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2016 年港灣環境資訊網觀測資料年報
(12 海域觀測波浪資料)

交通部運輸研究所

中華民國 106 年 9 月

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著者：蘇青和、李俊穎、陳明宗、劉清松
傅怡釧、陳鈞彥、林珂如、謝佳紘

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<tr><td colspan="4">摘要：
本港灣環境資訊網觀測波浪資料年報，包括北苗、北端、宜蘭、花蓮、臺東、屏東、高雄、嘉南、中雲、澎湖、金門及馬祖等12個海域，2016年觀測波浪資料之觀測記錄表及逐時資料歷線圖。</td></tr>
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ABSTRACT:

This Annual report 2016 of Harbor Environment Information Website(HEIV) covers the observation data of waves near the twelve offshoe regions(Pei-Miao Seas, North Seas, Yi-Lan Seas, Haw-lien Seas, Tai-Tung Seas, Peng-Tung Seas, Kao-Hsiung Seas, Chia-Nan Seas, Chung-Yun Seas, Peng-Hu Seas, Kin-Men Seas and Ma-Tsu Seas) in Taiwan. The contents in this Annual report include the records of observation and the time series of data.

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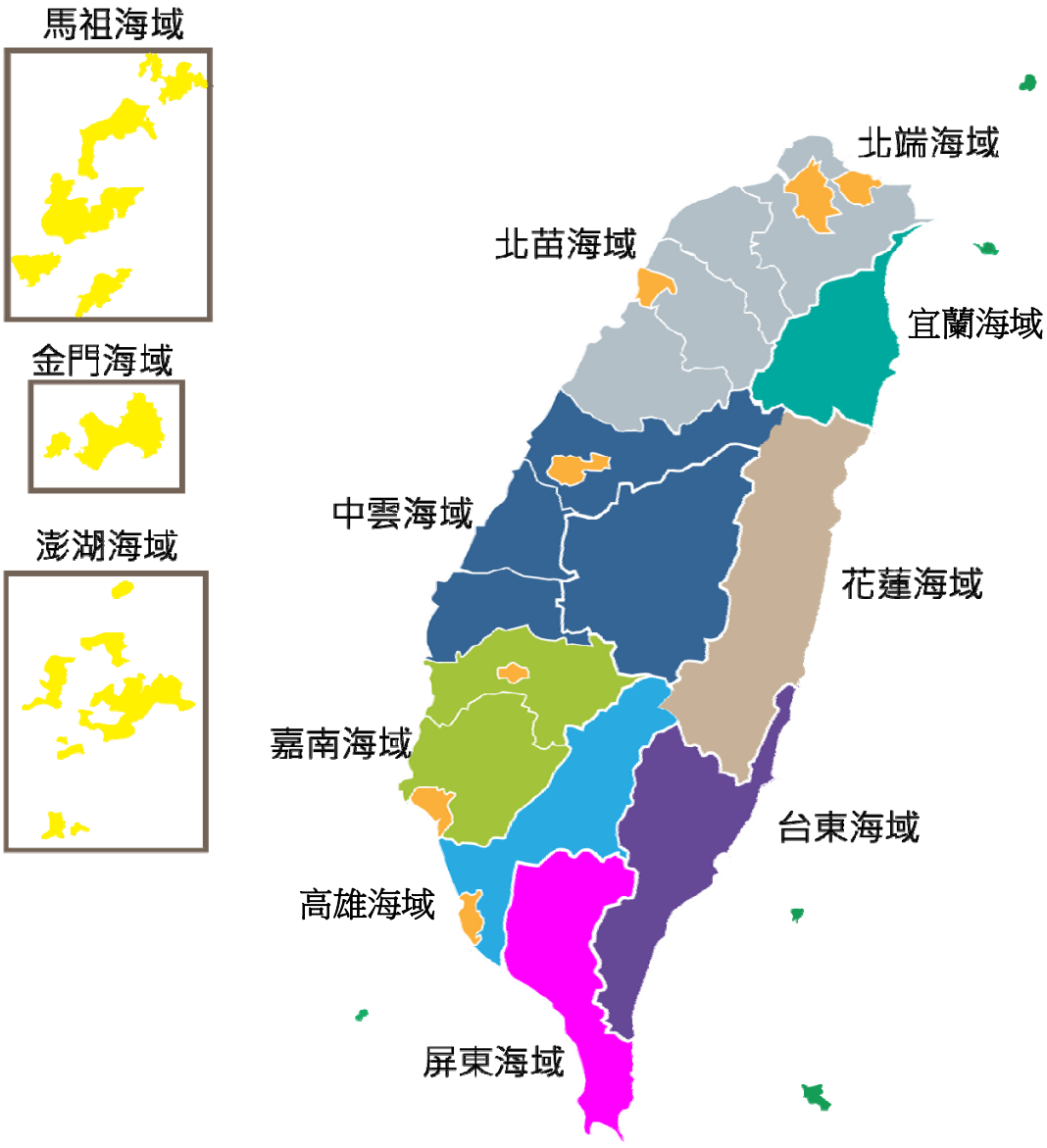
誌　　謝

2016 年港灣環境資訊網觀測波浪資料年報，蒐集之 12 海域波浪資料，除本中心自行觀測之外，在新竹海上浮標(**測站 Y**)、龍洞海上浮標(**測站 Y**)、花蓮海上浮標(**測站 Y**)、小琉球海上浮標(**測站 Y**) 、大鵬灣海上浮標(**測站 U**)、馬祖海上浮標(**測站 Y**)、富貴角海上浮標(**測站 R**) 、七美海上浮標(**測站 R**)、東吉島浮標(**測站 Z**)等觀測波浪資料，係交通部**中央氣象局(CWB)**提供，謹致謝忱。

蘇澳海上浮標(**測站 Y**)、臺東海上浮標(**測站 Y**) 、鵝鑾鼻海上浮標(**測站 Z**) 、彌陀海上浮標站(**測站 Z**)、七股海上浮標(**測站 Y**) 、七股雷達站(**測站 Z**)、澎湖海上浮標(**測站 Y**)、金門海上浮標(**測站 Y**)等觀測波浪資料，係經濟部**水利署(WRA)**提供，謹致謝忱。

其他福隆海上浮標(**測站 R**) 、灣裡海上浮標(**測站 R**) 、南灣海上浮標(**測站 R**)及金門后江灣海上浮標(**測站 Z**) 觀測波浪儀，係**國立成功大學水文中心(COMC)**裝設；基隆海域附近海上浮標(**測站 Z**)觀測波浪儀，係**國立臺灣海洋大學(NTOC)**裝設；彰濱外海浮標站(**測站 Y**)波浪儀，係**海科中心**(TORI)所設置；龜山島外海浮標站(**測站 Z**)之波浪儀屬**觀光局東北角管理處(TBRC)**所設置；曾文溪外海浮標(**測站 V**)及鹿耳門溪口外海浮標(**測站 U**)波浪儀屬**觀台灣中油(CPC)**所設置；彰濱外海一浮標站(**測站 Z**)及彰濱外海二浮標站(**測站 R**)之波浪儀屬**中興工程**所設置，謹致謝忱。

臺灣 12 海域區分示意圖



第一章　2016 年北苗海域觀測波浪資料

北苗海域(新北~苗栗)波浪之觀測較早本中心**(IHMT)**於臺北港外海觀測樁**(測站 X0**)水下 5 米處安裝 Inter Ocean S-4ADW 潮波儀所測得之 2Hz 水位變化時間序列處理而得，期間為 1996 年 10 月至 2004 年 9 月，舊觀測樁測站位置如附圖 1，2004 年 12 月以後更換之新觀測樁測，稱**測站 X1**，因 S-4 觀測儀器老舊，另更換為 NORTEK 公司之剖面海流表面波浪與潮汐之監測系統(AWCP)。

測站 Y(新竹外海浮標站)之波浪儀屬中央氣象局**(CWB)**所有，波浪資料由中央氣象局提供。各測站歷年觀測波浪資料蒐集概況如表 1。

波浪觀測 AWCP 系統有兩個分離波高量測模式:一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **X 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 1.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 1.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 1.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 1.2 以後。

表 1 北苗海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X0	25°10'44"N	121°22'41"E	1996/10-2004/09	港研中心	台北港舊觀測樁
X1	25°10'54"N	121°22'33"E	2005/01-2016/11(觀測中)	港研中心	台北港新觀測樁
Y	24°45'39N	120°50'38"E	1997/06-2016/11(觀測中)	中央氣象局	新竹浮標站

北苗海域

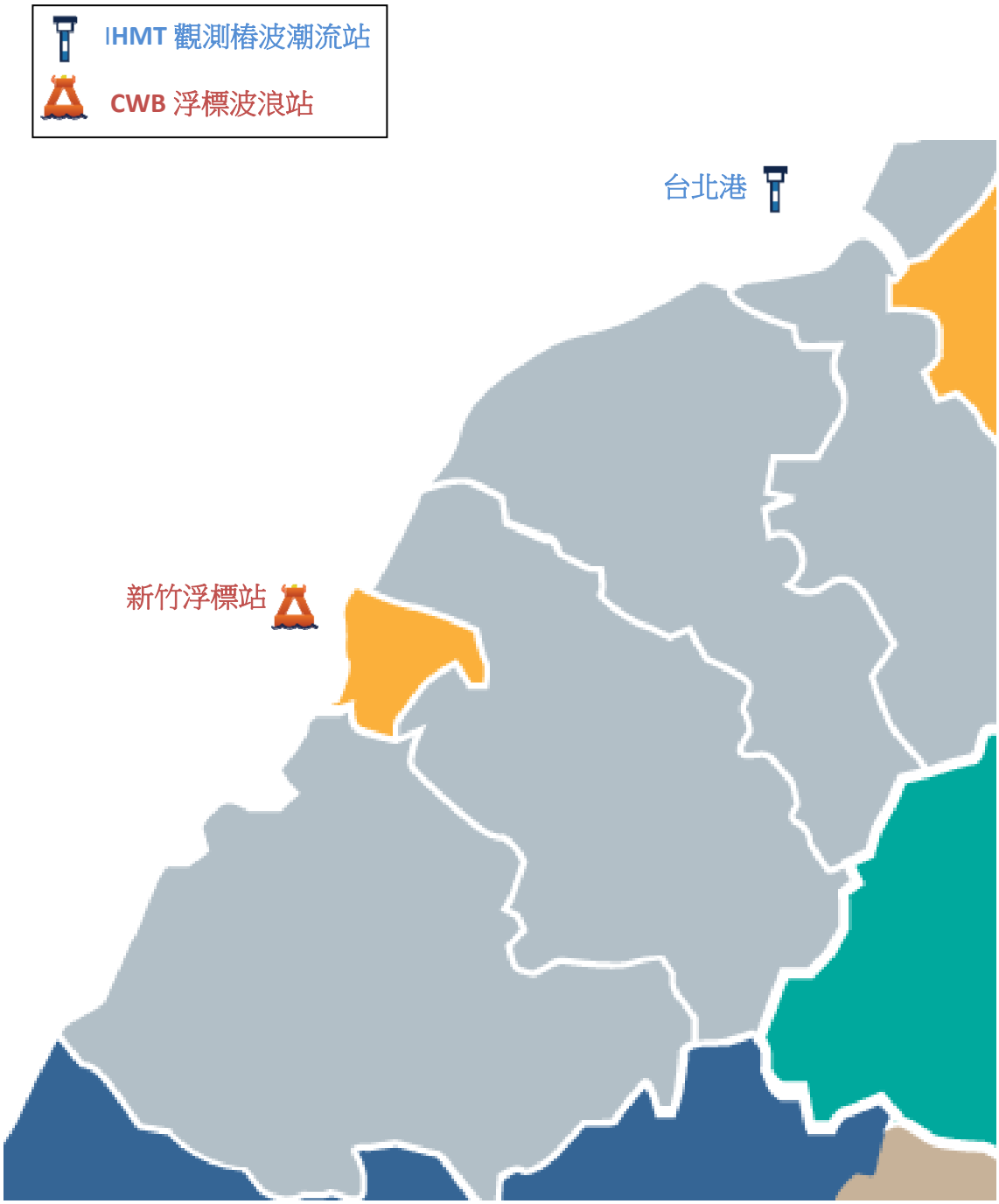


圖 1 北苗海域波浪觀測站位置示意圖

表1.1a 2016年每月北苗海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域
測站	X	Y						I
2015/12月	197 (26.5%)	729 (98.0%)	*	*	*	*	*	*
2016/ 1月	741 (99.6%)	734 (98.7%)	*	*	*	*	*	*
2016/ 2月	696 (100%)	677 (97.3%)	*	*	*	*	*	*
2016/ 3月	744 (100%)	731 (98.3%)	*	*	*	*	*	*
2016/ 4月	720 (100%)	717 (99.6%)	*	*	*	*	*	*
2016/ 5月	744 (100%)	742 (99.7%)	*	*	*	*	*	*
2016/ 6月	201 (27.9%)	717 (99.6%)	*	*	*	*	*	*
2016/ 7月	743 (99.9%)	740 (99.5%)	*	*	*	*	*	*
2016/ 8月	744 (100%)	743 (99.9%)	*	*	*	*	*	*
2016/ 9月	720 (100%)	711 (98.8%)	*	*	*	*	*	*
2016/10月	744 (100%)	743 (99.9%)	*	*	*	*	*	*
2016/11月	322 (44.7%)	716 (99.4%)	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表1.1b 2016年每月北苗海域修補後各測站波浪資料統計表

年/月 港區	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域	北苗海域
測站	X	Y						I
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Pei-Miao Seas of TPX0 at 2016

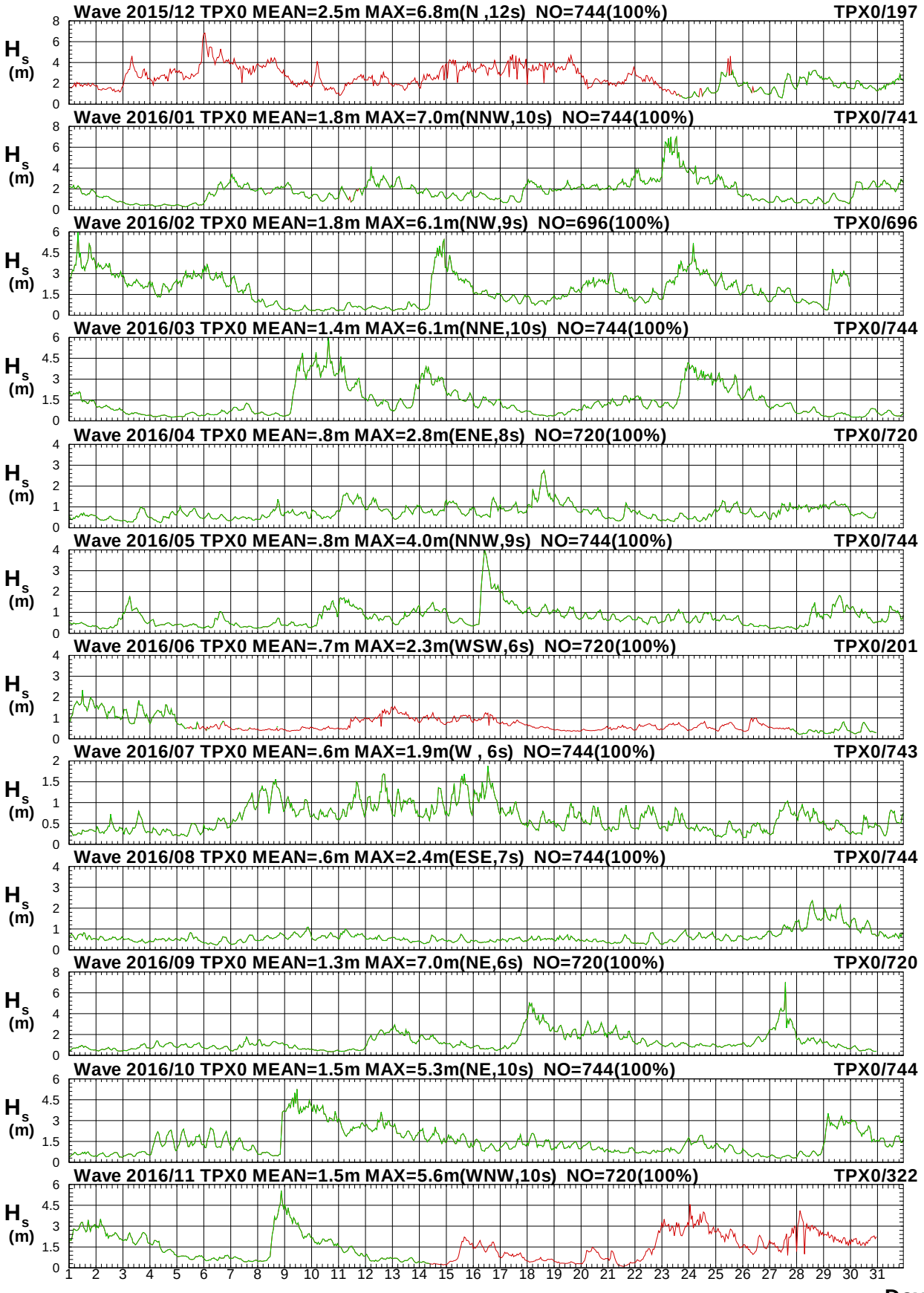


圖1.1a　2016年每月北苗海域 X 站修補前後之波高比較圖

V15CTPX0.1HA V15CTPX0.1H0 V161TPX0.1HA V161TPX0.1H0 V162TPX0.1HA V162TPX0.1H0
V163TPX0.1HA V163TPX0.1H0 V164TPX0.1HA V164TPX0.1H0 V165TPX0.1HA V165TPX0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

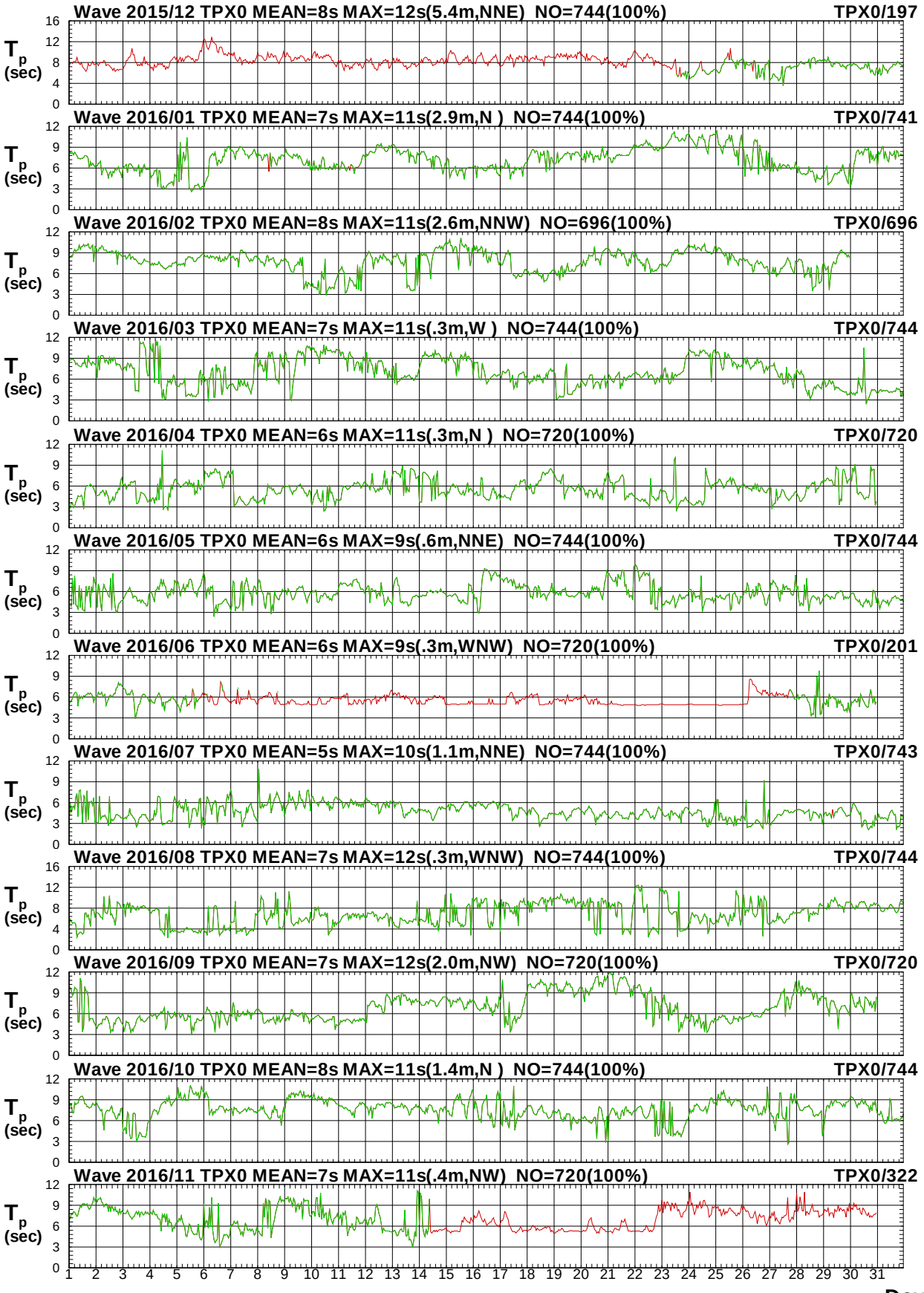

圖1.1b　2016年每月北苗海域 X 站修補前後之週期比較圖

V15CTPX0.1HA V15CTPX0.1H0 V161TPX0.1HA V161TPX0.1H0 V162TPX0.1HA V162TPX0.1H0
V163TPX0.1HA V163TPX0.1H0 V164TPX0.1HA V164TPX0.1H0 V165TPX0.1HA V165TPX0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

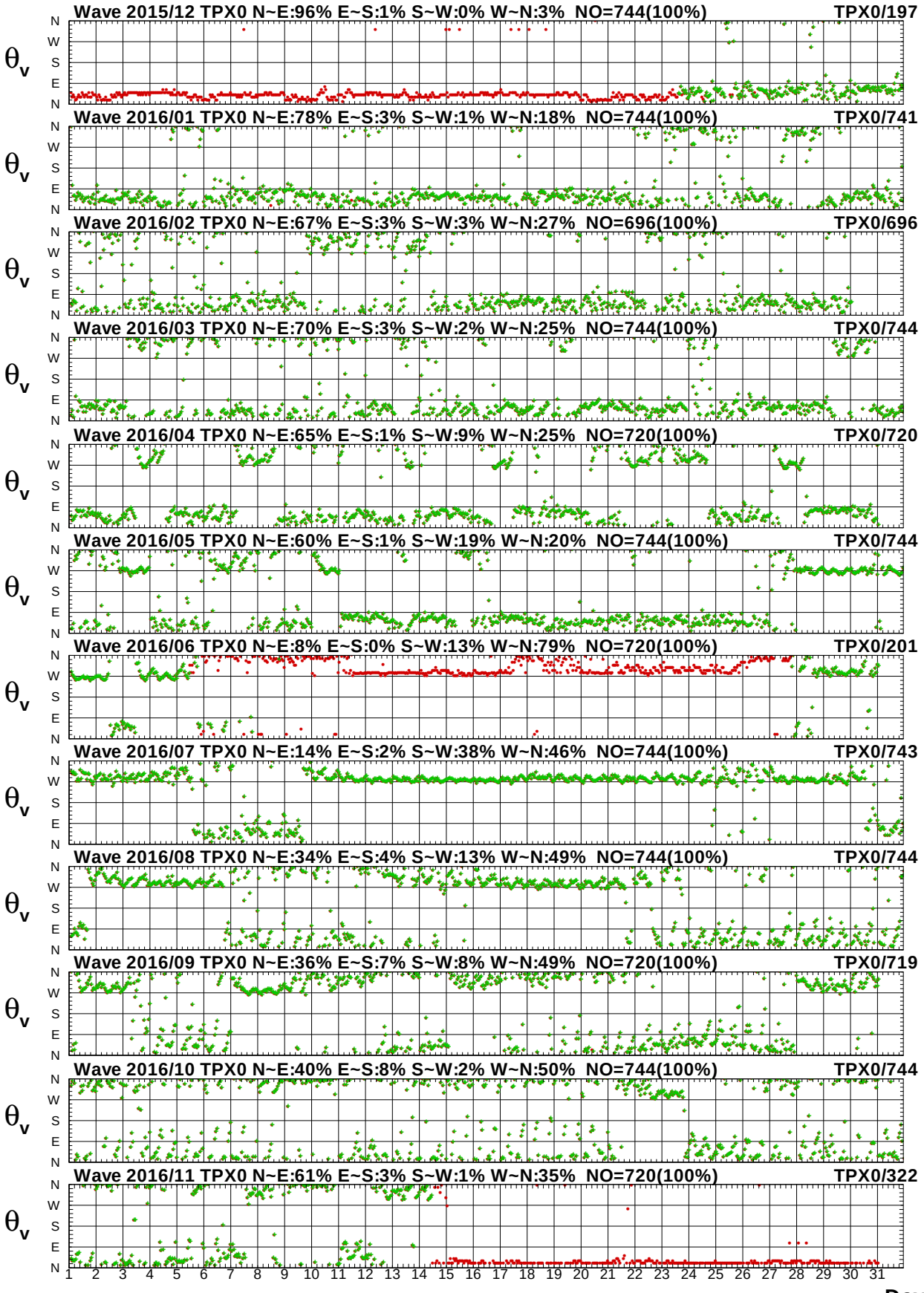

圖1.1c　2016年每月北苗海域 X 站修補前後之波向比較圖

V15CTPX0.1HA V15CTPX0.1H0 V161TPX0.1HA V161TPX0.1H0 V162TPX0.1HA V162TPX0.1H0
V163TPX0.1HA V163TPX0.1H0 V164TPX0.1HA V164TPX0.1H0 V165TPX0.1HA V165TPX0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2016

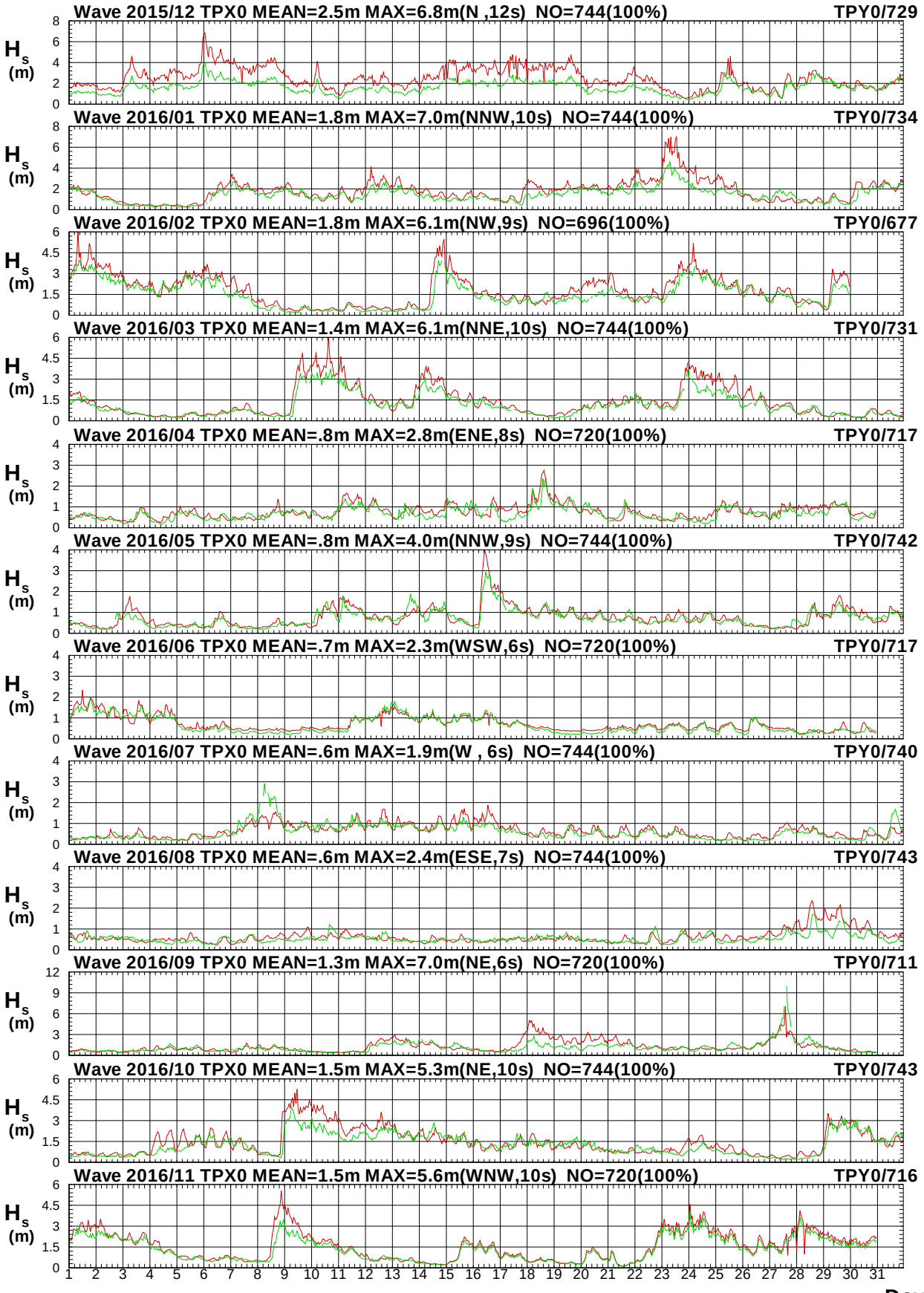

圖1.2a　2016年每月北苗海域 X 站與 Y 站波高比較圖

V15CTPX0.1HA V15CTPY0.1H0 V161TPX0.1HA V161TPY0.1H0 V162TPX0.1HA V162TPY0.1H0
V163TPX0.1HA V163TPY0.1H0 V164TPX0.1HA V164TPY0.1H0 V165TPX0.1HA V165TPY0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

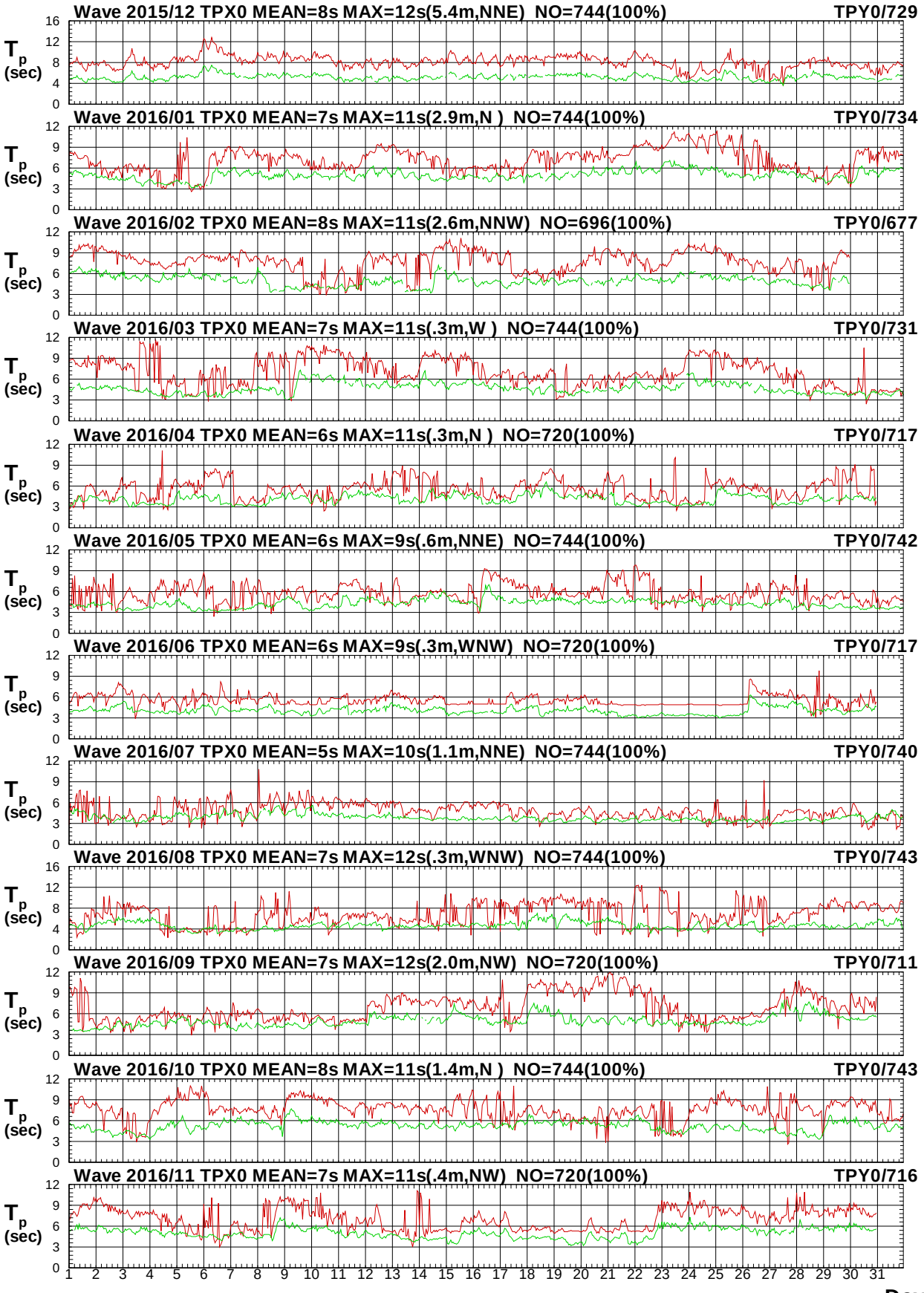

圖 1.2b　2016年每月北苗海域 X 站與 Y 站週期比較圖

V15CTPX0.1HA V15CTPY0.1H0 V161TPX0.1HA V161TPY0.1H0 V162TPX0.1HA V162TPY0.1H0
V163TPX0.1HA V163TPY0.1H0 V164TPX0.1HA V164TPY0.1H0 V165TPX0.1HA V165TPY0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

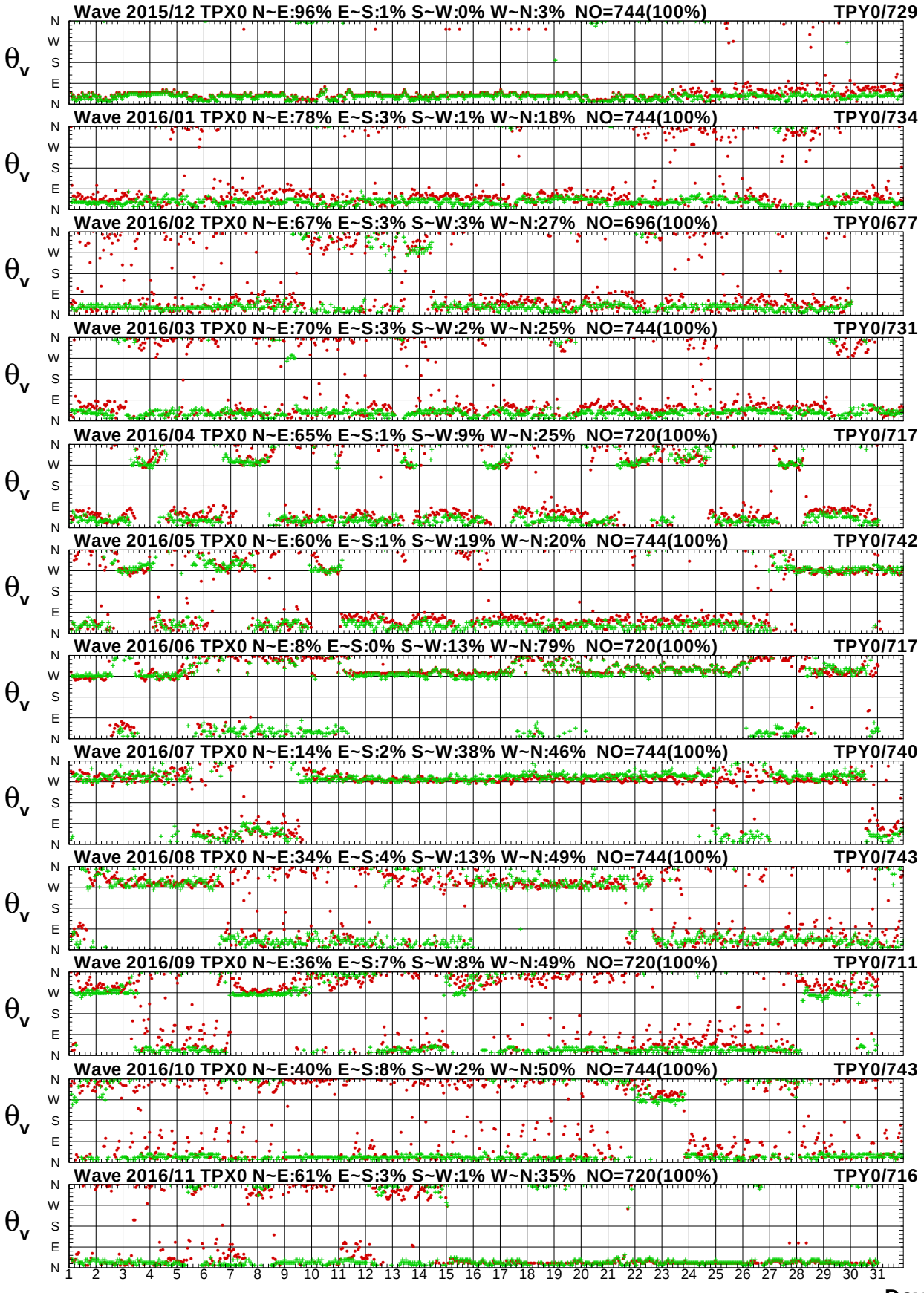

圖 1.2c　2016年每月北苗海域 X 站與 Y 站波向比較圖

V15CTPX0.1HA V15CTPY0.1H0 V161TPX0.1HA V161TPY0.1H0 V162TPX0.1HA V162TPY0.1H0
V163TPX0.1HA V163TPY0.1H0 V164TPX0.1HA V164TPY0.1H0 V165TPX0.1HA V165TPY0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2016

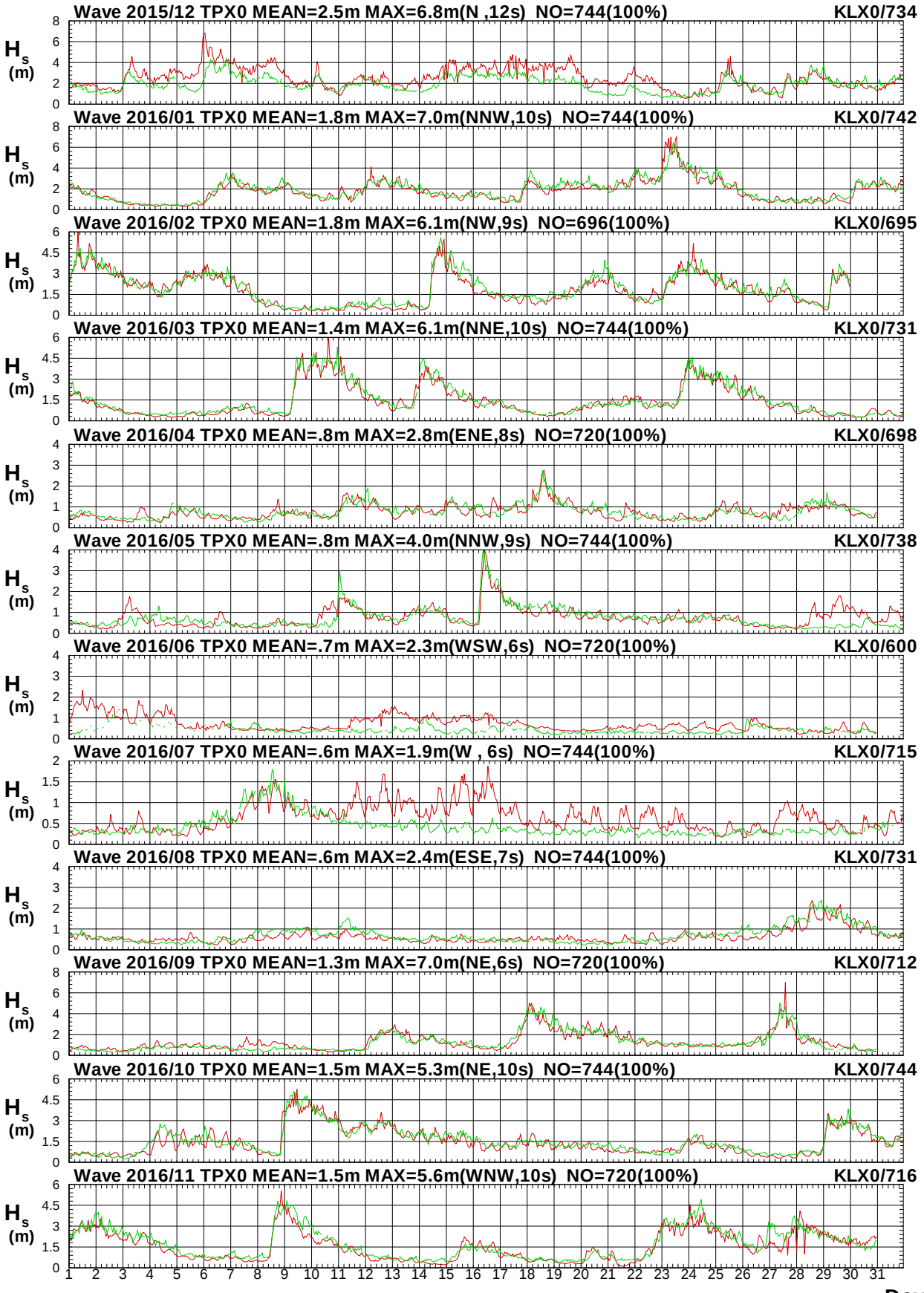

圖 1.3a　2016年每月北苗海域 X 站與北端海域 X 站波高圖

V15CTPX0.1HA V15CKLX0.1H0 V161TPX0.1HA V161KLX0.1H0 V162TPX0.1HA V162KLX0.1H0
V163TPX0.1HA V163KLX0.1H0 V164TPX0.1HA V164KLX0.1H0 V165TPX0.1HA V165KLX0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

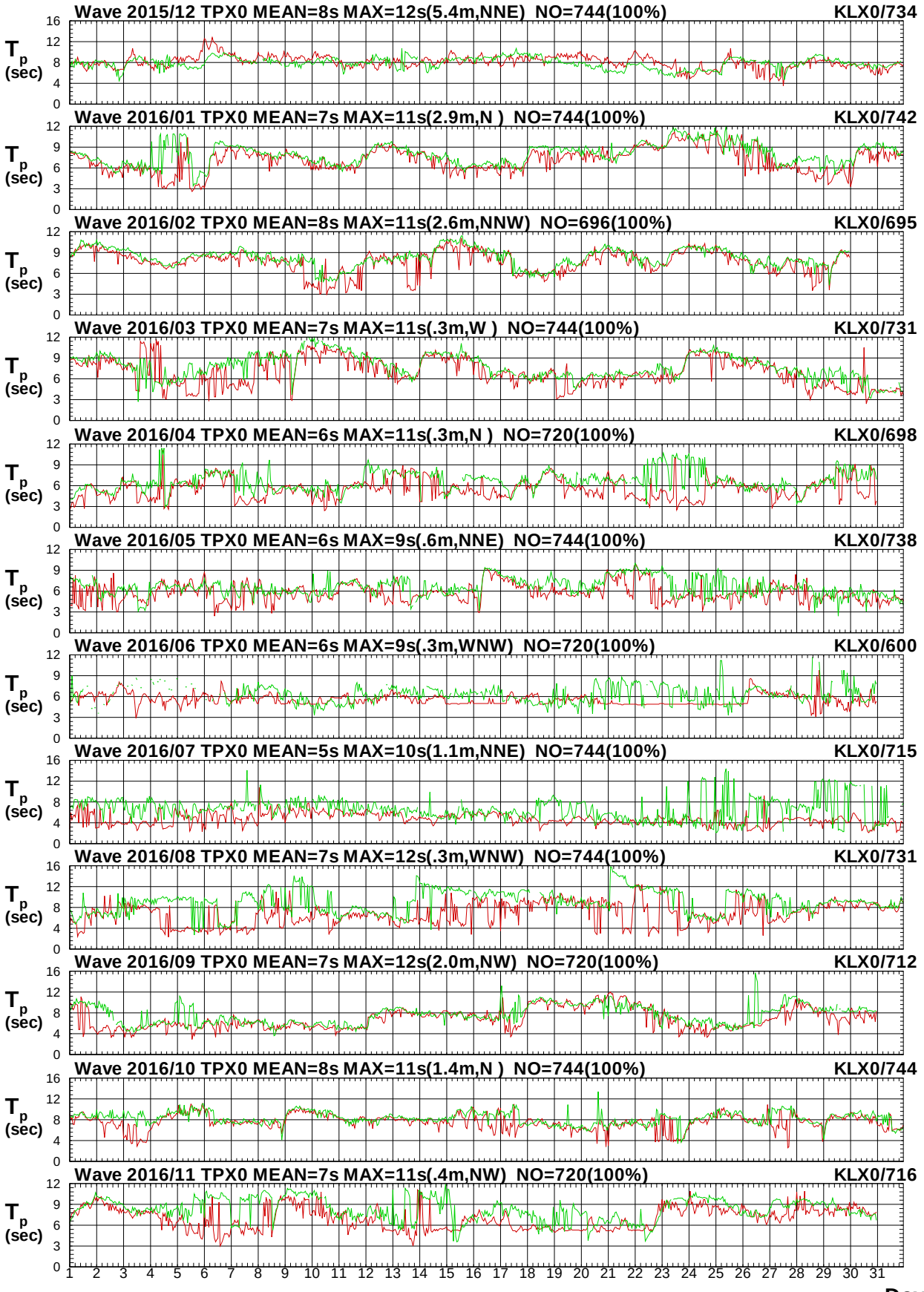

圖 1.3b　2016年每月北苗海域 X 站與北端海域 X 站週期圖

V15CTPX0.1HA V15CKLX0.1H0 V161TPX0.1HA V161KLX0.1H0 V162TPX0.1HA V162KLX0.1H0
V163TPX0.1HA V163KLX0.1H0 V164TPX0.1HA V164KLX0.1H0 V165TPX0.1HA V165KLX0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

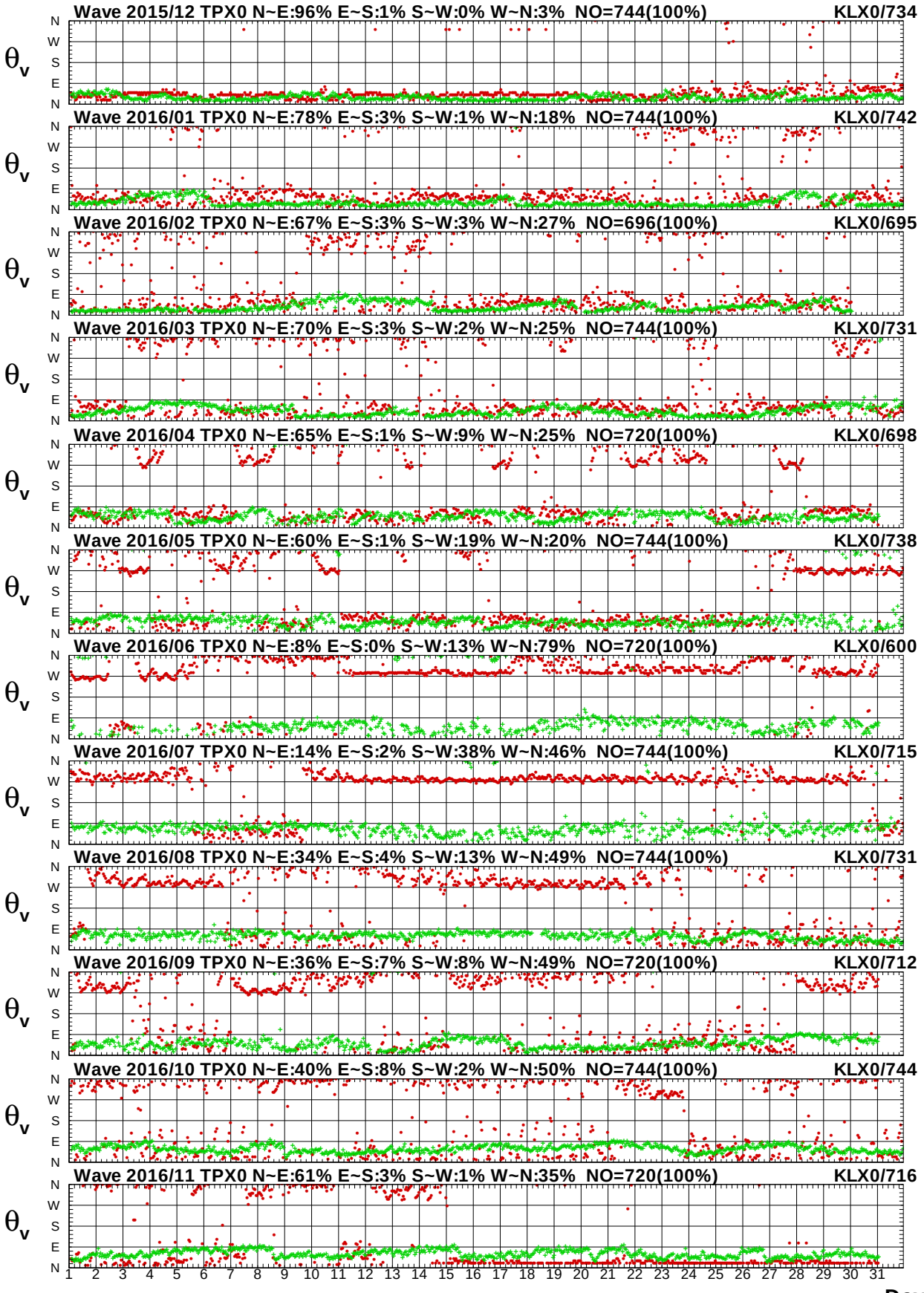

圖 1.3c　2016年每月北苗海域 X 站與北端海域 X 站波向圖

Wave H_s in Pei-Miao Seas of TPX0 at 2016

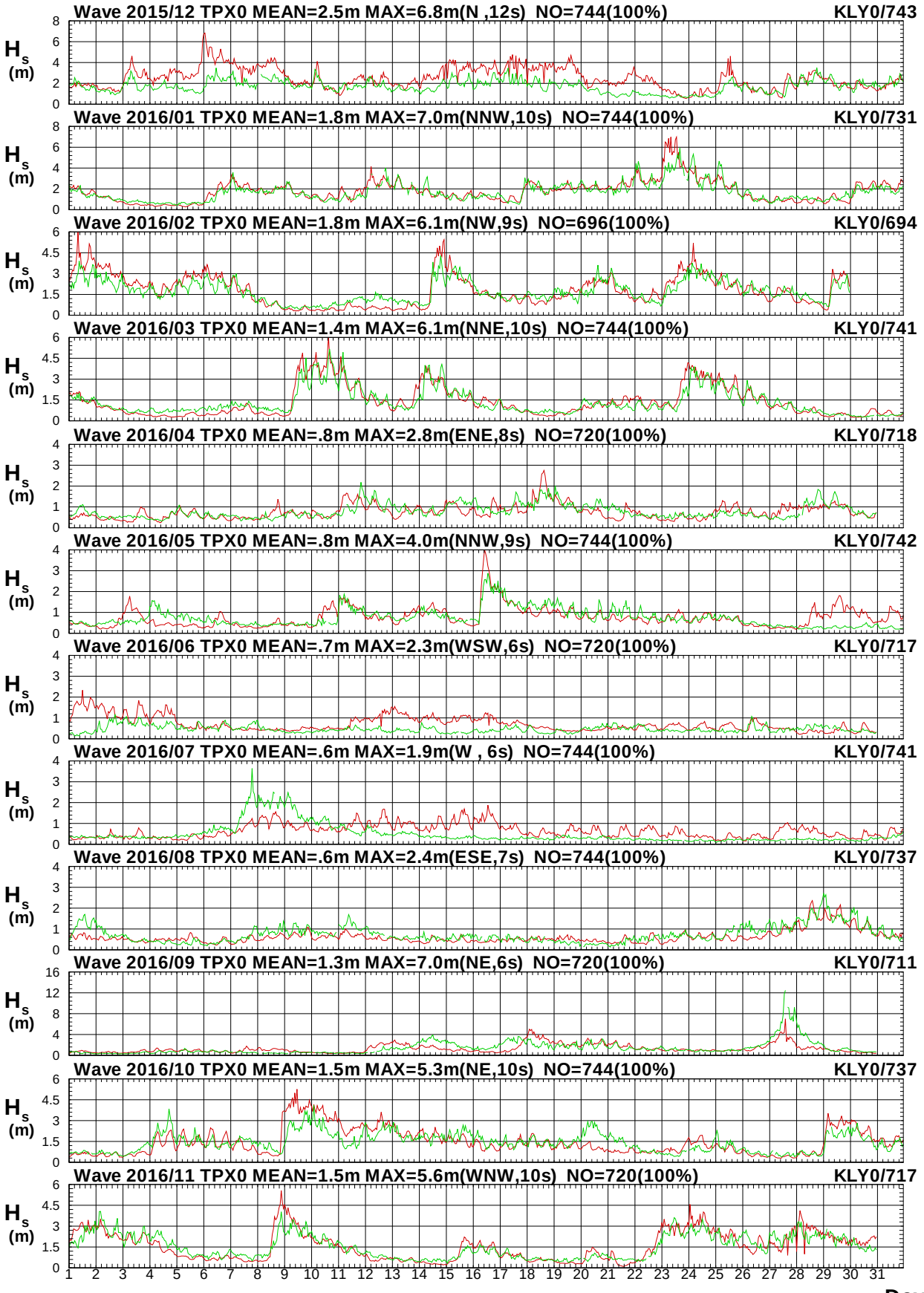

圖 1.4a　2016年每月北苗海域 X 站與北端海域 Y 站波高圖

V15CTPX0.1HA V15CKLY0.1H0 V161TPX0.1HA V161KLY0.1H0 V162TPX0.1HA V162KLY0.1H0
V163TPX0.1HA V163KLY0.1H0 V164TPX0.1HA V164KLY0.1H0 V165TPX0.1HA V165KLY0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

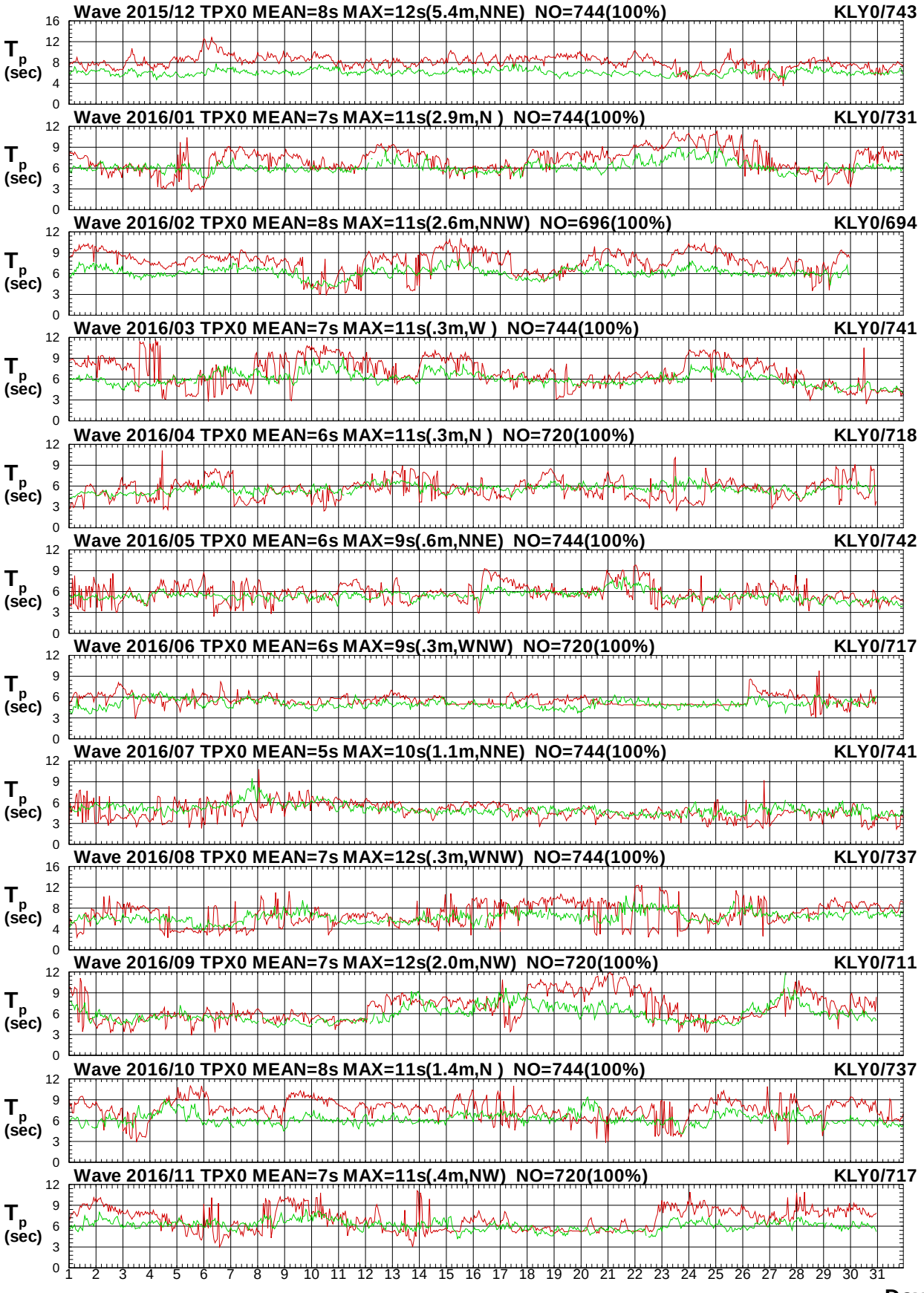

圖 1.4b　2016年每月北苗海域 X 站與北端海域 Y 站週期圖

V15CTPX0.1HA V15CKLY0.1H0 V161TPX0.1HA V161KLY0.1H0 V162TPX0.1HA V162KLY0.1H0
V163TPX0.1HA V163KLY0.1H0 V164TPX0.1HA V164KLY0.1H0 V165TPX0.1HA V165KLY0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

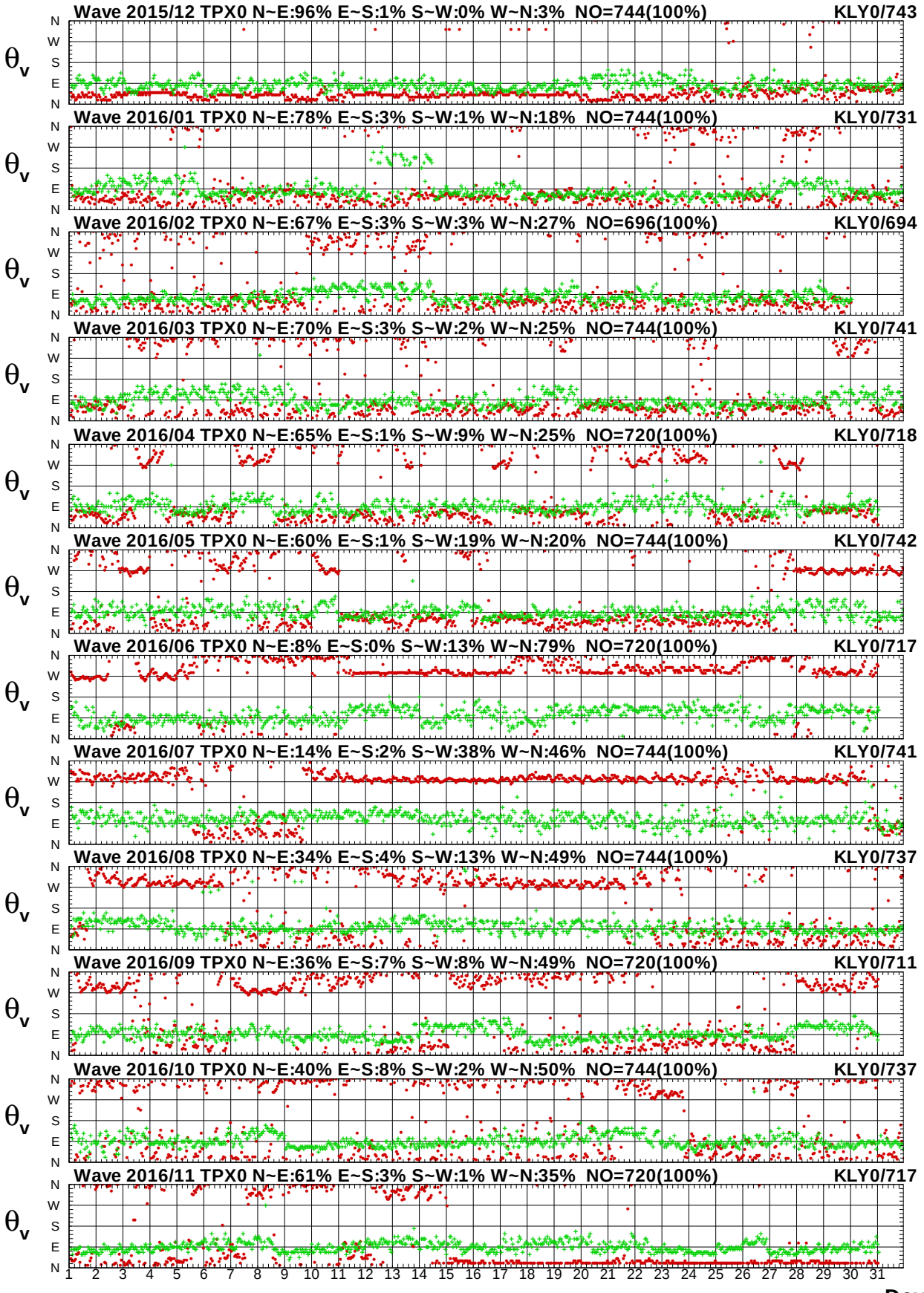

圖 1.4c　2016年每月北苗海域 X 站與北端海域 Y 站波向圖

Wave H_s in Pei-Miao Seas of TPX0 at 2016

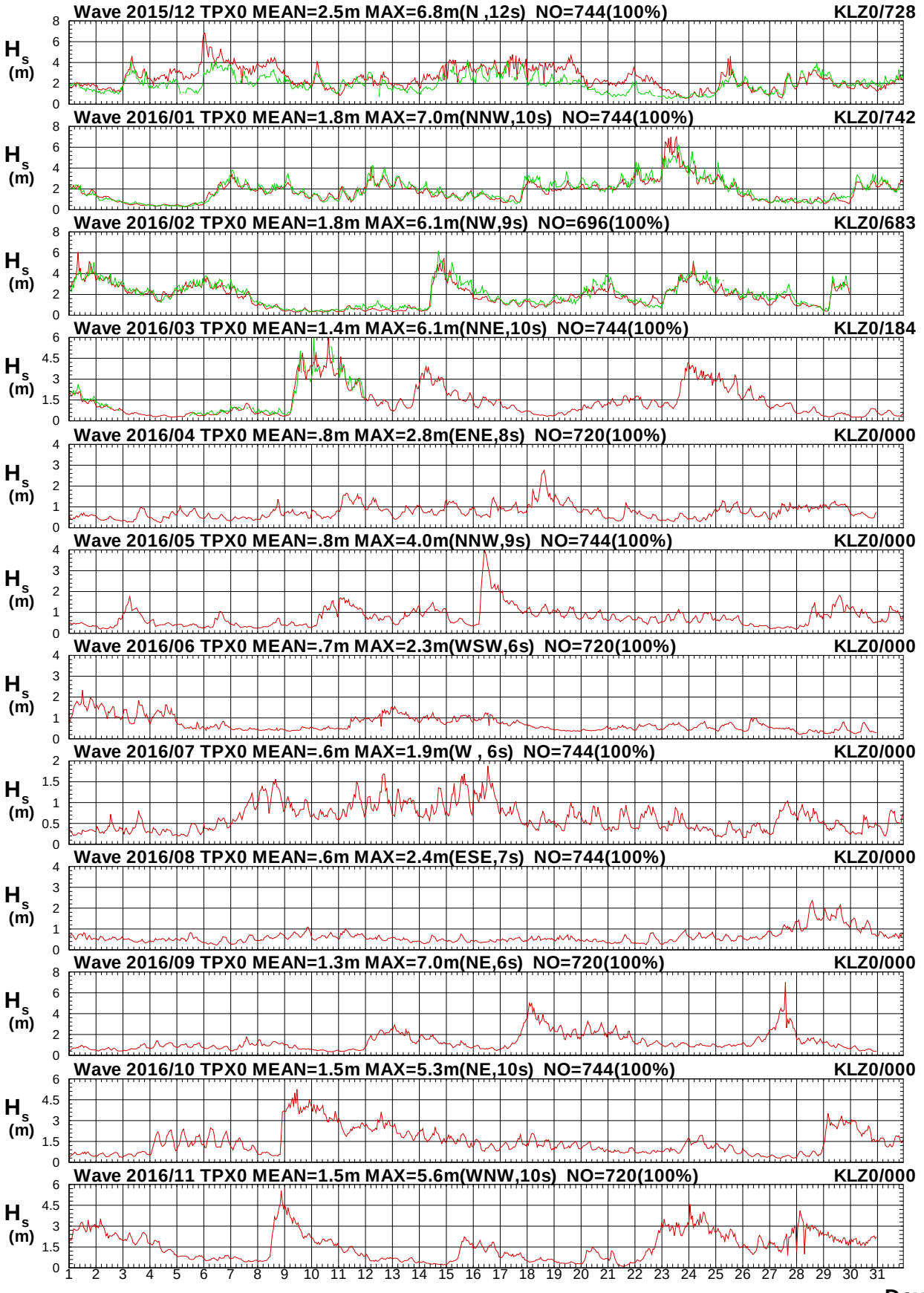

圖 1.5a　2016年每月北苗海域 X 站與北端海域 Z 站波高圖

V15CTPX0.1HA V15CKLZ0.1H0 V161TPX0.1HA V161KLZ0.1H0 V162TPX0.1HA V162KLZ0.1H0
V163TPX0.1HA V163KLZ0.1H0 V164TPX0.1HA V164KLZ0.1H0 V165TPX0.1HA V165KLZ0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

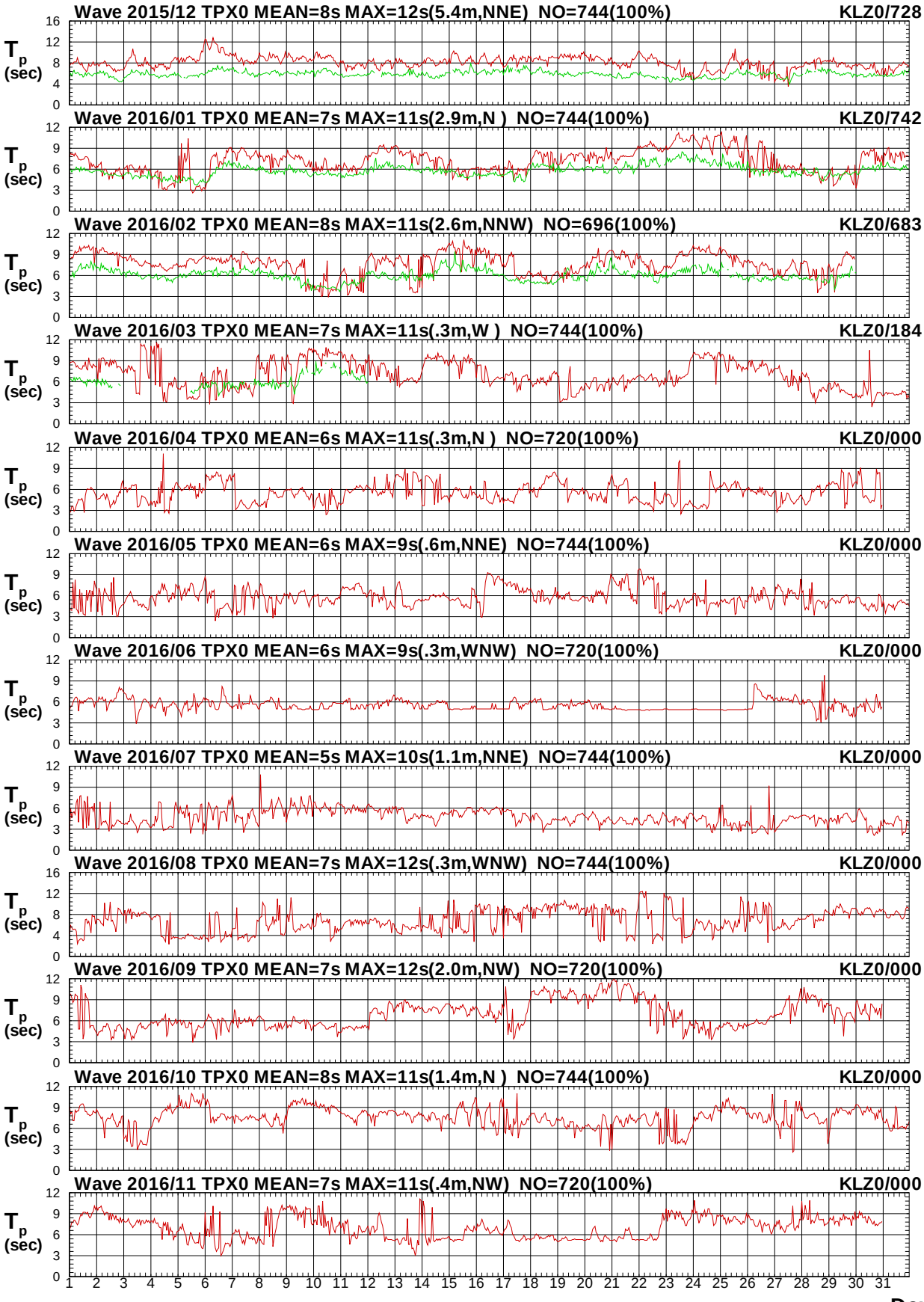

圖 1.5b　2016年每月北苗海域 X 站與北端海域 Z 站週期圖

V15CTPX0.1HA V15CKLZ0.1H0 V161TPX0.1HA V161KLZ0.1H0 V162TPX0.1HA V162KLZ0.1H0
V163TPX0.1HA V163KLZ0.1H0 V164TPX0.1HA V164KLZ0.1H0 V165TPX0.1HA V165KLZ0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

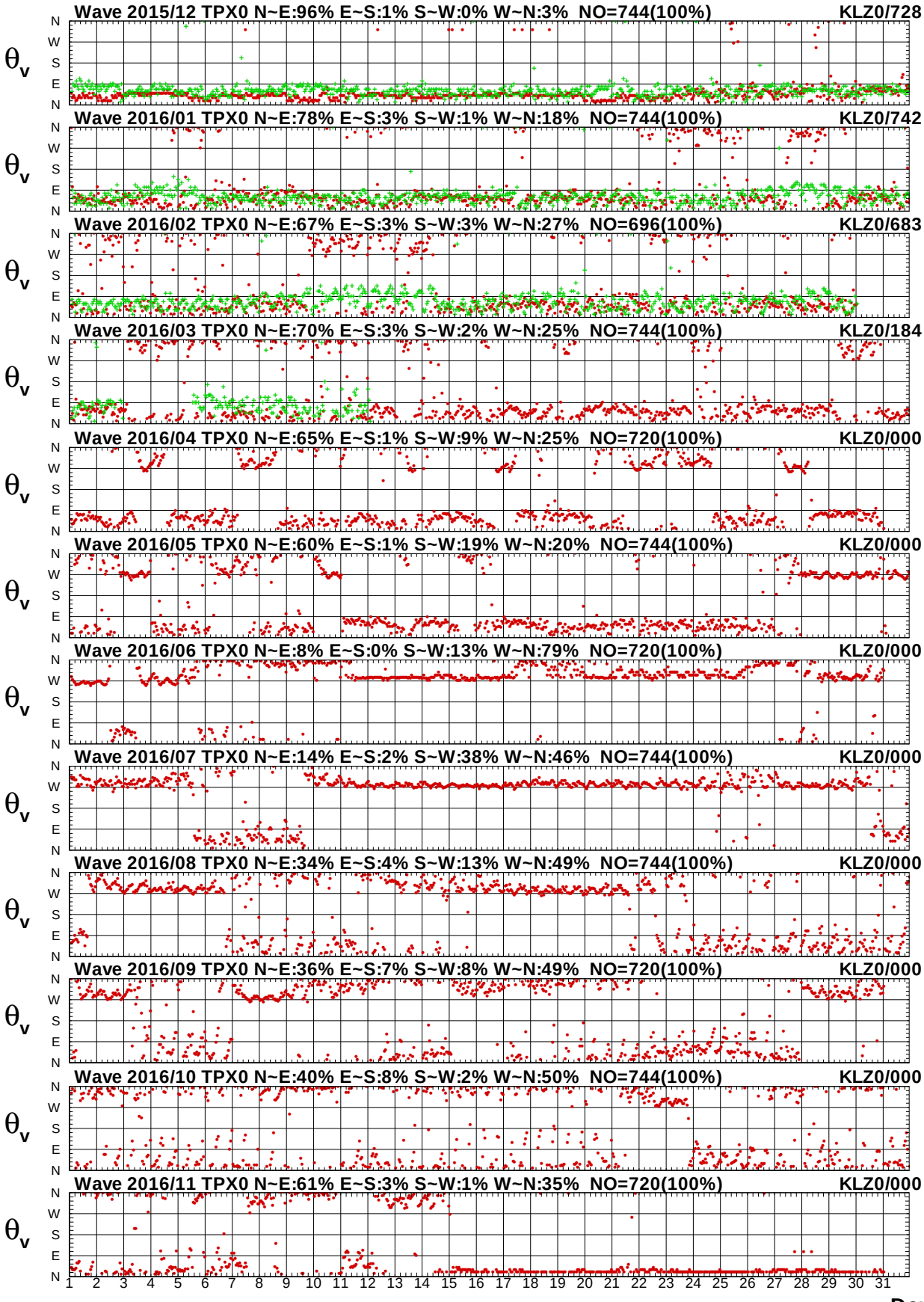

圖1.5c　2016年每月北苗海域 X 站與北端海域 Z 站波向圖

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V163TPX0.1HA V163KLZ0.1H0 V164TPX0.1HA V164KLZ0.1H0 V165TPX0.1HA V165KLZ0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2016

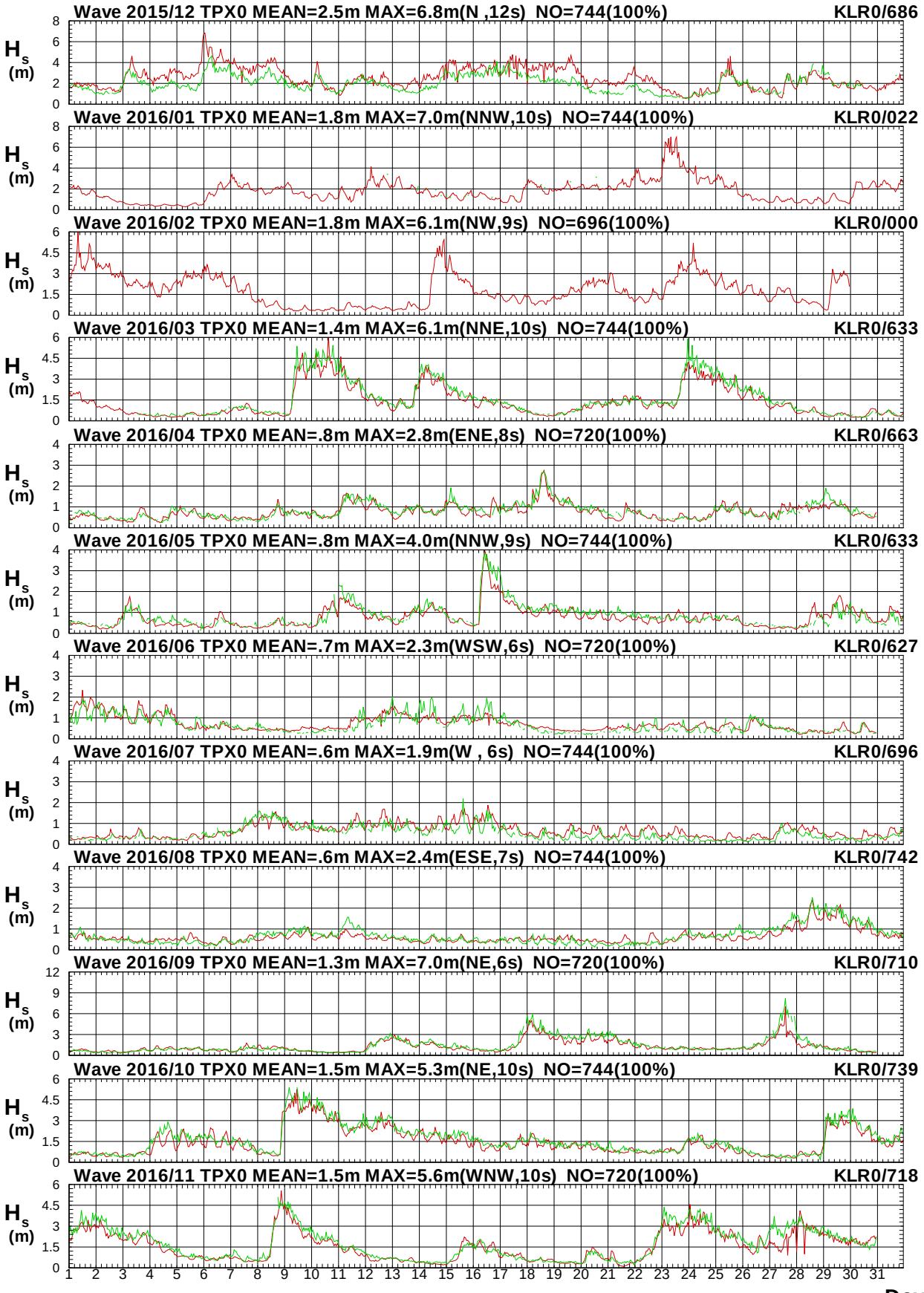

圖 1.6a　2016年每月北苗海域 X 站與北端海域 R 站波高圖

V15CTPX0.1HA V15CKLR0.1H0 V161TPX0.1HA V161KLR0.1H0 V162TPX0.1HA V162KLR0.1H0
V163TPX0.1HA V163KLR0.1H0 V164TPX0.1HA V164KLR0.1H0 V165TPX0.1HA V165KLR0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

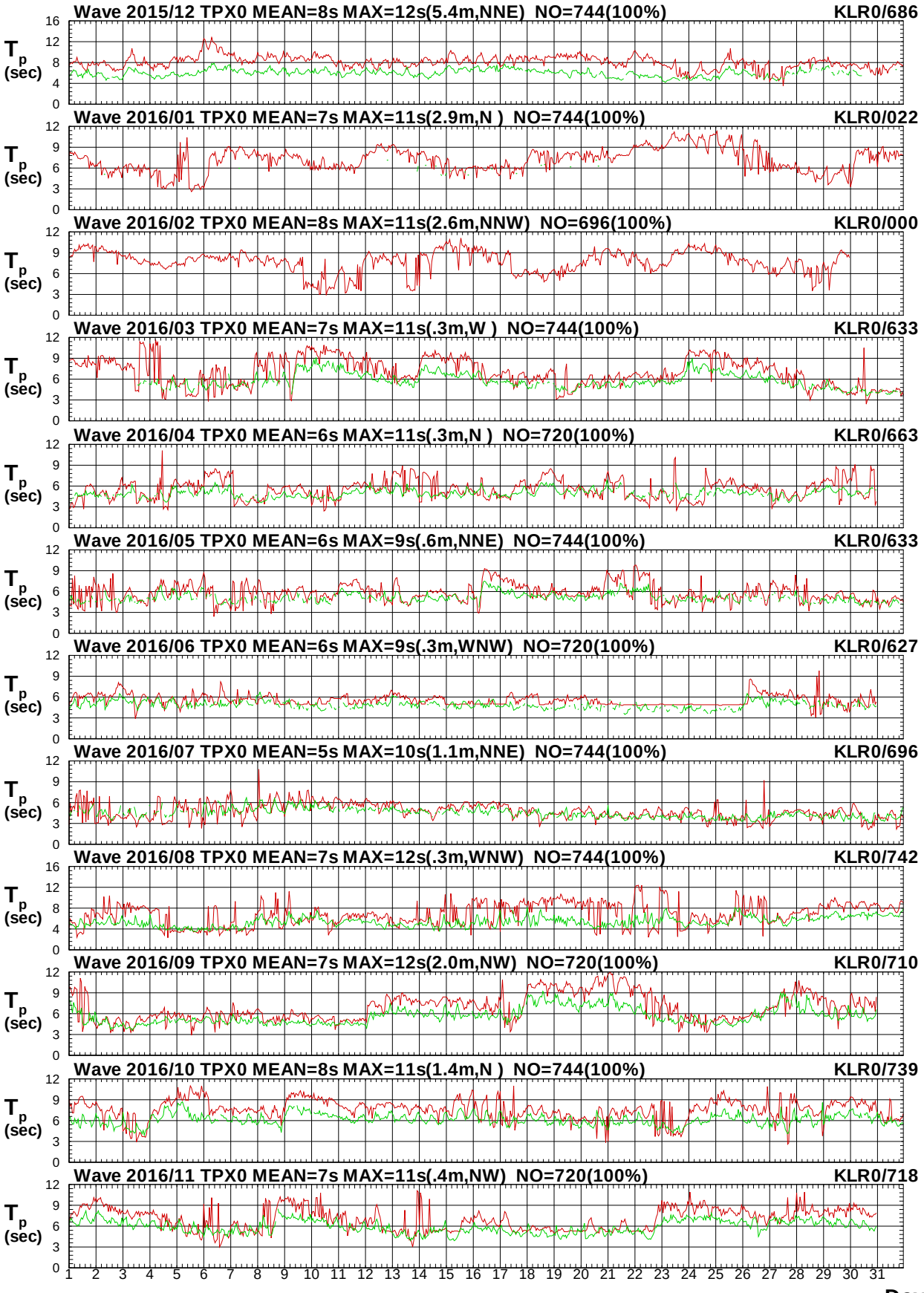

圖 1.6b　2016年每月北苗海域 X 站與北端海域 R 站週期圖

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V163TPX0.1HA V163KLR0.1H0 V164TPX0.1HA V164KLR0.1H0 V165TPX0.1HA V165KLR0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

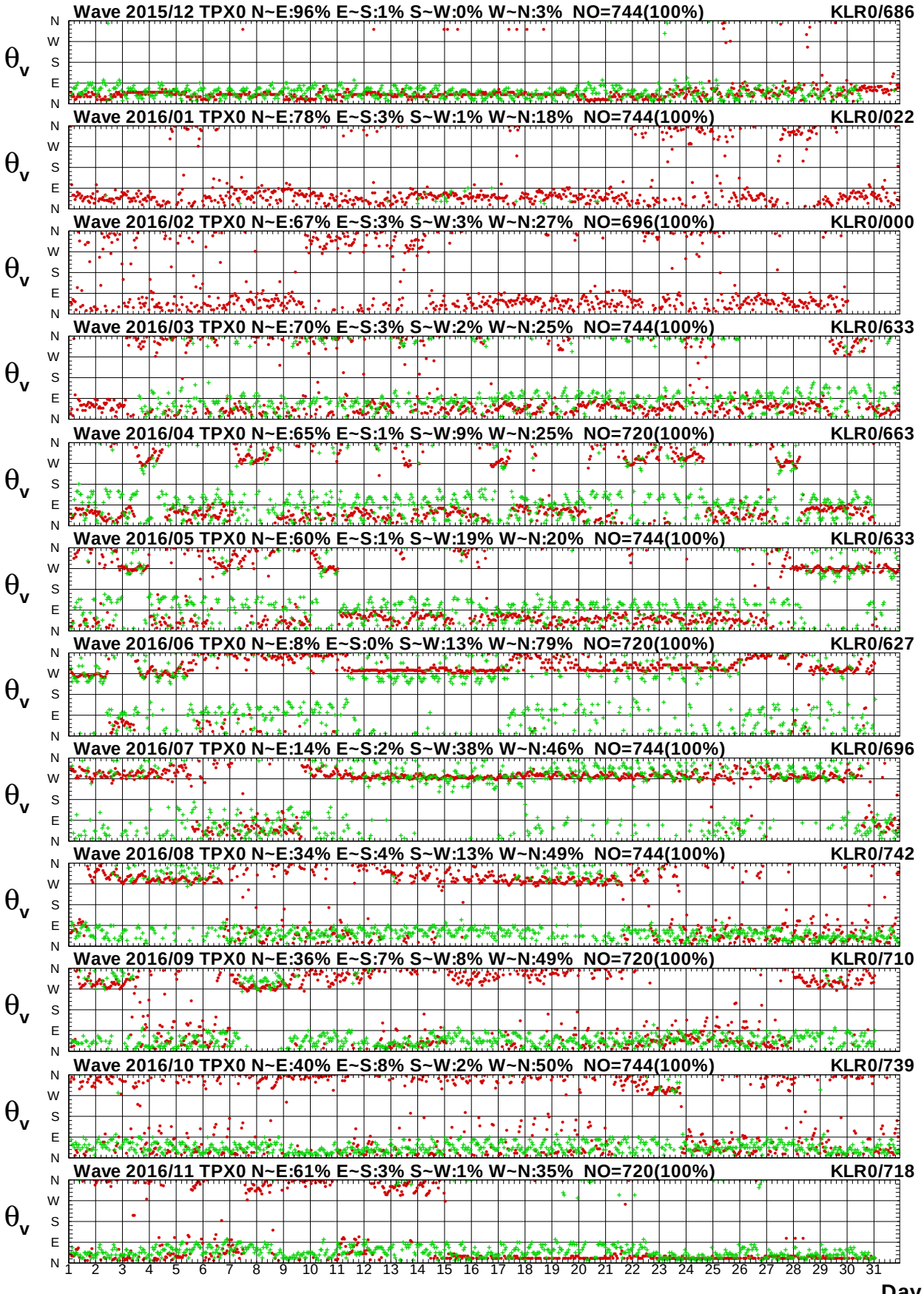

圖 1.6c　2016年每月北苗海域 X 站與北端海域 R 站波向圖

V15CTPX0.1HA V15CKLR0.1H0 V161TPX0.1HA V161KLR0.1H0 V162TPX0.1HA V162KLR0.1H0
V163TPX0.1HA V163KLR0.1H0 V164TPX0.1HA V164KLR0.1H0 V165TPX0.1HA V165KLR0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2016

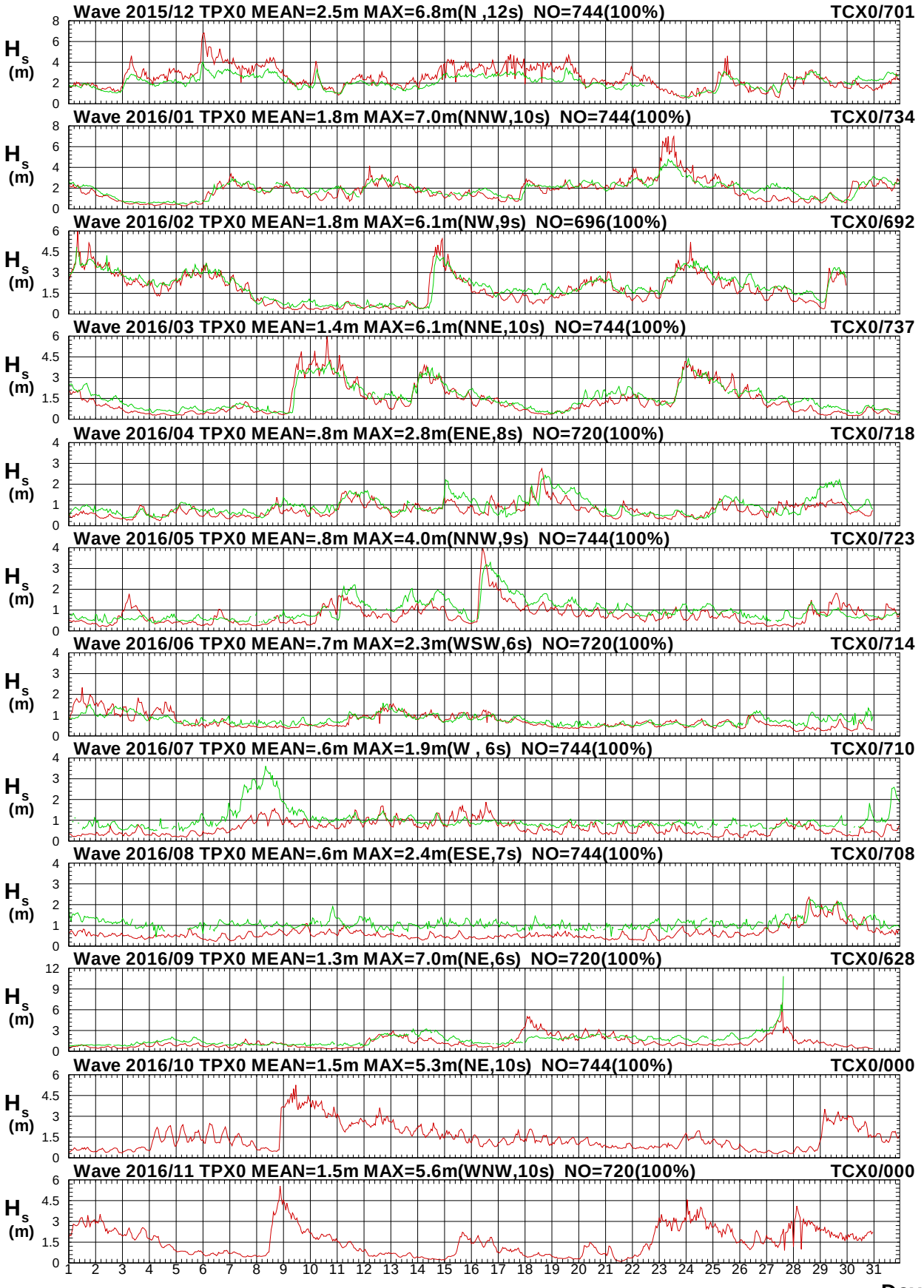

圖 1.7a　2016年每月北苗海域 X 站與中雲海域 X 站波高圖

V15CTPX0.1HA V15CTCX0.1H0 V161TPX0.1HA V161TCX0.1H0 V162TPX0.1HA V162TCX0.1H0
V163TPX0.1HA V163TCX0.1H0 V164TPX0.1HA V164TCX0.1H0 V165TPX0.1HA V165TCX0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

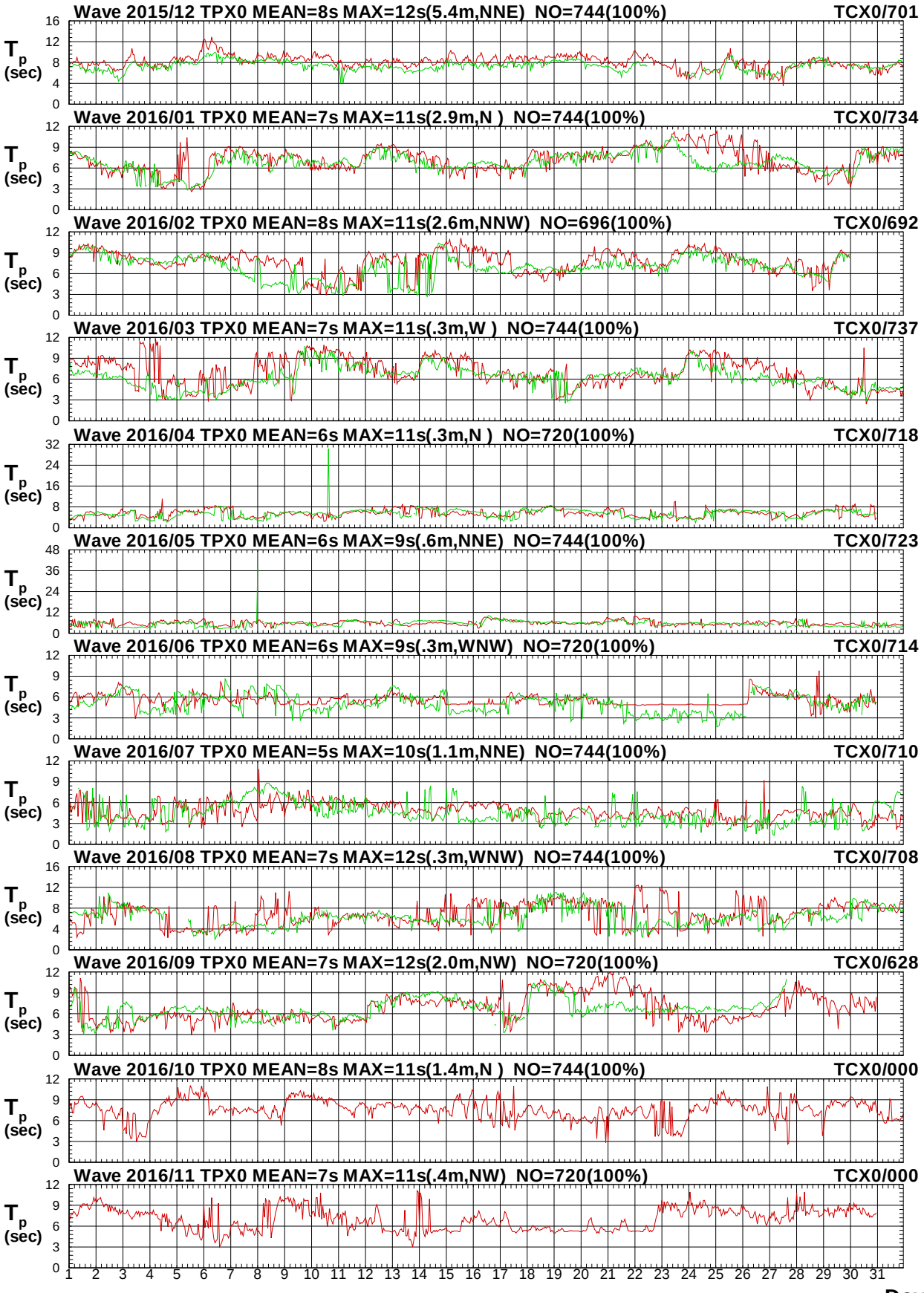

圖 1.7b　2016年每月北苗海域 X 站與中雲海域 X 站週期圖

V15CTPX0.1HA V15CTCX0.1H0 V161TPX0.1HA V161TCX0.1H0 V162TPX0.1HA V162TCX0.1H0
V163TPX0.1HA V163TCX0.1H0 V164TPX0.1HA V164TCX0.1H0 V165TPX0.1HA V165TCX0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

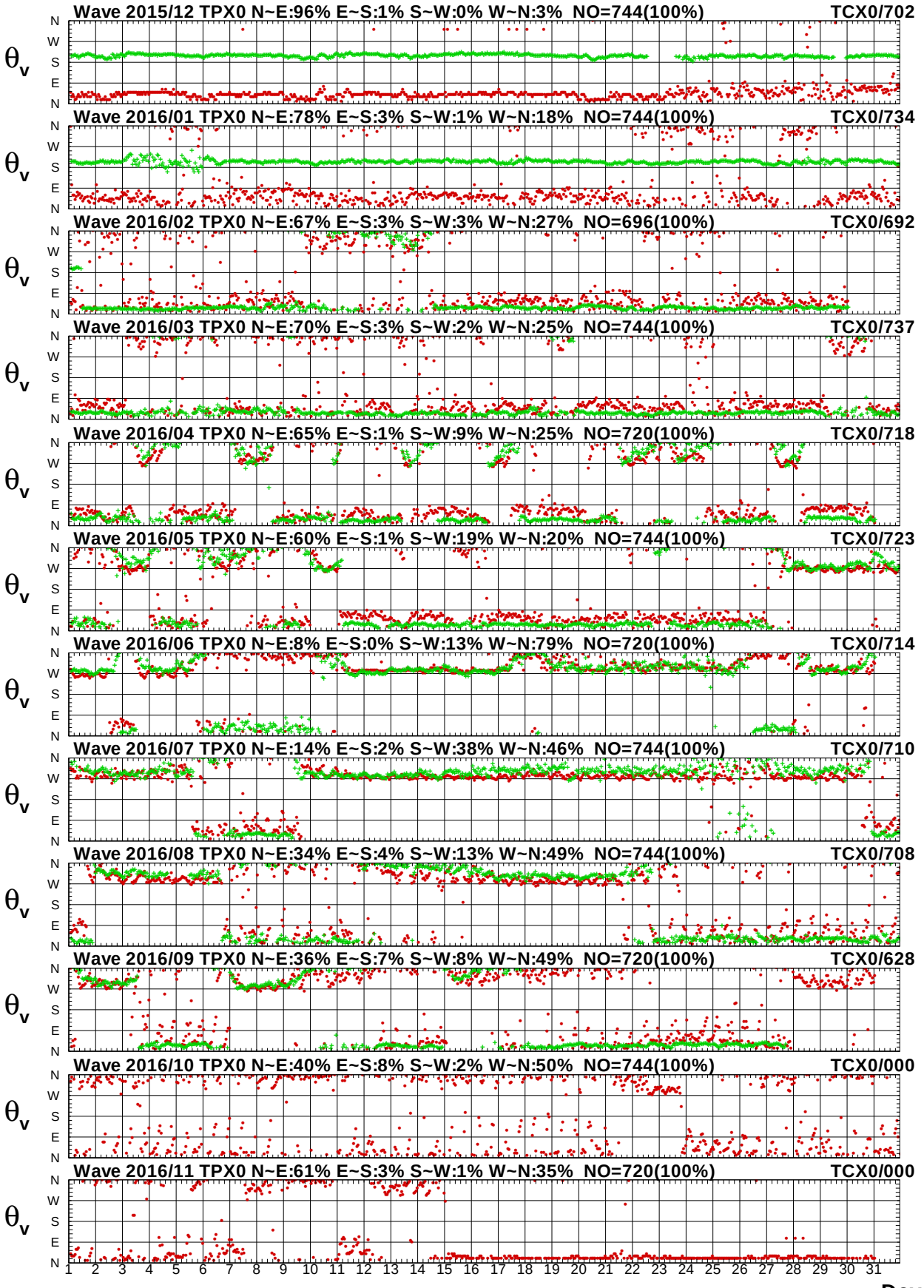

圖 1.7c　2016年每月北苗海域 X 站與中雲海域 X 站波向圖

Wave H_s in Pei-Miao Seas of TPX0 at 2016

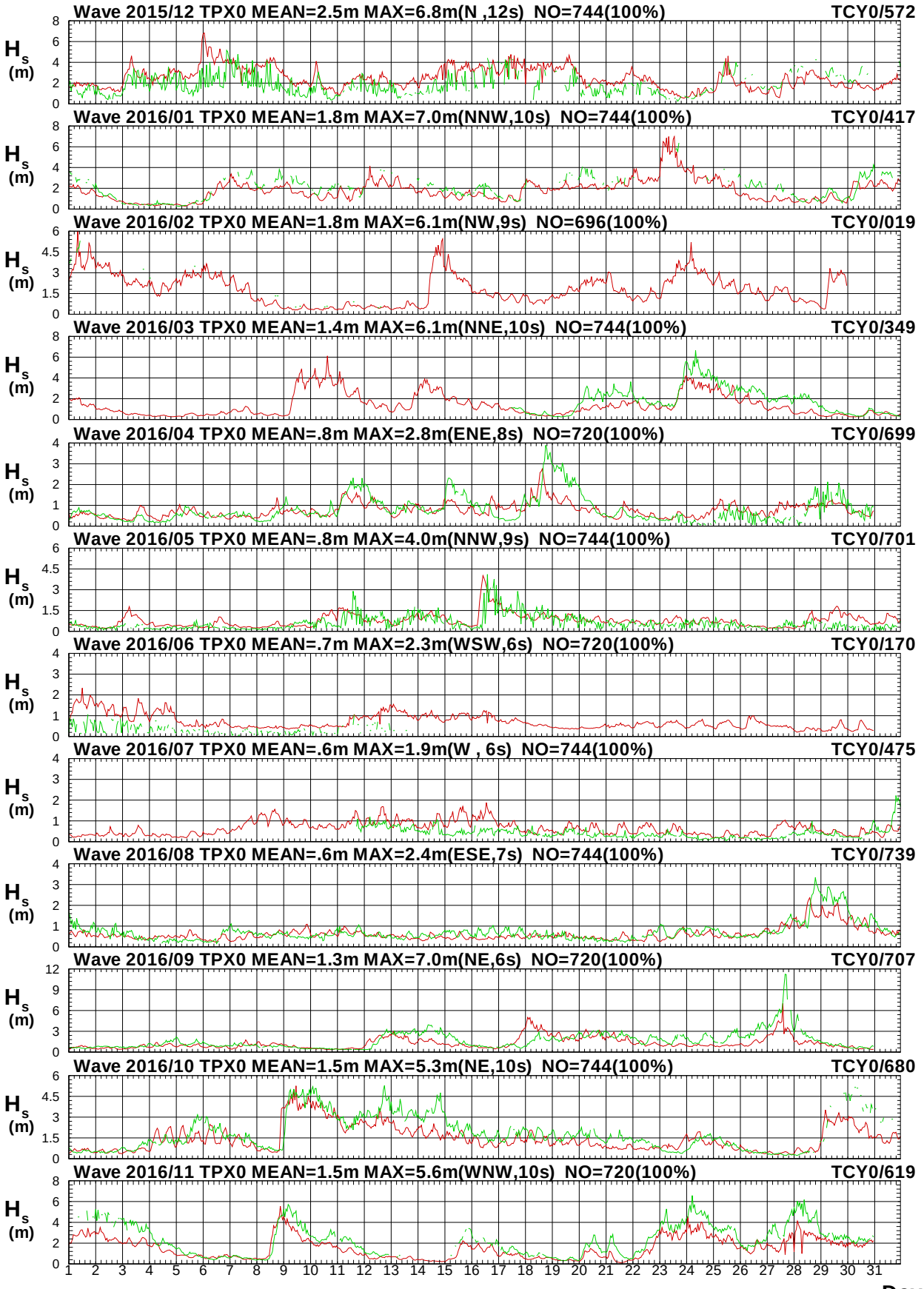

圖 1.8a　2016年每月北苗海域 X 站與中雲海域 Y 站波高圖

V15CTPX0.1HA V15CTCY0.1H0 V161TPX0.1HA V161TCY0.1H0 V162TPX0.1HA V162TCY0.1H0
V163TPX0.1HA V163TCY0.1H0 V164TPX0.1HA V164TCY0.1H0 V165TPX0.1HA V165TCY0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

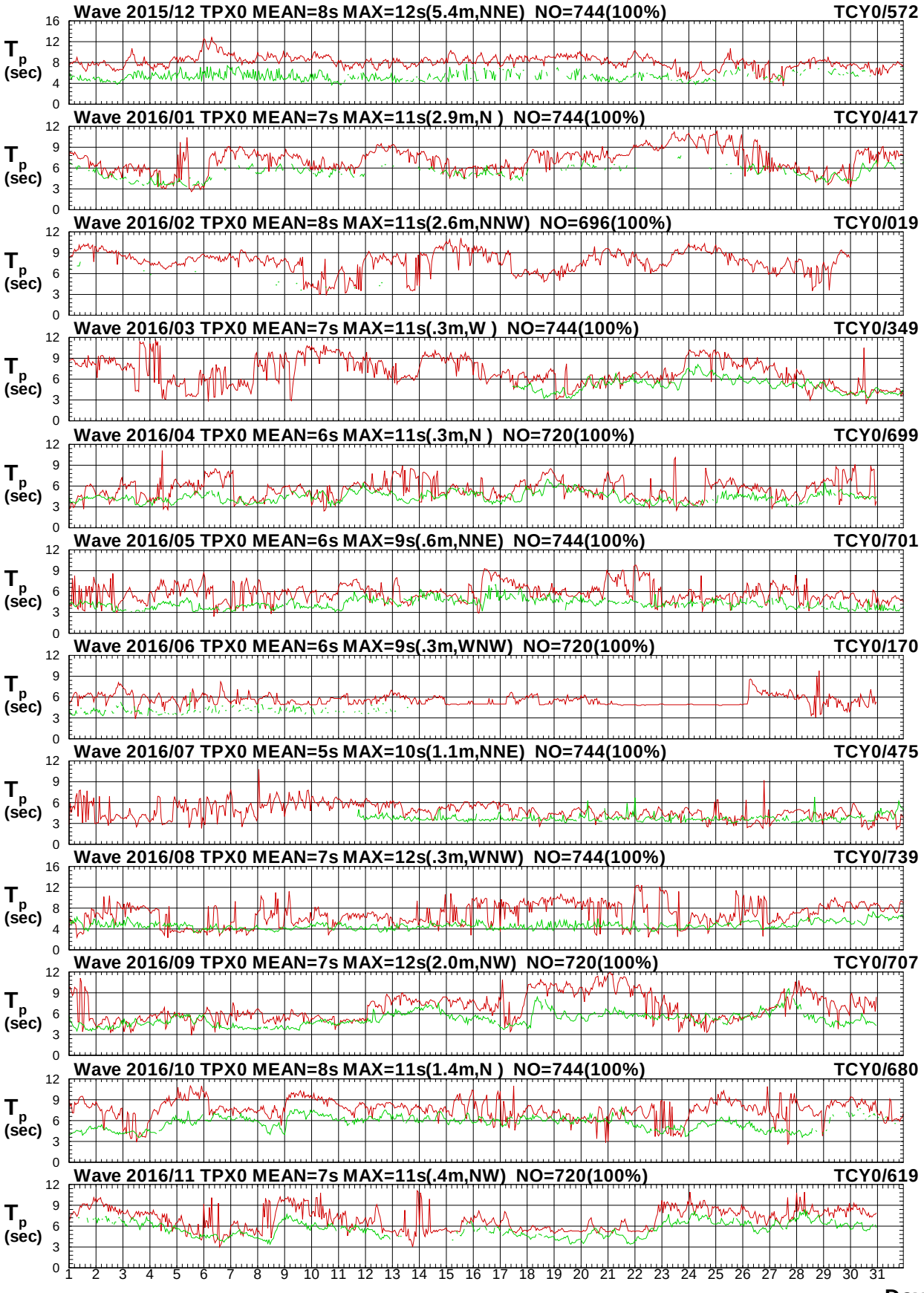

圖 1.8b　2016年每月北苗海域 X 站與中雲海域 Y 站週期圖

V15CTPX0.1HA V15CTCY0.1H0 V161TPX0.1HA V161TCY0.1H0 V162TPX0.1HA V162TCY0.1H0
V163TPX0.1HA V163TCY0.1H0 V164TPX0.1HA V164TCY0.1H0 V165TPX0.1HA V165TCY0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

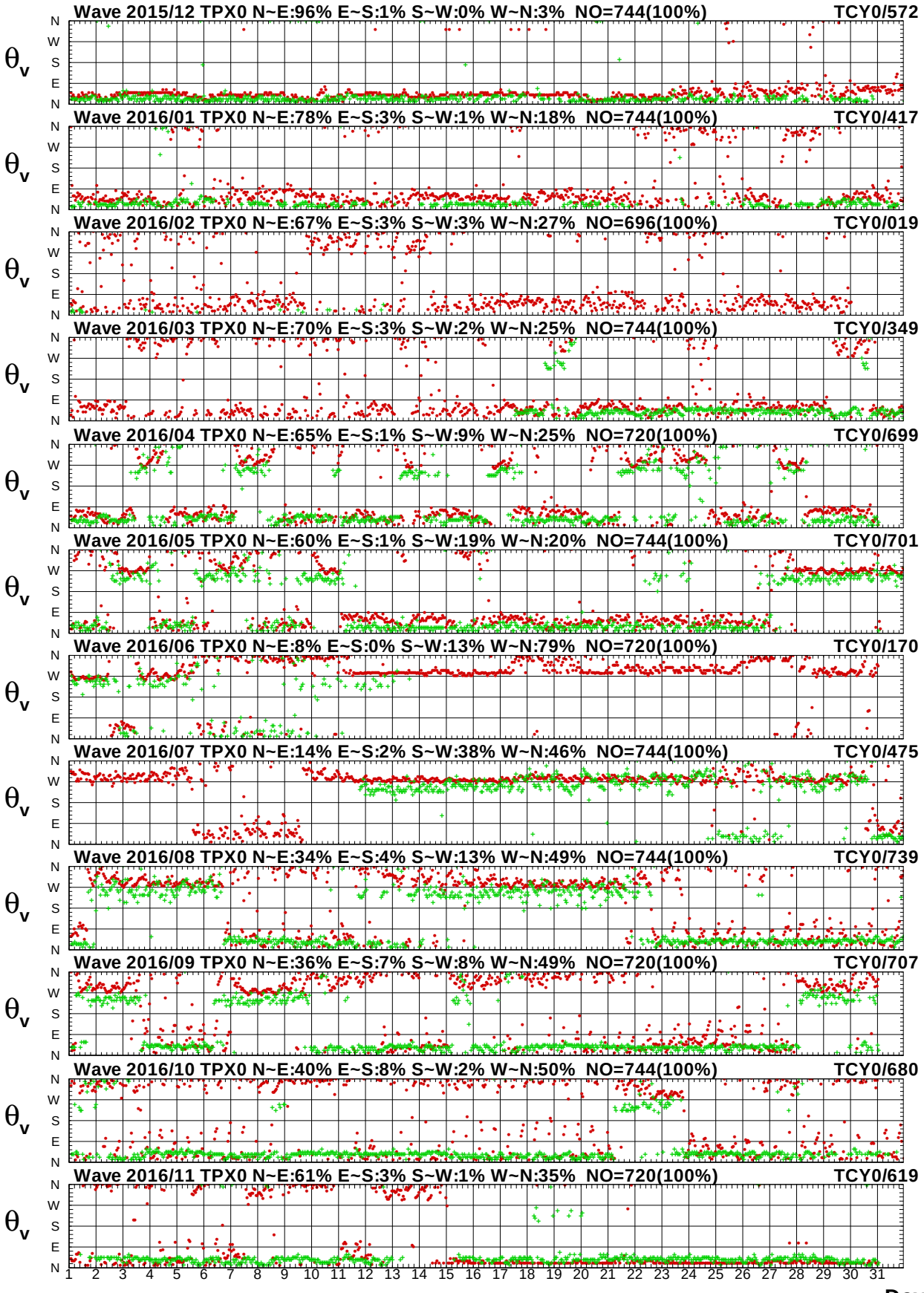

圖 1.8c　2016年每月北苗海域 X 站與中雲海域 Y 站波向圖

V15CTPX0.1HA V15CTCY0.1H0 V161TPX0.1HA V161TCY0.1H0 V162TPX0.1HA V162TCY0.1H0
V163TPX0.1HA V163TCY0.1H0 V164TPX0.1HA V164TCY0.1H0 V165TPX0.1HA V165TCY0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2016

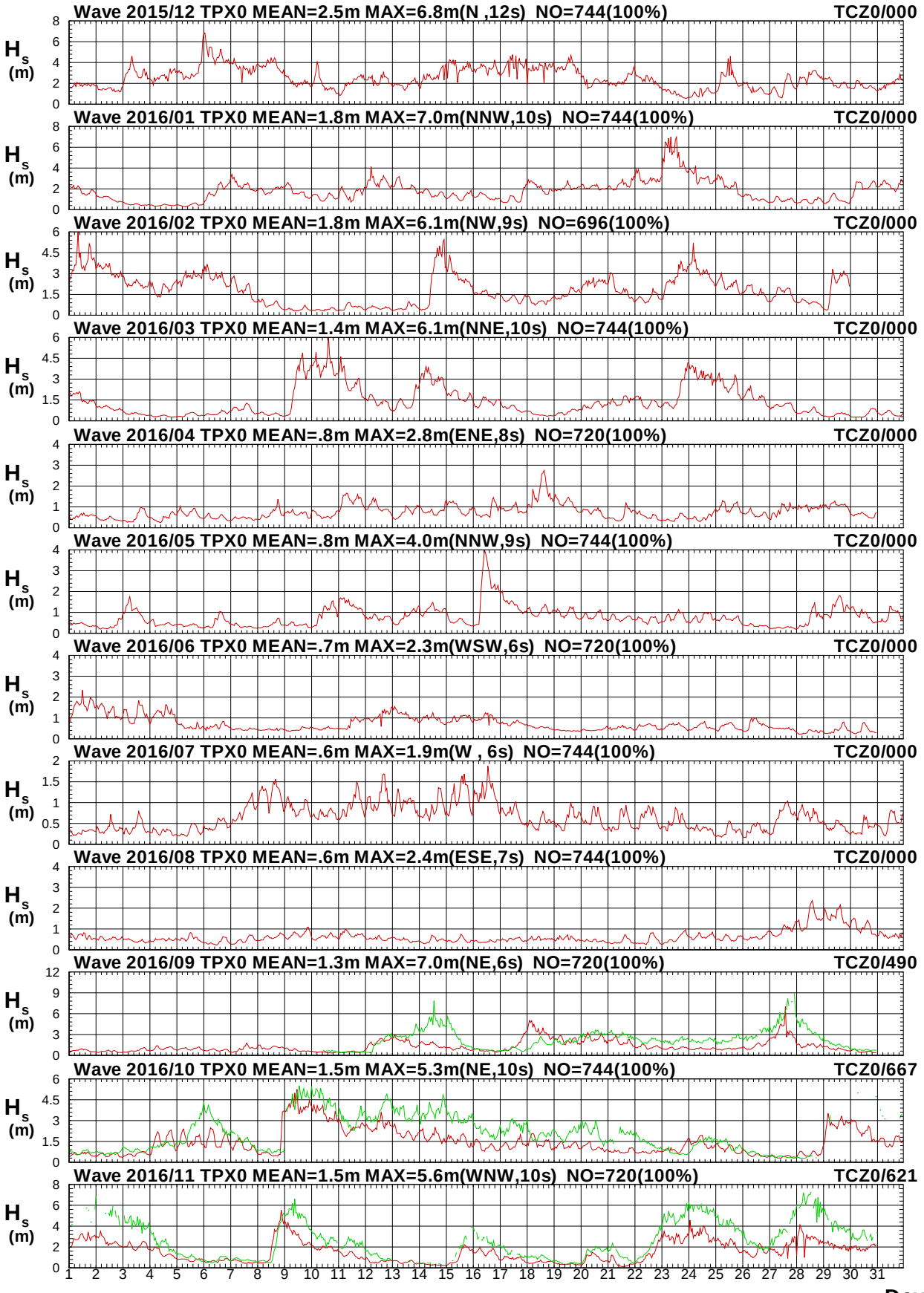

圖 1.9a　2016年每月北苗海域 X 站與中雲海域 Z 站波高圖

V15CTPX0.1HA V15CTCZ0.1H0 V161TPX0.1HA V161TCZ0.1H0 V162TPX0.1HA V162TCZ0.1H0
V163TPX0.1HA V163TCZ0.1H0 V164TPX0.1HA V164TCZ0.1H0 V165TPX0.1HA V165TCZ0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

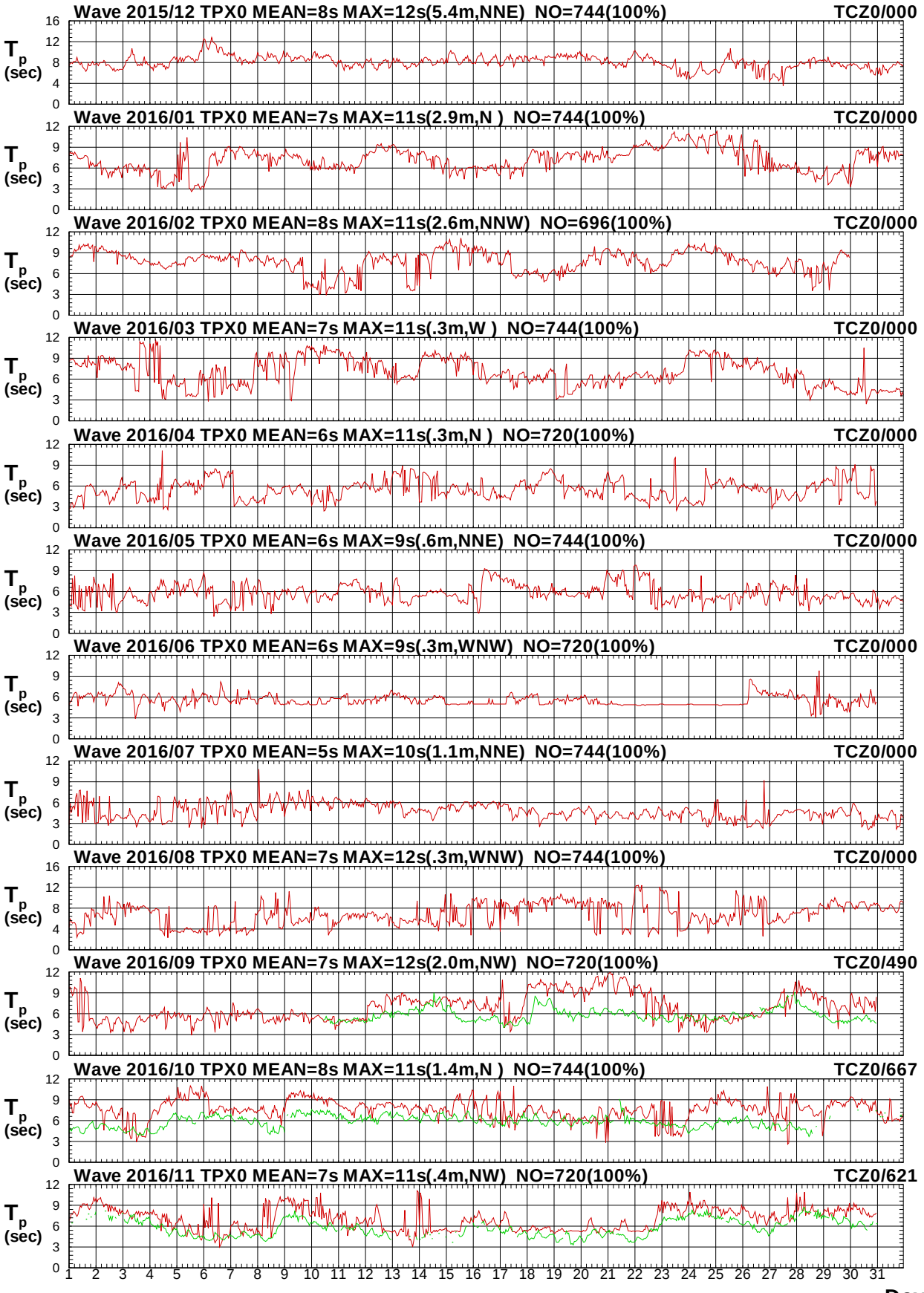

圖 1.9b　2016年每月北苗海域 X 站與中雲海域 Z 站週期圖

V15CTPX0.1HA V15CTCZ0.1H0 V161TPX0.1HA V161TCZ0.1H0 V162TPX0.1HA V162TCZ0.1H0
V163TPX0.1HA V163TCZ0.1H0 V164TPX0.1HA V164TCZ0.1H0 V165TPX0.1HA V165TCZ0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

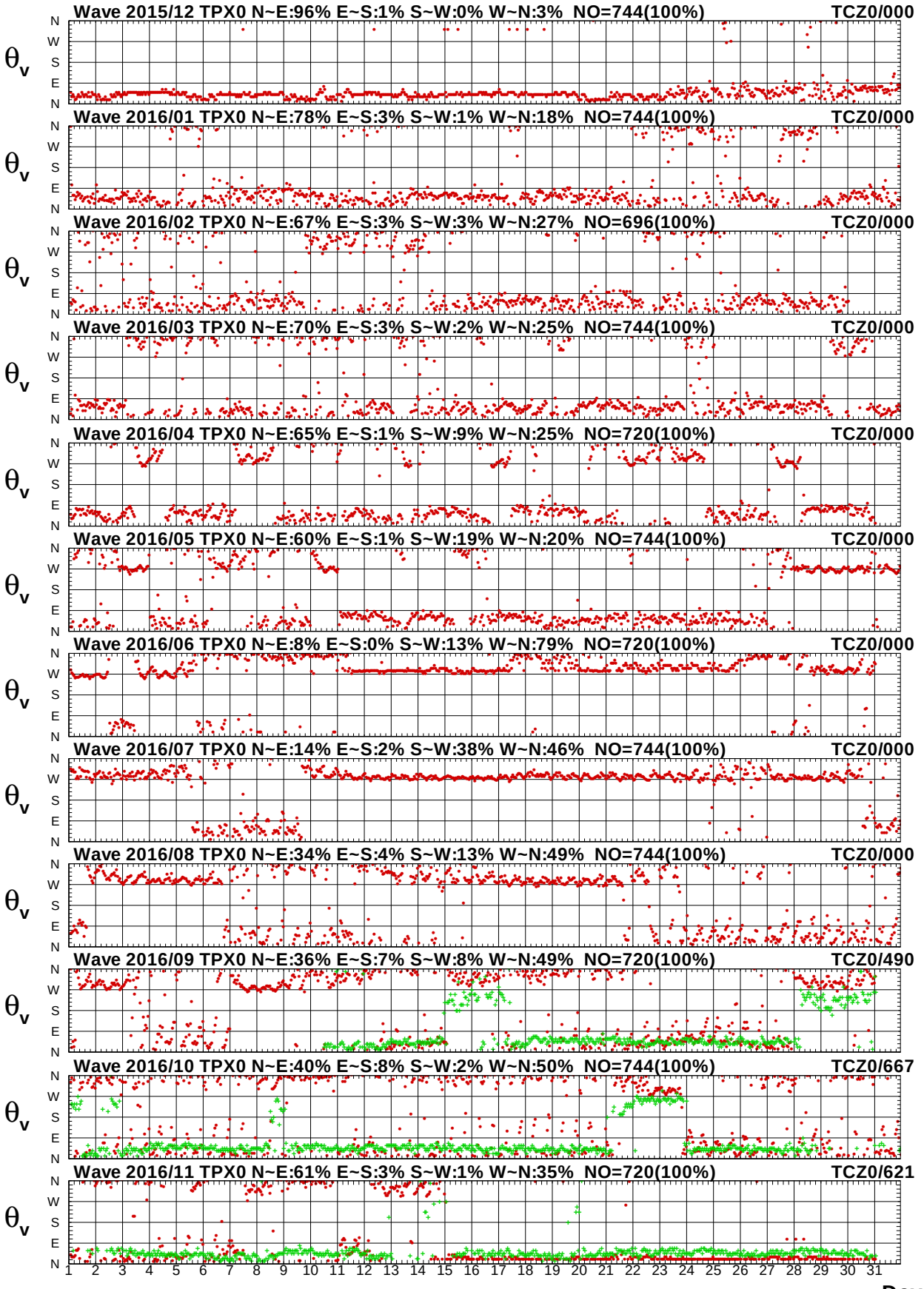

圖1.9c　2016年每月北苗海域 X 站與中雲海域 Z 站波向圖

V15CTPX0.1HA V15CTCZ0.1H0 V161TPX0.1HA V161TCZ0.1H0 V162TPX0.1HA V162TCZ0.1H0
V163TPX0.1HA V163TCZ0.1H0 V164TPX0.1HA V164TCZ0.1H0 V165TPX0.1HA V165TCZ0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2016

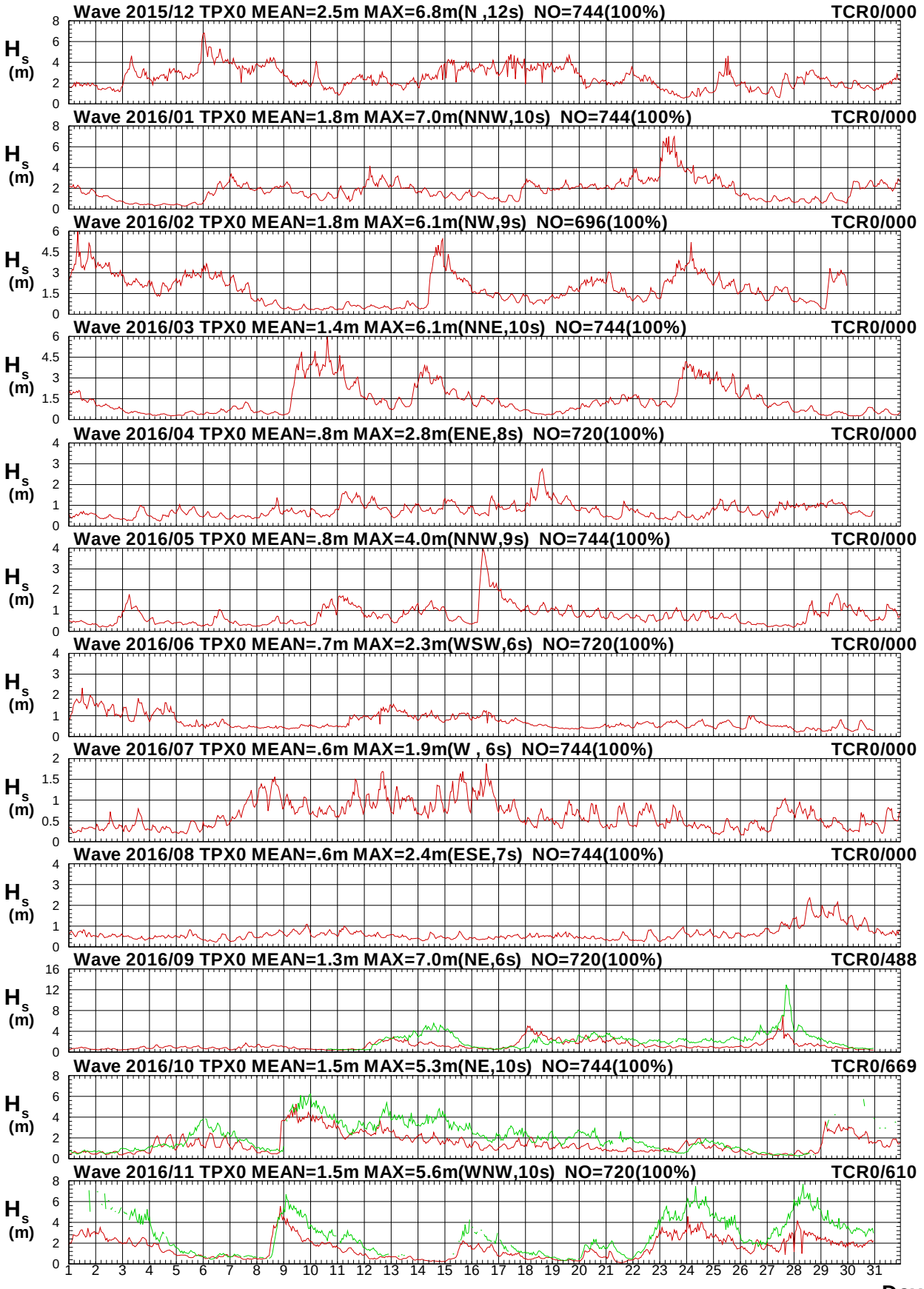

圖1.10a　2016年每月北苗海域 X 站與中雲海域 R 站波高圖

V15CTPX0.1HA V15CTCR0.1H0 V161TPX0.1HA V161TCR0.1H0 V162TPX0.1HA V162TCR0.1H0
V163TPX0.1HA V163TCR0.1H0 V164TPX0.1HA V164TCR0.1H0 V165TPX0.1HA V165TCR0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2016

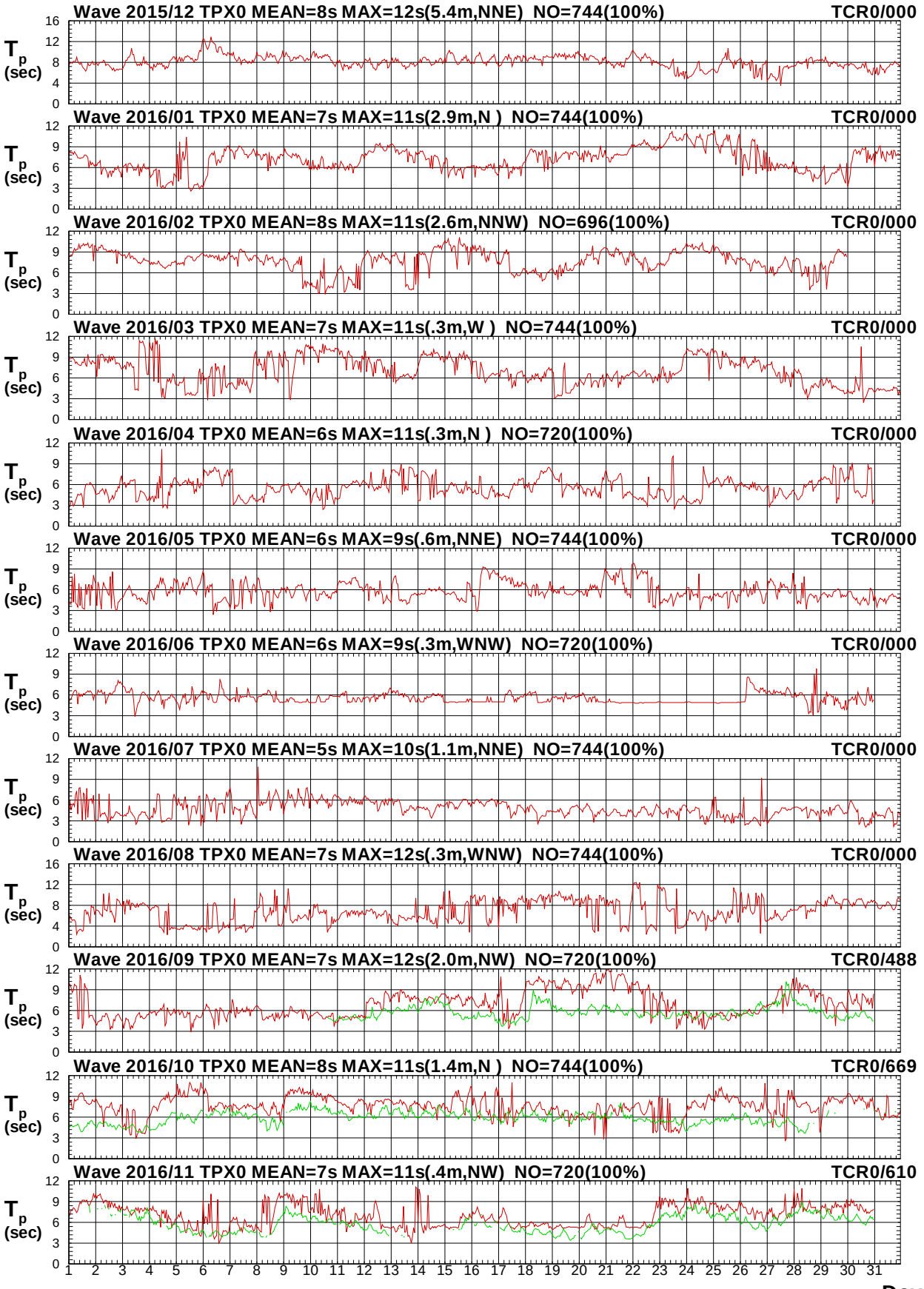

圖1.10b　2016年每月北苗海域 X 站與中雲海域 R 站週期圖

V15CTPX0.1HA V15CTCR0.1H0 V161TPX0.1HA V161TCR0.1H0 V162TPX0.1HA V162TCR0.1H0
V163TPX0.1HA V163TCR0.1H0 V164TPX0.1HA V164TCR0.1H0 V165TPX0.1HA V165TCR0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2016

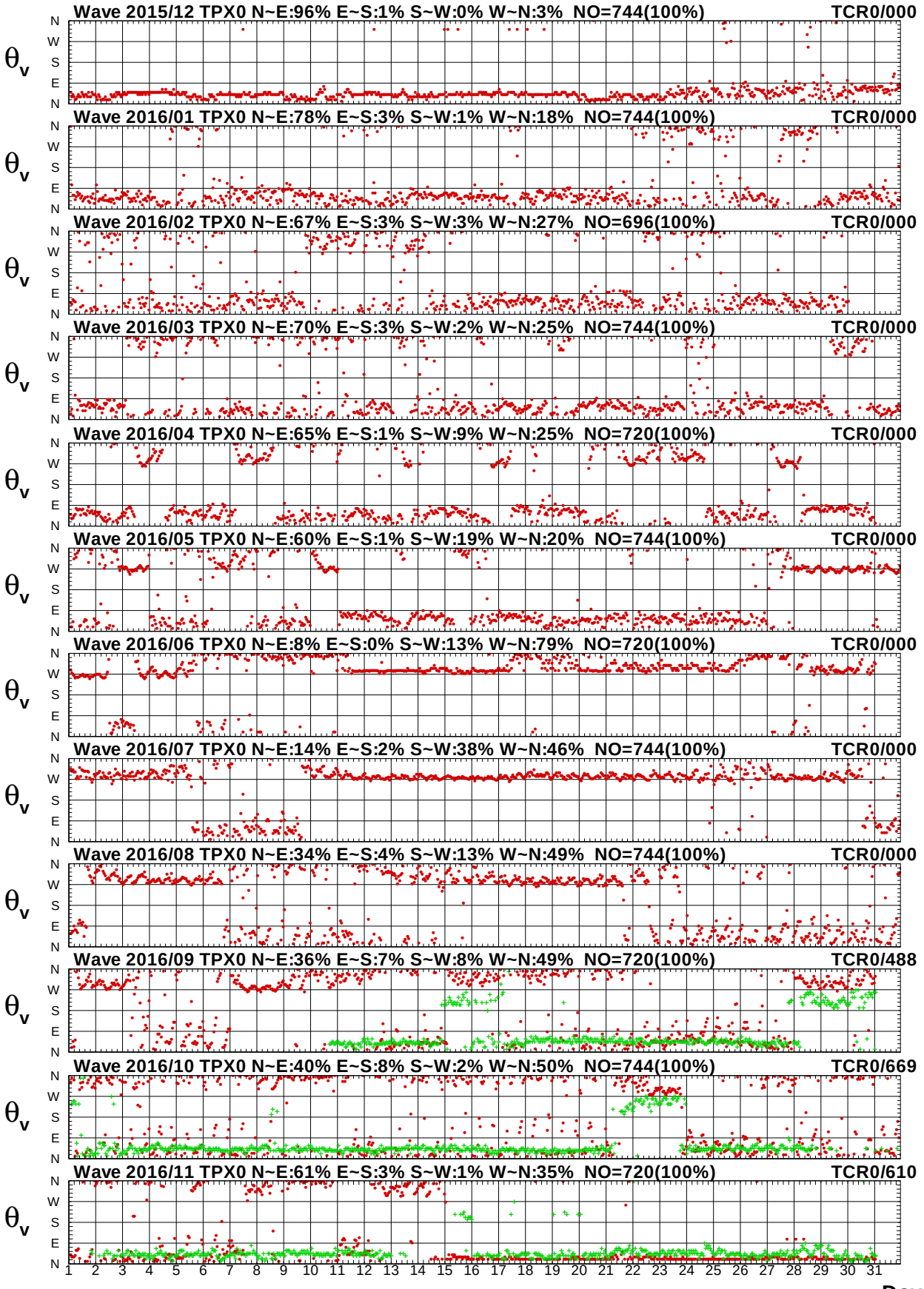

圖1.10c　2016年每月北苗海域 X 站與中雲海域 R 站波向圖

V15CTPX0.1HA V15CTCR0.1H0 V161TPX0.1HA V161TCR0.1H0 V162TPX0.1HA V162TCR0.1H0
V163TPX0.1HA V163TCR0.1H0 V164TPX0.1HA V164TCR0.1H0 V165TPX0.1HA V165TCR0.1H0

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第二章　2016 年北端海域觀測波浪資料

北端海域(富貴角~龍洞)波浪觀測，本中心**(IHMT)**於 2001 年 6 月安置 NORTEK 剖面海流表面波浪與潮汐之監測系統(簡稱 AWCP)，在基隆港東防波堤堤頭外水深 44m 處(**測站 X0**)，如附圖 2，2006 年 8 月因防波堤延伸工程，移至西防波堤堤外水深 36m 位置(**測站 X1**)。2011 年 8 月，再移至東防波堤堤頭北方約 200m，水深 48m(**測站 X2**)。

測站 Y(龍洞外海浮標站)及**測站 R(**富貴角外海浮標站)波浪儀屬中央氣象局**(CWB)**所有，**測站 Z**(基隆外海浮標站)波浪儀為國立臺灣海洋大學**(NOTC)**裝設。北端海域各測站歷年觀測波浪資料蒐集概況如表 2。

波浪觀測 AWCP 系統有兩個分離波高量測模式:一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **X 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 2.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 2.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 2.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 2.2 以後。

表 2 北端海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X0	25°09'50"N	121°45'14"E	2001/06-2006/05	港研中心	基隆港東堤外海
X1	25°44'58"N	121°44'58"E	2006/08-2011/07	港研中心	基隆港西堤外海
X2	25°09'57"N	121°45'17"E	2011/08-2016/11(觀測中)	港研中心	基隆港東堤外海
Y	25°05'54"N	121°55'22"E	1998/09-2016/11(觀測中)	中央氣象局	龍洞浮標站
Z	25°09'17"N	121°47'06"E	2012/05-2016/11(觀測中)	臺灣海洋大學	基隆浮標站
R	25°18'15"N	121°32'05"E	2015/07-2016/11(觀測中)	中央氣象局	富貴角浮標

北端海域

圖 2 北端海域波浪觀測站位置示意圖

表2.1a 2016年每月北端海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	北端海域	北端海域	北端海域	北端海域	北端海域	北端海域	北端海域	北端海域
測站	X	Y	Z	R				
2015/12月	734 (98.7%)	743 (99.9%)	728 (97.8%)	686 (92.2%)	*	*	*	*
2016/ 1月	742 (99.7%)	731 (98.3%)	742 (99.7%)	22 (3.0%)	*	*	*	*
2016/ 2月	695 (99.9%)	694 (99.7%)	683 (98.1%)	*	*	*	*	*
2016/ 3月	731 (98.3%)	741 (99.6%)	184 (24.7%)	633 (85.1%)	*	*	*	*
2016/ 4月	698 (96.9%)	718 (99.7%)	*	663 (92.1%)	*	*	*	*
2016/ 5月	738 (99.2%)	742 (99.7%)	*	633 (85.1%)	*	*	*	*
2016/ 6月	600 (83.3%)	717 (99.6%)	*	627 (87.1%)	*	*	*	*
2016/ 7月	715 (96.1%)	741 (99.6%)	*	696 (93.5%)	*	*	*	*
2016/ 8月	731 (98.3%)	737 (99.1%)	*	742 (99.7%)	*	*	*	*
2016/ 9月	712 (98.9%)	711 (98.8%)	*	710 (98.6%)	*	*	*	*
2016/10月	744 (100%)	737 (99.1%)	*	739 (99.3%)	*	*	*	*
2016/11月	716 (99.4%)	717 (99.6%)	*	718 (99.7%)	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表2.1b 2016年每月北端海域修補後各測站波浪資料統計表

年/月 港區	北端海域	北端海域	北端海域	北端海域	北端海域	北端海域	北端海域	北端海域
測站	X	Y	Z	R				
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in North Seas of KLX0 at 2016

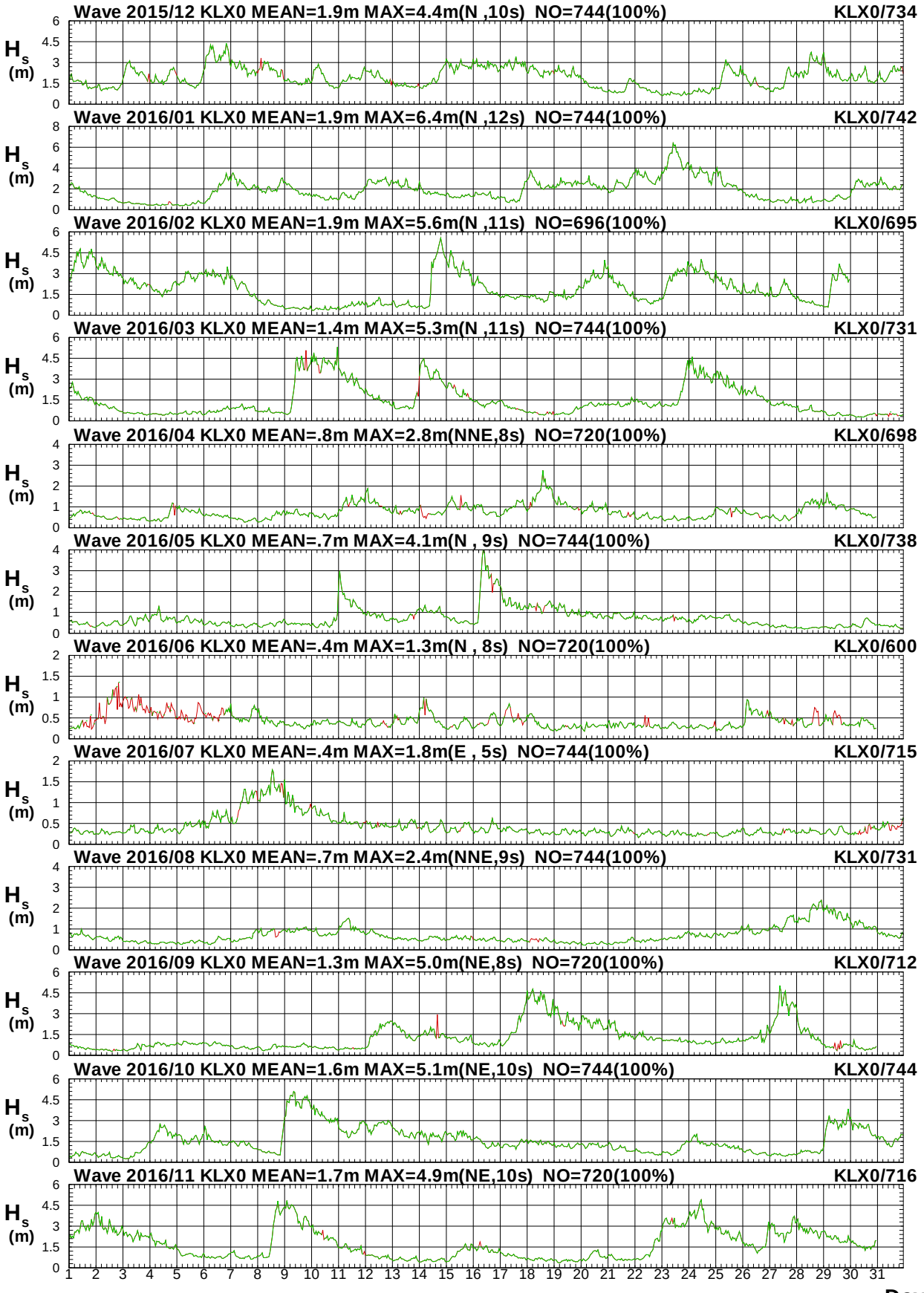

圖 2.1a　2016年每月北端海域 X 站修補前後之波高比較圖

V15CKLX0.1HA V15CKLX0.1H0 V161KLX0.1HA V161KLX0.1H0 V162KLX0.1HA V162KLX0.1H0
V163KLX0.1HA V163KLX0.1H0 V164KLX0.1HA V164KLX0.1H0 V165KLX0.1HA V165KLX0.1H0

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Wave T_p in North Seas of KLX0 at 2016

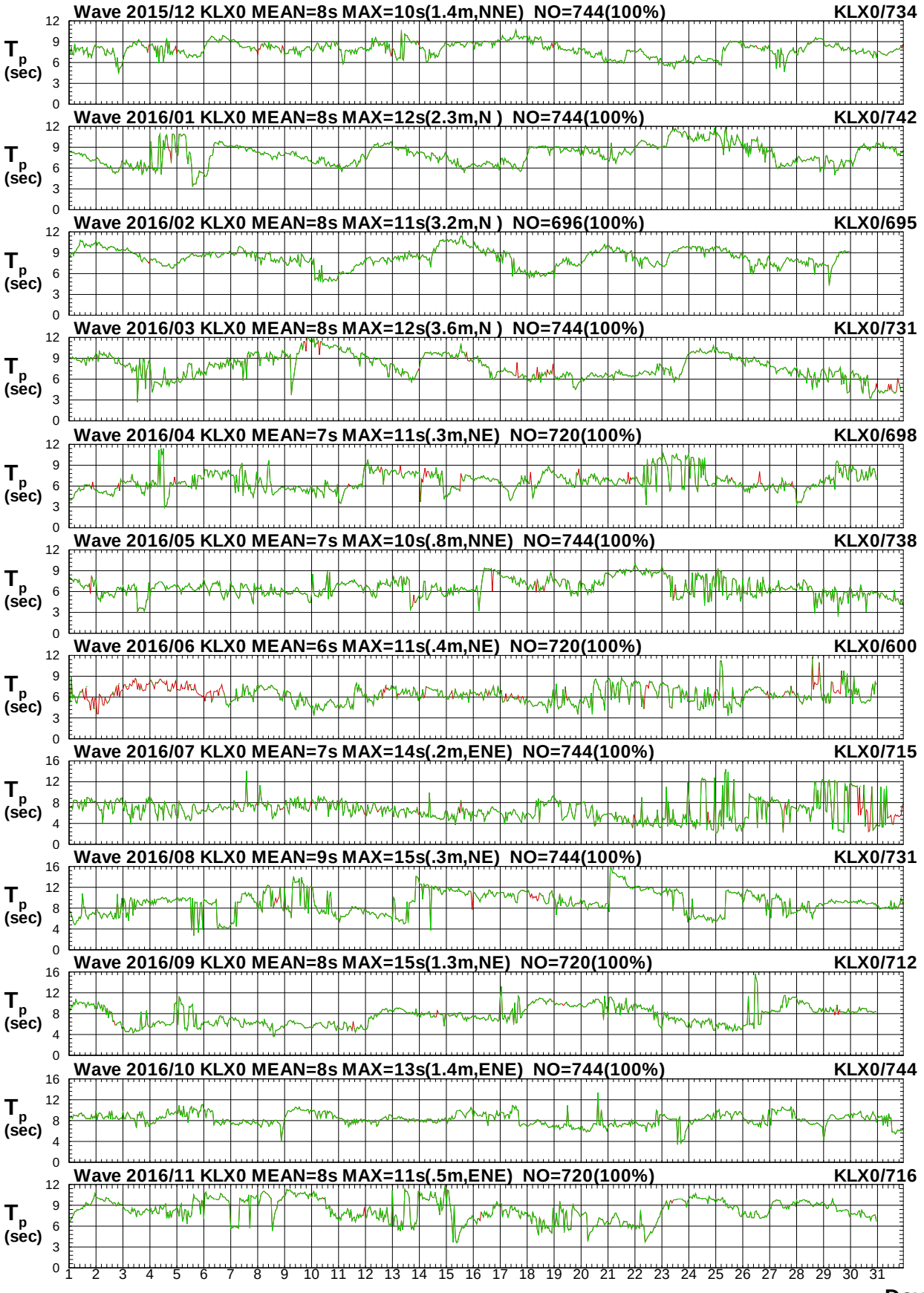

圖 2.1b　2016年每月北端海域 X 站修補前後之週期比較圖

V15CKLX0.1HA V15CKLX0.1H0 V161KLX0.1HA V161KLX0.1H0 V162KLX0.1HA V162KLX0.1H0
V163KLX0.1HA V163KLX0.1H0 V164KLX0.1HA V164KLX0.1H0 V165KLX0.1HA V165KLX0.1H0

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Wave Direction in North Seas of KLX0 at 2016

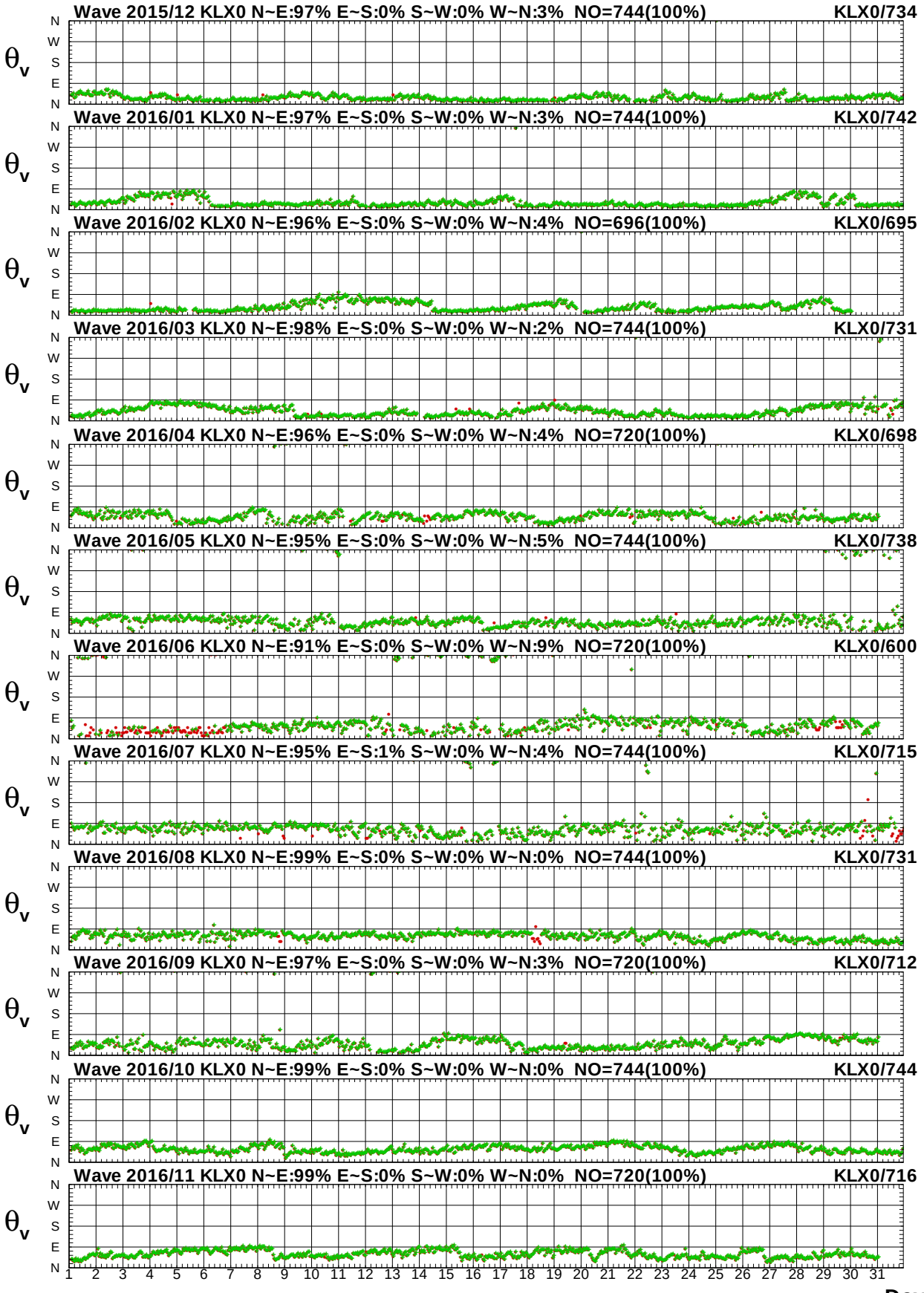

圖2.1c　2016年每月北端海域 X 站修補前後之波向比較圖

Wave H_s in North Seas of KLX0 at 2016

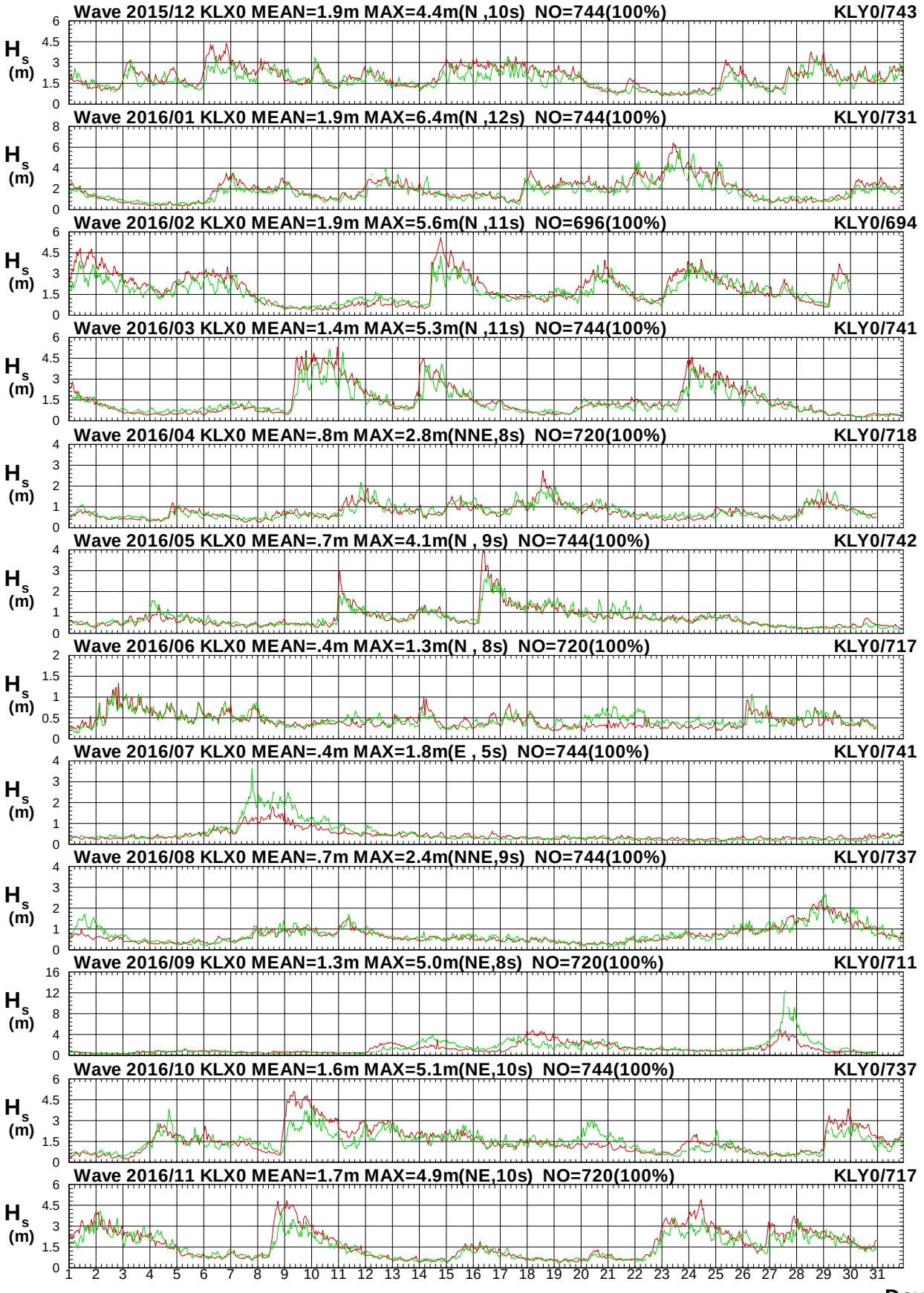

圖 2.2a　2016年每月北端海域 X 站與 Y 站波高比較圖

V15CKLX0.1HA V15CKLY0.1H0 V161KLX0.1HA V161KLY0.1H0 V162KLX0.1HA V162KLY0.1H0
V163KLX0.1HA V163KLY0.1H0 V164KLX0.1HA V164KLY0.1H0 V165KLX0.1HA V165KLY0.1H0

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Wave T_p in North Seas of KLX0 at 2016

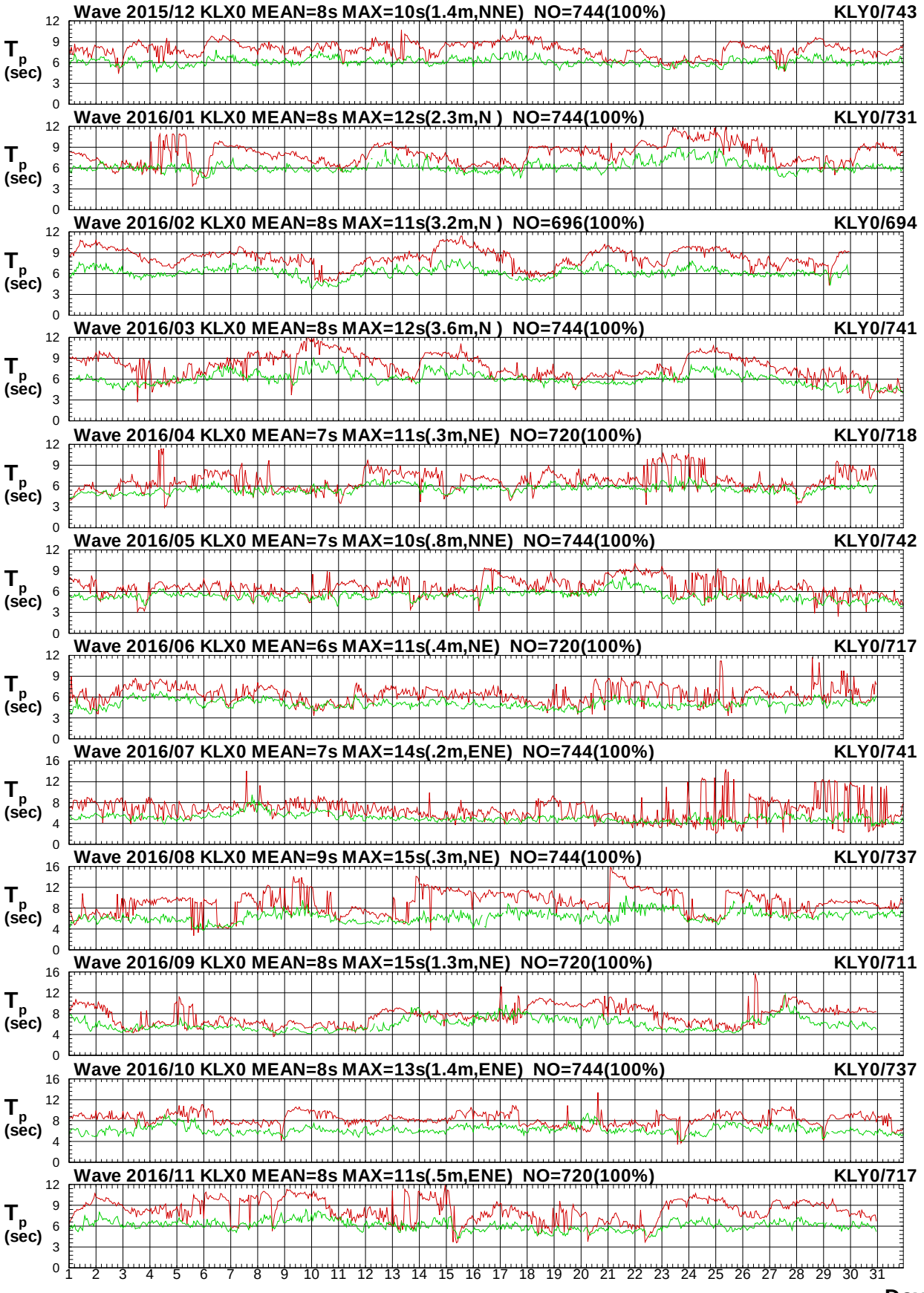

圖 2.2b　2016年每月北端海域 X 站與 Y 站週期比較圖

V15CKLX0.1HA V15CKLY0.1H0 V161KLX0.1HA V161KLY0.1H0 V162KLX0.1HA V162KLY0.1H0
V163KLX0.1HA V163KLY0.1H0 V164KLX0.1HA V164KLY0.1H0 V165KLX0.1HA V165KLY0.1H0

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Wave Direction in North Seas of KLX0 at 2016

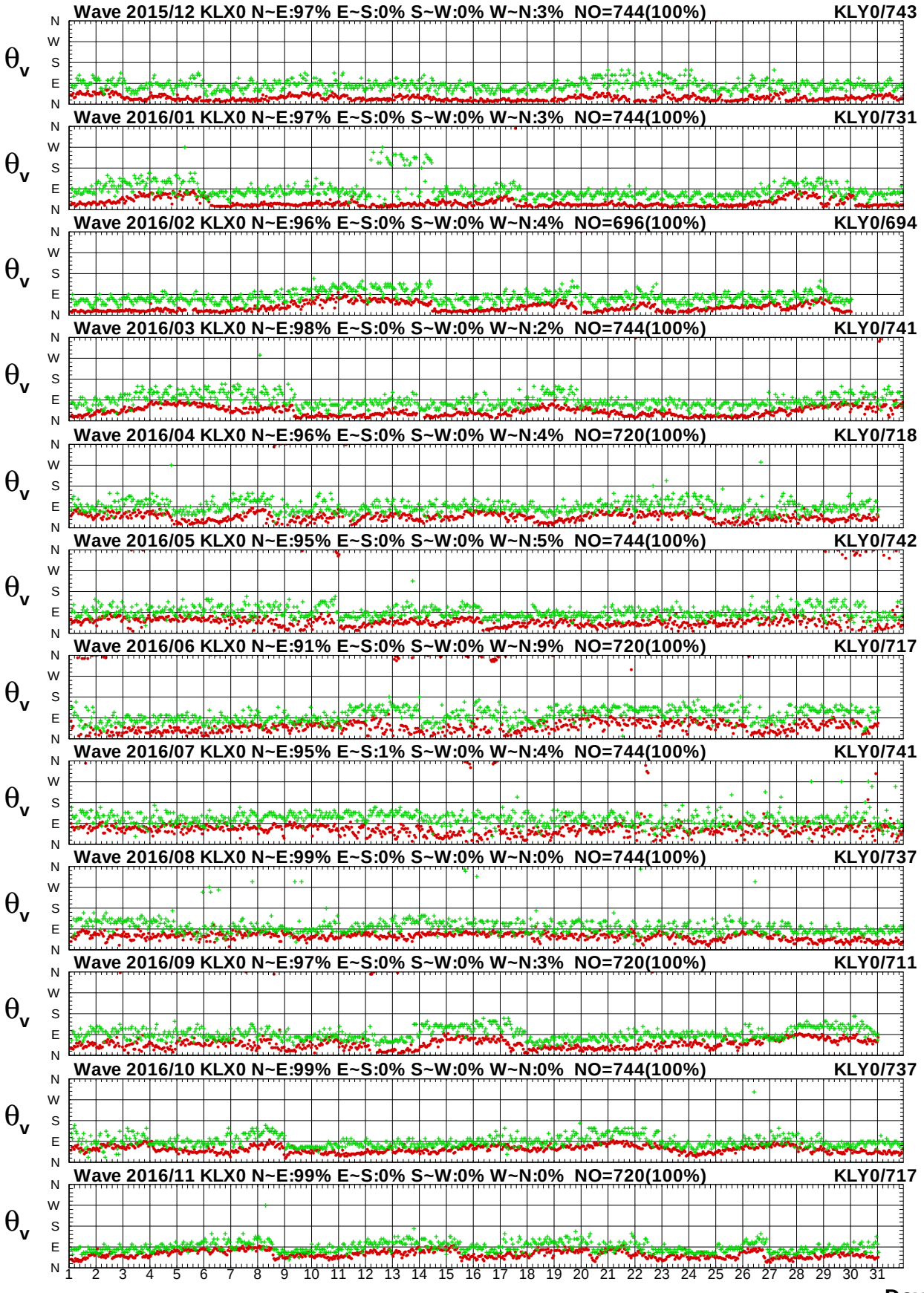

圖 2.2c　2016年每月北端海域 X 站與 Y 站波向比較圖

V15CKLX0.1HA V15CKLY0.1H0 V161KLX0.1HA V161KLY0.1H0 V162KLX0.1HA V162KLY0.1H0
V163KLX0.1HA V163KLY0.1H0 V164KLX0.1HA V164KLY0.1H0 V165KLX0.1HA V165KLY0.1H0

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Wave H_s in North Seas of KLX0 at 2016

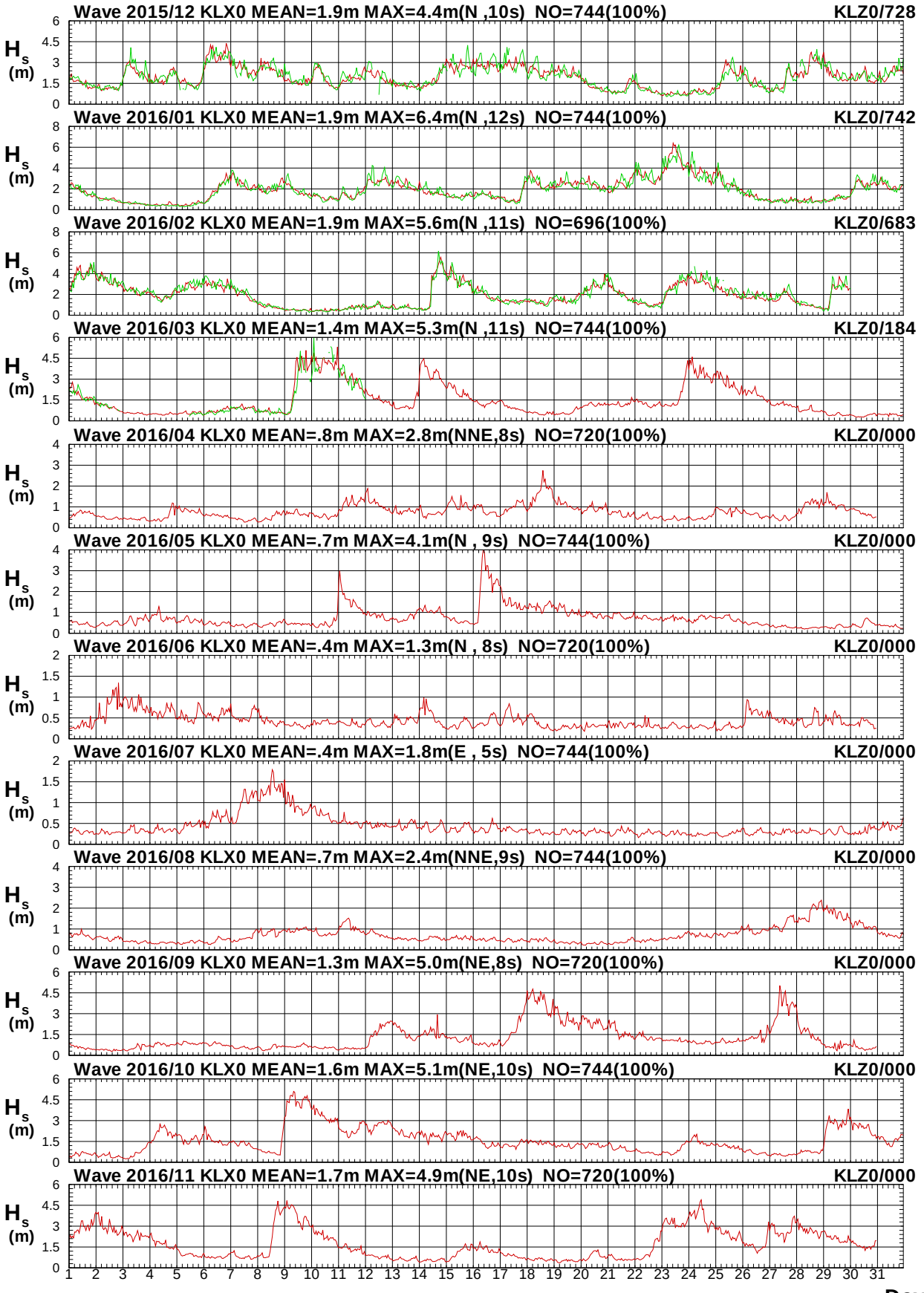

圖 2.3a　2016年每月北端海域 X 站與 Z 站波高比較圖

V15CKLX0.1HA V15CKLZ0.1H0 V161KLX0.1HA V161KLZ0.1H0 V162KLX0.1HA V162KLZ0.1H0
V163KLX0.1HA V163KLZ0.1H0 V164KLX0.1HA V164KLZ0.1H0 V165KLX0.1HA V165KLZ0.1H0

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Wave T_p in North Seas of KLX0 at 2016

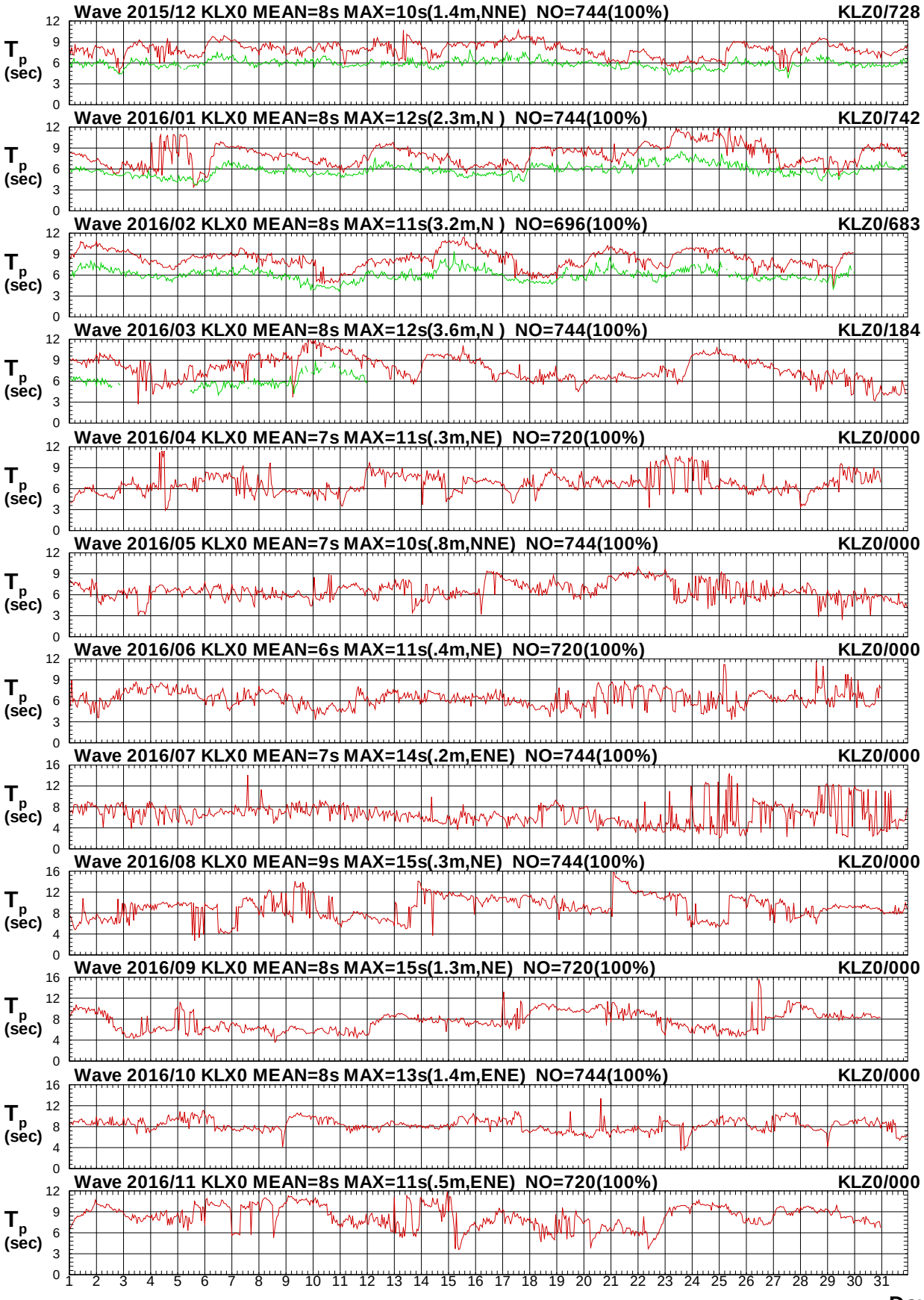

圖 2.3b　2016年每月北端海域 X 站與 Z 站週期比較圖

V15CKLX0.1HA V15CKLZ0.1H0 V161KLX0.1HA V161KLZ0.1H0 V162KLX0.1HA V162KLZ0.1H0
V163KLX0.1HA V163KLZ0.1H0 V164KLX0.1HA V164KLZ0.1H0 V165KLX0.1HA V165KLZ0.1H0

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Wave Direction in North Seas of KLX0 at 2016

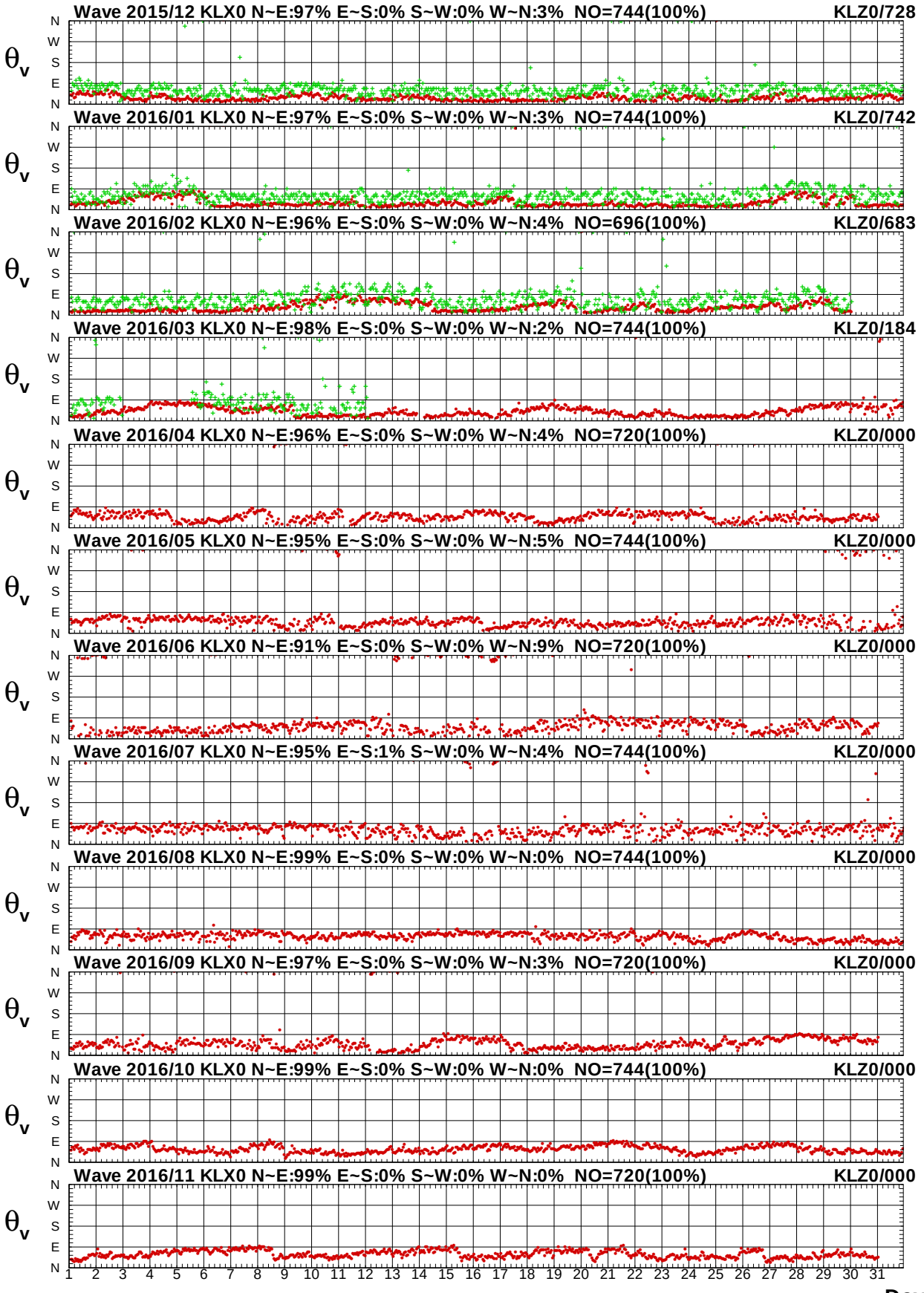

圖 2.3c　2016年每月北端海域 X 站與 Z 站波向比較圖

Wave H_s in North Seas of KLX0 at 2016

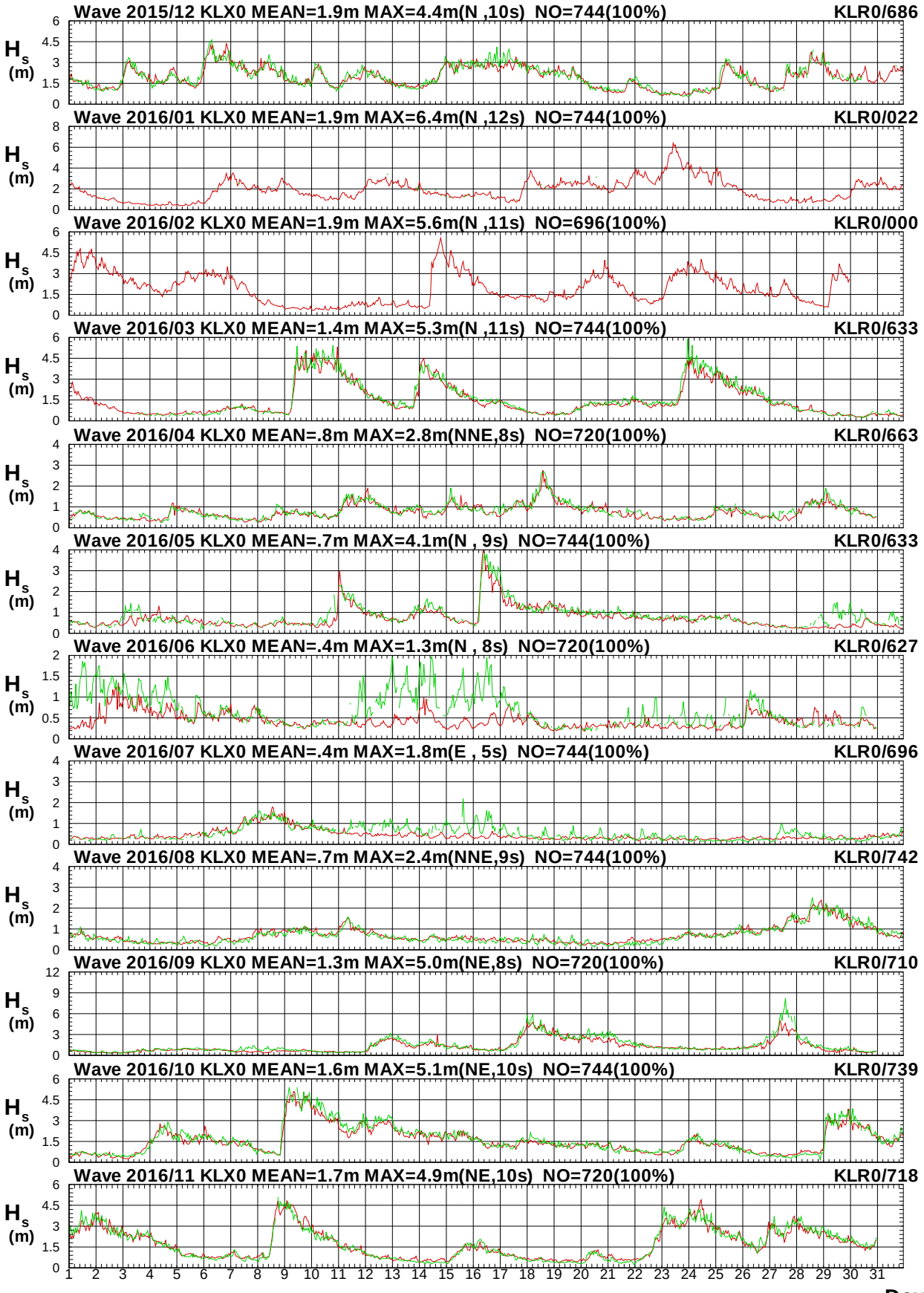

圖 2.4a　2016年每月北端海域 X 站與 R 站波高比較圖

V15CKLX0.1HA V15CKLR0.1H0 V161KLX0.1HA V161KLR0.1H0 V162KLX0.1HA V162KLR0.1H0
V163KLX0.1HA V163KLR0.1H0 V164KLX0.1HA V164KLR0.1H0 V165KLX0.1HA V165KLR0.1H0

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Wave T_p in North Seas of KLX0 at 2016

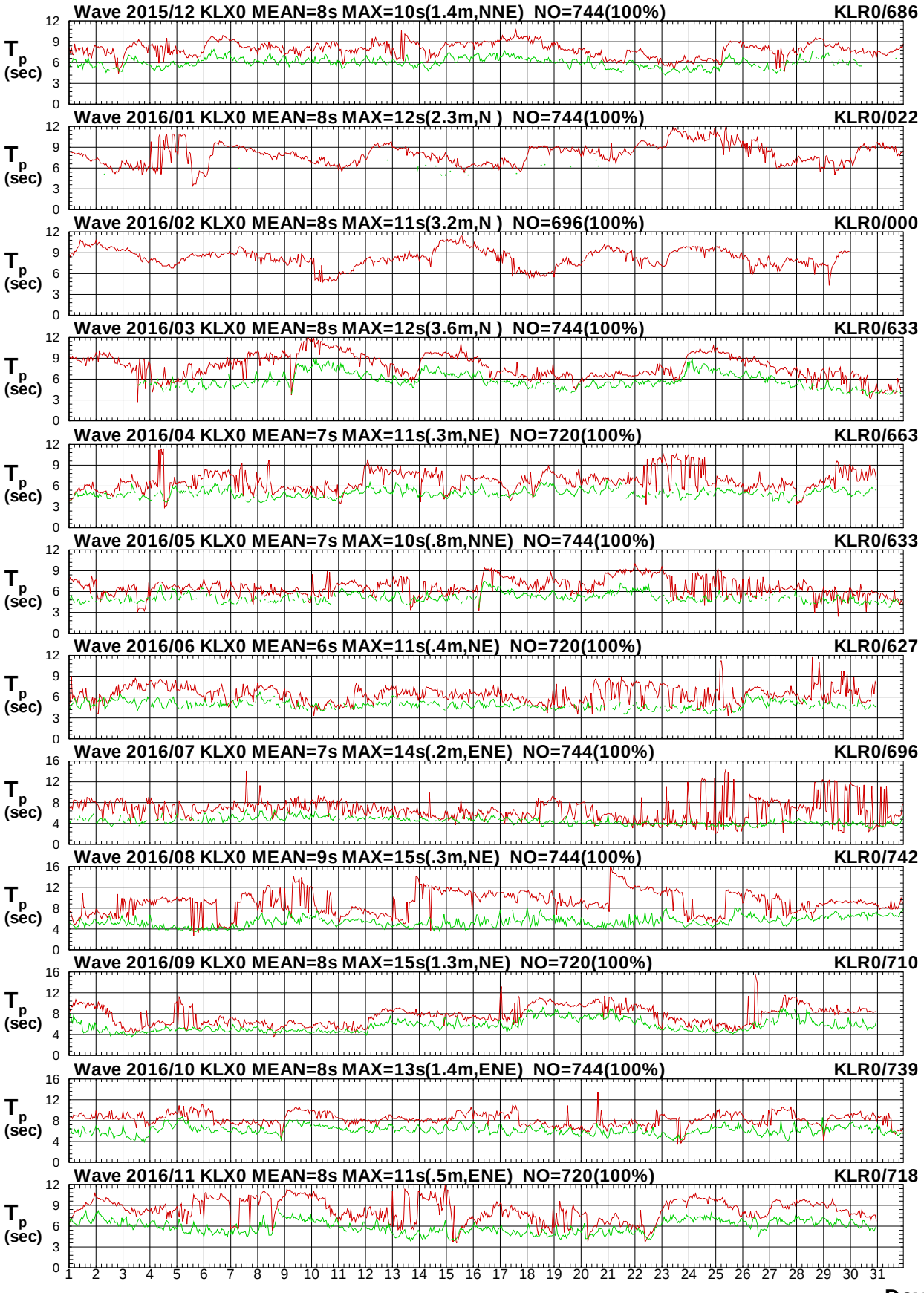

圖 2.4b　2016年每月北端海域 X 站與 R 站週期比較圖

V15CKLX0.1HA V15CKLR0.1H0 V161KLX0.1HA V161KLR0.1H0 V162KLX0.1HA V162KLR0.1H0
V163KLX0.1HA V163KLR0.1H0 V164KLX0.1HA V164KLR0.1H0 V165KLX0.1HA V165KLR0.1H0

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Wave Direction in North Seas of KLX0 at 2016

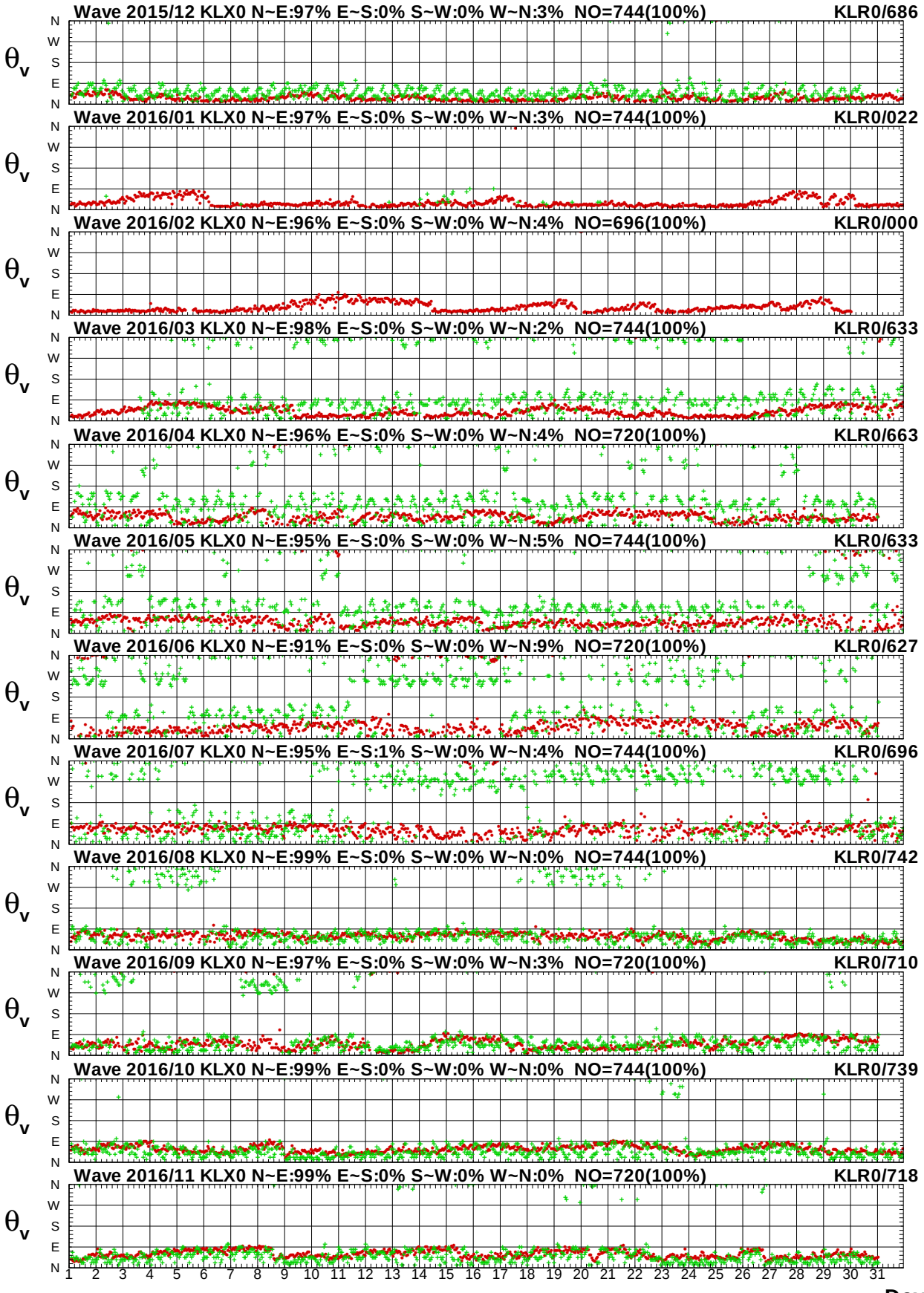

圖 2.4c　2016年每月北端海域 X 站與 R 站波向比較圖

Wave H_s in North Seas of KLX0 at 2016

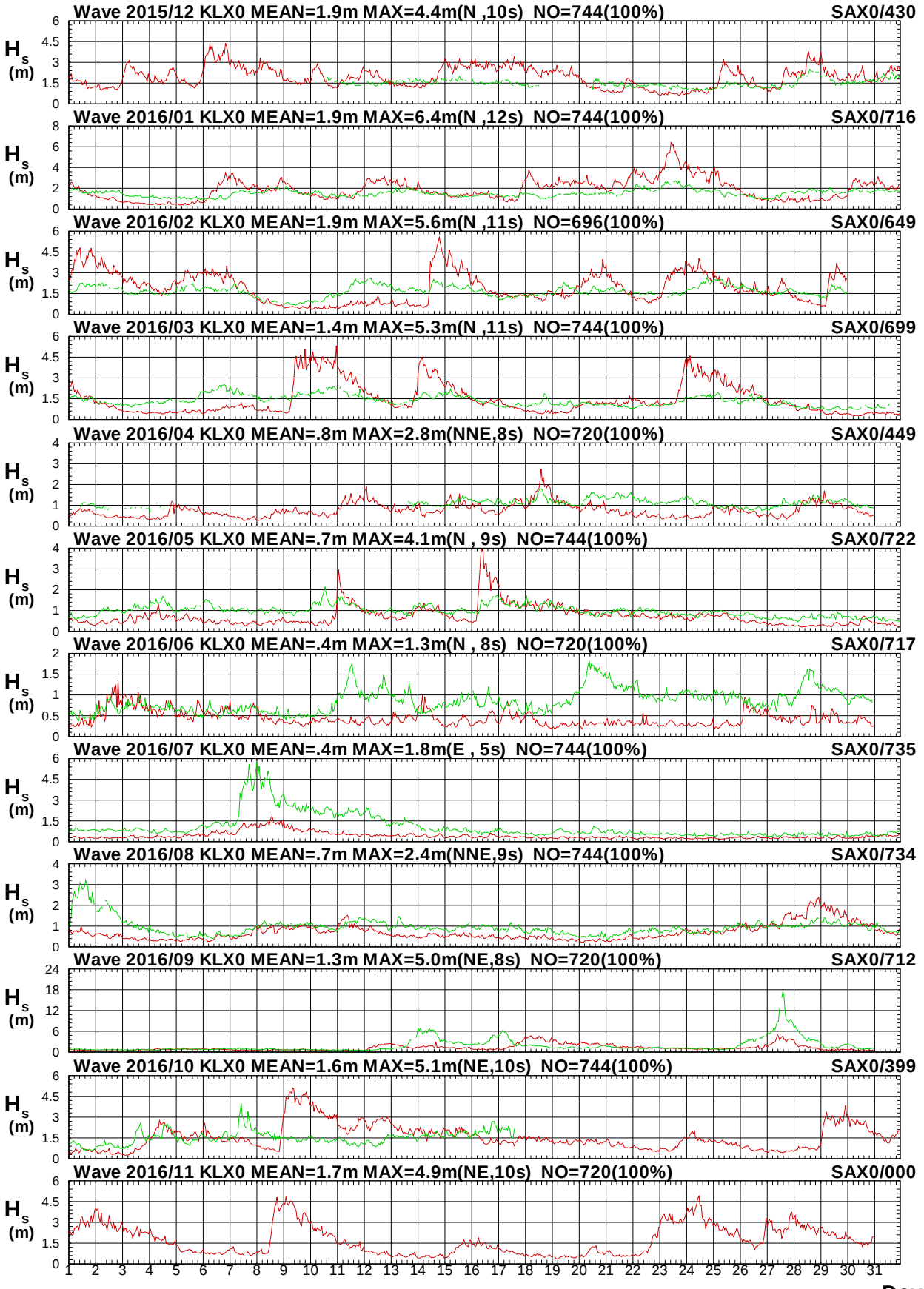

圖 2.5a　2016年每月北端海域 X 站與宜蘭海域 X 站波高圖

V15CKLX0.1HA V15CSAX0.1H0 V161KLX0.1HA V161SAX0.1H0 V162KLX0.1HA V162SAX0.1H0
V163KLX0.1HA V163SAX0.1H0 V164KLX0.1HA V164SAX0.1H0 V165KLX0.1HA V165SAX0.1H0

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Wave T_p in North Seas of KLX0 at 2016

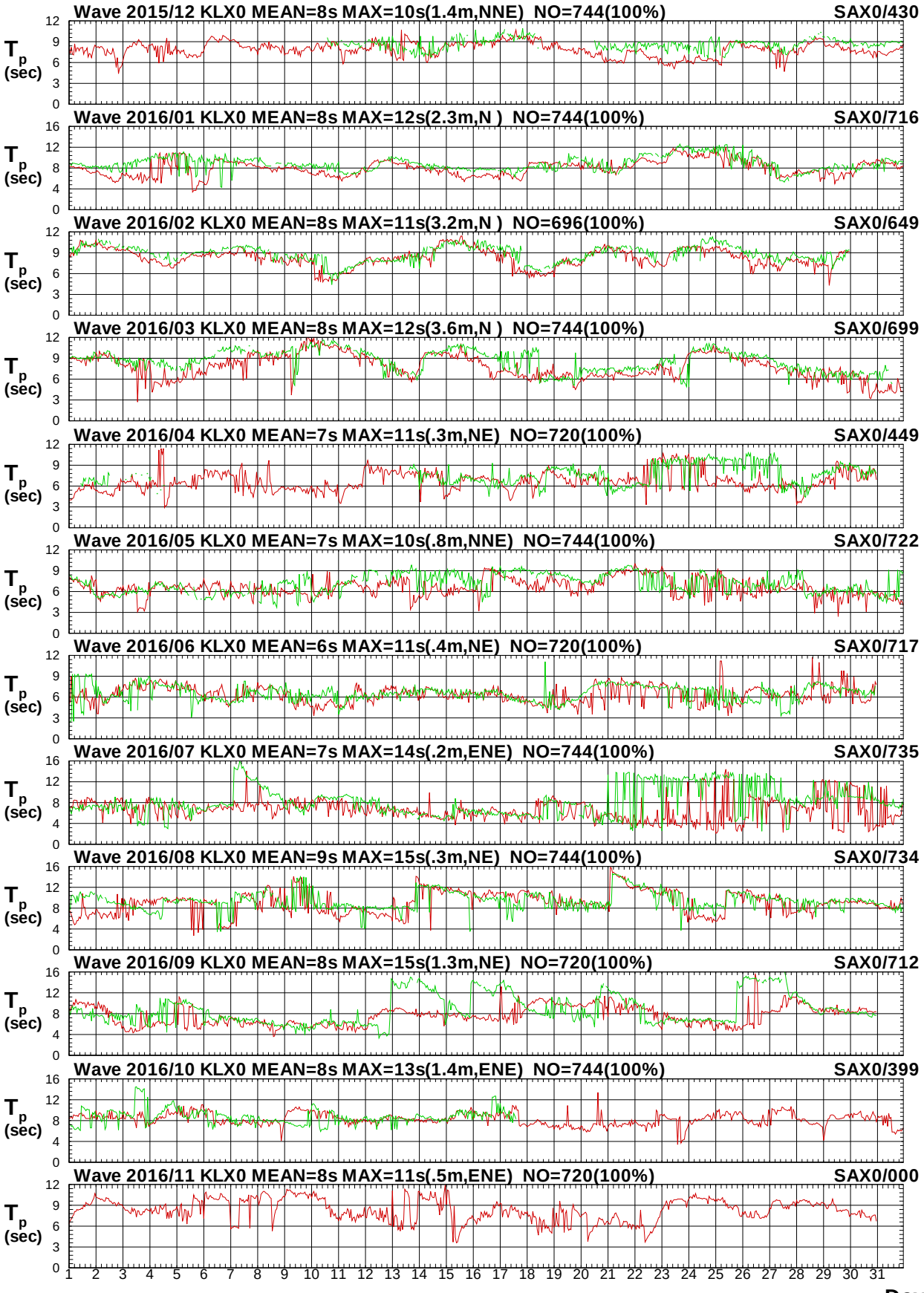

圖 2.5b　2016年每月北端海域 X 站與宜蘭海域 X 站週期圖

V15CKLX0.1HA V15CSAX0.1H0 V161KLX0.1HA V161SAX0.1H0 V162KLX0.1HA V162SAX0.1H0
V163KLX0.1HA V163SAX0.1H0 V164KLX0.1HA V164SAX0.1H0 V165KLX0.1HA V165SAX0.1H0

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Wave Direction in North Seas of KLX0 at 2016

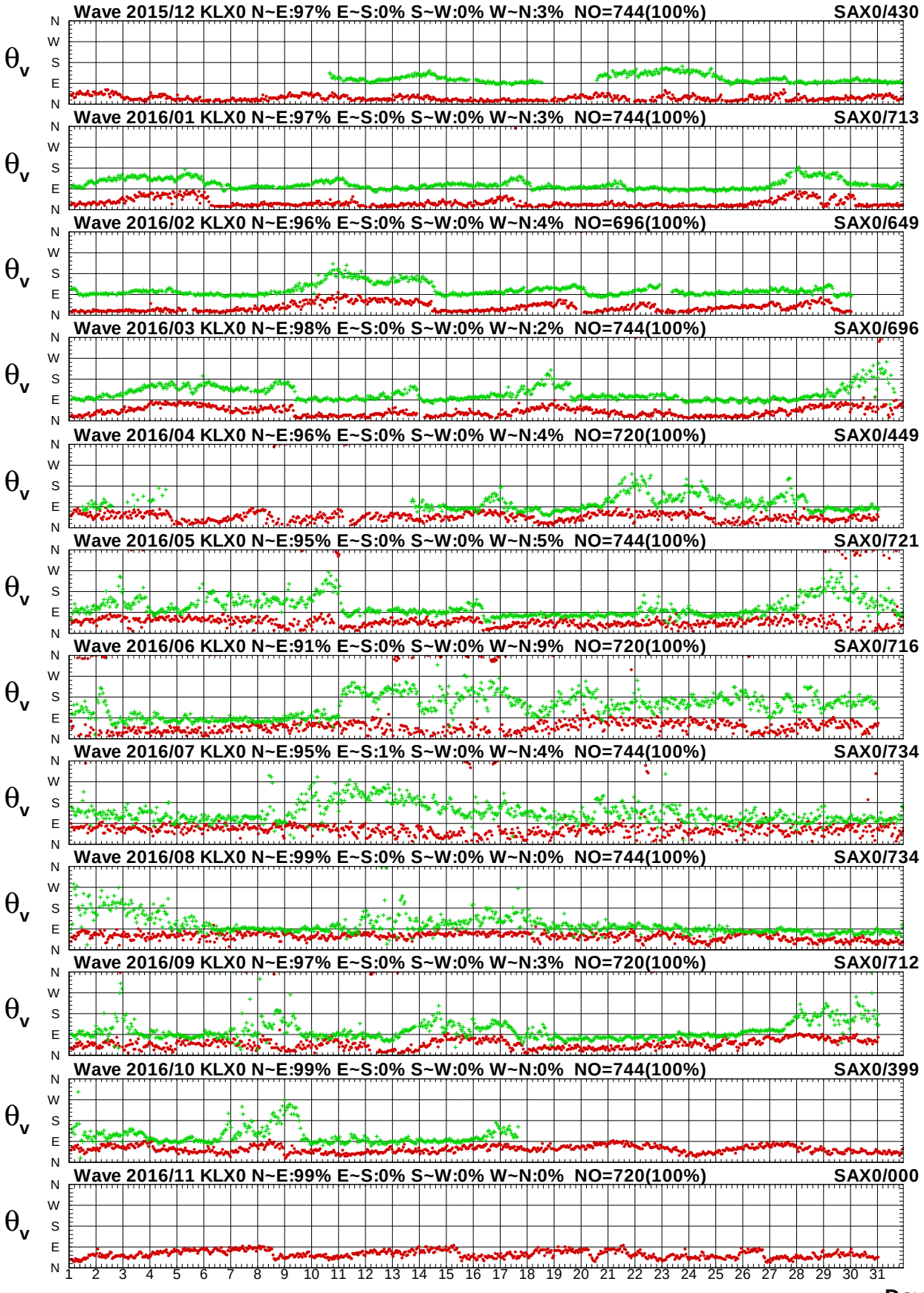

圖 2.5c　2016年每月北端海域 X 站與宜蘭海域 X 站波向圖

V15CKLX0.1HA V15CSAX0.1H0 V161KLX0.1HA V161SAX0.1H0 V162KLX0.1HA V162SAX0.1H0
V163KLX0.1HA V163SAX0.1H0 V164KLX0.1HA V164SAX0.1H0 V165KLX0.1HA V165SAX0.1H0

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Wave H_s in North Seas of KLX0 at 2016

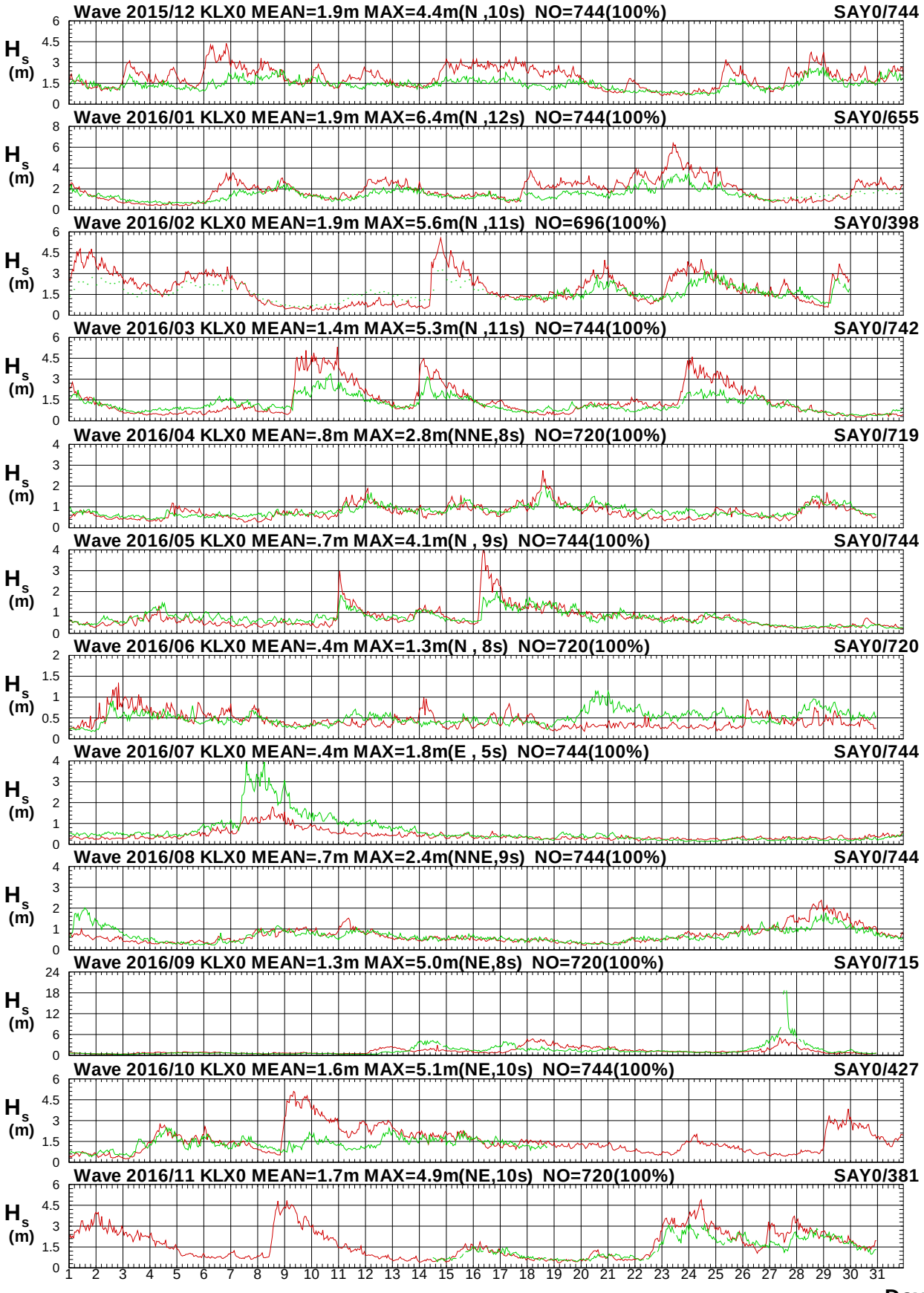

圖 2.6a　2016年每月北端海域 X 站與宜蘭海域 Y 站波高圖

V15CKLX0.1HA V15CSAY0.1H0 V161KLX0.1HA V161SAY0.1H0 V162KLX0.1HA V162SAY0.1H0
V163KLX0.1HA V163SAY0.1H0 V164KLX0.1HA V164SAY0.1H0 V165KLX0.1HA V165SAY0.1H0

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Wave T_p in North Seas of KLX0 at 2016

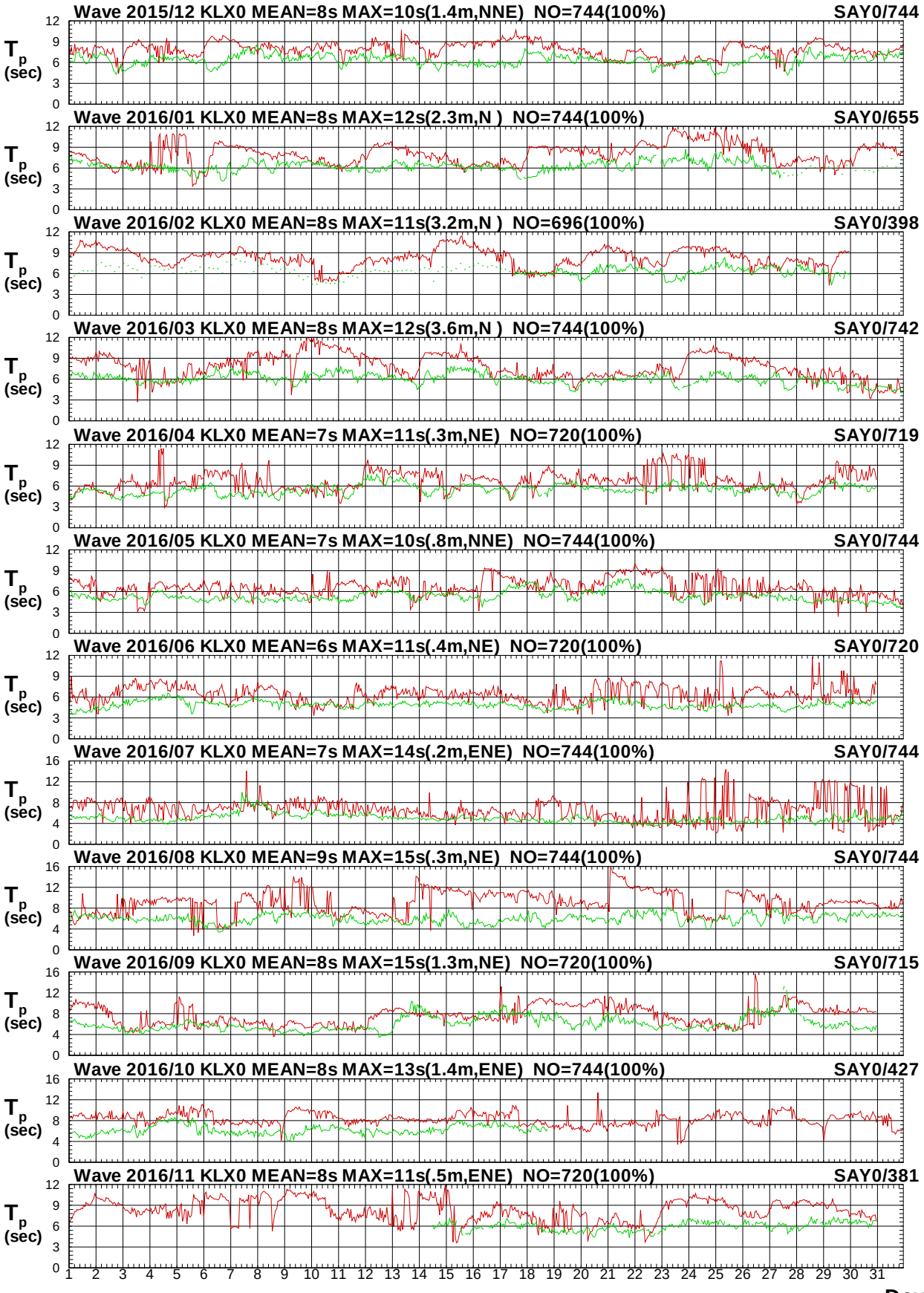

圖 2.6b　2016年每月北端海域 X 站與宜蘭海域 Y 站週期圖

V15CKLX0.1HA V15CSAY0.1H0 V161KLX0.1HA V161SAY0.1H0 V162KLX0.1HA V162SAY0.1H0
V163KLX0.1HA V163SAY0.1H0 V164KLX0.1HA V164SAY0.1H0 V165KLX0.1HA V165SAY0.1H0

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Wave Direction in North Seas of KLX0 at 2016

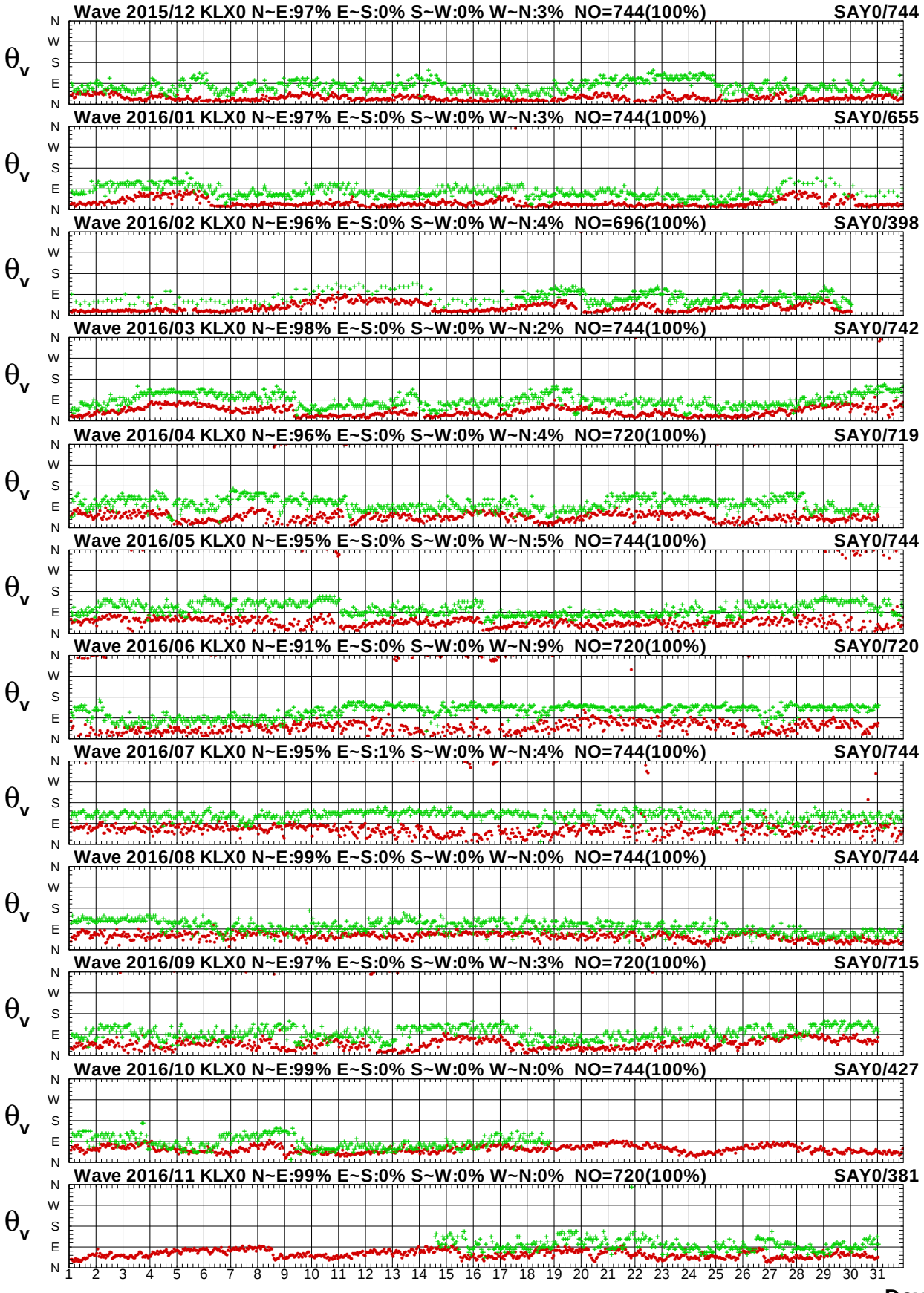

圖 2.6c　2016年每月北端海域 X 站與宜蘭海域 Y 站波向圖

Wave H_s in North Seas of KLX0 at 2016

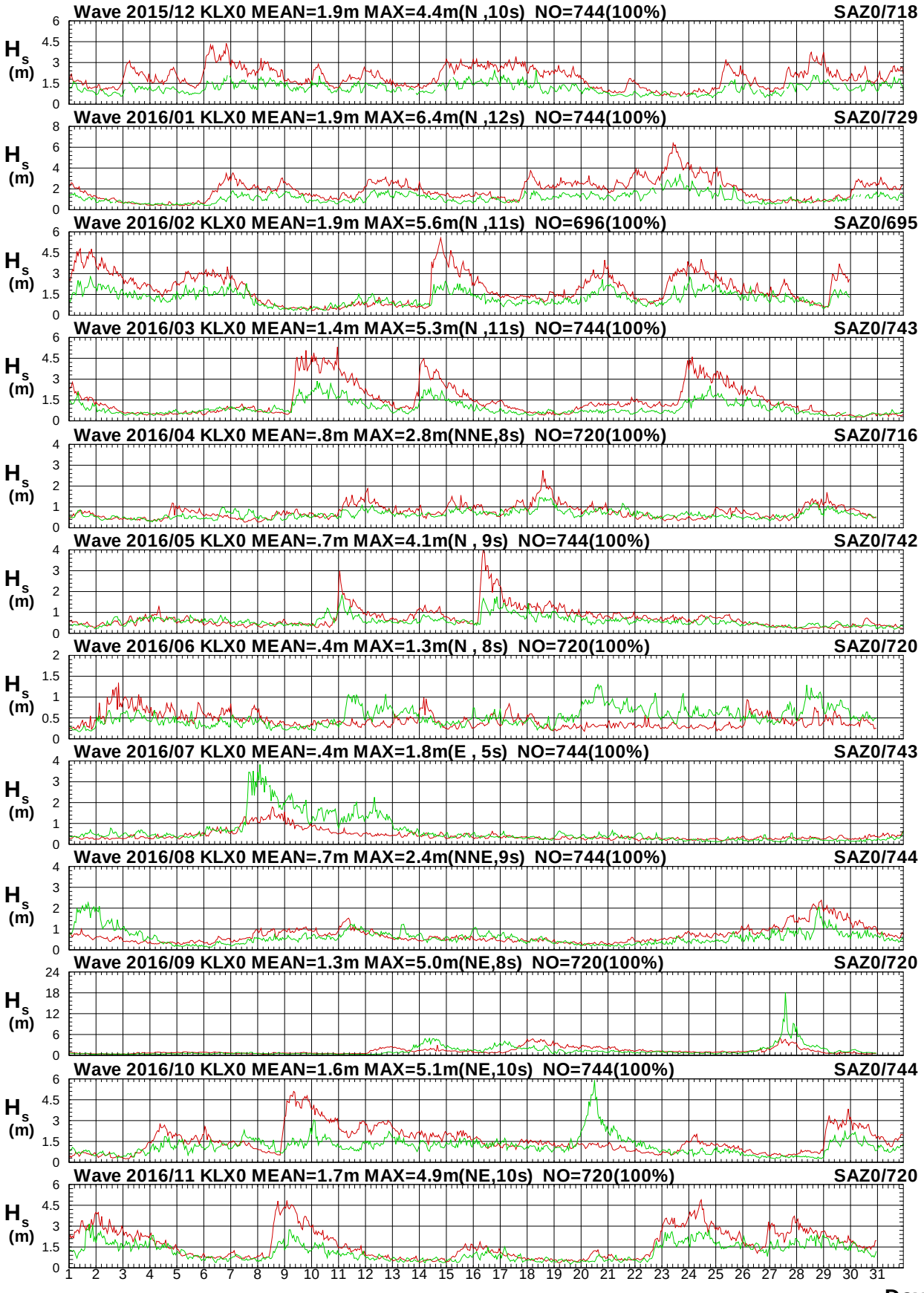

圖 2.7a　2016年每月北端海域 X 站與宜蘭海域 Z 站波高圖

V15CKLX0.1HA V15CSAZ0.1H0 V161KLX0.1HA V161SAZ0.1H0 V162KLX0.1HA V162SAZ0.1H0
V163KLX0.1HA V163SAZ0.1H0 V164KLX0.1HA V164SAZ0.1H0 V165KLX0.1HA V165SAZ0.1H0

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Wave T_p in North Seas of KLX0 at 2016

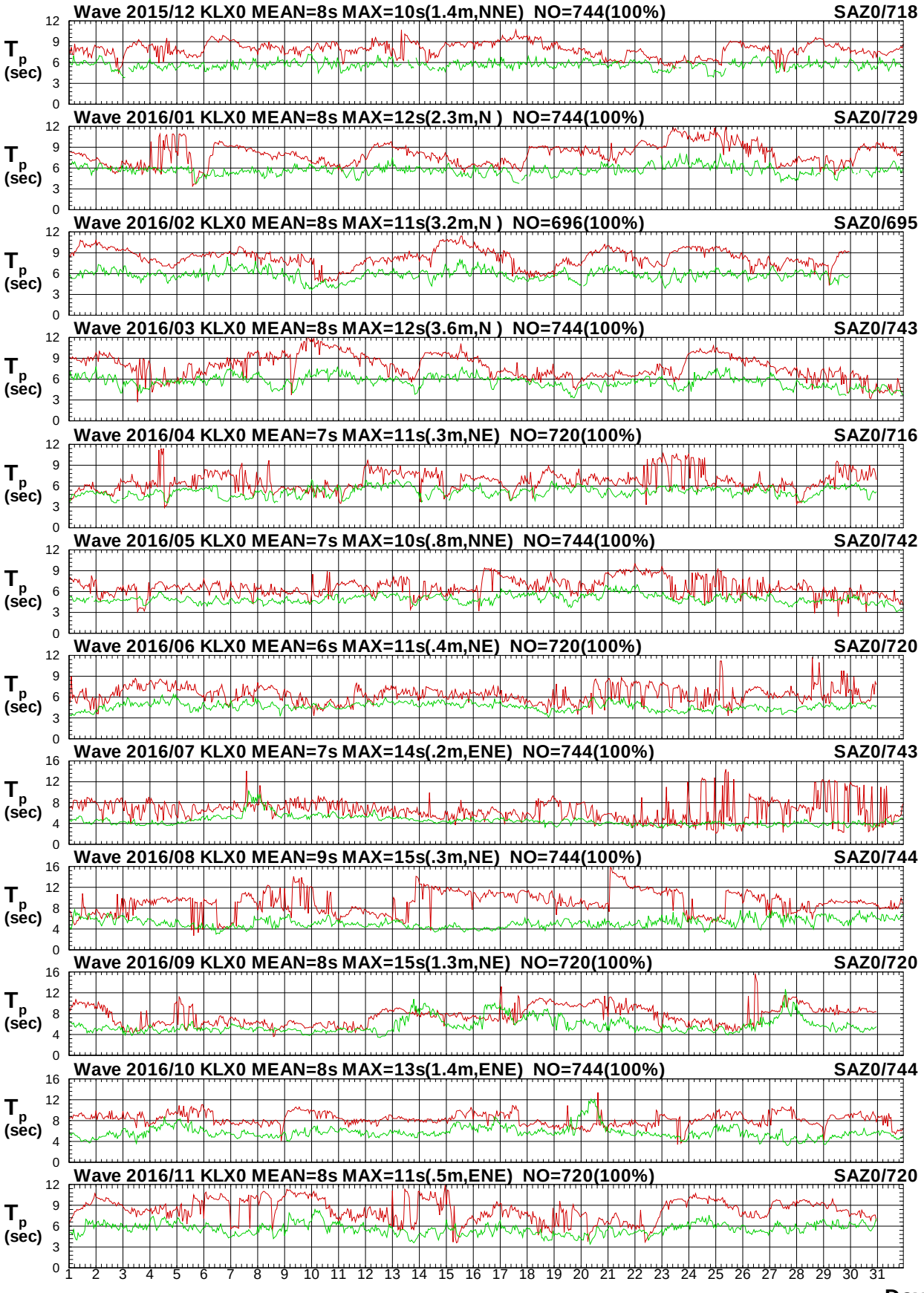

圖 2.7b　2016年每月北端海域 X 站與宜蘭海域 Z 站週期圖

V15CKLX0.1HA V15CSAZ0.1H0 V161KLX0.1HA V161SAZ0.1H0 V162KLX0.1HA V162SAZ0.1H0
V163KLX0.1HA V163SAZ0.1H0 V164KLX0.1HA V164SAZ0.1H0 V165KLX0.1HA V165SAZ0.1H0

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Wave Direction in North Seas of KLX0 at 2016

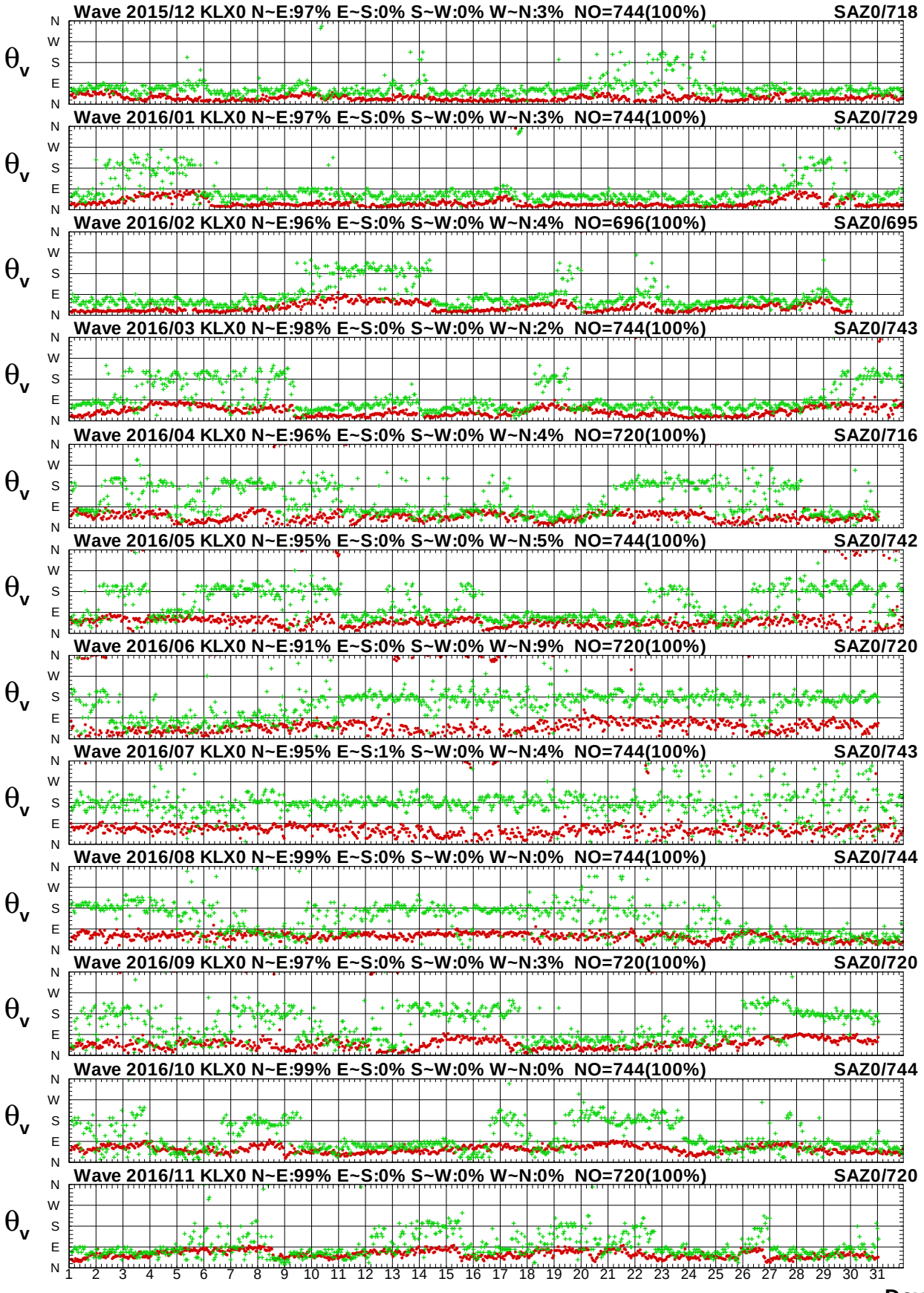

圖2.7c　2016年每月北端海域 X 站與宜蘭海域 Z 站波向圖

V15CKLX0.1HA V15CSAZ0.1H0 V161KLX0.1HA V161SAZ0.1H0 V162KLX0.1HA V162SAZ0.1H0
V163KLX0.1HA V163SAZ0.1H0 V164KLX0.1HA V164SAZ0.1H0 V165KLX0.1HA V165SAZ0.1H0

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Wave H_s in North Seas of KLX0 at 2016

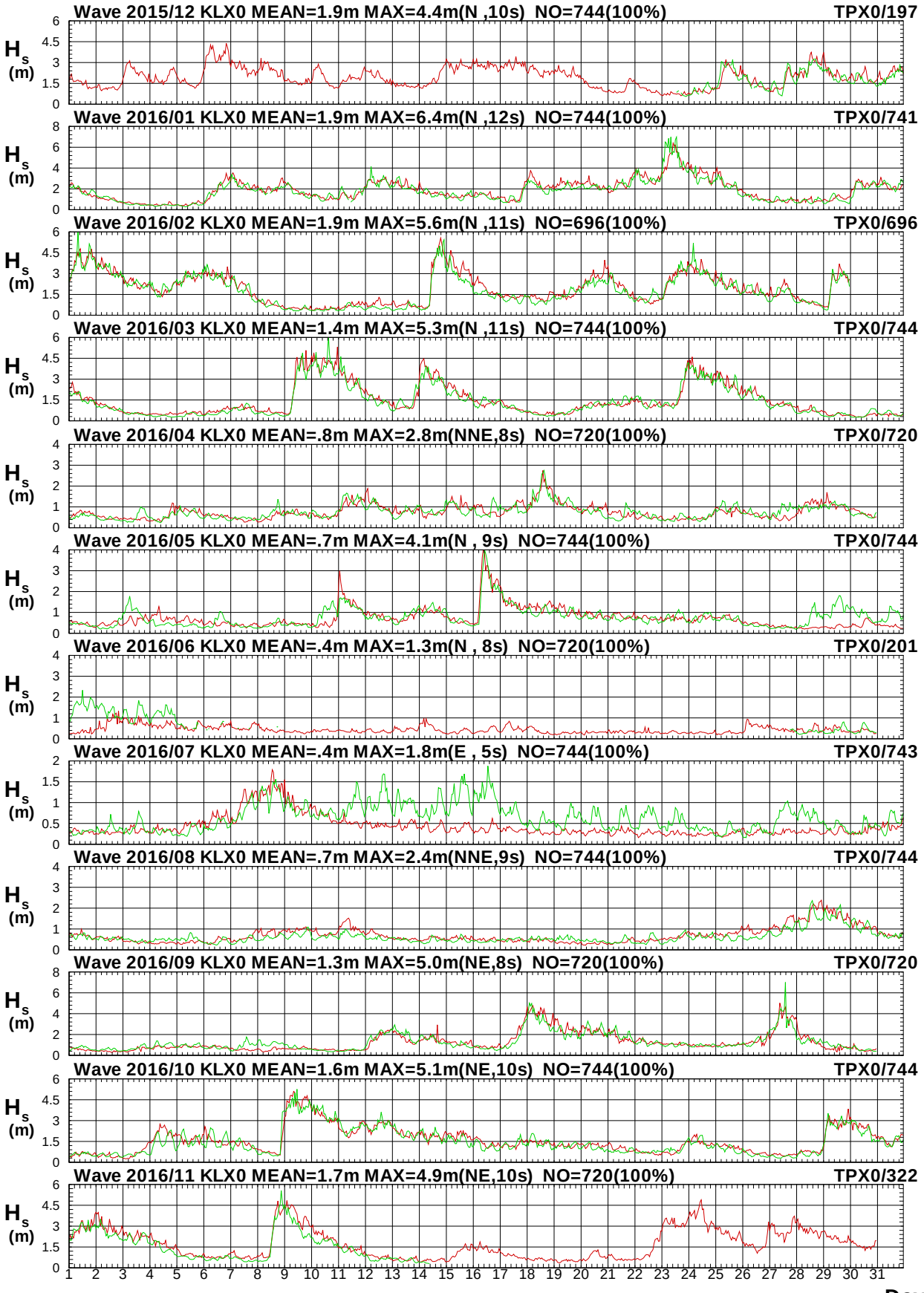

圖 2.8a　2016年每月北端海域 X 站與北苗海域 X 站波高圖

V15CKLX0.1HA V15CTPX0.1H0 V161KLX0.1HA V161TPX0.1H0 V162KLX0.1HA V162TPX0.1H0
V163KLX0.1HA V163TPX0.1H0 V164KLX0.1HA V164TPX0.1H0 V165KLX0.1HA V165TPX0.1H0

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Wave T_p in North Seas of KLX0 at 2016

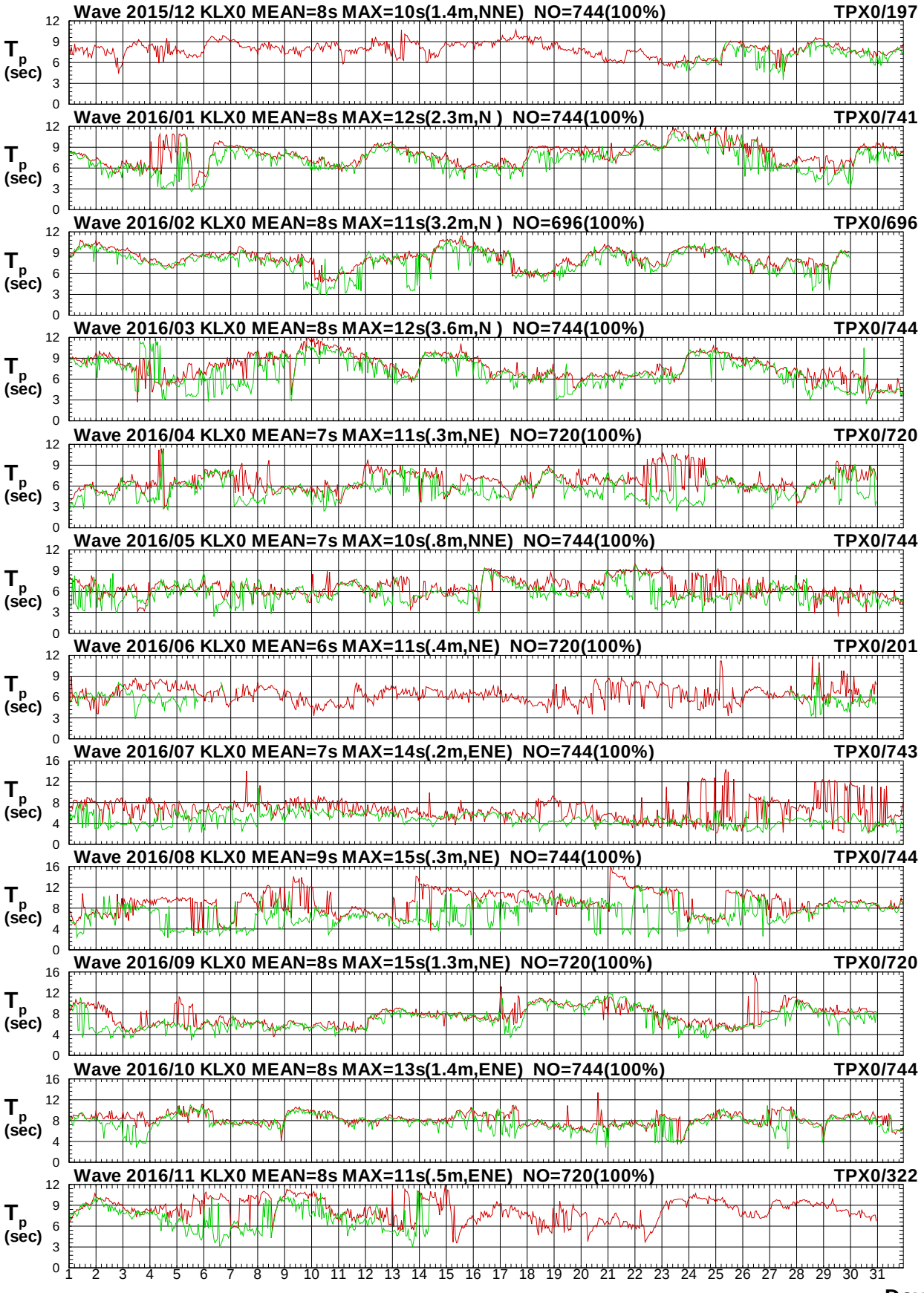

圖 2.8b　2016年每月北端海域 X 站與北苗海域 X 站週期圖

V15CKLX0.1HA V15CTPX0.1H0 V161KLX0.1HA V161TPX0.1H0 V162KLX0.1HA V162TPX0.1H0
V163KLX0.1HA V163TPX0.1H0 V164KLX0.1HA V164TPX0.1H0 V165KLX0.1HA V165TPX0.1H0

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Wave Direction in North Seas of KLX0 at 2016

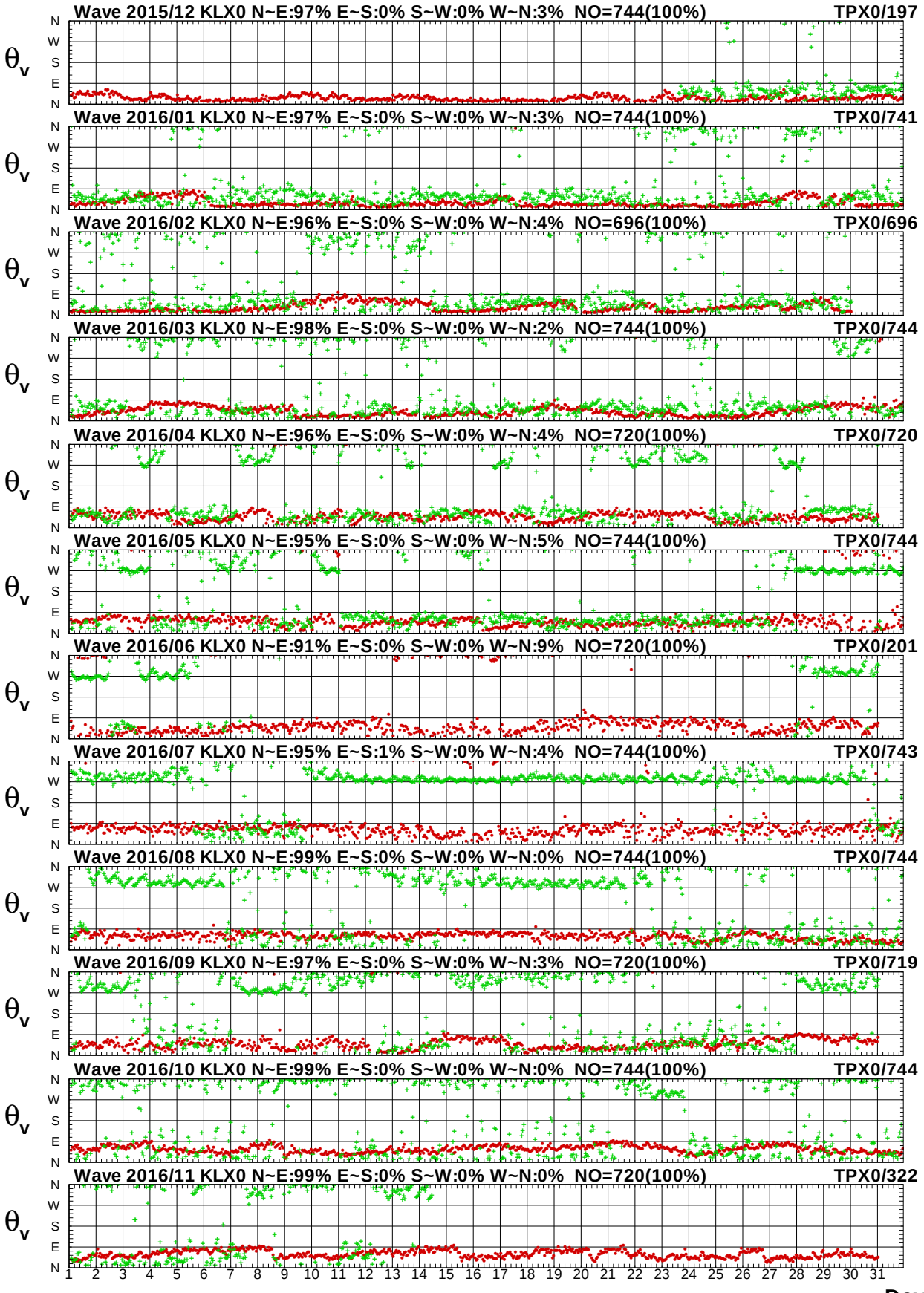

圖 2.8c　2016年每月北端海域 X 站與北苗海域 X 站波向圖

Wave H_s in North Seas of KLX0 at 2016

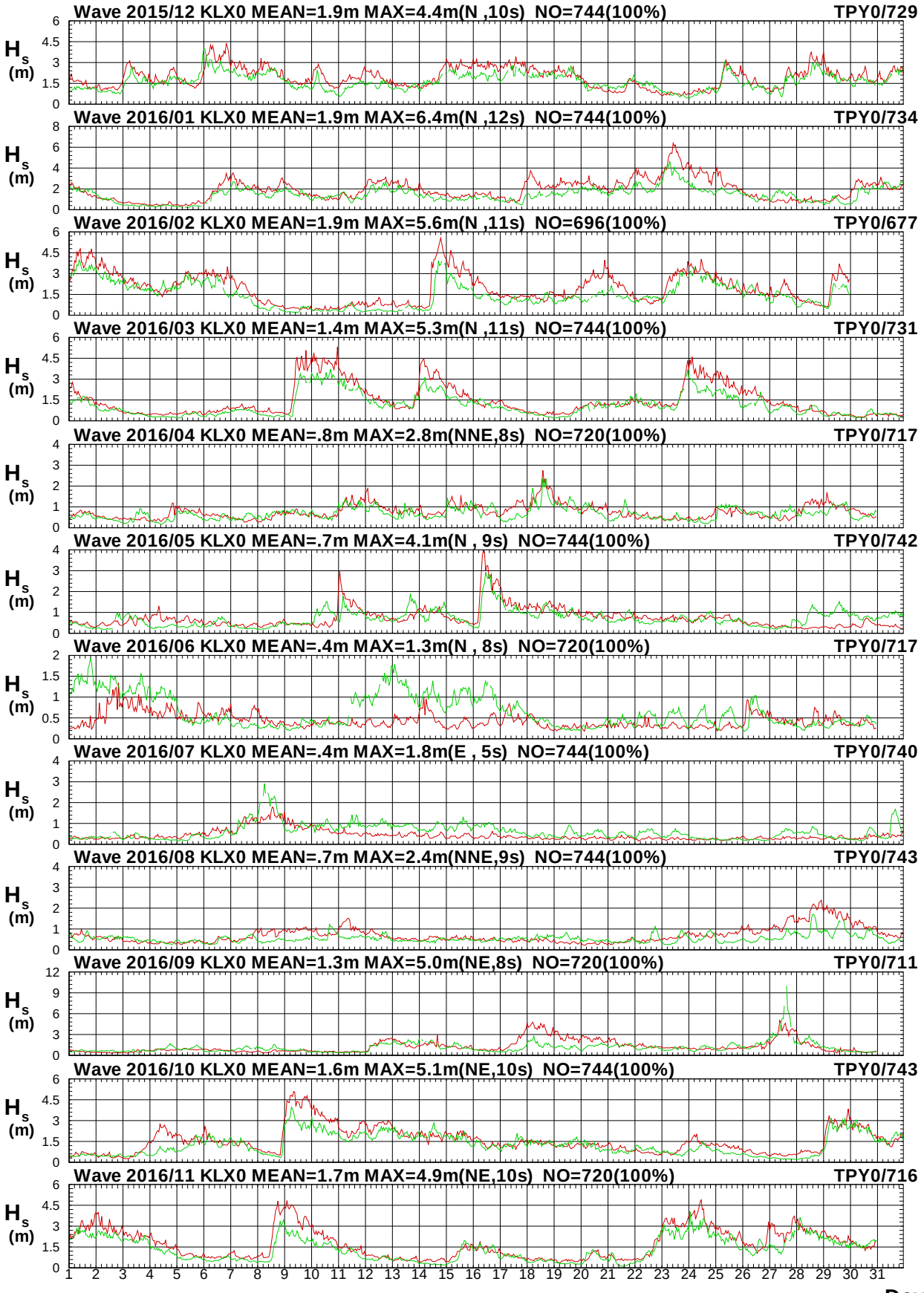

圖 2.9a　2016年每月北端海域 X 站與北苗海域 Y 站波高圖

V15CKLX0.1HA V15CTPY0.1H0 V161KLX0.1HA V161TPY0.1H0 V162KLX0.1HA V162TPY0.1H0
V163KLX0.1HA V163TPY0.1H0 V164KLX0.1HA V164TPY0.1H0 V165KLX0.1HA V165TPY0.1H0

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Wave T_p in North Seas of KLX0 at 2016

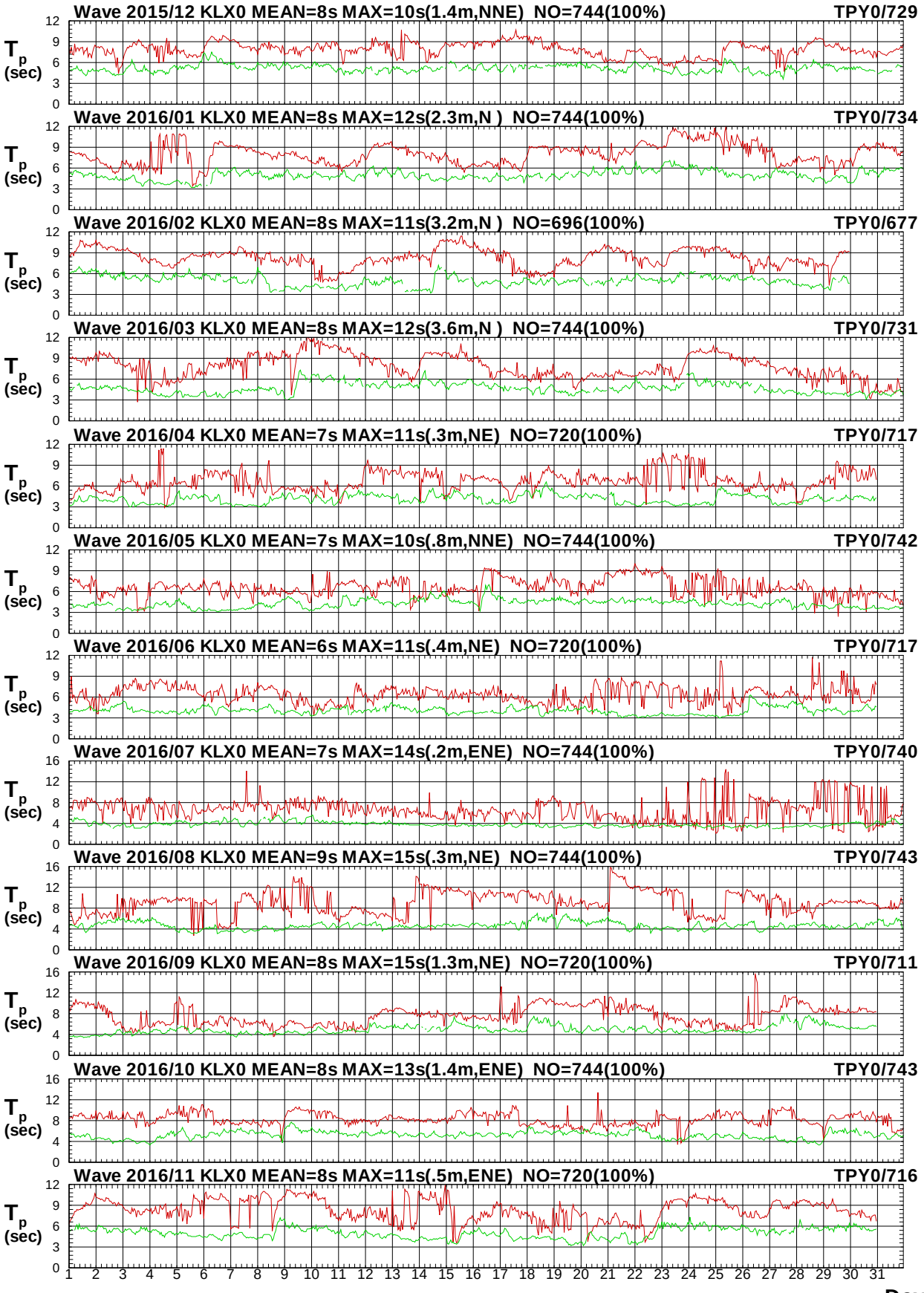

圖 2.9b　2016年每月北端海域 X 站與北苗海域 Y 站週期圖

V15CKLX0.1HA V15CTPY0.1H0 V161KLX0.1HA V161TPY0.1H0 V162KLX0.1HA V162TPY0.1H0
V163KLX0.1HA V163TPY0.1H0 V164KLX0.1HA V164TPY0.1H0 V165KLX0.1HA V165TPY0.1H0

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Wave Direction in North Seas of KLX0 at 2016

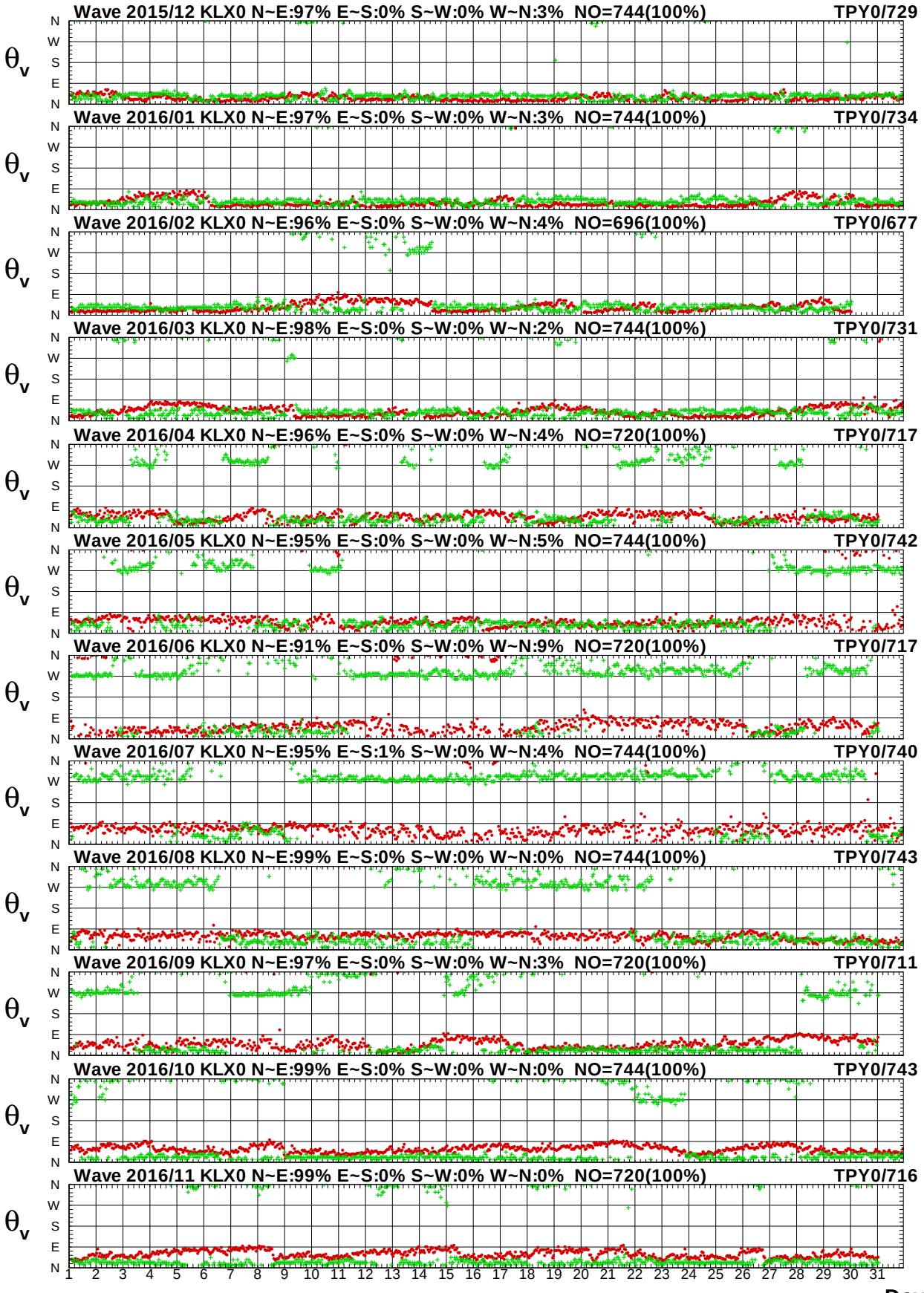

圖 2.9c　2016年每月北端海域 X 站與北苗海域 Y 站波向圖

第三章　2016 年宜蘭海域觀測波浪資料

宜蘭海域波浪之觀測本中心**(IHMT)**於 2002 年 7 月 19 日於蘇澳港外約 700m 附近(稱**測站 X**)，水深約 25 公尺處設置挪威 NORTEK 公司之剖面海流與表面波浪(波高、週期及波向)即時傳送監測系統(簡稱 AWCP)波浪觀測站，其位置如附圖 3。

測站 Y(蘇澳外海浮標站)之波浪儀屬水利署**(WRA)**所有，**測站 Z**(龜山島外海浮標站)之波浪儀屬觀光局東北角管理處**(TBRC)**所設置。福隆海上浮標(**測站 R**)觀測風力，係國立成功大學水文中心**(COMC)**所裝設。蘇澳海域各測站歷年觀測波浪資料蒐集概況如表 3。

波浪觀測 AWCP 系統有兩個分離波高量測模式:一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **X 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 3.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 3.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 3.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 3.2 以後。

表 3 宜蘭海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	24°35'23"N	121°53'07"E	2002/08-2016/11(觀測中)	港研中心	AWCP 蘇澳港
Y	24°37'38"N	121°52'36"E	1999/09-2016/11(觀測中)	水利署	蘇澳浮標站
Z	24°50'52"N	121°55'39"E	2002/05-2016/11(觀測中)	觀光局	龜山島浮標站
R	22°18'50"N	120°21'50"E	2006/04-2008/08	水文中心	福隆浮標站

圖 3 宜蘭海域波浪觀測站位置示意圖

表3.1a 2016年每月宜蘭海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
測站	X	Y	Z	R				
2015/12月	430 (57.8%)	744 (100%)	718 (96.5%)	*	*	*	*	*
2016/ 1月	716 (96.2%)	655 (88.0%)	729 (98.0%)	*	*	*	*	*
2016/ 2月	649 (93.2%)	398 (57.2%)	695 (99.9%)	*	*	*	*	*
2016/ 3月	699 (94.0%)	742 (99.7%)	743 (99.9%)	*	*	*	*	*
2016/ 4月	449 (62.4%)	719 (99.9%)	716 (99.4%)	*	*	*	*	*
2016/ 5月	722 (97.0%)	744 (100%)	742 (99.7%)	*	*	*	*	*
2016/ 6月	717 (99.6%)	720 (100%)	720 (100%)	*	*	*	*	*
2016/ 7月	735 (98.8%)	744 (100%)	743 (99.9%)	*	*	*	*	*
2016/ 8月	734 (98.7%)	744 (100%)	744 (100%)	*	*	*	*	*
2016/ 9月	712 (98.9%)	715 (99.3%)	720 (100%)	*	*	*	*	*
2016/10月	399 (53.6%)	427 (57.4%)	744 (100%)	*	*	*	*	*
2016/11月	*	381 (52.9%)	720 (100%)	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表3.1b 2016年每月宜蘭海域修補後各測站波浪資料統計表

年/月 港區	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
測站	X	Y	Z	R				
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Yi-Lan Seas of SAX0 at 2016

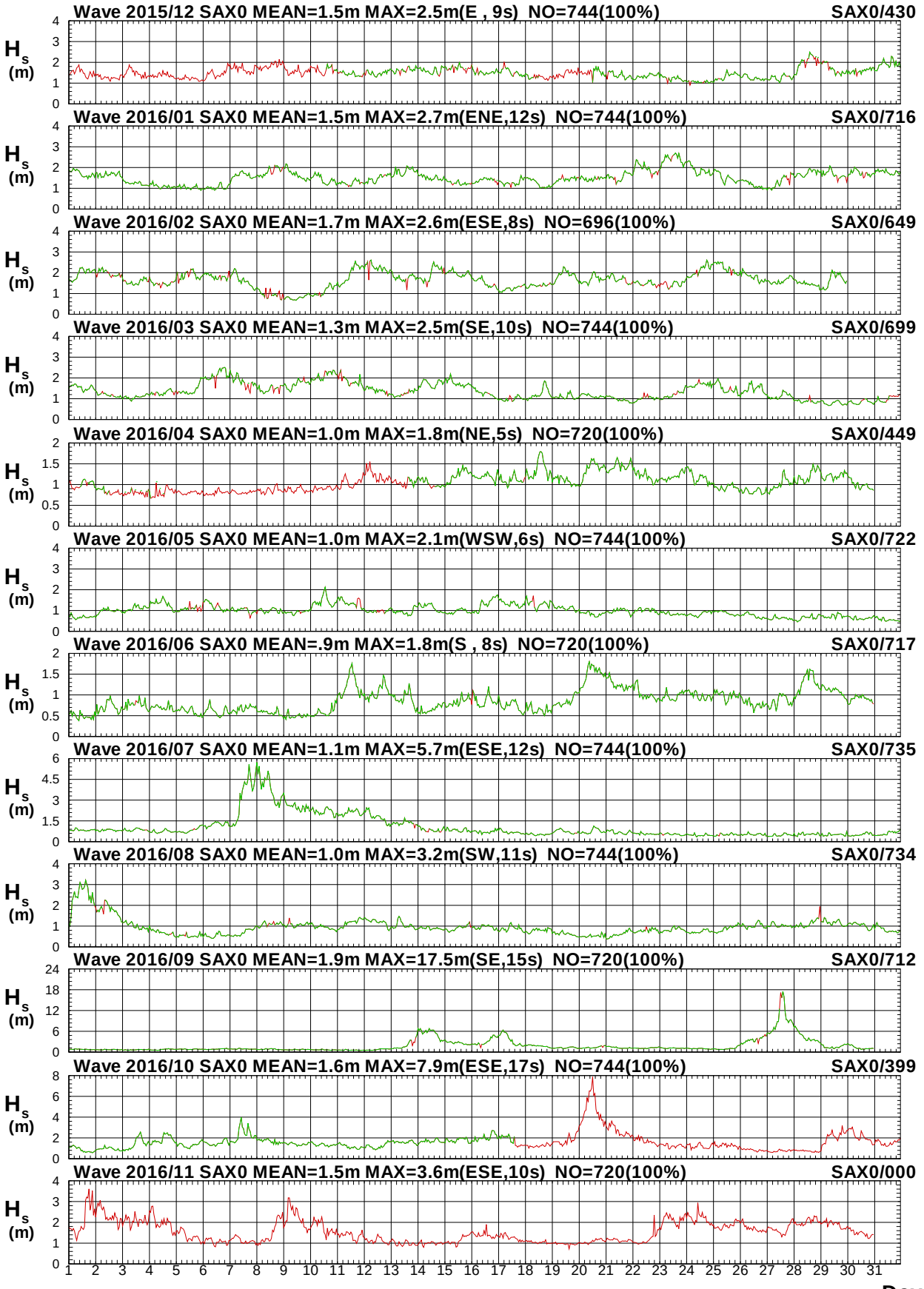

圖3.1a　2016年每月宜蘭海域 X 站修補前後之波高比較圖

V15CSAX0.1HA V15CSAX0.1H0 V161SAX0.1HA V161SAX0.1H0 V162SAX0.1HA V162SAX0.1H0
V163SAX0.1HA V163SAX0.1H0 V164SAX0.1HA V164SAX0.1H0 V165SAX0.1HA V165SAX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

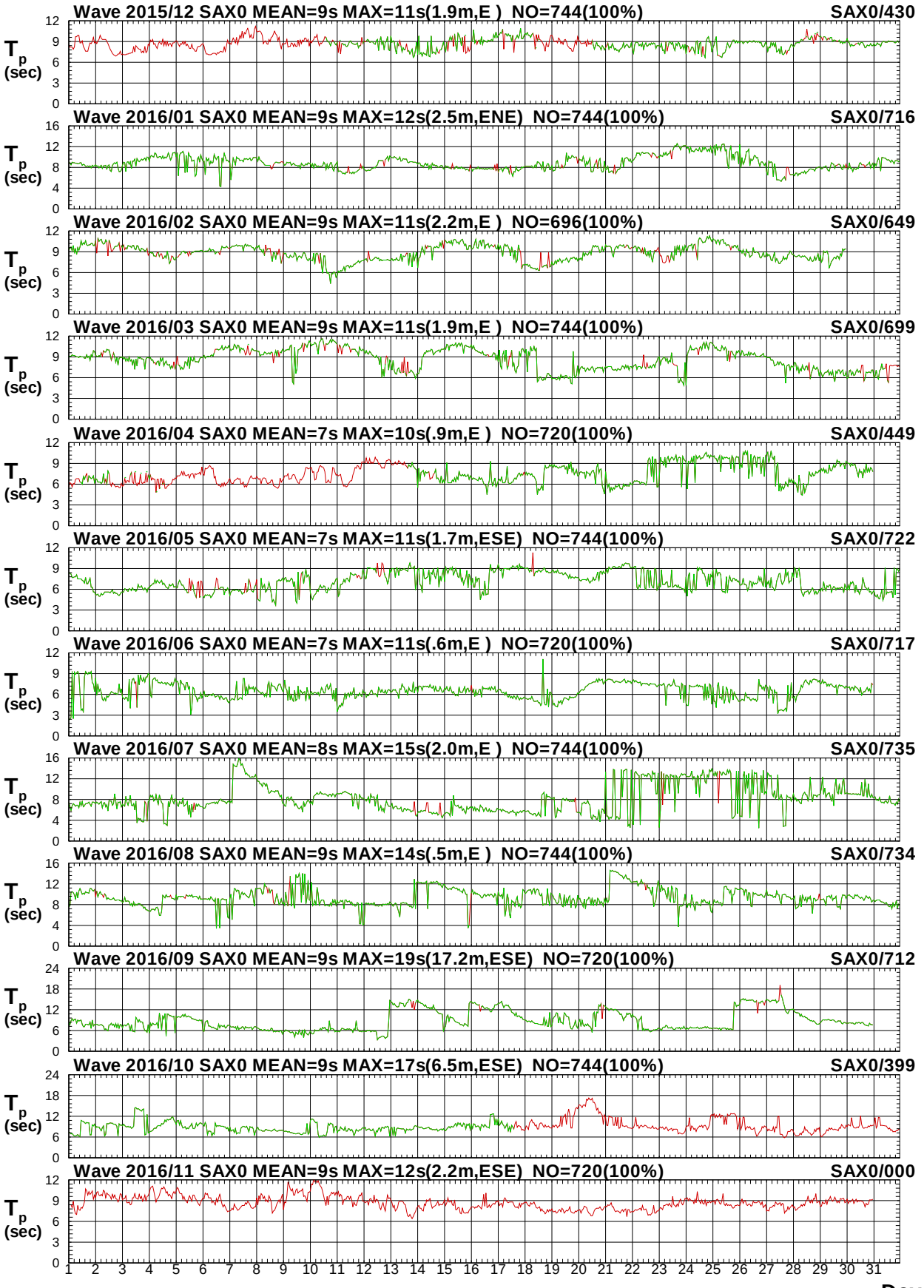

圖3.1b　2016年每月宜蘭海域 X 站修補前後之週期比較圖

V15CSAX0.1HA V15CSAX0.1H0 V161SAX0.1HA V161SAX0.1H0 V162SAX0.1HA V162SAX0.1H0
V163SAX0.1HA V163SAX0.1H0 V164SAX0.1HA V164SAX0.1H0 V165SAX0.1HA V165SAX0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

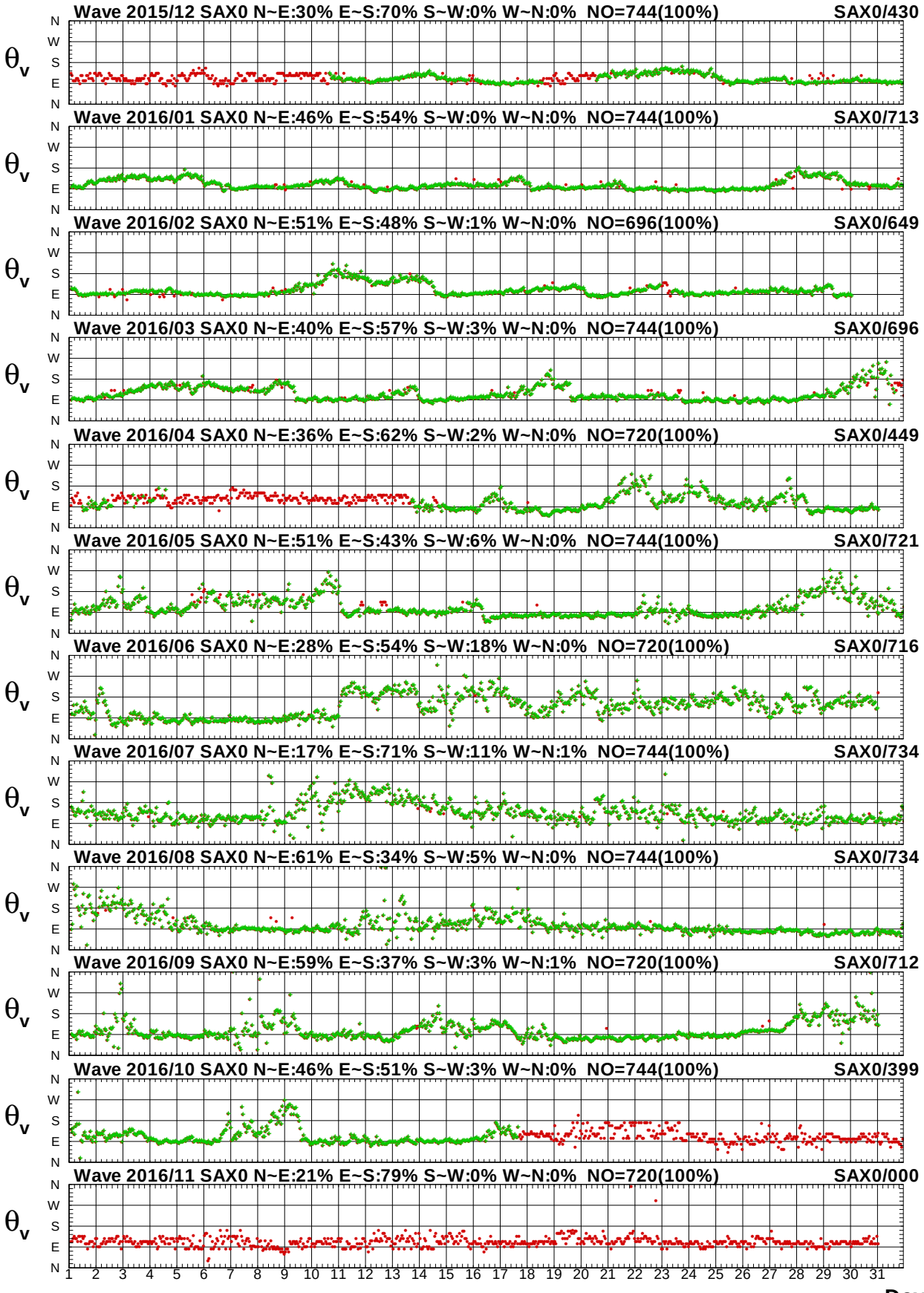

圖3.1c　2016年每月宜蘭海域 X 站修補前後之波向比較圖

Wave H_s in Yi-Lan Seas of SAX0 at 2016

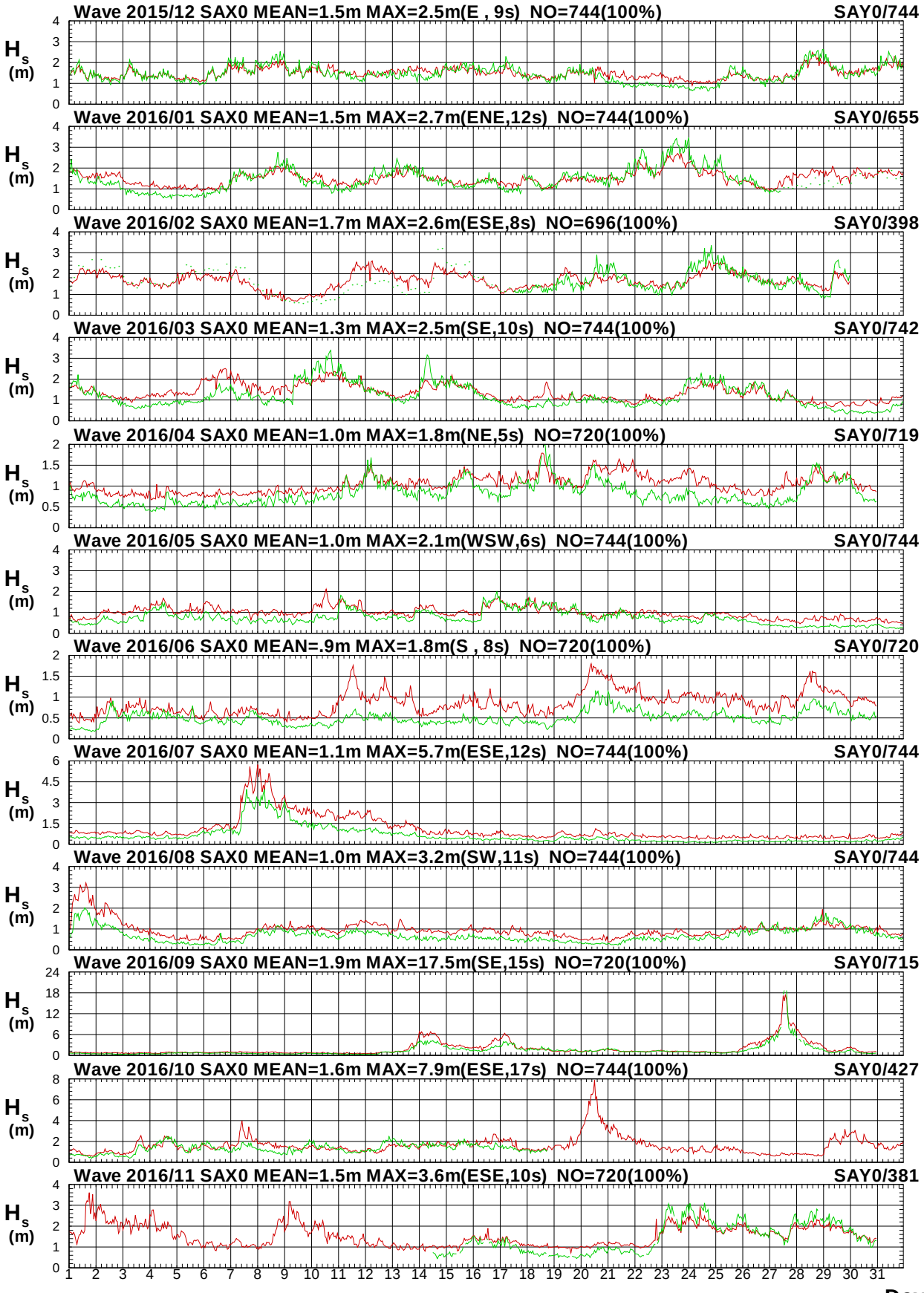

圖 3.2a　2016年每月宜蘭海域 X 站與 Y 站波高比較圖

V15CSAX0.1HA V15CSAY0.1H0 V161SAX0.1HA V161SAY0.1H0 V162SAX0.1HA V162SAY0.1H0
V163SAX0.1HA V163SAY0.1H0 V164SAX0.1HA V164SAY0.1H0 V165SAX0.1HA V165SAY0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

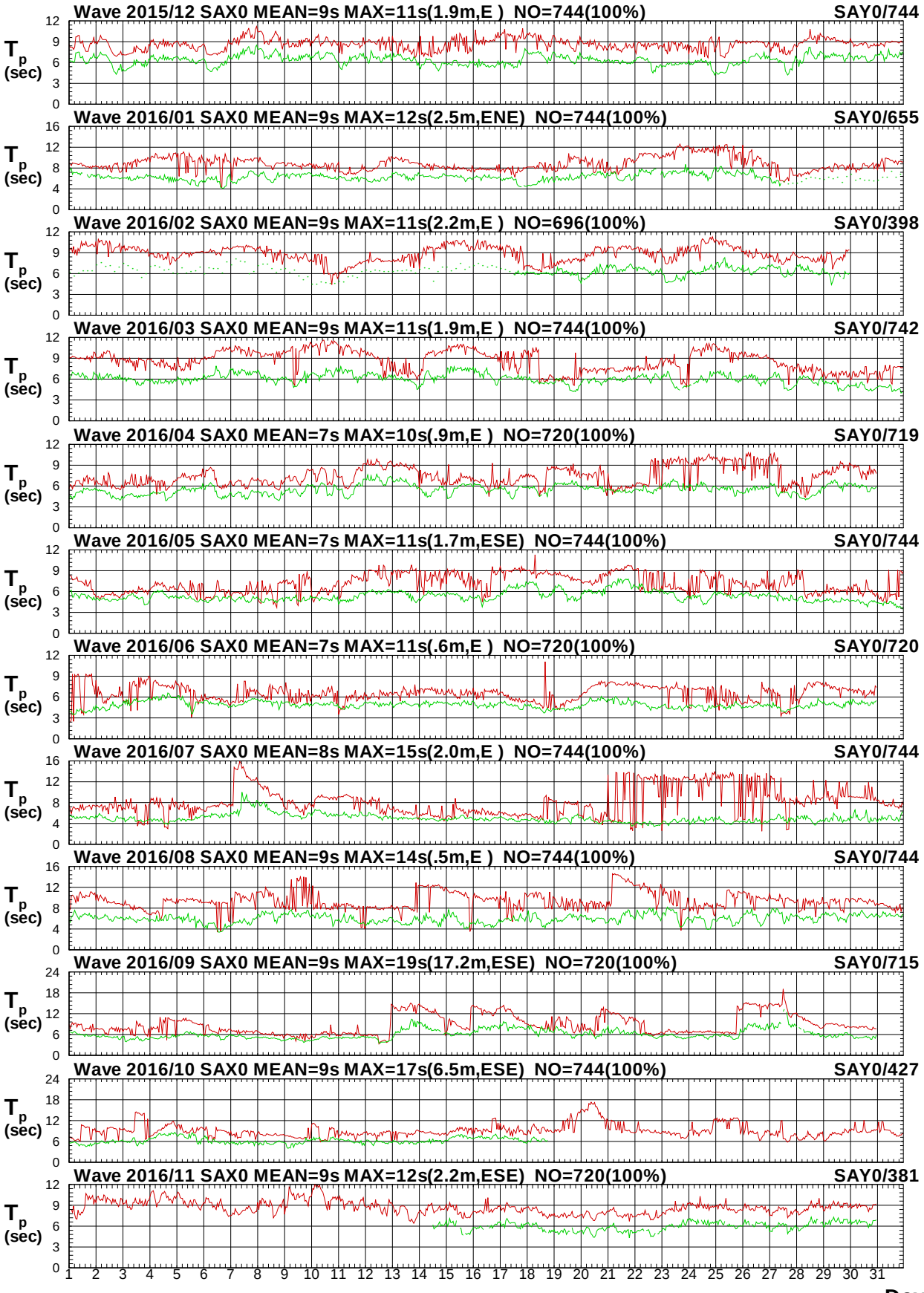

圖 3.2b　2016年每月宜蘭海域 X 站與 Y 站週期比較圖

V15CSAX0.1HA V15CSAY0.1H0 V161SAX0.1HA V161SAY0.1H0 V162SAX0.1HA V162SAY0.1H0
V163SAX0.1HA V163SAY0.1H0 V164SAX0.1HA V164SAY0.1H0 V165SAX0.1HA V165SAY0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

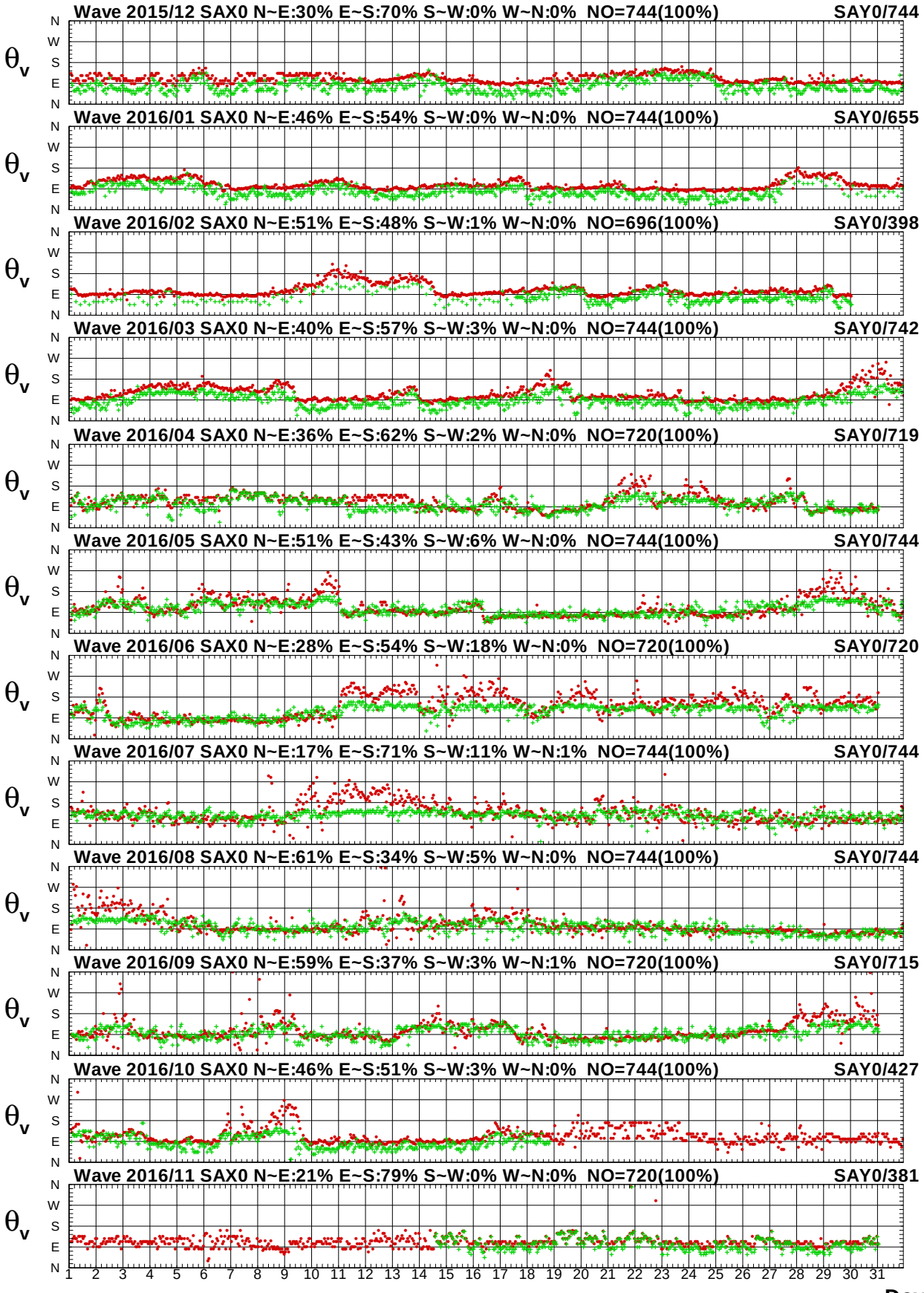

圖 3.2c　2016年每月宜蘭海域 X 站與 Y 站波向比較圖

Wave H_s in Yi-Lan Seas of SAX0 at 2016

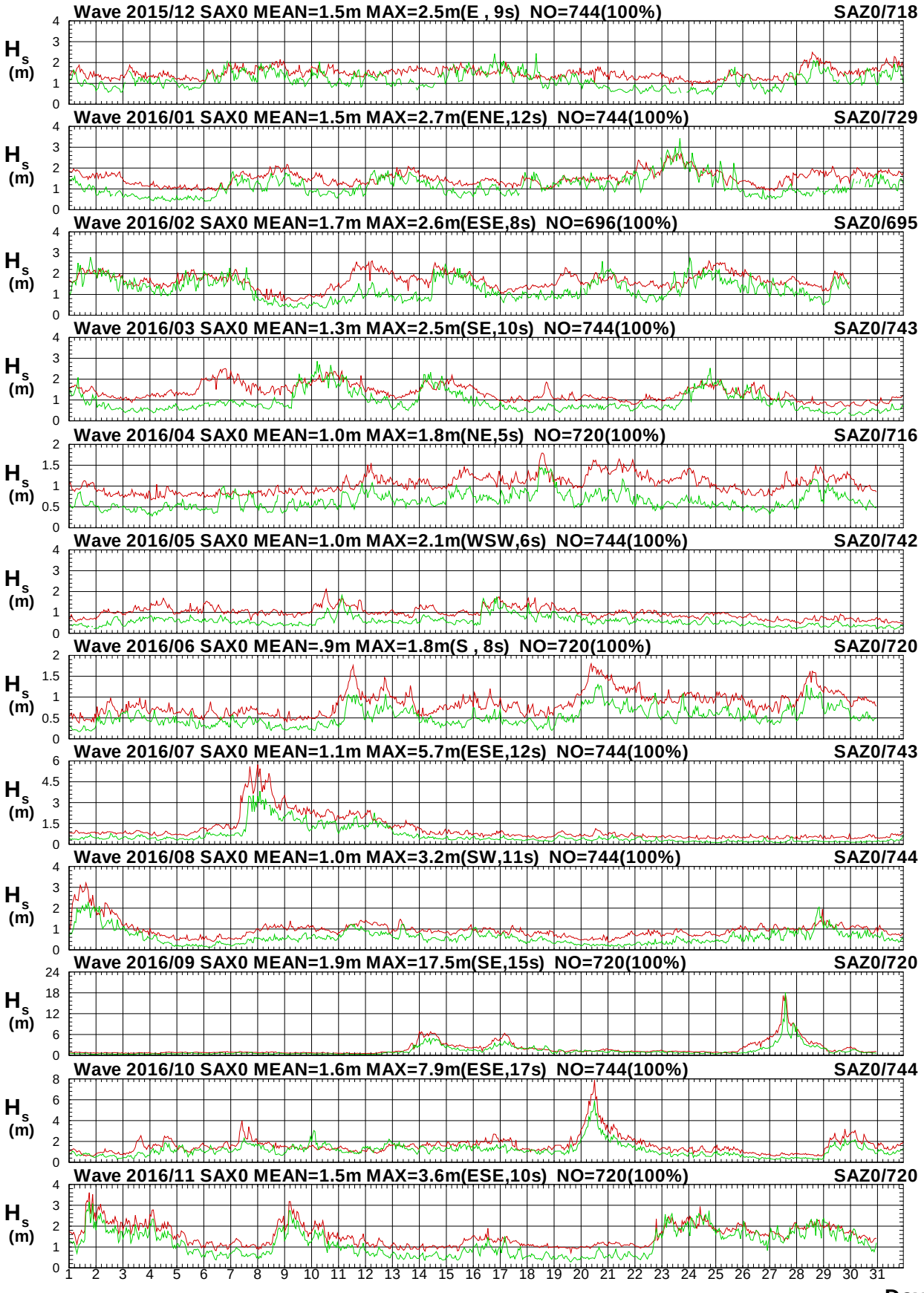

圖 3.3a　2016年每月宜蘭海域 X 站與 Z 站波高比較圖

V15CSAX0.1HA V15CSAZ0.1H0 V161SAX0.1HA V161SAZ0.1H0 V162SAX0.1HA V162SAZ0.1H0
V163SAX0.1HA V163SAZ0.1H0 V164SAX0.1HA V164SAZ0.1H0 V165SAX0.1HA V165SAZ0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

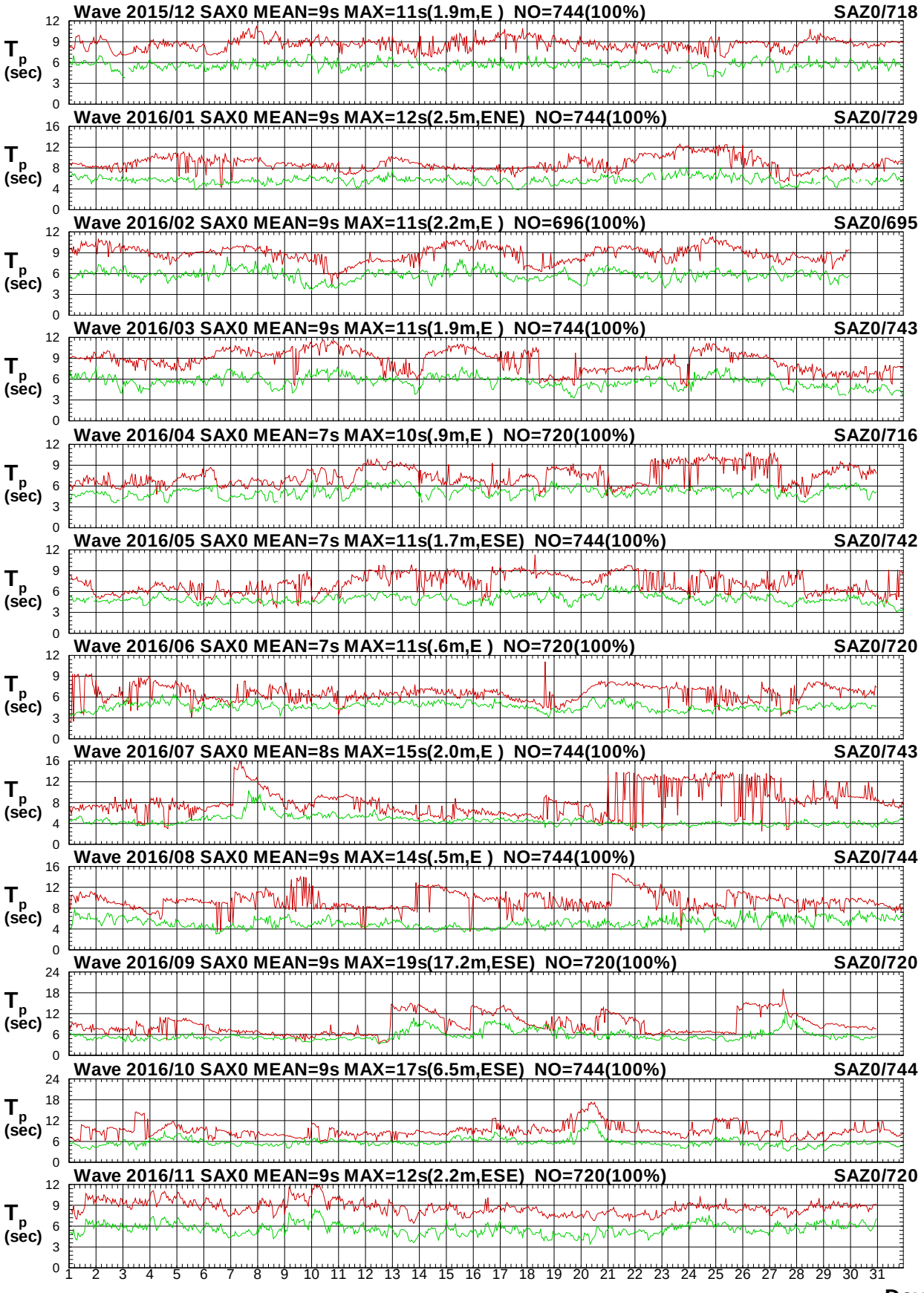

圖 3.3b　2016年每月宜蘭海域 X 站與 Z 站週期比較圖

V15CSAX0.1HA V15CSAZ0.1H0 V161SAX0.1HA V161SAZ0.1H0 V162SAX0.1HA V162SAZ0.1H0
V163SAX0.1HA V163SAZ0.1H0 V164SAX0.1HA V164SAZ0.1H0 V165SAX0.1HA V165SAZ0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

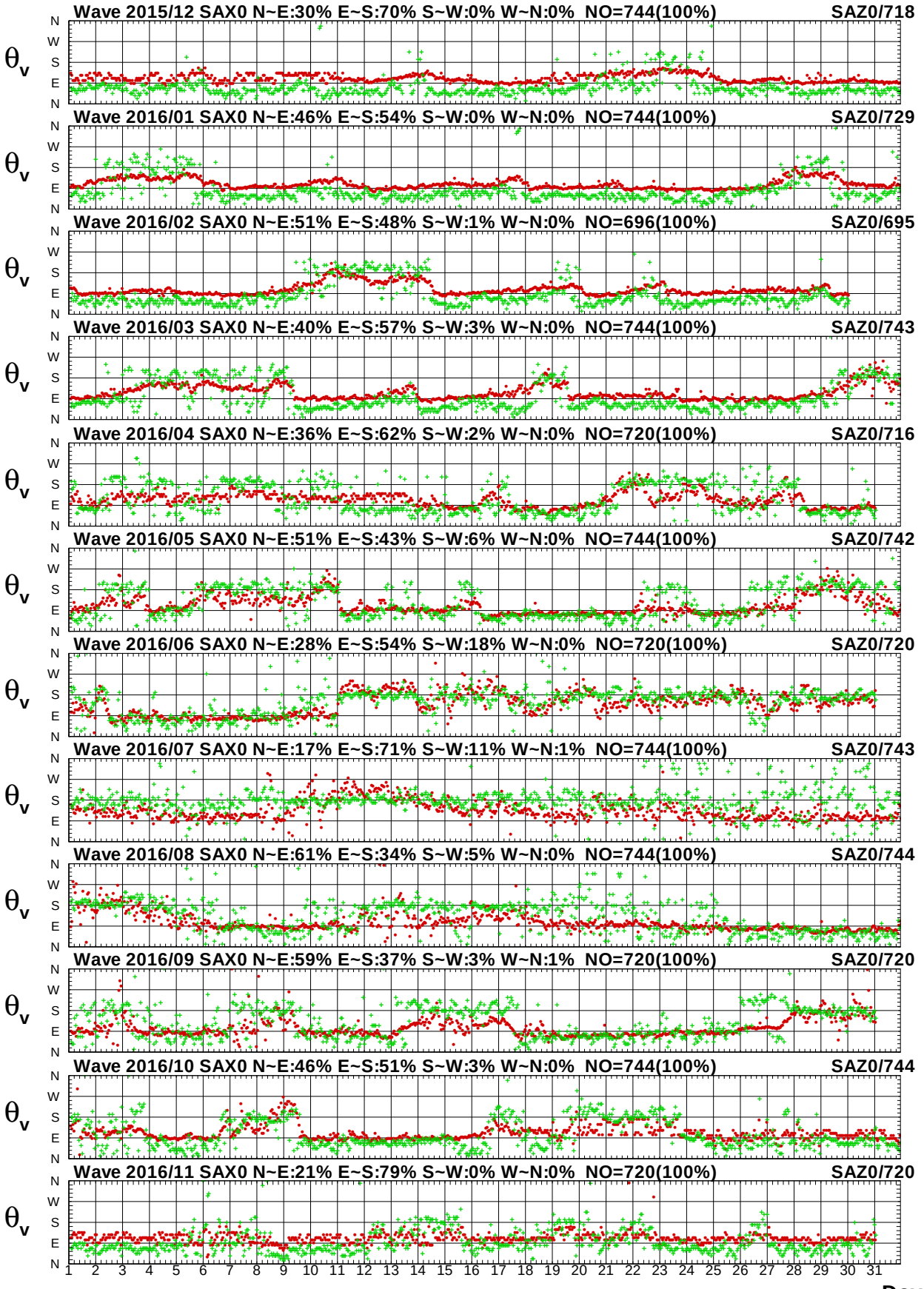

圖 3.3c　2016年每月宜蘭海域 X 站與 Z 站波向比較圖

Wave H_s in Yi-Lan Seas of SAX0 at 2016

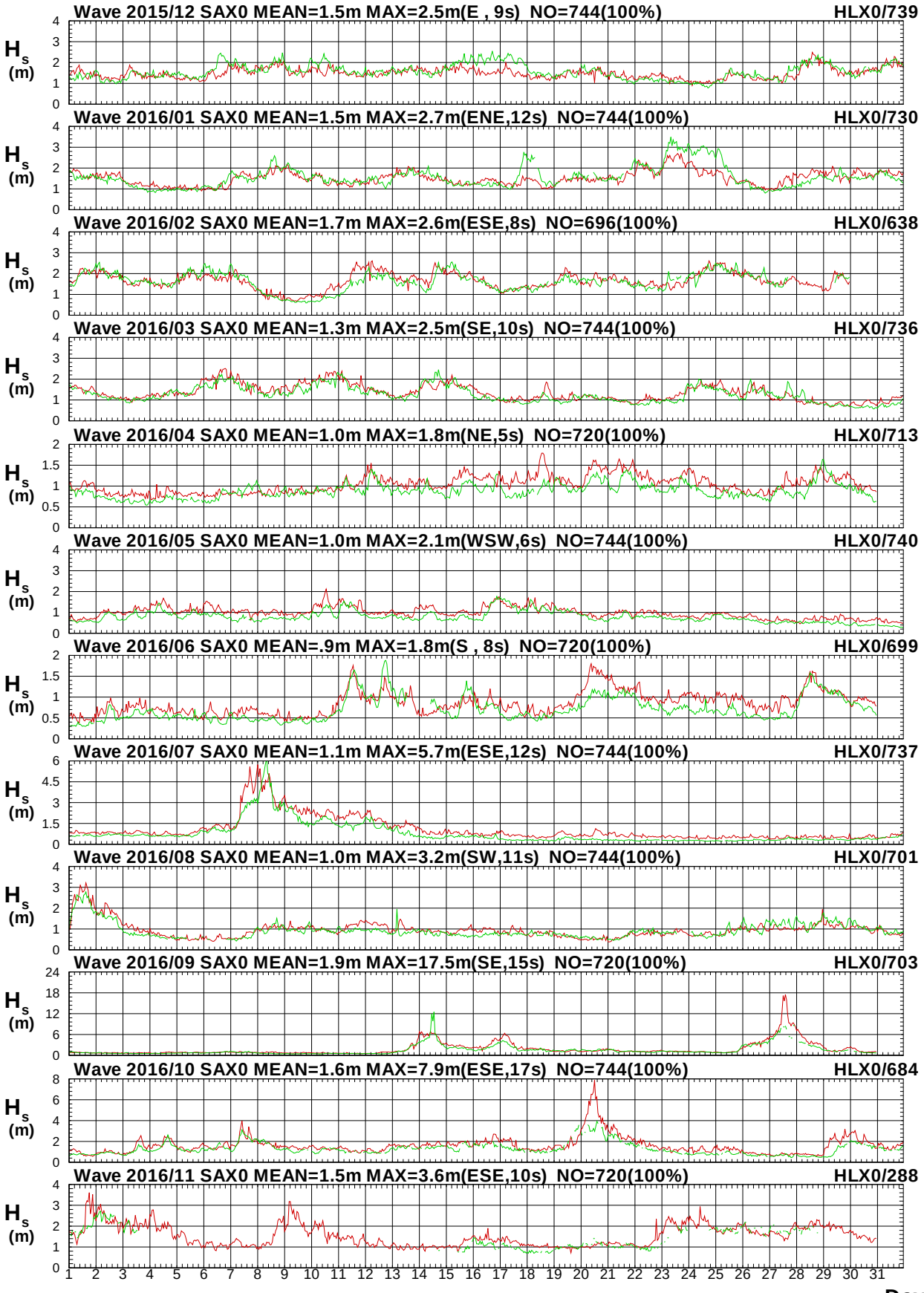

圖 3.4a　2016年每月宜蘭海域 X 站與花蓮海域 X 站波高圖

V15CSAX0.1HA V15CHLX0.1H0 V161SAX0.1HA V161HLX0.1H0 V162SAX0.1HA V162HLX0.1H0
V163SAX0.1HA V163HLX0.1H0 V164SAX0.1HA V164HLX0.1H0 V165SAX0.1HA V165HLX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

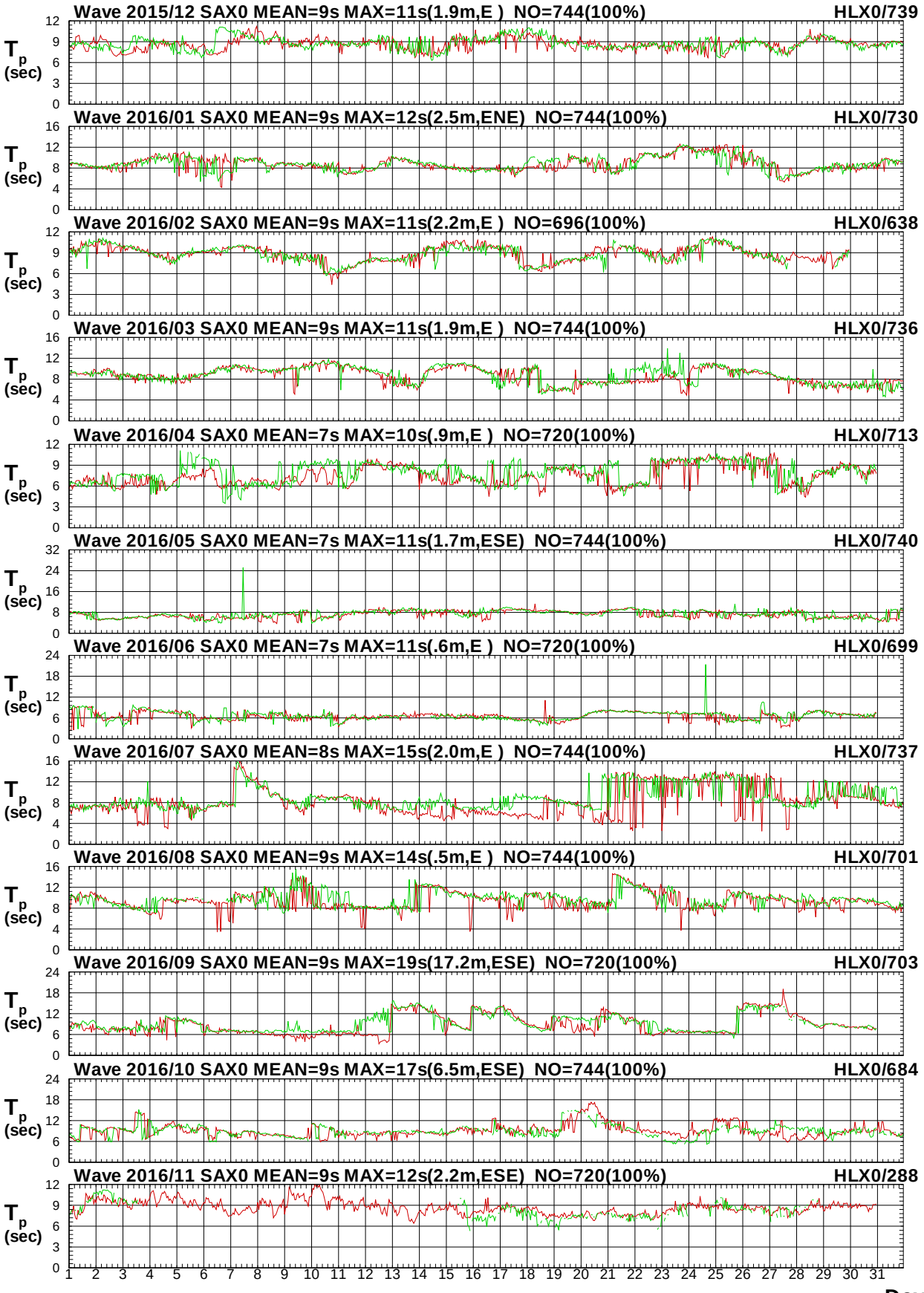

圖 3.4b　2016年每月宜蘭海域 X 站與花蓮海域 X 站週期圖

V15CSAX0.1HA V15CHLX0.1H0 V161SAX0.1HA V161HLX0.1H0 V162SAX0.1HA V162HLX0.1H0
V163SAX0.1HA V163HLX0.1H0 V164SAX0.1HA V164HLX0.1H0 V165SAX0.1HA V165HLX0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

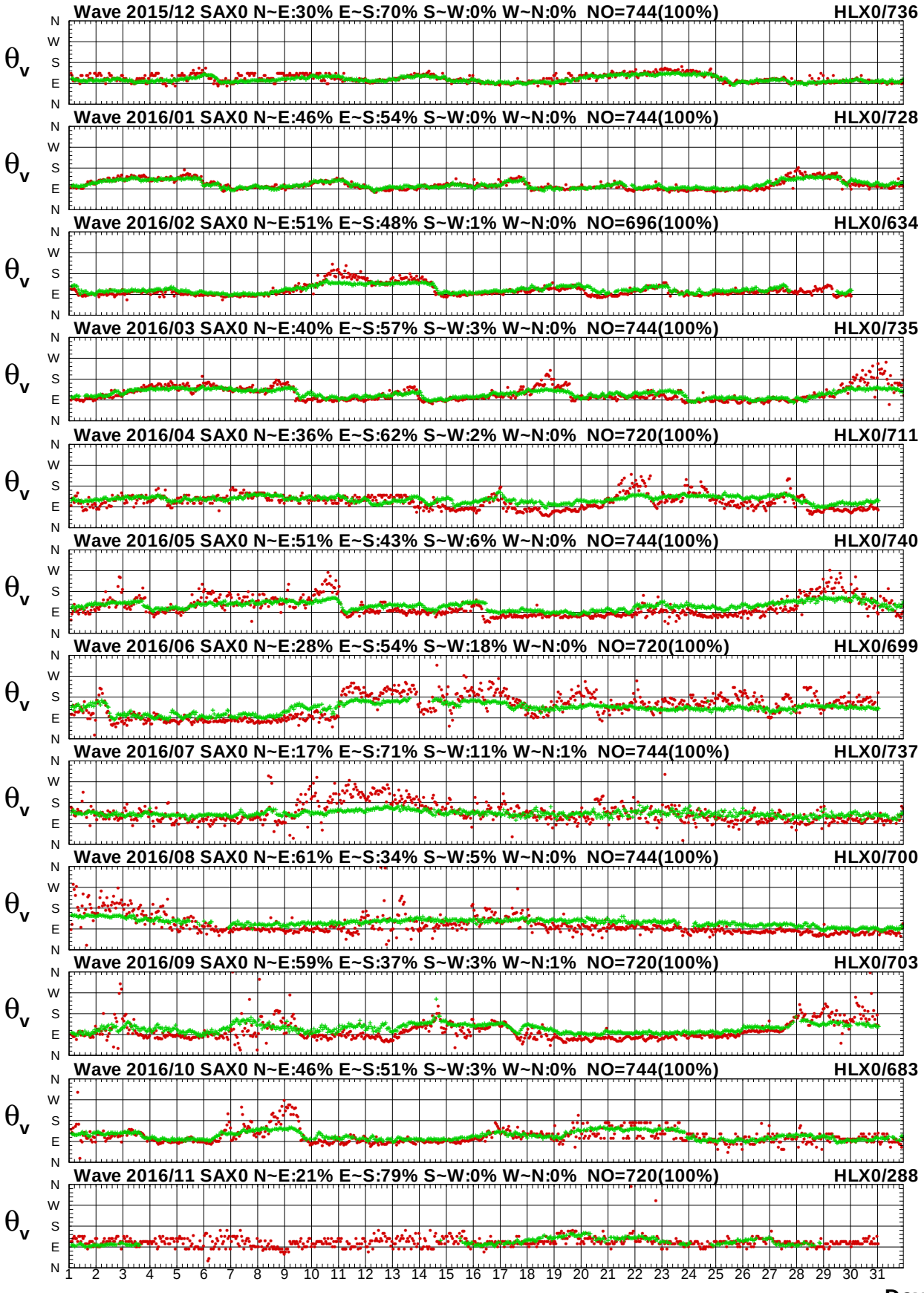

圖 3.4c　2016年每月宜蘭海域 X 站與花蓮海域 X 站波向圖

Wave H_s in Yi-Lan Seas of SAX0 at 2016

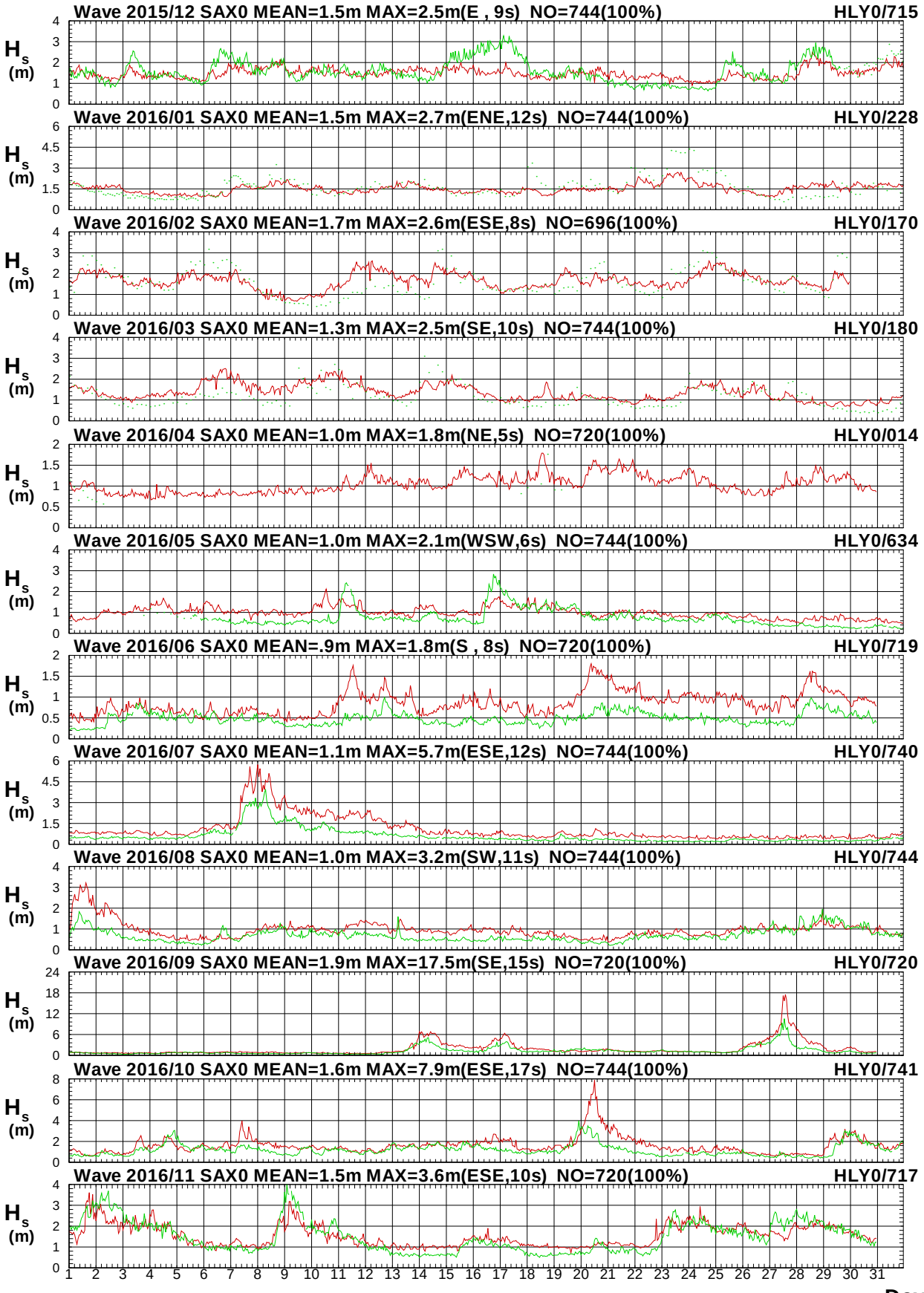

圖3.5a　2016年每月宜蘭海域 X 站與花蓮海域 Y 站波高圖

V15CSAX0.1HA V15CHLY0.1H0 V161SAX0.1HA V161HLY0.1H0 V162SAX0.1HA V162HLY0.1H0
V163SAX0.1HA V163HLY0.1H0 V164SAX0.1HA V164HLY0.1H0 V165SAX0.1HA V165HLY0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

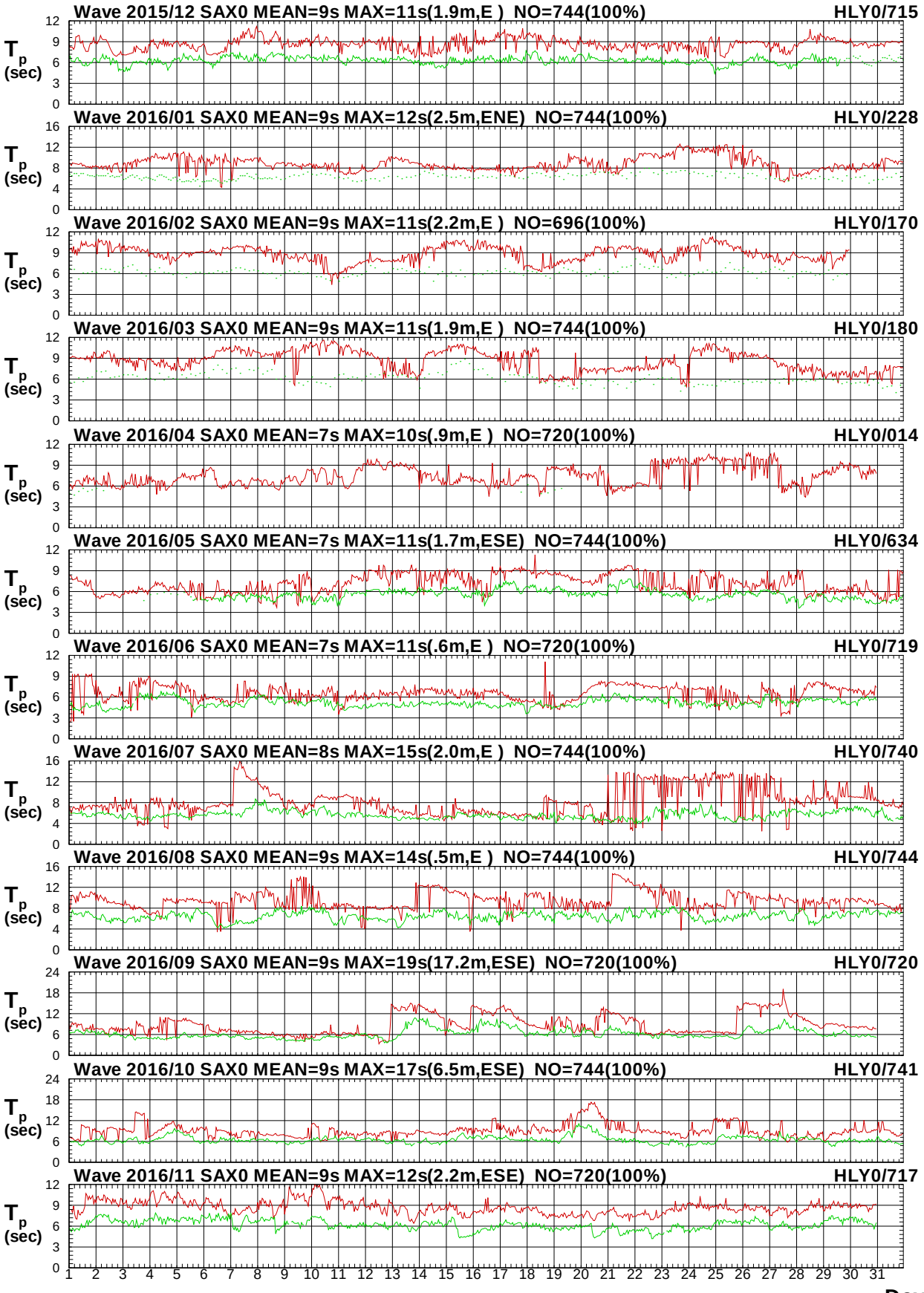

圖 3.5b　2016年每月宜蘭海域 X 站與花蓮海域 Y 站週期圖

V15CSAX0.1HA V15CHLY0.1H0 V161SAX0.1HA V161HLY0.1H0 V162SAX0.1HA V162HLY0.1H0
V163SAX0.1HA V163HLY0.1H0 V164SAX0.1HA V164HLY0.1H0 V165SAX0.1HA V165HLY0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

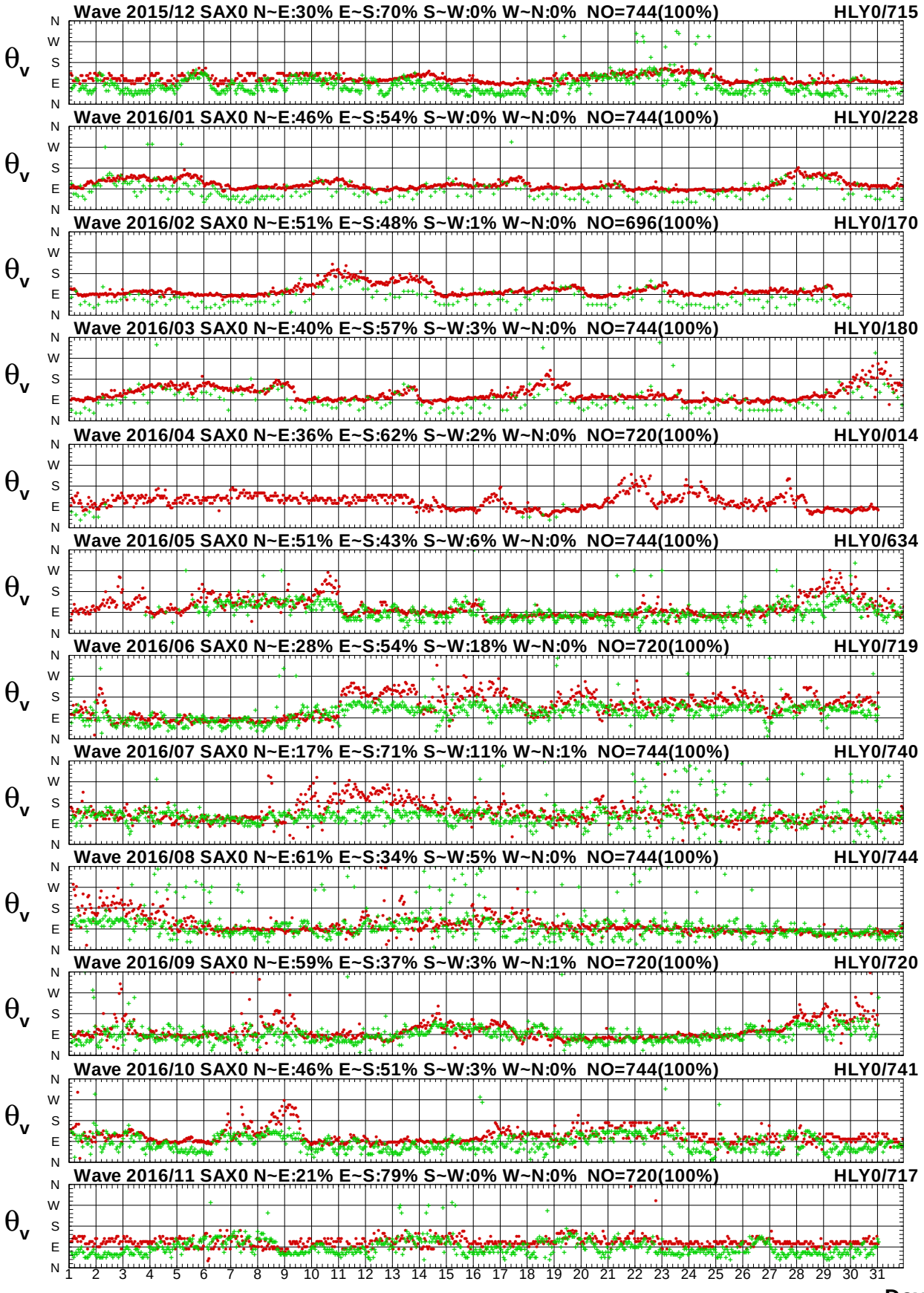

圖 3.5c　2016年每月宜蘭海域 X 站與花蓮海域 Y 站波向圖

Wave H_s in Yi-Lan Seas of SAX0 at 2016

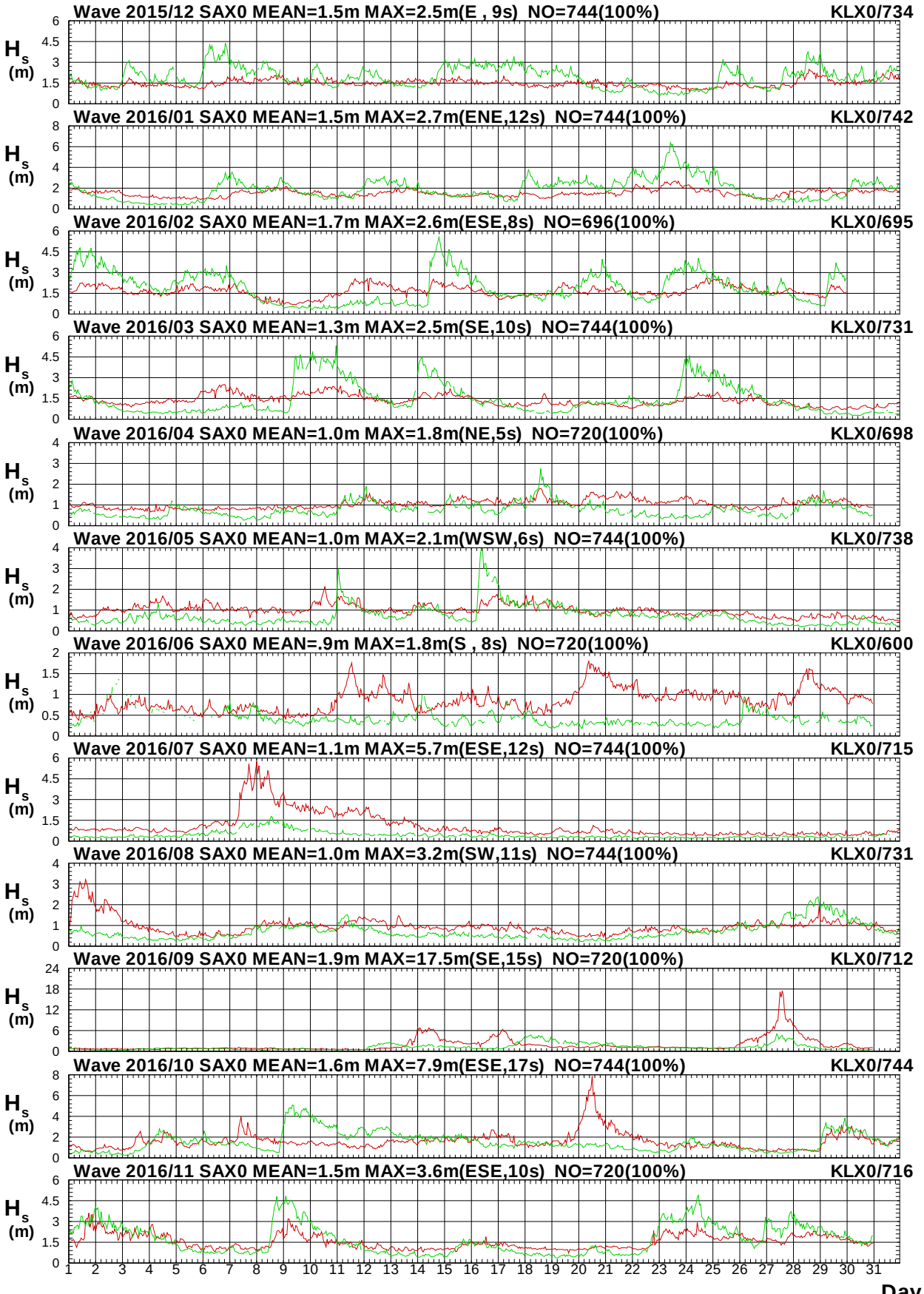

圖 3.6a　2016年每月宜蘭海域 X 站與北端海域 X 站波高圖

V15CSAX0.1HA V15CKLX0.1H0 V161SAX0.1HA V161KLX0.1H0 V162SAX0.1HA V162KLX0.1H0
V163SAX0.1HA V163KLX0.1H0 V164SAX0.1HA V164KLX0.1H0 V165SAX0.1HA V165KLX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

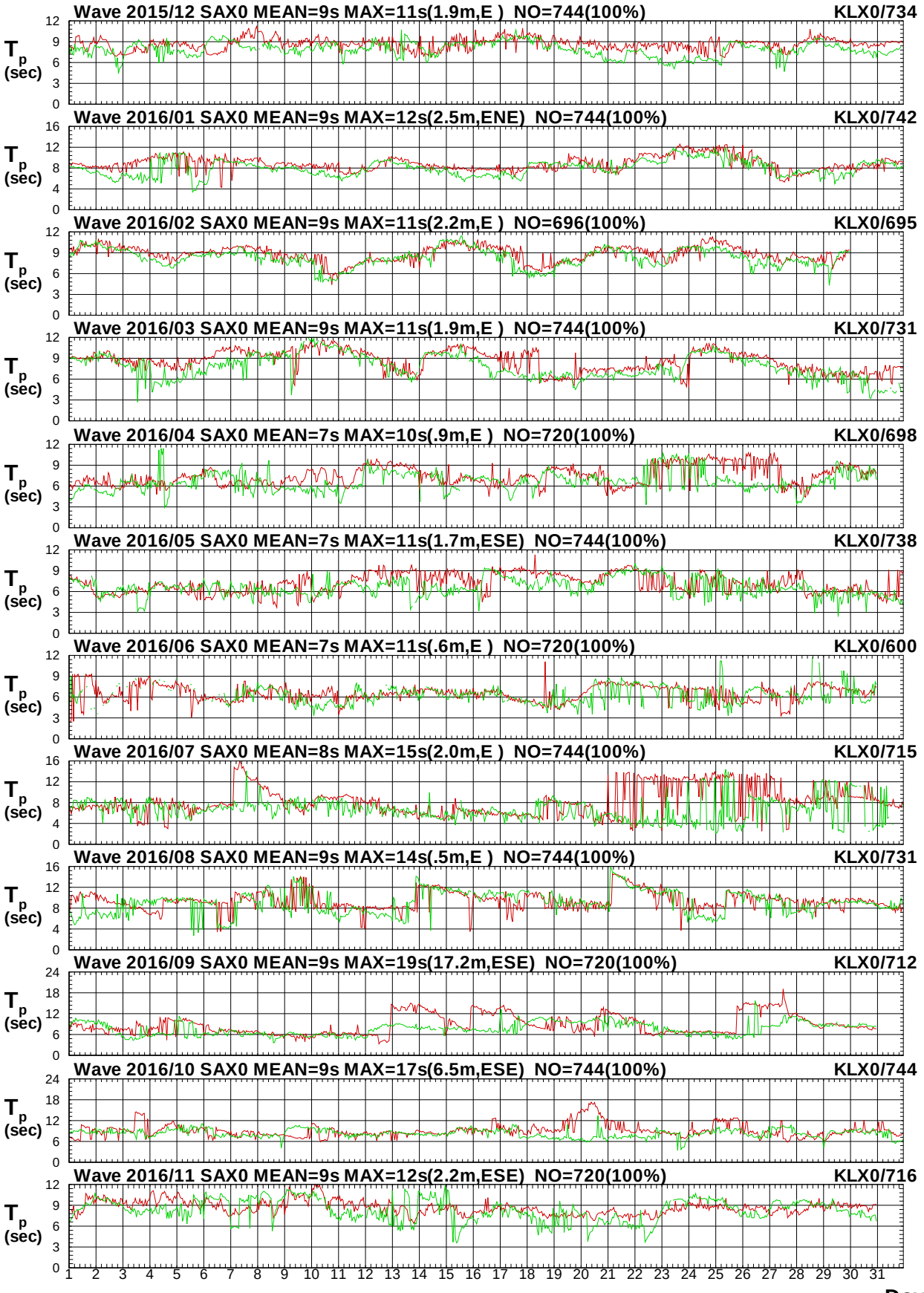

圖 3.6b　2016年每月宜蘭海域 X 站與北端海域 X 站週期圖

V15CSAX0.1HA V15CKLX0.1H0 V161SAX0.1HA V161KLX0.1H0 V162SAX0.1HA V162KLX0.1H0
V163SAX0.1HA V163KLX0.1H0 V164SAX0.1HA V164KLX0.1H0 V165SAX0.1HA V165KLX0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

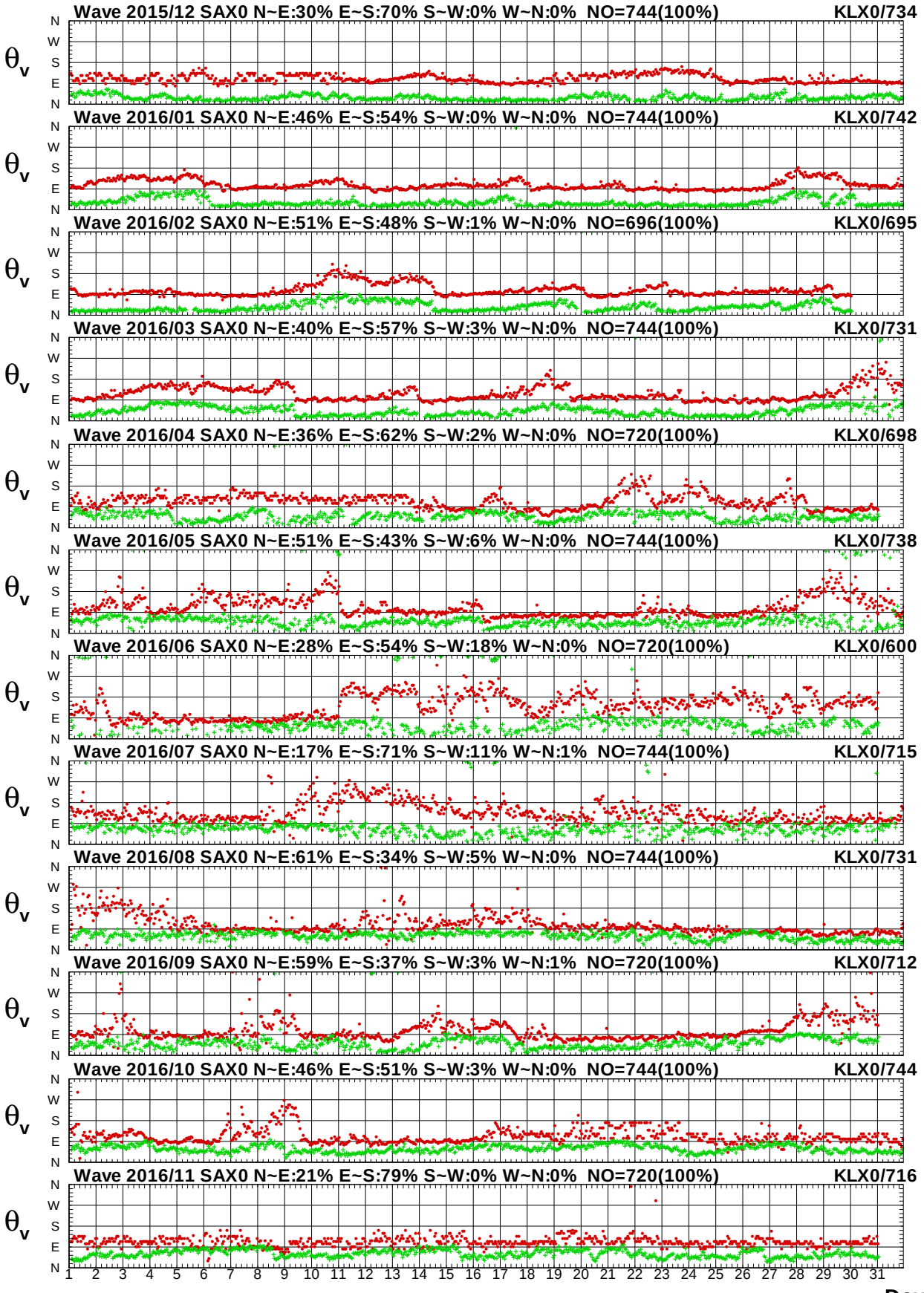

圖 3.6c　2016年每月宜蘭海域 X 站與北端海域 X 站波向圖

Wave H_s in Yi-Lan Seas of SAX0 at 2016

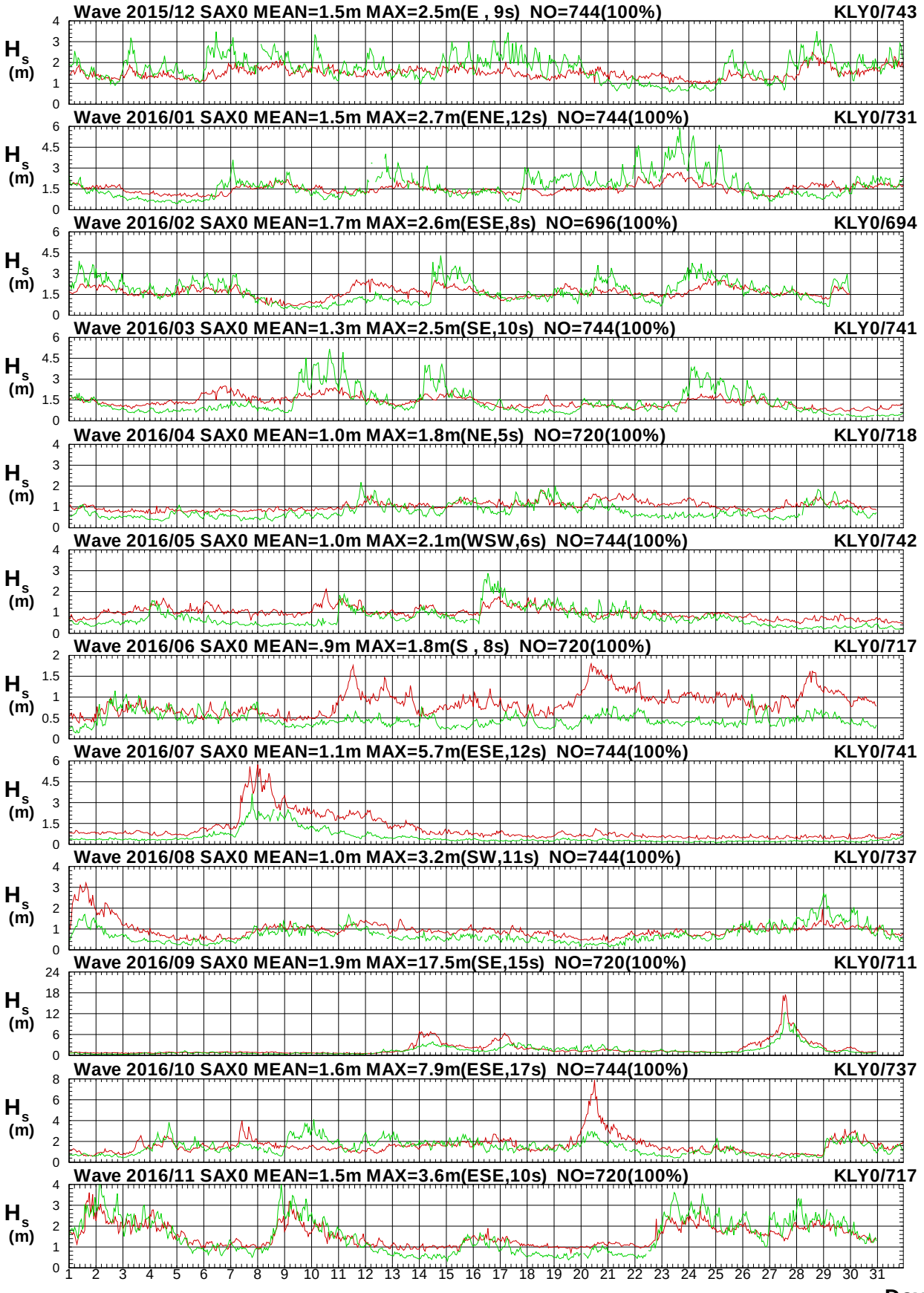

圖3.7a　2016年每月宜蘭海域 X 站與北端海域 Y 站波高圖

V15CSAX0.1HA V15CKLY0.1H0 V161SAX0.1HA V161KLY0.1H0 V162SAX0.1HA V162KLY0.1H0
V163SAX0.1HA V163KLY0.1H0 V164SAX0.1HA V164KLY0.1H0 V165SAX0.1HA V165KLY0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

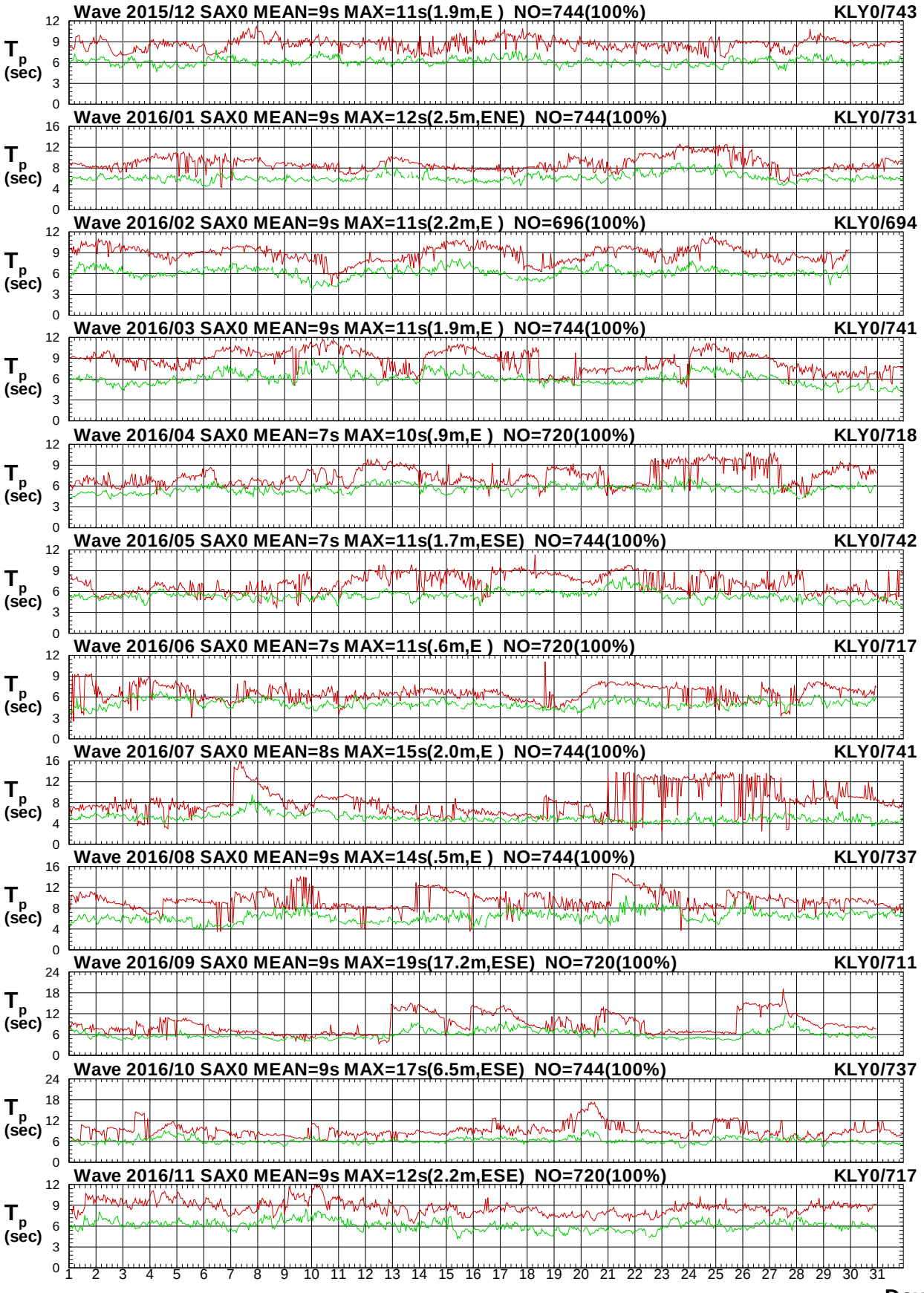

圖 3.7b　2016年每月宜蘭海域 X 站與北端海域 Y 站週期圖

V15CSAX0.1HA V15CKLY0.1H0 V161SAX0.1HA V161KLY0.1H0 V162SAX0.1HA V162KLY0.1H0
V163SAX0.1HA V163KLY0.1H0 V164SAX0.1HA V164KLY0.1H0 V165SAX0.1HA V165KLY0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

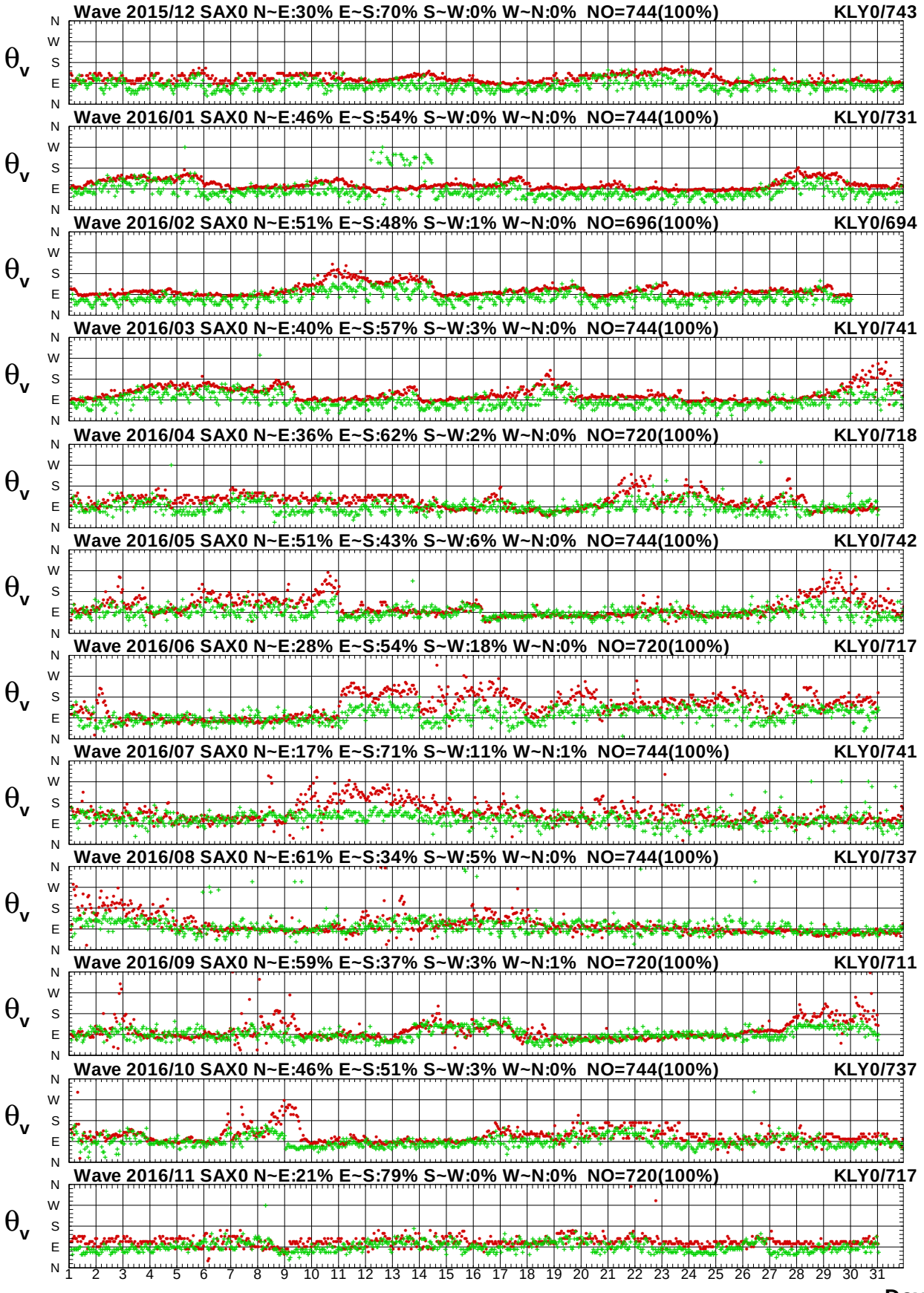

圖 3.7c　2016年每月宜蘭海域 X 站與北端海域 Y 站波向圖

V15CSAX0.1HA V15CKLY0.1H0 V161SAX0.1HA V161KLY0.1H0 V162SAX0.1HA V162KLY0.1H0
V163SAX0.1HA V163KLY0.1H0 V164SAX0.1HA V164KLY0.1H0 V165SAX0.1HA V165KLY0.1H0

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Wave H_s in Yi-Lan Seas of SAX0 at 2016

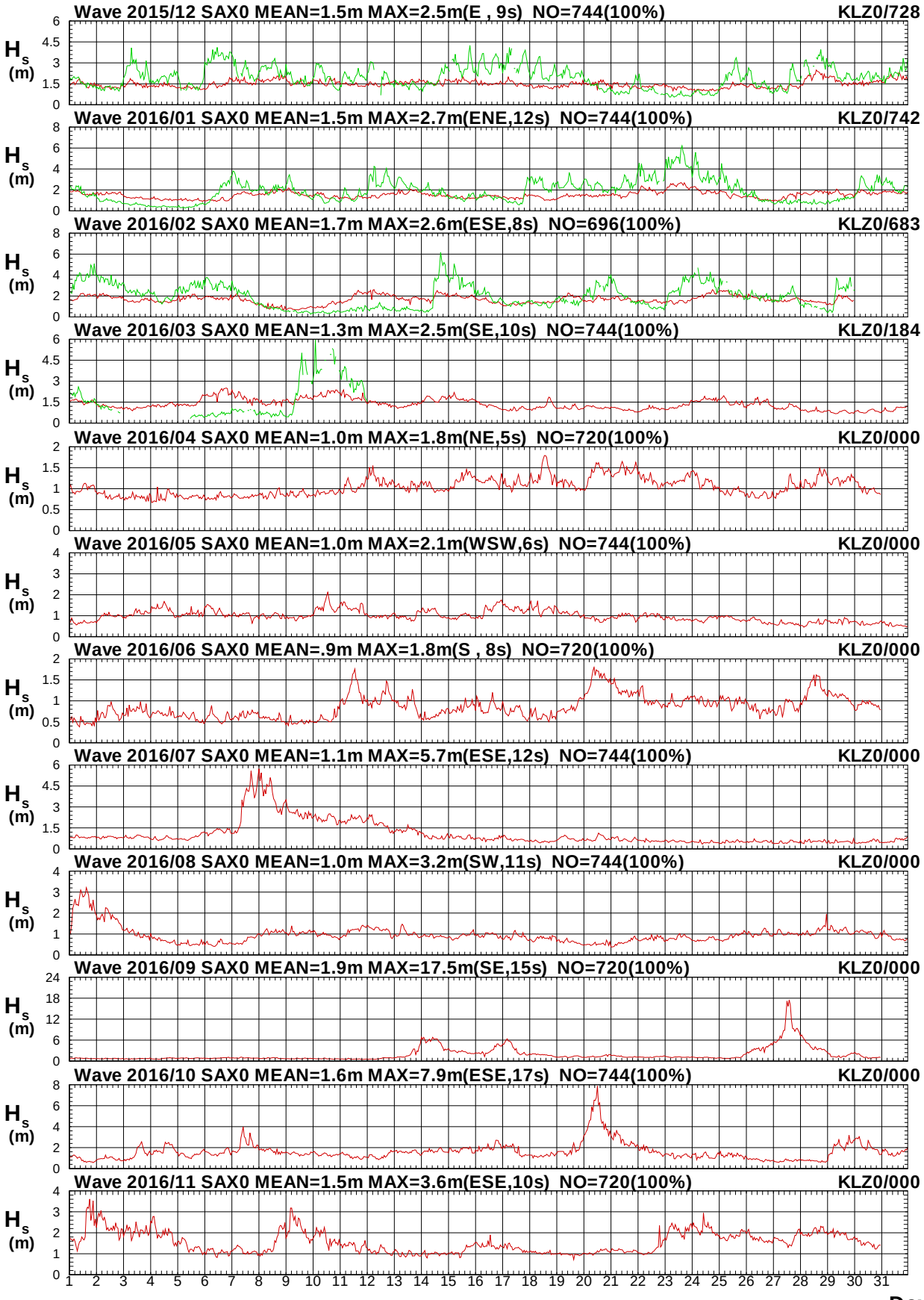

圖 3.8a　2016年每月宜蘭海域 X 站與北端海域 Z 站波高圖

V15CSAX0.1HA V15CKLZ0.1H0 V161SAX0.1HA V161KLZ0.1H0 V162SAX0.1HA V162KLZ0.1H0
V163SAX0.1HA V163KLZ0.1H0 V164SAX0.1HA V164KLZ0.1H0 V165SAX0.1HA V165KLZ0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

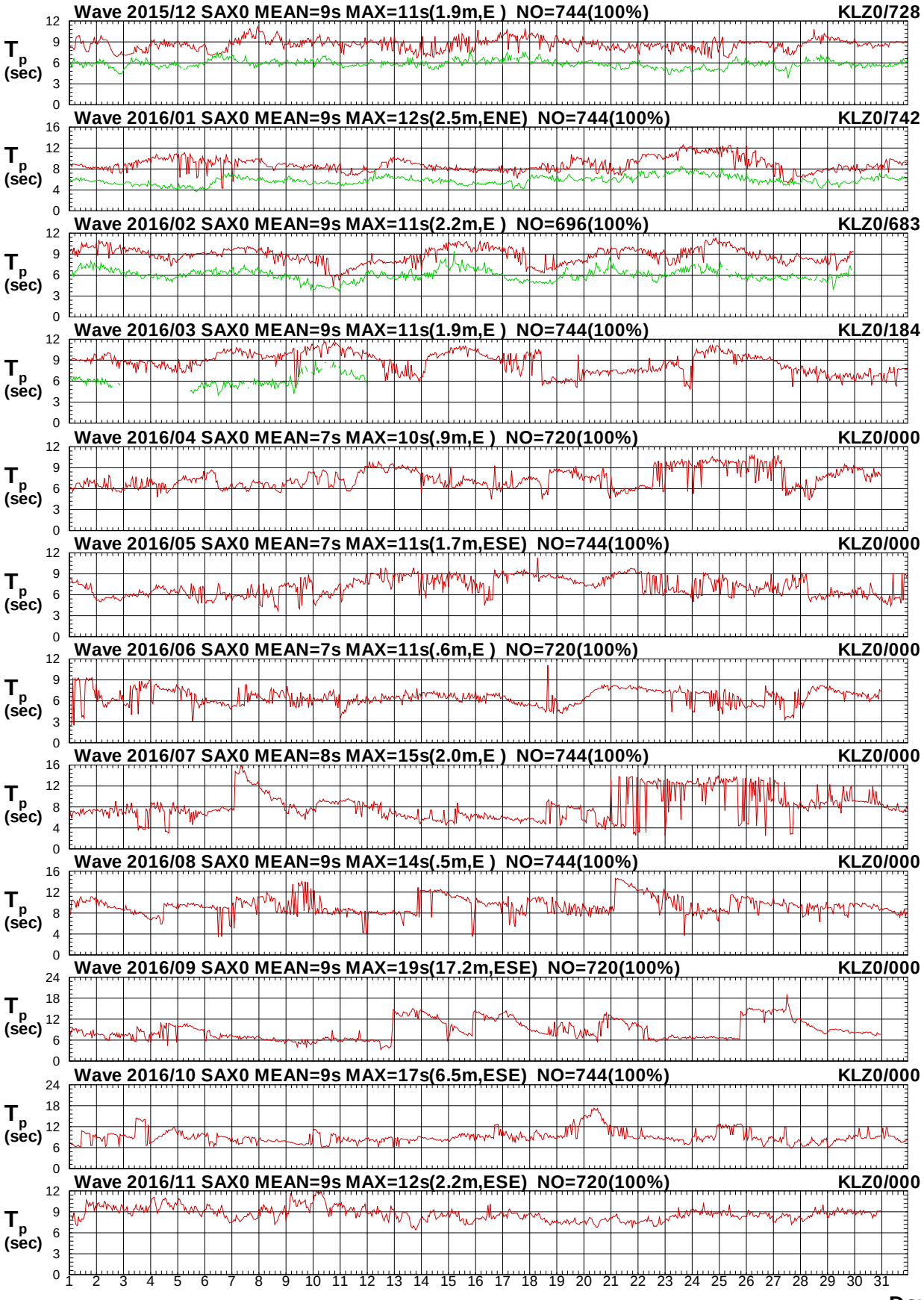

圖 3.8b　2016年每月宜蘭海域 X 站與北端海域 Z 站週期圖

V15CSAX0.1HA V15CKLZ0.1H0 V161SAX0.1HA V161KLZ0.1H0 V162SAX0.1HA V162KLZ0.1H0
V163SAX0.1HA V163KLZ0.1H0 V164SAX0.1HA V164KLZ0.1H0 V165SAX0.1HA V165KLZ0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

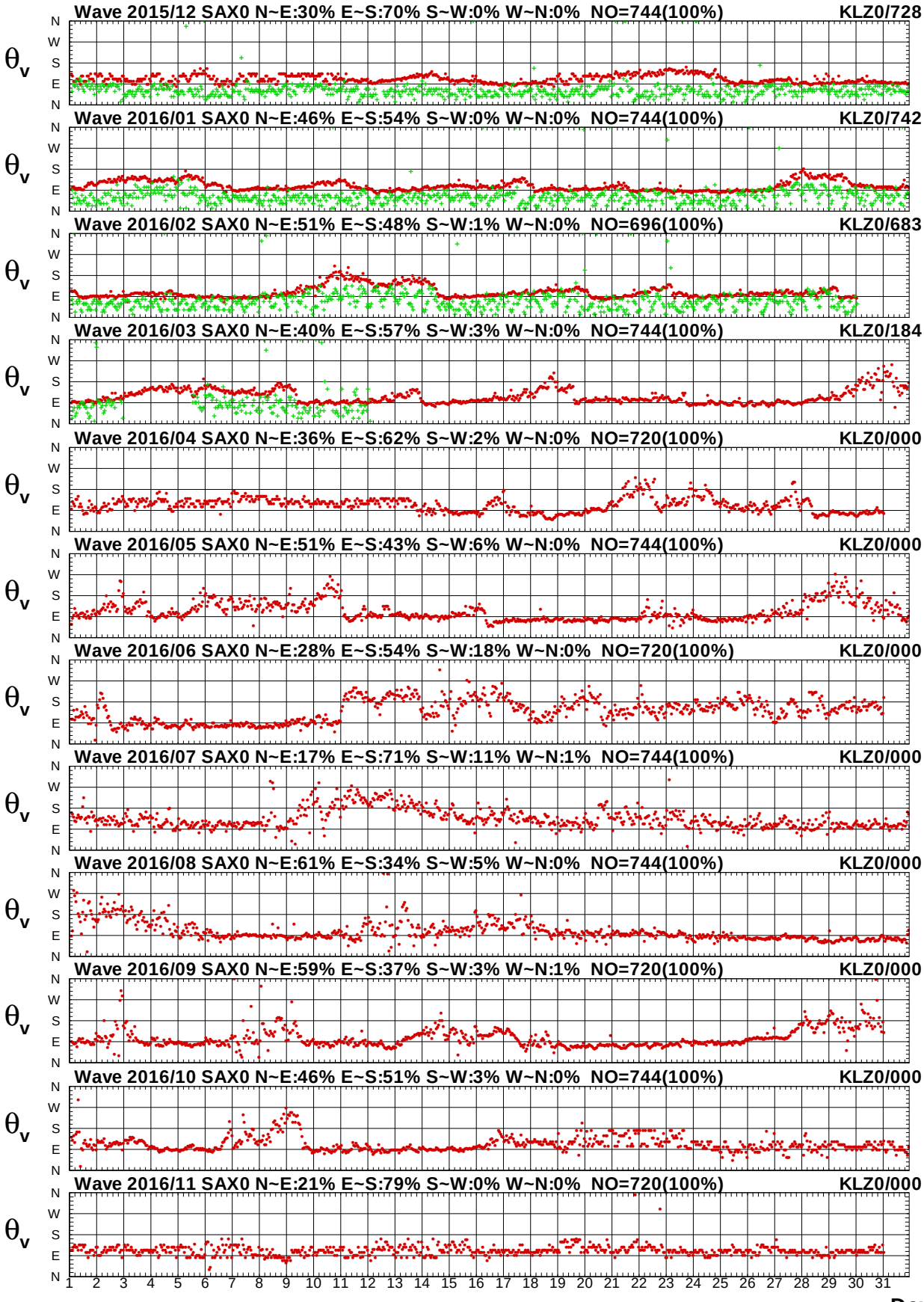

圖3.8c　2016年每月宜蘭海域 X 站與北端海域 Z 站波向圖

V15CSAX0.1HA V15CKLZ0.1H0 V161SAX0.1HA V161KLZ0.1H0 V162SAX0.1HA V162KLZ0.1H0
V163SAX0.1HA V163KLZ0.1H0 V164SAX0.1HA V164KLZ0.1H0 V165SAX0.1HA V165KLZ0.1H0

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Wave H_s in Yi-Lan Seas of SAX0 at 2016

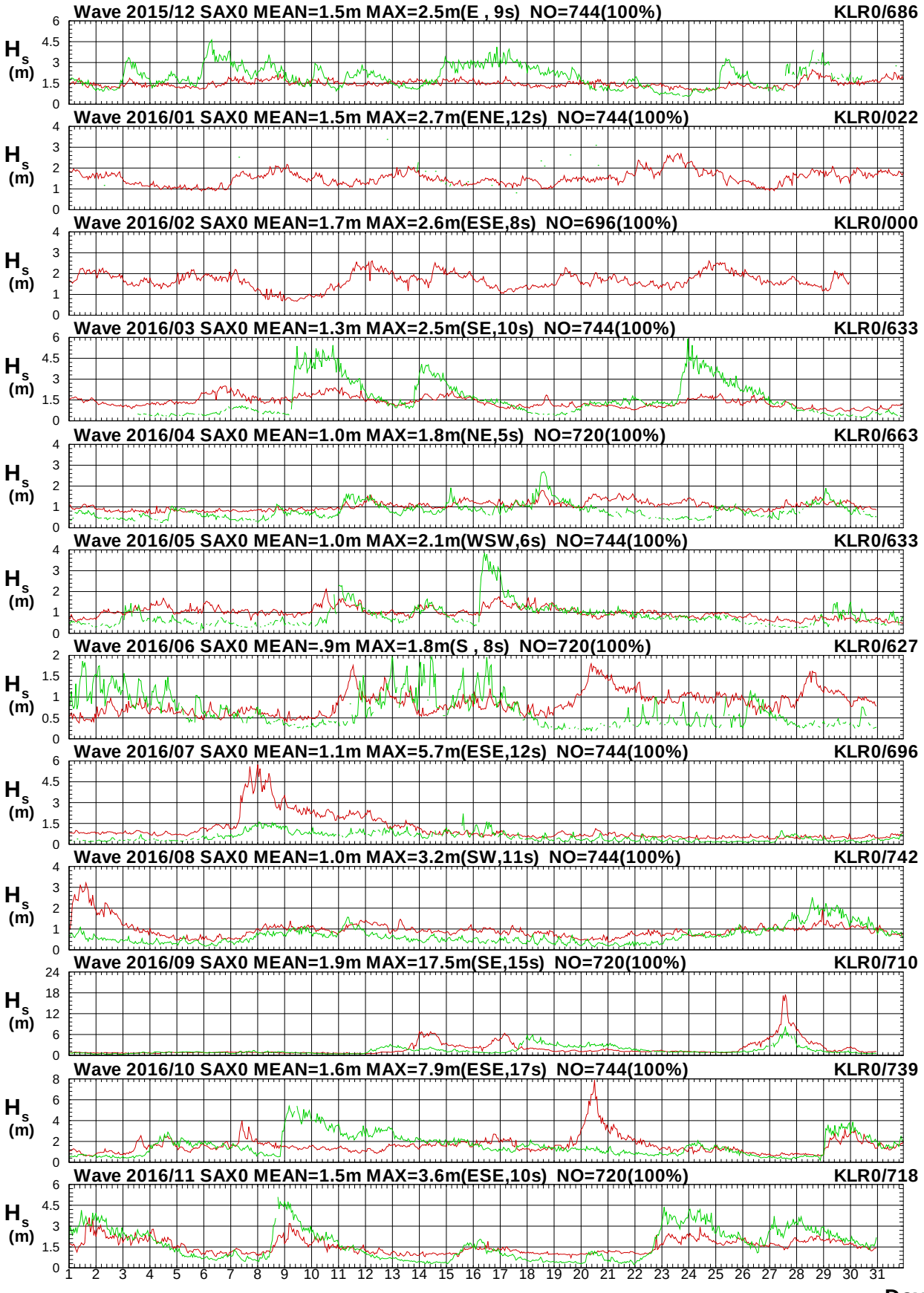

圖 3.9a　2016年每月宜蘭海域 X 站與北端海域 R 站波高圖

V15CSAX0.1HA V15CKLR0.1H0 V161SAX0.1HA V161KLR0.1H0 V162SAX0.1HA V162KLR0.1H0
V163SAX0.1HA V163KLR0.1H0 V164SAX0.1HA V164KLR0.1H0 V165SAX0.1HA V165KLR0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2016

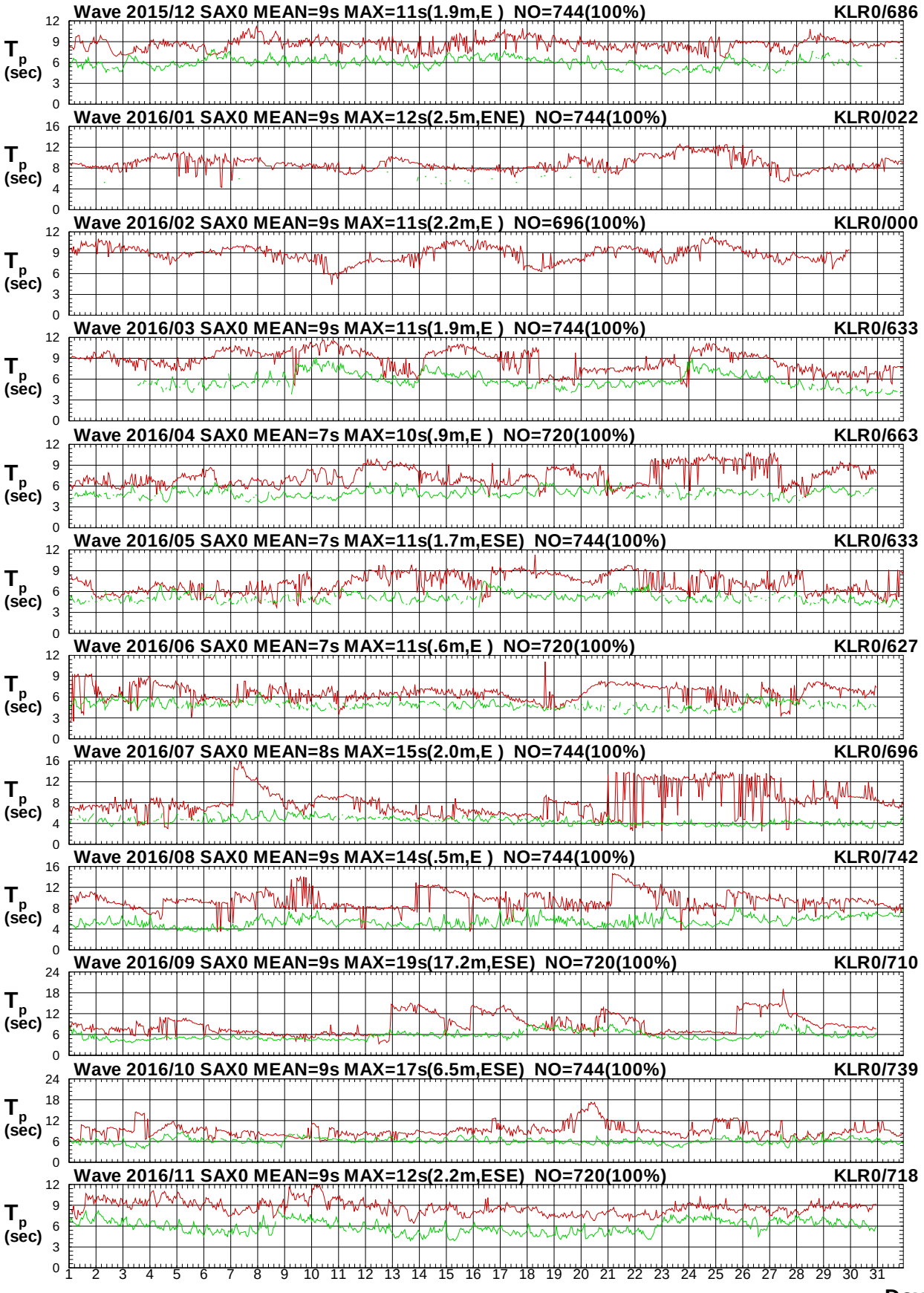

圖 3.9b　2016年每月宜蘭海域 X 站與北端海域 R 站週期圖

V15CSAX0.1HA V15CKLR0.1H0 V161SAX0.1HA V161KLR0.1H0 V162SAX0.1HA V162KLR0.1H0
V163SAX0.1HA V163KLR0.1H0 V164SAX0.1HA V164KLR0.1H0 V165SAX0.1HA V165KLR0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2016

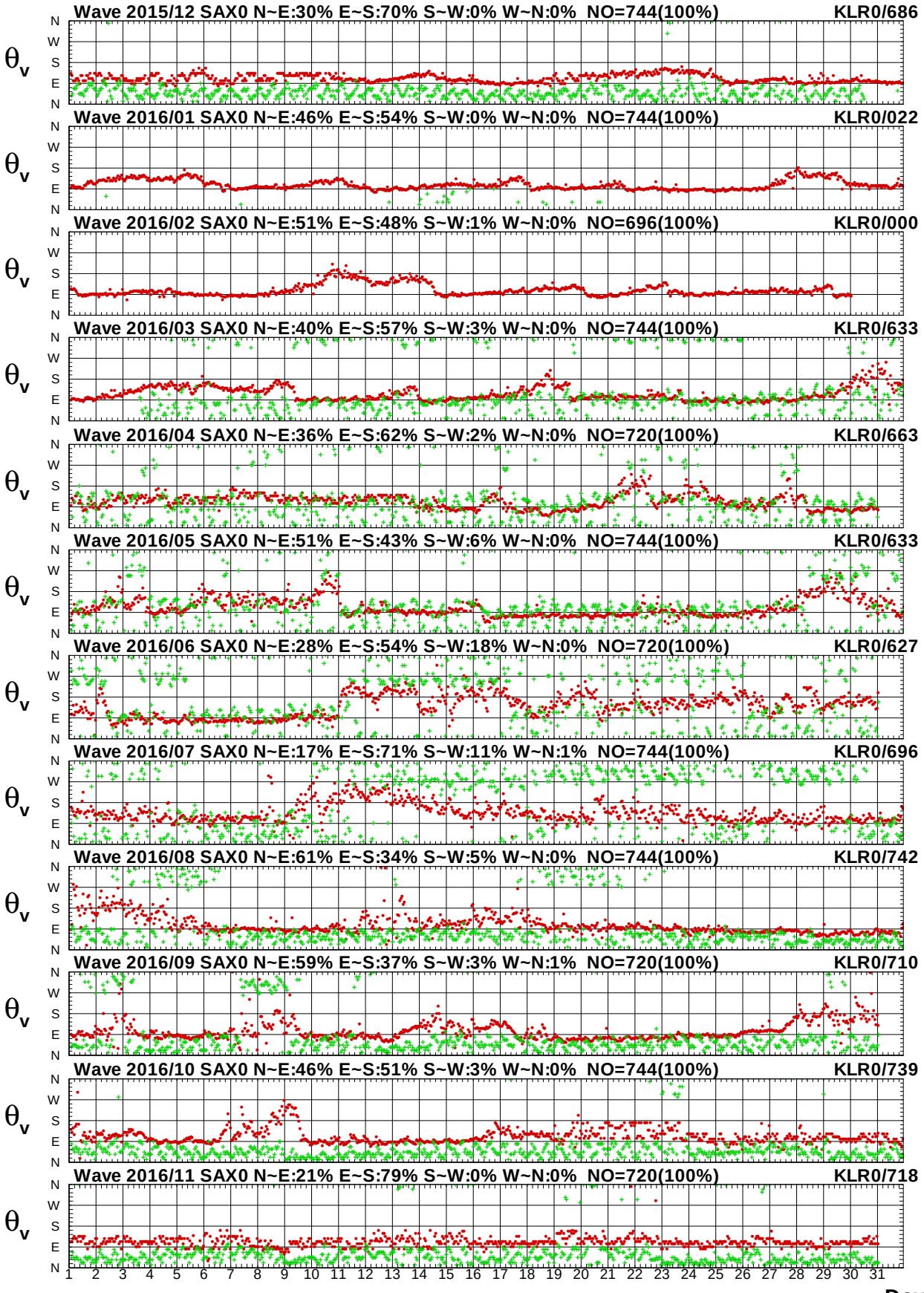

圖 3.9c　2016年每月宜蘭海域 X 站與北端海域 R 站波向圖

V15CSAX0.1HA V15CKLR0.1H0 V161SAX0.1HA V161KLR0.1H0 V162SAX0.1HA V162KLR0.1H0
V163SAX0.1HA V163KLR0.1H0 V164SAX0.1HA V164KLR0.1H0 V165SAX0.1HA V165KLR0.1H0

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第四章　2016 年花蓮海域觀測波浪資料

花蓮海域波浪觀測本中心**(IHMT)**在花蓮港東防波堤往南延長 380 公尺水深 34 公尺處(稱**測站 X**)，於 2001 年 8 月安裝挪威 NORTEK 公司之剖面海流與表面波浪(波高、週期及波向)即時傳送監測系統(簡稱 AWCP)，如附圖 4。

測站 Y(七星潭外海浮標站)之波浪儀屬中央氣象局**(CWB)**所有。花蓮海域各測站歷年觀測波浪資料蒐集概況如表 4。

波浪觀測 AWCP 系統有兩個分離波高量測模式:一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **X 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 4.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 4.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 4.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 4.2 以後。

表 4 花蓮海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	23°58'00"N	121°37'34"E	2000/09-2016/11(觀測中)	港研中心	花蓮港東堤外海
Y	24°01'58"	121°37'50"E	1997/07-2016/11(觀測中)	中央氣象局	花蓮浮標站

花蓮海域

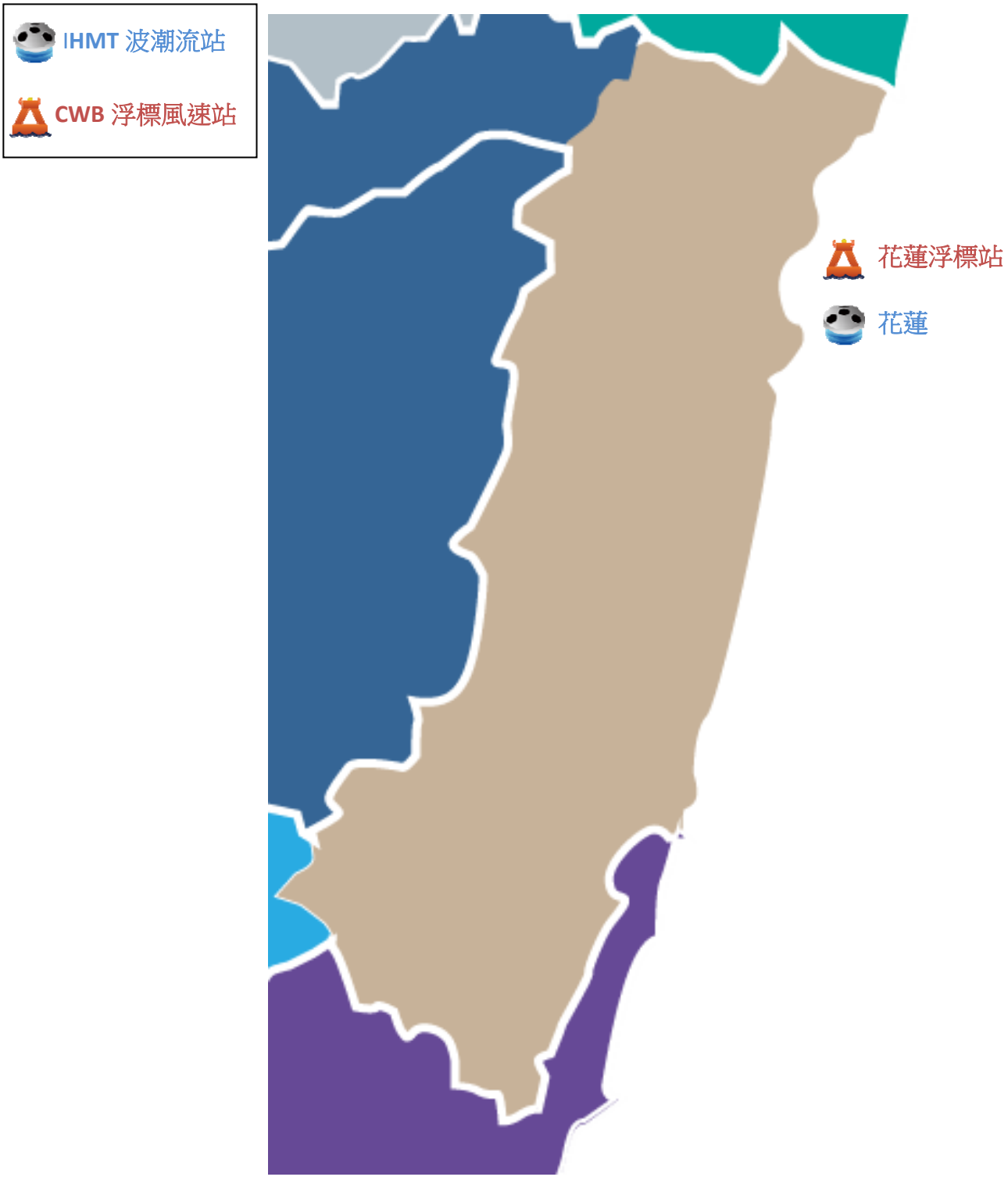

圖 4 花蓮海域波浪觀測站位置示意圖

表4.1a 2016年每月花蓮海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域
測站	X	Y						
2015/12月	739 (99.3%)	715 (96.1%)	*	*	*	*	*	*
2016/ 1月	730 (98.1%)	228 (30.6%)	*	*	*	*	*	*
2016/ 2月	638 (91.7%)	170 (24.4%)	*	*	*	*	*	*
2016/ 3月	736 (98.9%)	180 (24.2%)	*	*	*	*	*	*
2016/ 4月	713 (99.0%)	14 (1.9%)	*	*	*	*	*	*
2016/ 5月	740 (99.5%)	634 (85.2%)	*	*	*	*	*	*
2016/ 6月	699 (97.1%)	719 (99.9%)	*	*	*	*	*	*
2016/ 7月	737 (99.1%)	740 (99.5%)	*	*	*	*	*	*
2016/ 8月	701 (94.2%)	744 (100%)	*	*	*	*	*	*
2016/ 9月	703 (97.6%)	720 (100%)	*	*	*	*	*	*
2016/10月	684 (91.9%)	741 (99.6%)	*	*	*	*	*	*
2016/11月	288 (40.0%)	717 (99.6%)	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表4.1b 2016年每月花蓮海域修補後各測站波浪資料統計表

年/月 港區	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域	花蓮海域
測站	X	Y						
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Hua-Lien Seas of HLX0 at 2016

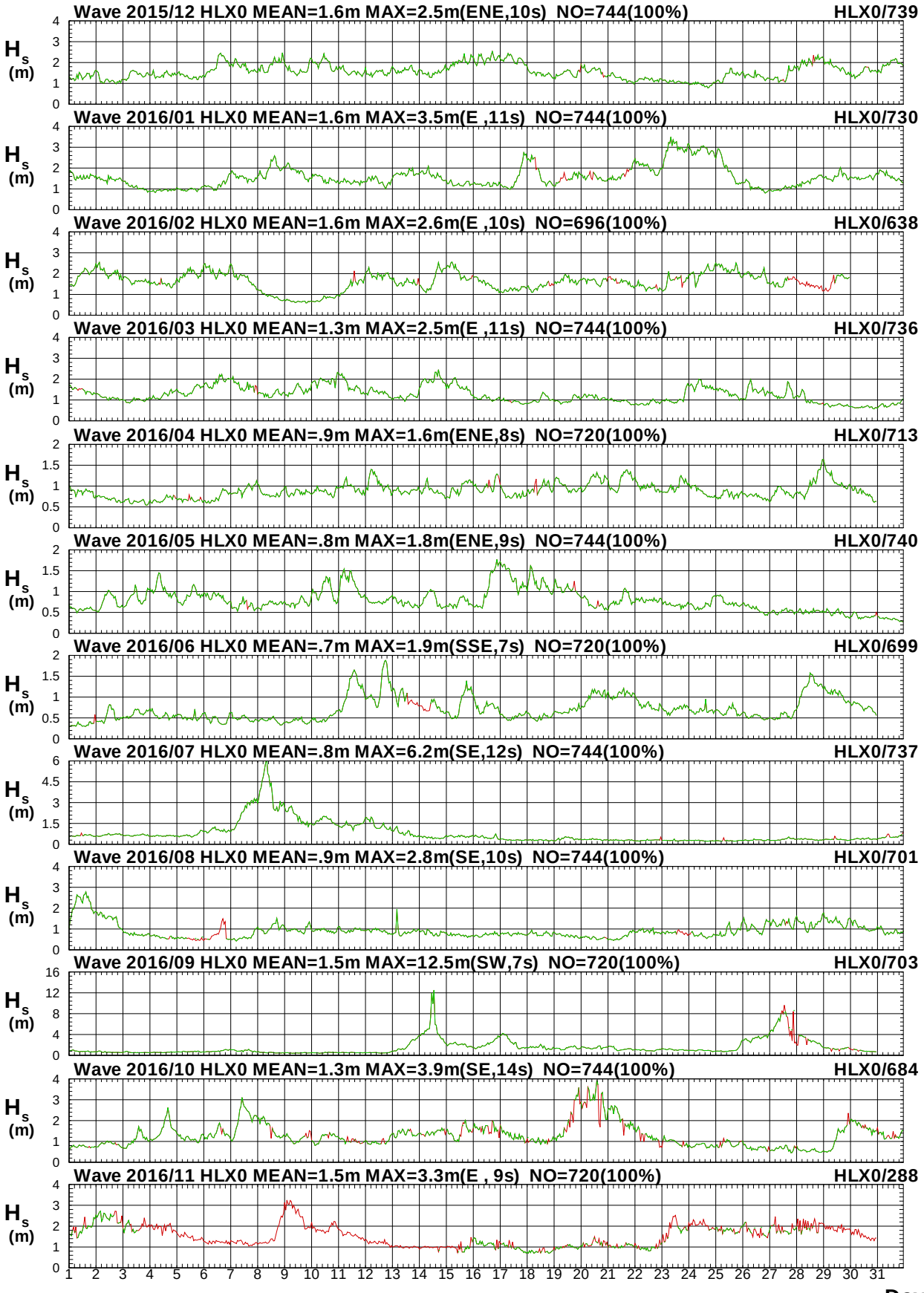

圖 4.1a　2016年每月花蓮海域 X 站修補前後之波高比較圖

V15CHLX0.1HA V15CHLX0.1H0 V161HLX0.1HA V161HLX0.1H0 V162HLX0.1HA V162HLX0.1H0
V163HLX0.1HA V163HLX0.1H0 V164HLX0.1HA V164HLX0.1H0 V165HLX0.1HA V165HLX0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2016

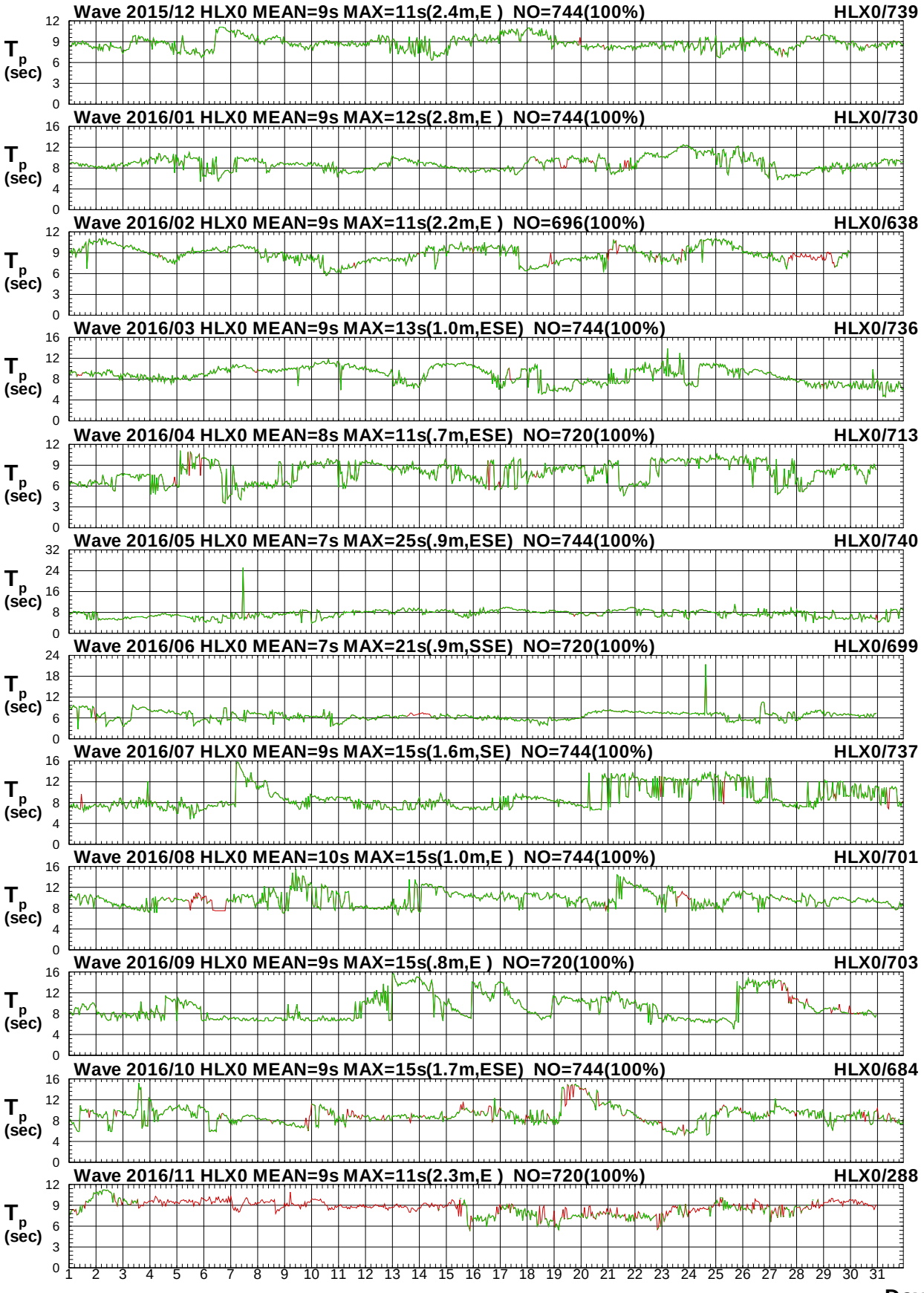

圖4.1b　2016年每月花蓮海域 X 站修補前後之週期比較圖

Wave Direction in Hua-Lien Seas of HLX0 at 2016

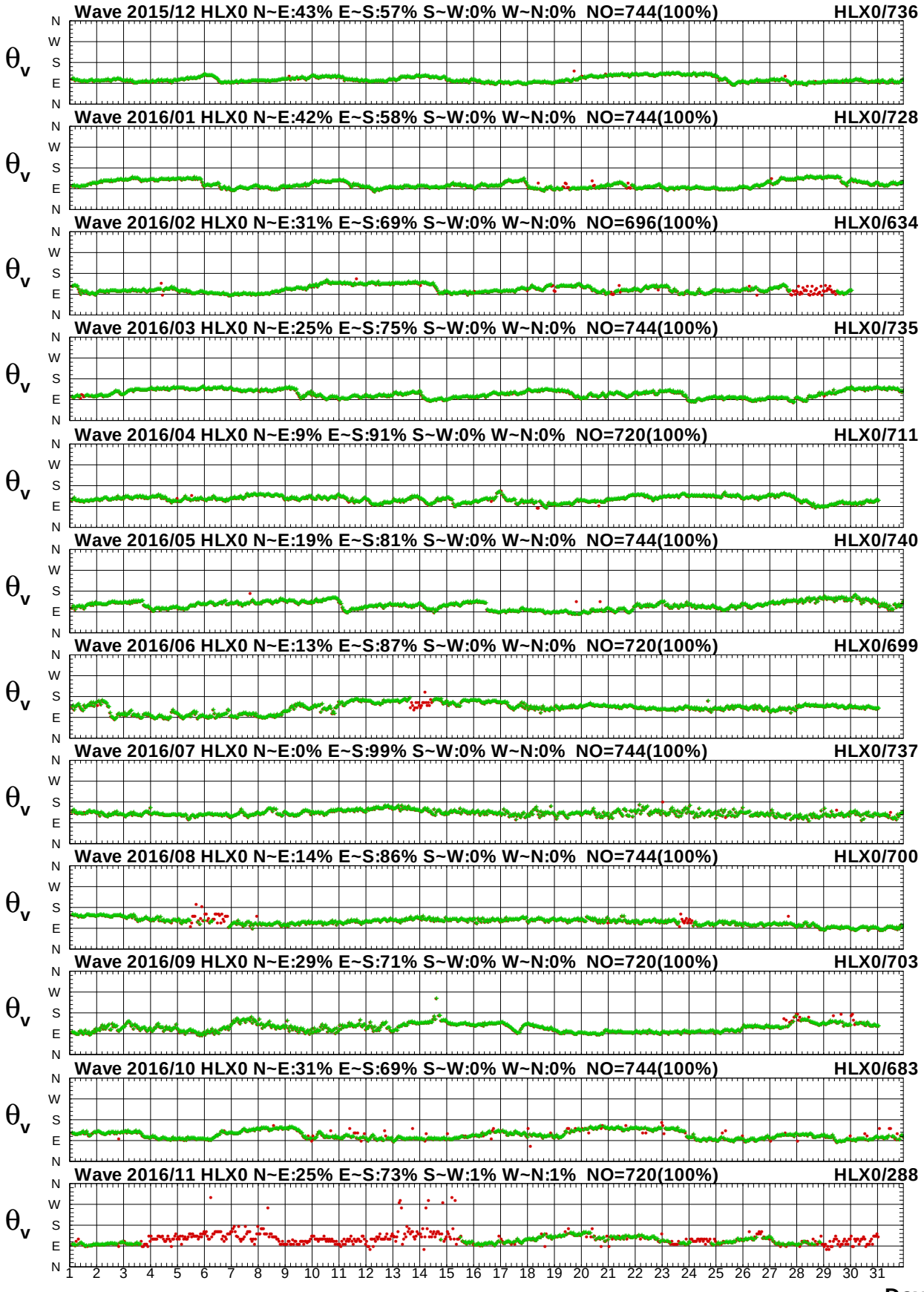

圖 4.1c　2016年每月花蓮海域 X 站修補前後之波向比較圖

Wave H_s in Hua-Lien Seas of HLX0 at 2016

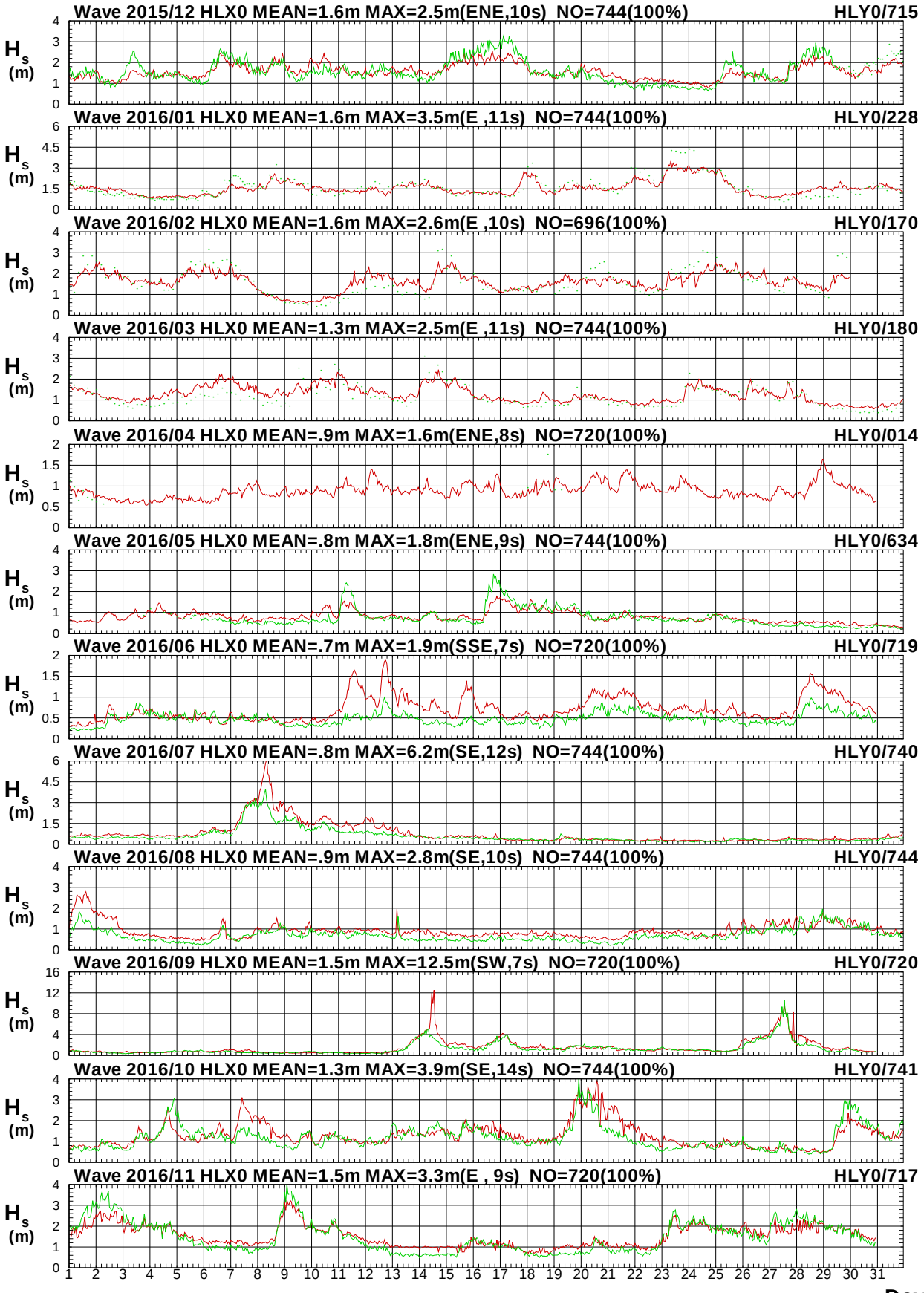

圖 4.2a　2016年每月花蓮海域 X 站與 Y 站波高比較圖

V15CHLX0.1HA V15CHLY0.1H0 V161HLX0.1HA V161HLY0.1H0 V162HLX0.1HA V162HLY0.1H0
V163HLX0.1HA V163HLY0.1H0 V164HLX0.1HA V164HLY0.1H0 V165HLX0.1HA V165HLY0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2016

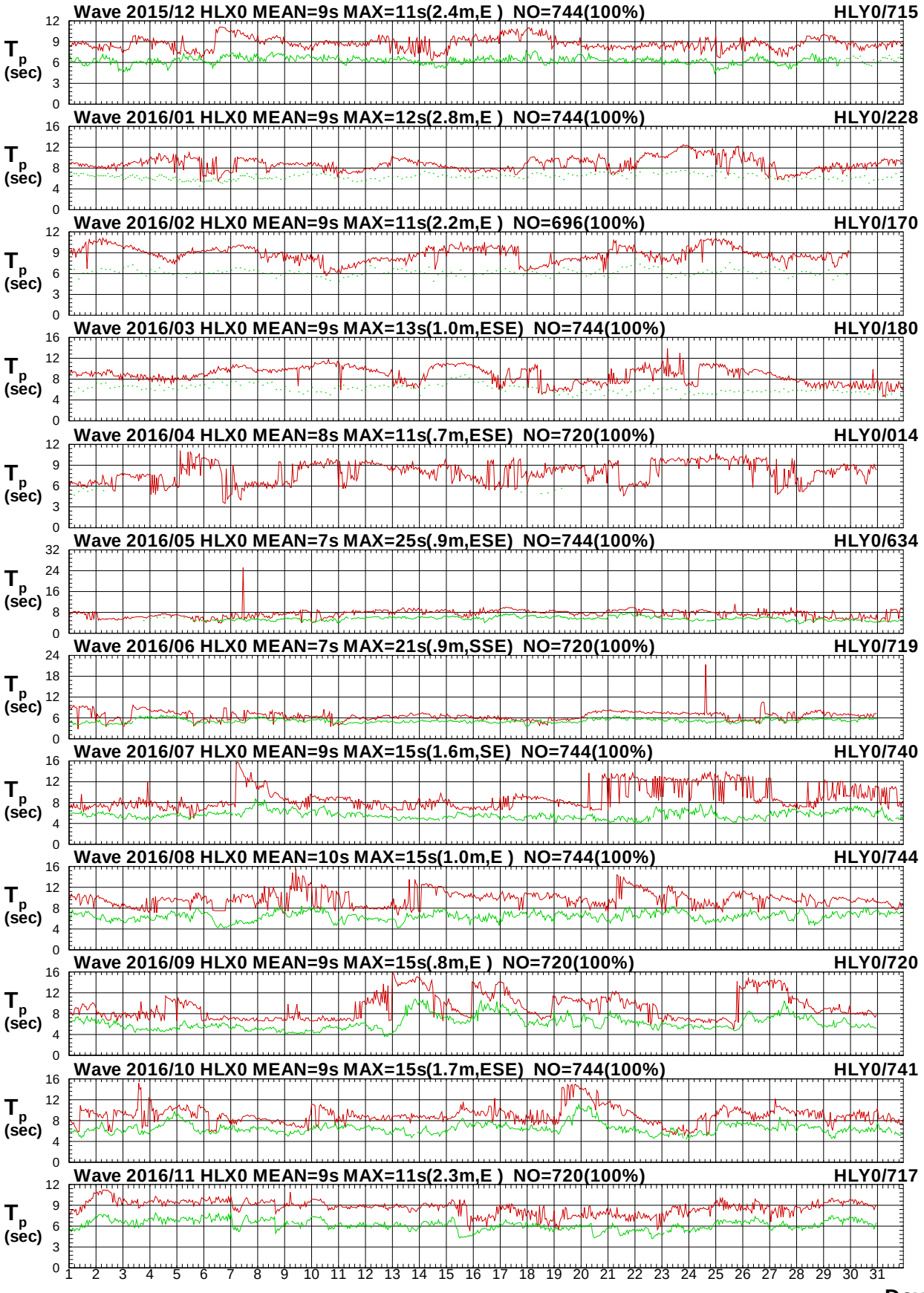

圖 4.2b　2016年每月花蓮海域 X 站與 Y 站週期比較圖

V15CHLX0.1HA V15CHLY0.1H0 V161HLX0.1HA V161HLY0.1H0 V162HLX0.1HA V162HLY0.1H0
V163HLX0.1HA V163HLY0.1H0 V164HLX0.1HA V164HLY0.1H0 V165HLX0.1HA V165HLY0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2016

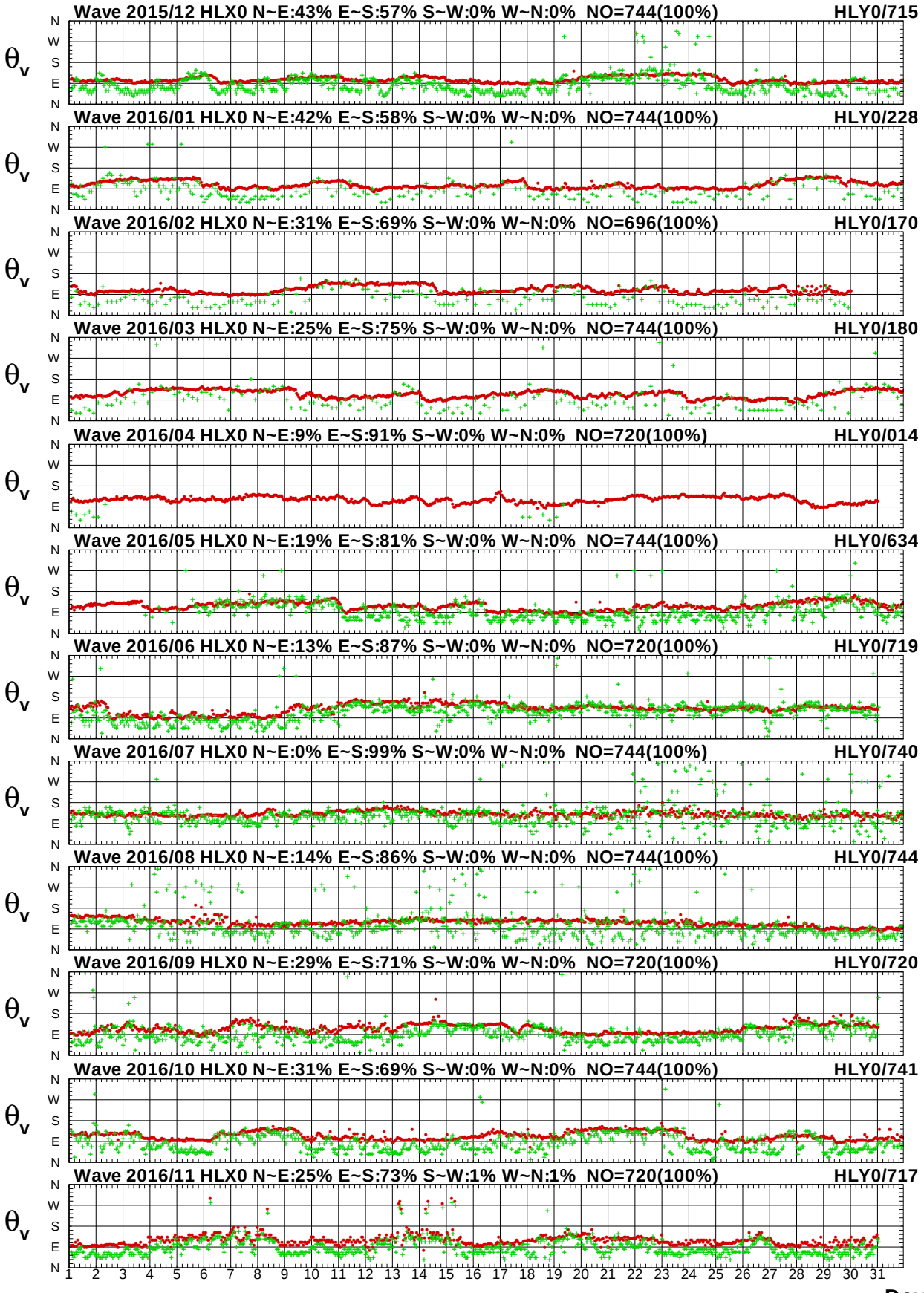

圖 4.2c　2016年每月花蓮海域 X 站與 Y 站波向比較圖

Wave H_s in Hua-Lien Seas of HLX0 at 2016

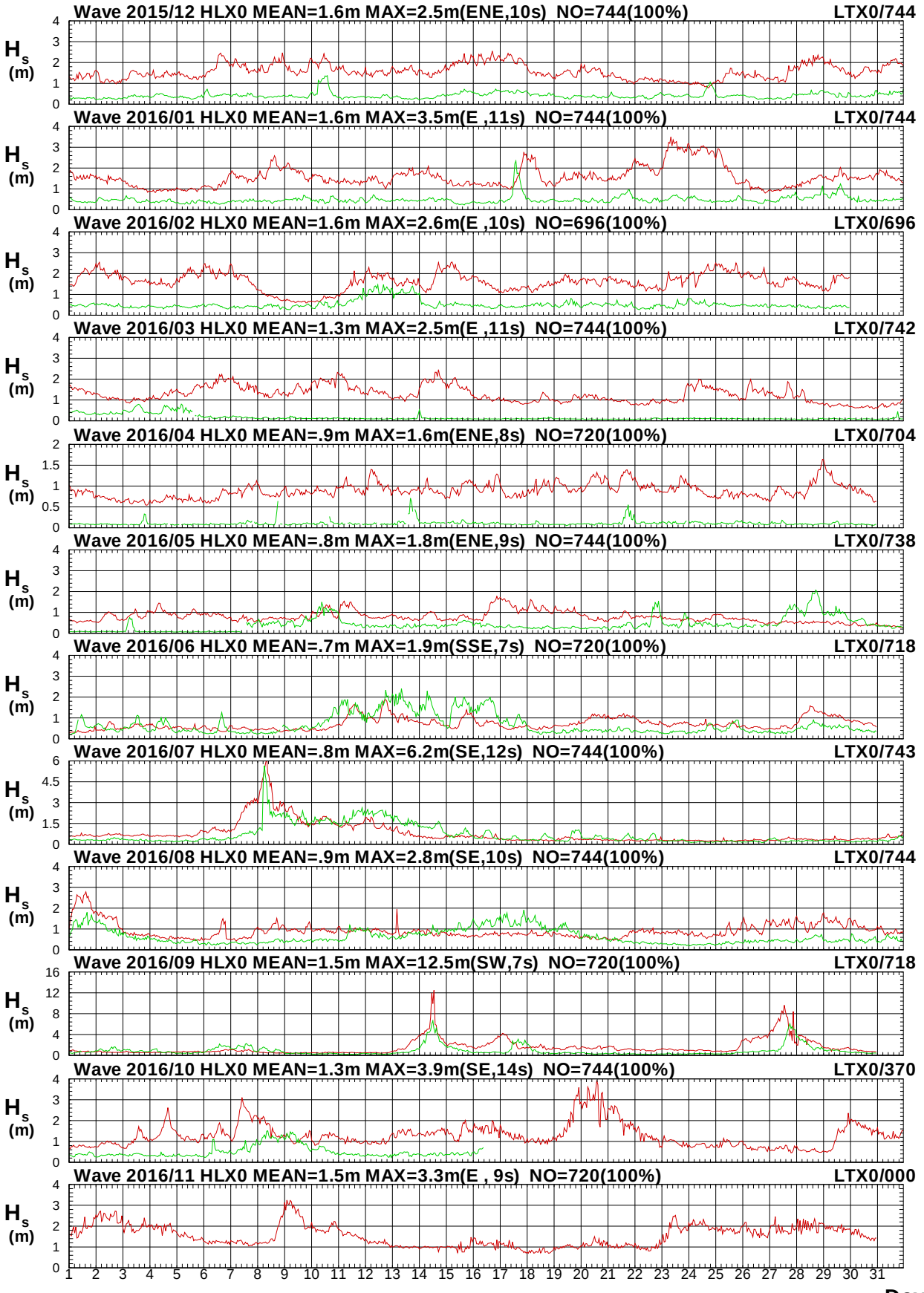

圖 4.3a　2016年每月花蓮海域 X 站與臺東海域 X 站波高圖

Wave T_p in Hua-Lien Seas of HLX0 at 2016

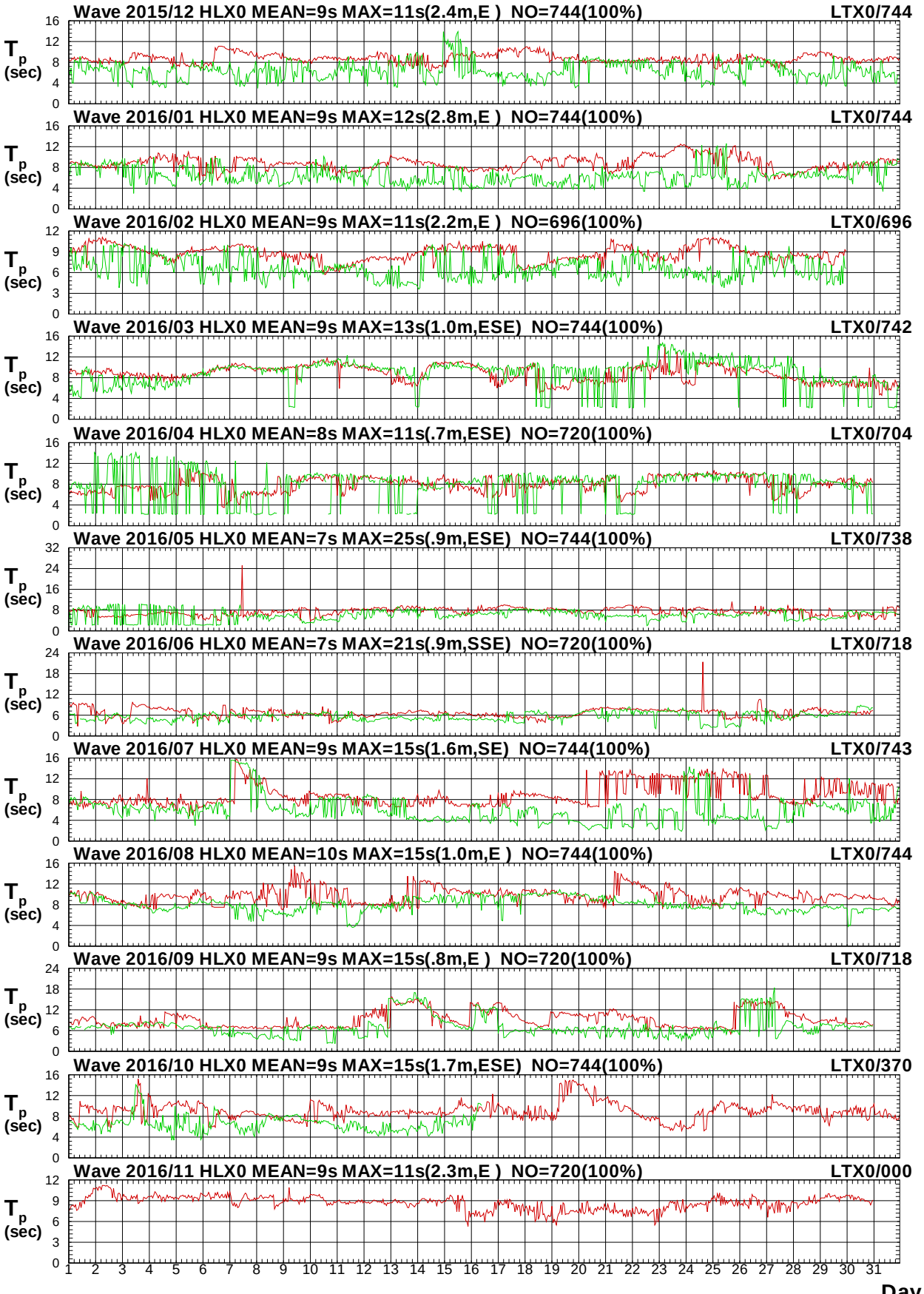

圖 4.3b　2016年每月花蓮海域 X 站與臺東海域 X 站週期圖

V15CHLX0.1HA V15CLTX0.1H0 V161HLX0.1HA V161LTX0.1H0 V162HLX0.1HA V162LTX0.1H0
V163HLX0.1HA V163LTX0.1H0 V164HLX0.1HA V164LTX0.1H0 V165HLX0.1HA V165LTX0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2016

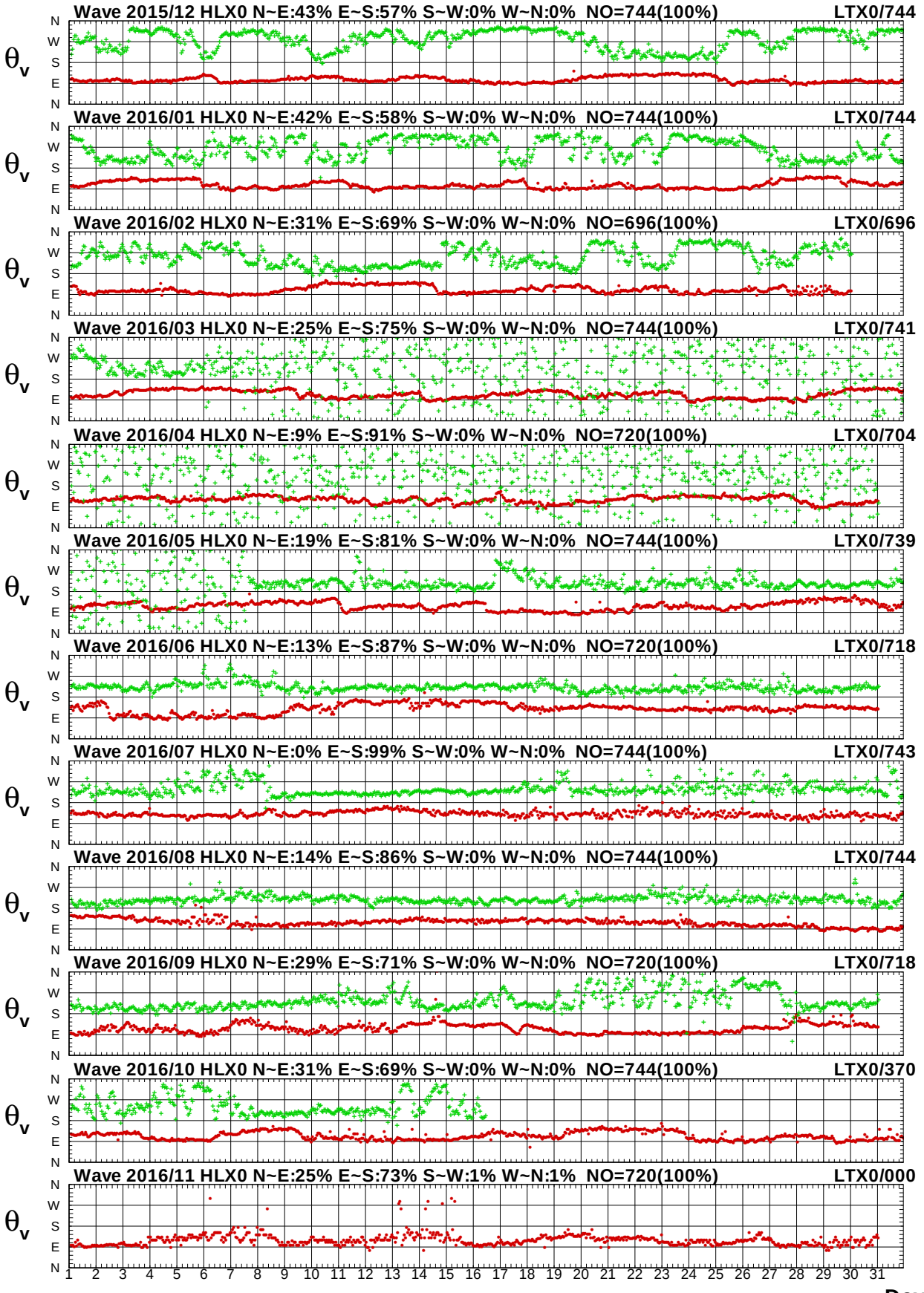

圖 4.3c　2016年每月花蓮海域 X 站與臺東海域 X 站波向圖

V15CHLX0.1HA V15CLTX0.1H0 V161HLX0.1HA V161LTX0.1H0 V162HLX0.1HA V162LTX0.1H0
V163HLX0.1HA V163LTX0.1H0 V164HLX0.1HA V164LTX0.1H0 V165HLX0.1HA V165LTX0.1H0

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Wave H_s in Hua-Lien Seas of HLX0 at 2016

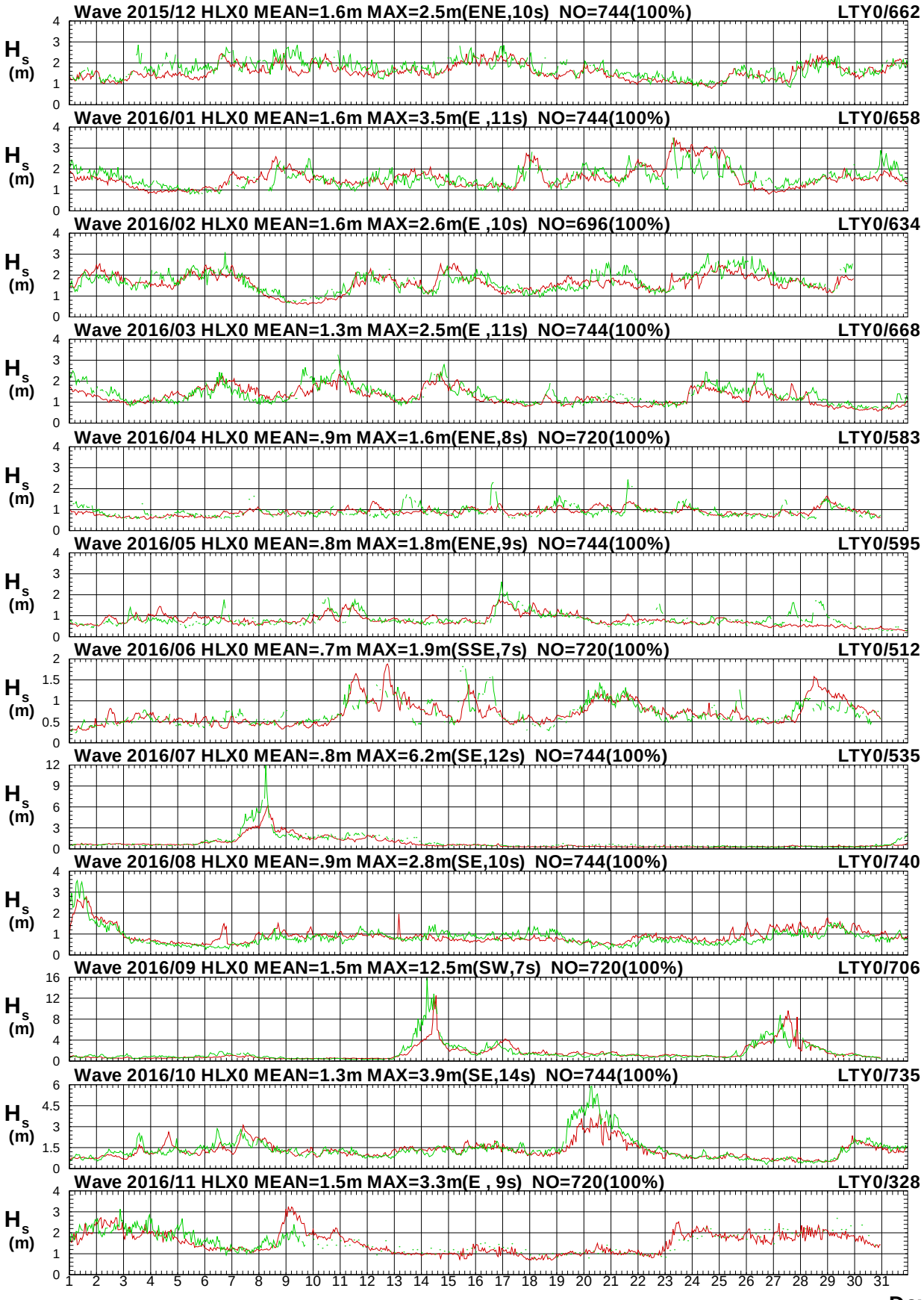

圖 4.4a　2016年每月花蓮海域 X 站與臺東海域 Y 站波高圖

V15CHLX0.1HA V15CLTY0.1H0 V161HLX0.1HA V161LTY0.1H0 V162HLX0.1HA V162LTY0.1H0
V163HLX0.1HA V163LTY0.1H0 V164HLX0.1HA V164LTY0.1H0 V165HLX0.1HA V165LTY0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2016

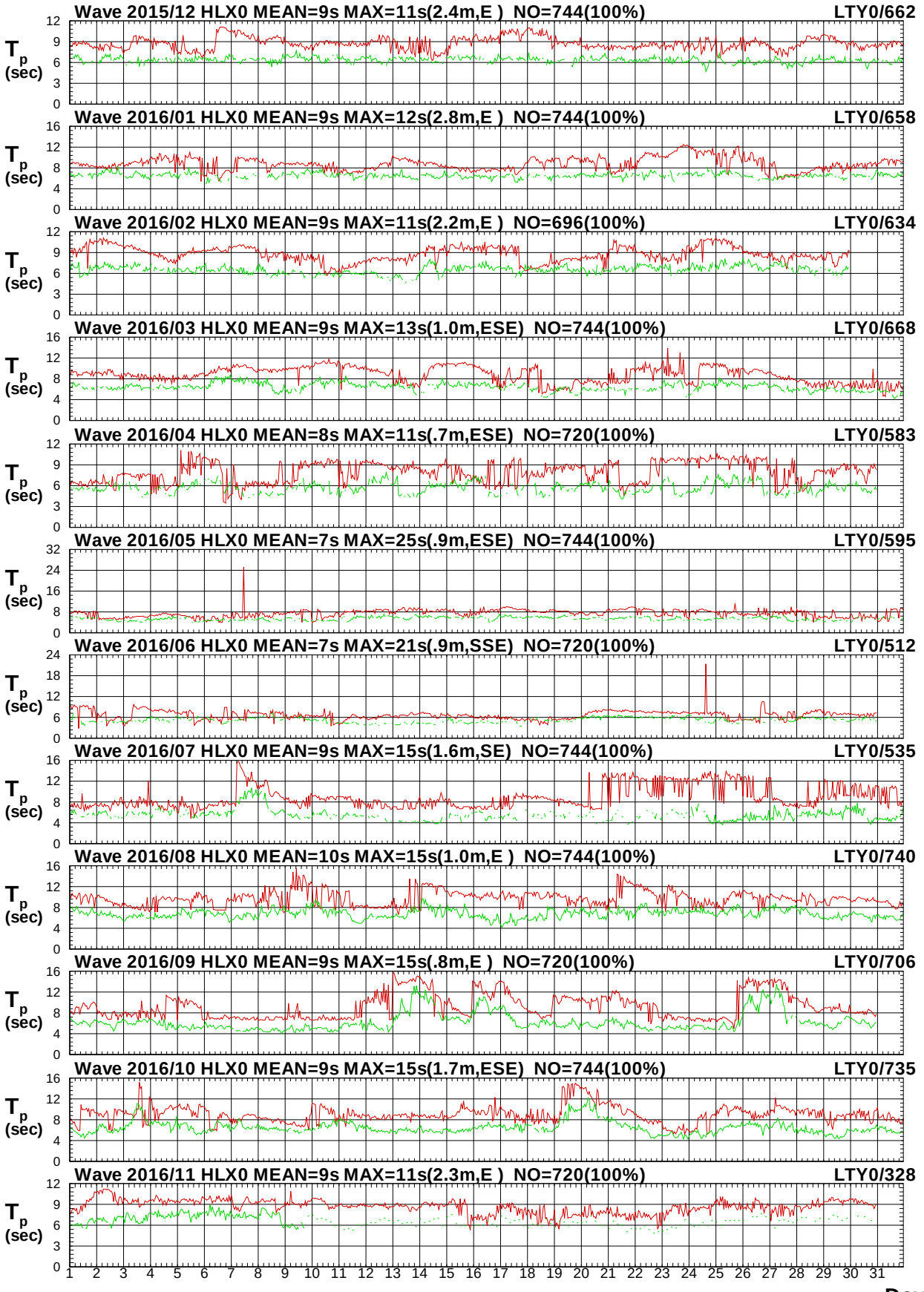

圖 4.4b　2016年每月花蓮海域 X 站與臺東海域 Y 站週期圖

V15CHLX0.1HA V15CLTY0.1H0 V161HLX0.1HA V161LTY0.1H0 V162HLX0.1HA V162LTY0.1H0
V163HLX0.1HA V163LTY0.1H0 V164HLX0.1HA V164LTY0.1H0 V165HLX0.1HA V165LTY0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2016

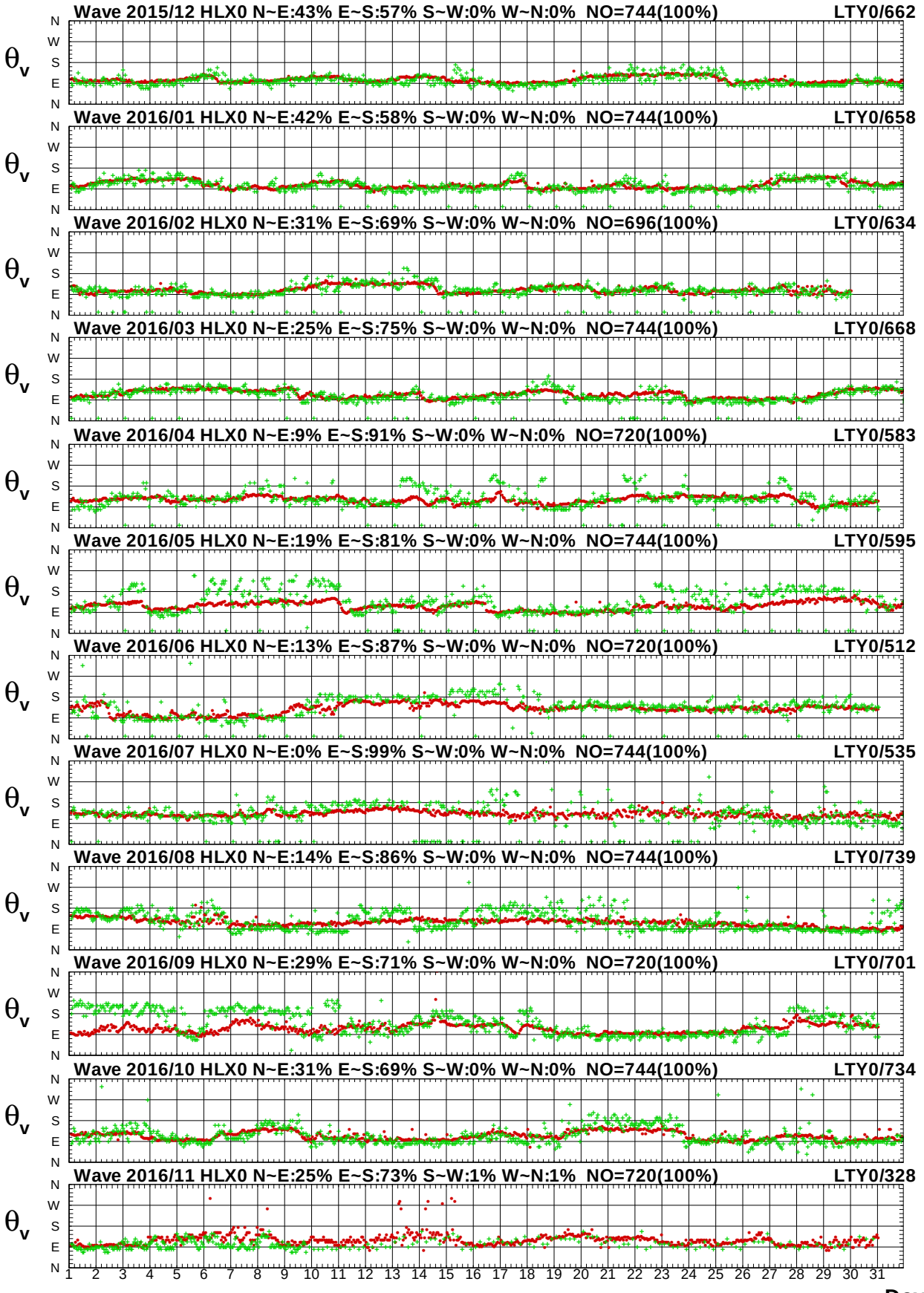

圖 4.4c　2016年每月花蓮海域 X 站與臺東海域 Y 站波向圖

V15CHLX0.1HA V15CLTY0.1H0 V161HLX0.1HA V161LTY0.1H0 V162HLX0.1HA V162LTY0.1H0
V163HLX0.1HA V163LTY0.1H0 V164HLX0.1HA V164LTY0.1H0 V165HLX0.1HA V165LTY0.1H0

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Wave H_s in Hua-Lien Seas of HLX0 at 2016

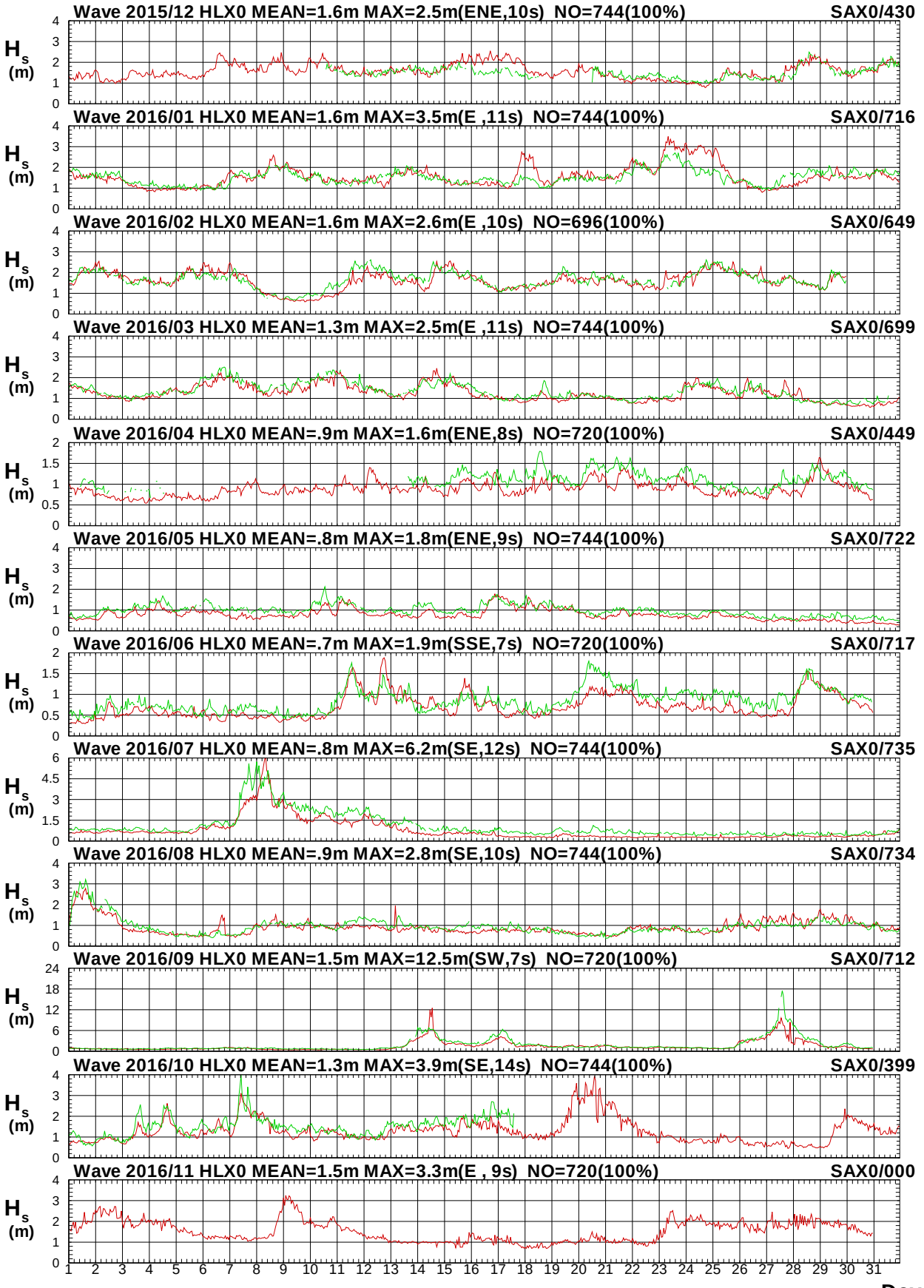

圖 4.5a　2016年每月花蓮海域 X 站與宜蘭海域 X 站波高圖

V15CHLX0.1HA V15CSAX0.1H0 V161HLX0.1HA V161SAX0.1H0 V162HLX0.1HA V162SAX0.1H0
V163HLX0.1HA V163SAX0.1H0 V164HLX0.1HA V164SAX0.1H0 V165HLX0.1HA V165SAX0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2016

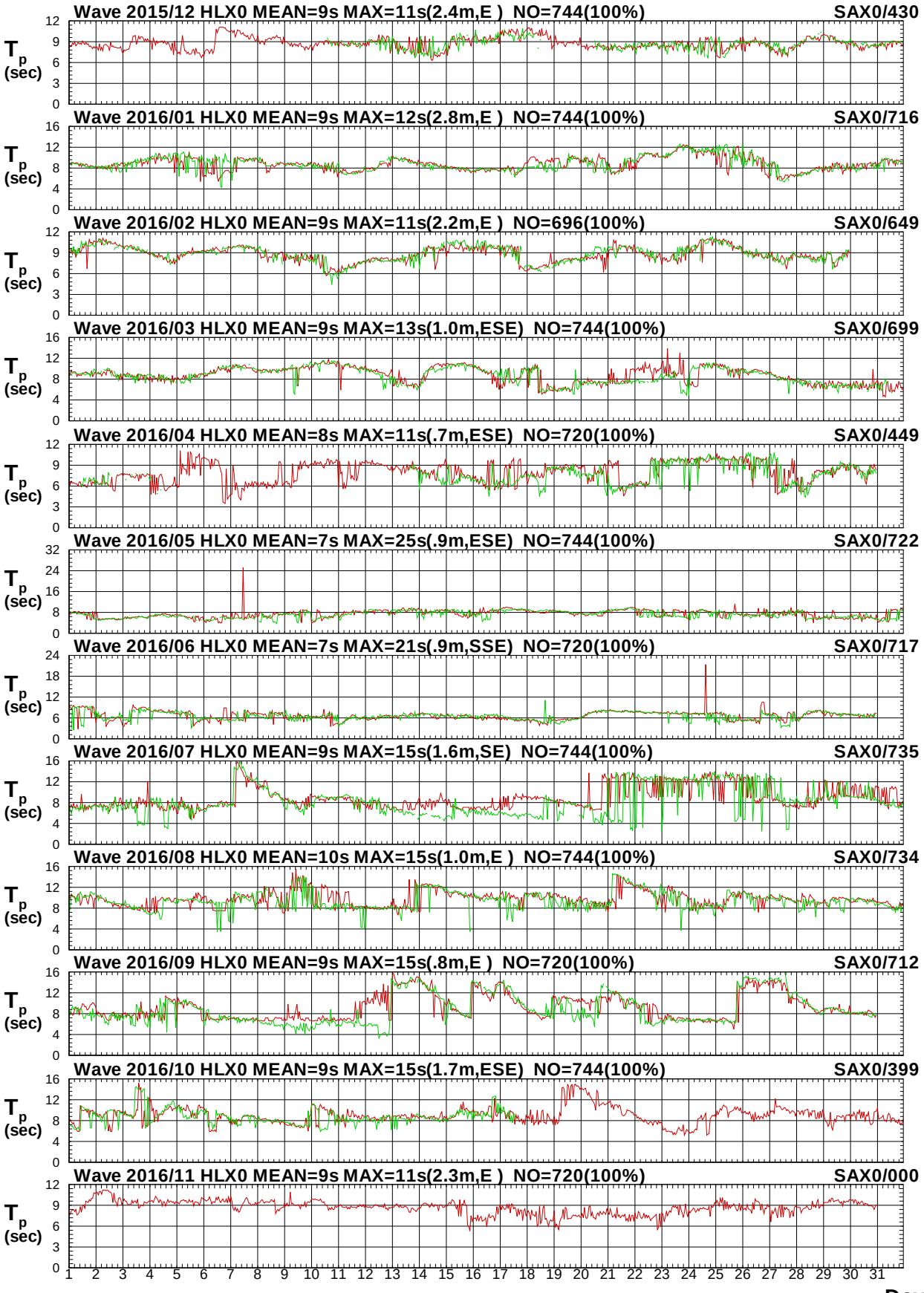

圖 4.5b　2016年每月花蓮海域 X 站與宜蘭海域 X 站週期圖

V15CHLX0.1HA V15CSAX0.1H0 V161HLX0.1HA V161SAX0.1H0 V162HLX0.1HA V162SAX0.1H0
V163HLX0.1HA V163SAX0.1H0 V164HLX0.1HA V164SAX0.1H0 V165HLX0.1HA V165SAX0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2016

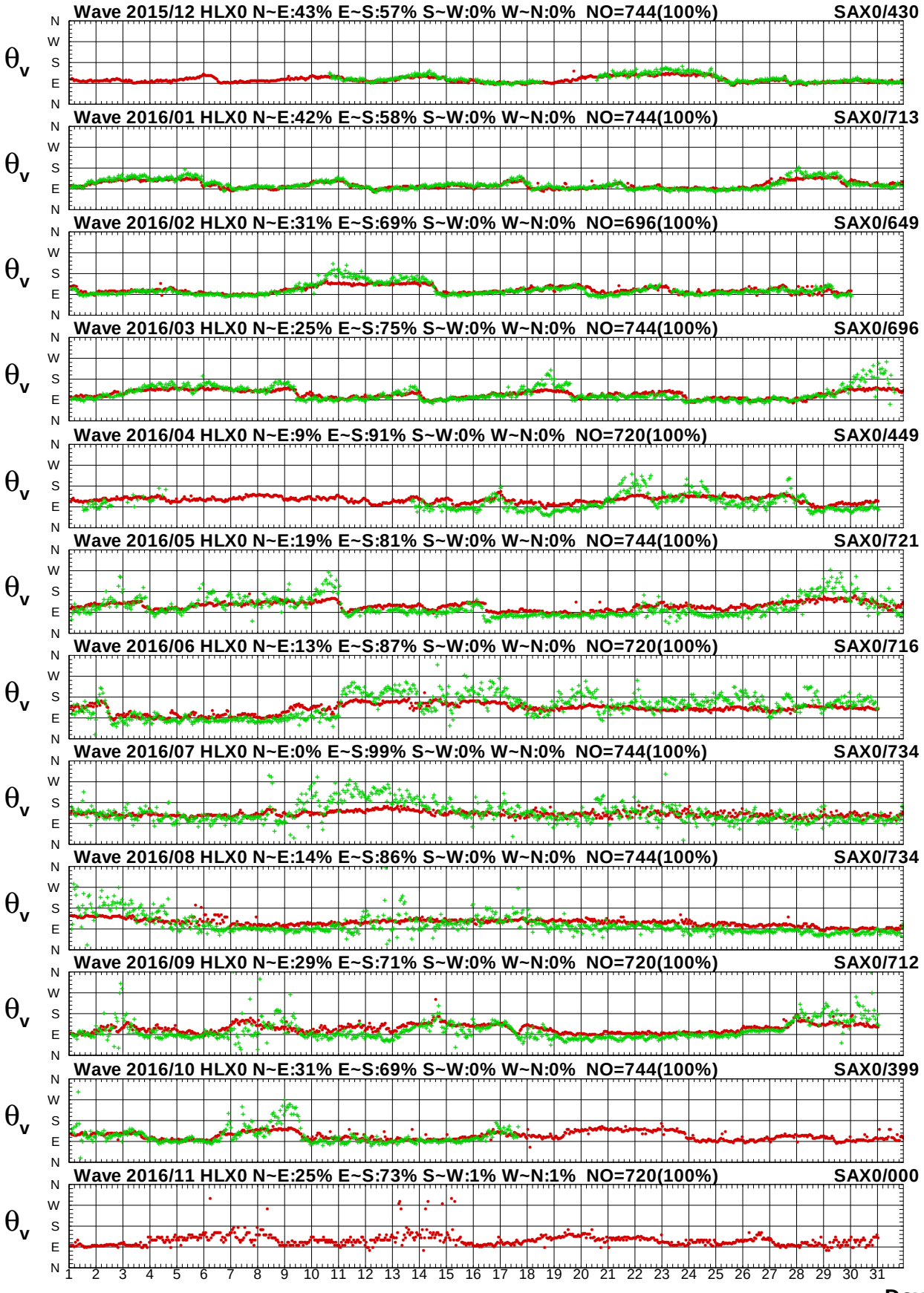

圖 4.5c　2016年每月花蓮海域 X 站與宜蘭海域 X 站波向圖

V15CHLX0.1HA V15CSAX0.1H0 V161HLX0.1HA V161SAX0.1H0 V162HLX0.1HA V162SAX0.1H0
V163HLX0.1HA V163SAX0.1H0 V164HLX0.1HA V164SAX0.1H0 V165HLX0.1HA V165SAX0.1H0

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Wave H_s in Hua-Lien Seas of HLX0 at 2016

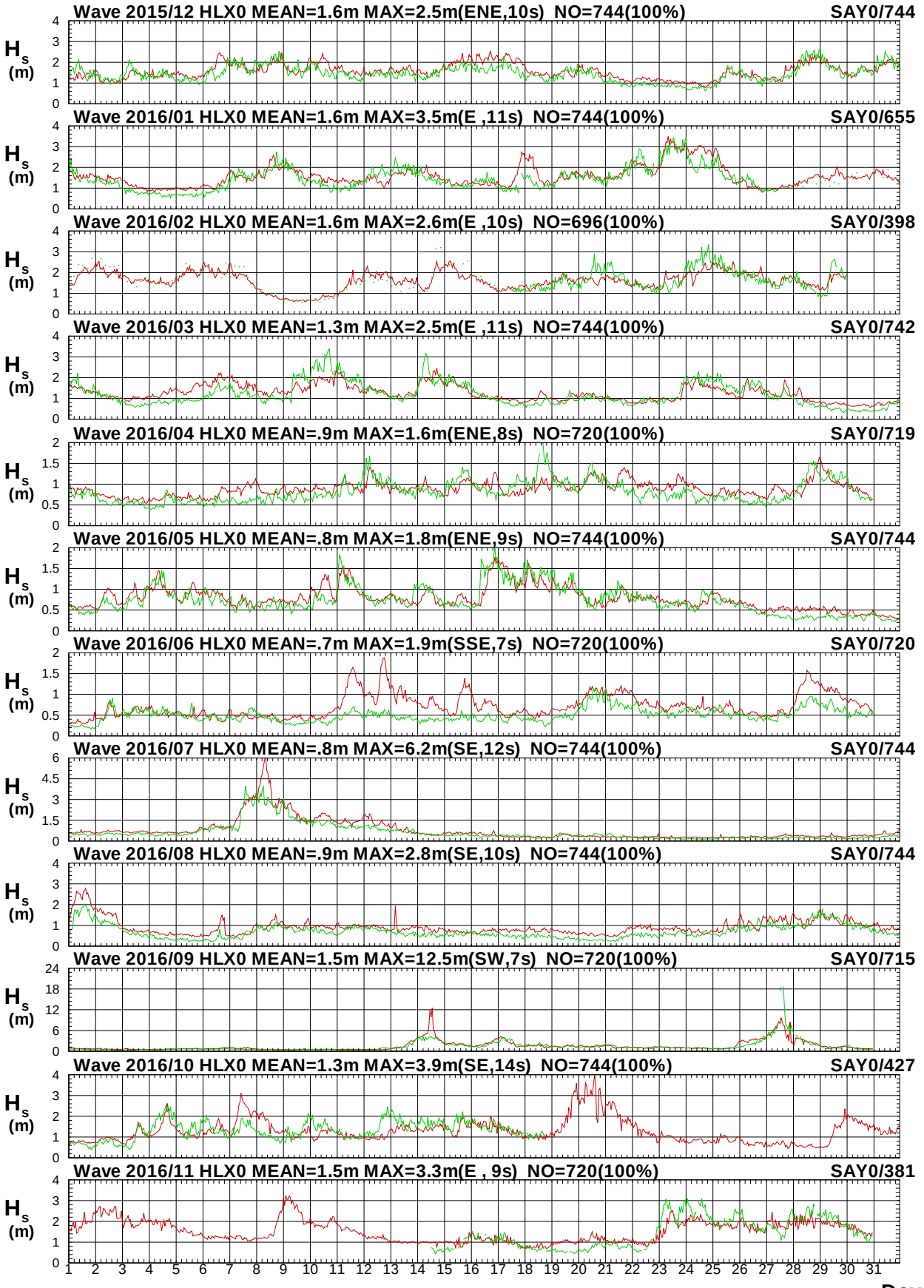

圖 4.6a　2016年每月花蓮海域 X 站與宜蘭海域 Y 站波高圖

V15CHLX0.1HA V15CSAY0.1H0 V161HLX0.1HA V161SAY0.1H0 V162HLX0.1HA V162SAY0.1H0
V163HLX0.1HA V163SAY0.1H0 V164HLX0.1HA V164SAY0.1H0 V165HLX0.1HA V165SAY0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2016

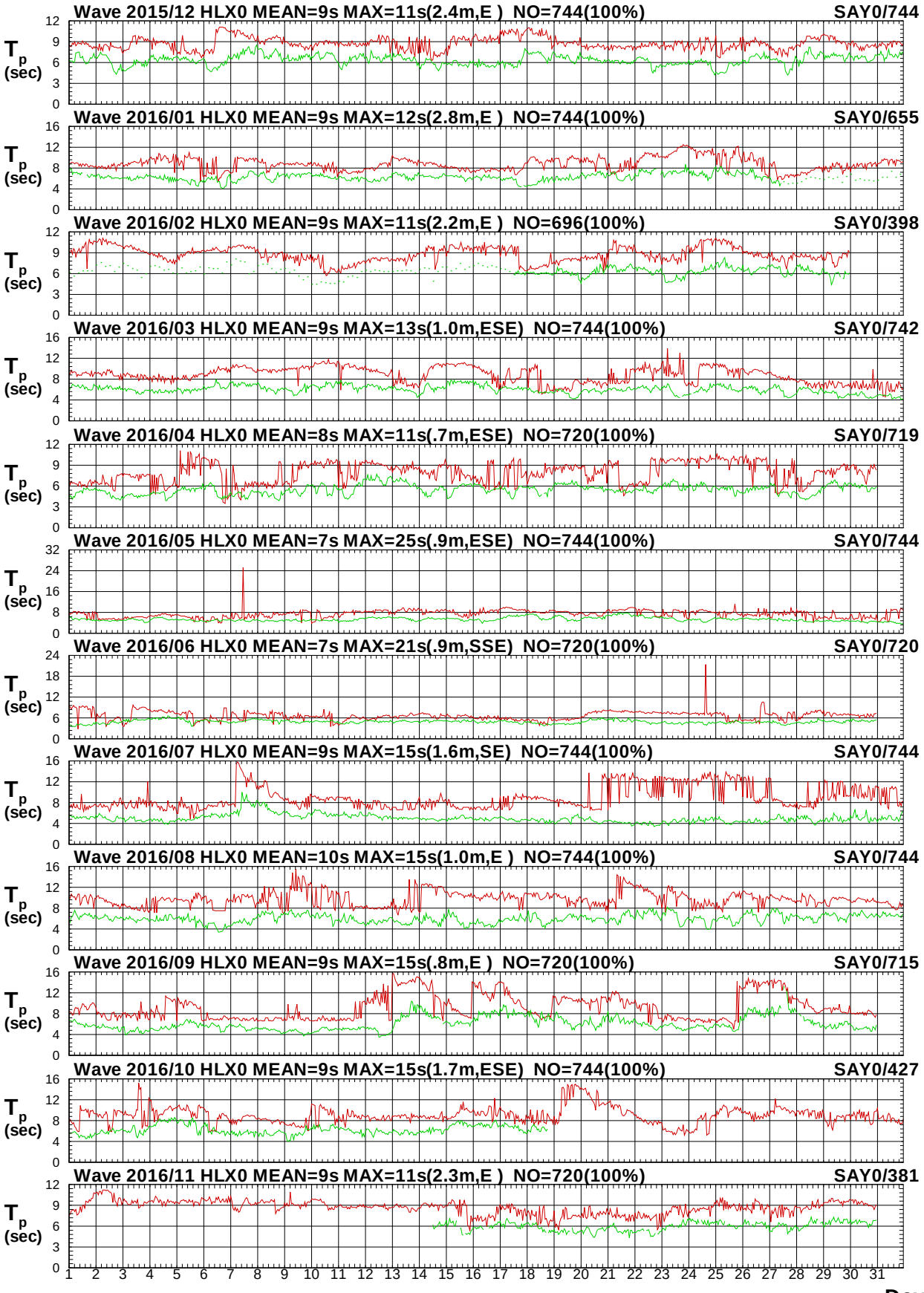

圖 4.6b　2016年每月花蓮海域 X 站與宜蘭海域 Y 站週期圖

V15CHLX0.1HA V15CSAY0.1H0 V161HLX0.1HA V161SAY0.1H0 V162HLX0.1HA V162SAY0.1H0
V163HLX0.1HA V163SAY0.1H0 V164HLX0.1HA V164SAY0.1H0 V165HLX0.1HA V165SAY0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2016

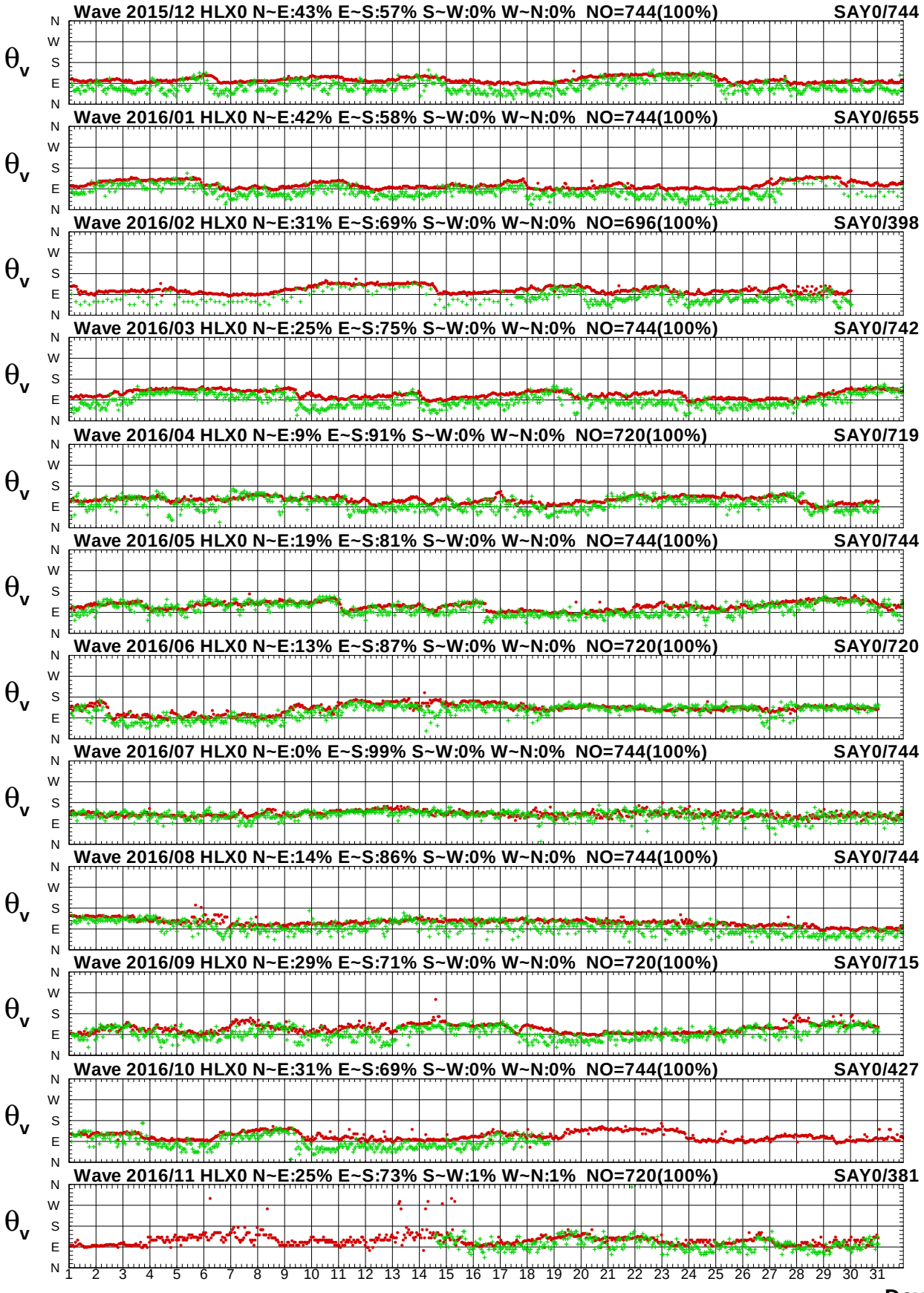

圖 4.6c　2016年每月花蓮海域 X 站與宜蘭海域 Y 站波向圖

Wave H_s in Hua-Lien Seas of HLX0 at 2016

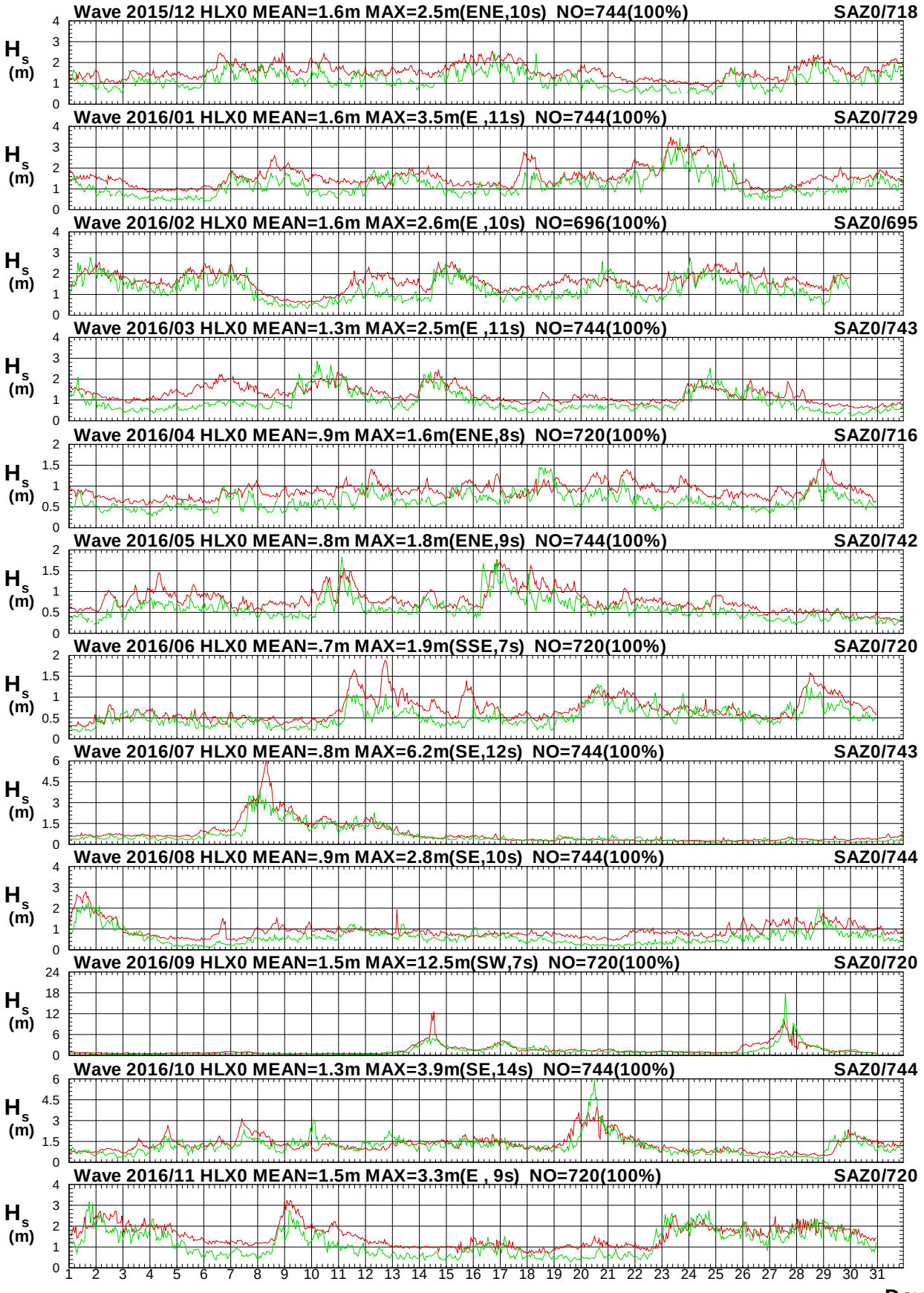

圖 4.7a　2016年每月花蓮海域 X 站與宜蘭海域 Z 站波高圖

V15CHLX0.1HA V15CSAZ0.1H0 V161HLX0.1HA V161SAZ0.1H0 V162HLX0.1HA V162SAZ0.1H0
V163HLX0.1HA V163SAZ0.1H0 V164HLX0.1HA V164SAZ0.1H0 V165HLX0.1HA V165SAZ0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2016

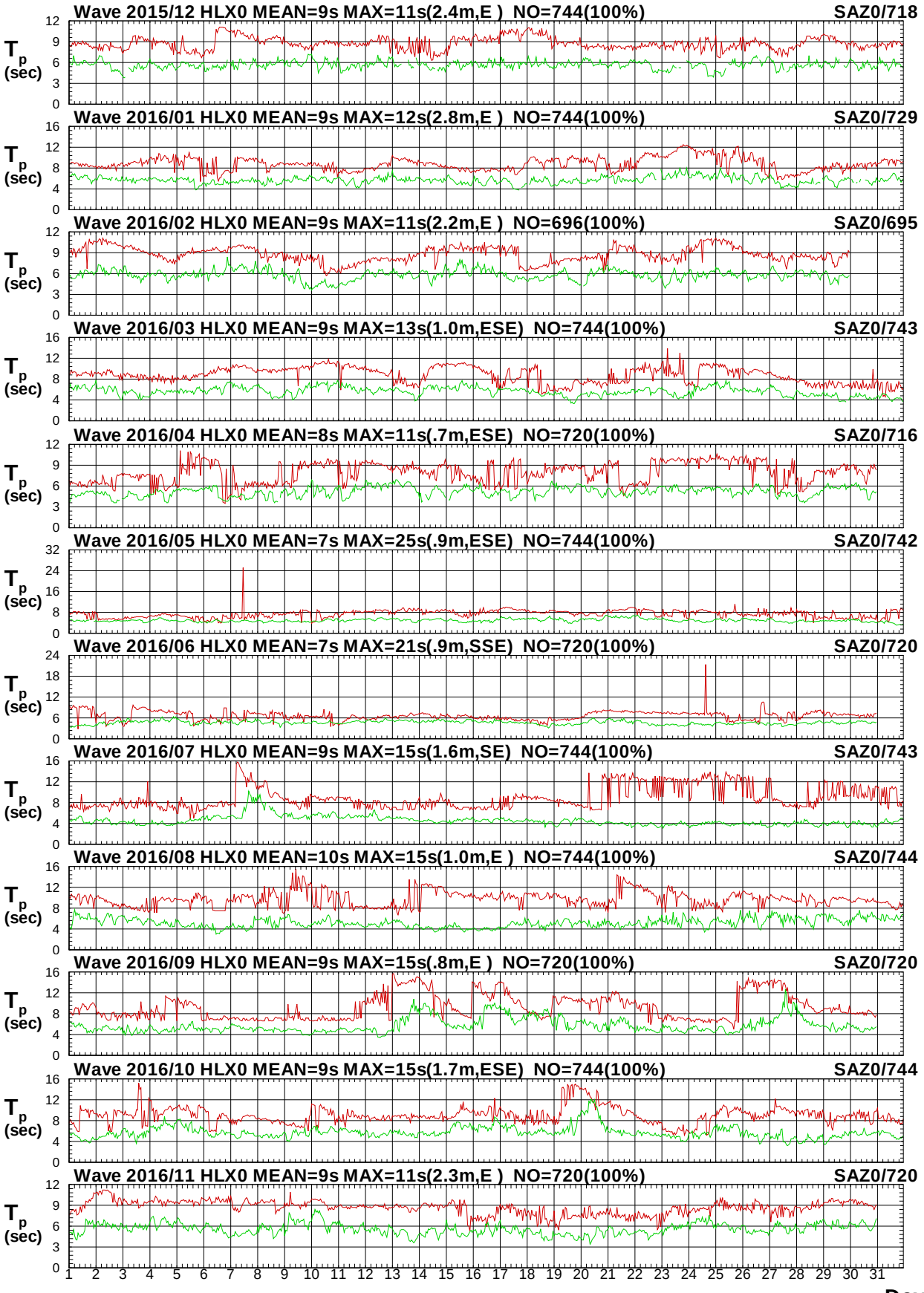

圖 4.7b　2016年每月花蓮海域 X 站與宜蘭海域 Z 站週期圖

V15CHLX0.1HA V15CSAZ0.1H0 V161HLX0.1HA V161SAZ0.1H0 V162HLX0.1HA V162SAZ0.1H0
V163HLX0.1HA V163SAZ0.1H0 V164HLX0.1HA V164SAZ0.1H0 V165HLX0.1HA V165SAZ0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2016

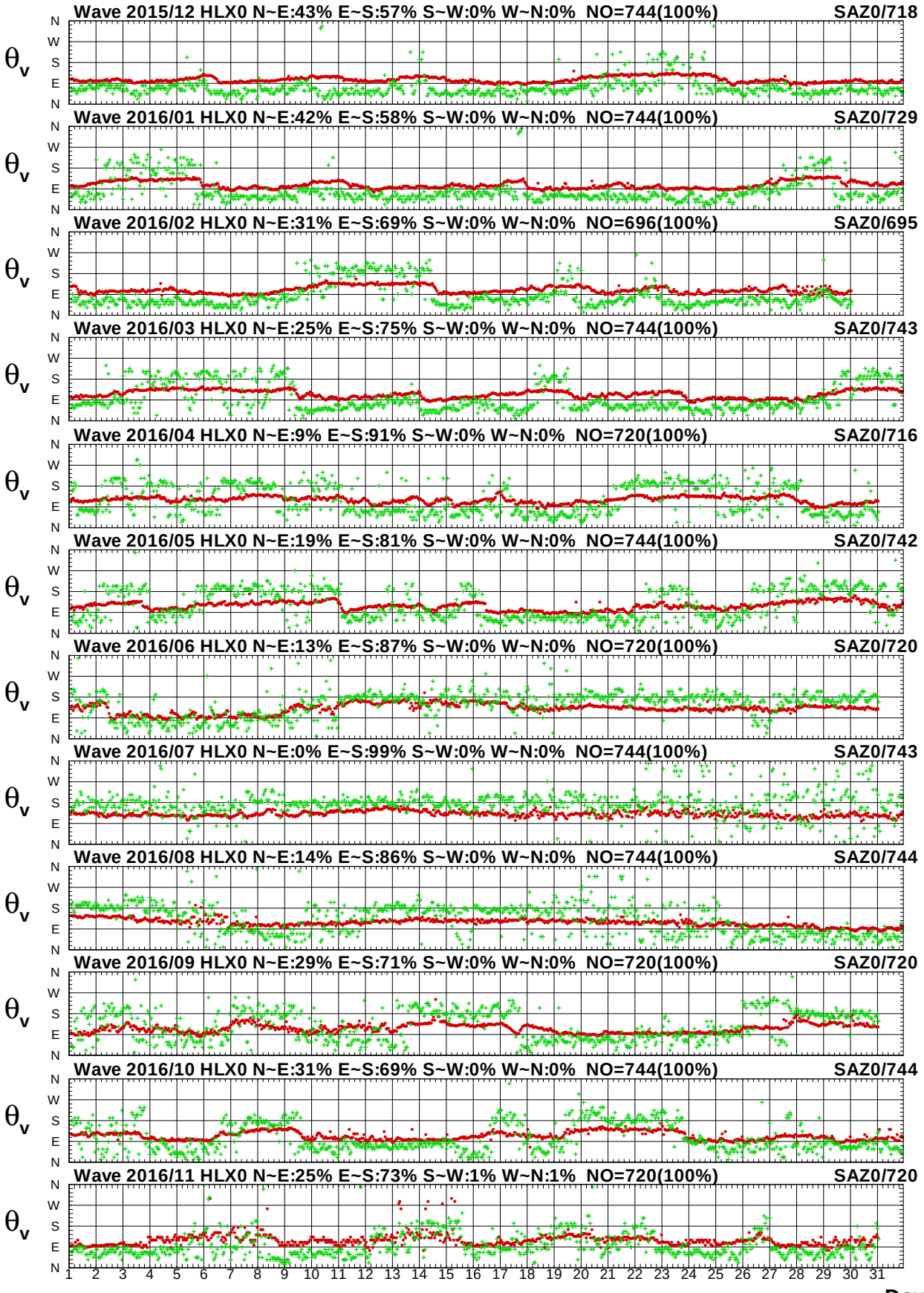

圖4.7c　2016年每月花蓮海域 X 站與宜蘭海域 Z 站波向圖

第五章　2016 年臺東海域觀測波浪資料

臺東海域綠島南寮港波浪之觀測係 2014 年 10 月本中心**(IHMT)**於南寮港南防波堤外處(**測站 X**) 挪威 NORTEK 公司之剖面海流與表面波浪(波高、週期及波向)即時傳送監測系統(簡稱 AWCP)波浪觀測站，其位置如附圖 5。

測站 Y(台東外海浮標站)之波浪儀也皆屬水利署**(WRA)**所有。臺東海域各測站歷年觀測波浪資料蒐集概況如表 5。

波浪觀測 AWCP 系統有兩個分離波高量測模式:一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **X 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 5.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 5.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 5.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 5.2 以後。

表 5 臺東海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	22°39'30"N	121°28'14"E	2014/10-2016/11(觀測中)	港研中心	綠島南寮港區外海
Y	22°43'27"N	121°08'40"E	2010/09-2016/11(觀測中)	水利署	台東外海浮標站

臺東海域

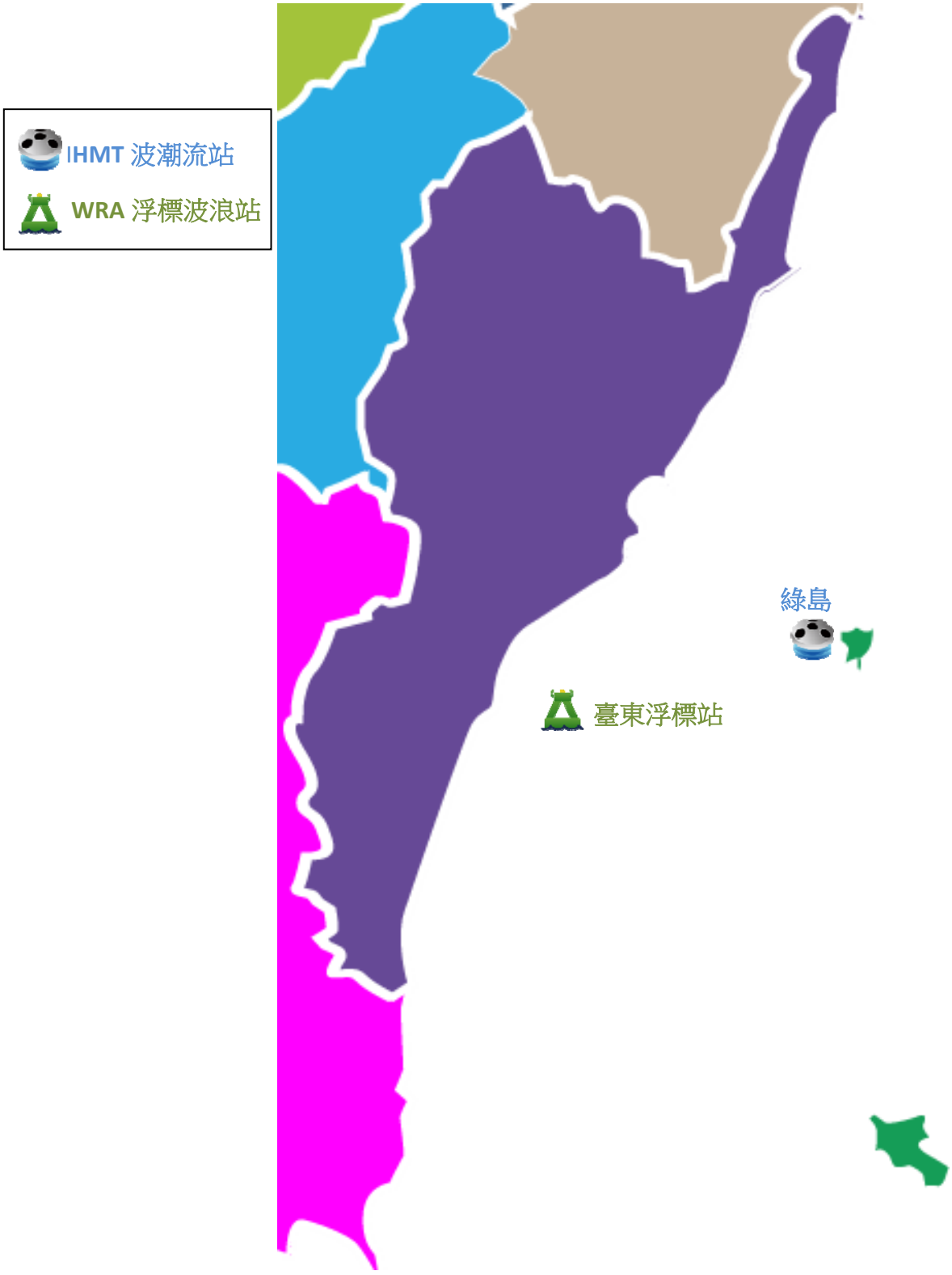

圖 5 臺東海域波浪觀測站位置示意圖

表5.1a 2016年每月臺東海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域
測站	X	Y						
2015/12月	744 (100%)	662 (89.0%)	*	*	*	*	*	*
2016/ 1月	744 (100%)	658 (88.4%)	*	*	*	*	*	*
2016/ 2月	696 (100%)	634 (91.1%)	*	*	*	*	*	*
2016/ 3月	742 (99.7%)	668 (89.8%)	*	*	*	*	*	*
2016/ 4月	704 (97.8%)	583 (81.0%)	*	*	*	*	*	*
2016/ 5月	738 (99.2%)	595 (80.0%)	*	*	*	*	*	*
2016/ 6月	718 (99.7%)	512 (71.1%)	*	*	*	*	*	*
2016/ 7月	743 (99.9%)	535 (71.9%)	*	*	*	*	*	*
2016/ 8月	744 (100%)	740 (99.5%)	*	*	*	*	*	*
2016/ 9月	718 (99.7%)	706 (98.1%)	*	*	*	*	*	*
2016/10月	370 (49.7%)	735 (98.8%)	*	*	*	*	*	*
2016/11月	*	328 (45.6%)	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表5.1b 2016年每月臺東海域修補後各測站波浪資料統計表

年/月 港區	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域	臺東海域
測站	X	Y						
2015/12月	*	744 (100%)	*	*	*	*	*	*
2016/ 1月	*	744 (100%)	*	*	*	*	*	*
2016/ 2月	*	696 (100%)	*	*	*	*	*	*
2016/ 3月	*	744 (100%)	*	*	*	*	*	*
2016/ 4月	*	720 (100%)	*	*	*	*	*	*
2016/ 5月	*	744 (100%)	*	*	*	*	*	*
2016/ 6月	*	720 (100%)	*	*	*	*	*	*
2016/ 7月	*	744 (100%)	*	*	*	*	*	*
2016/ 8月	*	744 (100%)	*	*	*	*	*	*
2016/ 9月	*	720 (100%)	*	*	*	*	*	*
2016/10月	*	744 (100%)	*	*	*	*	*	*
2016/11月	*	720 (100%)	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Ta-Tung Seas of LTY0 at 2016

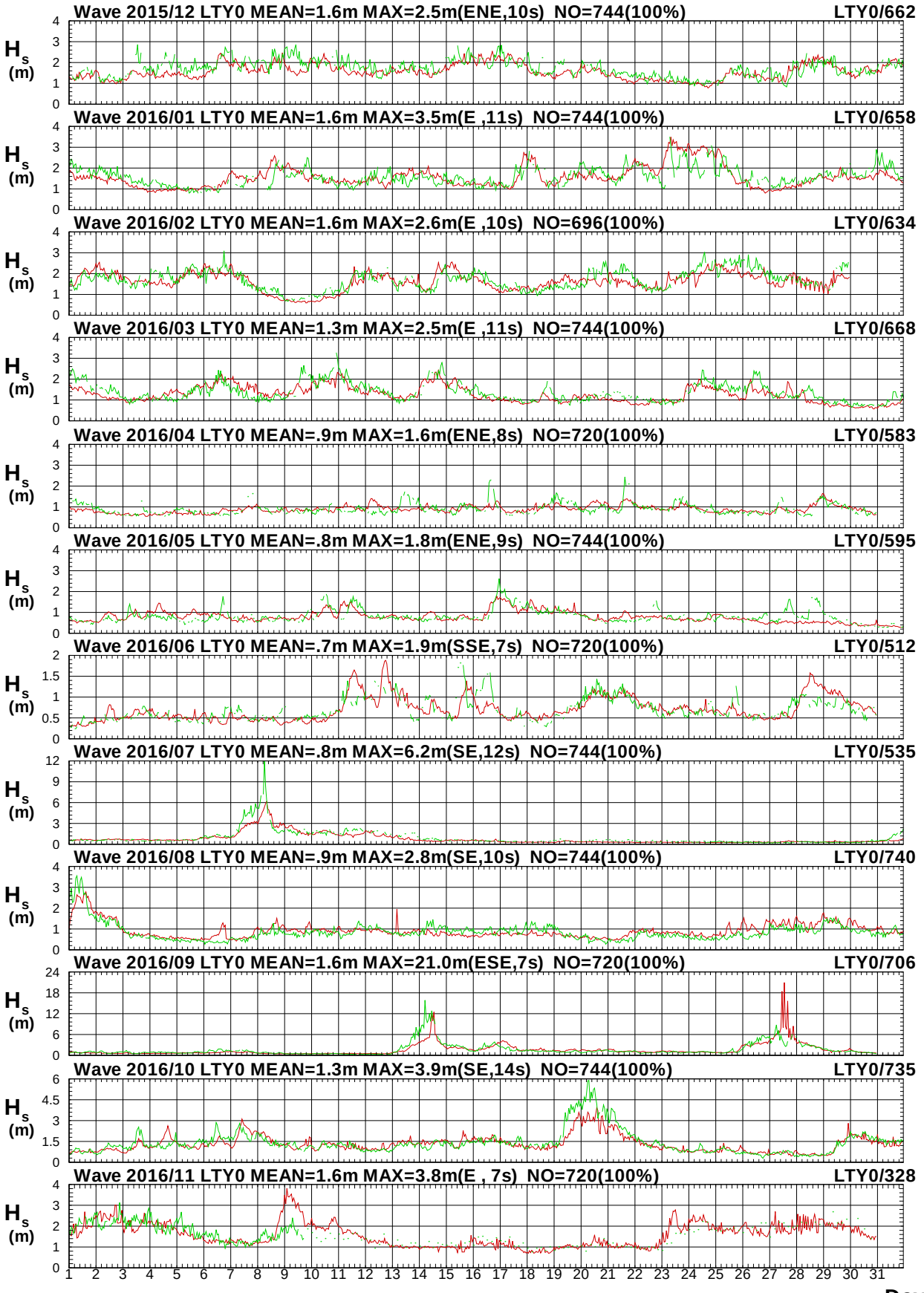

圖5.1a　2016年每月臺東海域 Y 站修補前後之波高比較圖

V15CLTY0.1HA V15CLTY0.1H0 V161LTY0.1HA V161LTY0.1H0 V162LTY0.1HA V162LTY0.1H0
V163LTY0.1HA V163LTY0.1H0 V164LTY0.1HA V164LTY0.1H0 V165LTY0.1HA V165LTY0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

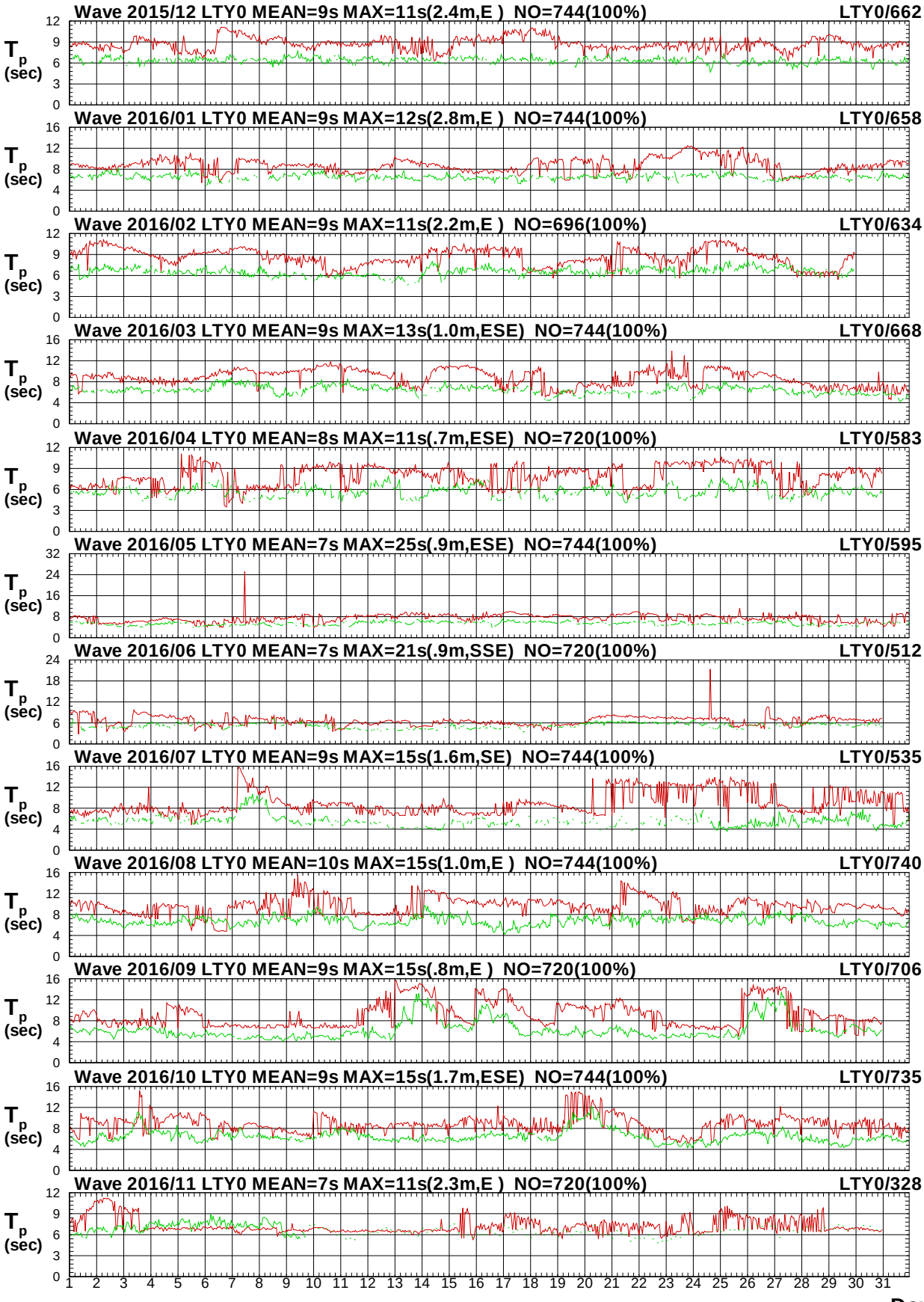

圖5.1b　2016年每月臺東海域 Y 站修補前後之週期比較圖

V15CLTY0.1HA V15CLTY0.1H0 V161LTY0.1HA V161LTY0.1H0 V162LTY0.1HA V162LTY0.1H0
V163LTY0.1HA V163LTY0.1H0 V164LTY0.1HA V164LTY0.1H0 V165LTY0.1HA V165LTY0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

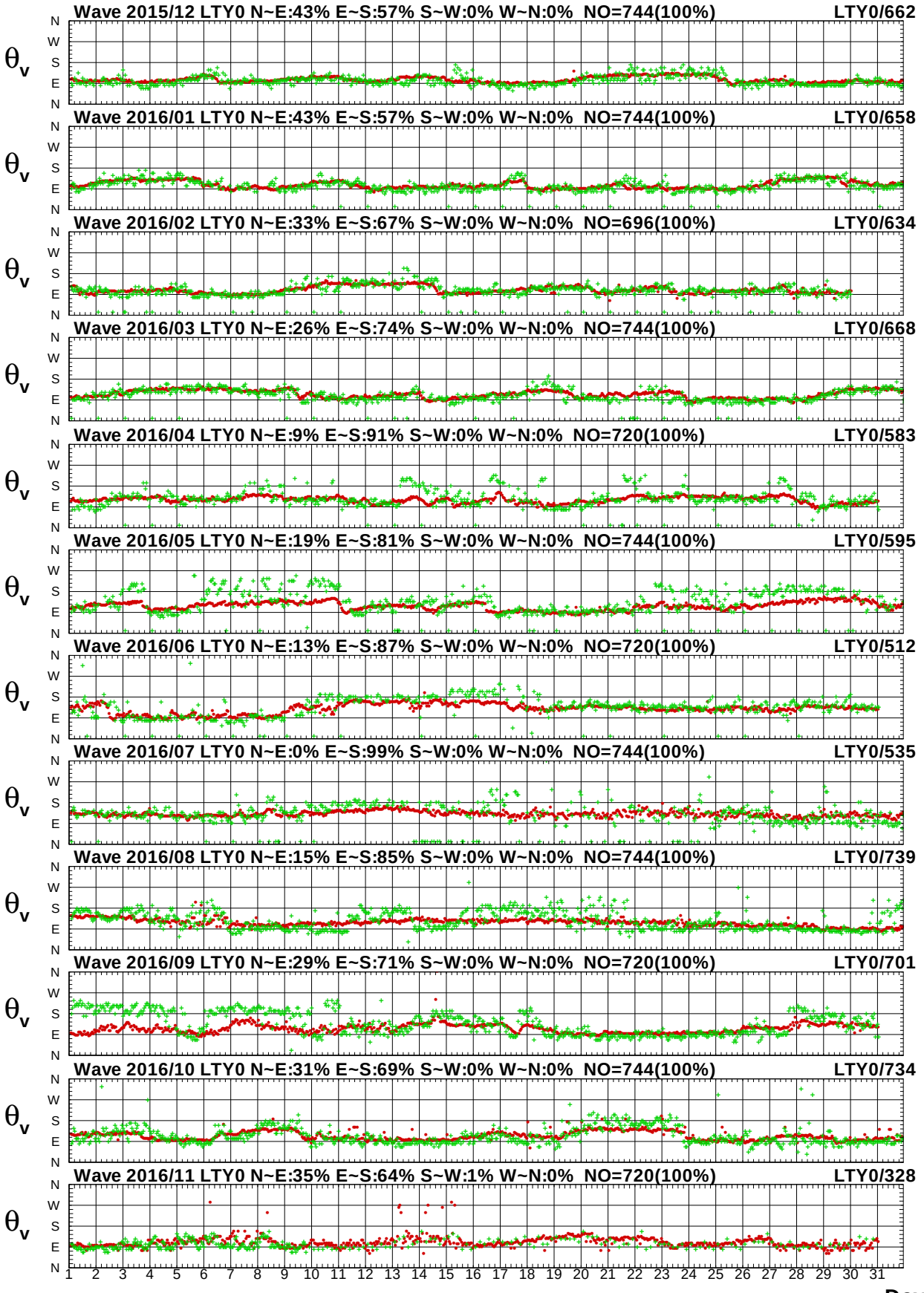

圖5.1c　2016年每月臺東海域 Y 站修補前後之波向比較圖

V15CLTY0.1HA V15CLTY0.1H0 V161LTY0.1HA V161LTY0.1H0 V162LTY0.1HA V162LTY0.1H0
V163LTY0.1HA V163LTY0.1H0 V164LTY0.1HA V164LTY0.1H0 V165LTY0.1HA V165LTY0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

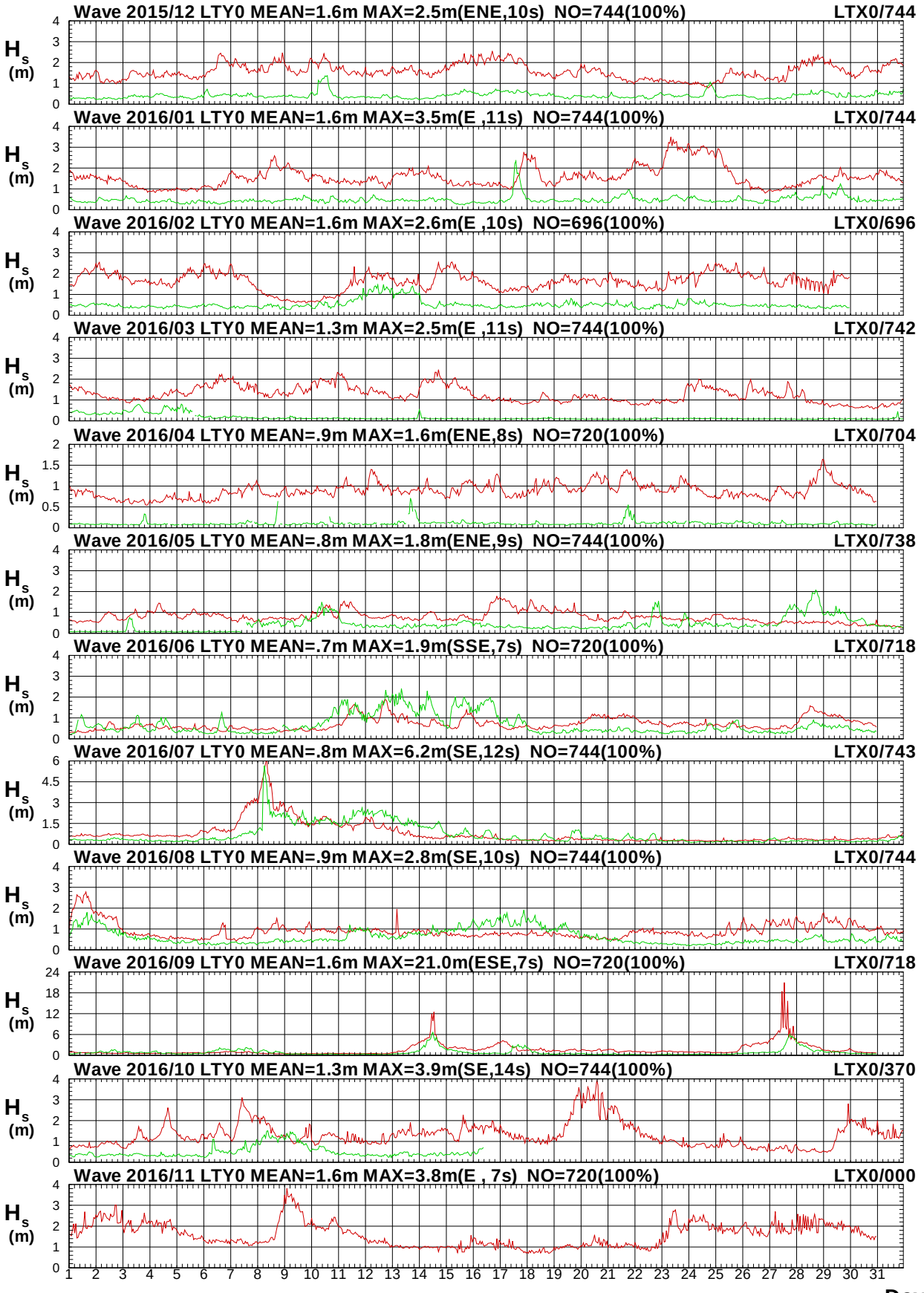

圖 5.2a　2016年每月臺東海域 Y 站與 X 站波高比較圖

V15CLTY0.1HA V15CLTX0.1H0 V161LTY0.1HA V161LTX0.1H0 V162LTY0.1HA V162LTX0.1H0
V163LTY0.1HA V163LTX0.1H0 V164LTY0.1HA V164LTX0.1H0 V165LTY0.1HA V165LTX0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

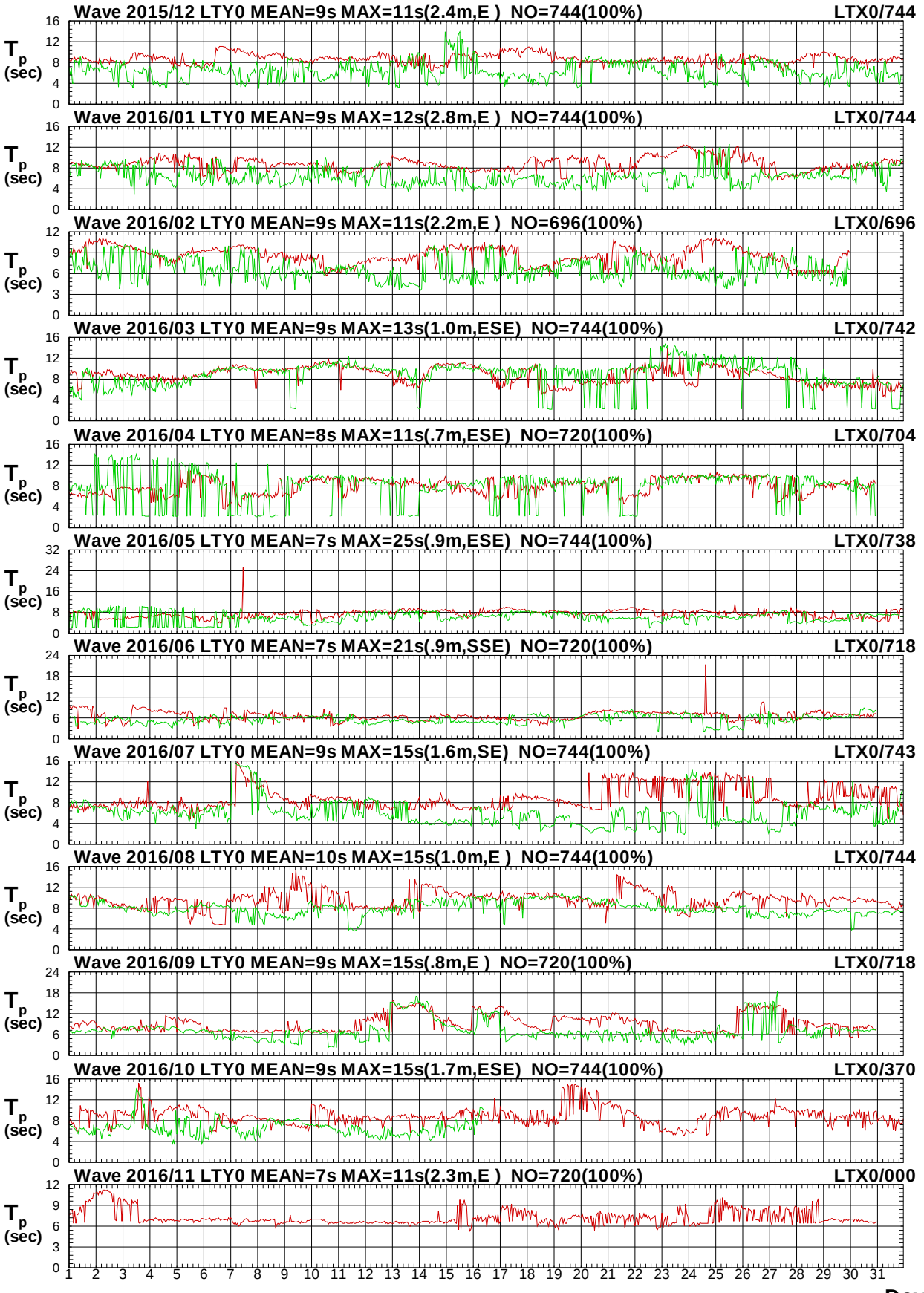

圖 5.2b　2016年每月臺東海域 Y 站與 X 站週期比較圖

V15CLTY0.1HA V15CLTX0.1H0 V161LTY0.1HA V161LTX0.1H0 V162LTY0.1HA V162LTX0.1H0
V163LTY0.1HA V163LTX0.1H0 V164LTY0.1HA V164LTX0.1H0 V165LTY0.1HA V165LTX0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

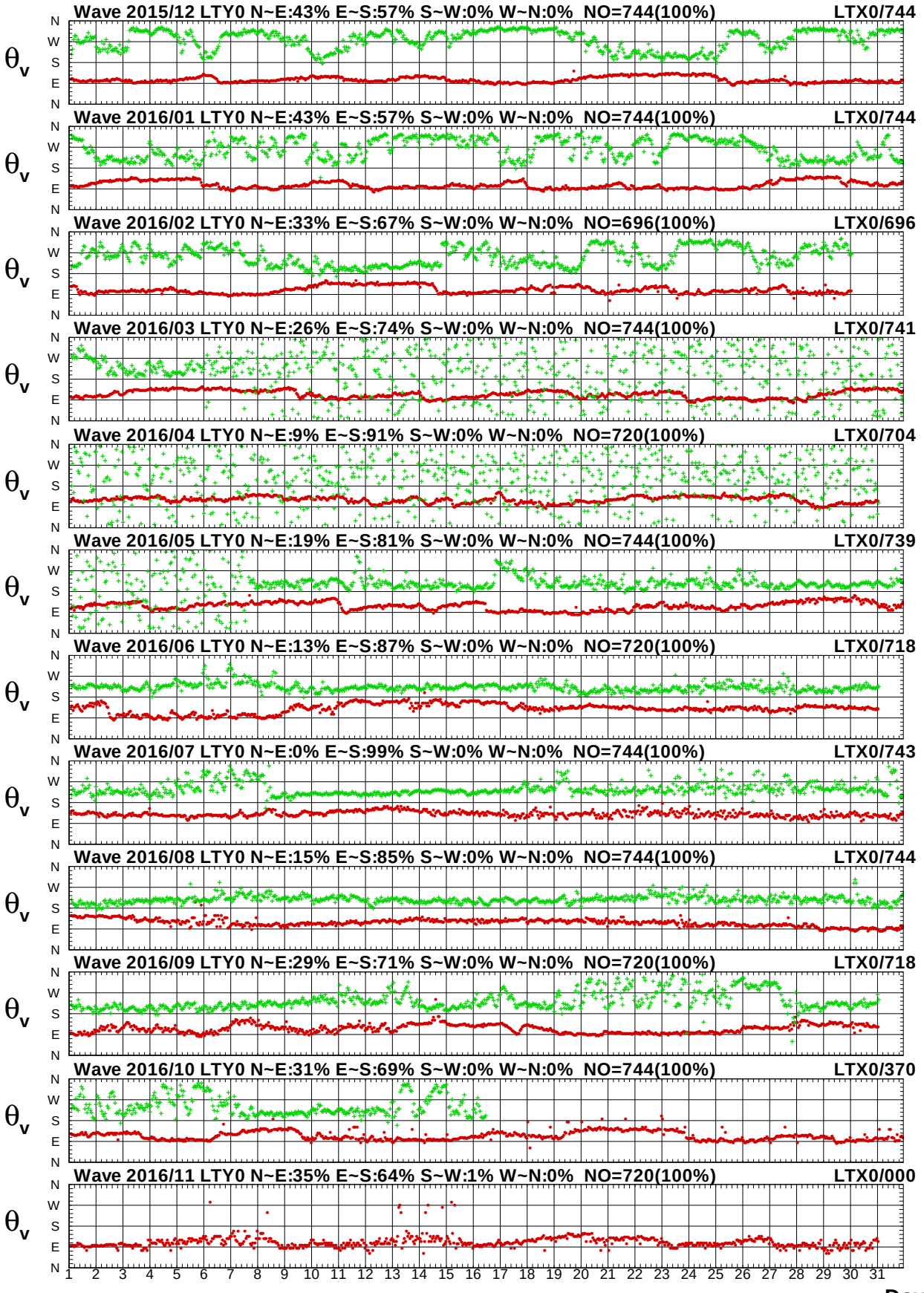

圖 5.2c　2016年每月臺東海域 Y 站與 X 站波向比較圖

V15CLTY0.1HA V15CLTX0.1H0 V161LTY0.1HA V161LTX0.1H0 V162LTY0.1HA V162LTX0.1H0
V163LTY0.1HA V163LTX0.1H0 V164LTY0.1HA V164LTX0.1H0 V165LTY0.1HA V165LTX0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

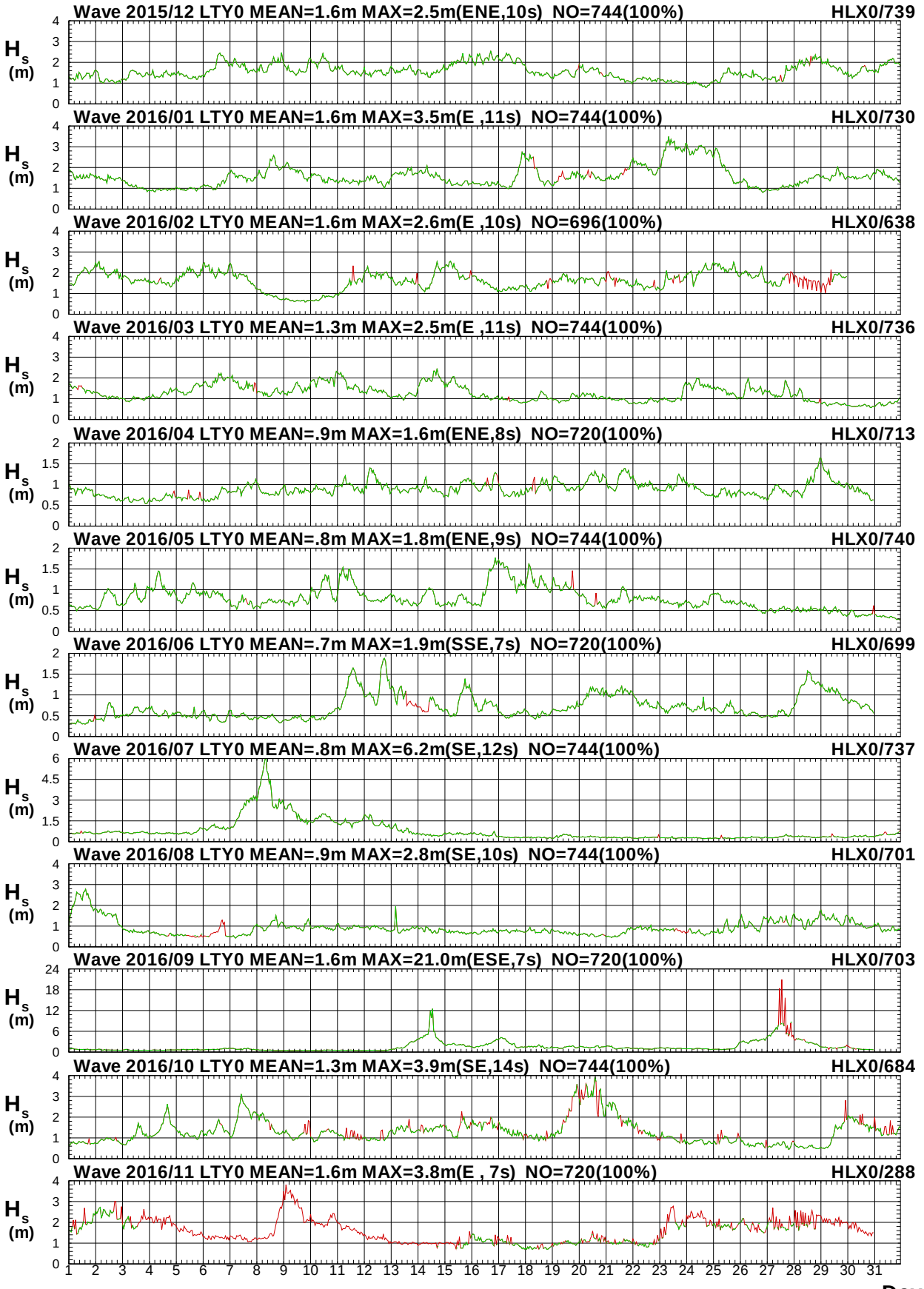

圖 5.3a　2016年每月臺東海域 Y 站與花蓮海域 X 站波高圖

V15CLTY0.1HA V15CHLX0.1H0 V161LTY0.1HA V161HLX0.1H0 V162LTY0.1HA V162HLX0.1H0
V163LTY0.1HA V163HLX0.1H0 V164LTY0.1HA V164HLX0.1H0 V165LTY0.1HA V165HLX0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

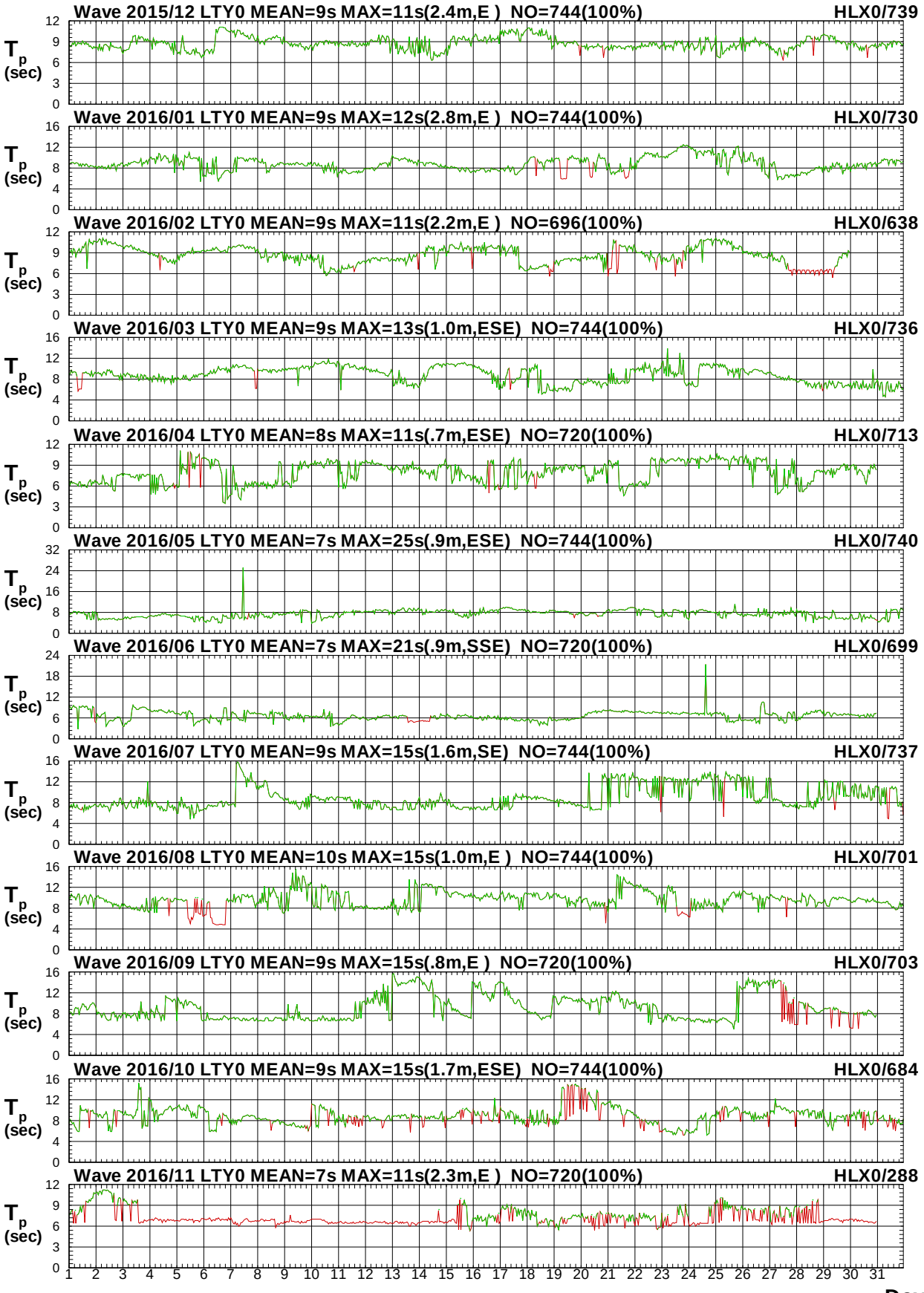

圖 5.3b　2016年每月臺東海域 Y 站與花蓮海域 X 站週期圖

V15CLTY0.1HA V15CHLX0.1H0 V161LTY0.1HA V161HLX0.1H0 V162LTY0.1HA V162HLX0.1H0
V163LTY0.1HA V163HLX0.1H0 V164LTY0.1HA V164HLX0.1H0 V165LTY0.1HA V165HLX0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

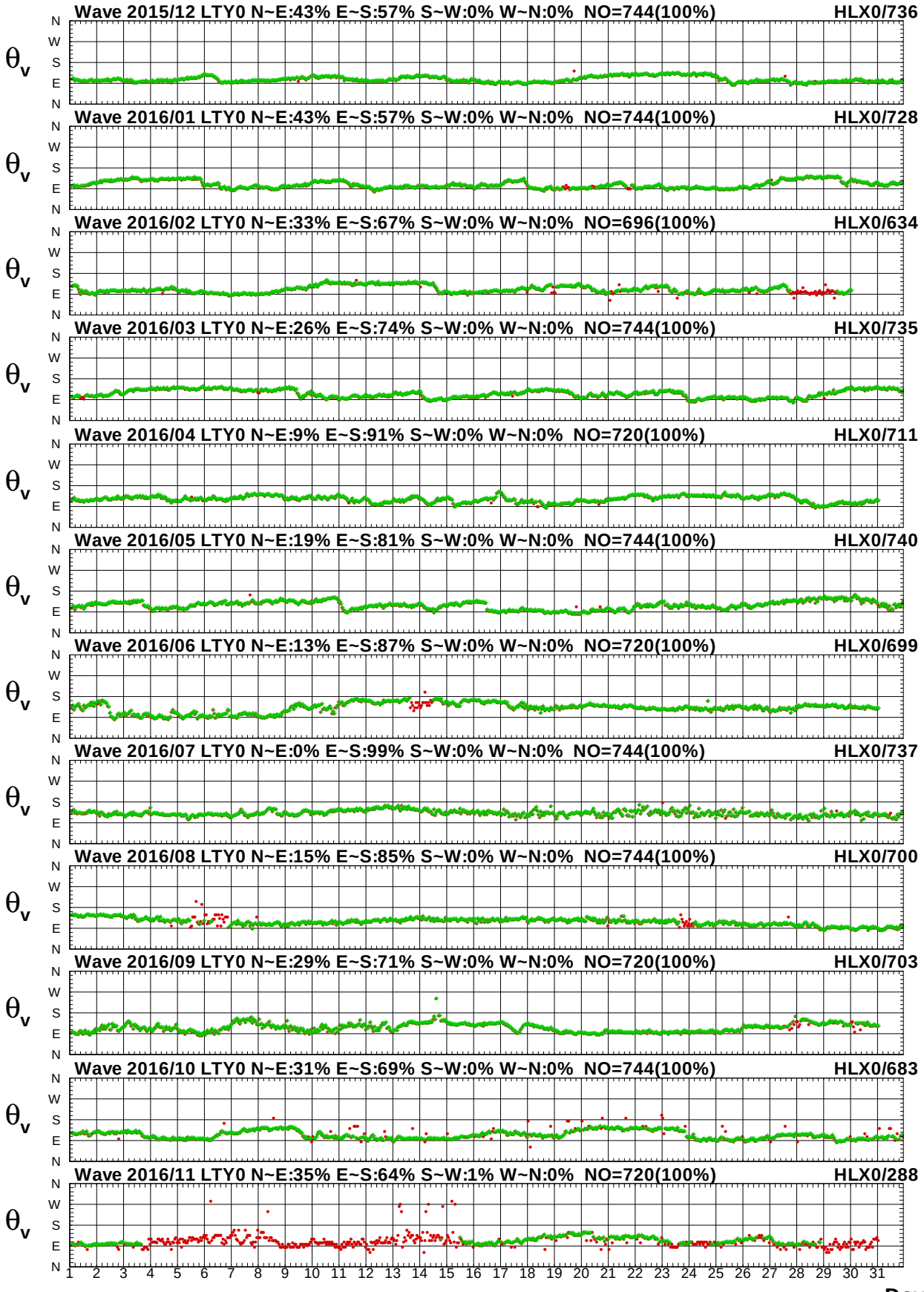

圖 5.3c　2016年每月臺東海域 Y 站與花蓮海域 X 站波向圖

V15CLTY0.1HA V15CHLX0.1H0 V161LTY0.1HA V161HLX0.1H0 V162LTY0.1HA V162HLX0.1H0
V163LTY0.1HA V163HLX0.1H0 V164LTY0.1HA V164HLX0.1H0 V165LTY0.1HA V165HLX0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

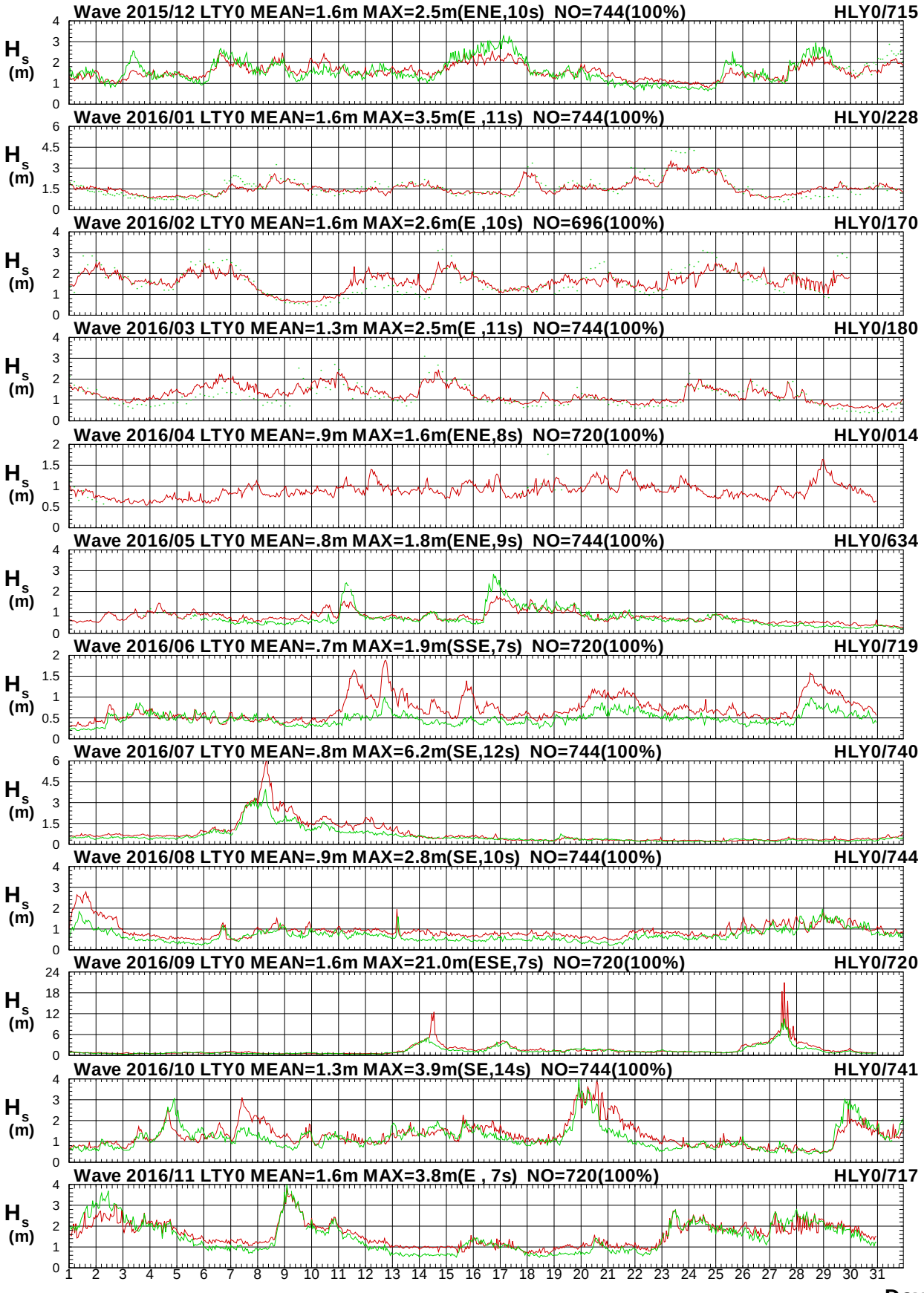

圖5.4a　2016年每月臺東海域 Y 站與花蓮海域 Y 站波高圖

V15CLTY0.1HA V15CHLY0.1H0 V161LTY0.1HA V161HLY0.1H0 V162LTY0.1HA V162HLY0.1H0
V163LTY0.1HA V163HLY0.1H0 V164LTY0.1HA V164HLY0.1H0 V165LTY0.1HA V165HLY0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

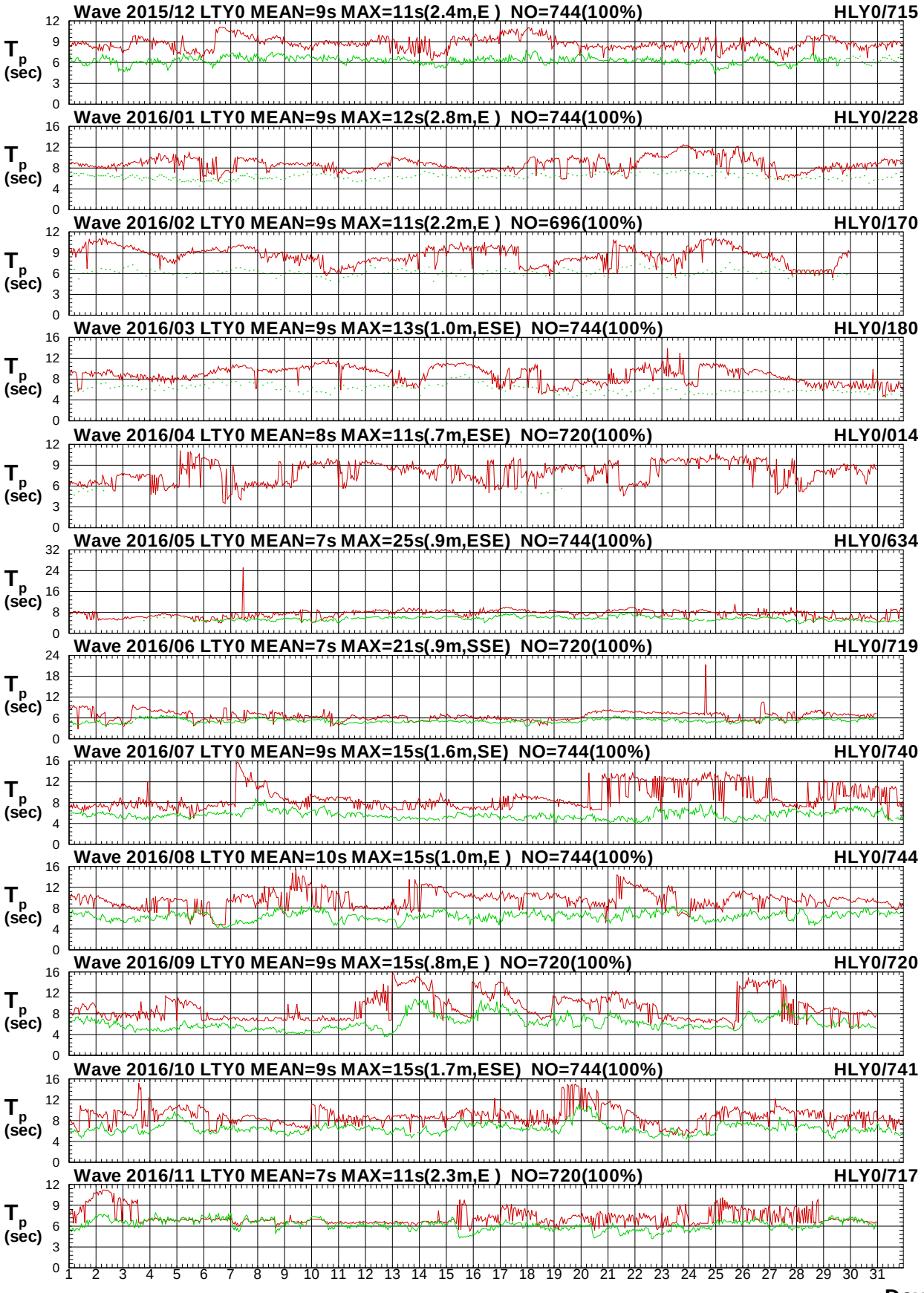

圖5.4b　2016年每月臺東海域 Y 站與花蓮海域 Y 站週期圖

V15CLTY0.1HA V15CHLY0.1H0 V161LTY0.1HA V161HLY0.1H0 V162LTY0.1HA V162HLY0.1H0
V163LTY0.1HA V163HLY0.1H0 V164LTY0.1HA V164HLY0.1H0 V165LTY0.1HA V165HLY0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

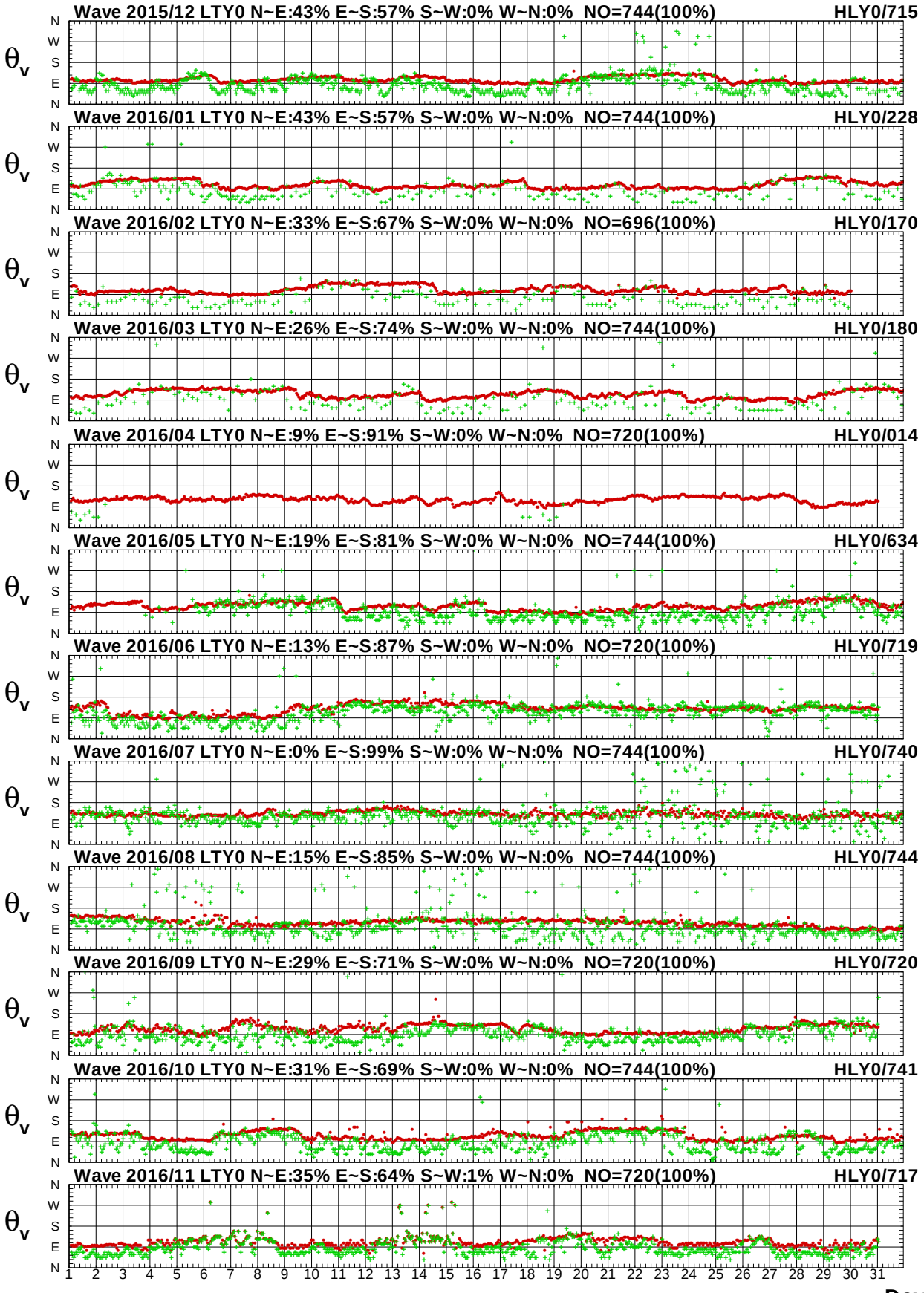

圖 5.4c　2016年每月臺東海域 Y 站與花蓮海域 Y 站波向圖

V15CLTY0.1HA V15CHLY0.1H0 V161LTY0.1HA V161HLY0.1H0 V162LTY0.1HA V162HLY0.1H0
V163LTY0.1HA V163HLY0.1H0 V164LTY0.1HA V164HLY0.1H0 V165LTY0.1HA V165HLY0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

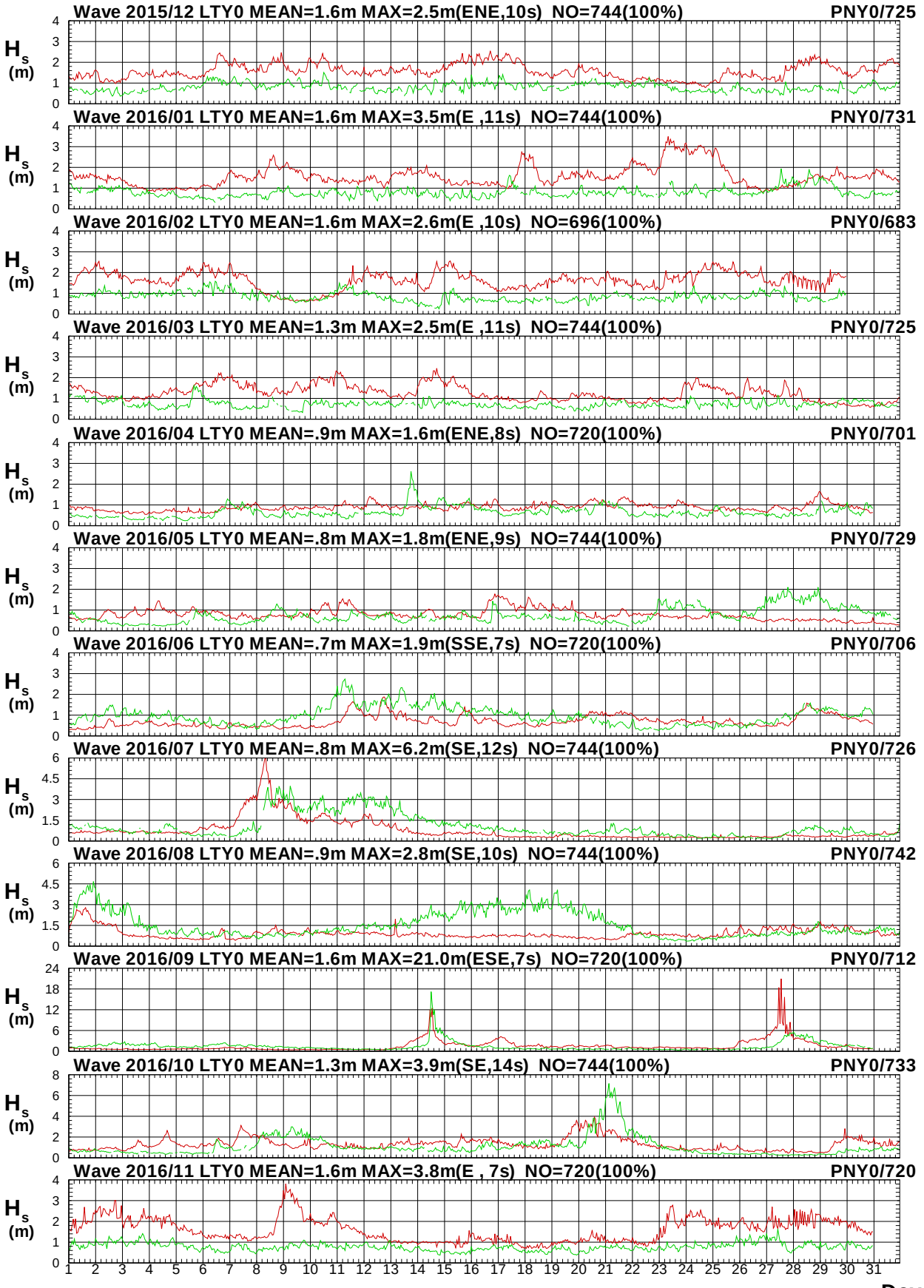

圖5.5a　2016年每月臺東海域 Y 站與屏東海域 Y 站波高圖

V15CLTY0.1HA V15CPNY0.1H0 V161LTY0.1HA V161PNY0.1H0 V162LTY0.1HA V162PNY0.1H0
V163LTY0.1HA V163PNY0.1H0 V164LTY0.1HA V164PNY0.1H0 V165LTY0.1HA V165PNY0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

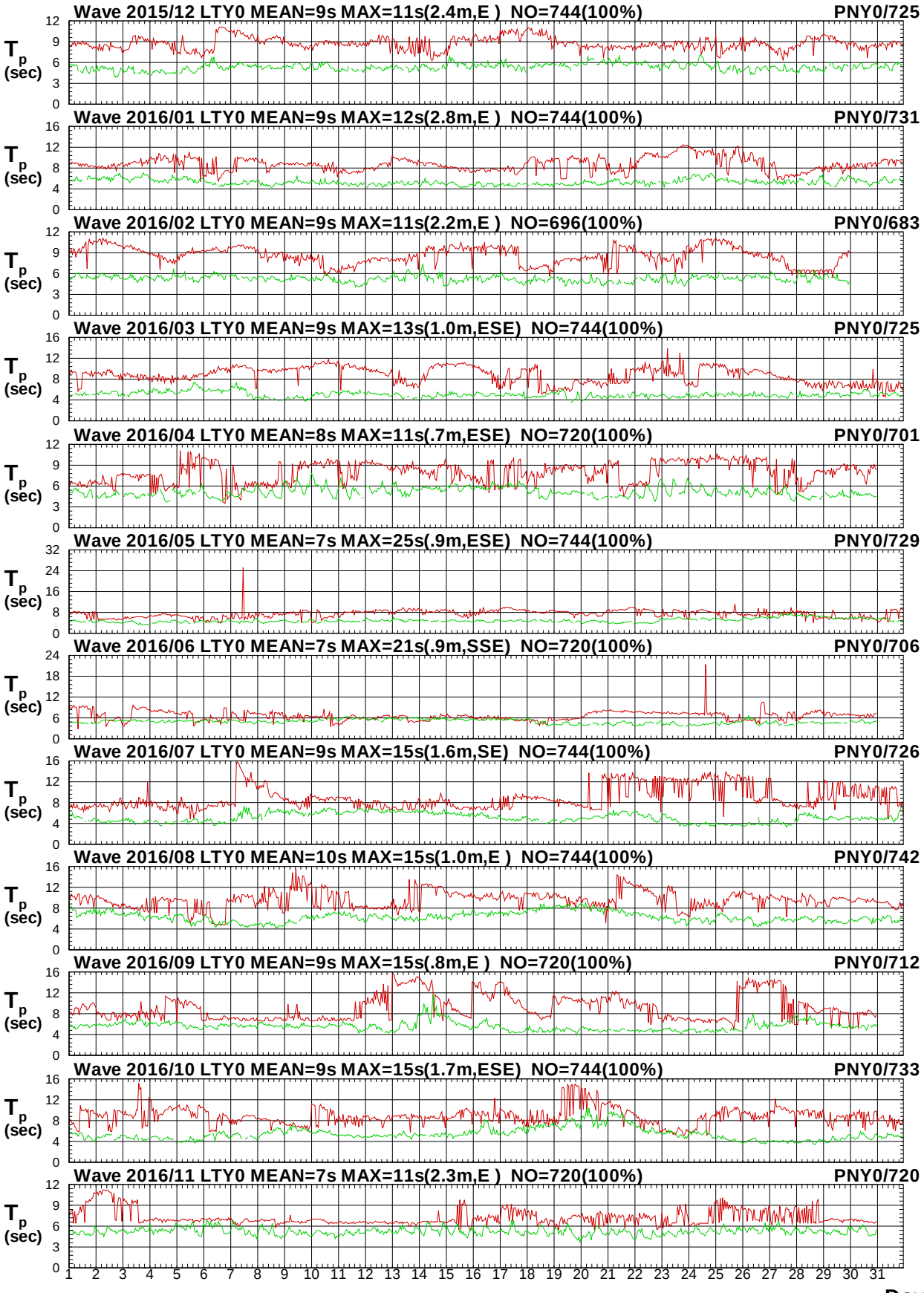

圖 5.5b　2016年每月臺東海域 Y 站與屏東海域 Y 站週期圖

V15CLTY0.1HA V15CPNY0.1H0 V161LTY0.1HA V161PNY0.1H0 V162LTY0.1HA V162PNY0.1H0
V163LTY0.1HA V163PNY0.1H0 V164LTY0.1HA V164PNY0.1H0 V165LTY0.1HA V165PNY0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

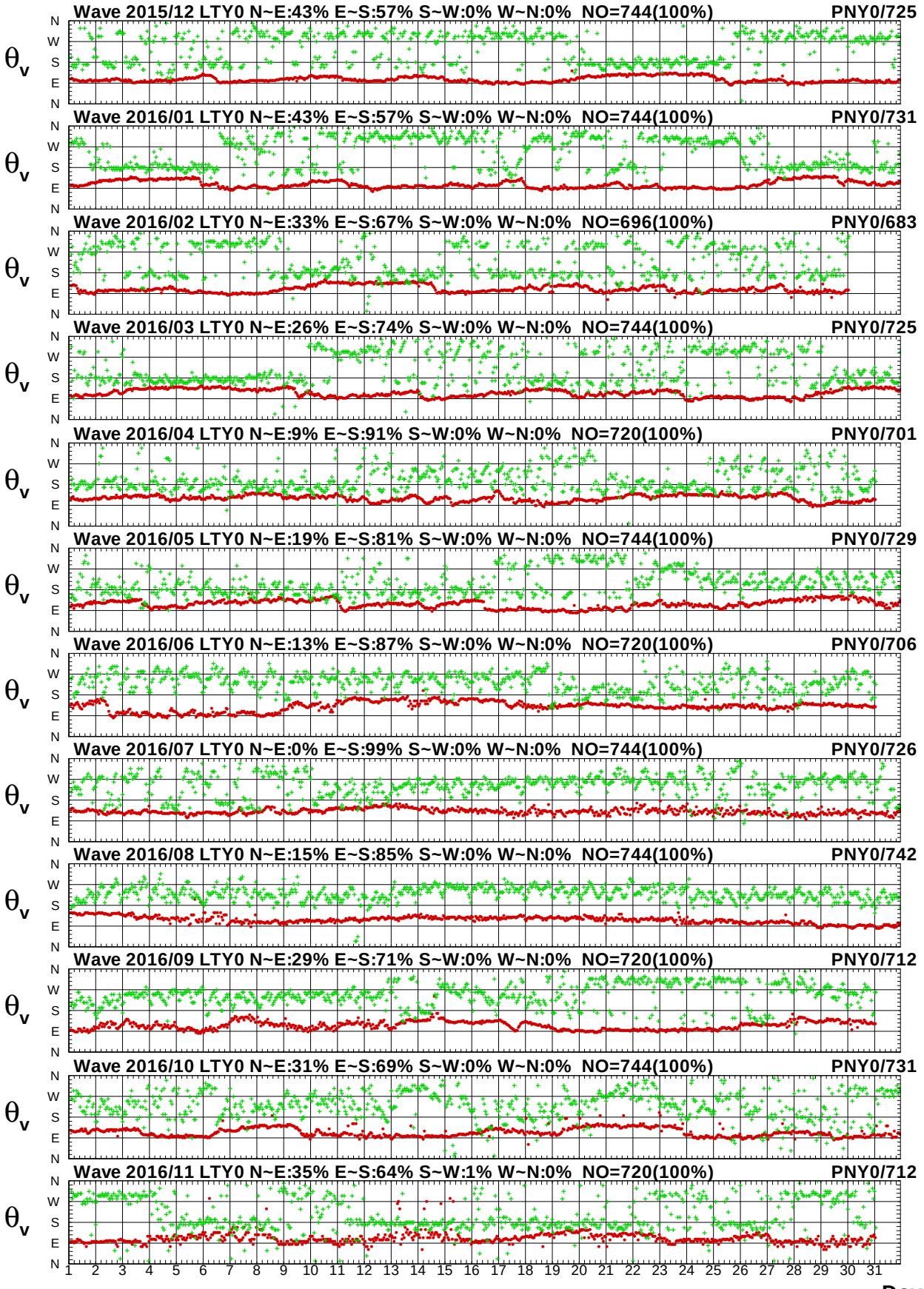

圖 5.5c　2016年每月臺東海域 Y 站與屏東海域 Y 站波向圖

V15CLTY0.1HA V15CPNY0.1H0 V161LTY0.1HA V161PNY0.1H0 V162LTY0.1HA V162PNY0.1H0
V163LTY0.1HA V163PNY0.1H0 V164LTY0.1HA V164PNY0.1H0 V165LTY0.1HA V165PNY0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

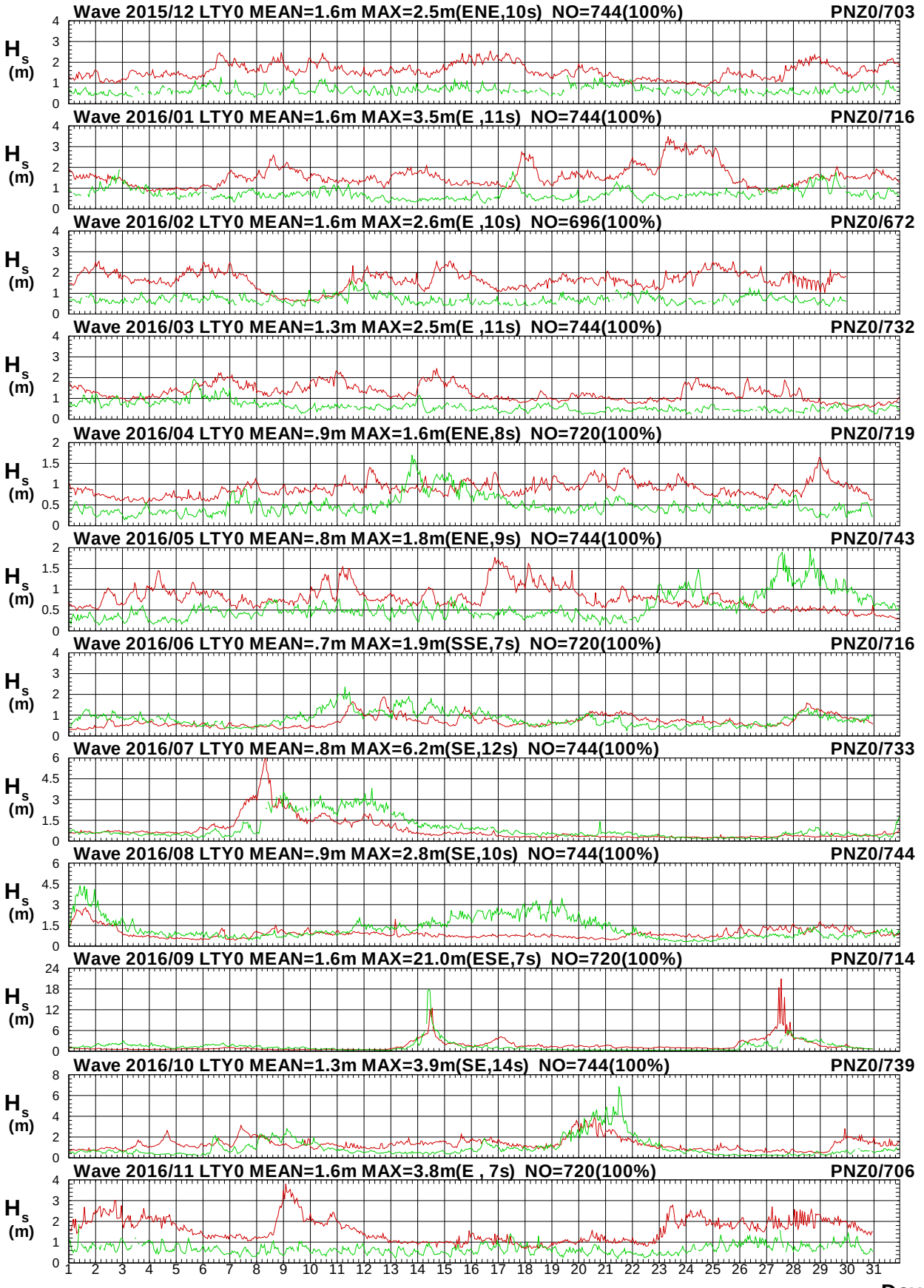

圖 5.6a　2016年每月臺東海域 Y 站與屏東海域 Z 站波高圖

V15CLTY0.1HA V15CPNZ0.1H0 V161LTY0.1HA V161PNZ0.1H0 V162LTY0.1HA V162PNZ0.1H0
V163LTY0.1HA V163PNZ0.1H0 V164LTY0.1HA V164PNZ0.1H0 V165LTY0.1HA V165PNZ0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

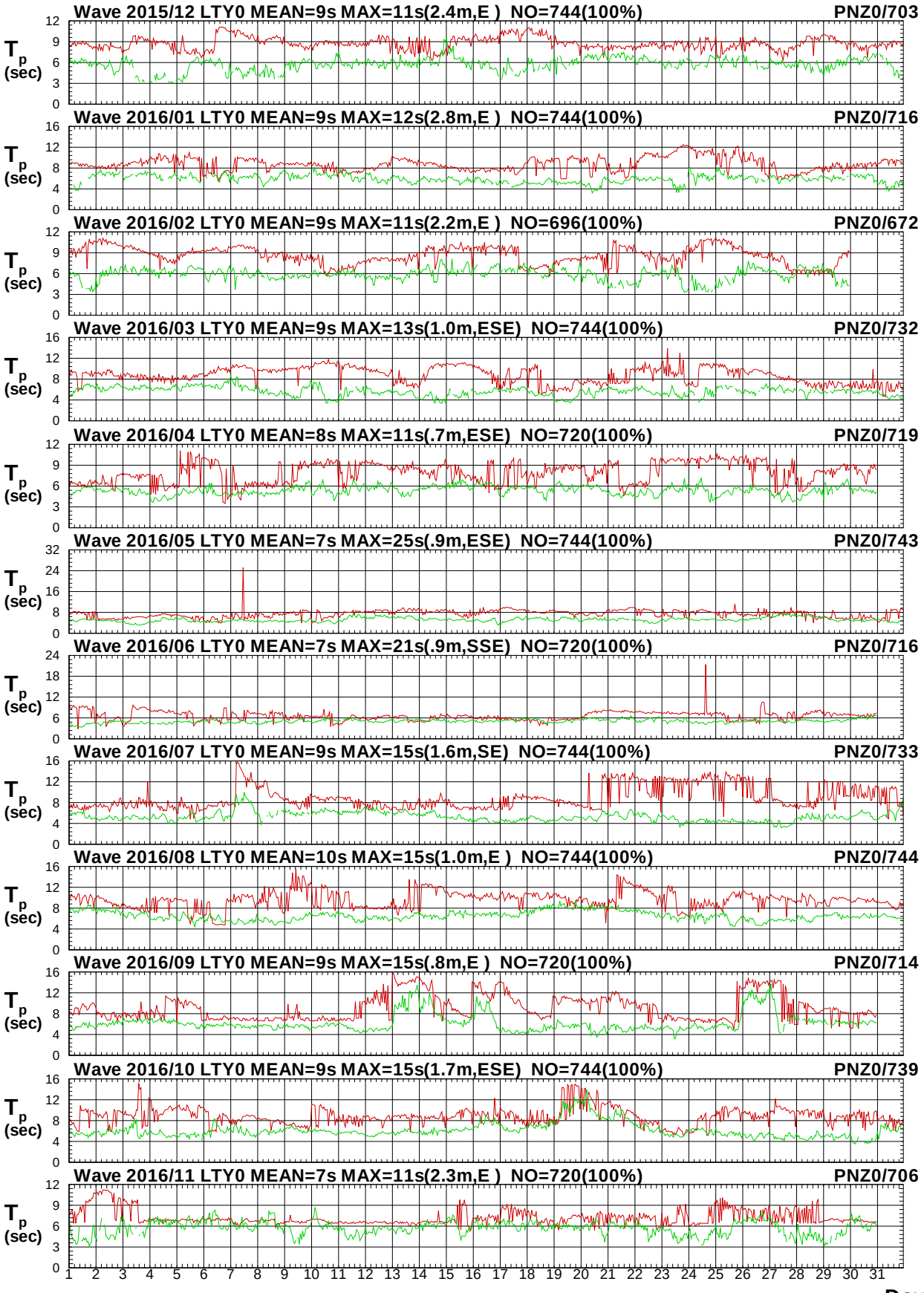

圖 5.6b　2016年每月臺東海域 Y 站與屏東海域 Z 站週期圖

V15CLTY0.1HA V15CPNZ0.1H0 V161LTY0.1HA V161PNZ0.1H0 V162LTY0.1HA V162PNZ0.1H0
V163LTY0.1HA V163PNZ0.1H0 V164LTY0.1HA V164PNZ0.1H0 V165LTY0.1HA V165PNZ0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

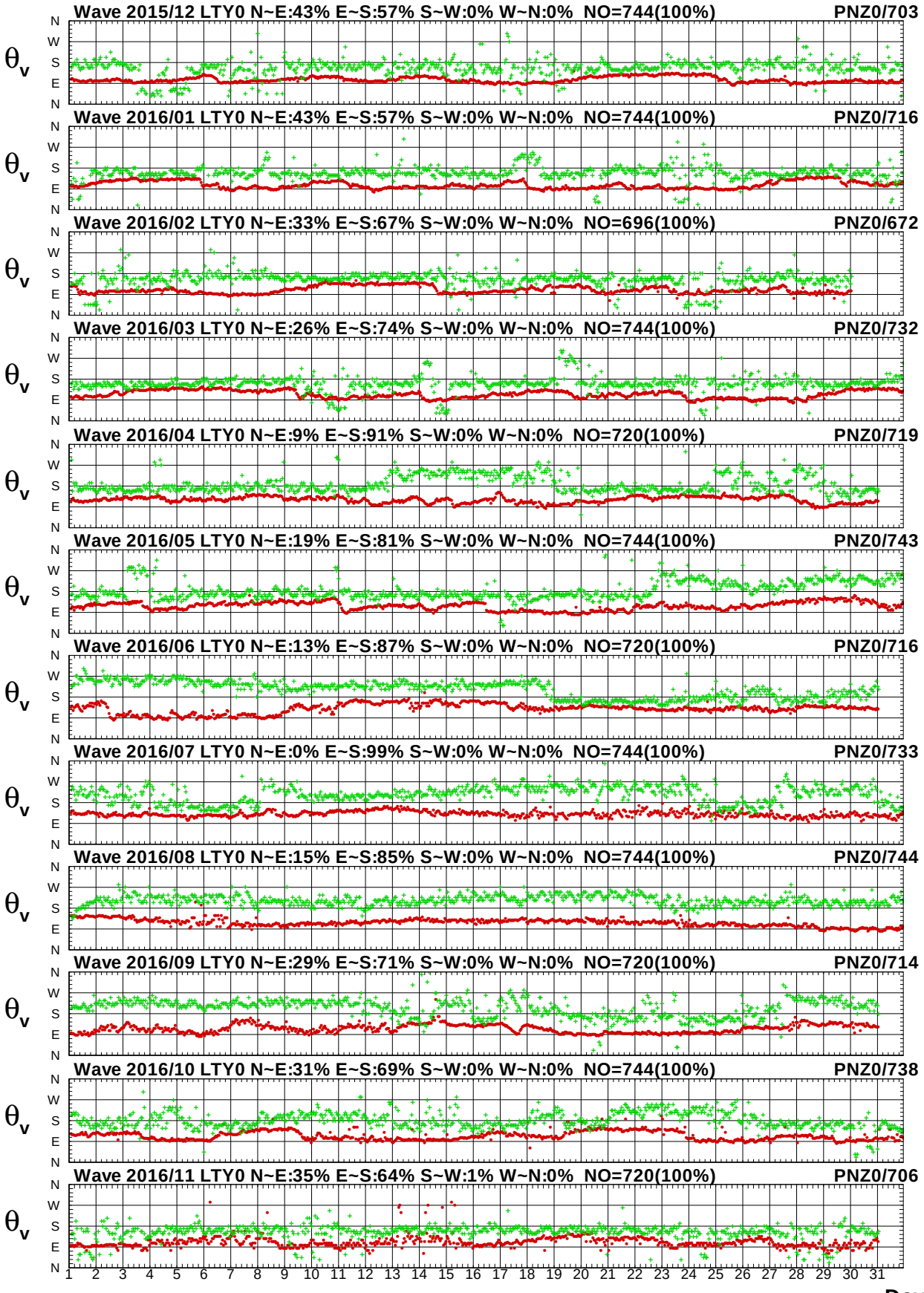

圖5.6c　2016年每月臺東海域 Y 站與屏東海域 Z 站波向圖

V15CLTY0.1HA V15CPNZ0.1H0 V161LTY0.1HA V161PNZ0.1H0 V162LTY0.1HA V162PNZ0.1H0
V163LTY0.1HA V163PNZ0.1H0 V164LTY0.1HA V164PNZ0.1H0 V165LTY0.1HA V165PNZ0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

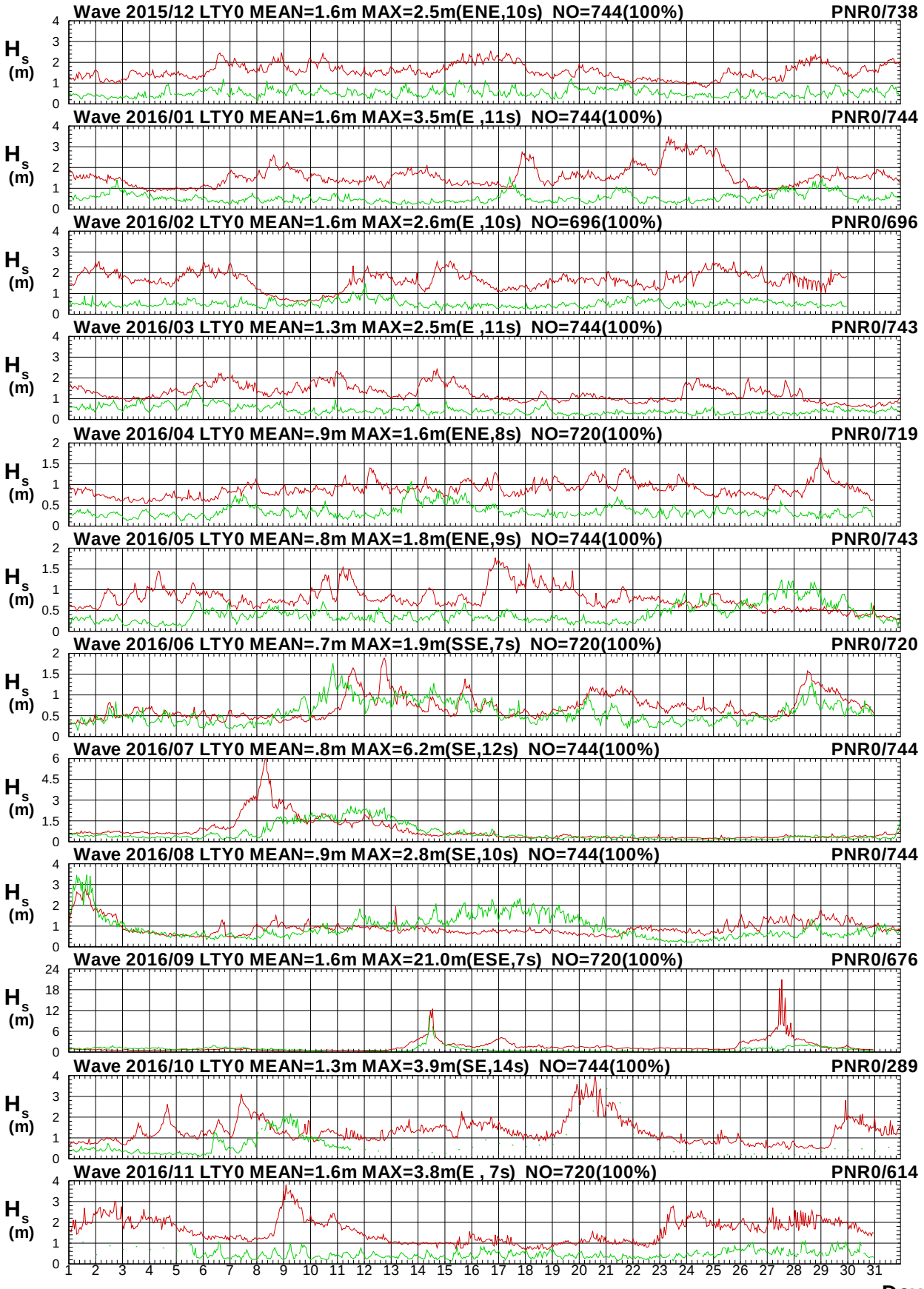

圖 5.7a　2016年每月臺東海域 Y 站與屏東海域 R 站波高圖

V15CLTY0.1HA V15CPNR0.1H0 V161LTY0.1HA V161PNR0.1H0 V162LTY0.1HA V162PNR0.1H0
V163LTY0.1HA V163PNR0.1H0 V164LTY0.1HA V164PNR0.1H0 V165LTY0.1HA V165PNR0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

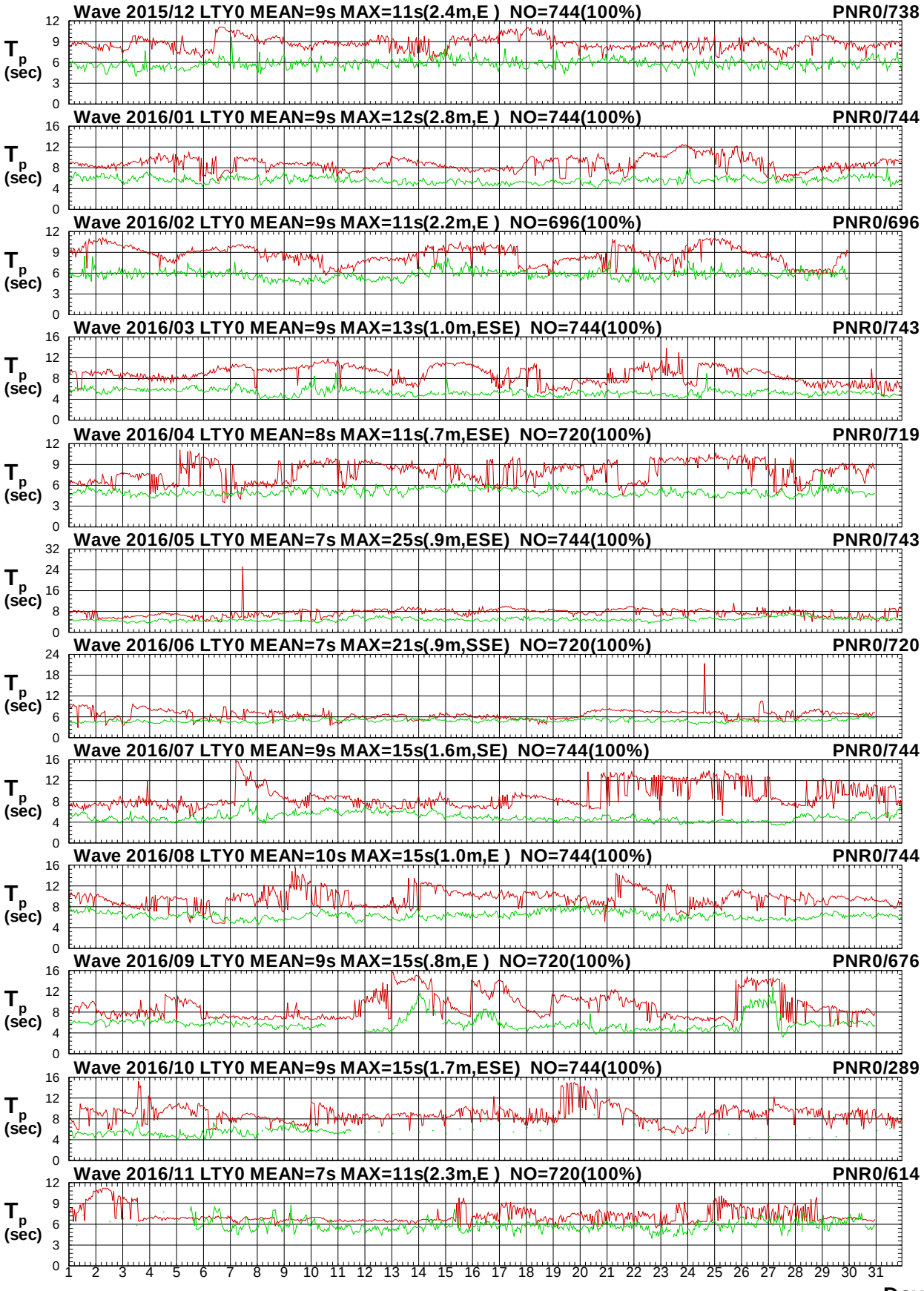

圖 5.7b　2016年每月臺東海域 Y 站與屏東海域 R 站週期圖

V15CLTY0.1HA V15CPNR0.1H0 V161LTY0.1HA V161PNR0.1H0 V162LTY0.1HA V162PNR0.1H0
V163LTY0.1HA V163PNR0.1H0 V164LTY0.1HA V164PNR0.1H0 V165LTY0.1HA V165PNR0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

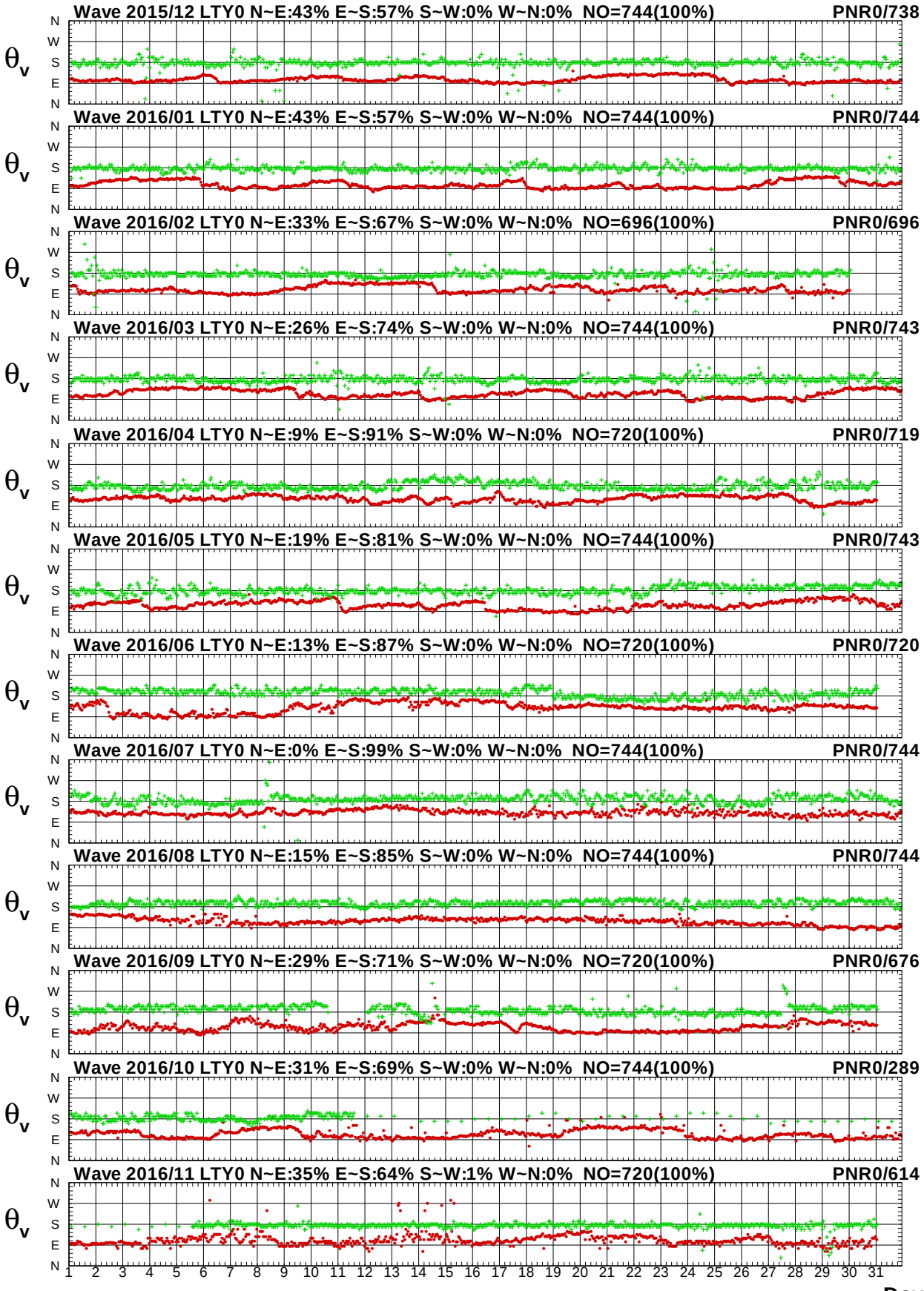

圖 5.7c　2016年每月臺東海域 Y 站與屏東海域 R 站波向圖

V15CLTY0.1HA V15CPNR0.1H0 V161LTY0.1HA V161PNR0.1H0 V162LTY0.1HA V162PNR0.1H0
V163LTY0.1HA V163PNR0.1H0 V164LTY0.1HA V164PNR0.1H0 V165LTY0.1HA V165PNR0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2016

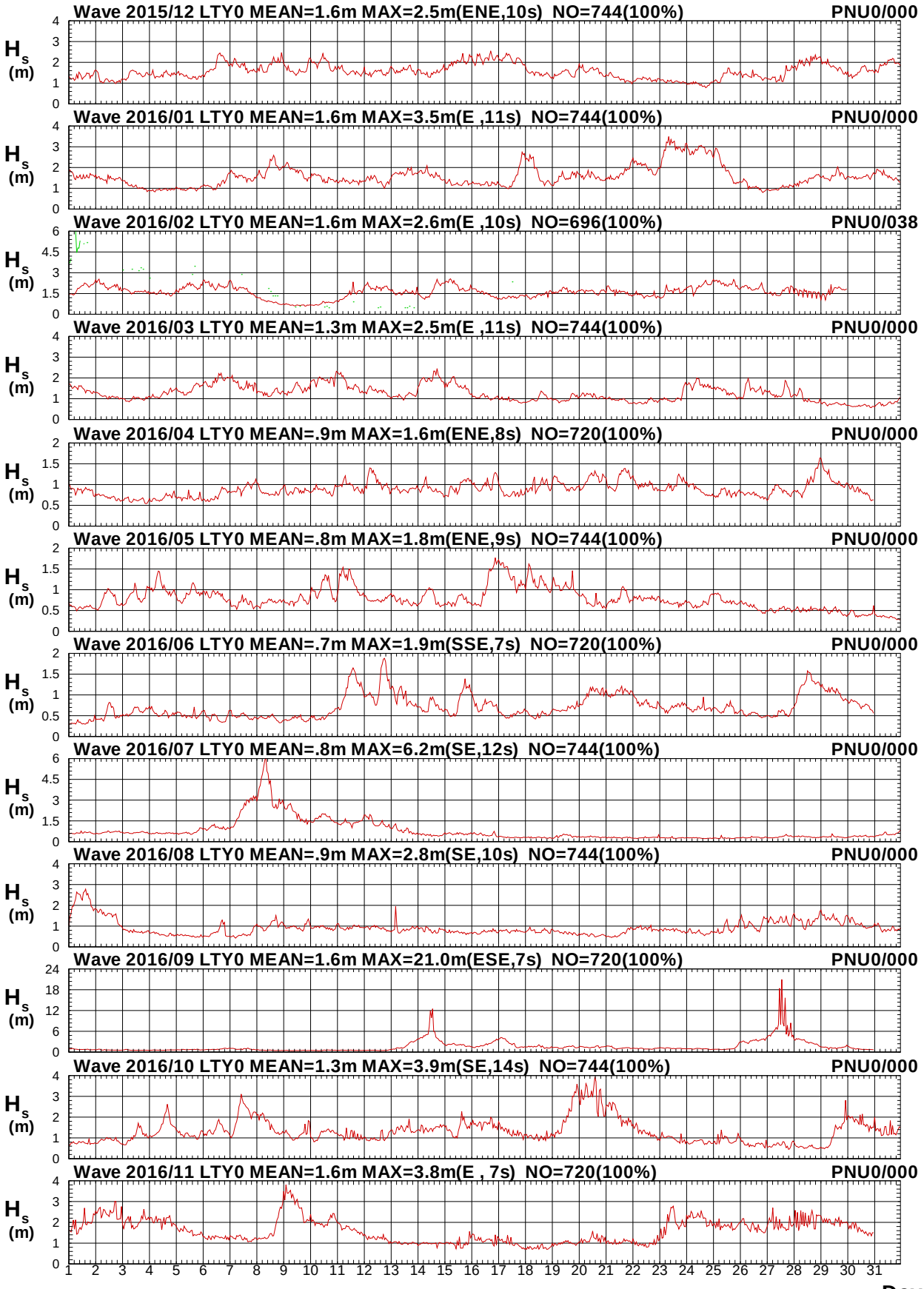

圖5.8a　2016年每月臺東海域 Y 站與屏東海域 U 站波高圖

V15CLTY0.1HA V15CPNU0.1H0 V161LTY0.1HA V161PNU0.1H0 V162LTY0.1HA V162PNU0.1H0
V163LTY0.1HA V163PNU0.1H0 V164LTY0.1HA V164PNU0.1H0 V165LTY0.1HA V165PNU0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2016

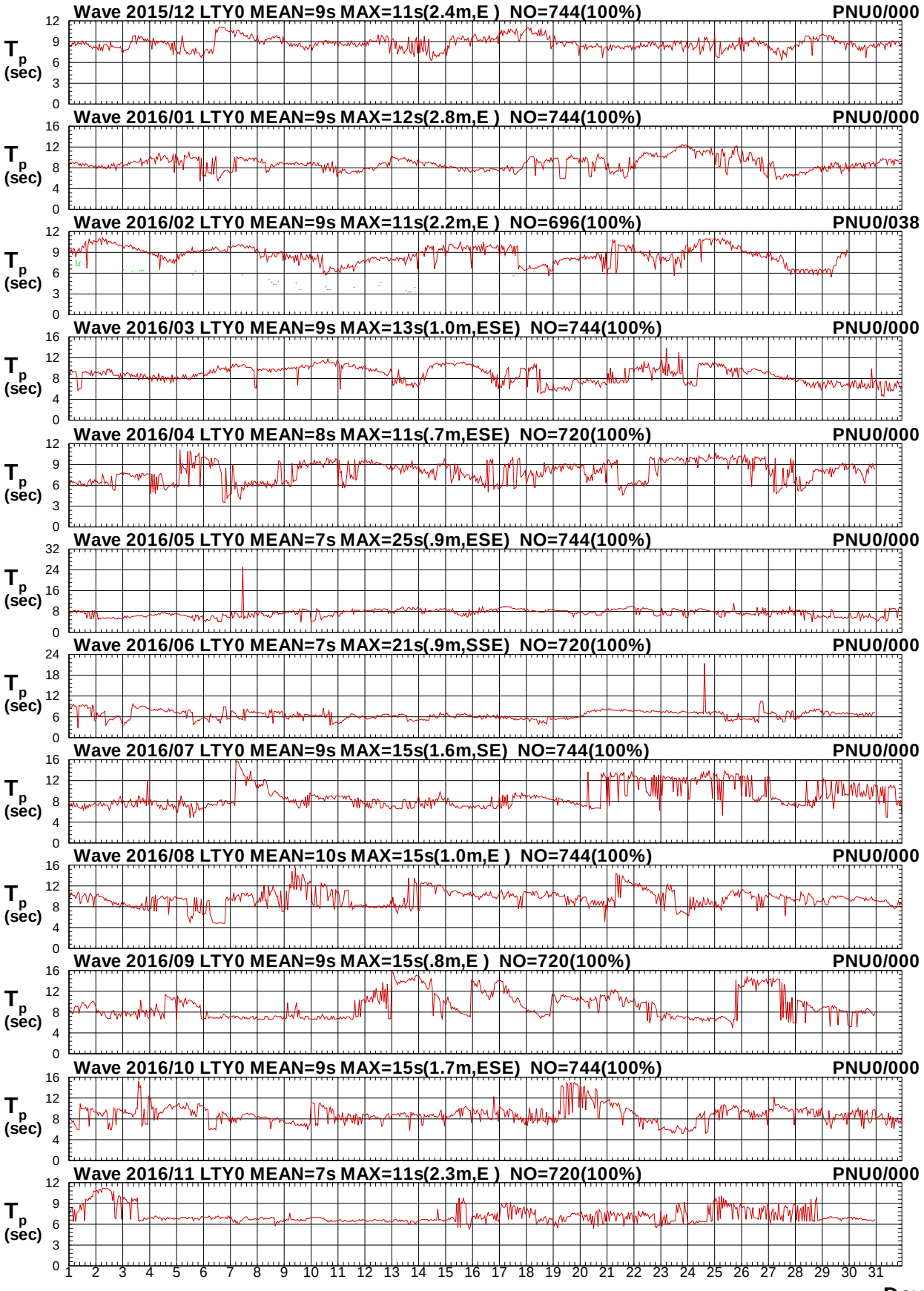

圖 5.8b　2016年每月臺東海域 Y 站與屏東海域 U 站週期圖

V15CLTY0.1HA V15CPNU0.1H0 V161LTY0.1HA V161PNU0.1H0 V162LTY0.1HA V162PNU0.1H0
V163LTY0.1HA V163PNU0.1H0 V164LTY0.1HA V164PNU0.1H0 V165LTY0.1HA V165PNU0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2016

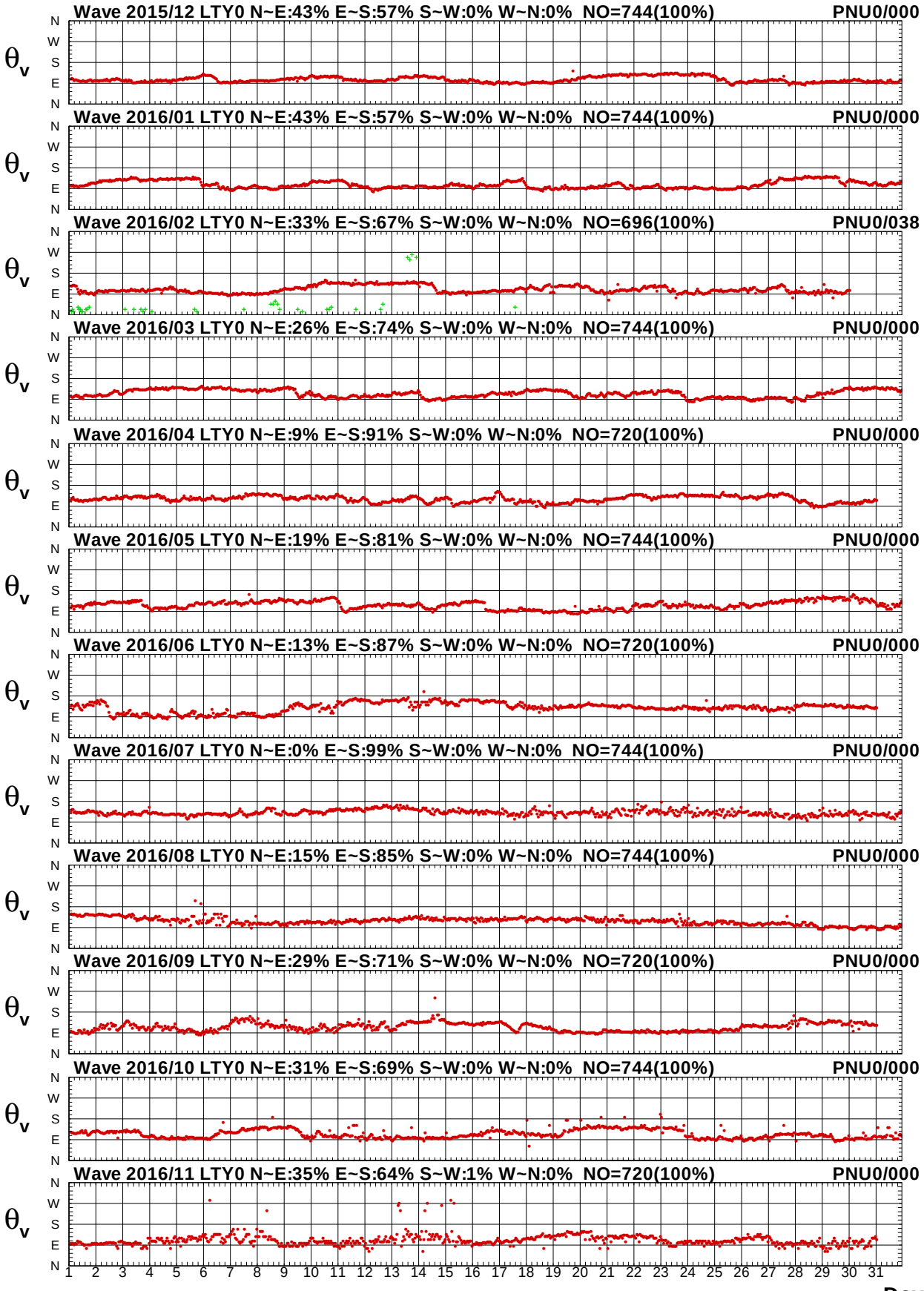

圖 5.8c　2016年每月臺東海域 Y 站與屏東海域 U 站波向圖

V15CLTY0.1HA V15CPNU0.1H0 V161LTY0.1HA V161PNU0.1H0 V162LTY0.1HA V162PNU0.1H0
V163LTY0.1HA V163PNU0.1H0 V164LTY0.1HA V164PNU0.1H0 V165LTY0.1HA V165PNU0.1H0

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第六章　2016 年屏東海域觀測波浪資料

屏東海域波浪之觀測小琉球海上浮標(**測站 Y**) 屬中央氣象局**(CWB)**所有，測站之位置如圖 6。

測站 Z(鵝鑾鼻外海浮標站) 、**測站 U**(大鵬灣海上浮標站) 之波浪儀則屬水利署**(WRA)**所有。

南灣海上浮標(**測站 R**) 波浪儀，係國立成功大學水文中心**(COMC)**裝設。各測站歷年觀測風資料蒐集概況如表 6。

本波浪年報以取經檢核或修補後之 **Y 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 6.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 6.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 6.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 6.2 以後。

表 6 屏東海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
Y	22°18'50"N	120°21'50"E	2003/11-2016/11(觀測中)	中央氣象局	小琉球浮標站
Z	21°54'01"N	120°49'21"E	2000/10-2016/11(觀測中)	水利署	鵝鑾鼻浮標站
U	22°18'50"N	120°21'50"E	2002/11-2013/08	水利署	大鵬灣浮標
R	22°18'50"N	120°21'50"E	2003/11-2016/11(觀測中)	水文中心	南灣海上浮標

屏東海域

圖 6 屏東海域波浪觀測站位置示意圖

表6.1a 2016年每月屏東海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域
測站	Y	Z	R	U				
2015/12月	725 (97.4%)	703 (94.5%)	738 (99.2%)	*	*	*	*	*
2016/ 1月	731 (98.3%)	716 (96.2%)	744 (100%)	*	*	*	*	*
2016/ 2月	683 (98.1%)	672 (96.6%)	696 (100%)	38 (5.5%)	*	*	*	*
2016/ 3月	725 (97.4%)	732 (98.4%)	743 (99.9%)	*	*	*	*	*
2016/ 4月	701 (97.4%)	719 (99.9%)	719 (99.9%)	*	*	*	*	*
2016/ 5月	729 (98.0%)	743 (99.9%)	743 (99.9%)	*	*	*	*	*
2016/ 6月	706 (98.1%)	716 (99.4%)	720 (100%)	*	*	*	*	*
2016/ 7月	726 (97.6%)	733 (98.5%)	744 (100%)	*	*	*	*	*
2016/ 8月	742 (99.7%)	744 (100%)	744 (100%)	*	*	*	*	*
2016/ 9月	712 (98.9%)	714 (99.2%)	676 (93.9%)	*	*	*	*	*
2016/10月	733 (98.5%)	739 (99.3%)	289 (38.8%)	*	*	*	*	*
2016/11月	720 (100%)	706 (98.1%)	614 (85.3%)	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表6.1b 2016年每月屏東海域修補後各測站波浪資料統計表

年/月 港區	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域	屏東海域
測站	Y	Z	R	U				
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Peng-Tung Seas of PNY0 at 2016

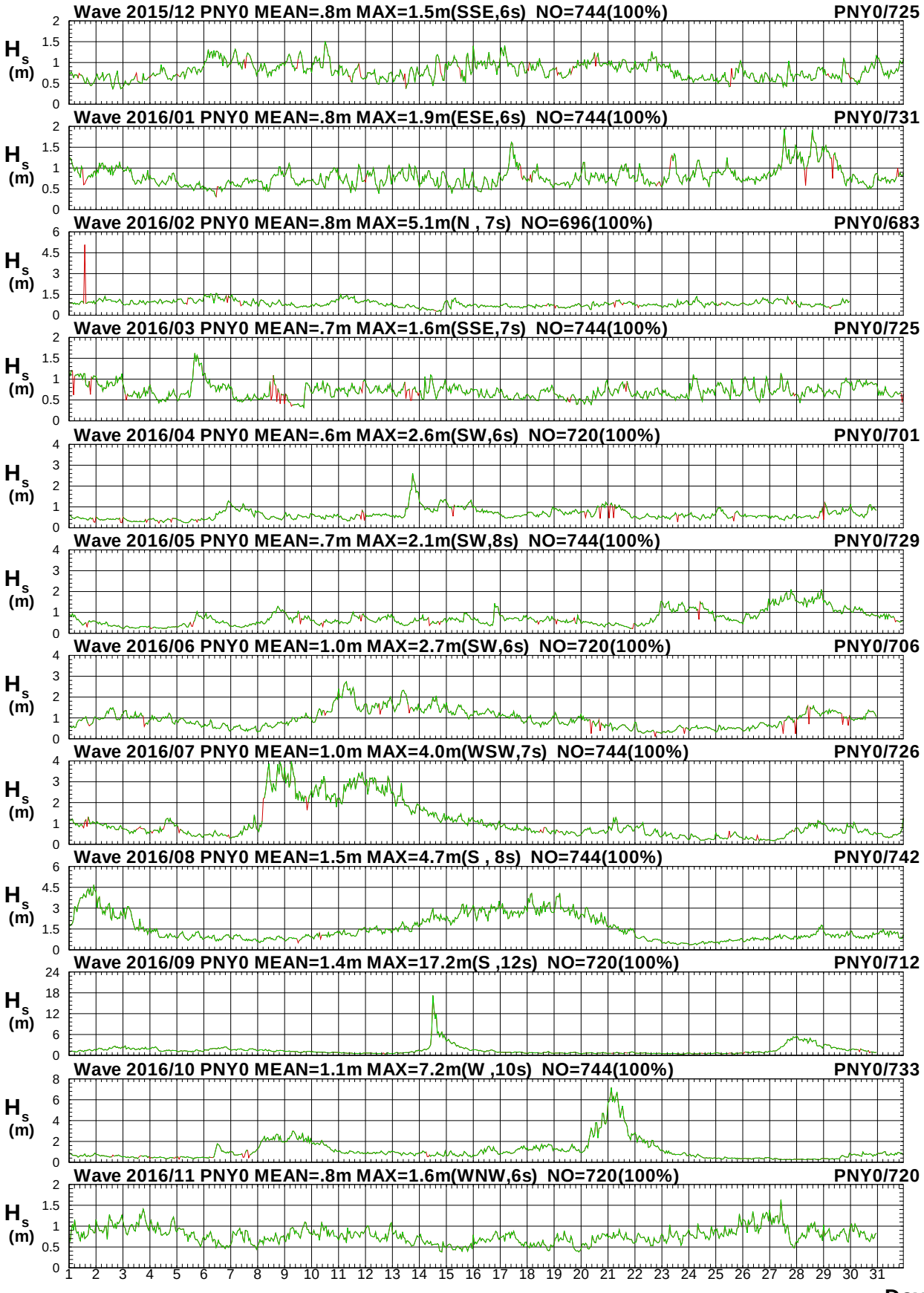

圖6.1a　2016年每月屏東海域 Y 站修補前後之波高比較圖

V15CPNY0.1HA V15CPNY0.1H0 V161PNY0.1HA V161PNY0.1H0 V162PNY0.1HA V162PNY0.1H0
V163PNY0.1HA V163PNY0.1H0 V164PNY0.1HA V164PNY0.1H0 V165PNY0.1HA V165PNY0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

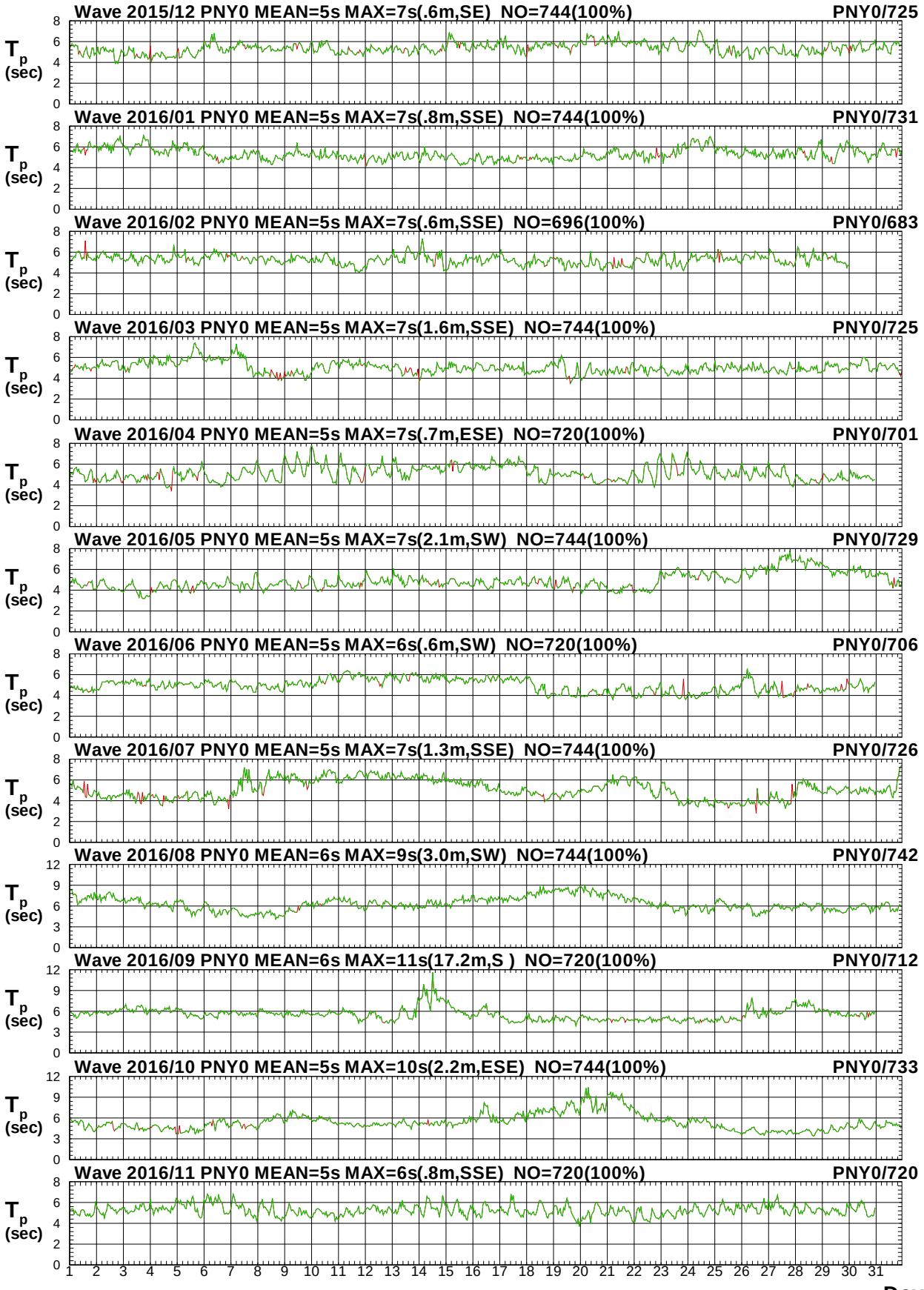

圖6.1b　2016年每月屏東海域 Y 站修補前後之週期比較圖

V15CPNY0.1HA V15CPNY0.1H0 V161PNY0.1HA V161PNY0.1H0 V162PNY0.1HA V162PNY0.1H0
V163PNY0.1HA V163PNY0.1H0 V164PNY0.1HA V164PNY0.1H0 V165PNY0.1HA V165PNY0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

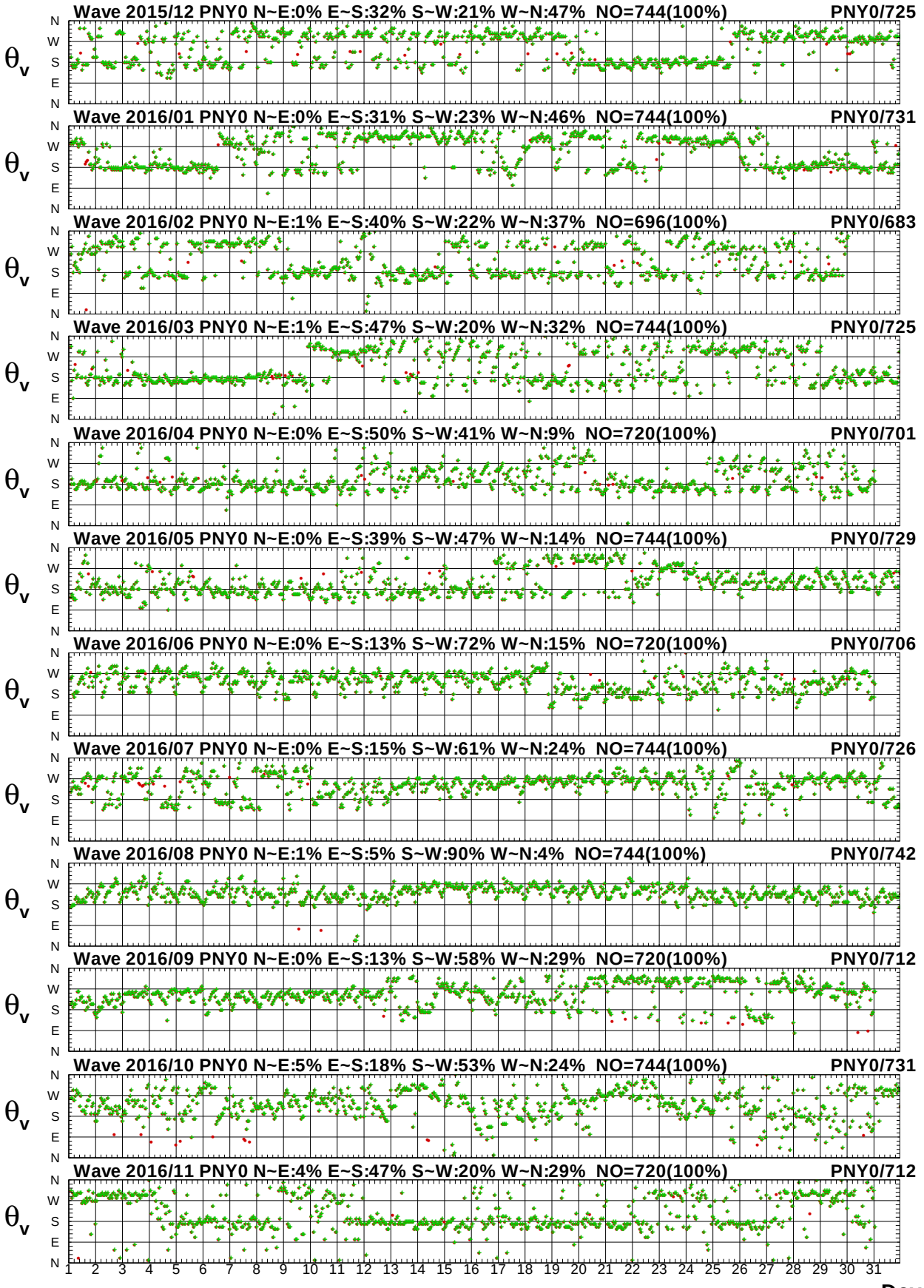

圖6.1c　2016年每月屏東海域 Y 站修補前後之波向比較圖

V15CPNY0.1HA V15CPNY0.1H0 V161PNY0.1HA V161PNY0.1H0 V162PNY0.1HA V162PNY0.1H0
V163PNY0.1HA V163PNY0.1H0 V164PNY0.1HA V164PNY0.1H0 V165PNY0.1HA V165PNY0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

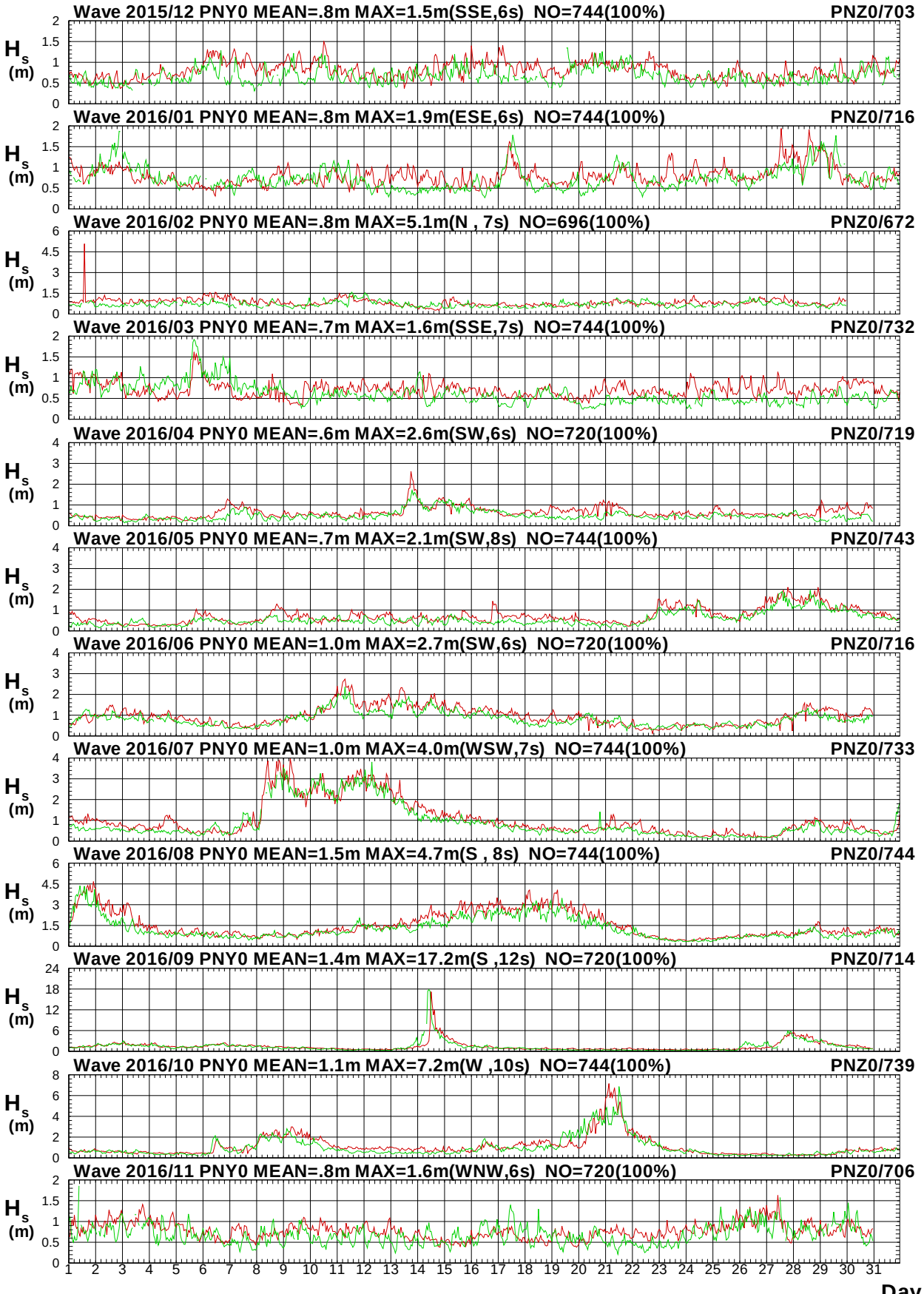

圖 6.2a　2016年每月屏東海域 Y 站與 Z 站波高比較圖

V15CPNY0.1HA V15CPNZ0.1H0 V161PNY0.1HA V161PNZ0.1H0 V162PNY0.1HA V162PNZ0.1H0
V163PNY0.1HA V163PNZ0.1H0 V164PNY0.1HA V164PNZ0.1H0 V165PNY0.1HA V165PNZ0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

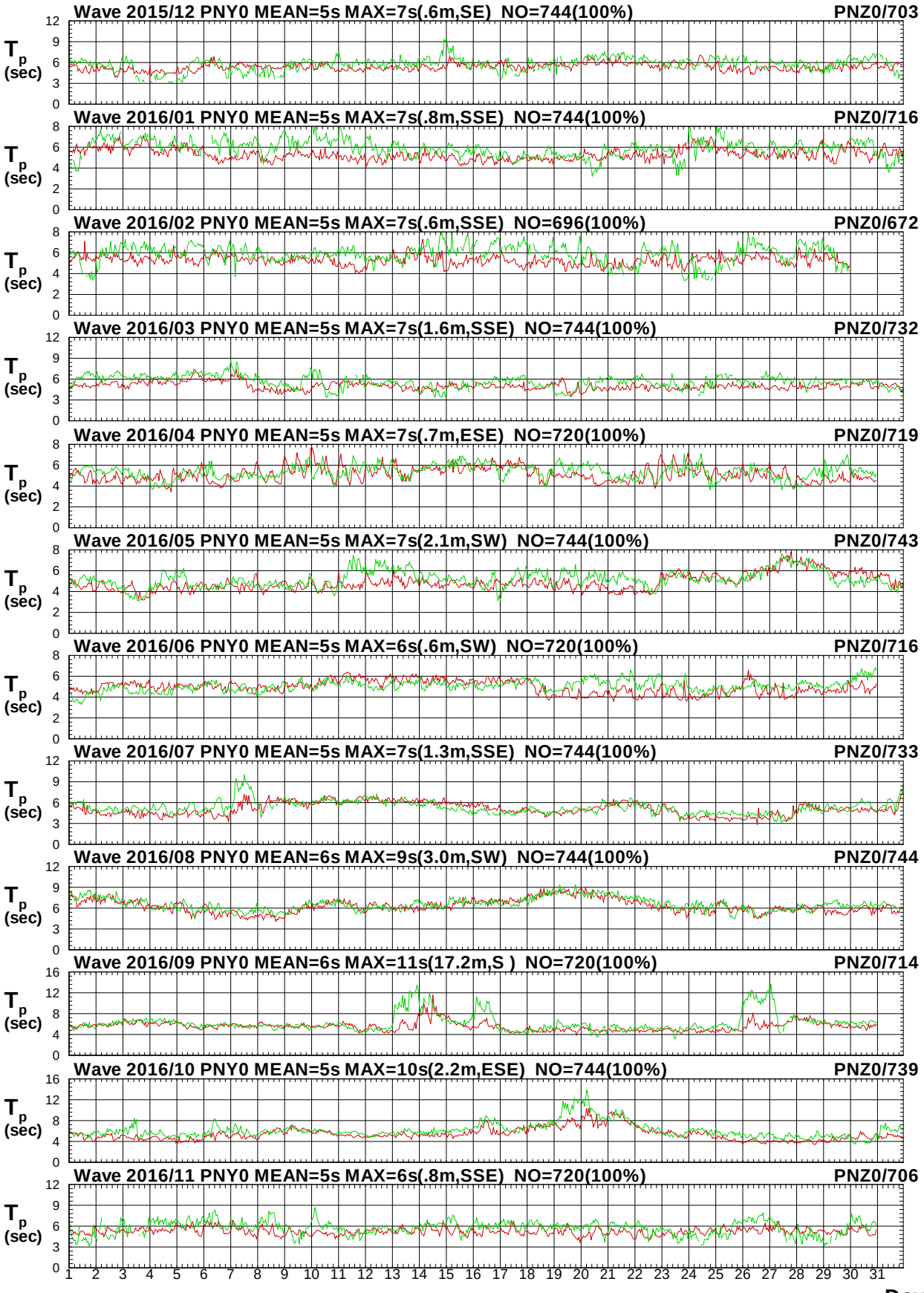

圖 6.2b　2016年每月屏東海域 Y 站與 Z 站週期比較圖

V15CPNY0.1HA V15CPNZ0.1H0 V161PNY0.1HA V161PNZ0.1H0 V162PNY0.1HA V162PNZ0.1H0
V163PNY0.1HA V163PNZ0.1H0 V164PNY0.1HA V164PNZ0.1H0 V165PNY0.1HA V165PNZ0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

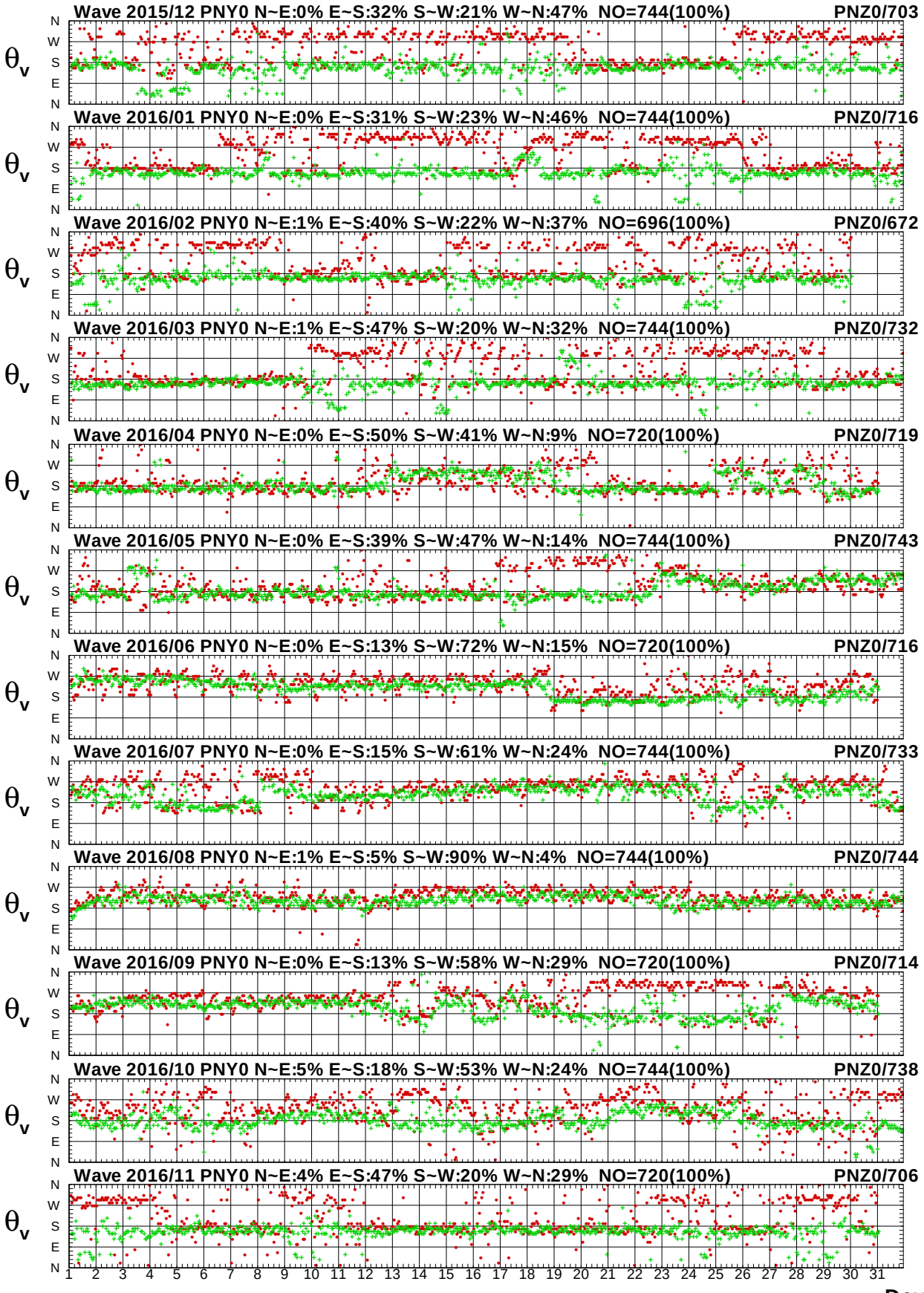

圖 6.2c　2016年每月屏東海域 Y 站與 Z 站波向比較圖

V15CPNY0.1HA V15CPNZ0.1H0 V161PNY0.1HA V161PNZ0.1H0 V162PNY0.1HA V162PNZ0.1H0
V163PNY0.1HA V163PNZ0.1H0 V164PNY0.1HA V164PNZ0.1H0 V165PNY0.1HA V165PNZ0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

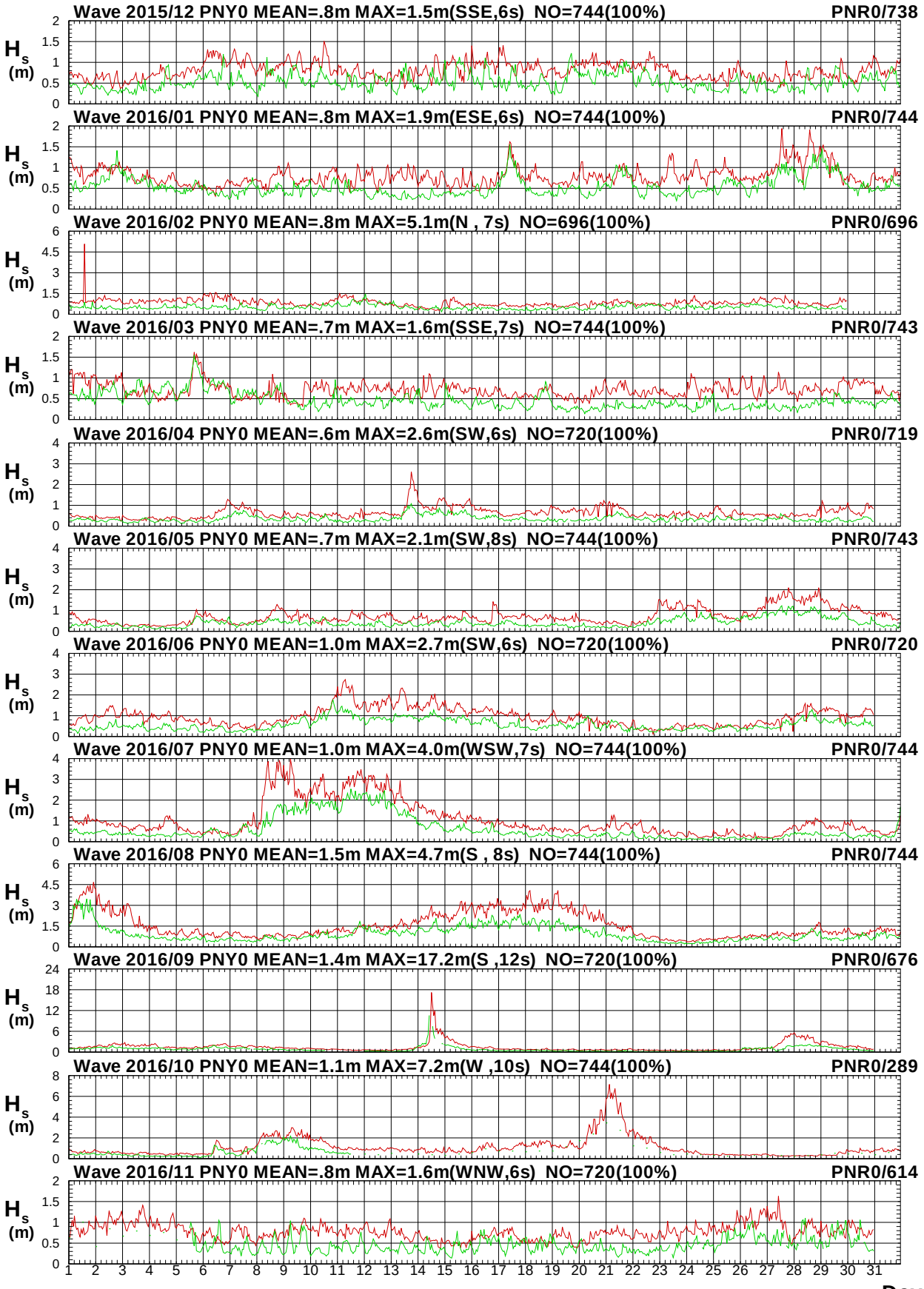

圖 6.3a　2016年每月屏東海域 Y 站與 R 站波高比較圖

V15CPNY0.1HA V15CPNR0.1H0 V161PNY0.1HA V161PNR0.1H0 V162PNY0.1HA V162PNR0.1H0
V163PNY0.1HA V163PNR0.1H0 V164PNY0.1HA V164PNR0.1H0 V165PNY0.1HA V165PNR0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

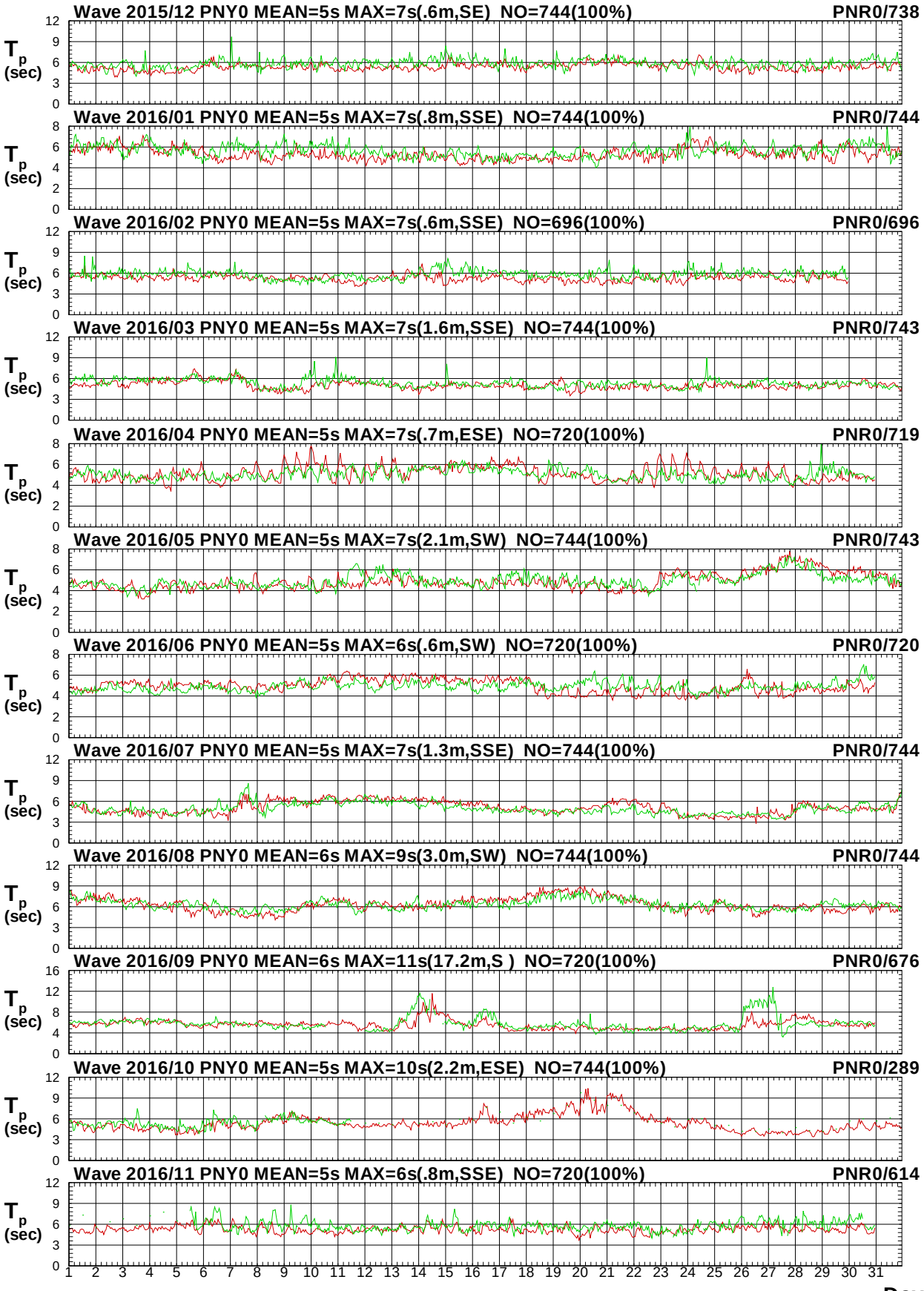

圖 6.3b　2016年每月屏東海域 Y 站與 R 站週期比較圖

V15CPNY0.1HA V15CPNR0.1H0 V161PNY0.1HA V161PNR0.1H0 V162PNY0.1HA V162PNR0.1H0
V163PNY0.1HA V163PNR0.1H0 V164PNY0.1HA V164PNR0.1H0 V165PNY0.1HA V165PNR0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

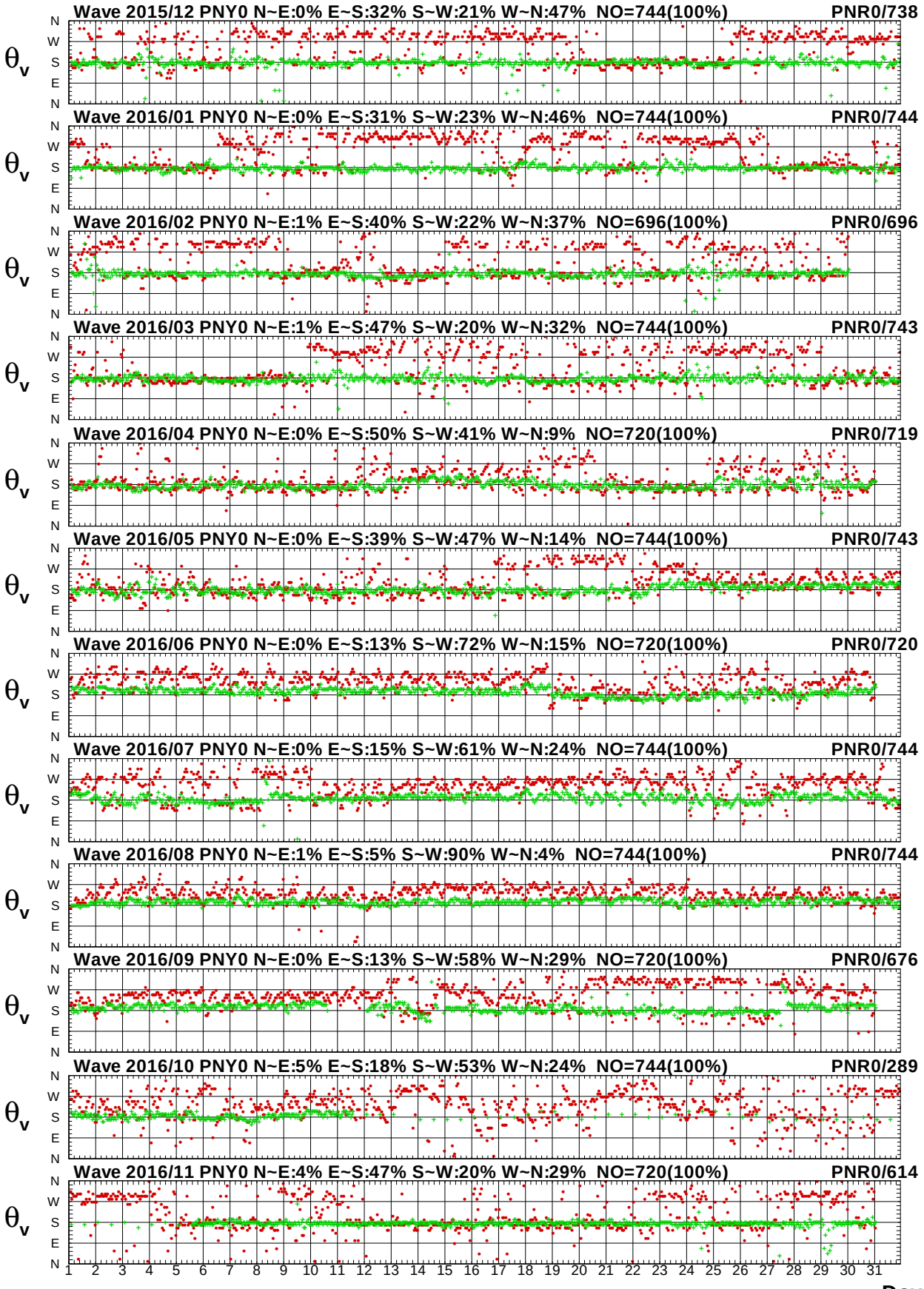

圖 6.3c　2016年每月屏東海域 Y 站與 R 站波向比較圖

V15CPNY0.1HA V15CPNR0.1H0 V161PNY0.1HA V161PNR0.1H0 V162PNY0.1HA V162PNR0.1H0
V163PNY0.1HA V163PNR0.1H0 V164PNY0.1HA V164PNR0.1H0 V165PNY0.1HA V165PNR0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

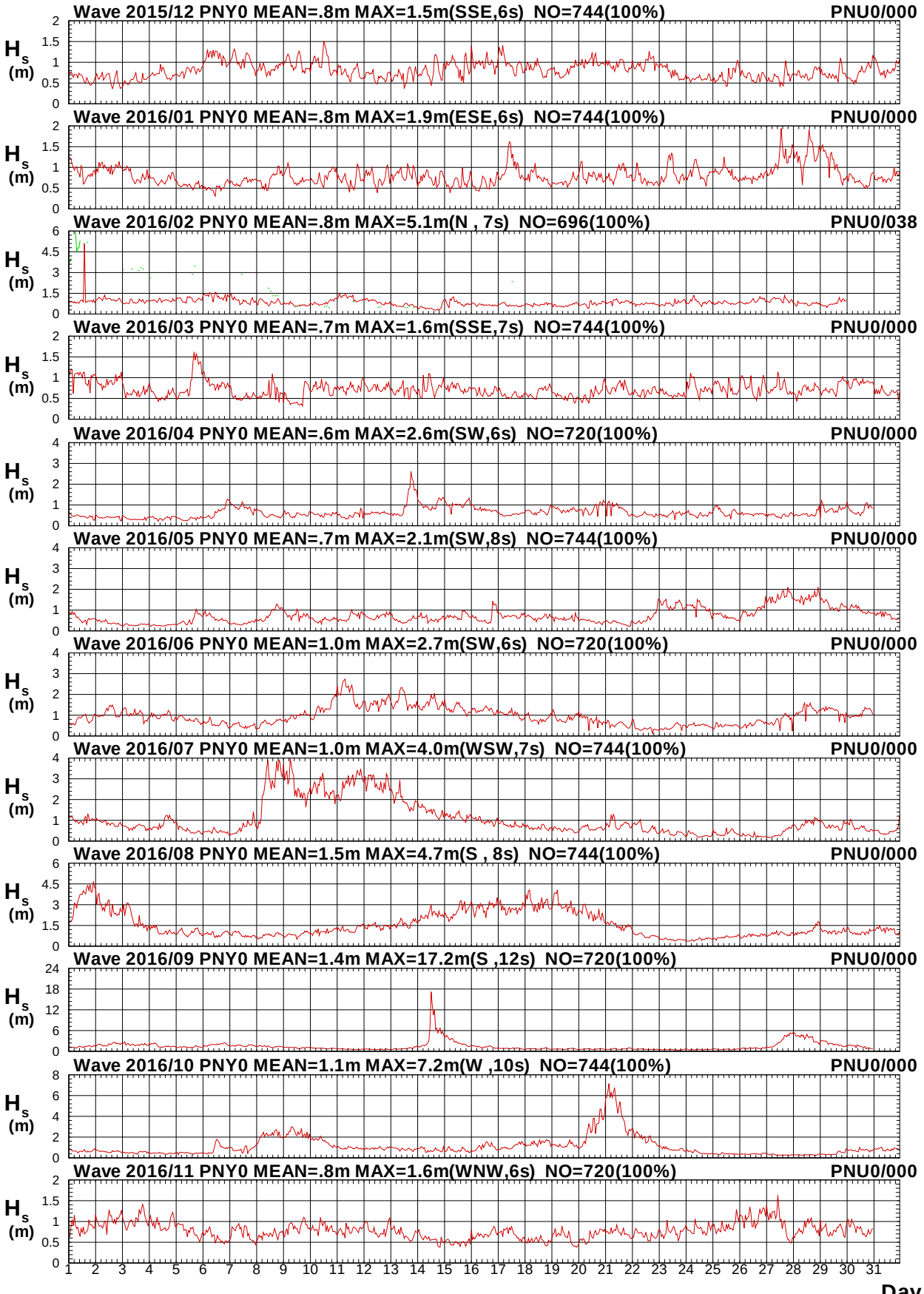

圖 6.4a　2016年每月屏東海域 Y 站與 U 站波高比較圖

V15CPNY0.1HA V15CPNU0.1H0 V161PNY0.1HA V161PNU0.1H0 V162PNY0.1HA V162PNU0.1H0
V163PNY0.1HA V163PNU0.1H0 V164PNY0.1HA V164PNU0.1H0 V165PNY0.1HA V165PNU0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

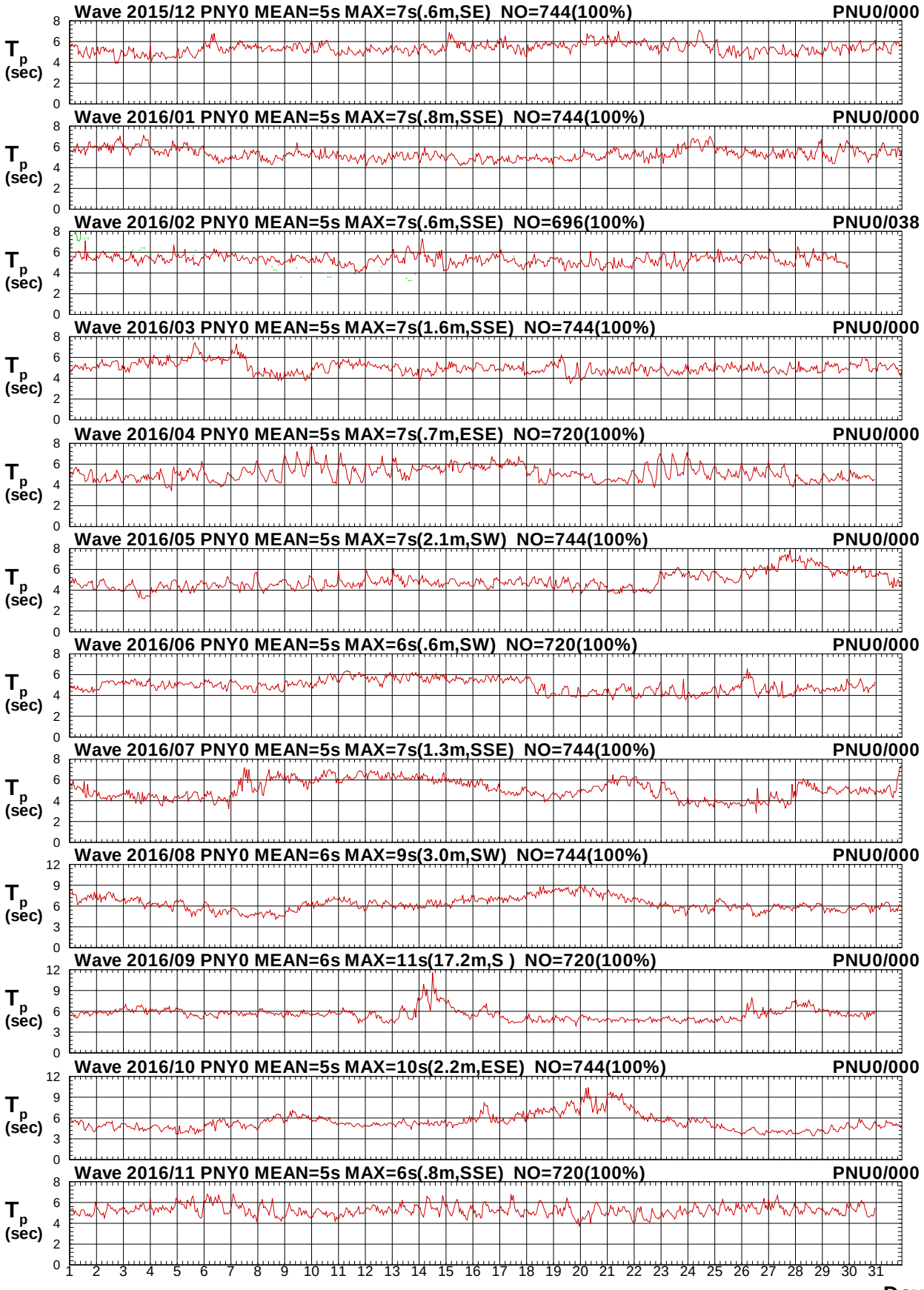

圖 6.4b　2016年每月屏東海域 Y 站與 U 站週期比較圖

V15CPNY0.1HA V15CPNU0.1H0 V161PNY0.1HA V161PNU0.1H0 V162PNY0.1HA V162PNU0.1H0
V163PNY0.1HA V163PNU0.1H0 V164PNY0.1HA V164PNU0.1H0 V165PNY0.1HA V165PNU0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

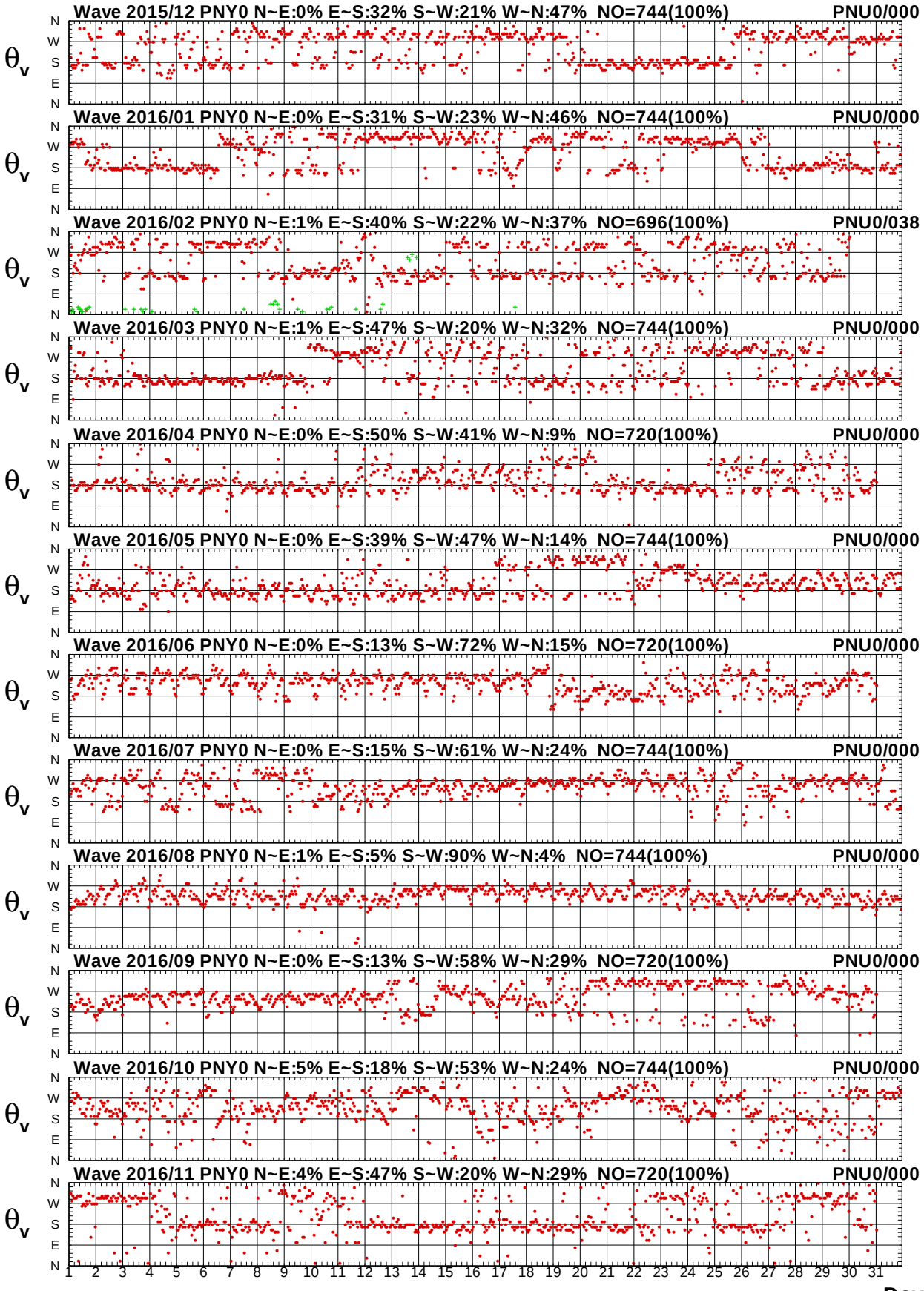

圖 6.4c　2016年每月屏東海域 Y 站與 U 站波向比較圖

V15CPNY0.1HA V15CPNU0.1H0 V161PNY0.1HA V161PNU0.1H0 V162PNY0.1HA V162PNU0.1H0
V163PNY0.1HA V163PNU0.1H0 V164PNY0.1HA V164PNU0.1H0 V165PNY0.1HA V165PNU0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

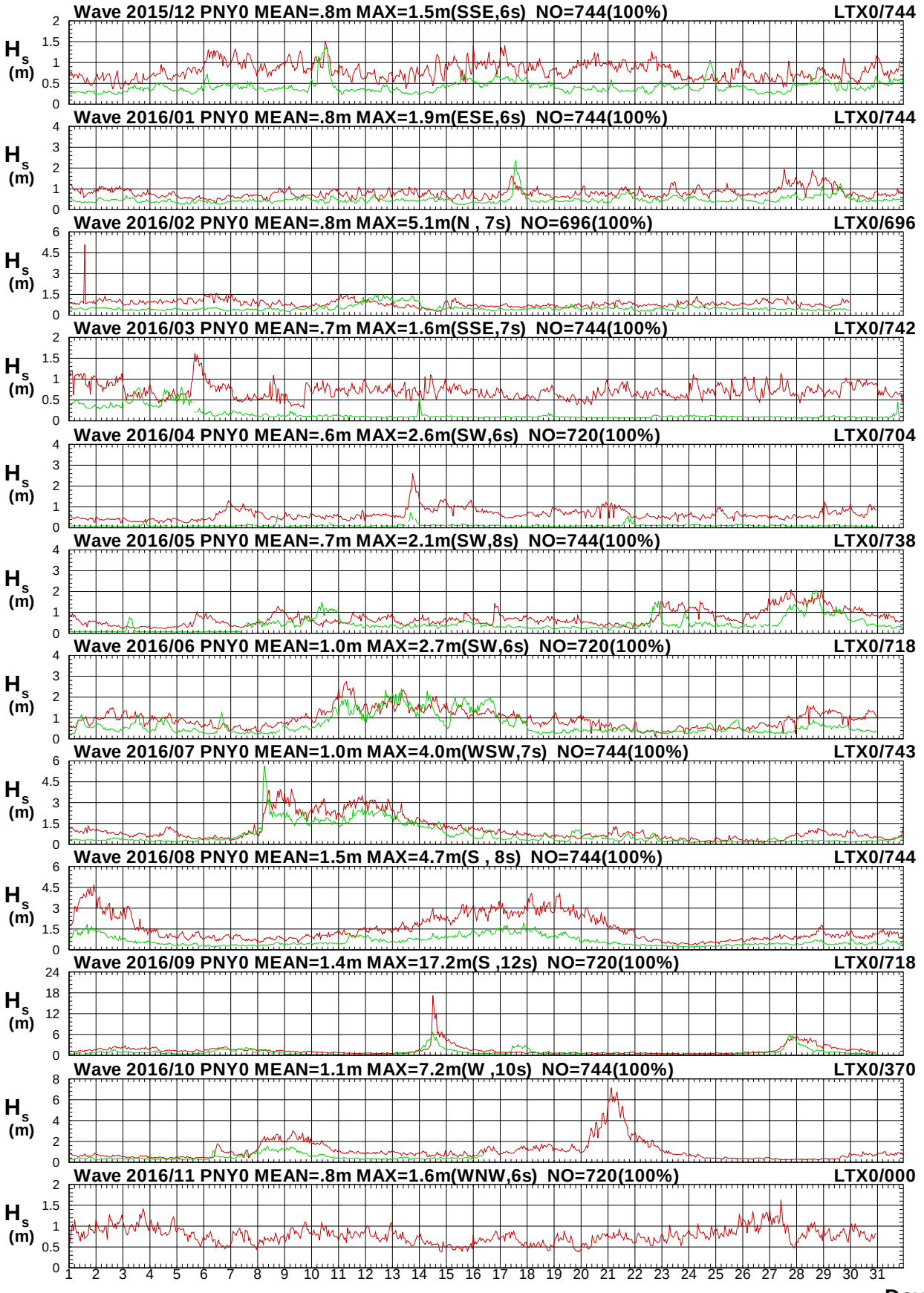

圖 6.5a　2016年每月屏東海域 Y 站與臺東海域 X 站波高圖

V15CPNY0.1HA V15CLTX0.1H0 V161PNY0.1HA V161LTX0.1H0 V162PNY0.1HA V162LTX0.1H0
V163PNY0.1HA V163LTX0.1H0 V164PNY0.1HA V164LTX0.1H0 V165PNY0.1HA V165LTX0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

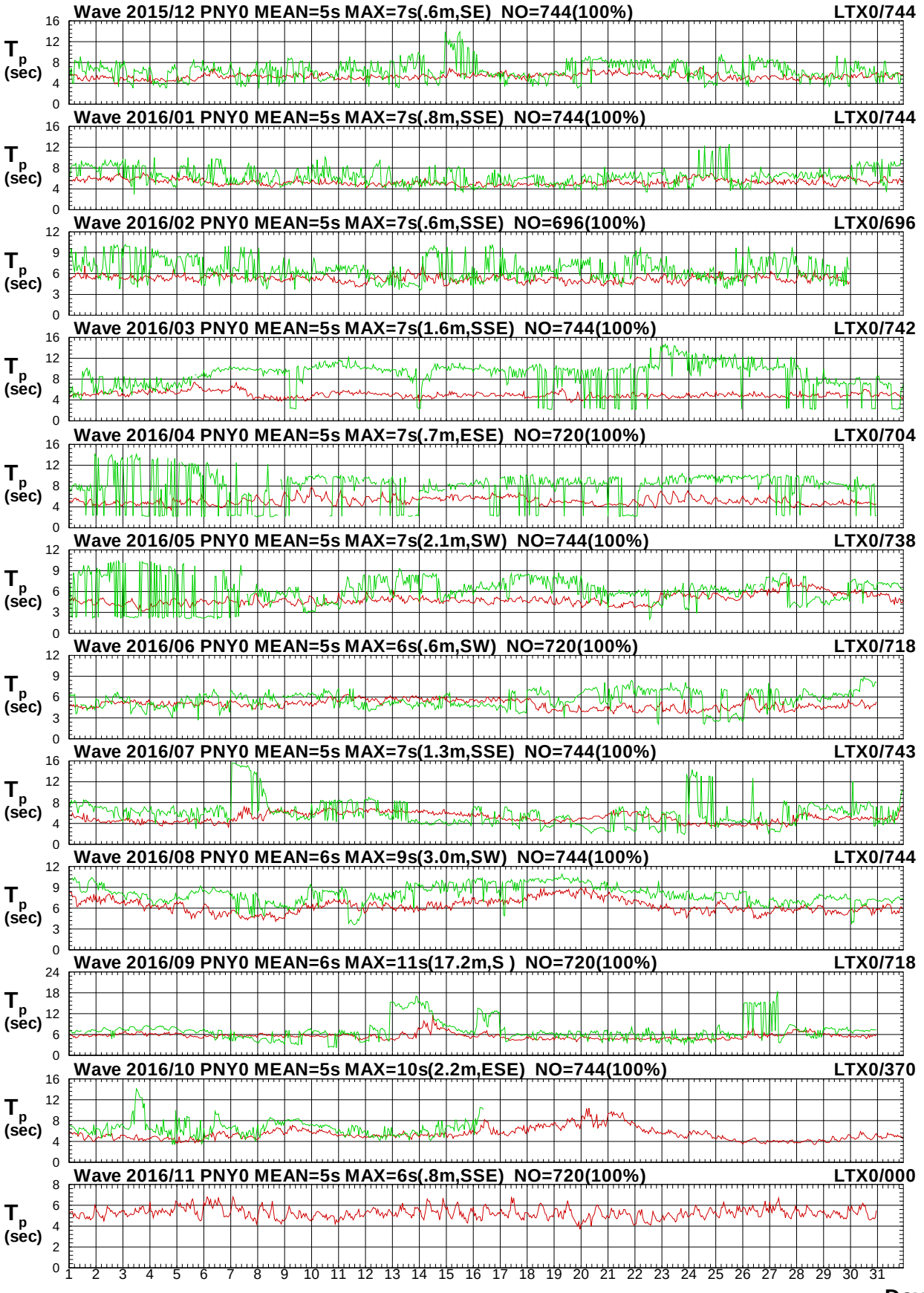

圖 6.5b　2016年每月屏東海域 Y 站與臺東海域 X 站週期圖

V15CPNY0.1HA V15CLTX0.1H0 V161PNY0.1HA V161LTX0.1H0 V162PNY0.1HA V162LTX0.1H0
V163PNY0.1HA V163LTX0.1H0 V164PNY0.1HA V164LTX0.1H0 V165PNY0.1HA V165LTX0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

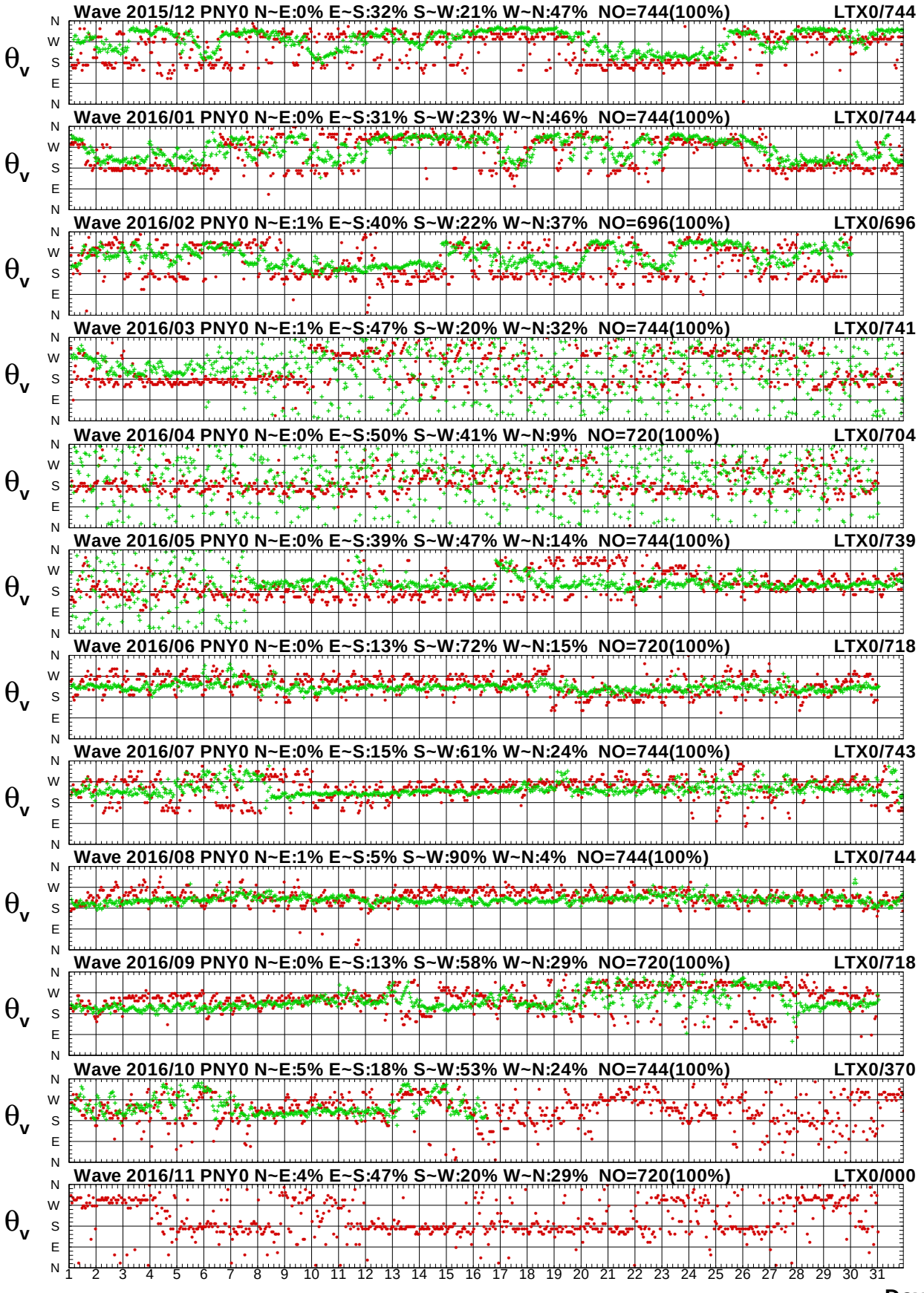

圖 6.5c　2016年每月屏東海域 Y 站與臺東海域 X 站波向圖

V15CPNY0.1HA V15CLTX0.1H0 V161PNY0.1HA V161LTX0.1H0 V162PNY0.1HA V162LTX0.1H0
V163PNY0.1HA V163LTX0.1H0 V164PNY0.1HA V164LTX0.1H0 V165PNY0.1HA V165LTX0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

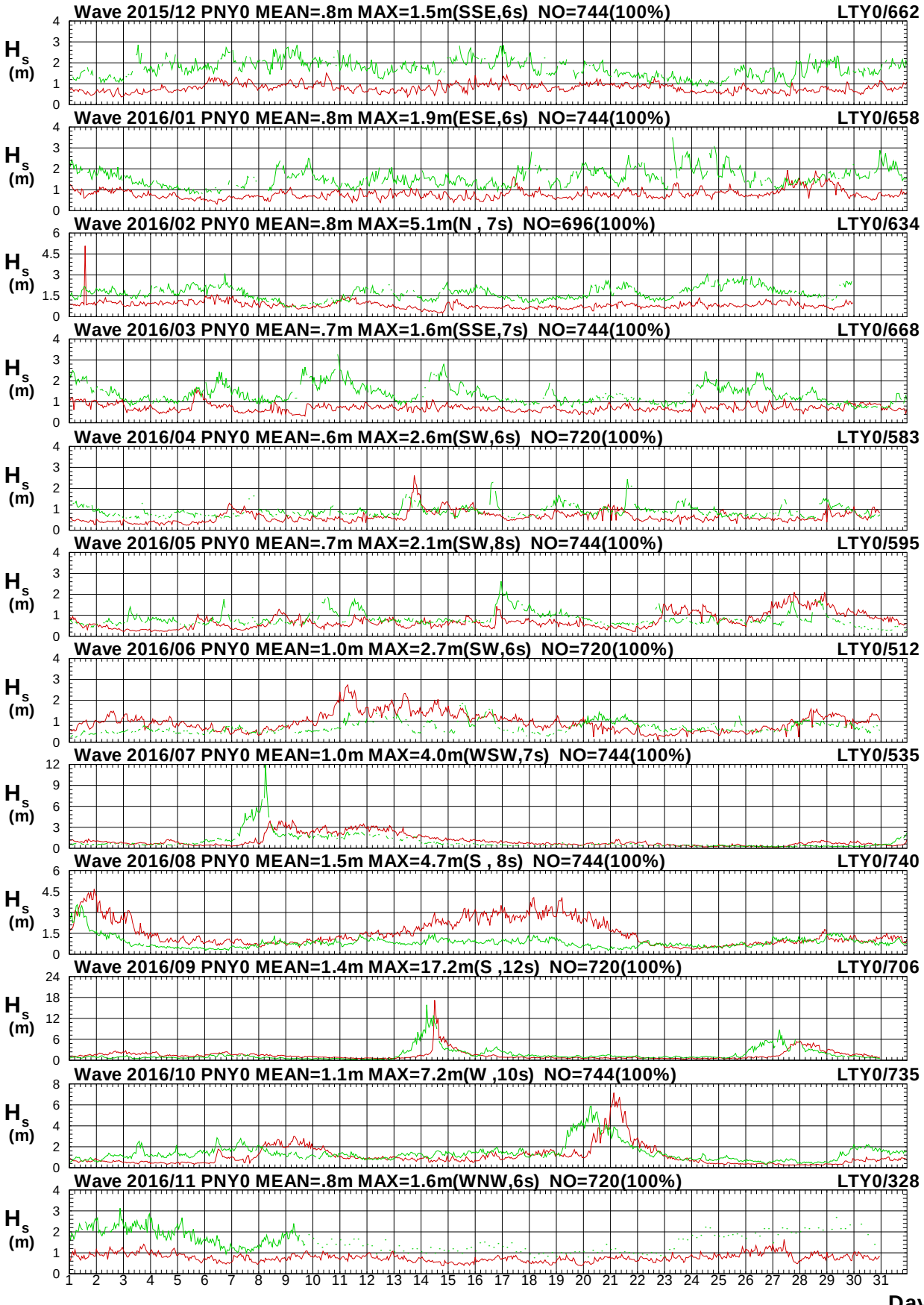

圖 6.6a　2016年每月屏東海域 Y 站與臺東海域 Y 站波高圖

V15CPNY0.1HA V15CLTY0.1H0 V161PNY0.1HA V161LTY0.1H0 V162PNY0.1HA V162LTY0.1H0
V163PNY0.1HA V163LTY0.1H0 V164PNY0.1HA V164LTY0.1H0 V165PNY0.1HA V165LTY0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

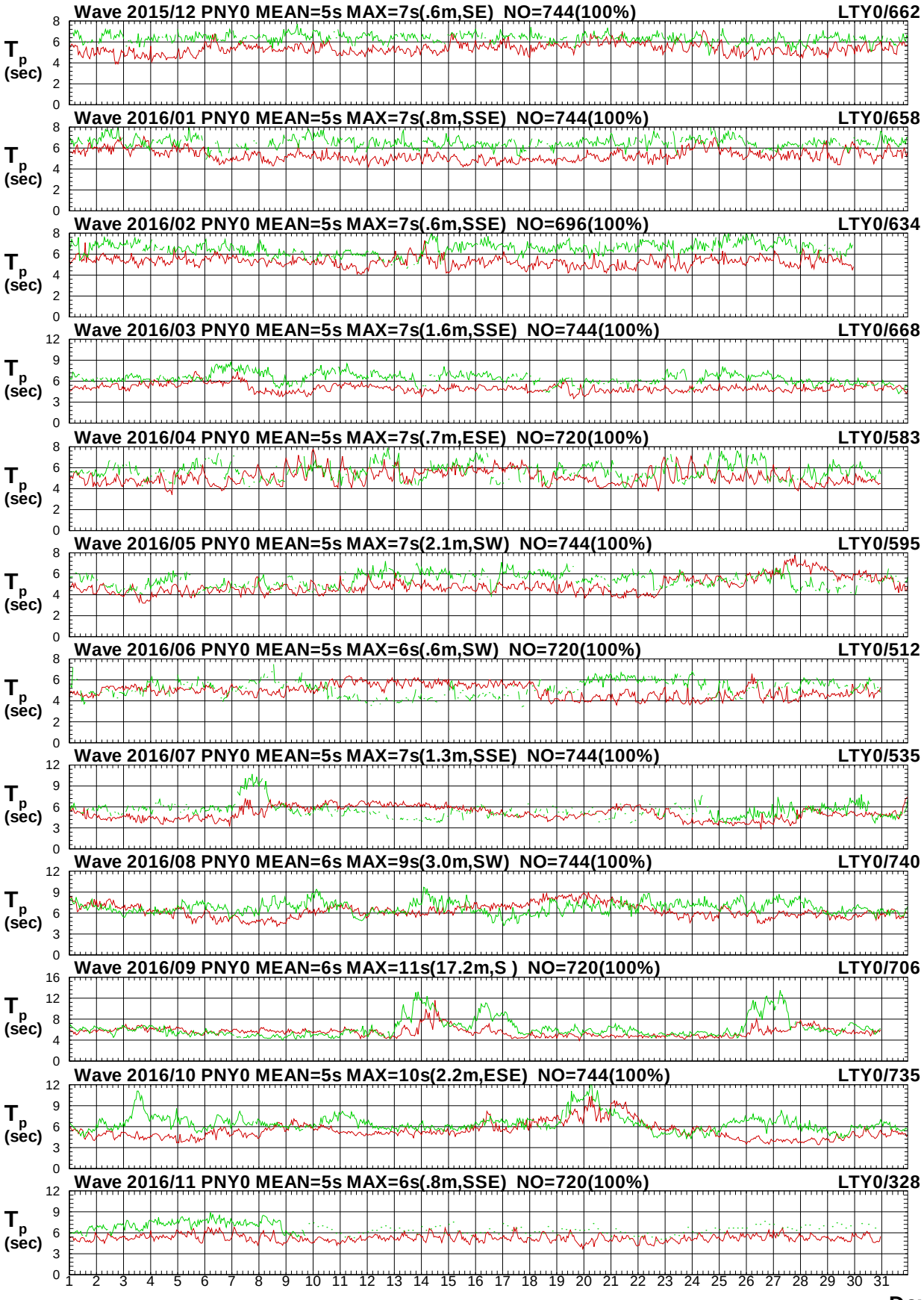

圖 6.6b　2016年每月屏東海域 Y 站與臺東海域 Y 站週期圖

V15CPNY0.1HA V15CLTY0.1H0 V161PNY0.1HA V161LTY0.1H0 V162PNY0.1HA V162LTY0.1H0
V163PNY0.1HA V163LTY0.1H0 V164PNY0.1HA V164LTY0.1H0 V165PNY0.1HA V165LTY0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

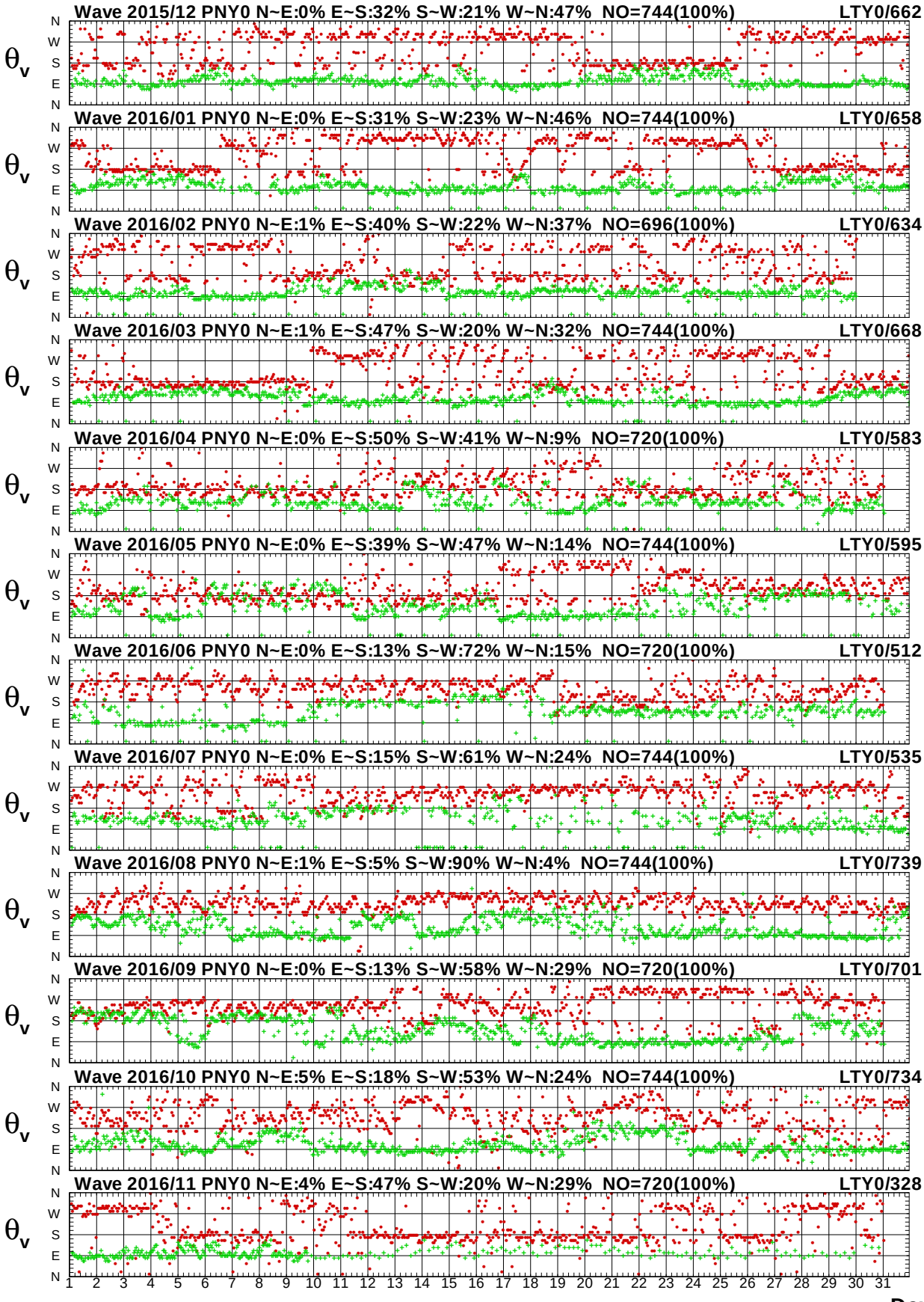

圖 6.6c　2016年每月屏東海域 Y 站與臺東海域 Y 站波向圖

V15CPNY0.1HA V15CLTY0.1H0 V161PNY0.1HA V161LTY0.1H0 V162PNY0.1HA V162LTY0.1H0
V163PNY0.1HA V163LTY0.1H0 V164PNY0.1HA V164LTY0.1H0 V165PNY0.1HA V165LTY0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

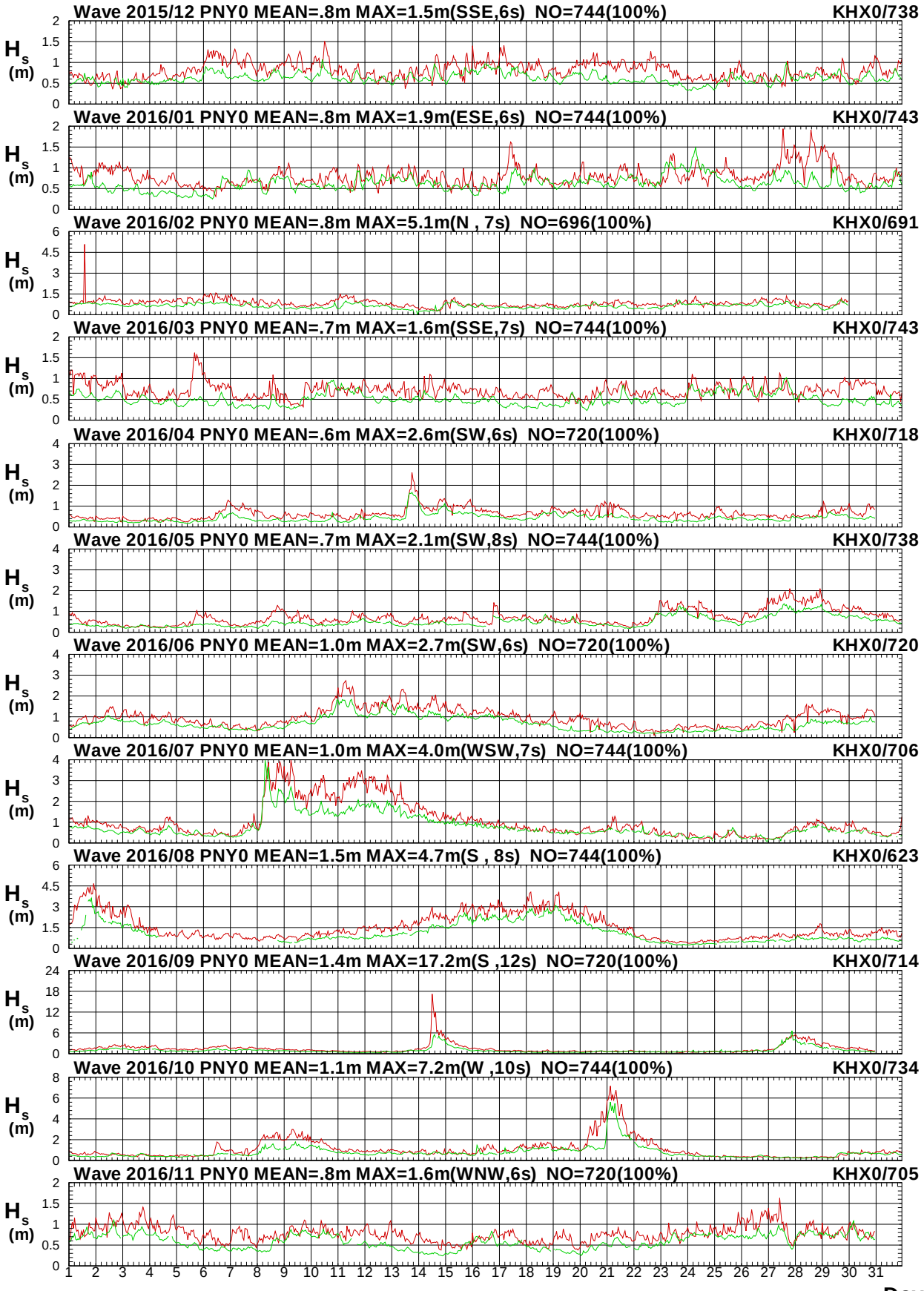

圖 6.7a　2016年每月屏東海域 Y 站與高雄海域 X 站波高圖

V15CPNY0.1HA V15CKHX0.1H0 V161PNY0.1HA V161KHX0.1H0 V162PNY0.1HA V162KHX0.1H0
V163PNY0.1HA V163KHX0.1H0 V164PNY0.1HA V164KHX0.1H0 V165PNY0.1HA V165KHX0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

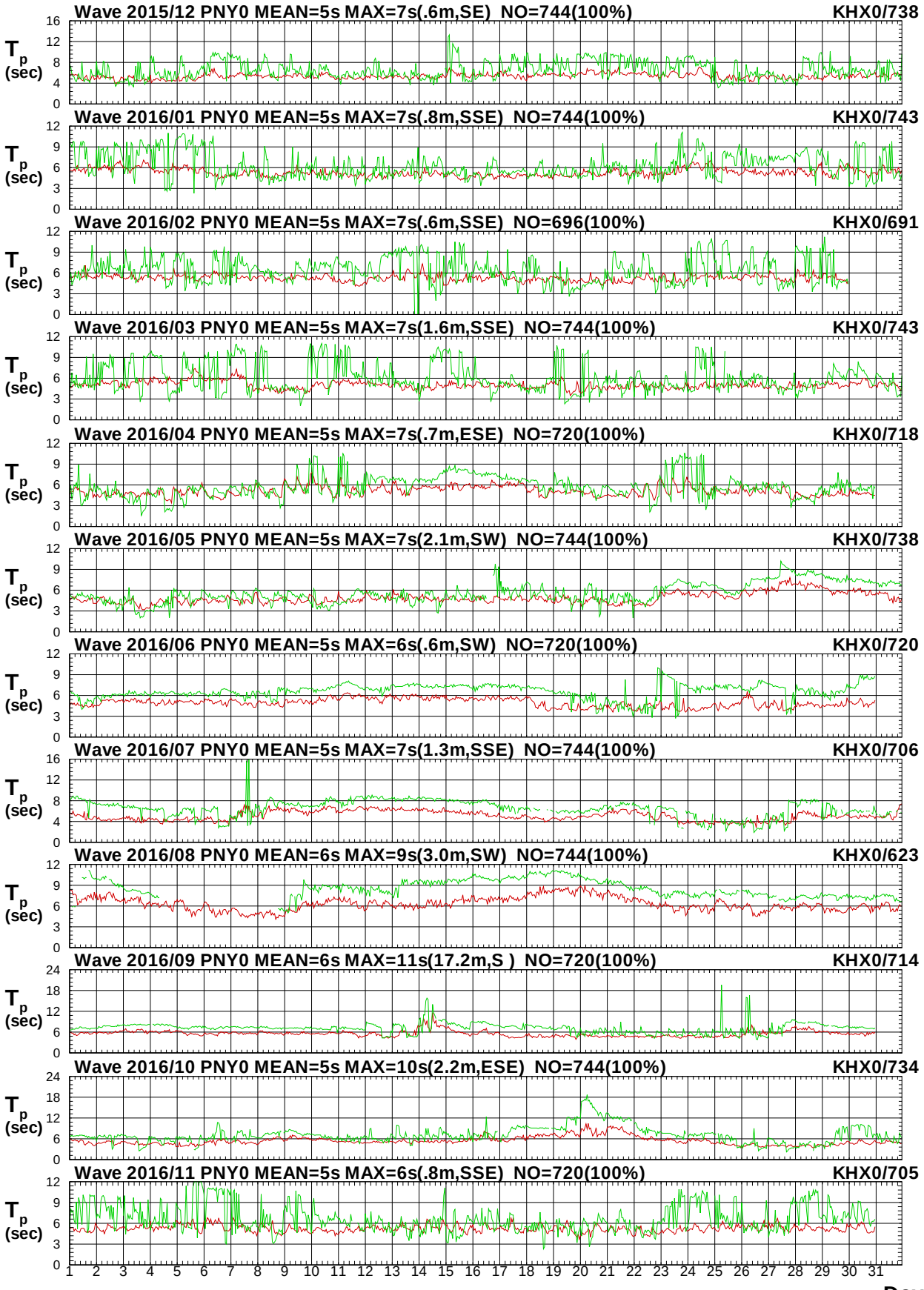

圖 6.7b　2016年每月屏東海域 Y 站與高雄海域 X 站週期圖

V15CPNY0.1HA V15CKHX0.1H0 V161PNY0.1HA V161KHX0.1H0 V162PNY0.1HA V162KHX0.1H0
V163PNY0.1HA V163KHX0.1H0 V164PNY0.1HA V164KHX0.1H0 V165PNY0.1HA V165KHX0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

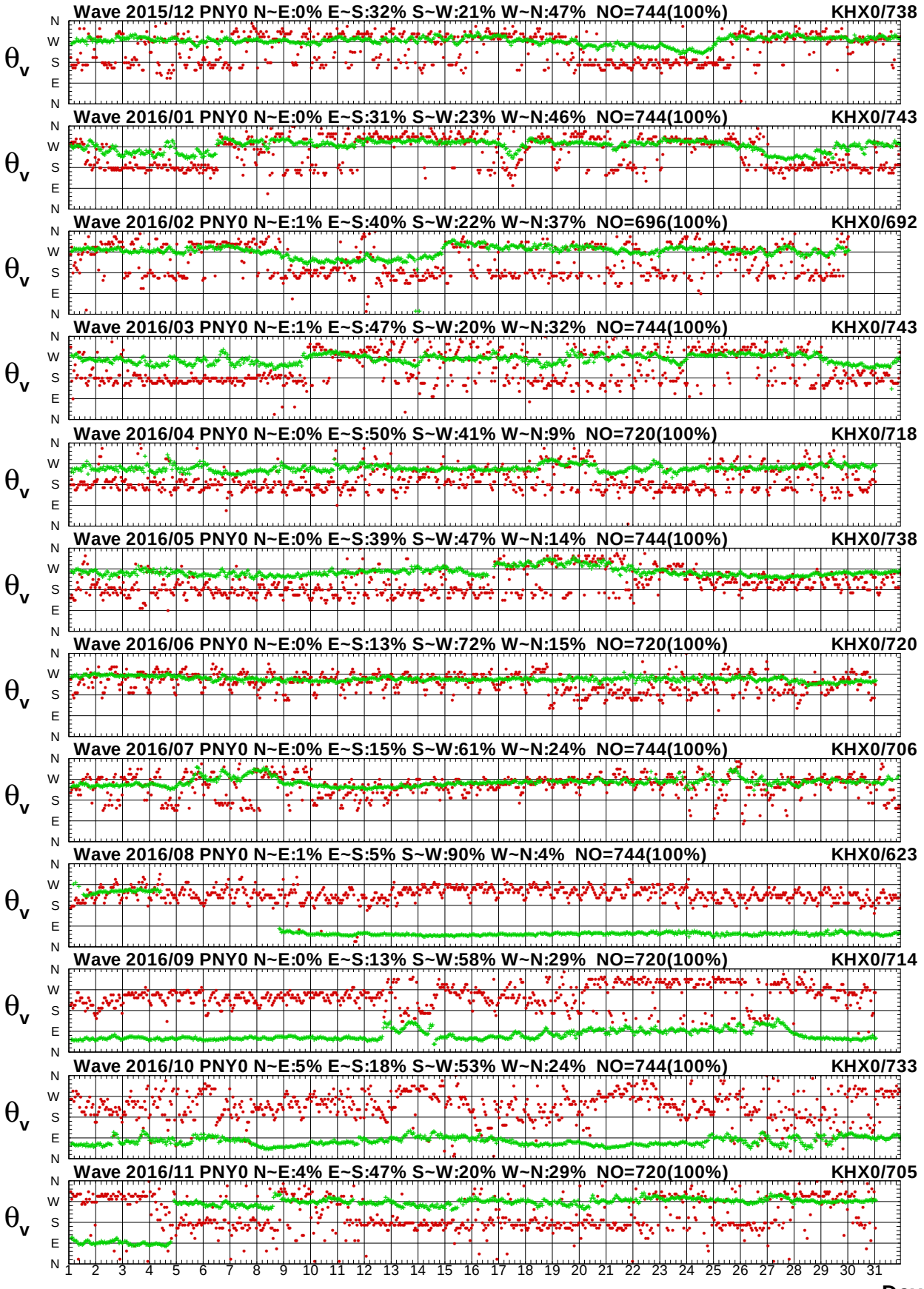

圖 6.7c　2016年每月屏東海域 Y 站與高雄海域 X 站波向圖

Wave H_s in Peng-Tung Seas of PNY0 at 2016

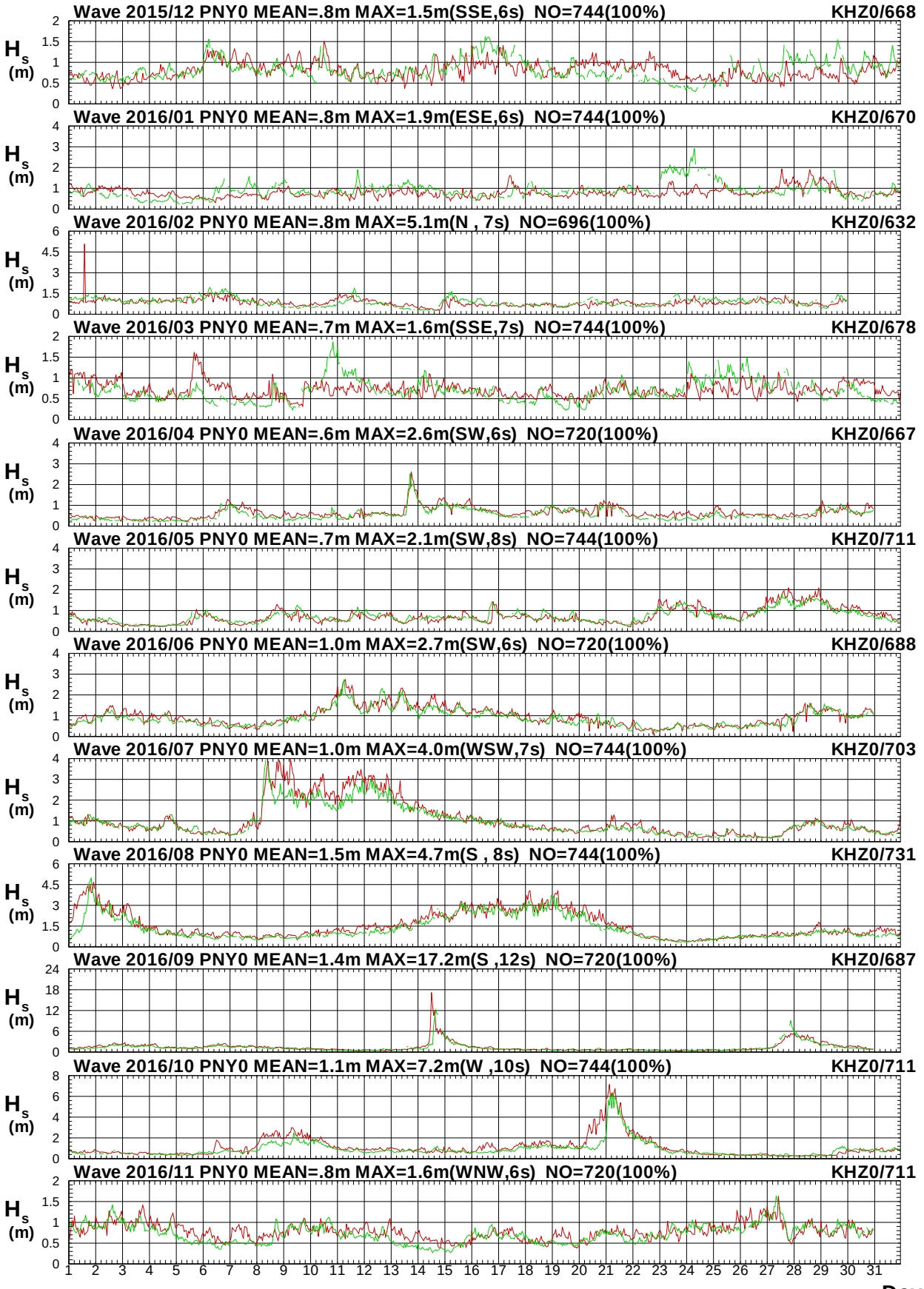

圖 6.8a　2016年每月屏東海域 Y 站與高雄海域 Z 站波高圖

V15CPNY0.1HA V15CKHZ0.1H0 V161PNY0.1HA V161KHZ0.1H0 V162PNY0.1HA V162KHZ0.1H0
V163PNY0.1HA V163KHZ0.1H0 V164PNY0.1HA V164KHZ0.1H0 V165PNY0.1HA V165KHZ0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

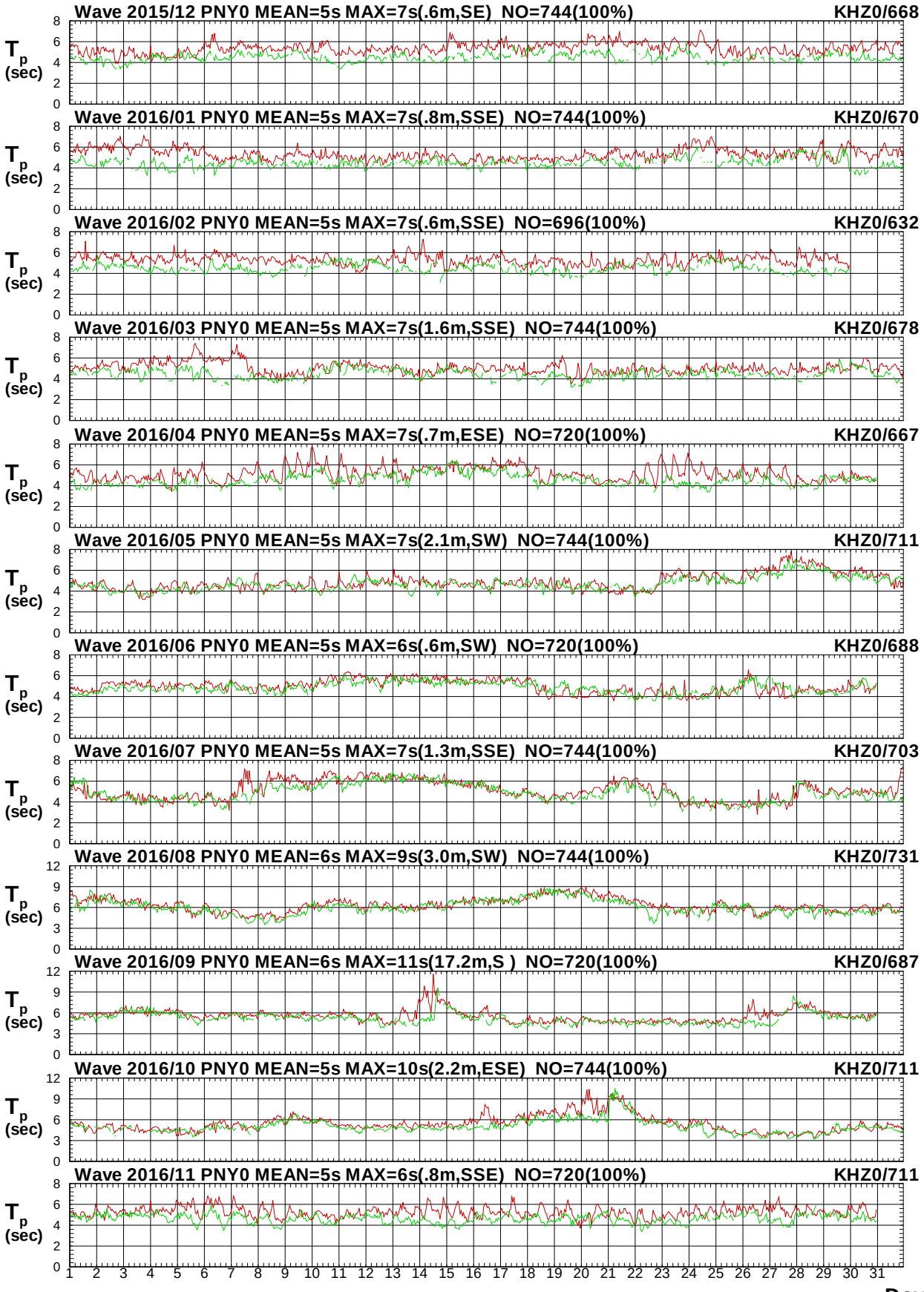

圖 6.8b　2016年每月屏東海域 Y 站與高雄海域 Z 站週期圖

V15CPNY0.1HA V15CKHZ0.1H0 V161PNY0.1HA V161KHZ0.1H0 V162PNY0.1HA V162KHZ0.1H0
V163PNY0.1HA V163KHZ0.1H0 V164PNY0.1HA V164KHZ0.1H0 V165PNY0.1HA V165KHZ0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

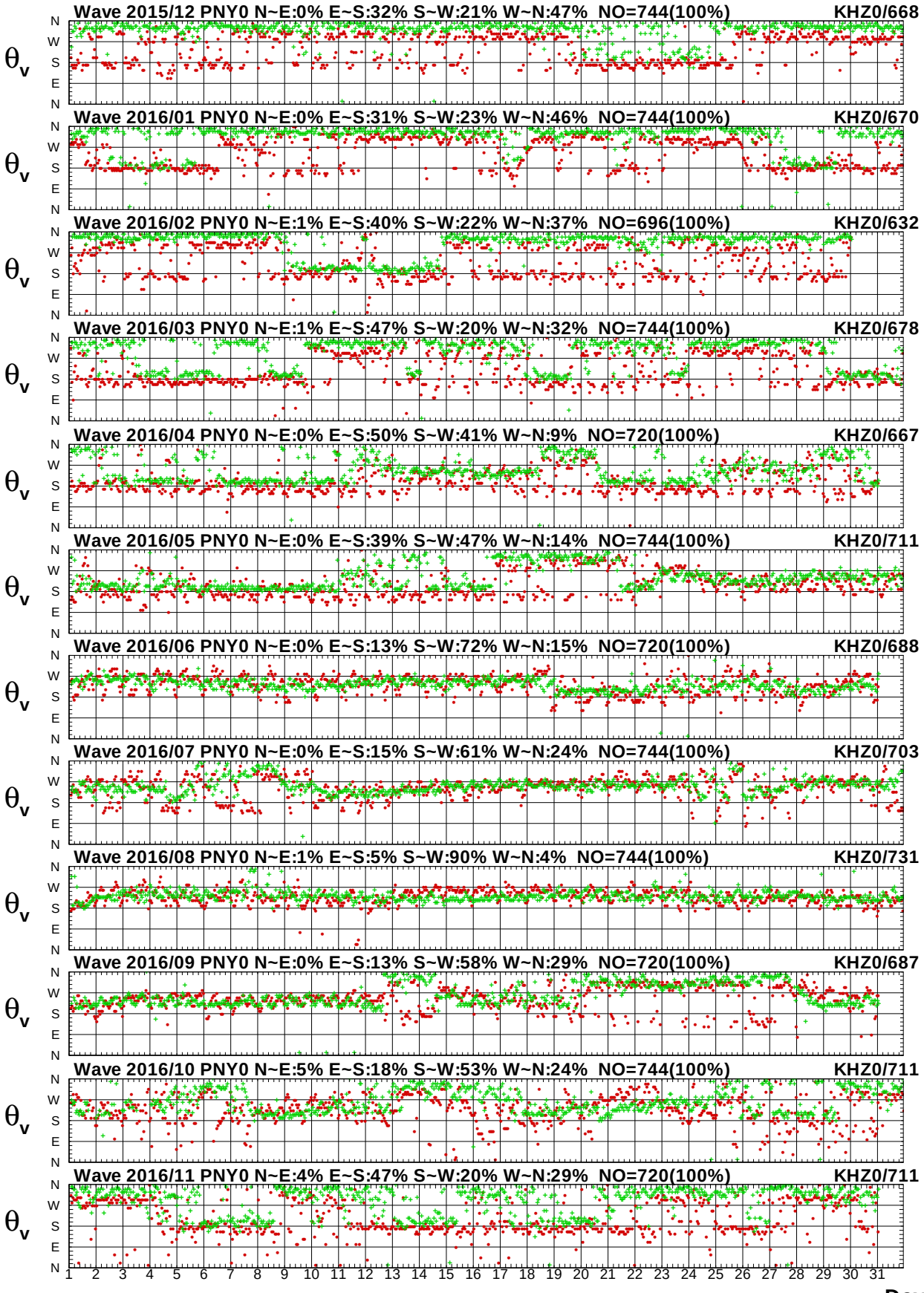

圖6.8c　2016年每月屏東海域 Y 站與高雄海域 Z 站波向圖

V15CPNY0.1HA V15CKHZ0.1H0 V161PNY0.1HA V161KHZ0.1H0 V162PNY0.1HA V162KHZ0.1H0
V163PNY0.1HA V163KHZ0.1H0 V164PNY0.1HA V164KHZ0.1H0 V165PNY0.1HA V165KHZ0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

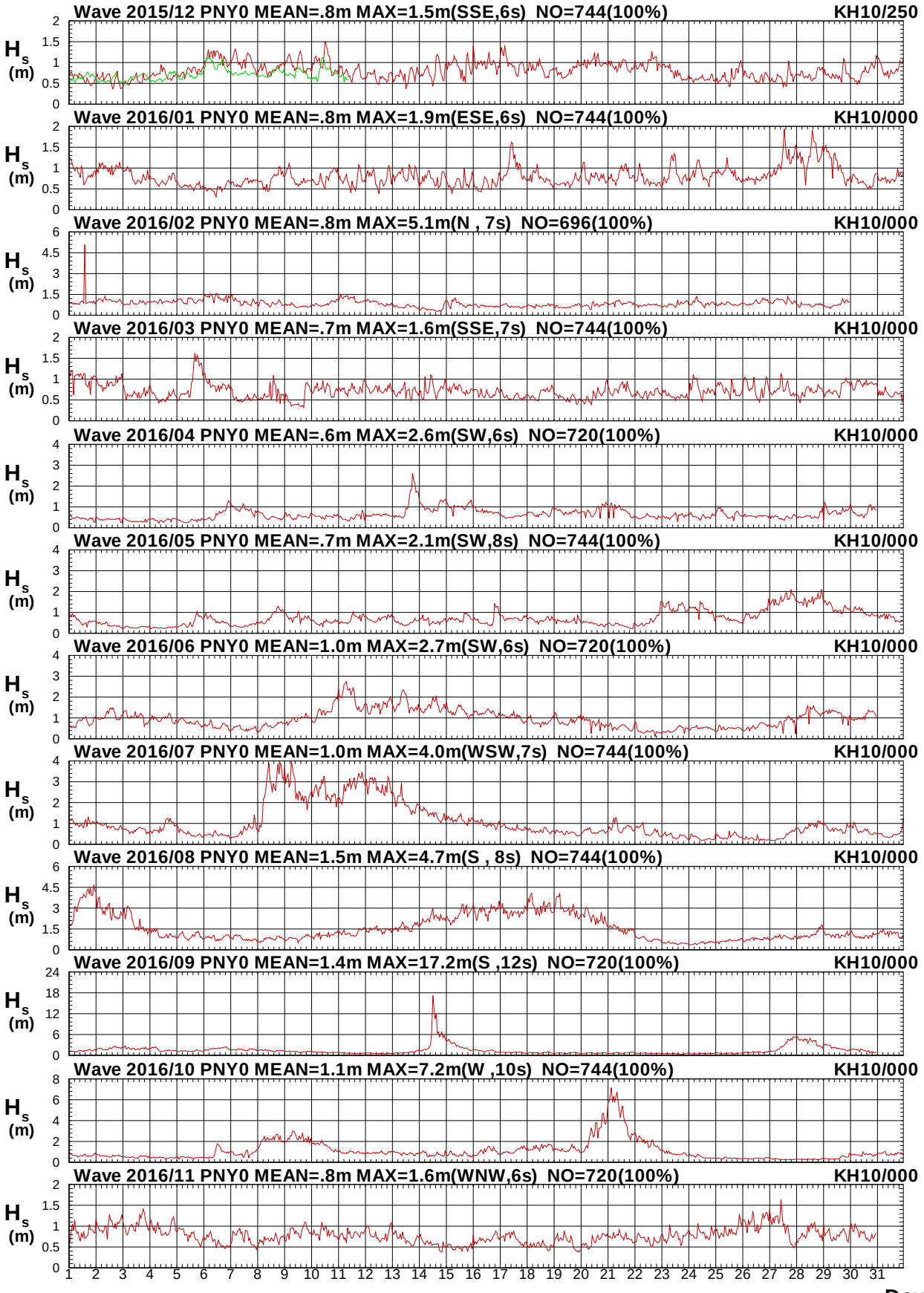

圖6.9a　2016年每月屏東海域Y站與高雄海域1站波高圖

V15CPNY0.1HA V15CKH10.1H0 V161PNY0.1HA V161KH10.1H0 V162PNY0.1HA V162KH10.1H0
V163PNY0.1HA V163KH10.1H0 V164PNY0.1HA V164KH10.1H0 V165PNY0.1HA V165KH10.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

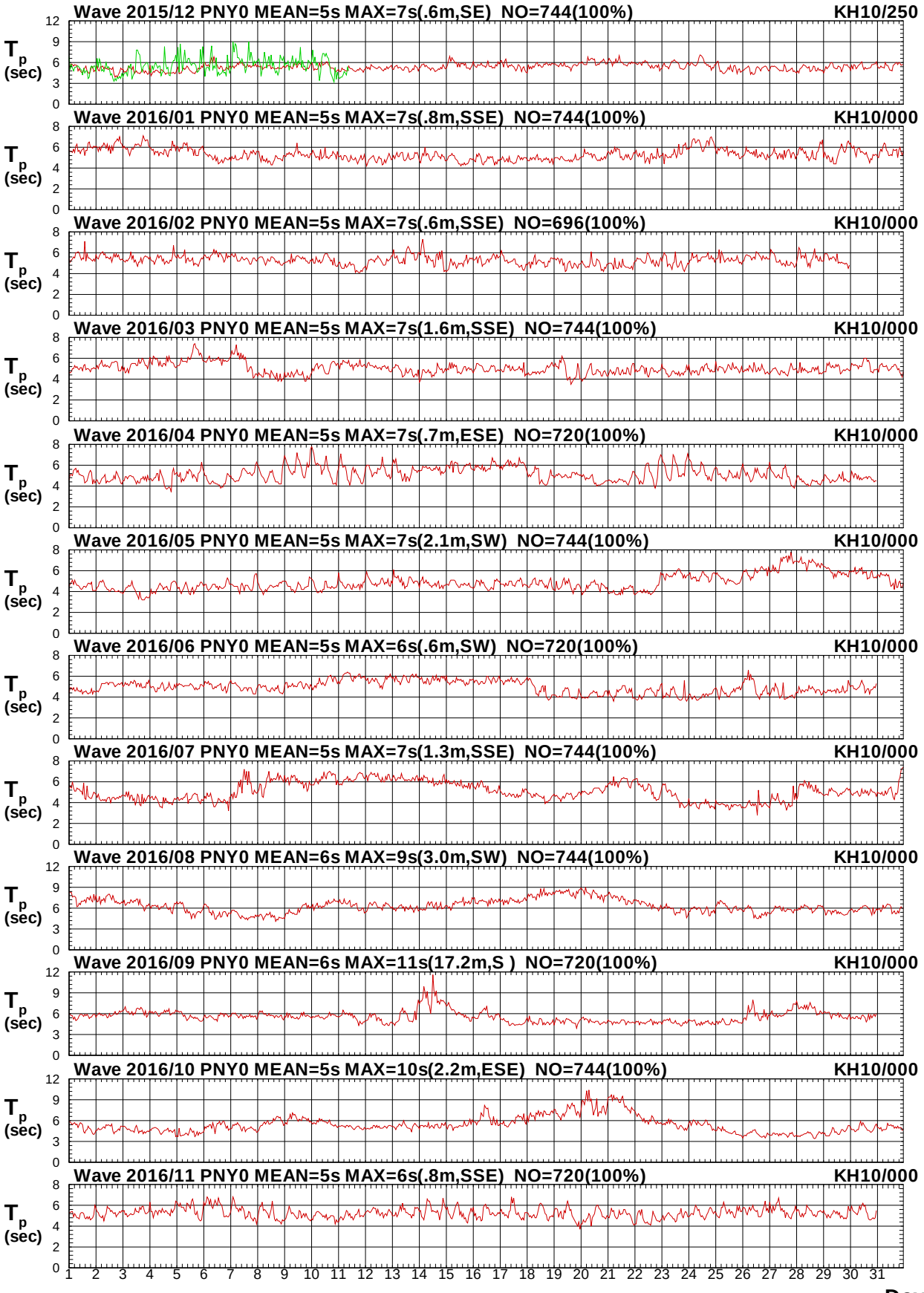

圖 6.9b　2016年每月屏東海域 Y 站與高雄海域1站週期圖

V15CPNY0.1HA V15CKH10.1H0 V161PNY0.1HA V161KH10.1H0 V162PNY0.1HA V162KH10.1H0
V163PNY0.1HA V163KH10.1H0 V164PNY0.1HA V164KH10.1H0 V165PNY0.1HA V165KH10.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

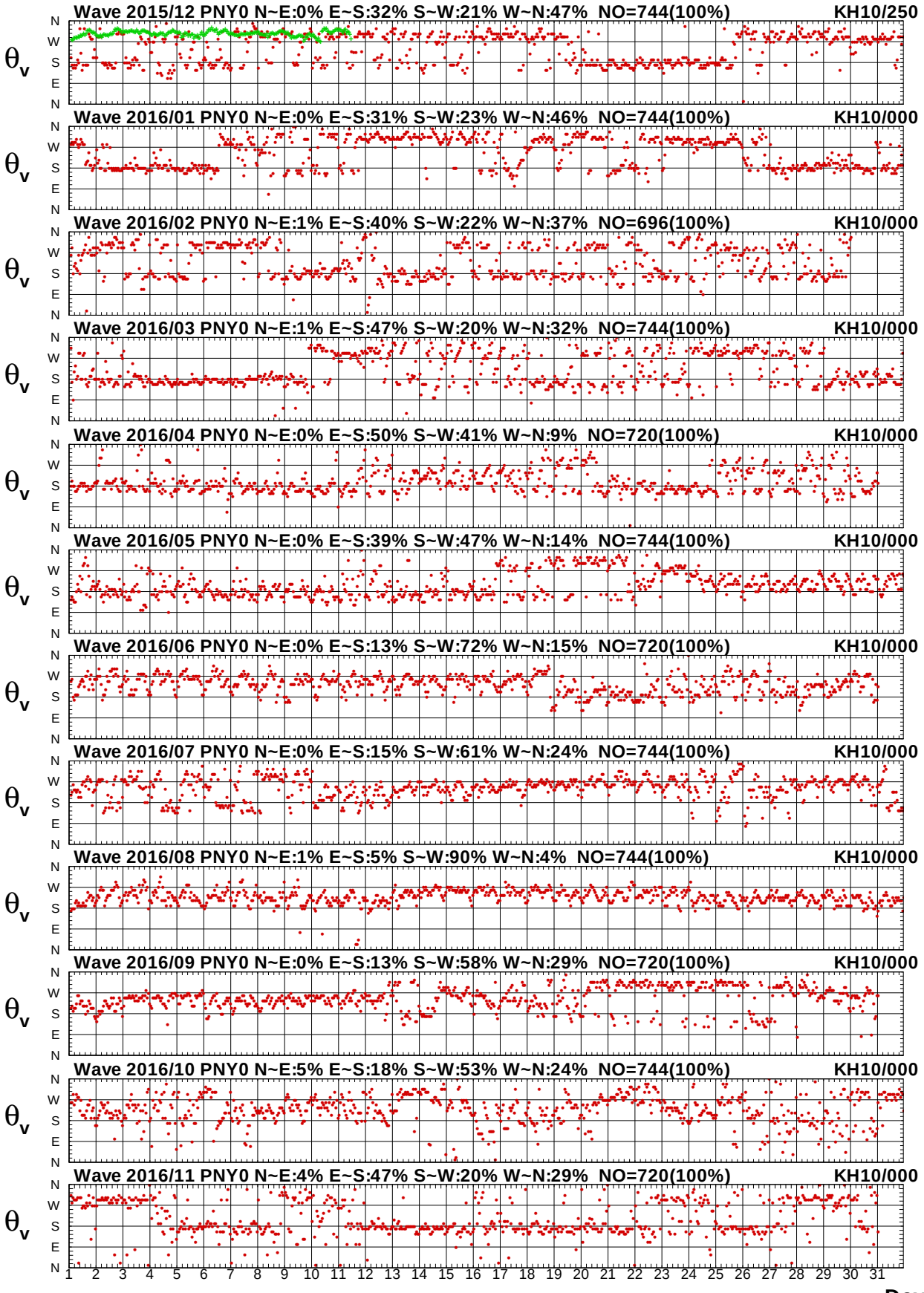

圖 6.9c　2016年每月屏東海域 Y 站與高雄海域1站波向圖

V15CPNY0.1HA V15CKH10.1H0 V161PNY0.1HA V161KH10.1H0 V162PNY0.1HA V162KH10.1H0
V163PNY0.1HA V163KH10.1H0 V164PNY0.1HA V164KH10.1H0 V165PNY0.1HA V165KH10.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2016

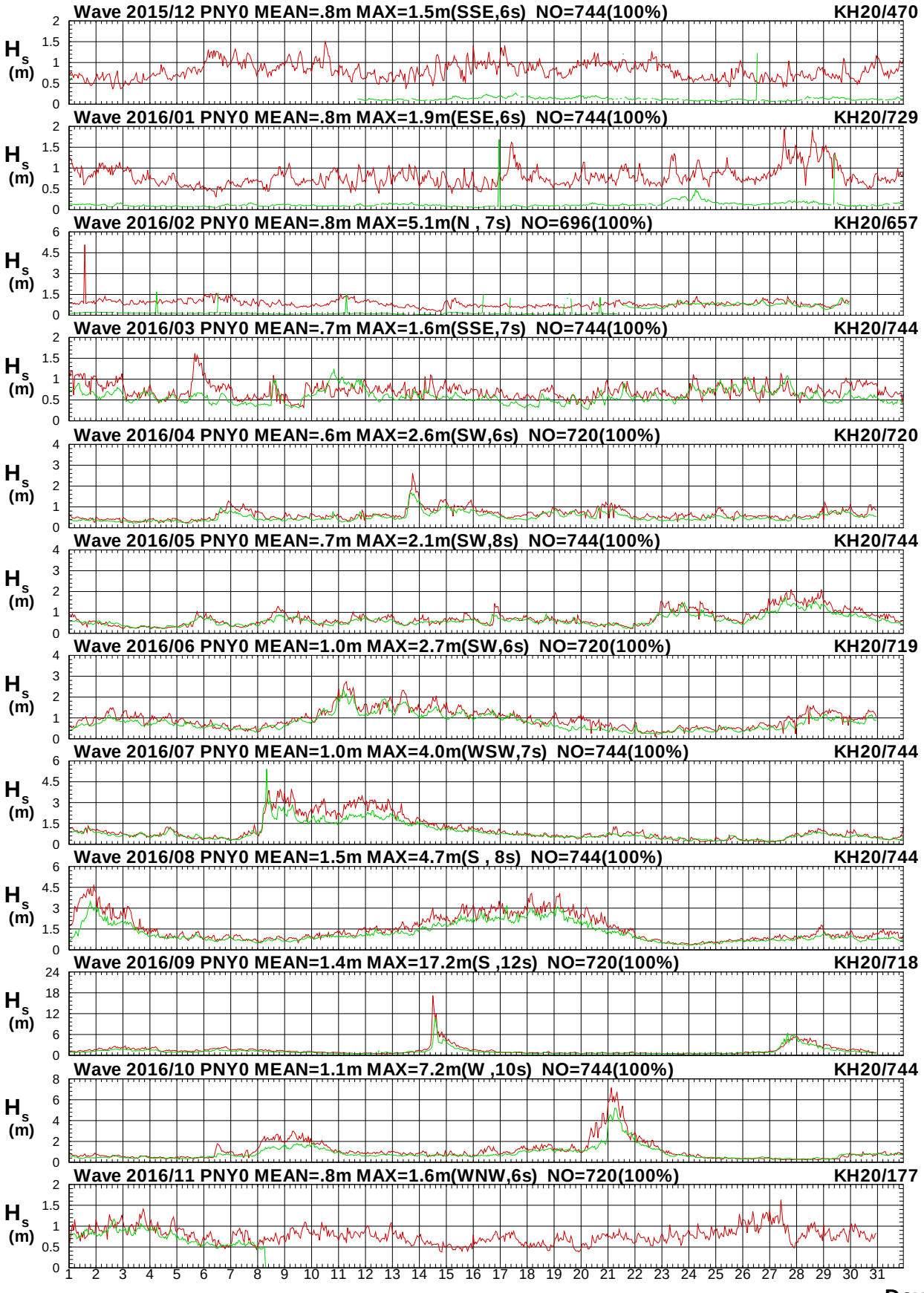

圖6.10a　2016年每月屏東海域 Y 站與高雄海域2站波高圖

V15CPNY0.1HA V15CKH20.1H0 V161PNY0.1HA V161KH20.1H0 V162PNY0.1HA V162KH20.1H0
V163PNY0.1HA V163KH20.1H0 V164PNY0.1HA V164KH20.1H0 V165PNY0.1HA V165KH20.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2016

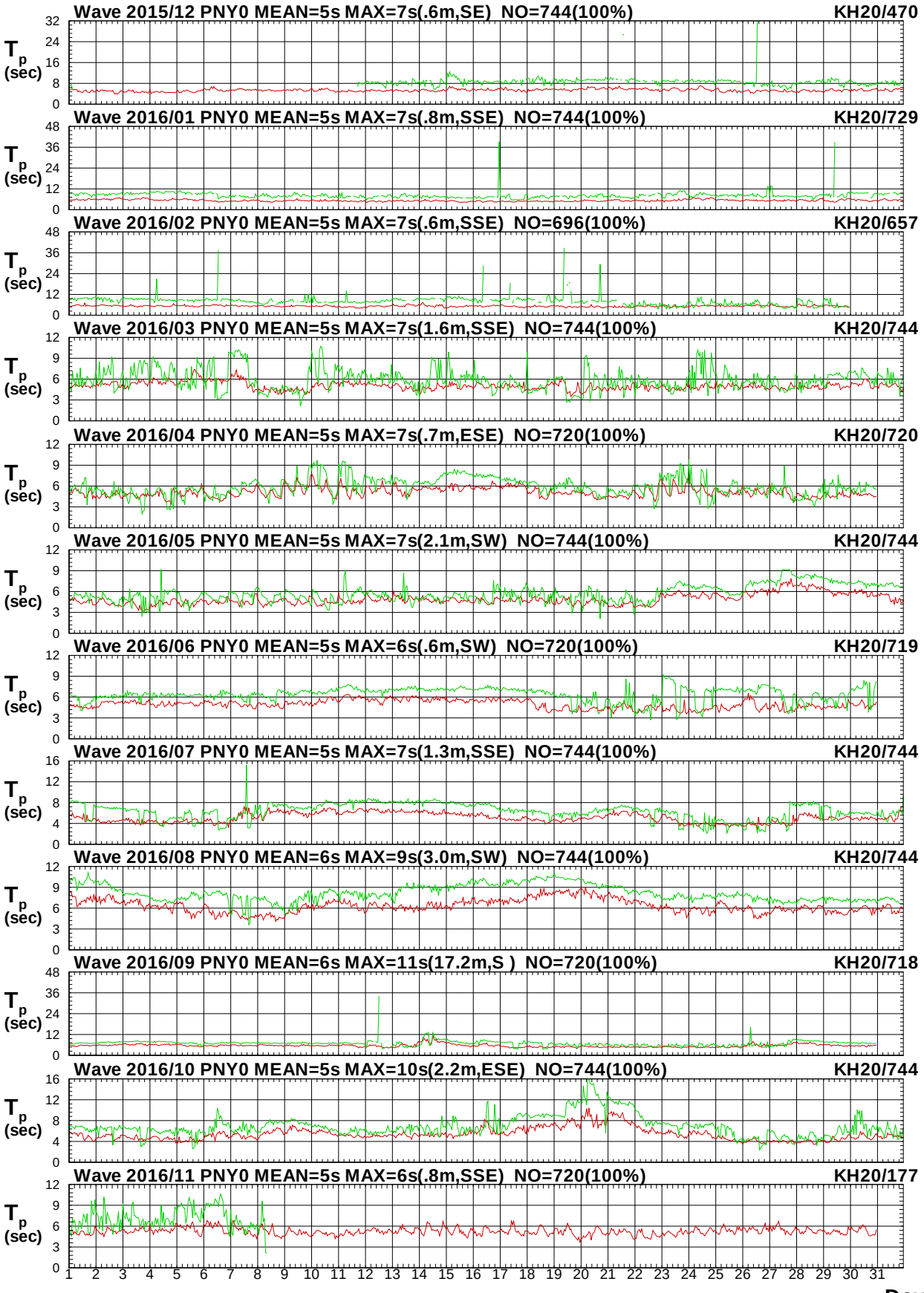

圖 6.10b　2016年每月屏東海域 Y 站與高雄海域2站週期圖

V15CPNY0.1HA V15CKH20.1H0 V161PNY0.1HA V161KH20.1H0 V162PNY0.1HA V162KH20.1H0
V163PNY0.1HA V163KH20.1H0 V164PNY0.1HA V164KH20.1H0 V165PNY0.1HA V165KH20.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2016

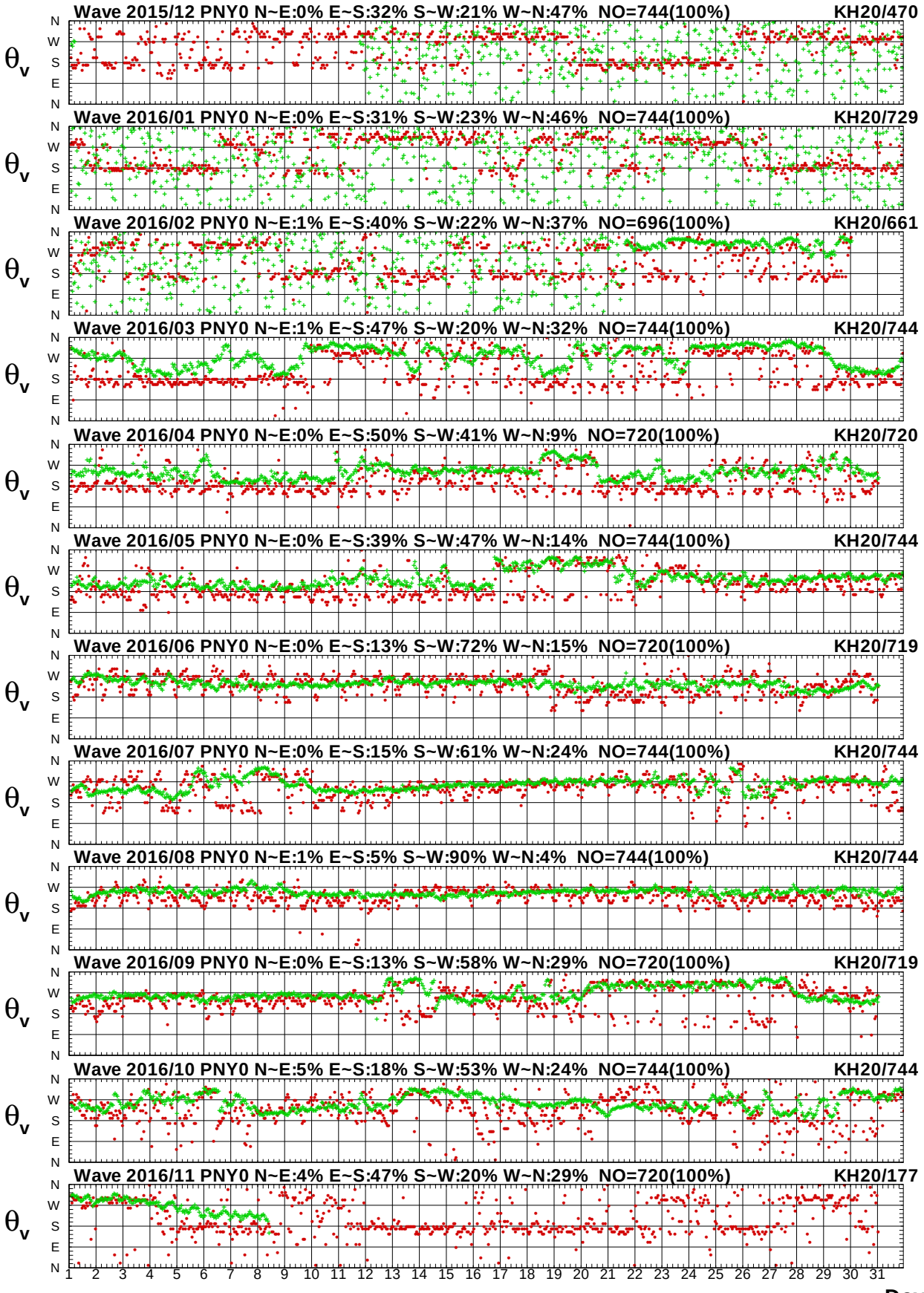

圖6.10c　2016年每月屏東海域 Y 站與高雄海域2站波向圖

V15CPNY0.1HA V15CKH20.1H0 V161PNY0.1HA V161KH20.1H0 V162PNY0.1HA V162KH20.1H0
V163PNY0.1HA V163KH20.1H0 V164PNY0.1HA V164KH20.1H0 V165PNY0.1HA V165KH20.1H0

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第七章　2016 年高雄海域觀測波浪資料

高雄海域波浪觀測係本中心**(IHMT)**2000 年 12 月於中區污水處理廠附近海域安置 NORTEK 公司之剖面海流與波浪即時監測系統(**測站 X0**)，如圖 7，以進行長期觀測。本站於 2005 年 8 月移至第二港口附近海(**稱測站 X1**)，水深約 18m;另於 2014 年 4 月及 12 月分別於第一港口及第二港口附近海(**測站 A** 及**測站 1、測站 2)**，增設潮波儀站。

測站 Z(彌陀外海浮標站)之波浪儀則屬水利署**(WRA)**所有。高雄海域各測站歷年觀測波浪資料蒐集概況如表 7。

波浪觀測 AWCP 系統有兩個分離波高量測模式:一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **W 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 7.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 7.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 7.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 7.2 以後。

表 7 高雄海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X0	22°34'23"N	120°16'09"E	2000/12-2005/08	港研中心	高雄中洲外海
X1	22°32'34"N	120°17'38"E	2005/08-2016/11(觀測中)	港研中心	高雄 2 港口外海
A	22°38'36"N	120°14'13"E	2014/04-2015/03	港研中心	高雄 1 港口外海
1			2014/12-2015/12	港研中心	高雄 2 港口外海
2			2015/12-2016/11	港研中心	高雄 2 港口外海
Z	22°45'50"N	120°09'49"E	2012/09-2016/11(觀測中)	水利署	彌陀外海浮標站

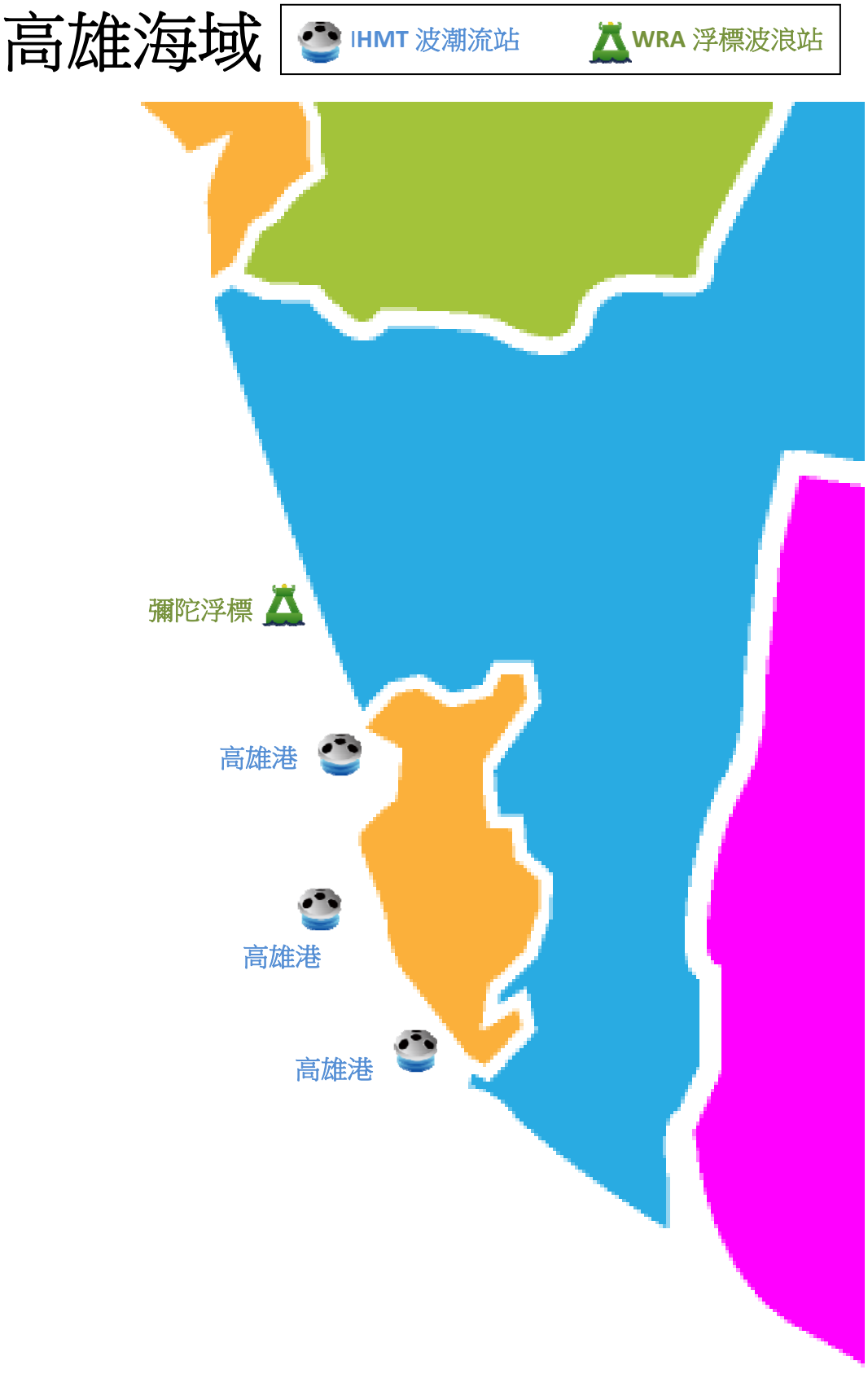

圖 7 高雄海域波浪觀測站位置示意圖

表7.1a 2016年每月高雄海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域
測站	X	Z	A	1	2			
2015/12月	738 (99.2%)	668 (89.8%)	*	250 (33.6%)	470 (63.2%)	*	*	*
2016/ 1月	743 (99.9%)	670 (90.1%)	*	*	729 (98.0%)	*	*	*
2016/ 2月	691 (99.3%)	632 (90.8%)	*	*	657 (94.4%)	*	*	*
2016/ 3月	743 (99.9%)	678 (91.1%)	*	*	744 (100%)	*	*	*
2016/ 4月	718 (99.7%)	667 (92.6%)	*	*	720 (100%)	*	*	*
2016/ 5月	738 (99.2%)	711 (95.6%)	*	*	744 (100%)	*	*	*
2016/ 6月	720 (100%)	688 (95.6%)	*	*	719 (99.9%)	*	*	*
2016/ 7月	706 (94.9%)	703 (94.5%)	*	*	744 (100%)	*	*	*
2016/ 8月	623 (83.7%)	731 (98.3%)	*	*	744 (100%)	*	*	*
2016/ 9月	714 (99.2%)	687 (95.4%)	*	*	718 (99.7%)	*	*	*
2016/10月	734 (98.7%)	711 (95.6%)	*	*	744 (100%)	*	*	*
2016/11月	705 (97.9%)	711 (98.8%)	*	*	177 (24.6%)	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表7.1b 2016年每月高雄海域修補後各測站波浪資料統計表

年/月 港區	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域	高雄海域
測站	X	Z	A	1	2			
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

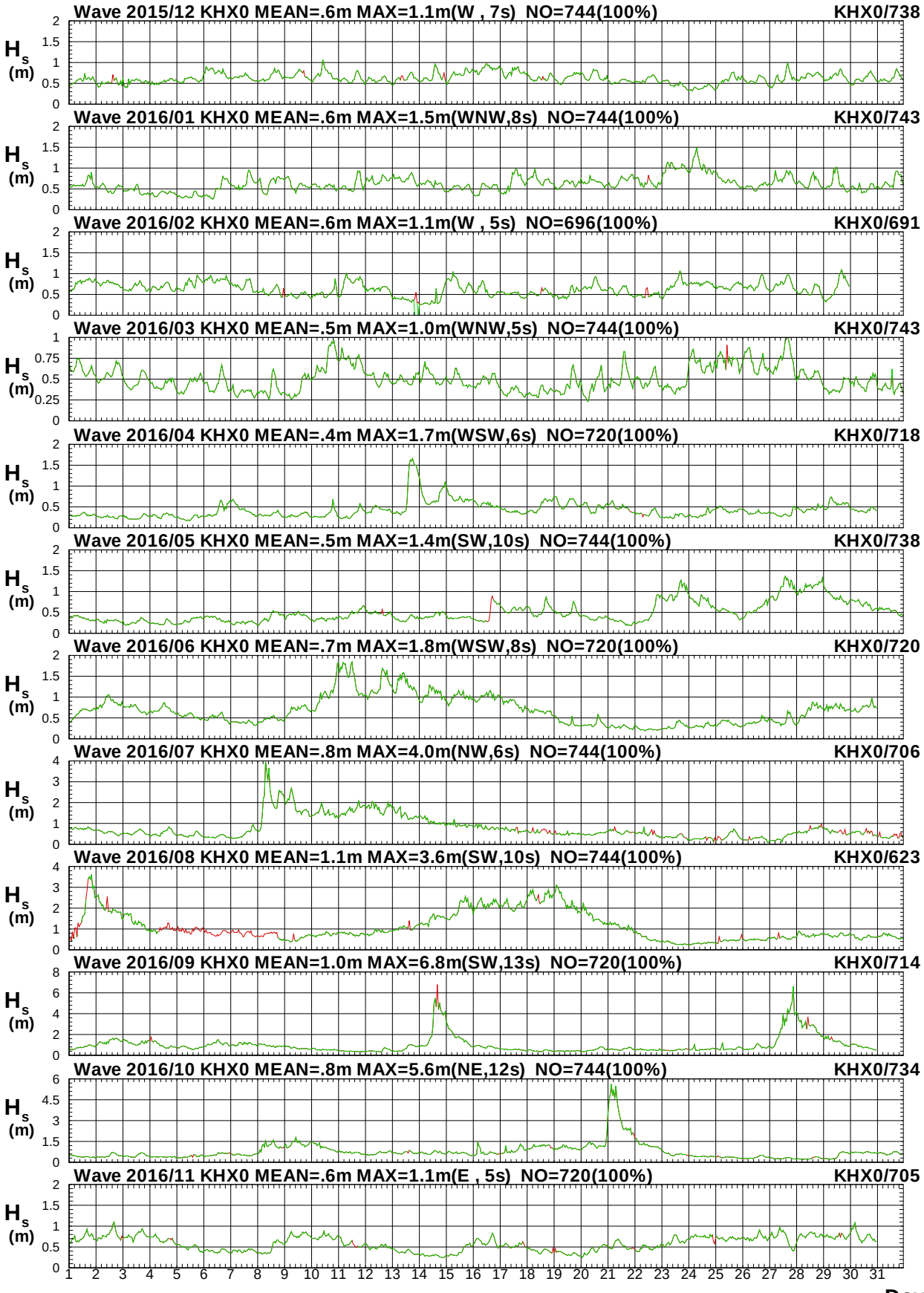

圖7.1a　2016年每月高雄海域 X 站修補前後之波高比較圖

V15CKHX0.1HA V15CKHX0.1H0 V161KHX0.1HA V161KHX0.1H0 V162KHX0.1HA V162KHX0.1H0
V163KHX0.1HA V163KHX0.1H0 V164KHX0.1HA V164KHX0.1H0 V165KHX0.1HA V165KHX0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

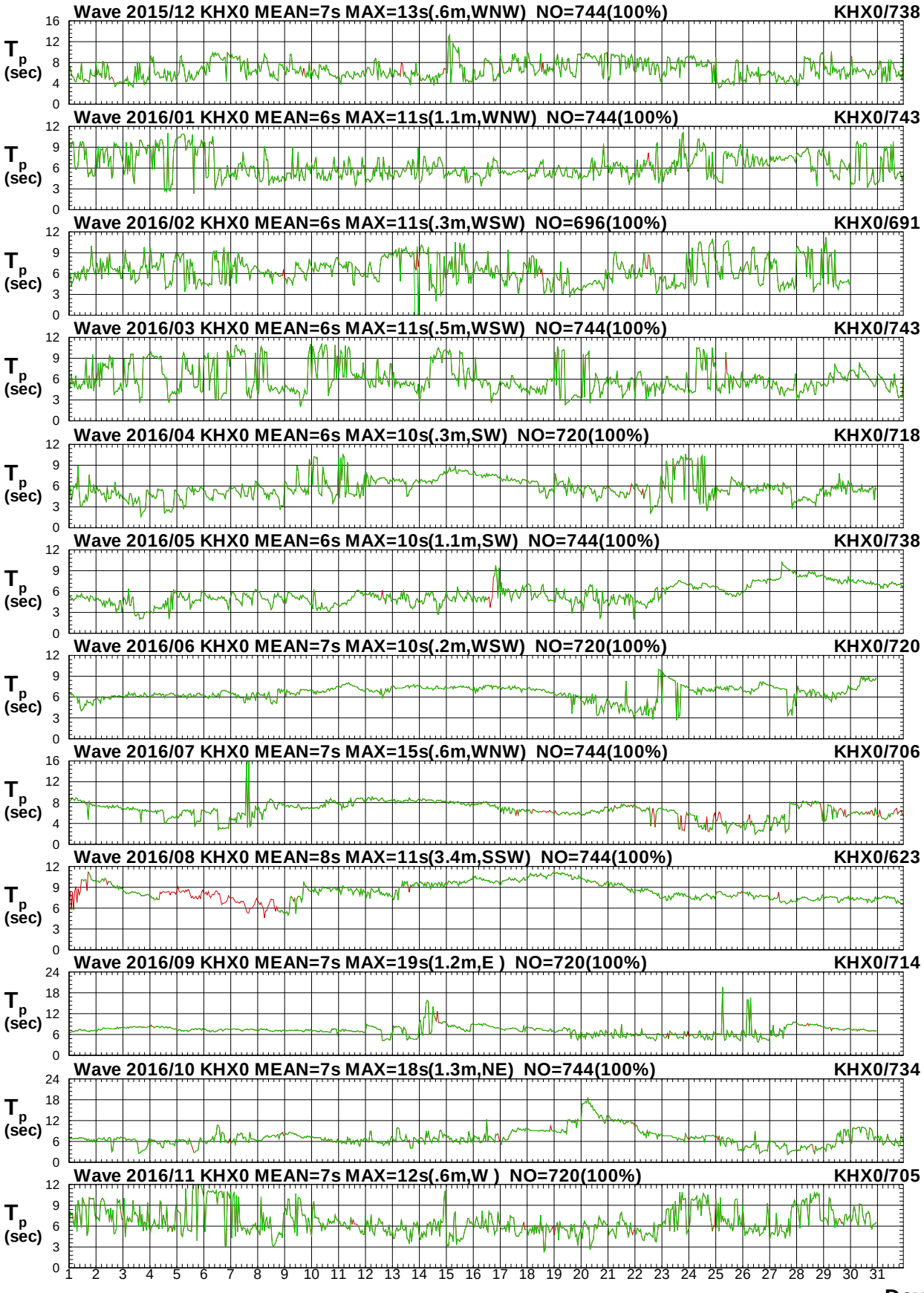

圖7.1b　2016年每月高雄海域 X 站修補前後之週期比較圖

V15CKHX0.1HA V15CKHX0.1H0 V161KHX0.1HA V161KHX0.1H0 V162KHX0.1HA V162KHX0.1H0
V163KHX0.1HA V163KHX0.1H0 V164KHX0.1HA V164KHX0.1H0 V165KHX0.1HA V165KHX0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

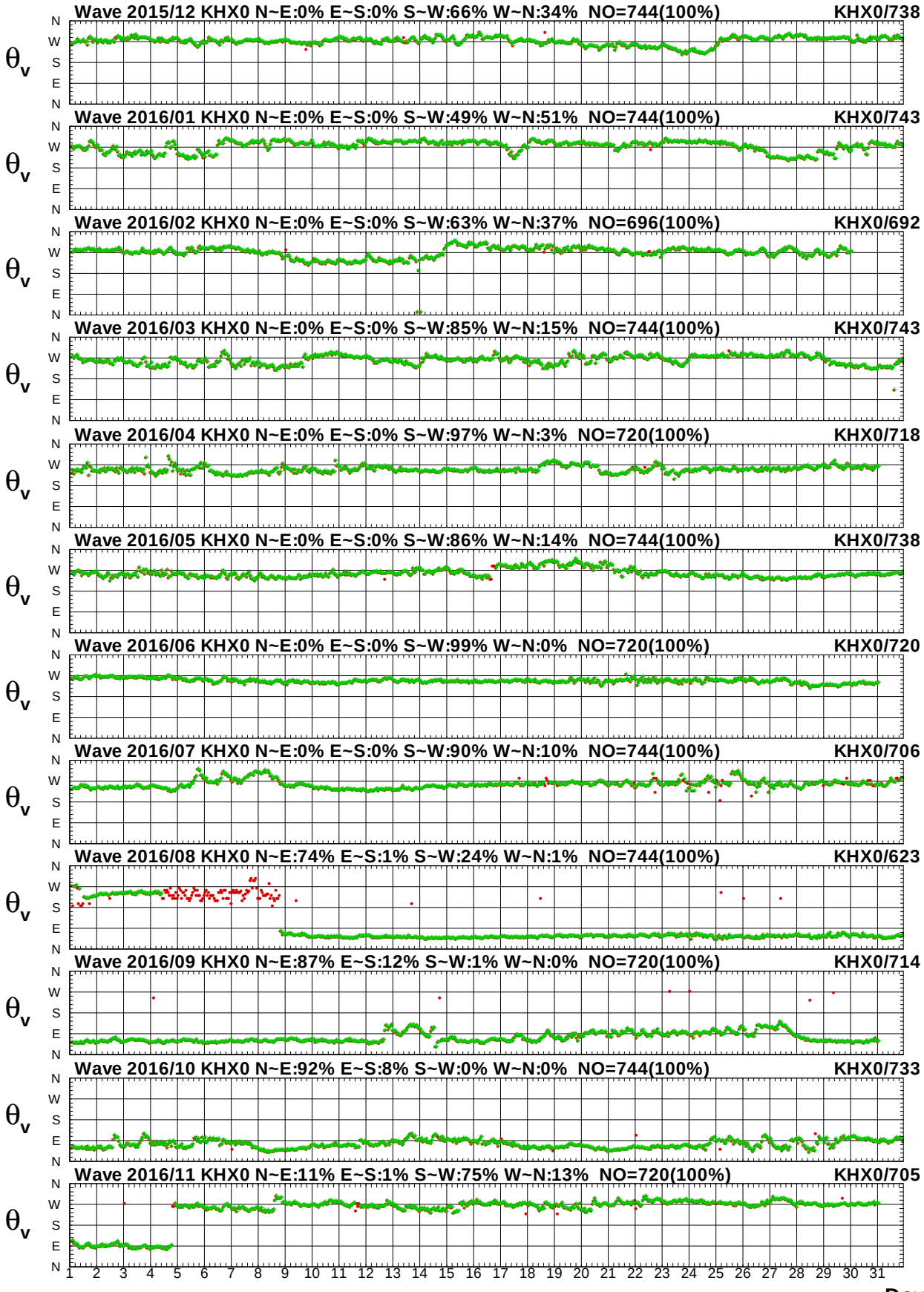

圖 7.1c　2016年每月高雄海域 X 站修補前後之波向比較圖

V15CKHX0.1HA V15CKHX0.1H0 V161KHX0.1HA V161KHX0.1H0 V162KHX0.1HA V162KHX0.1H0
V163KHX0.1HA V163KHX0.1H0 V164KHX0.1HA V164KHX0.1H0 V165KHX0.1HA V165KHX0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

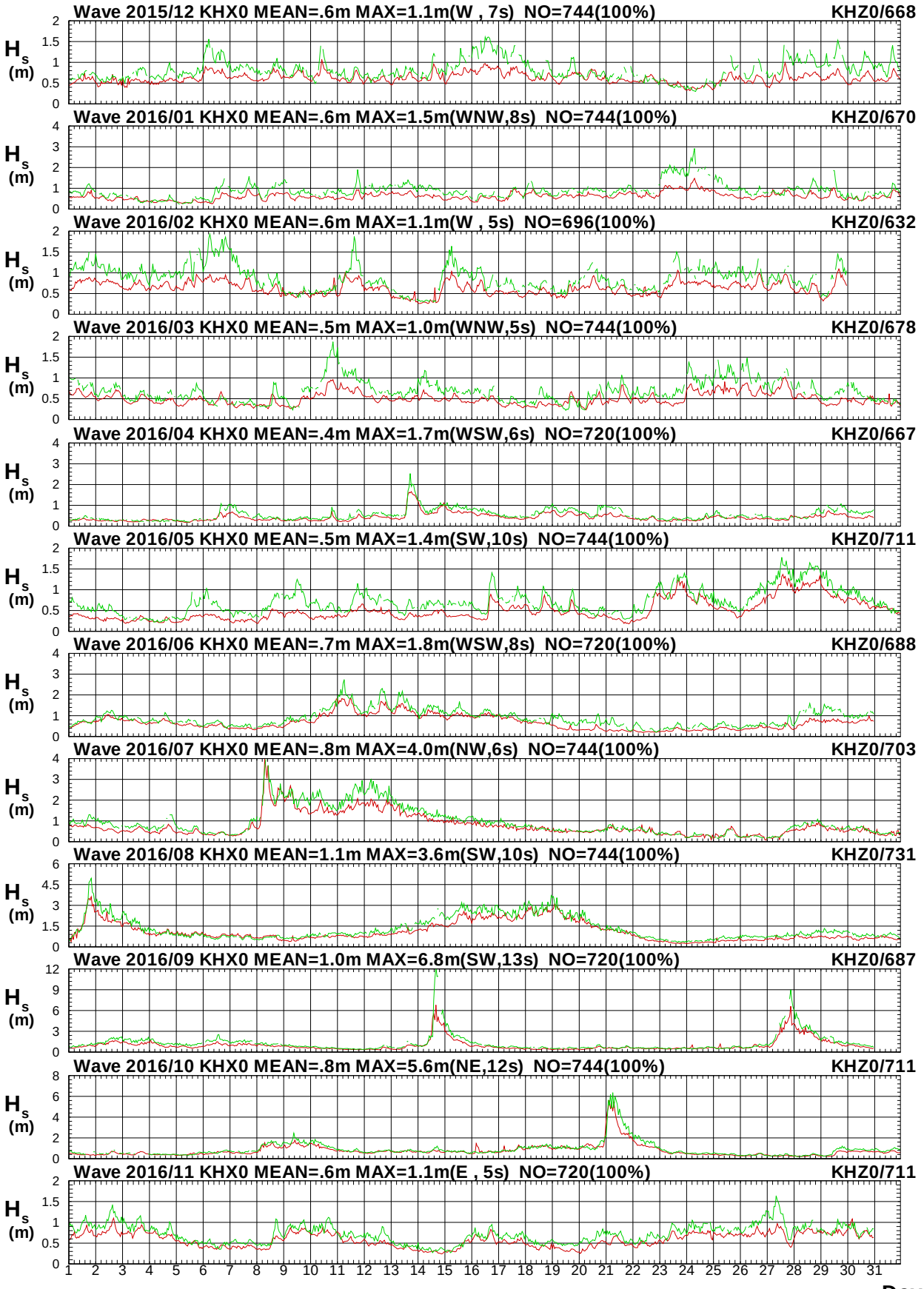

圖 7.2a　2016年每月高雄海域 X 站與 Z 站波高比較圖

V15CKHX0.1HA V15CKHZ0.1H0 V161KHX0.1HA V161KHZ0.1H0 V162KHX0.1HA V162KHZ0.1H0
V163KHX0.1HA V163KHZ0.1H0 V164KHX0.1HA V164KHZ0.1H0 V165KHX0.1HA V165KHZ0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

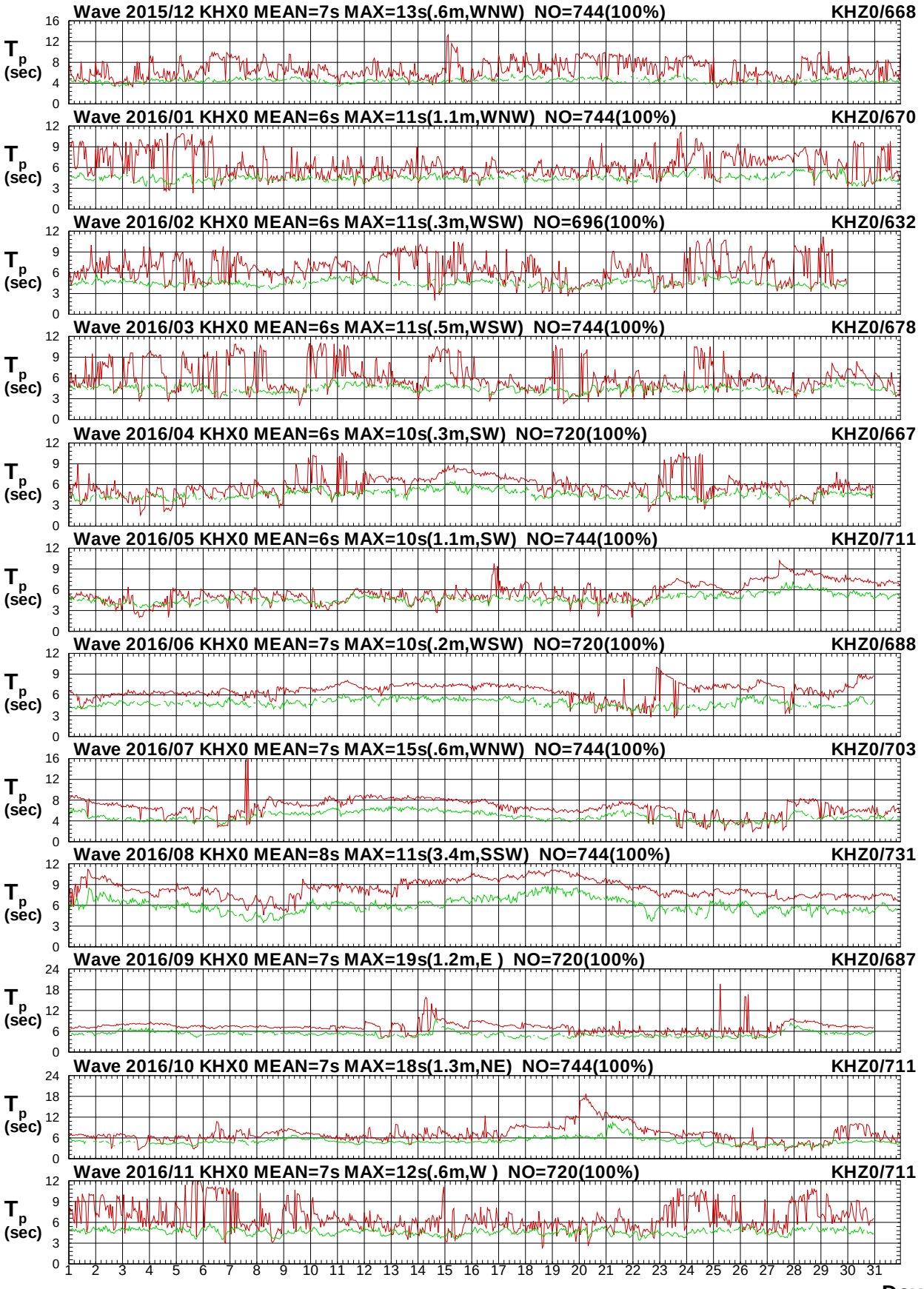

圖 7.2b　2016年每月高雄海域 X 站與 Z 站週期比較圖

V15CKHX0.1HA V15CKHZ0.1H0 V161KHX0.1HA V161KHZ0.1H0 V162KHX0.1HA V162KHZ0.1H0
V163KHX0.1HA V163KHZ0.1H0 V164KHX0.1HA V164KHZ0.1H0 V165KHX0.1HA V165KHZ0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

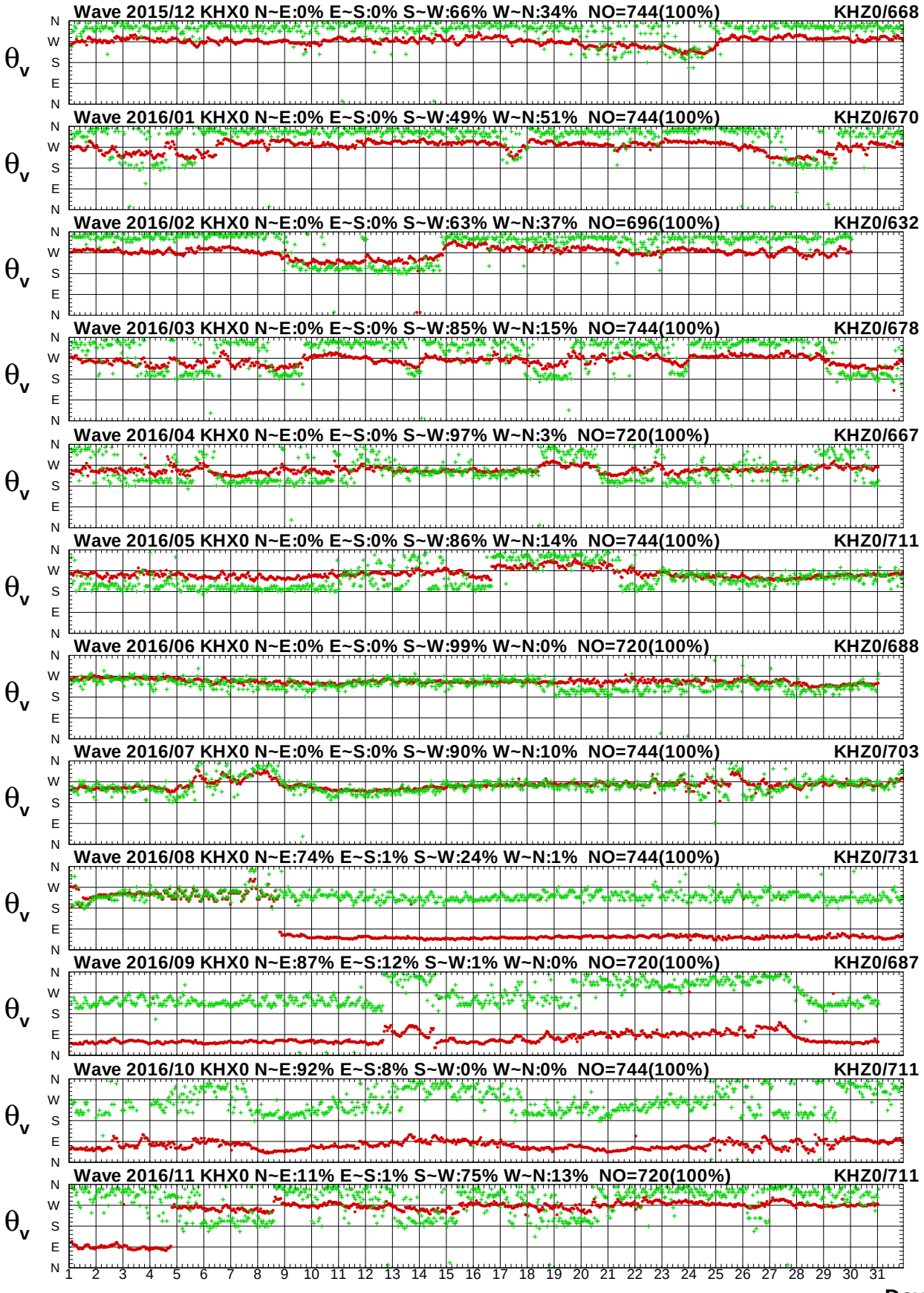

圖7.2c　2016年每月高雄海域 X 站與 Z 站波向比較圖

V15CKHX0.1HA V15CKHZ0.1H0 V161KHX0.1HA V161KHZ0.1H0 V162KHX0.1HA V162KHZ0.1H0
V163KHX0.1HA V163KHZ0.1H0 V164KHX0.1HA V164KHZ0.1H0 V165KHX0.1HA V165KHZ0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

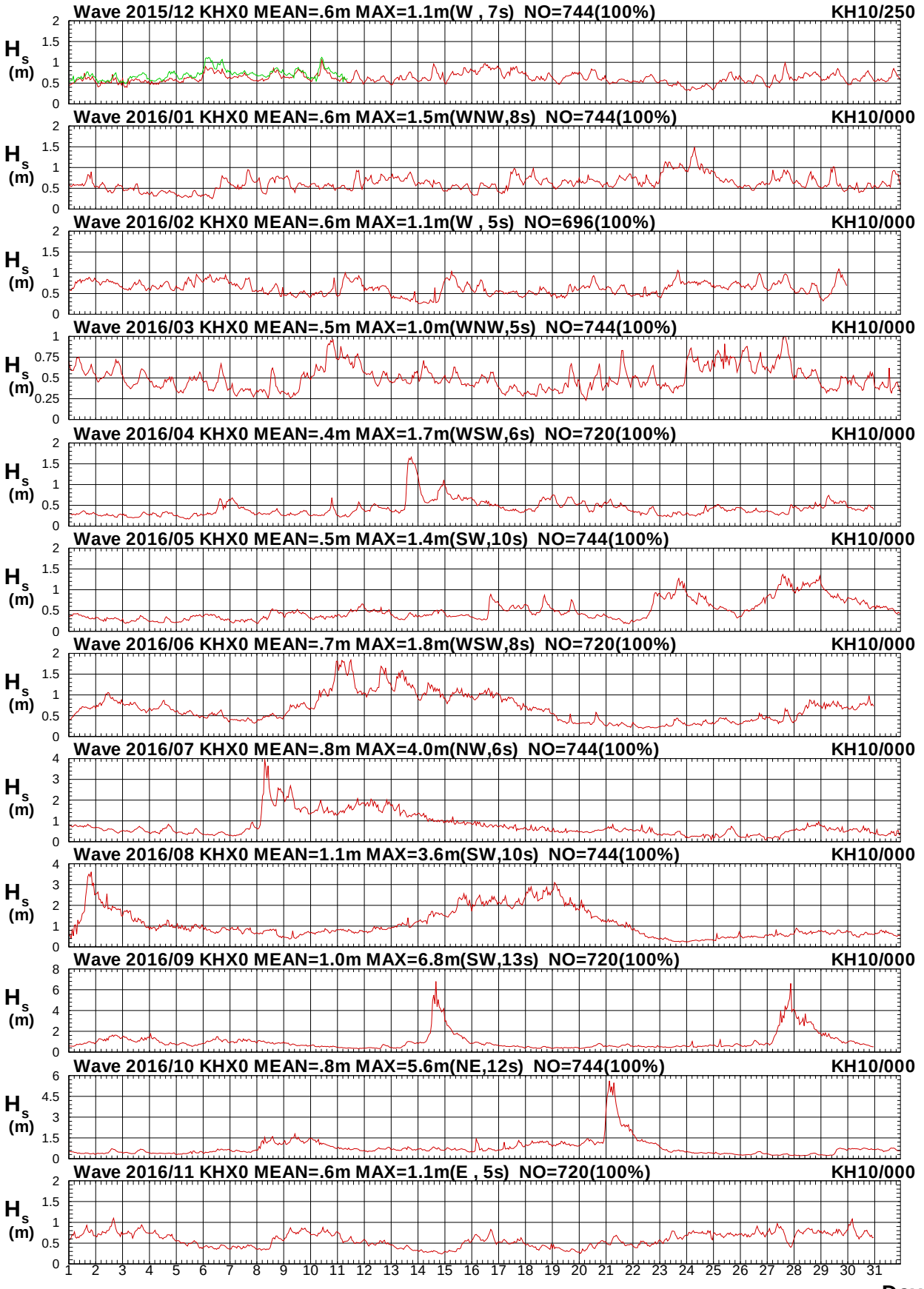

圖 7.3a　2016年每月高雄海域 X 站與 1 站波高比較圖

V15CKHX0.1HA V15CKH10.1H0 V161KHX0.1HA V161KH10.1H0 V162KHX0.1HA V162KH10.1H0
V163KHX0.1HA V163KH10.1H0 V164KHX0.1HA V164KH10.1H0 V165KHX0.1HA V165KH10.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

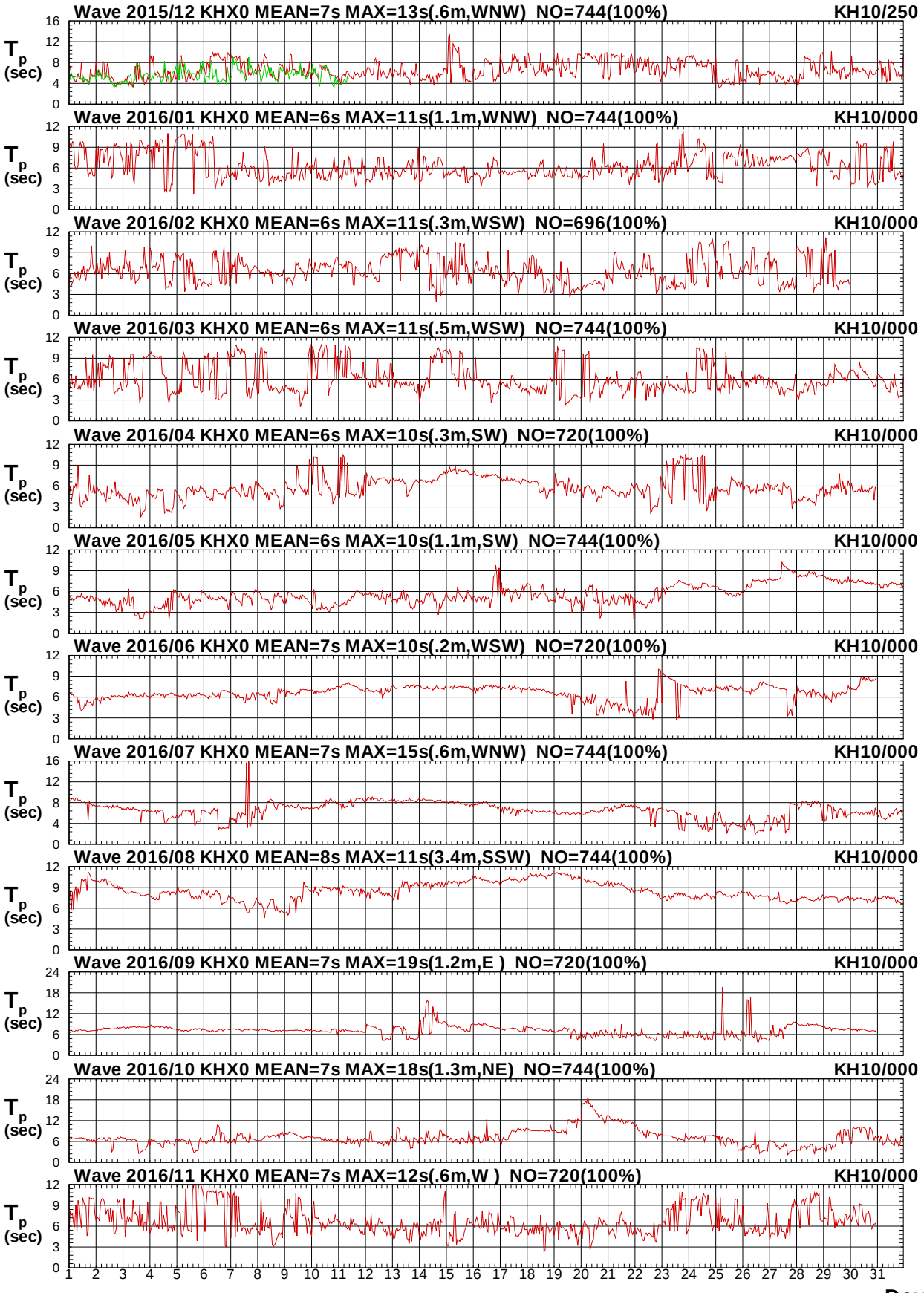

圖 7.3b　2016年每月高雄海域 X 站與 1 站週期比較圖

V15CKHX0.1HA V15CKH10.1H0 V161KHX0.1HA V161KH10.1H0 V162KHX0.1HA V162KH10.1H0
V163KHX0.1HA V163KH10.1H0 V164KHX0.1HA V164KH10.1H0 V165KHX0.1HA V165KH10.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

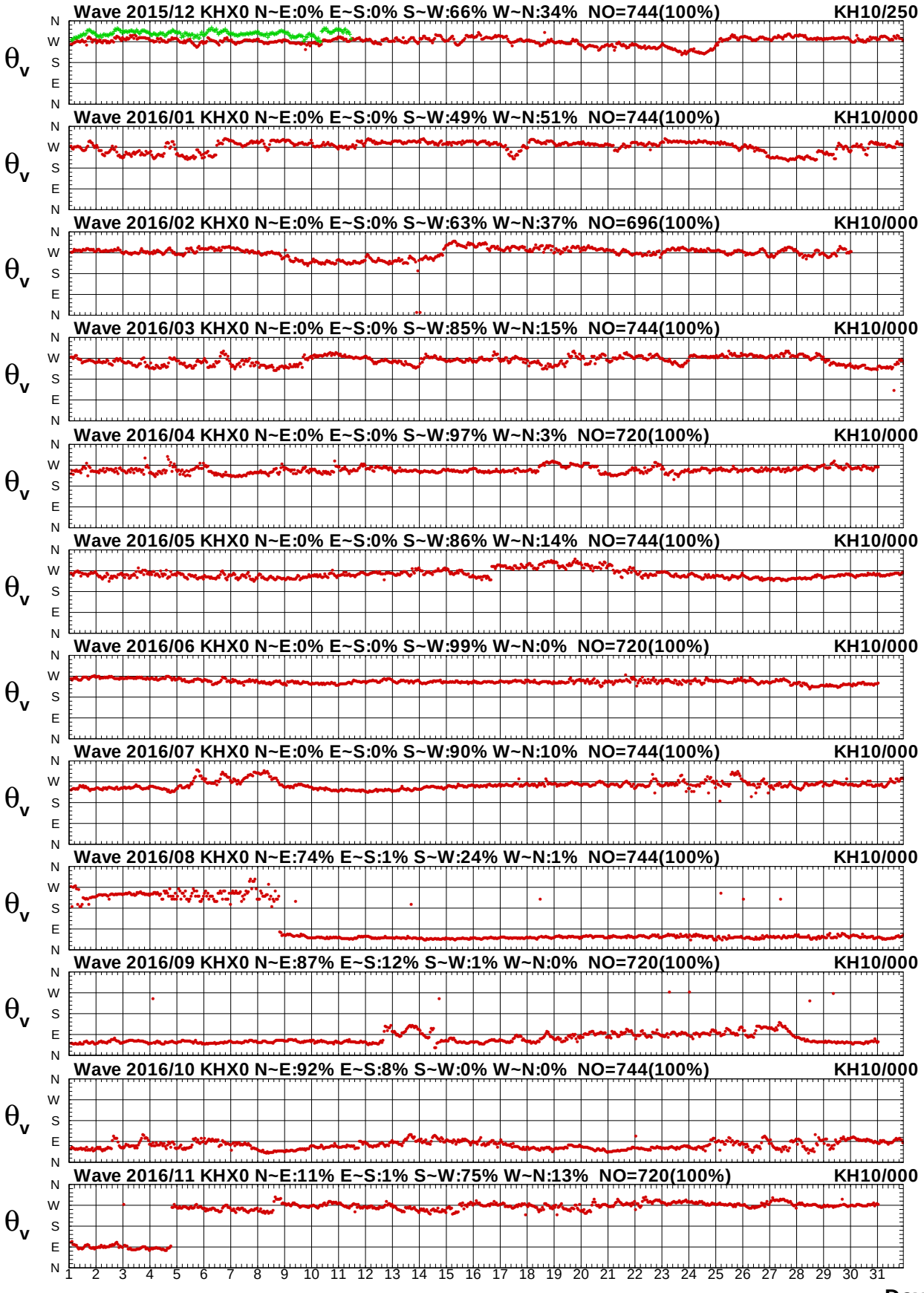

圖 7.3c　2016年每月高雄海域 X 站與 1 站波向比較圖

V15CKHX0.1HA V15CKH10.1H0 V161KHX0.1HA V161KH10.1H0 V162KHX0.1HA V162KH10.1H0
V163KHX0.1HA V163KH10.1H0 V164KHX0.1HA V164KH10.1H0 V165KHX0.1HA V165KH10.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

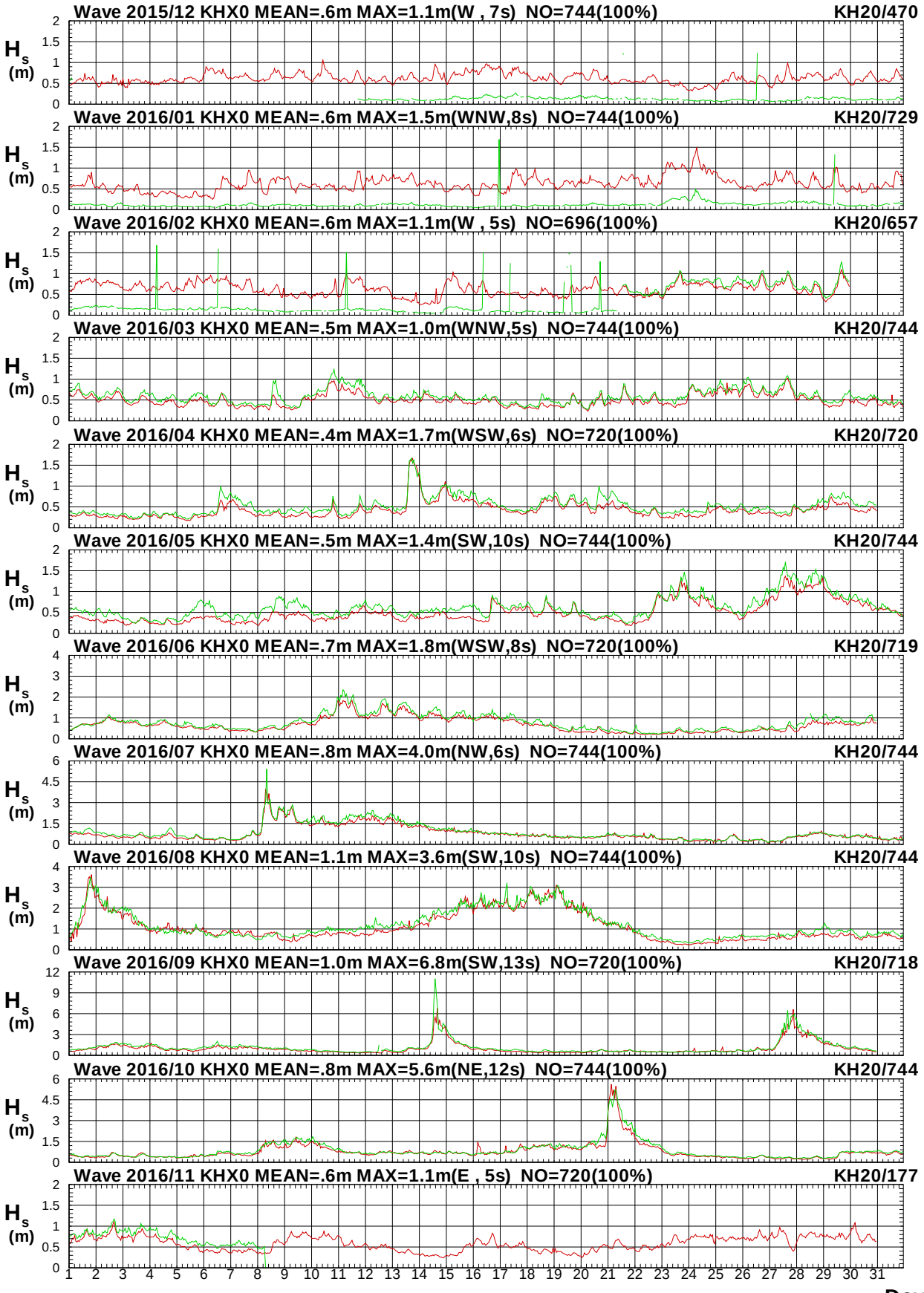

圖 7.4a　2016年每月高雄海域 X 站與2站波高比較圖

V15CKHX0.1HA V15CKH20.1H0 V161KHX0.1HA V161KH20.1H0 V162KHX0.1HA V162KH20.1H0
V163KHX0.1HA V163KH20.1H0 V164KHX0.1HA V164KH20.1H0 V165KHX0.1HA V165KH20.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

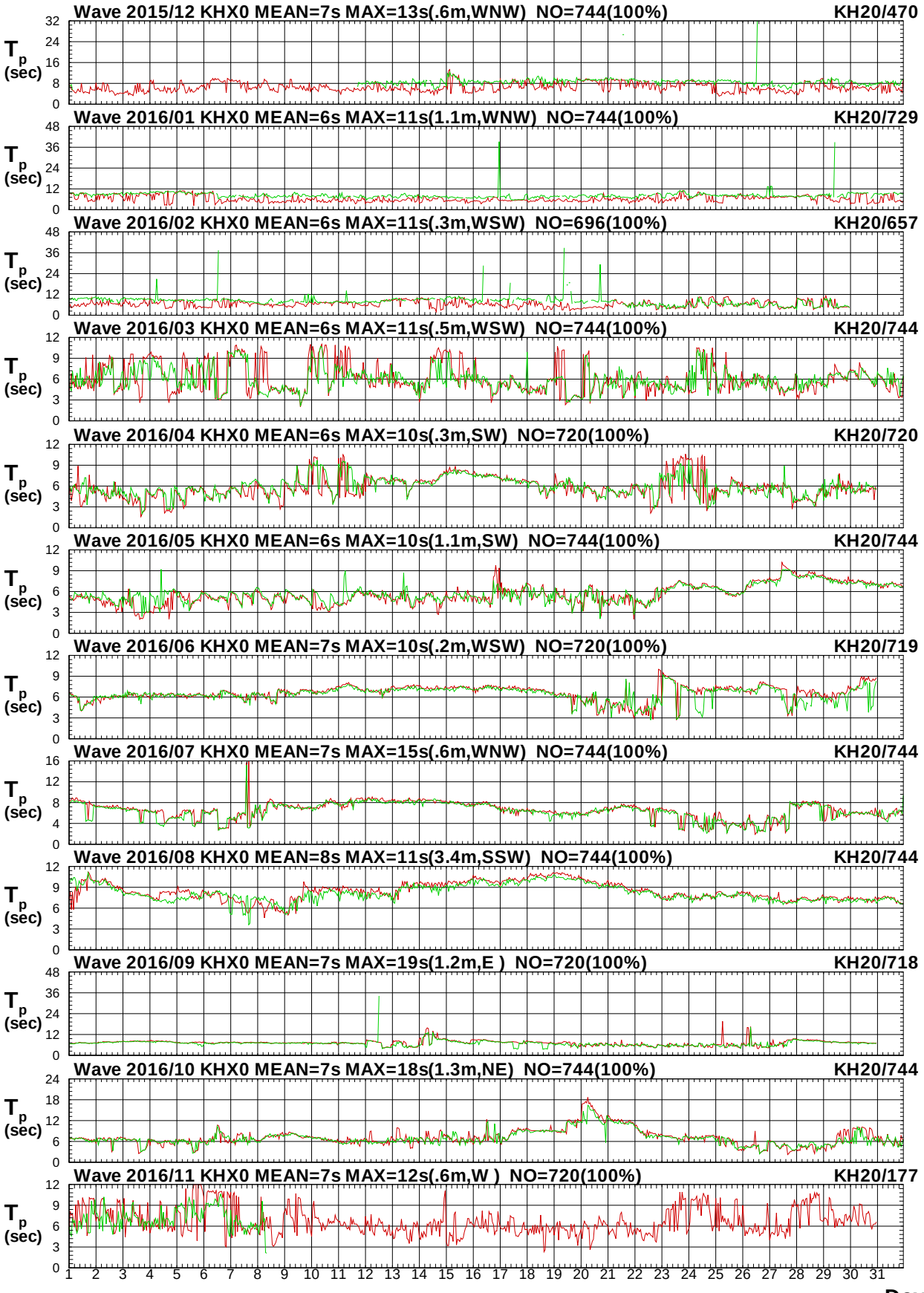

圖 7.4b　2016年每月高雄海域 X 站與2站週期比較圖

V15CKHX0.1HA V15CKH20.1H0 V161KHX0.1HA V161KH20.1H0 V162KHX0.1HA V162KH20.1H0
V163KHX0.1HA V163KH20.1H0 V164KHX0.1HA V164KH20.1H0 V165KHX0.1HA V165KH20.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

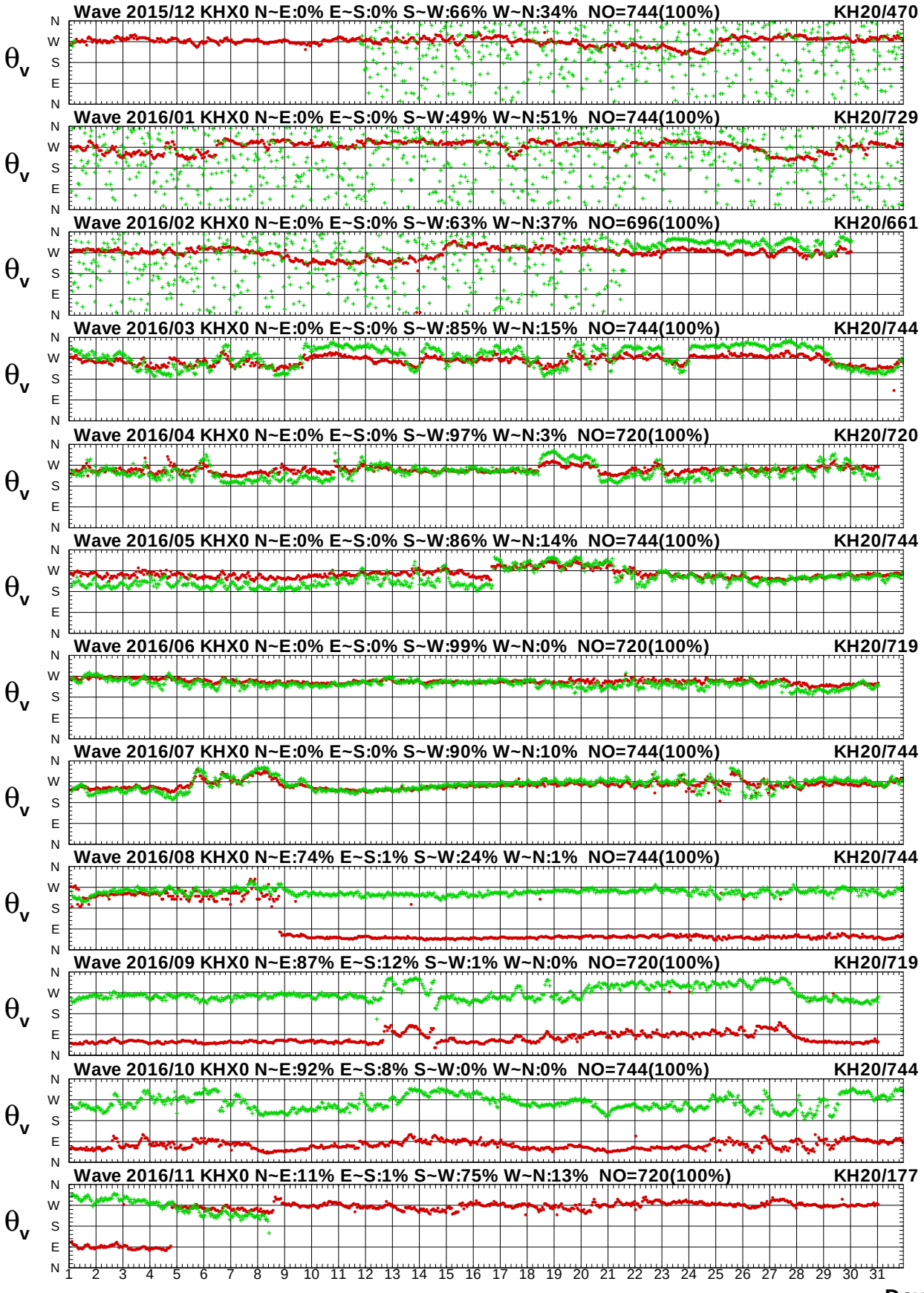

圖 7.4c　2016年每月高雄海域 X 站與2站波向比較圖

V15CKHX0.1HA V15CKH20.1H0 V161KHX0.1HA V161KH20.1H0 V162KHX0.1HA V162KH20.1H0
V163KHX0.1HA V163KH20.1H0 V164KHX0.1HA V164KH20.1H0 V165KHX0.1HA V165KH20.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

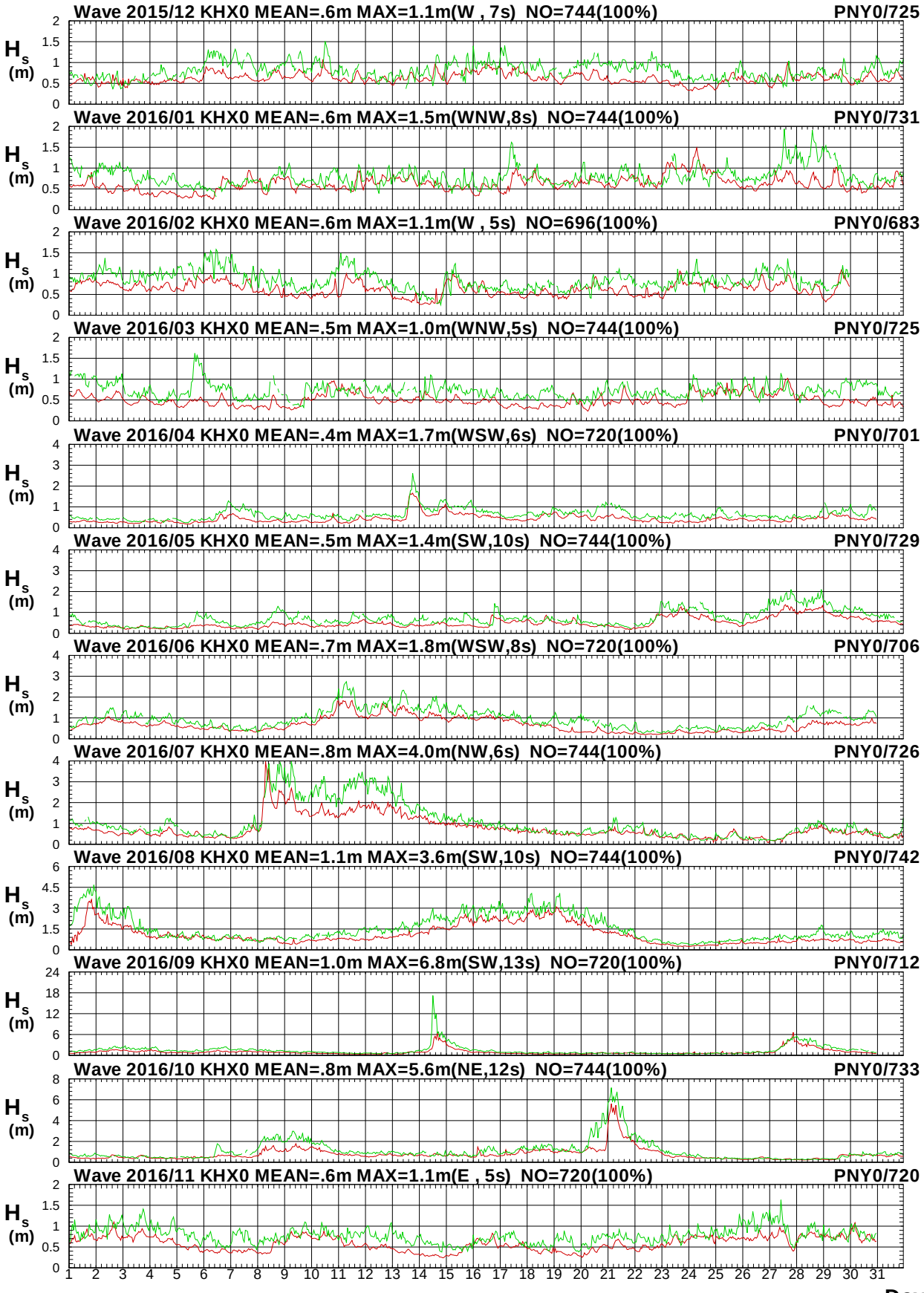

圖 7.5a　2016年每月高雄海域 X 站與屏東海域 Y 站波高圖

V15CKHX0.1HA V15CPNY0.1H0 V161KHX0.1HA V161PNY0.1H0 V162KHX0.1HA V162PNY0.1H0
V163KHX0.1HA V163PNY0.1H0 V164KHX0.1HA V164PNY0.1H0 V165KHX0.1HA V165PNY0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

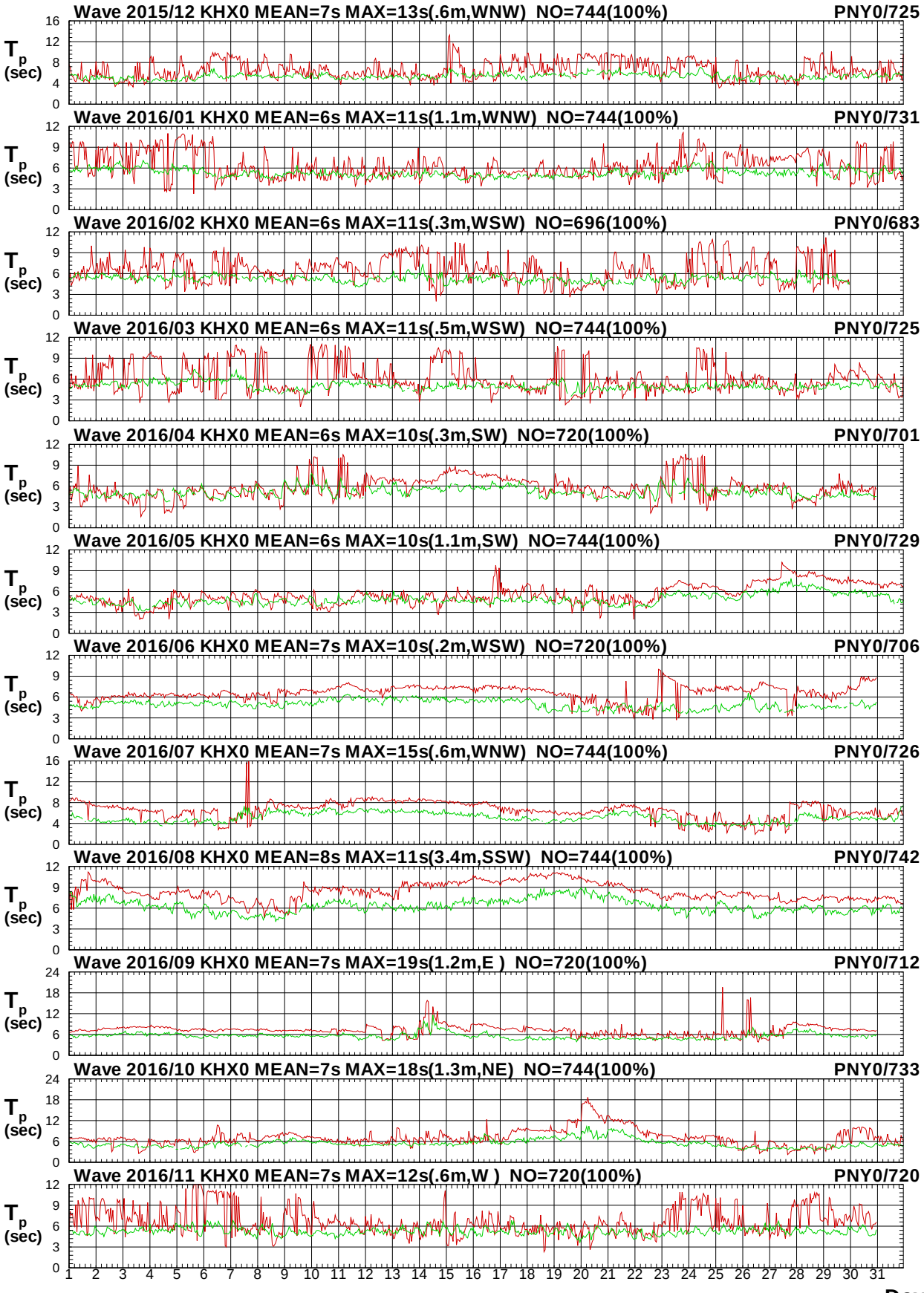

圖 7.5b　2016年每月高雄海域 X 站與屏東海域 Y 站週期圖

V15CKHX0.1HA V15CPNY0.1H0 V161KHX0.1HA V161PNY0.1H0 V162KHX0.1HA V162PNY0.1H0
V163KHX0.1HA V163PNY0.1H0 V164KHX0.1HA V164PNY0.1H0 V165KHX0.1HA V165PNY0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

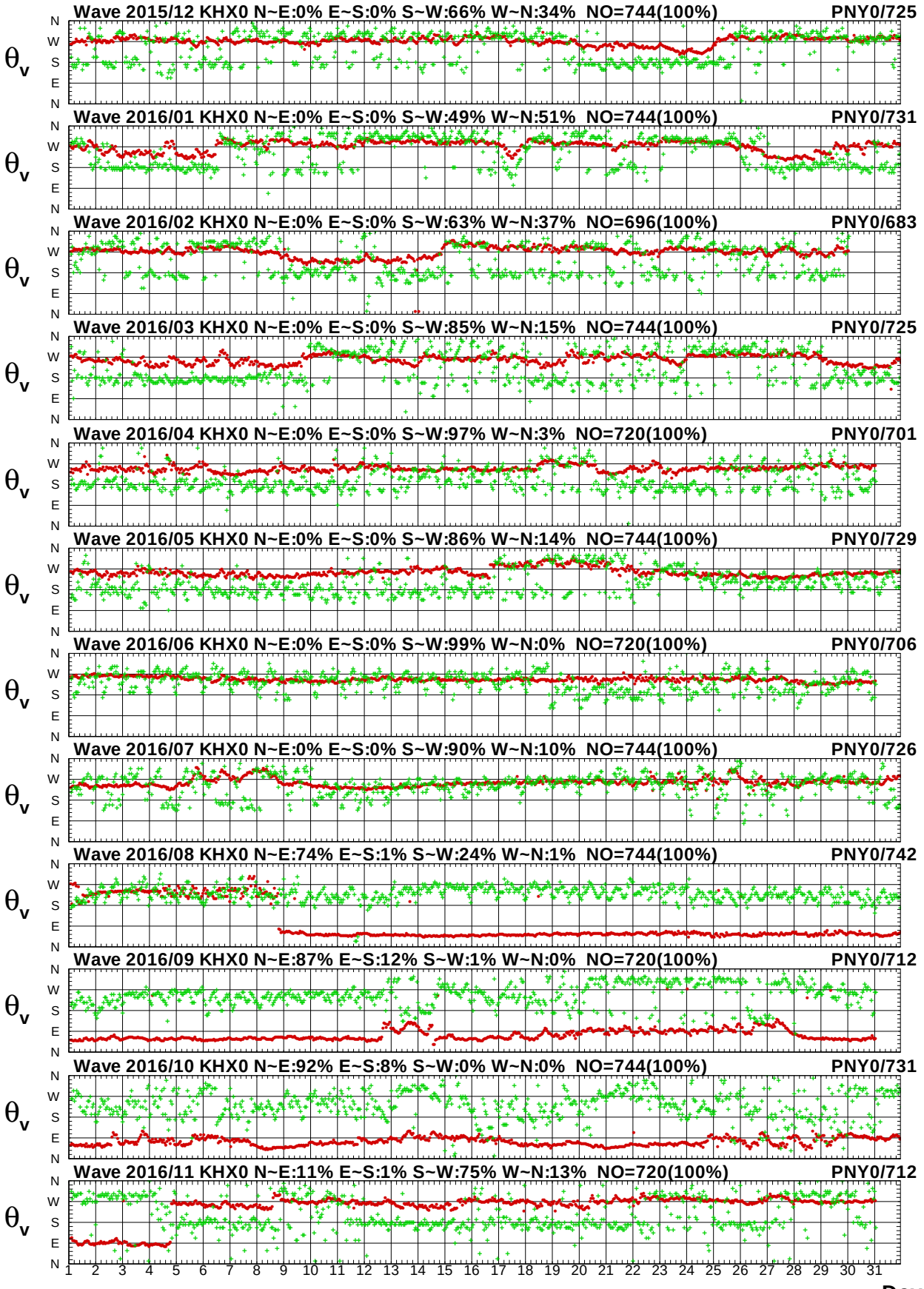

圖 7.5c　2016年每月高雄海域 X 站與屏東海域 Y 站波向圖

V15CKHX0.1HA V15CPNY0.1H0 V161KHX0.1HA V161PNY0.1H0 V162KHX0.1HA V162PNY0.1H0
V163KHX0.1HA V163PNY0.1H0 V164KHX0.1HA V164PNY0.1H0 V165KHX0.1HA V165PNY0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

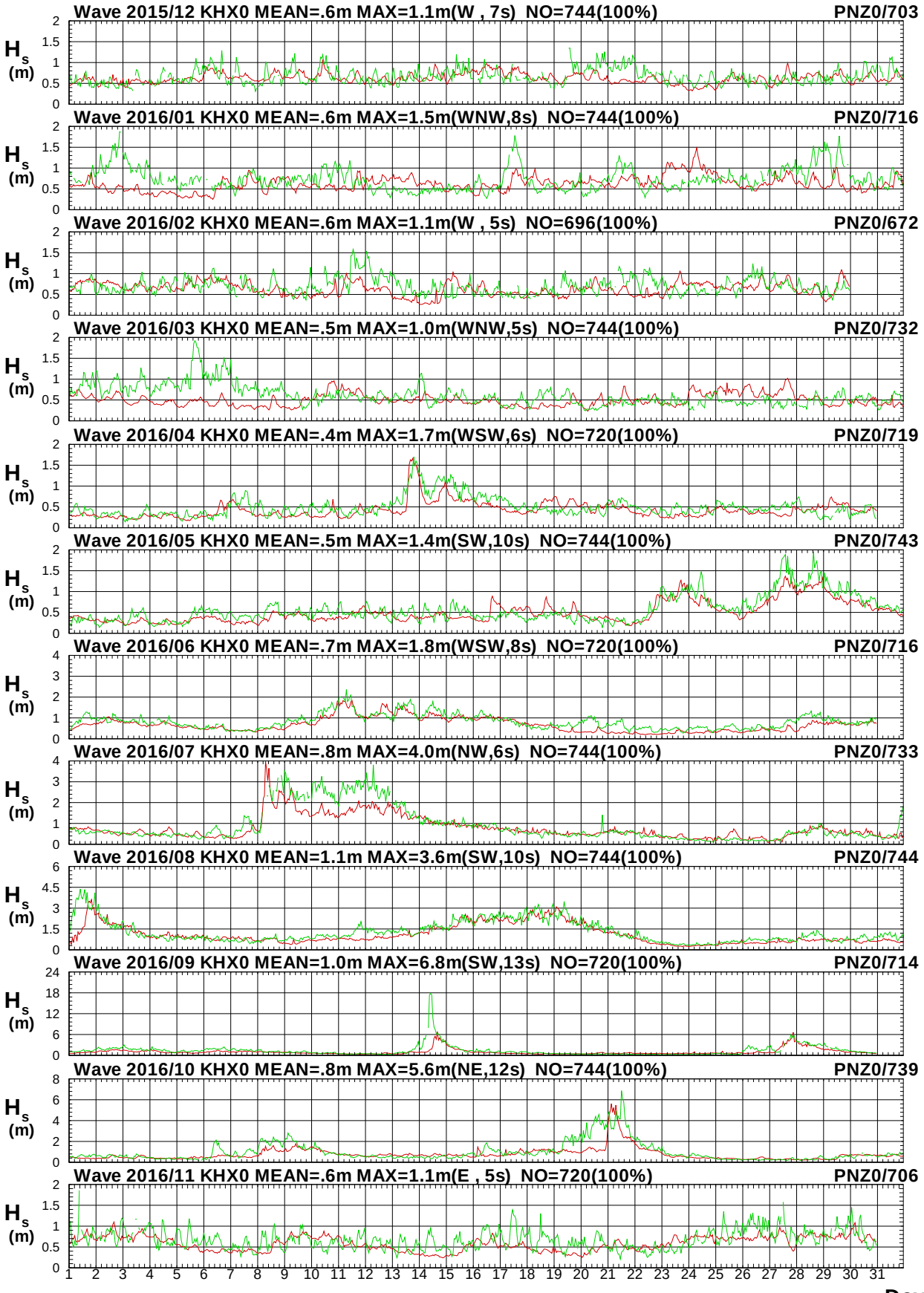

圖 7.6a　2016年每月高雄海域 X 站與屏東海域 Z 站波高圖

V15CKHX0.1HA V15CPNZ0.1H0 V161KHX0.1HA V161PNZ0.1H0 V162KHX0.1HA V162PNZ0.1H0
V163KHX0.1HA V163PNZ0.1H0 V164KHX0.1HA V164PNZ0.1H0 V165KHX0.1HA V165PNZ0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

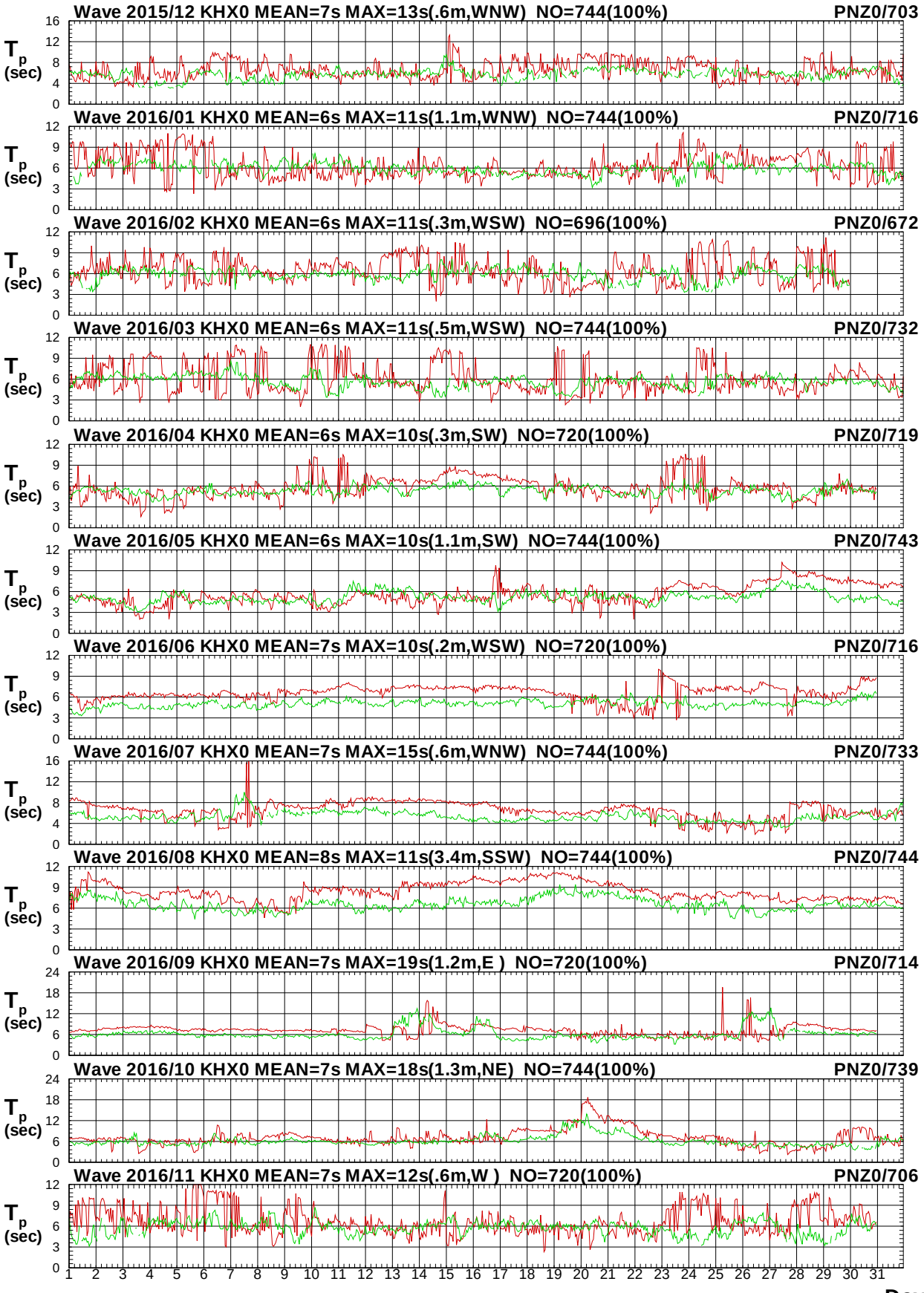

圖 7.6b　2016年每月高雄海域 X 站與屏東海域 Z 站週期圖

V15CKHX0.1HA V15CPNZ0.1H0 V161KHX0.1HA V161PNZ0.1H0 V162KHX0.1HA V162PNZ0.1H0
V163KHX0.1HA V163PNZ0.1H0 V164KHX0.1HA V164PNZ0.1H0 V165KHX0.1HA V165PNZ0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

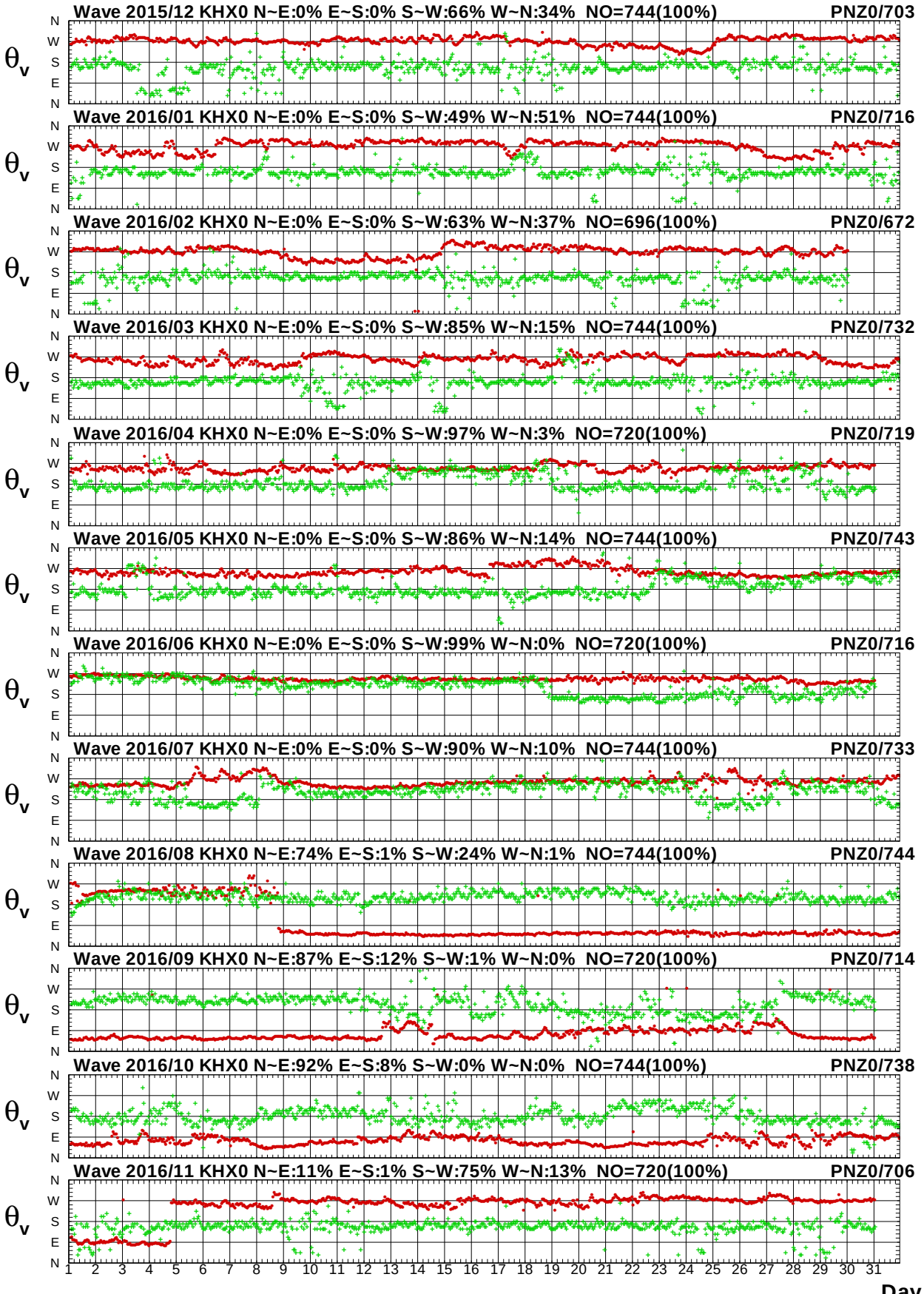

圖7.6c　2016年每月高雄海域 X 站與屏東海域 Z 站波向圖

V15CKHX0.1HA V15CPNZ0.1H0 V161KHX0.1HA V161PNZ0.1H0 V162KHX0.1HA V162PNZ0.1H0
V163KHX0.1HA V163PNZ0.1H0 V164KHX0.1HA V164PNZ0.1H0 V165KHX0.1HA V165PNZ0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

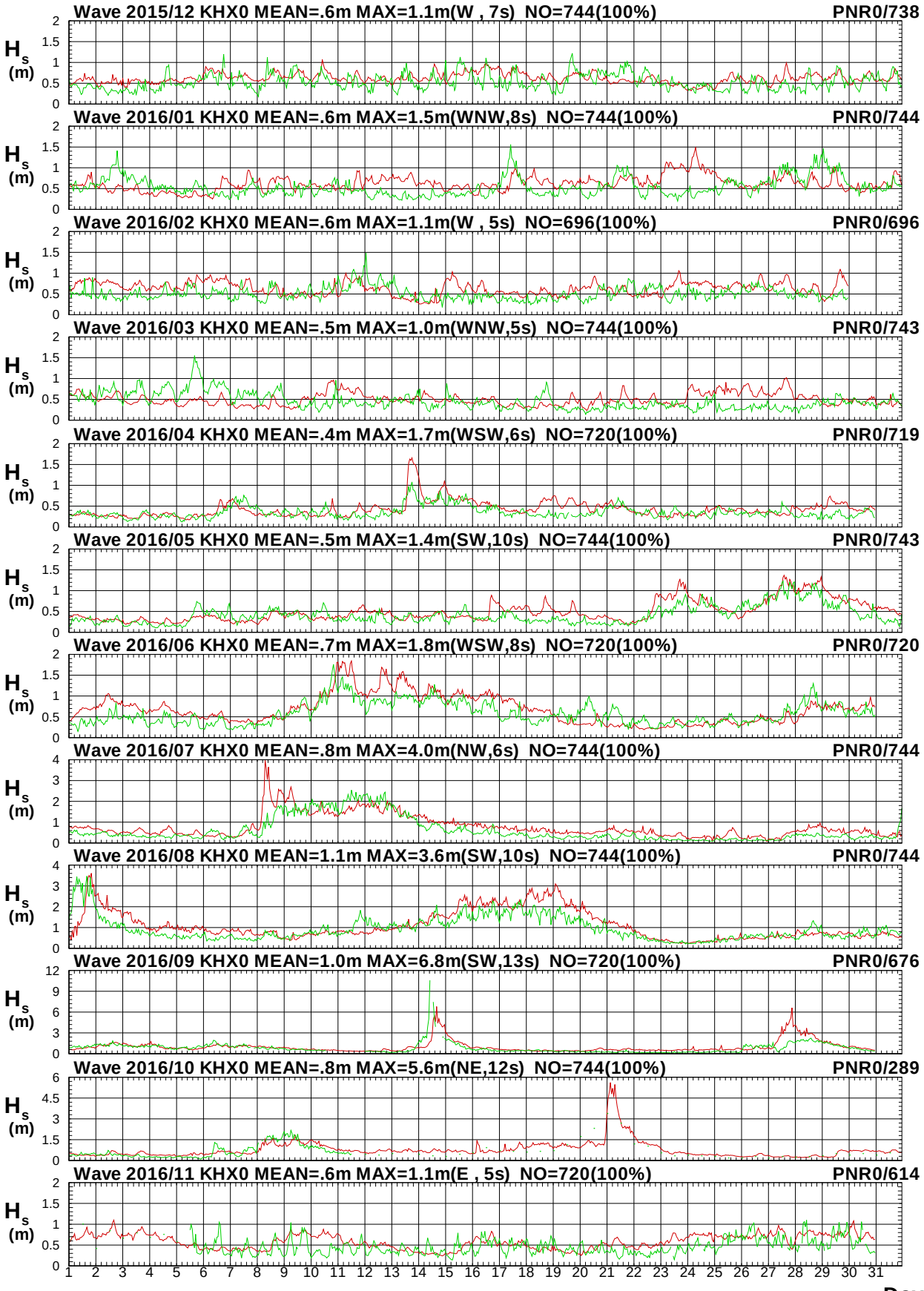

圖 7.7a　2016年每月高雄海域 X 站與屏東海域 R 站波高圖

V15CKHX0.1HA V15CPNR0.1H0 V161KHX0.1HA V161PNR0.1H0 V162KHX0.1HA V162PNR0.1H0
V163KHX0.1HA V163PNR0.1H0 V164KHX0.1HA V164PNR0.1H0 V165KHX0.1HA V165PNR0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

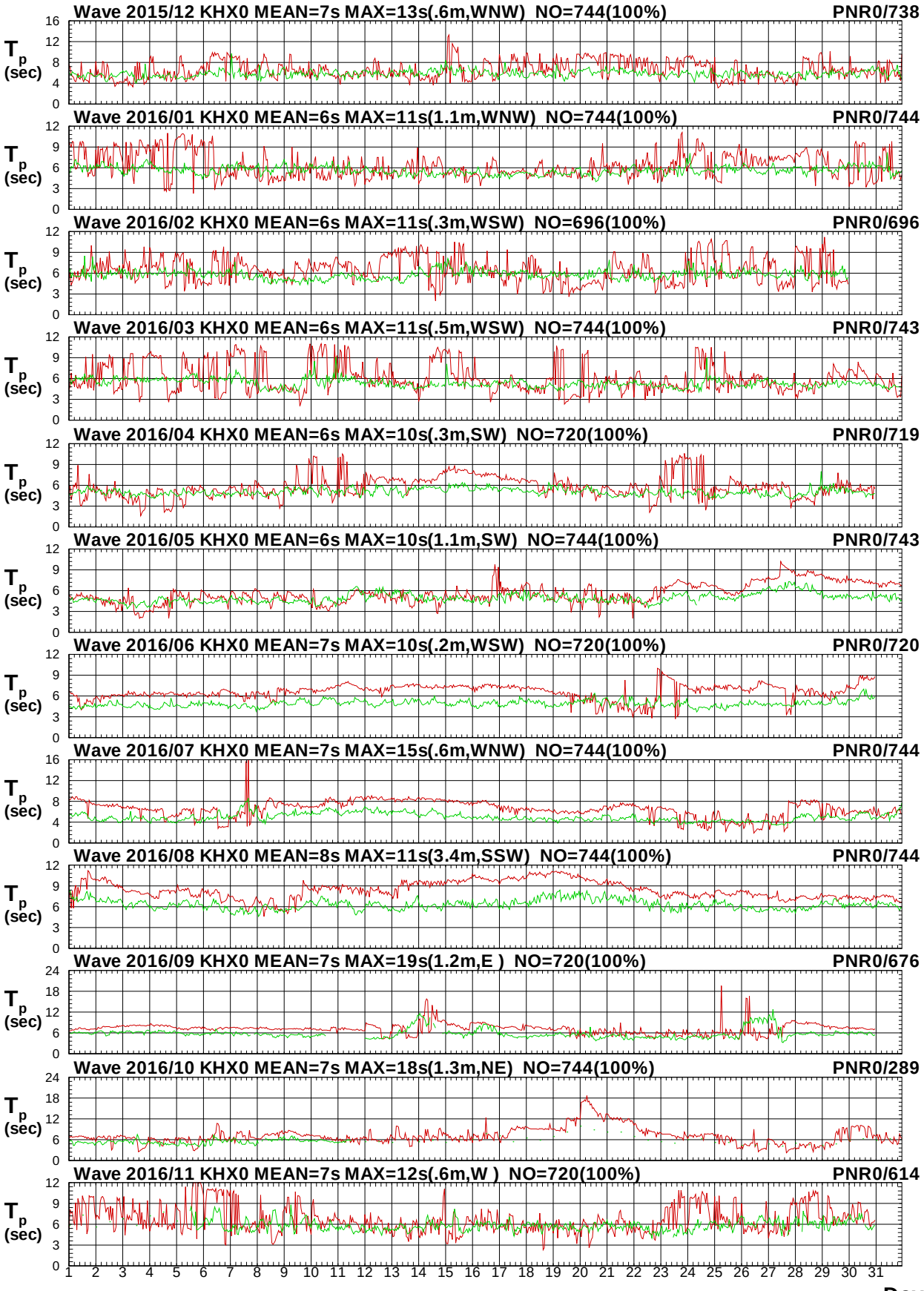

圖 7.7b　2016年每月高雄海域 X 站與屏東海域 R 站週期圖

V15CKHX0.1HA V15CPNR0.1H0 V161KHX0.1HA V161PNR0.1H0 V162KHX0.1HA V162PNR0.1H0
V163KHX0.1HA V163PNR0.1H0 V164KHX0.1HA V164PNR0.1H0 V165KHX0.1HA V165PNR0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

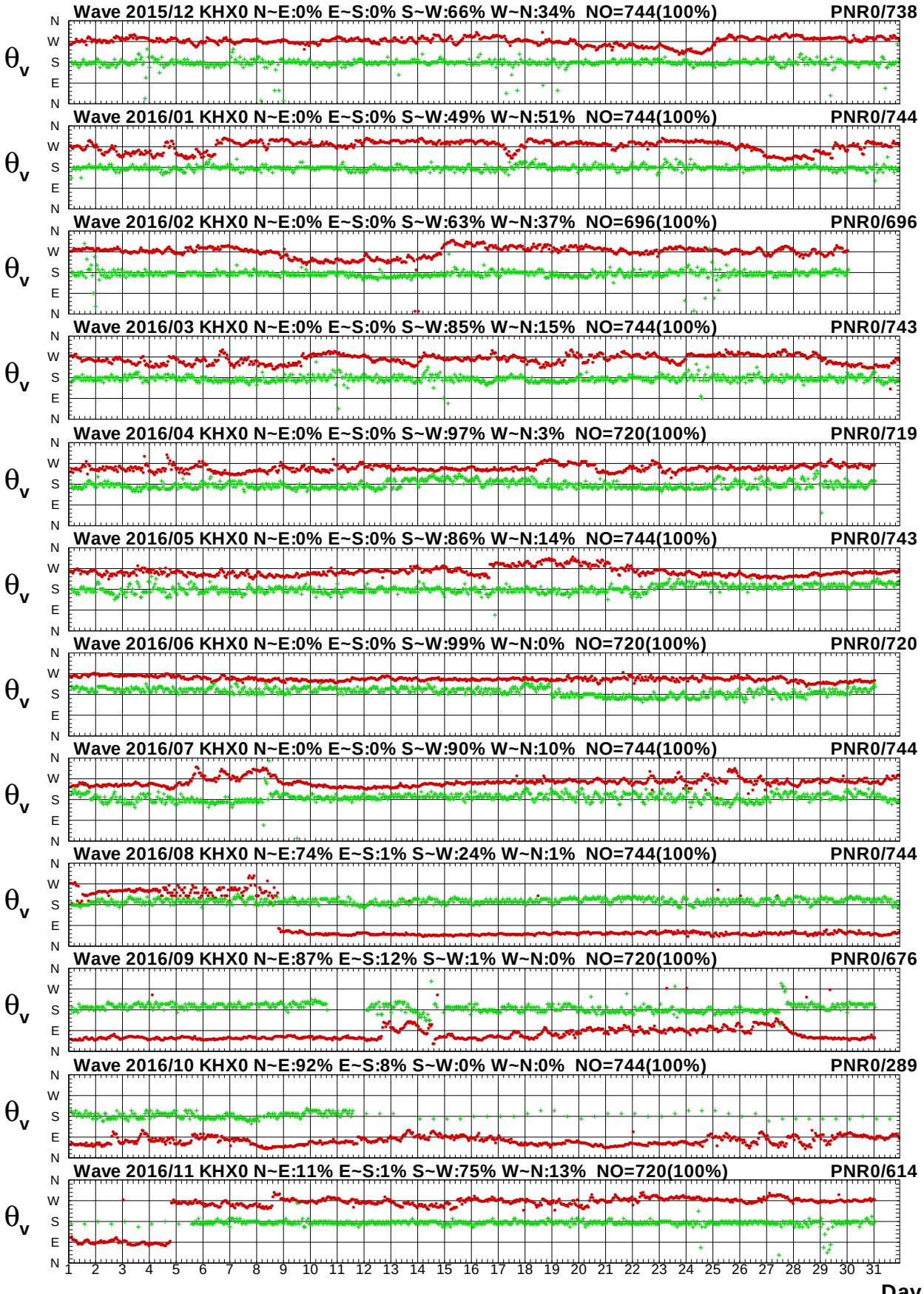

圖 7.7c　2016年每月高雄海域 X 站與屏東海域 R 站波向圖

V15CKHX0.1HA V15CPNR0.1H0 V161KHX0.1HA V161PNR0.1H0 V162KHX0.1HA V162PNR0.1H0
V163KHX0.1HA V163PNR0.1H0 V164KHX0.1HA V164PNR0.1H0 V165KHX0.1HA V165PNR0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

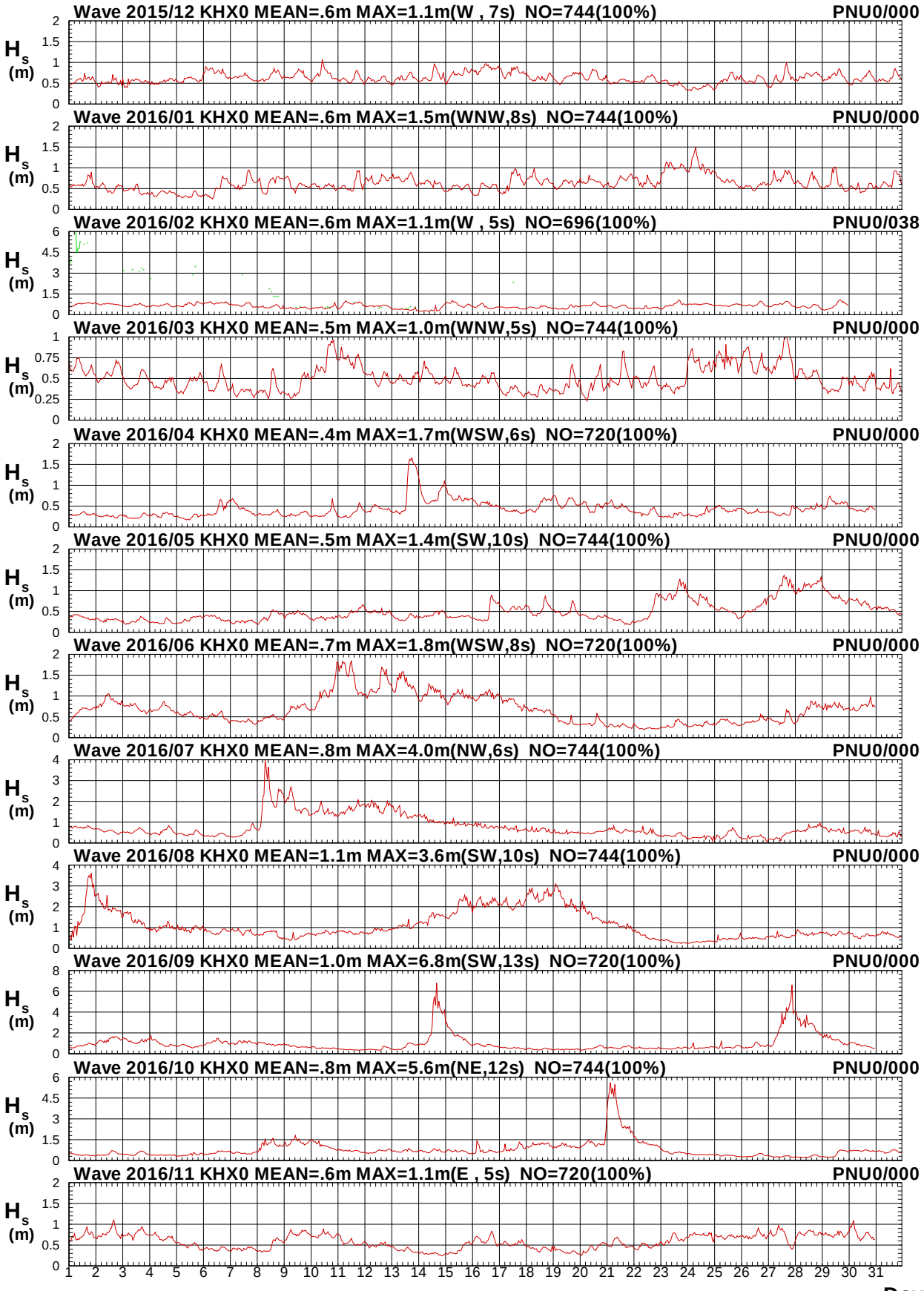

圖 7.8a　2016年每月高雄海域 X 站與屏東海域 U 站波高圖

V15CKHX0.1HA V15CPNU0.1H0 V161KHX0.1HA V161PNU0.1H0 V162KHX0.1HA V162PNU0.1H0
V163KHX0.1HA V163PNU0.1H0 V164KHX0.1HA V164PNU0.1H0 V165KHX0.1HA V165PNU0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

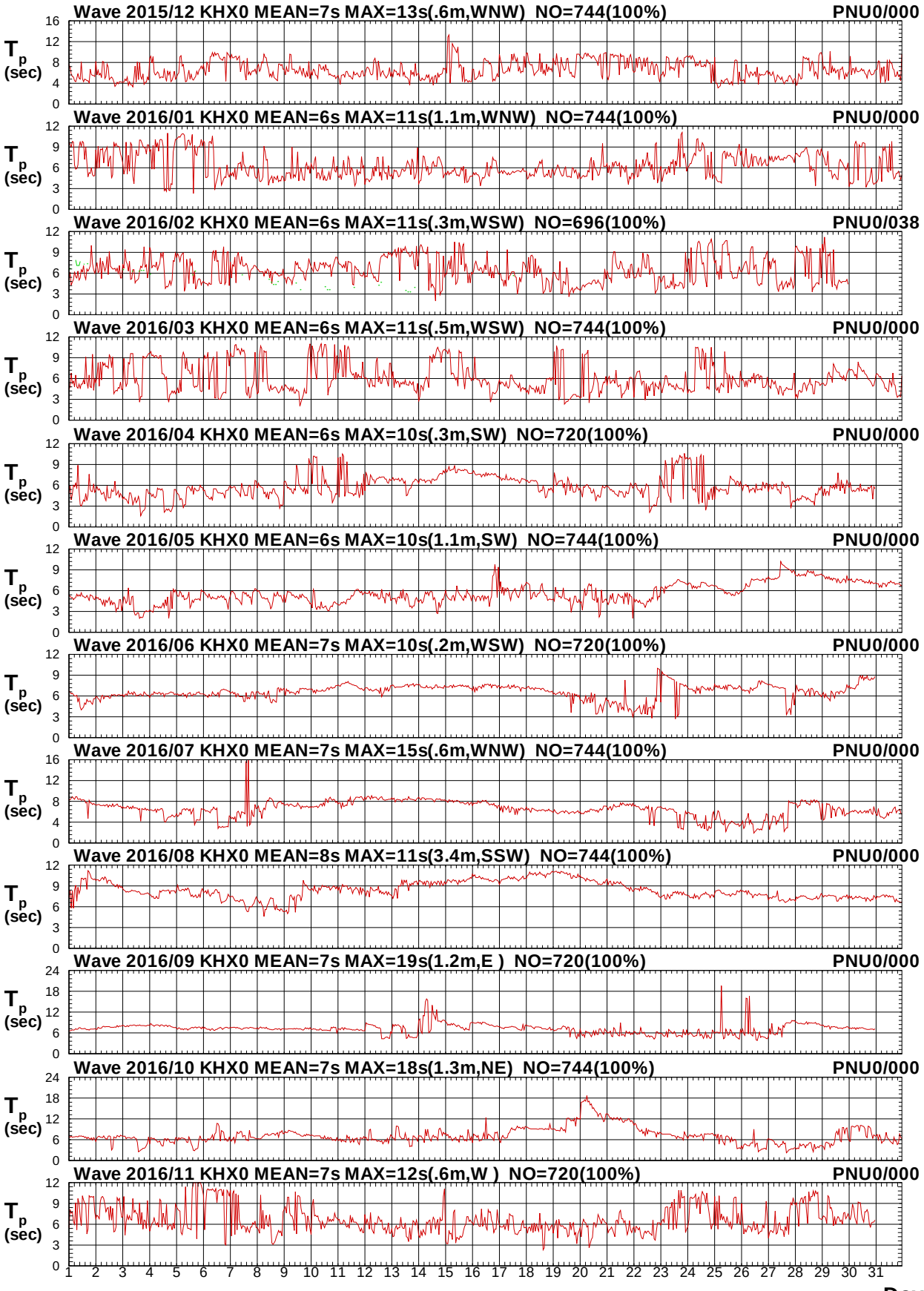

圖 7.8b　2016年每月高雄海域 X 站與屏東海域 U 站週期圖

V15CKHX0.1HA V15CPNU0.1H0 V161KHX0.1HA V161PNU0.1H0 V162KHX0.1HA V162PNU0.1H0
V163KHX0.1HA V163PNU0.1H0 V164KHX0.1HA V164PNU0.1H0 V165KHX0.1HA V165PNU0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

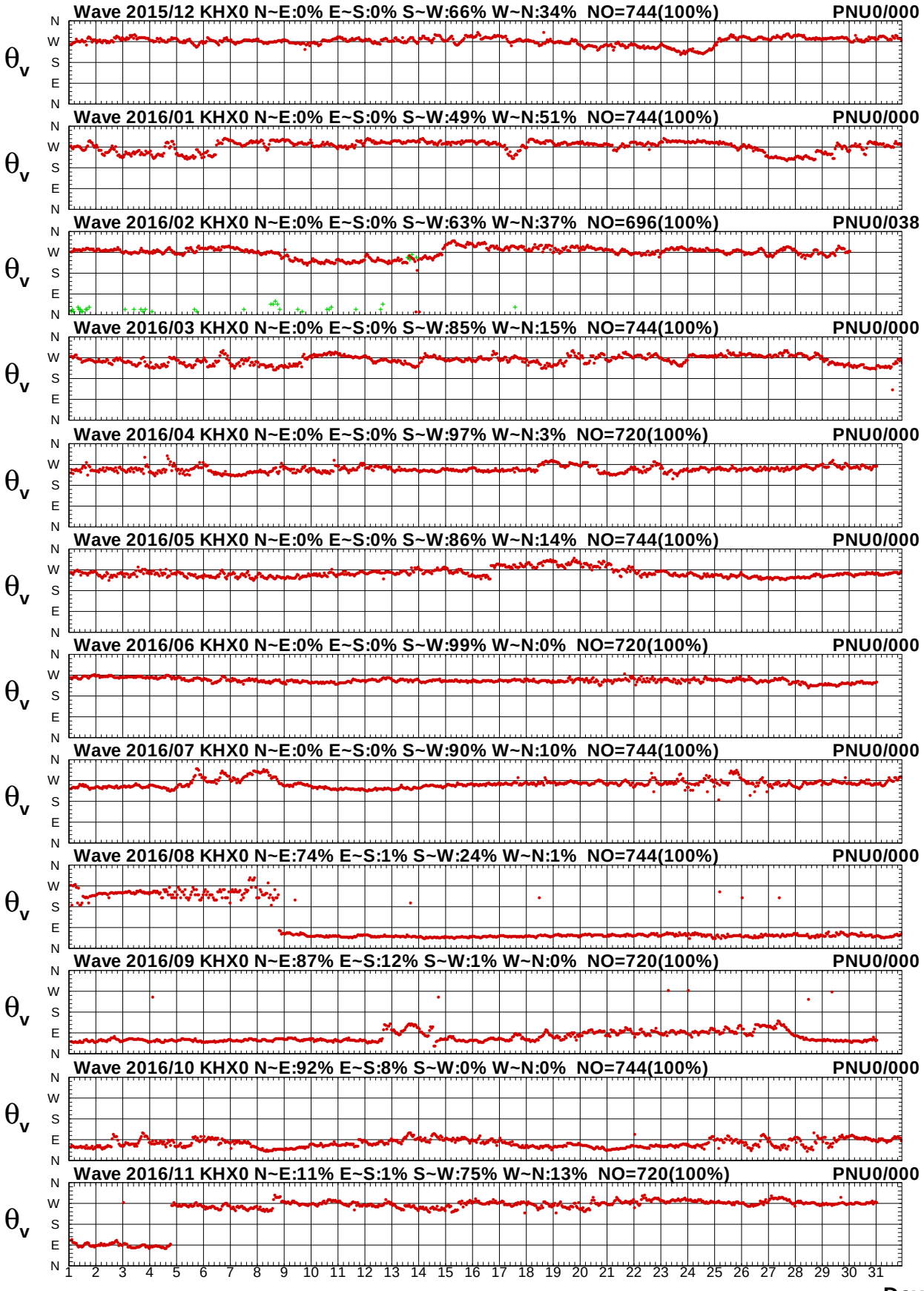

圖 7.8c　2016年每月高雄海域 X 站與屏東海域 U 站波向圖

V15CKHX0.1HA V15CPNU0.1H0 V161KHX0.1HA V161PNU0.1H0 V162KHX0.1HA V162PNU0.1H0
V163KHX0.1HA V163PNU0.1H0 V164KHX0.1HA V164PNU0.1H0 V165KHX0.1HA V165PNU0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

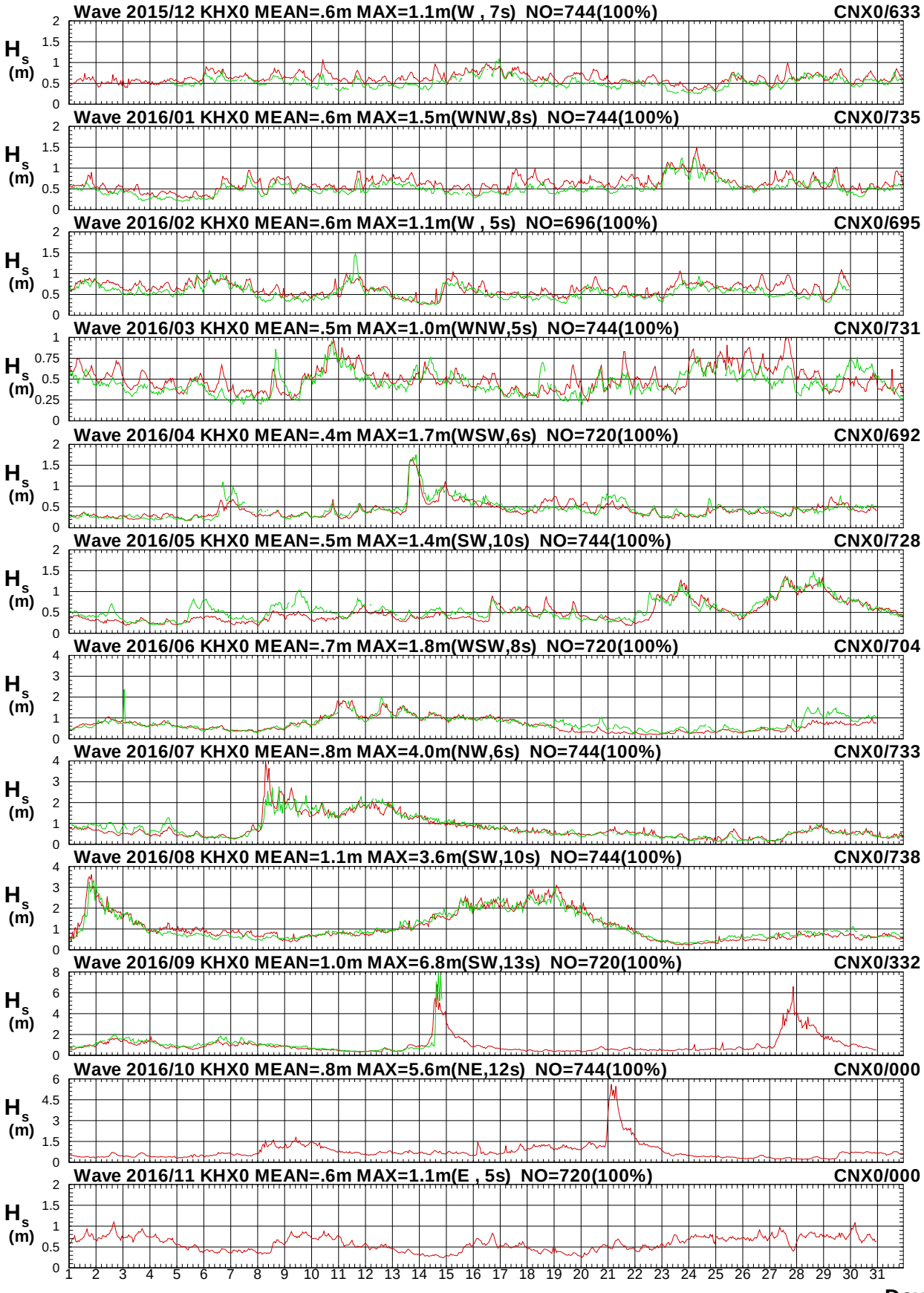

圖 7.9a　2016年每月高雄海域 X 站與嘉南海域 X 站波高圖

V15CKHX0.1HA V15CCNX0.1H0 V161KHX0.1HA V161CNX0.1H0 V162KHX0.1HA V162CNX0.1H0
V163KHX0.1HA V163CNX0.1H0 V164KHX0.1HA V164CNX0.1H0 V165KHX0.1HA V165CNX0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

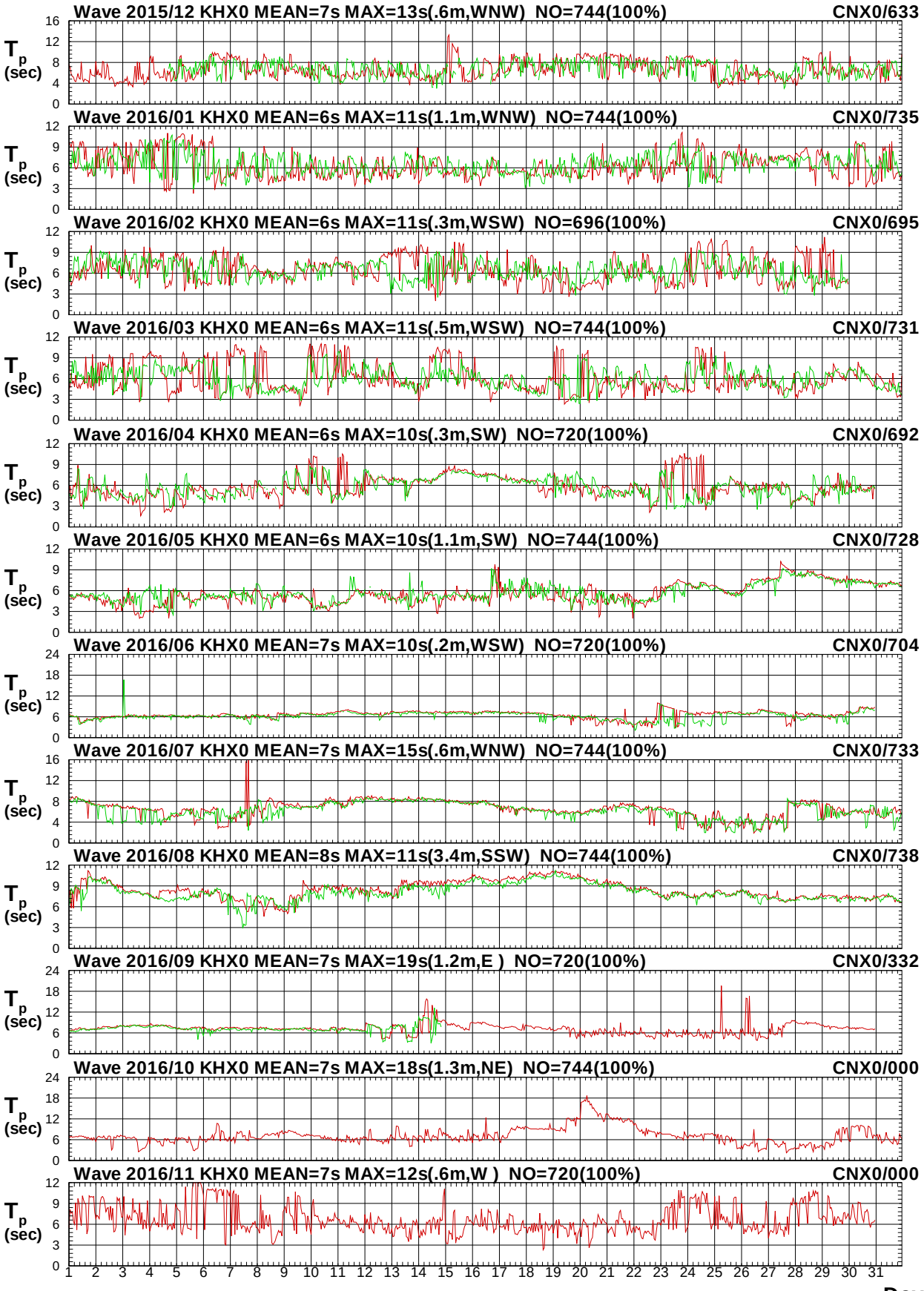

圖 7.9b　2016年每月高雄海域 X 站與嘉南海域 X 站週期圖

V15CKHX0.1HA V15CCNX0.1H0 V161KHX0.1HA V161CNX0.1H0 V162KHX0.1HA V162CNX0.1H0
V163KHX0.1HA V163CNX0.1H0 V164KHX0.1HA V164CNX0.1H0 V165KHX0.1HA V165CNX0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

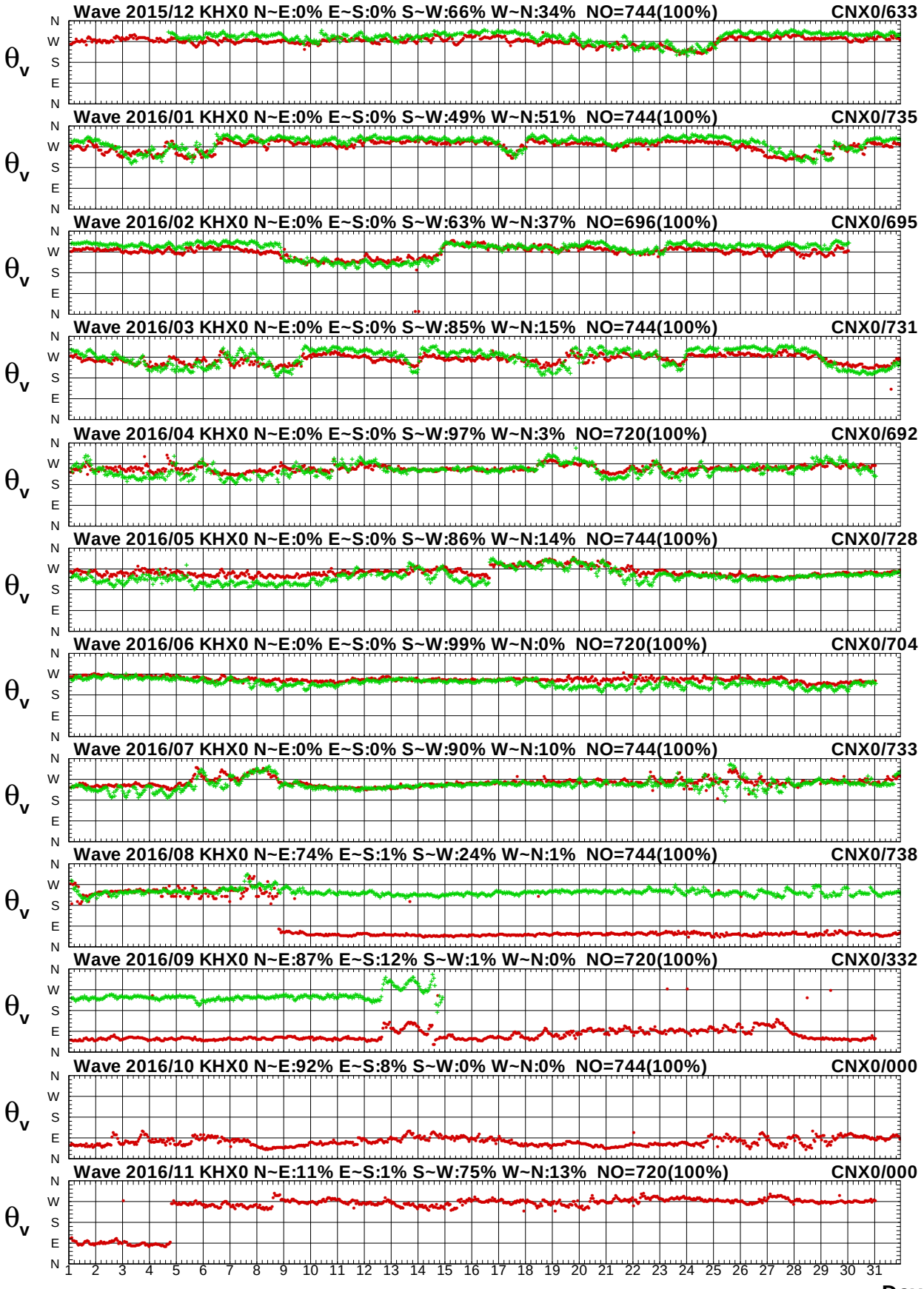

圖 7.9c　2016年每月高雄海域 X 站與嘉南海域 X 站波向圖

Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

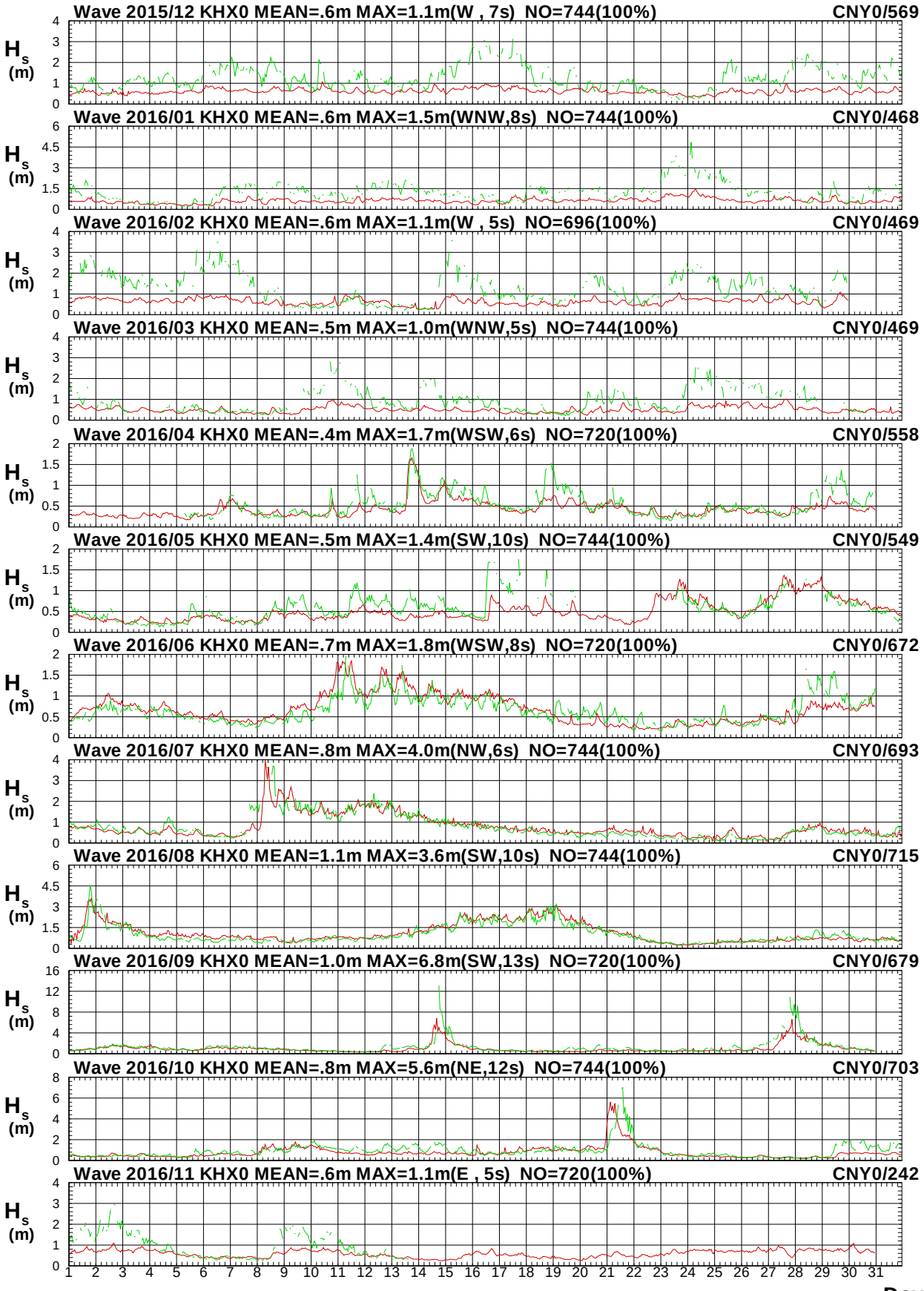

圖7.10a　2016年每月高雄海域 X 站與嘉南海域 Y 站波高圖

V15CKHX0.1HA V15CCNY0.1H0 V161KHX0.1HA V161CNY0.1H0 V162KHX0.1HA V162CNY0.1H0
V163KHX0.1HA V163CNY0.1H0 V164KHX0.1HA V164CNY0.1H0 V165KHX0.1HA V165CNY0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

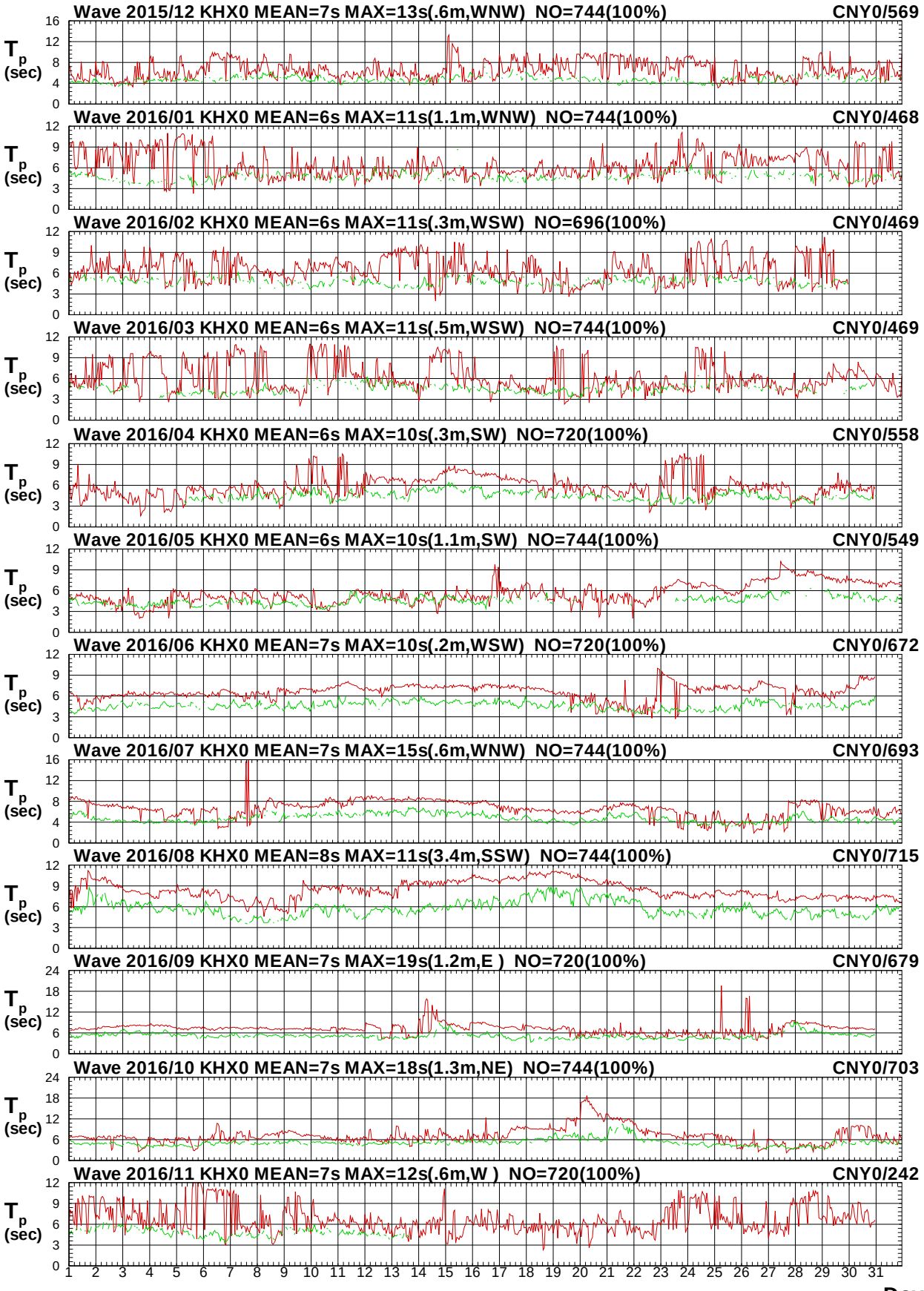

圖7.10b　2016年每月高雄海域 X 站與嘉南海域 Y 站週期圖

V15CKHX0.1HA V15CCNY0.1H0 V161KHX0.1HA V161CNY0.1H0 V162KHX0.1HA V162CNY0.1H0
V163KHX0.1HA V163CNY0.1H0 V164KHX0.1HA V164CNY0.1H0 V165KHX0.1HA V165CNY0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

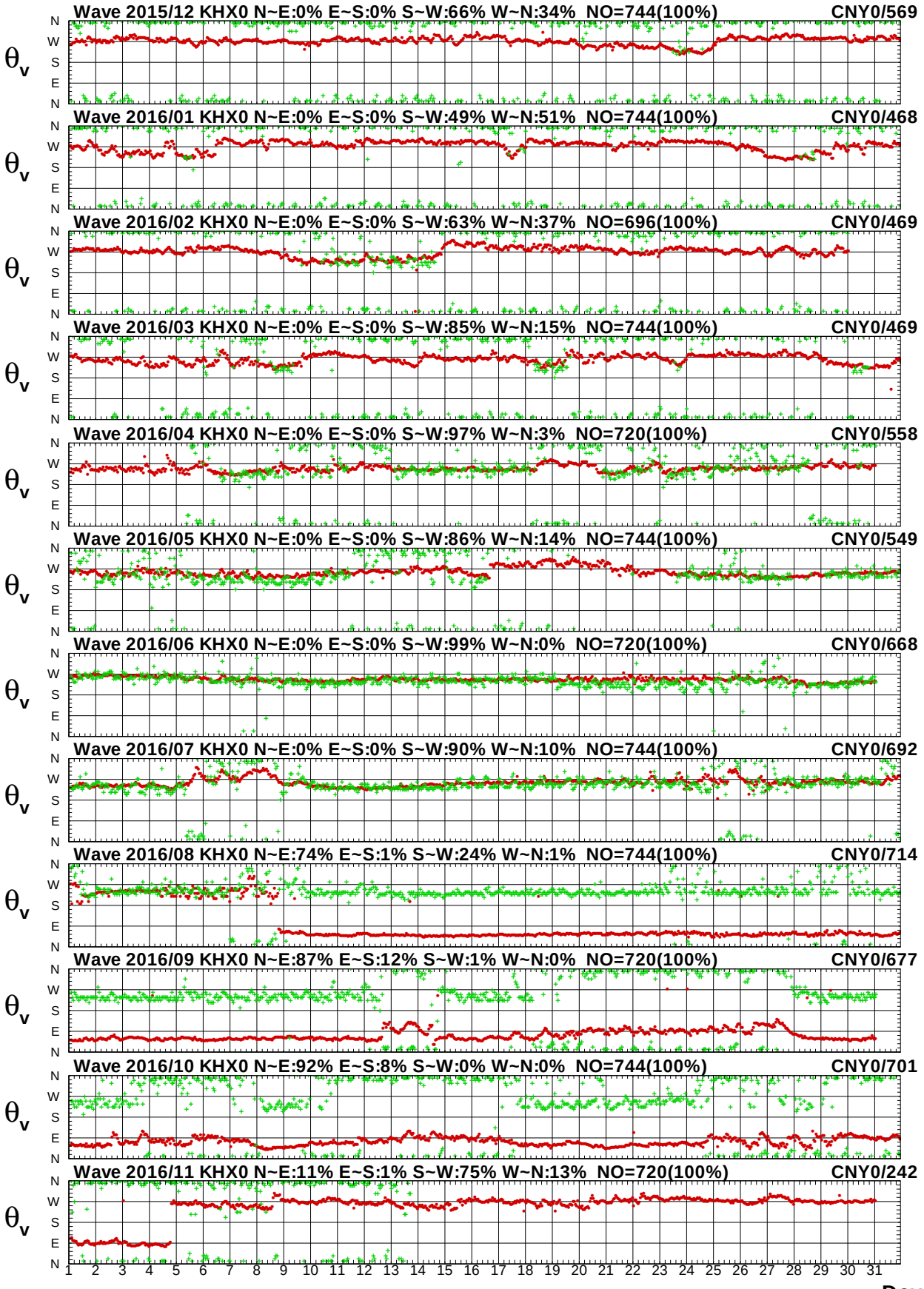

圖7.10c　2016年每月高雄海域 X 站與嘉南海域 Y 站波向圖

V15CKHX0.1HA V15CCNY0.1H0 V161KHX0.1HA V161CNY0.1H0 V162KHX0.1HA V162CNY0.1H0
V163KHX0.1HA V163CNY0.1H0 V164KHX0.1HA V164CNY0.1H0 V165KHX0.1HA V165CNY0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

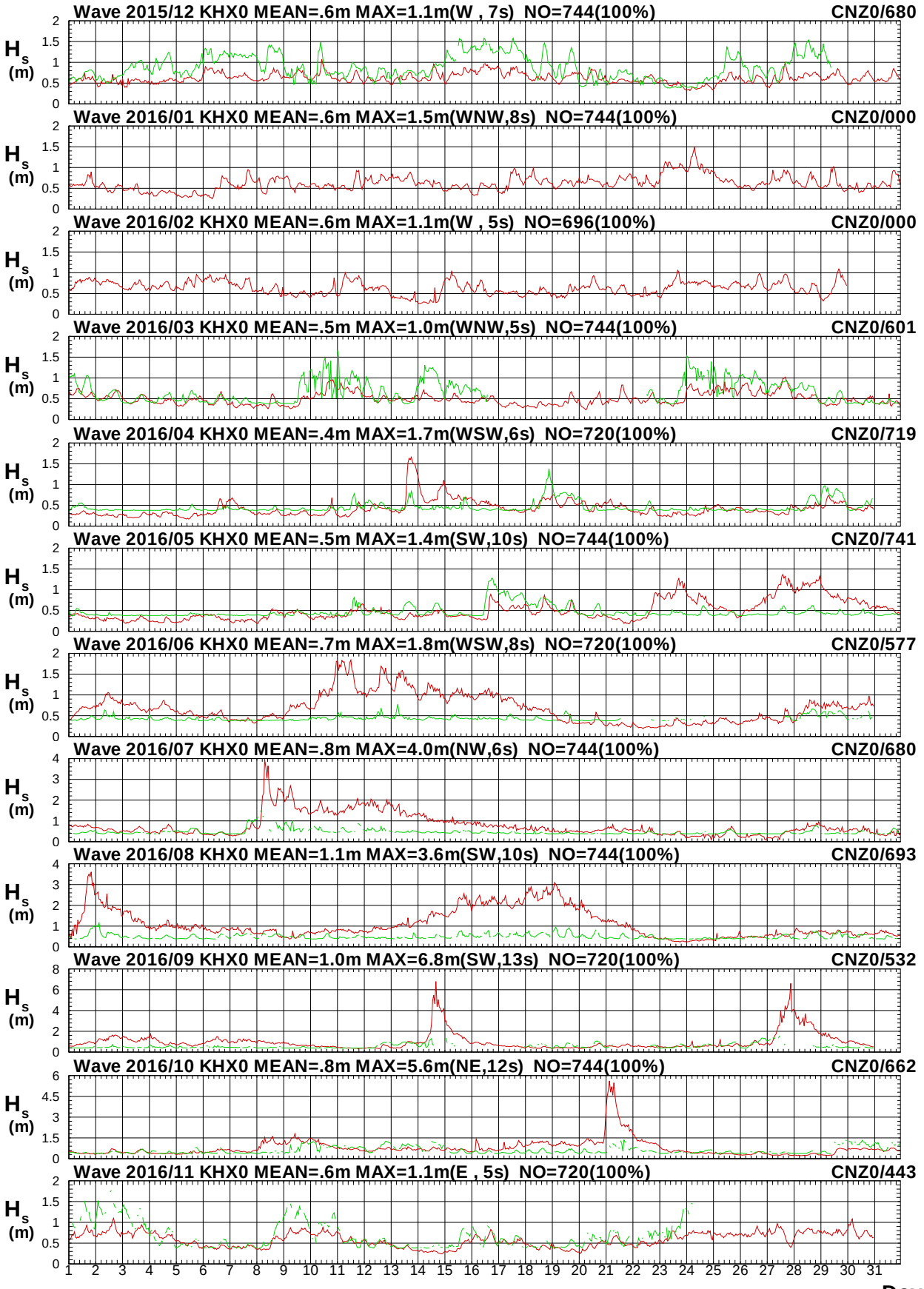

圖7.11a　2016年每月高雄海域 X 站與嘉南海域 Z 站波高圖

V15CKHX0.1HA V15CCNZ0.1H0 V161KHX0.1HA V161CNZ0.1H0 V162KHX0.1HA V162CNZ0.1H0
V163KHX0.1HA V163CNZ0.1H0 V164KHX0.1HA V164CNZ0.1H0 V165KHX0.1HA V165CNZ0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

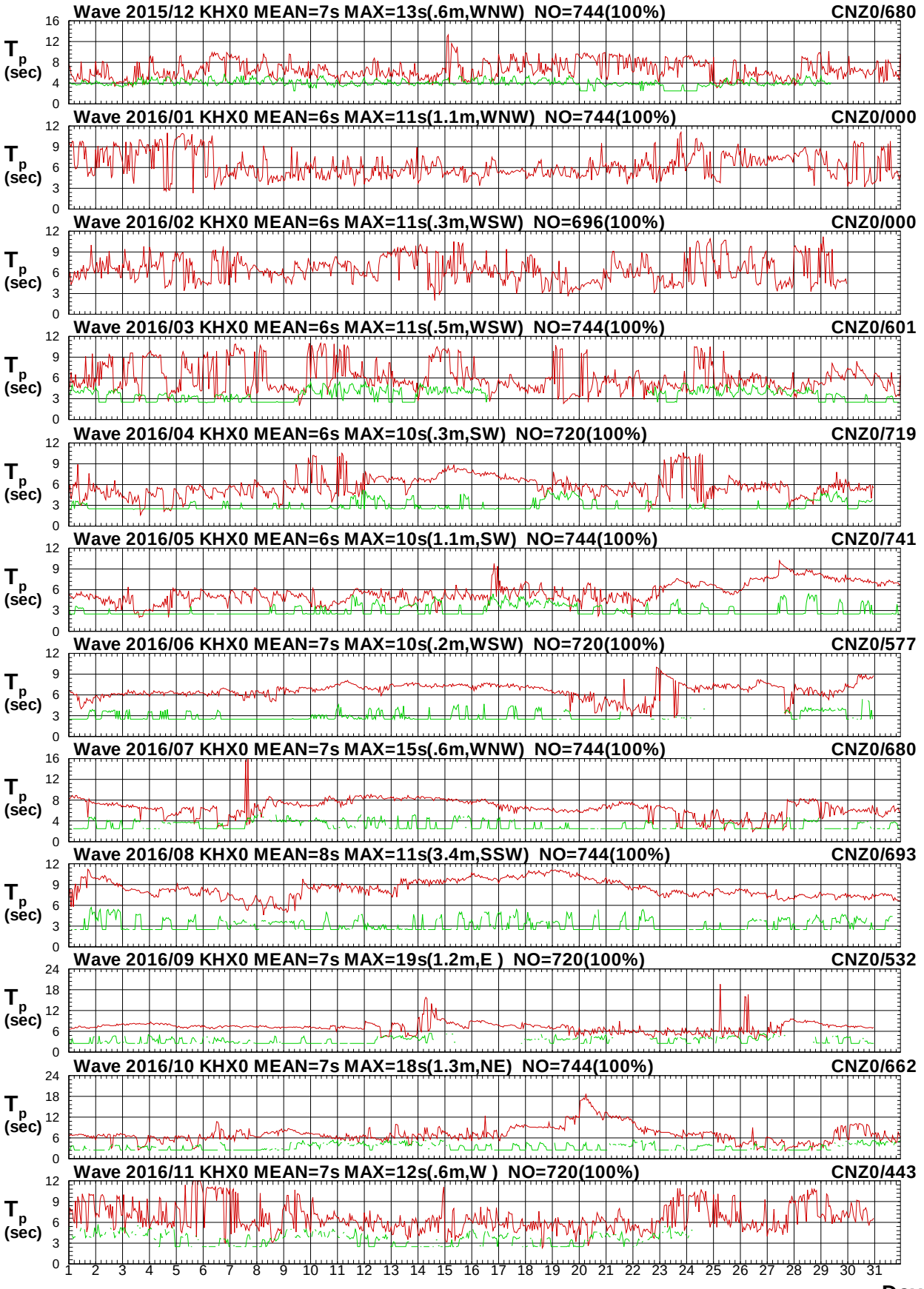

圖7.11b　2016年每月高雄海域 X 站與嘉南海域 Z 站週期圖

V15CKHX0.1HA V15CCNZ0.1H0 V161KHX0.1HA V161CNZ0.1H0 V162KHX0.1HA V162CNZ0.1H0
V163KHX0.1HA V163CNZ0.1H0 V164KHX0.1HA V164CNZ0.1H0 V165KHX0.1HA V165CNZ0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

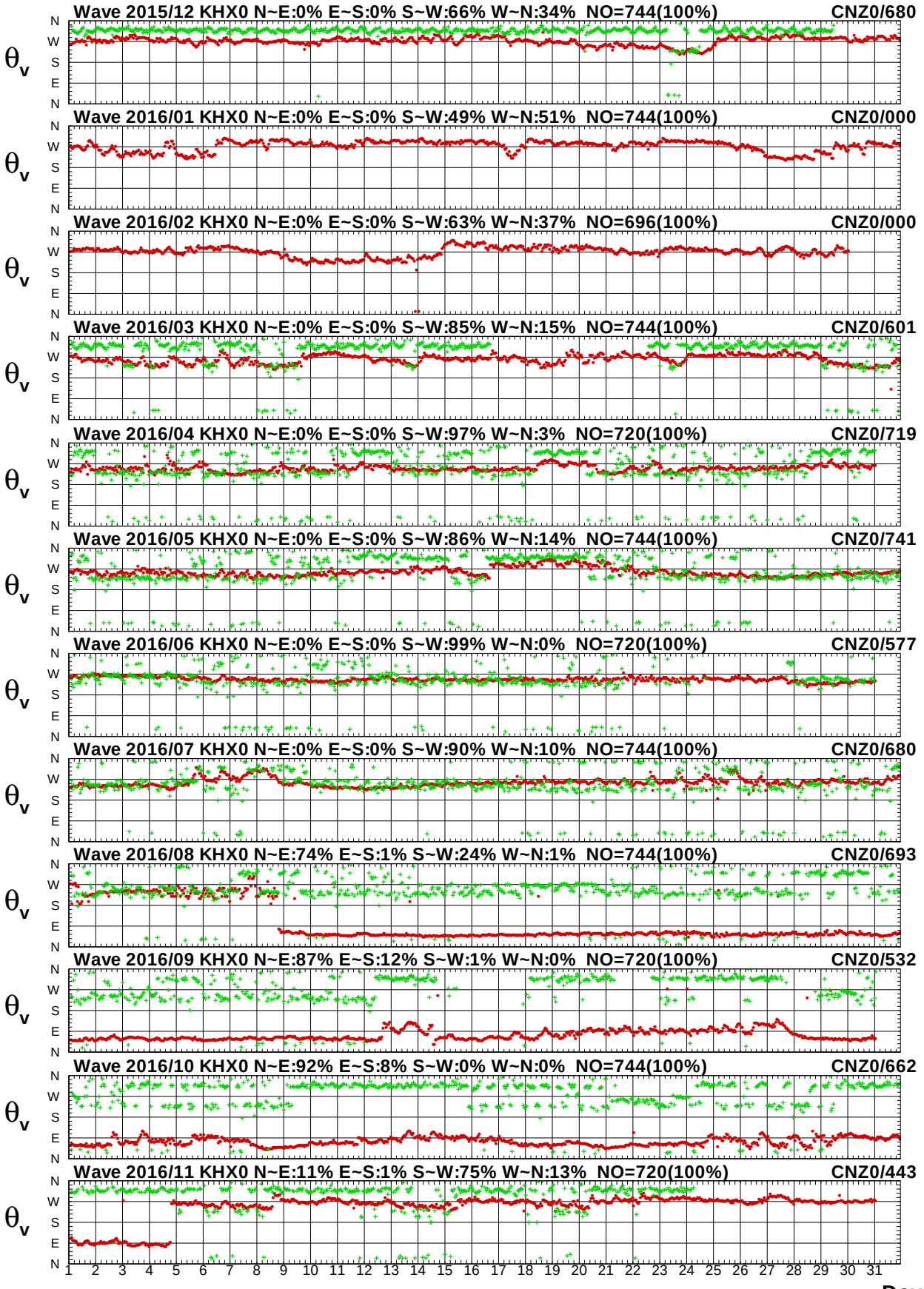

圖7.11c　2016年每月高雄海域 X 站與嘉南海域 Z 站波向圖

V15CKHX0.1HA V15CCNZ0.1H0 V161KHX0.1HA V161CNZ0.1H0 V162KHX0.1HA V162CNZ0.1H0
V163KHX0.1HA V163CNZ0.1H0 V164KHX0.1HA V164CNZ0.1H0 V165KHX0.1HA V165CNZ0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

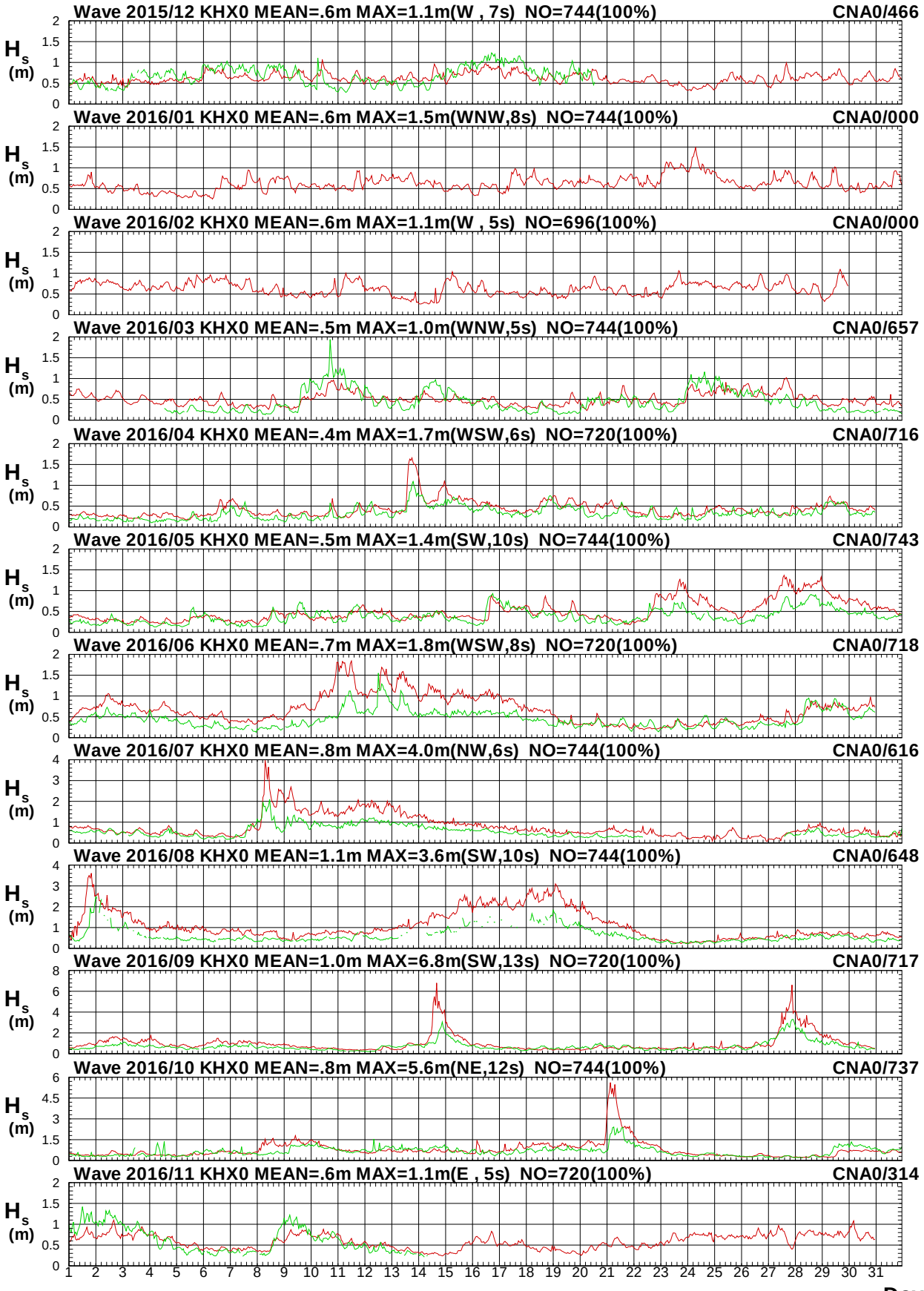

圖7.12a　2016年每月高雄海域 X 站與嘉南海域 A 站波高圖

V15CKHX0.1HA V15CCNA0.1H0 V161KHX0.1HA V161CNA0.1H0 V162KHX0.1HA V162CNA0.1H0
V163KHX0.1HA V163CNA0.1H0 V164KHX0.1HA V164CNA0.1H0 V165KHX0.1HA V165CNA0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

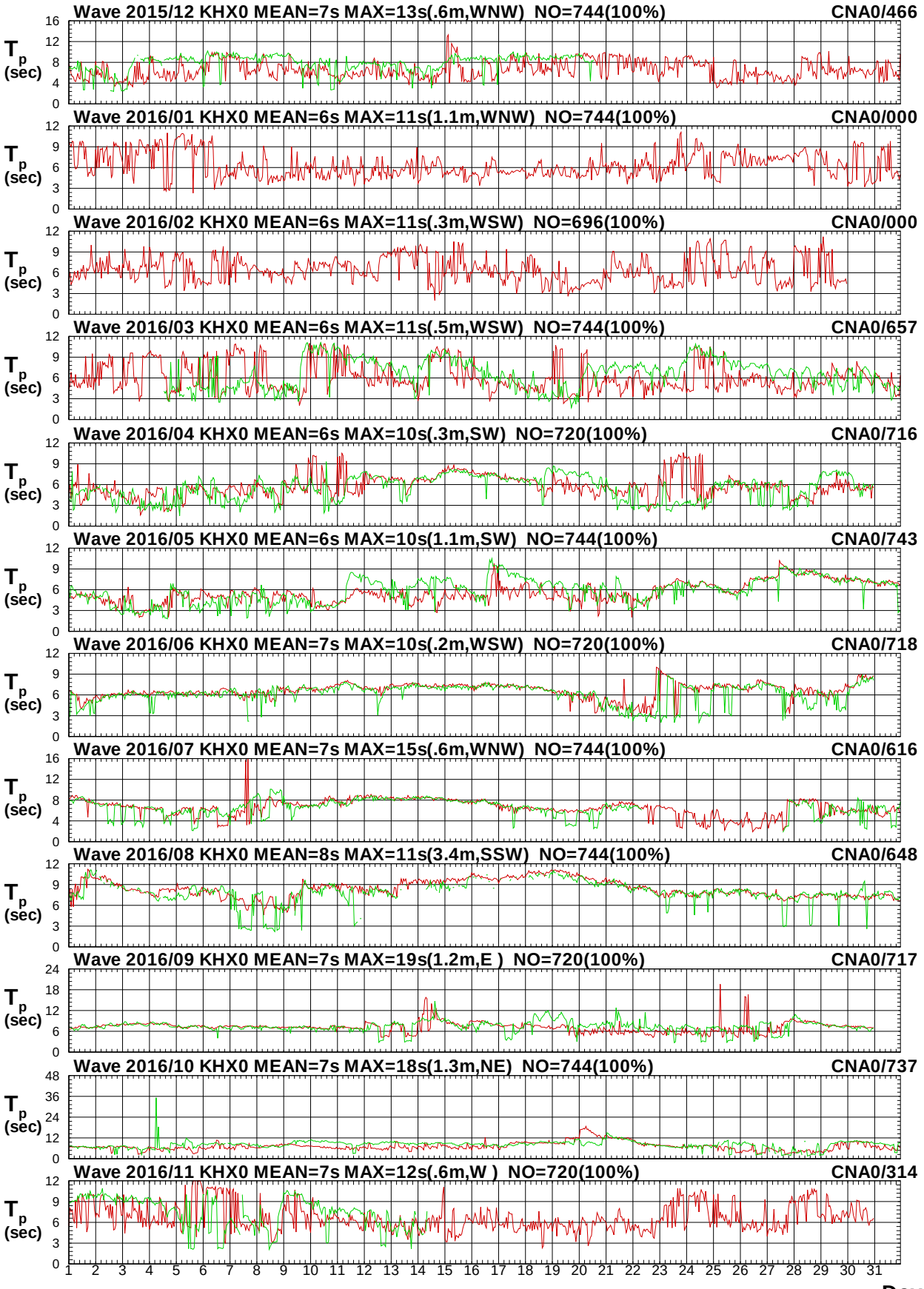

圖7.12b　2016年每月高雄海域 X 站與嘉南海域 A 站週期圖

V15CKHX0.1HA V15CCNA0.1H0 V161KHX0.1HA V161CNA0.1H0 V162KHX0.1HA V162CNA0.1H0
V163KHX0.1HA V163CNA0.1H0 V164KHX0.1HA V164CNA0.1H0 V165KHX0.1HA V165CNA0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

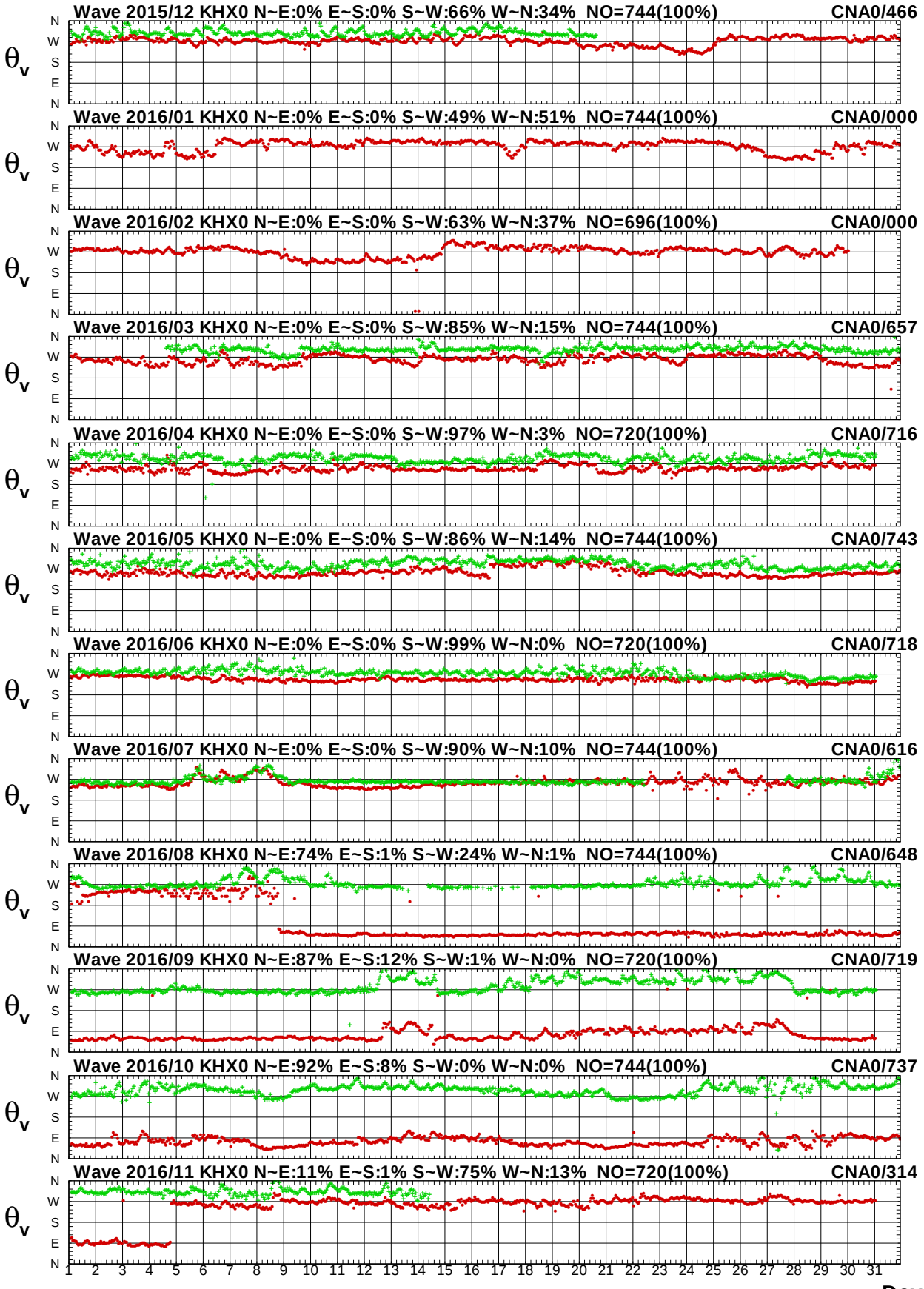

圖7.12c　2016年每月高雄海域 X 站與嘉南海域 A 站波向圖

V15CKHX0.1HA V15CCNA0.1H0 V161KHX0.1HA V161CNA0.1H0 V162KHX0.1HA V162CNA0.1H0
V163KHX0.1HA V163CNA0.1H0 V164KHX0.1HA V164CNA0.1H0 V165KHX0.1HA V165CNA0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

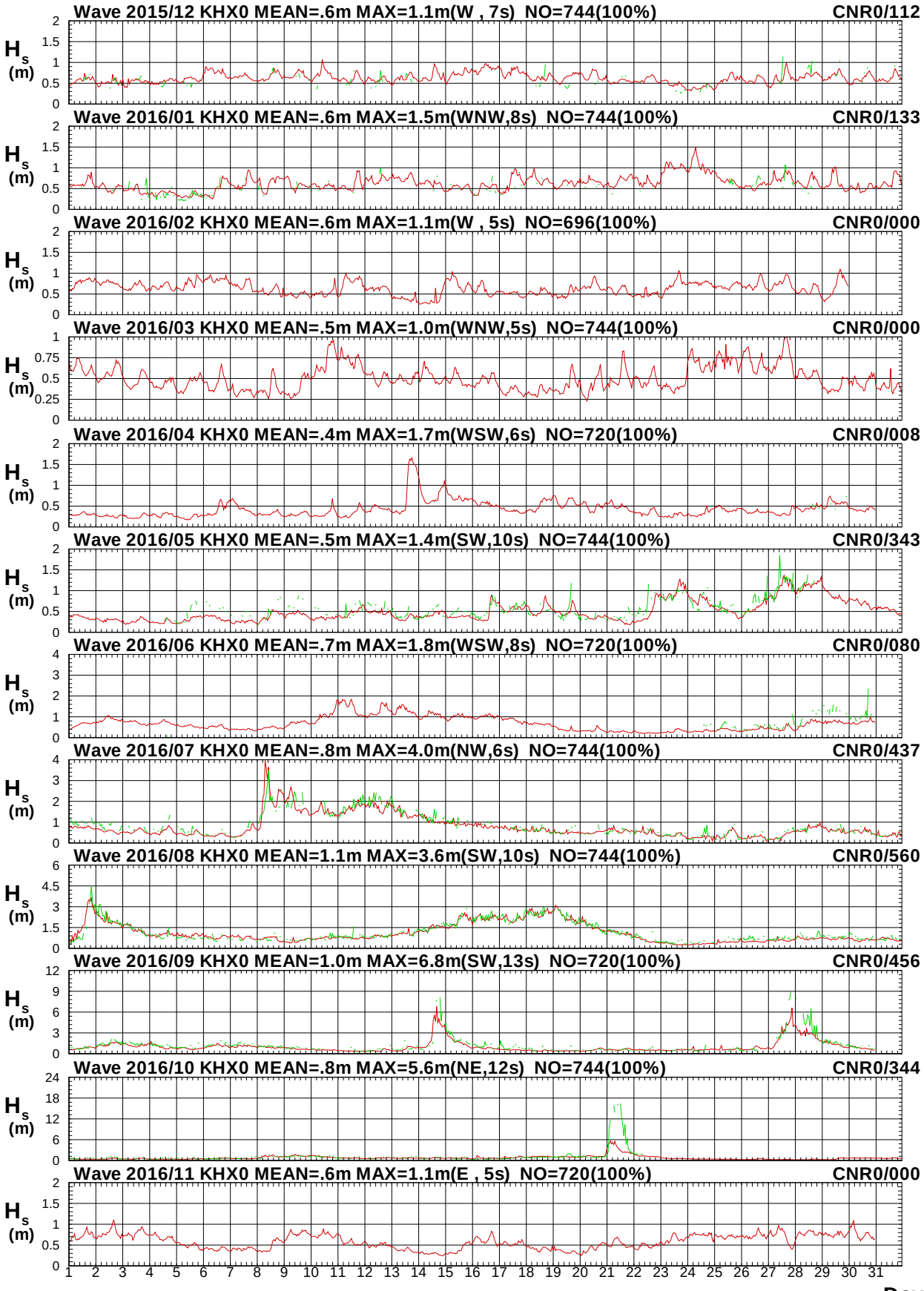

圖7.13a　2016年每月高雄海域 X 站與嘉南海域 R 站波高圖

V15CKHX0.1HA V15CCNR0.1H0 V161KHX0.1HA V161CNR0.1H0 V162KHX0.1HA V162CNR0.1H0
V163KHX0.1HA V163CNR0.1H0 V164KHX0.1HA V164CNR0.1H0 V165KHX0.1HA V165CNR0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

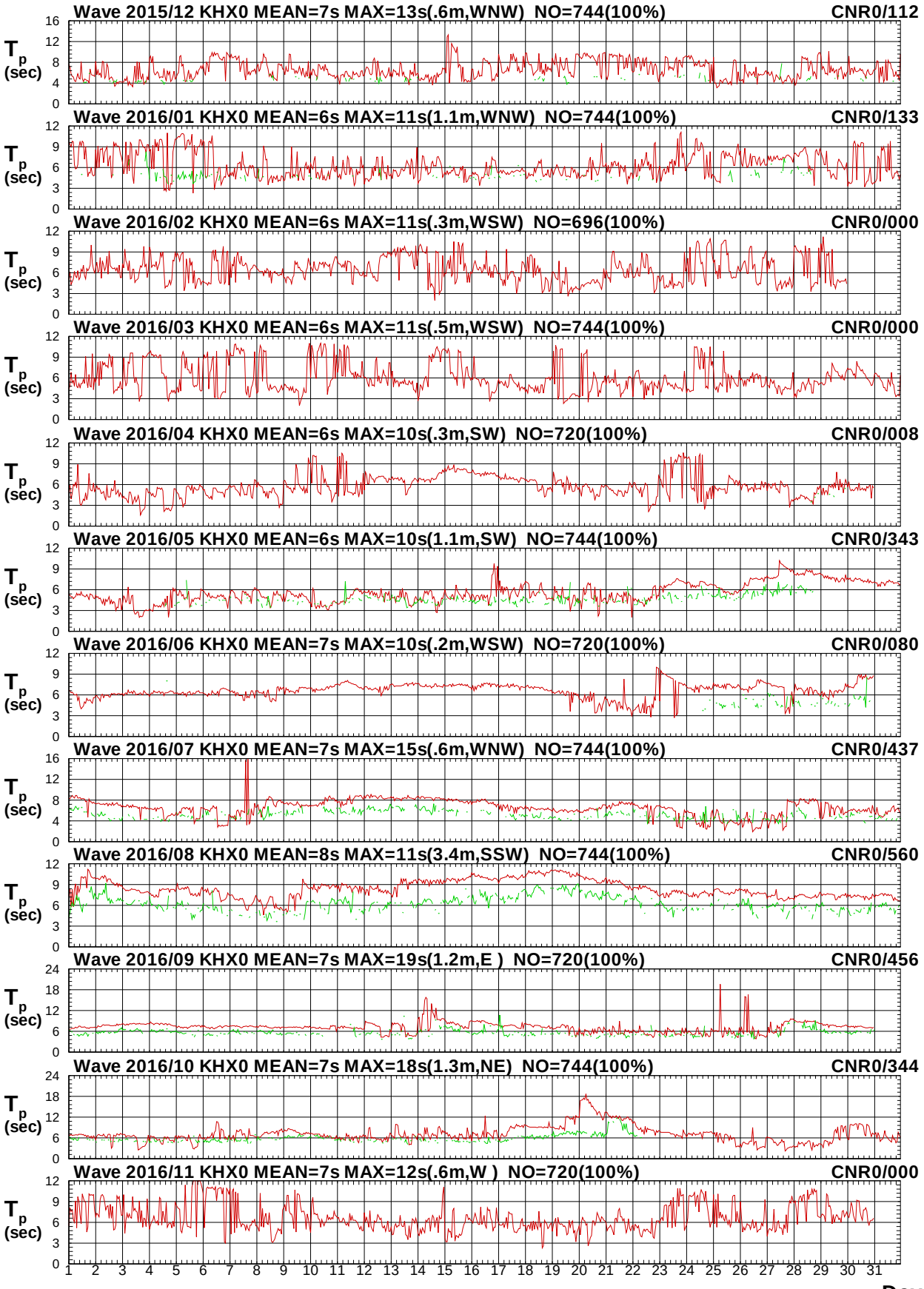

圖7.13b　2016年每月高雄海域 X 站與嘉南海域 R 站週期圖

V15CKHX0.1HA V15CCNR0.1H0 V161KHX0.1HA V161CNR0.1H0 V162KHX0.1HA V162CNR0.1H0
V163KHX0.1HA V163CNR0.1H0 V164KHX0.1HA V164CNR0.1H0 V165KHX0.1HA V165CNR0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

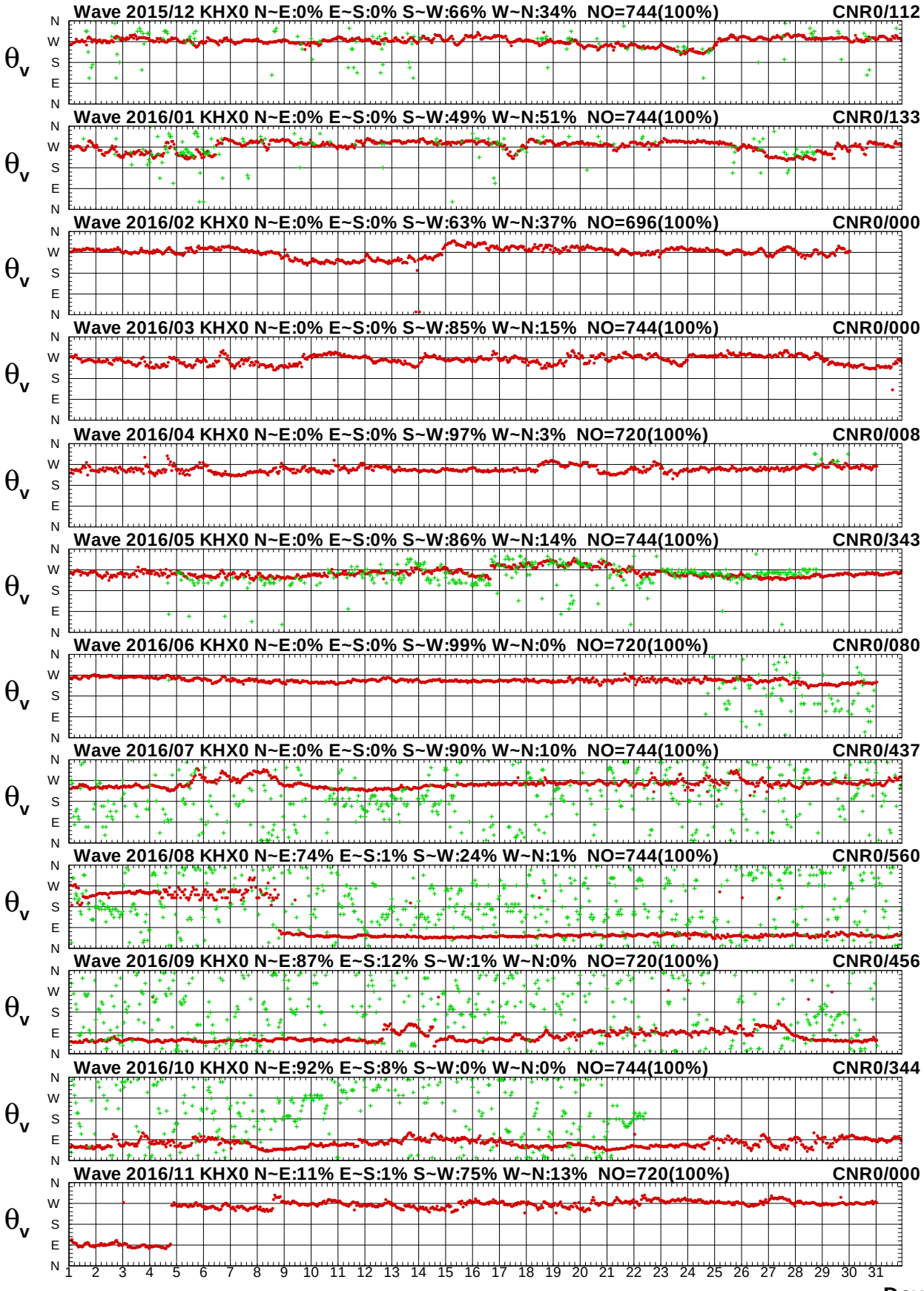

圖7.13c　2016年每月高雄海域 X 站與嘉南海域 R 站波向圖

V15CKHX0.1HA V15CCNR0.1H0 V161KHX0.1HA V161CNR0.1H0 V162KHX0.1HA V162CNR0.1H0
V163KHX0.1HA V163CNR0.1H0 V164KHX0.1HA V164CNR0.1H0 V165KHX0.1HA V165CNR0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

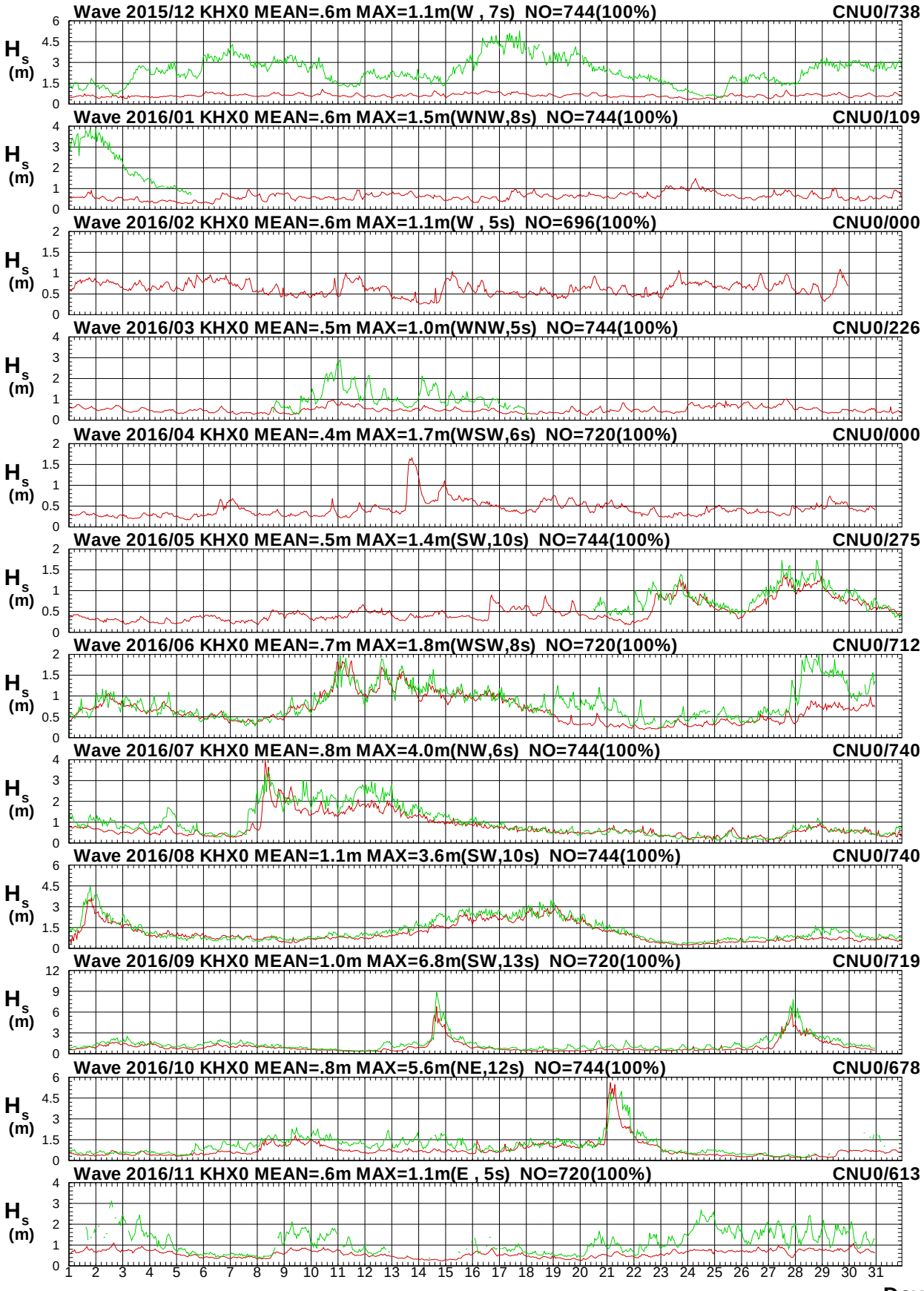

圖7.14a　2016年每月高雄海域 X 站與嘉南海域 U 站波高圖

V15CKHX0.1HA V15CCNU0.1H0 V161KHX0.1HA V161CNU0.1H0 V162KHX0.1HA V162CNU0.1H0
V163KHX0.1HA V163CNU0.1H0 V164KHX0.1HA V164CNU0.1H0 V165KHX0.1HA V165CNU0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

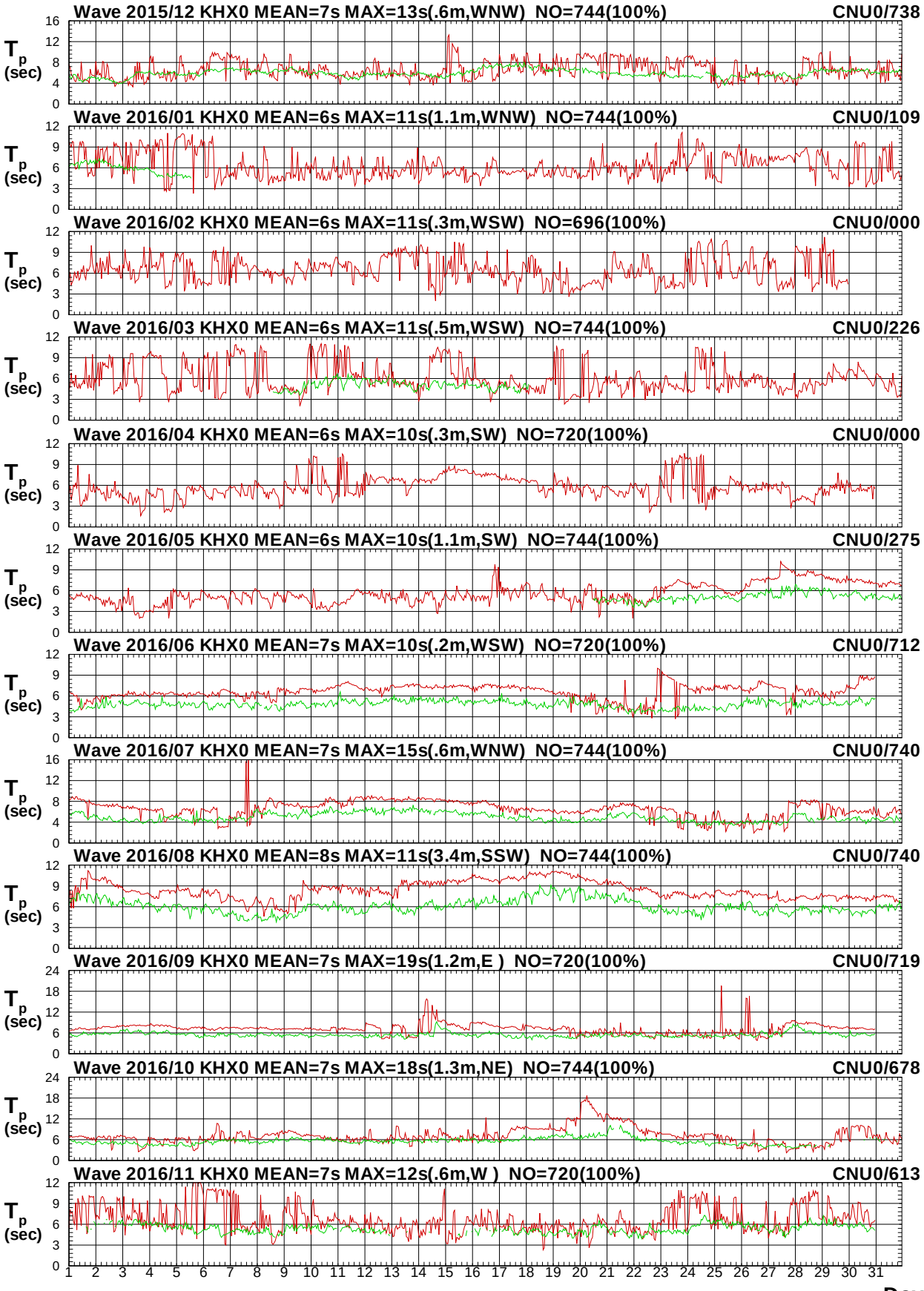

圖7.14b　2016年每月高雄海域 X 站與嘉南海域 U 站週期圖

V15CKHX0.1HA V15CCNU0.1H0 V161KHX0.1HA V161CNU0.1H0 V162KHX0.1HA V162CNU0.1H0
V163KHX0.1HA V163CNU0.1H0 V164KHX0.1HA V164CNU0.1H0 V165KHX0.1HA V165CNU0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

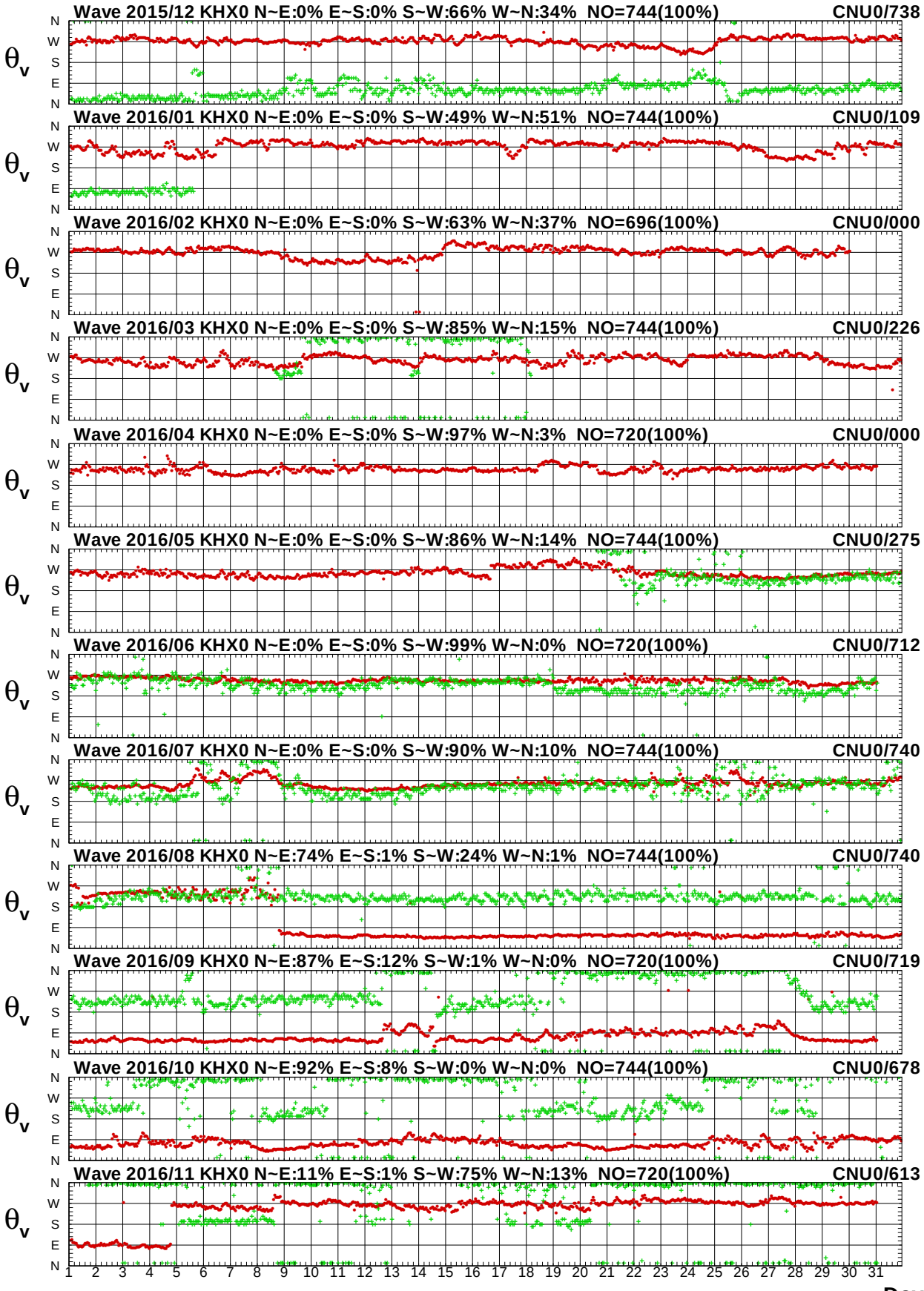

圖7.14c　2016年每月高雄海域 X 站與嘉南海域 U 站波向圖

V15CKHX0.1HA V15CCNU0.1H0 V161KHX0.1HA V161CNU0.1H0 V162KHX0.1HA V162CNU0.1H0
V163KHX0.1HA V163CNU0.1H0 V164KHX0.1HA V164CNU0.1H0 V165KHX0.1HA V165CNU0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2016

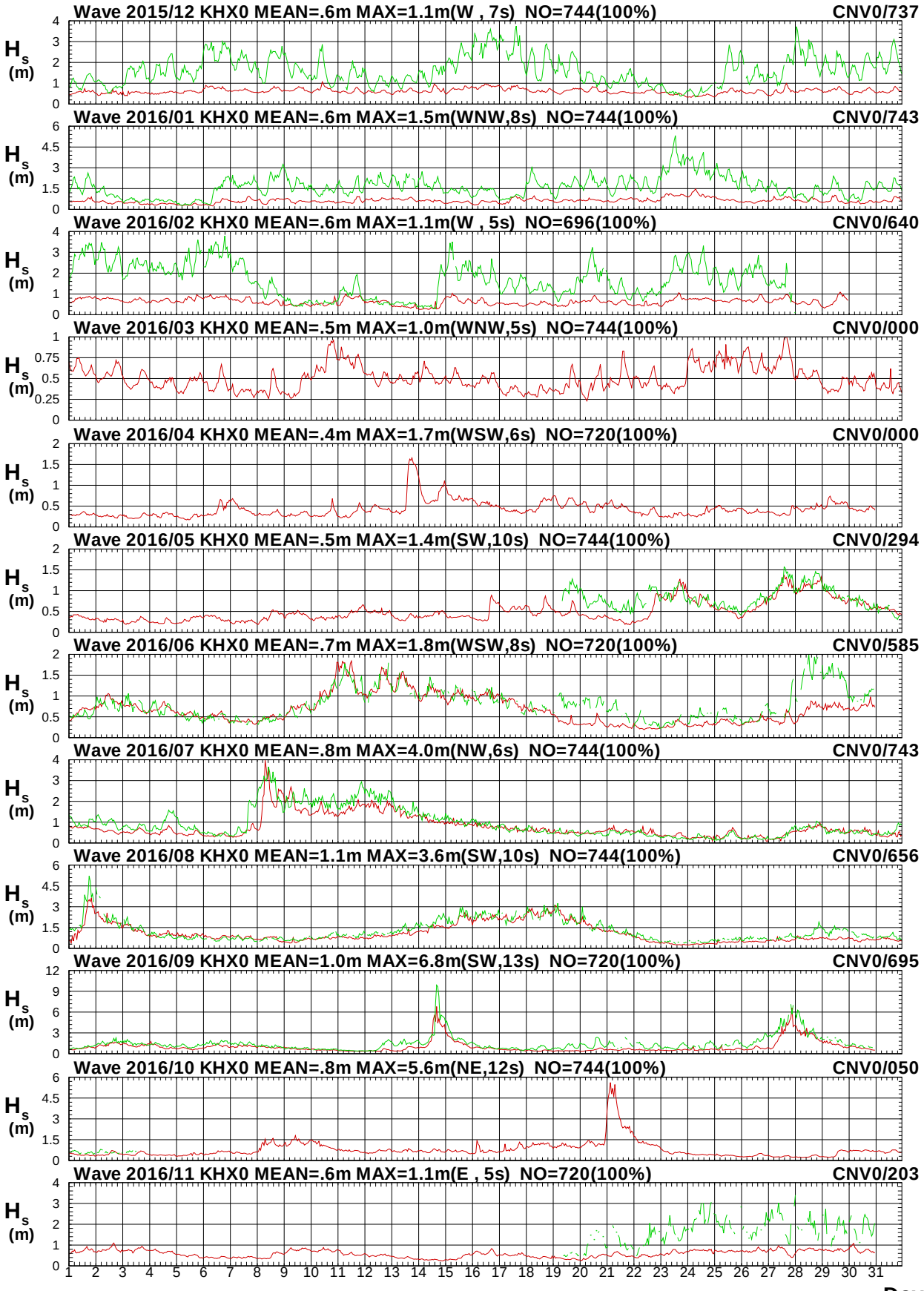

圖7.15a　2016年每月高雄海域 X 站與嘉南海域 V 站波高圖

V15CKHX0.1HA V15CCNV0.1H0 V161KHX0.1HA V161CNV0.1H0 V162KHX0.1HA V162CNV0.1H0
V163KHX0.1HA V163CNV0.1H0 V164KHX0.1HA V164CNV0.1H0 V165KHX0.1HA V165CNV0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2016

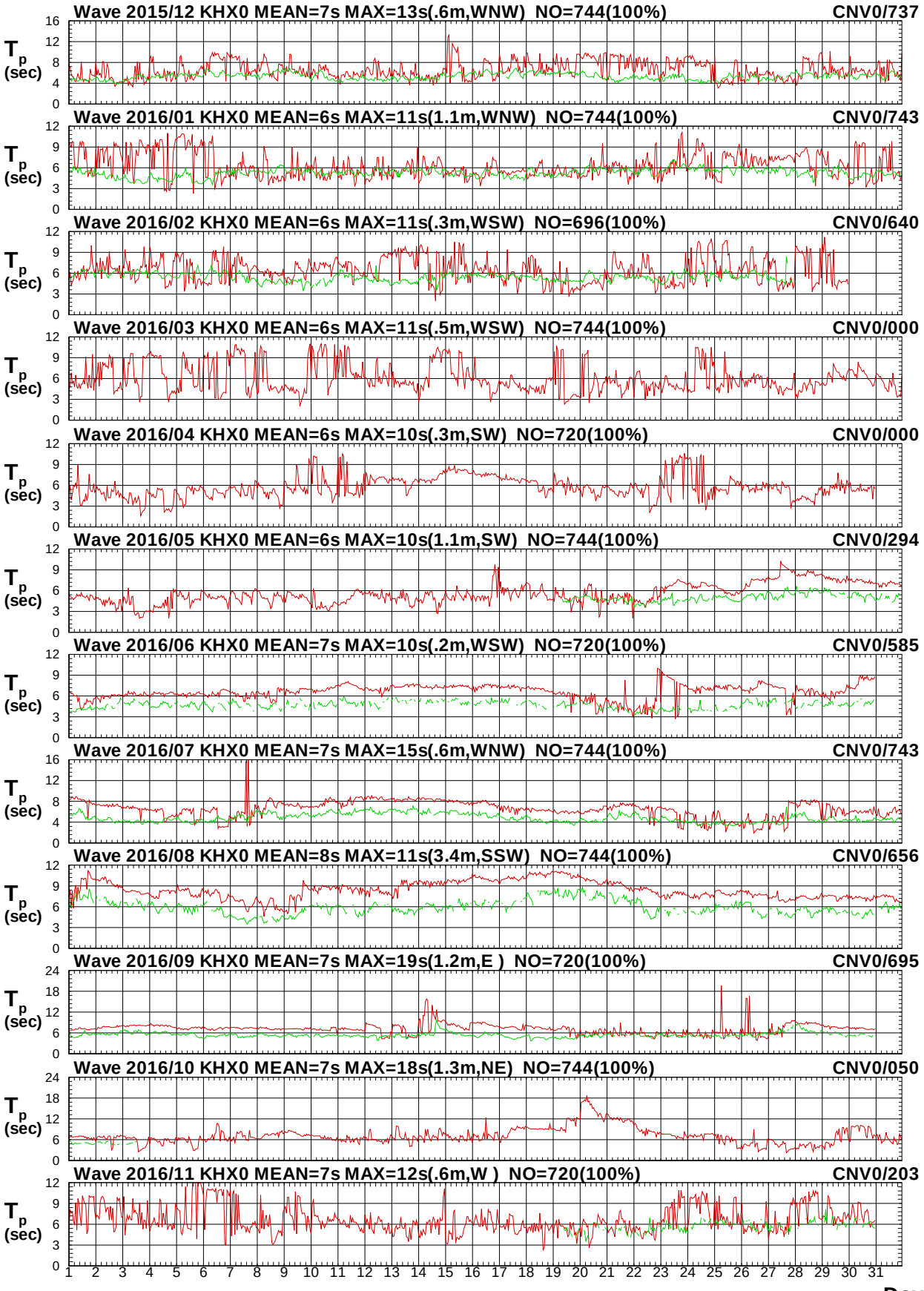

圖7.15b　2016年每月高雄海域 X 站與嘉南海域 V 站週期圖

V15CKHX0.1HA V15CCNV0.1H0 V161KHX0.1HA V161CNV0.1H0 V162KHX0.1HA V162CNV0.1H0
V163KHX0.1HA V163CNV0.1H0 V164KHX0.1HA V164CNV0.1H0 V165KHX0.1HA V165CNV0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2016

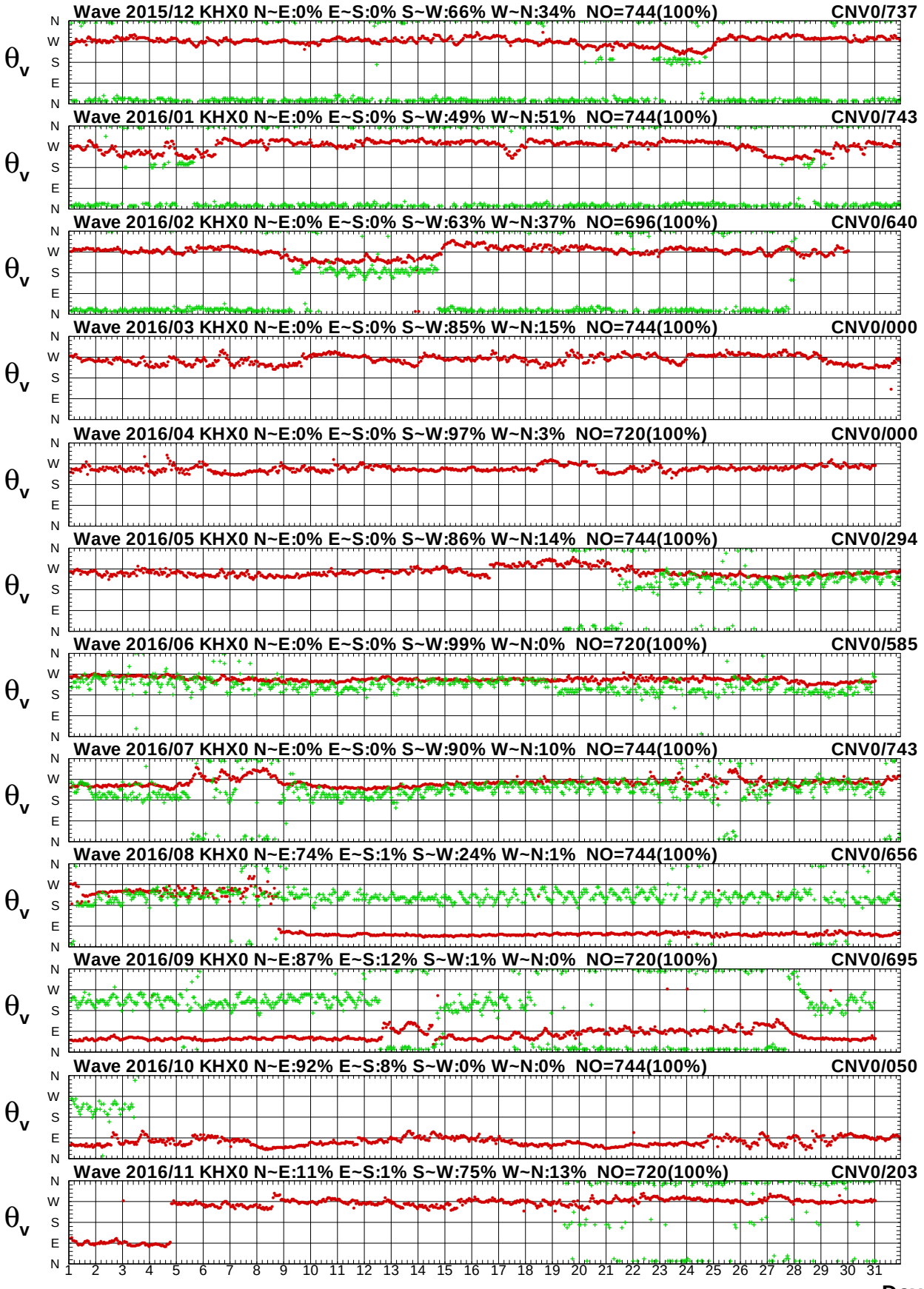

圖7.15c　2016年每月高雄海域 X 站與嘉南海域 V 站波向圖

V15CKHX0.1HA V15CCNV0.1H0 V161KHX0.1HA V161CNV0.1H0 V162KHX0.1HA V162CNV0.1H0
V163KHX0.1HA V163CNV0.1H0 V164KHX0.1HA V164CNV0.1H0 V165KHX0.1HA V165CNV0.1H0

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第八章　2016 年嘉南海域觀測波浪資料

嘉南海域波浪觀測係本中心**(IHMT)**係利用位於安平港海上觀測樁頂水下 5 米處(稱**測站 X0**)之 Inter Ocean S-4ADW 潮波儀所測得，如附圖 8，因 S-4 觀測儀器老舊，目前已更換為 NORTEK 公司之剖面海流表面波浪與潮汐之監測系統(AWCP)，觀測資料至觀測樁於 2011 年 7 月拆除為止。2011 年 7 月於南堤外海增設(AWCP (稱**測站 X1**)。本中心 2006 年 6 月於布袋港外附近(稱**測站 A**)水深約 7 公尺處設置 AWCP

測站 Y(七股外海浮標站)及**測站 Z**(七股雷達站)之波浪儀屬水利署**(WRA)**所有；曾文溪外海浮標(**測站 V**)、鹿耳門溪口外海浮標(**測站 U**)波浪儀屬觀台灣中油**(CPC)**所設置。灣裡海上浮標(**測站 R**)觀測波浪儀，係國立成功大學水文中心**(COMC)**裝設。安平海域各測站歷年觀測波浪資料蒐集概況如表 8。

波浪觀測 AWCP 系統有兩個分離波高量測模式：一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **Y 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 8.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 8.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 8.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 8.2 以後。

表 8 嘉南海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X0	22°56'37"N	120°08'10"E	1999/10-2011/07	港研中心	安平港觀測樁
X1	22°57'22"N	120°08'53"E	2010/12-2016/11(觀測中)	港研中心	安平港南堤
Y	23°05'55"	120°00'20"E	2006/06-2016/11(觀測中)	水利署	七股浮標站
Z	23°06'48"	120°03'8"E	2005/10-2016/11(觀測中)	水利署	七股雷達站
A0	23°22'49"N	120°07'29" E	2006/06-2010/03	港研中心	AWCP 布袋港
A1	23°22'37"N	120°07'26"E	2012/08-2014/11(觀測中)	港研中心	AWCP 布袋港
V	23°04'29"N	119°57'40"E	2013/08-2014/09	臺灣中油	曾文浮標站
U	22°59'22"N	120°02'26"E	2015/09-2016/11(觀測中)	臺灣中油	鹿耳門浮標站
R	22°54'54"N	129°09'55"E	2015/06-2016/11(觀測中)	水文中心	灣裡浮標站

圖 8 嘉南海域波浪觀測站位置示意圖

表8.1a 2016年每月嘉南海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域
測站	X	Y	A	Z	V	U	R	
2015/12月	633 (85.1%)	569 (76.5%)	466 (62.6%)	680 (91.4%)	737 (99.1%)	738 (99.2%)	112 (15.1%)	*
2016/ 1月	735 (98.8%)	468 (62.9%)	*	*	743 (99.9%)	109 (14.7%)	133 (17.9%)	*
2016/ 2月	695 (99.9%)	469 (67.4%)	*	*	640 (92.0%)	*	*	*
2016/ 3月	731 (98.3%)	469 (63.0%)	657 (88.3%)	601 (80.8%)	*	226 (30.4%)	*	*
2016/ 4月	692 (96.1%)	558 (77.5%)	716 (99.4%)	719 (99.9%)	*	*	8 (1.1%)	*
2016/ 5月	728 (97.8%)	549 (73.8%)	743 (99.9%)	741 (99.6%)	294 (39.5%)	275 (37.0%)	343 (46.1%)	*
2016/ 6月	704 (97.8%)	672 (93.3%)	718 (99.7%)	577 (80.1%)	585 (81.3%)	712 (98.9%)	80 (11.1%)	*
2016/ 7月	733 (98.5%)	693 (93.1%)	616 (82.8%)	680 (91.4%)	743 (99.9%)	740 (99.5%)	437 (58.7%)	*
2016/ 8月	738 (99.2%)	715 (96.1%)	648 (87.1%)	693 (93.1%)	656 (88.2%)	740 (99.5%)	560 (75.3%)	*
2016/ 9月	332 (46.1%)	679 (94.3%)	717 (99.6%)	532 (73.9%)	695 (96.5%)	719 (99.9%)	456 (63.3%)	*
2016/10月	*	703 (94.5%)	737 (99.1%)	662 (89.0%)	50 (6.7%)	678 (91.1%)	344 (46.2%)	*
2016/11月	*	242 (33.6%)	314 (43.6%)	443 (61.5%)	203 (28.2%)	613 (85.1%)	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表8.1b 2016年每月嘉南海域修補後各測站波浪資料統計表

年/月 港區	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域	嘉南海域
測站	X	Y	A	Z	V	U	R	
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Chia-Nan Seas of CNX0 at 2016

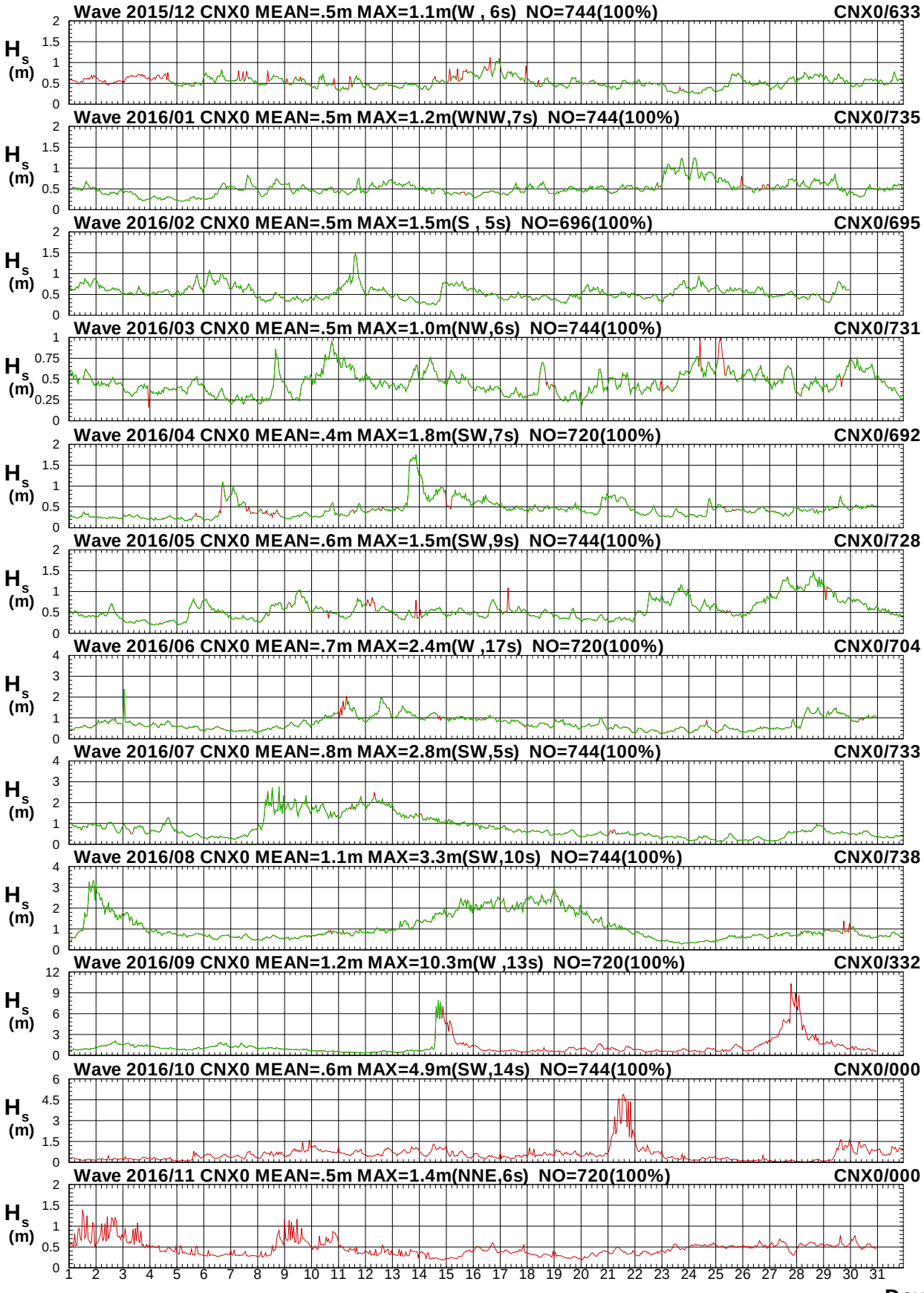

圖 8.1a　2016年每月嘉南海域 X 站修補前後之波高比較圖

V15CCNX0.1HA V15CCNX0.1H0 V161CNX0.1HA V161CNX0.1H0 V162CNX0.1HA V162CNX0.1H0
V163CNX0.1HA V163CNX0.1H0 V164CNX0.1HA V164CNX0.1H0 V165CNX0.1HA V165CNX0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

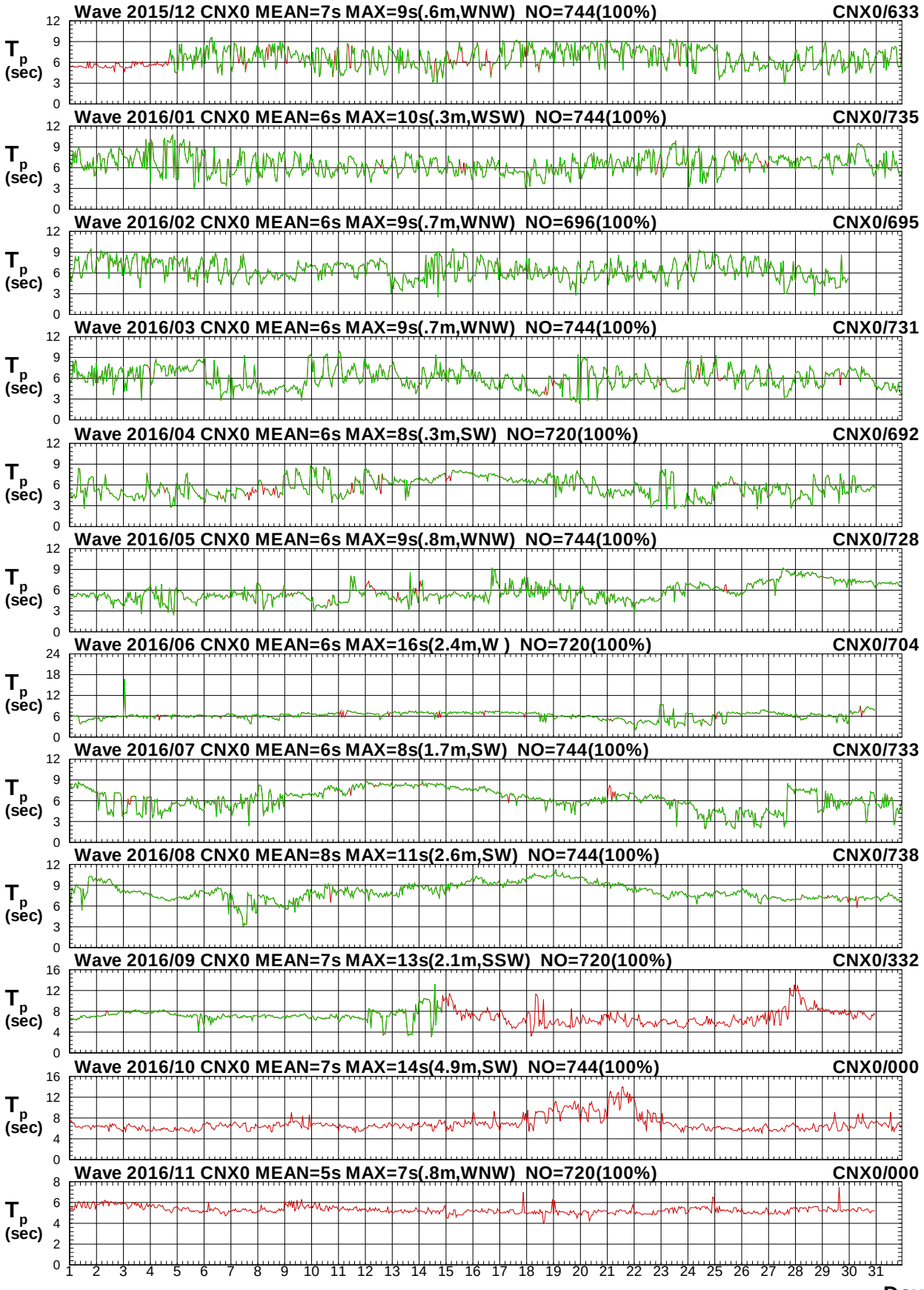

圖 8.1b　2016年每月嘉南海域 X 站修補前後之週期比較圖

V15CCNX0.1HA V15CCNX0.1H0 V161CNX0.1HA V161CNX0.1H0 V162CNX0.1HA V162CNX0.1H0
V163CNX0.1HA V163CNX0.1H0 V164CNX0.1HA V164CNX0.1H0 V165CNX0.1HA V165CNX0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

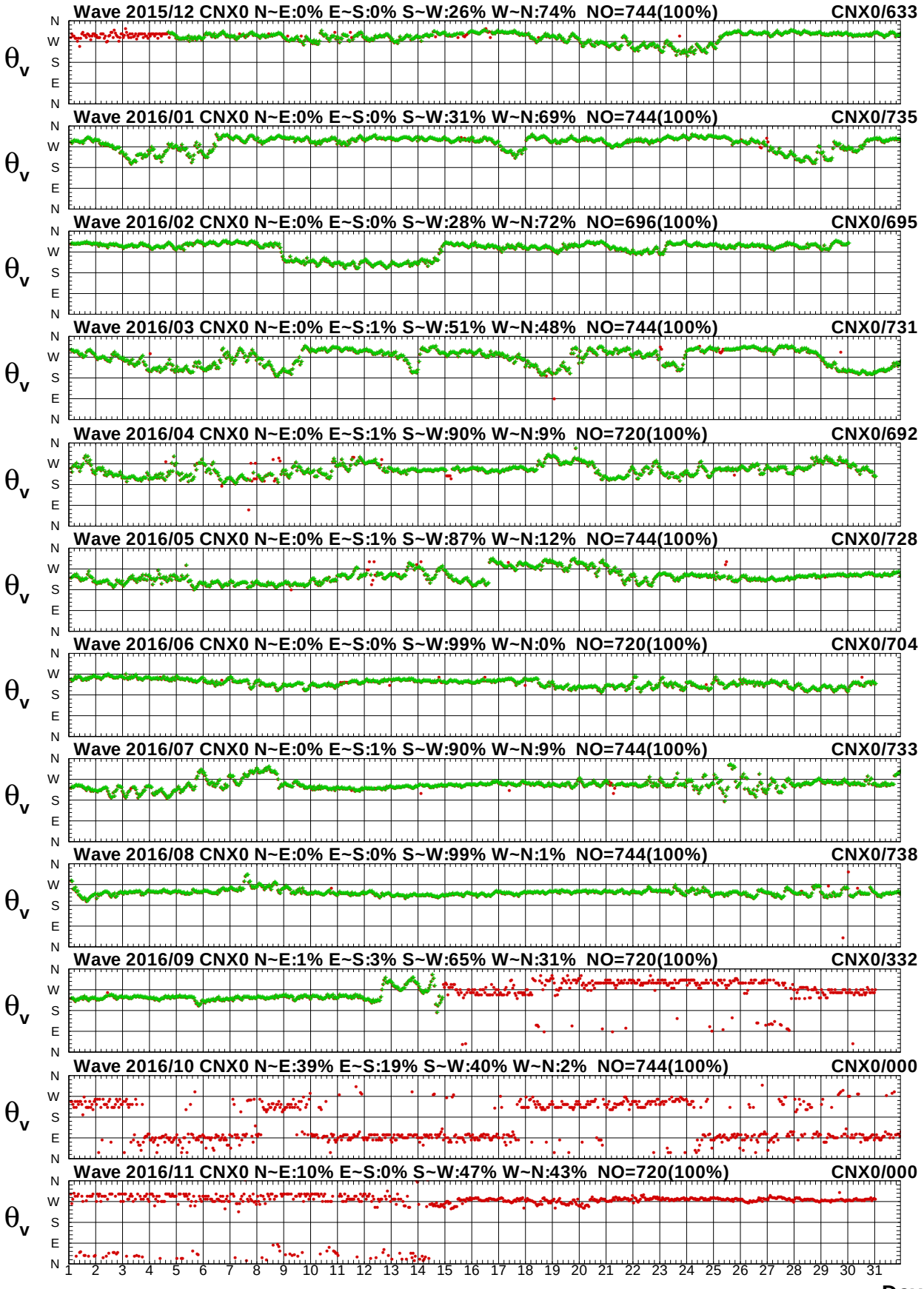

圖8.1c　2016年每月嘉南海域 X 站修補前後之波向比較圖

V15CCNX0.1HA V15CCNX0.1H0 V161CNX0.1HA V161CNX0.1H0 V162CNX0.1HA V162CNX0.1H0
V163CNX0.1HA V163CNX0.1H0 V164CNX0.1HA V164CNX0.1H0 V165CNX0.1HA V165CNX0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

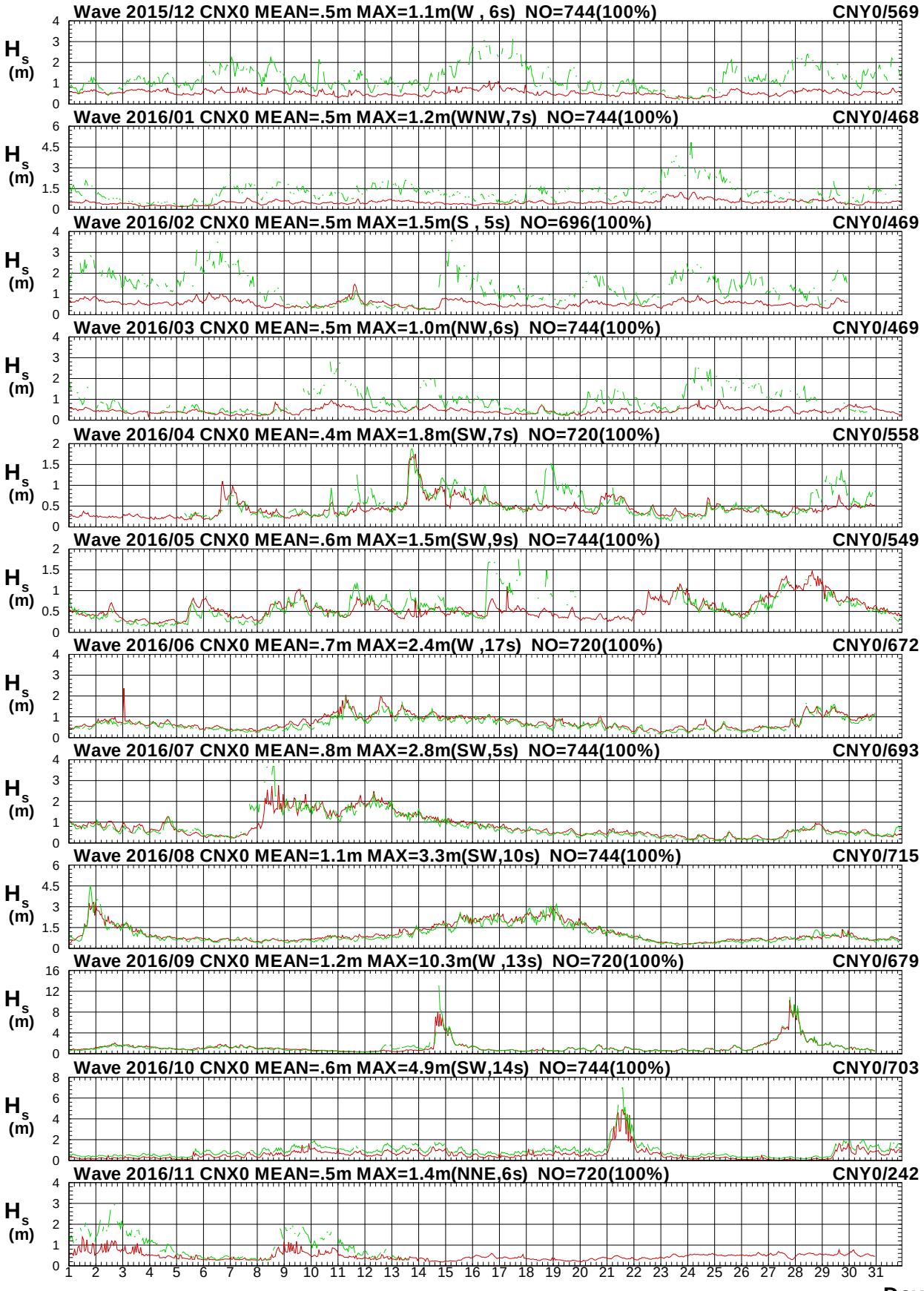

圖 8.2a　2016年每月嘉南海域 X 站與 Y 站波高比較圖

V15CCNX0.1HA V15CCNY0.1H0 V161CNX0.1HA V161CNY0.1H0 V162CNX0.1HA V162CNY0.1H0
V163CNX0.1HA V163CNY0.1H0 V164CNX0.1HA V164CNY0.1H0 V165CNX0.1HA V165CNY0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

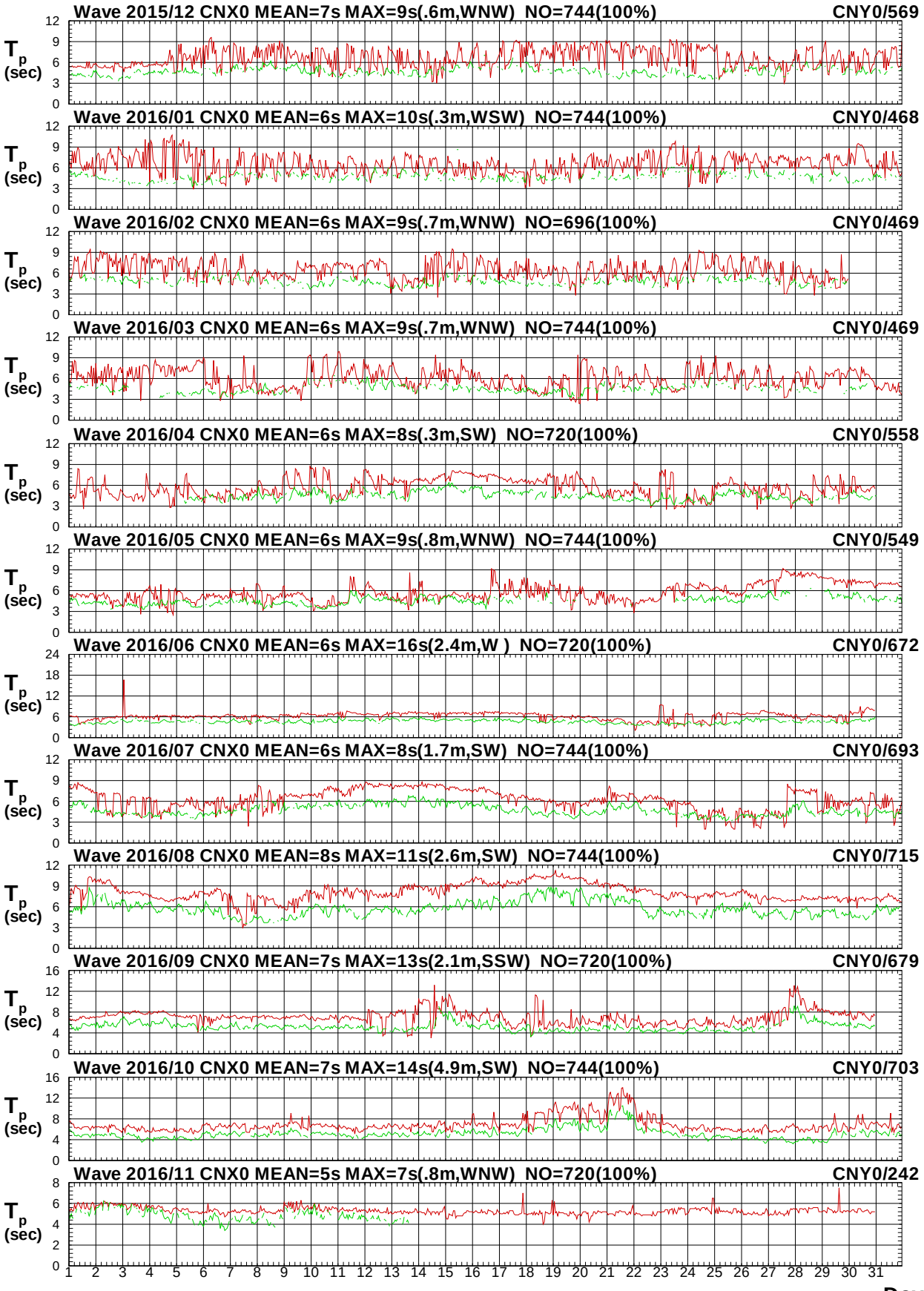

圖 8.2b　2016年每月嘉南海域 X 站與 Y 站週期比較圖

V15CCNX0.1HA V15CCNY0.1H0 V161CNX0.1HA V161CNY0.1H0 V162CNX0.1HA V162CNY0.1H0
V163CNX0.1HA V163CNY0.1H0 V164CNX0.1HA V164CNY0.1H0 V165CNX0.1HA V165CNY0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

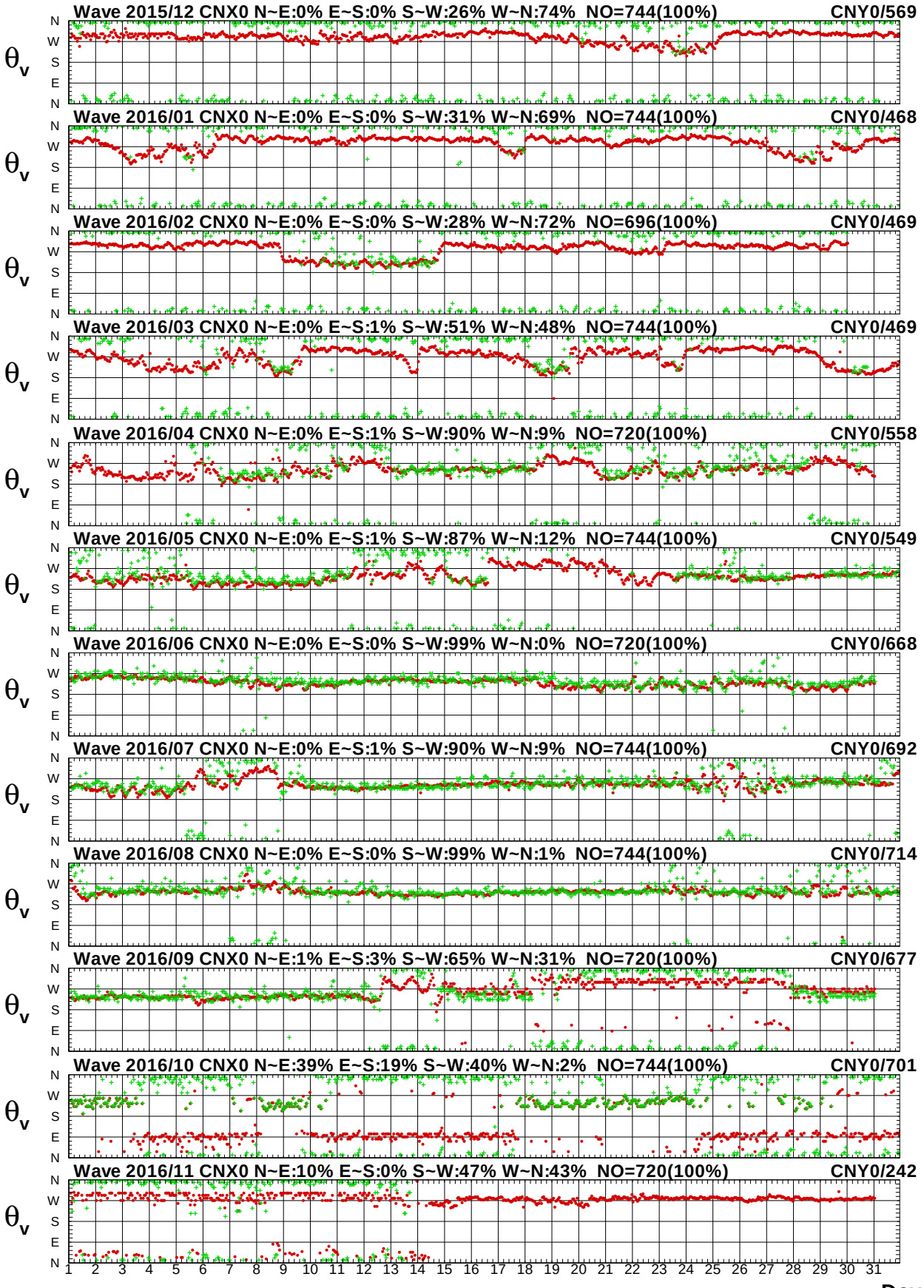

圖 8.2c　2016年每月嘉南海域 X 站與 Y 站波向比較圖

V15CCNX0.1HA V15CCNY0.1H0 V161CNX0.1HA V161CNY0.1H0 V162CNX0.1HA V162CNY0.1H0
V163CNX0.1HA V163CNY0.1H0 V164CNX0.1HA V164CNY0.1H0 V165CNX0.1HA V165CNY0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

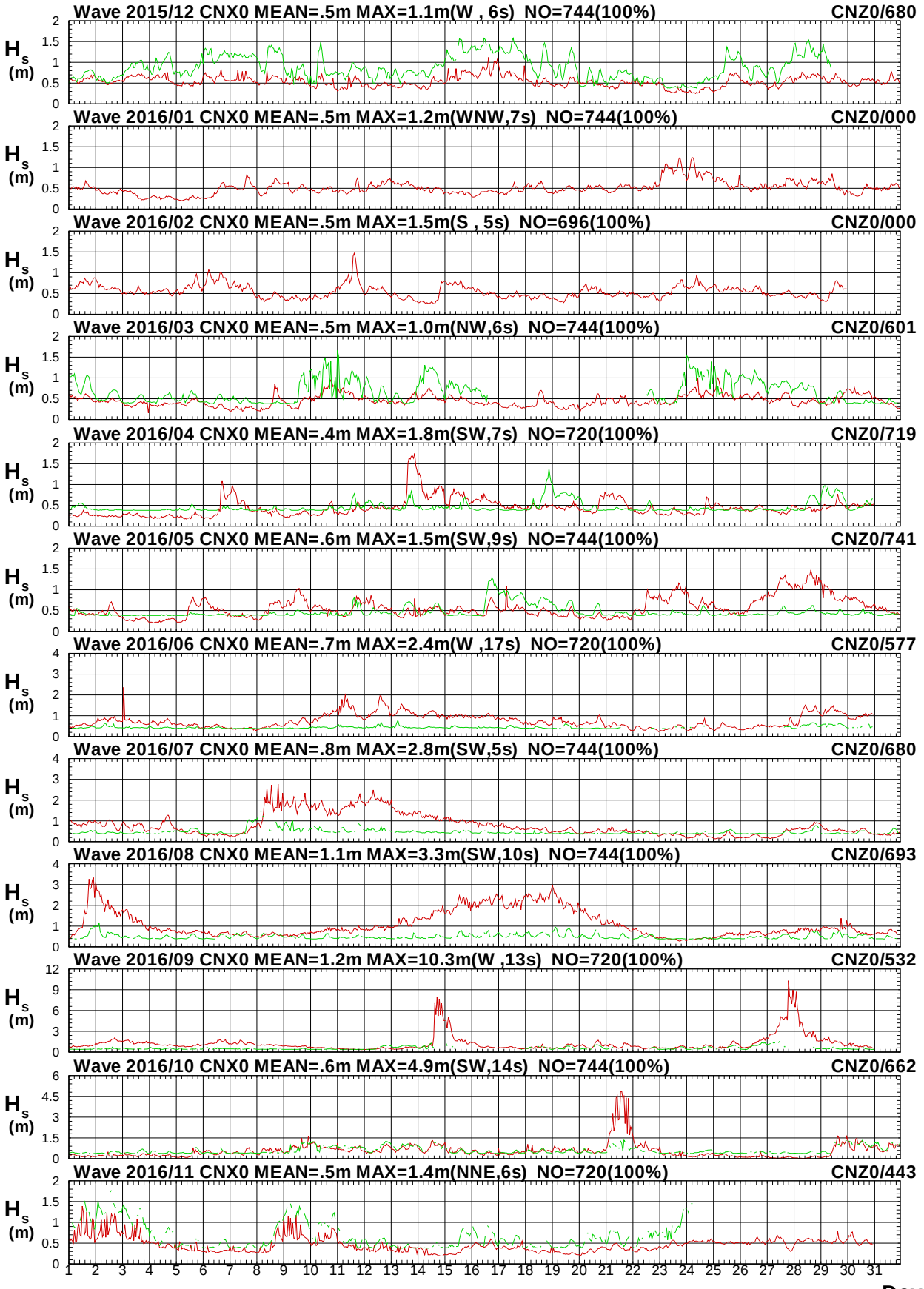

圖 8.3a　2016年每月嘉南海域 X 站與 Z 站波高比較圖

V15CCNX0.1HA V15CCNZ0.1H0 V161CNX0.1HA V161CNZ0.1H0 V162CNX0.1HA V162CNZ0.1H0
V163CNX0.1HA V163CNZ0.1H0 V164CNX0.1HA V164CNZ0.1H0 V165CNX0.1HA V165CNZ0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

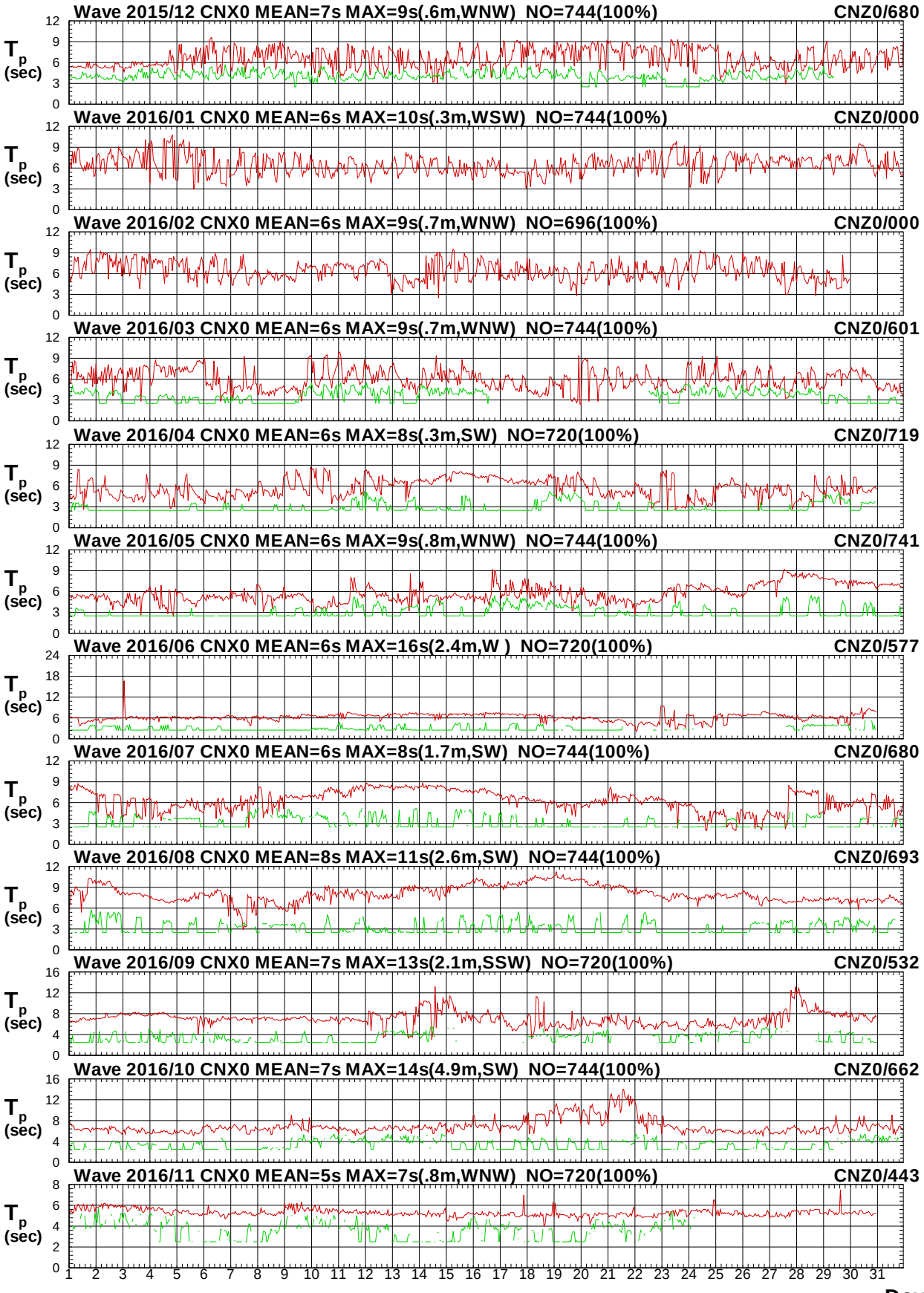

圖 8.3b　2016年每月嘉南海域 X 站與 Z 站週期比較圖

V15CCNX0.1HA V15CCNZ0.1H0 V161CNX0.1HA V161CNZ0.1H0 V162CNX0.1HA V162CNZ0.1H0
V163CNX0.1HA V163CNZ0.1H0 V164CNX0.1HA V164CNZ0.1H0 V165CNX0.1HA V165CNZ0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

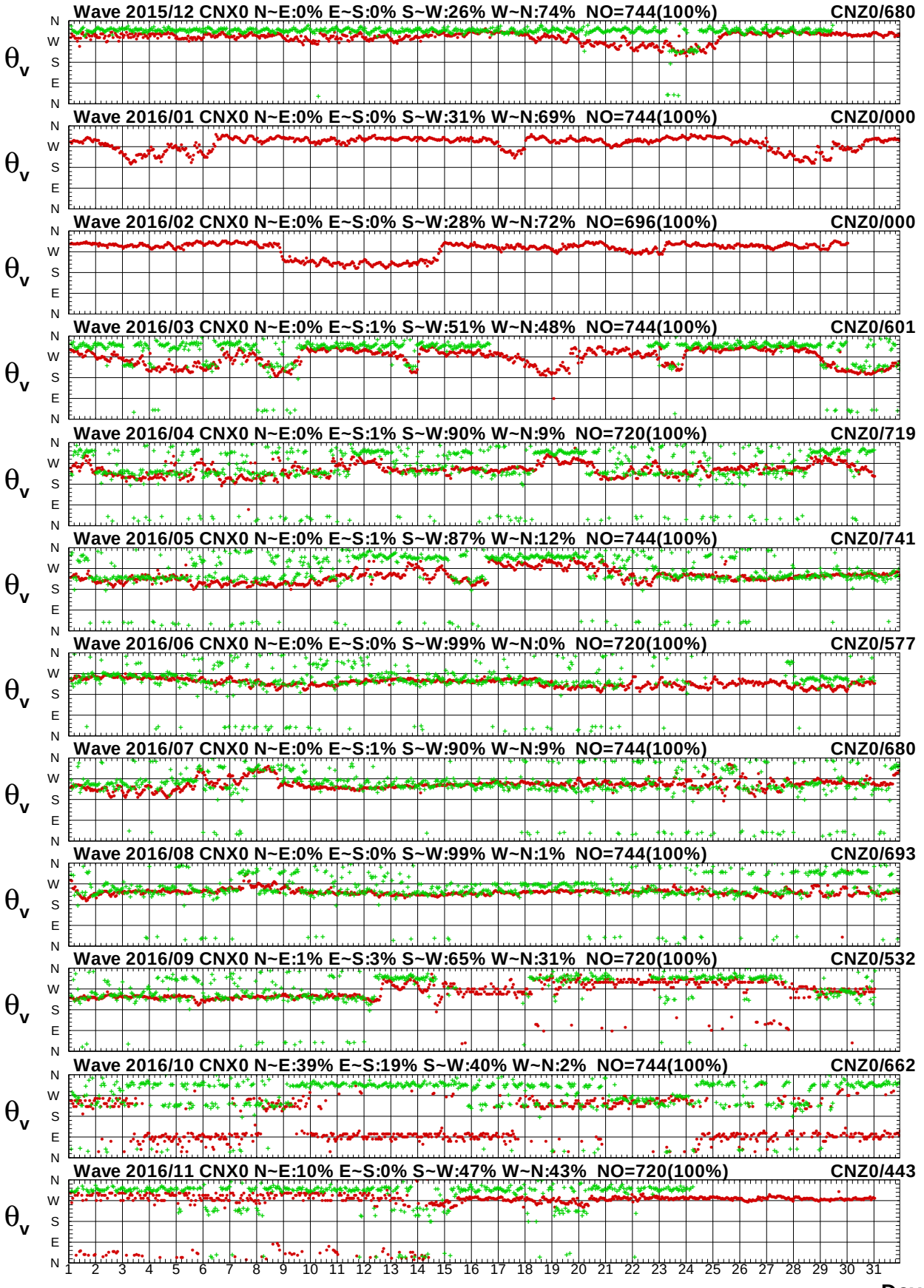

圖 8.3c　2016年每月嘉南海域 X 站與 Z 站波向比較圖

V15CCNX0.1HA V15CCNZ0.1H0 V161CNX0.1HA V161CNZ0.1H0 V162CNX0.1HA V162CNZ0.1H0
V163CNX0.1HA V163CNZ0.1H0 V164CNX0.1HA V164CNZ0.1H0 V165CNX0.1HA V165CNZ0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

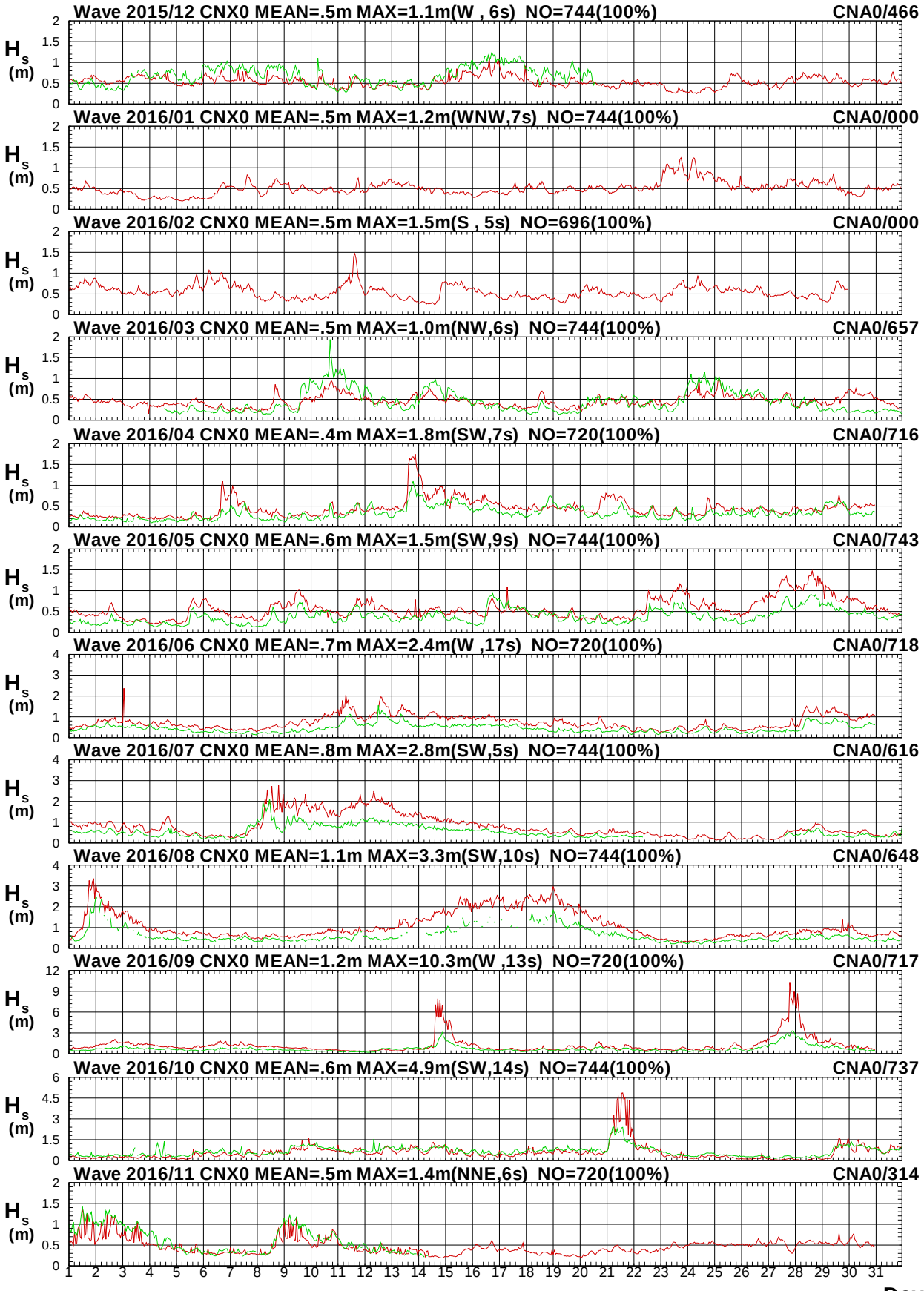

圖 8.4a　2016年每月嘉南海域 X 站與 A 站波高比較圖

V15CCNX0.1HA V15CCNA0.1H0 V161CNX0.1HA V161CNA0.1H0 V162CNX0.1HA V162CNA0.1H0
V163CNX0.1HA V163CNA0.1H0 V164CNX0.1HA V164CNA0.1H0 V165CNX0.1HA V165CNA0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

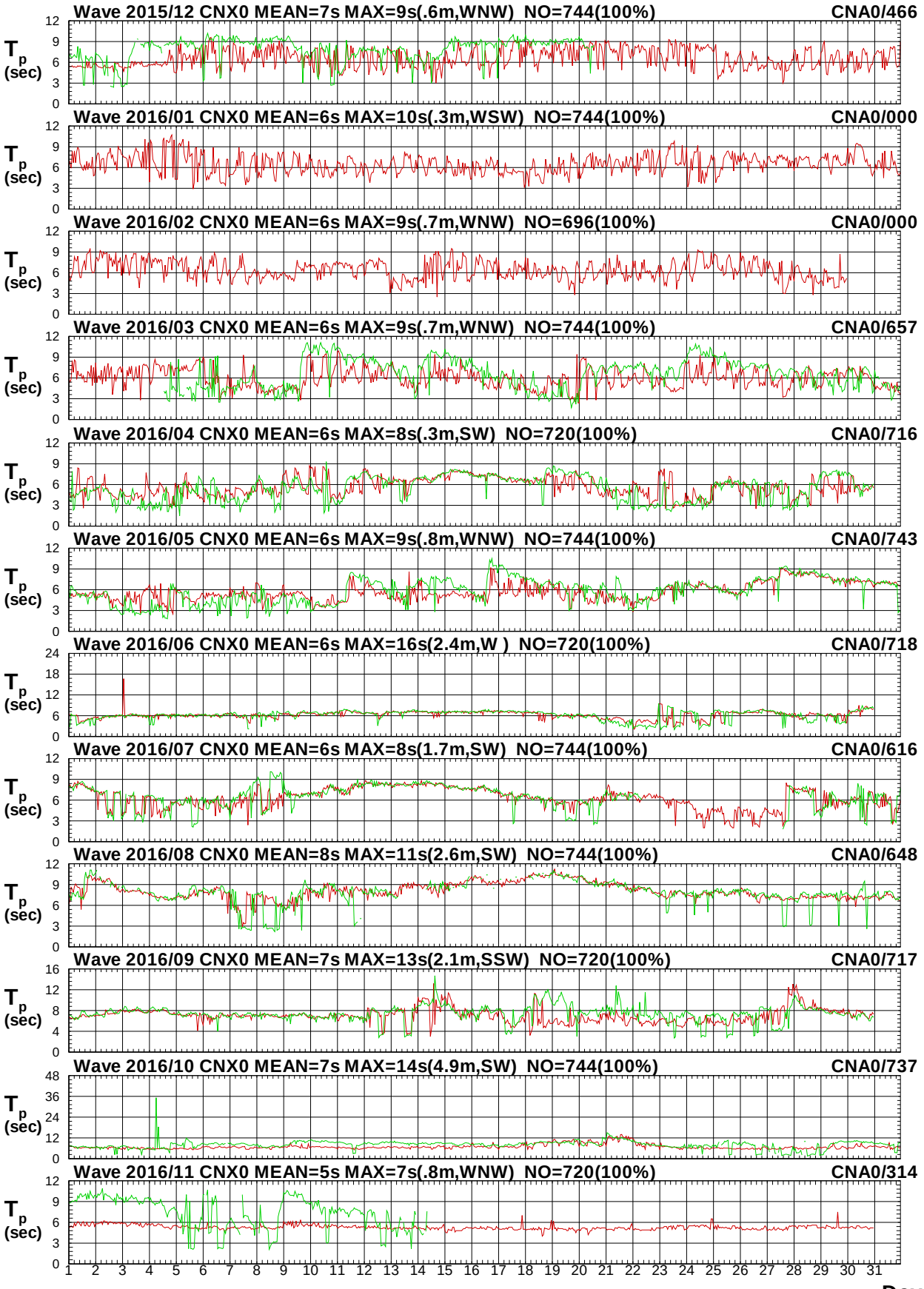

圖 8.4b　2016年每月嘉南海域 X 站與 A 站週期比較圖

V15CCNX0.1HA V15CCNA0.1H0 V161CNX0.1HA V161CNA0.1H0 V162CNX0.1HA V162CNA0.1H0
V163CNX0.1HA V163CNA0.1H0 V164CNX0.1HA V164CNA0.1H0 V165CNX0.1HA V165CNA0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

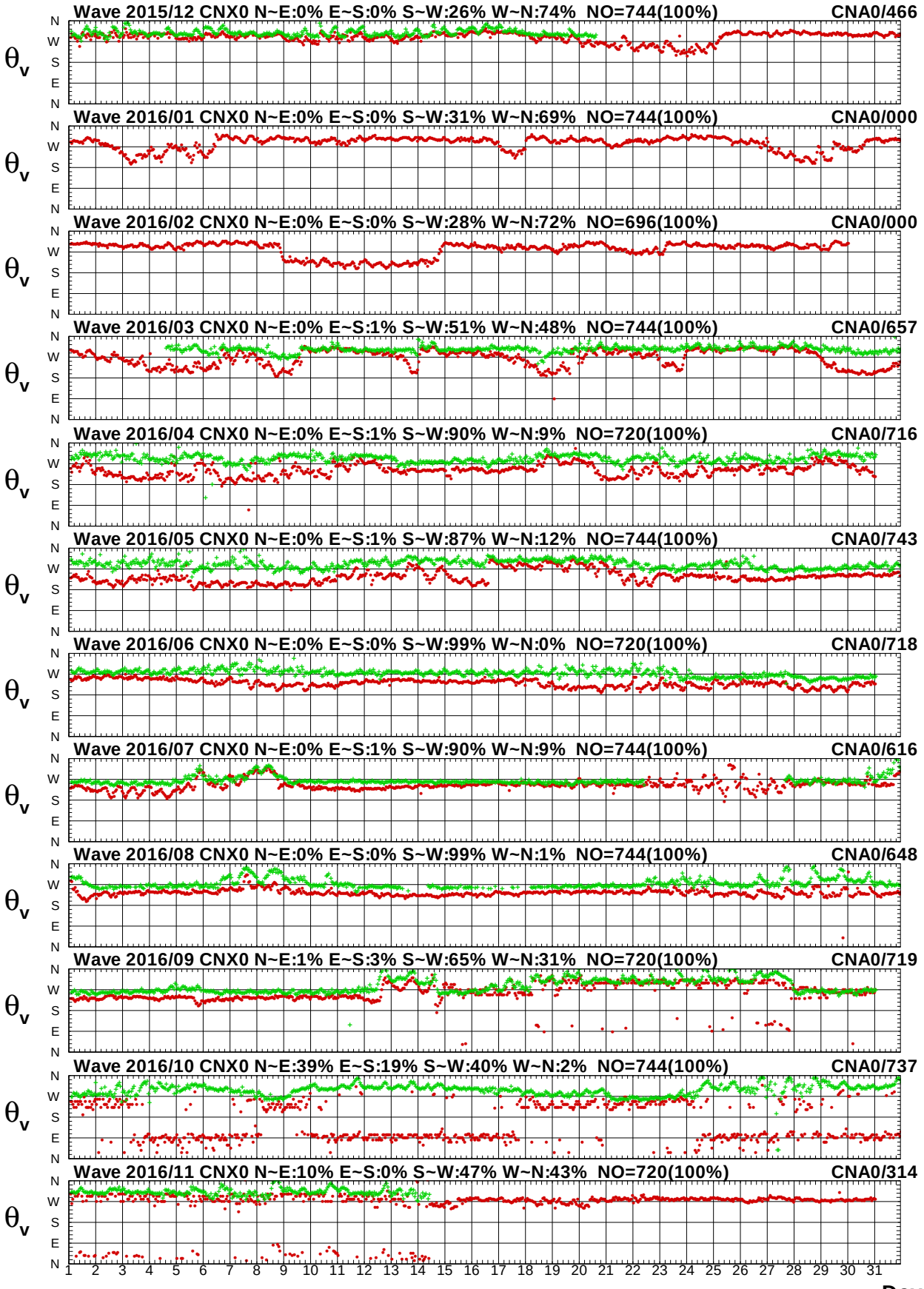

圖 8.4c　2016年每月嘉南海域 X 站與 A 站波向比較圖

V15CCNX0.1HA V15CCNA0.1H0 V161CNX0.1HA V161CNA0.1H0 V162CNX0.1HA V162CNA0.1H0
V163CNX0.1HA V163CNA0.1H0 V164CNX0.1HA V164CNA0.1H0 V165CNX0.1HA V165CNA0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

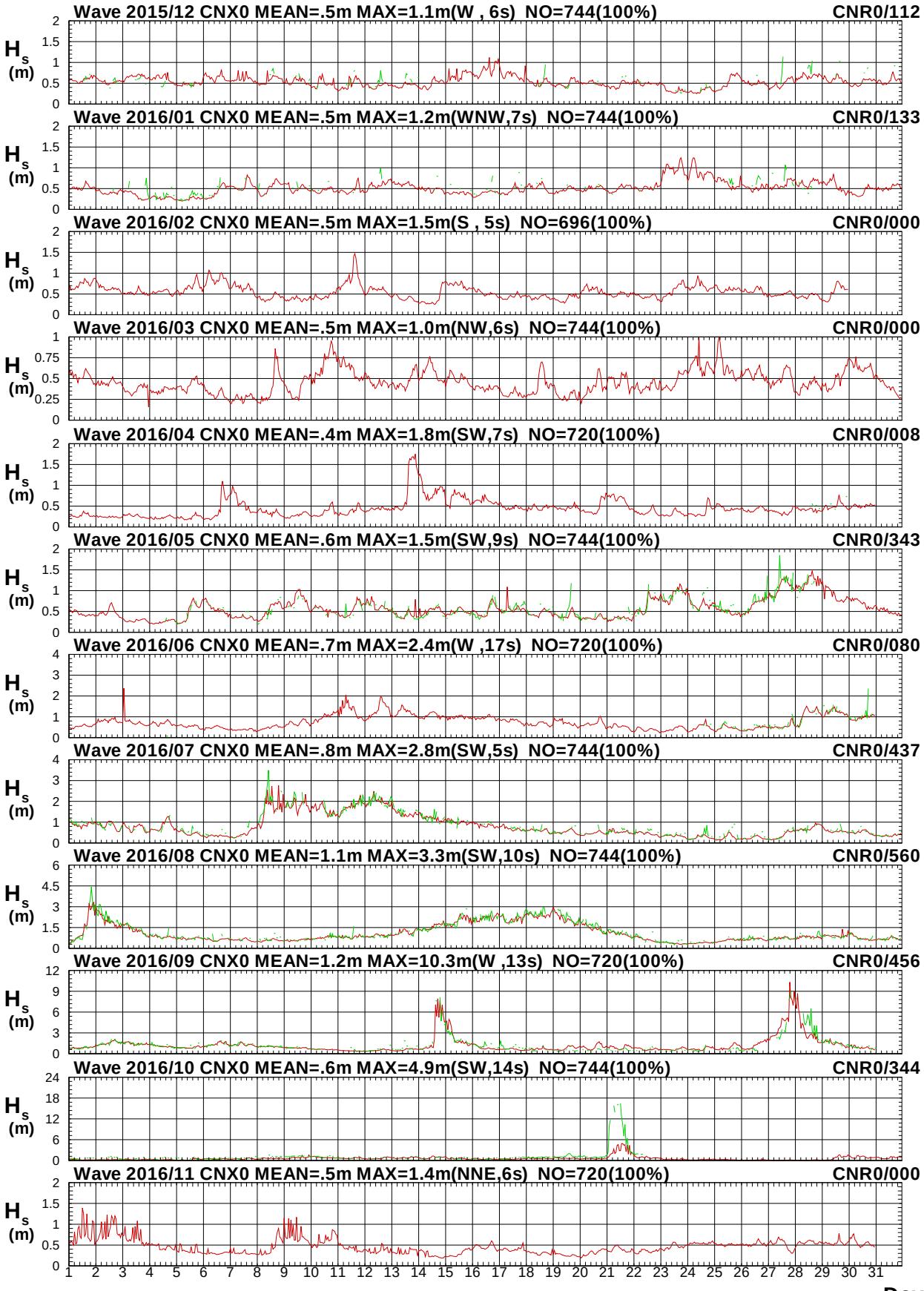

圖 8.5a　2016年每月嘉南海域 X 站與 R 站波高比較圖

V15CCNX0.1HA V15CCNR0.1H0 V161CNX0.1HA V161CNR0.1H0 V162CNX0.1HA V162CNR0.1H0
V163CNX0.1HA V163CNR0.1H0 V164CNX0.1HA V164CNR0.1H0 V165CNX0.1HA V165CNR0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

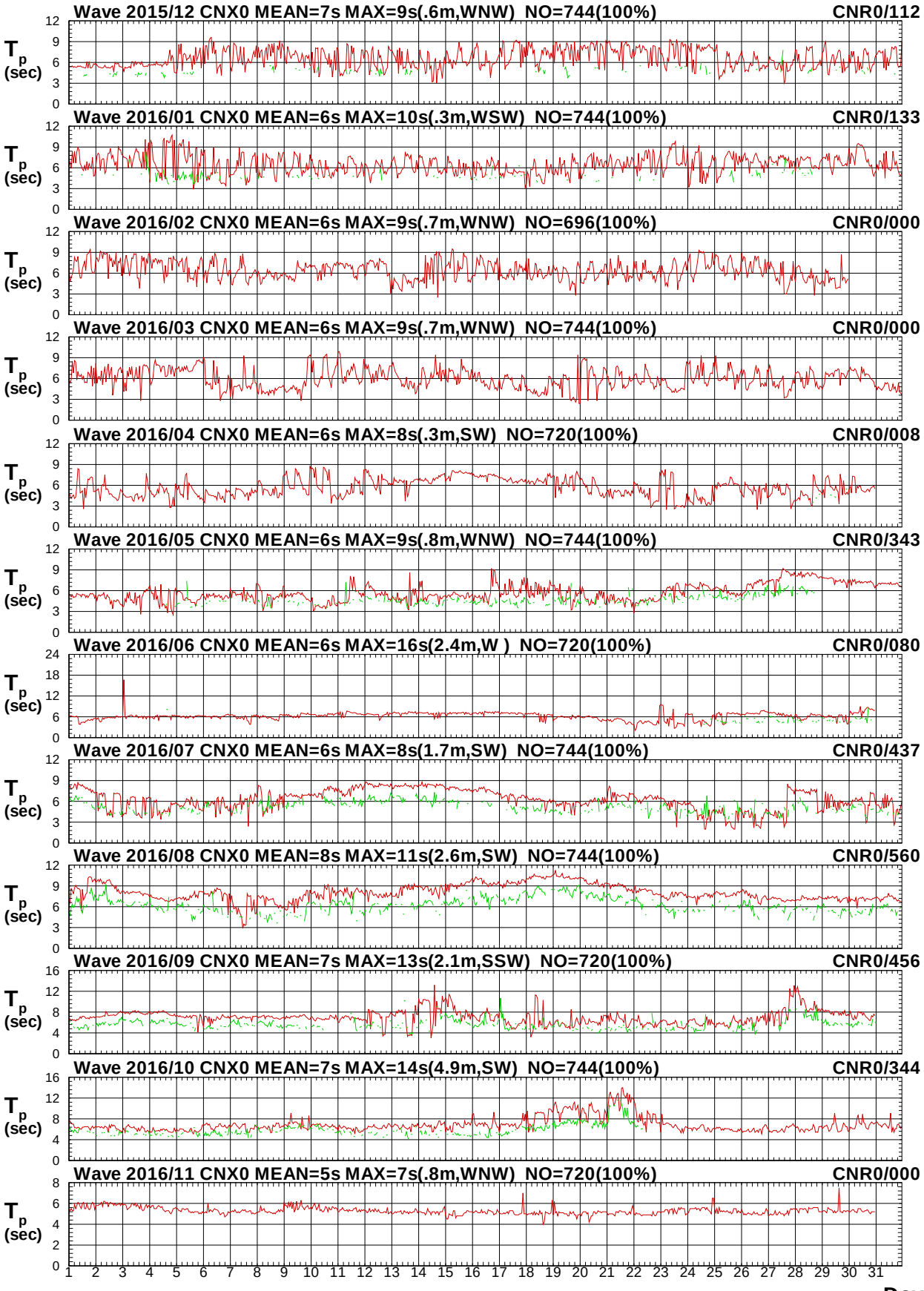

圖 8.5b　2016年每月嘉南海域 X 站與 R 站週期比較圖

V15CCNX0.1HA V15CCNR0.1H0 V161CNX0.1HA V161CNR0.1H0 V162CNX0.1HA V162CNR0.1H0
V163CNX0.1HA V163CNR0.1H0 V164CNX0.1HA V164CNR0.1H0 V165CNX0.1HA V165CNR0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

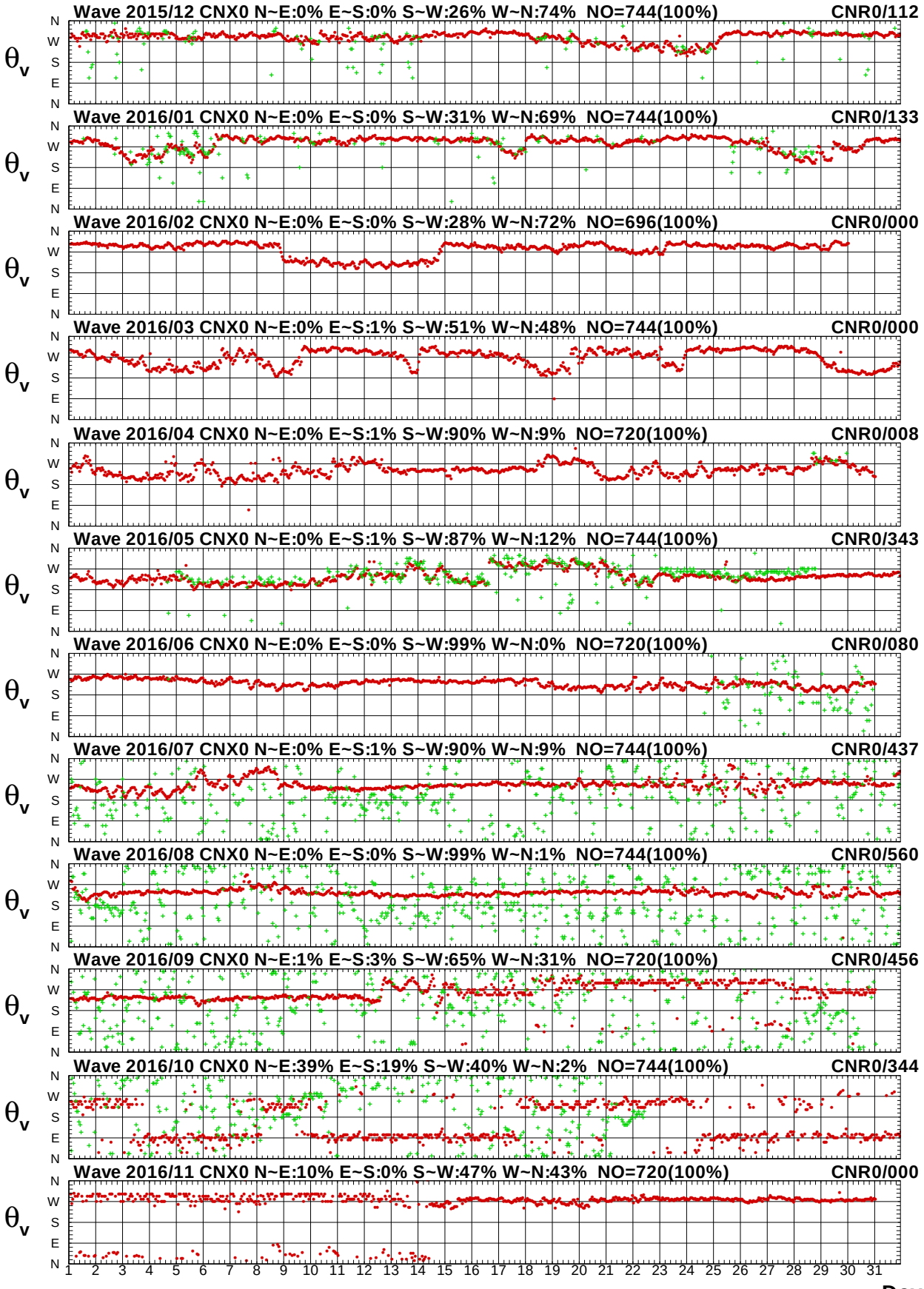

圖 8.5c　2016年每月嘉南海域 X 站與 R 站波向比較圖

V15CCNX0.1HA V15CCNR0.1H0 V161CNX0.1HA V161CNR0.1H0 V162CNX0.1HA V162CNR0.1H0
V163CNX0.1HA V163CNR0.1H0 V164CNX0.1HA V164CNR0.1H0 V165CNX0.1HA V165CNR0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

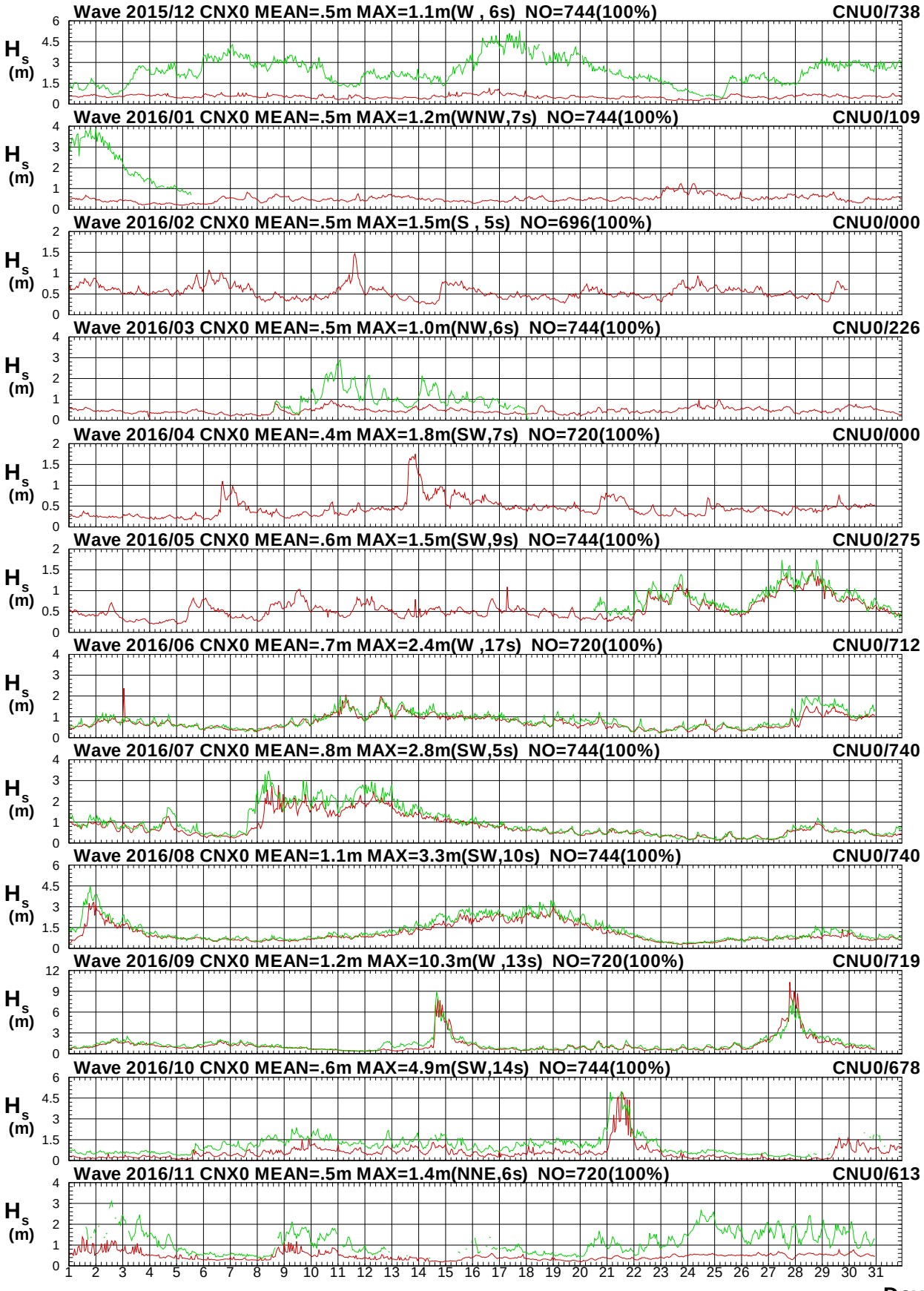

圖 8.6a　2016年每月嘉南海域 X 站與 U 站波高比較圖

V15CCNX0.1HA V15CCNU0.1H0 V161CNX0.1HA V161CNU0.1H0 V162CNX0.1HA V162CNU0.1H0
V163CNX0.1HA V163CNU0.1H0 V164CNX0.1HA V164CNU0.1H0 V165CNX0.1HA V165CNU0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

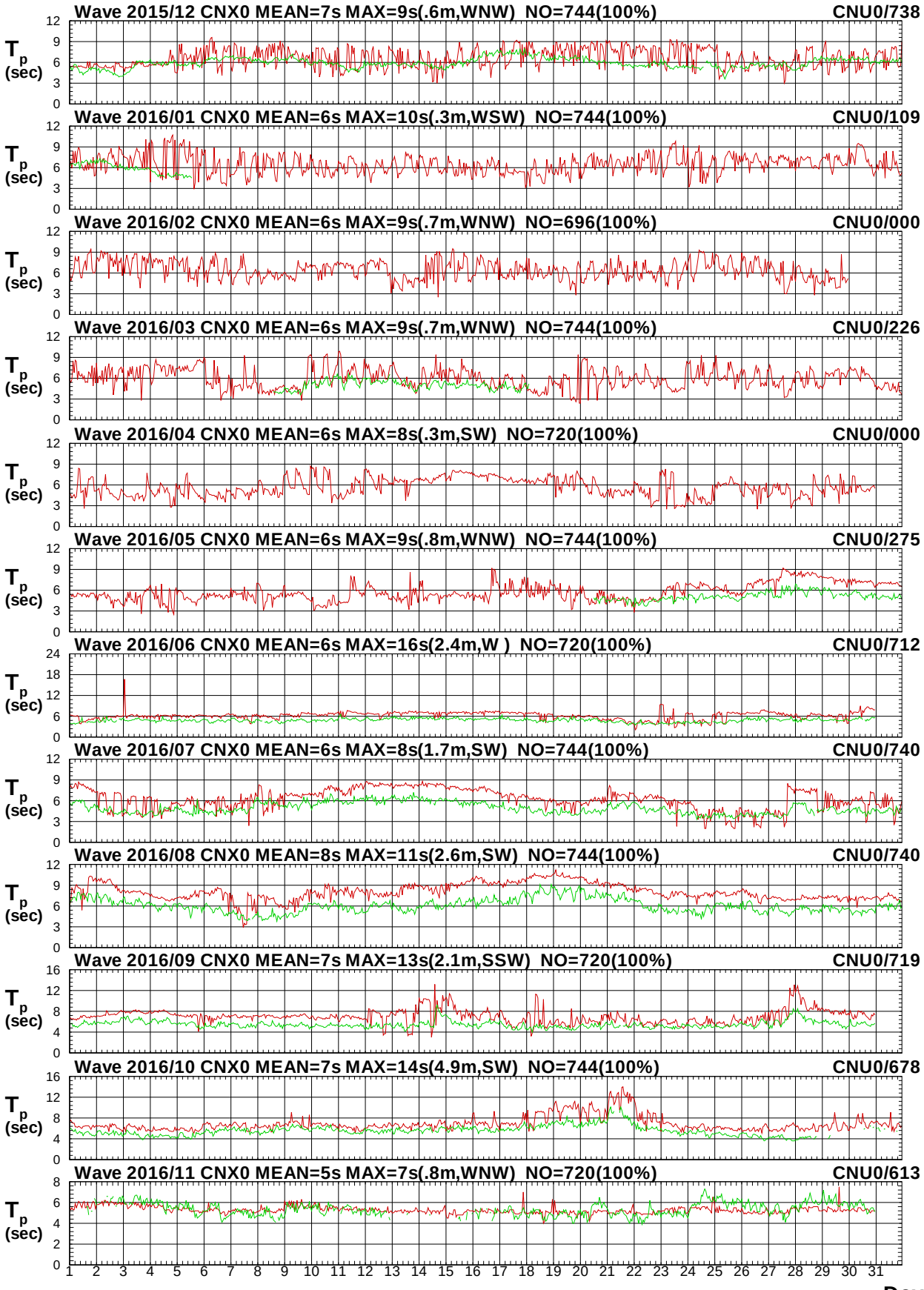

圖 8.6b　2016年每月嘉南海域 X 站與 U 站週期比較圖

V15CCNX0.1HA V15CCNU0.1H0 V161CNX0.1HA V161CNU0.1H0 V162CNX0.1HA V162CNU0.1H0
V163CNX0.1HA V163CNU0.1H0 V164CNX0.1HA V164CNU0.1H0 V165CNX0.1HA V165CNU0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

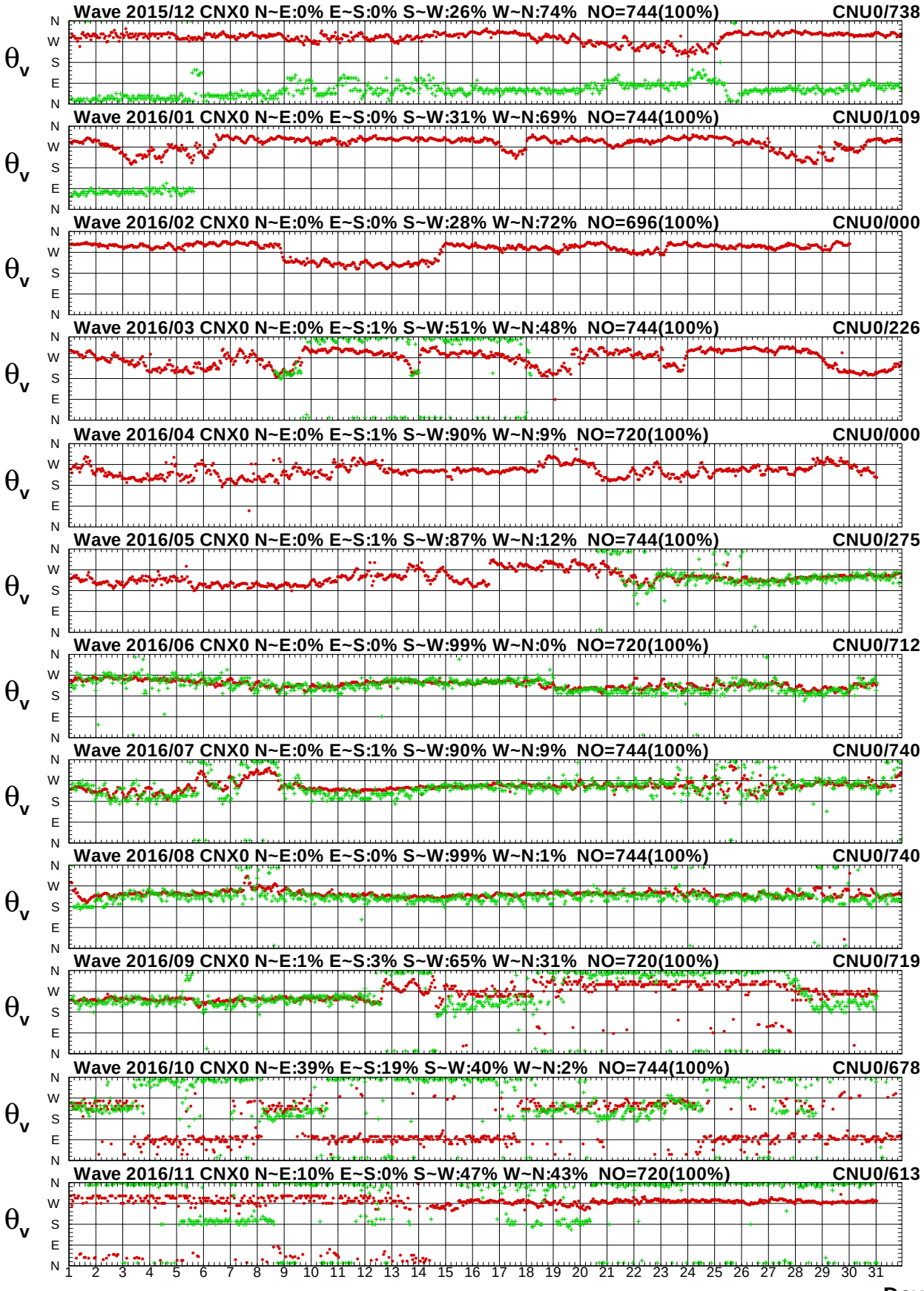

圖 8.6c　2016年每月嘉南海域 X 站與 U 站波向比較圖

V15CCNX0.1HA V15CCNU0.1H0 V161CNX0.1HA V161CNU0.1H0 V162CNX0.1HA V162CNU0.1H0
V163CNX0.1HA V163CNU0.1H0 V164CNX0.1HA V164CNU0.1H0 V165CNX0.1HA V165CNU0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

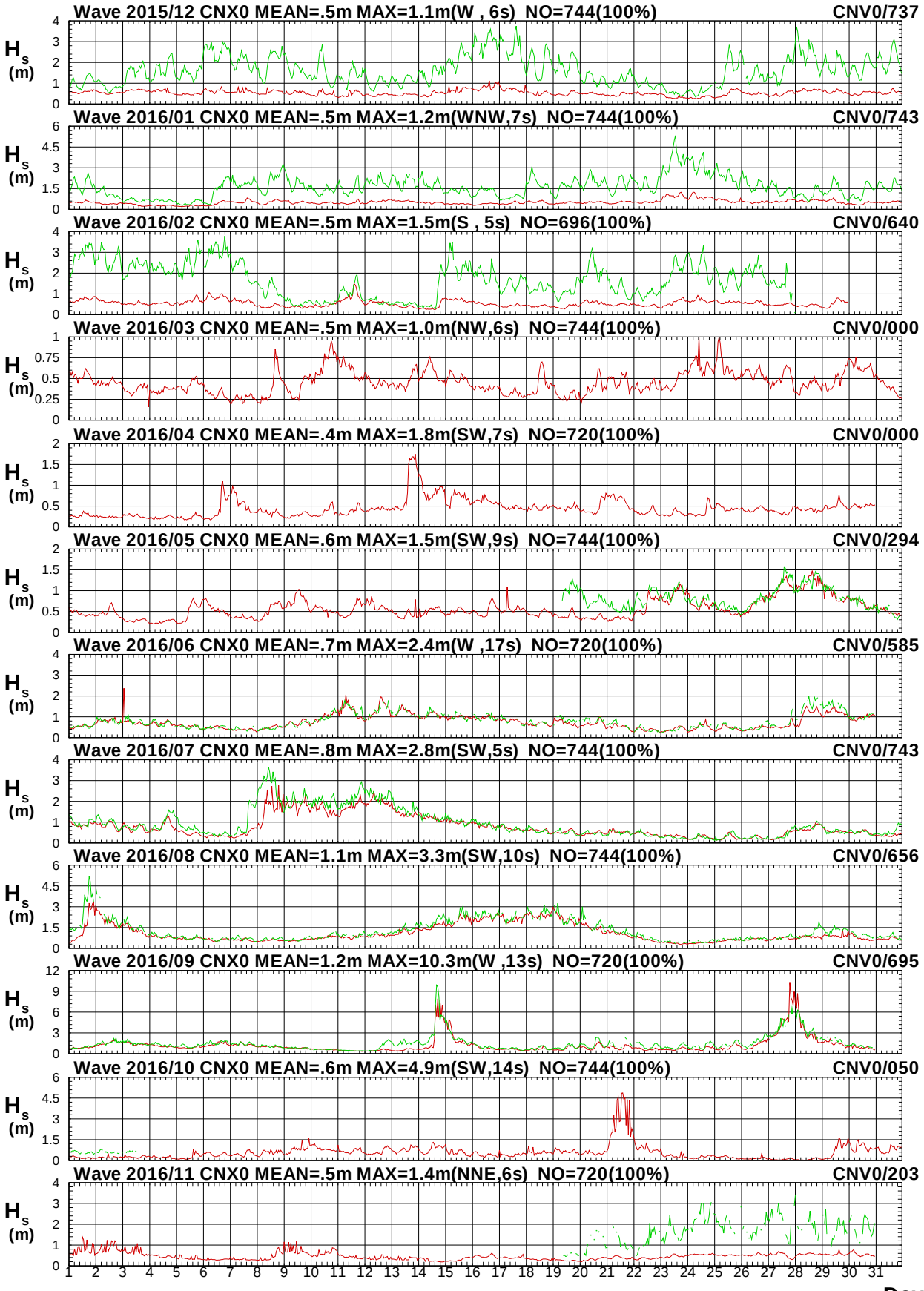

圖 8.7a　2016年每月嘉南海域 X 站與 V 站波高比較圖

V15CCNX0.1HA V15CCNV0.1H0 V161CNX0.1HA V161CNV0.1H0 V162CNX0.1HA V162CNV0.1H0
V163CNX0.1HA V163CNV0.1H0 V164CNX0.1HA V164CNV0.1H0 V165CNX0.1HA V165CNV0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

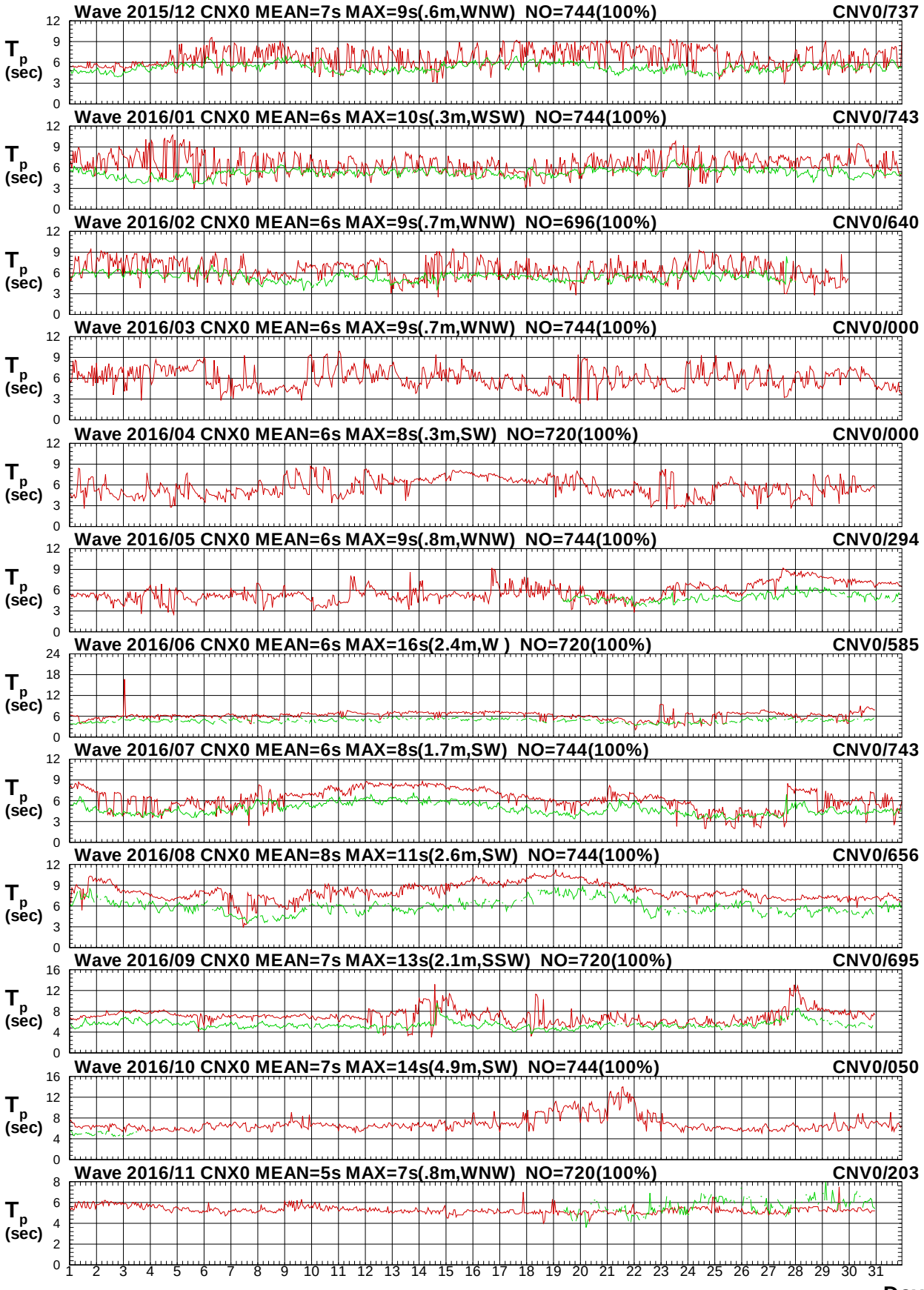

圖 8.7b　2016年每月嘉南海域 X 站與 V 站週期比較圖

V15CCNX0.1HA V15CCNV0.1H0 V161CNX0.1HA V161CNV0.1H0 V162CNX0.1HA V162CNV0.1H0
V163CNX0.1HA V163CNV0.1H0 V164CNX0.1HA V164CNV0.1H0 V165CNX0.1HA V165CNV0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

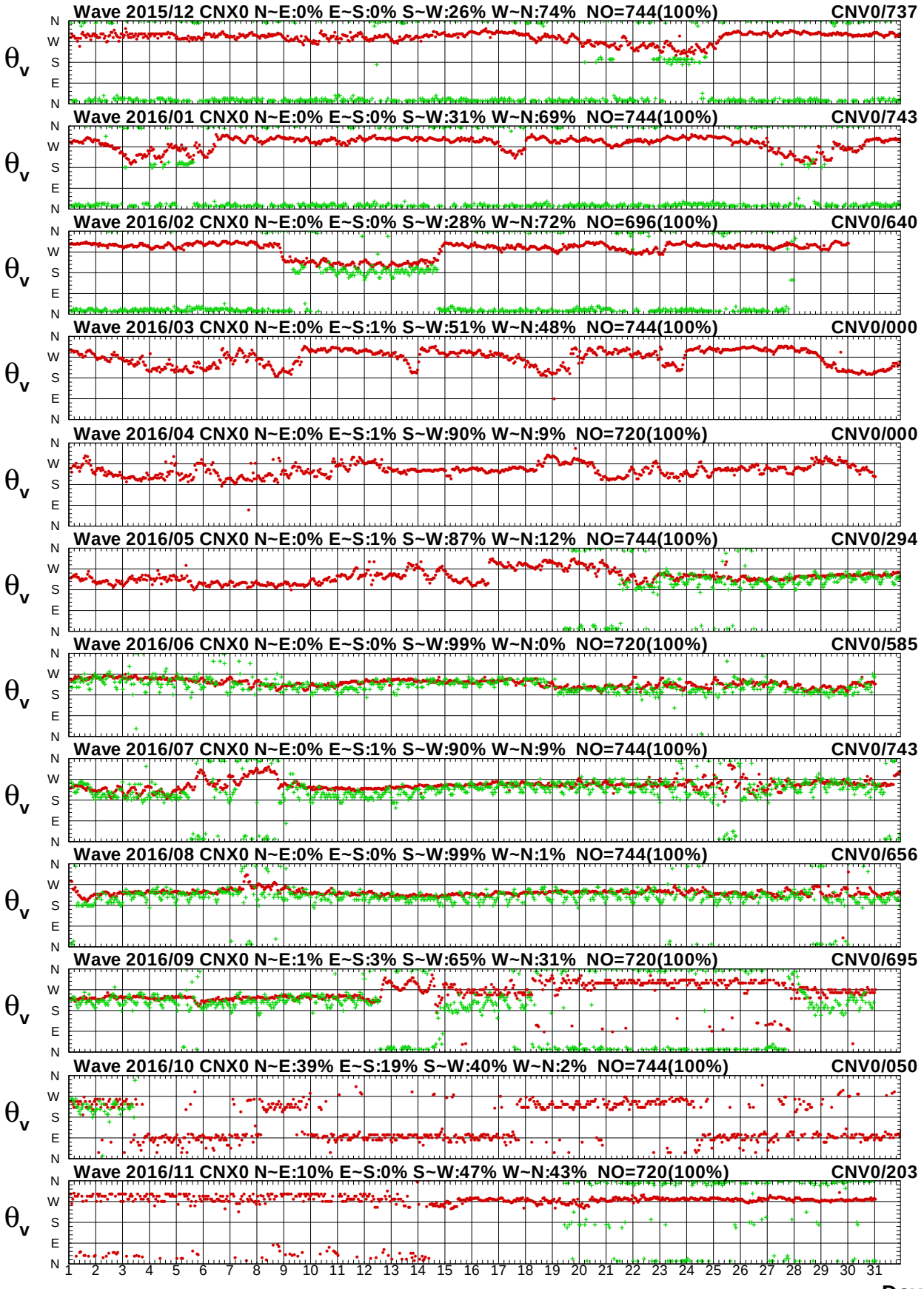

圖8.7c　2016年每月嘉南海域 X 站與 V 站波向比較圖

V15CCNX0.1HA V15CCNV0.1H0 V161CNX0.1HA V161CNV0.1H0 V162CNX0.1HA V162CNV0.1H0
V163CNX0.1HA V163CNV0.1H0 V164CNX0.1HA V164CNV0.1H0 V165CNX0.1HA V165CNV0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

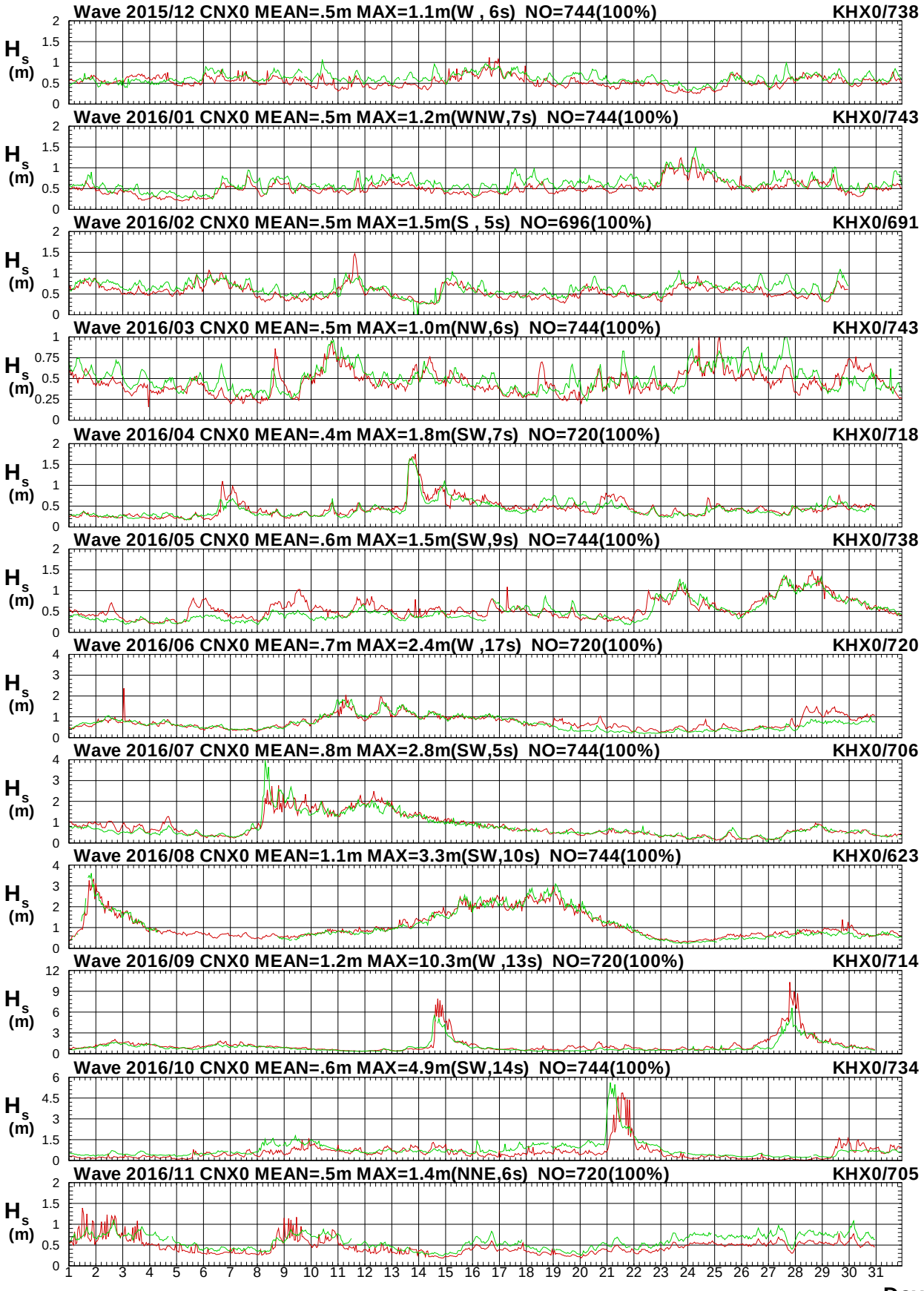

圖 8.8a　2016年每月嘉南海域 X 站與高雄海域 X 站波高圖

V15CCNX0.1HA V15CKHX0.1H0 V161CNX0.1HA V161KHX0.1H0 V162CNX0.1HA V162KHX0.1H0
V163CNX0.1HA V163KHX0.1H0 V164CNX0.1HA V164KHX0.1H0 V165CNX0.1HA V165KHX0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

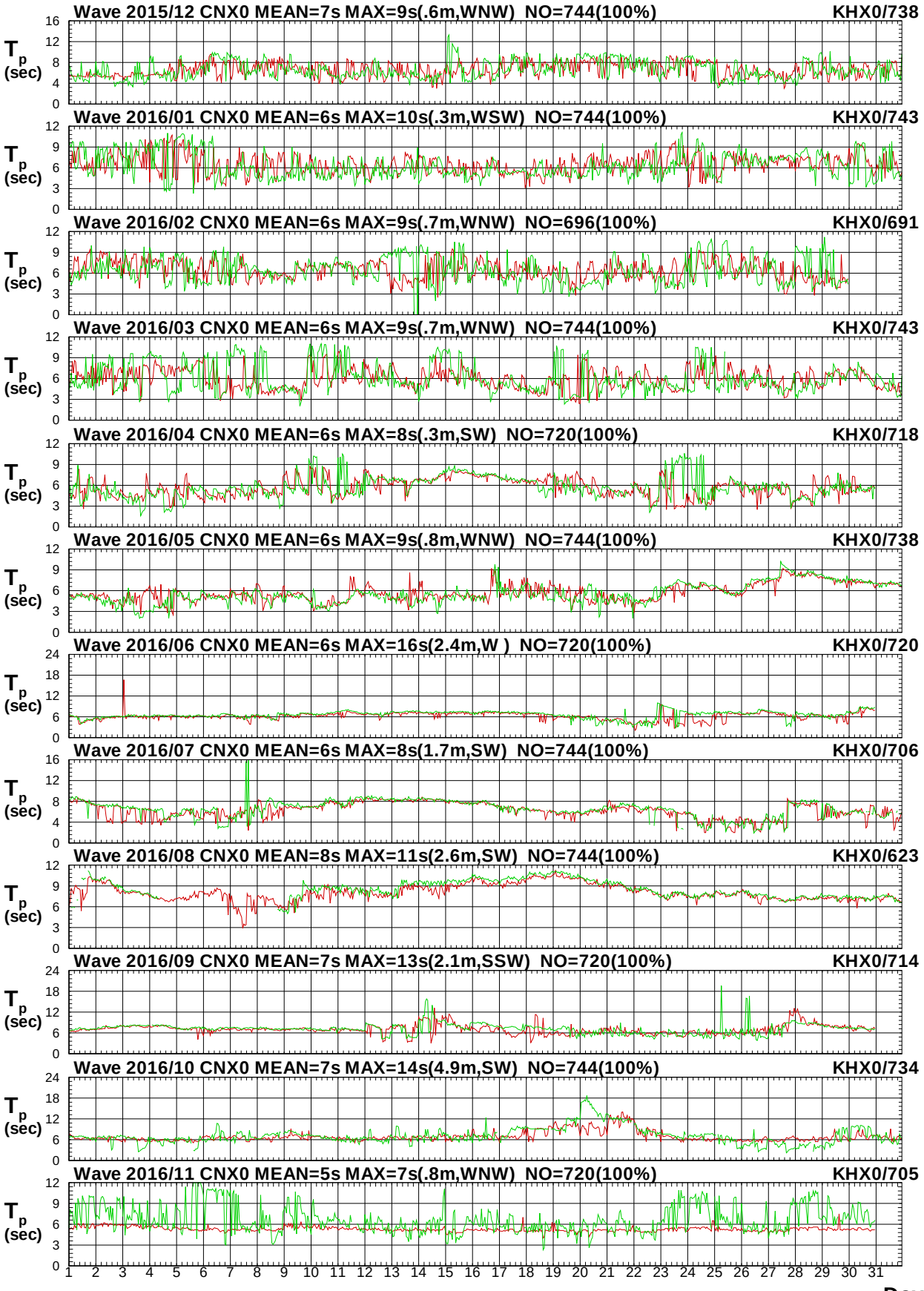

圖 8.8b　2016年每月嘉南海域 X 站與高雄海域 X 站週期圖

V15CCNX0.1HA V15CKHX0.1H0 V161CNX0.1HA V161KHX0.1H0 V162CNX0.1HA V162KHX0.1H0
V163CNX0.1HA V163KHX0.1H0 V164CNX0.1HA V164KHX0.1H0 V165CNX0.1HA V165KHX0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

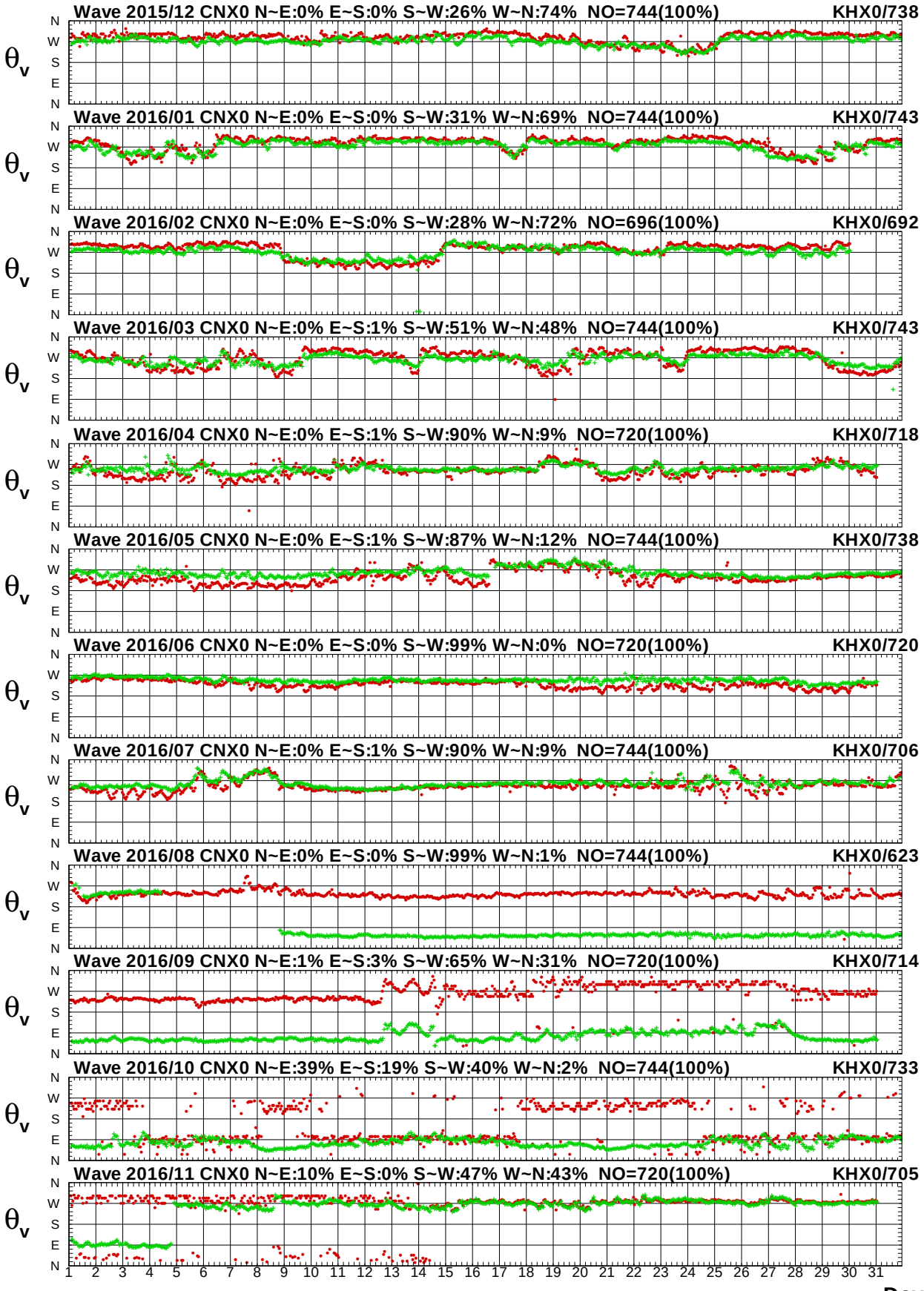

圖 8.8c　2016年每月嘉南海域 X 站與高雄海域 X 站波向圖

Wave H_s in Chia-Nan Seas of CNX0 at 2016

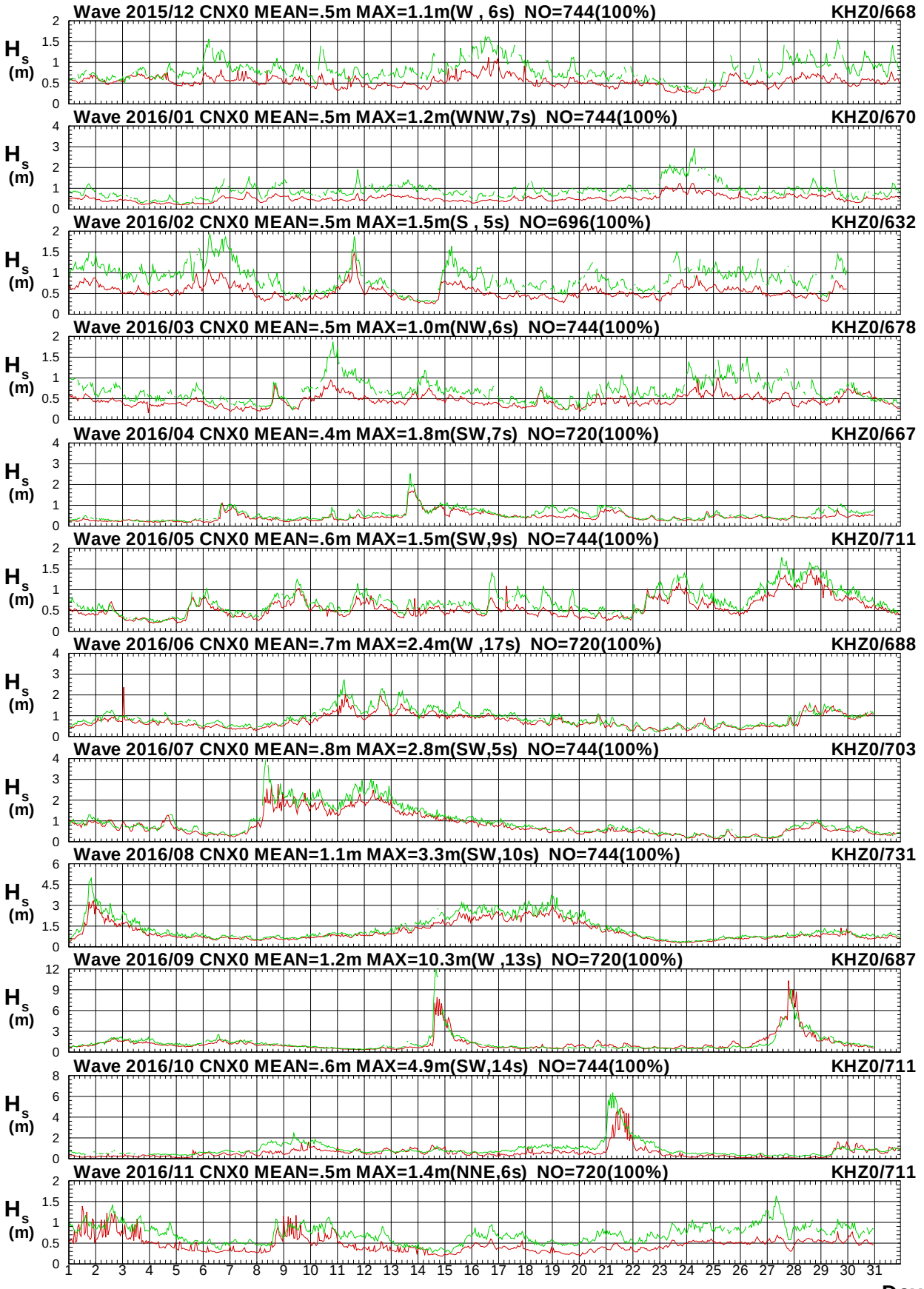

圖 8.9a　2016年每月嘉南海域 X 站與高雄海域 Z 站波高圖

V15CCNX0.1HA V15CKHZ0.1H0 V161CNX0.1HA V161KHZ0.1H0 V162CNX0.1HA V162KHZ0.1H0
V163CNX0.1HA V163KHZ0.1H0 V164CNX0.1HA V164KHZ0.1H0 V165CNX0.1HA V165KHZ0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

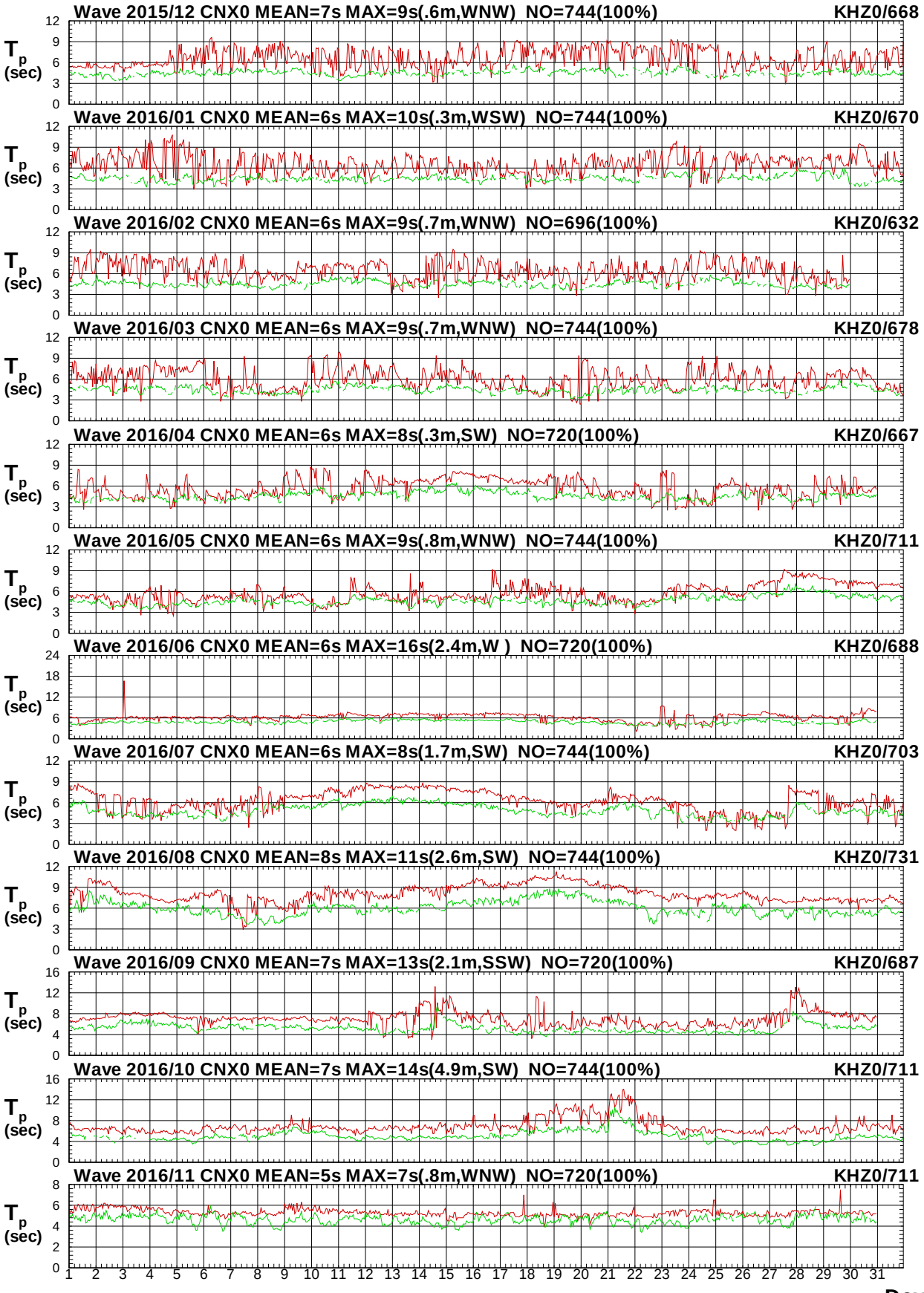

圖 8.9b　2016年每月嘉南海域 X 站與高雄海域 Z 站週期圖

Wave Direction in Chia-Nan Seas of CNX0 at 2016

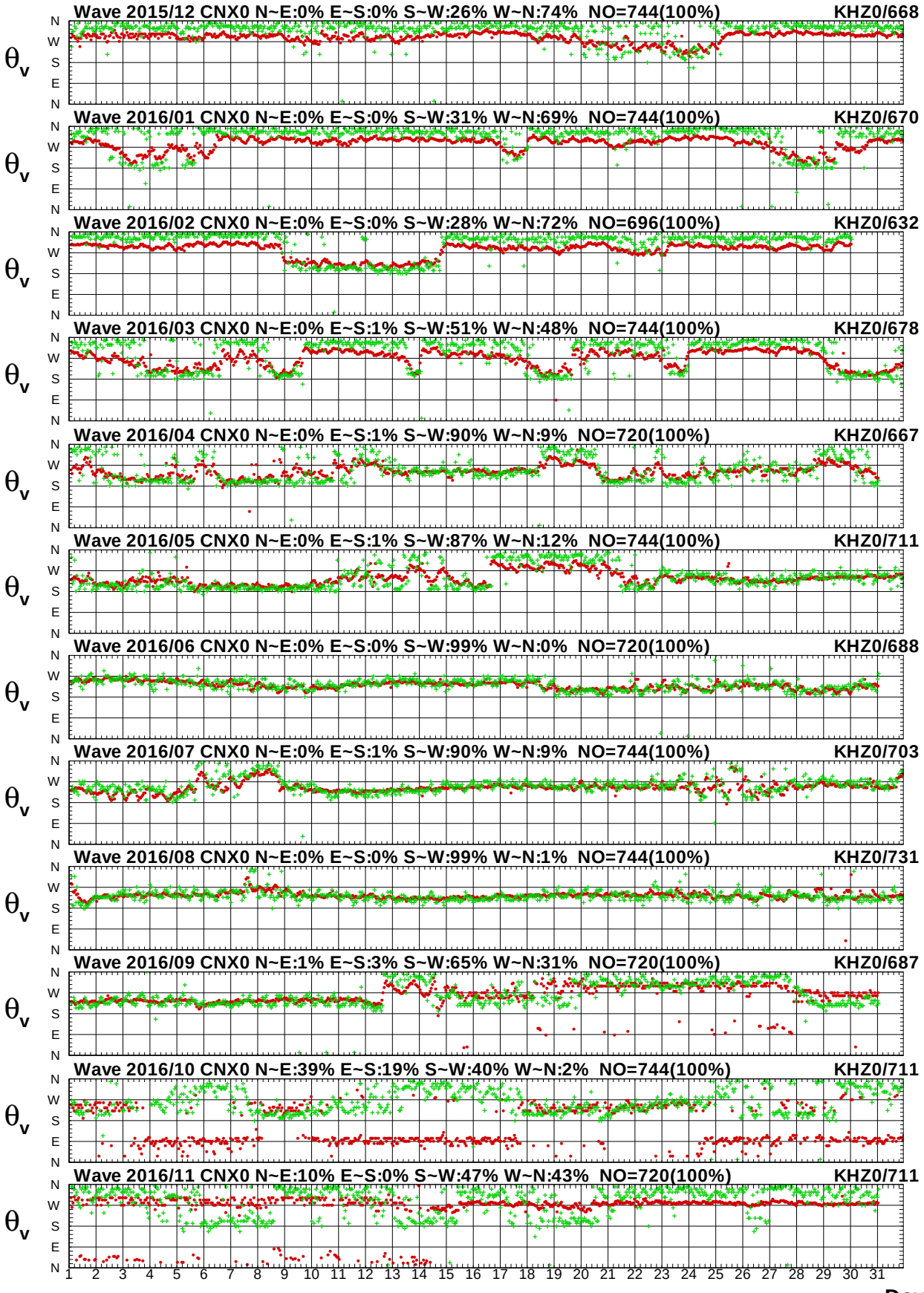

圖8.9c　2016年每月嘉南海域 X 站與高雄海域 Z 站波向圖

V15CCNX0.1HA V15CKHZ0.1H0 V161CNX0.1HA V161KHZ0.1H0 V162CNX0.1HA V162KHZ0.1H0
V163CNX0.1HA V163KHZ0.1H0 V164CNX0.1HA V164KHZ0.1H0 V165CNX0.1HA V165KHZ0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

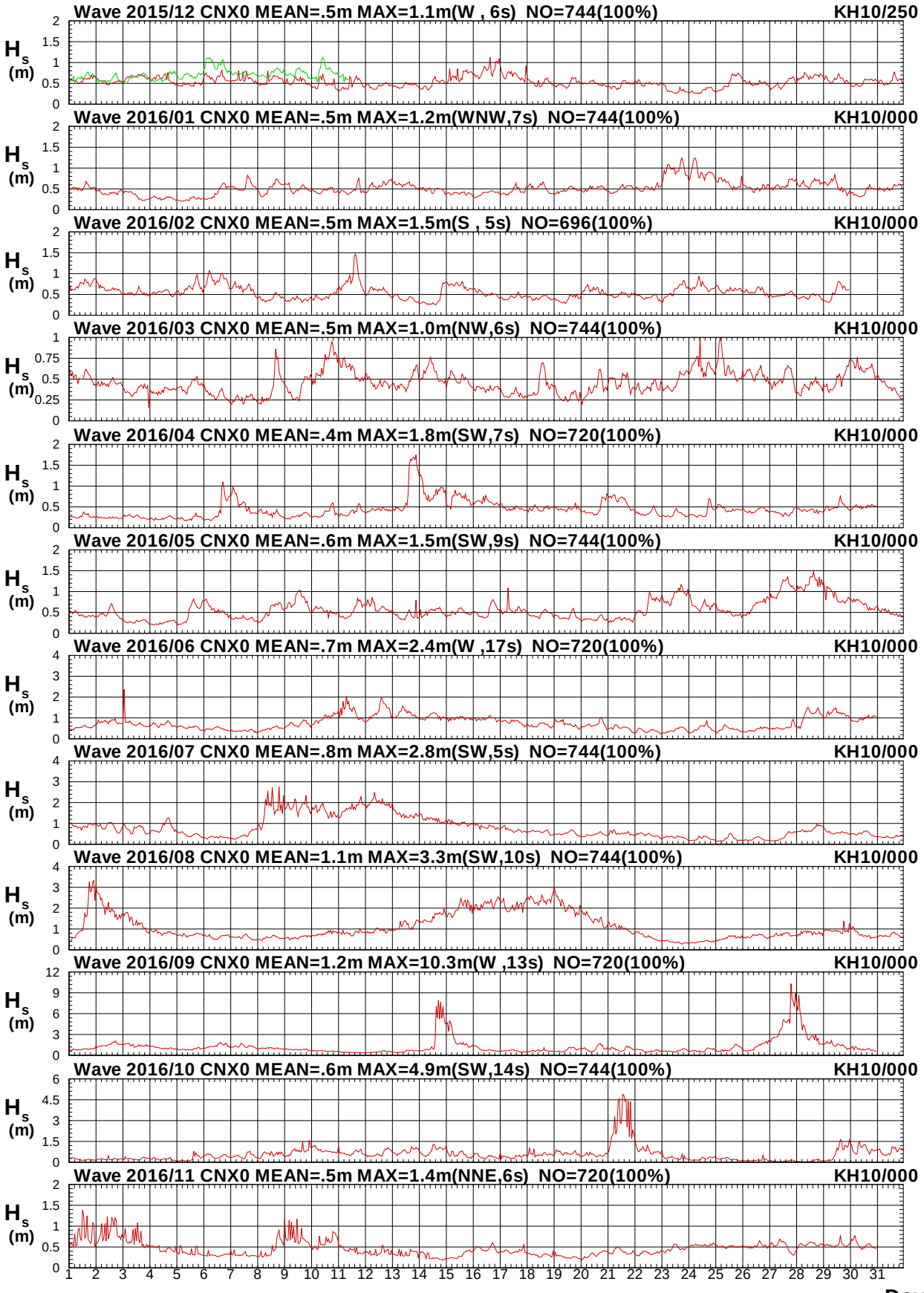

圖8.10a　2016年每月嘉南海域 X 站與高雄海域1站波高圖

V15CCNX0.1HA V15CKH10.1H0 V161CNX0.1HA V161KH10.1H0 V162CNX0.1HA V162KH10.1H0
V163CNX0.1HA V163KH10.1H0 V164CNX0.1HA V164KH10.1H0 V165CNX0.1HA V165KH10.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

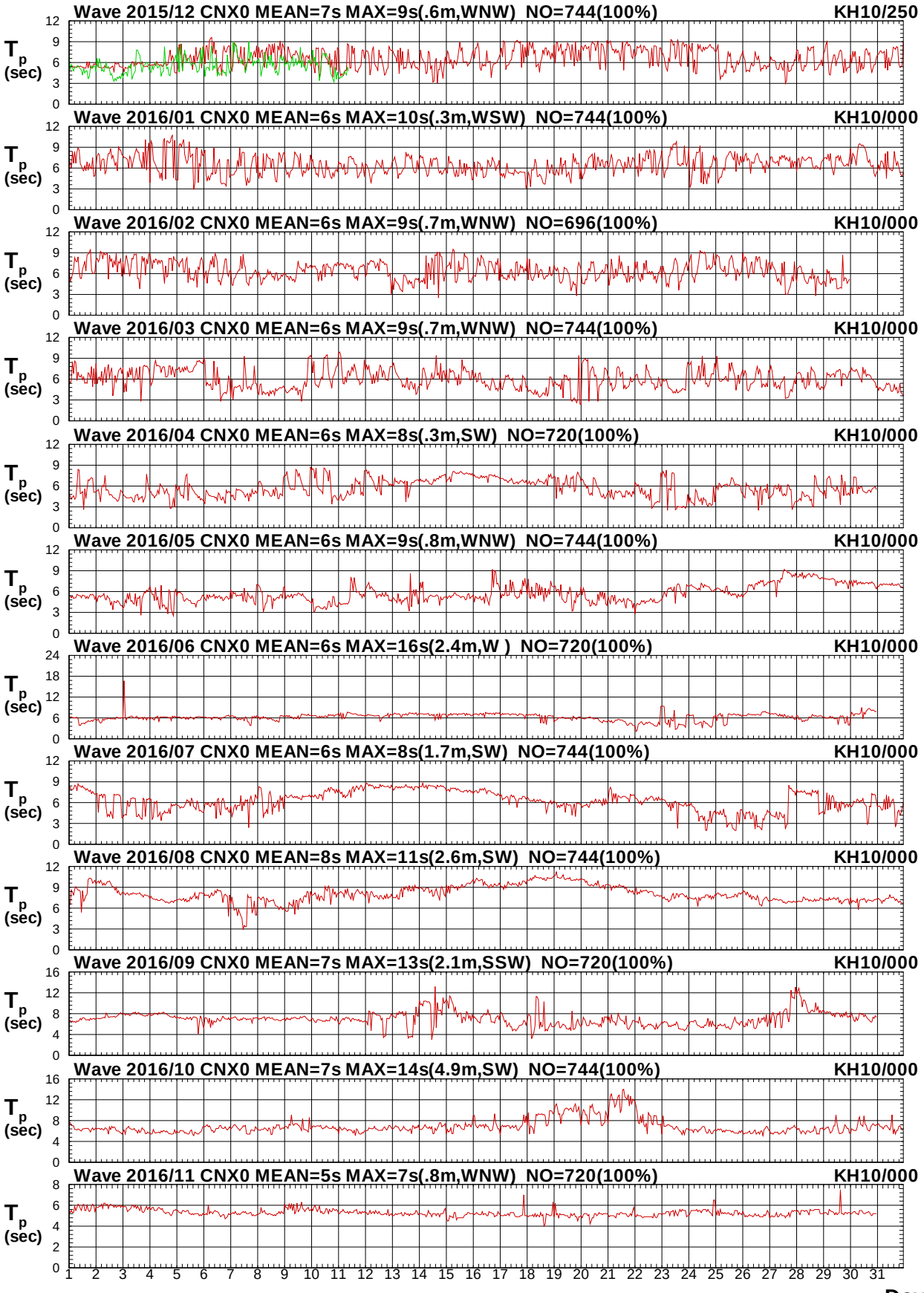

圖 8.10b　2016年每月嘉南海域 X 站與高雄海域1站週期圖

V15CCNX0.1HA V15CKH10.1H0 V161CNX0.1HA V161KH10.1H0 V162CNX0.1HA V162KH10.1H0
V163CNX0.1HA V163KH10.1H0 V164CNX0.1HA V164KH10.1H0 V165CNX0.1HA V165KH10.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

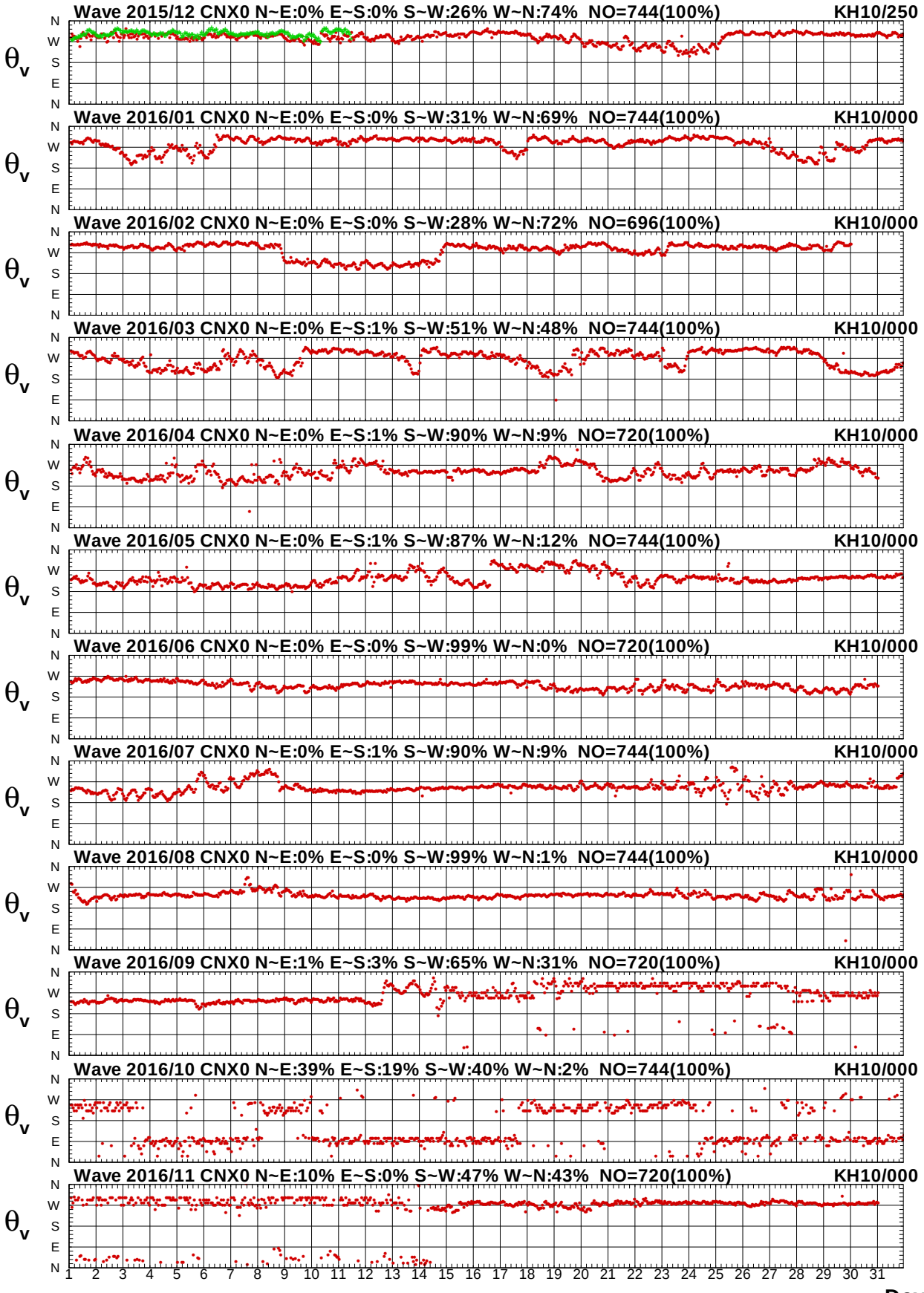

圖8.10c　2016年每月嘉南海域 X 站與高雄海域1站波向圖

V15CCNX0.1HA V15CKH10.1H0 V161CNX0.1HA V161KH10.1H0 V162CNX0.1HA V162KH10.1H0
V163CNX0.1HA V163KH10.1H0 V164CNX0.1HA V164KH10.1H0 V165CNX0.1HA V165KH10.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

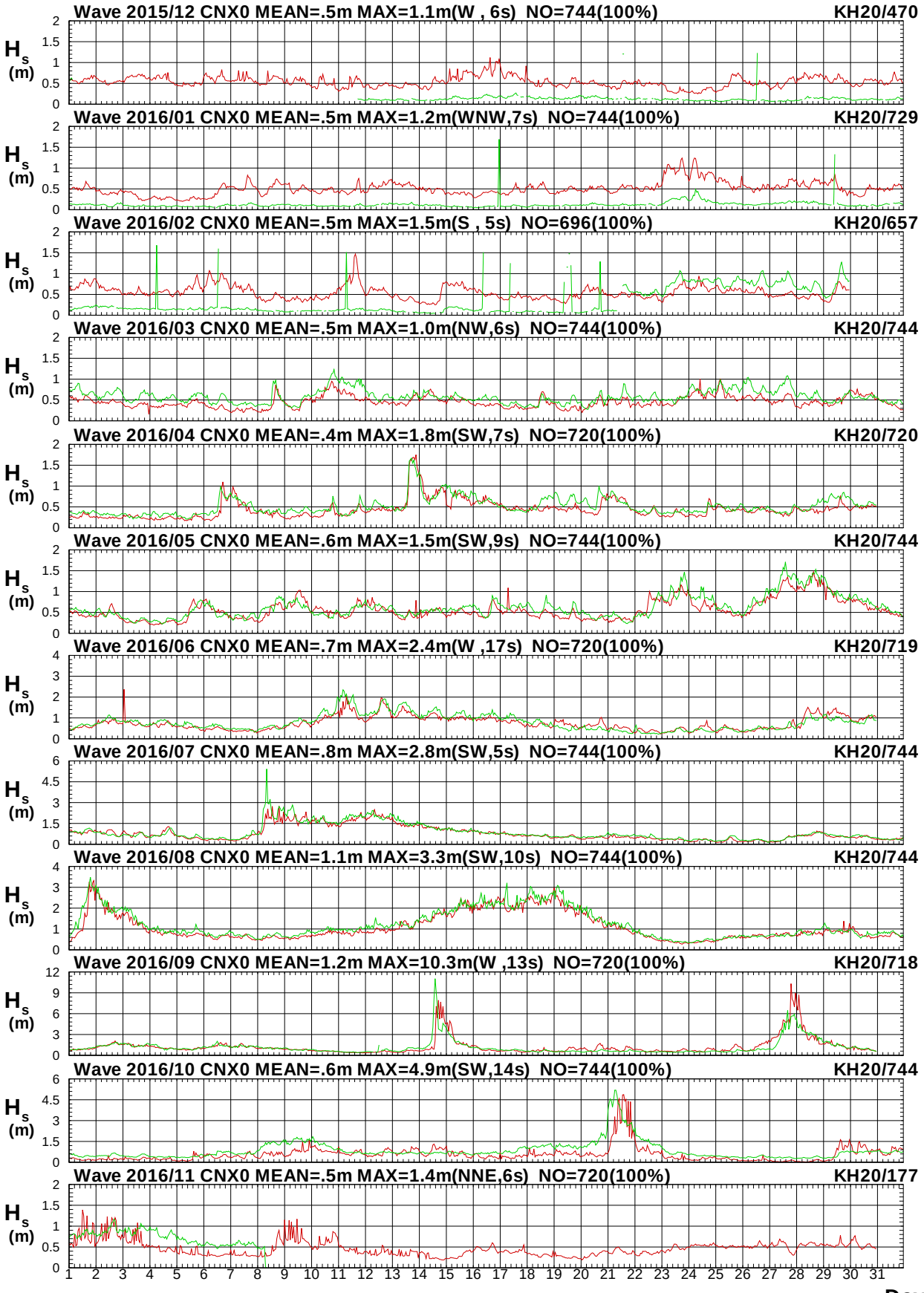

圖8.11a　2016年每月嘉南海域 X 站與高雄海域2站波高圖

V15CCNX0.1HA V15CKH20.1H0 V161CNX0.1HA V161KH20.1H0 V162CNX0.1HA V162KH20.1H0
V163CNX0.1HA V163KH20.1H0 V164CNX0.1HA V164KH20.1H0 V165CNX0.1HA V165KH20.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

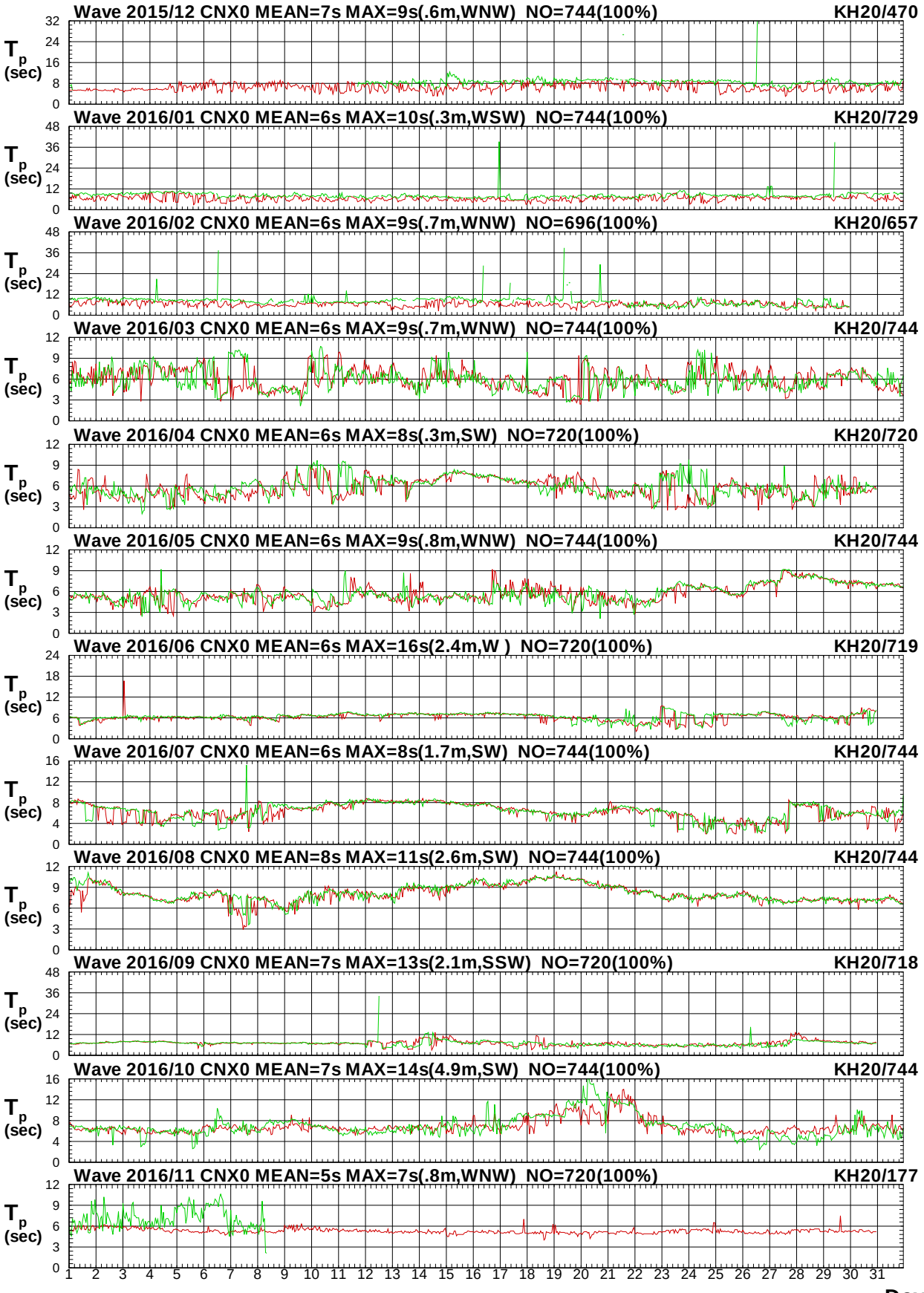

圖 8.11b　2016年每月嘉南海域 X 站與高雄海域2站週期圖

V15CCNX0.1HA V15CKH20.1H0 V161CNX0.1HA V161KH20.1H0 V162CNX0.1HA V162KH20.1H0
V163CNX0.1HA V163KH20.1H0 V164CNX0.1HA V164KH20.1H0 V165CNX0.1HA V165KH20.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

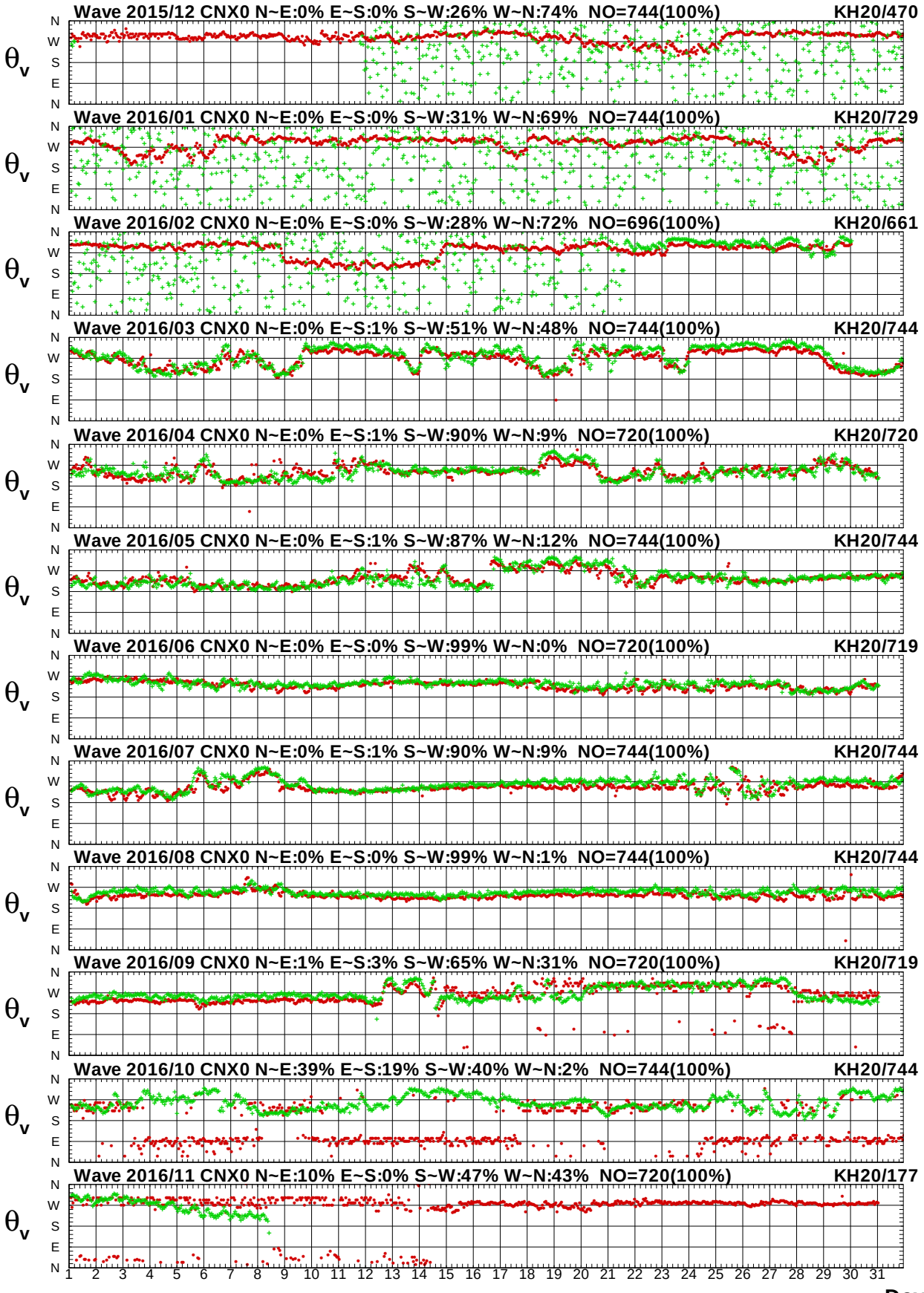

圖8.11c　2016年每月嘉南海域 X 站與高雄海域2站波向圖

V15CCNX0.1HA V15CKH20.1H0 V161CNX0.1HA V161KH20.1H0 V162CNX0.1HA V162KH20.1H0
V163CNX0.1HA V163KH20.1H0 V164CNX0.1HA V164KH20.1H0 V165CNX0.1HA V165KH20.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

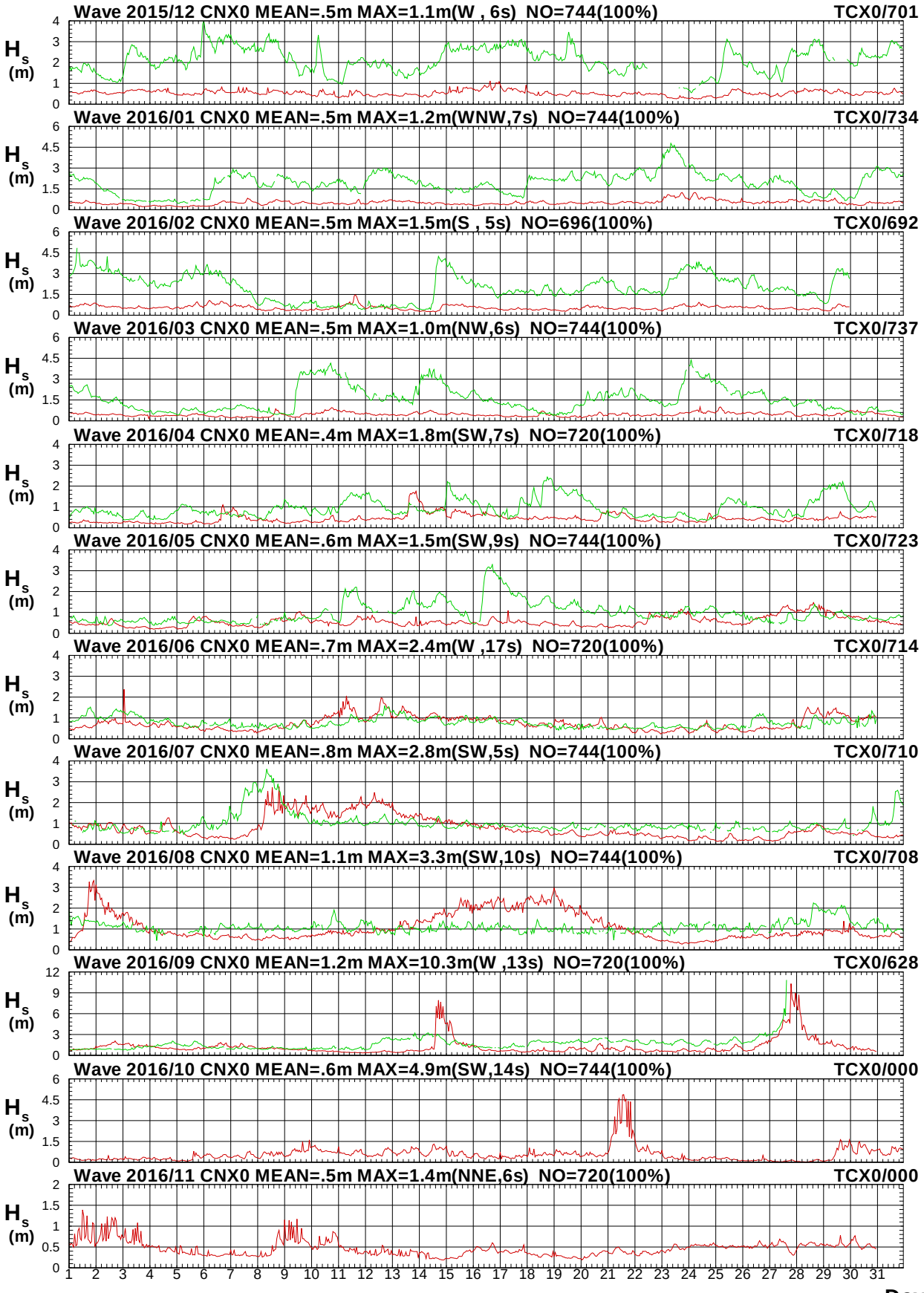

圖8.12a　2016年每月嘉南海域 X 站與中雲海域 X 站波高圖

V15CCNX0.1HA V15CTCX0.1H0 V161CNX0.1HA V161TCX0.1H0 V162CNX0.1HA V162TCX0.1H0
V163CNX0.1HA V163TCX0.1H0 V164CNX0.1HA V164TCX0.1H0 V165CNX0.1HA V165TCX0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

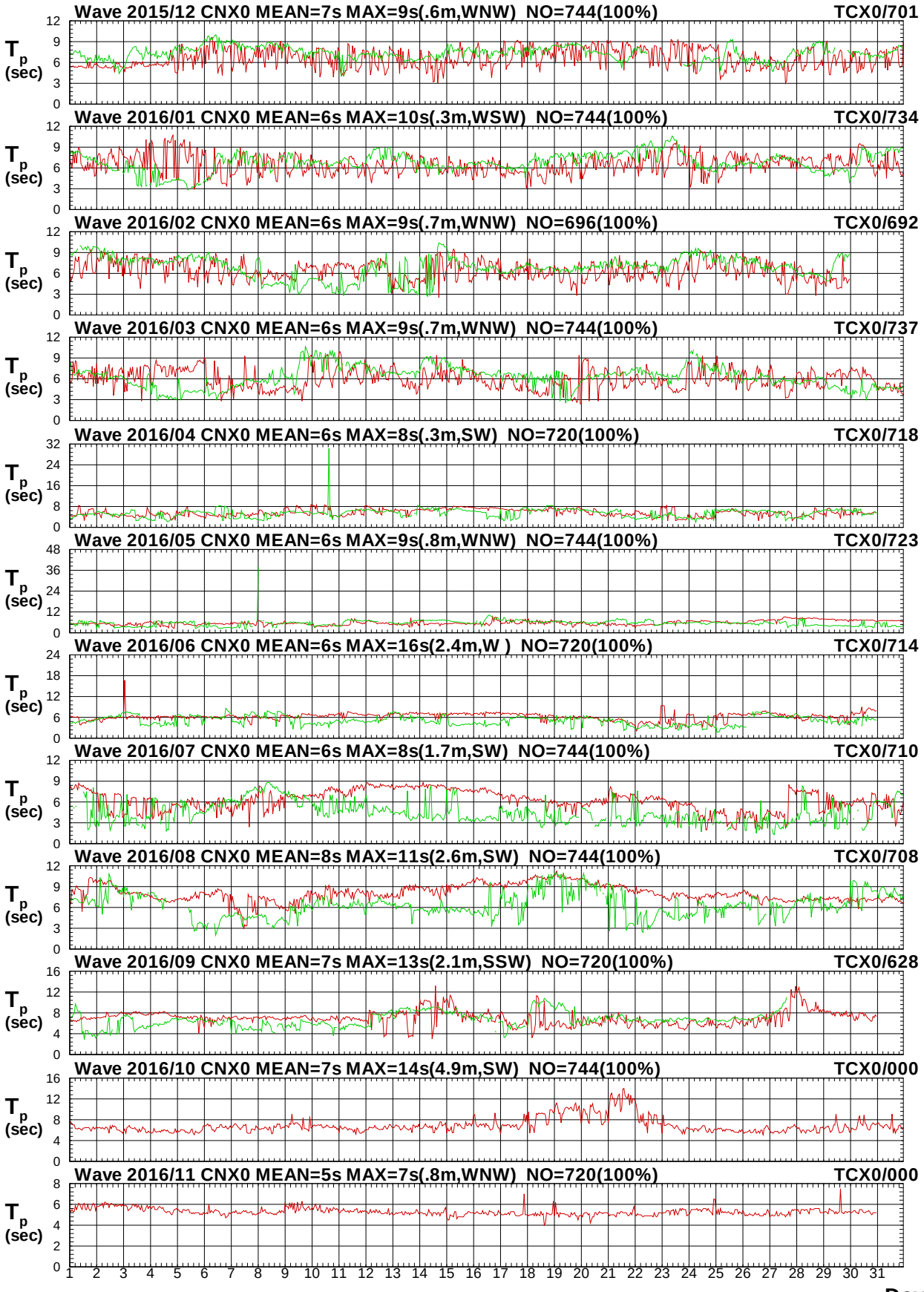

圖 8.12b　2016年每月嘉南海域 X 站與中雲海域 X 站週期圖

V15CCNX0.1HA V15CTCX0.1H0 V161CNX0.1HA V161TCX0.1H0 V162CNX0.1HA V162TCX0.1H0
V163CNX0.1HA V163TCX0.1H0 V164CNX0.1HA V164TCX0.1H0 V165CNX0.1HA V165TCX0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

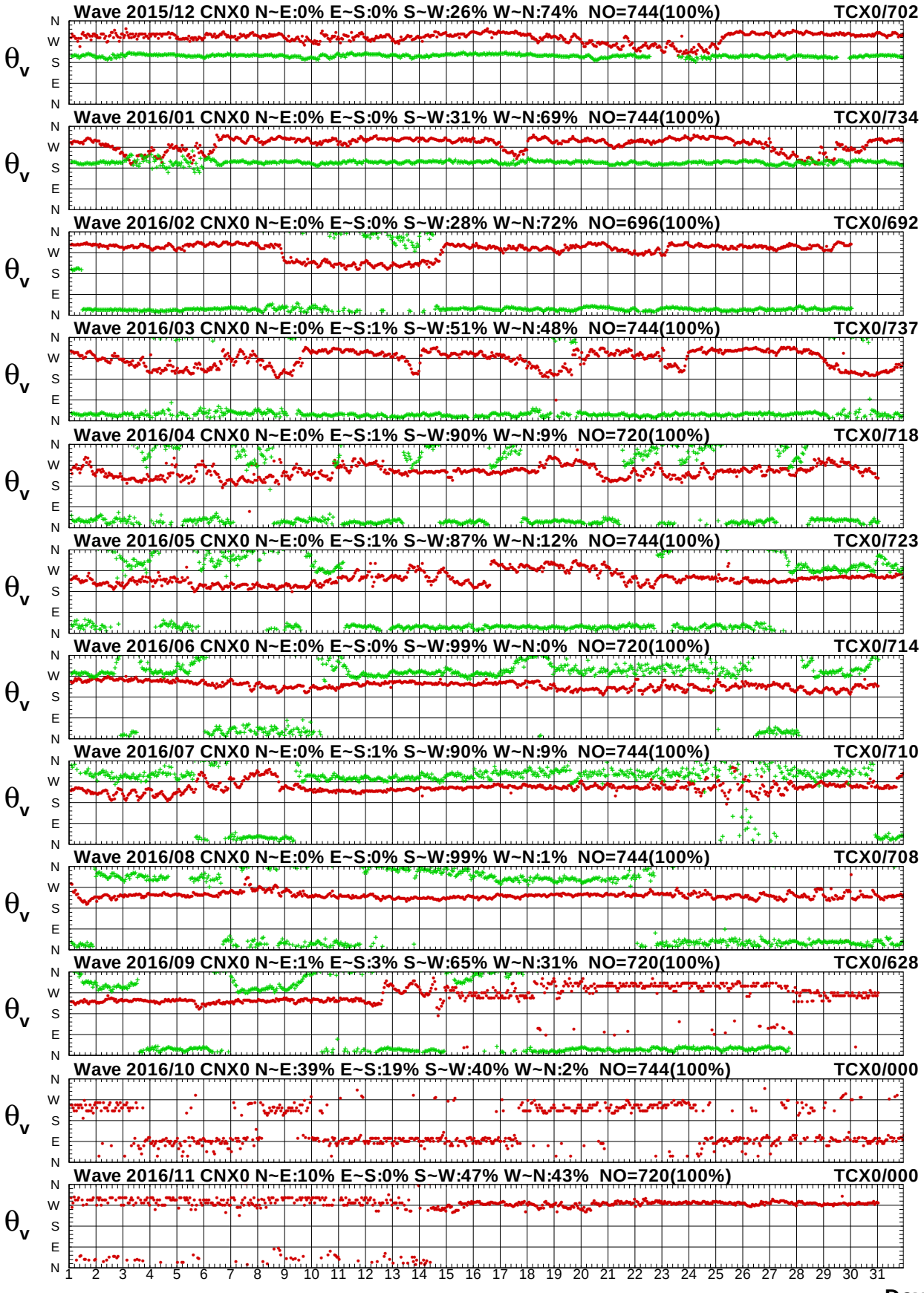

圖8.12c　2016年每月嘉南海域 X 站與中雲海域 X 站波向圖

V15CCNX0.1HA V15CTCX0.1H0 V161CNX0.1HA V161TCX0.1H0 V162CNX0.1HA V162TCX0.1H0
V163CNX0.1HA V163TCX0.1H0 V164CNX0.1HA V164TCX0.1H0 V165CNX0.1HA V165TCX0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

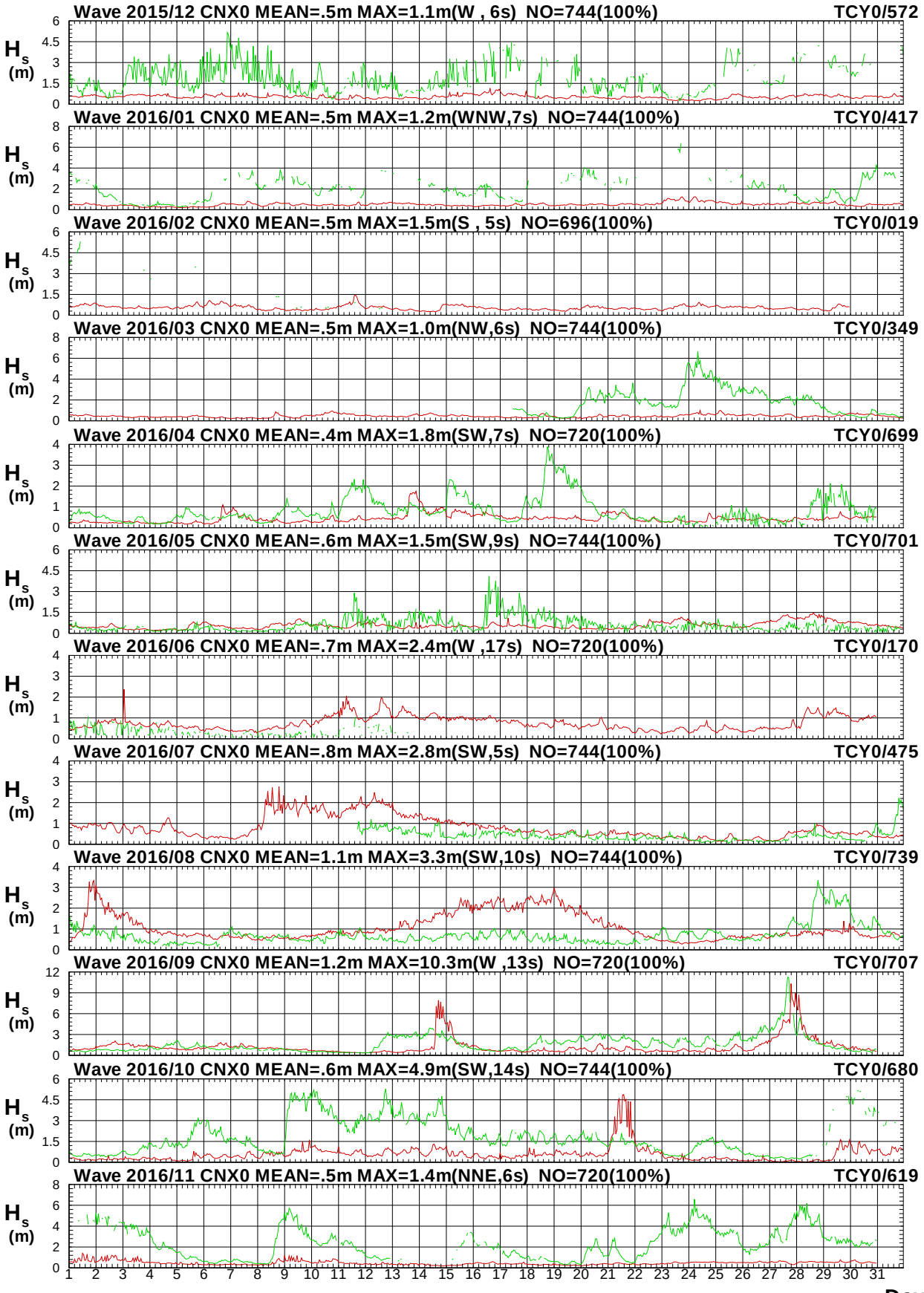

圖8.13a　2016年每月嘉南海域 X 站與中雲海域 Y 站波高圖

V15CCNX0.1HA V15CTCY0.1H0 V161CNX0.1HA V161TCY0.1H0 V162CNX0.1HA V162TCY0.1H0
V163CNX0.1HA V163TCY0.1H0 V164CNX0.1HA V164TCY0.1H0 V165CNX0.1HA V165TCY0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

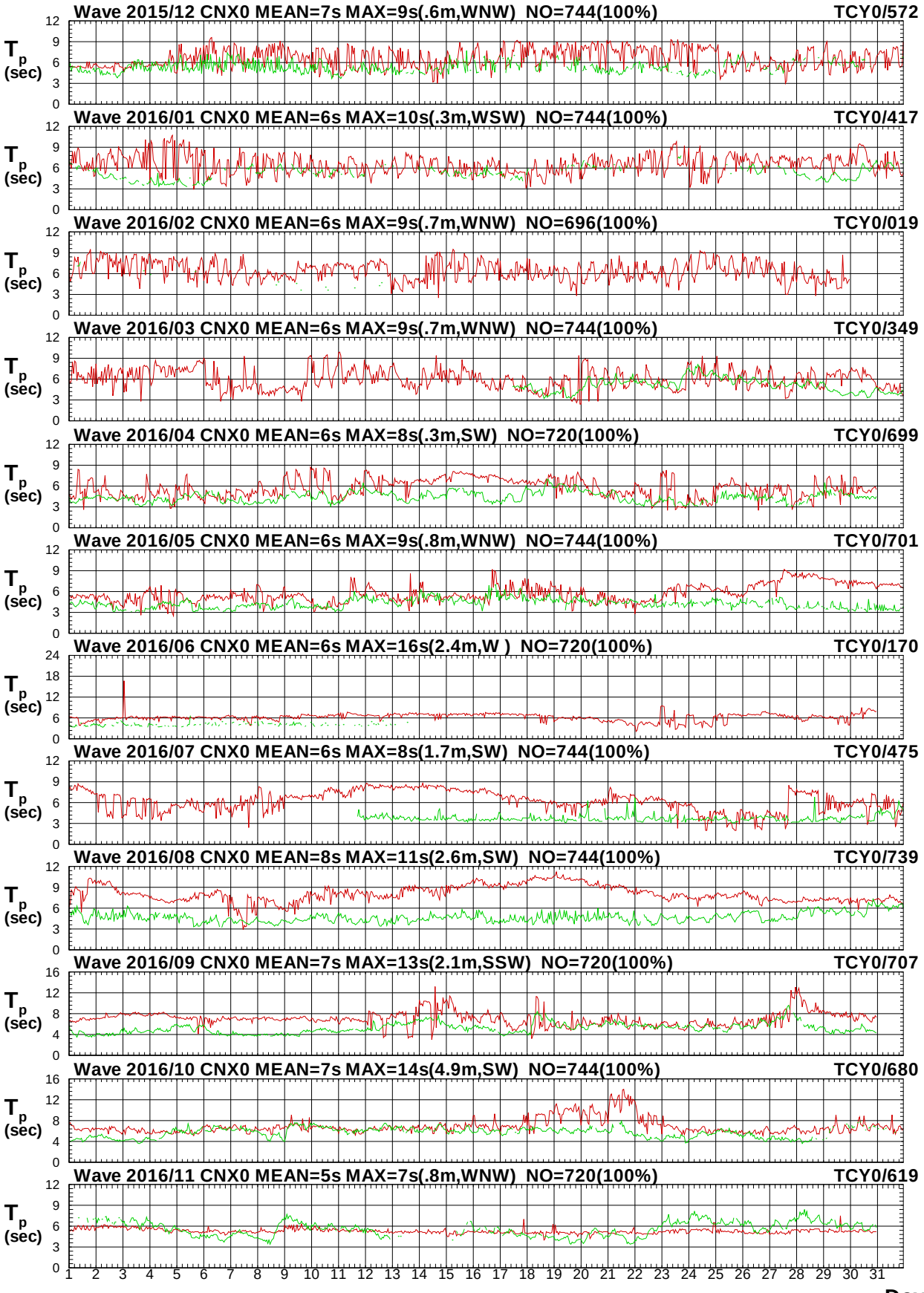

圖 8.13b　2016年每月嘉南海域 X 站與中雲海域 Y 站週期圖

V15CCNX0.1HA V15CTCY0.1H0 V161CNX0.1HA V161TCY0.1H0 V162CNX0.1HA V162TCY0.1H0
V163CNX0.1HA V163TCY0.1H0 V164CNX0.1HA V164TCY0.1H0 V165CNX0.1HA V165TCY0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

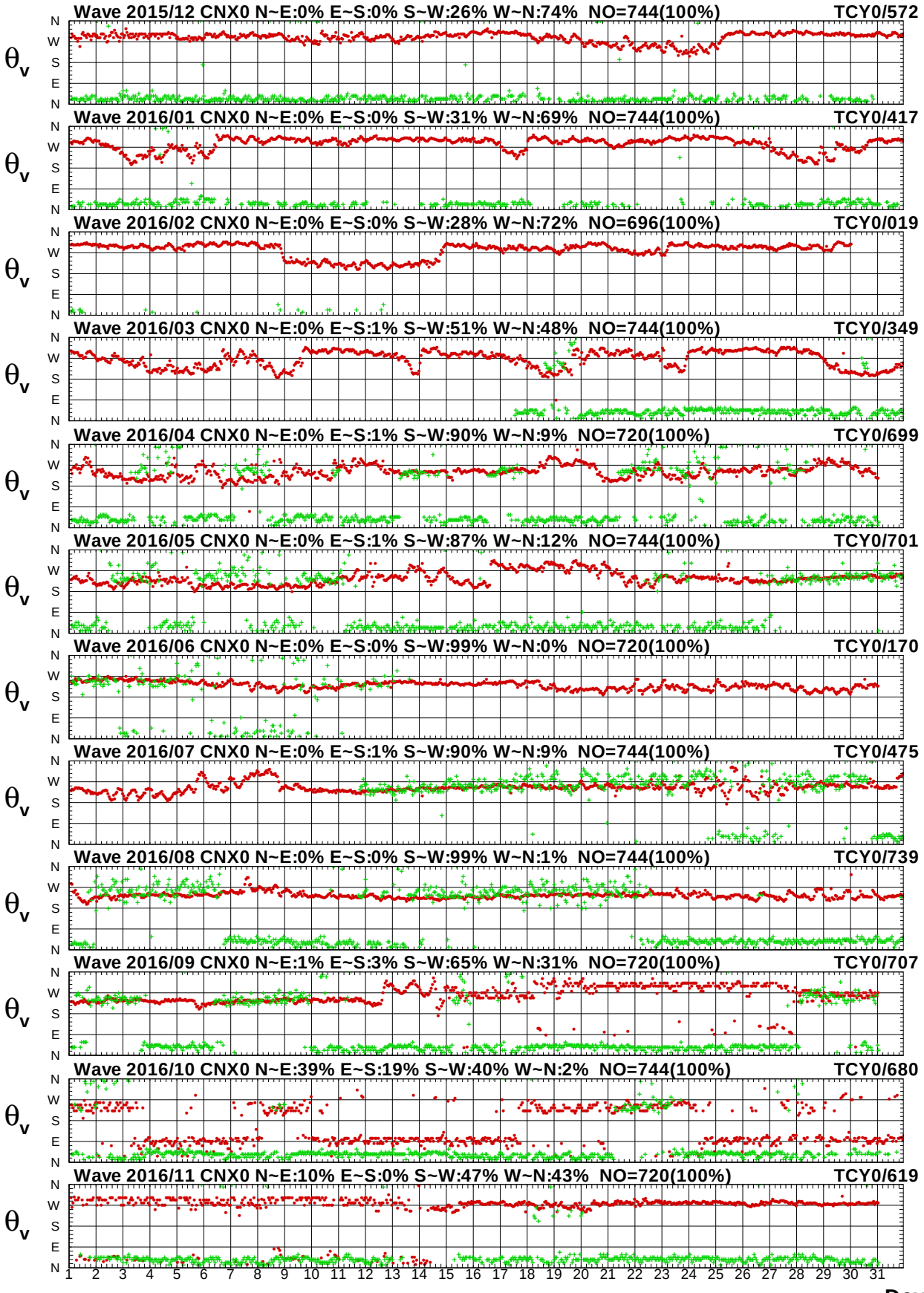

圖8.13c　2016年每月嘉南海域 X 站與中雲海域 Y 站波向圖

V15CCNX0.1HA V15CTCY0.1H0 V161CNX0.1HA V161TCY0.1H0 V162CNX0.1HA V162TCY0.1H0
V163CNX0.1HA V163TCY0.1H0 V164CNX0.1HA V164TCY0.1H0 V165CNX0.1HA V165TCY0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

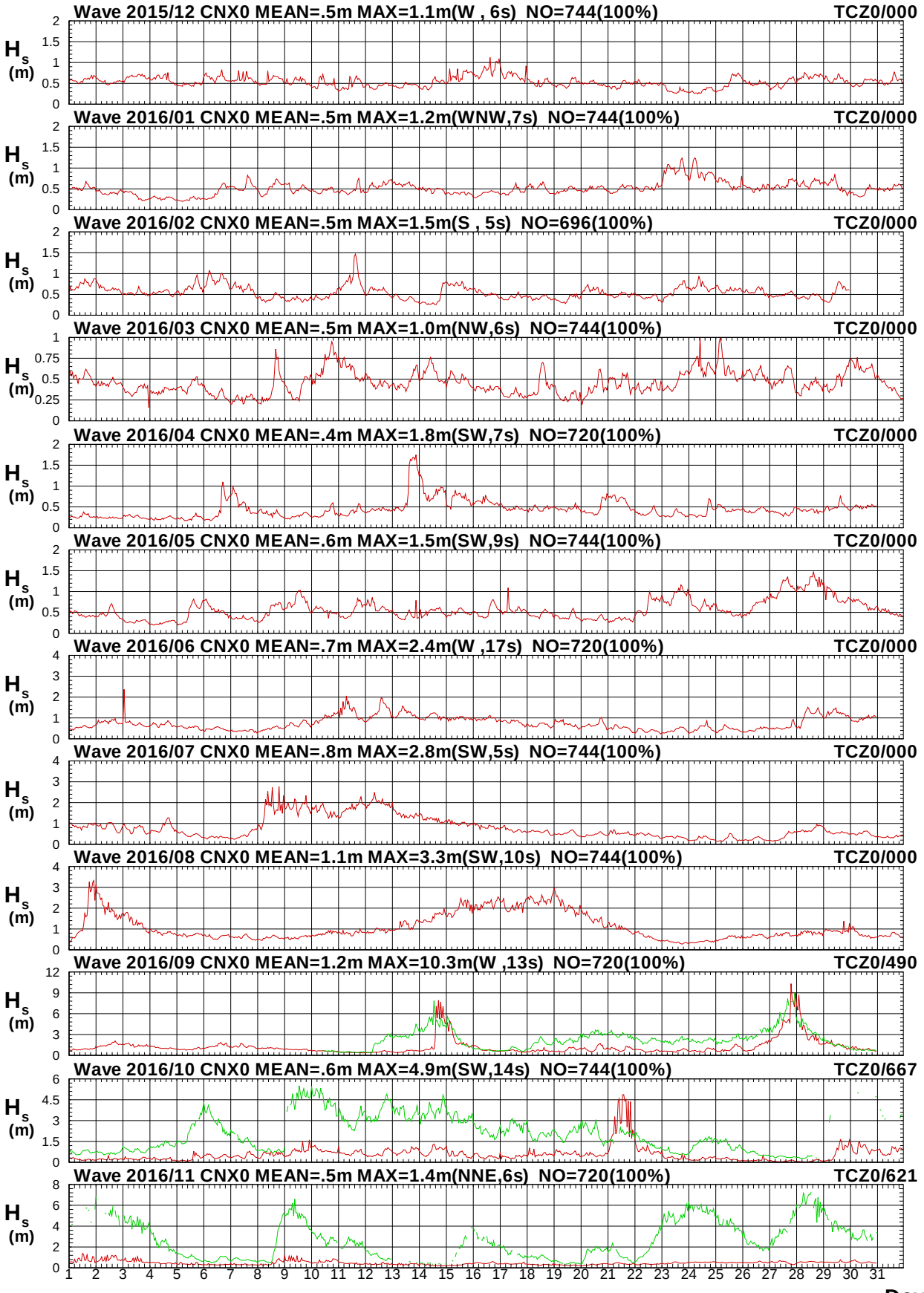

圖8.14a　2016年每月嘉南海域 X 站與中雲海域 Z 站波高圖

V15CCNX0.1HA V15CTCZ0.1H0 V161CNX0.1HA V161TCZ0.1H0 V162CNX0.1HA V162TCZ0.1H0
V163CNX0.1HA V163TCZ0.1H0 V164CNX0.1HA V164TCZ0.1H0 V165CNX0.1HA V165TCZ0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

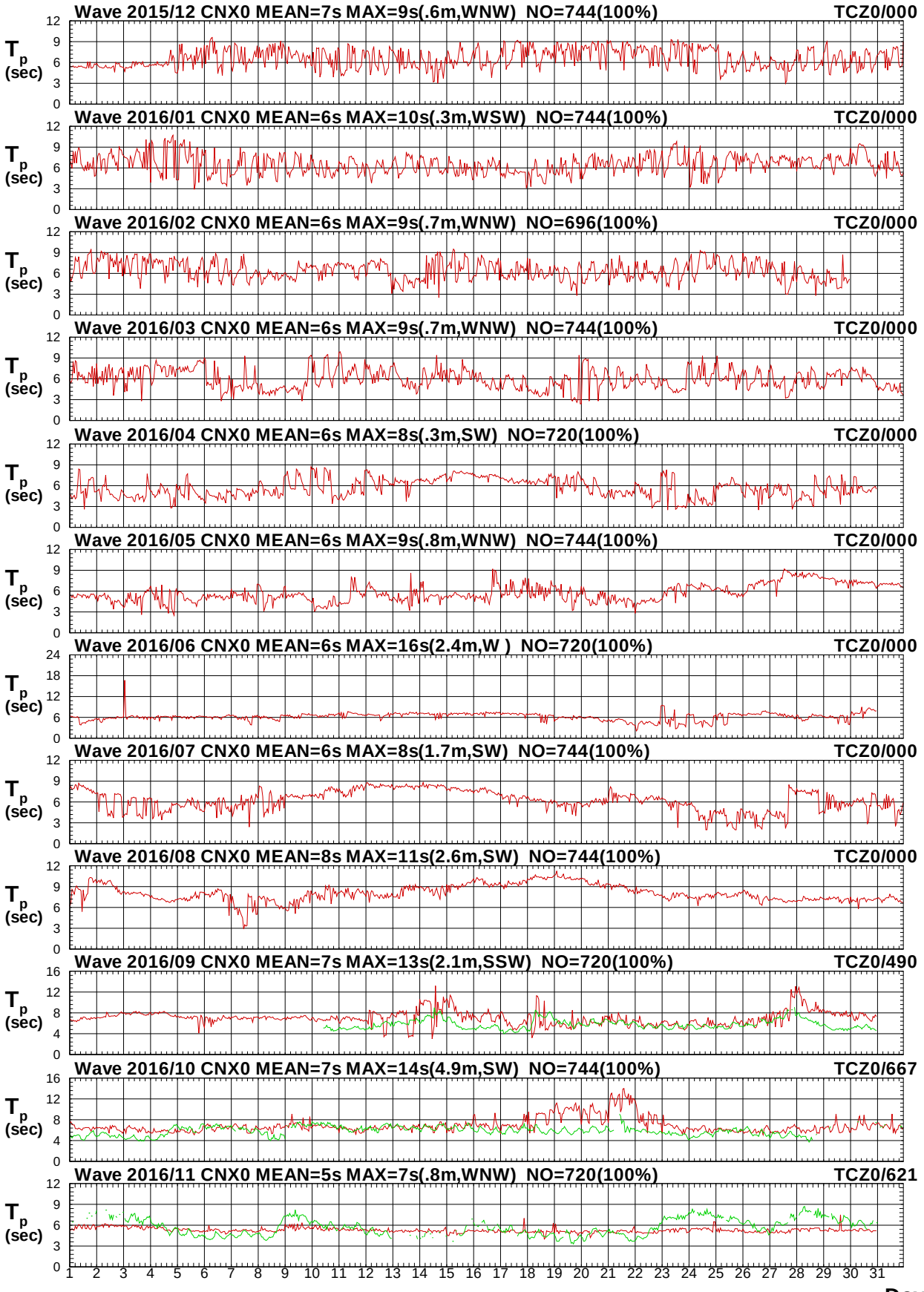

圖8.14b　2016年每月嘉南海域 X 站與中雲海域 Z 站週期圖

V15CCNX0.1HA V15CTCZ0.1H0 V161CNX0.1HA V161TCZ0.1H0 V162CNX0.1HA V162TCZ0.1H0
V163CNX0.1HA V163TCZ0.1H0 V164CNX0.1HA V164TCZ0.1H0 V165CNX0.1HA V165TCZ0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

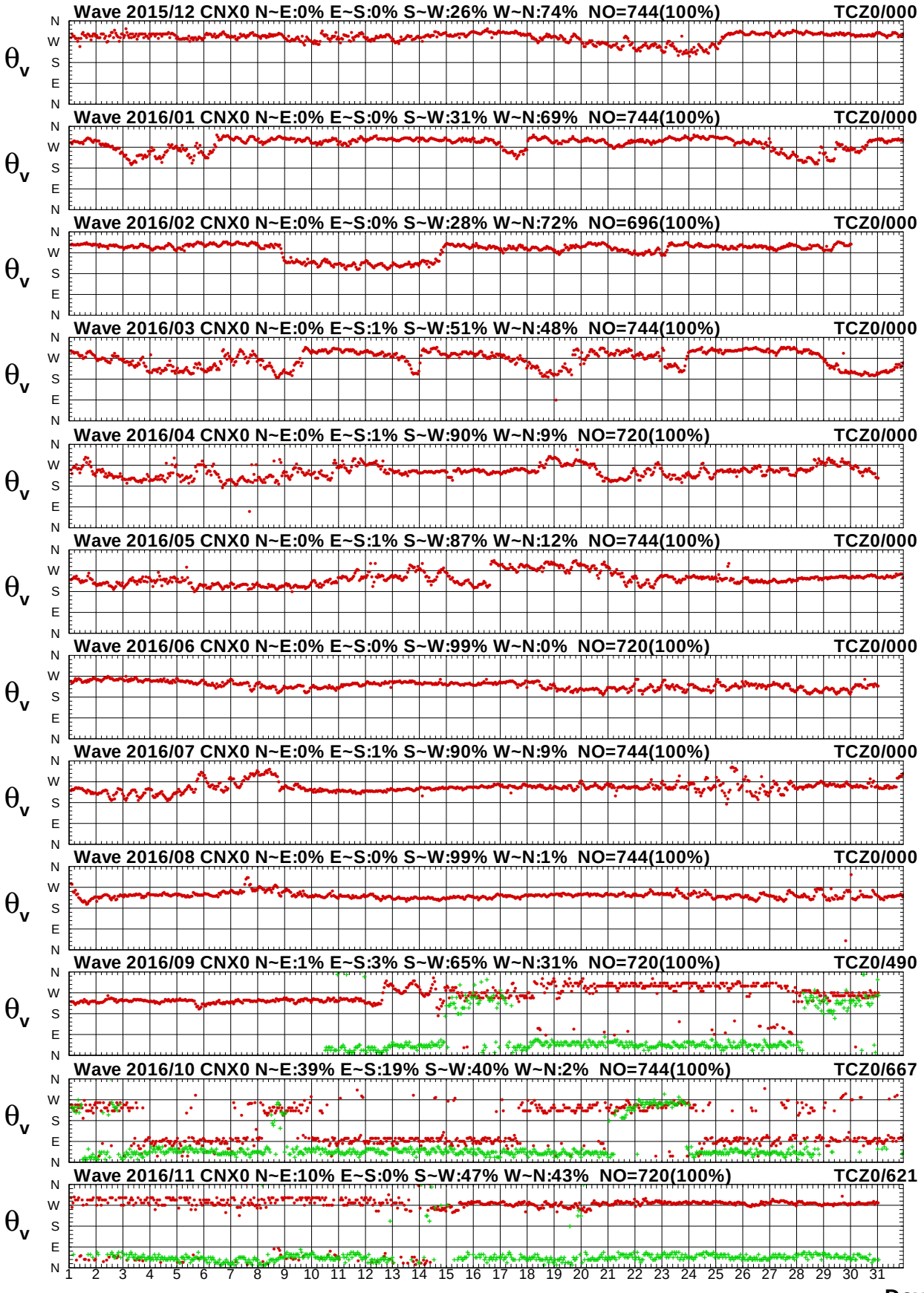

圖8.14c　2016年每月嘉南海域 X 站與中雲海域 Z 站波向圖

V15CCNX0.1HA V15CTCZ0.1H0 V161CNX0.1HA V161TCZ0.1H0 V162CNX0.1HA V162TCZ0.1H0
V163CNX0.1HA V163TCZ0.1H0 V164CNX0.1HA V164TCZ0.1H0 V165CNX0.1HA V165TCZ0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2016

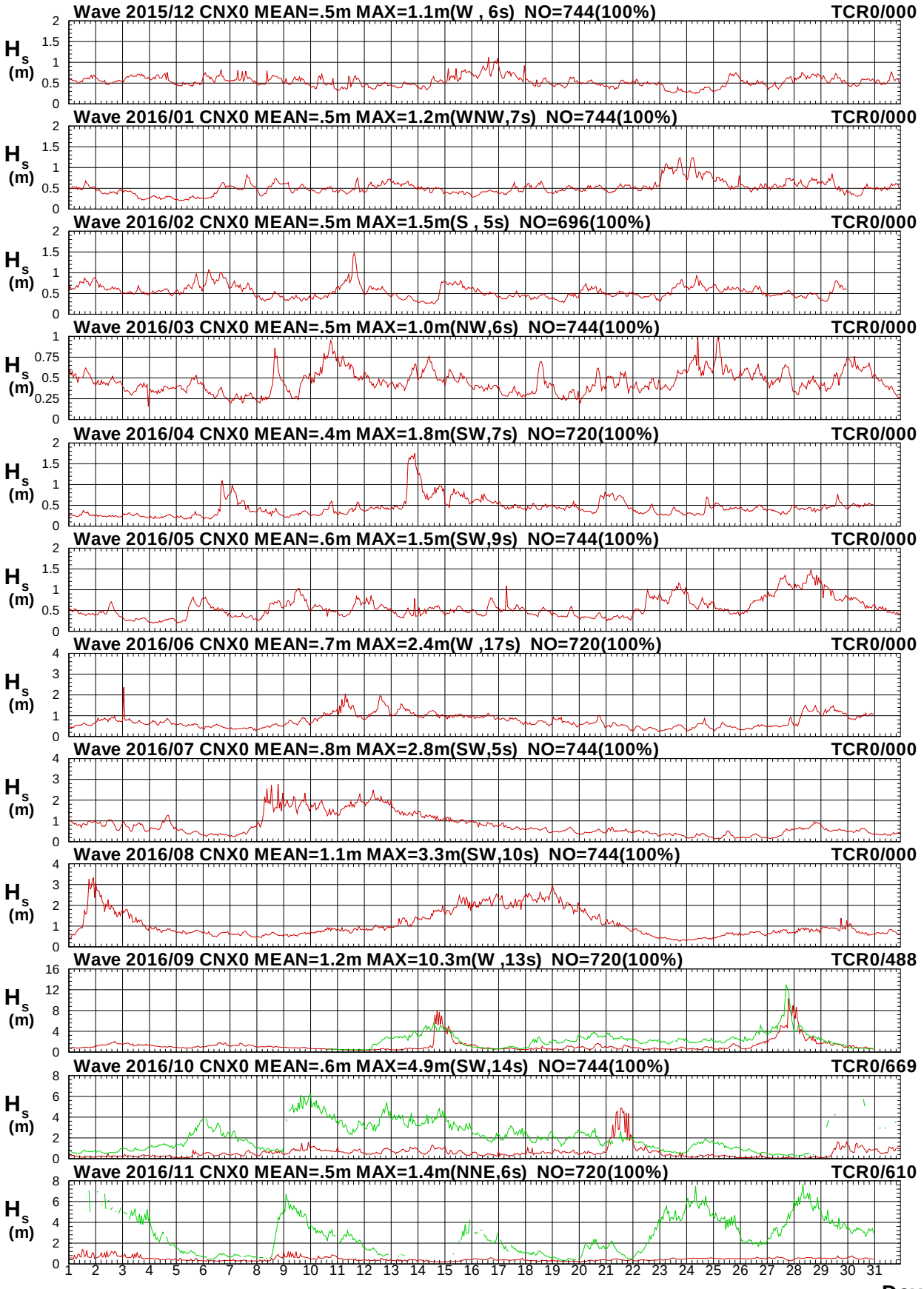

圖8.15a　2016年每月嘉南海域 X 站與中雲海域 R 站波高圖

V15CCNX0.1HA V15CTCR0.1H0 V161CNX0.1HA V161TCR0.1H0 V162CNX0.1HA V162TCR0.1H0
V163CNX0.1HA V163TCR0.1H0 V164CNX0.1HA V164TCR0.1H0 V165CNX0.1HA V165TCR0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2016

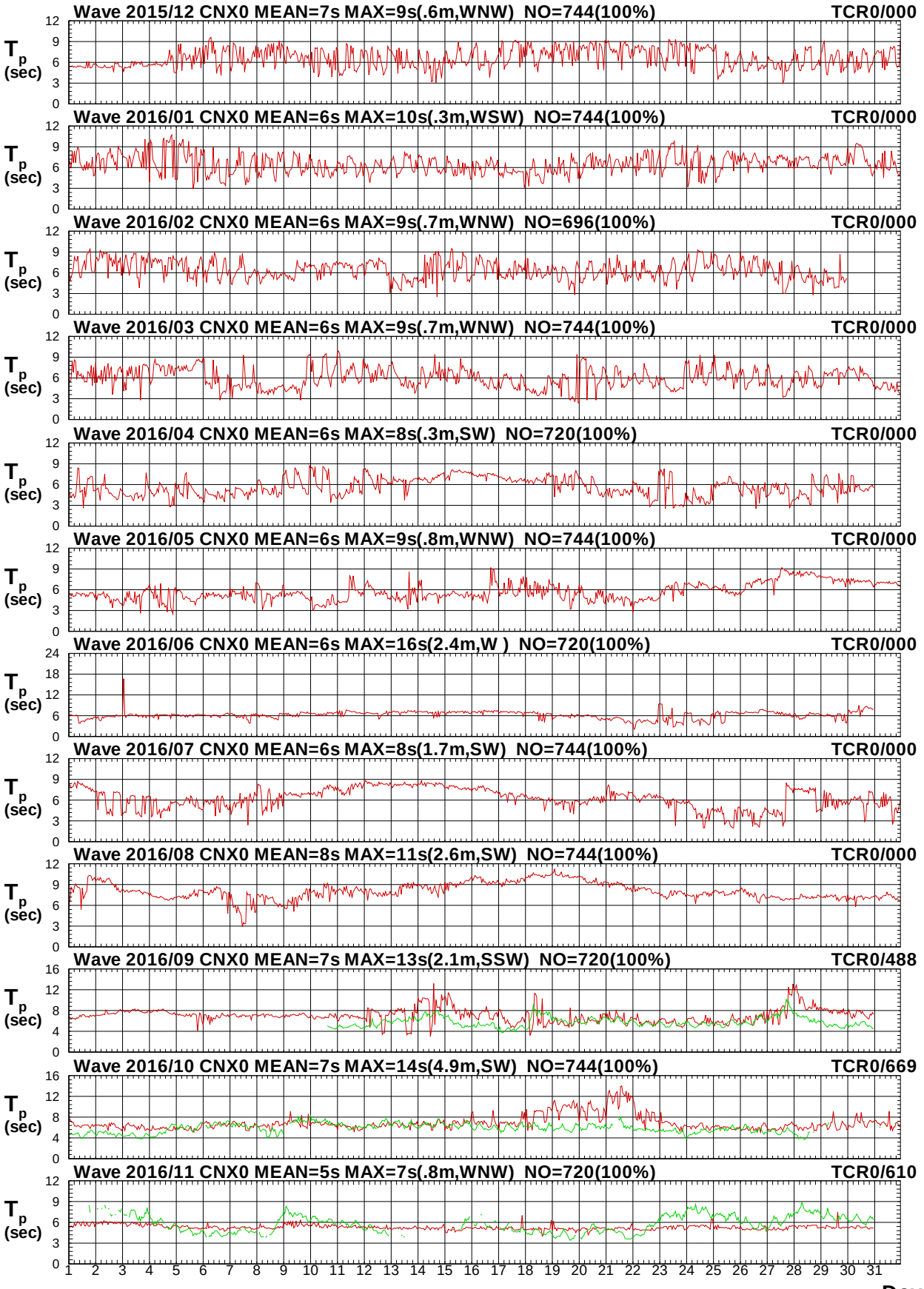

圖8.15b　2016年每月嘉南海域 X 站與中雲海域 R 站週期圖

V15CCNX0.1HA V15CTCR0.1H0 V161CNX0.1HA V161TCR0.1H0 V162CNX0.1HA V162TCR0.1H0
V163CNX0.1HA V163TCR0.1H0 V164CNX0.1HA V164TCR0.1H0 V165CNX0.1HA V165TCR0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2016

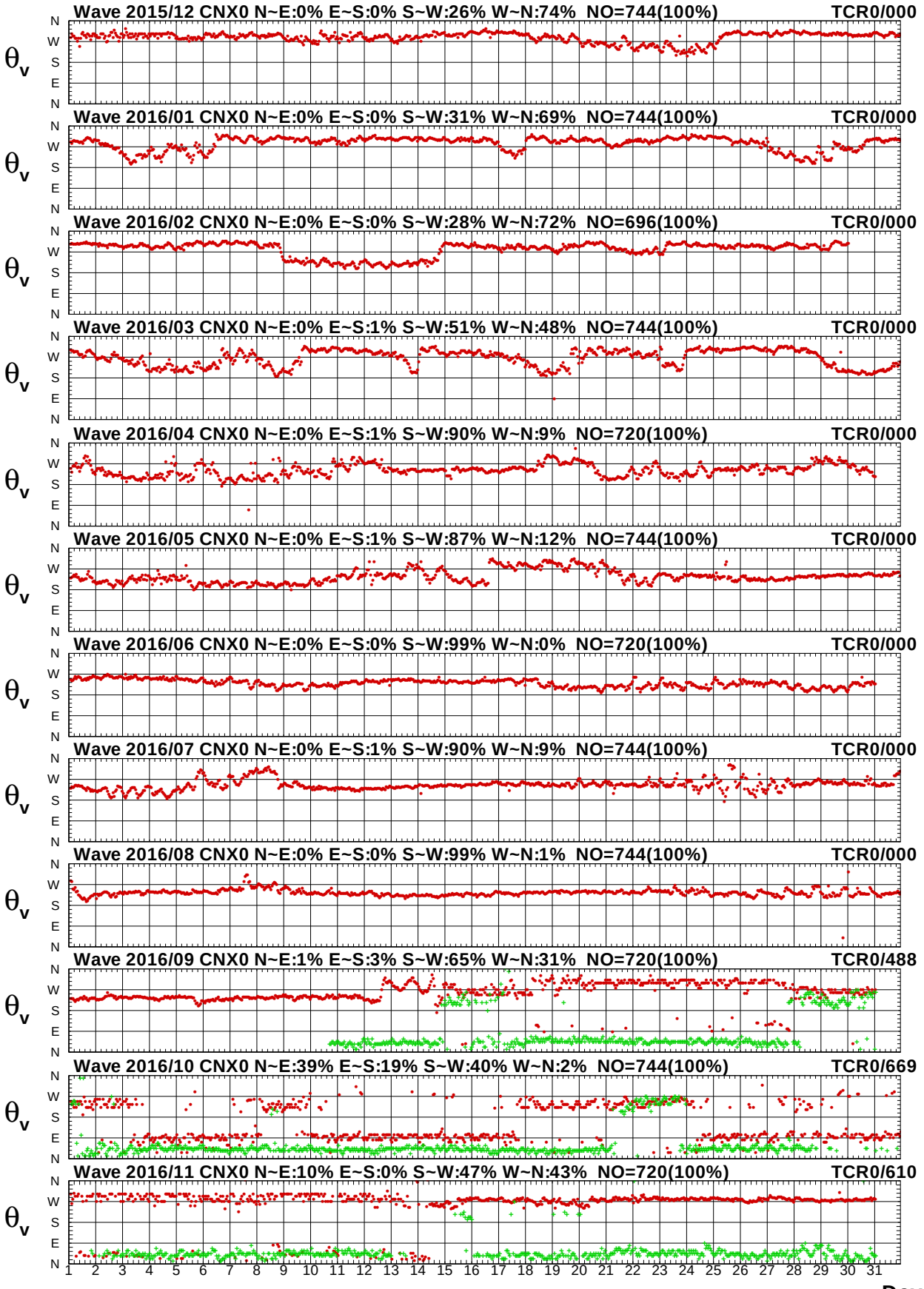

圖8.15c　2016年每月嘉南海域 X 站與中雲海域 R 站波向圖

V15CCNX0.1HA V15CTCR0.1H0 V161CNX0.1HA V161TCR0.1H0 V162CNX0.1HA V162TCR0.1H0
V163CNX0.1HA V163TCR0.1H0 V164CNX0.1HA V164TCR0.1H0 V165CNX0.1HA V165TCR0.1H0

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第九章　2016 年中雲海域觀測波浪資料

中雲海域(臺中~雲林)波浪之觀測本中心**(IHMT)**係於 1999 年 10 月安置挪威 NORTEK 公司表面波浪監測系統於台中港**測站 X0** 處，位置如附圖 9，2000 年因臺中港務局北防波堤延長工程開始展開整平拋石工作影響到儀器安全，於 8 月 18 日暫時停止量測並將設備收回。2003 年 5 月臺中港務局北防波堤延長工程完成後本所隨即在 2003 年 7 月 5 日就安裝完成(挪威 NORTEK 公司)潮波流監測系統，安裝在臺中港北防波堤堤頭 150 公尺外、水深 25 公尺處(稱**測站 X1**)。

測站 Y(彰濱外海浮標站)之波浪儀屬海科中心**(TORI)**所設置;**測站 Z**(彰濱外海一浮標站)及**測站 R**(彰濱外海二浮標站)之波浪儀屬中興工程所設置。臺中海域各測站歷年觀測波浪資料蒐集概況如表 9。

波浪觀測 AWCP 系統有兩個分離波高量測模式：一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **X 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 9.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 9.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 9.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 9.2 以後。

表 9 中雲海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X0	24°17'54"N	120°29'39"E	1999/10-2000/08	港研中心	北堤外海(延伸前)
X1	24°18'02"N	120°29'05"E	2003/07-2016/11(觀測中)	港研中心	北堤外海
Y	24°01'12"N	120°13'59"E	2012/07-2013/08	海科中心	彰濱外海浮標站
Z	24°06'24"	119°41'33"	2016/09-2016/11(觀測中)	中興工程	彰化外海一浮標
R	24°06'56"	119°51'08"	2016/09-2016/11(觀測中)	中興工程	彰化外海二浮標

中雲海域

圖 9 中雲海域波浪觀測站位置示意圖

表9.1a 2016年每月中雲海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域
測站	X	Y	Z	R				
2015/12月	701 (94.2%)	572 (76.9%)	*	*	*	*	*	*
2016/ 1月	734 (98.7%)	417 (56.0%)	*	*	*	*	*	*
2016/ 2月	692 (99.4%)	19 (2.7%)	*	*	*	*	*	*
2016/ 3月	737 (99.1%)	349 (46.9%)	*	*	*	*	*	*
2016/ 4月	718 (99.7%)	699 (97.1%)	*	*	*	*	*	*
2016/ 5月	723 (97.2%)	701 (94.2%)	*	*	*	*	*	*
2016/ 6月	714 (99.2%)	170 (23.6%)	*	*	*	*	*	*
2016/ 7月	710 (95.4%)	475 (63.8%)	*	*	*	*	*	*
2016/ 8月	708 (95.2%)	739 (99.3%)	*	*	*	*	*	*
2016/ 9月	628 (87.2%)	707 (98.2%)	490 (68.1%)	488 (67.8%)	*	*	*	*
2016/10月	*	680 (91.4%)	667 (89.7%)	669 (89.9%)	*	*	*	*
2016/11月	*	619 (86.0%)	621 (86.3%)	610 (84.7%)	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表9.1b 2016年每月中雲海域修補後各測站波浪資料統計表

年/月 港區	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域	中雲海域
測站	X	Y	Z	R				
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Chung-Yun Seas of TCX0 at 2016

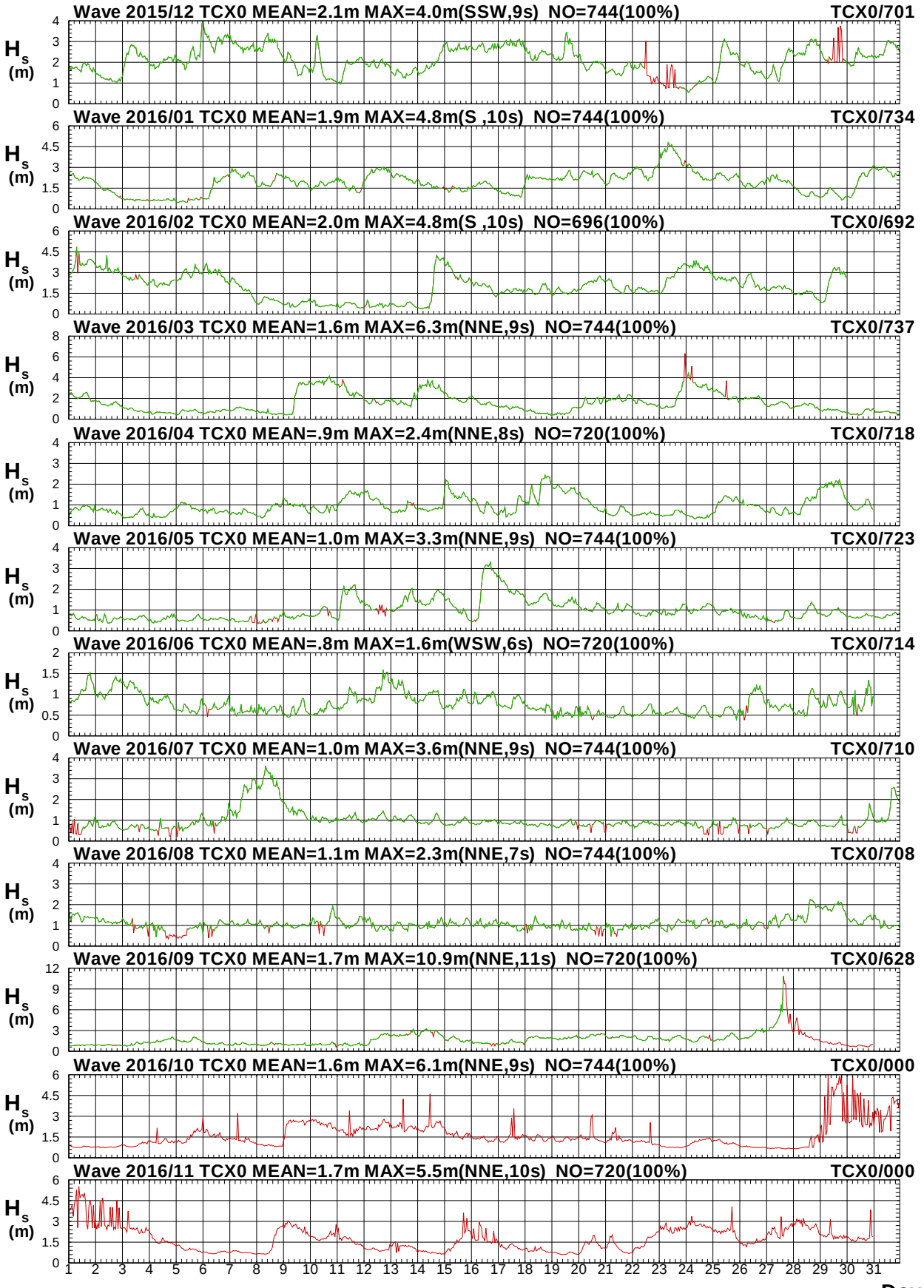

圖 9.1a　2016年每月中雲海域 X 站修補前後之波高比較圖

V15CTCX0.1HA V15CTCX0.1H0 V161TCX0.1HA V161TCX0.1H0 V162TCX0.1HA V162TCX0.1H0
V163TCX0.1HA V163TCX0.1H0 V164TCX0.1HA V164TCX0.1H0 V165TCX0.1HA V165TCX0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

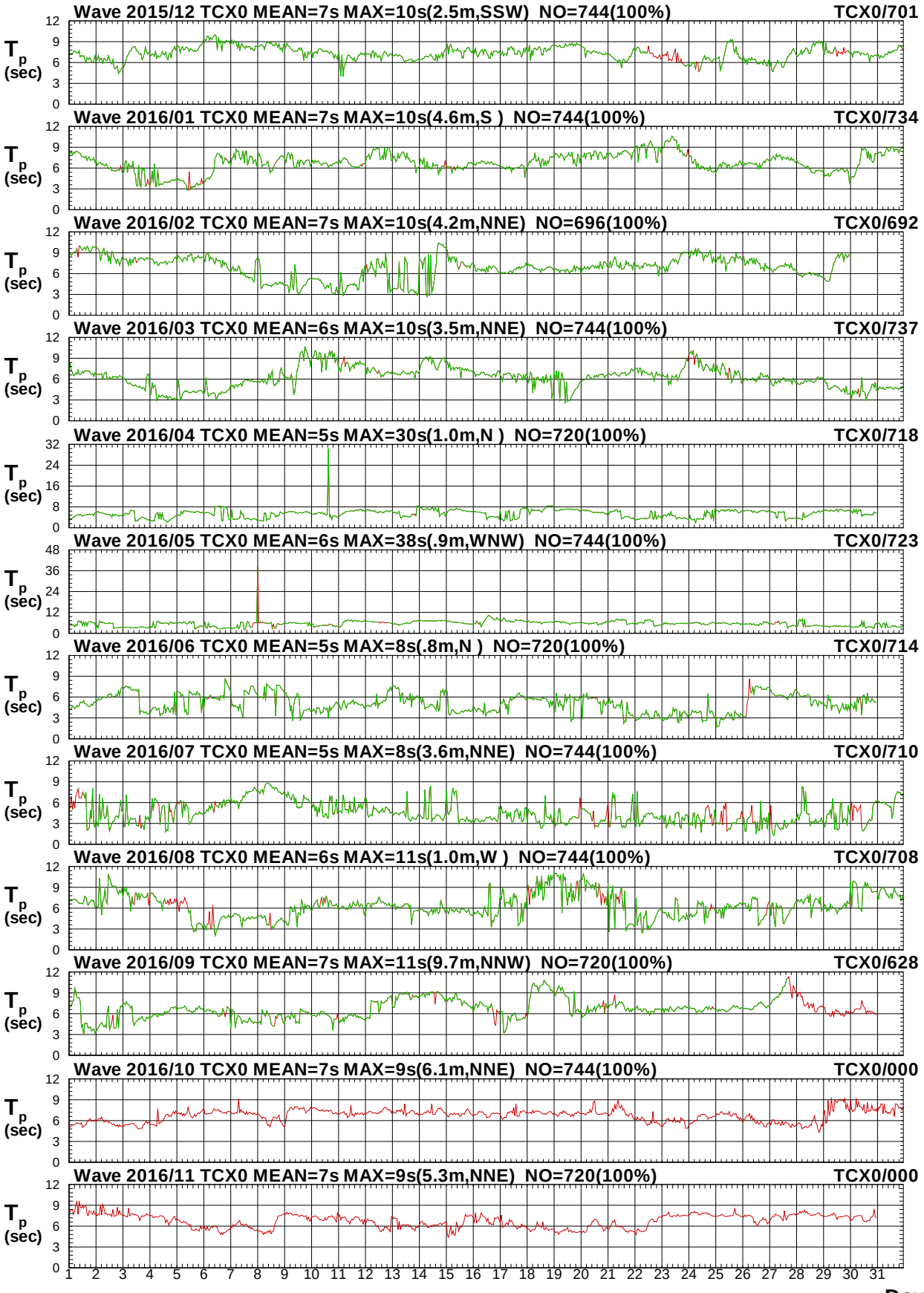

圖 9.1b　2016年每月中雲海域 X 站修補前後之週期比較圖

V15CTCX0.1HA V15CTCX0.1H0 V161TCX0.1HA V161TCX0.1H0 V162TCX0.1HA V162TCX0.1H0
V163TCX0.1HA V163TCX0.1H0 V164TCX0.1HA V164TCX0.1H0 V165TCX0.1HA V165TCX0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

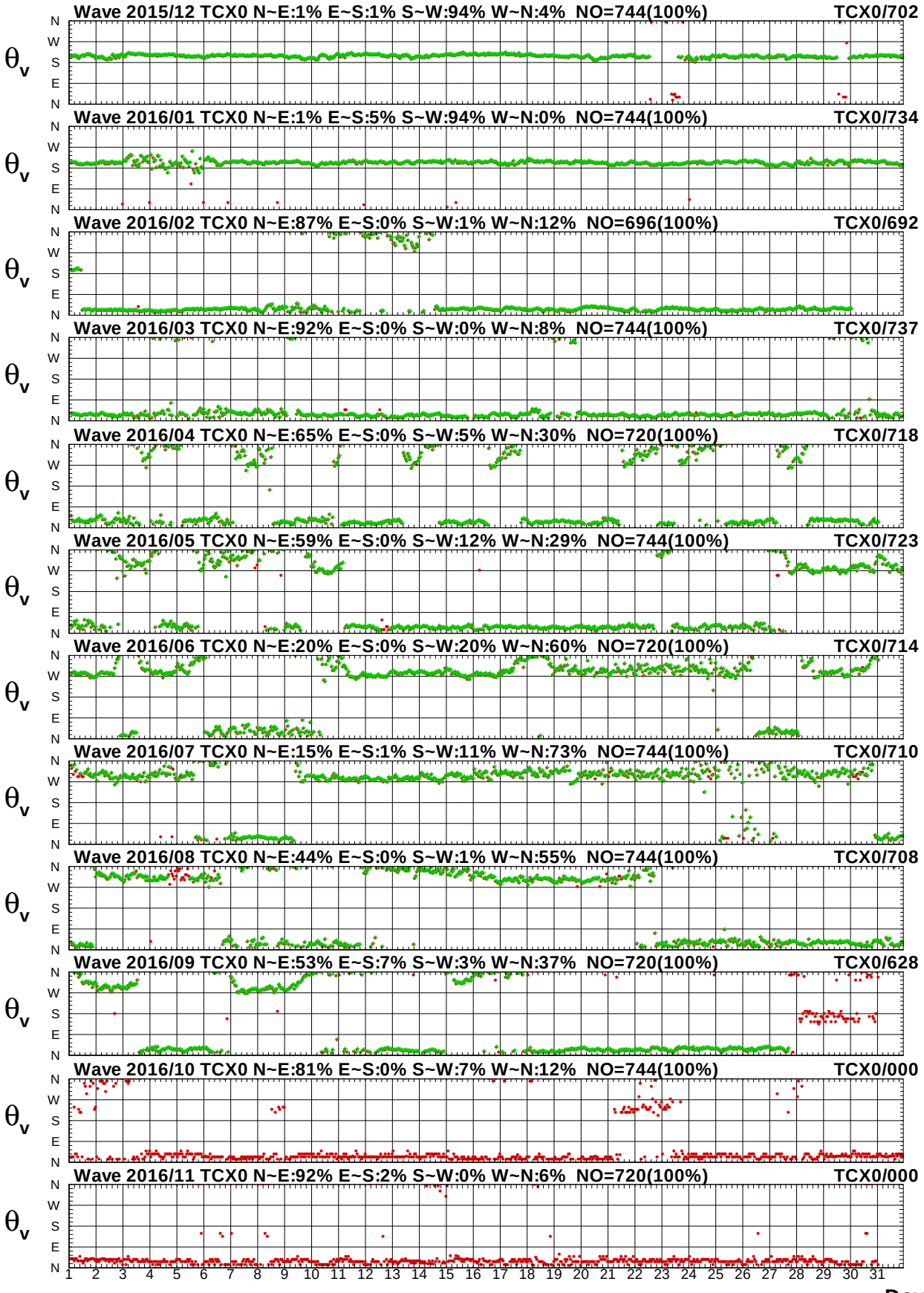

圖 9.1c　2016年每月中雲海域 X 站修補前後之波向比較圖

V15CTCX0.1HA V15CTCX0.1H0 V161TCX0.1HA V161TCX0.1H0 V162TCX0.1HA V162TCX0.1H0
V163TCX0.1HA V163TCX0.1H0 V164TCX0.1HA V164TCX0.1H0 V165TCX0.1HA V165TCX0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

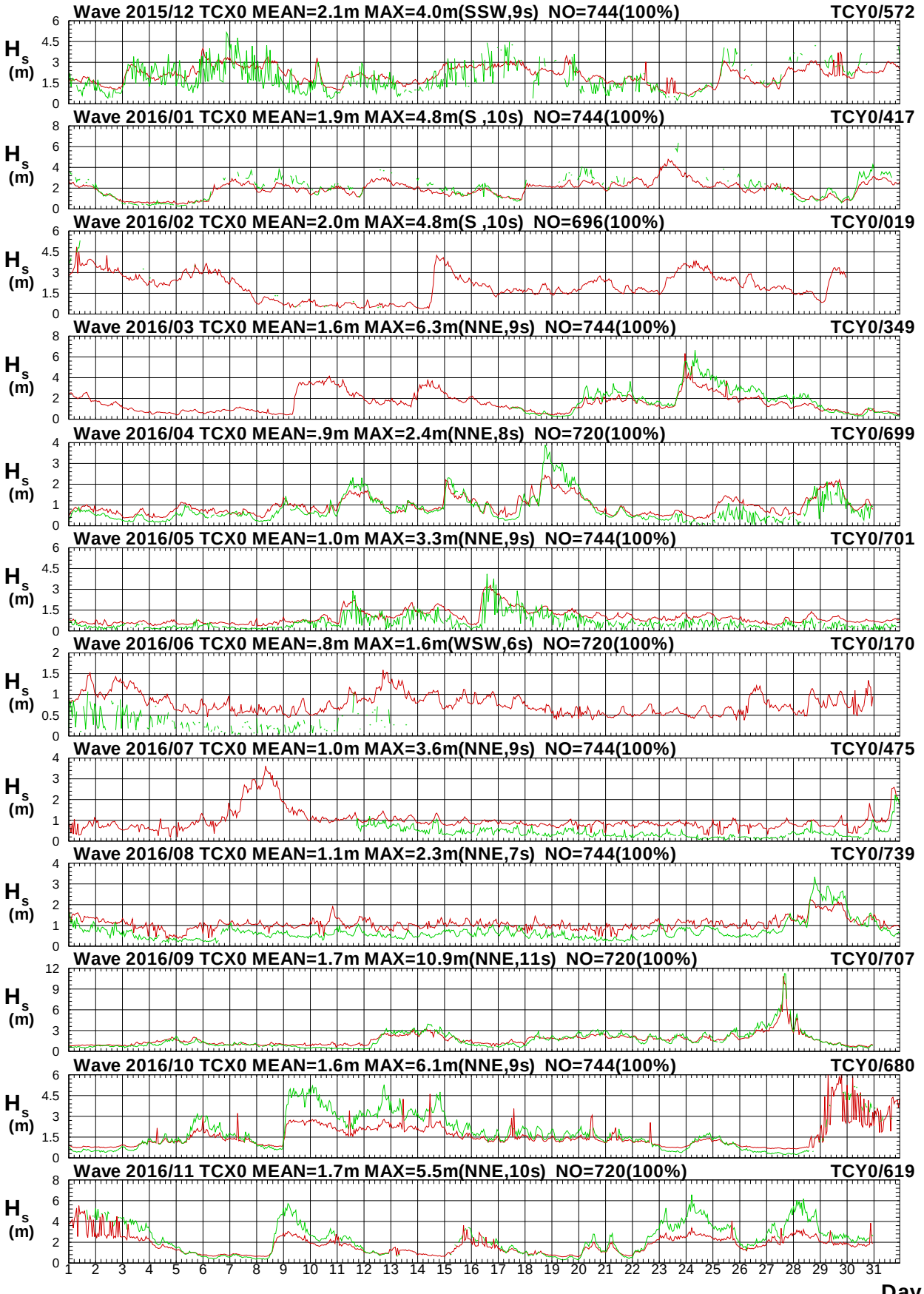

圖 9.2a　2016年每月中雲海域 X 站與 Y 站波高比較圖

V15CTCX0.1HA V15CTCY0.1H0 V161TCX0.1HA V161TCY0.1H0 V162TCX0.1HA V162TCY0.1H0
V163TCX0.1HA V163TCY0.1H0 V164TCX0.1HA V164TCY0.1H0 V165TCX0.1HA V165TCY0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

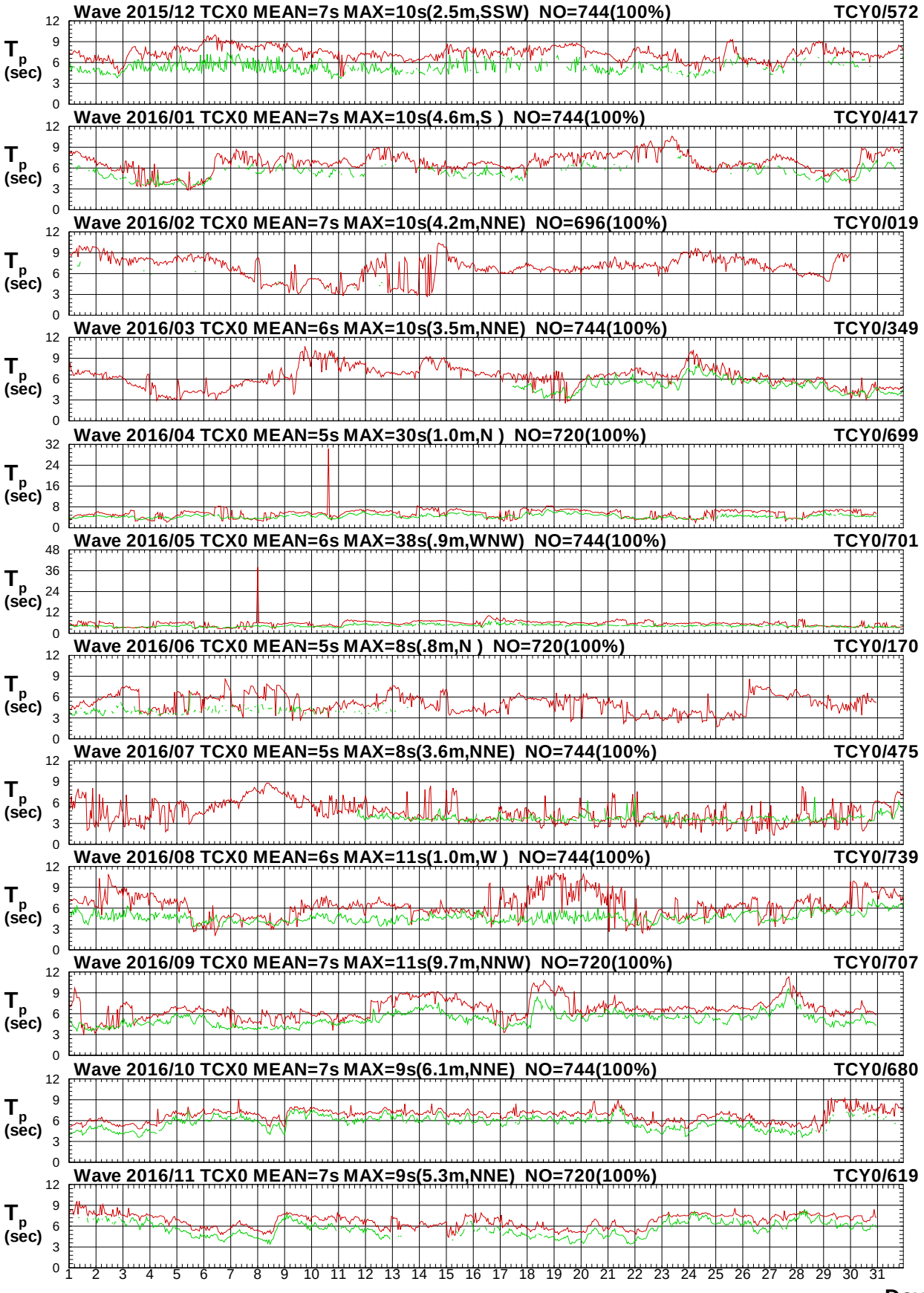

圖 9.2b　2016年每月中雲海域 X 站與 Y 站週期比較圖

V15CTCX0.1HA V15CTCY0.1H0 V161TCX0.1HA V161TCY0.1H0 V162TCX0.1HA V162TCY0.1H0
V163TCX0.1HA V163TCY0.1H0 V164TCX0.1HA V164TCY0.1H0 V165TCX0.1HA V165TCY0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

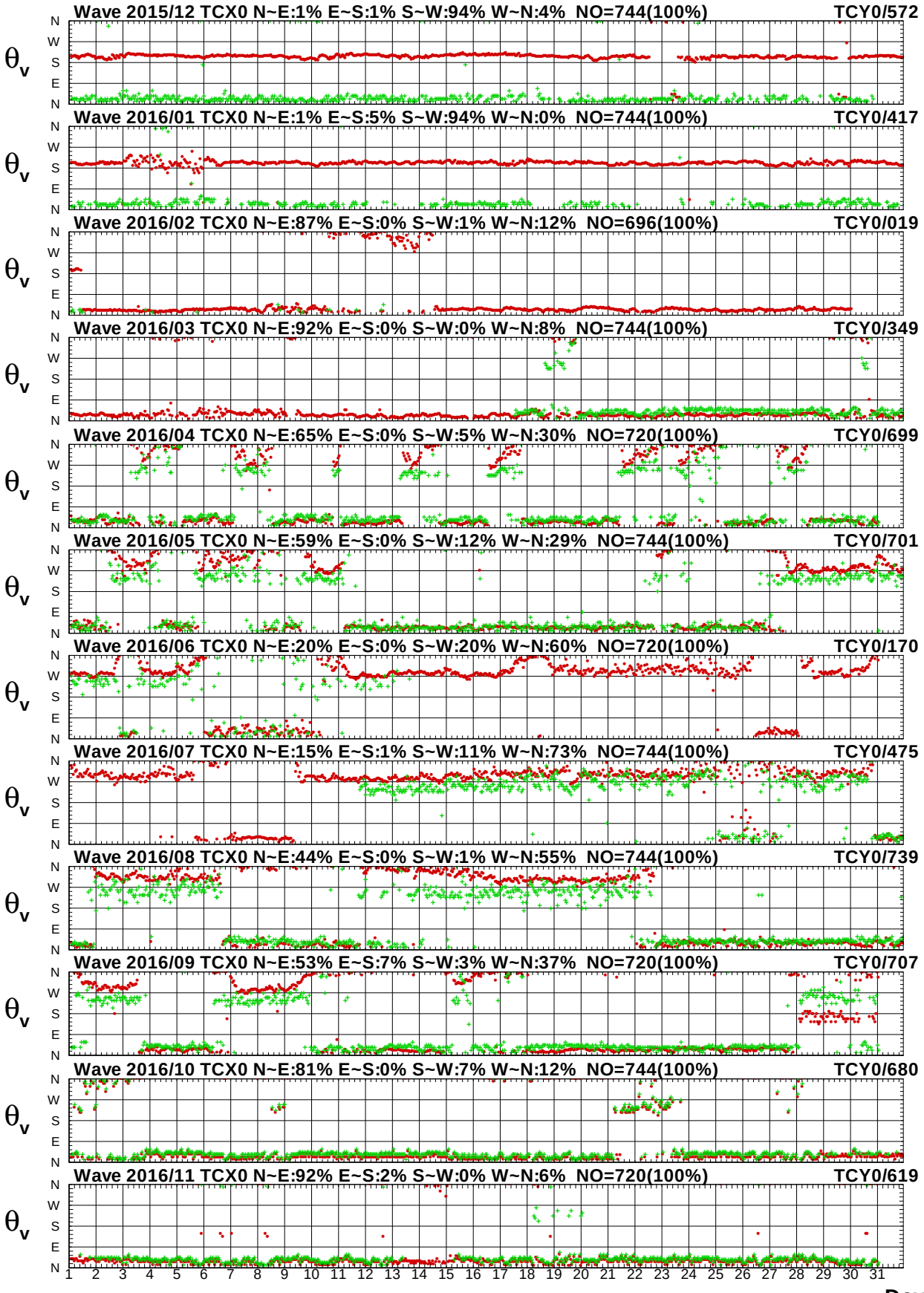

圖 9.2c　2016年每月中雲海域 X 站與 Y 站波向比較圖

V15CTCX0.1HA V15CTCY0.1H0 V161TCX0.1HA V161TCY0.1H0 V162TCX0.1HA V162TCY0.1H0
V163TCX0.1HA V163TCY0.1H0 V164TCX0.1HA V164TCY0.1H0 V165TCX0.1HA V165TCY0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

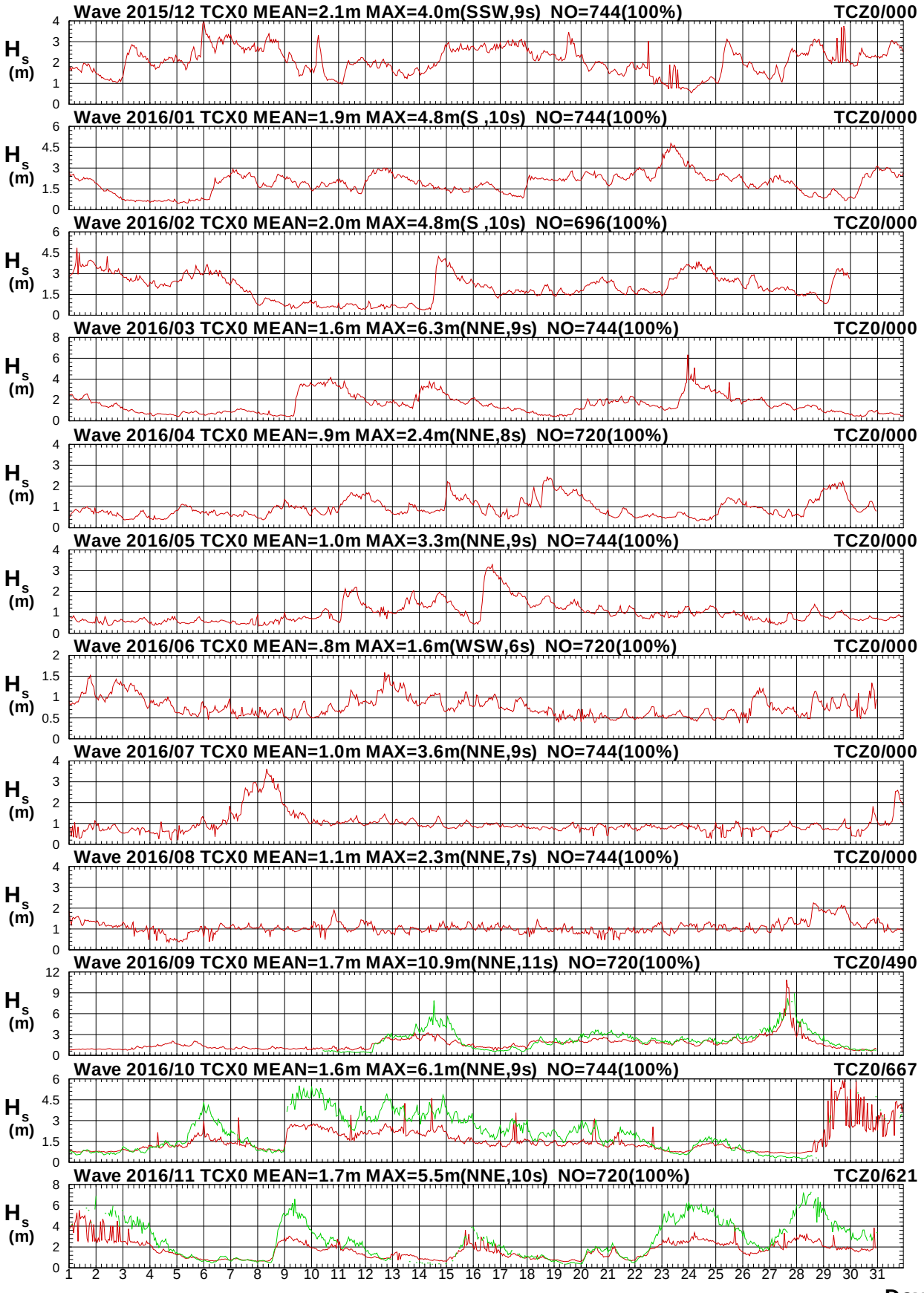

圖 9.3a　2016年每月中雲海域 X 站與 Z 站波高比較圖

V15CTCX0.1HA V15CTCZ0.1H0 V161TCX0.1HA V161TCZ0.1H0 V162TCX0.1HA V162TCZ0.1H0
V163TCX0.1HA V163TCZ0.1H0 V164TCX0.1HA V164TCZ0.1H0 V165TCX0.1HA V165TCZ0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

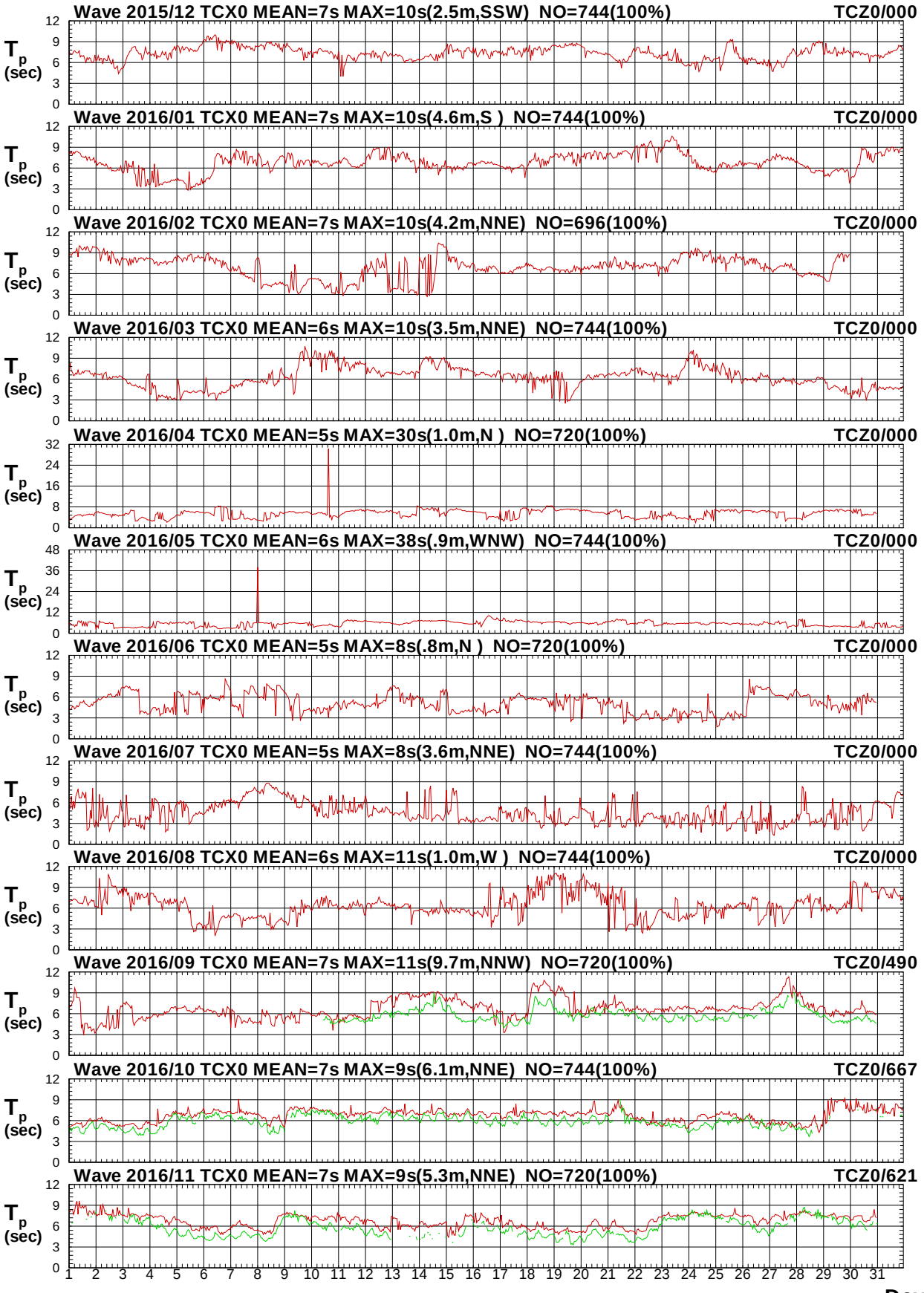

圖 9.3b　2016年每月中雲海域 X 站與 Z 站週期比較圖

V15CTCX0.1HA V15CTCZ0.1H0 V161TCX0.1HA V161TCZ0.1H0 V162TCX0.1HA V162TCZ0.1H0
V163TCX0.1HA V163TCZ0.1H0 V164TCX0.1HA V164TCZ0.1H0 V165TCX0.1HA V165TCZ0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

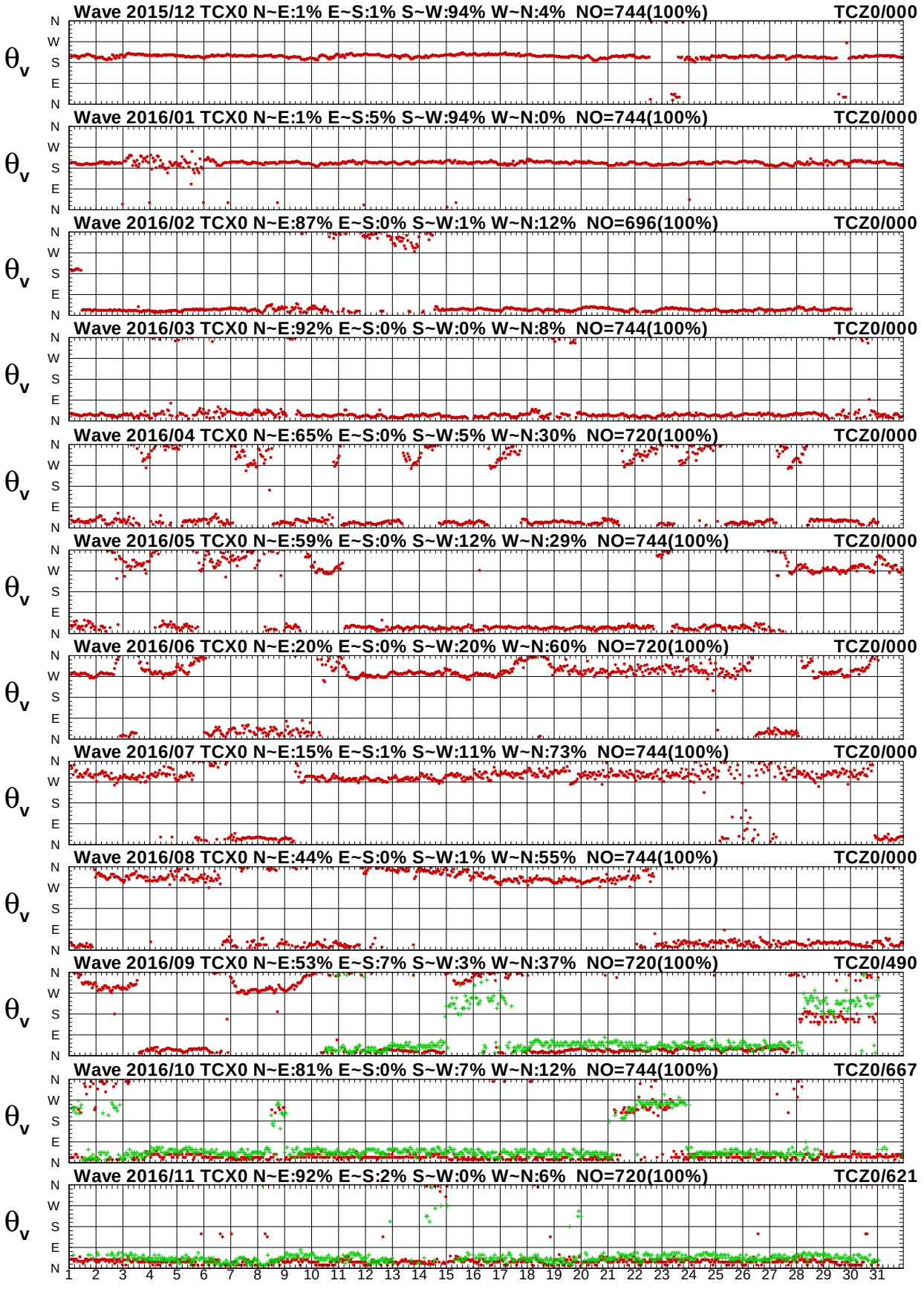

圖 9.3c　2016年每月中雲海域 X 站與 Z 站波向比較圖

V15CTCX0.1HA V15CTCZ0.1H0 V161TCX0.1HA V161TCZ0.1H0 V162TCX0.1HA V162TCZ0.1H0
V163TCX0.1HA V163TCZ0.1H0 V164TCX0.1HA V164TCZ0.1H0 V165TCX0.1HA V165TCZ0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

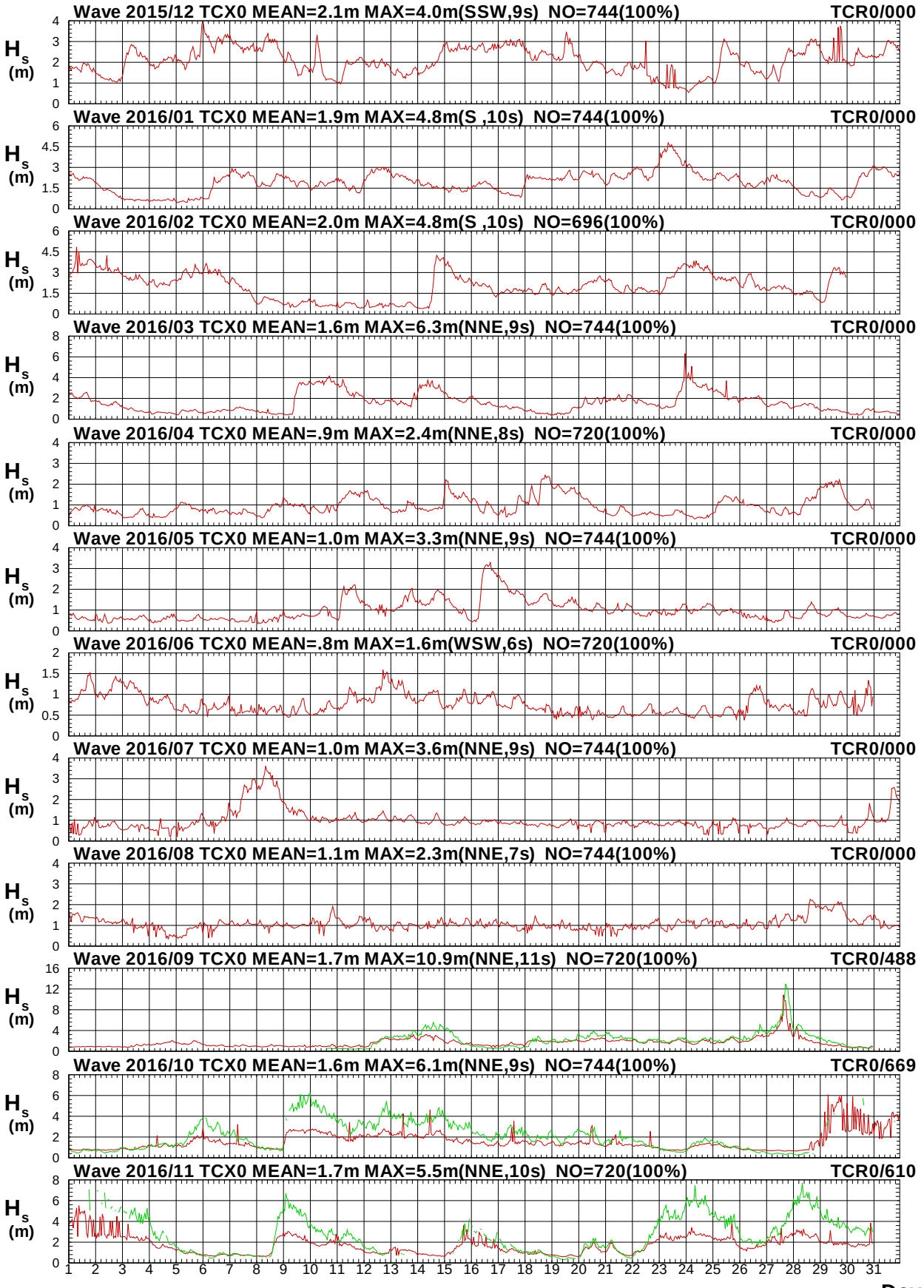

圖 9.4a　2016年每月中雲海域 X 站與 R 站波高比較圖

V15CTCX0.1HA V15CTCR0.1H0 V161TCX0.1HA V161TCR0.1H0 V162TCX0.1HA V162TCR0.1H0
V163TCX0.1HA V163TCR0.1H0 V164TCX0.1HA V164TCR0.1H0 V165TCX0.1HA V165TCR0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

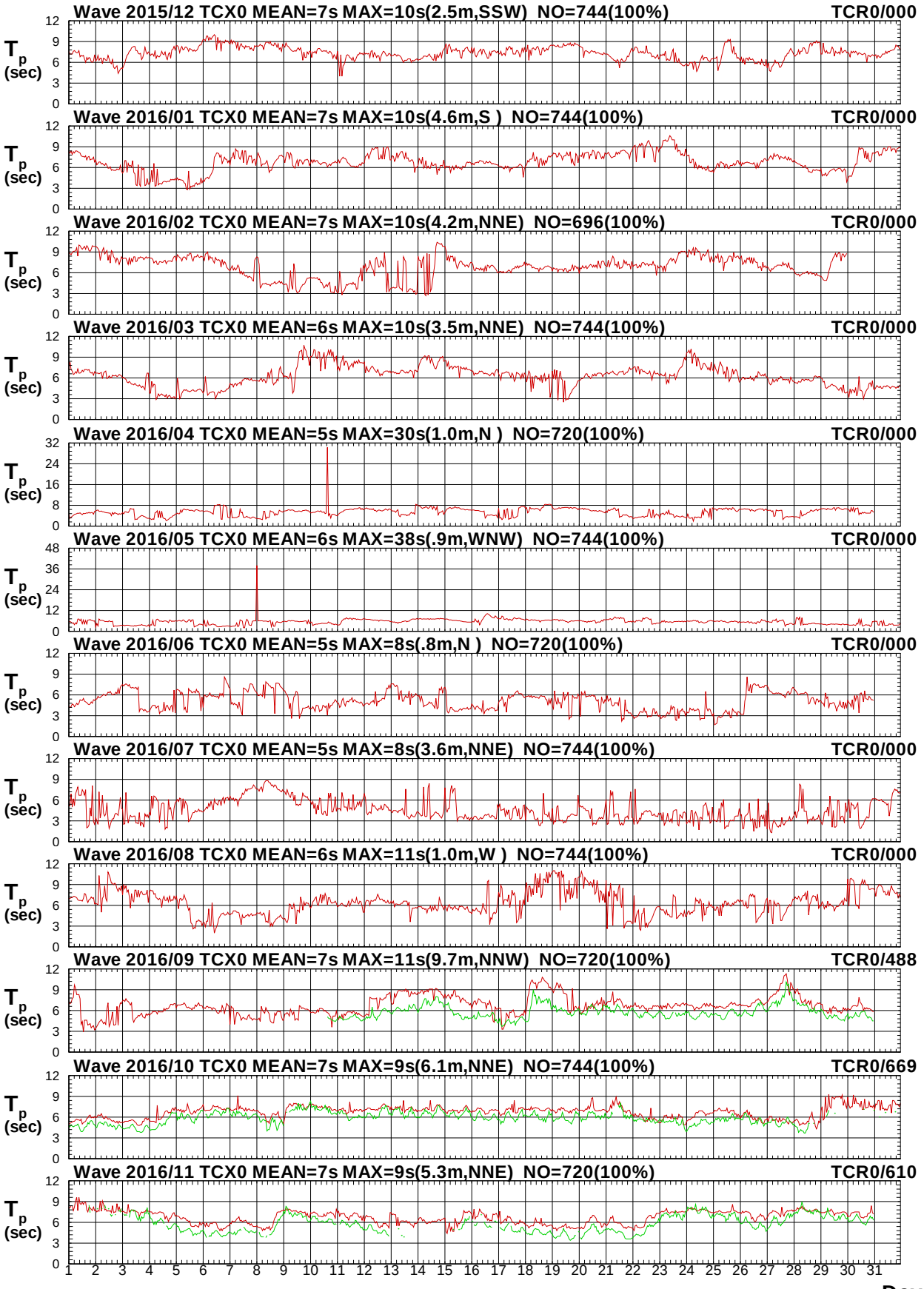

圖 9.4b　2016年每月中雲海域 X 站與 R 站週期比較圖

V15CTCX0.1HA V15CTCR0.1H0 V161TCX0.1HA V161TCR0.1H0 V162TCX0.1HA V162TCR0.1H0
V163TCX0.1HA V163TCR0.1H0 V164TCX0.1HA V164TCR0.1H0 V165TCX0.1HA V165TCR0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

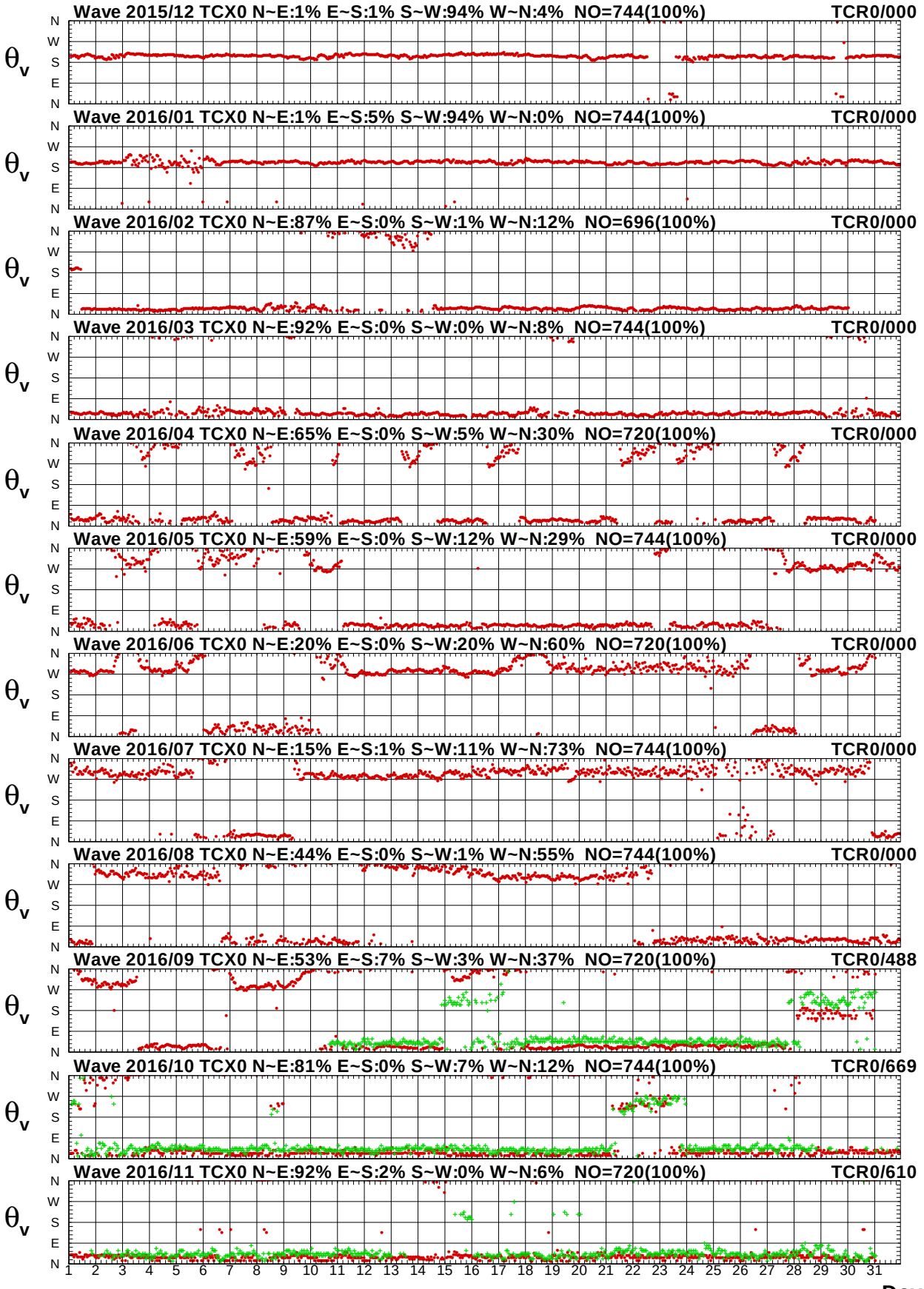

圖 9.4c　2016年每月中雲海域 X 站與 R 站波向比較圖

V15CTCX0.1HA V15CTCR0.1H0 V161TCX0.1HA V161TCR0.1H0 V162TCX0.1HA V162TCR0.1H0
V163TCX0.1HA V163TCR0.1H0 V164TCX0.1HA V164TCR0.1H0 V165TCX0.1HA V165TCR0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

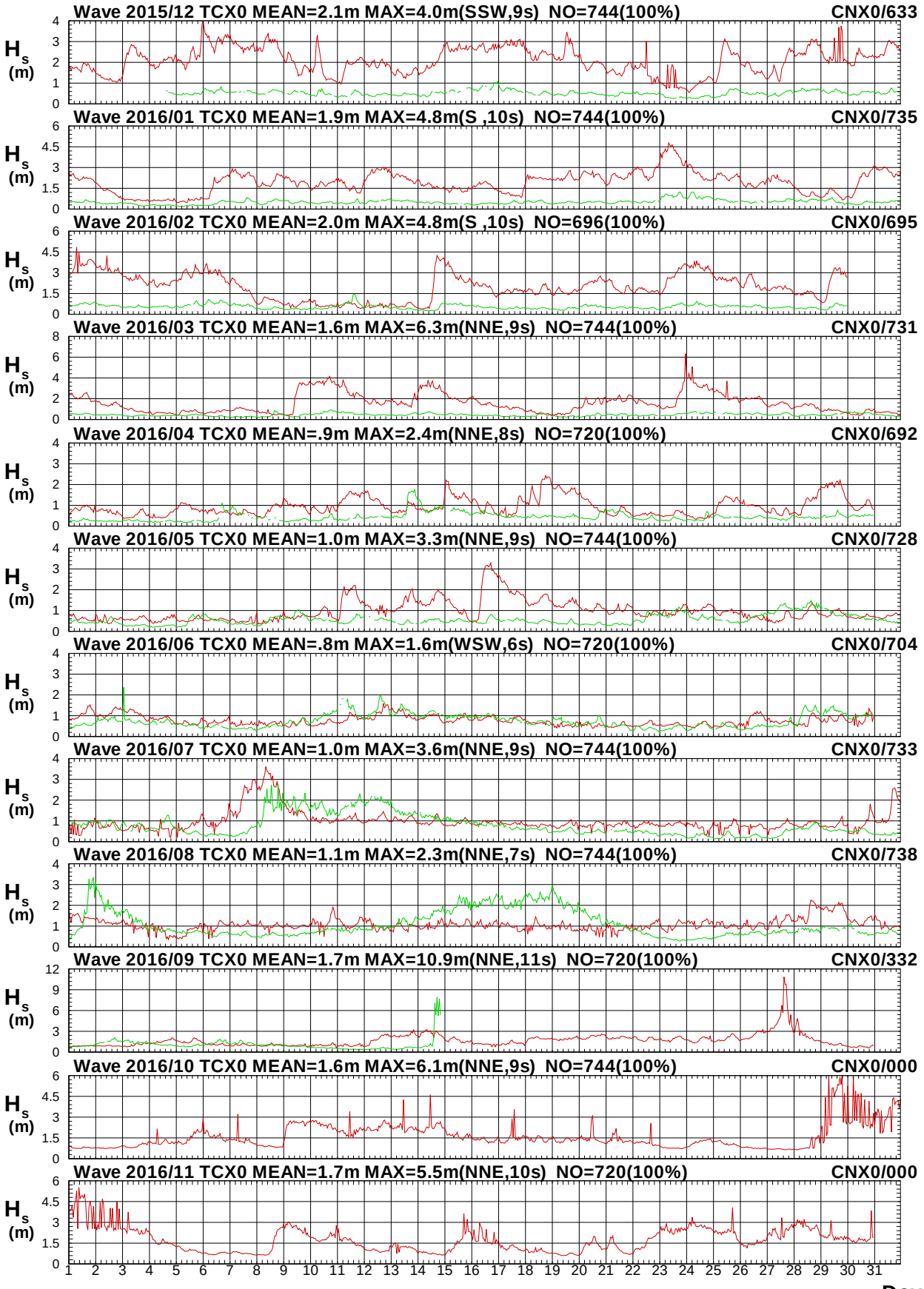

圖 9.5a　2016年每月中雲海域 X 站與嘉南海域 X 站波高圖

V15CTCX0.1HA V15CCNX0.1H0 V161TCX0.1HA V161CNX0.1H0 V162TCX0.1HA V162CNX0.1H0
V163TCX0.1HA V163CNX0.1H0 V164TCX0.1HA V164CNX0.1H0 V165TCX0.1HA V165CNX0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

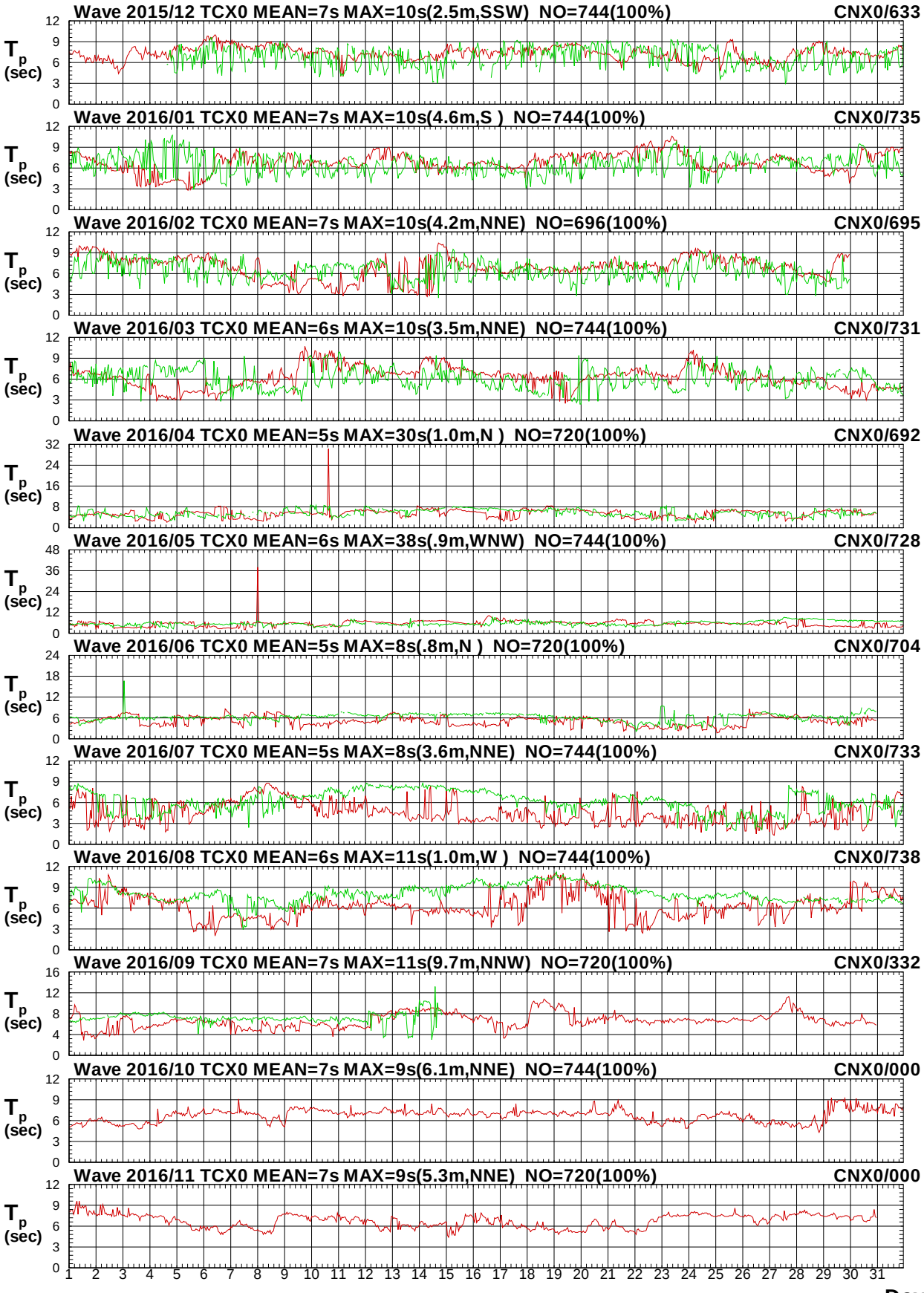

圖 9.5b　2016年每月中雲海域 X 站與嘉南海域 X 站週期圖

V15CTCX0.1HA V15CCNX0.1H0 V161TCX0.1HA V161CNX0.1H0 V162TCX0.1HA V162CNX0.1H0
V163TCX0.1HA V163CNX0.1H0 V164TCX0.1HA V164CNX0.1H0 V165TCX0.1HA V165CNX0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

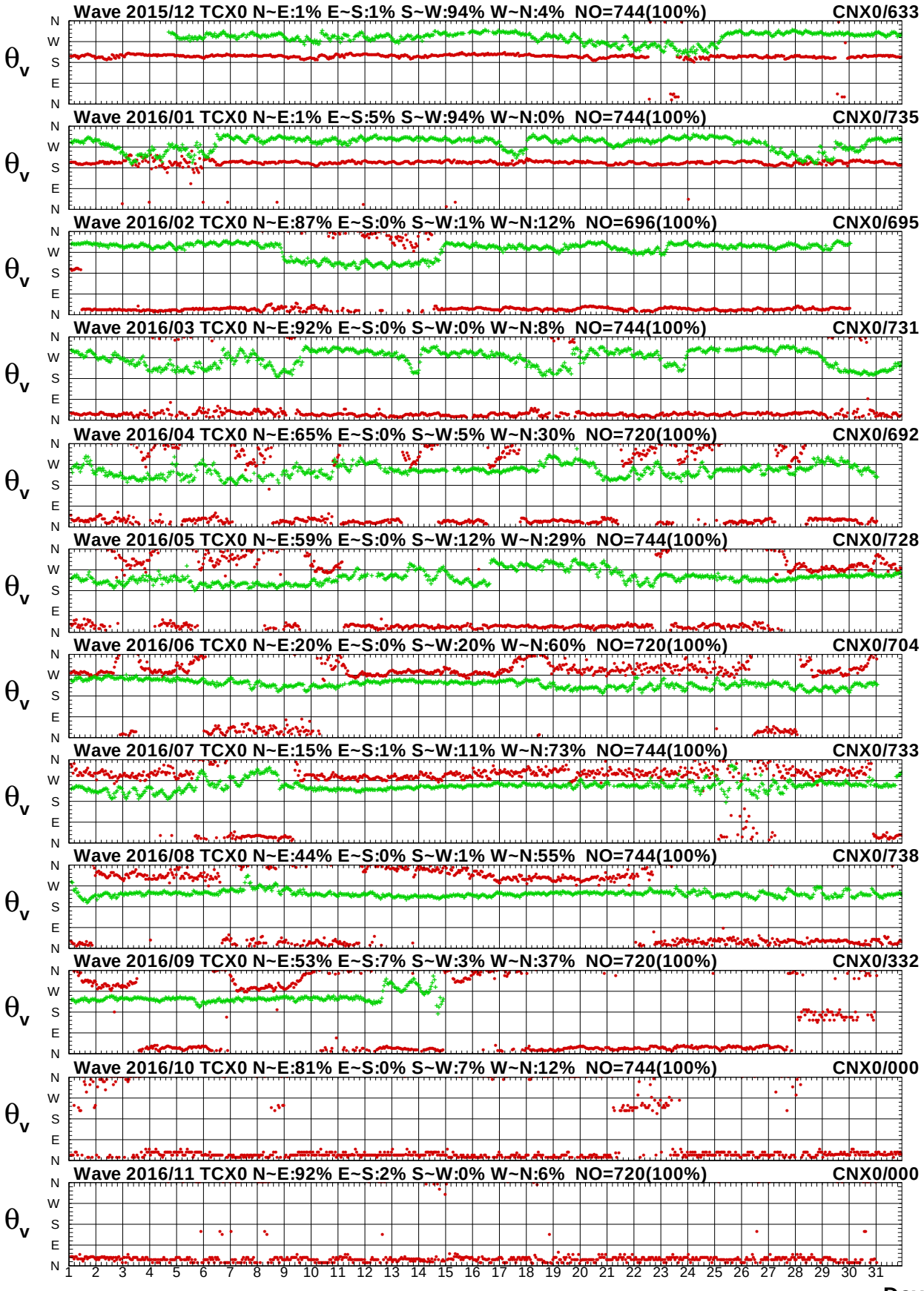

圖 9.5c　2016年每月中雲海域 X 站與嘉南海域 X 站波向圖

Wave H_s in Chung-Yun Seas of TCX0 at 2016

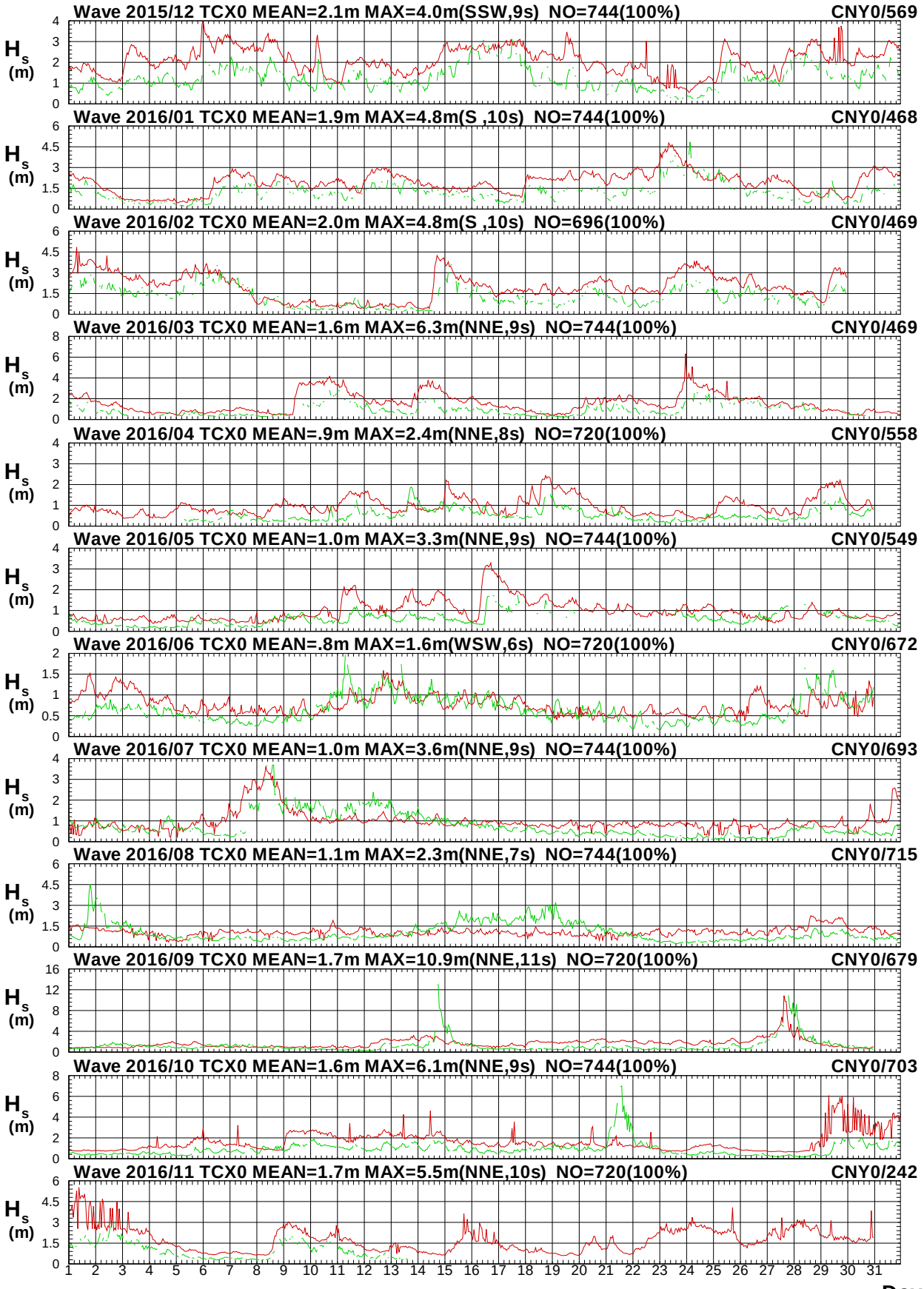

圖 9.6a　2016年每月中雲海域 X 站與嘉南海域 Y 站波高圖

V15CTCX0.1HA V15CCNY0.1H0 V161TCX0.1HA V161CNY0.1H0 V162TCX0.1HA V162CNY0.1H0
V163TCX0.1HA V163CNY0.1H0 V164TCX0.1HA V164CNY0.1H0 V165TCX0.1HA V165CNY0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

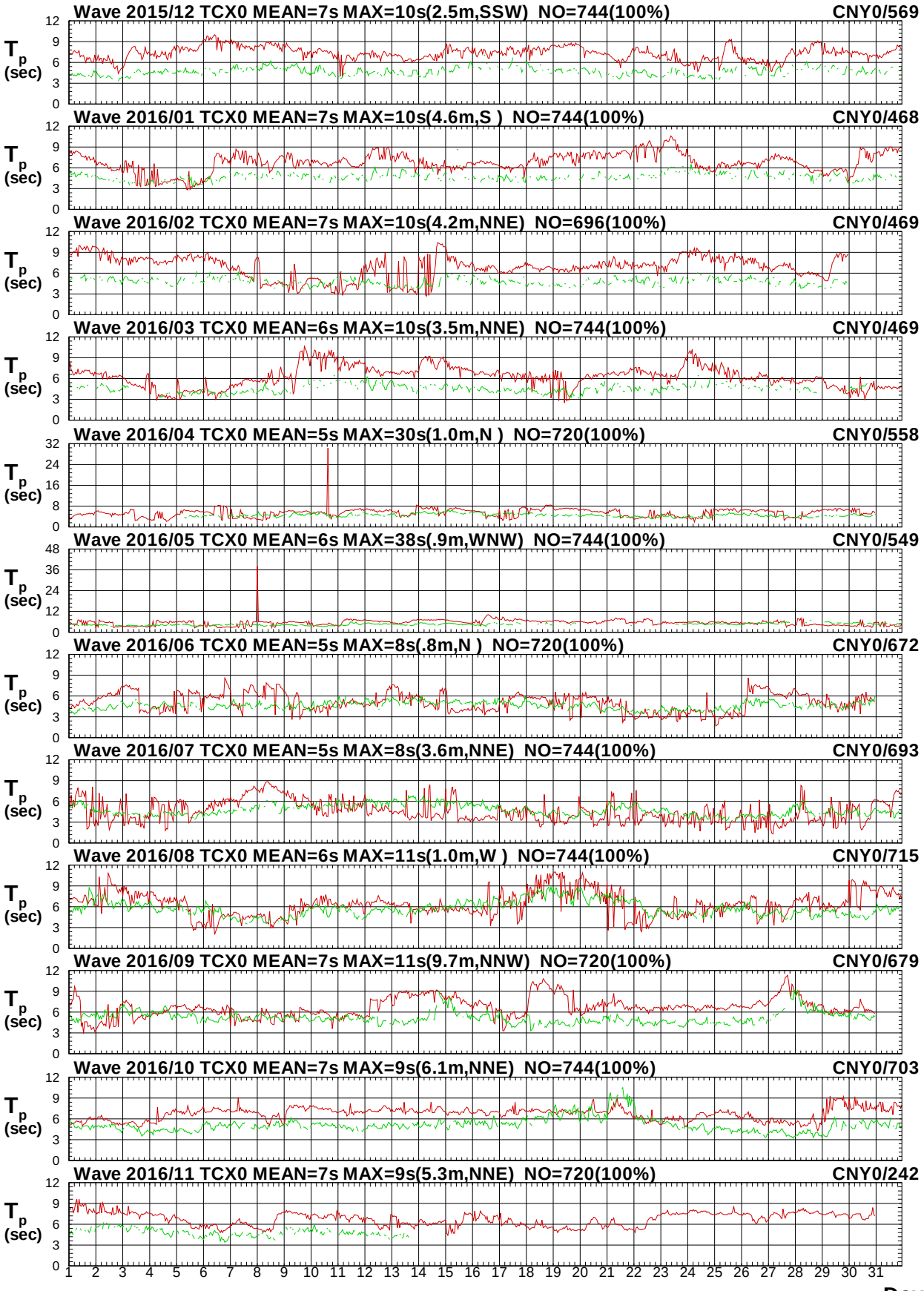

圖 9.6b　2016年每月中雲海域 X 站與嘉南海域 Y 站週期圖

V15CTCX0.1HA V15CCNY0.1H0 V161TCX0.1HA V161CNY0.1H0 V162TCX0.1HA V162CNY0.1H0
V163TCX0.1HA V163CNY0.1H0 V164TCX0.1HA V164CNY0.1H0 V165TCX0.1HA V165CNY0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

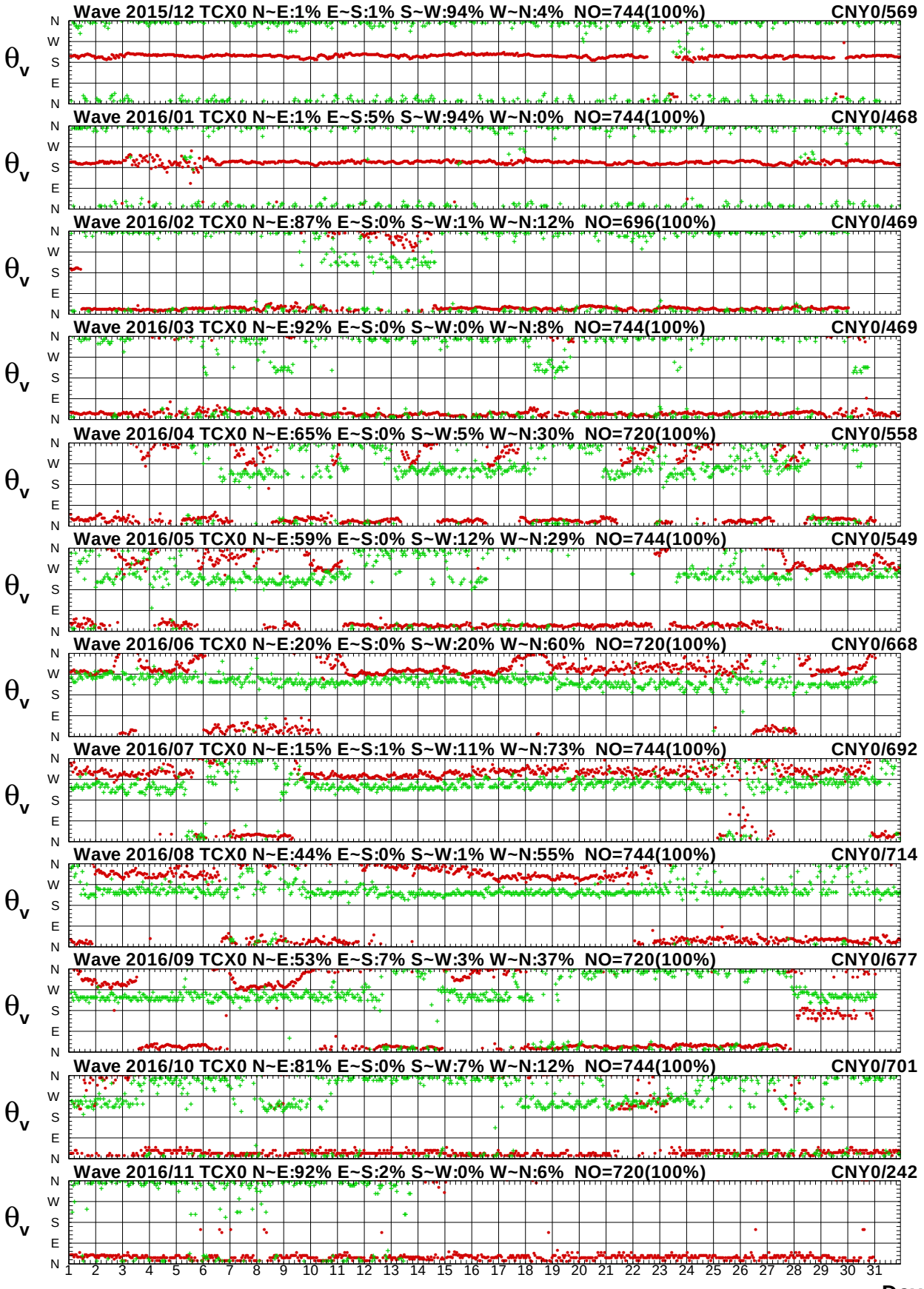

圖 9.6c　2016年每月中雲海域 X 站與嘉南海域 Y 站波向圖

Wave H_s in Chung-Yun Seas of TCX0 at 2016

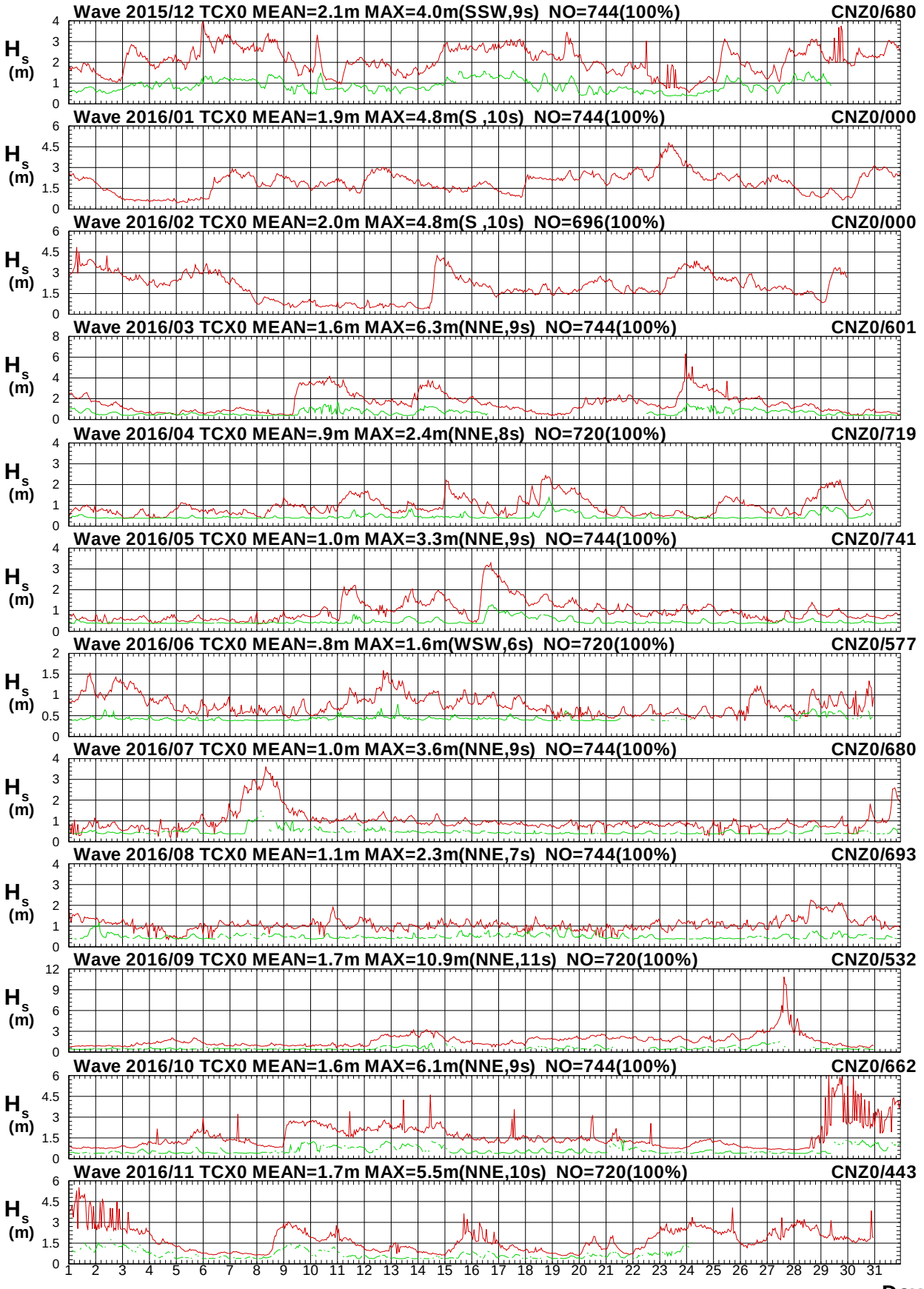

圖 9.7a　2016年每月中雲海域 X 站與嘉南海域 Z 站波高圖

V15CTCX0.1HA V15CCNZ0.1H0 V161TCX0.1HA V161CNZ0.1H0 V162TCX0.1HA V162CNZ0.1H0
V163TCX0.1HA V163CNZ0.1H0 V164TCX0.1HA V164CNZ0.1H0 V165TCX0.1HA V165CNZ0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

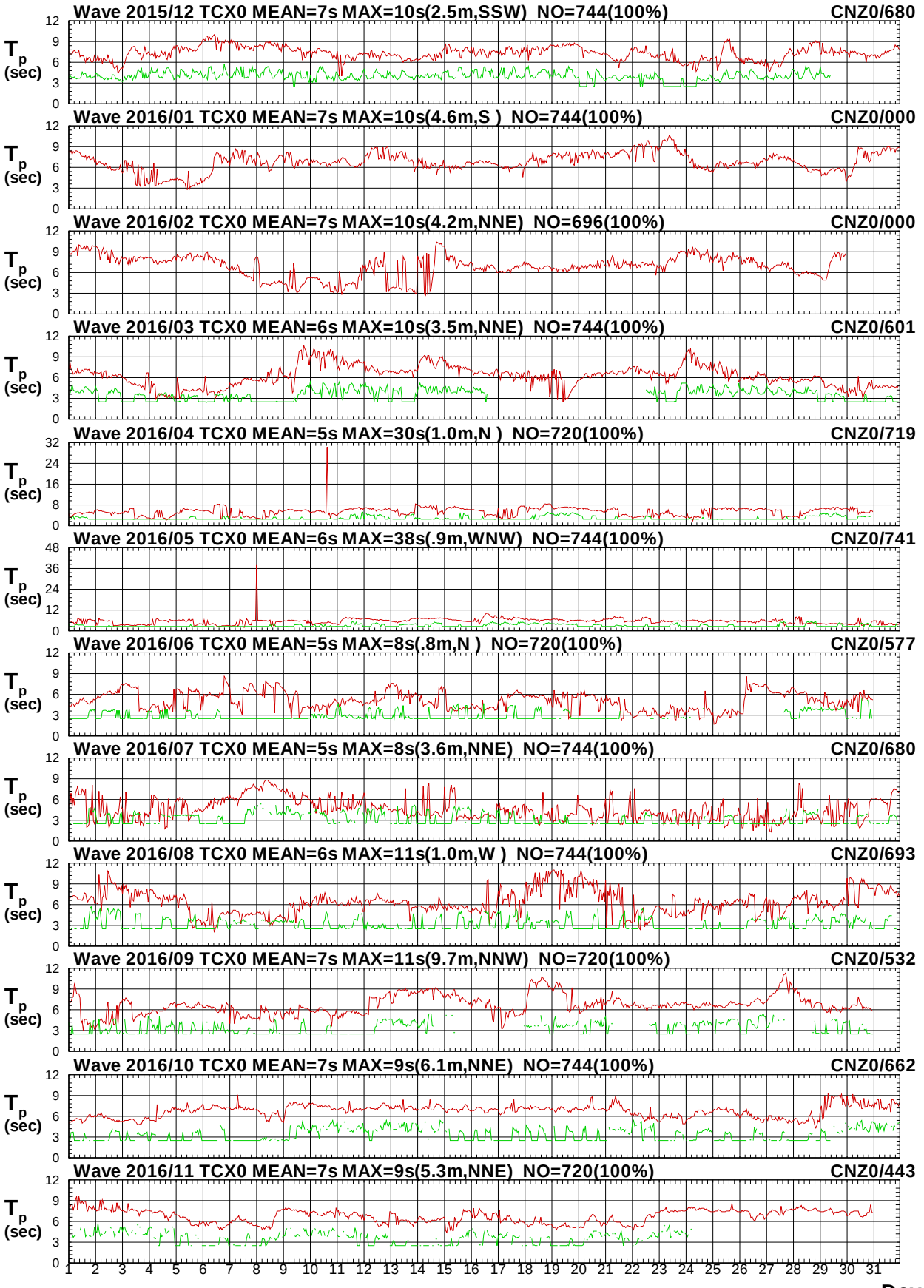

圖 9.7b　2016年每月中雲海域 X 站與嘉南海域 Z 站週期圖

V15CTCX0.1HA V15CCNZ0.1H0 V161TCX0.1HA V161CNZ0.1H0 V162TCX0.1HA V162CNZ0.1H0
V163TCX0.1HA V163CNZ0.1H0 V164TCX0.1HA V164CNZ0.1H0 V165TCX0.1HA V165CNZ0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

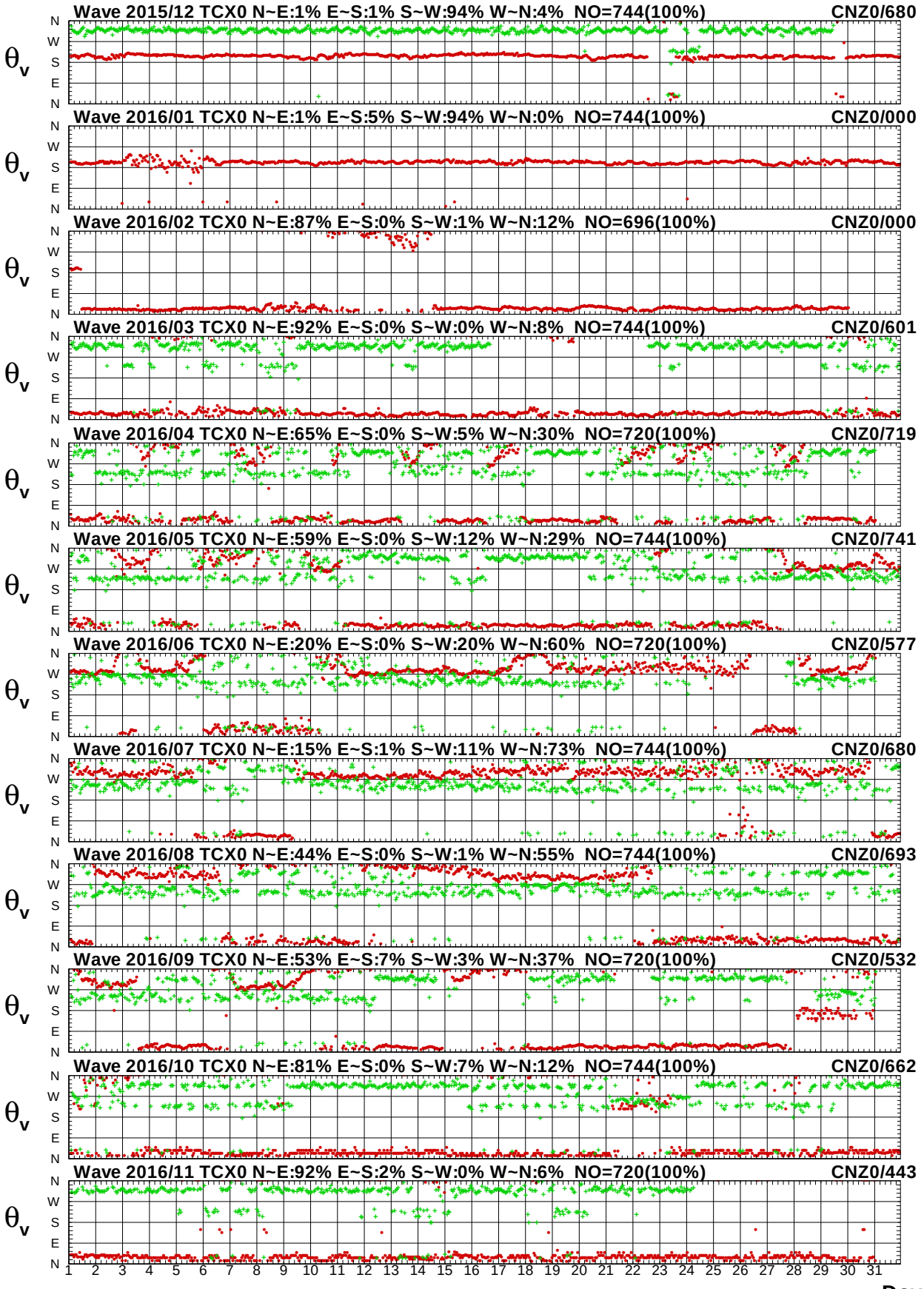

圖 9.7c　2016年每月中雲海域 X 站與嘉南海域 Z 站波向圖

V15CTCX0.1HA V15CCNZ0.1H0 V161TCX0.1HA V161CNZ0.1H0 V162TCX0.1HA V162CNZ0.1H0
V163TCX0.1HA V163CNZ0.1H0 V164TCX0.1HA V164CNZ0.1H0 V165TCX0.1HA V165CNZ0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

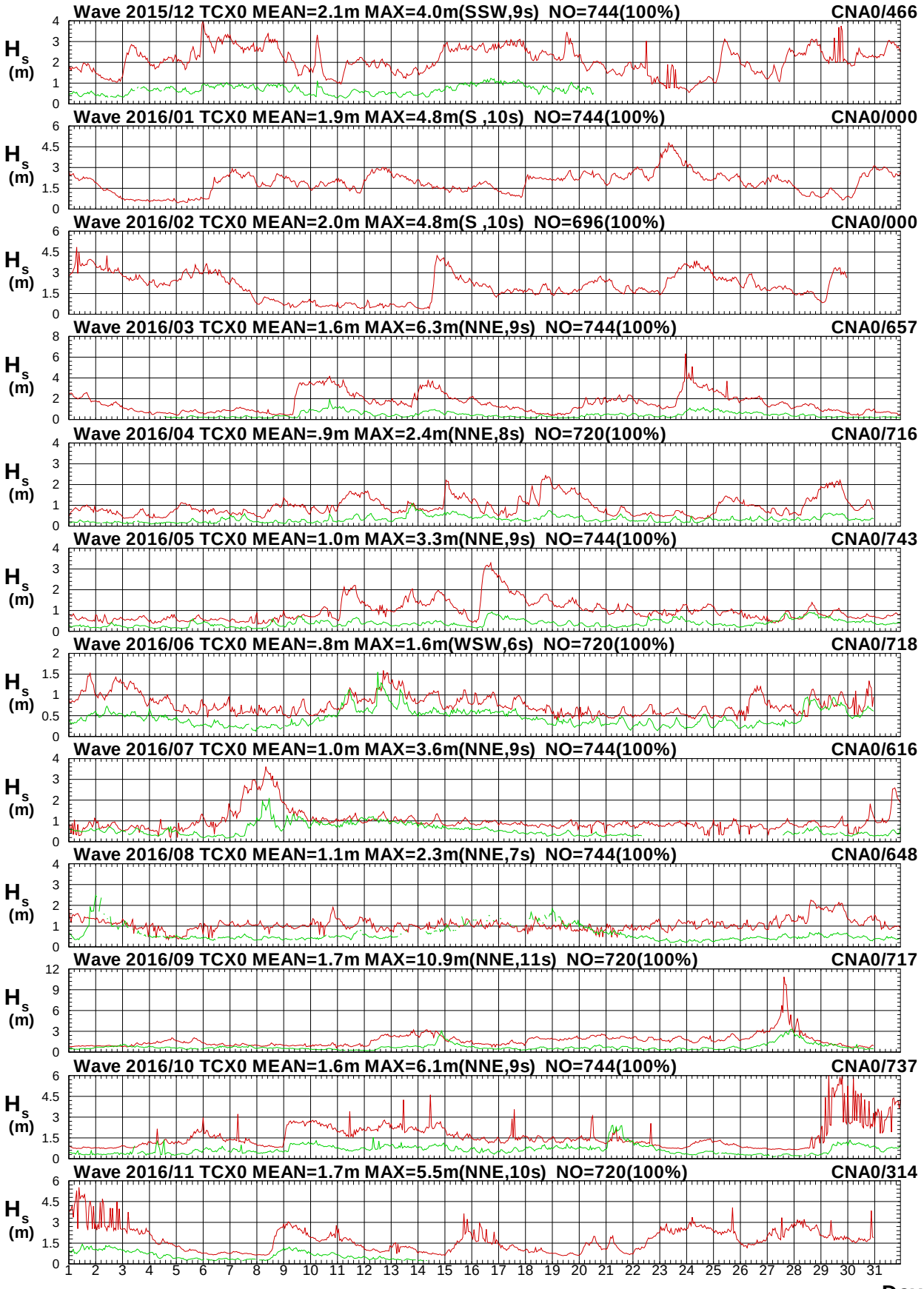

圖 9.8a　2016年每月中雲海域 X 站與嘉南海域 A 站波高圖

V15CTCX0.1HA V15CCNA0.1H0 V161TCX0.1HA V161CNA0.1H0 V162TCX0.1HA V162CNA0.1H0
V163TCX0.1HA V163CNA0.1H0 V164TCX0.1HA V164CNA0.1H0 V165TCX0.1HA V165CNA0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

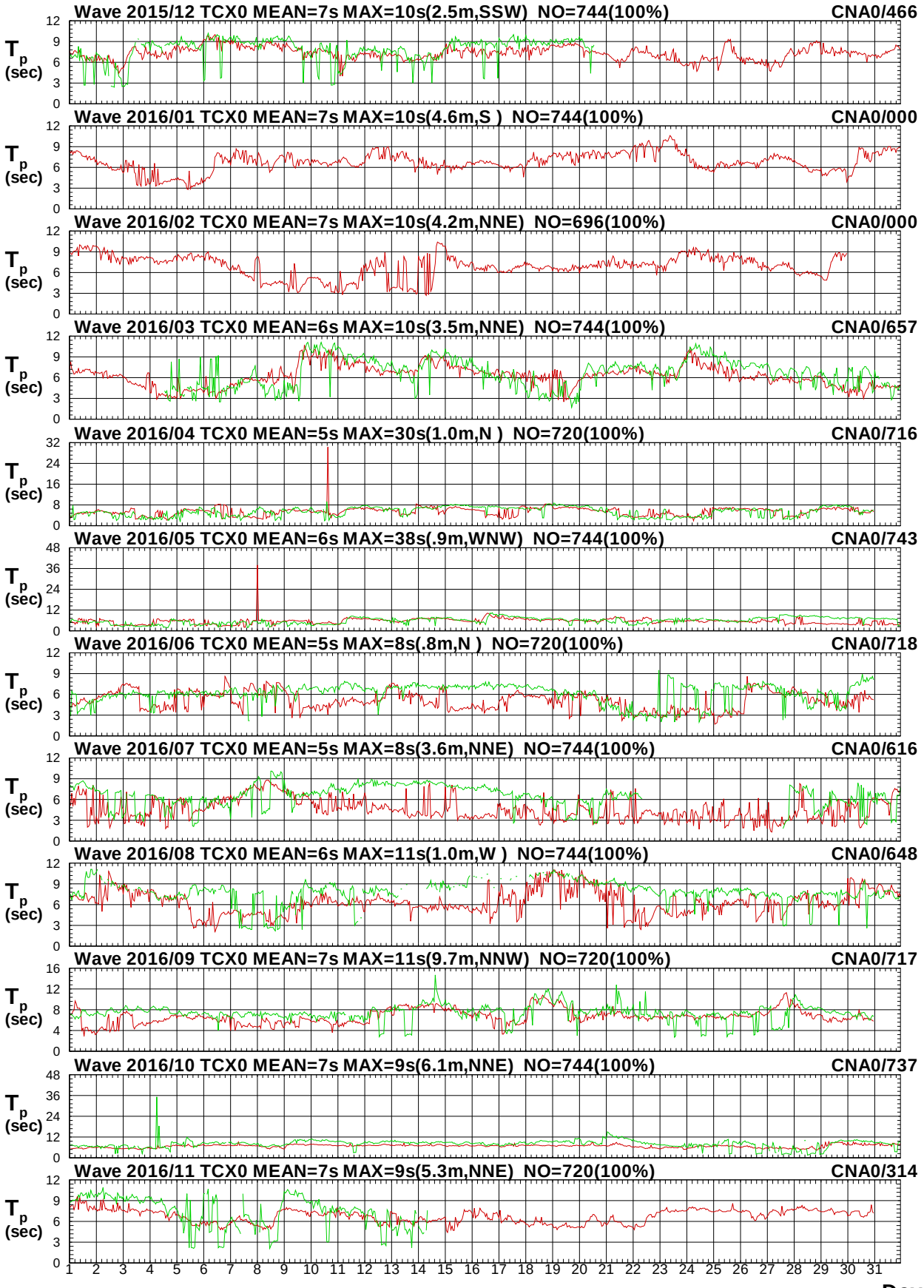

圖 9.8b　2016年每月中雲海域 X 站與嘉南海域 A 站週期圖

V15CTCX0.1HA V15CCNA0.1H0 V161TCX0.1HA V161CNA0.1H0 V162TCX0.1HA V162CNA0.1H0
V163TCX0.1HA V163CNA0.1H0 V164TCX0.1HA V164CNA0.1H0 V165TCX0.1HA V165CNA0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

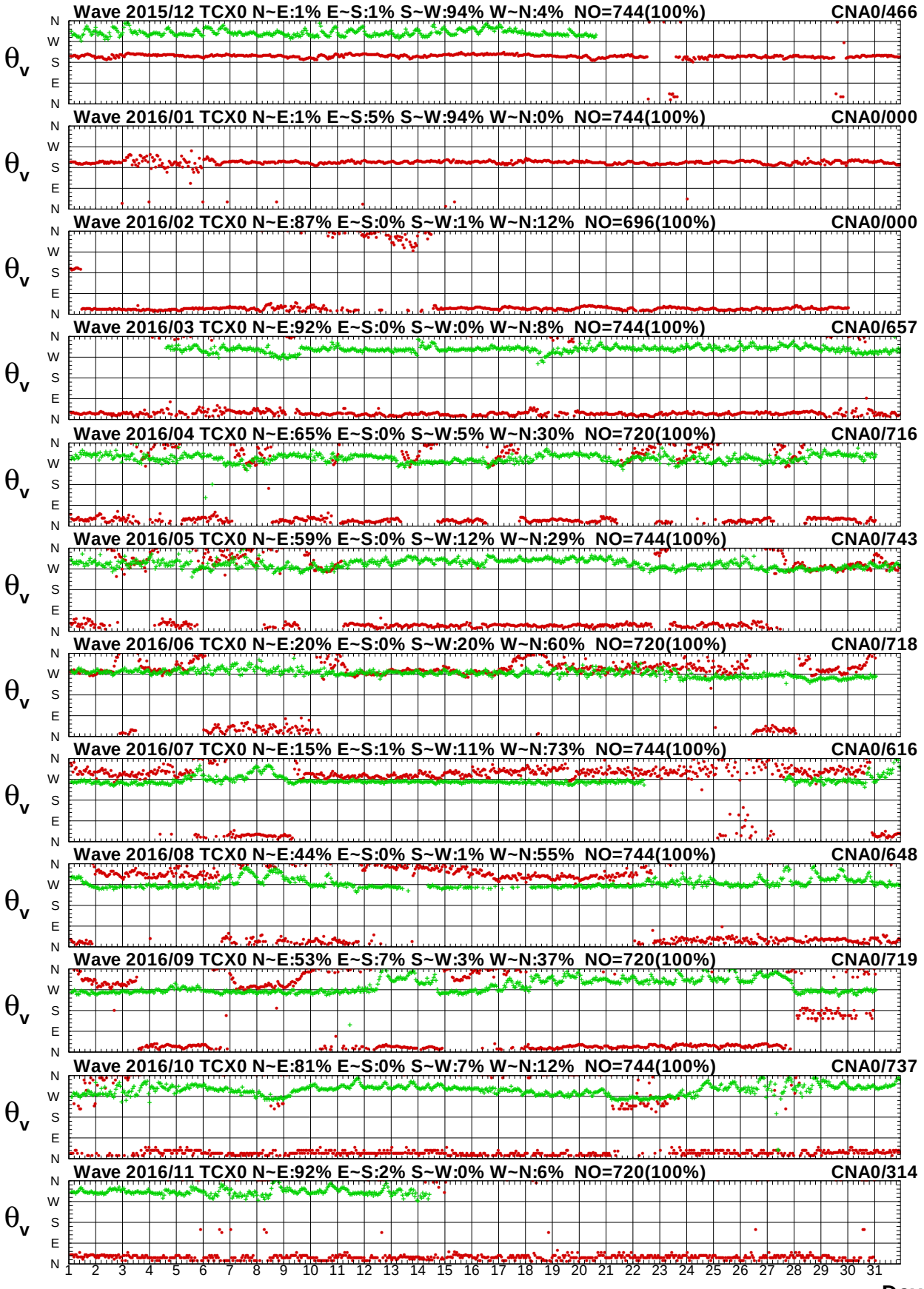

圖 9.8c　2016年每月中雲海域 X 站與嘉南海域 A 站波向圖

V15CTCX0.1HA V15CCNA0.1H0 V161TCX0.1HA V161CNA0.1H0 V162TCX0.1HA V162CNA0.1H0
V163TCX0.1HA V163CNA0.1H0 V164TCX0.1HA V164CNA0.1H0 V165TCX0.1HA V165CNA0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

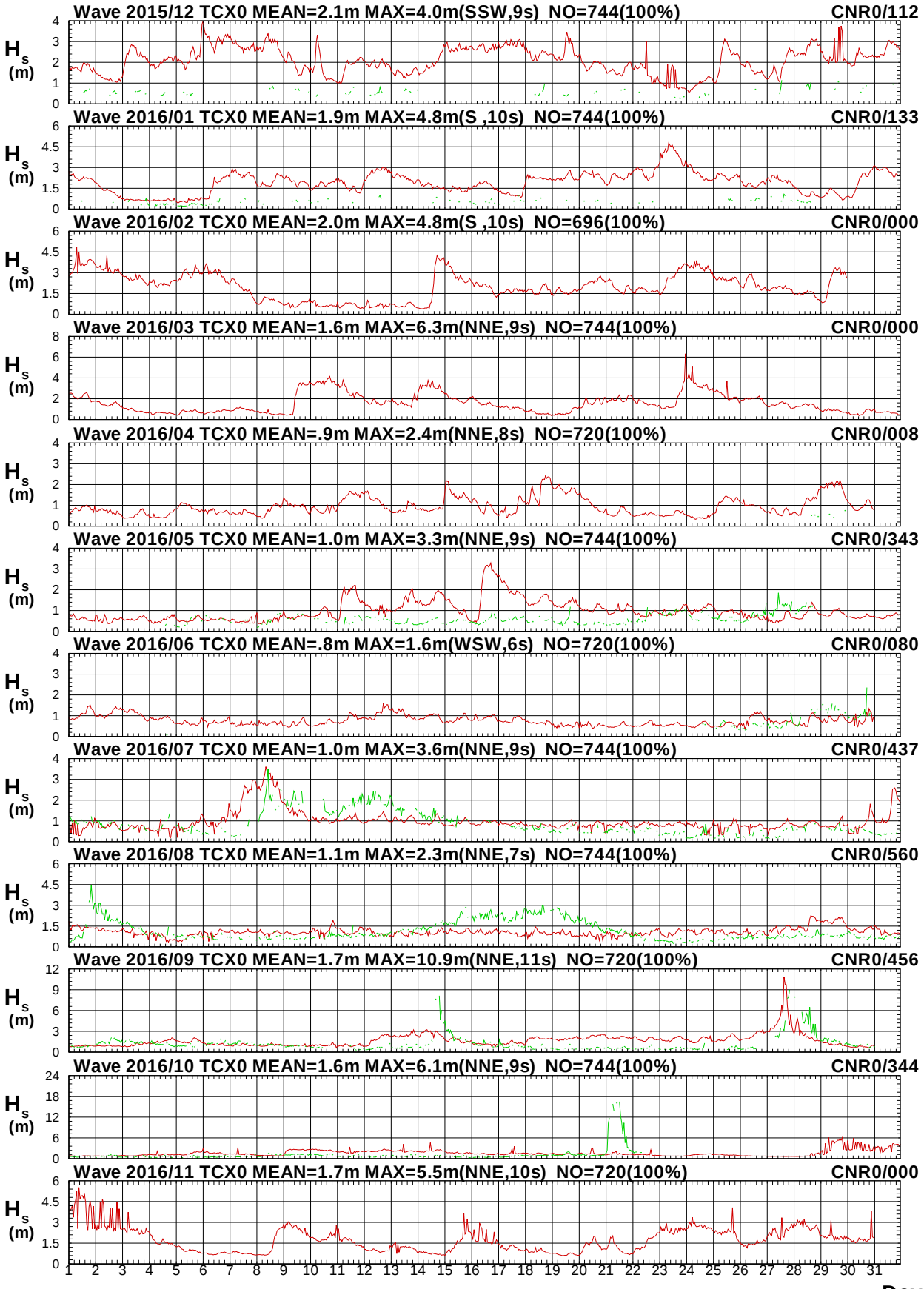

圖 9.9a　2016年每月中雲海域 X 站與嘉南海域 R 站波高圖

V15CTCX0.1HA V15CCNR0.1H0 V161TCX0.1HA V161CNR0.1H0 V162TCX0.1HA V162CNR0.1H0
V163TCX0.1HA V163CNR0.1H0 V164TCX0.1HA V164CNR0.1H0 V165TCX0.1HA V165CNR0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

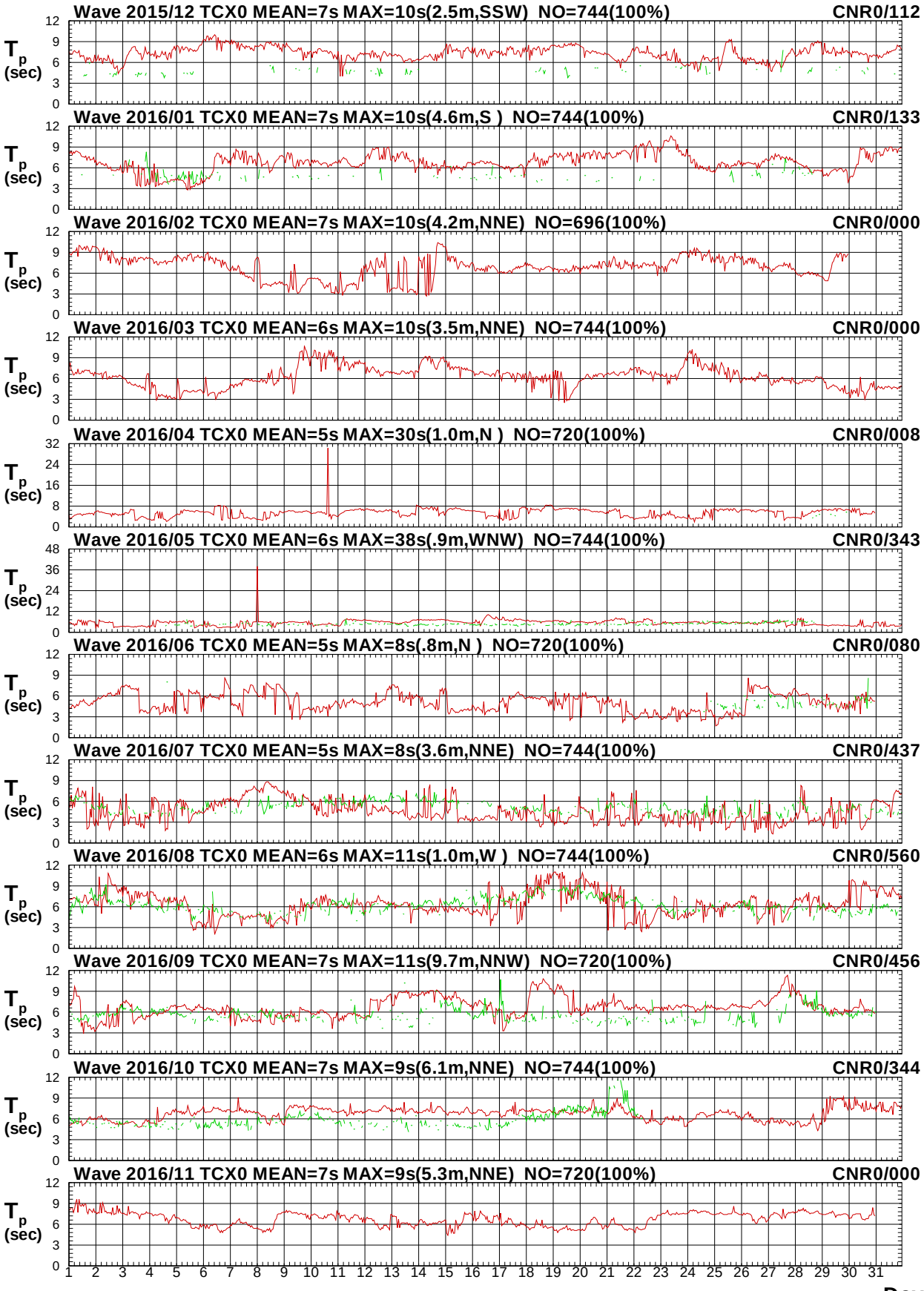

圖 9.9b　2016年每月中雲海域 X 站與嘉南海域 R 站週期圖

V15CTCX0.1HA V15CCNR0.1H0 V161TCX0.1HA V161CNR0.1H0 V162TCX0.1HA V162CNR0.1H0
V163TCX0.1HA V163CNR0.1H0 V164TCX0.1HA V164CNR0.1H0 V165TCX0.1HA V165CNR0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

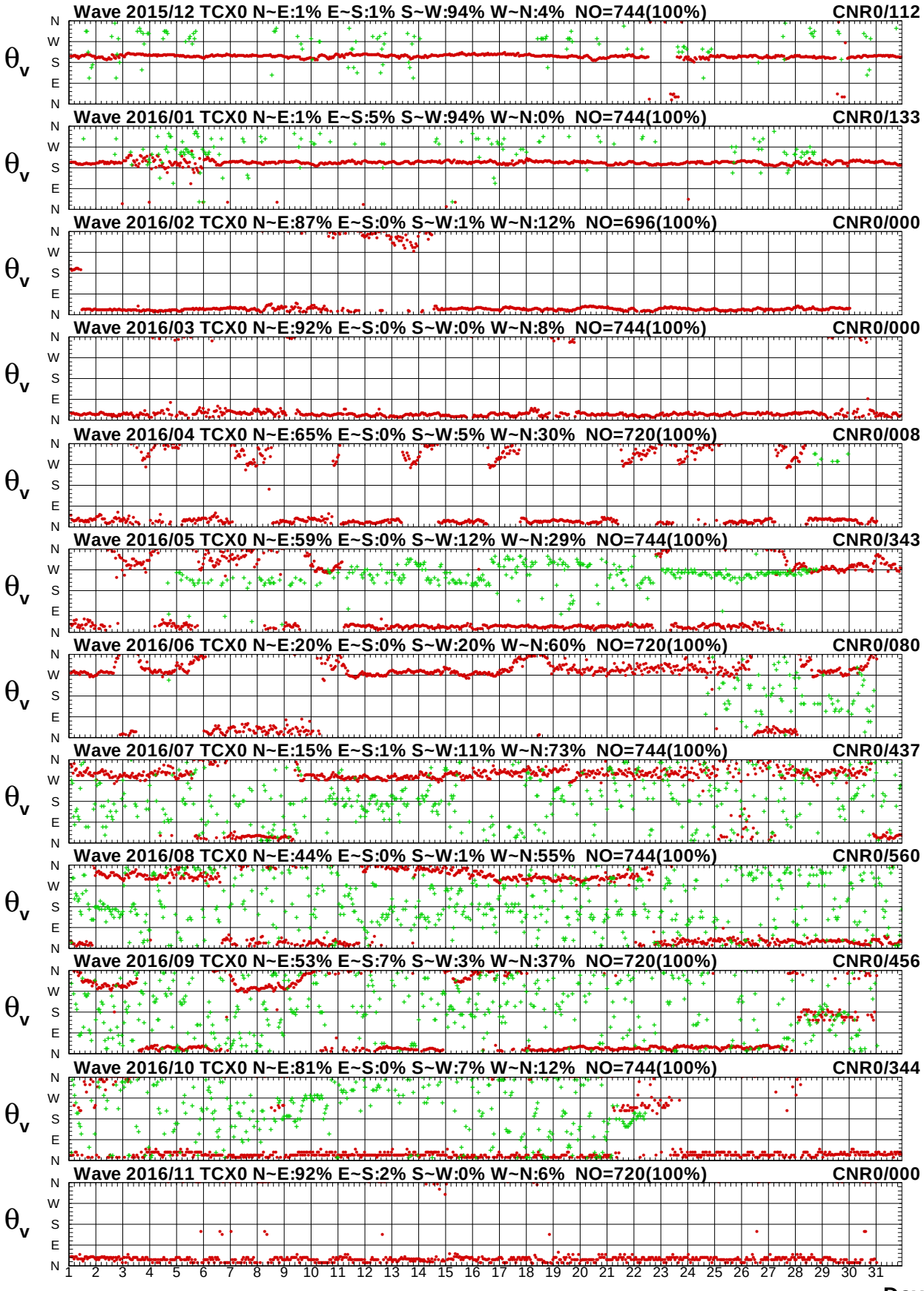

圖 9.9c　2016年每月中雲海域 X 站與嘉南海域 R 站波向圖

V15CTCX0.1HA V15CCNR0.1H0 V161TCX0.1HA V161CNR0.1H0 V162TCX0.1HA V162CNR0.1H0
V163TCX0.1HA V163CNR0.1H0 V164TCX0.1HA V164CNR0.1H0 V165TCX0.1HA V165CNR0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

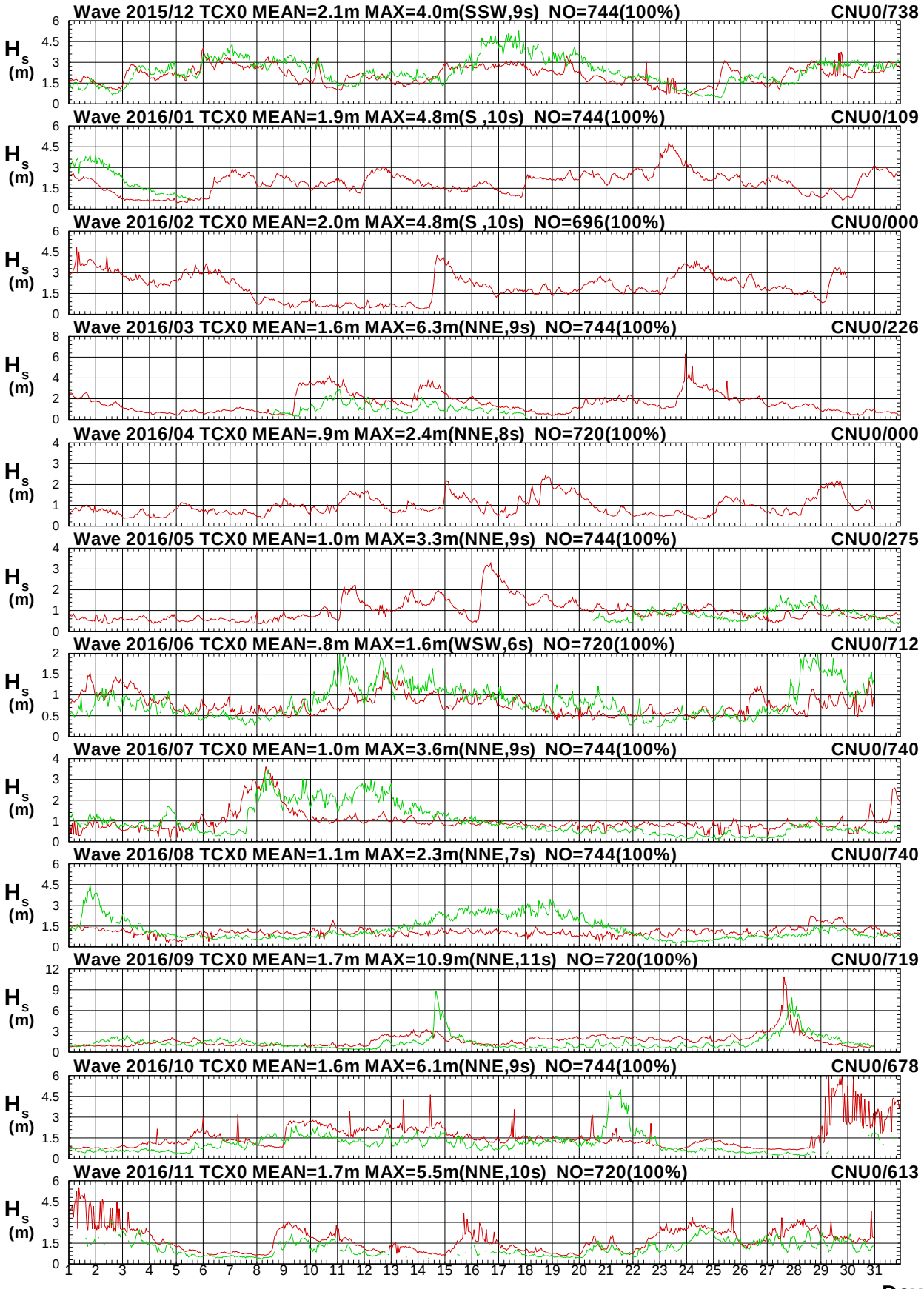

圖 9.10a　2016年每月中雲海域 X 站與嘉南海域 U 站波高圖

V15CTCX0.1HA V15CCNU0.1H0 V161TCX0.1HA V161CNU0.1H0 V162TCX0.1HA V162CNU0.1H0
V163TCX0.1HA V163CNU0.1H0 V164TCX0.1HA V164CNU0.1H0 V165TCX0.1HA V165CNU0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

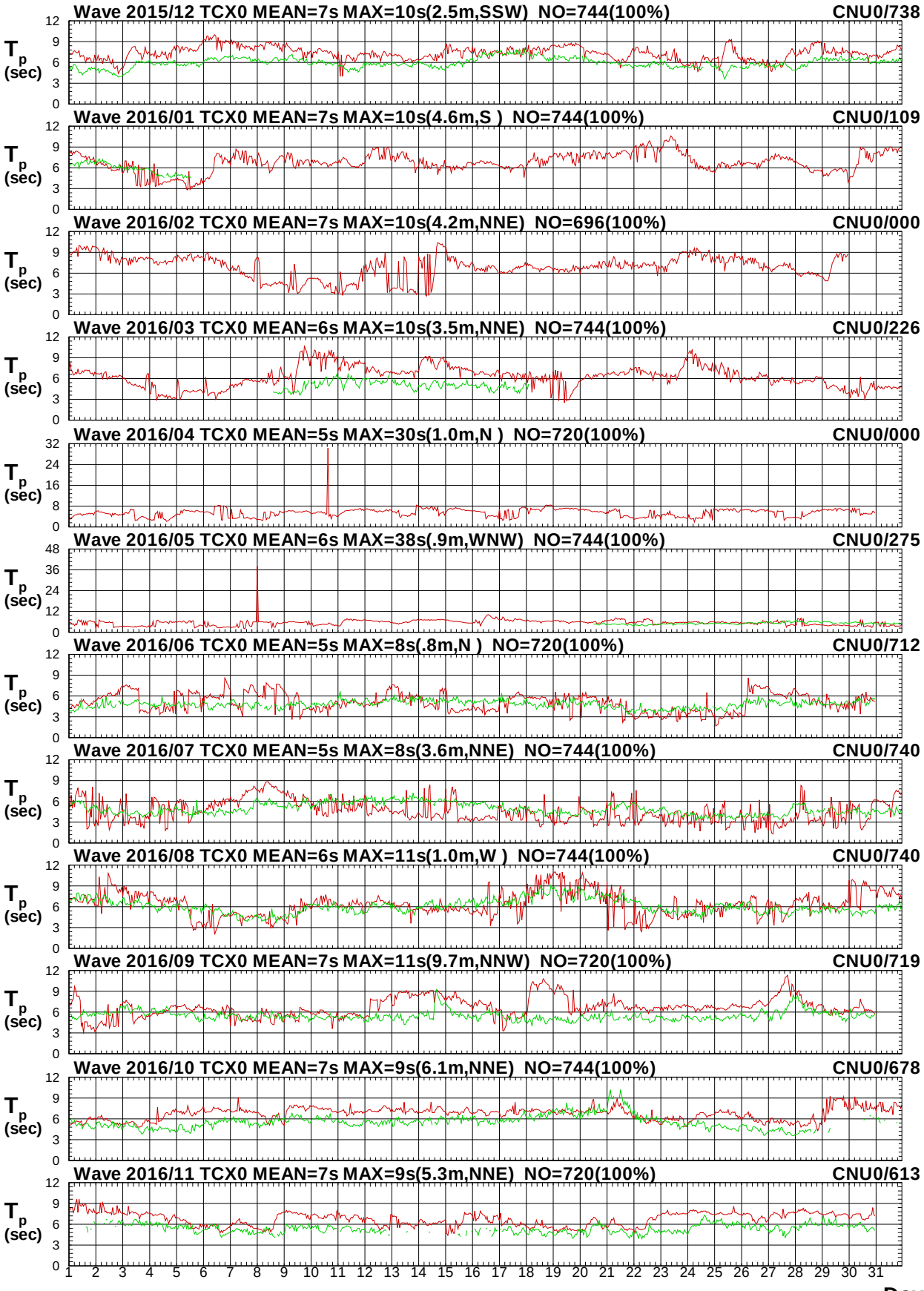

圖 9.10b　2016年每月中雲海域 X 站與嘉南海域 U 站週期圖

V15CTCX0.1HA V15CCNU0.1H0 V161TCX0.1HA V161CNU0.1H0 V162TCX0.1HA V162CNU0.1H0
V163TCX0.1HA V163CNU0.1H0 V164TCX0.1HA V164CNU0.1H0 V165TCX0.1HA V165CNU0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

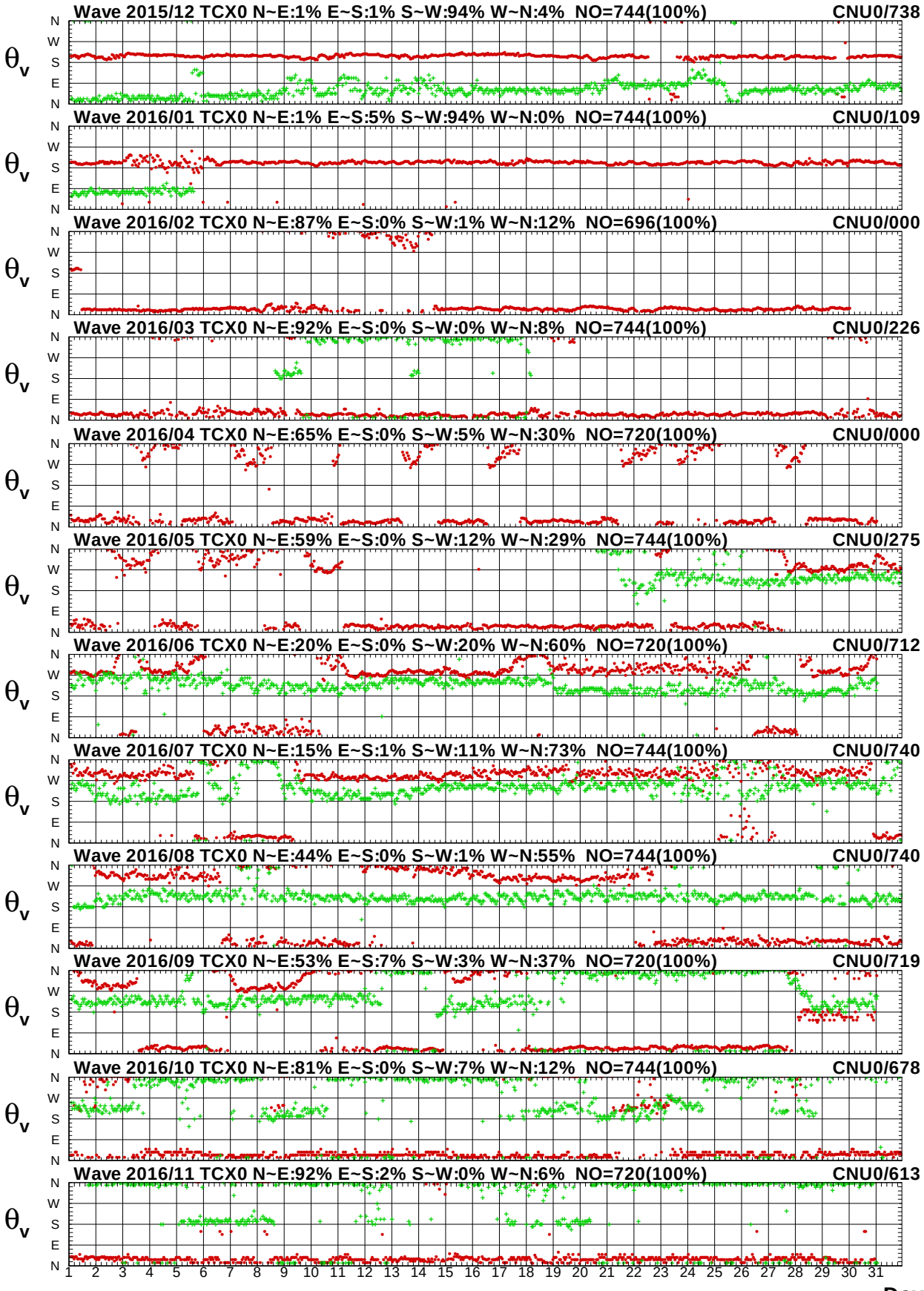

圖 9.10c　2016年每月中雲海域 X 站與嘉南海域 U 站波向圖

V15CTCX0.1HA V15CCNU0.1H0 V161TCX0.1HA V161CNU0.1H0 V162TCX0.1HA V162CNU0.1H0
V163TCX0.1HA V163CNU0.1H0 V164TCX0.1HA V164CNU0.1H0 V165TCX0.1HA V165CNU0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2016

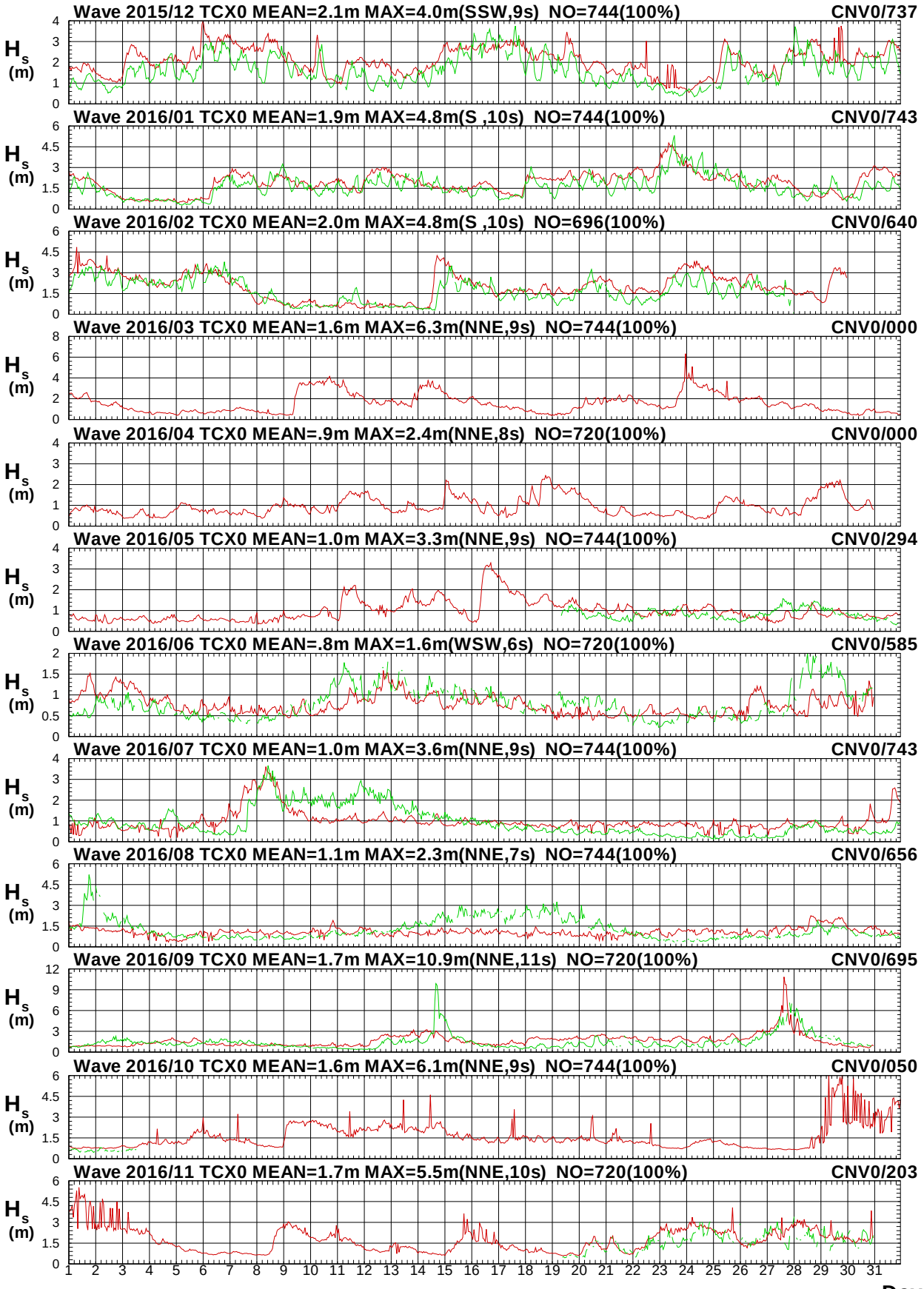

圖 9.11a　2016年每月中雲海域 X 站與嘉南海域 V 站波高圖

V15CTCX0.1HA V15CCNV0.1H0 V161TCX0.1HA V161CNV0.1H0 V162TCX0.1HA V162CNV0.1H0
V163TCX0.1HA V163CNV0.1H0 V164TCX0.1HA V164CNV0.1H0 V165TCX0.1HA V165CNV0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

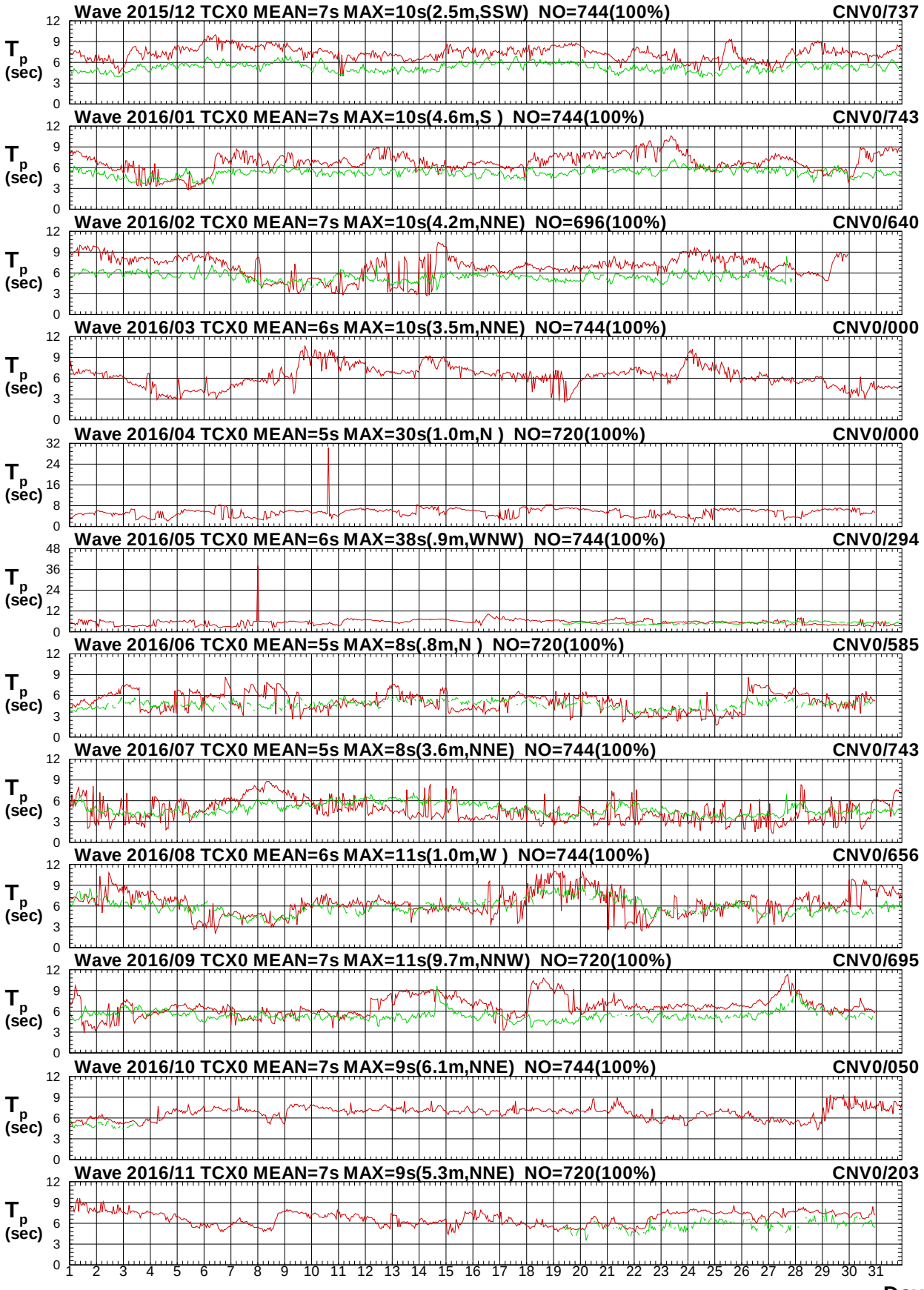

圖 9.11b　2016年每月中雲海域 X 站與嘉南海域 V 站週期圖

V15CTCX0.1HA V15CCNV0.1H0 V161TCX0.1HA V161CNV0.1H0 V162TCX0.1HA V162CNV0.1H0
V163TCX0.1HA V163CNV0.1H0 V164TCX0.1HA V164CNV0.1H0 V165TCX0.1HA V165CNV0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

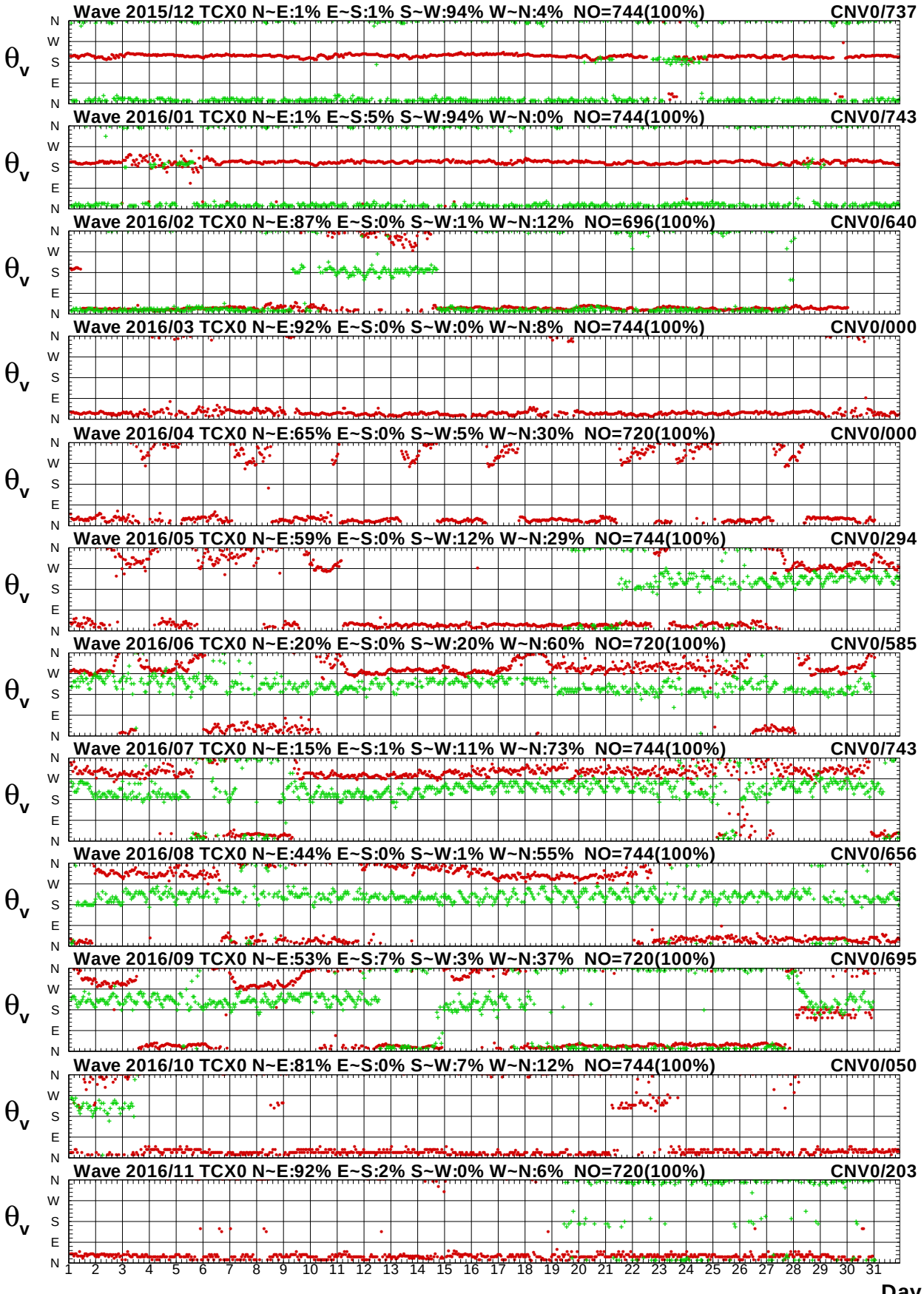

圖 9.11c　2016年每月中雲海域 X 站與嘉南海域 V 站波向圖

Wave H_s in Chung-Yun Seas of TCX0 at 2016

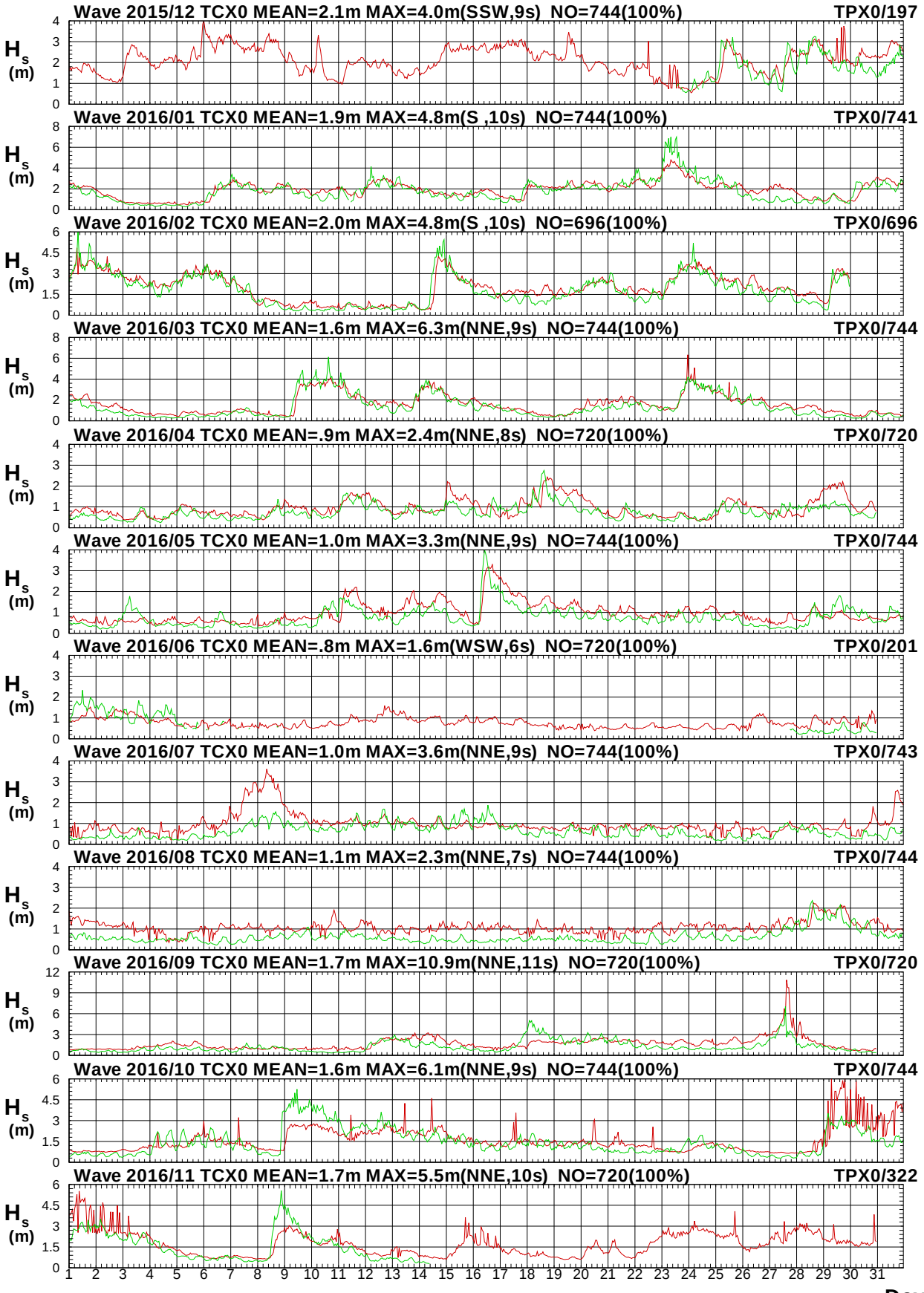

圖 9.12a　2016年每月中雲海域 X 站與北苗海域 X 站波高圖

V15CTCX0.1HA V15CTPX0.1H0 V161TCX0.1HA V161TPX0.1H0 V162TCX0.1HA V162TPX0.1H0
V163TCX0.1HA V163TPX0.1H0 V164TCX0.1HA V164TPX0.1H0 V165TCX0.1HA V165TPX0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

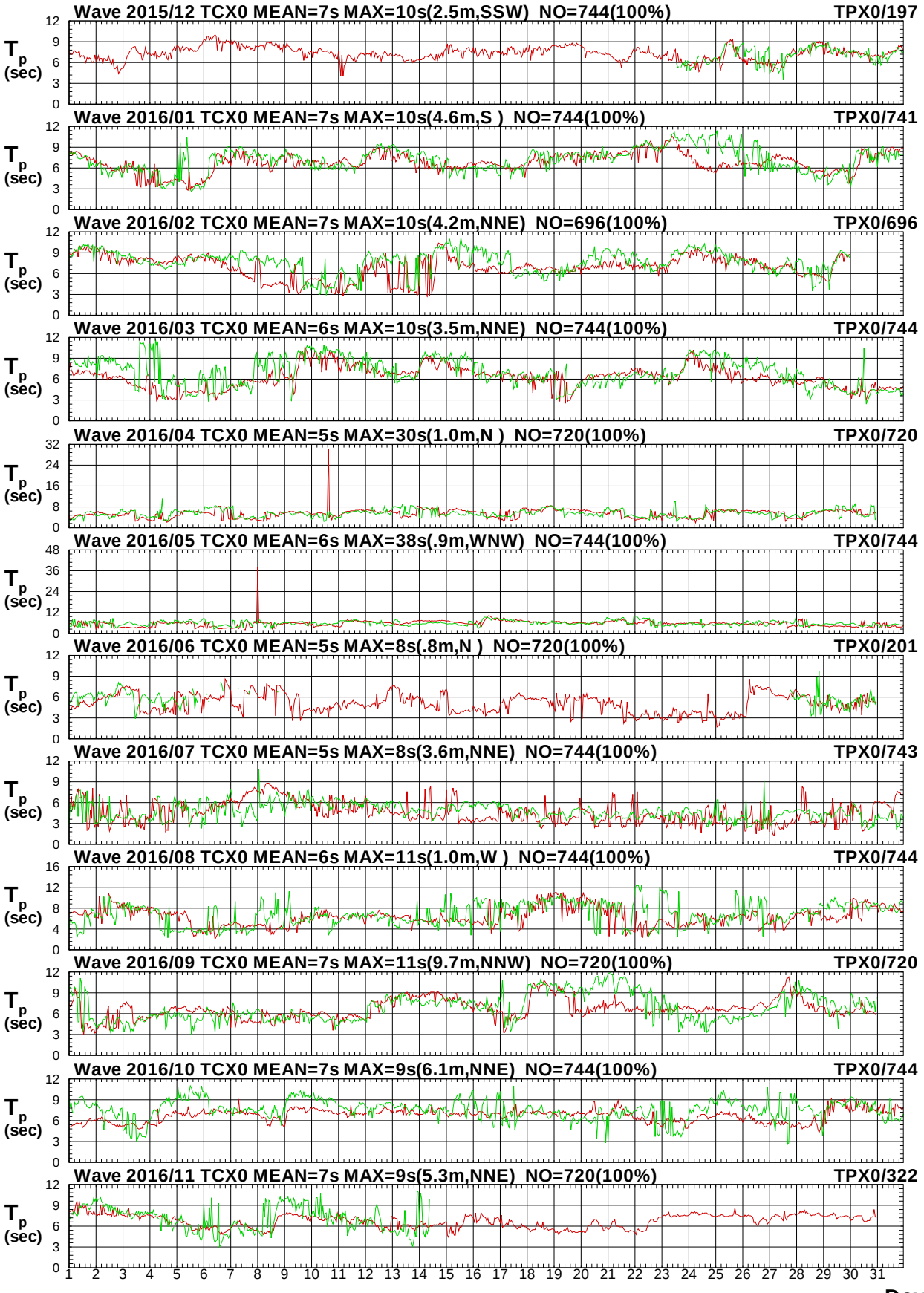

圖 9.12b　2016年每月中雲海域 X 站與北苗海域 X 站週期圖

Wave Direction in Chung-Yun Seas of TCX0 at 2016

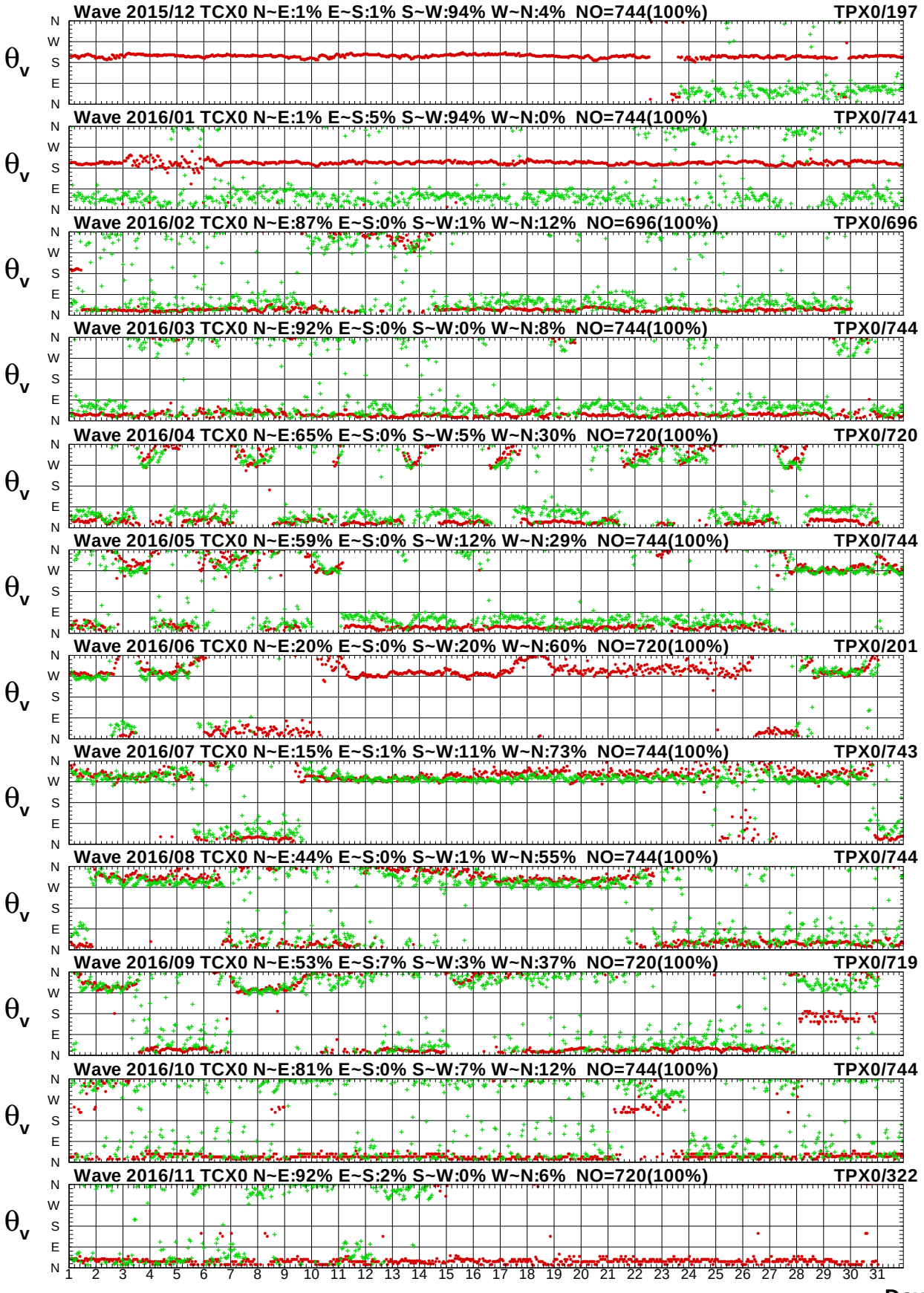

圖 9.12c　2016年每月中雲海域 X 站與北苗海域 X 站波向圖

Wave H_s in Chung-Yun Seas of TCX0 at 2016

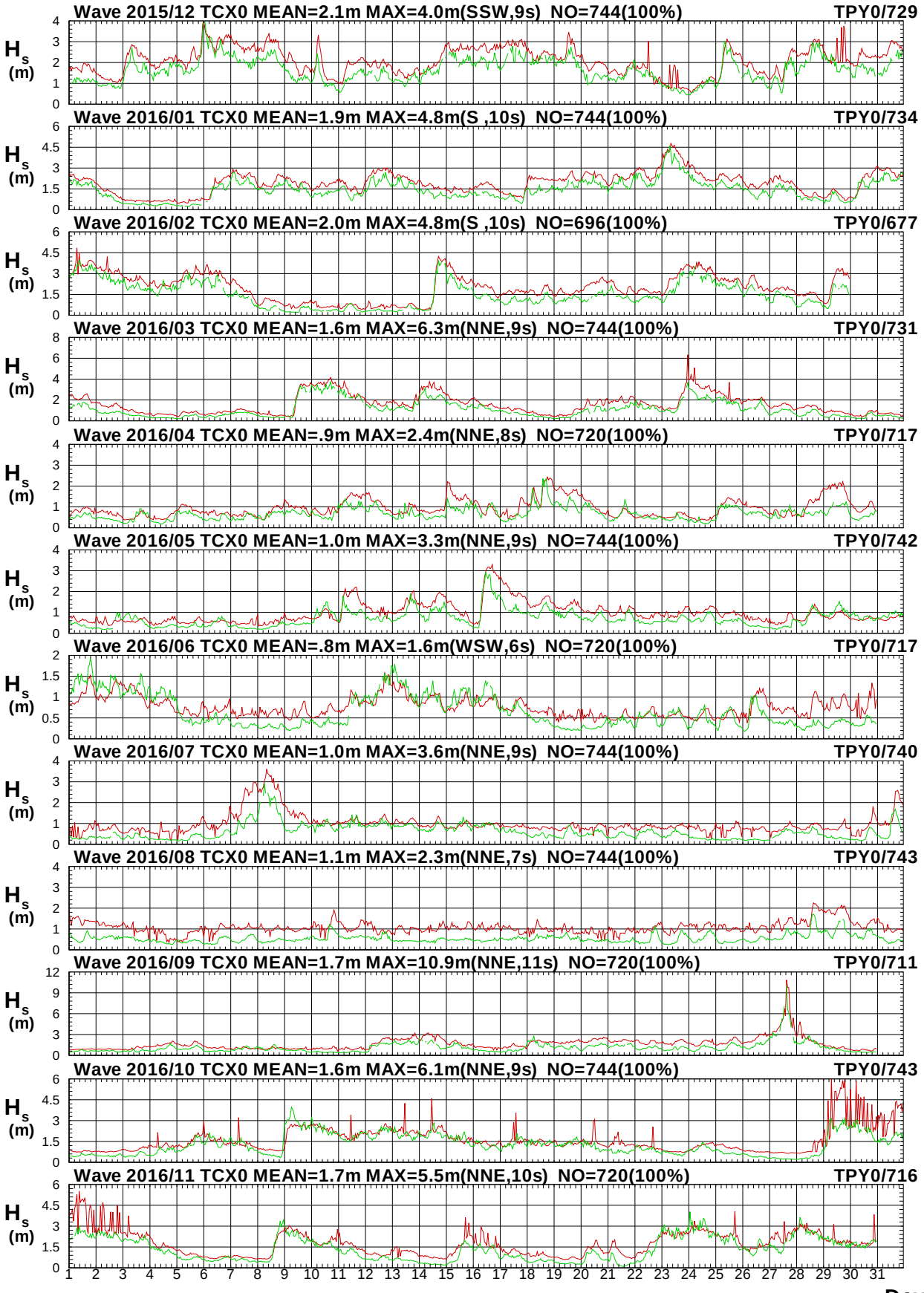

圖 9.13a　2016年每月中雲海域 X 站與北苗海域 Y 站波高圖

V15CTCX0.1HA V15CTPY0.1H0 V161TCX0.1HA V161TPY0.1H0 V162TCX0.1HA V162TPY0.1H0
V163TCX0.1HA V163TPY0.1H0 V164TCX0.1HA V164TPY0.1H0 V165TCX0.1HA V165TPY0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2016

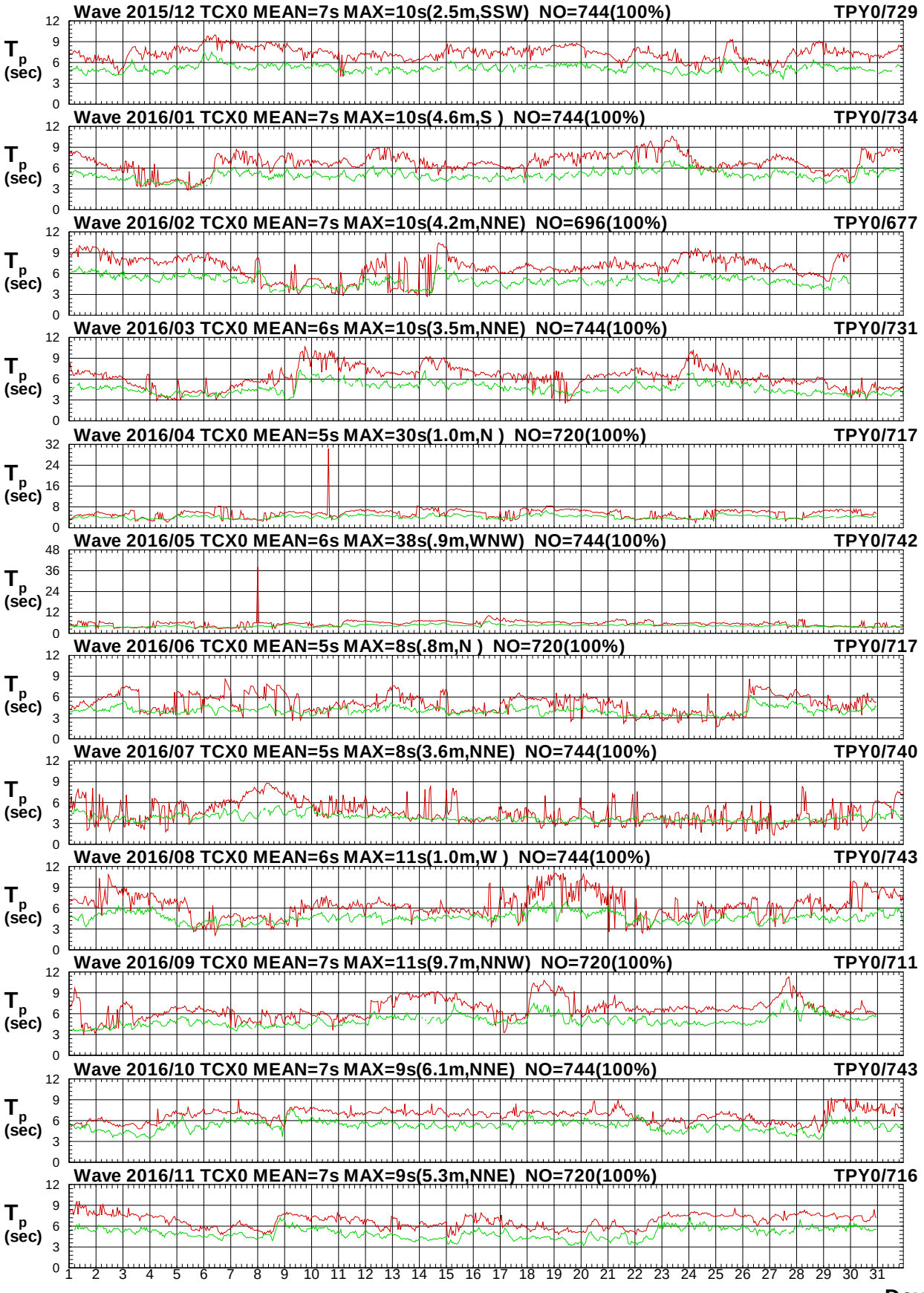

圖 9.13b　2016年每月中雲海域 X 站與北苗海域 Y 站週期圖

V15CTCX0.1HA V15CTPY0.1H0 V161TCX0.1HA V161TPY0.1H0 V162TCX0.1HA V162TPY0.1H0
V163TCX0.1HA V163TPY0.1H0 V164TCX0.1HA V164TPY0.1H0 V165TCX0.1HA V165TPY0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2016

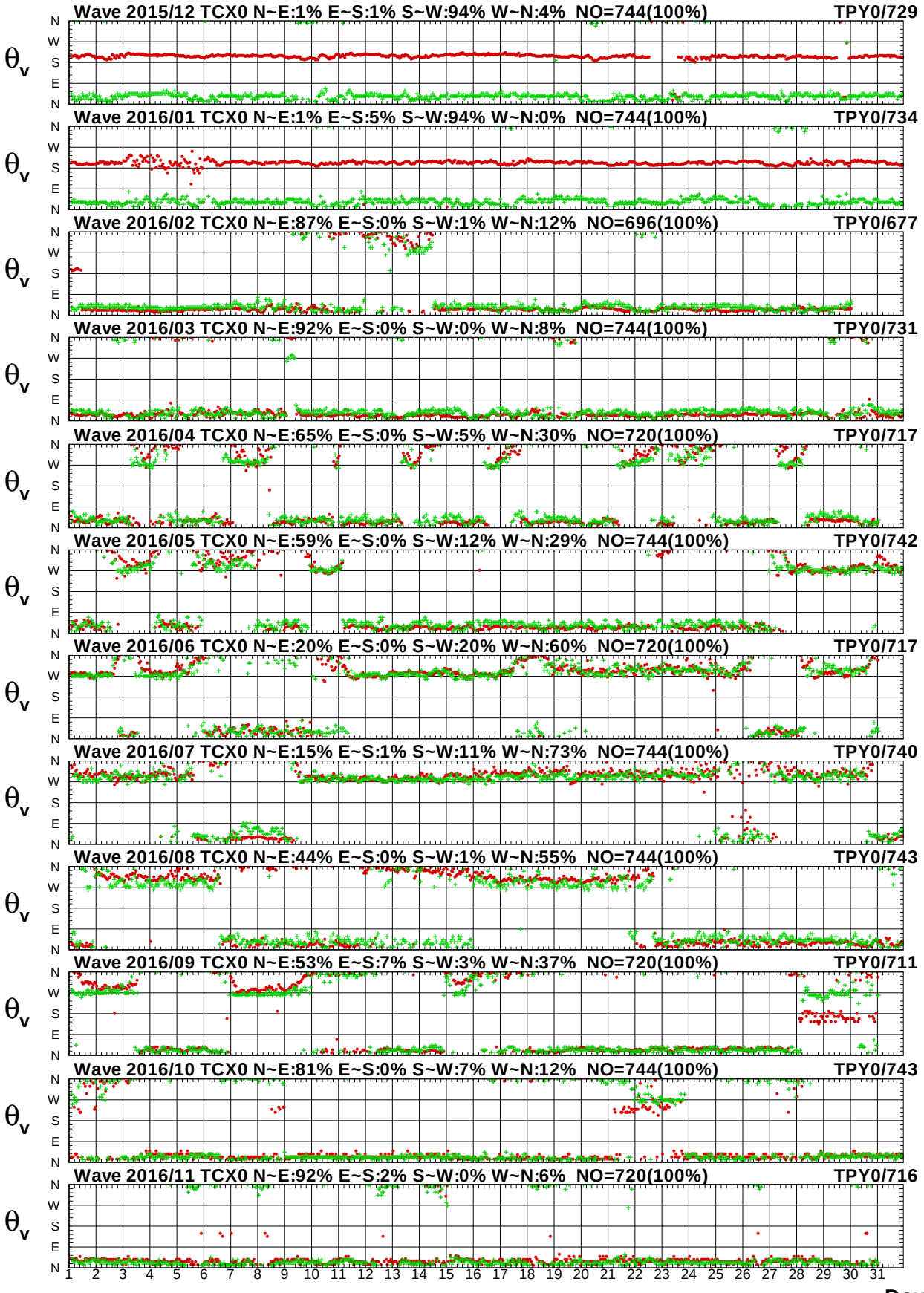

圖 9.13c　2016年每月中雲海域 X 站與北苗海域 Y 站波向圖

V15CTCX0.1HA V15CTPY0.1H0 V161TCX0.1HA V161TPY0.1H0 V162TCX0.1HA V162TPY0.1H0
V163TCX0.1HA V163TPY0.1H0 V164TCX0.1HA V164TPY0.1H0 V165TCX0.1HA V165TPY0.1H0

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第十章　2016 年澎湖海域觀測波浪資料

澎湖港波浪之觀測，本中心於**(IHMT)**2011 年 1 月安置挪威 NORTEK 公司之剖面海流表面波浪與潮汐之監測系統(簡稱 AWCP)，安裝在澎湖港龍門尖山港區波堤堤頭外(**測站 X**)，如附圖 10。

測站 Y(澎湖外海浮標站)之波浪儀屬水利署**(WRA)**所有，姑婆嶼北北西方約 1 公里處，水深 26.6 公尺浮標上。**測站 Z**(東吉島波浪站)及七美海上浮標(**測站 R**)之波浪儀屬中央氣象局**(CWB)**所有。各觀測站歷年觀測波浪資料蒐集概況如表 10。

波浪觀測 AWCP 系統有兩個分離波高量測模式：一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **Y 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 10.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 10.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 10.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 10.2 以後。

表 10 澎湖海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	23°33'21"N	119°40'31"E	2011/01-2016/11(觀測中)	港研中心	龍門尖山港外海
Y	23°43'37"N	119°33'07"E	2006/09-2016/11(觀測中)	水利署	澎湖資料浮標
Z	23°15'23"N	119°41'2"E	2013/10-2016/11(觀測中)	中央氣象局	東吉島波浪站
R	22°45'16"N	119°25'42"E	2015/07-2016/11(觀測中)	中央氣象局	七美資料浮標

圖 10 澎湖海域波浪觀測站位置示意圖

表10.1a 2016年每月澎湖海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域
測站	Y	X	Z	R				
2015/12月	618 (83.1%)	81 (10.9%)	*	694 (93.3%)	*	*	*	*
2016/ 1月	625 (84.0%)	731 (98.3%)	*	697 (93.7%)	*	*	*	*
2016/ 2月	552 (79.3%)	682 (98.0%)	*	657 (94.4%)	*	*	*	*
2016/ 3月	667 (89.7%)	728 (97.8%)	*	238 (32.0%)	*	*	*	*
2016/ 4月	698 (96.9%)	697 (96.8%)	*	78 (10.8%)	*	*	*	*
2016/ 5月	726 (97.6%)	740 (99.5%)	*	*	*	*	*	*
2016/ 6月	720 (100%)	716 (99.4%)	*	*	*	*	*	*
2016/ 7月	714 (96.0%)	711 (95.6%)	*	319 (42.9%)	*	*	*	*
2016/ 8月	741 (99.6%)	701 (94.2%)	*	736 (98.9%)	*	*	*	*
2016/ 9月	693 (96.3%)	634 (88.1%)	*	680 (94.4%)	*	*	*	*
2016/10月	102 (13.7%)	*	*	643 (86.4%)	*	*	*	*
2016/11月	659 (91.5%)	*	*	607 (84.3%)	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表10.1b 2016年每月澎湖海域修補後各測站波浪資料統計表

年/月 港區	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域	澎湖海域
測站	Y	X	Z	R				
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Peng-Hu Seas of PHY0 at 2016

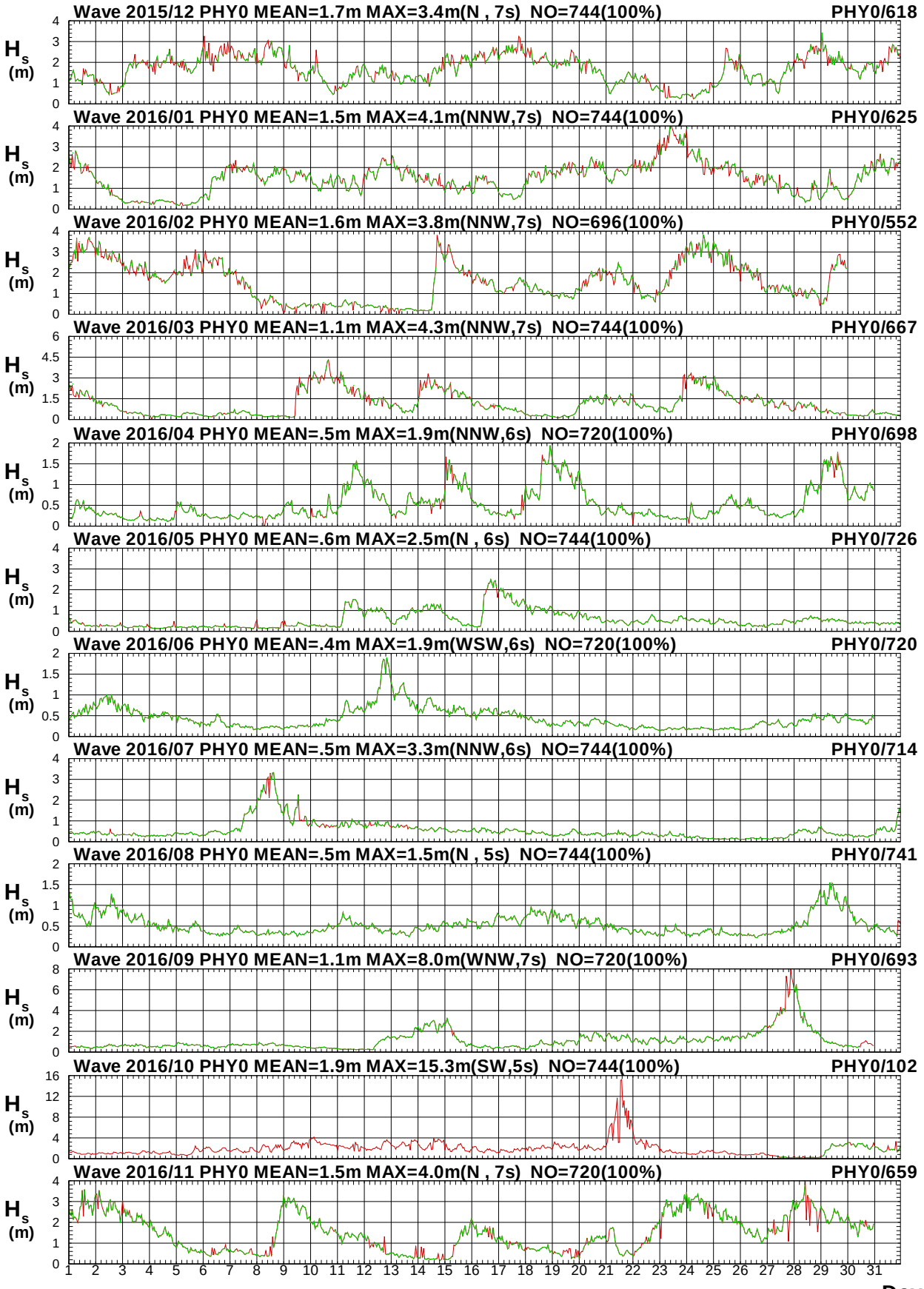

圖 10.1a　2016年每月澎湖海域 Y 站修補前後之波高比較圖

V15CPHY0.1HA V15CPHY0.1H0 V161PHY0.1HA V161PHY0.1H0 V162PHY0.1HA V162PHY0.1H0
V163PHY0.1HA V163PHY0.1H0 V164PHY0.1HA V164PHY0.1H0 V165PHY0.1HA V165PHY0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

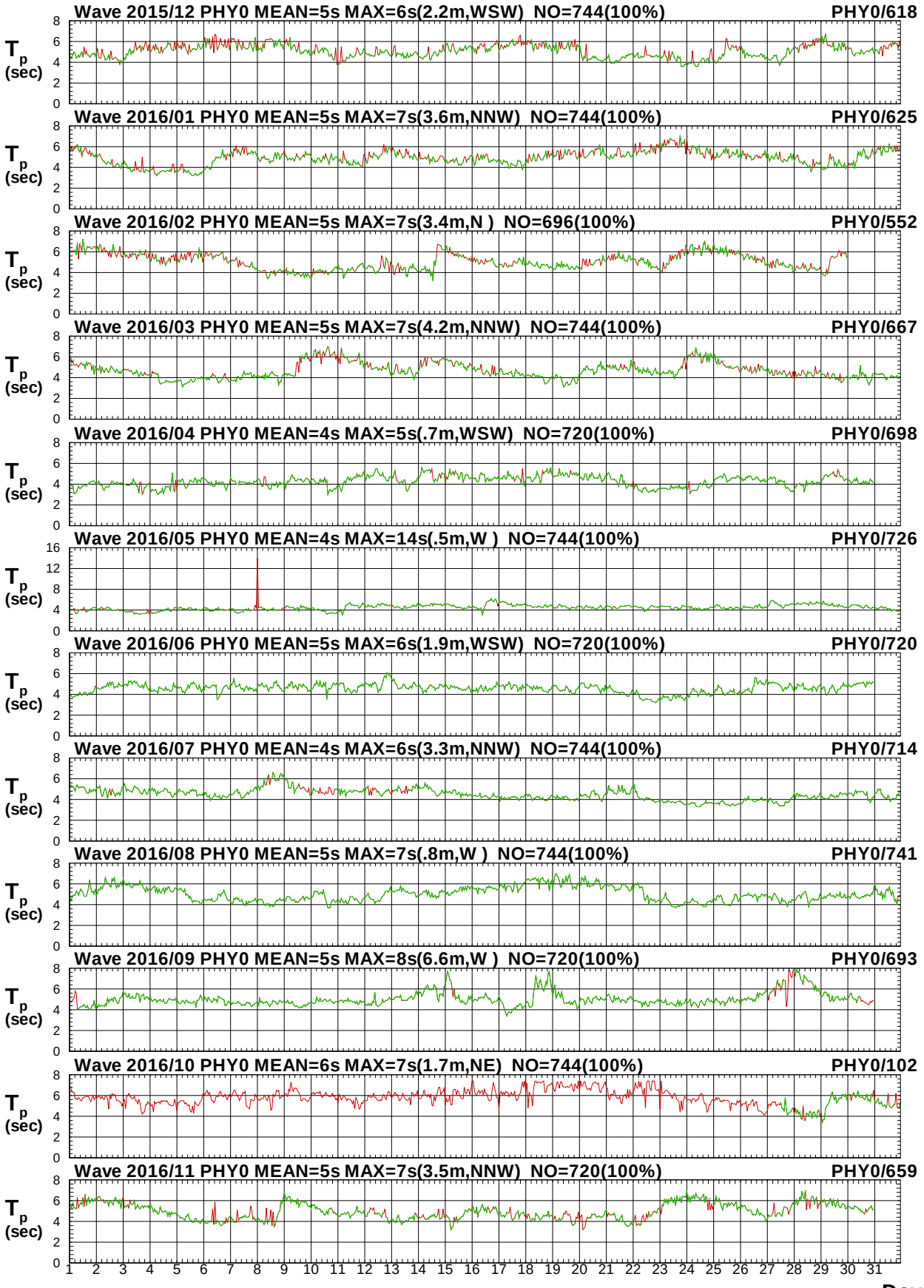

圖 10.1b　2016年每月澎湖海域 Y 站修補前後之週期比較圖

V15CPHY0.1HA V15CPHY0.1H0 V161PHY0.1HA V161PHY0.1H0 V162PHY0.1HA V162PHY0.1H0
V163PHY0.1HA V163PHY0.1H0 V164PHY0.1HA V164PHY0.1H0 V165PHY0.1HA V165PHY0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

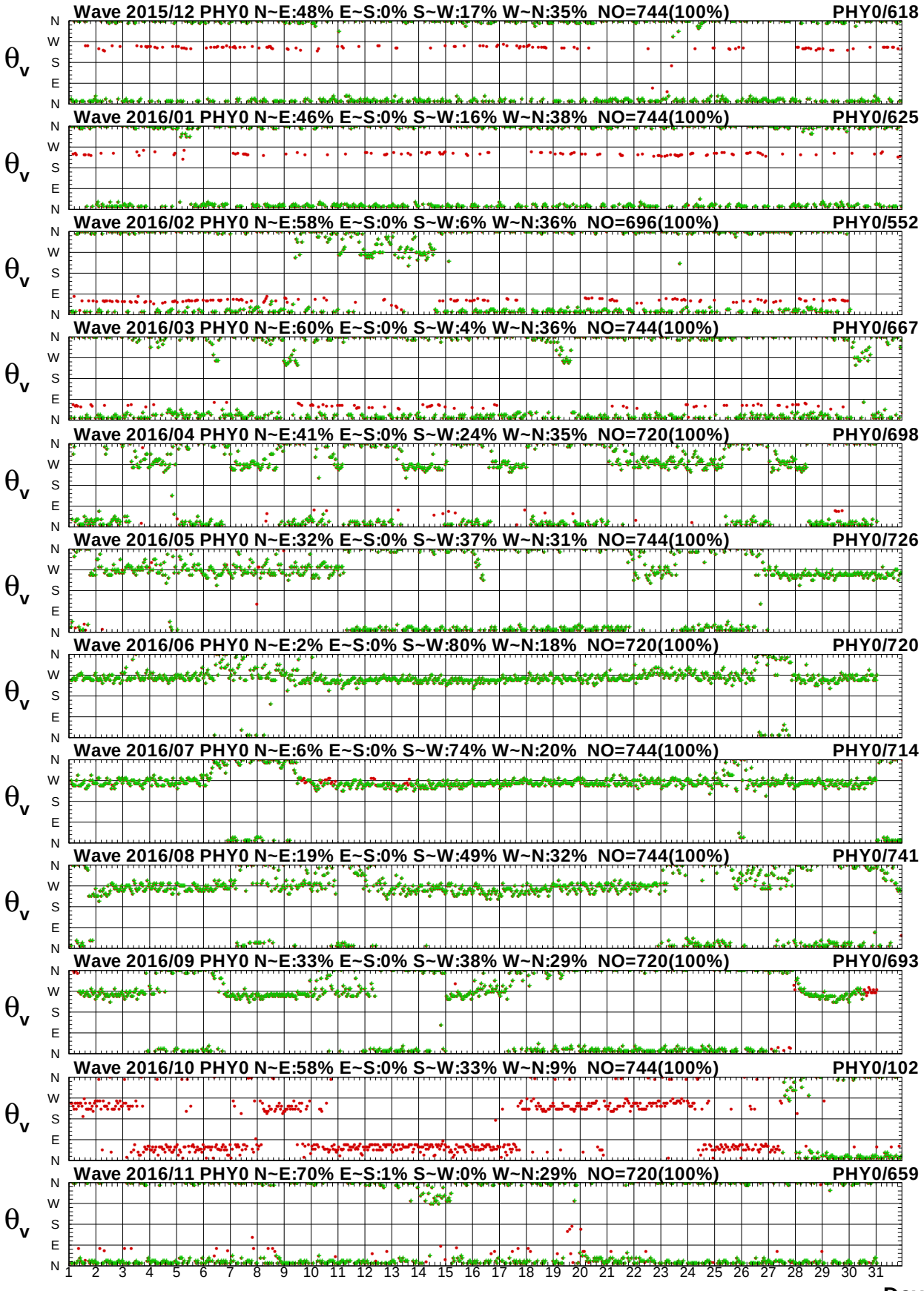

圖 10.1c　2016年每月澎湖海域 Y 站修補前後之波向比較圖

V15CPHY0.1HA V15CPHY0.1H0 V161PHY0.1HA V161PHY0.1H0 V162PHY0.1HA V162PHY0.1H0
V163PHY0.1HA V163PHY0.1H0 V164PHY0.1HA V164PHY0.1H0 V165PHY0.1HA V165PHY0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

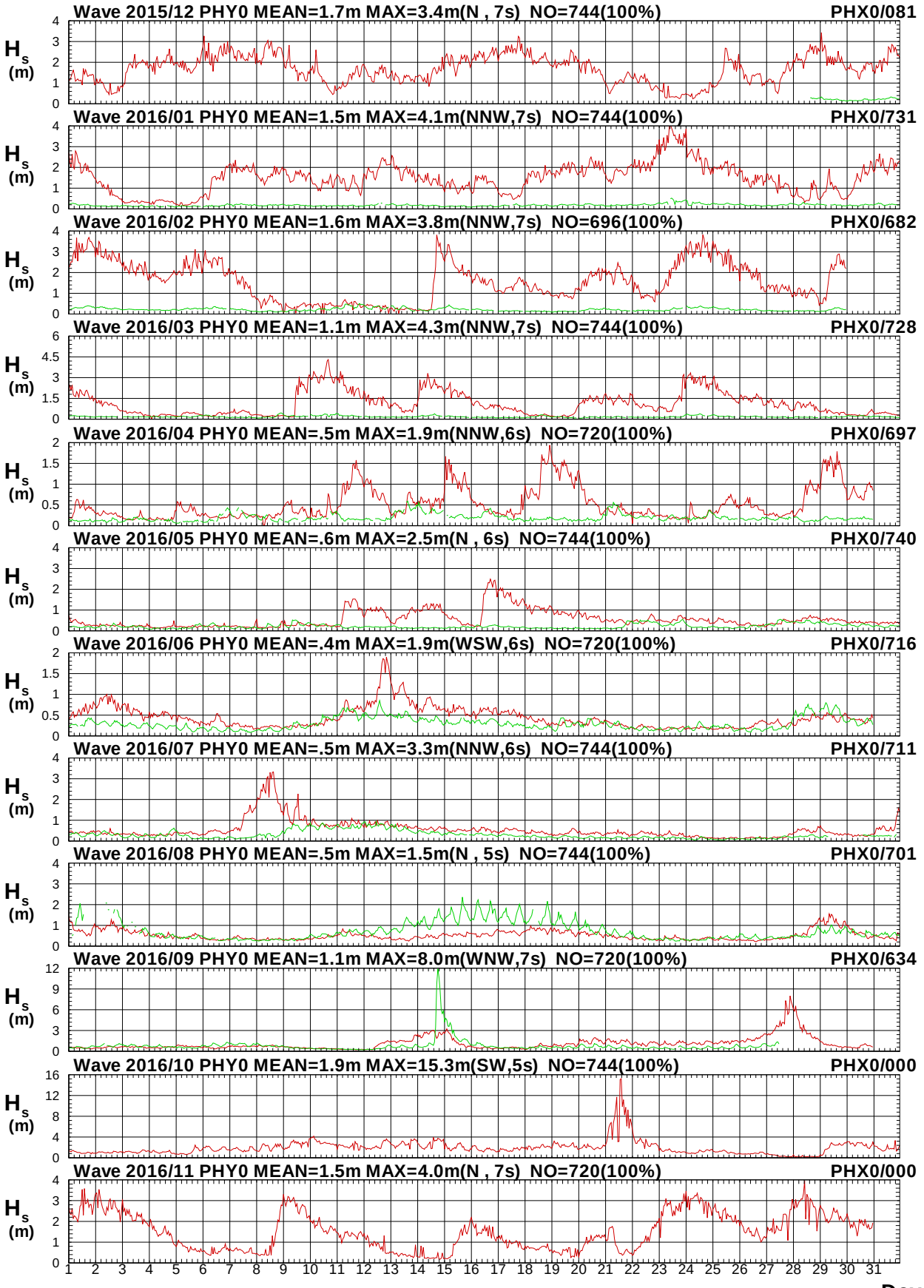

圖 10.2a　2016年每月澎湖海域 Y 站與 X 站波高比較圖

V15CPHY0.1HA V15CPHX0.1H0 V161PHY0.1HA V161PHX0.1H0 V162PHY0.1HA V162PHX0.1H0
V163PHY0.1HA V163PHX0.1H0 V164PHY0.1HA V164PHX0.1H0 V165PHY0.1HA V165PHX0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

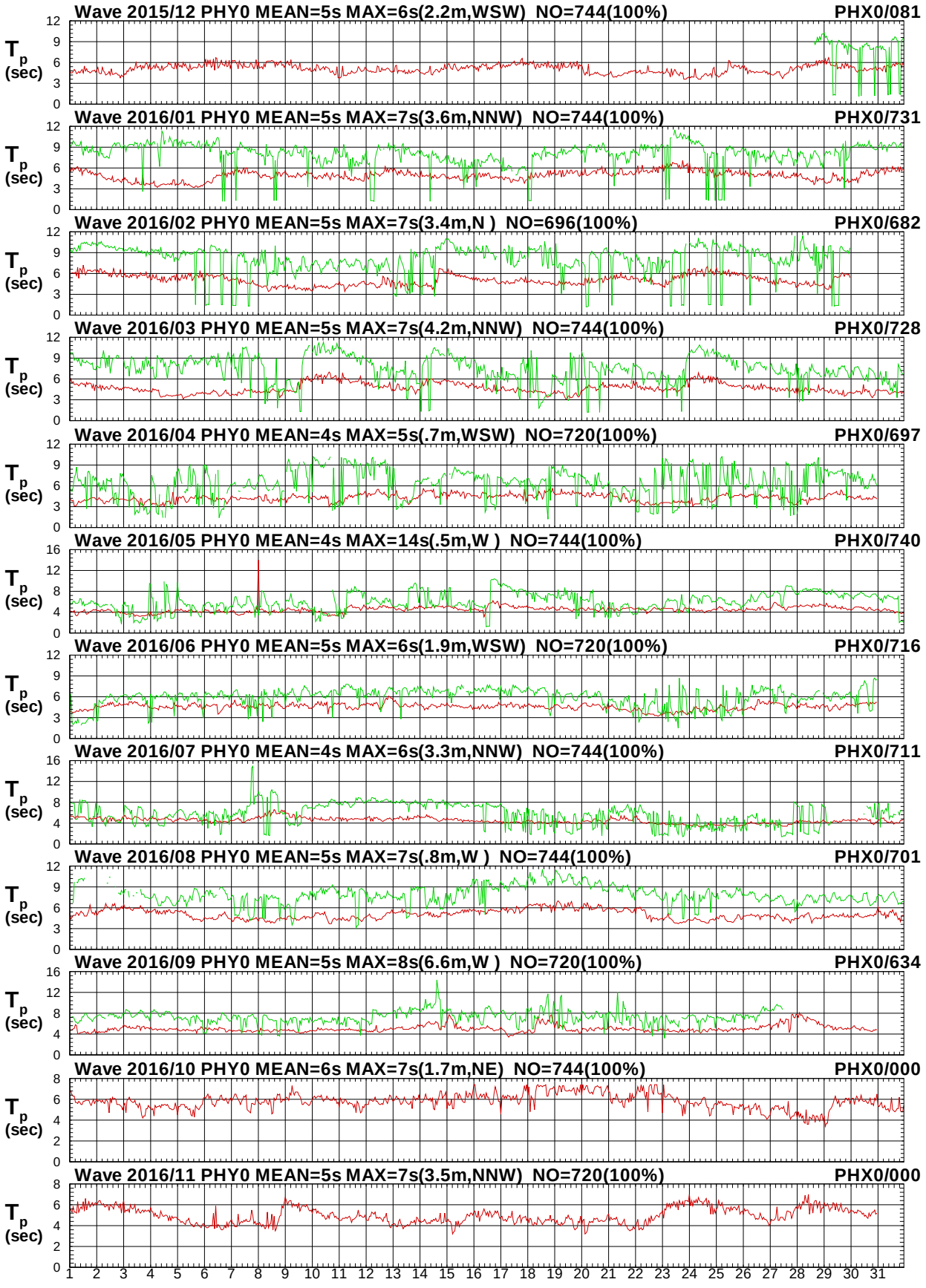

圖 10.2b　2016年每月澎湖海域 Y 站與 X 站週期比較圖

V15CPHY0.1HA V15CPHX0.1H0 V161PHY0.1HA V161PHX0.1H0 V162PHY0.1HA V162PHX0.1H0
V163PHY0.1HA V163PHX0.1H0 V164PHY0.1HA V164PHX0.1H0 V165PHY0.1HA V165PHX0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

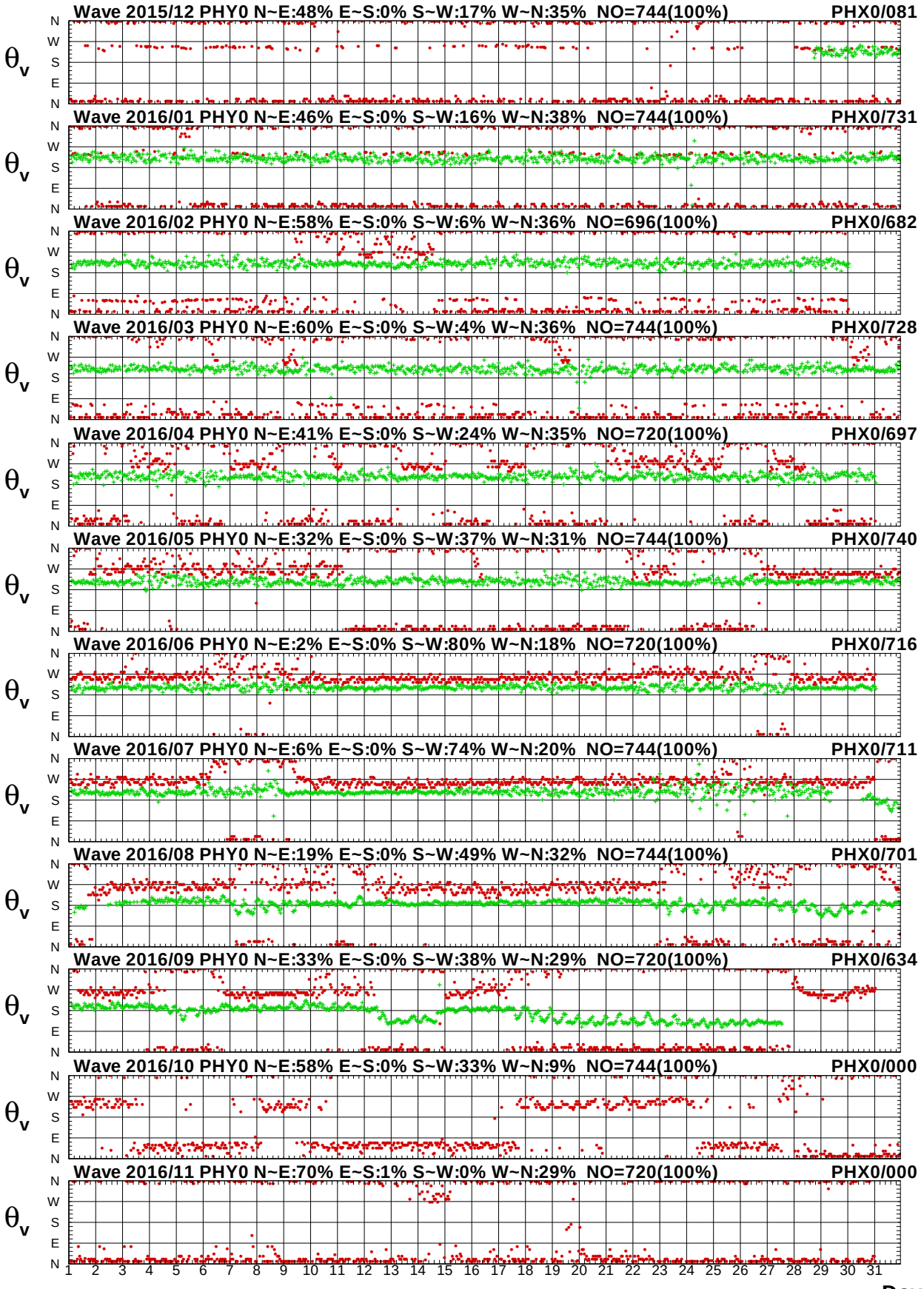

圖10.2c　2016年每月澎湖海域 Y 站與 X 站波向比較圖

V15CPHY0.1HA V15CPHX0.1H0 V161PHY0.1HA V161PHX0.1H0 V162PHY0.1HA V162PHX0.1H0
V163PHY0.1HA V163PHX0.1H0 V164PHY0.1HA V164PHX0.1H0 V165PHY0.1HA V165PHX0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

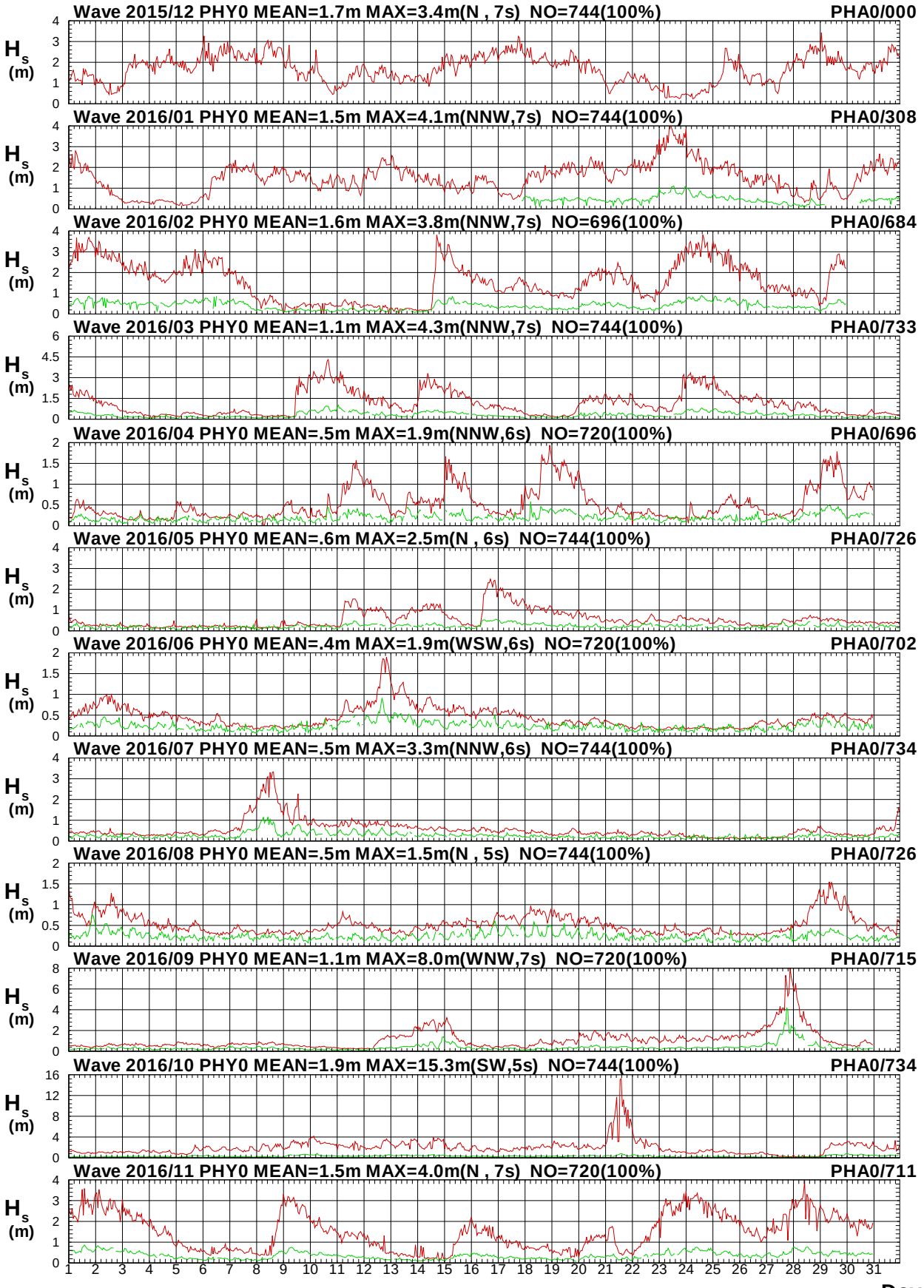

圖 10.3a　2016年每月澎湖海域 Y 站與 A 站波高比較圖

V15CPHY0.1HA V15CPHA0.1H0 V161PHY0.1HA V161PHA0.1H0 V162PHY0.1HA V162PHA0.1H0
V163PHY0.1HA V163PHA0.1H0 V164PHY0.1HA V164PHA0.1H0 V165PHY0.1HA V165PHA0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

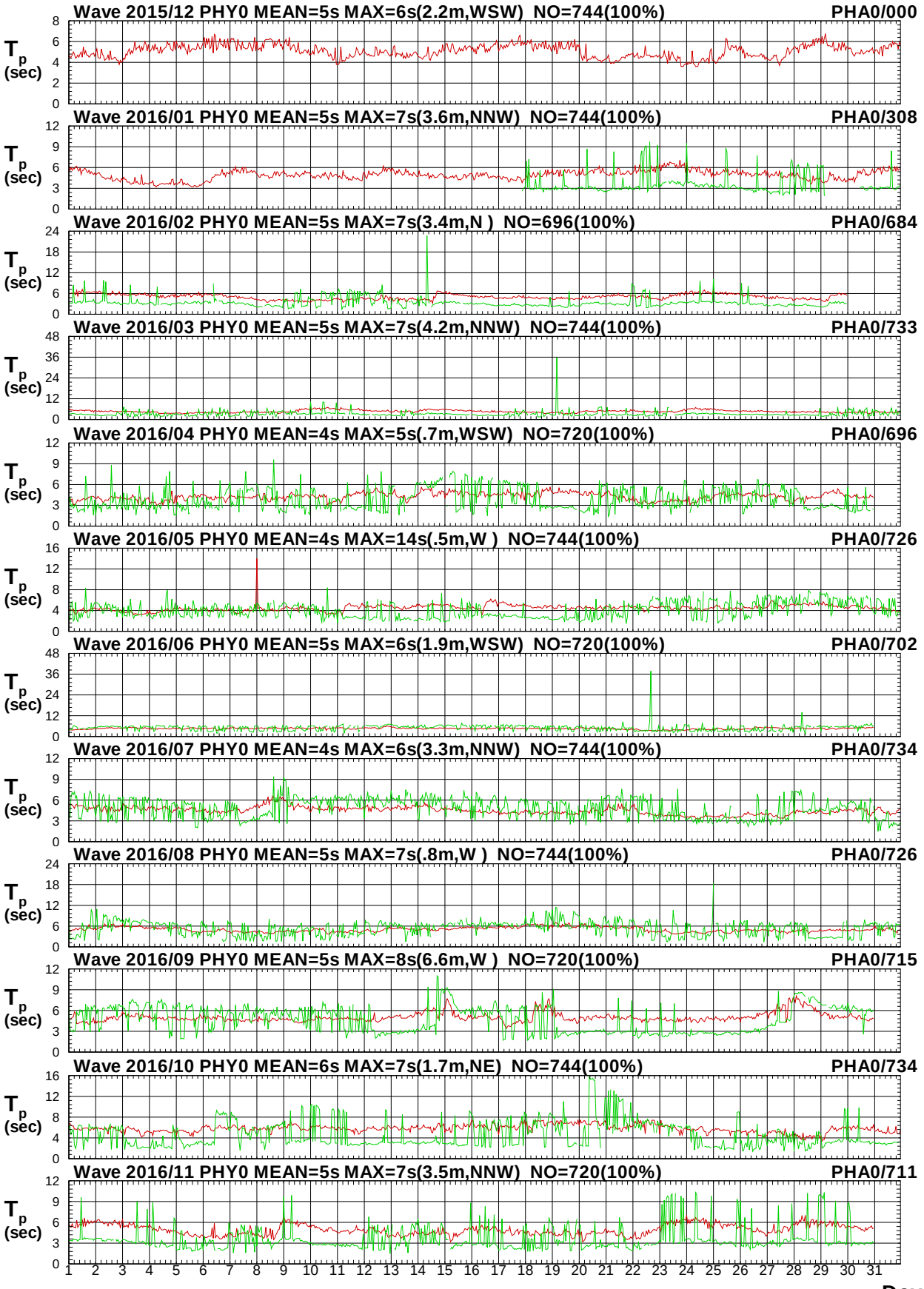

圖 10.3b　2016年每月澎湖海域 Y 站與 A 站週期比較圖

V15CPHY0.1HA V15CPHA0.1H0 V161PHY0.1HA V161PHA0.1H0 V162PHY0.1HA V162PHA0.1H0
V163PHY0.1HA V163PHA0.1H0 V164PHY0.1HA V164PHA0.1H0 V165PHY0.1HA V165PHA0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

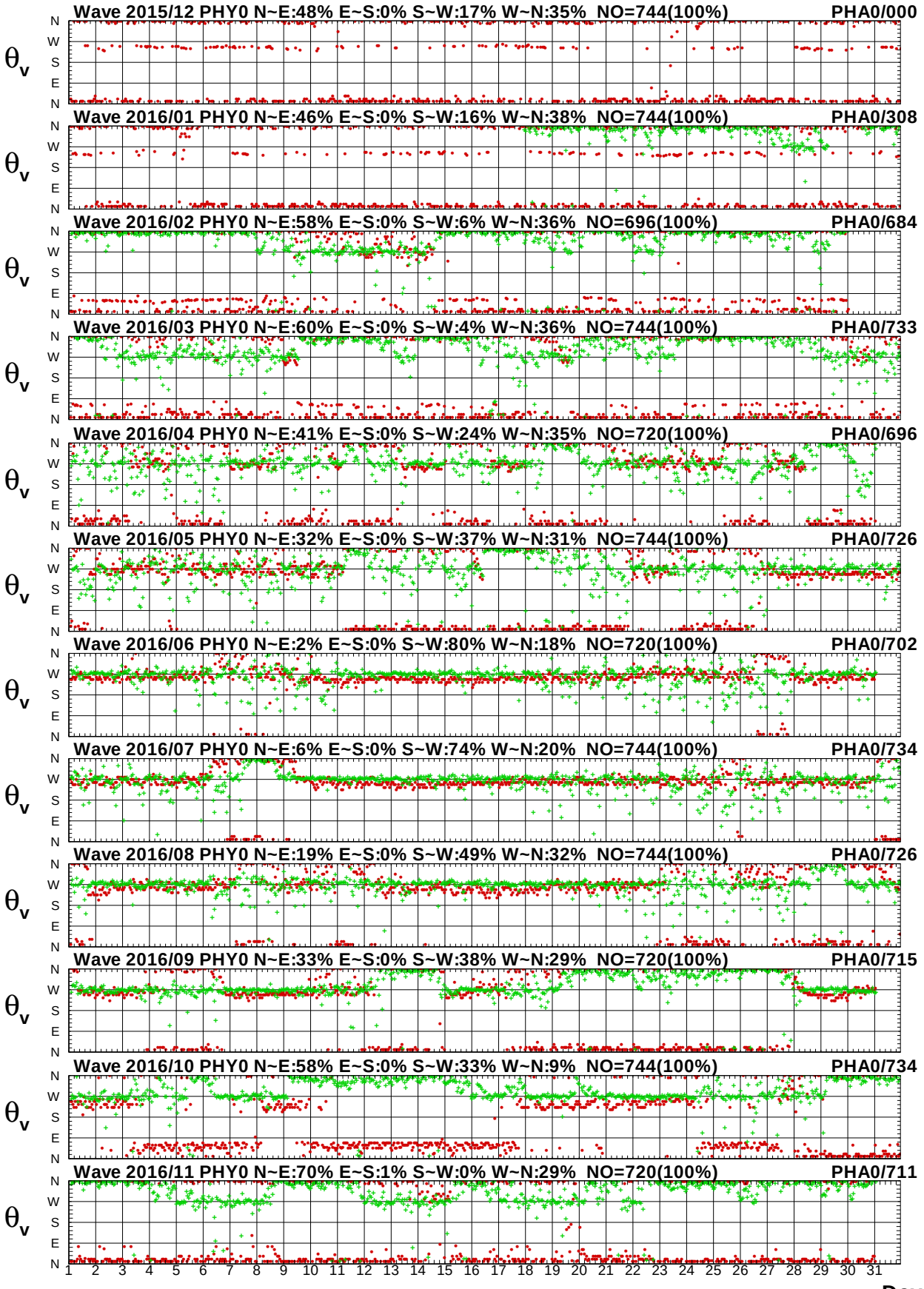

圖10.3c　2016年每月澎湖海域 Y 站與 A 站波向比較圖

V15CPHY0.1HA V15CPHA0.1H0 V161PHY0.1HA V161PHA0.1H0 V162PHY0.1HA V162PHA0.1H0
V163PHY0.1HA V163PHA0.1H0 V164PHY0.1HA V164PHA0.1H0 V165PHY0.1HA V165PHA0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

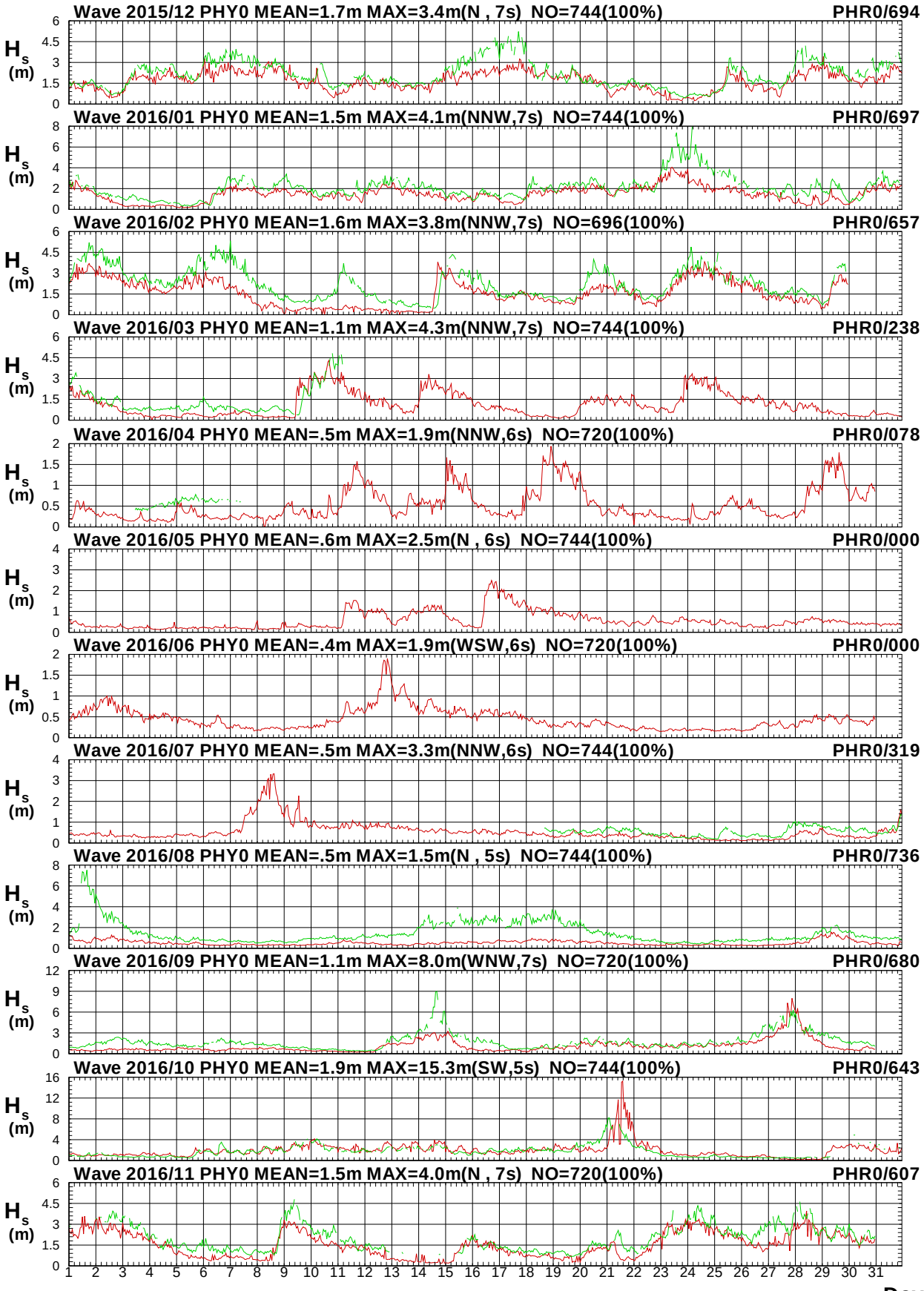

圖 10.4a　2016年每月澎湖海域 Y 站與 R 站波高比較圖

V15CPHY0.1HA V15CPHR0.1H0 V161PHY0.1HA V161PHR0.1H0 V162PHY0.1HA V162PHR0.1H0
V163PHY0.1HA V163PHR0.1H0 V164PHY0.1HA V164PHR0.1H0 V165PHY0.1HA V165PHR0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

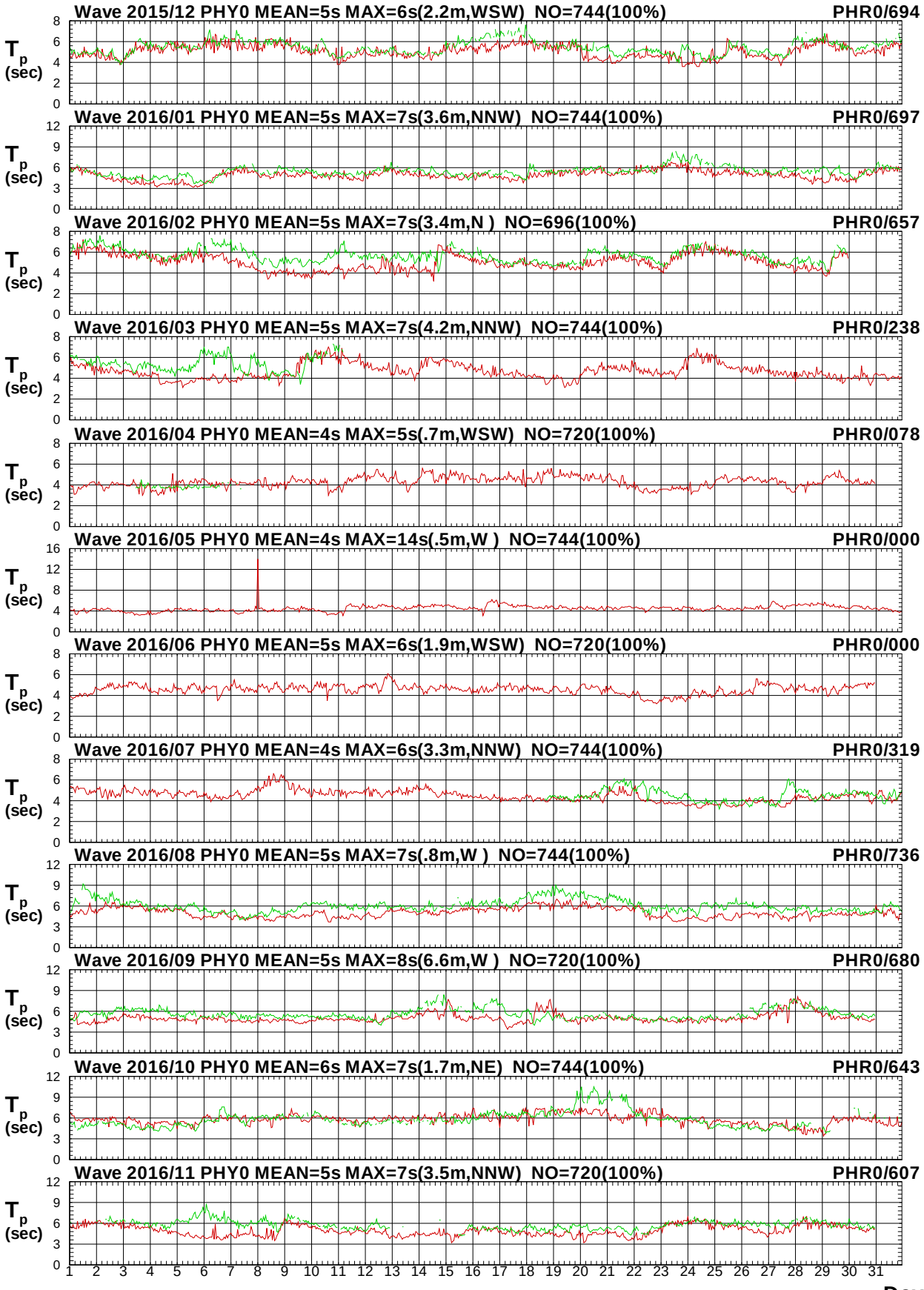

圖 10.4b　2016年每月澎湖海域 Y 站與 R 站週期比較圖

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V163PHY0.1HA V163PHR0.1H0 V164PHY0.1HA V164PHR0.1H0 V165PHY0.1HA V165PHR0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

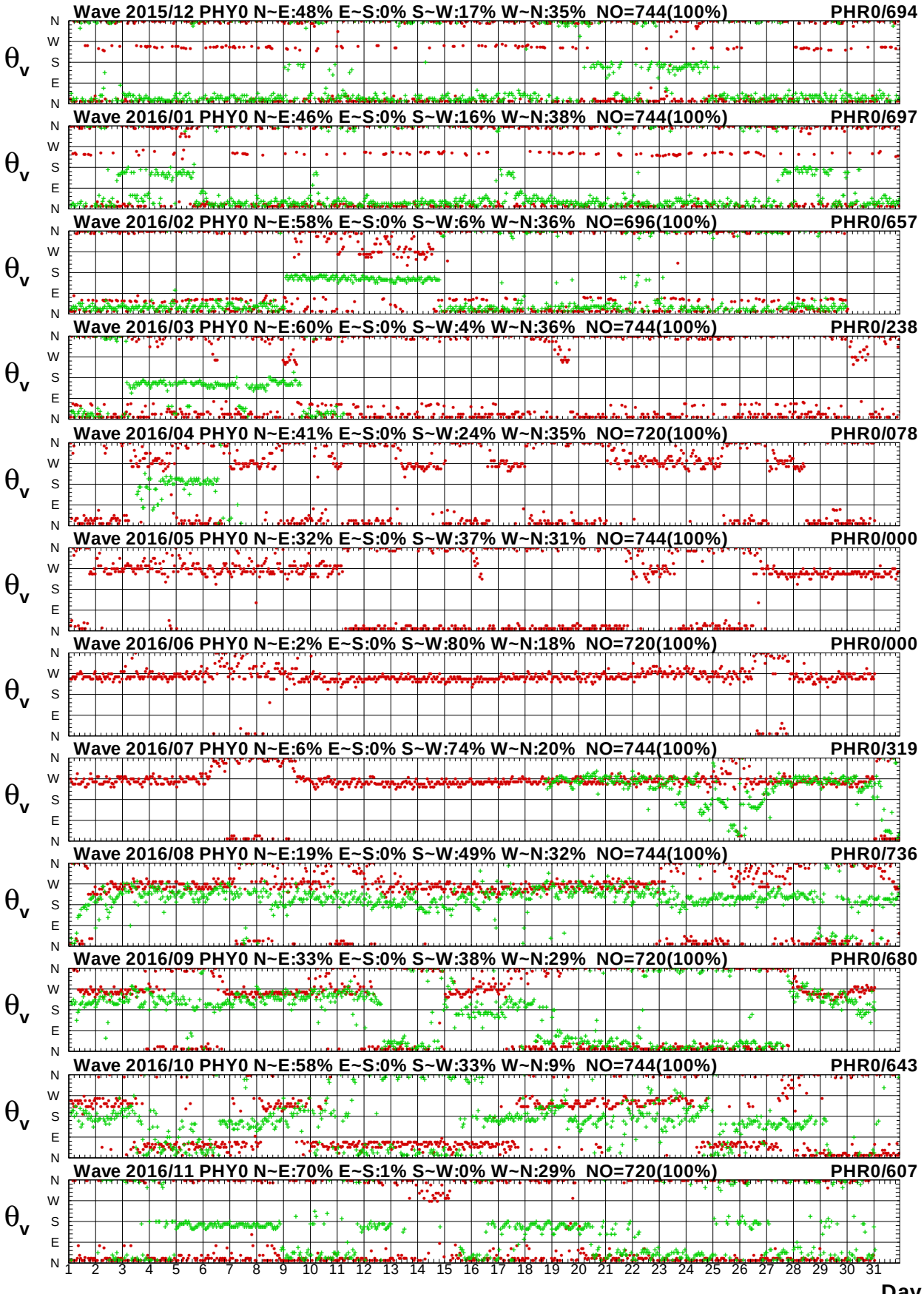

圖10.4c　2016年每月澎湖海域 Y 站與 R 站波向比較圖

V15CPHY0.1HA V15CPHR0.1H0 V161PHY0.1HA V161PHR0.1H0 V162PHY0.1HA V162PHR0.1H0
V163PHY0.1HA V163PHR0.1H0 V164PHY0.1HA V164PHR0.1H0 V165PHY0.1HA V165PHR0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

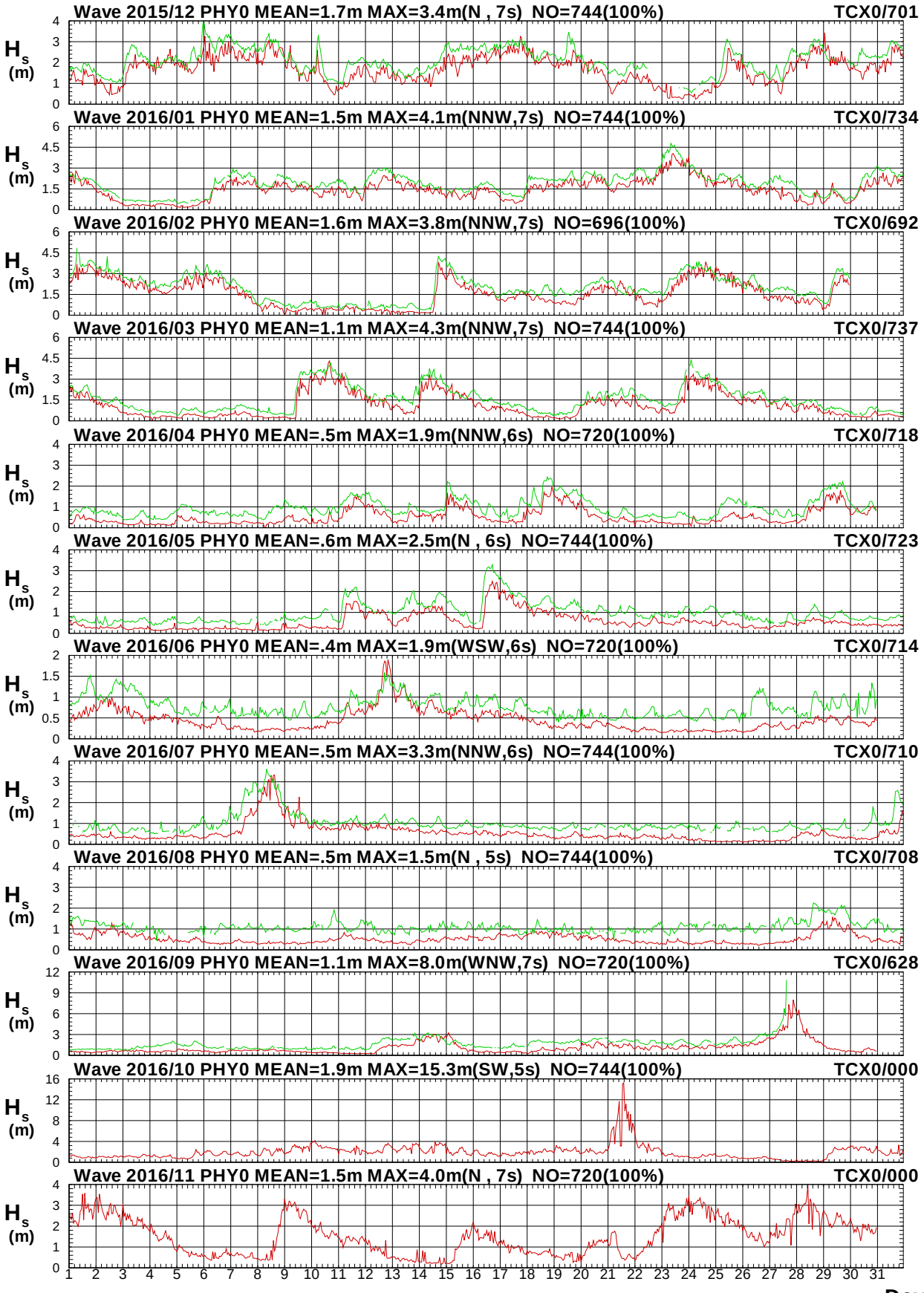

圖 10.5a　2016年每月澎湖海域 Y 站與中雲海域 X 站波高圖

V15CPHY0.1HA V15CTCX0.1H0 V161PHY0.1HA V161TCX0.1H0 V162PHY0.1HA V162TCX0.1H0
V163PHY0.1HA V163TCX0.1H0 V164PHY0.1HA V164TCX0.1H0 V165PHY0.1HA V165TCX0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

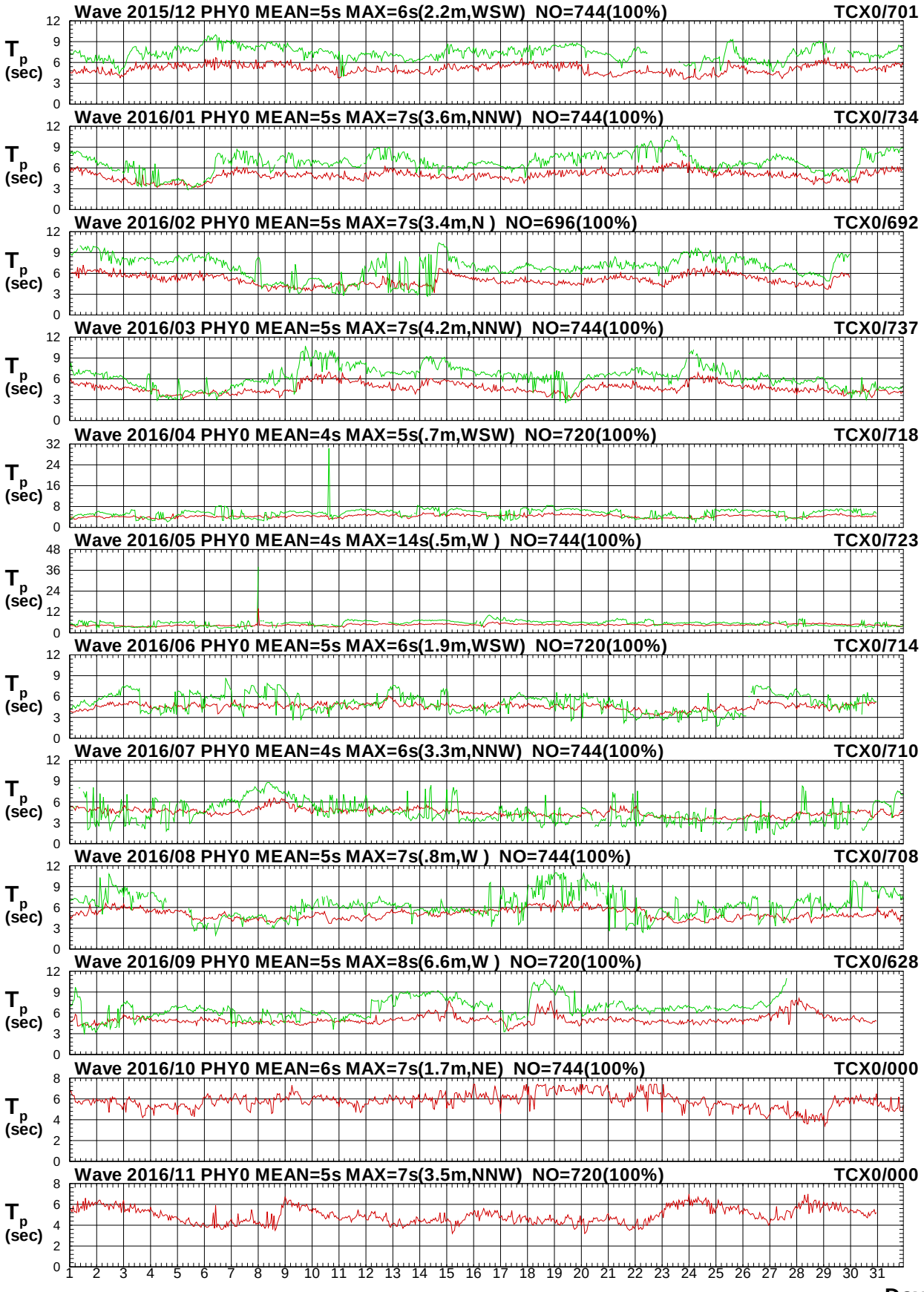

圖 10.5b　2016年每月澎湖海域 Y 站與中雲海域 X 站週期圖

V15CPHY0.1HA V15CTCX0.1H0 V161PHY0.1HA V161TCX0.1H0 V162PHY0.1HA V162TCX0.1H0
V163PHY0.1HA V163TCX0.1H0 V164PHY0.1HA V164TCX0.1H0 V165PHY0.1HA V165TCX0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

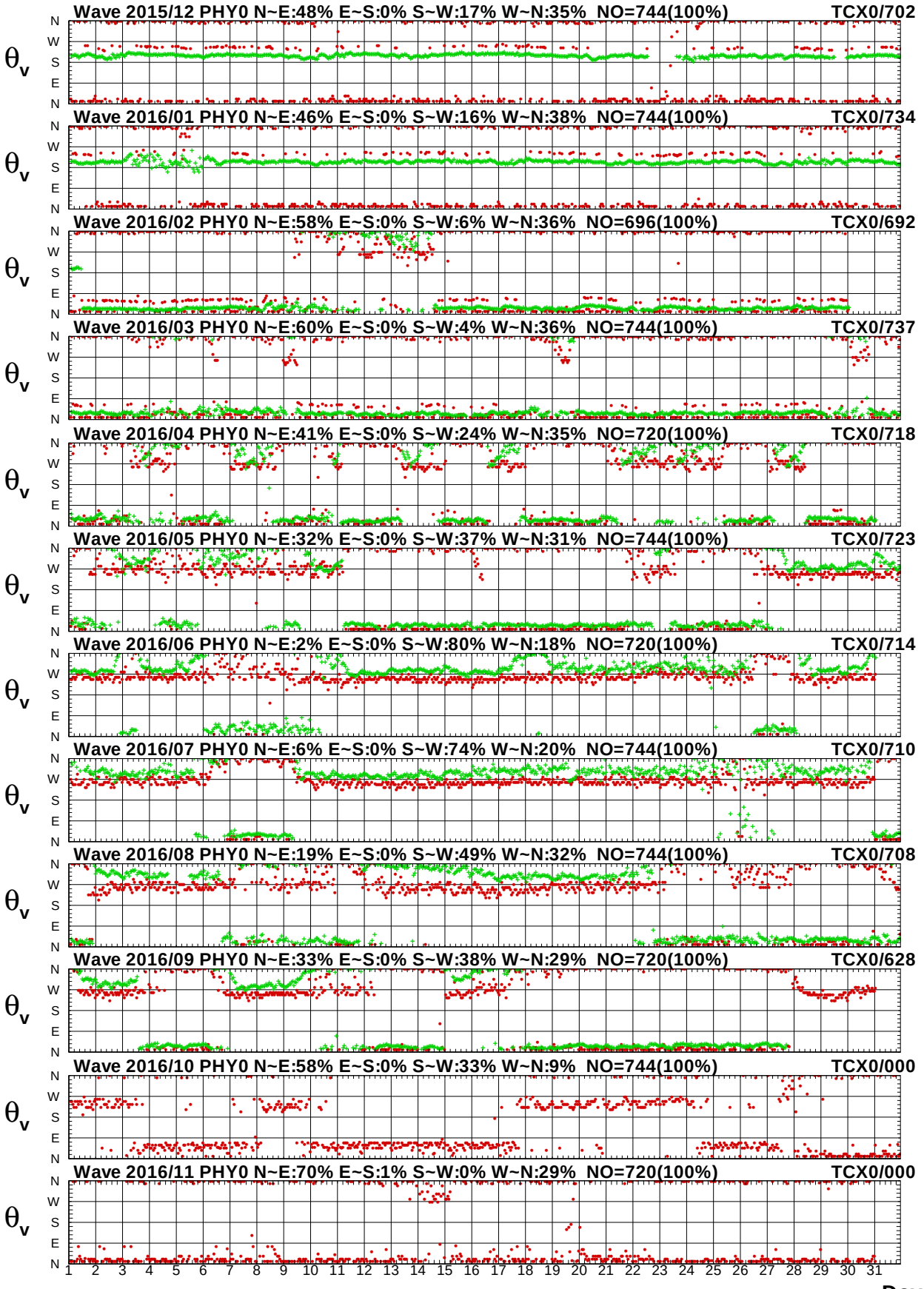

圖 10.5c　2016年每月澎湖海域 Y 站與中雲海域 X 站波向圖

V15CPHY0.1HA V15CTCX0.1H0 V161PHY0.1HA V161TCX0.1H0 V162PHY0.1HA V162TCX0.1H0
V163PHY0.1HA V163TCX0.1H0 V164PHY0.1HA V164TCX0.1H0 V165PHY0.1HA V165TCX0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

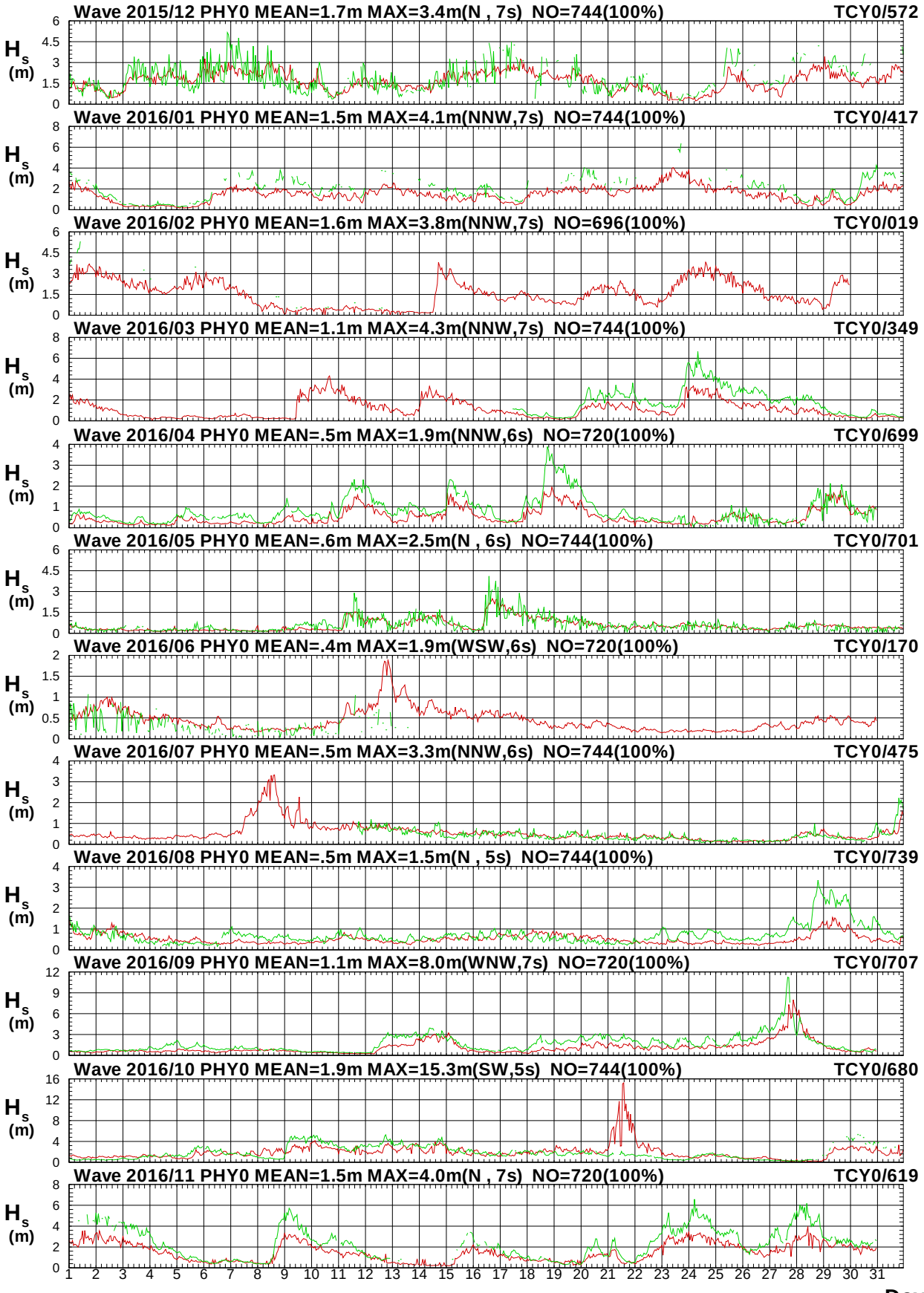

圖 10.6a　2016年每月澎湖海域 Y 站與中雲海域 Y 站波高圖

V15CPHY0.1HA V15CTCY0.1H0 V161PHY0.1HA V161TCY0.1H0 V162PHY0.1HA V162TCY0.1H0
V163PHY0.1HA V163TCY0.1H0 V164PHY0.1HA V164TCY0.1H0 V165PHY0.1HA V165TCY0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

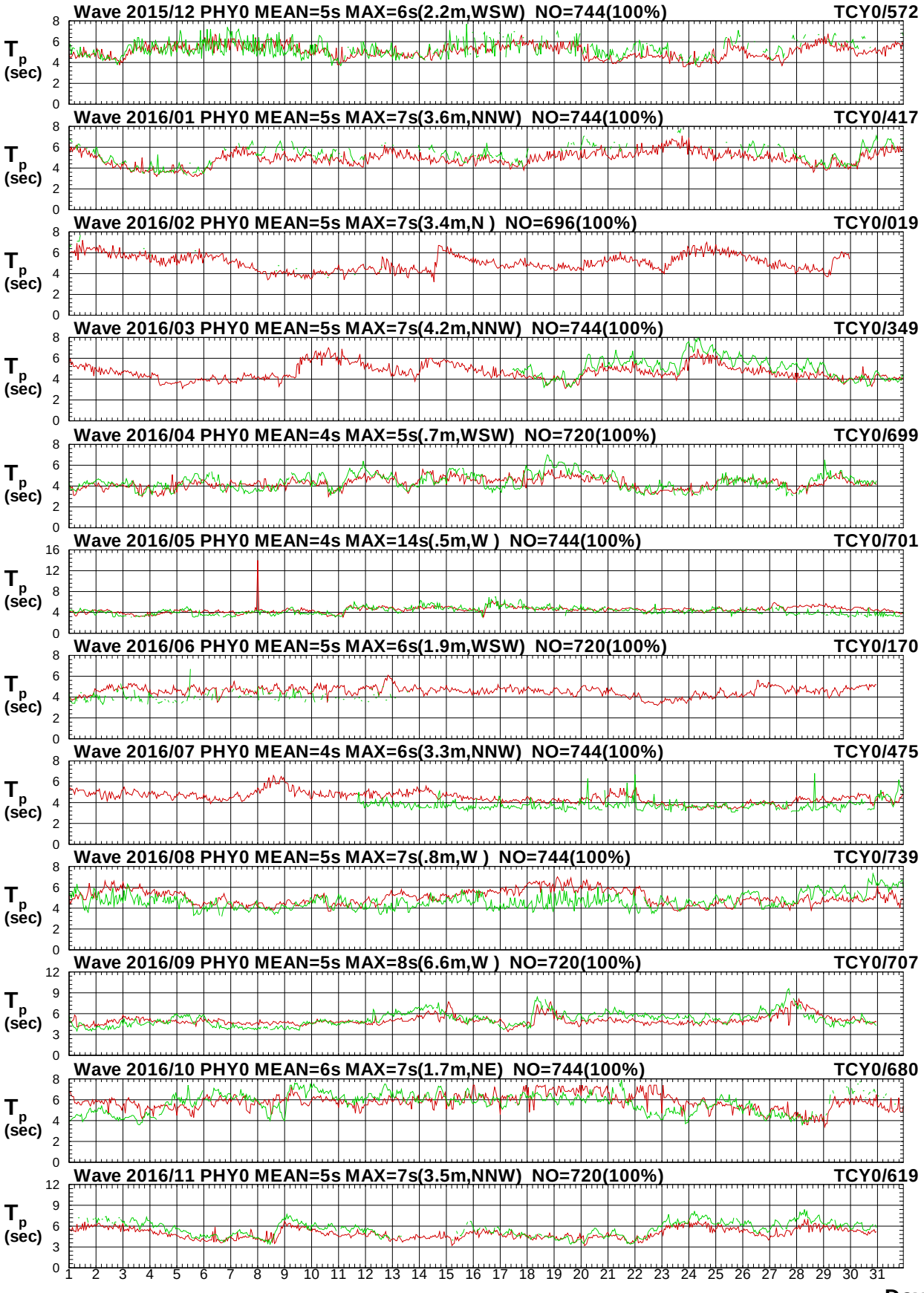

圖 10.6b　2016年每月澎湖海域 Y 站與中雲海域 Y 站週期圖

V15CPHY0.1HA V15CTCY0.1H0 V161PHY0.1HA V161TCY0.1H0 V162PHY0.1HA V162TCY0.1H0
V163PHY0.1HA V163TCY0.1H0 V164PHY0.1HA V164TCY0.1H0 V165PHY0.1HA V165TCY0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

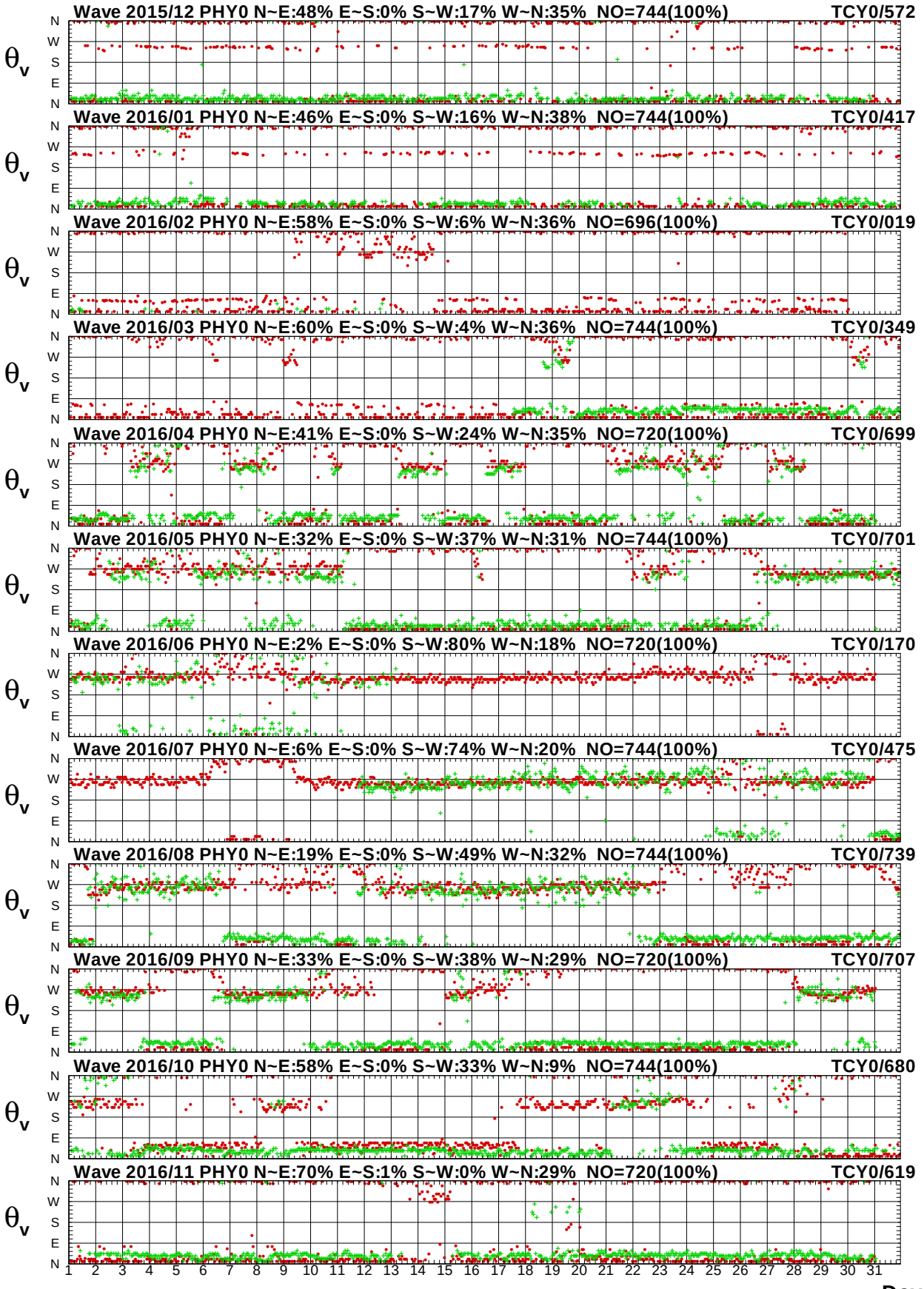

圖 10.6c　2016年每月澎湖海域 Y 站與中雲海域 Y 站波向圖

V15CPHY0.1HA V15CTCY0.1H0 V161PHY0.1HA V161TCY0.1H0 V162PHY0.1HA V162TCY0.1H0
V163PHY0.1HA V163TCY0.1H0 V164PHY0.1HA V164TCY0.1H0 V165PHY0.1HA V165TCY0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

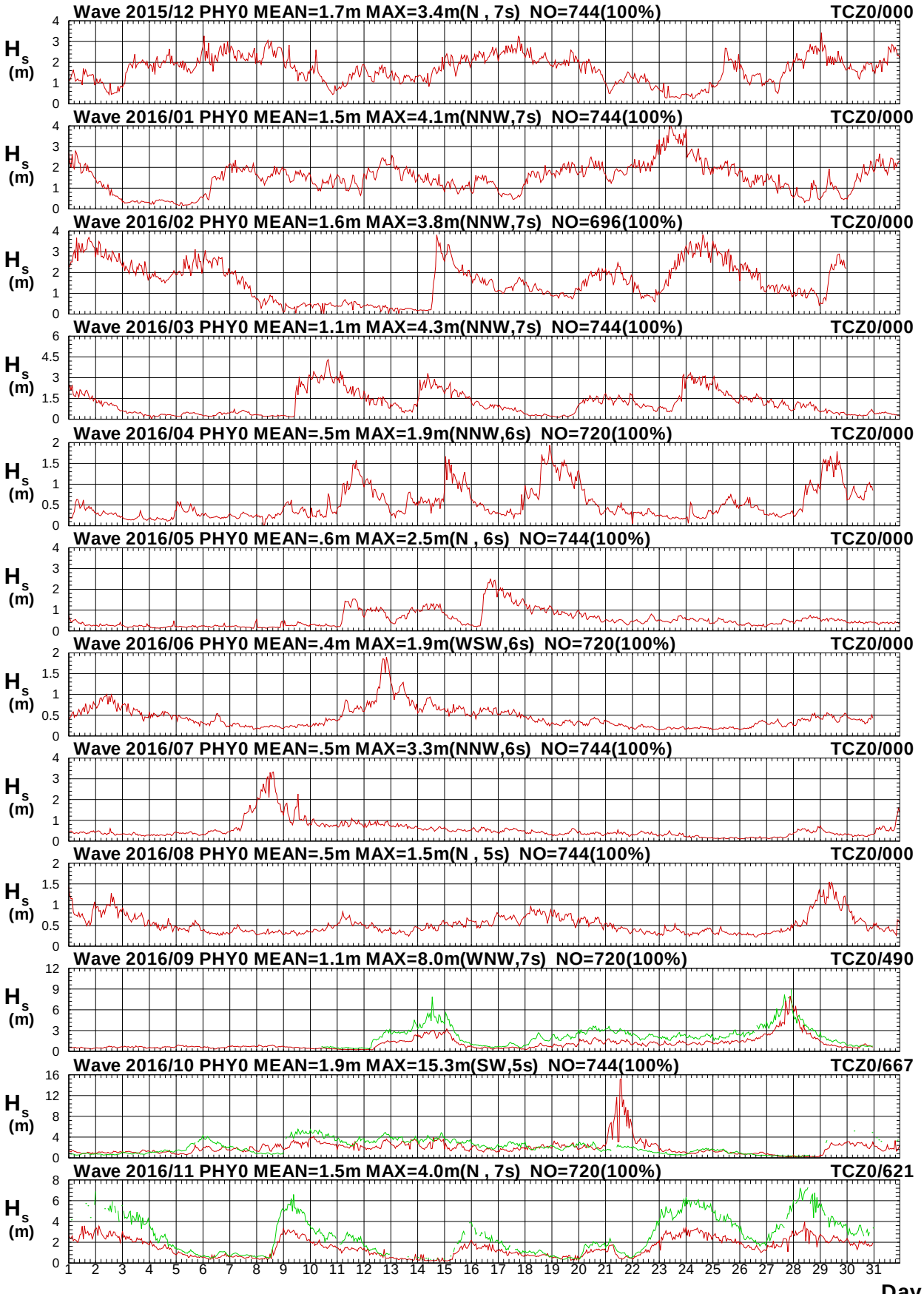

圖 10.7a　2016年每月澎湖海域 Y 站與中雲海域 Z 站波高圖

V15CPHY0.1HA V15CTCZ0.1H0 V161PHY0.1HA V161TCZ0.1H0 V162PHY0.1HA V162TCZ0.1H0
V163PHY0.1HA V163TCZ0.1H0 V164PHY0.1HA V164TCZ0.1H0 V165PHY0.1HA V165TCZ0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

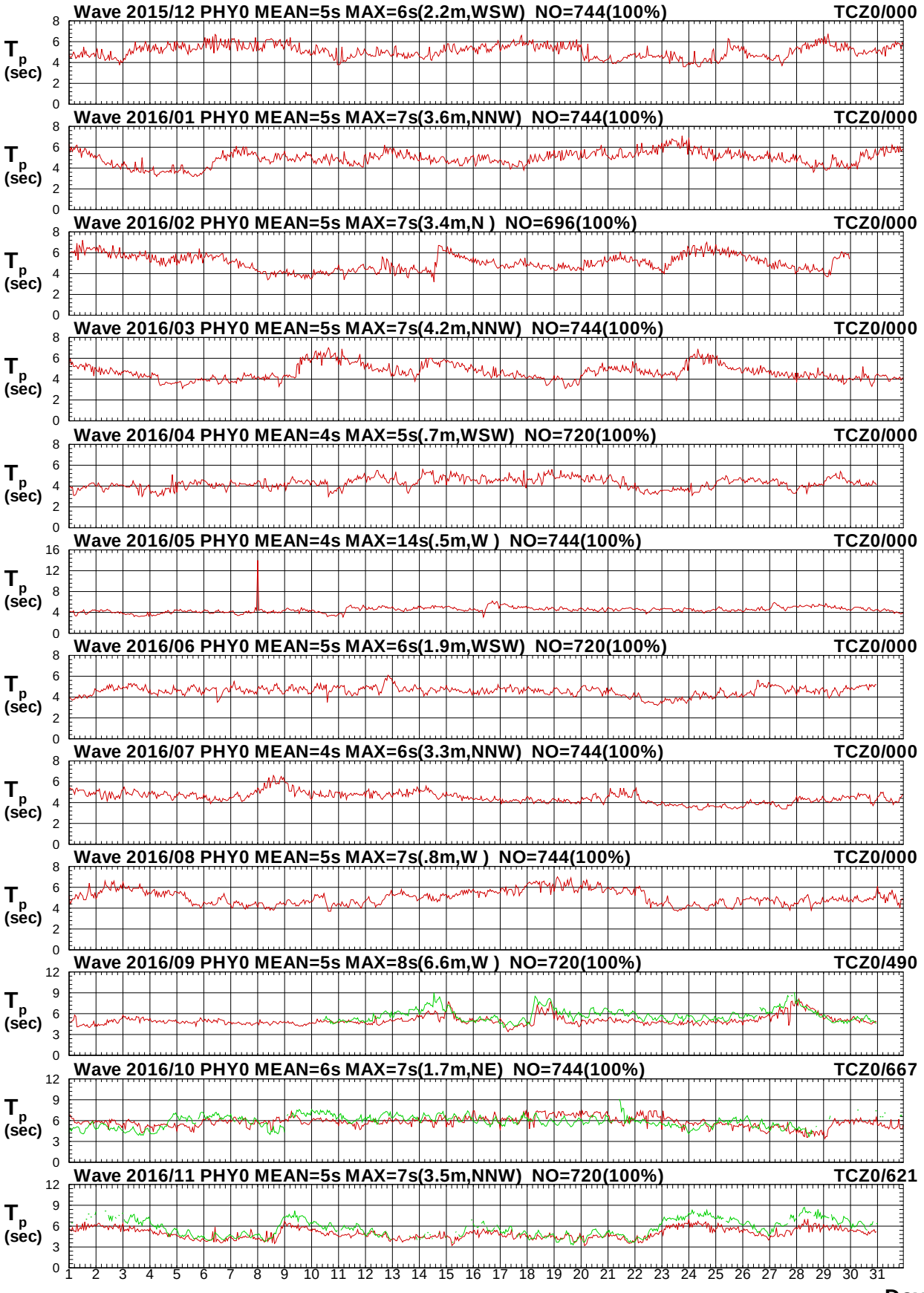

圖 10.7b　2016年每月澎湖海域 Y 站與中雲海域 Z 站週期圖

V15CPHY0.1HA V15CTCZ0.1H0 V161PHY0.1HA V161TCZ0.1H0 V162PHY0.1HA V162TCZ0.1H0
V163PHY0.1HA V163TCZ0.1H0 V164PHY0.1HA V164TCZ0.1H0 V165PHY0.1HA V165TCZ0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

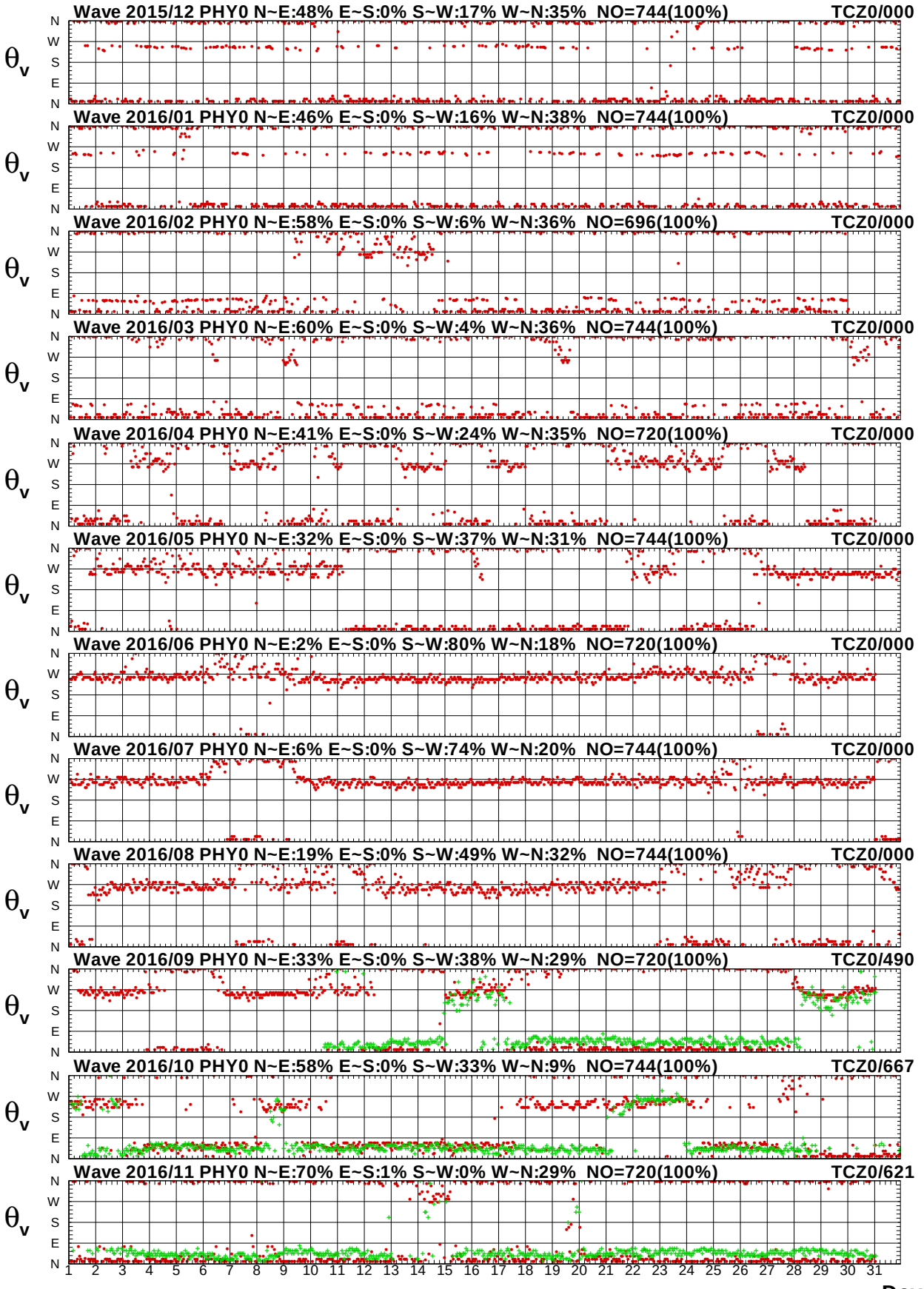

圖10.7c　2016年每月澎湖海域 Y 站與中雲海域 Z 站波向圖

V15CPHY0.1HA V15CTCZ0.1H0 V161PHY0.1HA V161TCZ0.1H0 V162PHY0.1HA V162TCZ0.1H0
V163PHY0.1HA V163TCZ0.1H0 V164PHY0.1HA V164TCZ0.1H0 V165PHY0.1HA V165TCZ0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

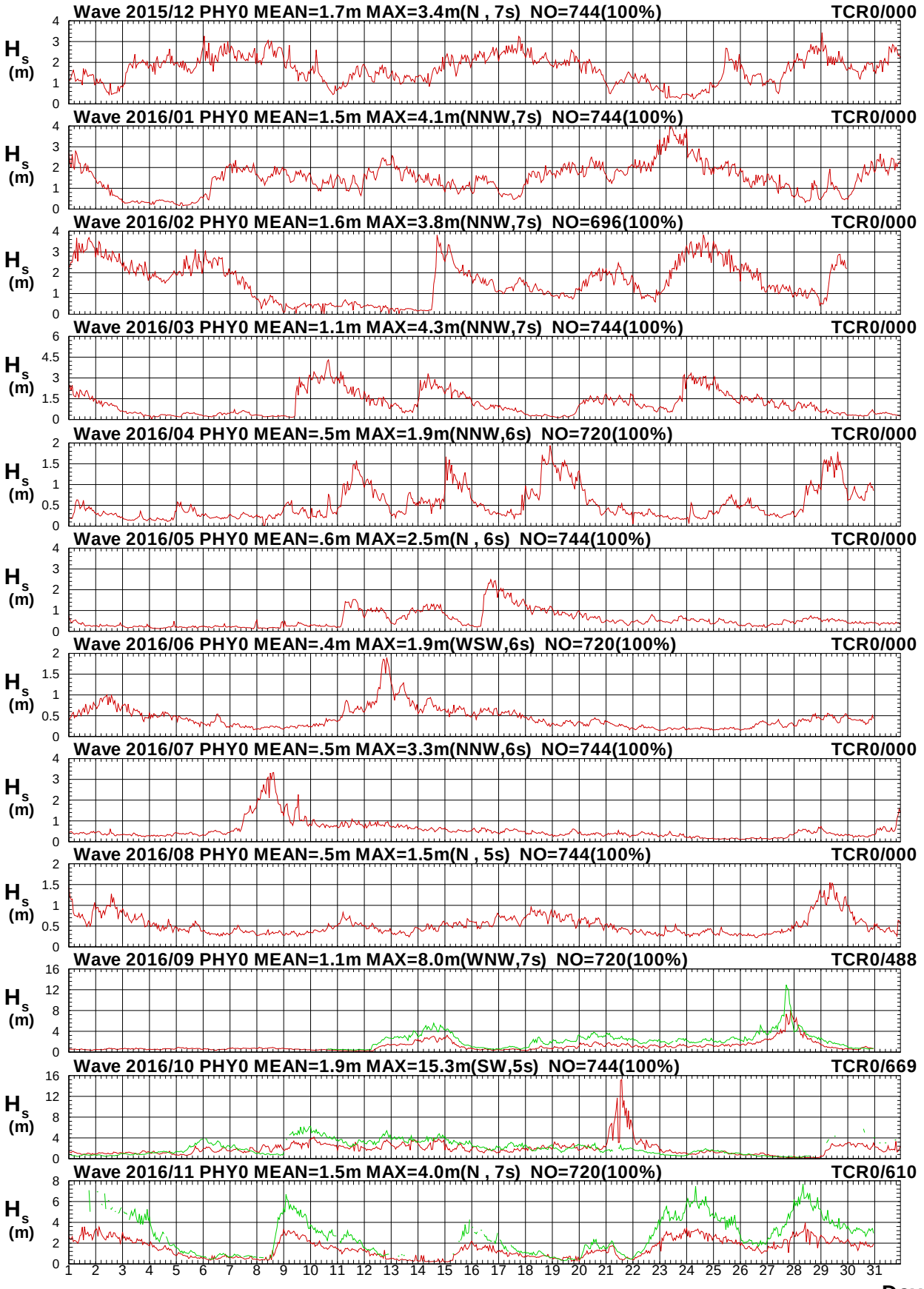

圖 10.8a　2016年每月澎湖海域 Y 站與中雲海域 R 站波高圖

V15CPHY0.1HA V15CTCR0.1H0 V161PHY0.1HA V161TCR0.1H0 V162PHY0.1HA V162TCR0.1H0
V163PHY0.1HA V163TCR0.1H0 V164PHY0.1HA V164TCR0.1H0 V165PHY0.1HA V165TCR0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

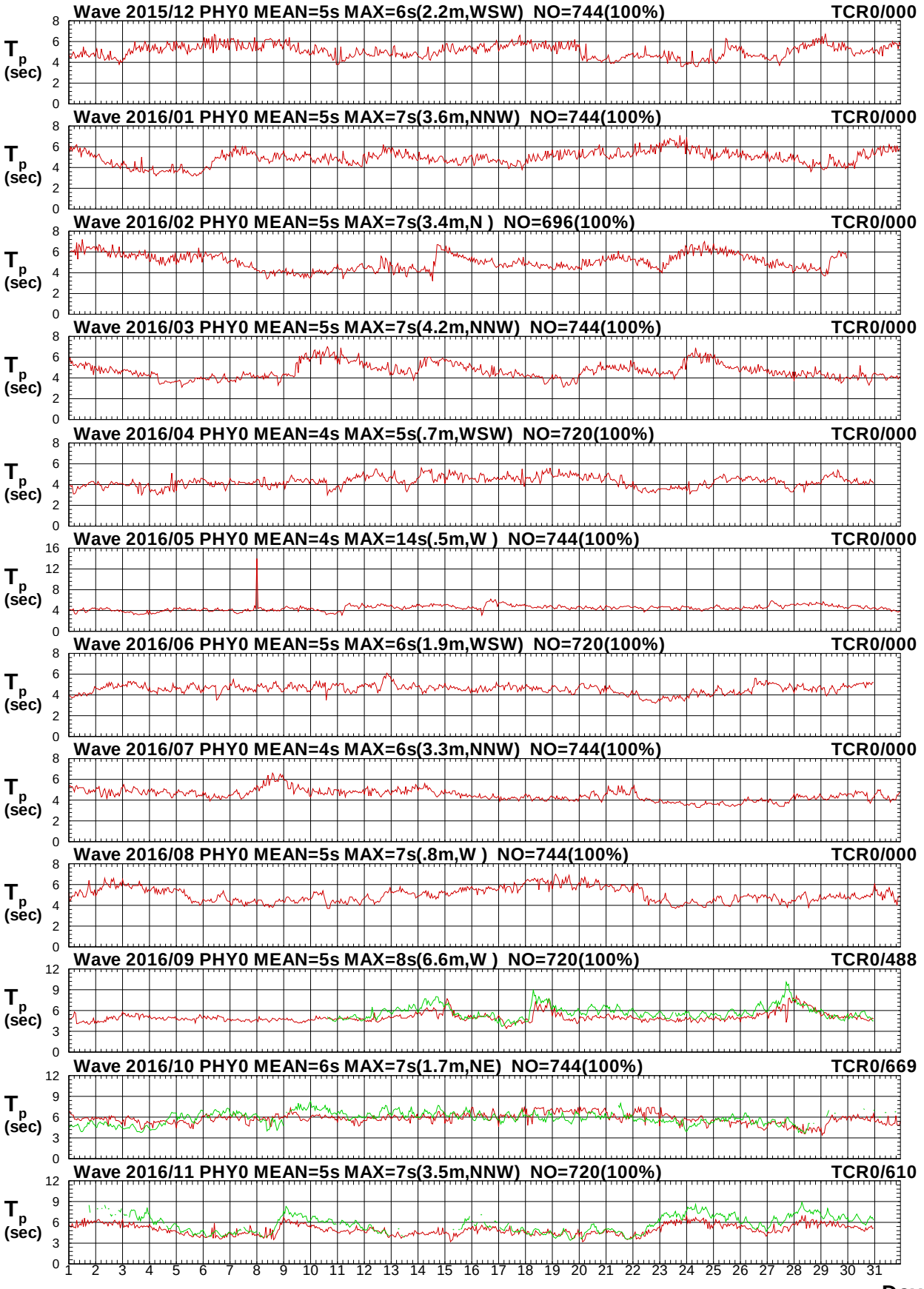

圖 10.8b　2016年每月澎湖海域 Y 站與中雲海域 R 站週期圖

V15CPHY0.1HA V15CTCR0.1H0 V161PHY0.1HA V161TCR0.1H0 V162PHY0.1HA V162TCR0.1H0
V163PHY0.1HA V163TCR0.1H0 V164PHY0.1HA V164TCR0.1H0 V165PHY0.1HA V165TCR0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

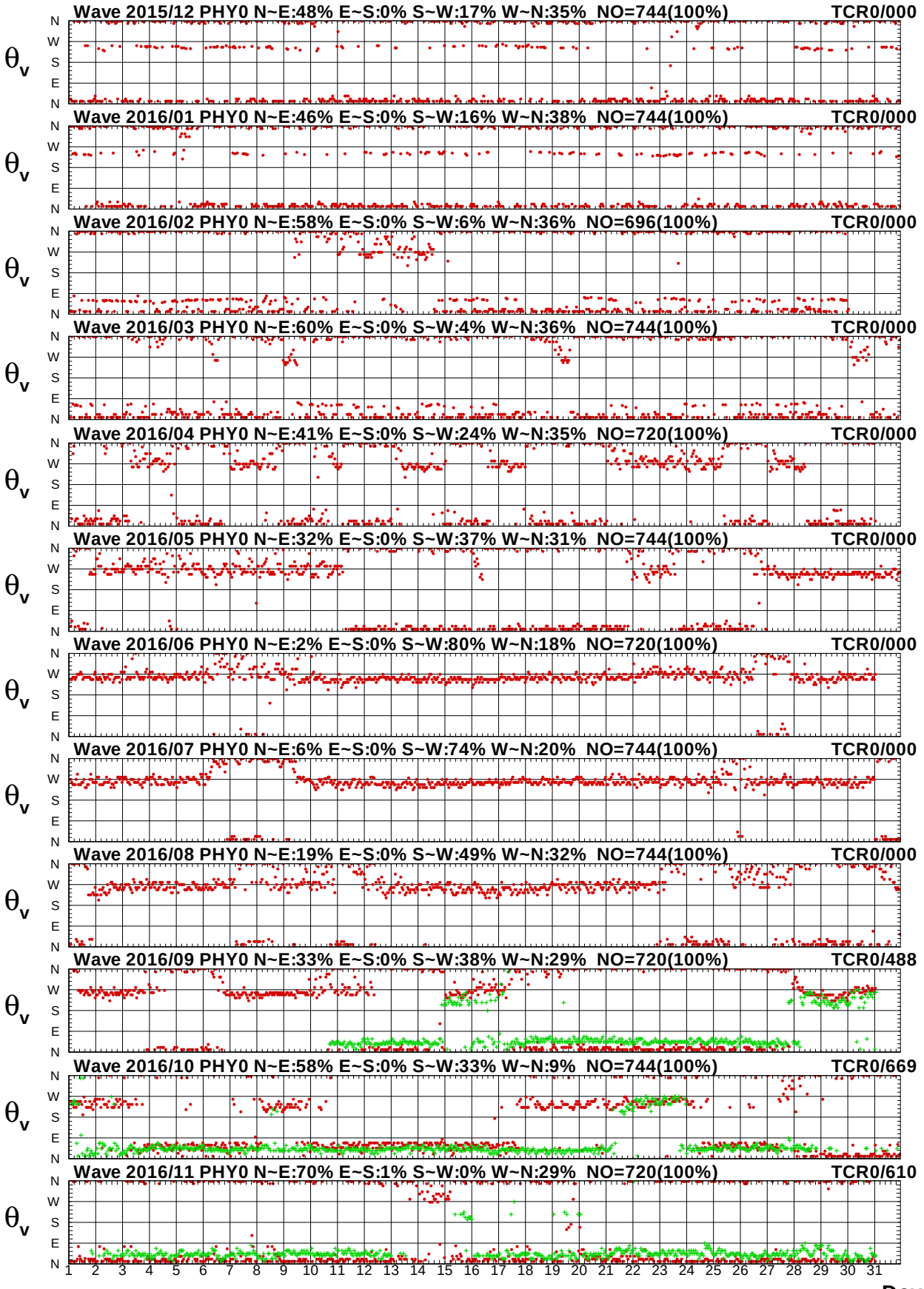

圖 10.8c　2016年每月澎湖海域 Y 站與中雲海域 R 站波向圖

V15CPHY0.1HA V15CTCR0.1H0 V161PHY0.1HA V161TCR0.1H0 V162PHY0.1HA V162TCR0.1H0
V163PHY0.1HA V163TCR0.1H0 V164PHY0.1HA V164TCR0.1H0 V165PHY0.1HA V165TCR0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

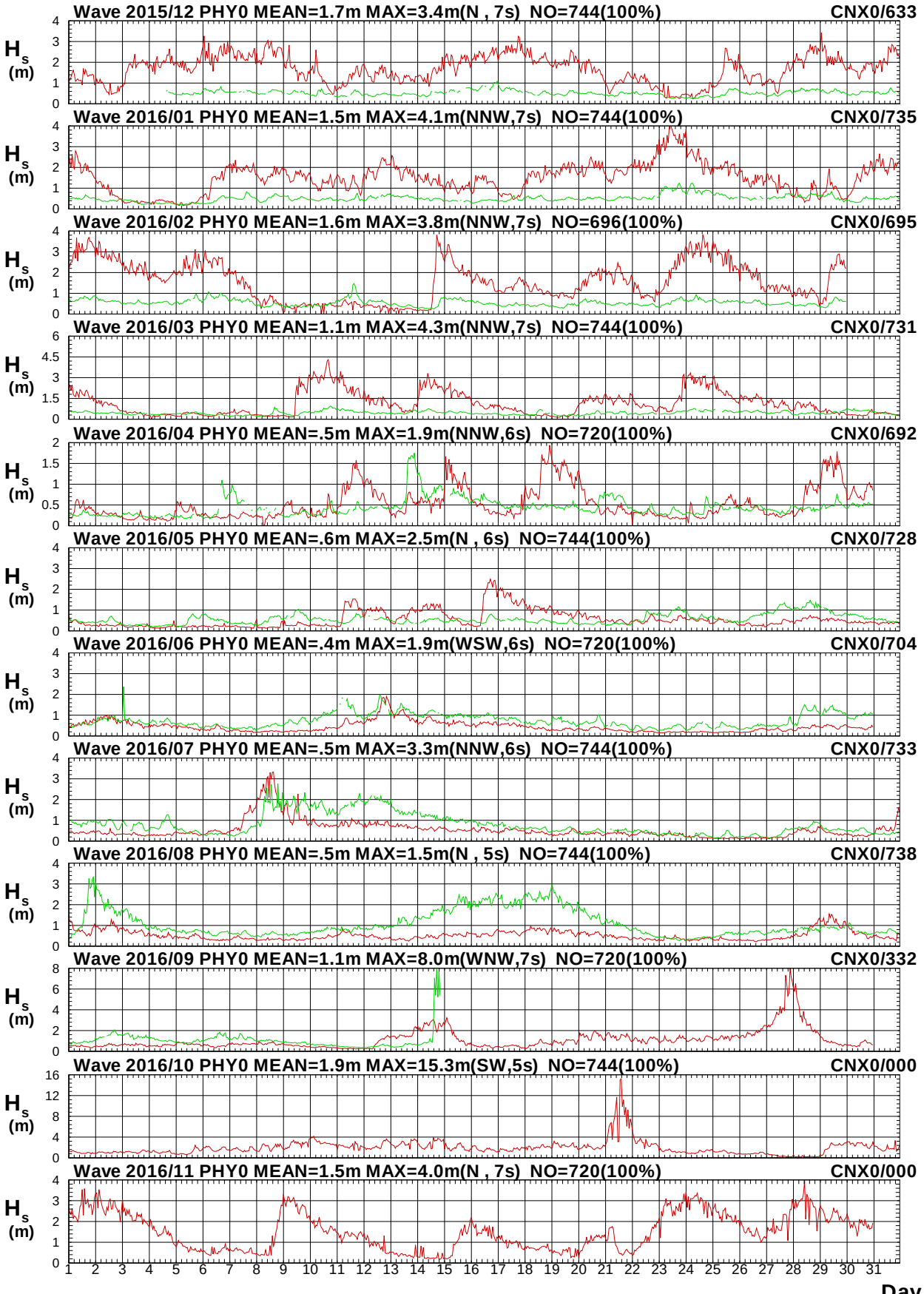

圖 10.9a　2016年每月澎湖海域 Y 站與嘉南海域 X 站波高圖

V15CPHY0.1HA V15CCNX0.1H0 V161PHY0.1HA V161CNX0.1H0 V162PHY0.1HA V162CNX0.1H0
V163PHY0.1HA V163CNX0.1H0 V164PHY0.1HA V164CNX0.1H0 V165PHY0.1HA V165CNX0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

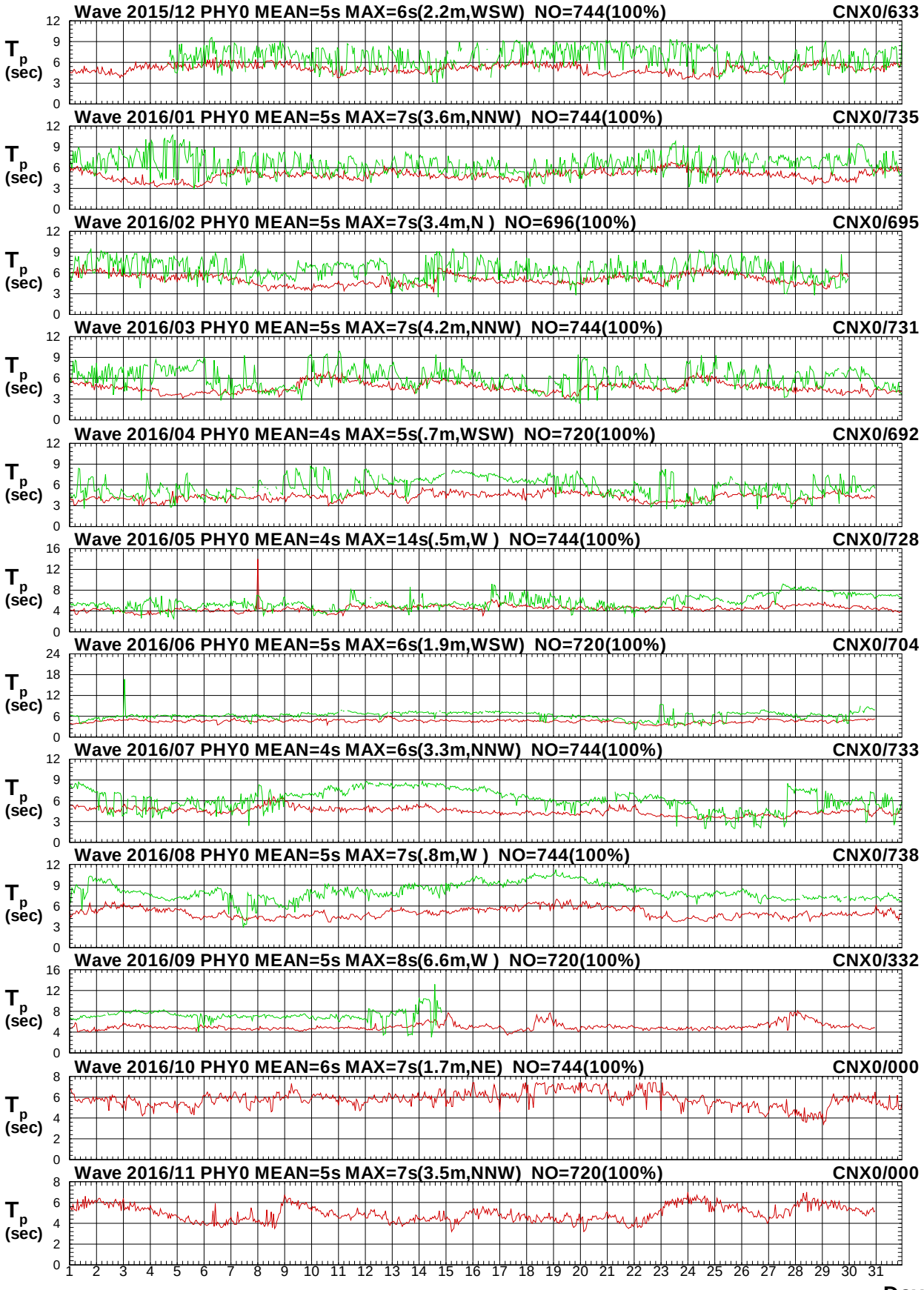

圖 10.9b　2016年每月澎湖海域 Y 站與嘉南海域 X 站週期圖

V15CPHY0.1HA V15CCNX0.1H0 V161PHY0.1HA V161CNX0.1H0 V162PHY0.1HA V162CNX0.1H0
V163PHY0.1HA V163CNX0.1H0 V164PHY0.1HA V164CNX0.1H0 V165PHY0.1HA V165CNX0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

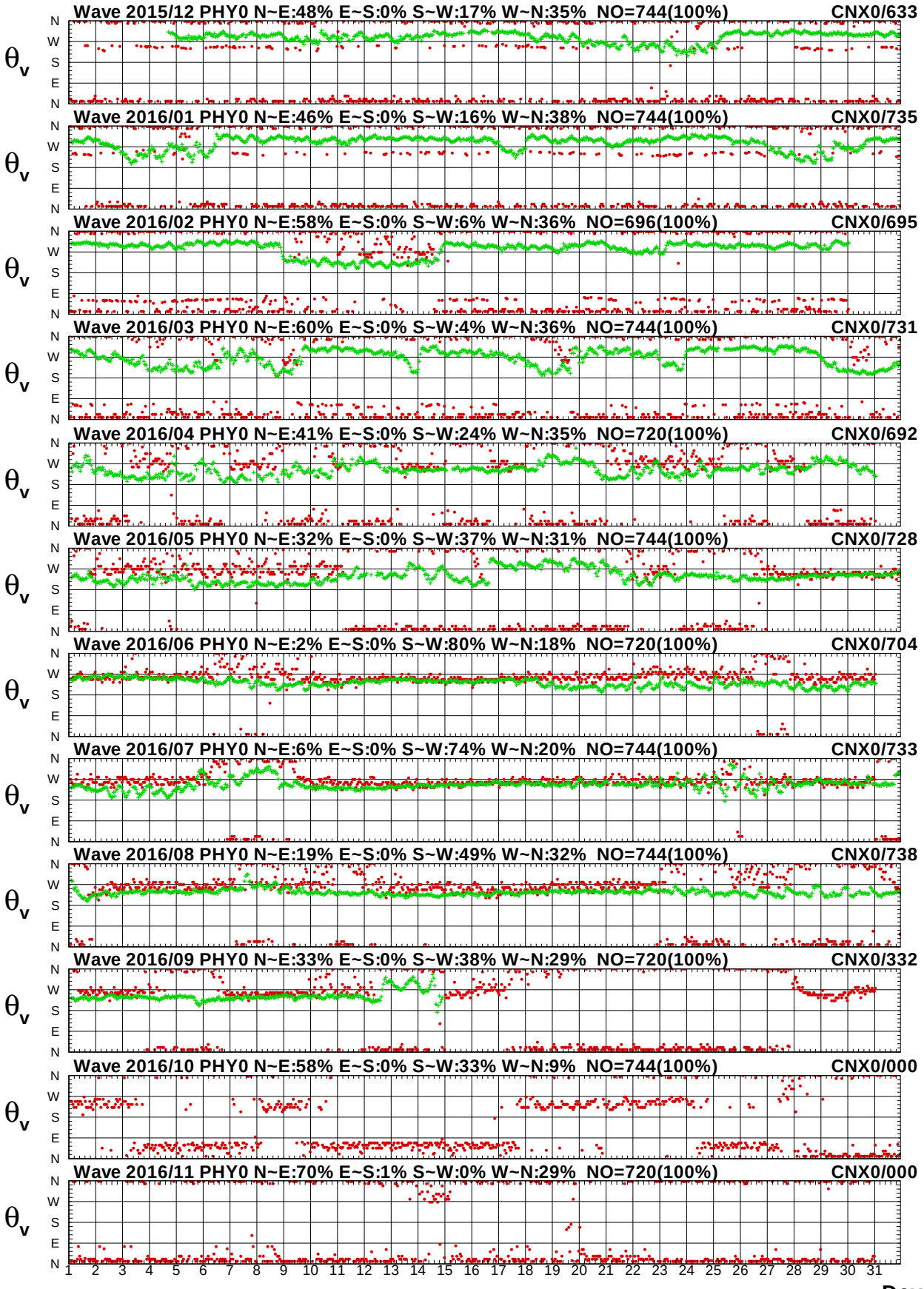

圖 10.9c　2016年每月澎湖海域 Y 站與嘉南海域 X 站波向圖

V15CPHY0.1HA V15CCNX0.1H0 V161PHY0.1HA V161CNX0.1H0 V162PHY0.1HA V162CNX0.1H0
V163PHY0.1HA V163CNX0.1H0 V164PHY0.1HA V164CNX0.1H0 V165PHY0.1HA V165CNX0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

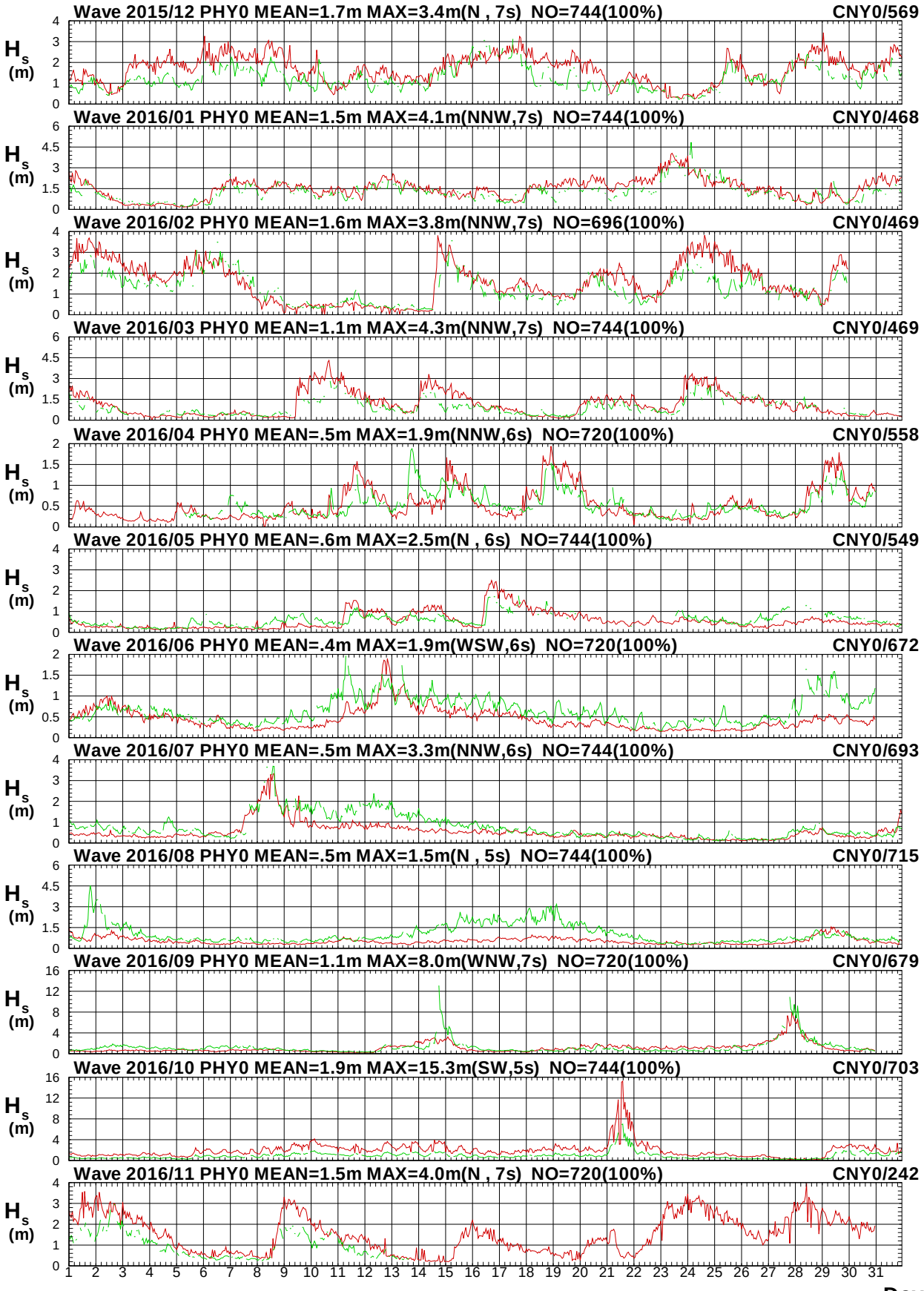

圖 10.10a　2016年每月澎湖海域 Y 站與嘉南海域 Y 站波高圖

V15CPHY0.1HA V15CCNY0.1H0 V161PHY0.1HA V161CNY0.1H0 V162PHY0.1HA V162CNY0.1H0
V163PHY0.1HA V163CNY0.1H0 V164PHY0.1HA V164CNY0.1H0 V165PHY0.1HA V165CNY0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

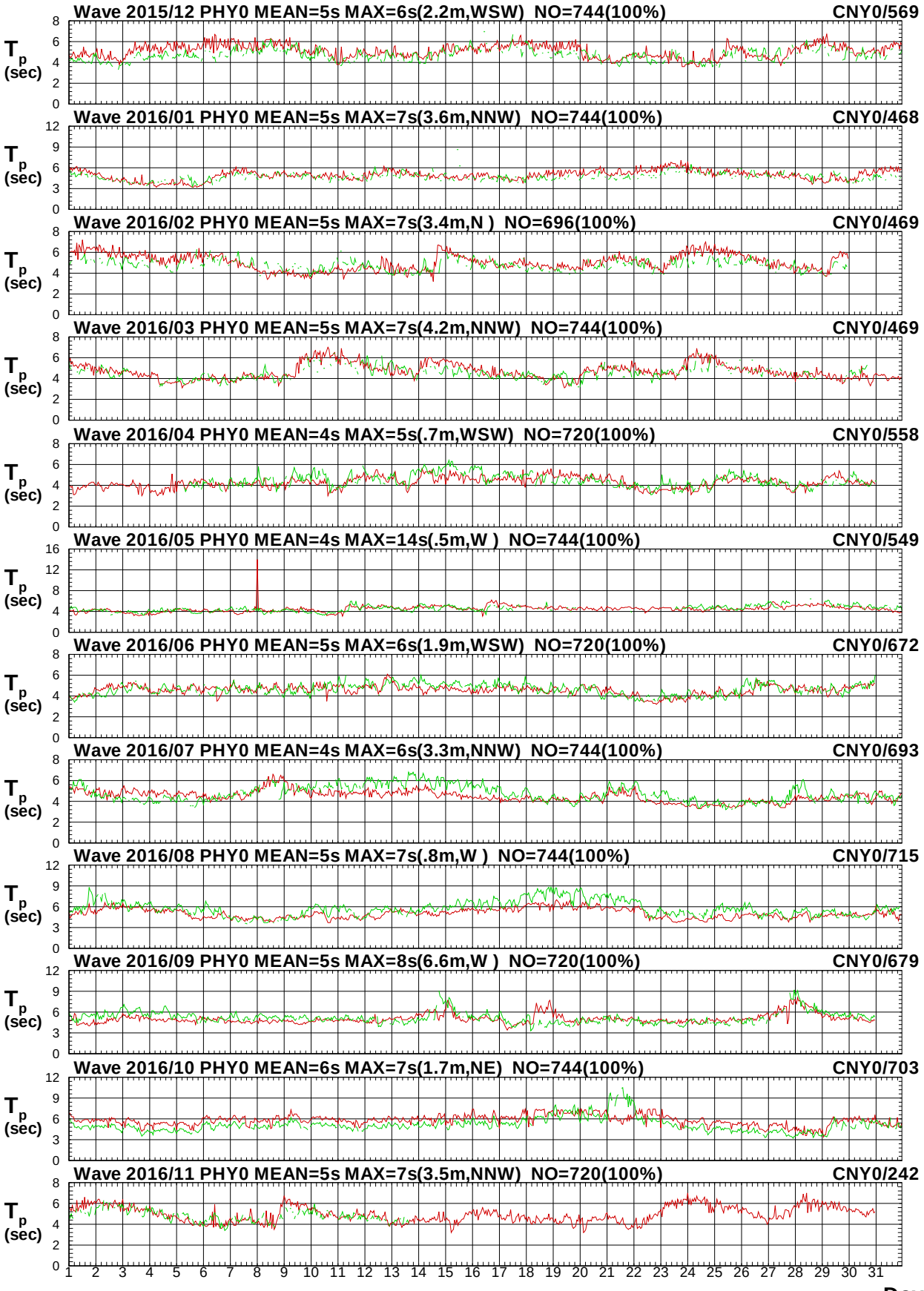

圖 10.10b　2016年每月澎湖海域 Y 站與嘉南海域 Y 站週期圖

V15CPHY0.1HA V15CCNY0.1H0 V161PHY0.1HA V161CNY0.1H0 V162PHY0.1HA V162CNY0.1H0
V163PHY0.1HA V163CNY0.1H0 V164PHY0.1HA V164CNY0.1H0 V165PHY0.1HA V165CNY0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

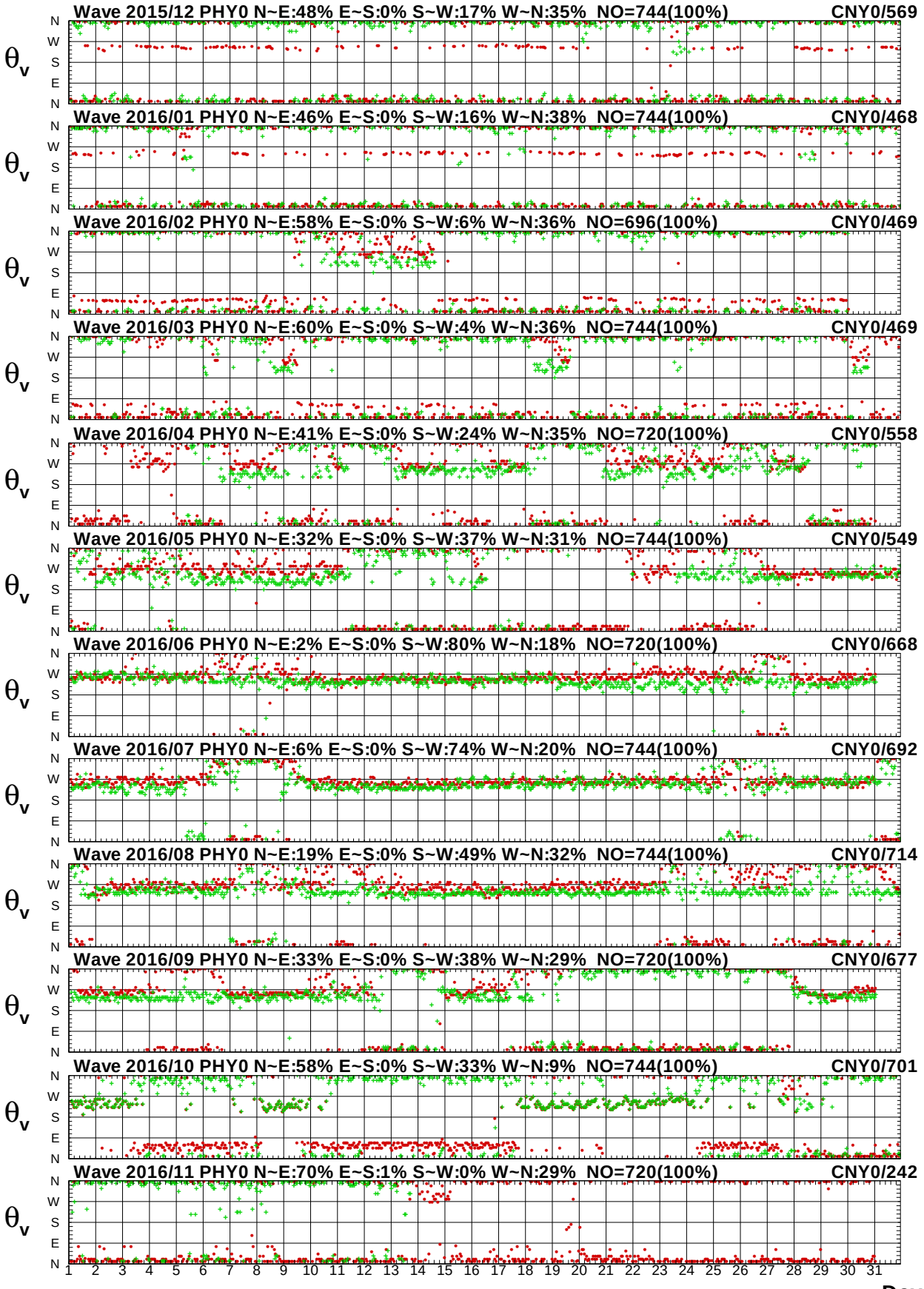

圖 10.10c　2016年每月澎湖海域 Y 站與嘉南海域 Y 站波向圖

V15CPHY0.1HA V15CCNY0.1H0 V161PHY0.1HA V161CNY0.1H0 V162PHY0.1HA V162CNY0.1H0
V163PHY0.1HA V163CNY0.1H0 V164PHY0.1HA V164CNY0.1H0 V165PHY0.1HA V165CNY0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

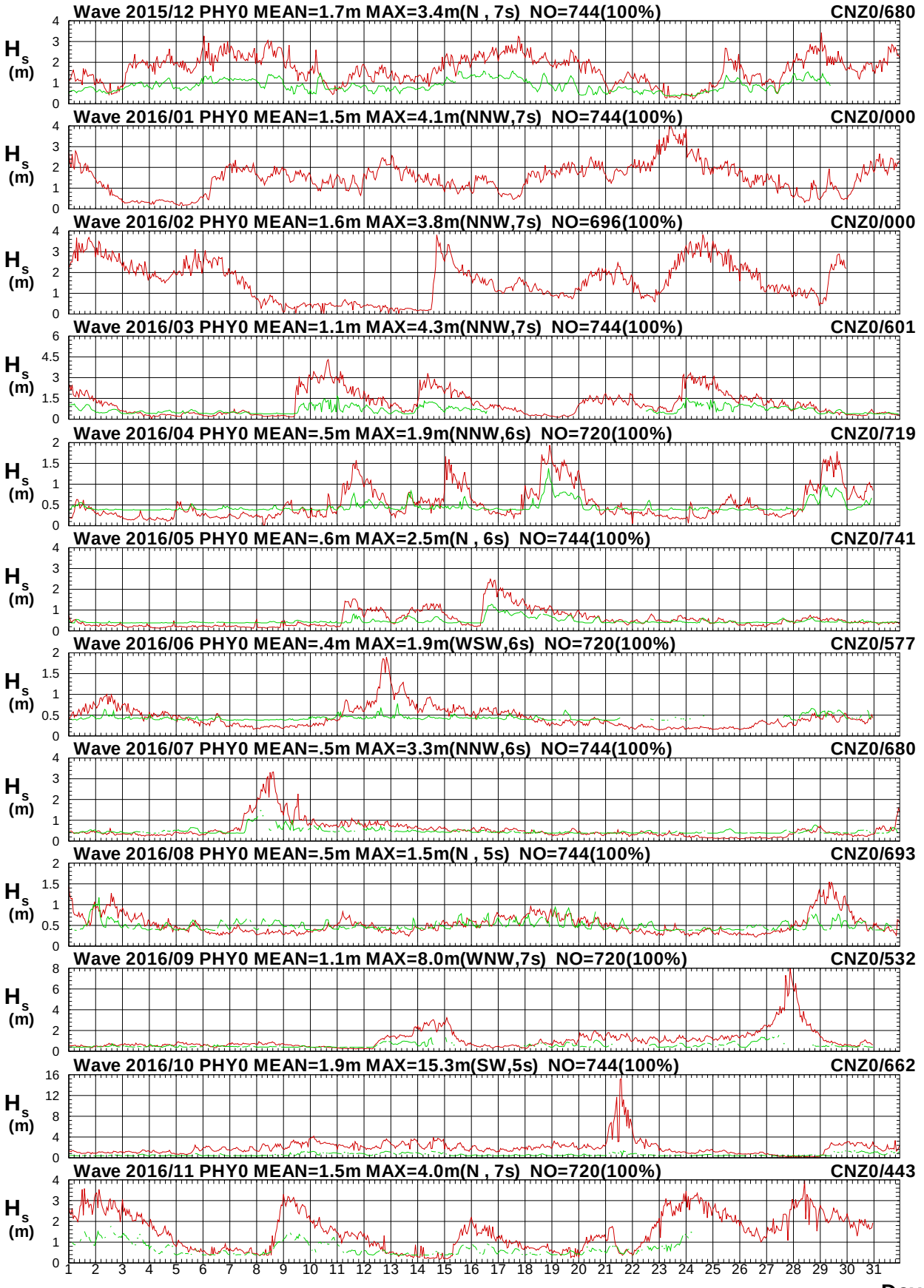

圖 10.11a　2016年每月澎湖海域 Y 站與嘉南海域 Z 站波高圖

V15CPHY0.1HA V15CCNZ0.1H0 V161PHY0.1HA V161CNZ0.1H0 V162PHY0.1HA V162CNZ0.1H0
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Wave T_p in Peng-Hu Seas of PHY0 at 2016

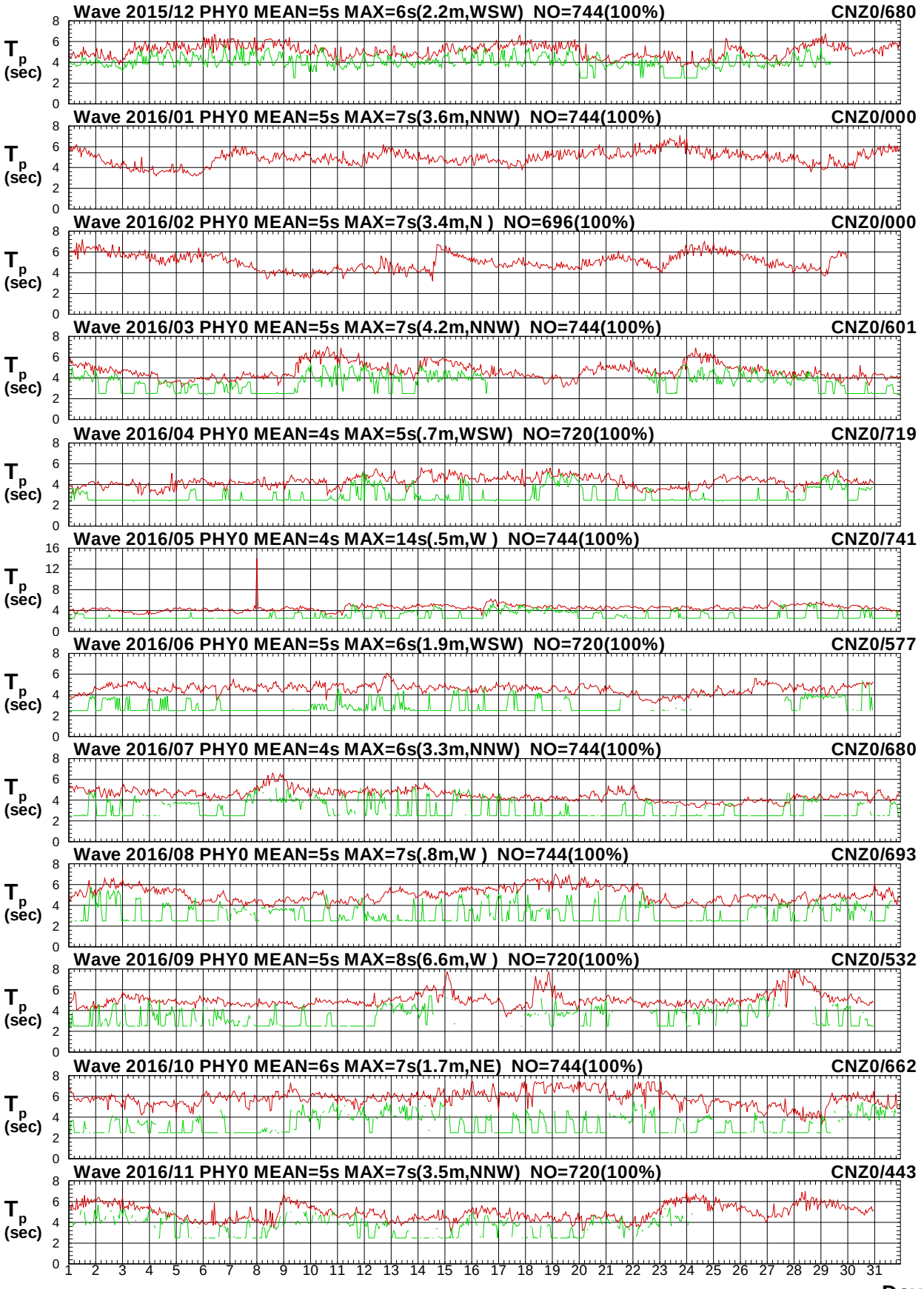

圖 10.11b　2016年每月澎湖海域 Y 站與嘉南海域 Z 站週期圖

V15CPHY0.1HA V15CCNZ0.1H0 V161PHY0.1HA V161CNZ0.1H0 V162PHY0.1HA V162CNZ0.1H0
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Wave Direction in Peng-Hu Seas of PHY0 at 2016

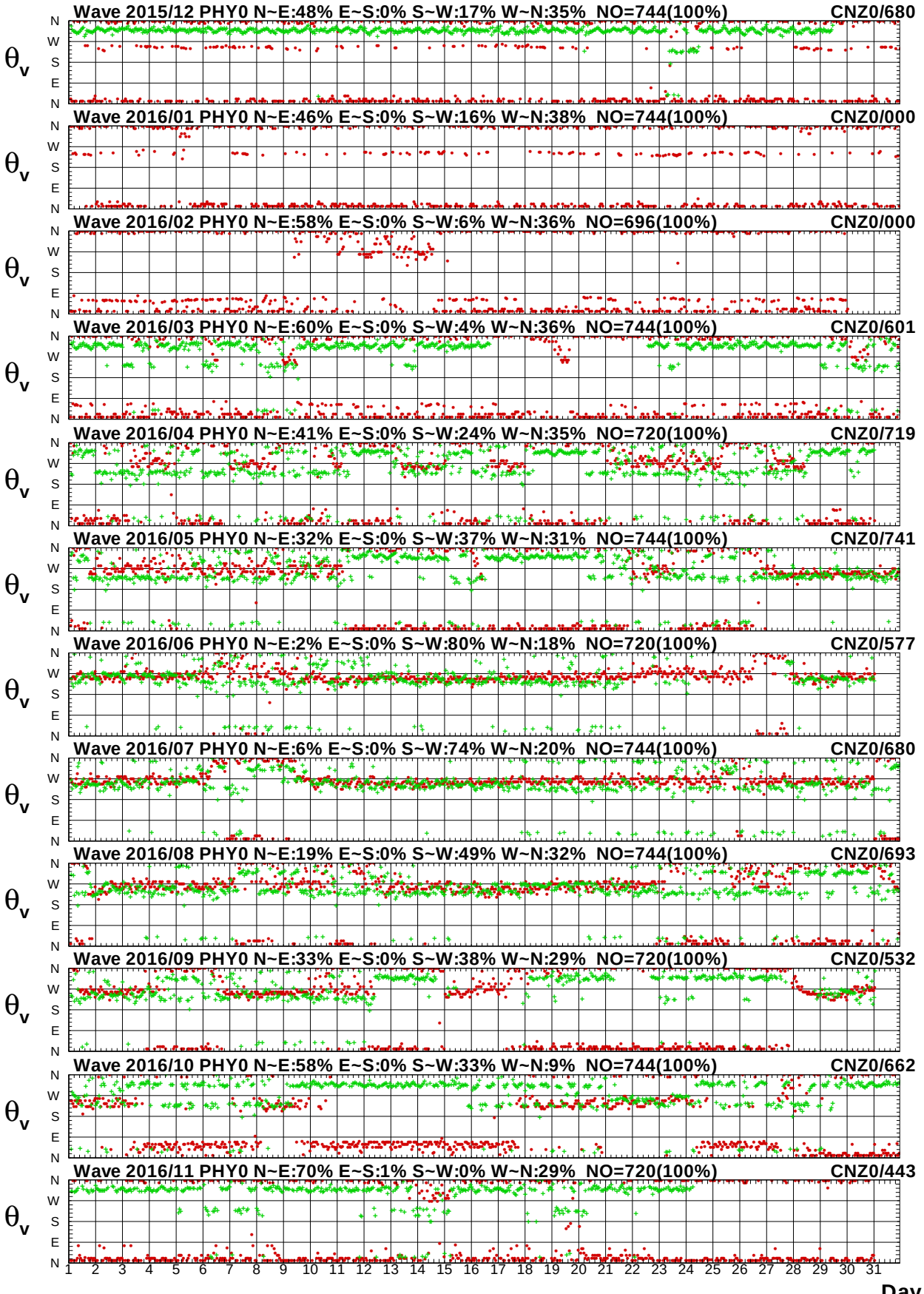

圖 10.11c　2016年每月澎湖海域 Y 站與嘉南海域 Z 站波向圖

V15CPHY0.1HA V15CCNZ0.1H0 V161PHY0.1HA V161CNZ0.1H0 V162PHY0.1HA V162CNZ0.1H0
V163PHY0.1HA V163CNZ0.1H0 V164PHY0.1HA V164CNZ0.1H0 V165PHY0.1HA V165CNZ0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

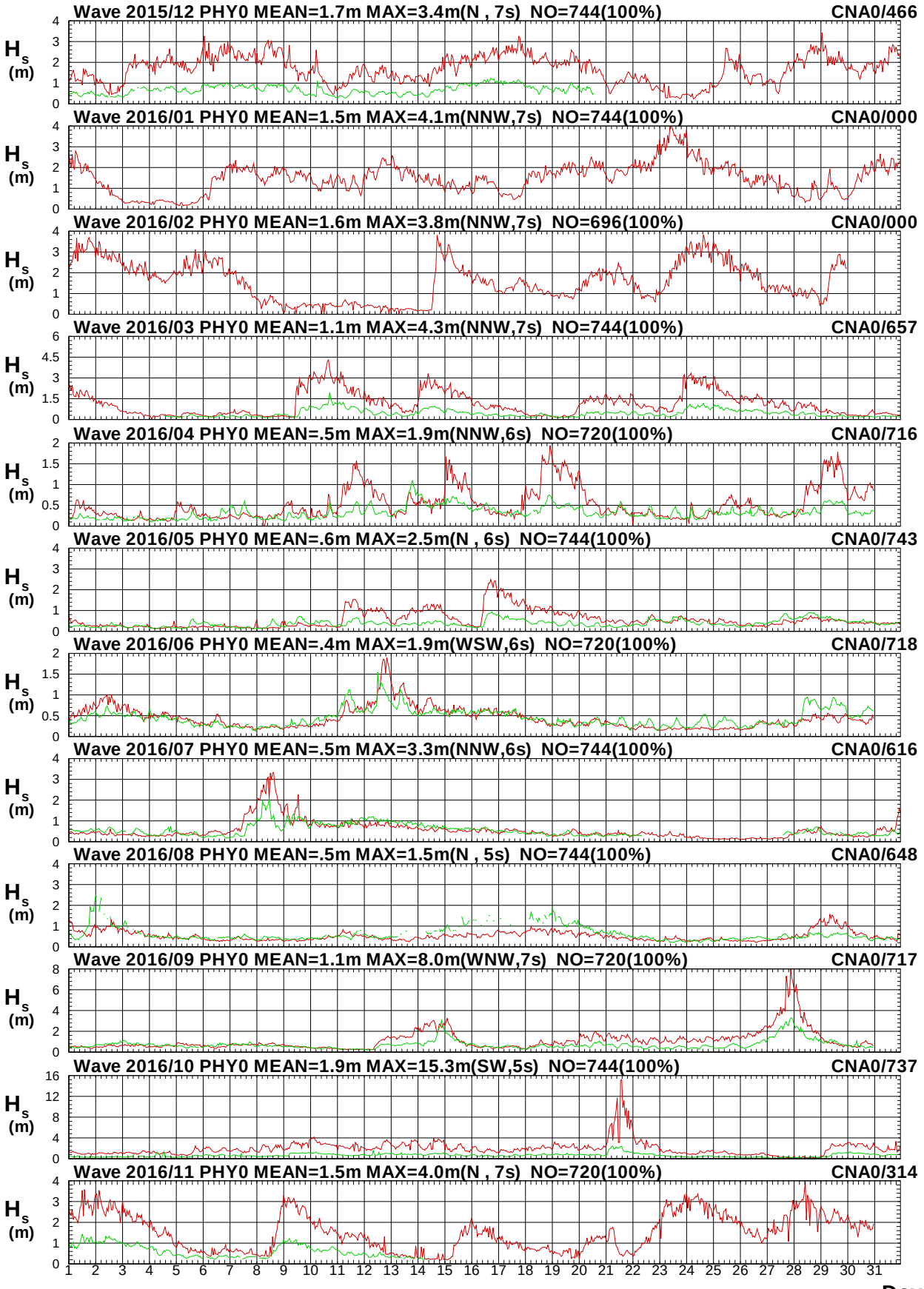

圖 10.12a　2016年每月澎湖海域 Y 站與嘉南海域 A 站波高圖

V15CPHY0.1HA V15CCNA0.1H0 V161PHY0.1HA V161CNA0.1H0 V162PHY0.1HA V162CNA0.1H0
V163PHY0.1HA V163CNA0.1H0 V164PHY0.1HA V164CNA0.1H0 V165PHY0.1HA V165CNA0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

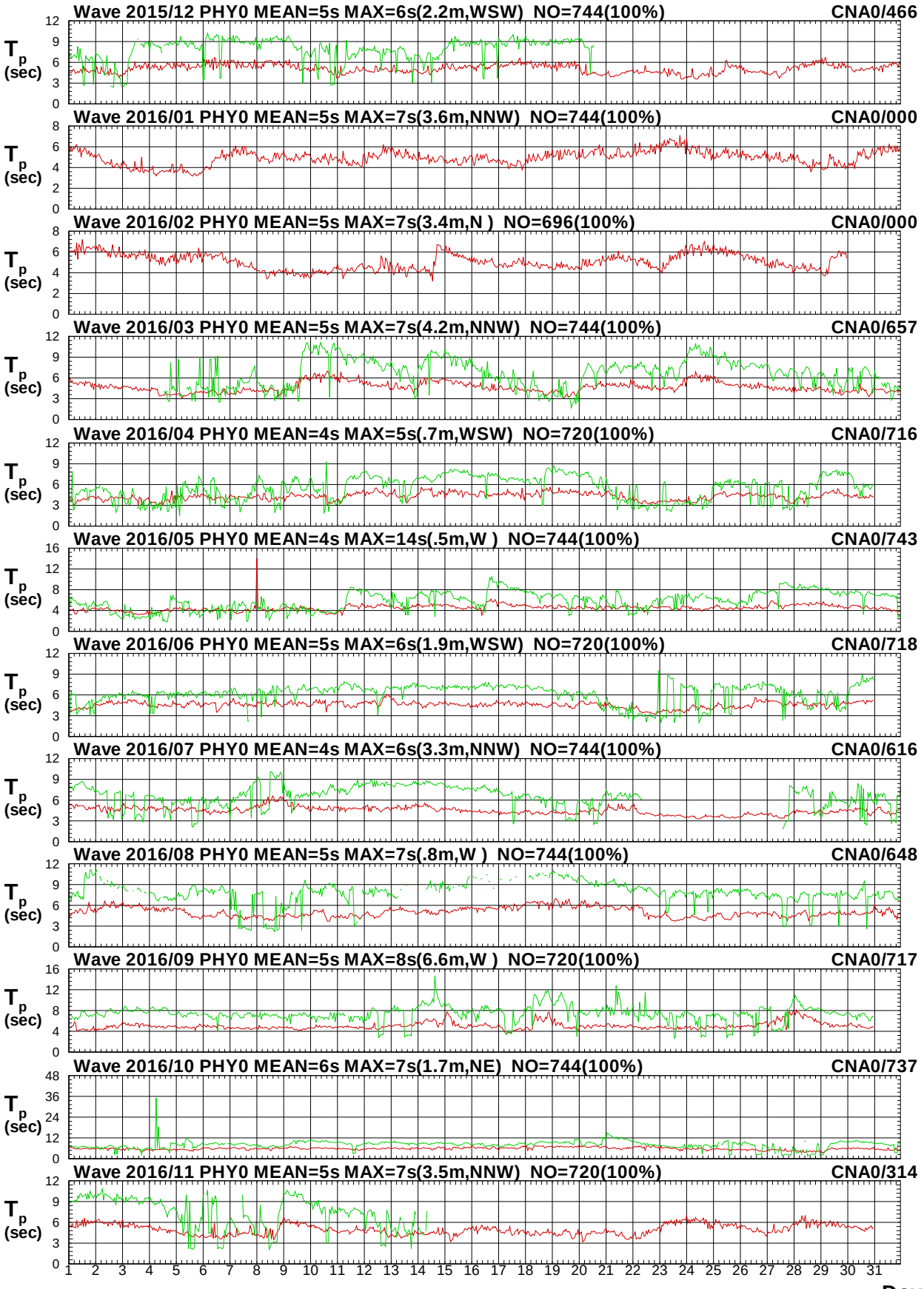

圖 10.12b　2016年每月澎湖海域 Y 站與嘉南海域 A 站週期圖

V15CPHY0.1HA V15CCNA0.1H0 V161PHY0.1HA V161CNA0.1H0 V162PHY0.1HA V162CNA0.1H0
V163PHY0.1HA V163CNA0.1H0 V164PHY0.1HA V164CNA0.1H0 V165PHY0.1HA V165CNA0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

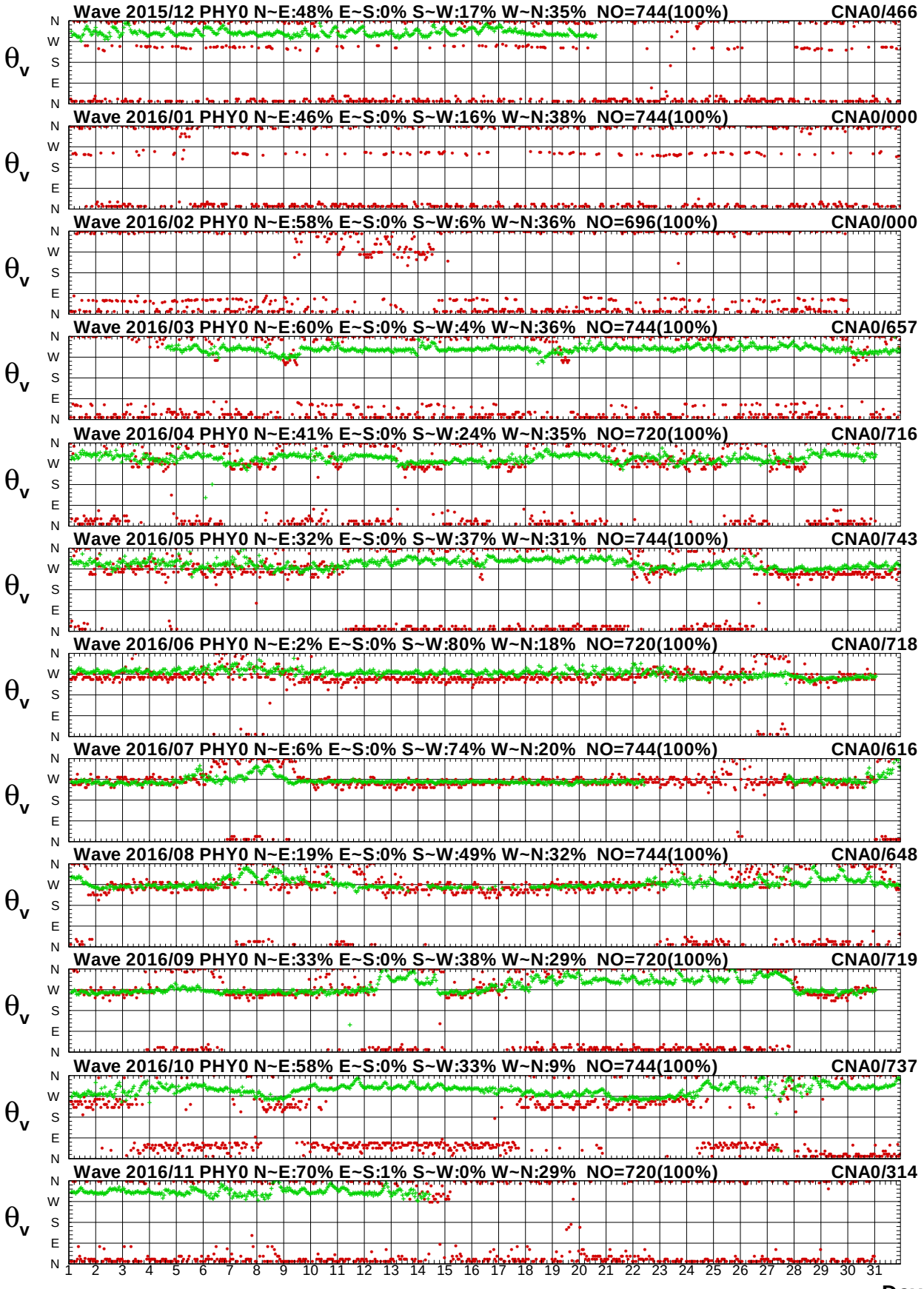

圖 10.12c　2016年每月澎湖海域 Y 站與嘉南海域 A 站波向圖

V15CPHY0.1HA V15CCNA0.1H0 V161PHY0.1HA V161CNA0.1H0 V162PHY0.1HA V162CNA0.1H0
V163PHY0.1HA V163CNA0.1H0 V164PHY0.1HA V164CNA0.1H0 V165PHY0.1HA V165CNA0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

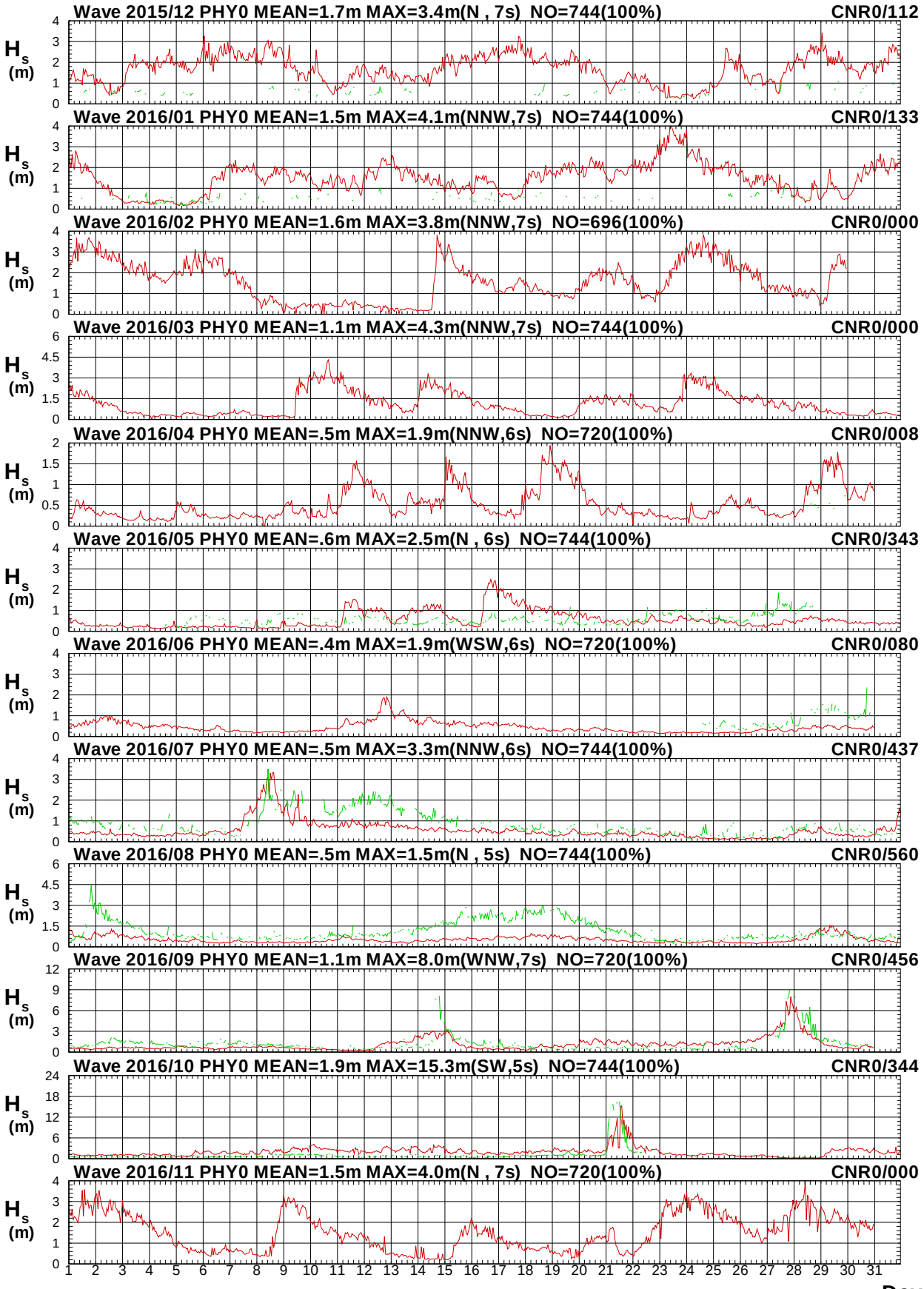

圖 10.13a　2016年每月澎湖海域 Y 站與嘉南海域 R 站波高圖

V15CPHY0.1HA V15CCNR0.1H0 V161PHY0.1HA V161CNR0.1H0 V162PHY0.1HA V162CNR0.1H0
V163PHY0.1HA V163CNR0.1H0 V164PHY0.1HA V164CNR0.1H0 V165PHY0.1HA V165CNR0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

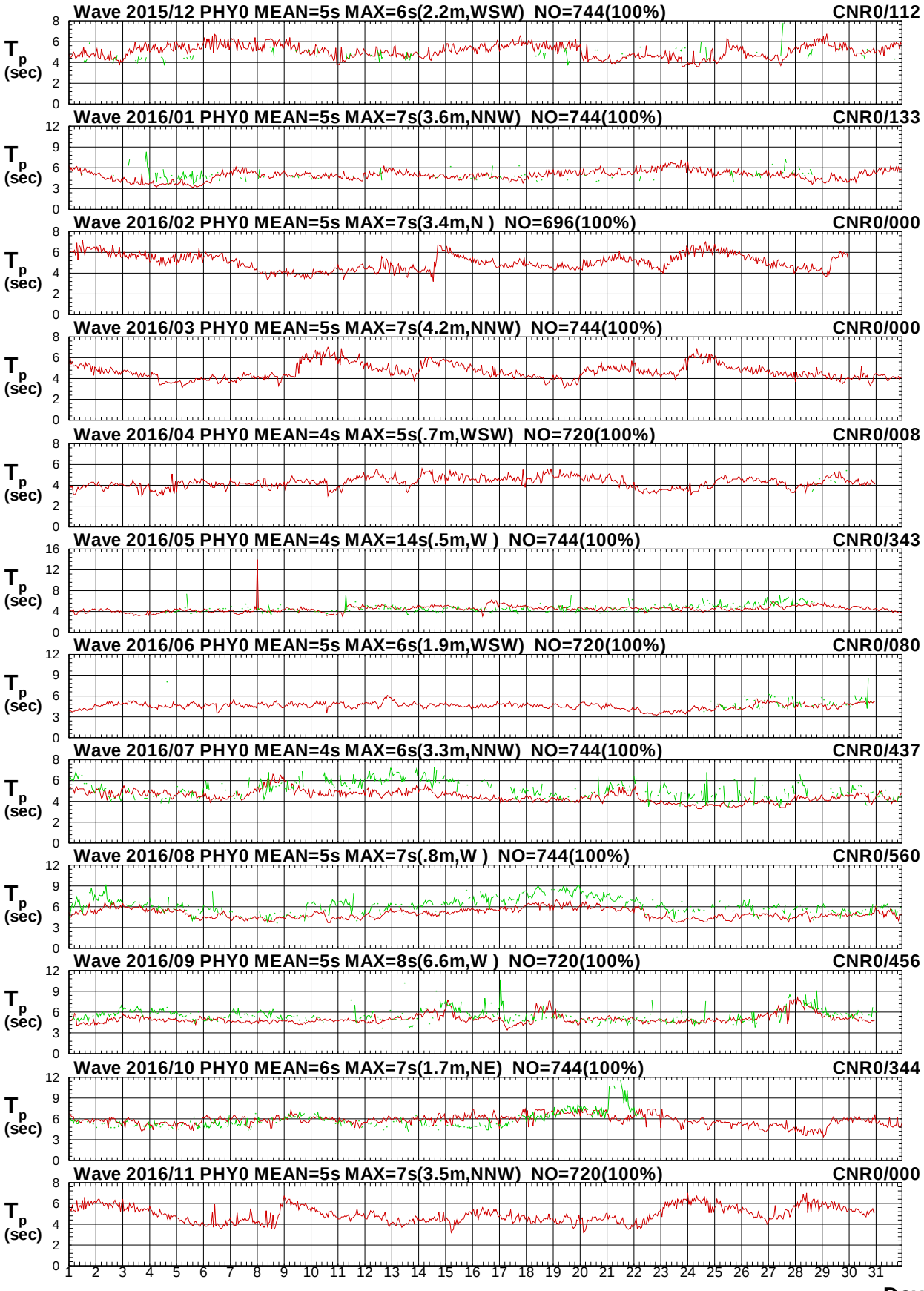

圖 10.13b　2016年每月澎湖海域 Y 站與嘉南海域 R 站週期圖

V15CPHY0.1HA V15CCNR0.1H0 V161PHY0.1HA V161CNR0.1H0 V162PHY0.1HA V162CNR0.1H0
V163PHY0.1HA V163CNR0.1H0 V164PHY0.1HA V164CNR0.1H0 V165PHY0.1HA V165CNR0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

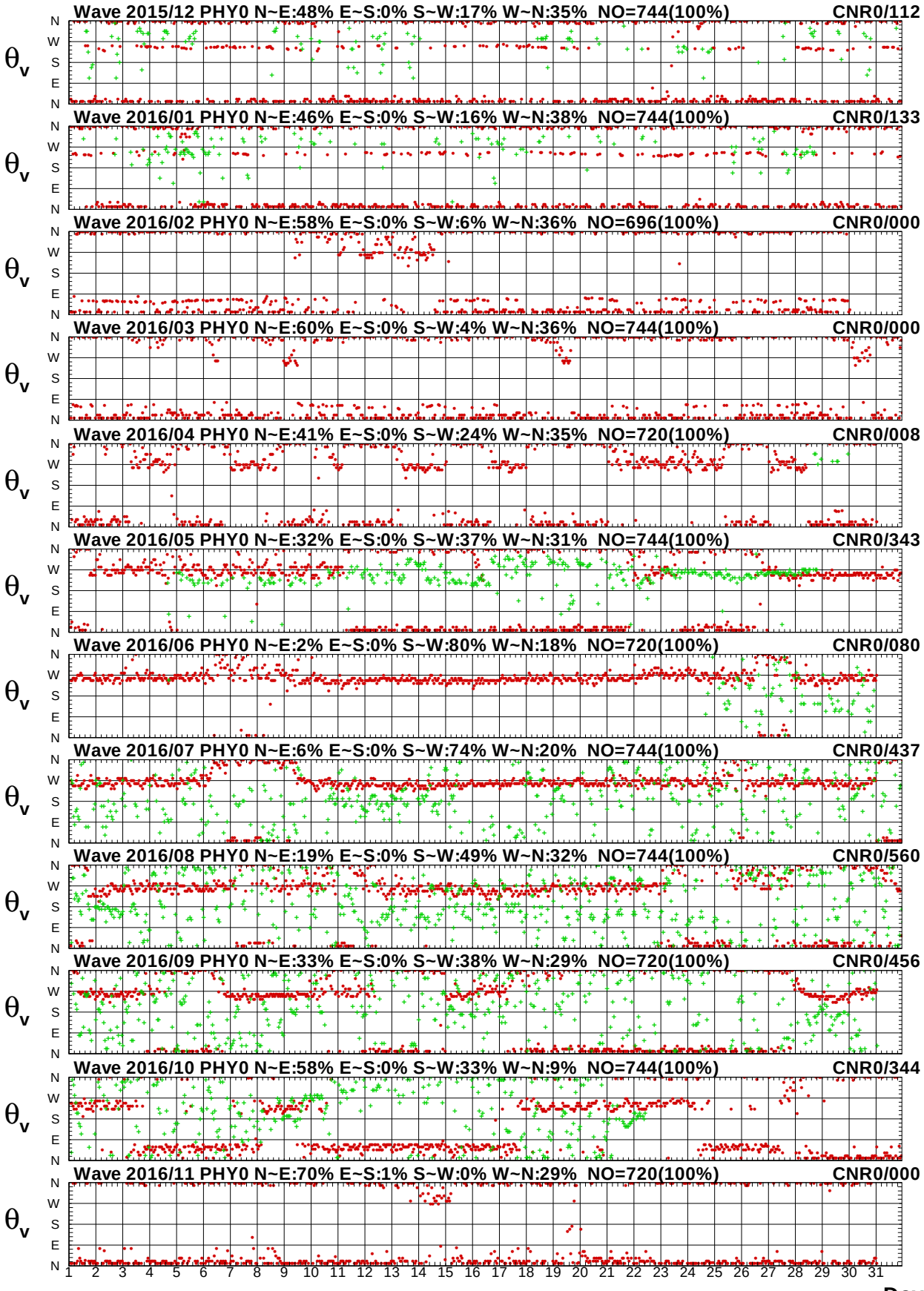

圖 10.13c　2016年每月澎湖海域 Y 站與嘉南海域 R 站波向圖

V15CPHY0.1HA V15CCNR0.1H0 V161PHY0.1HA V161CNR0.1H0 V162PHY0.1HA V162CNR0.1H0
V163PHY0.1HA V163CNR0.1H0 V164PHY0.1HA V164CNR0.1H0 V165PHY0.1HA V165CNR0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

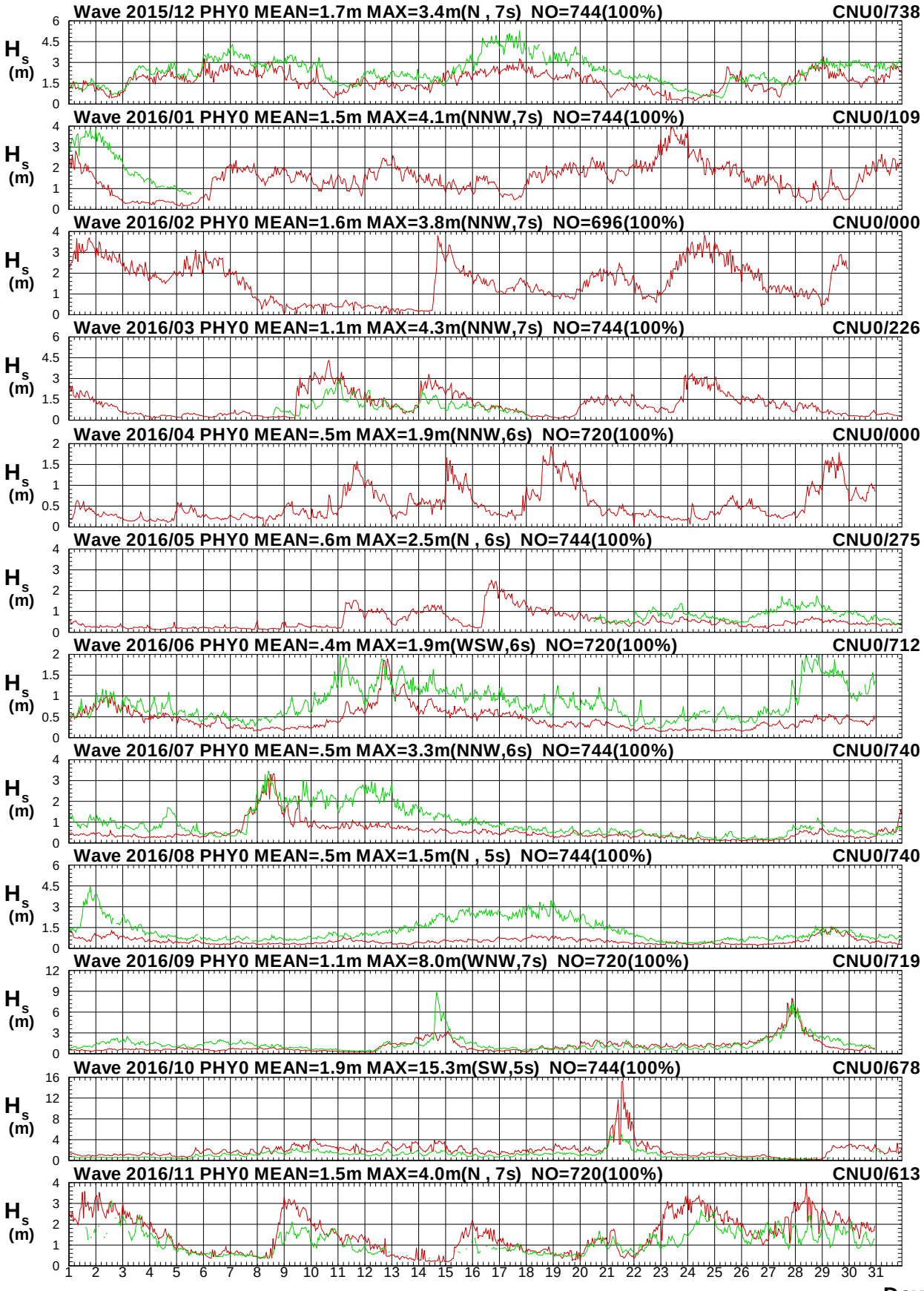

圖 10.14a　2016年每月澎湖海域 Y 站與嘉南海域 U 站波高圖

V15CPHY0.1HA V15CCNU0.1H0 V161PHY0.1HA V161CNU0.1H0 V162PHY0.1HA V162CNU0.1H0
V163PHY0.1HA V163CNU0.1H0 V164PHY0.1HA V164CNU0.1H0 V165PHY0.1HA V165CNU0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

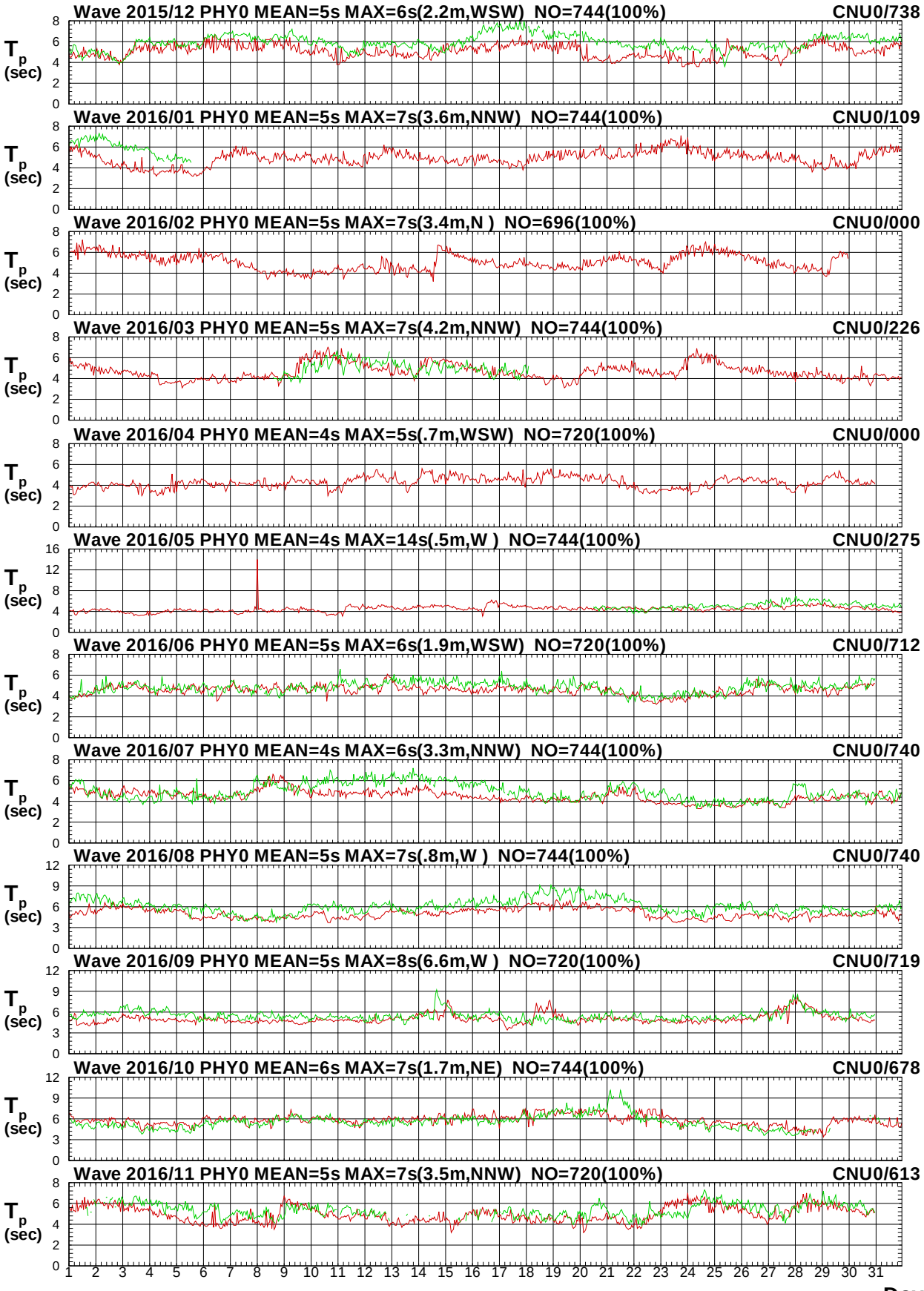

圖 10.14b　2016年每月澎湖海域 Y 站與嘉南海域 U 站週期圖

V15CPHY0.1HA V15CCNU0.1H0 V161PHY0.1HA V161CNU0.1H0 V162PHY0.1HA V162CNU0.1H0
V163PHY0.1HA V163CNU0.1H0 V164PHY0.1HA V164CNU0.1H0 V165PHY0.1HA V165CNU0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2016

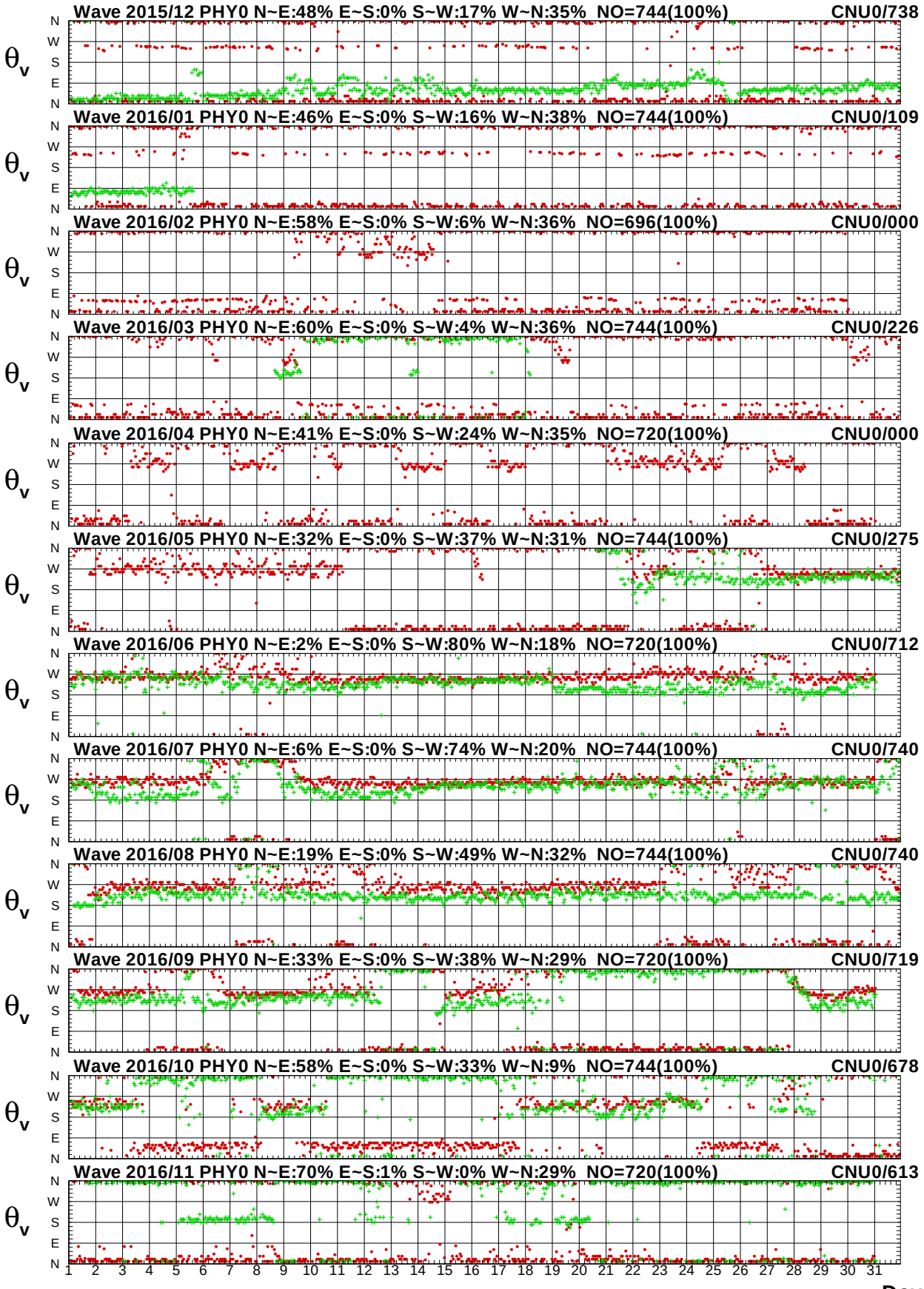

圖 10.14c　2016年每月澎湖海域 Y 站與嘉南海域 U 站波向圖

V15CPHY0.1HA V15CCNU0.1H0 V161PHY0.1HA V161CNU0.1H0 V162PHY0.1HA V162CNU0.1H0
V163PHY0.1HA V163CNU0.1H0 V164PHY0.1HA V164CNU0.1H0 V165PHY0.1HA V165CNU0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2016

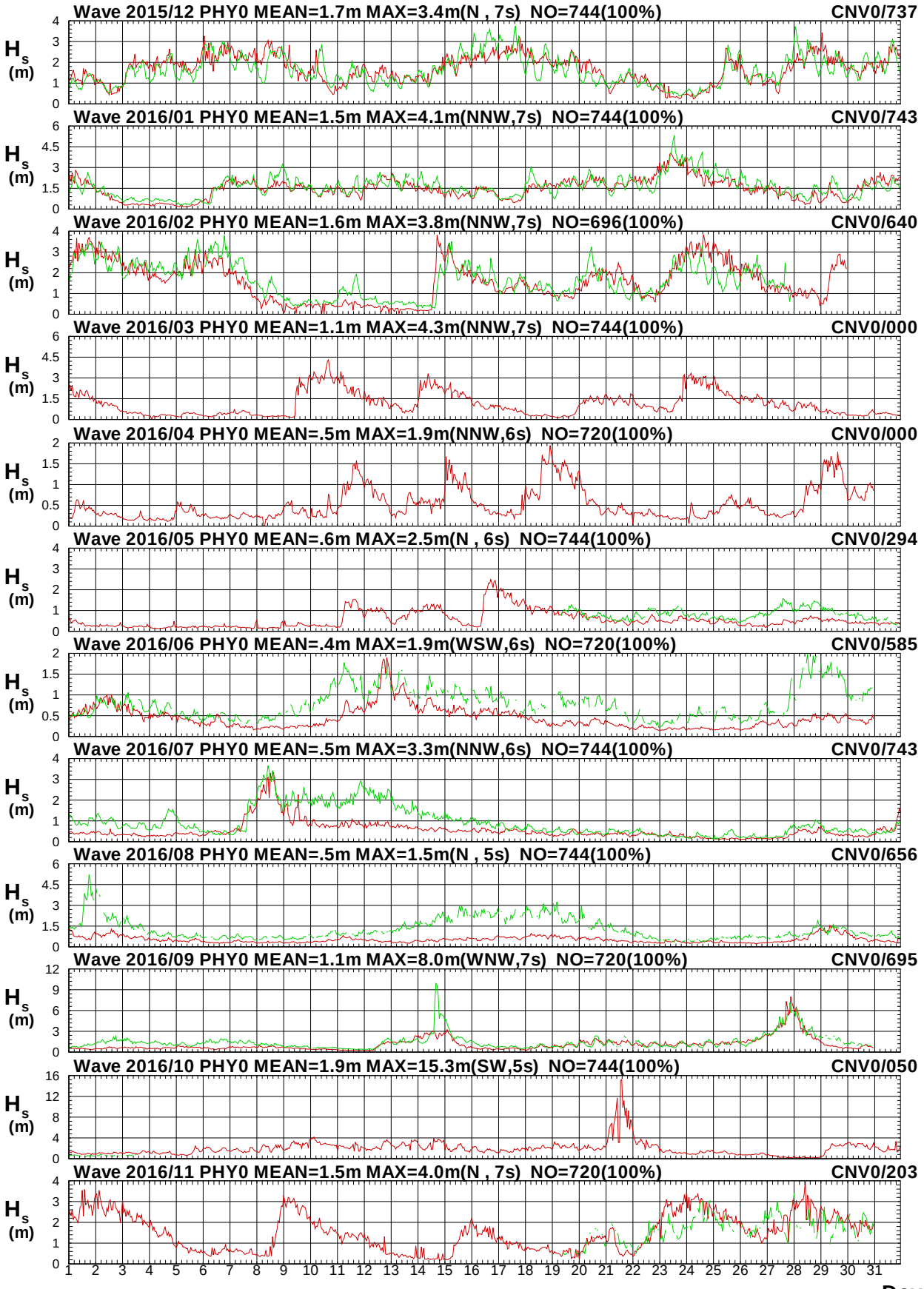

圖 10.15a　2016年每月澎湖海域 Y 站與嘉南海域 V 站波高圖

V15CPHY0.1HA V15CCNV0.1H0 V161PHY0.1HA V161CNV0.1H0 V162PHY0.1HA V162CNV0.1H0
V163PHY0.1HA V163CNV0.1H0 V164PHY0.1HA V164CNV0.1H0 V165PHY0.1HA V165CNV0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2016

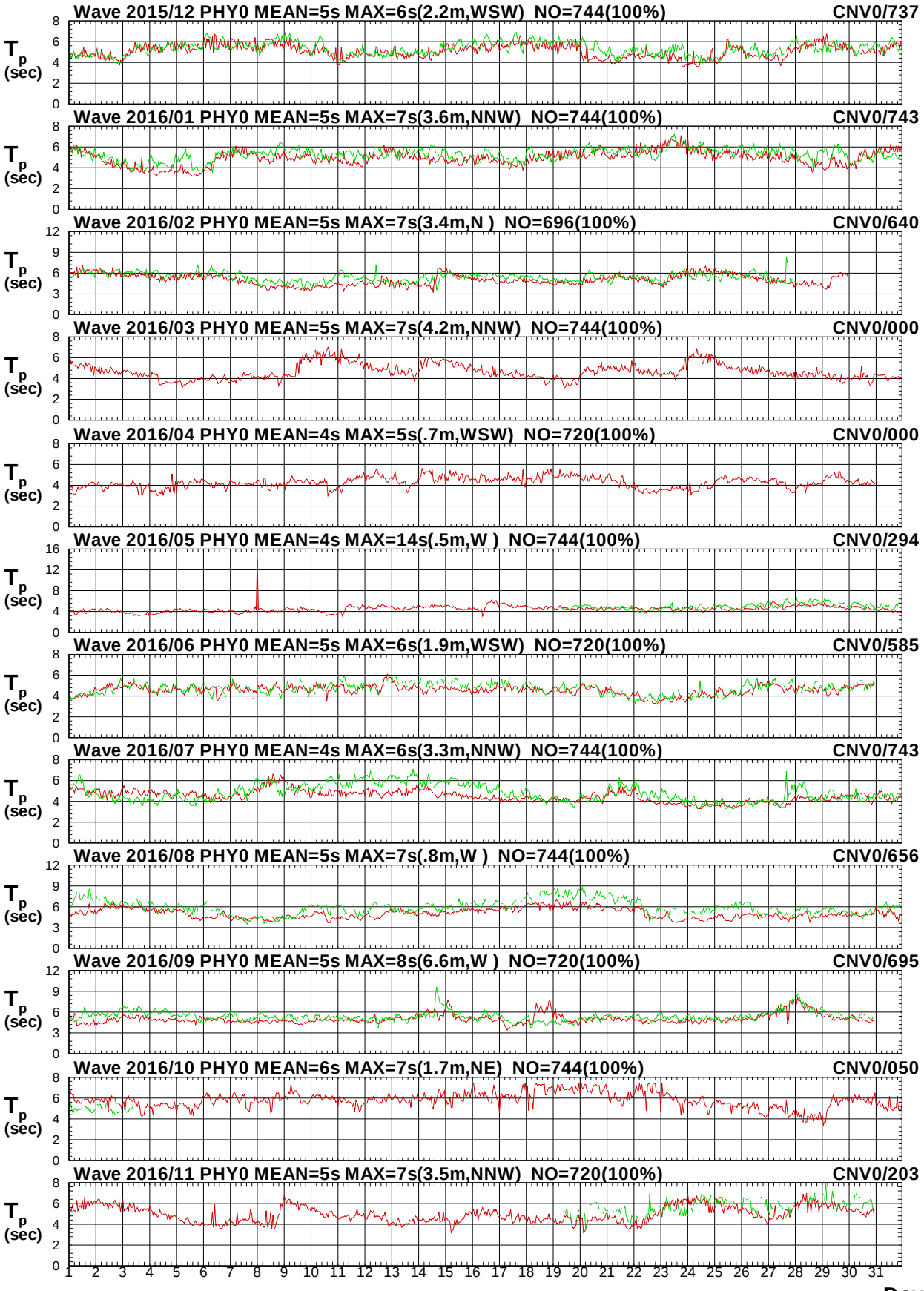

圖 10.15b　2016年每月澎湖海域 Y 站與嘉南海域 V 站週期圖

Wave Direction in Peng-Hu Seas of PHY0 at 2016

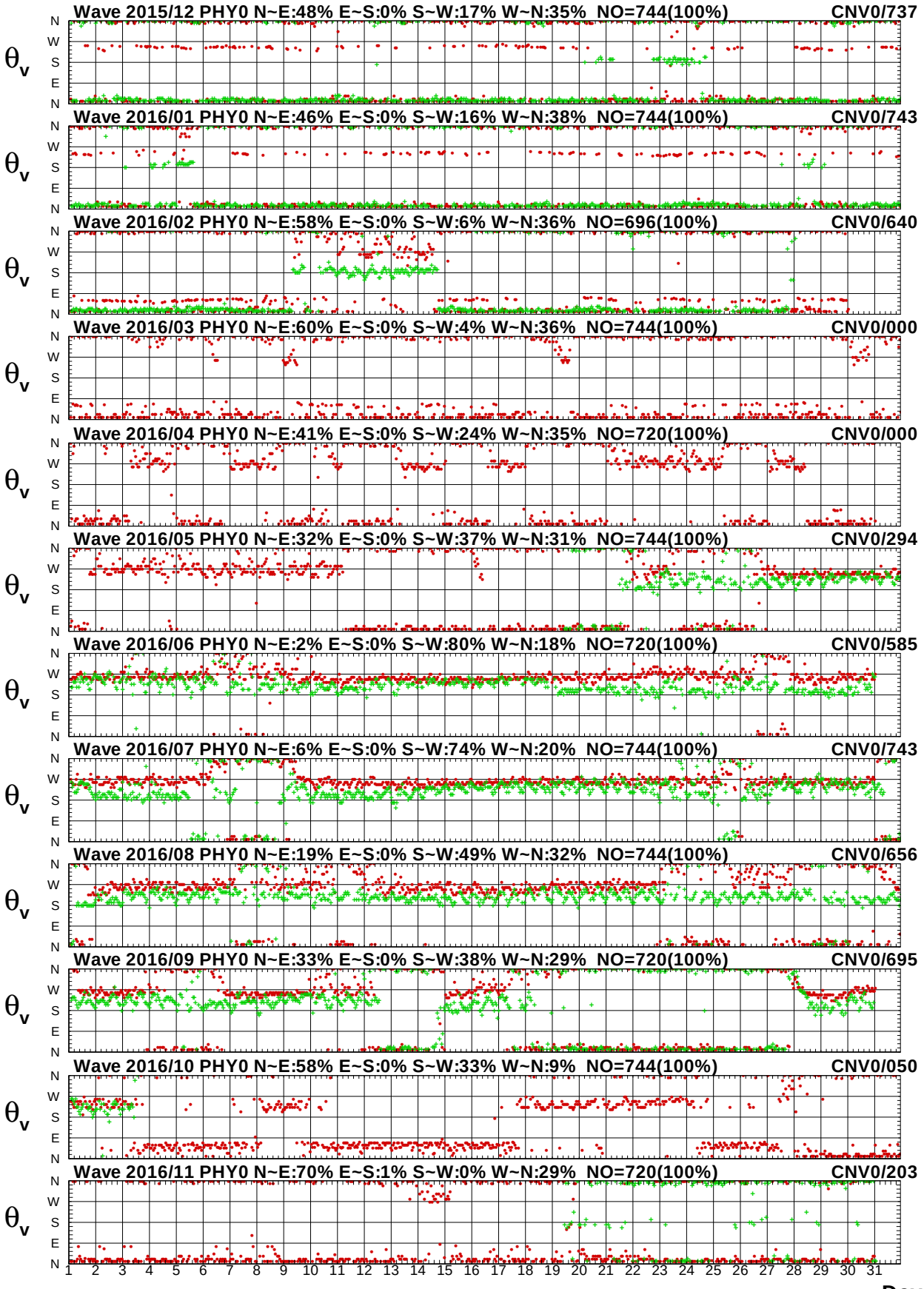

圖 10.15c　2016年每月澎湖海域 Y 站與嘉南海域 V 站波向圖

V15CPHY0.1HA V15CCNV0.1H0 V161PHY0.1HA V161CNV0.1H0 V162PHY0.1HA V162CNV0.1H0
V163PHY0.1HA V163CNV0.1H0 V164PHY0.1HA V164CNV0.1H0 V165PHY0.1HA V165CNV0.1H0

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第十一章　2016 年金門海域觀測波浪資料

金門海域波浪之觀測 2013 年 12 月本中心**(IHMT)**安裝挪威 NORTEK 公司表面波浪監測系統於金門港料羅港區(**測站 X**)及水頭港區(**測站 A**)，其位置如附圖 11。

測站 Y 外海浮標站之波浪儀屬水利署**(WRA)**所有，**測站 Z** 外後江灣小浮標之波浪儀屬近海水文文中心**(COMC)**設置。金門海域各測站歷年觀測波浪資料蒐集概況如表 11。

波浪觀測 AWCP 系統有兩個分離波高量測模式：一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **Y 站**資料作為**主要觀測站**，2016 年各觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 11.1，**主要觀測站**修補前後每月波浪歷線比較圖，如圖 11.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 11.2 以後。

表 11 金門海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	24°24'17"N	118°25'19"E	2014/02-2016/11(觀測中)	港研中心	羅港港區外海
A	24°25'8"N	118°16'41"E	2014/02-2016/11(觀測中)	港研中心	水頭港區外海
Y	23°43'37"N	119°33'07"E	2000/07-2016/11(觀測中)	水利署	金門資料浮標
Z	24°30'27"N	118°22'24"E	2013/12-2014/07	水文中心	后江灣小浮標

圖 11 金門海域波浪觀測站位置示意圖

表11.1a 2016年每月金門海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	金門海域	金門海域	金門海域	金門海域	金門海域	金門海域	金門海域	金門海域
測站	Y	X	A	Z				
2015/12月	632 (84.9%)	735 (98.8%)	721 (96.9%)	*	*	*	*	*
2016/ 1月	601 (80.8%)	703 (94.5%)	740 (99.5%)	*	*	*	*	*
2016/ 2月	588 (84.5%)	687 (98.7%)	694 (99.7%)	*	*	*	*	*
2016/ 3月	633 (85.1%)	727 (97.7%)	725 (97.4%)	*	*	*	*	*
2016/ 4月	631 (87.6%)	699 (97.1%)	683 (94.9%)	*	*	*	*	*
2016/ 5月	703 (94.5%)	107 (14.4%)	735 (98.8%)	*	*	*	*	*
2016/ 6月	696 (96.7%)	*	714 (99.2%)	*	*	*	*	*
2016/ 7月	737 (99.1%)	6 (.8%)	205 (27.6%)	*	*	*	*	*
2016/ 8月	744 (100%)	13 (1.7%)	138 (18.5%)	*	*	*	*	*
2016/ 9月	718 (99.7%)	*	693 (96.3%)	*	*	*	*	*
2016/10月	733 (98.5%)	*	*	*	*	*	*	*
2016/11月	705 (97.9%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表11.1b 2016年每月金門海域修補後各測站波浪資料統計表

年/月 港區	金門海域	金門海域	金門海域	金門海域	金門海域	金門海域	金門海域	金門海域
測站	Y	X	A	Z				
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Kin-Men seas of KMY0 at 2016

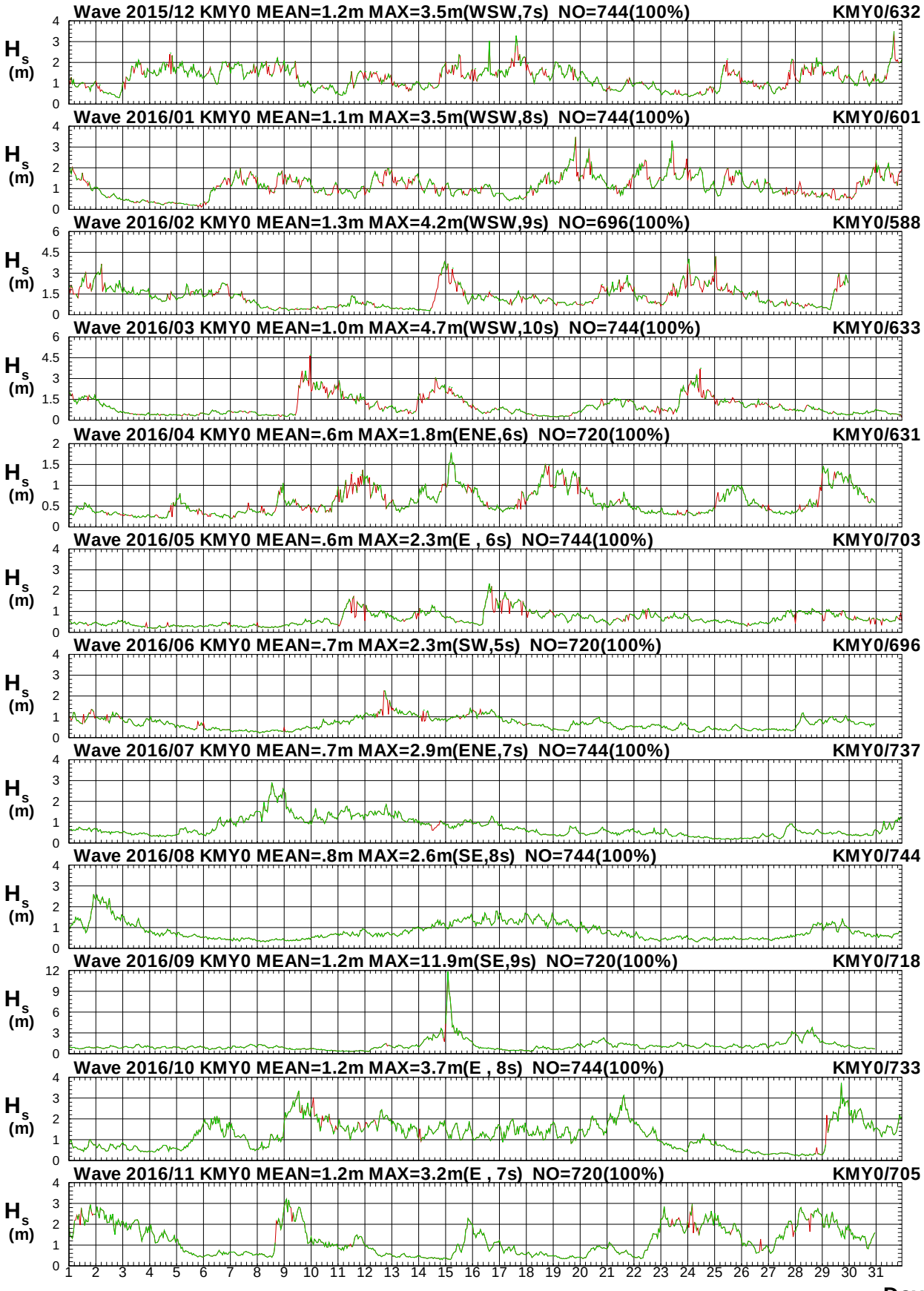

圖 11.1a　2016年每月金門海域 Y 站修補前後之波高比較圖

V15CKMY0.1HA V15CKMY0.1H0 V161KMY0.1HA V161KMY0.1H0 V162KMY0.1HA V162KMY0.1H0
V163KMY0.1HA V163KMY0.1H0 V164KMY0.1HA V164KMY0.1H0 V165KMY0.1HA V165KMY0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

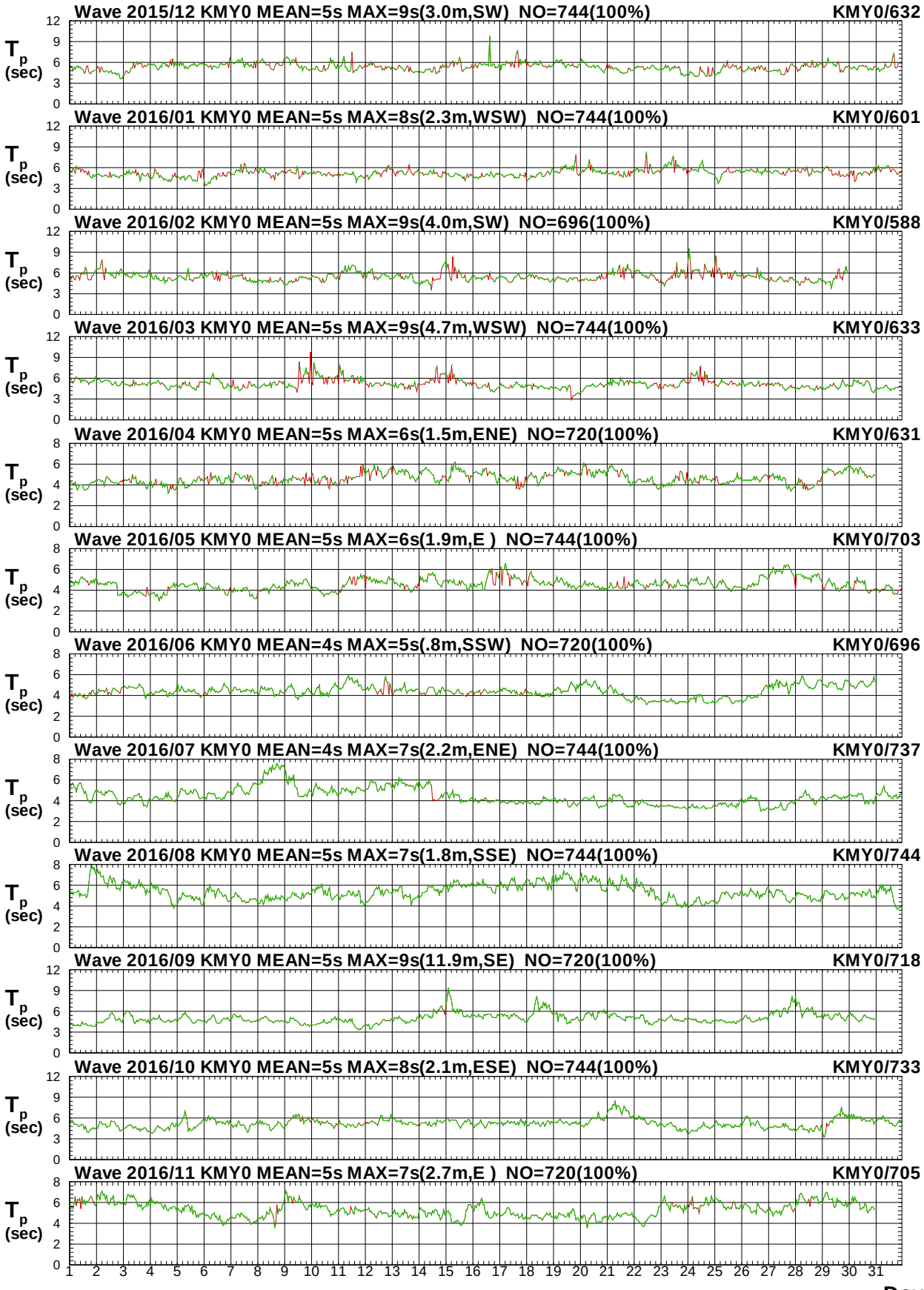

圖 11.1b　2016年每月金門海域 Y 站修補前後之週期比較圖

V15CKMY0.1HA V15CKMY0.1H0 V161KMY0.1HA V161KMY0.1H0 V162KMY0.1HA V162KMY0.1H0
V163KMY0.1HA V163KMY0.1H0 V164KMY0.1HA V164KMY0.1H0 V165KMY0.1HA V165KMY0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

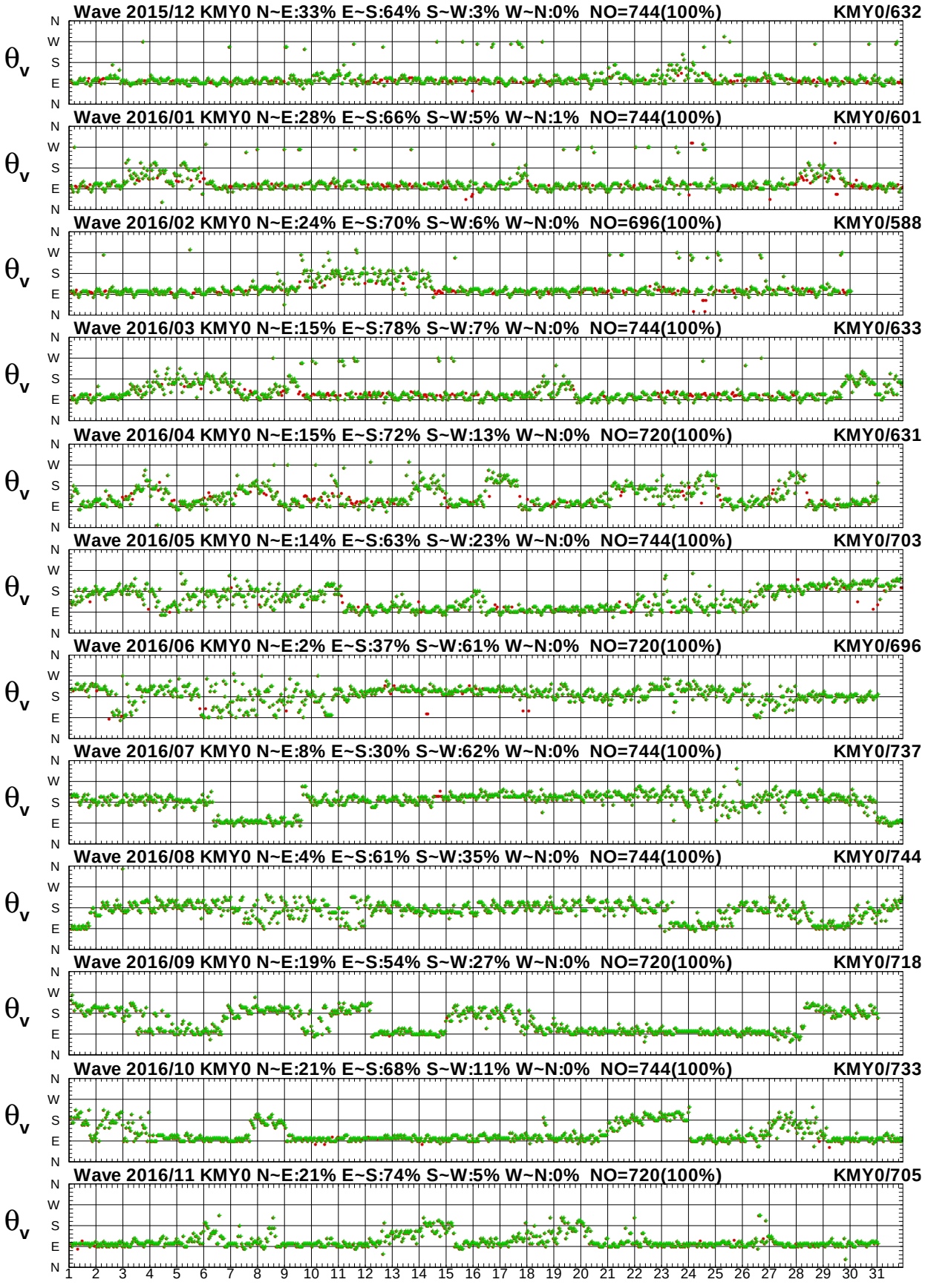

圖 11.1c　2016年每月金門海域 Y 站修補前後之波向比較圖

V15CKMY0.1HA V15CKMY0.1H0 V161KMY0.1HA V161KMY0.1H0 V162KMY0.1HA V162KMY0.1H0
V163KMY0.1HA V163KMY0.1H0 V164KMY0.1HA V164KMY0.1H0 V165KMY0.1HA V165KMY0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

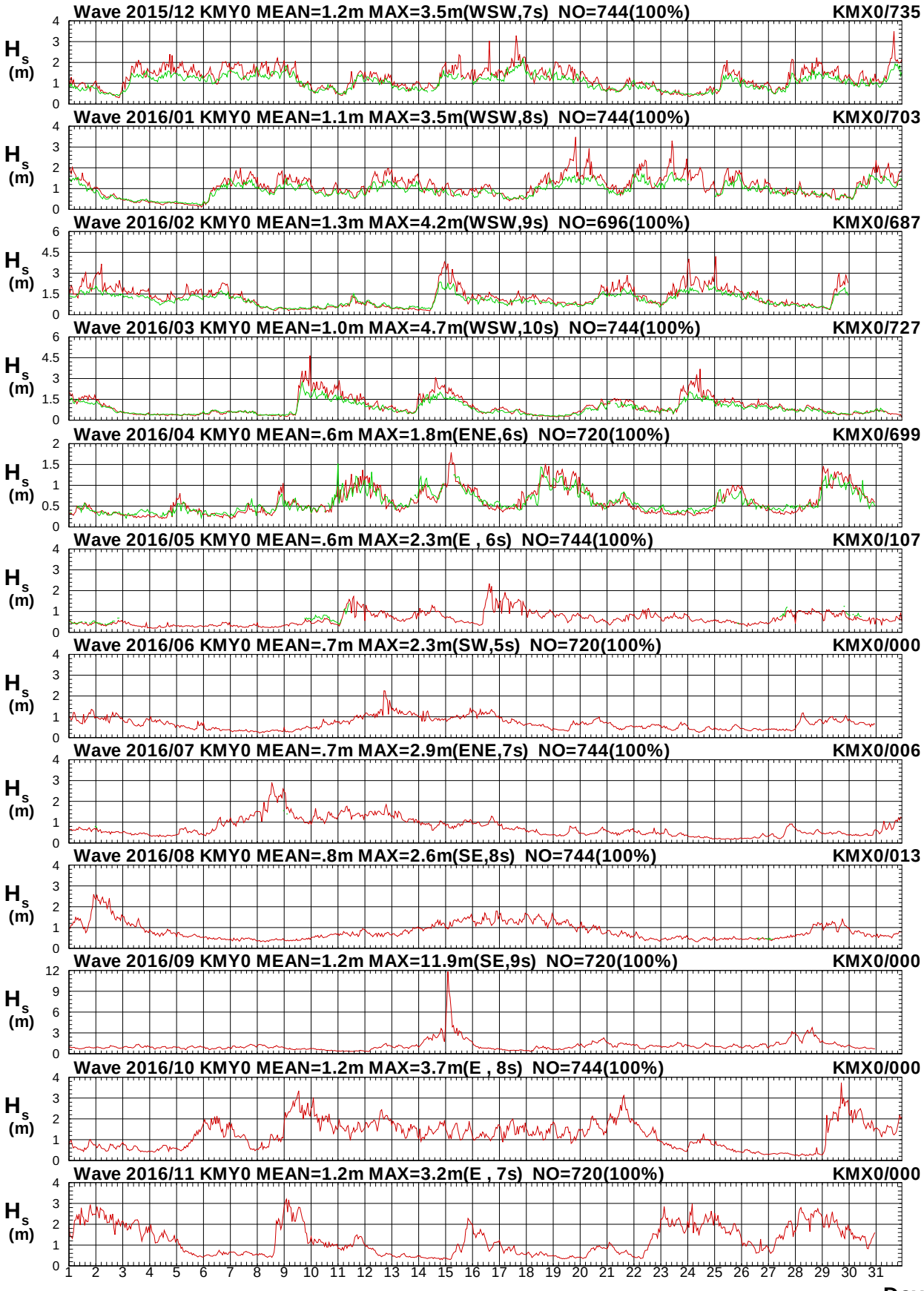

圖11.2a　2016年每月金門海域 Y 站與 X 站波高比較圖

V15CKMY0.1HA V15CKMX0.1H0 V161KMY0.1HA V161KMX0.1H0 V162KMY0.1HA V162KMX0.1H0
V163KMY0.1HA V163KMX0.1H0 V164KMY0.1HA V164KMX0.1H0 V165KMY0.1HA V165KMX0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

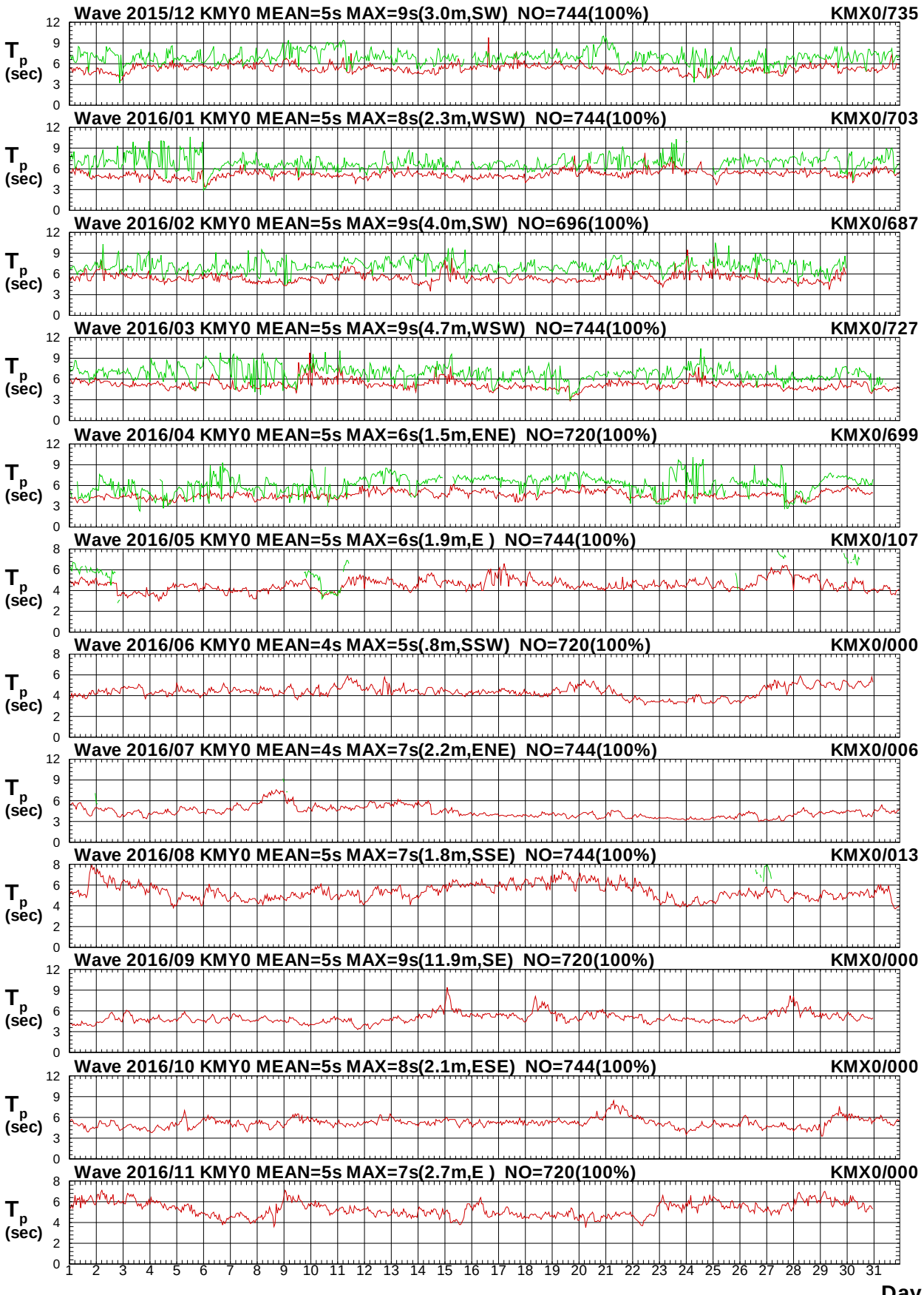

圖11.2b　2016年每月金門海域 Y 站與 X 站週期比較圖

V15CKMY0.1HA V15CKMX0.1H0 V161KMY0.1HA V161KMX0.1H0 V162KMY0.1HA V162KMX0.1H0
V163KMY0.1HA V163KMX0.1H0 V164KMY0.1HA V164KMX0.1H0 V165KMY0.1HA V165KMX0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

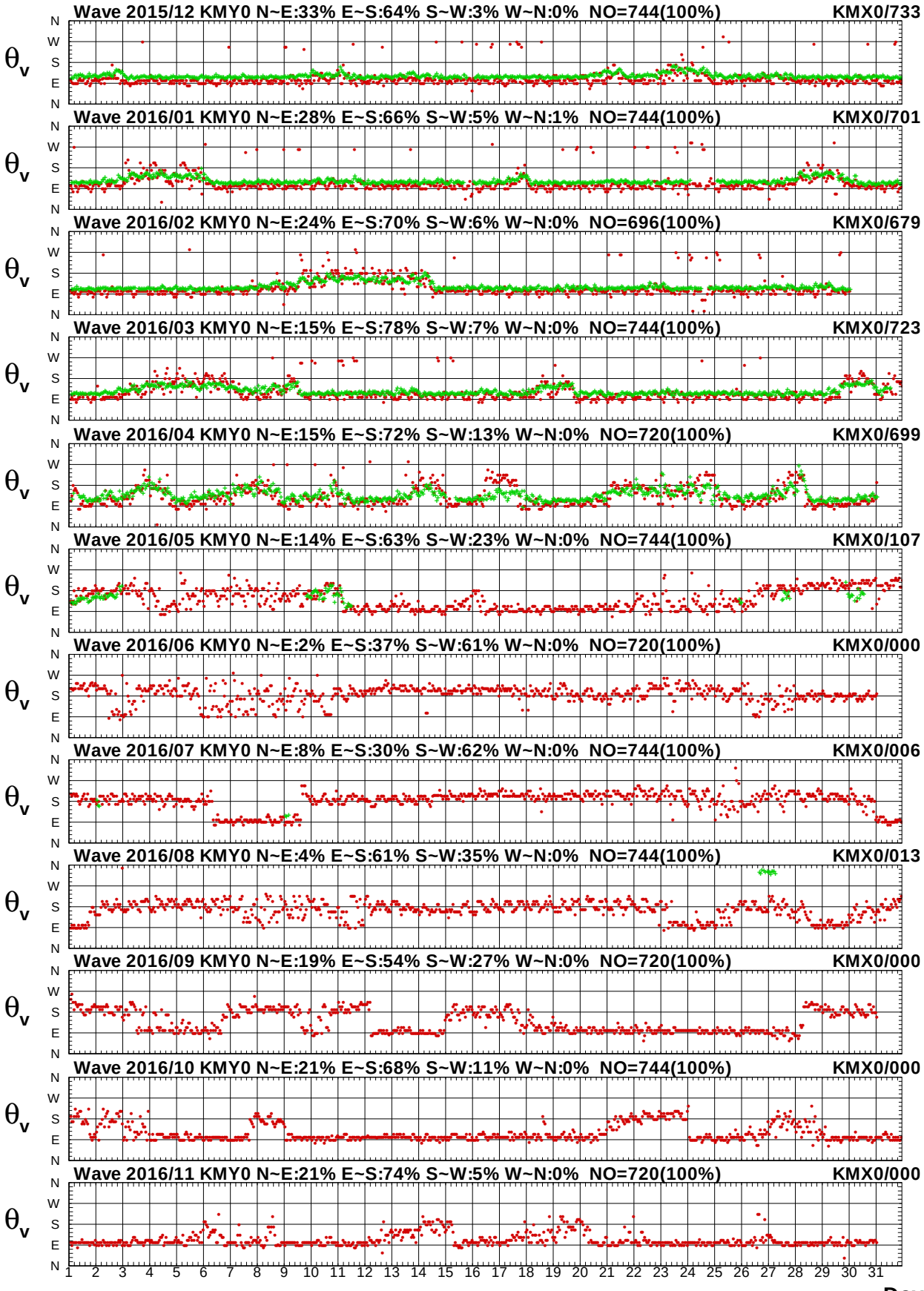

圖11.2c　2016年每月金門海域 Y 站與 X 站波向比較圖

V15CKMY0.1HA V15CKMX0.1H0 V161KMY0.1HA V161KMX0.1H0 V162KMY0.1HA V162KMX0.1H0
V163KMY0.1HA V163KMX0.1H0 V164KMY0.1HA V164KMX0.1H0 V165KMY0.1HA V165KMX0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

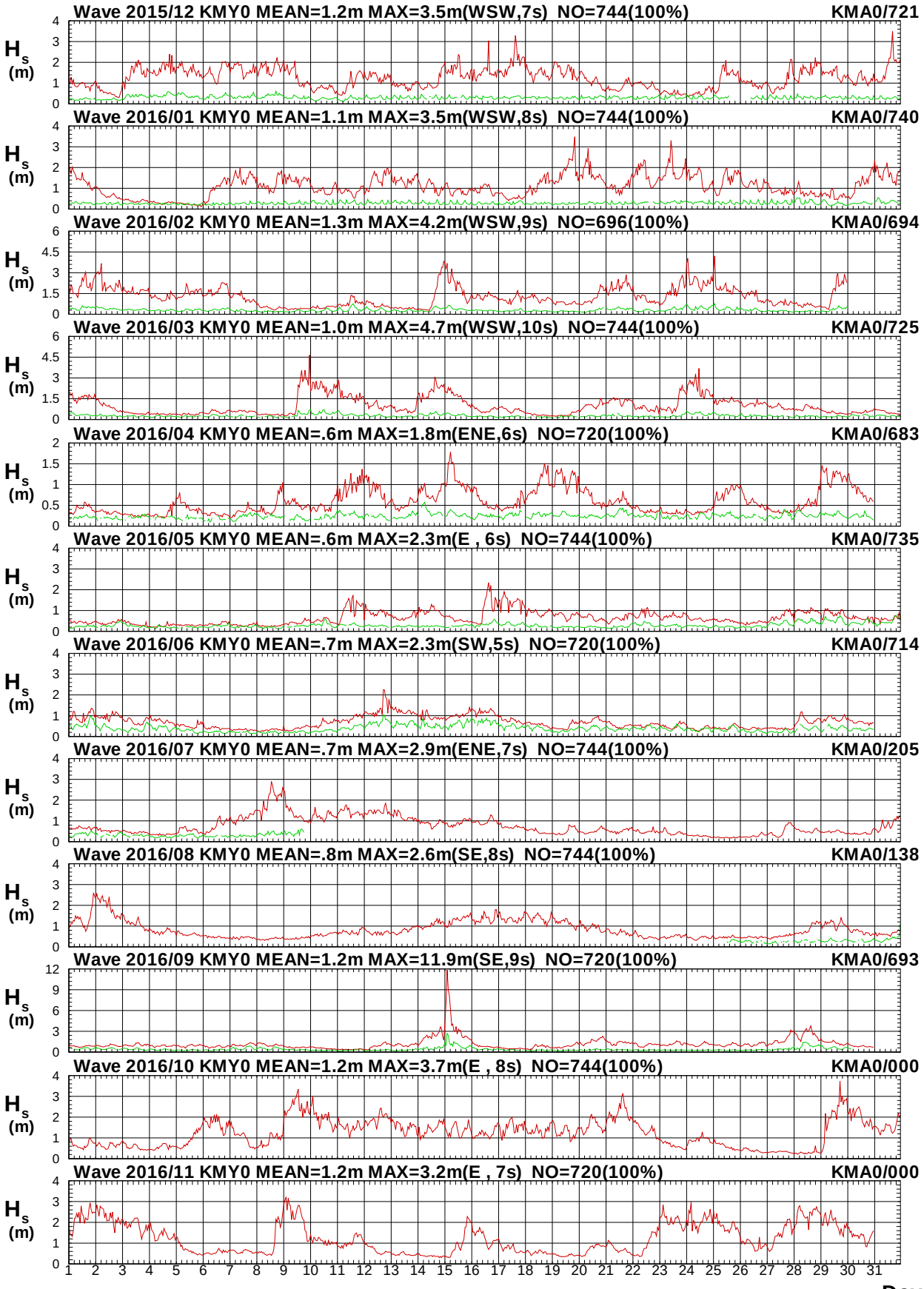

圖11.3a　2016年每月金門海域 Y 站與 A 站波高比較圖

V15CKMY0.1HA V15CKMA0.1H0 V161KMY0.1HA V161KMA0.1H0 V162KMY0.1HA V162KMA0.1H0
V163KMY0.1HA V163KMA0.1H0 V164KMY0.1HA V164KMA0.1H0 V165KMY0.1HA V165KMA0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

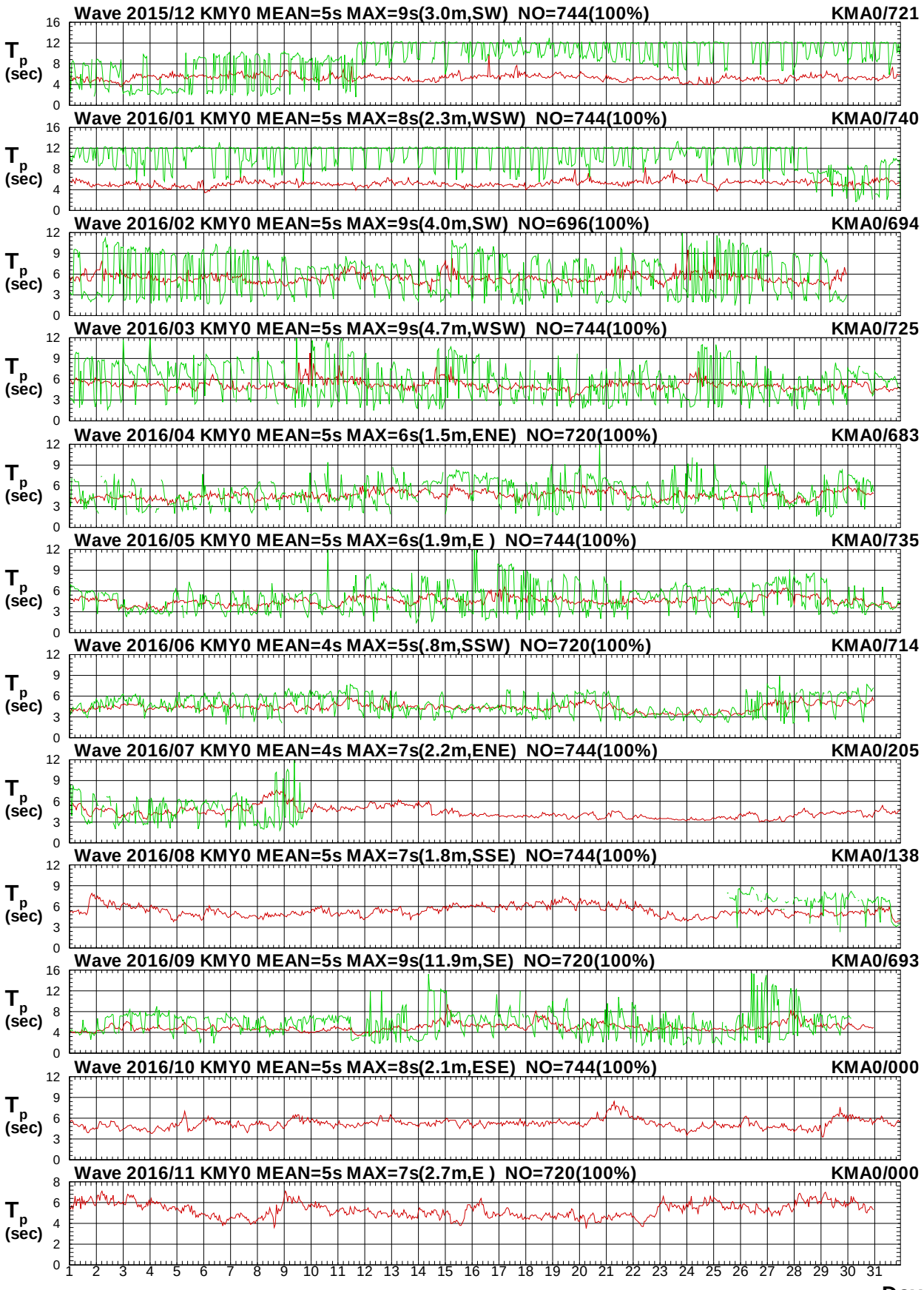

圖 11.3b　2016年每月金門海域 Y 站與 A 站週期比較圖

V15CKMY0.1HA V15CKMA0.1H0 V161KMY0.1HA V161KMA0.1H0 V162KMY0.1HA V162KMA0.1H0
V163KMY0.1HA V163KMA0.1H0 V164KMY0.1HA V164KMA0.1H0 V165KMY0.1HA V165KMA0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

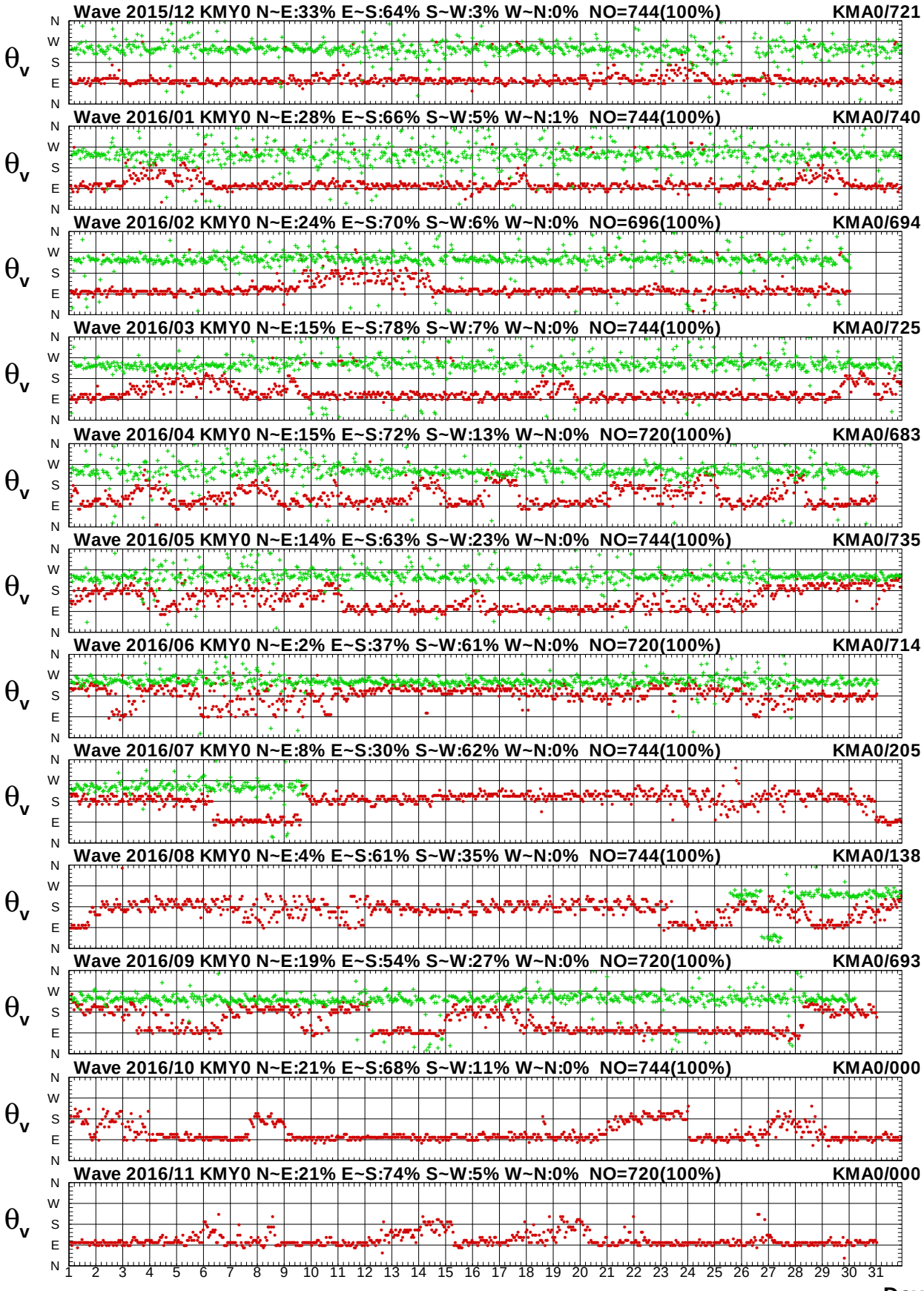

圖11.3c　2016年每月金門海域 Y 站與 A 站波向比較圖

V15CKMY0.1HA V15CKMA0.1H0 V161KMY0.1HA V161KMA0.1H0 V162KMY0.1HA V162KMA0.1H0
V163KMY0.1HA V163KMA0.1H0 V164KMY0.1HA V164KMA0.1H0 V165KMY0.1HA V165KMA0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

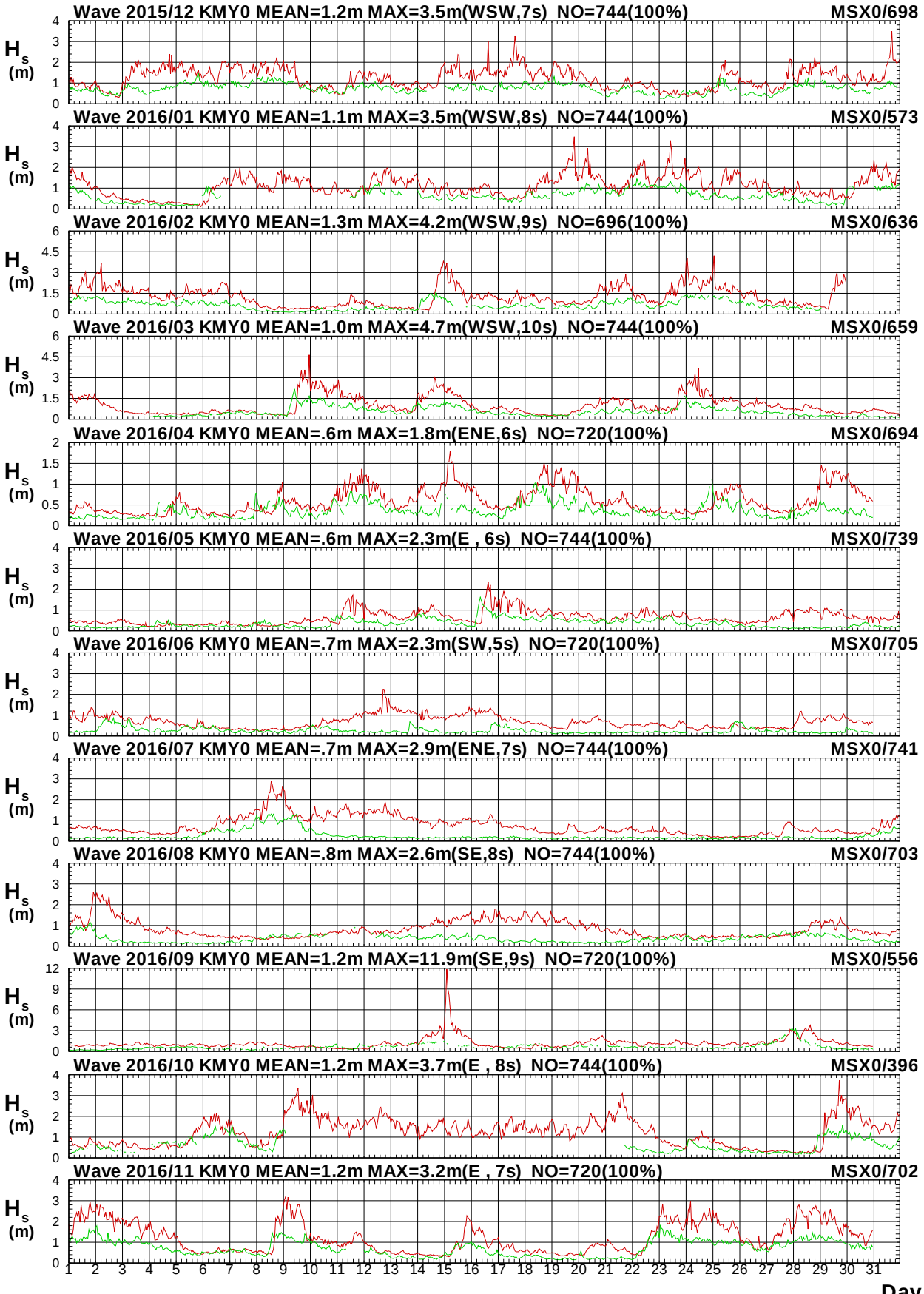

圖11.4a　2016年每月金門海域 Y 站與馬祖海域 X 站波高圖

V15CKMY0.1HA V15CMSX0.1H0 V161KMY0.1HA V161MSX0.1H0 V162KMY0.1HA V162MSX0.1H0
V163KMY0.1HA V163MSX0.1H0 V164KMY0.1HA V164MSX0.1H0 V165KMY0.1HA V165MSX0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

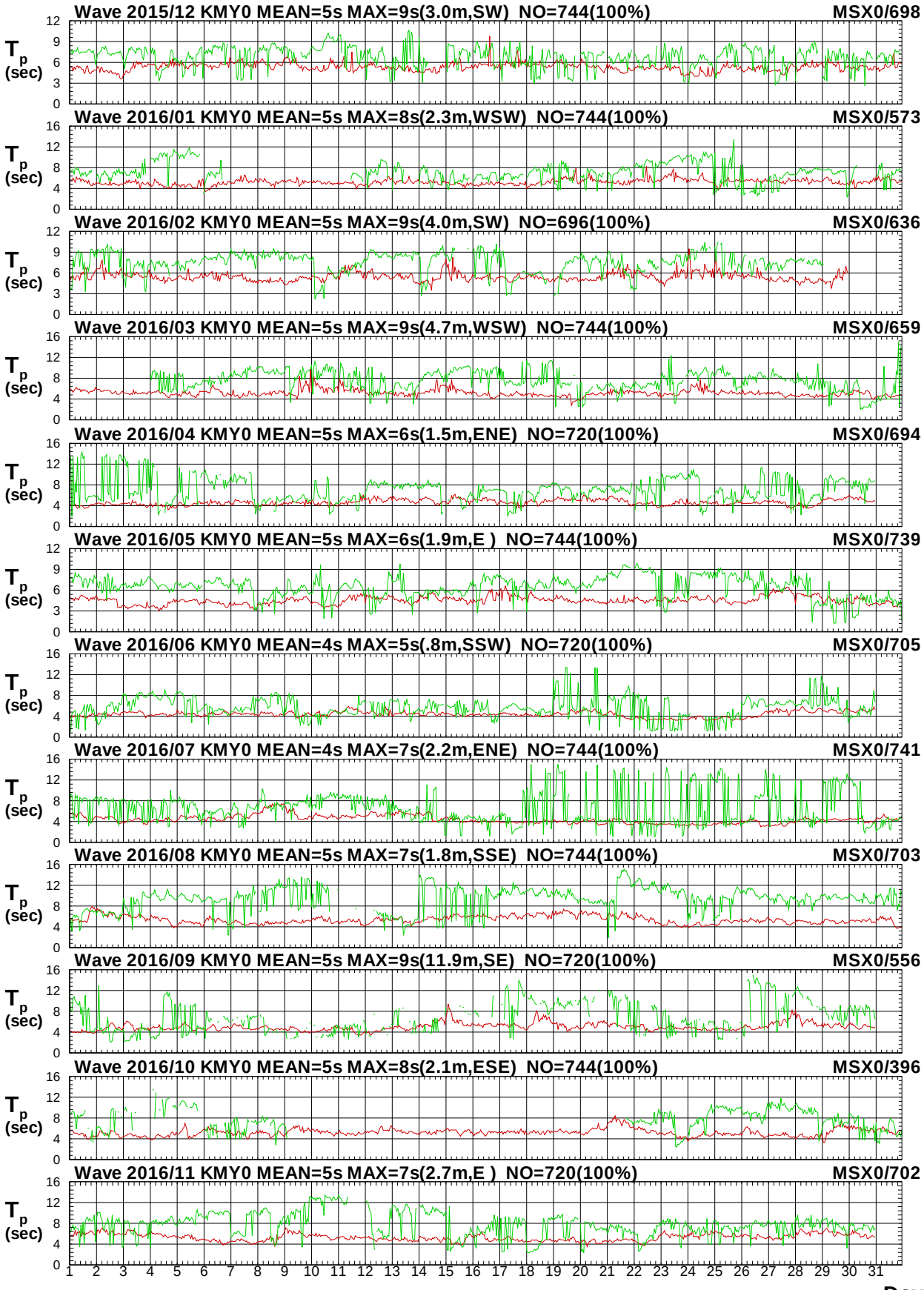

圖 11.4b　2016年每月金門海域 Y 站與馬祖海域 X 站週期圖

V15CKMY0.1HA V15CMSX0.1H0 V161KMY0.1HA V161MSX0.1H0 V162KMY0.1HA V162MSX0.1H0
V163KMY0.1HA V163MSX0.1H0 V164KMY0.1HA V164MSX0.1H0 V165KMY0.1HA V165MSX0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

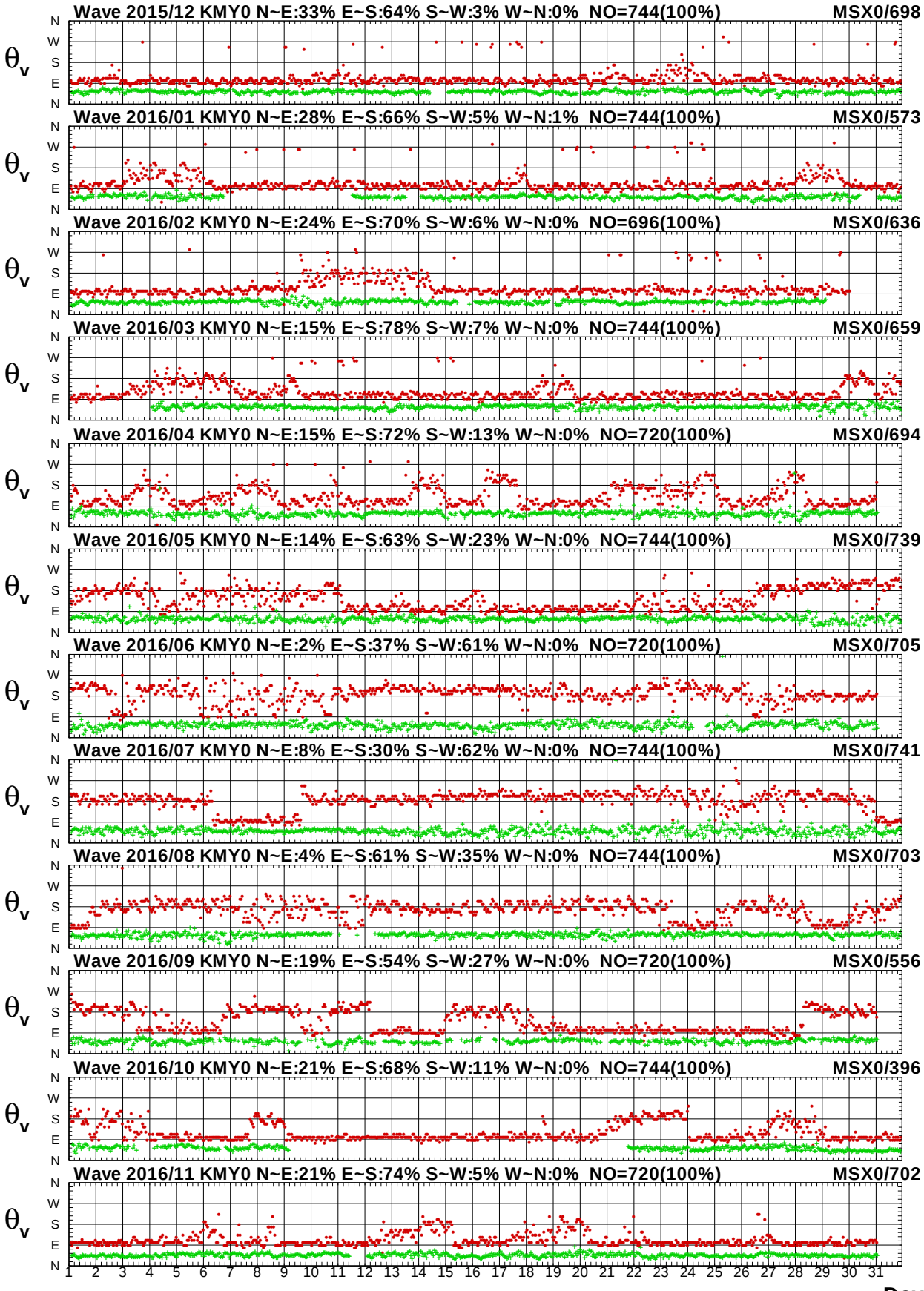

圖11.4c　2016年每月金門海域 Y 站與馬祖海域 X 站波向圖

V15CKMY0.1HA V15CMSX0.1H0 V161KMY0.1HA V161MSX0.1H0 V162KMY0.1HA V162MSX0.1H0
V163KMY0.1HA V163MSX0.1H0 V164KMY0.1HA V164MSX0.1H0 V165KMY0.1HA V165MSX0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

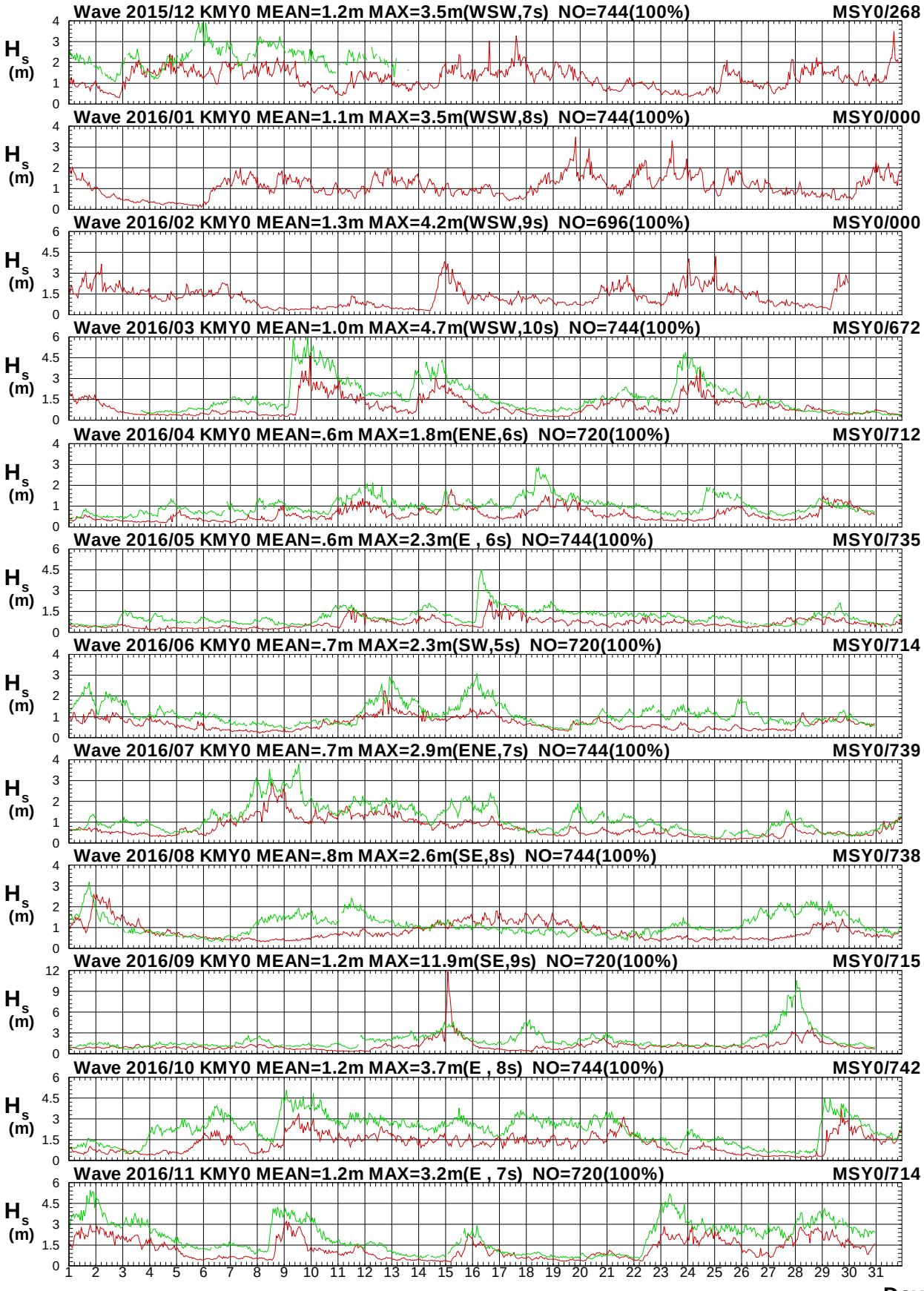

圖11.5a　2016年每月金門海域 Y 站與馬祖海域 Y 站波高圖

V15CKMY0.1HA V15CMSY0.1H0 V161KMY0.1HA V161MSY0.1H0 V162KMY0.1HA V162MSY0.1H0
V163KMY0.1HA V163MSY0.1H0 V164KMY0.1HA V164MSY0.1H0 V165KMY0.1HA V165MSY0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

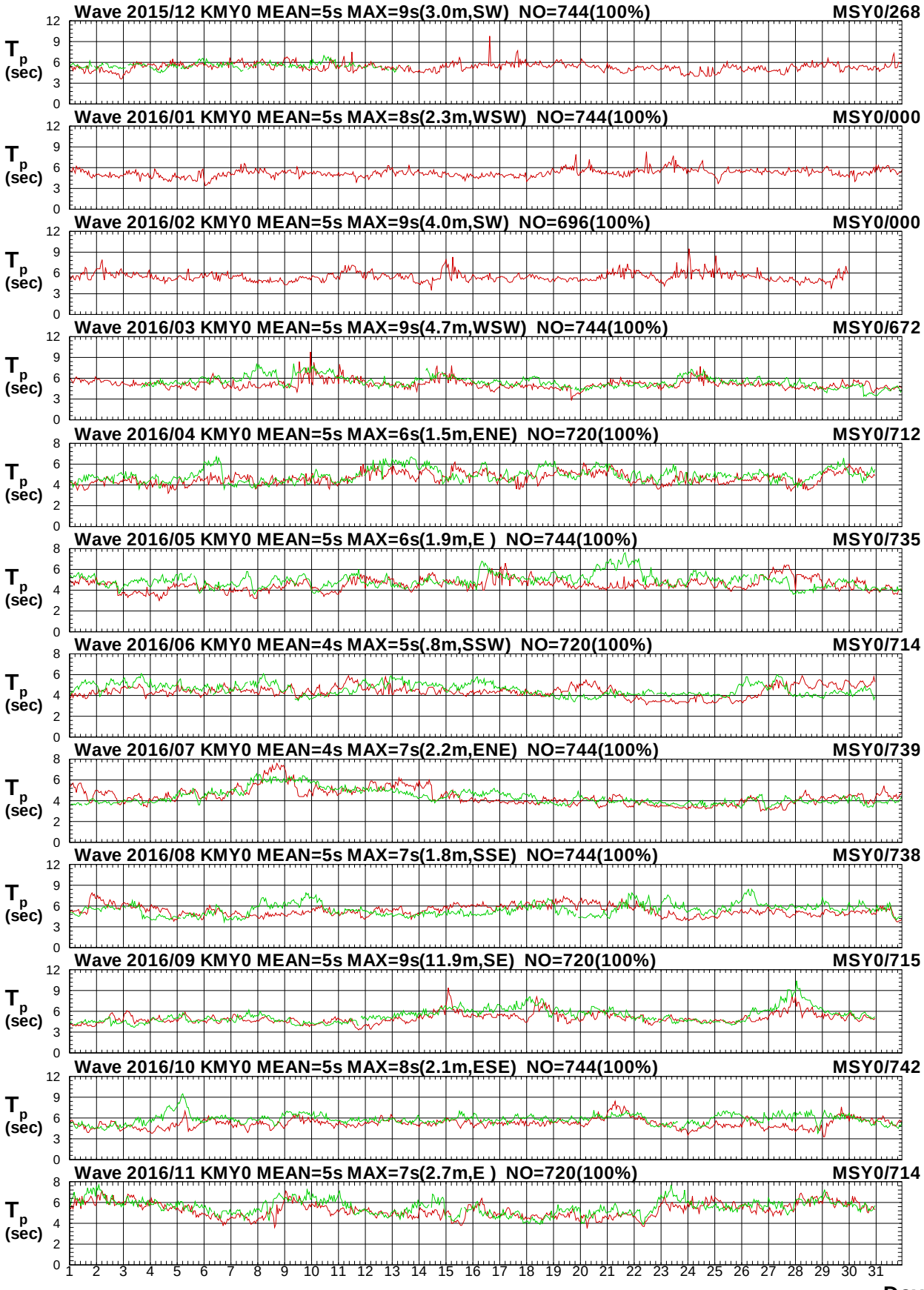

圖 11.5b　2016年每月金門海域 Y 站與馬祖海域 Y 站週期圖

V15CKMY0.1HA V15CMSY0.1H0 V161KMY0.1HA V161MSY0.1H0 V162KMY0.1HA V162MSY0.1H0
V163KMY0.1HA V163MSY0.1H0 V164KMY0.1HA V164MSY0.1H0 V165KMY0.1HA V165MSY0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

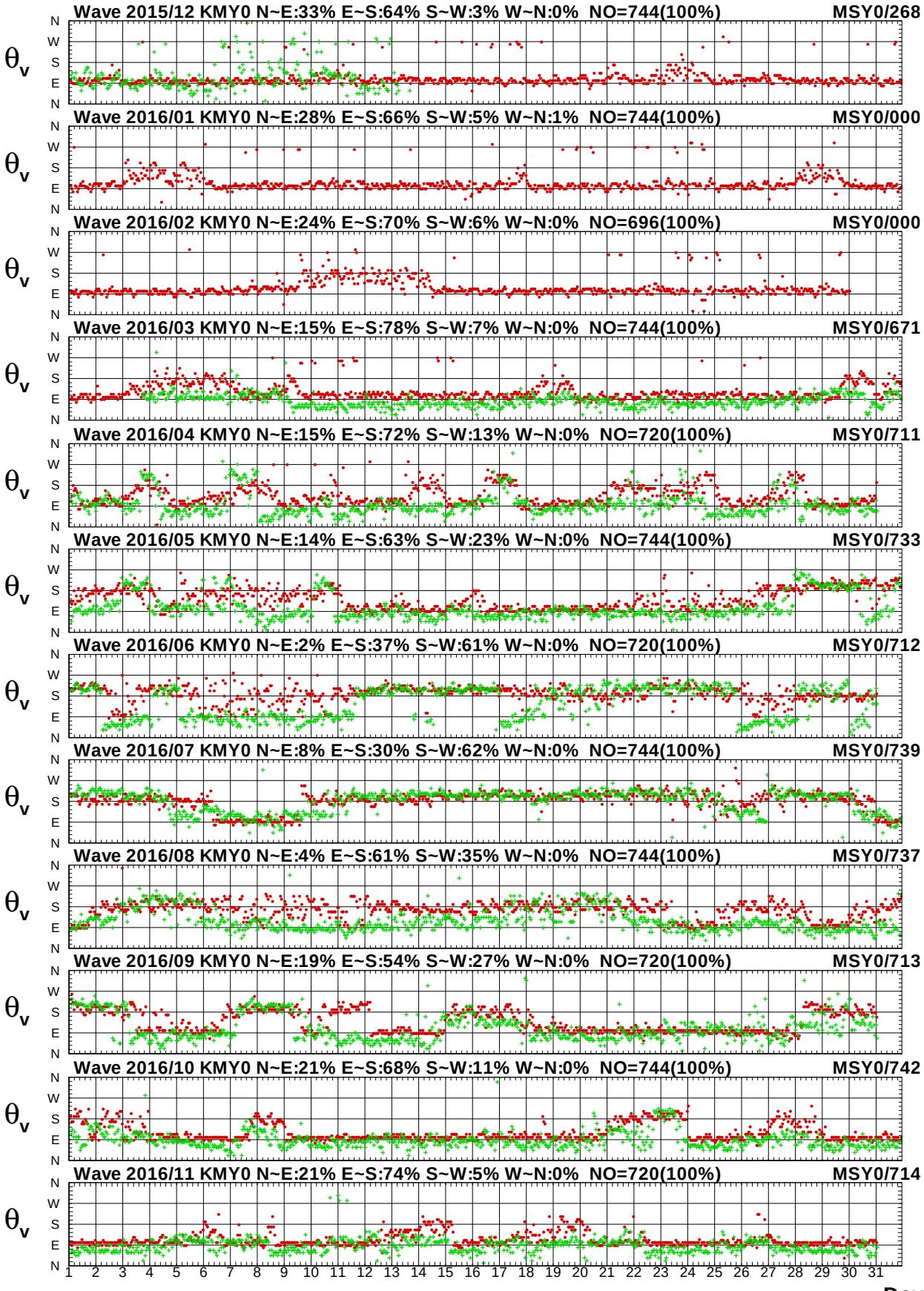

圖11.5c　2016年每月金門海域 Y 站與馬祖海域 Y 站波向圖

V15CKMY0.1HA V15CMSY0.1H0 V161KMY0.1HA V161MSY0.1H0 V162KMY0.1HA V162MSY0.1H0
V163KMY0.1HA V163MSY0.1H0 V164KMY0.1HA V164MSY0.1H0 V165KMY0.1HA V165MSY0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

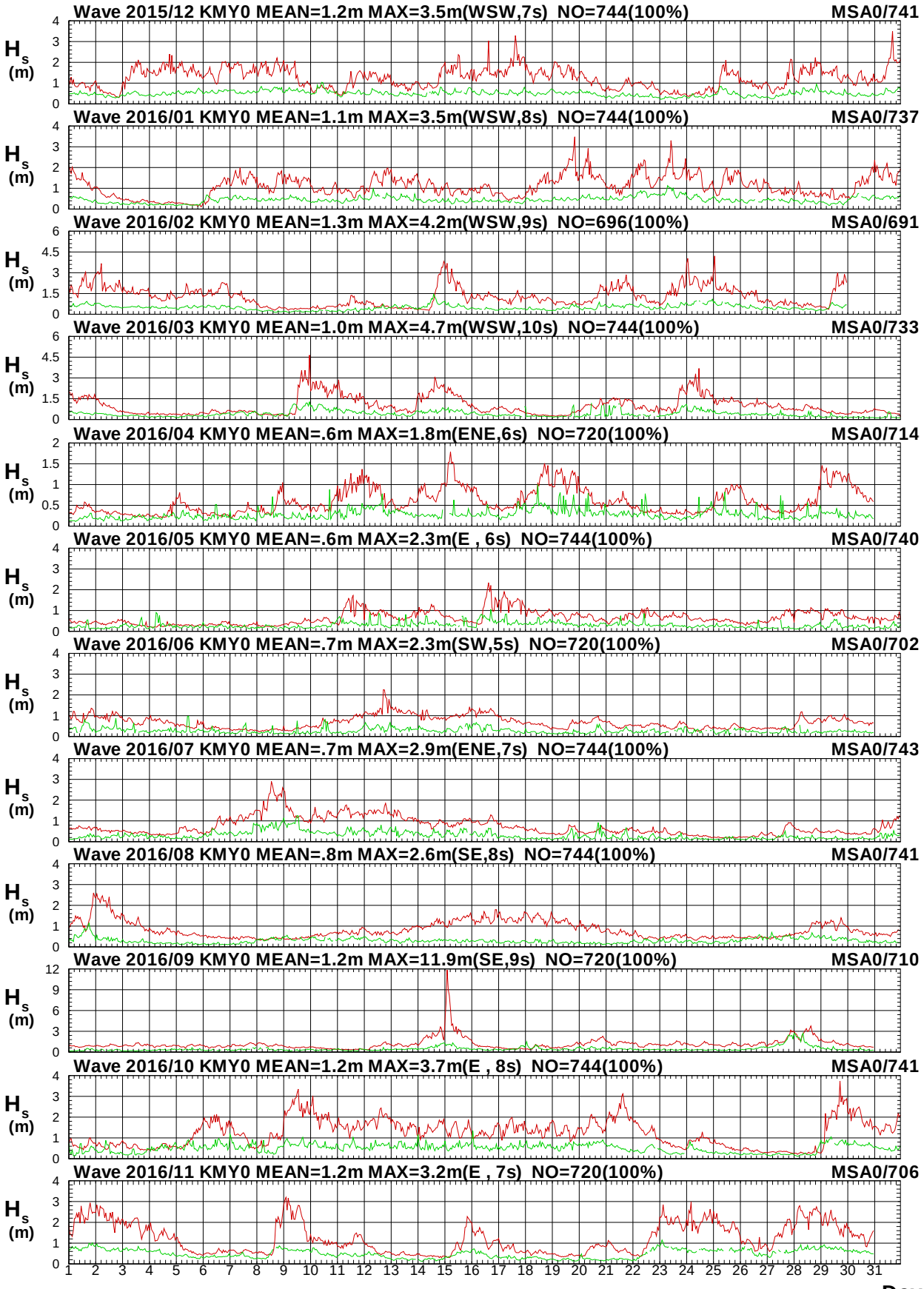

圖11.6a　2016年每月金門海域 Y 站與馬祖海域 A 站波高圖

V15CKMY0.1HA V15CMSA0.1H0 V161KMY0.1HA V161MSA0.1H0 V162KMY0.1HA V162MSA0.1H0
V163KMY0.1HA V163MSA0.1H0 V164KMY0.1HA V164MSA0.1H0 V165KMY0.1HA V165MSA0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

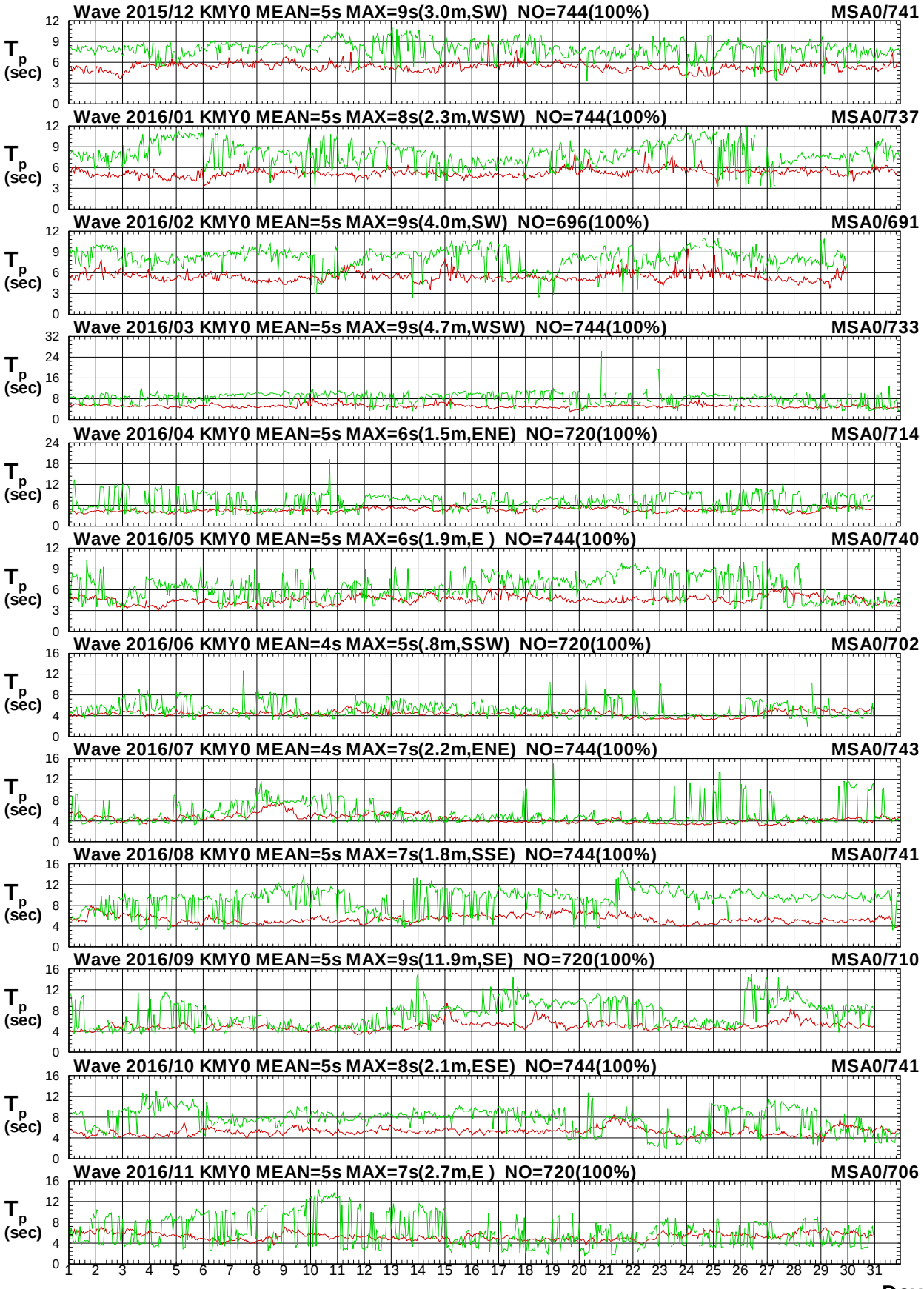

圖 11.6b　2016年每月金門海域 Y 站與馬祖海域 A 站週期圖

V15CKMY0.1HA V15CMSA0.1H0 V161KMY0.1HA V161MSA0.1H0 V162KMY0.1HA V162MSA0.1H0
V163KMY0.1HA V163MSA0.1H0 V164KMY0.1HA V164MSA0.1H0 V165KMY0.1HA V165MSA0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

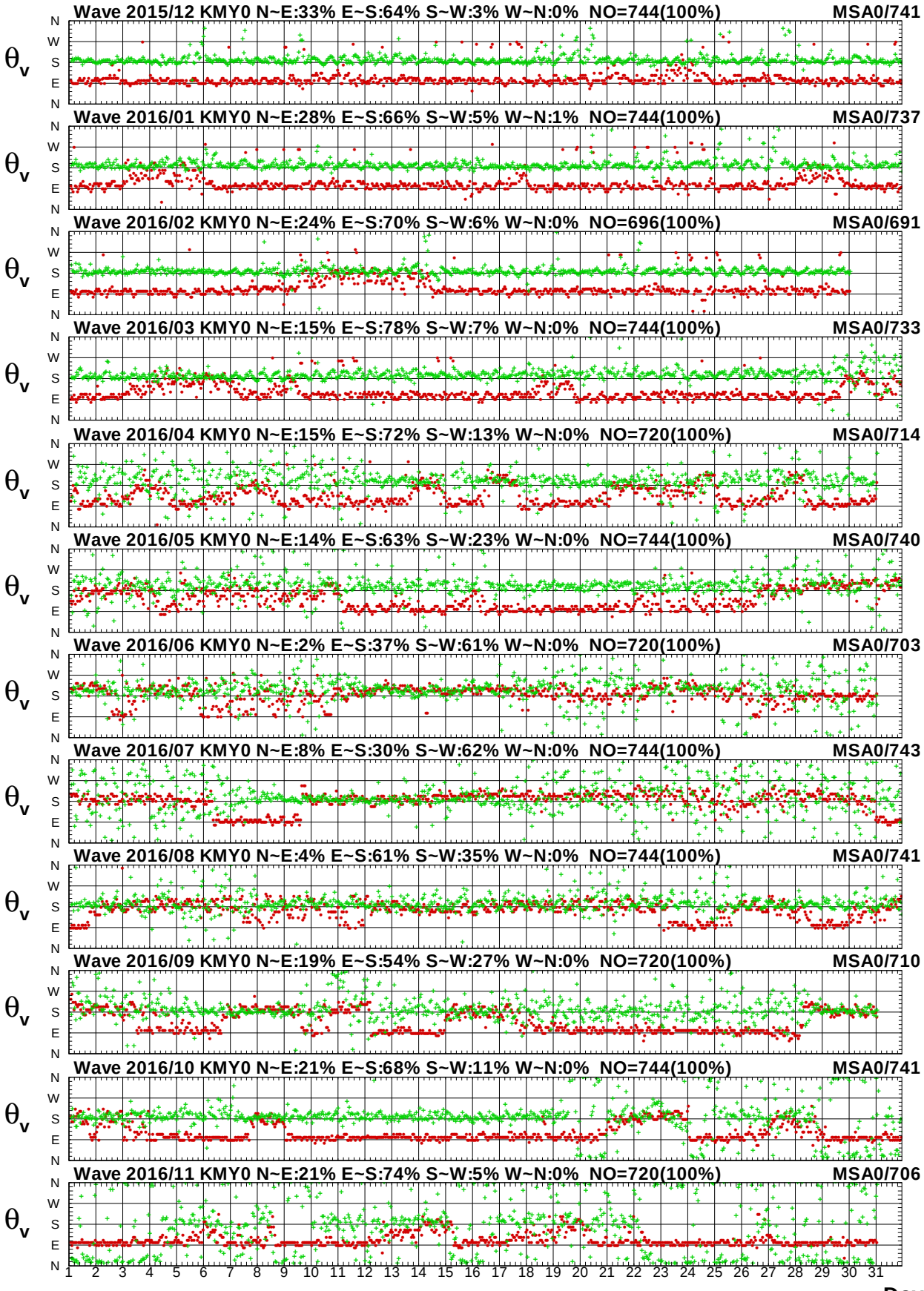

圖11.6c　2016年每月金門海域 Y 站與馬祖海域 A 站波向圖

V15CKMY0.1HA V15CMSA0.1H0 V161KMY0.1HA V161MSA0.1H0 V162KMY0.1HA V162MSA0.1H0
V163KMY0.1HA V163MSA0.1H0 V164KMY0.1HA V164MSA0.1H0 V165KMY0.1HA V165MSA0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

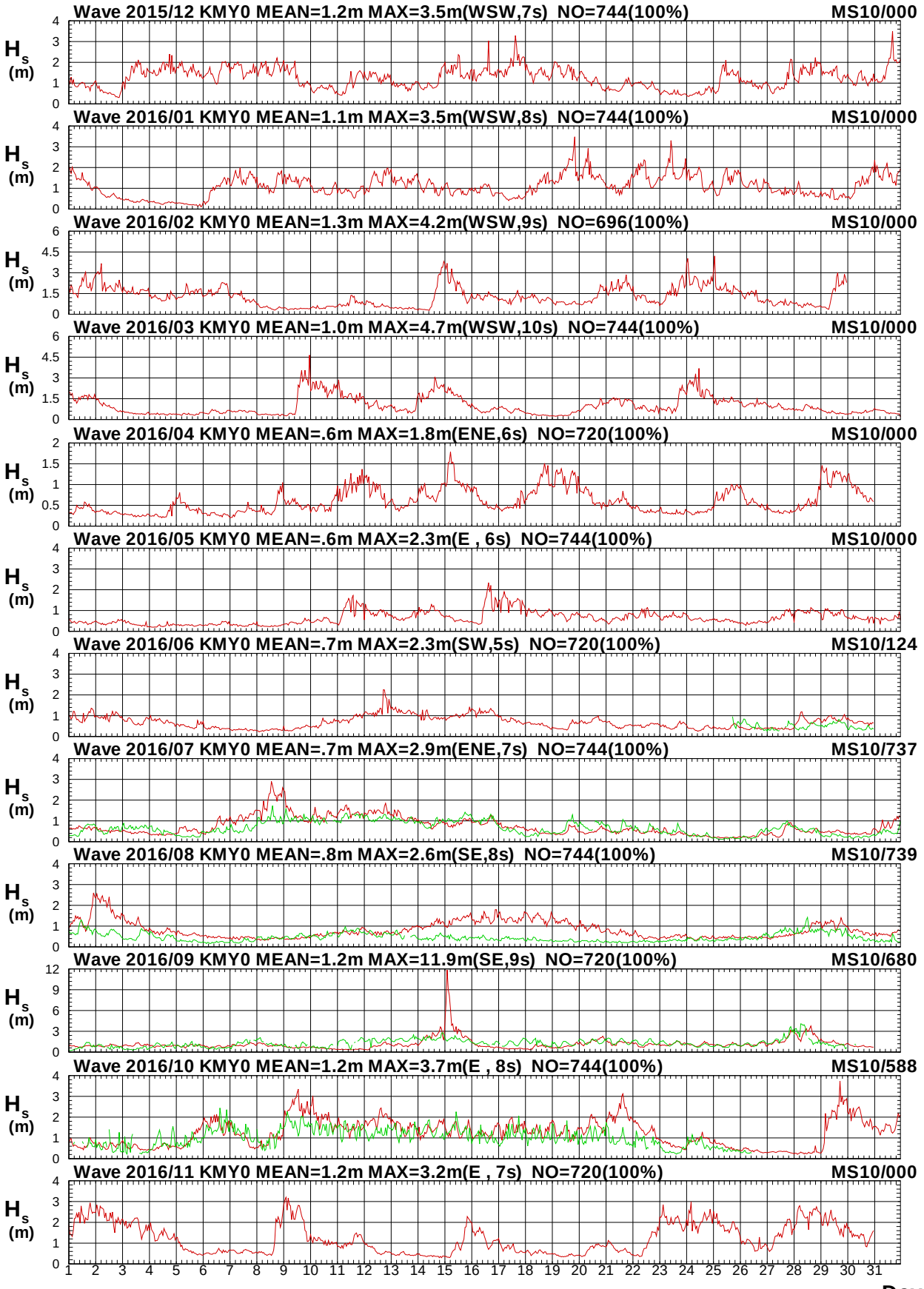

圖11.7a　2016年每月金門海域 Y 站與馬祖海域1站波高圖

V15CKMY0.1HA V15CMS10.1H0 V161KMY0.1HA V161MS10.1H0 V162KMY0.1HA V162MS10.1H0
V163KMY0.1HA V163MS10.1H0 V164KMY0.1HA V164MS10.1H0 V165KMY0.1HA V165MS10.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

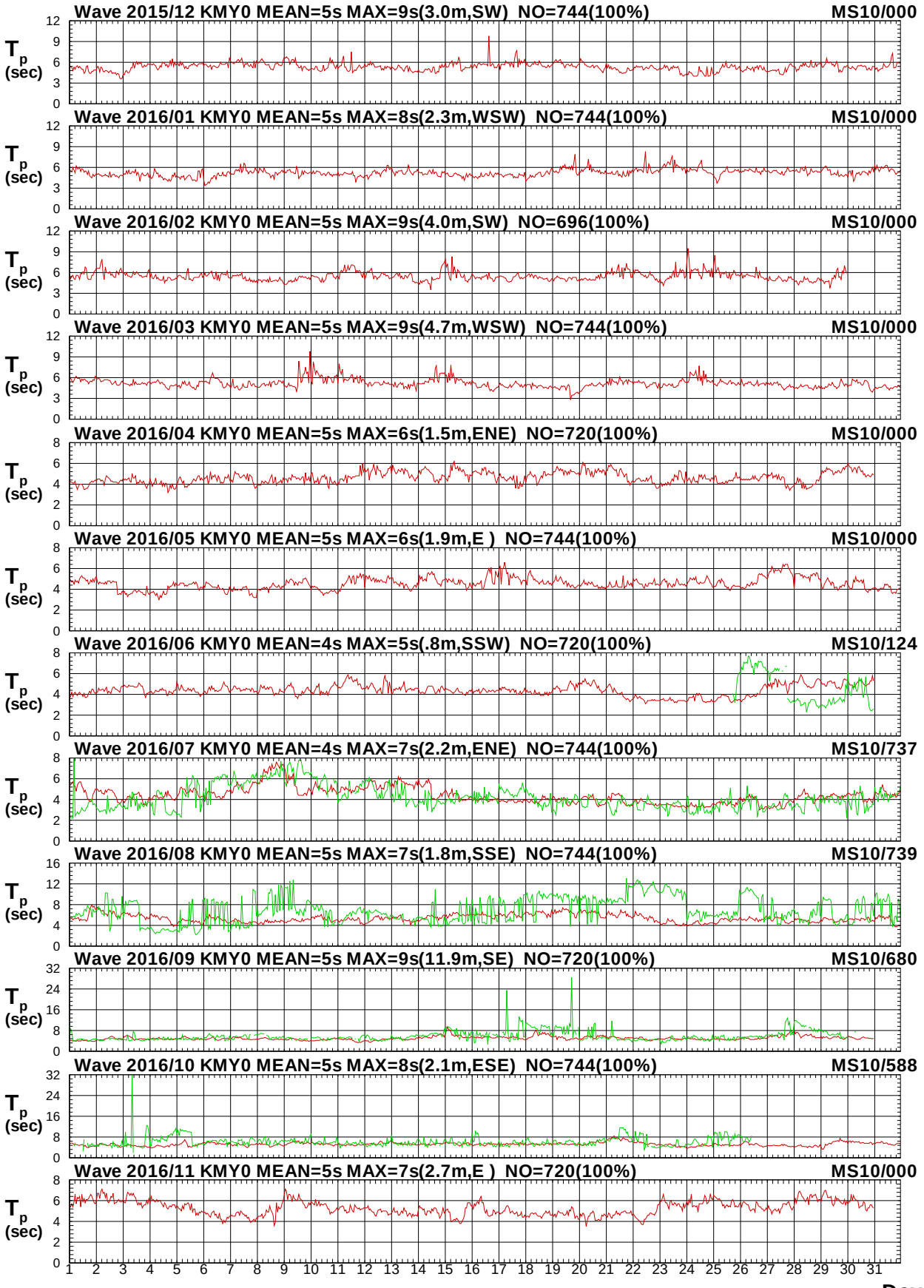

圖 11.7b　2016年每月金門海域 Y 站與馬祖海域1站週期圖

V15CKMY0.1HA V15CMS10.1H0 V161KMY0.1HA V161MS10.1H0 V162KMY0.1HA V162MS10.1H0
V163KMY0.1HA V163MS10.1H0 V164KMY0.1HA V164MS10.1H0 V165KMY0.1HA V165MS10.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

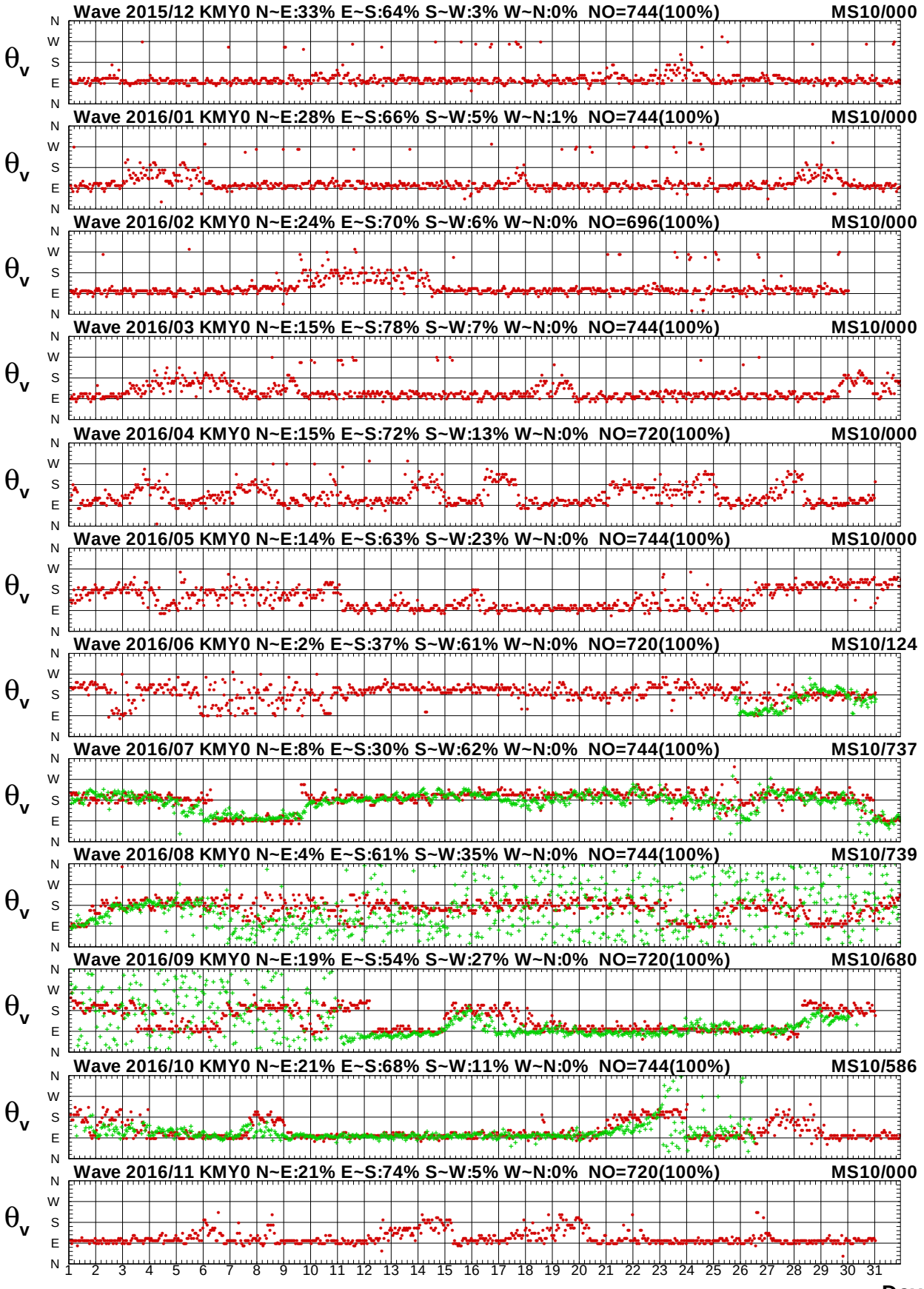

圖11.7c　2016年每月金門海域 Y 站與馬祖海域1站波向圖

V15CKMY0.1HA V15CMS10.1H0 V161KMY0.1HA V161MS10.1H0 V162KMY0.1HA V162MS10.1H0
V163KMY0.1HA V163MS10.1H0 V164KMY0.1HA V164MS10.1H0 V165KMY0.1HA V165MS10.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

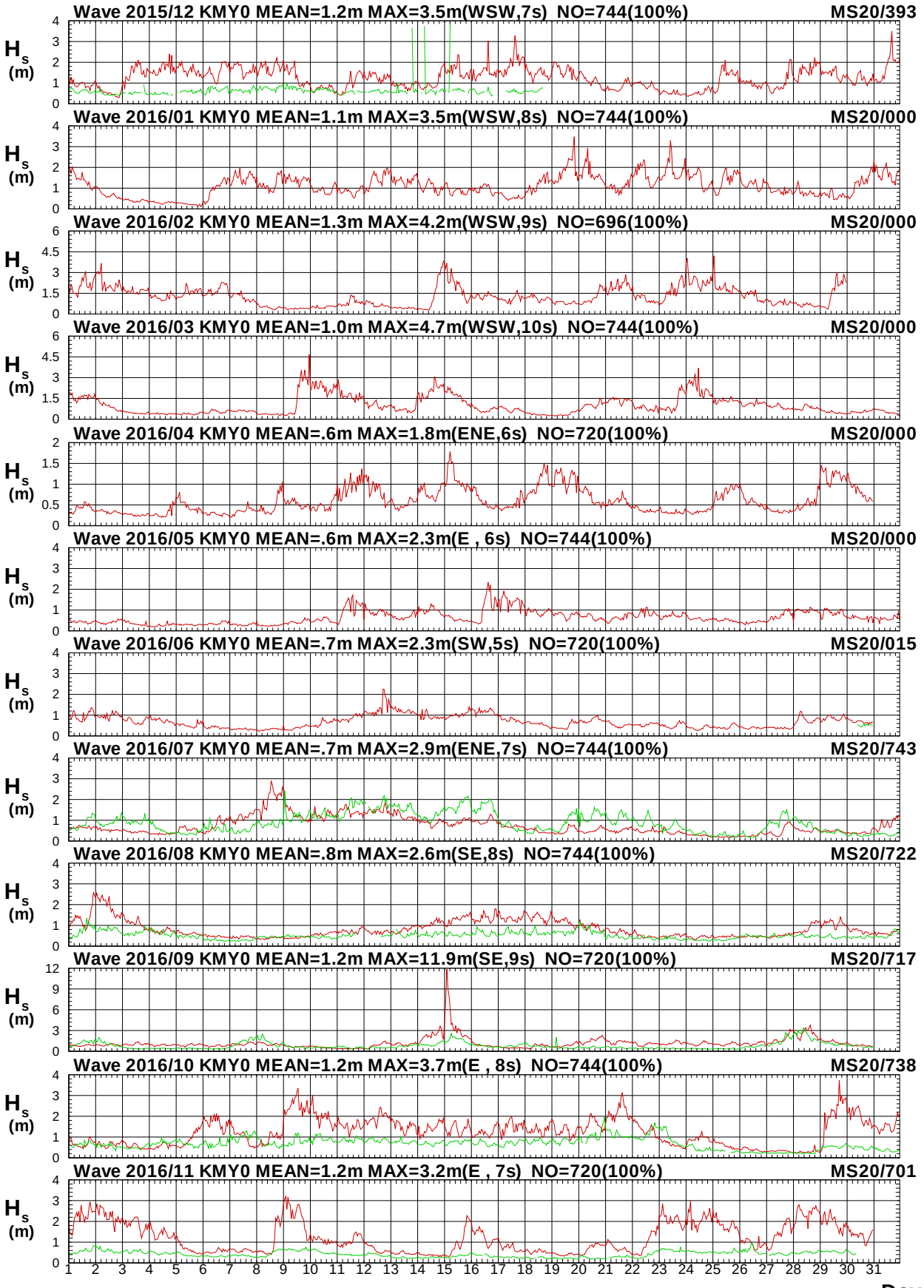

圖11.8a　2016年每月金門海域 Y 站與馬祖海域2站波高圖

V15CKMY0.1HA V15CMS20.1H0 V161KMY0.1HA V161MS20.1H0 V162KMY0.1HA V162MS20.1H0
V163KMY0.1HA V163MS20.1H0 V164KMY0.1HA V164MS20.1H0 V165KMY0.1HA V165MS20.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

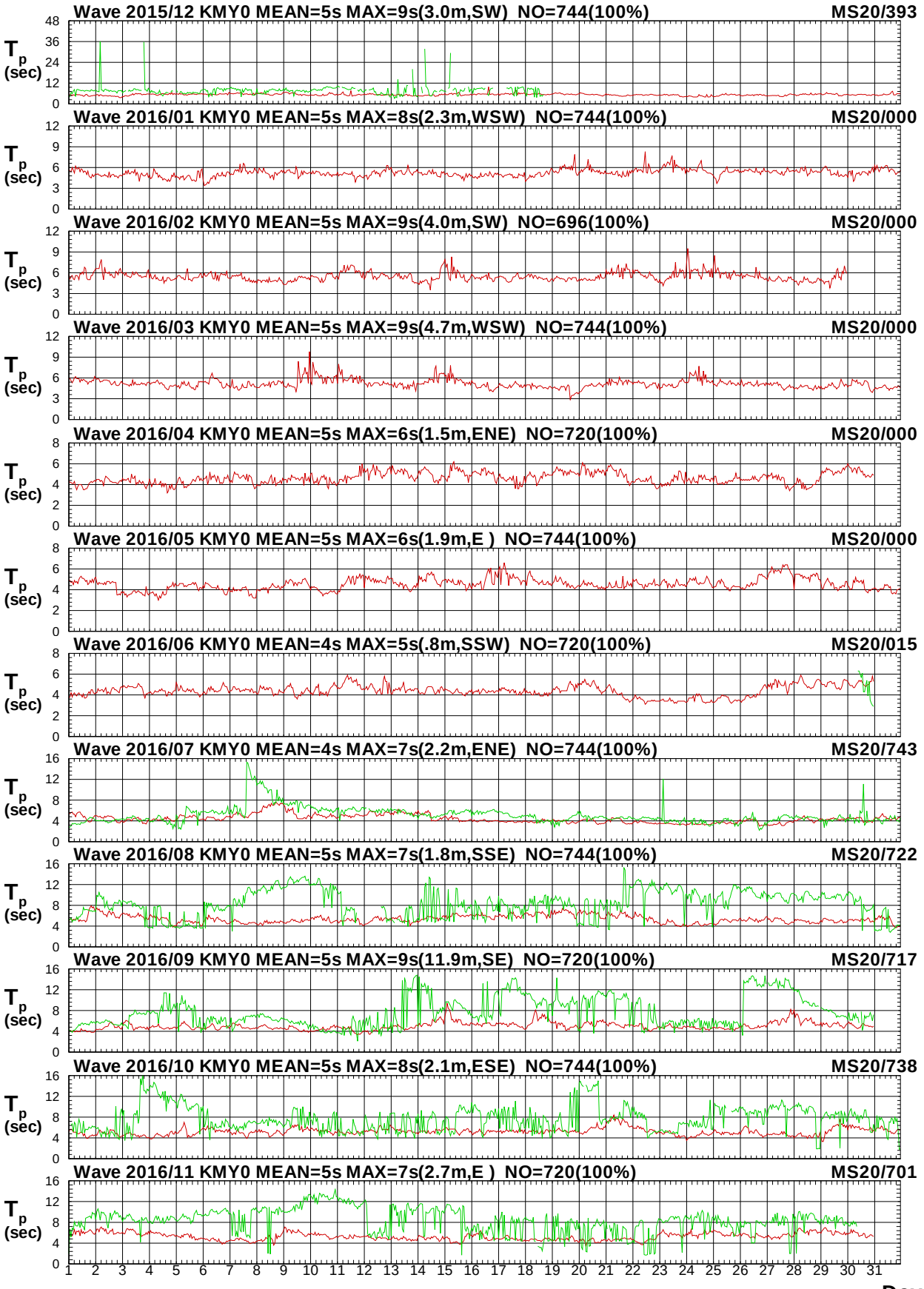

圖 11.8b　2016年每月金門海域 Y 站與馬祖海域2站週期圖

V15CKMY0.1HA V15CMS20.1H0 V161KMY0.1HA V161MS20.1H0 V162KMY0.1HA V162MS20.1H0
V163KMY0.1HA V163MS20.1H0 V164KMY0.1HA V164MS20.1H0 V165KMY0.1HA V165MS20.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

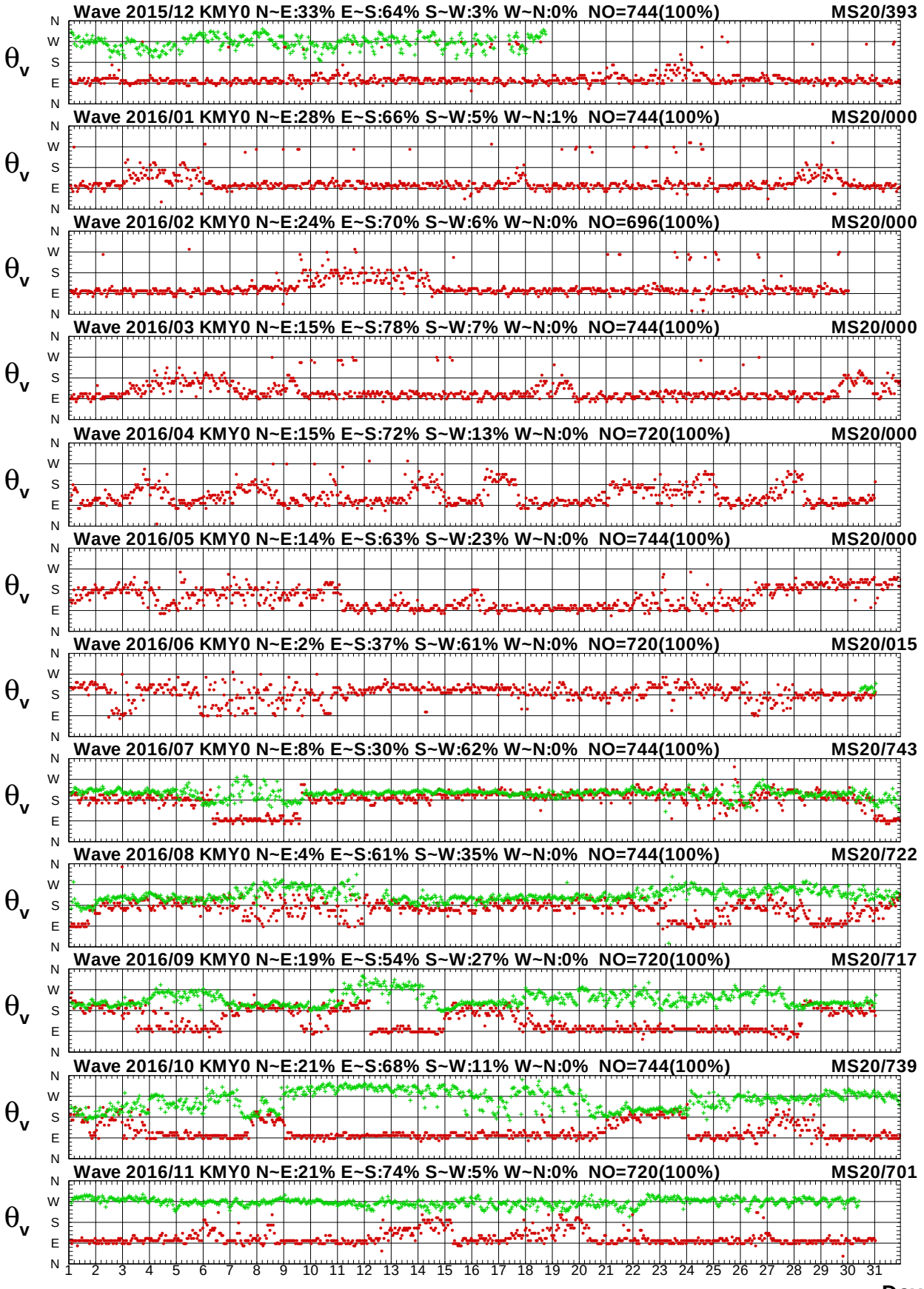

圖11.8c　2016年每月金門海域 Y 站與馬祖海域2站波向圖

V15CKMY0.1HA V15CMS20.1H0 V161KMY0.1HA V161MS20.1H0 V162KMY0.1HA V162MS20.1H0
V163KMY0.1HA V163MS20.1H0 V164KMY0.1HA V164MS20.1H0 V165KMY0.1HA V165MS20.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

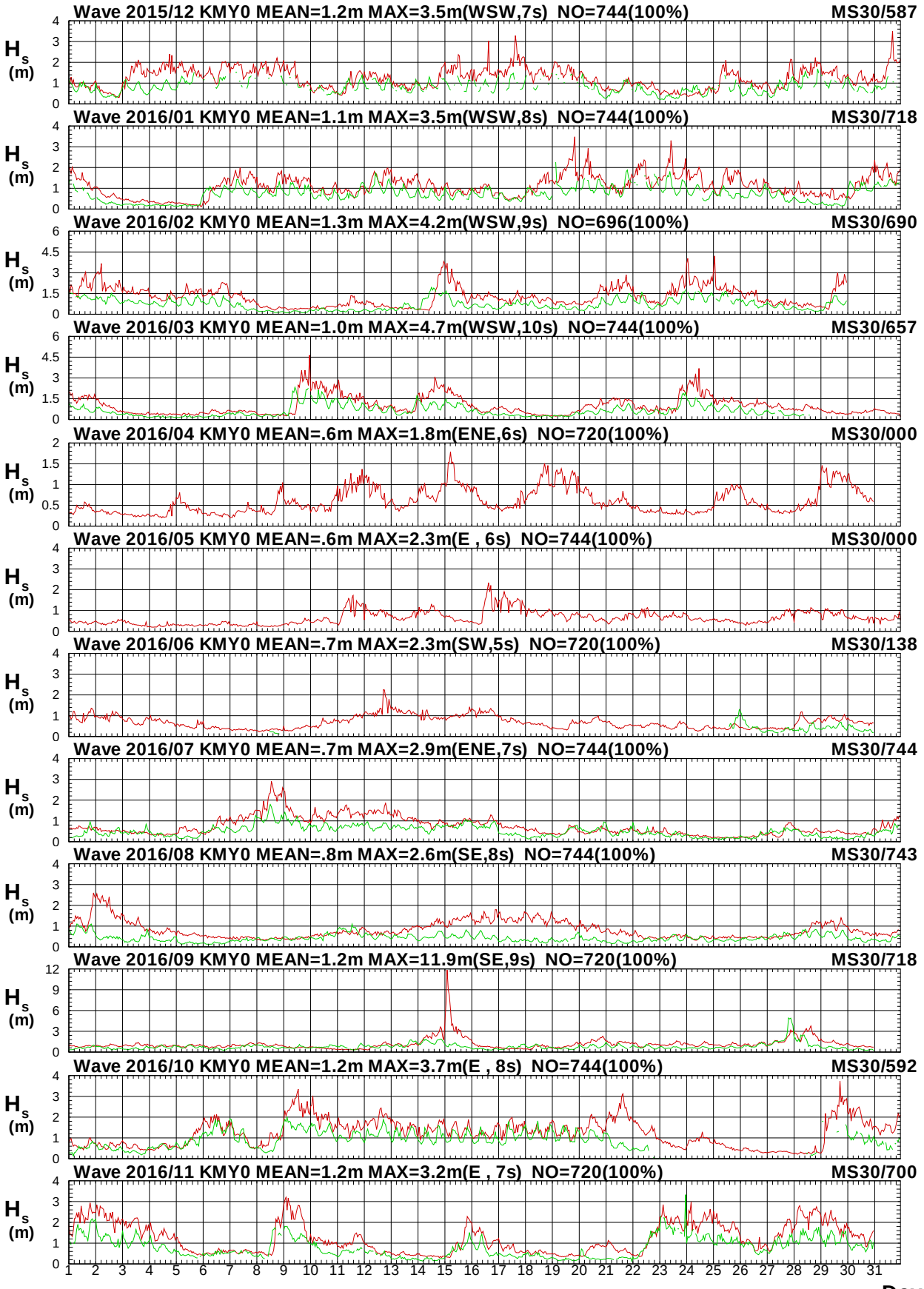

圖11.9a　2016年每月金門海域 Y 站與馬祖海域3站波高圖

V15CKMY0.1HA V15CMS30.1H0 V161KMY0.1HA V161MS30.1H0 V162KMY0.1HA V162MS30.1H0
V163KMY0.1HA V163MS30.1H0 V164KMY0.1HA V164MS30.1H0 V165KMY0.1HA V165MS30.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

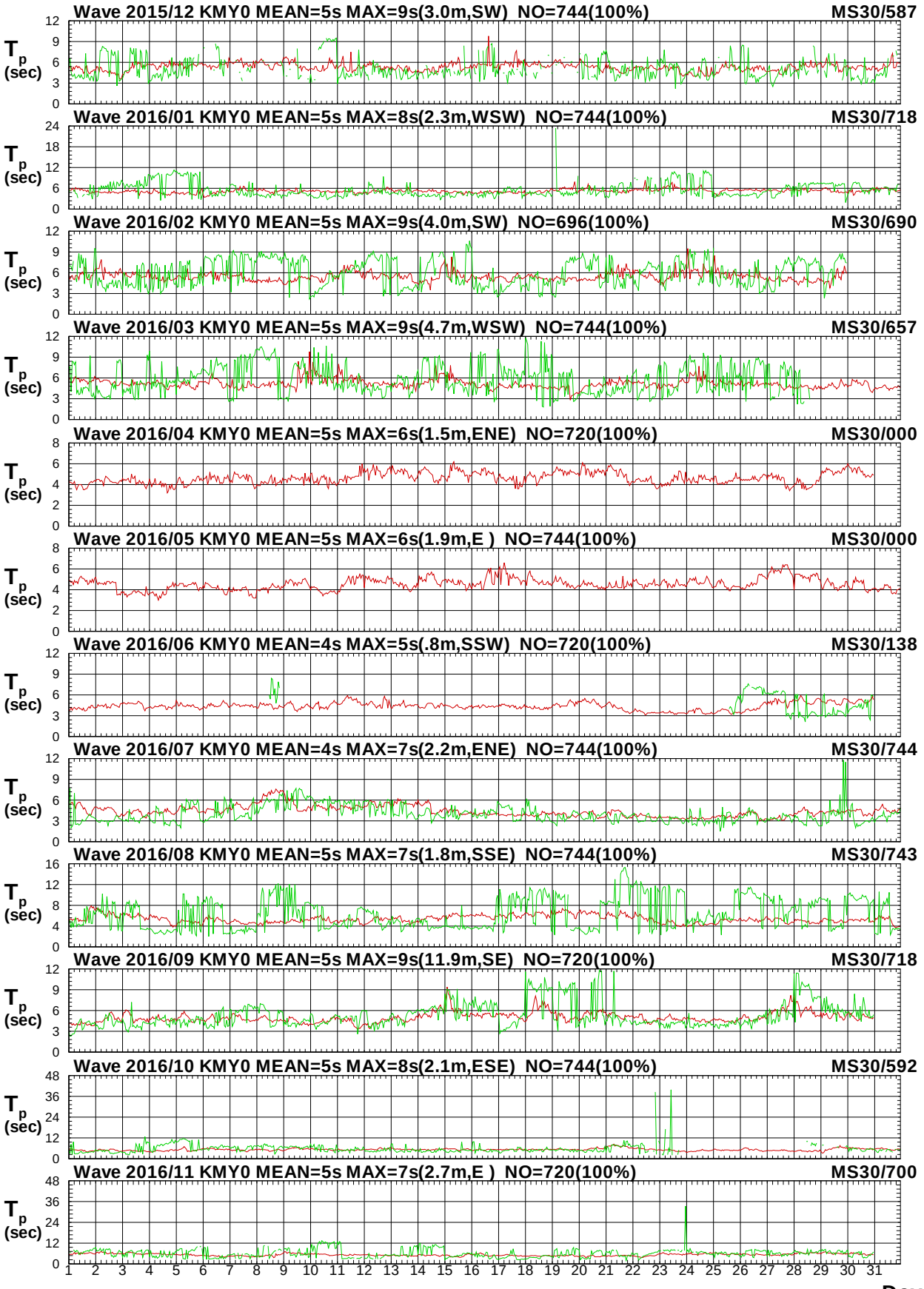

圖 11.9b　2016年每月金門海域 Y 站與馬祖海域3站週期圖

V15CKMY0.1HA V15CMS30.1H0 V161KMY0.1HA V161MS30.1H0 V162KMY0.1HA V162MS30.1H0
V163KMY0.1HA V163MS30.1H0 V164KMY0.1HA V164MS30.1H0 V165KMY0.1HA V165MS30.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

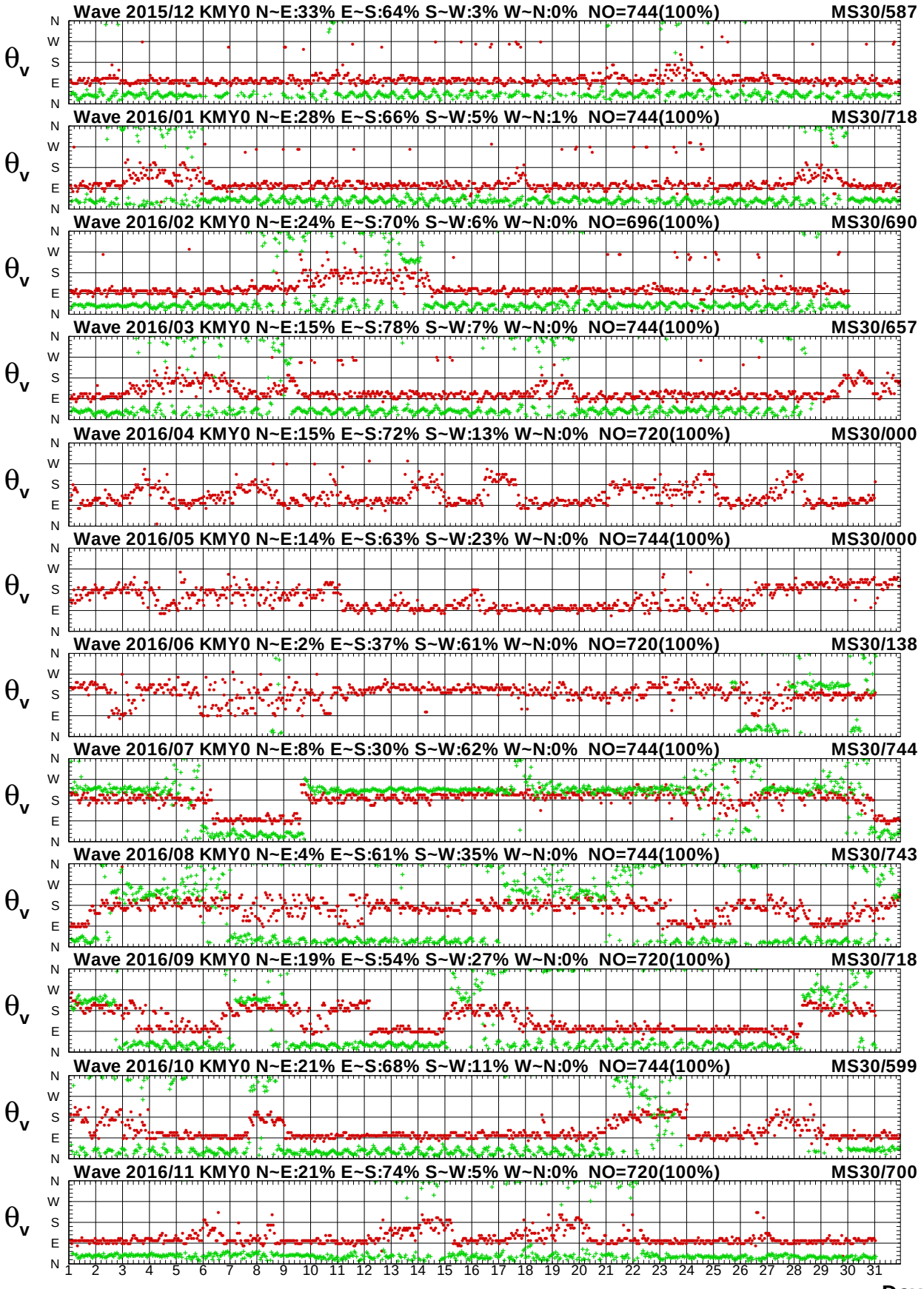

圖11.9c　2016年每月金門海域 Y 站與馬祖海域3站波向圖

V15CKMY0.1HA V15CMS30.1H0 V161KMY0.1HA V161MS30.1H0 V162KMY0.1HA V162MS30.1H0
V163KMY0.1HA V163MS30.1H0 V164KMY0.1HA V164MS30.1H0 V165KMY0.1HA V165MS30.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

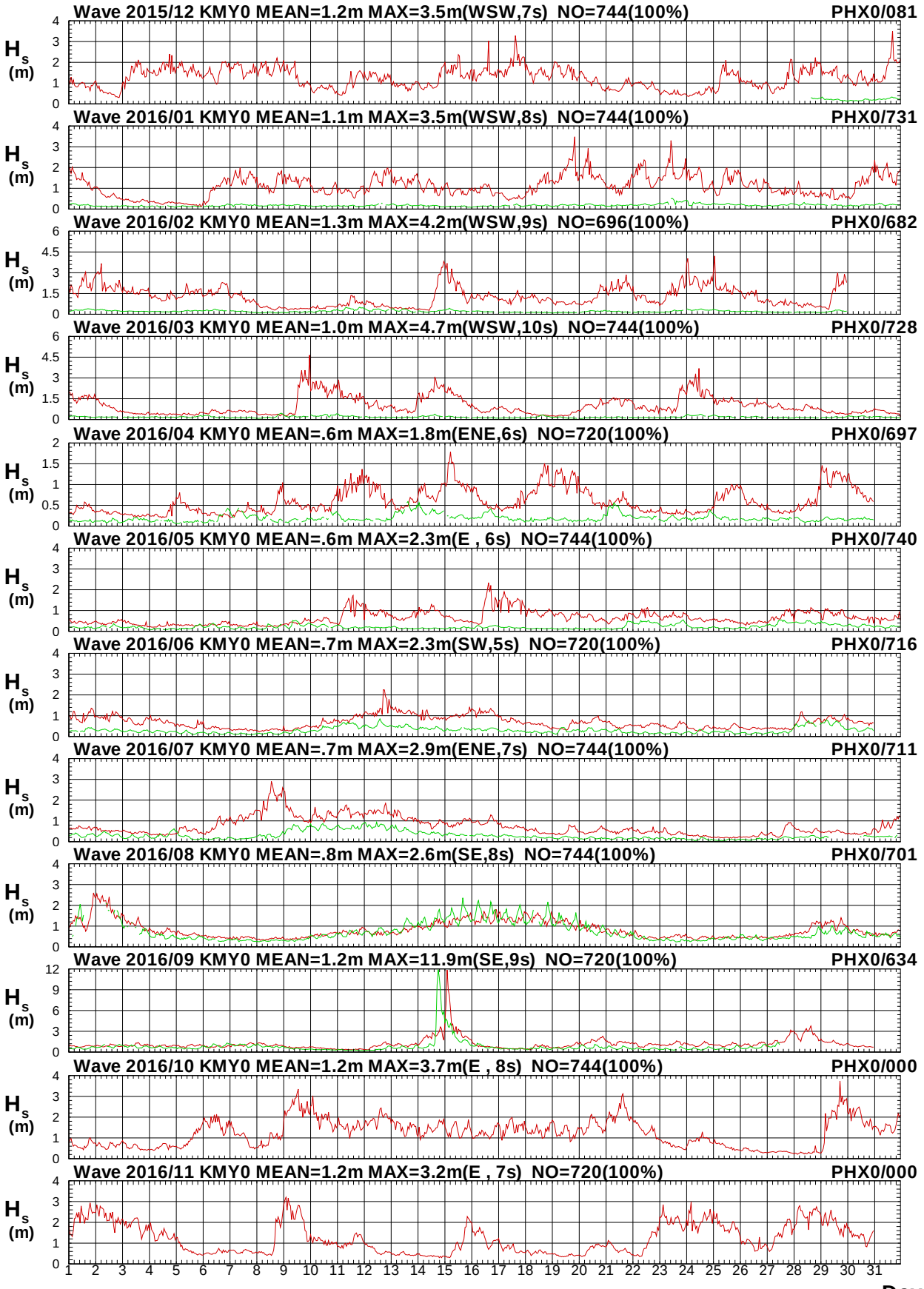

圖 11.10a　2016年每月金門海域 Y 站與澎湖海域 X 站波高圖

V15CKMY0.1HA V15CPHX0.1H0 V161KMY0.1HA V161PHX0.1H0 V162KMY0.1HA V162PHX0.1H0
V163KMY0.1HA V163PHX0.1H0 V164KMY0.1HA V164PHX0.1H0 V165KMY0.1HA V165PHX0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

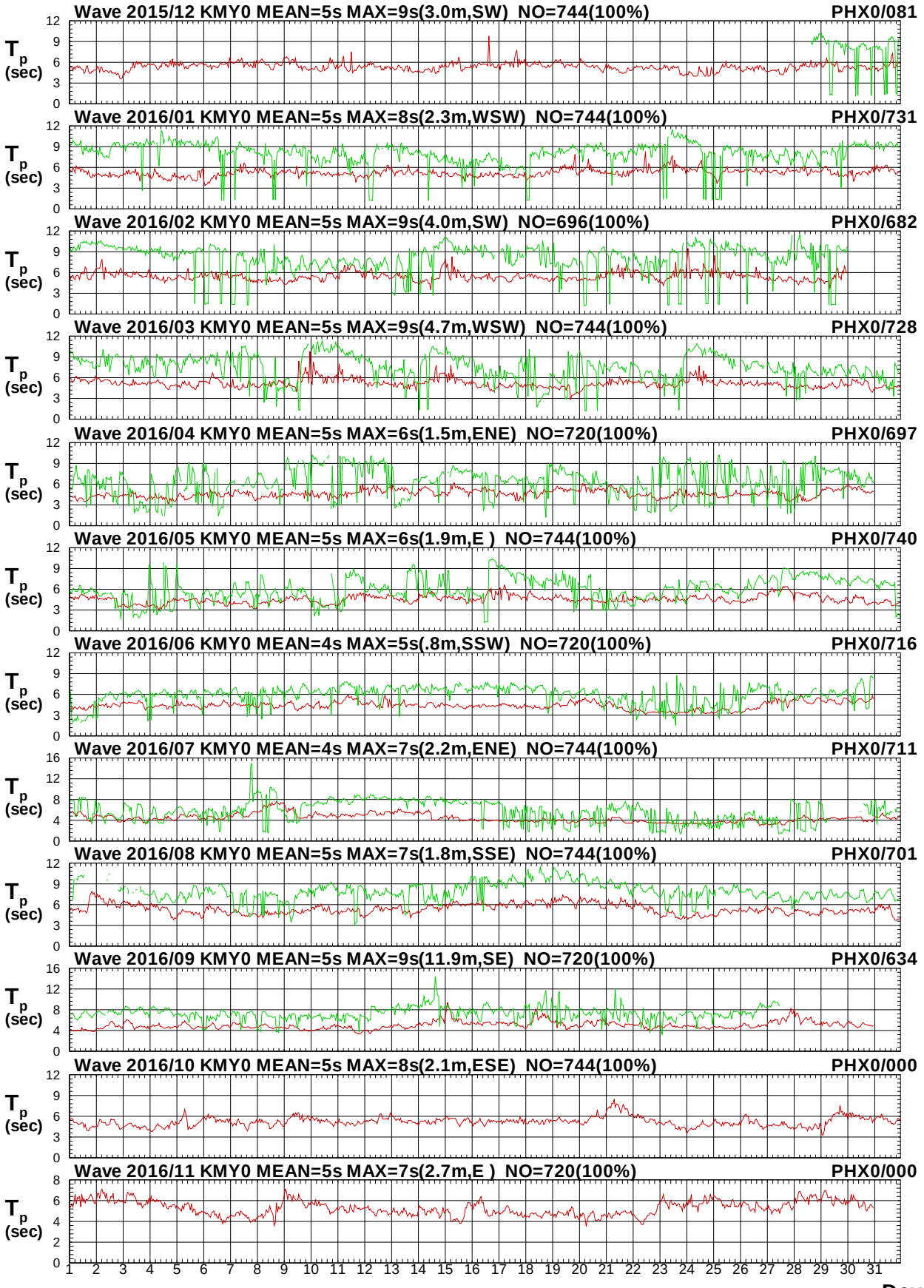

圖 11.10b　2016年每月金門海域 Y 站與澎湖海域 X 站週期圖

V15CKMY0.1HA V15CPHX0.1H0 V161KMY0.1HA V161PHX0.1H0 V162KMY0.1HA V162PHX0.1H0
V163KMY0.1HA V163PHX0.1H0 V164KMY0.1HA V164PHX0.1H0 V165KMY0.1HA V165PHX0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

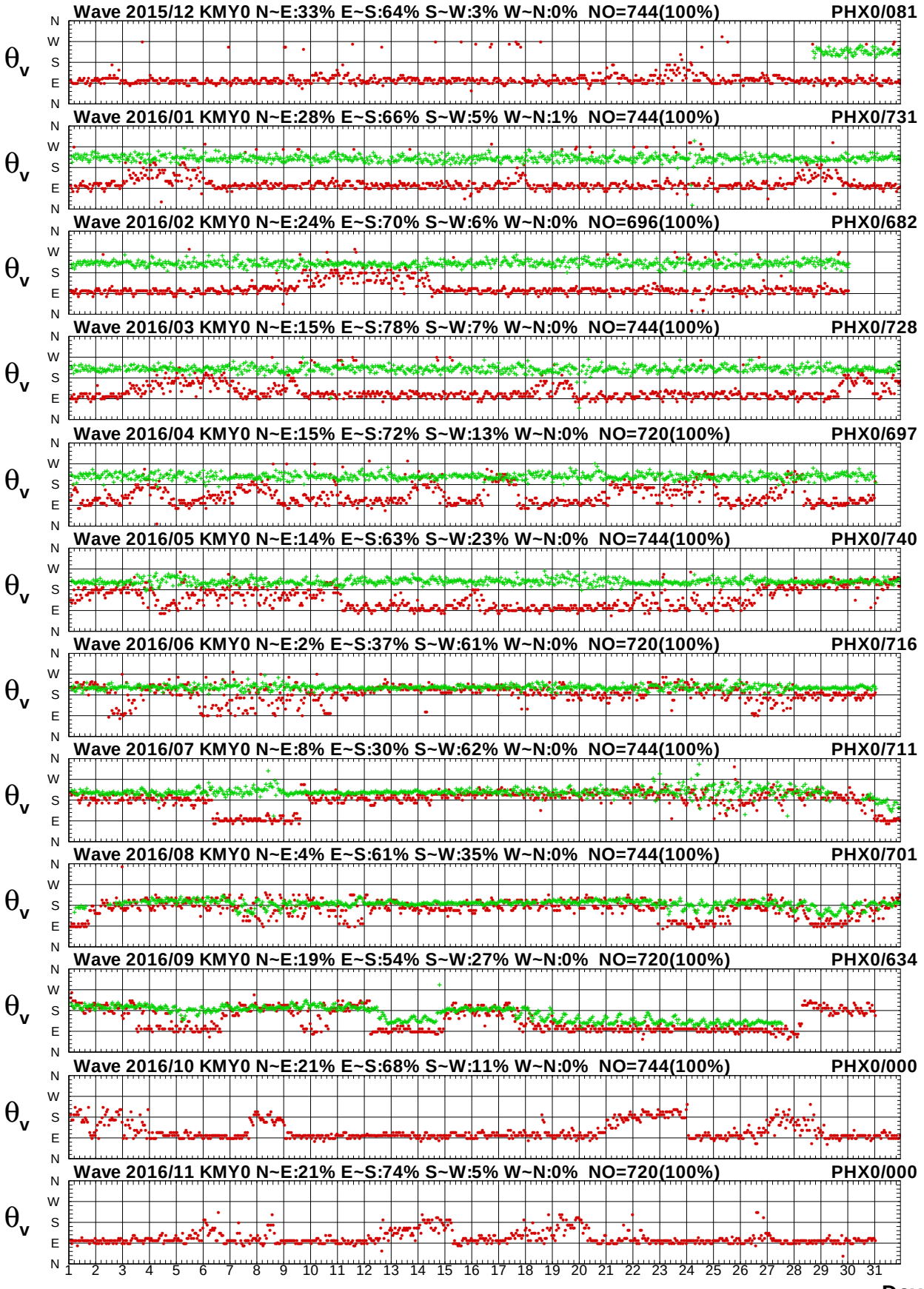

圖 11.10c　2016年每月金門海域 Y 站與澎湖海域 X 站波向圖

V15CKMY0.1HA V15CPHX0.1H0 V161KMY0.1HA V161PHX0.1H0 V162KMY0.1HA V162PHX0.1H0
V163KMY0.1HA V163PHX0.1H0 V164KMY0.1HA V164PHX0.1H0 V165KMY0.1HA V165PHX0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

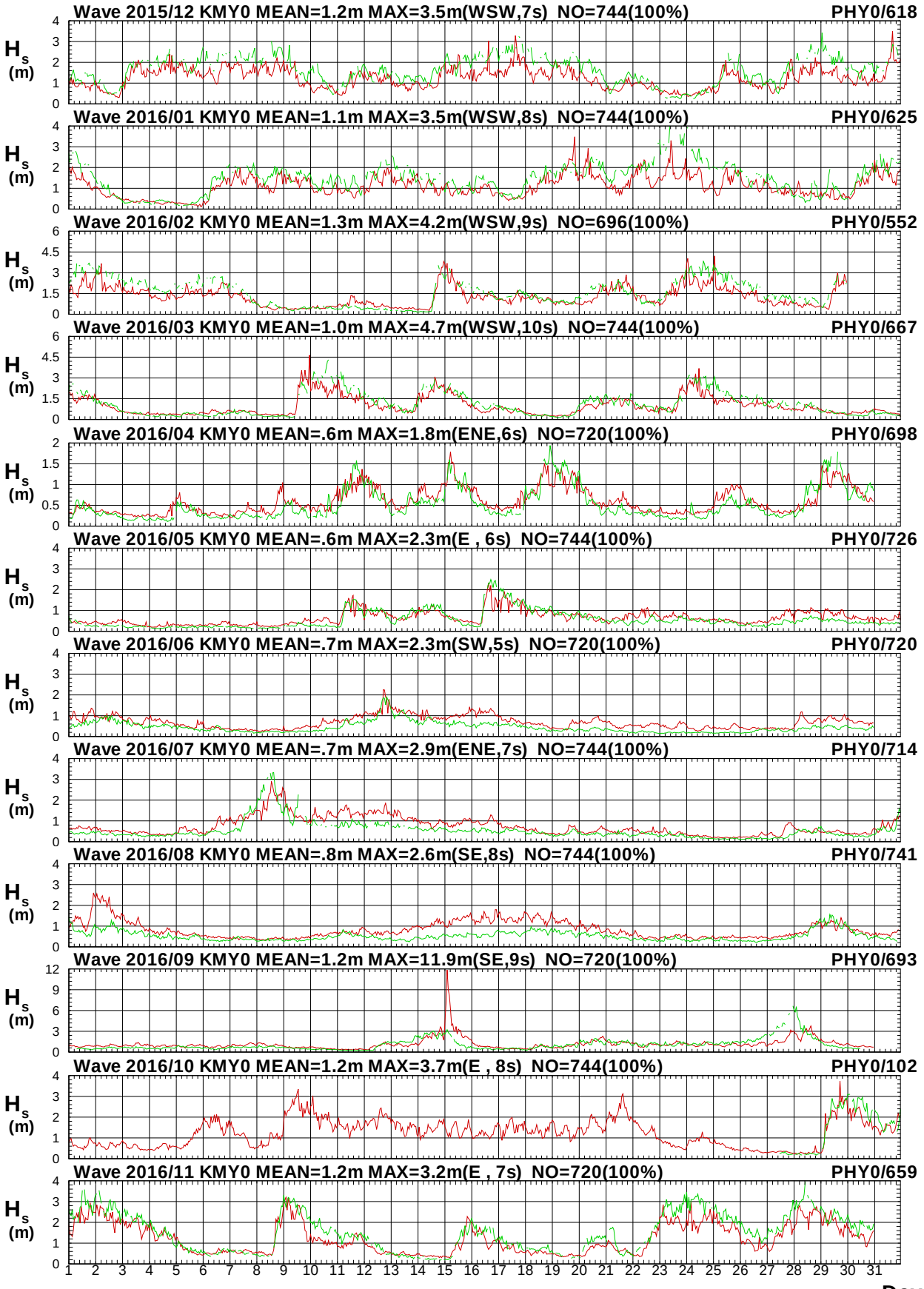

圖 11.11a　2016年每月金門海域 Y 站與澎湖海域 Y 站波高圖

V15CKMY0.1HA V15CPHY0.1H0 V161KMY0.1HA V161PHY0.1H0 V162KMY0.1HA V162PHY0.1H0
V163KMY0.1HA V163PHY0.1H0 V164KMY0.1HA V164PHY0.1H0 V165KMY0.1HA V165PHY0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

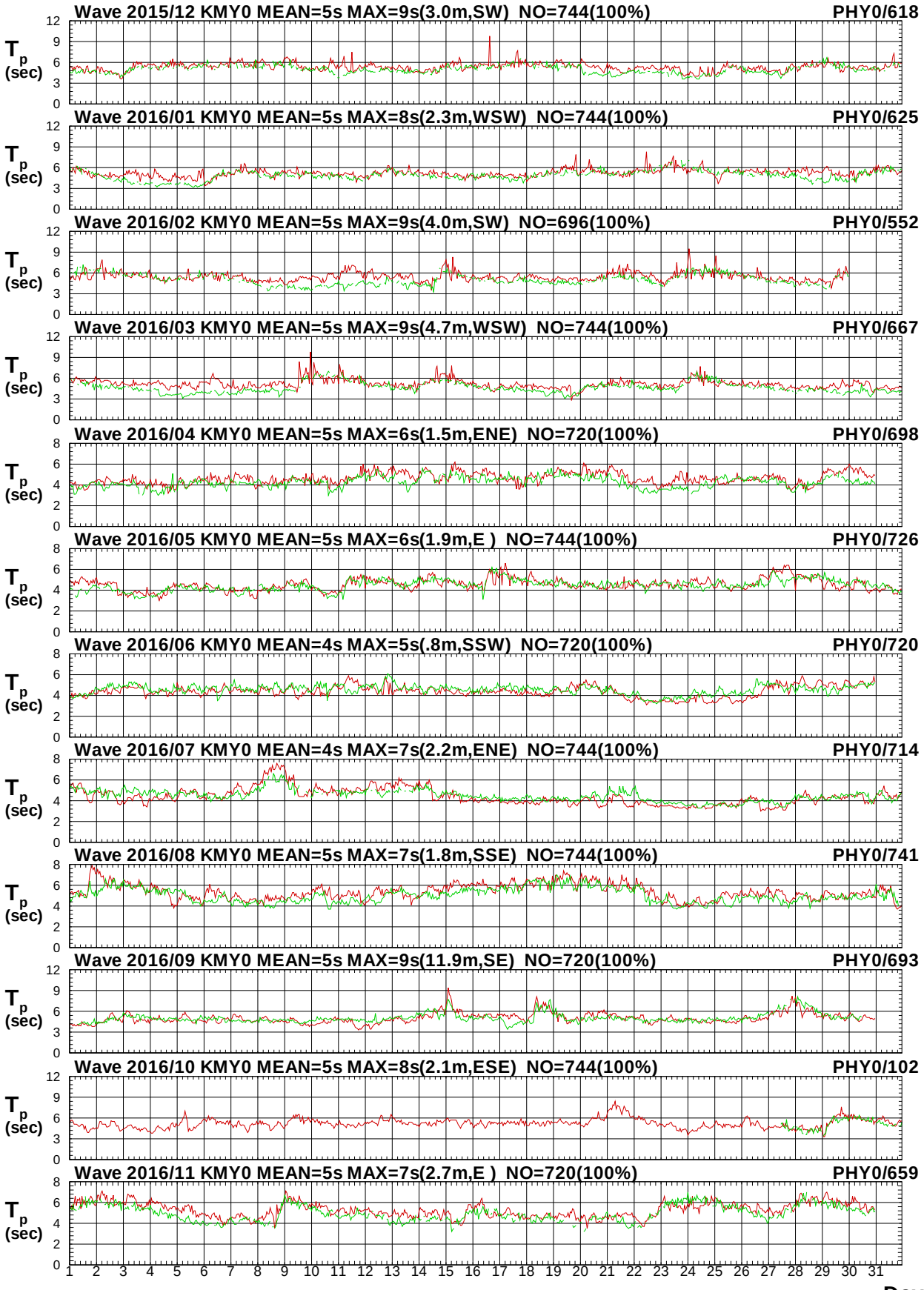

圖 11.11b　2016年每月金門海域 Y 站與澎湖海域 Y 站週期圖

V15CKMY0.1HA V15CPHY0.1H0 V161KMY0.1HA V161PHY0.1H0 V162KMY0.1HA V162PHY0.1H0
V163KMY0.1HA V163PHY0.1H0 V164KMY0.1HA V164PHY0.1H0 V165KMY0.1HA V165PHY0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

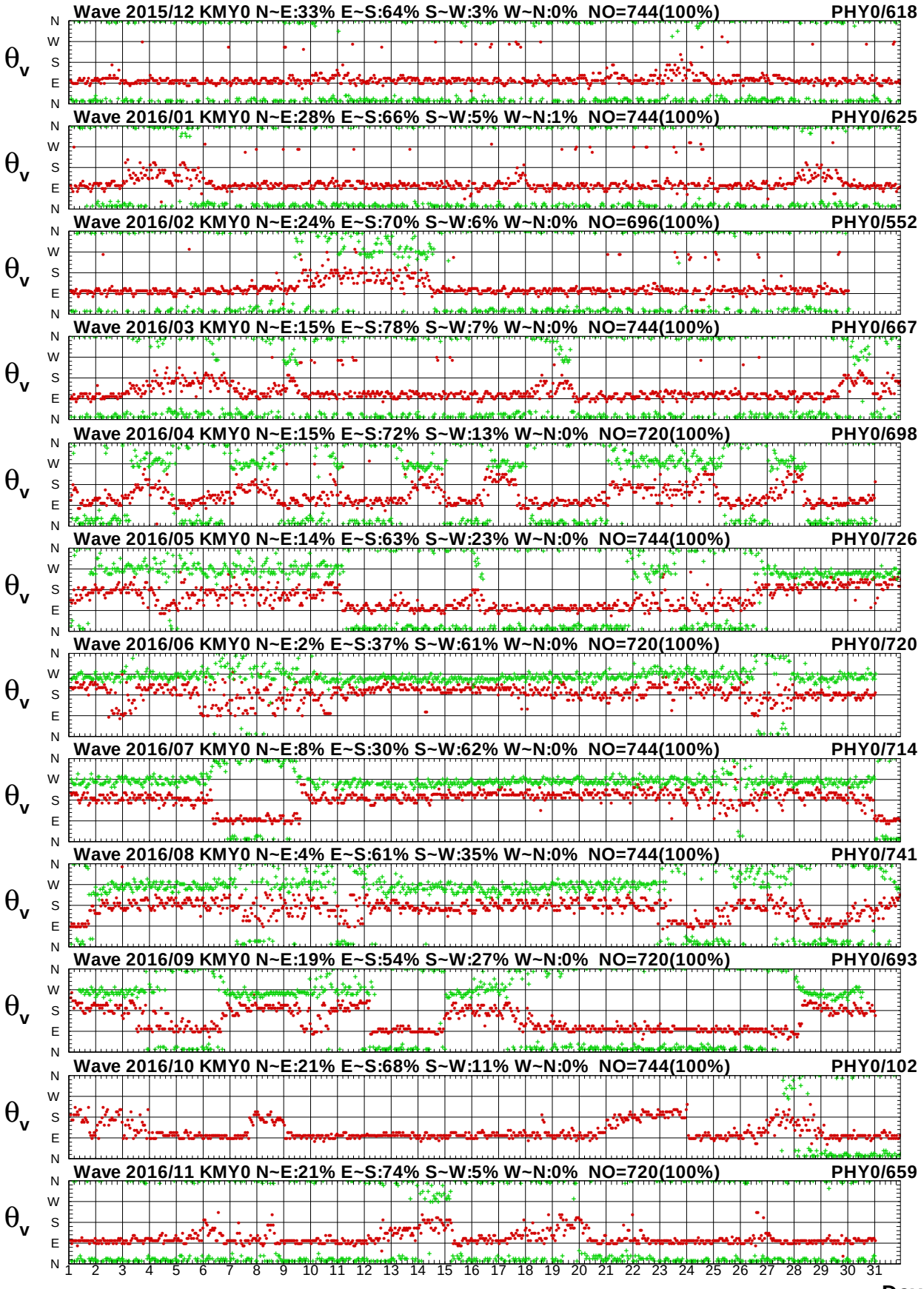

圖 11.11c　2016年每月金門海域 Y 站與澎湖海域 Y 站波向圖

V15CKMY0.1HA V15CPHY0.1H0 V161KMY0.1HA V161PHY0.1H0 V162KMY0.1HA V162PHY0.1H0
V163KMY0.1HA V163PHY0.1H0 V164KMY0.1HA V164PHY0.1H0 V165KMY0.1HA V165PHY0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

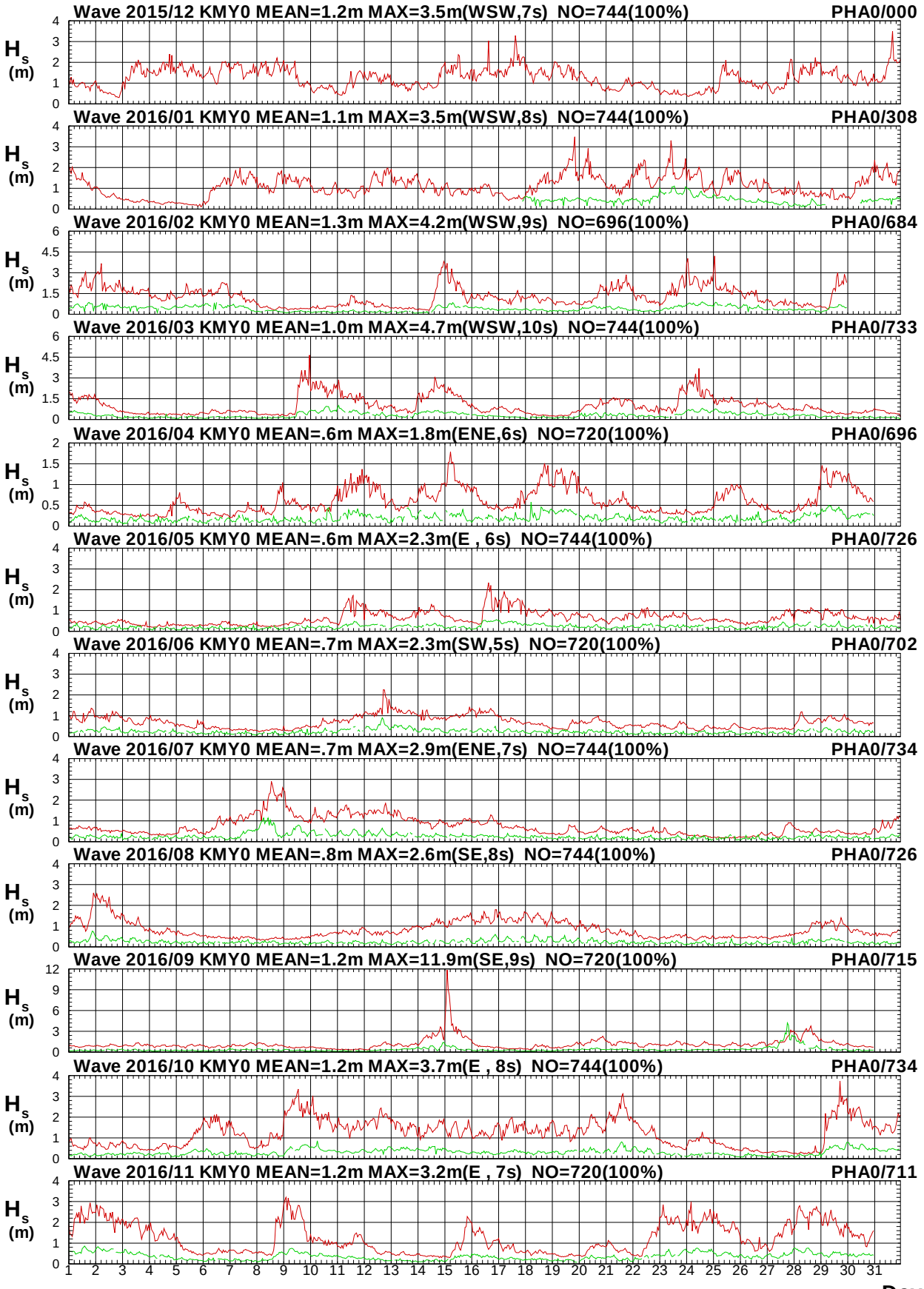

圖 11.12a　2016年每月金門海域 Y 站與澎湖海域 A 站波高圖

V15CKMY0.1HA V15CPHA0.1H0 V161KMY0.1HA V161PHA0.1H0 V162KMY0.1HA V162PHA0.1H0
V163KMY0.1HA V163PHA0.1H0 V164KMY0.1HA V164PHA0.1H0 V165KMY0.1HA V165PHA0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

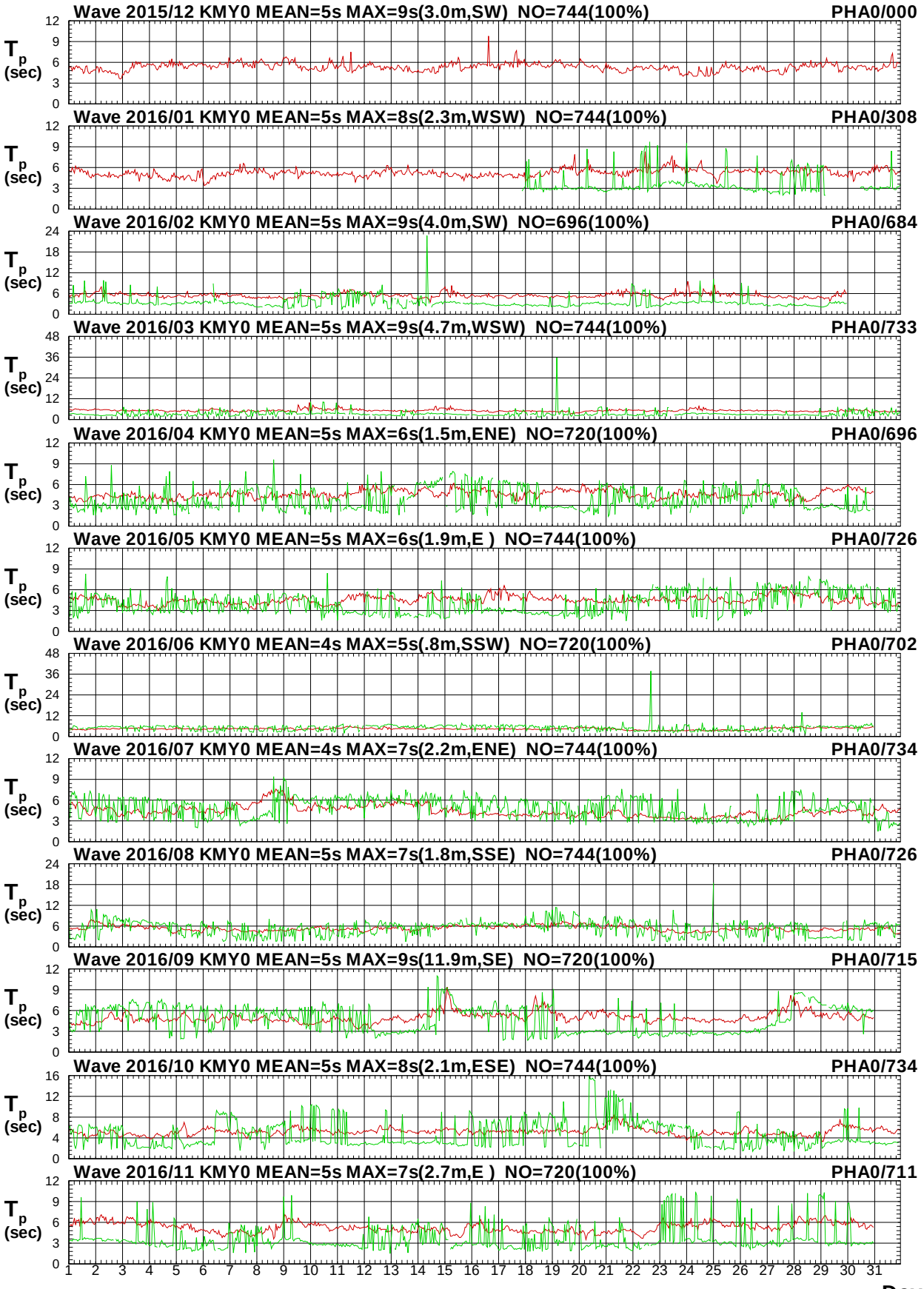

圖 11.12b　2016年每月金門海域 Y 站與澎湖海域 A 站週期圖

V15CKMY0.1HA V15CPHA0.1H0 V161KMY0.1HA V161PHA0.1H0 V162KMY0.1HA V162PHA0.1H0
V163KMY0.1HA V163PHA0.1H0 V164KMY0.1HA V164PHA0.1H0 V165KMY0.1HA V165PHA0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

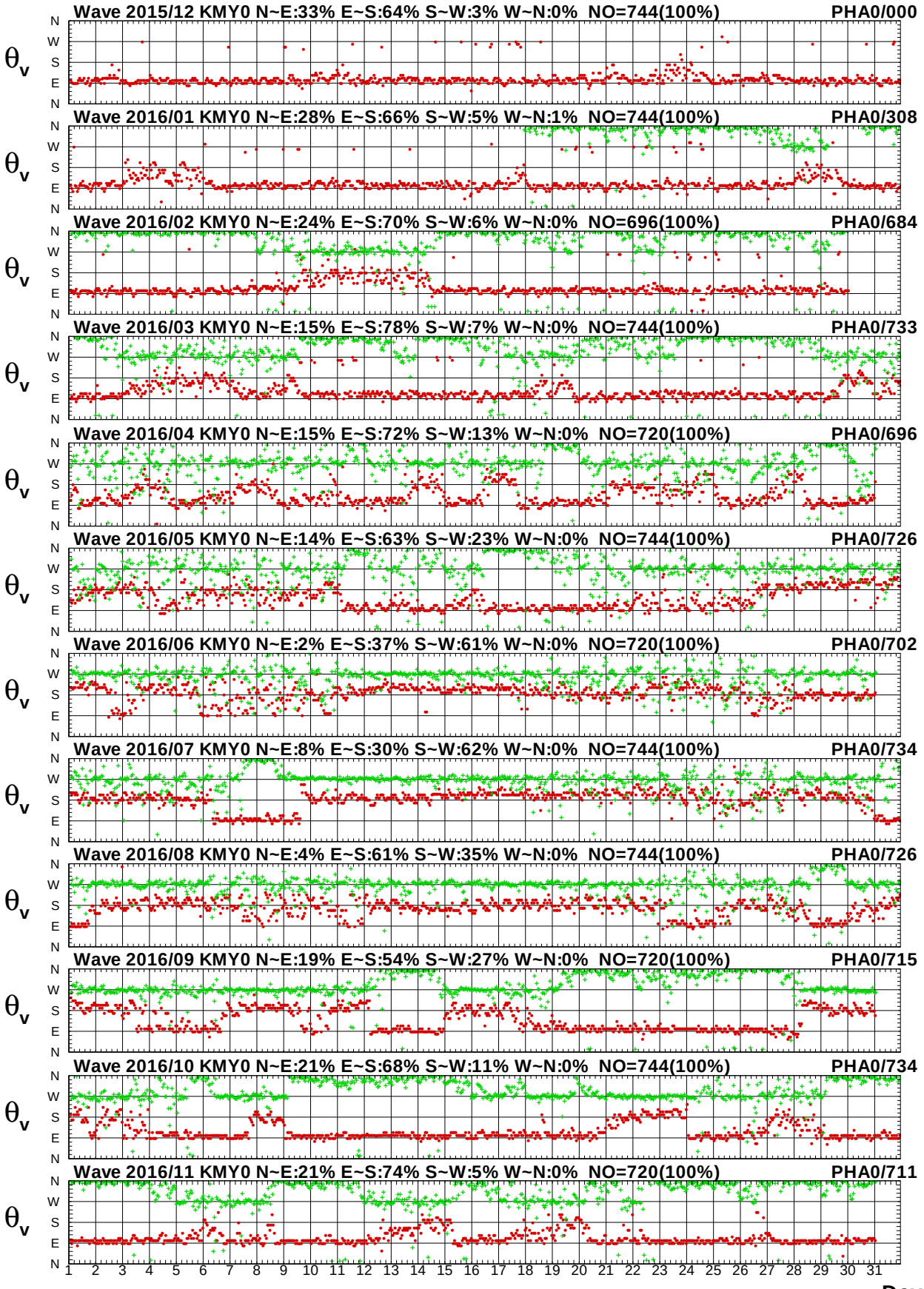

圖 11.12c　2016年每月金門海域 Y 站與澎湖海域 A 站波向圖

V15CKMY0.1HA V15CPHA0.1H0 V161KMY0.1HA V161PHA0.1H0 V162KMY0.1HA V162PHA0.1H0
V163KMY0.1HA V163PHA0.1H0 V164KMY0.1HA V164PHA0.1H0 V165KMY0.1HA V165PHA0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2016

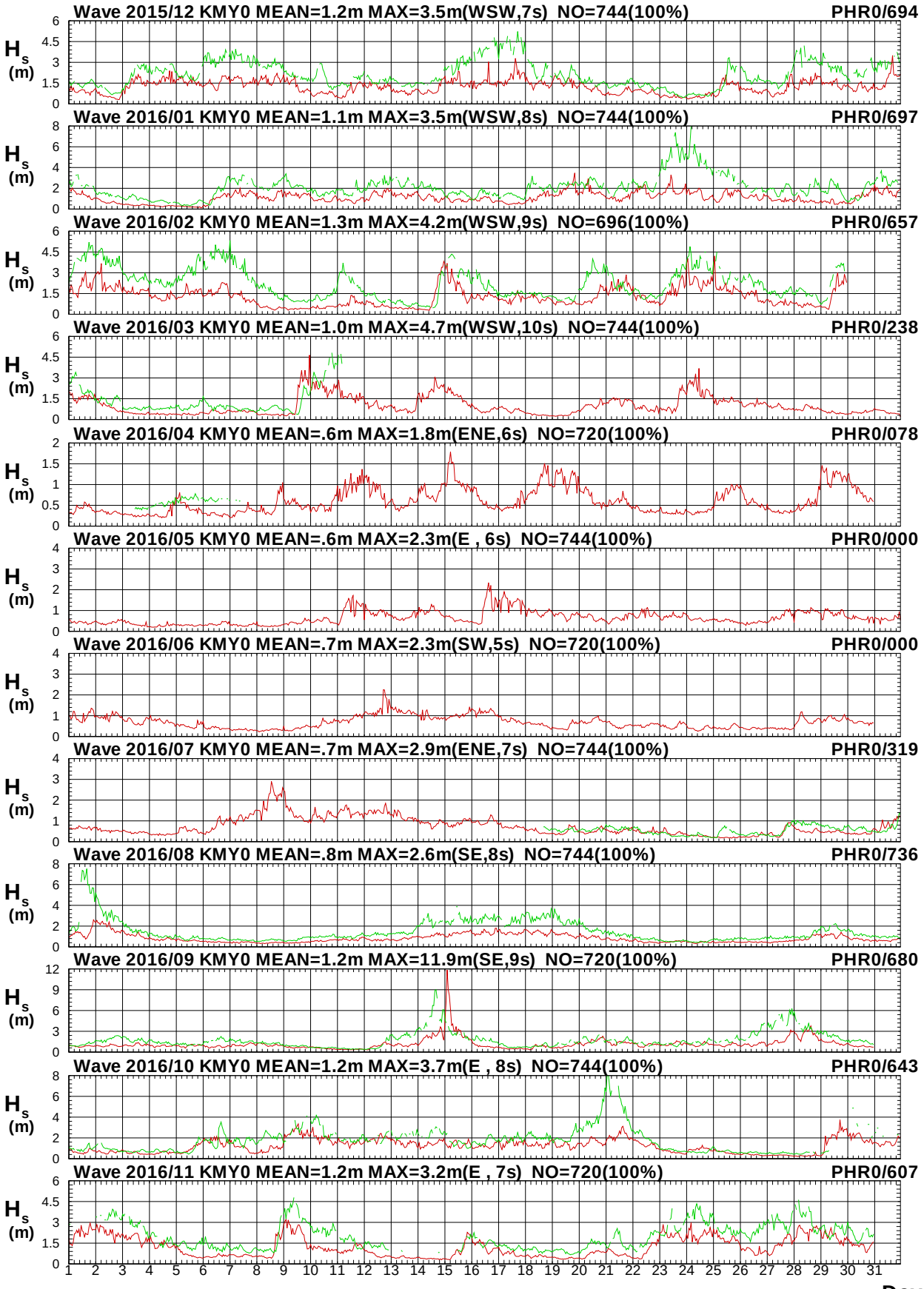

圖 11.13a　2016年每月金門海域 Y 站與澎湖海域 R 站波高圖

V15CKMY0.1HA V15CPHR0.1H0 V161KMY0.1HA V161PHR0.1H0 V162KMY0.1HA V162PHR0.1H0
V163KMY0.1HA V163PHR0.1H0 V164KMY0.1HA V164PHR0.1H0 V165KMY0.1HA V165PHR0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2016

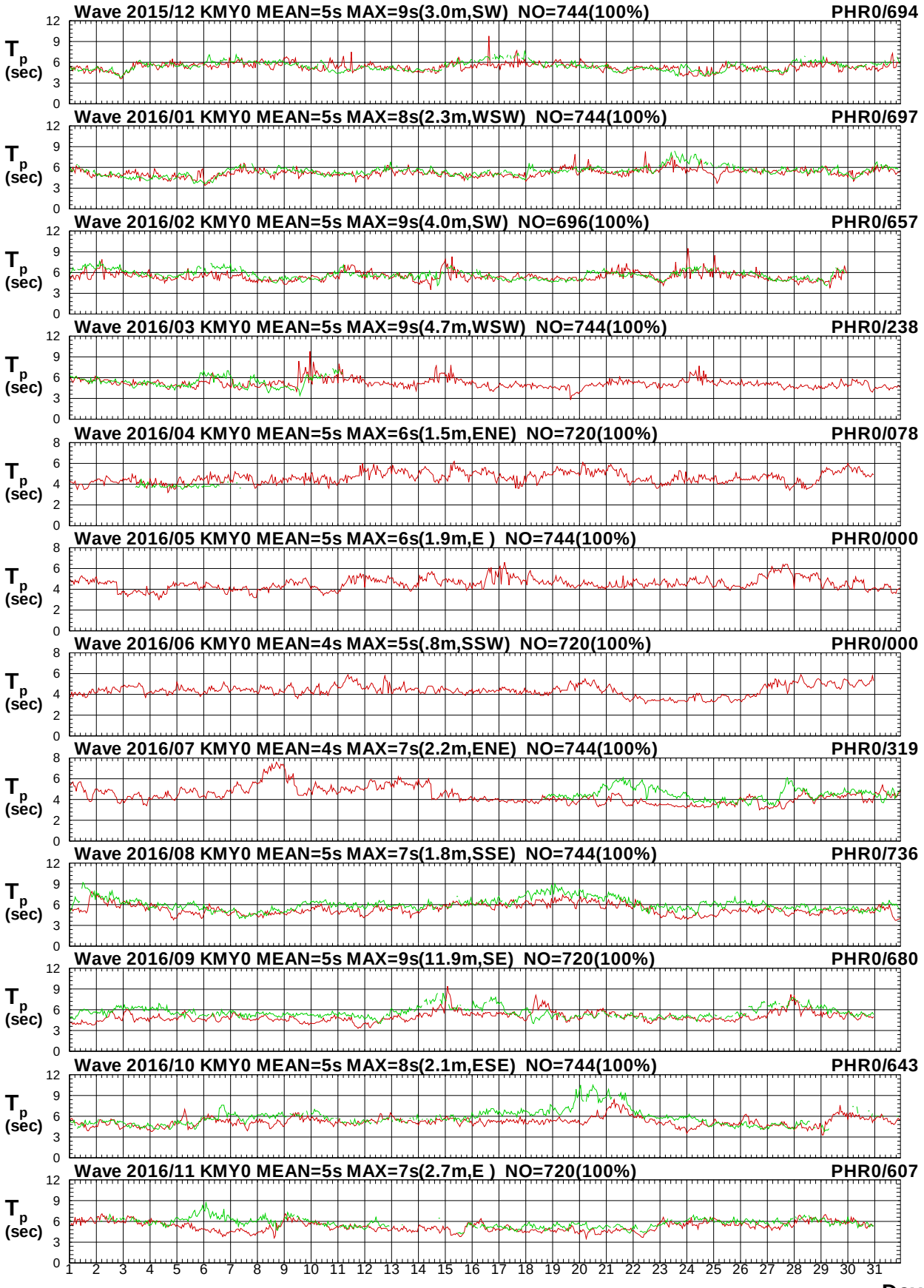

圖 11.13b　2016年每月金門海域 Y 站與澎湖海域 R 站週期圖

V15CKMY0.1HA V15CPHR0.1H0 V161KMY0.1HA V161PHR0.1H0 V162KMY0.1HA V162PHR0.1H0
V163KMY0.1HA V163PHR0.1H0 V164KMY0.1HA V164PHR0.1H0 V165KMY0.1HA V165PHR0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2016

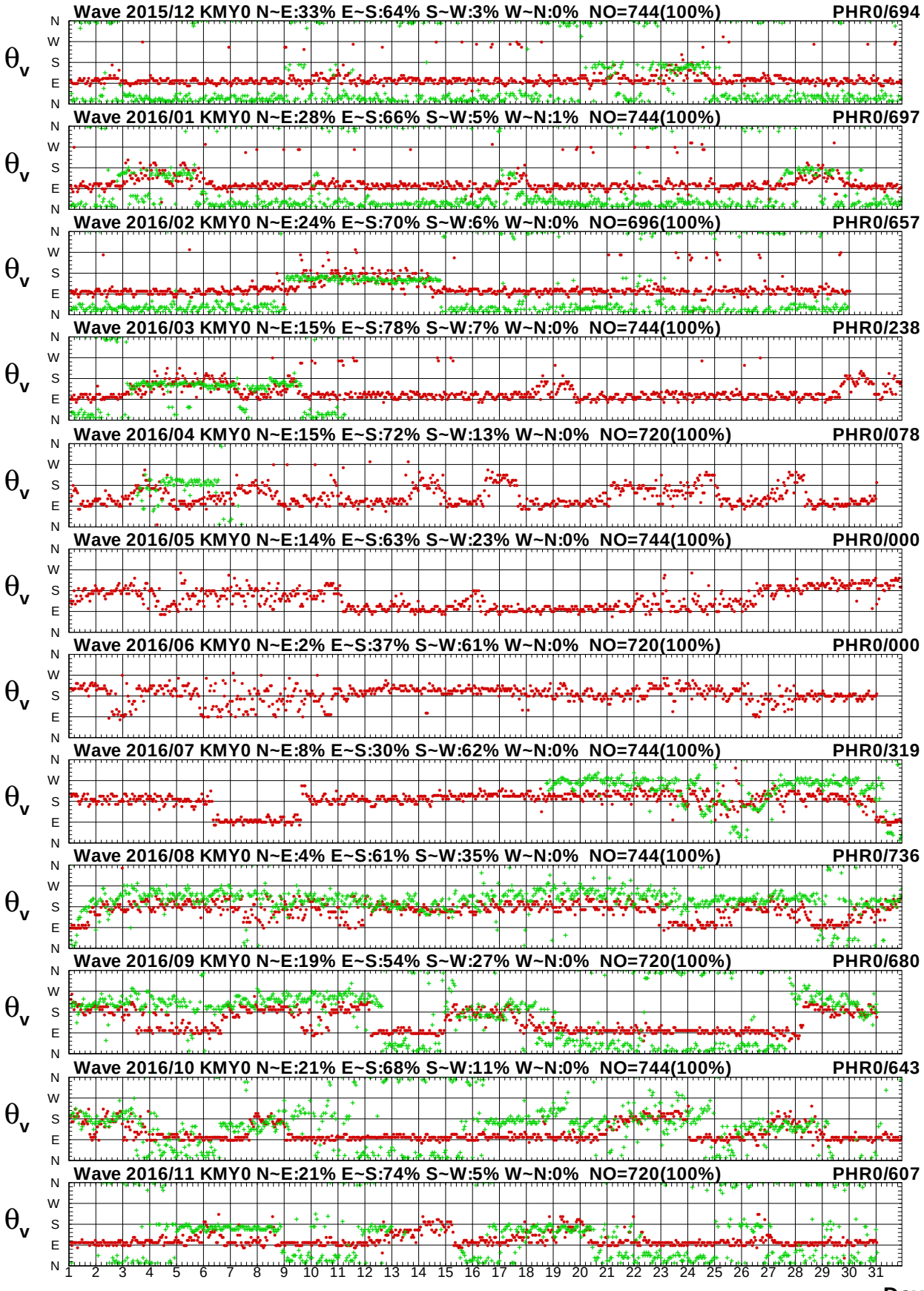

圖 11.13c　2016年每月金門海域 Y 站與澎湖海域 R 站波向圖

V15CKMY0.1HA V15CPHR0.1H0 V161KMY0.1HA V161PHR0.1H0 V162KMY0.1HA V162PHR0.1H0
V163KMY0.1HA V163PHR0.1H0 V164KMY0.1HA V164PHR0.1H0 V165KMY0.1HA V165PHR0.1H0

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第十二章　2016 年馬祖海域觀測波浪資料

馬祖海域風之觀測係 2014 年 10 月本中心**(IHMT)**安裝挪威 NORTEK 公司潮波流儀(AWAC)於馬祖福澳港區(稱**測站 X**) ，其位置如附圖 12。2015 年 9 月本中心於北竿、西莒、東引及東莒等 4 處增設潮波流儀 AWAC(稱**測站 A**、**測站 1**、**測站 2** 及**測站 3**) 。

測站 Y 之波浪儀也屬屬中央氣象局**(CWB)**所有。馬祖海域各測站歷年觀測波浪資料蒐集概況如表 12。

波浪觀測 AWCP 系統有兩個分離波高量測模式：一個是對平靜波浪時，當資料由傳統式壓力感應器量測時將會因儀器佈放的深度而受很大的影響。此時，表面高度必須用一個聲波式的高度感應器量測波高。AWCP 波向量測範圍：波向的量測從海面下 3 米以上的流向資料與波高資料計算轉換而得。對攪動的海況來說；用於轉換波向的該層深度應該自動被調整為平均水位也就是 $H_{max/2}$。量測的參數為：平均波向及波向分佈，波向單位為度。

本波浪年報以取經檢核或修補後之 **Y 站**資料作為**主要觀測站**，2016 年主要觀測站修補前(後)每月觀測之波浪資料記錄期間統計表，如表 12.1a，2016 年波浪**次要觀測站**資料(未補餘)記錄統計表，如表 12.1b，**主要觀測站修補前後**每月波浪歷線比較圖，如圖 12.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月波浪歷線比較圖，如圖 12.2 以後。

表 12 馬祖海域觀測波浪資料蒐集概況表(統計時間至 2016 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	26°09'87"N	119°56'11"E	2014/10-2016/11(觀測中)	港研中心	馬祖福澳港 AWCP
A	26°12'18"N	119°58'1 "E	2015/09-2016/11(觀測中)	港研中心	北竿港區 AWCP
1	25°58'8 "N	119°55'54 "E	2015/09-2016/11(觀測中)	港研中心	西莒 AWCP
2	26°21'55 "N	120°29'2 "E	2015/09-2016/11(觀測中)	港研中心	東引 AWCP
3	25°57'31 "N	119°57'47 "E	2015/09-2016/11(觀測中)	港研中心	東莒 AWCP
Y	26°22'36"N	120°31'53"E	2010/08-2016/11(觀測中)	中央氣象局	馬祖資料浮標

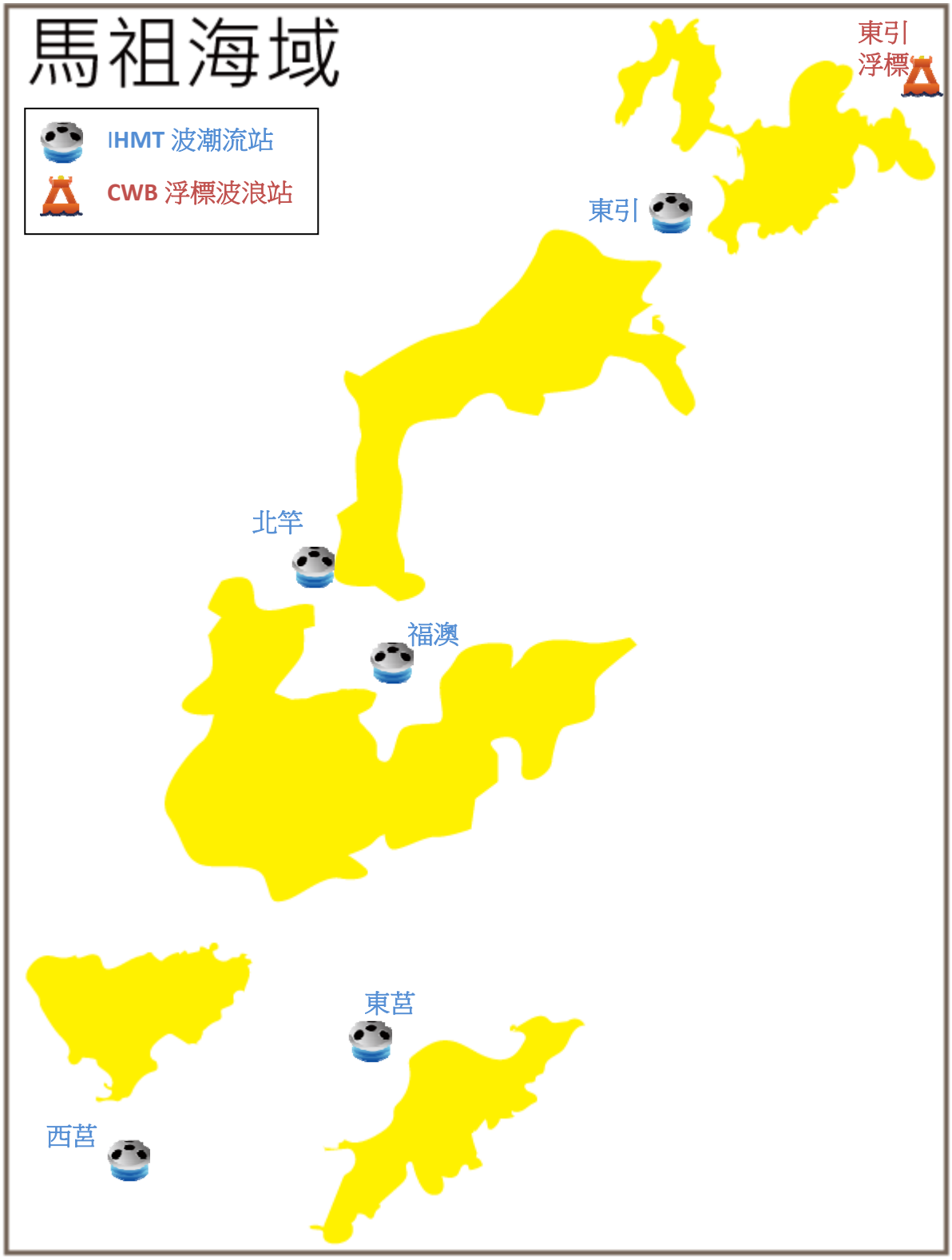

圖 12 馬祖海域波浪觀測站位置示意圖

表12.1a 2016年每月馬祖海域修補前各測站觀測波浪資料紀錄統計表

年/月 港區	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域
測站	Y	X	A	1	2	3		
2015/12月	268 (36.0%)	698 (93.8%)	741 (99.6%)	*	393 (52.8%)	587 (78.9%)	*	*
2016/ 1月	*	573 (77.0%)	737 (99.1%)	*	*	718 (96.5%)	*	*
2016/ 2月	*	636 (91.4%)	691 (99.3%)	*	*	690 (99.1%)	*	*
2016/ 3月	672 (90.3%)	659 (88.6%)	733 (98.5%)	*	*	657 (88.3%)	*	*
2016/ 4月	712 (98.9%)	694 (96.4%)	714 (99.2%)	*	*	*	*	*
2016/ 5月	735 (98.8%)	739 (99.3%)	740 (99.5%)	*	*	*	*	*
2016/ 6月	714 (99.2%)	705 (97.9%)	702 (97.5%)	124 (17.2%)	15 (2.1%)	138 (19.2%)	*	*
2016/ 7月	739 (99.3%)	741 (99.6%)	743 (99.9%)	737 (99.1%)	743 (99.9%)	744 (100%)	*	*
2016/ 8月	738 (99.2%)	703 (94.5%)	741 (99.6%)	739 (99.3%)	722 (97.0%)	743 (99.9%)	*	*
2016/ 9月	715 (99.3%)	556 (77.2%)	710 (98.6%)	680 (94.4%)	717 (99.6%)	718 (99.7%)	*	*
2016/10月	742 (99.7%)	396 (53.2%)	741 (99.6%)	588 (79.0%)	738 (99.2%)	592 (79.6%)	*	*
2016/11月	714 (99.2%)	702 (97.5%)	706 (98.1%)	*	701 (97.4%)	700 (97.2%)	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

表12.1b 2016年每月馬祖海域修補後各測站波浪資料統計表

年/月 港區	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域	馬祖海域
測站	Y	X	A	1	2	3		
2015/12月	744 (100%)	*	*	*	*	*	*	*
2016/ 1月	744 (100%)	*	*	*	*	*	*	*
2016/ 2月	696 (100%)	*	*	*	*	*	*	*
2016/ 3月	744 (100%)	*	*	*	*	*	*	*
2016/ 4月	720 (100%)	*	*	*	*	*	*	*
2016/ 5月	744 (100%)	*	*	*	*	*	*	*
2016/ 6月	720 (100%)	*	*	*	*	*	*	*
2016/ 7月	744 (100%)	*	*	*	*	*	*	*
2016/ 8月	744 (100%)	*	*	*	*	*	*	*
2016/ 9月	720 (100%)	*	*	*	*	*	*	*
2016/10月	744 (100%)	*	*	*	*	*	*	*
2016/11月	720 (100%)	*	*	*	*	*	*	*
2016/冬季	*	*	*	*	*	*	*	*
2016/春季	*	*	*	*	*	*	*	*
2016/夏季	*	*	*	*	*	*	*	*
2016/秋季	*	*	*	*	*	*	*	*
2016/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

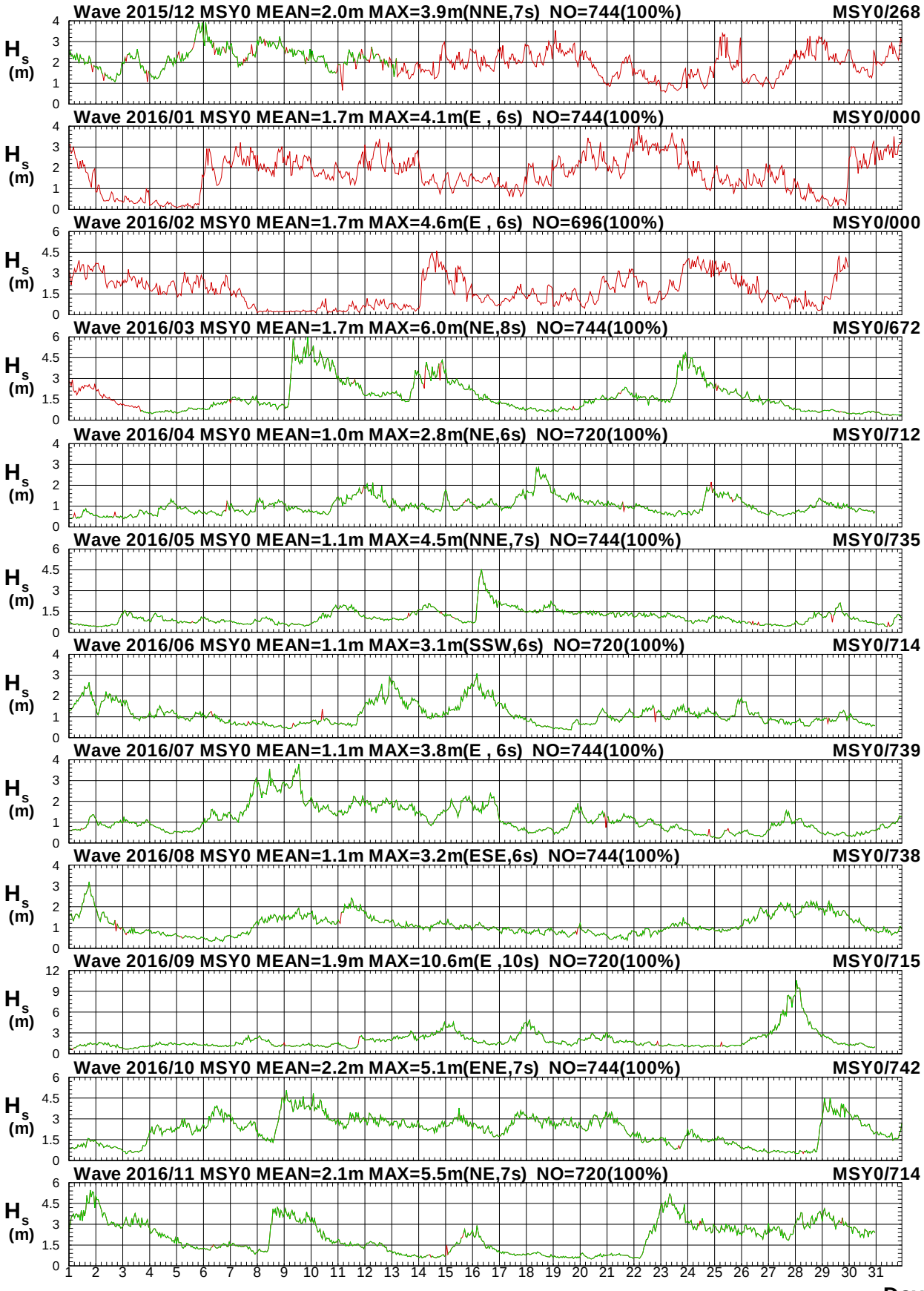

圖 12.1a　2016年每月馬祖海域 Y 站修補前後之波高比較圖

V15CMSY0.1HA V15CMSY0.1H0 V161MSY0.1HA V161MSY0.1H0 V162MSY0.1HA V162MSY0.1H0
V163MSY0.1HA V163MSY0.1H0 V164MSY0.1HA V164MSY0.1H0 V165MSY0.1HA V165MSY0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

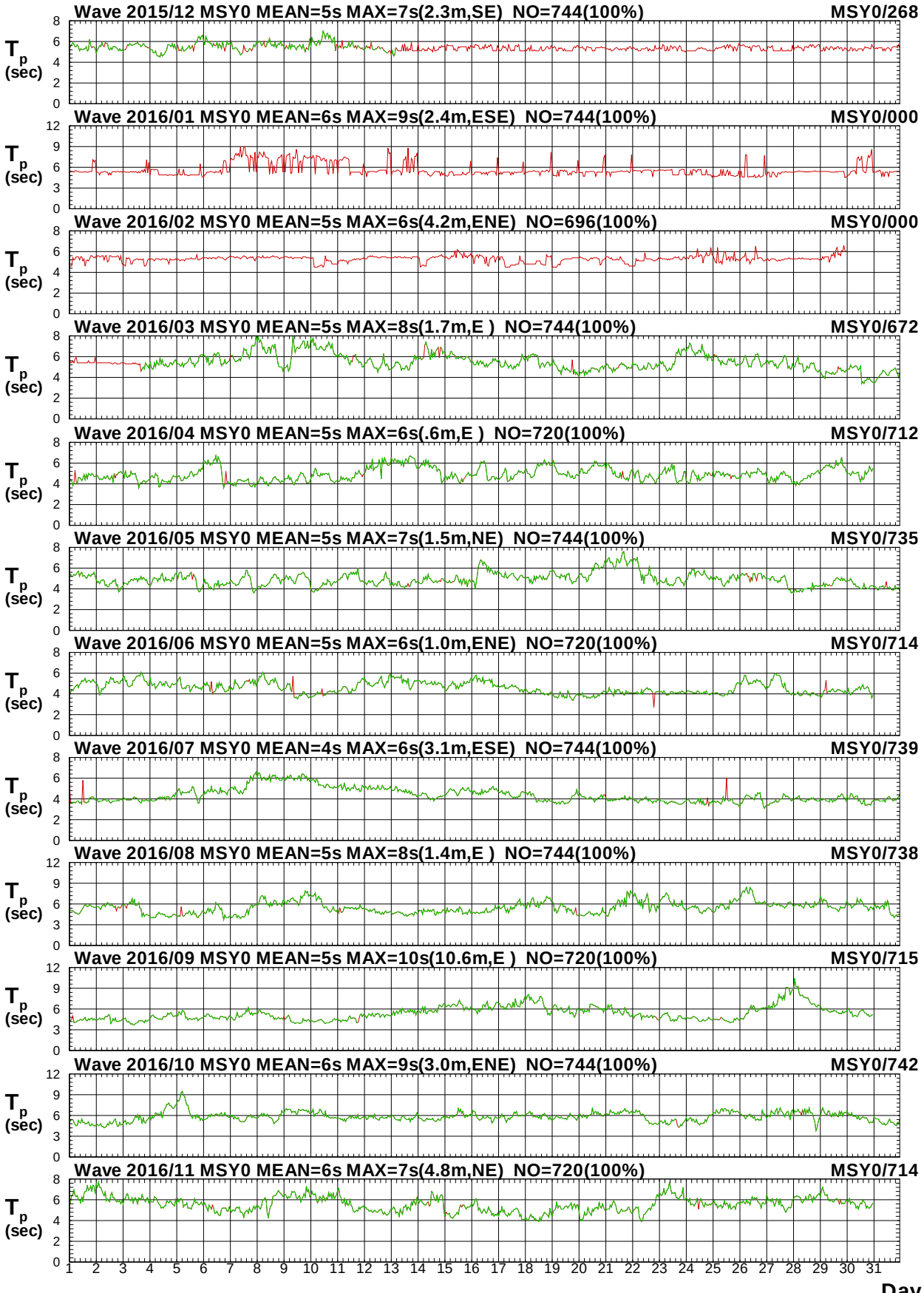

圖 12.1b　2016年每月馬祖海域 Y 站修補前後之週期比較圖

V15CMSY0.1HA V15CMSY0.1H0 V161MSY0.1HA V161MSY0.1H0 V162MSY0.1HA V162MSY0.1H0
V163MSY0.1HA V163MSY0.1H0 V164MSY0.1HA V164MSY0.1H0 V165MSY0.1HA V165MSY0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

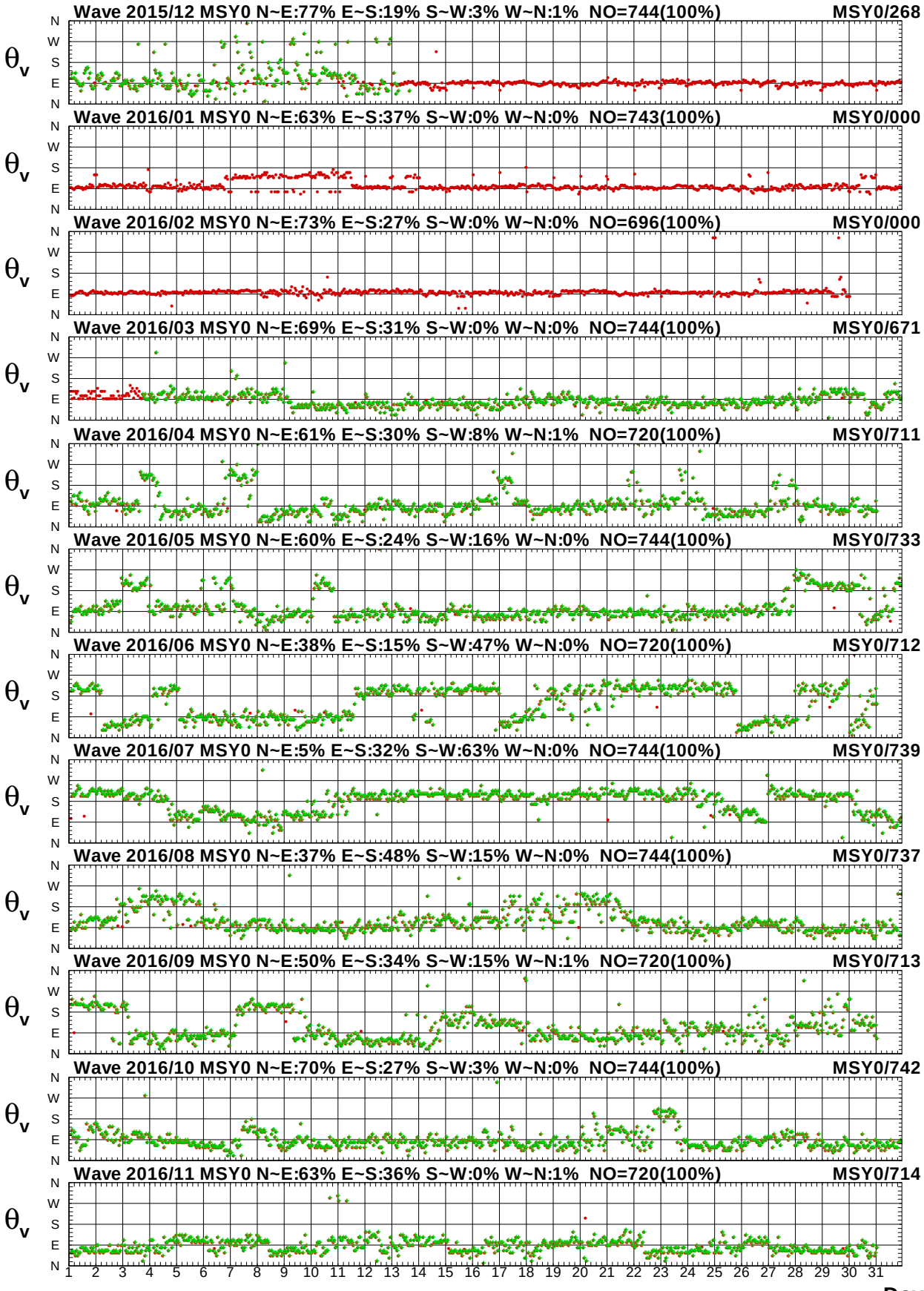

圖 12.1c　2016年每月馬祖海域 Y 站修補前後之波向比較圖

V15CMSY0.1HA V15CMSY0.1H0 V161MSY0.1HA V161MSY0.1H0 V162MSY0.1HA V162MSY0.1H0
V163MSY0.1HA V163MSY0.1H0 V164MSY0.1HA V164MSY0.1H0 V165MSY0.1HA V165MSY0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2016

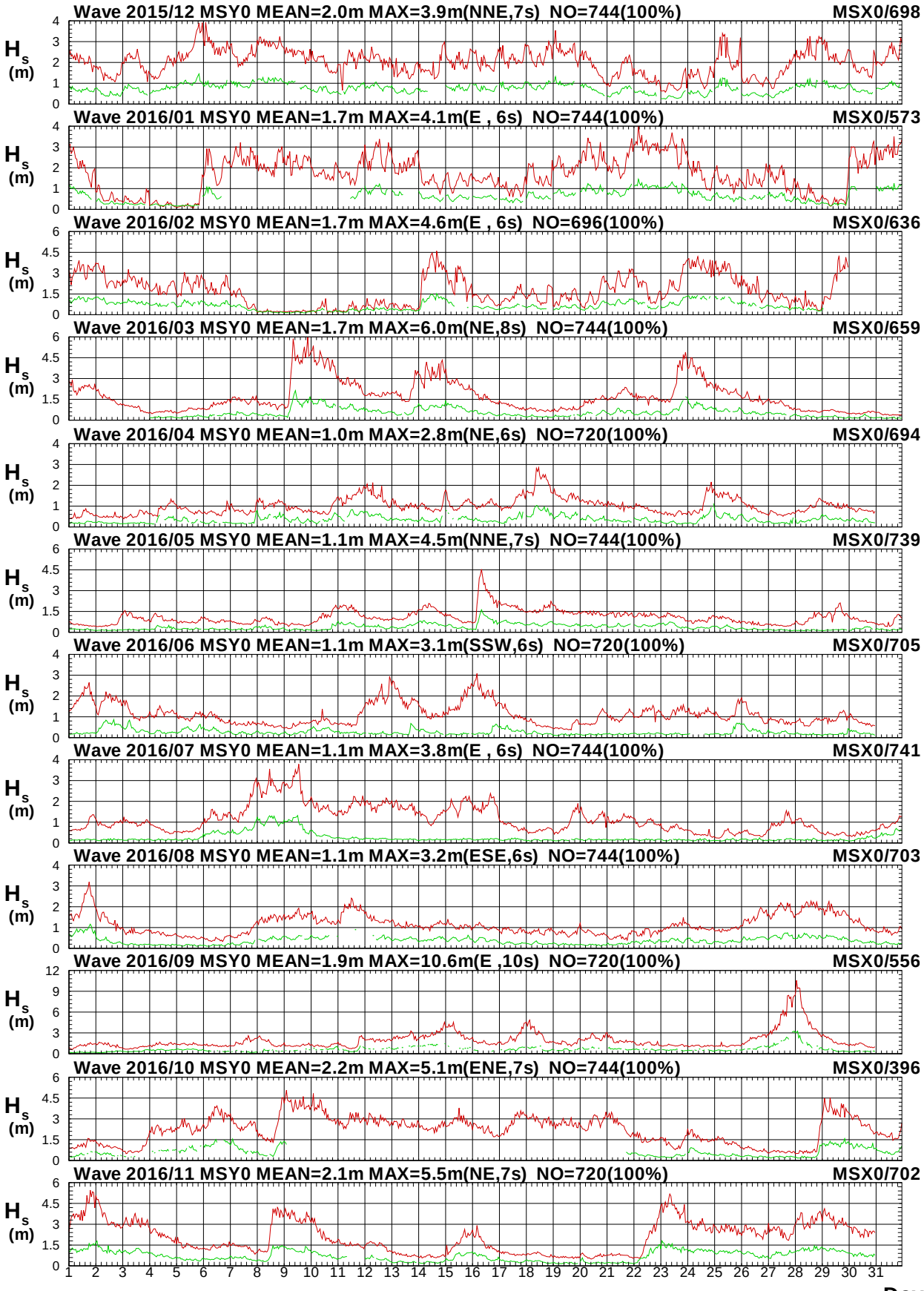

圖 12.2a　2016年每月馬祖海域 Y 站與 X 站波高比較圖

V15CMSY0.1HA V15CMSX0.1H0 V161MSY0.1HA V161MSX0.1H0 V162MSY0.1HA V162MSX0.1H0
V163MSY0.1HA V163MSX0.1H0 V164MSY0.1HA V164MSX0.1H0 V165MSY0.1HA V165MSX0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

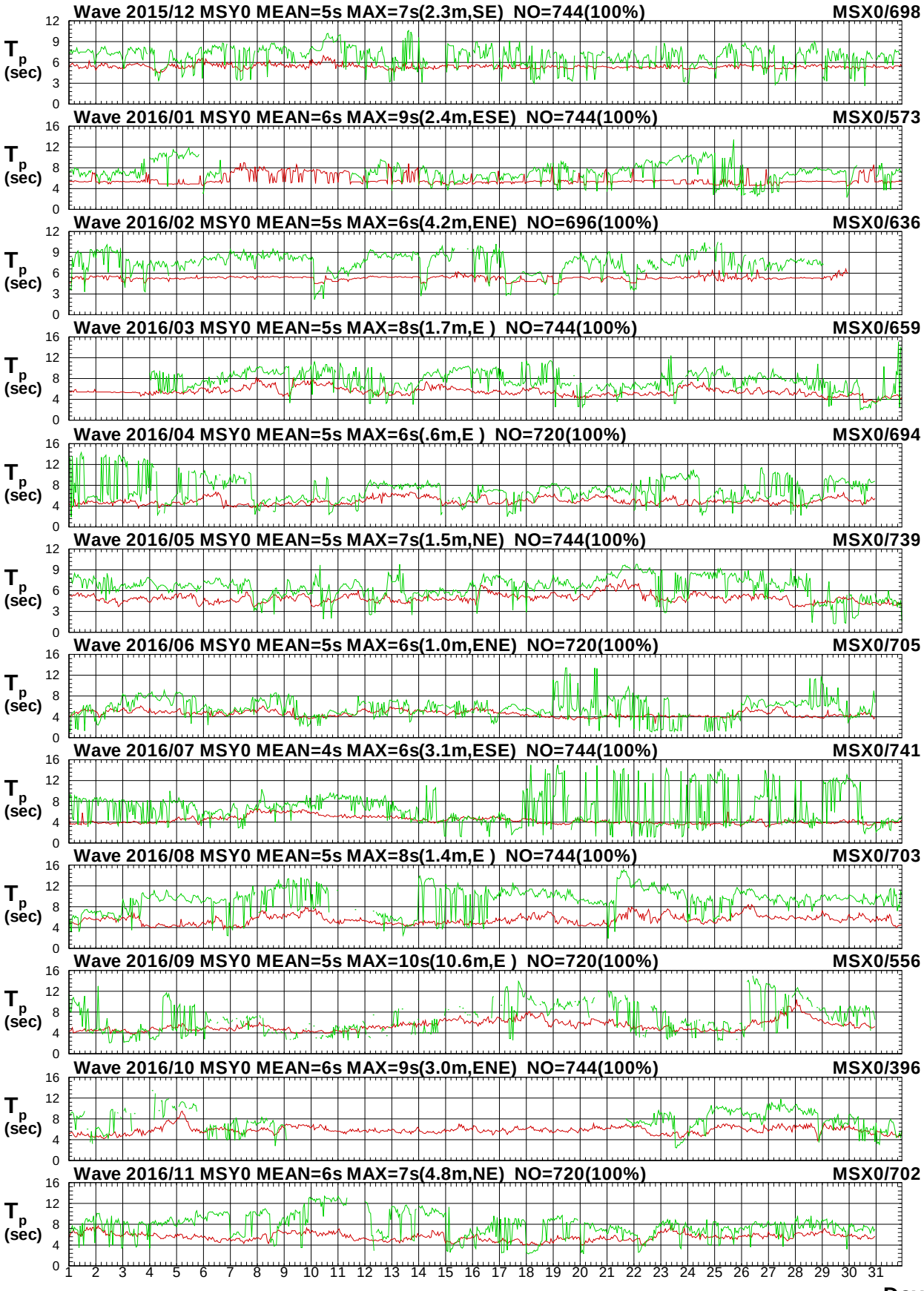

圖 12.2b　2016年每月馬祖海域 Y 站與 X 站週期比較圖

V15CMSY0.1HA V15CMSX0.1H0 V161MSY0.1HA V161MSX0.1H0 V162MSY0.1HA V162MSX0.1H0
V163MSY0.1HA V163MSX0.1H0 V164MSY0.1HA V164MSX0.1H0 V165MSY0.1HA V165MSX0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

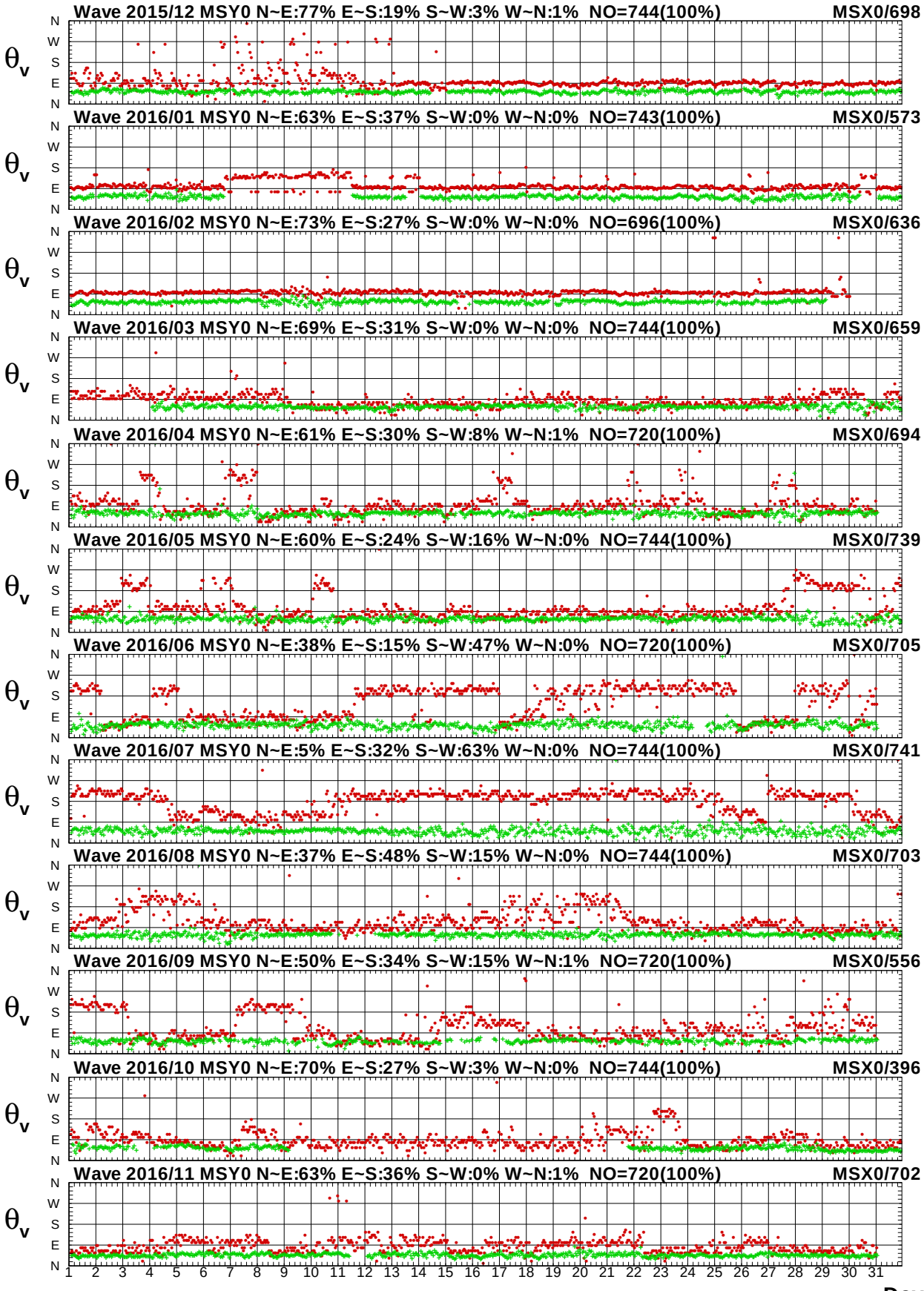

圖 12.2c　2016年每月馬祖海域 Y 站與 X 站波向比較圖

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

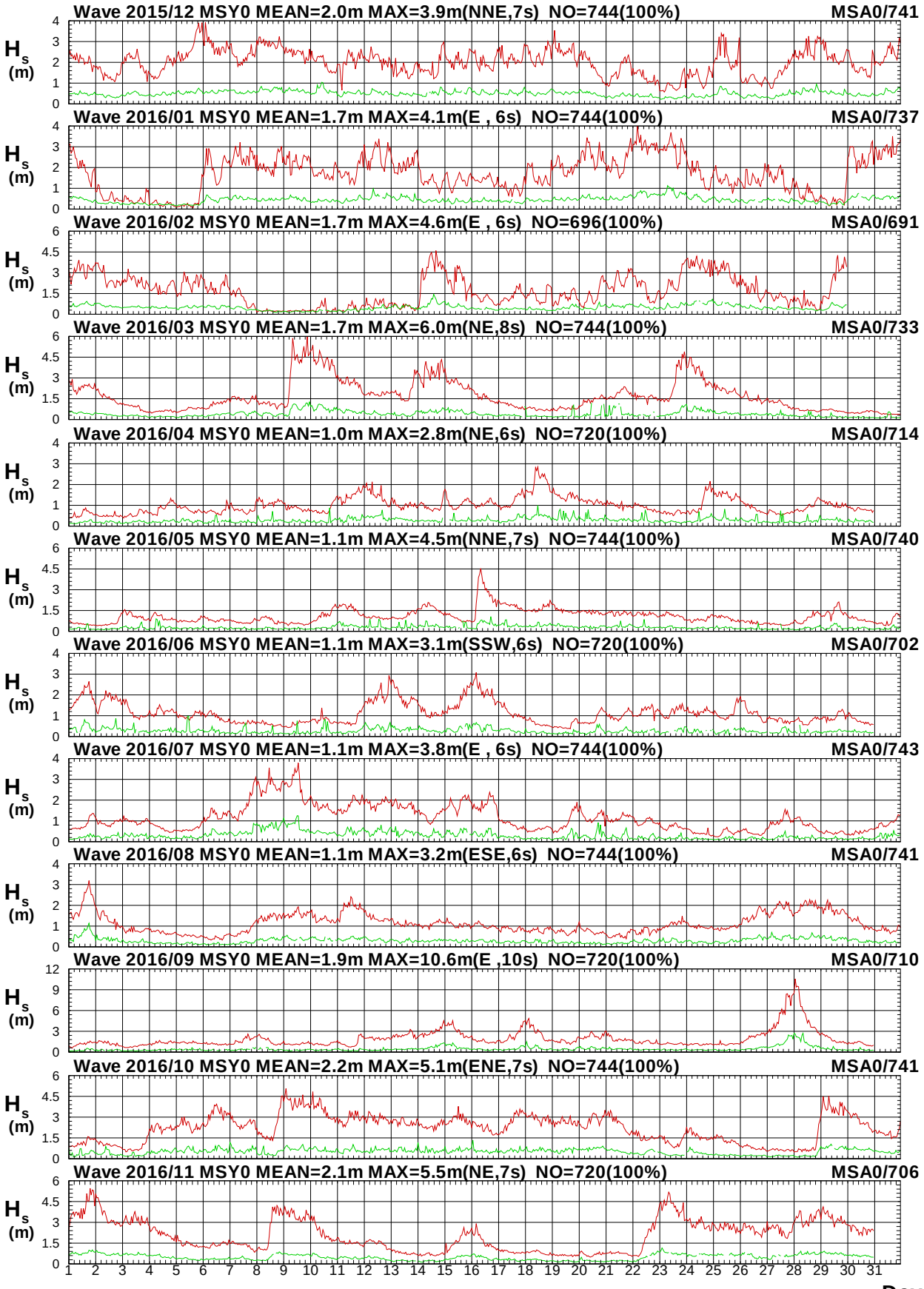

圖 12.3a　2016年每月馬祖海域 Y 站與 A 站波高比較圖

V15CMSY0.1HA V15CMSA0.1H0 V161MSY0.1HA V161MSA0.1H0 V162MSY0.1HA V162MSA0.1H0
V163MSY0.1HA V163MSA0.1H0 V164MSY0.1HA V164MSA0.1H0 V165MSY0.1HA V165MSA0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

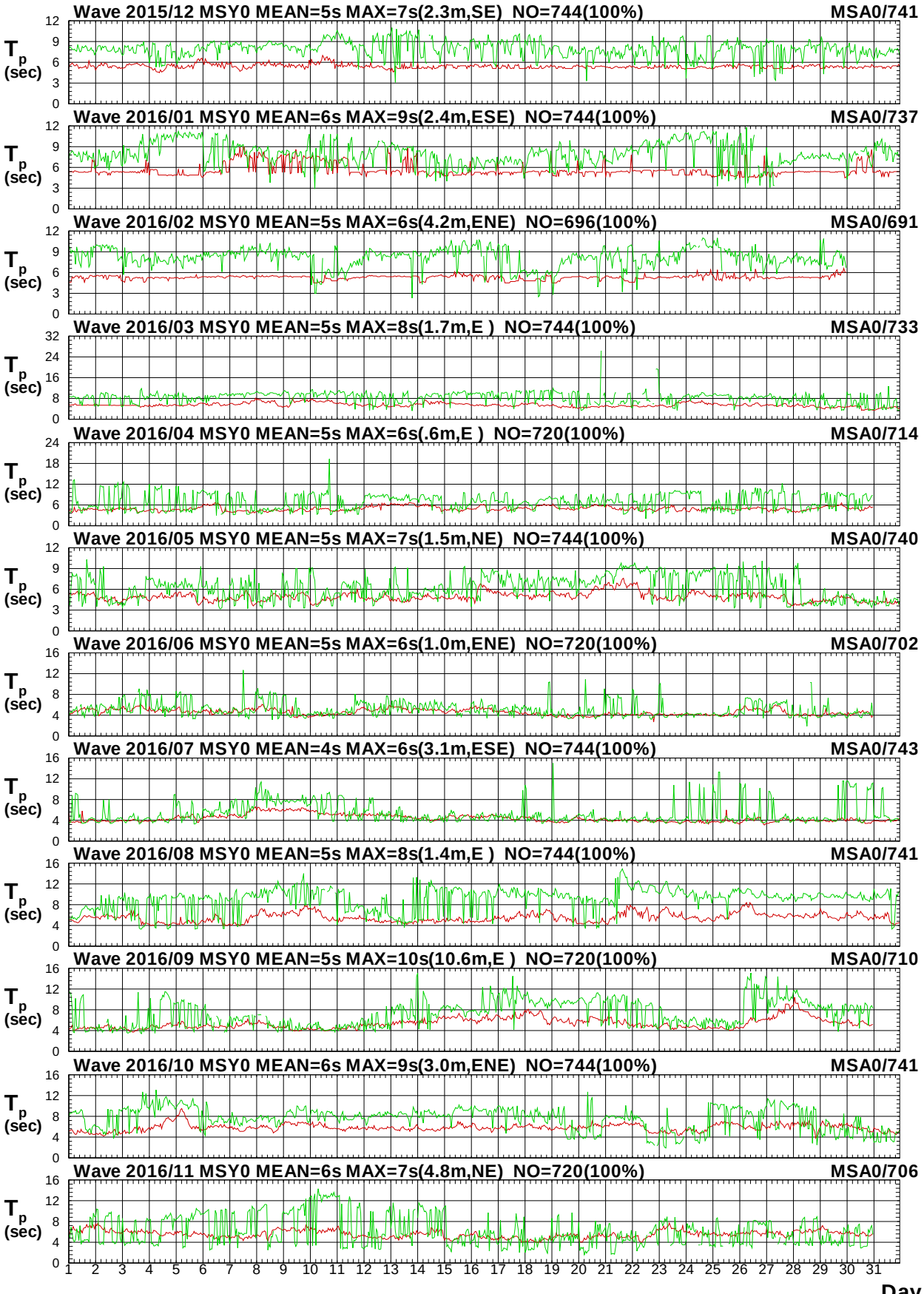

圖 12.3b　2016年每月馬祖海域 Y 站與 A 站週期比較圖

V15CMSY0.1HA V15CMSA0.1H0 V161MSY0.1HA V161MSA0.1H0 V162MSY0.1HA V162MSA0.1H0
V163MSY0.1HA V163MSA0.1H0 V164MSY0.1HA V164MSA0.1H0 V165MSY0.1HA V165MSA0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

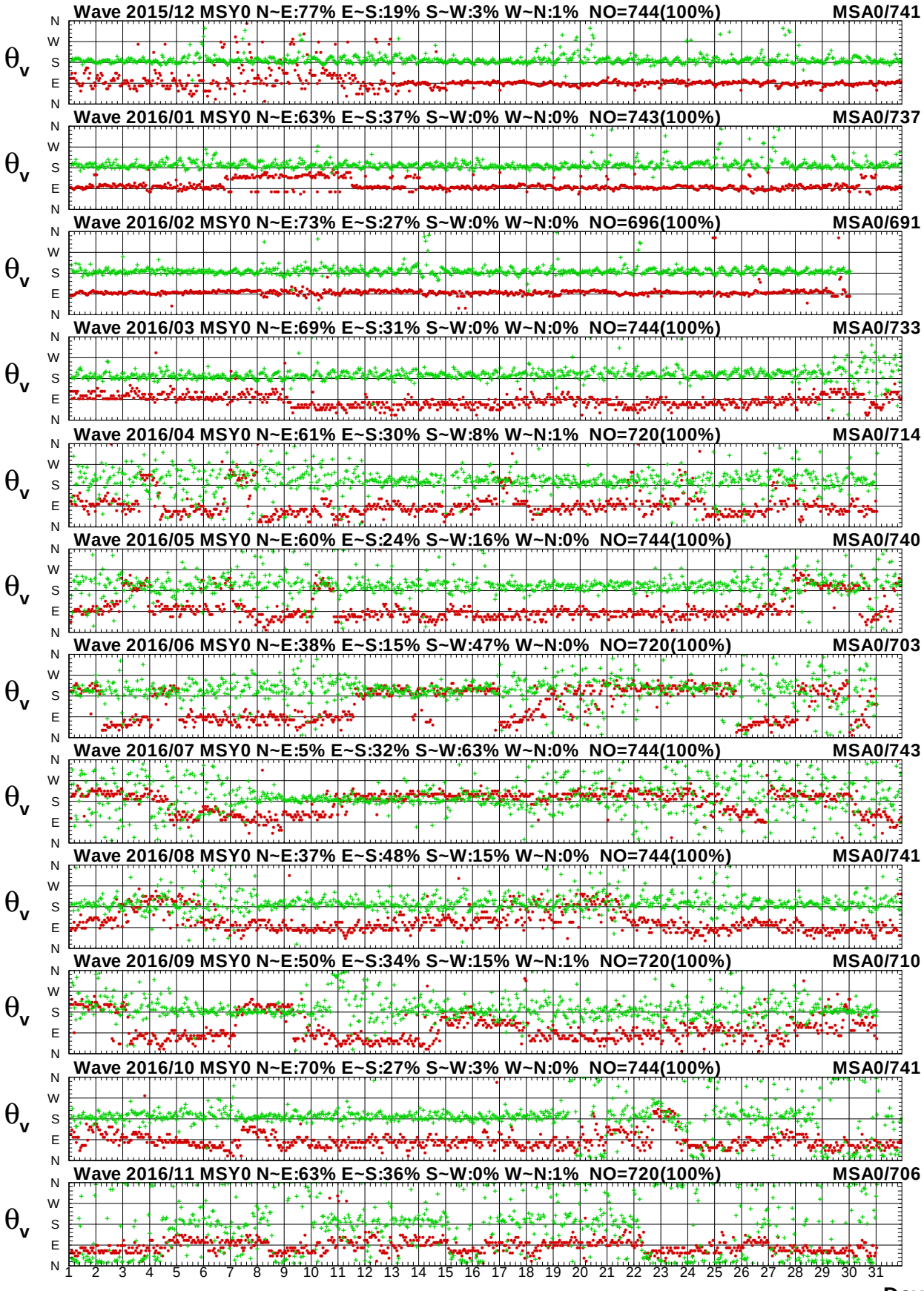

圖 12.3c　2016年每月馬祖海域 Y 站與 A 站波向比較圖

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

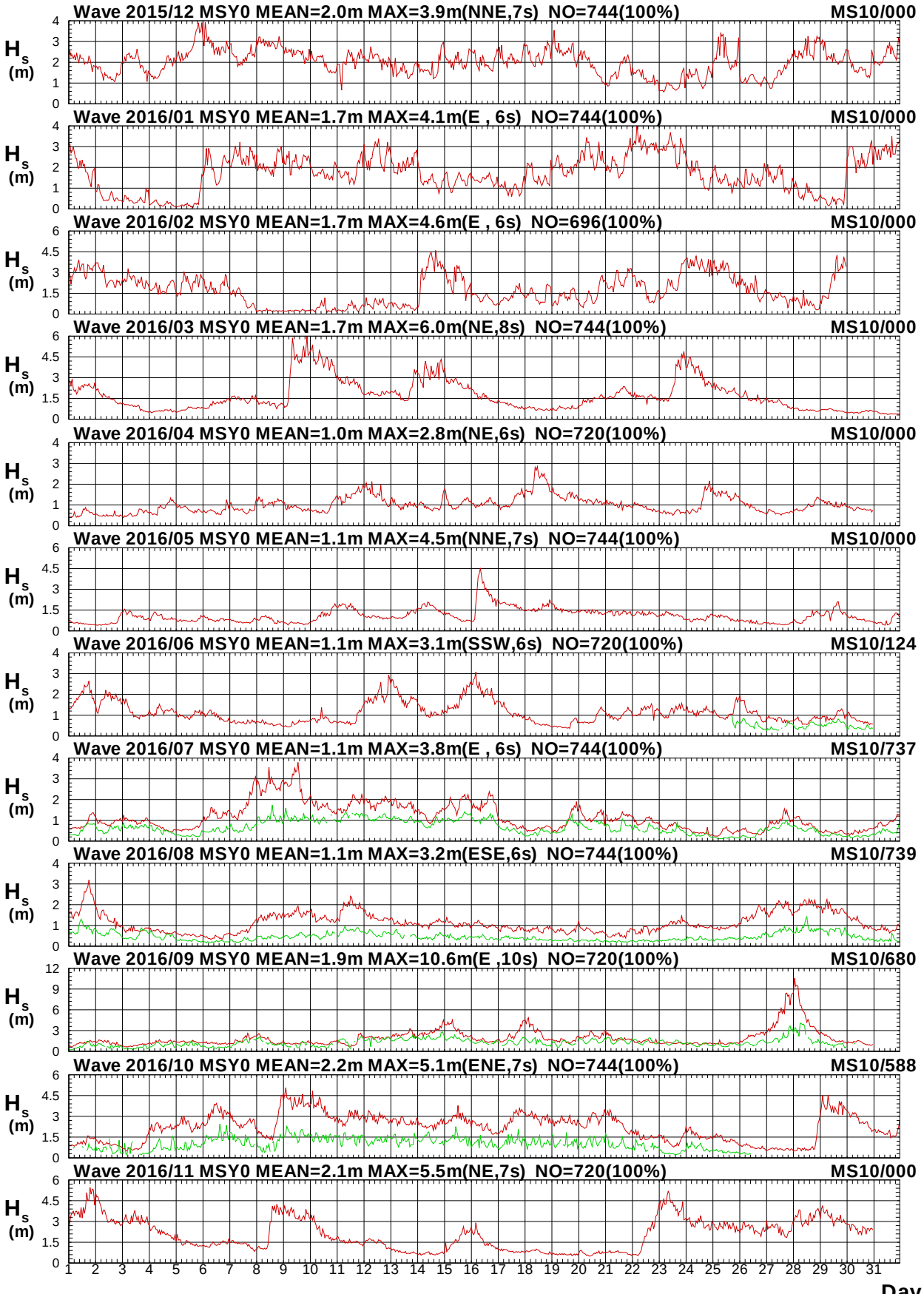

圖 12.4a　2016年每月馬祖海域 Y 站與1站波高比較圖

V15CMSY0.1HA V15CMS10.1H0 V161MSY0.1HA V161MS10.1H0 V162MSY0.1HA V162MS10.1H0
V163MSY0.1HA V163MS10.1H0 V164MSY0.1HA V164MS10.1H0 V165MSY0.1HA V165MS10.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

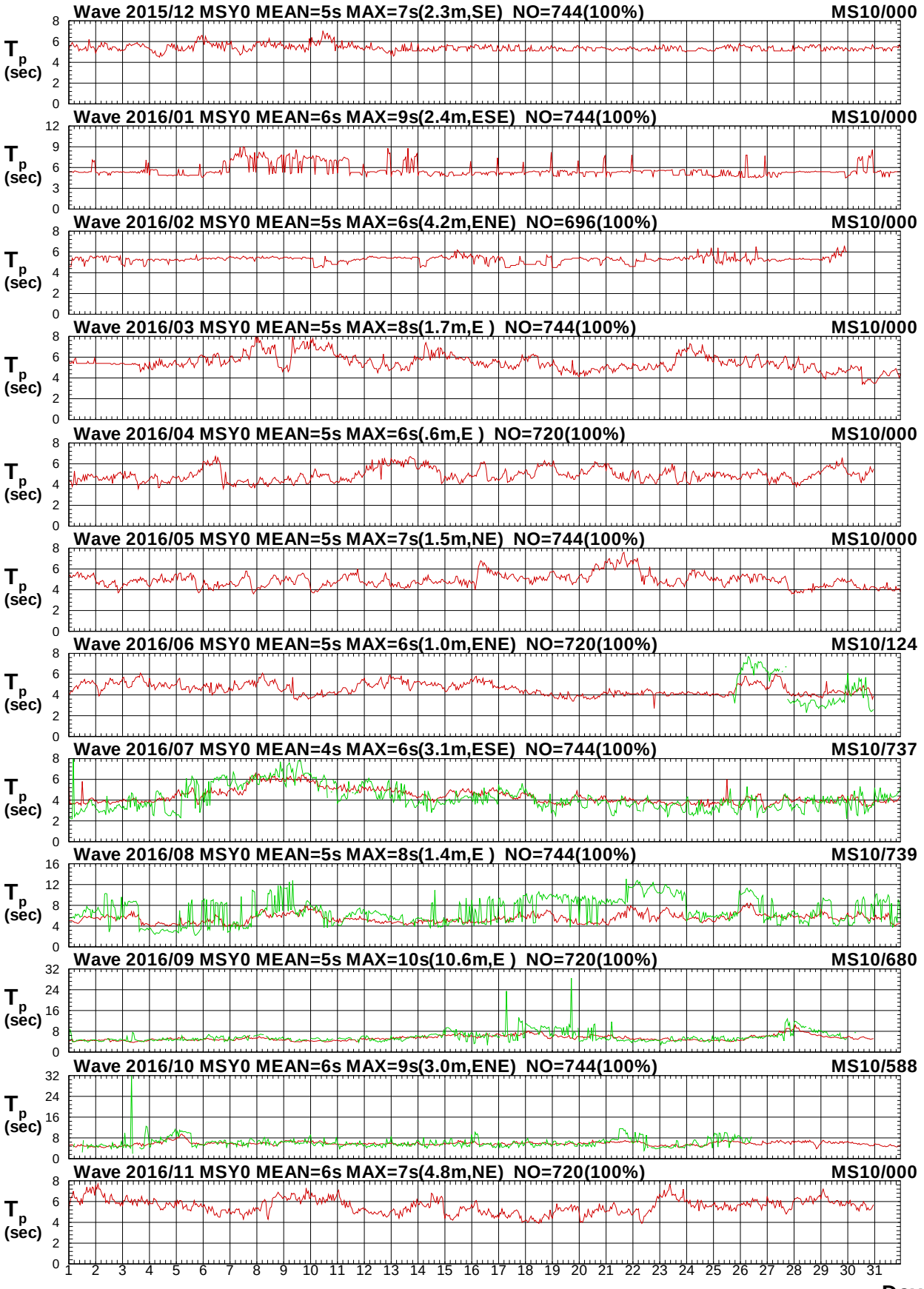

圖 12.4b　2016年每月馬祖海域 Y 站與1站週期比較圖

V15CMSY0.1HA V15CMS10.1H0 V161MSY0.1HA V161MS10.1H0 V162MSY0.1HA V162MS10.1H0
V163MSY0.1HA V163MS10.1H0 V164MSY0.1HA V164MS10.1H0 V165MSY0.1HA V165MS10.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

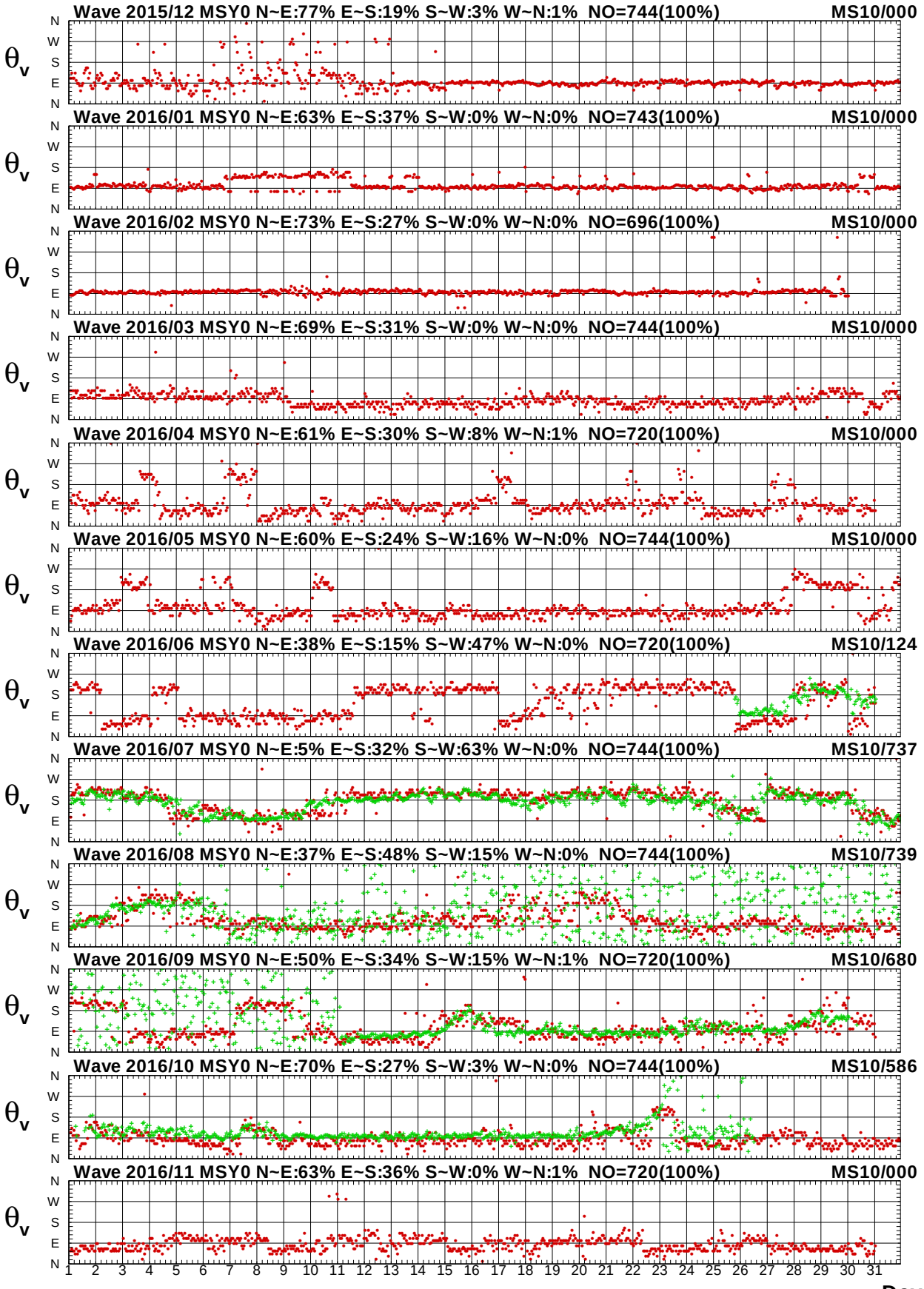

圖 12.4c　2016年每月馬祖海域 Y 站與1站波向比較圖

V15CMSY0.1HA V15CMS10.1H0 V161MSY0.1HA V161MS10.1H0 V162MSY0.1HA V162MS10.1H0
V163MSY0.1HA V163MS10.1H0 V164MSY0.1HA V164MS10.1H0 V165MSY0.1HA V165MS10.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2016

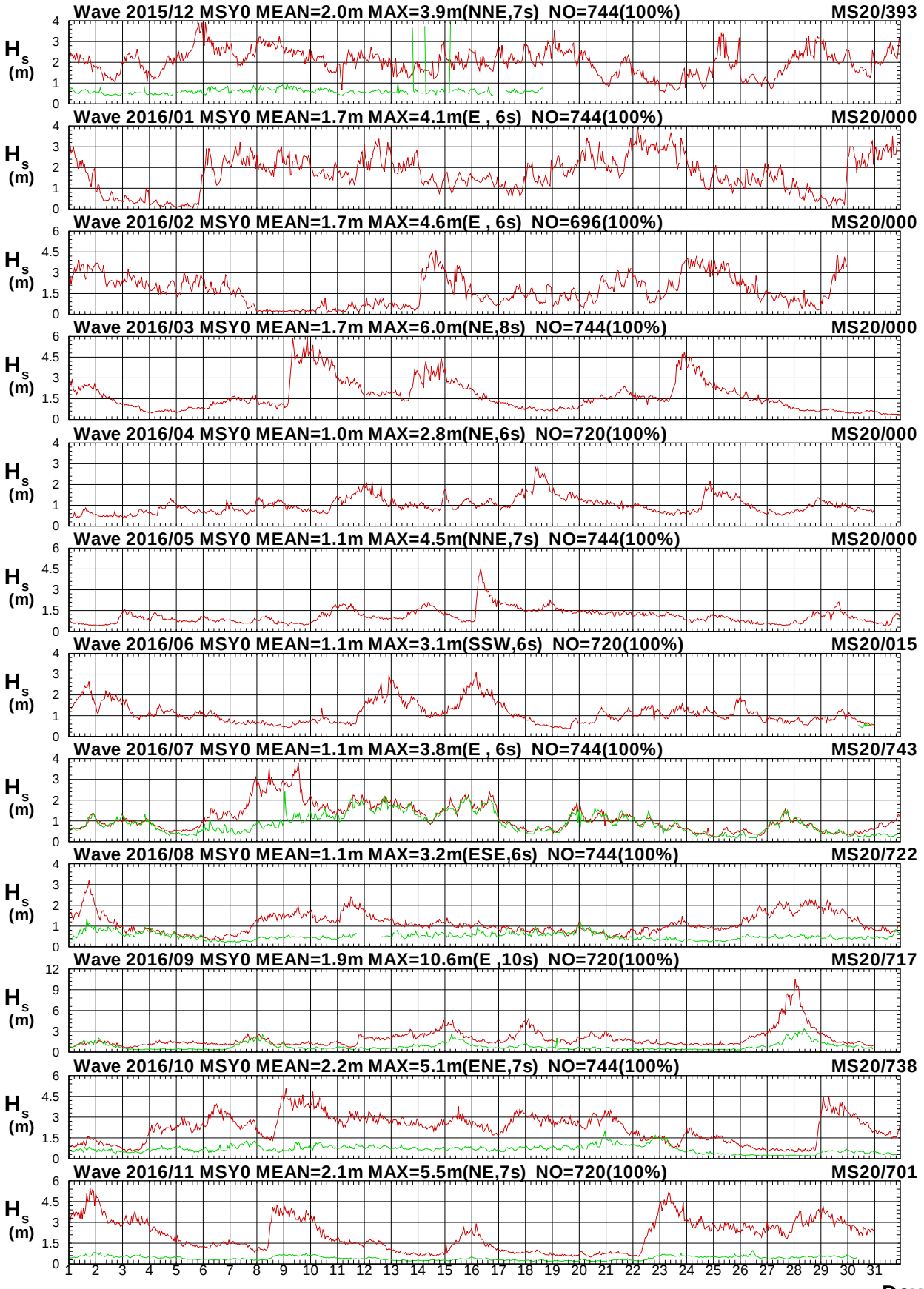

圖 12.5a　2016年每月馬祖海域 Y 站與2站波高比較圖

V15CMSY0.1HA V15CMS20.1H0 V161MSY0.1HA V161MS20.1H0 V162MSY0.1HA V162MS20.1H0
V163MSY0.1HA V163MS20.1H0 V164MSY0.1HA V164MS20.1H0 V165MSY0.1HA V165MS20.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

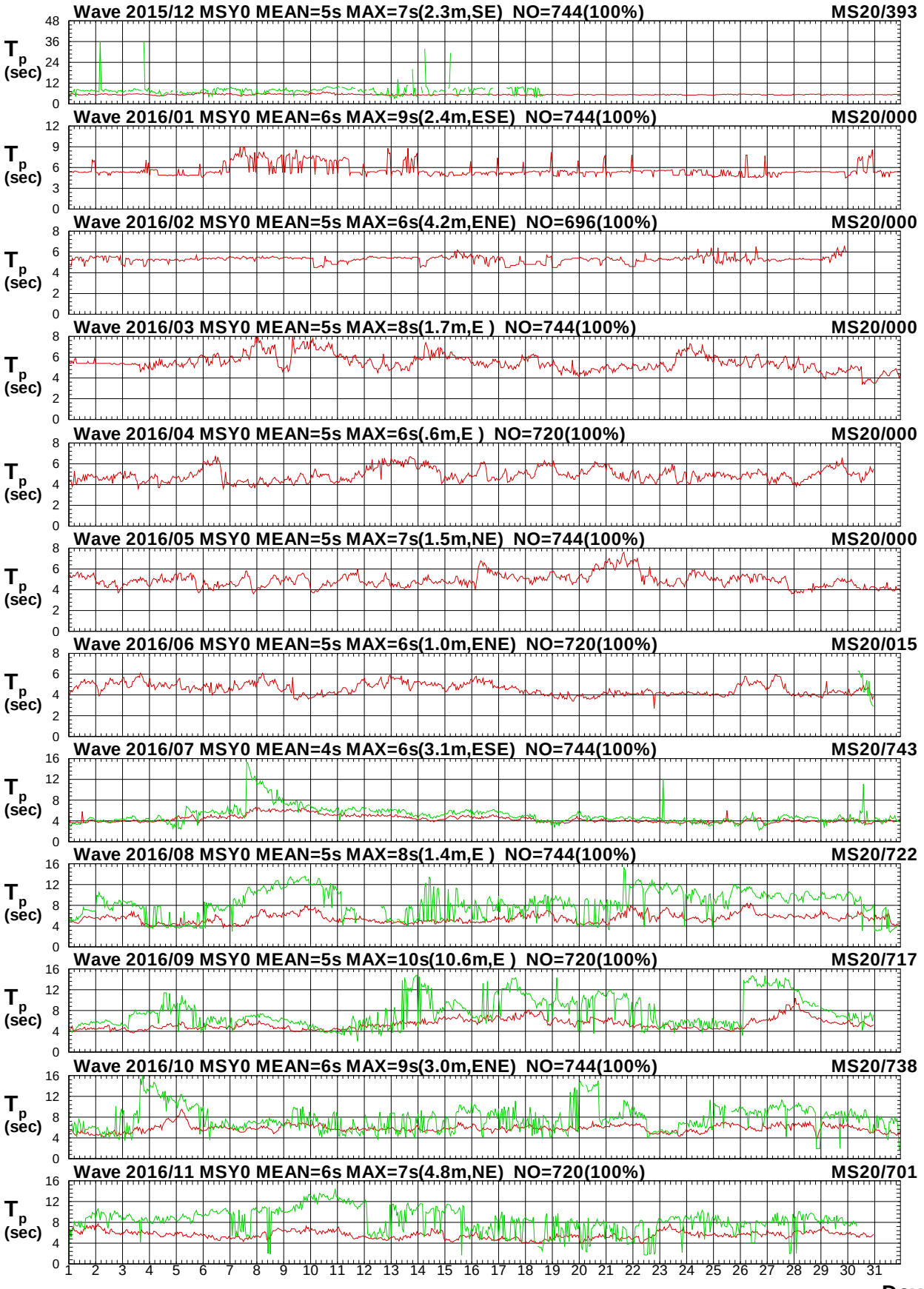

圖 12.5b　2016年每月馬祖海域 Y 站與2站週期比較圖

V15CMSY0.1HA V15CMS20.1H0 V161MSY0.1HA V161MS20.1H0 V162MSY0.1HA V162MS20.1H0
V163MSY0.1HA V163MS20.1H0 V164MSY0.1HA V164MS20.1H0 V165MSY0.1HA V165MS20.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

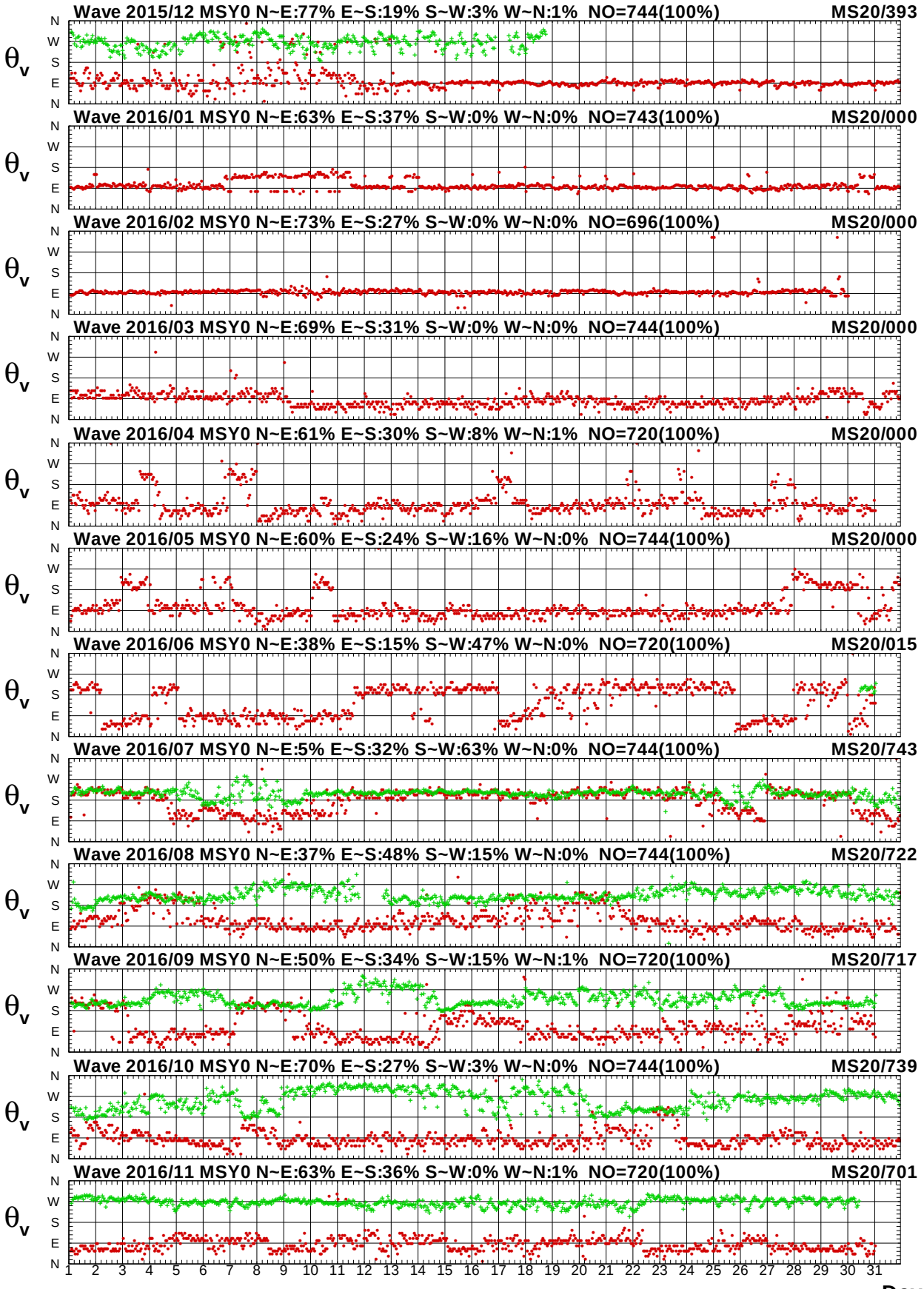

圖 12.5c　2016年每月馬祖海域 Y 站與2站波向比較圖

V15CMSY0.1HA V15CMS20.1H0 V161MSY0.1HA V161MS20.1H0 V162MSY0.1HA V162MS20.1H0
V163MSY0.1HA V163MS20.1H0 V164MSY0.1HA V164MS20.1H0 V165MSY0.1HA V165MS20.1H0

Institute of Harbor & Marine Technology

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

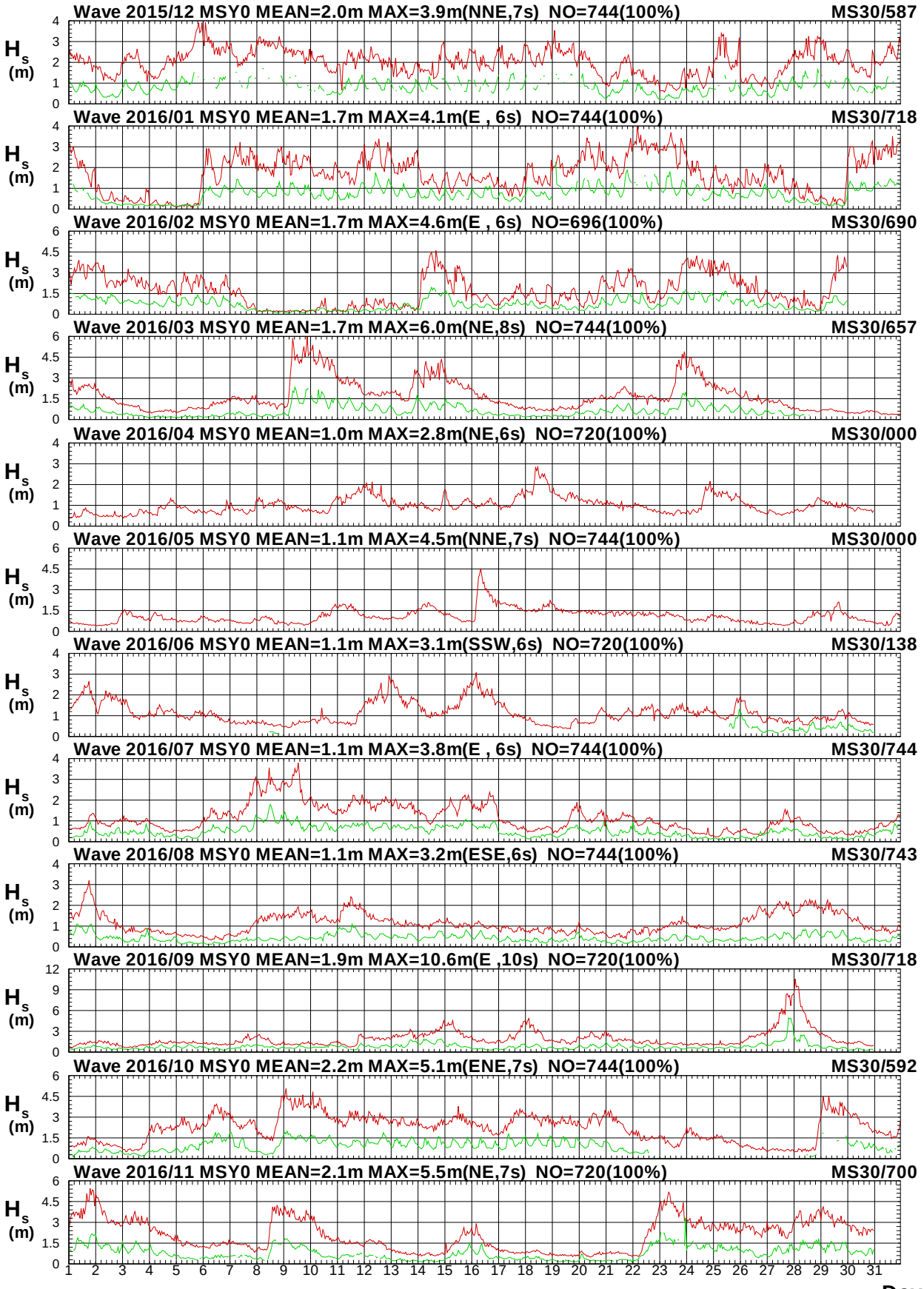

圖 12.6a　2016年每月馬祖海域 Y 站與3站波高比較圖

V15CMSY0.1HA V15CMS30.1H0 V161MSY0.1HA V161MS30.1H0 V162MSY0.1HA V162MS30.1H0
V163MSY0.1HA V163MS30.1H0 V164MSY0.1HA V164MS30.1H0 V165MSY0.1HA V165MS30.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

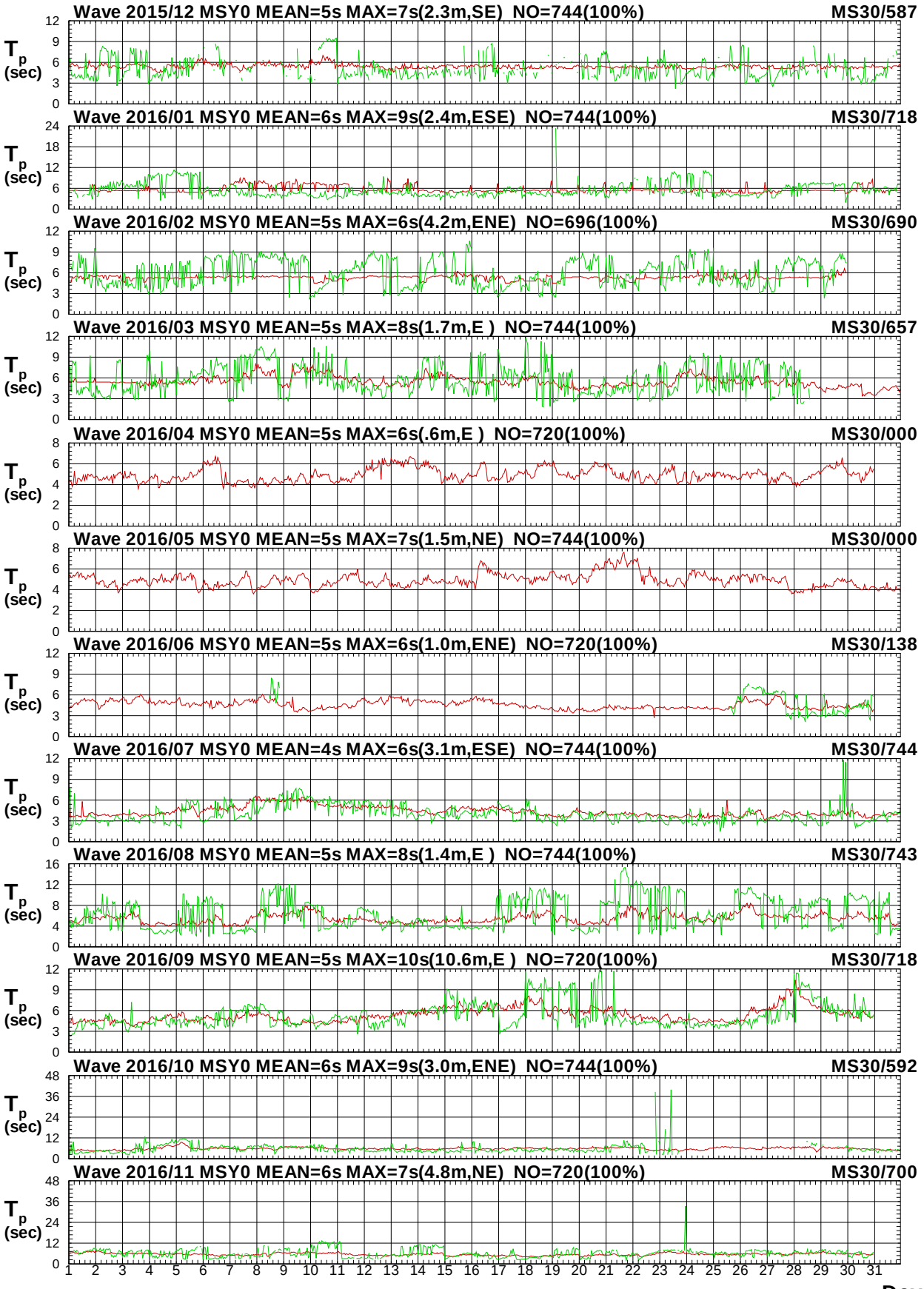

圖 12.6b　2016年每月馬祖海域 Y 站與3站週期比較圖

V15CMSY0.1HA V15CMS30.1H0 V161MSY0.1HA V161MS30.1H0 V162MSY0.1HA V162MS30.1H0
V163MSY0.1HA V163MS30.1H0 V164MSY0.1HA V164MS30.1H0 V165MSY0.1HA V165MS30.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

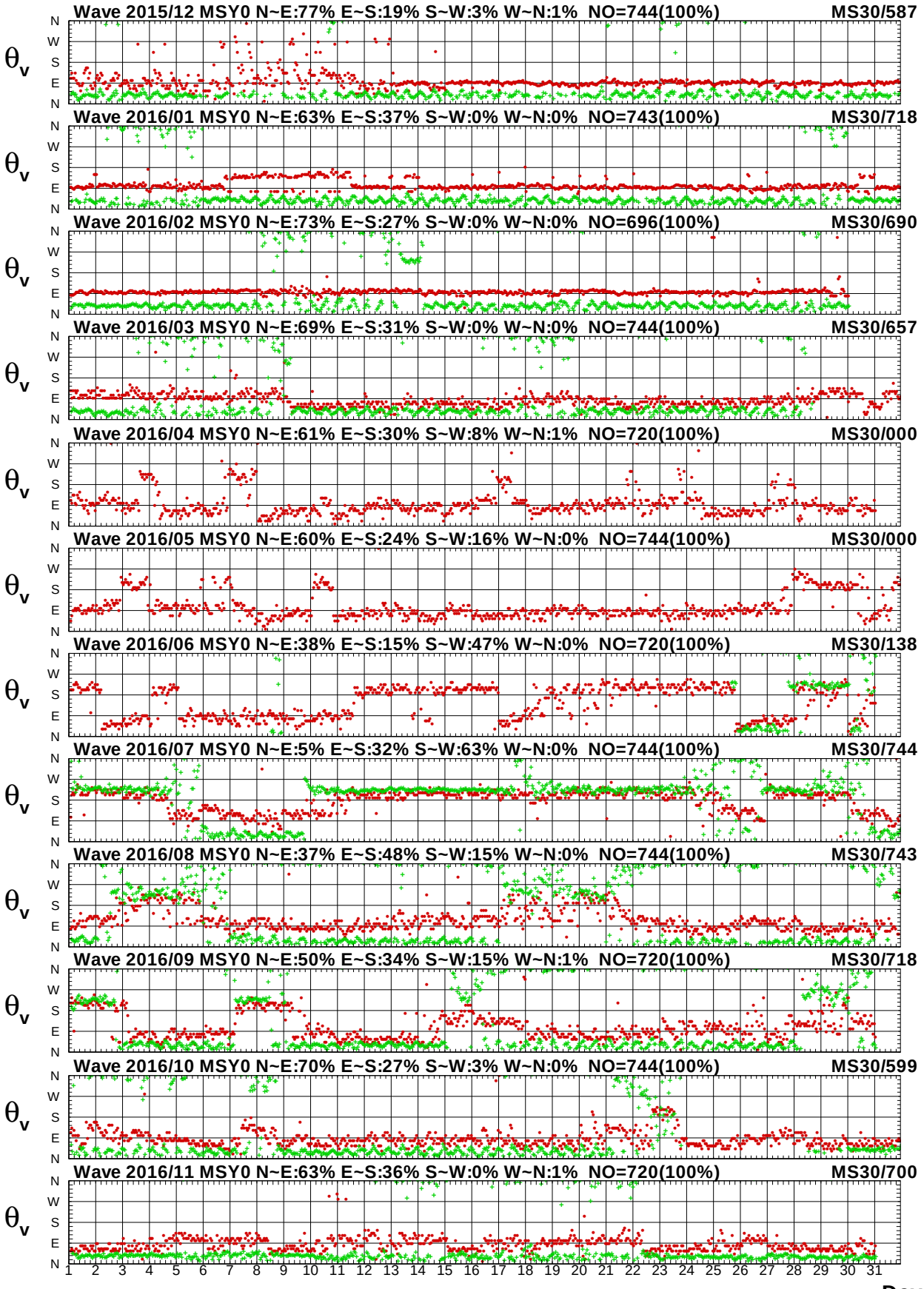

圖 12.6c　2016年每月馬祖海域 Y 站與3站波向比較圖

V15CMSY0.1HA V15CMS30.1H0 V161MSY0.1HA V161MS30.1H0 V162MSY0.1HA V162MS30.1H0
V163MSY0.1HA V163MS30.1H0 V164MSY0.1HA V164MS30.1H0 V165MSY0.1HA V165MS30.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2016

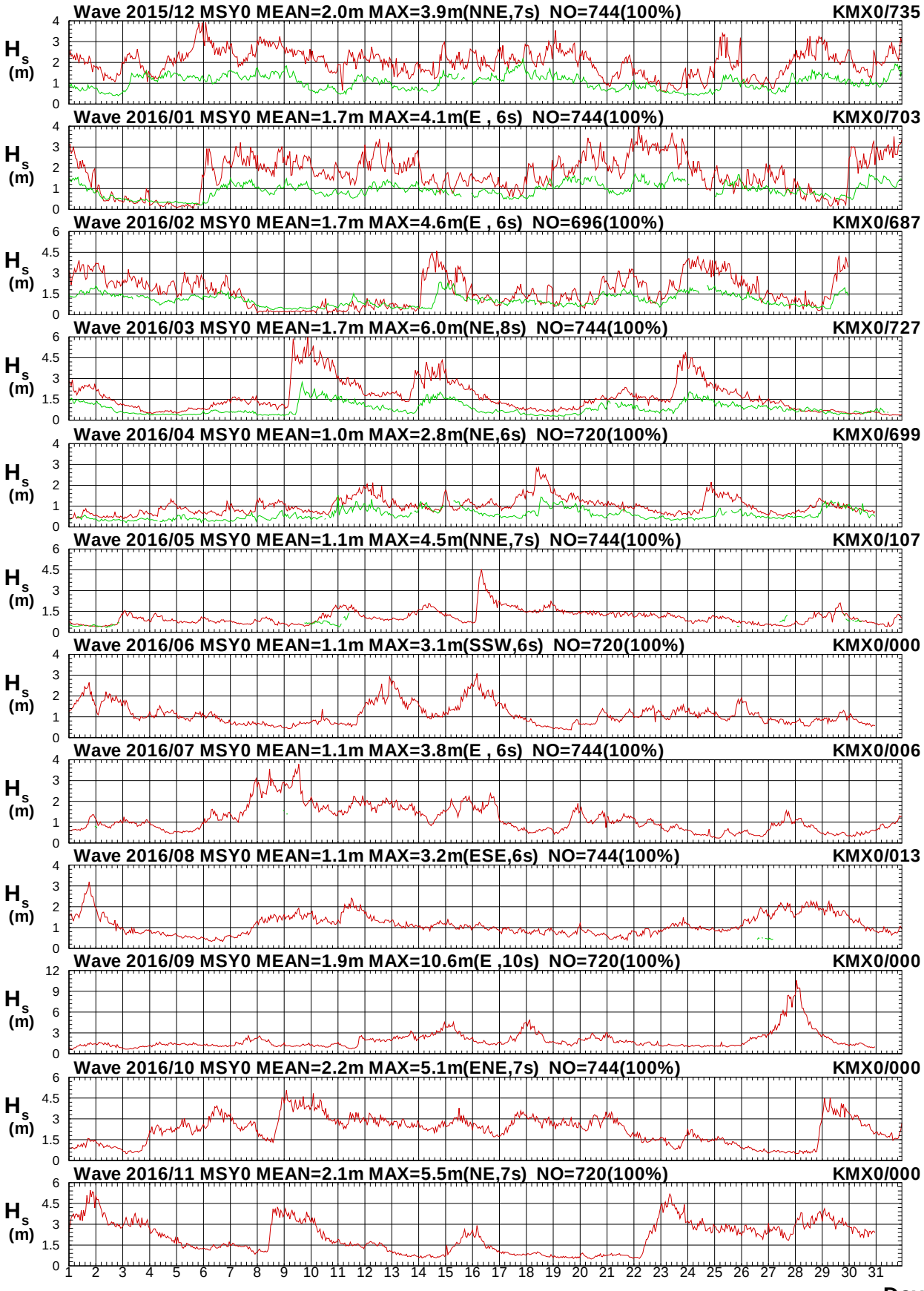

圖 12.7a　2016年每月馬祖海域 Y 站與金門海域 X 站波高圖

V15CMSY0.1HA V15CKMX0.1H0 V161MSY0.1HA V161KMX0.1H0 V162MSY0.1HA V162KMX0.1H0
V163MSY0.1HA V163KMX0.1H0 V164MSY0.1HA V164KMX0.1H0 V165MSY0.1HA V165KMX0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

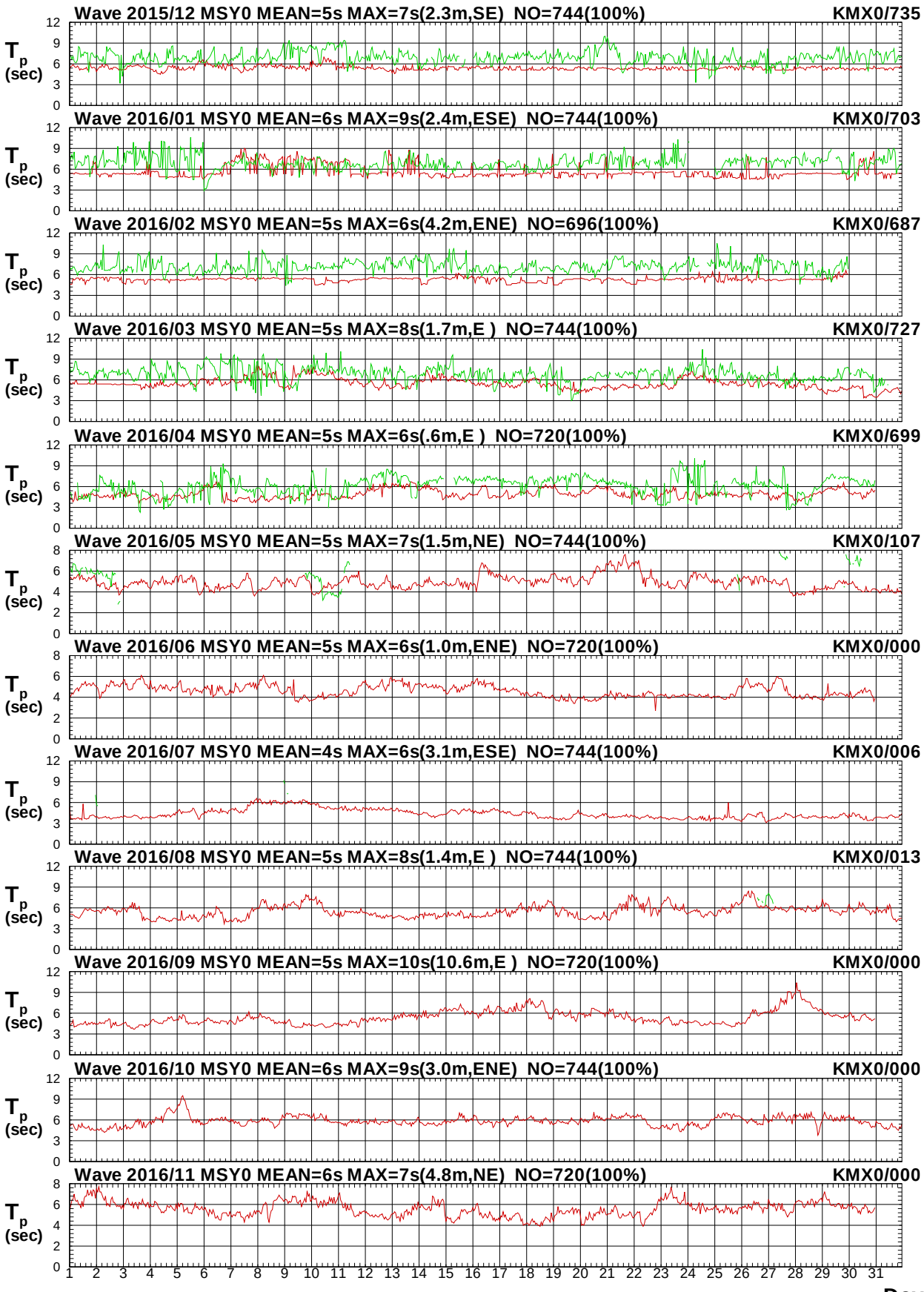

圖 12.7b　2016年每月馬祖海域 Y 站與金門海域 X 站週期圖

V15CMSY0.1HA V15CKMX0.1H0 V161MSY0.1HA V161KMX0.1H0 V162MSY0.1HA V162KMX0.1H0
V163MSY0.1HA V163KMX0.1H0 V164MSY0.1HA V164KMX0.1H0 V165MSY0.1HA V165KMX0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

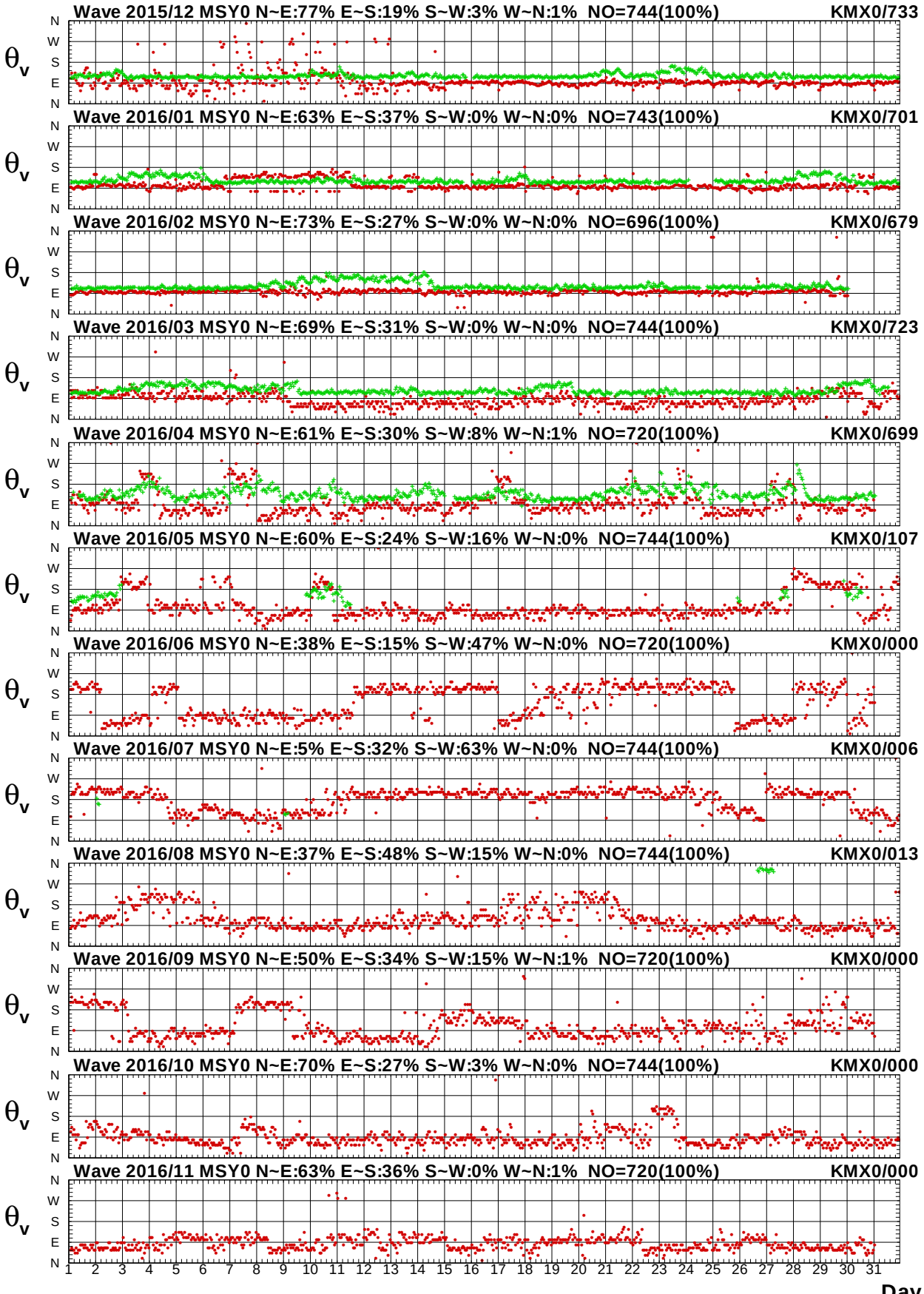

圖 12.7c　2016年每月馬祖海域 Y 站與金門海域 X 站波向圖

V15CMSY0.1HA V15CKMX0.1H0 V161MSY0.1HA V161KMX0.1H0 V162MSY0.1HA V162KMX0.1H0
V163MSY0.1HA V163KMX0.1H0 V164MSY0.1HA V164KMX0.1H0 V165MSY0.1HA V165KMX0.1H0

Institute of Harbor & Marine Technology

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

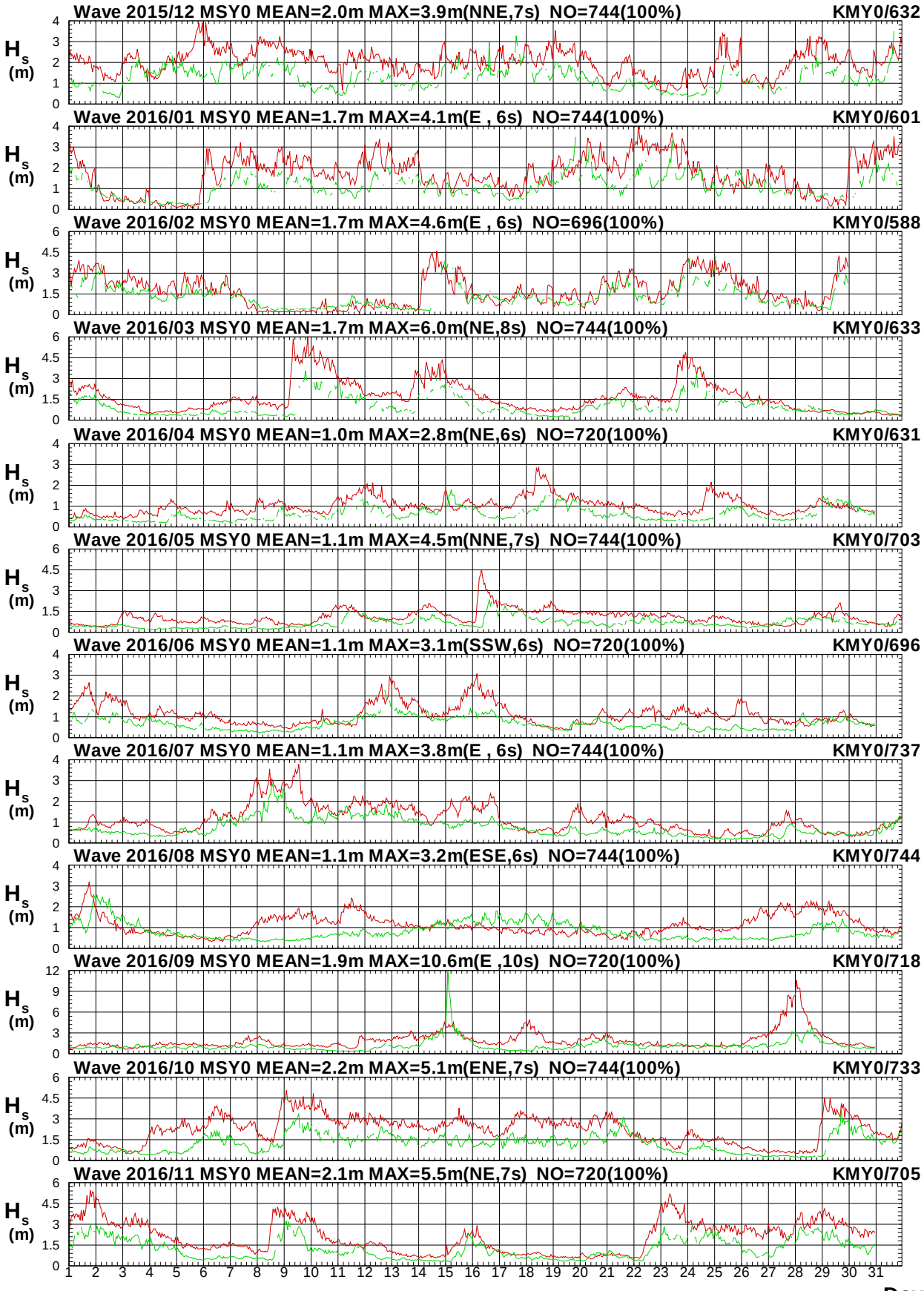

圖12.8a　2016年每月馬祖海域 Y 站與金門海域 Y 站波高圖

V15CMSY0.1HA V15CKMY0.1H0 V161MSY0.1HA V161KMY0.1H0 V162MSY0.1HA V162KMY0.1H0
V163MSY0.1HA V163KMY0.1H0 V164MSY0.1HA V164KMY0.1H0 V165MSY0.1HA V165KMY0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

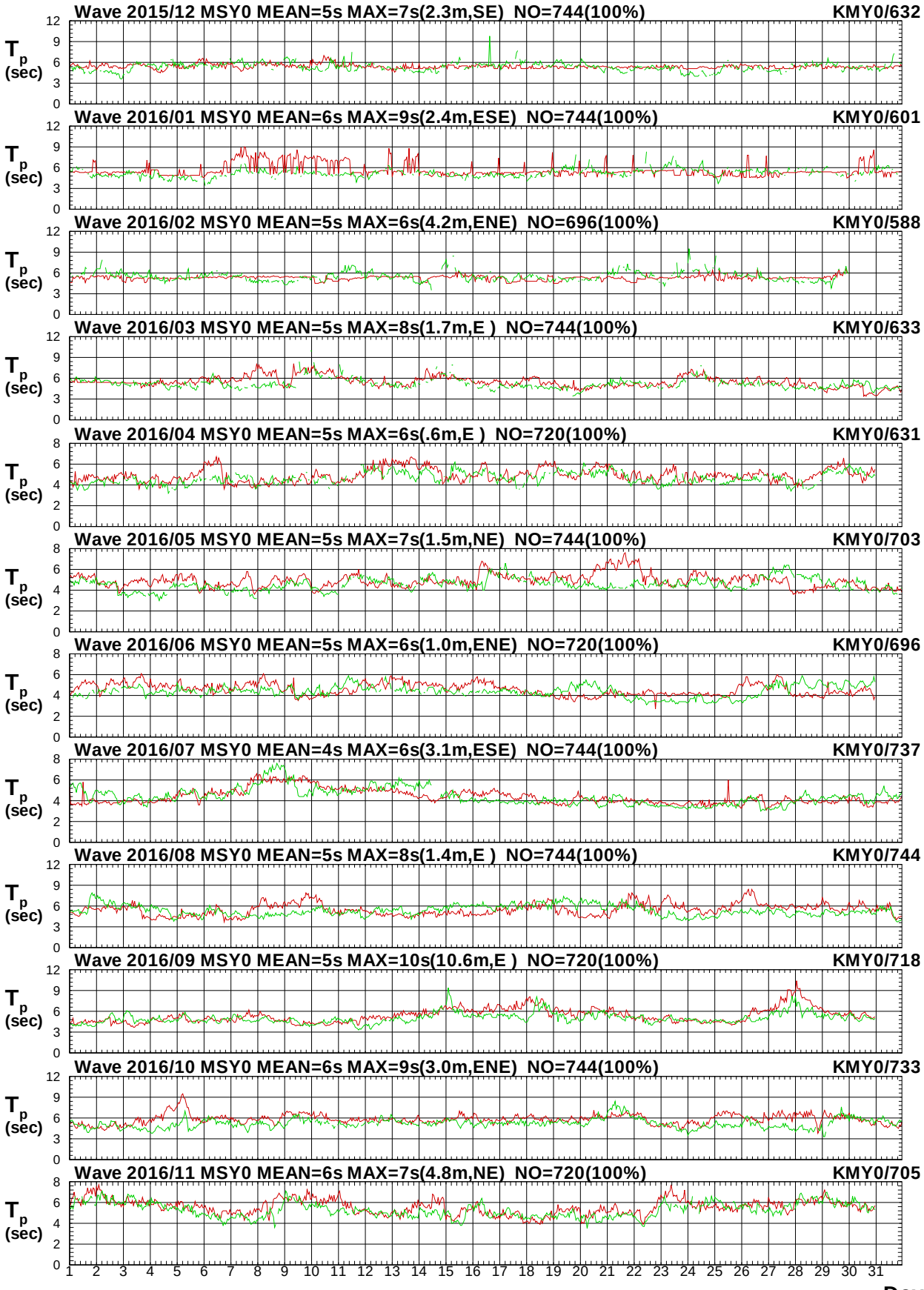

圖 12.8b　2016年每月馬祖海域 Y 站與金門海域 Y 站週期圖

V15CMSY0.1HA V15CKMY0.1H0 V161MSY0.1HA V161KMY0.1H0 V162MSY0.1HA V162KMY0.1H0
V163MSY0.1HA V163KMY0.1H0 V164MSY0.1HA V164KMY0.1H0 V165MSY0.1HA V165KMY0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

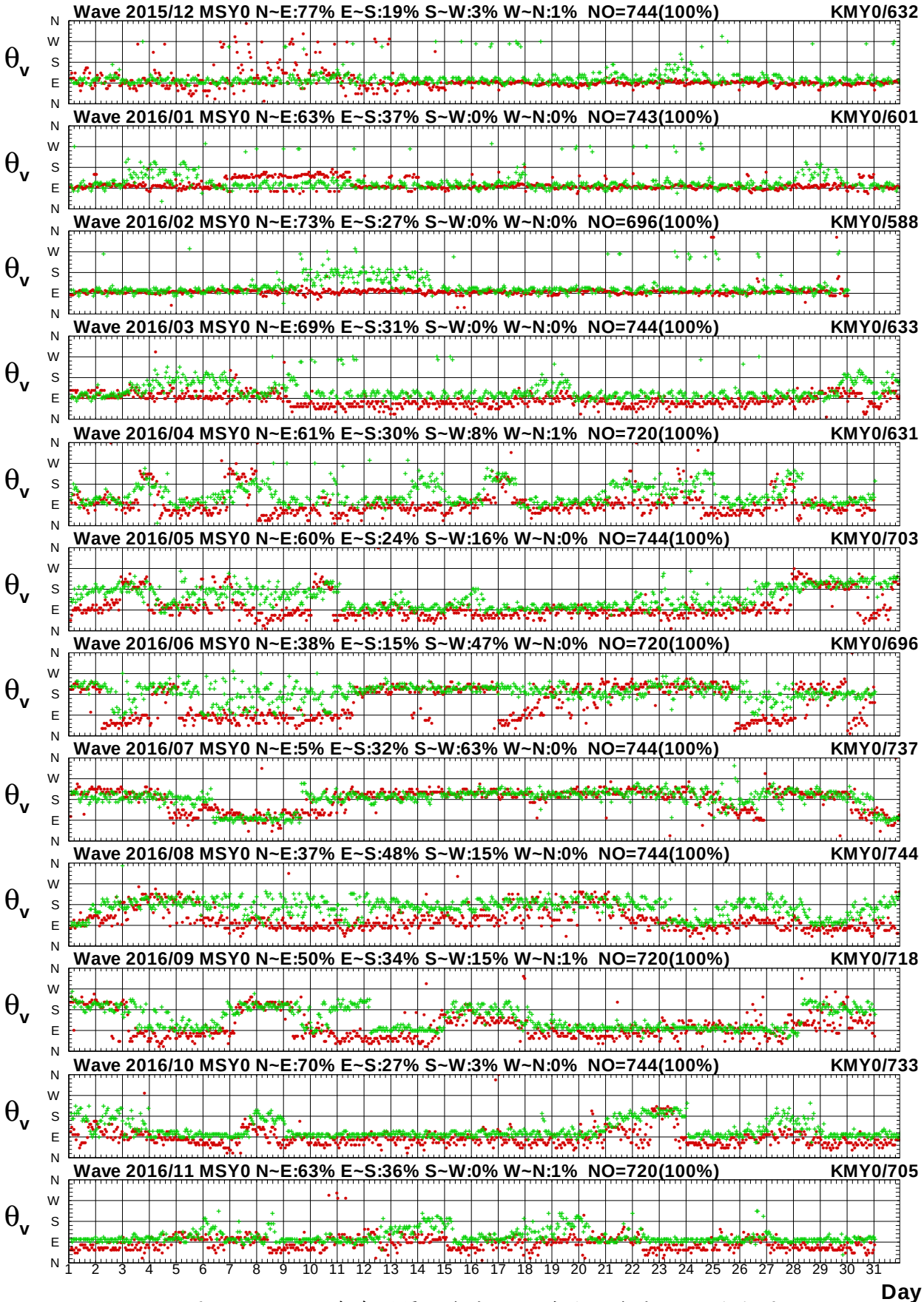

圖 12.8c　2016年每月馬祖海域 Y 站與金門海域 Y 站波向圖

V15CMSY0.1HA V15CKMY0.1H0 V161MSY0.1HA V161KMY0.1H0 V162MSY0.1HA V162KMY0.1H0
V163MSY0.1HA V163KMY0.1H0 V164MSY0.1HA V164KMY0.1H0 V165MSY0.1HA V165KMY0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2016

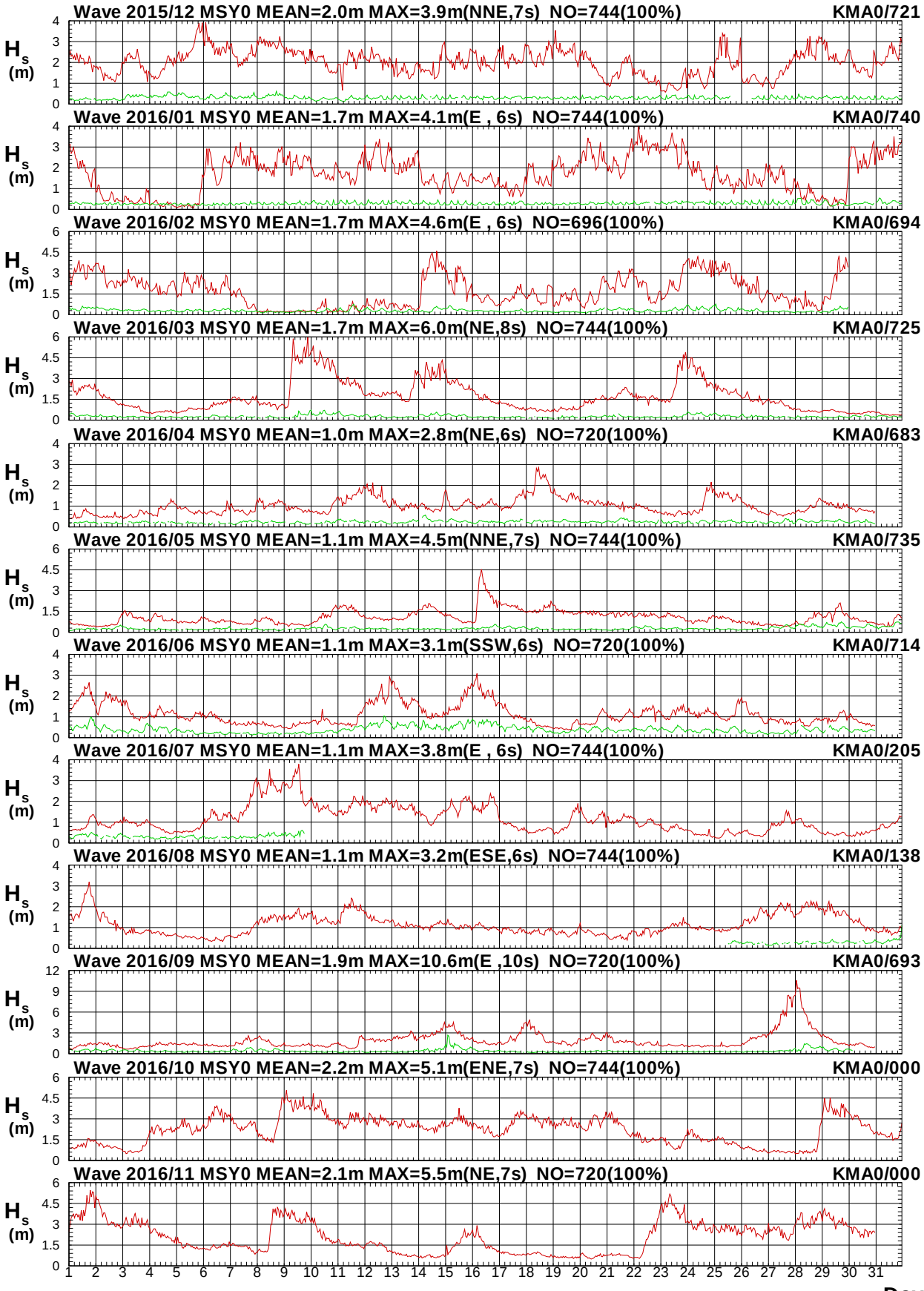

圖 12.9a　2016年每月馬祖海域 Y 站與金門海域 A 站波高圖

V15CMSY0.1HA V15CKMA0.1H0 V161MSY0.1HA V161KMA0.1H0 V162MSY0.1HA V162KMA0.1H0
V163MSY0.1HA V163KMA0.1H0 V164MSY0.1HA V164KMA0.1H0 V165MSY0.1HA V165KMA0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

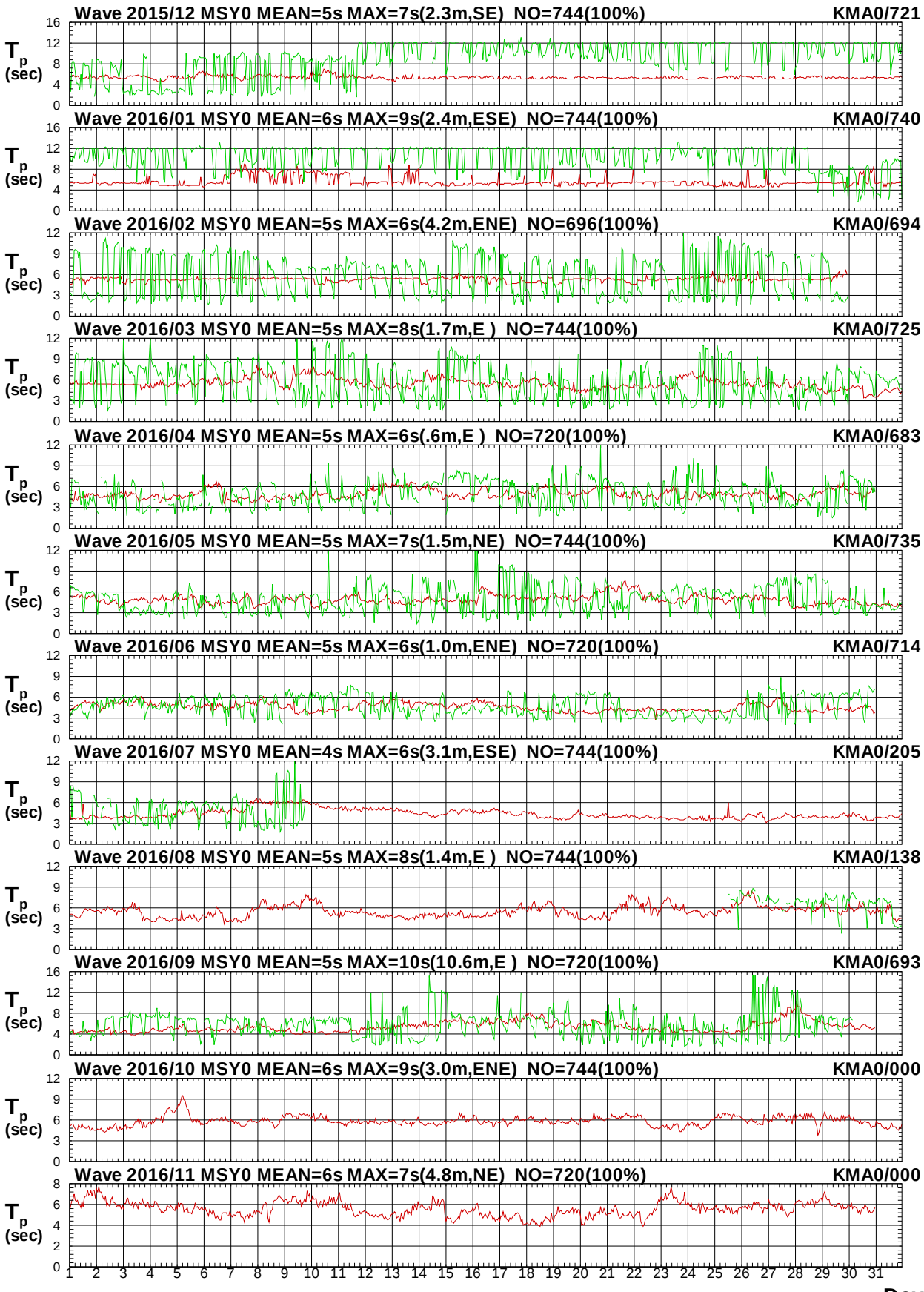

圖 12.9b　2016年每月馬祖海域 Y 站與金門海域 A 站週期圖

V15CMSY0.1HA V15CKMA0.1H0 V161MSY0.1HA V161KMA0.1H0 V162MSY0.1HA V162KMA0.1H0
V163MSY0.1HA V163KMA0.1H0 V164MSY0.1HA V164KMA0.1H0 V165MSY0.1HA V165KMA0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

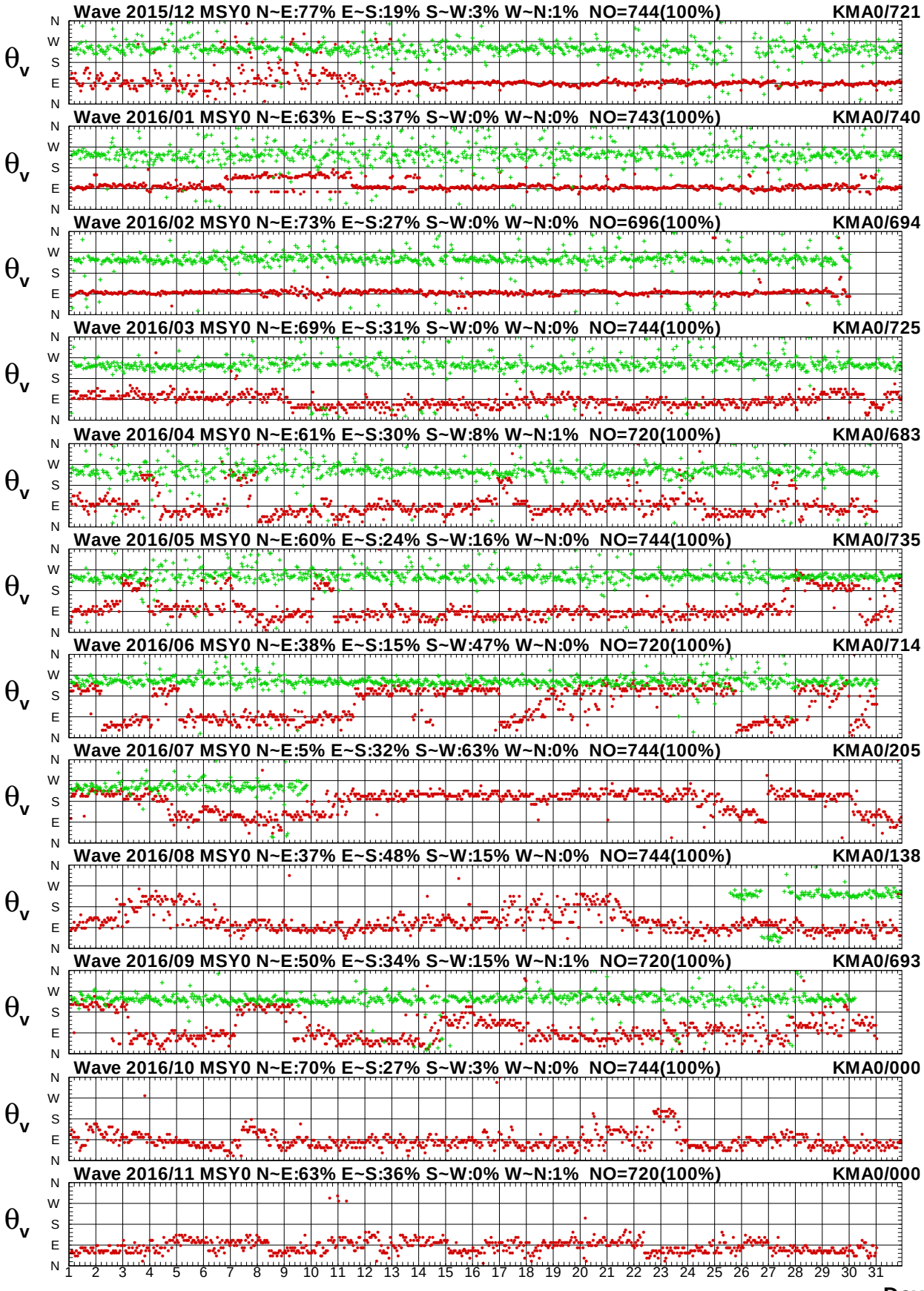

圖 12.9c　2016年每月馬祖海域 Y 站與金門海域 A 站波向圖

V15CMSY0.1HA V15CKMA0.1H0 V161MSY0.1HA V161KMA0.1H0 V162MSY0.1HA V162KMA0.1H0
V163MSY0.1HA V163KMA0.1H0 V164MSY0.1HA V164KMA0.1H0 V165MSY0.1HA V165KMA0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2016

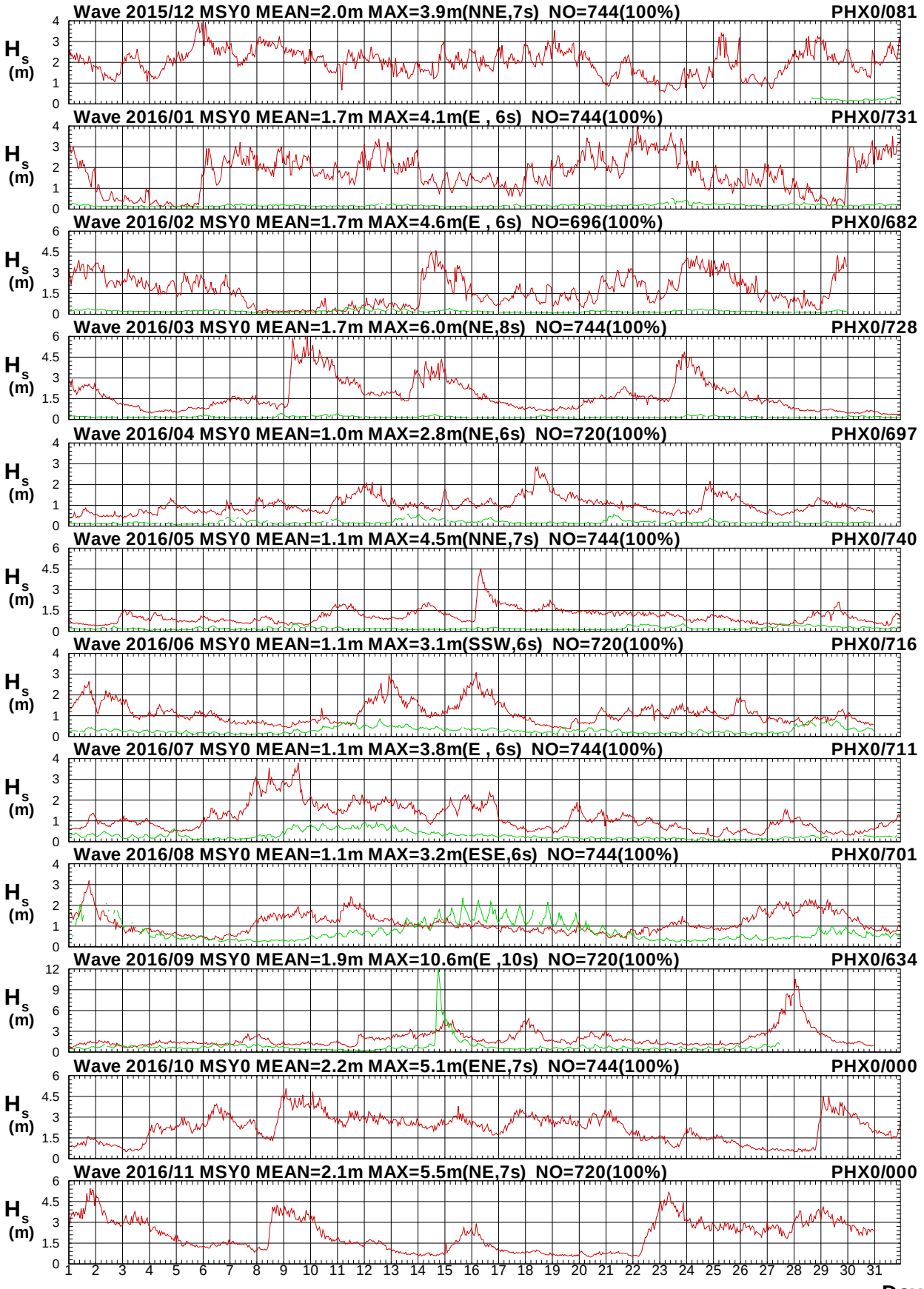

圖 12.10a　2016年每月馬祖海域 Y 站與澎湖海域 X 站波高圖

V15CMSY0.1HA V15CPHX0.1H0 V161MSY0.1HA V161PHX0.1H0 V162MSY0.1HA V162PHX0.1H0
V163MSY0.1HA V163PHX0.1H0 V164MSY0.1HA V164PHX0.1H0 V165MSY0.1HA V165PHX0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

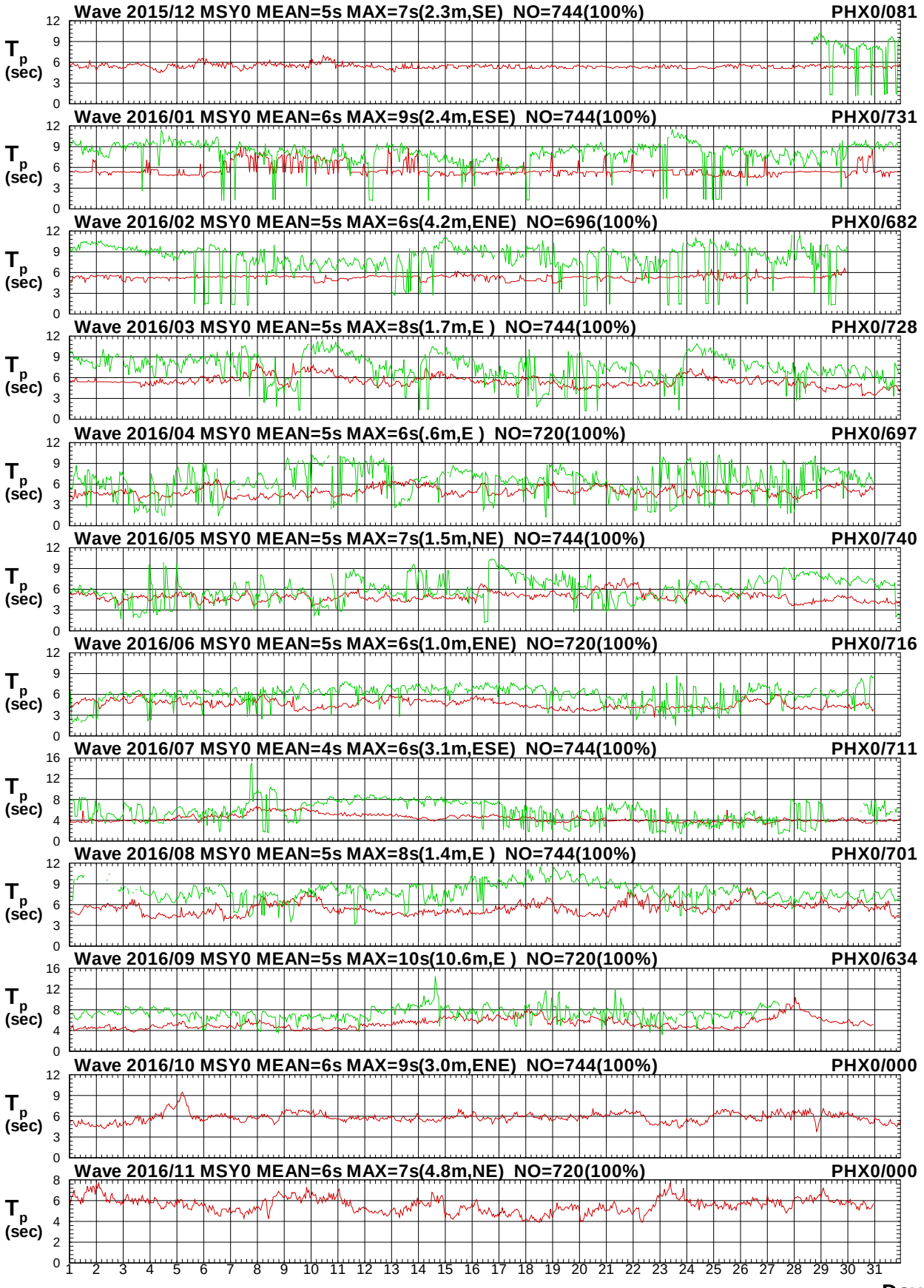

圖 12.10b　2016年每月馬祖海域 Y 站與澎湖海域 X 站週期圖

V15CMSY0.1HA V15CPHX0.1H0 V161MSY0.1HA V161PHX0.1H0 V162MSY0.1HA V162PHX0.1H0
V163MSY0.1HA V163PHX0.1H0 V164MSY0.1HA V164PHX0.1H0 V165MSY0.1HA V165PHX0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

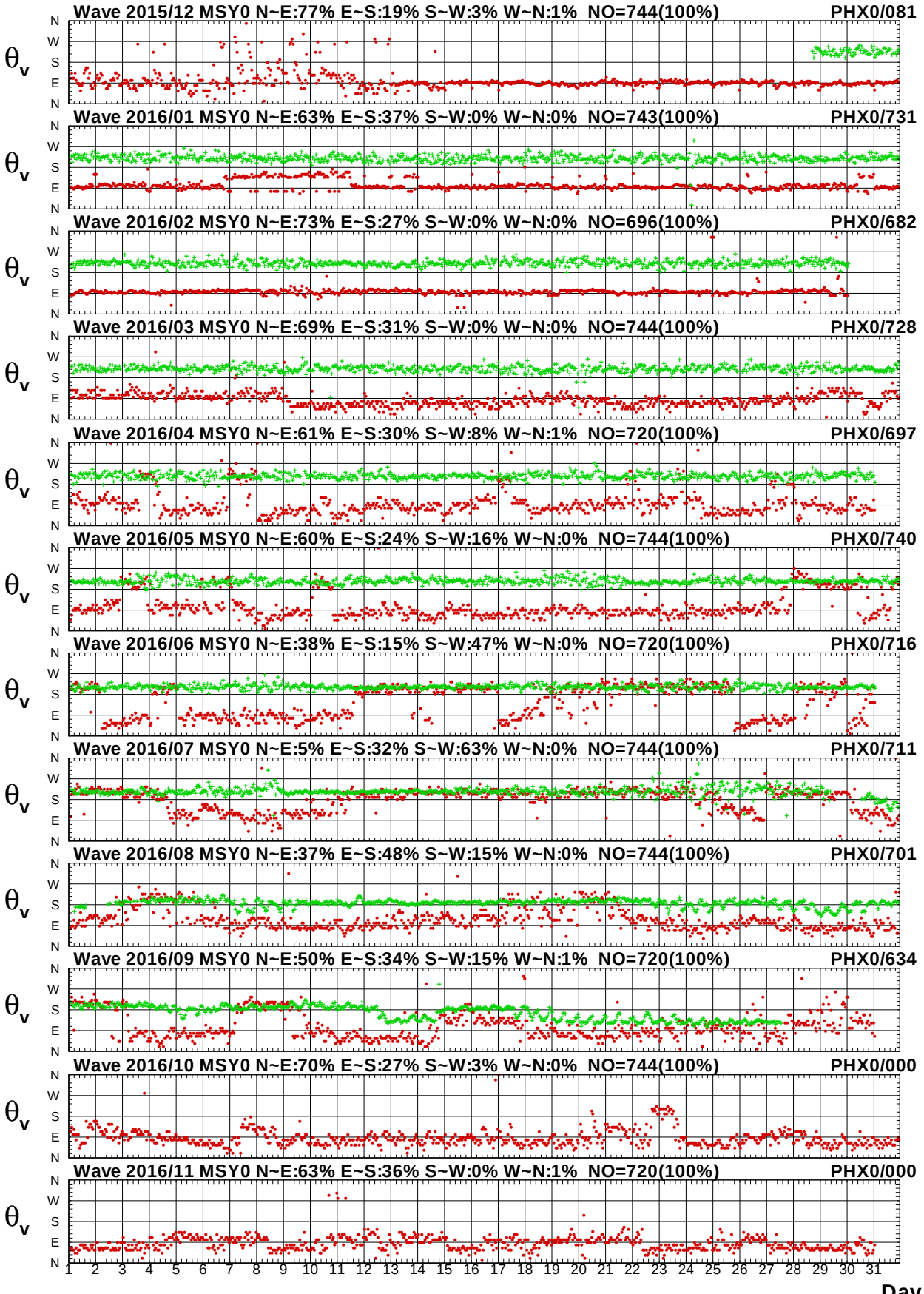

圖 12.10c　2016年每月馬祖海域 Y 站與澎湖海域 X 站波向圖

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

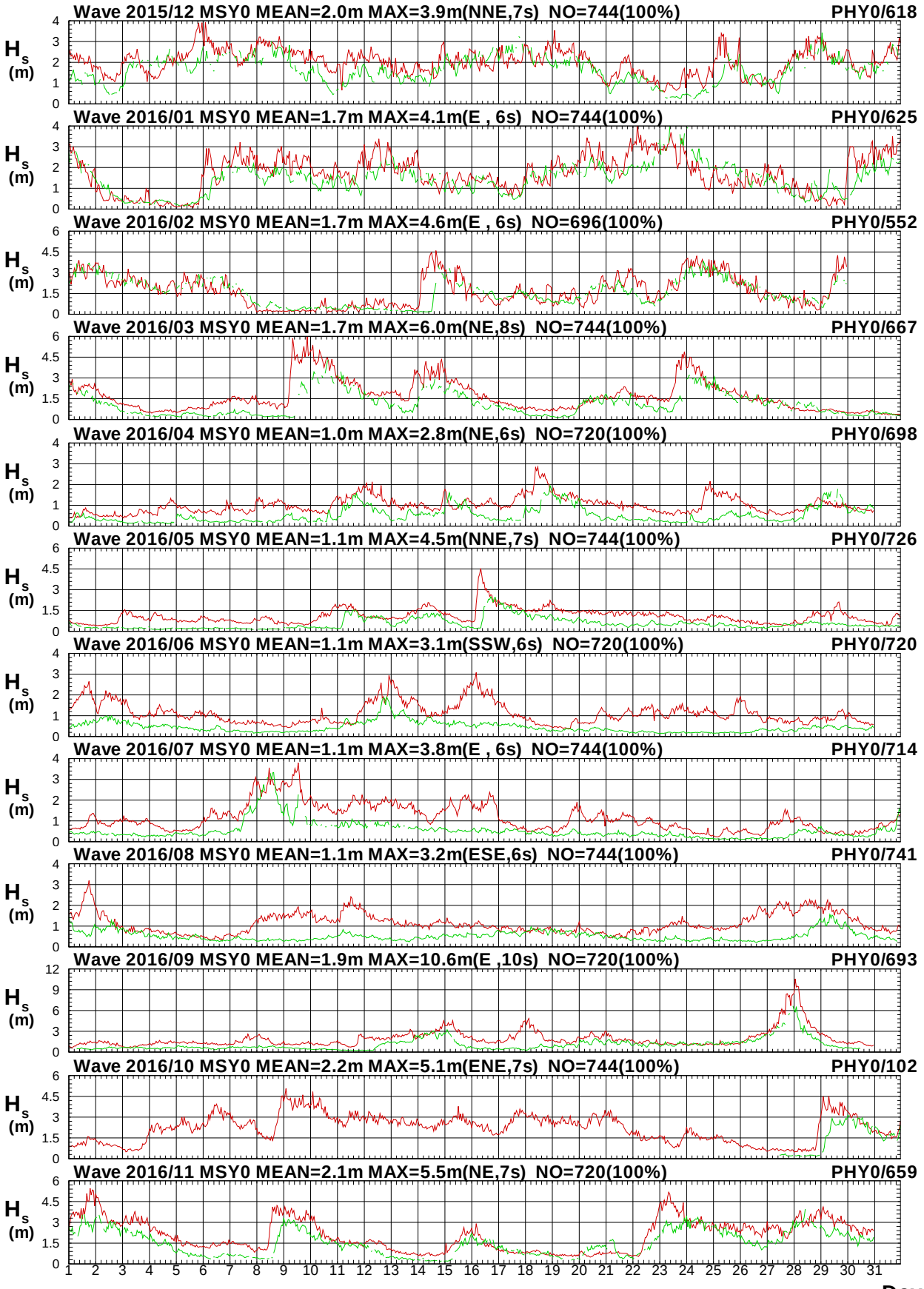

圖 12.11a　2016年每月馬祖海域 Y 站與澎湖海域 Y 站波高圖

V15CMSY0.1HA V15CPHY0.1H0 V161MSY0.1HA V161PHY0.1H0 V162MSY0.1HA V162PHY0.1H0
V163MSY0.1HA V163PHY0.1H0 V164MSY0.1HA V164PHY0.1H0 V165MSY0.1HA V165PHY0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

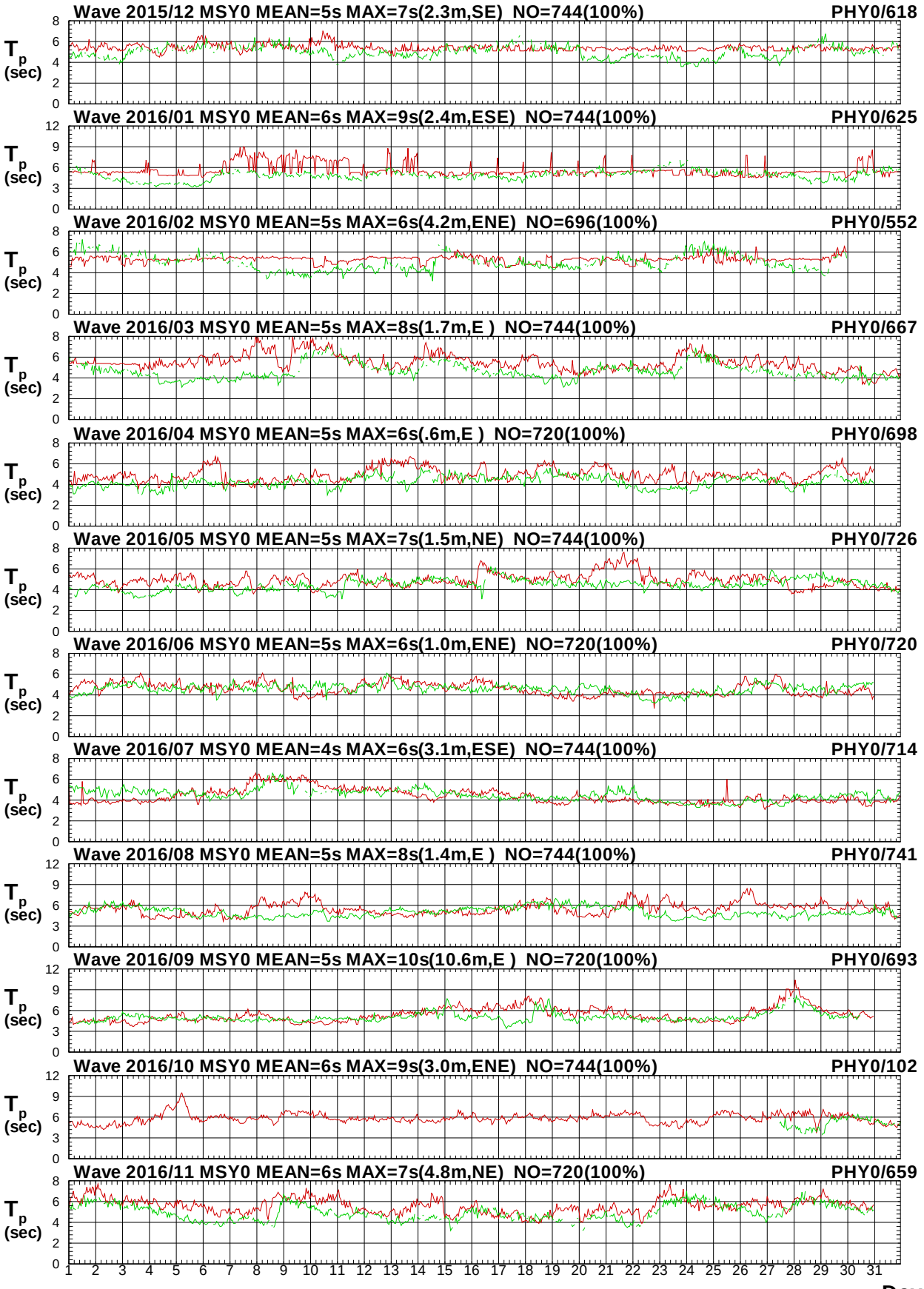

圖 12.11b　2016年每月馬祖海域 Y 站與澎湖海域 Y 站週期圖

Wave Direction in Ma-Tsu Seas of MSY0 at 2016

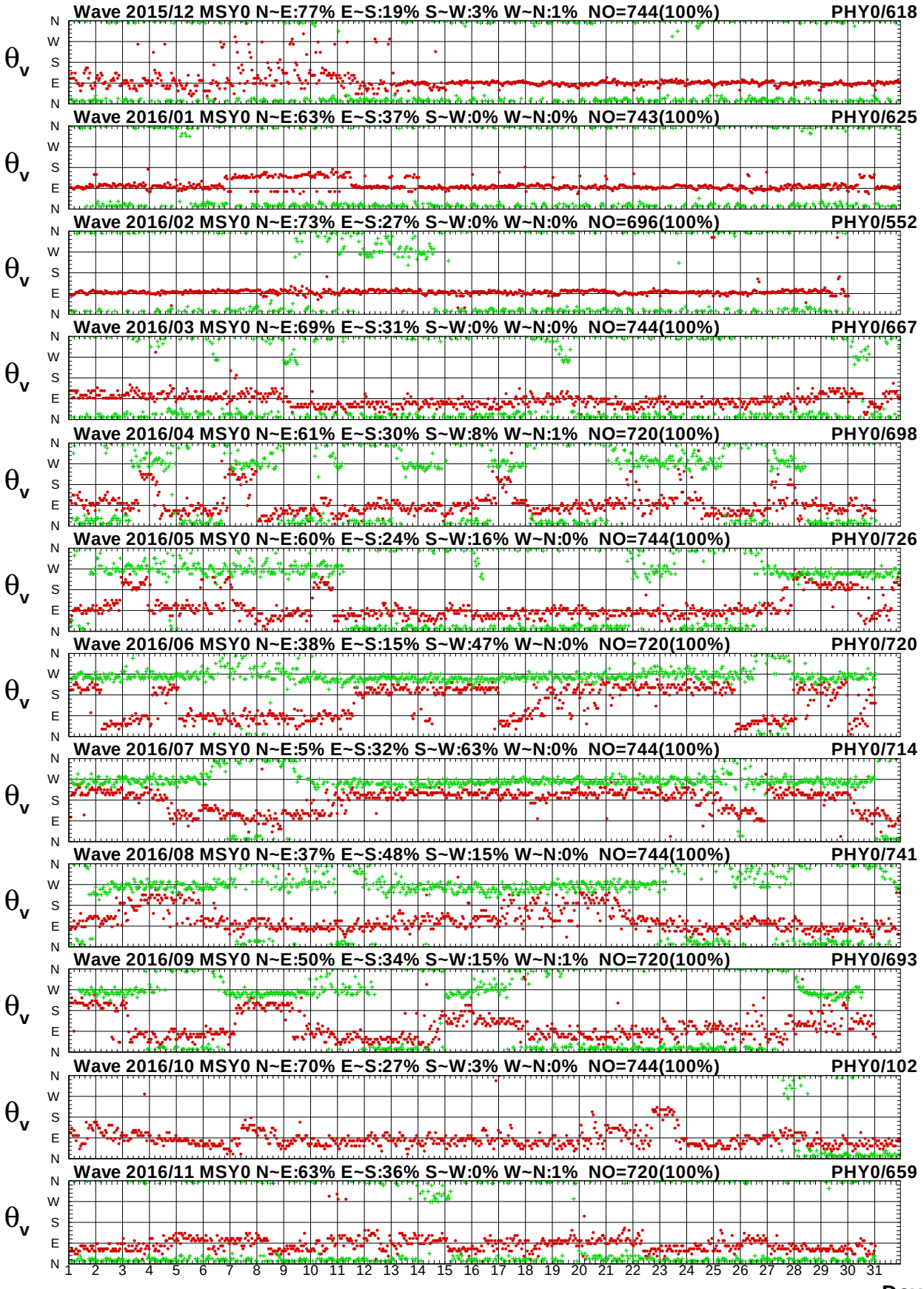

圖 12.11c　2016年每月馬祖海域 Y 站與澎湖海域 Y 站波向圖

Wave H_s in Ma-Tsu Seas of MSY0 at 2016

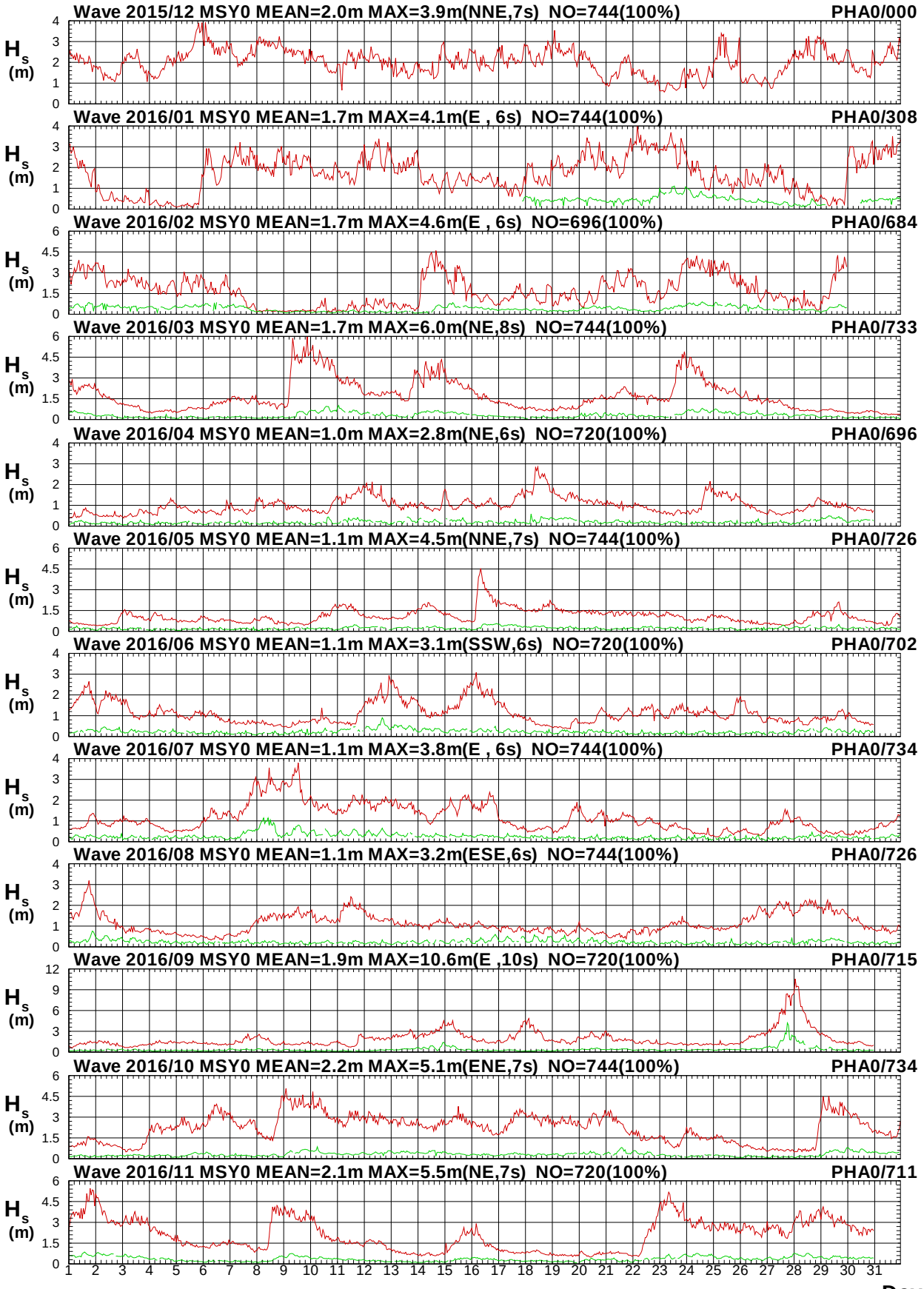

圖 12.12a　2016年每月馬祖海域 Y 站與澎湖海域 A 站波高圖

V15CMSY0.1HA V15CPHA0.1H0 V161MSY0.1HA V161PHA0.1H0 V162MSY0.1HA V162PHA0.1H0
V163MSY0.1HA V163PHA0.1H0 V164MSY0.1HA V164PHA0.1H0 V165MSY0.1HA V165PHA0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

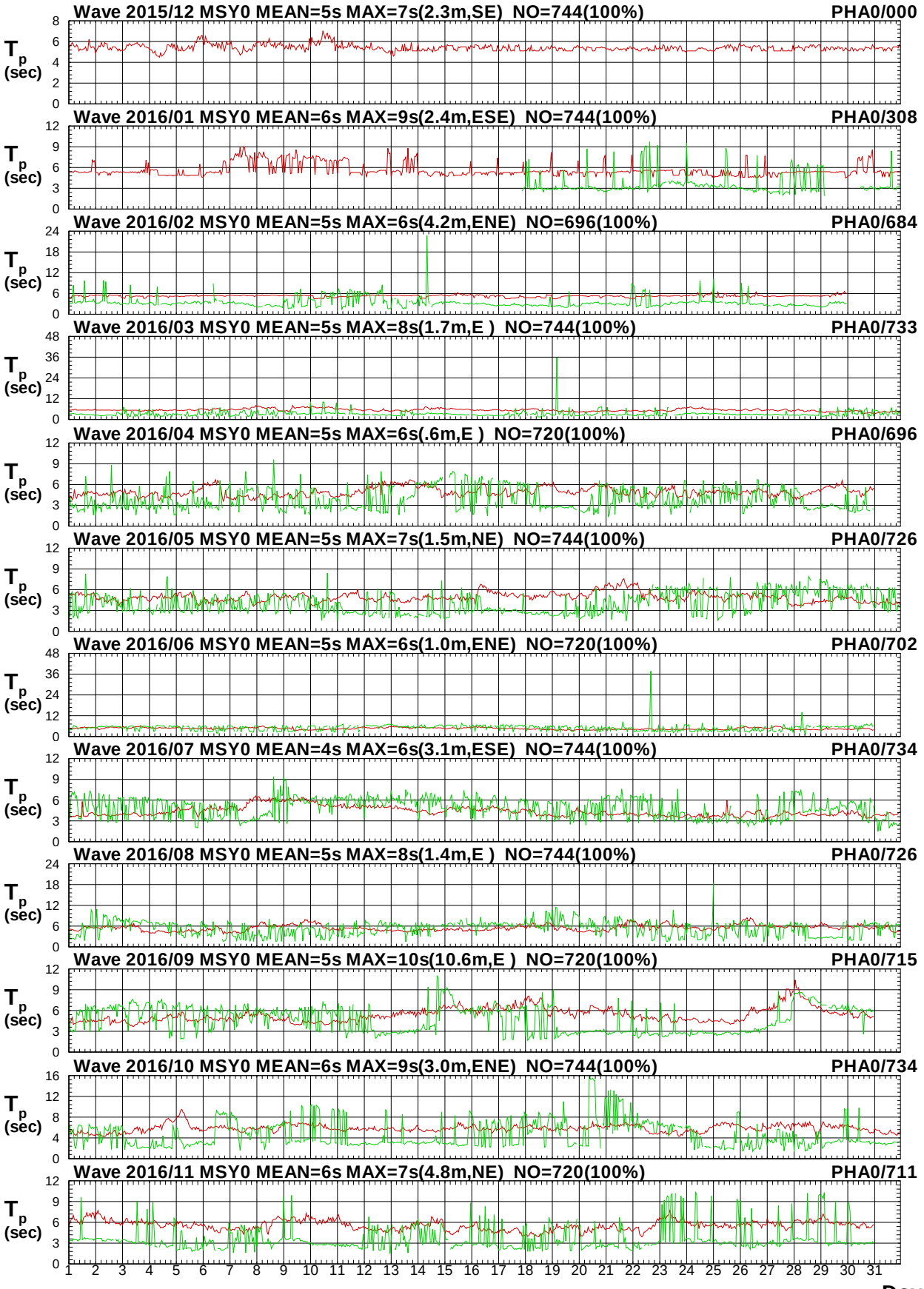

圖 12.12b　2016年每月馬祖海域 Y 站與澎湖海域 A 站週期圖

V15CMSY0.1HA V15CPHA0.1H0 V161MSY0.1HA V161PHA0.1H0 V162MSY0.1HA V162PHA0.1H0
V163MSY0.1HA V163PHA0.1H0 V164MSY0.1HA V164PHA0.1H0 V165MSY0.1HA V165PHA0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

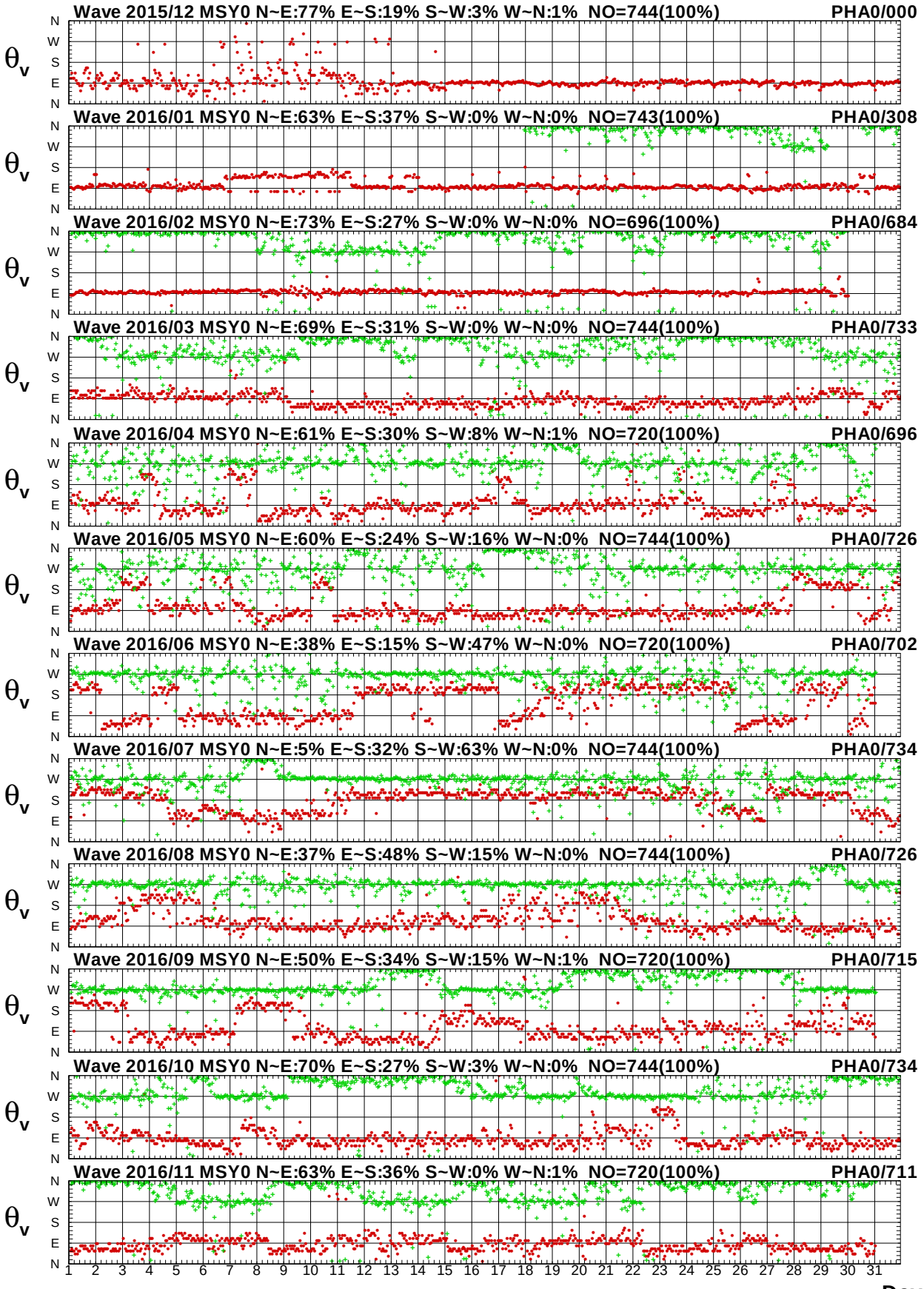

圖 12.12c　2016年每月馬祖海域 Y 站與澎湖海域 A 站波向圖

V15CMSY0.1HA V15CPHA0.1H0 V161MSY0.1HA V161PHA0.1H0 V162MSY0.1HA V162PHA0.1H0
V163MSY0.1HA V163PHA0.1H0 V164MSY0.1HA V164PHA0.1H0 V165MSY0.1HA V165PHA0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2016

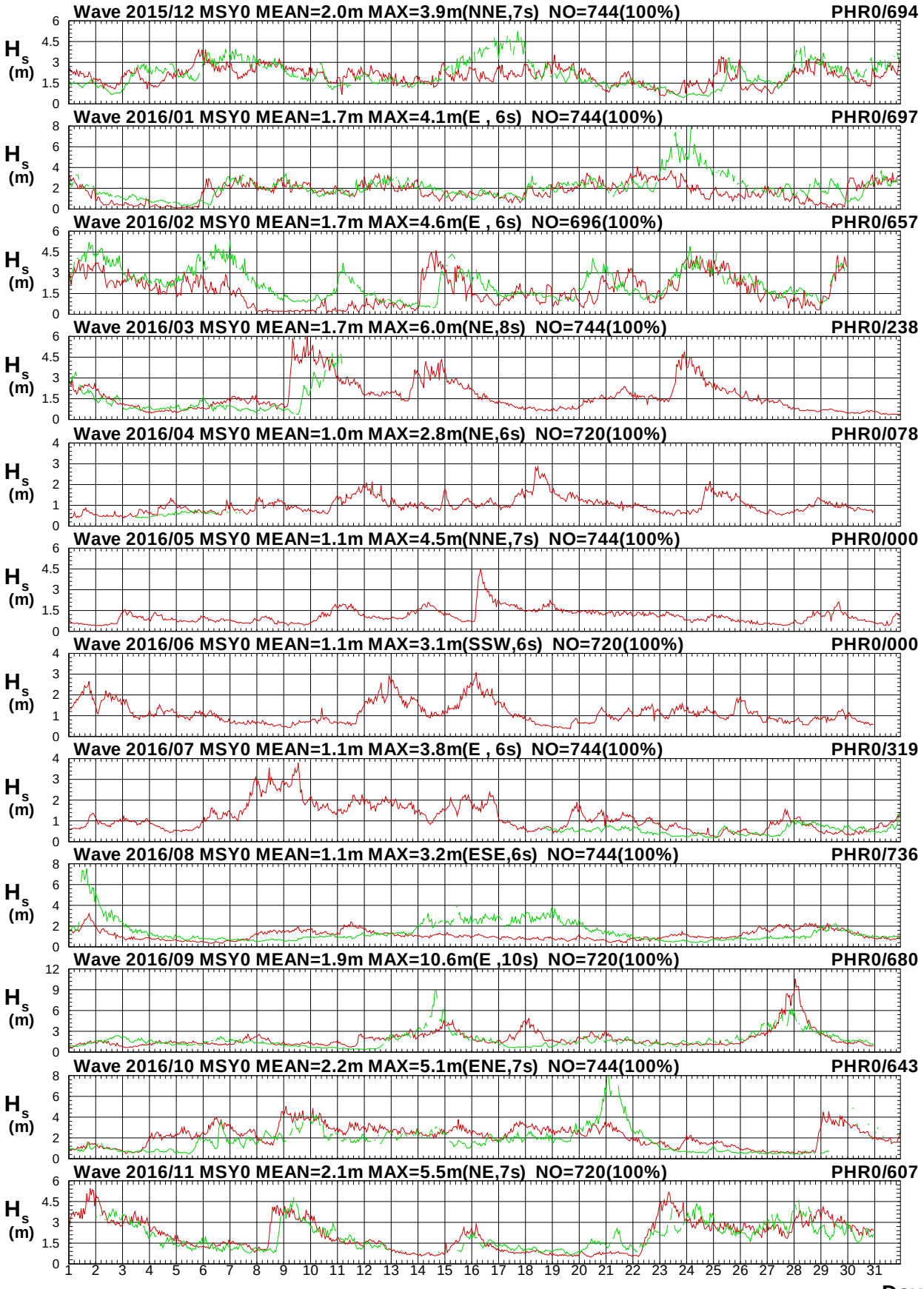

圖 12.13a　2016年每月馬祖海域 Y 站與澎湖海域 R 站波高圖

V15CMSY0.1HA V15CPHR0.1H0 V161MSY0.1HA V161PHR0.1H0 V162MSY0.1HA V162PHR0.1H0
V163MSY0.1HA V163PHR0.1H0 V164MSY0.1HA V164PHR0.1H0 V165MSY0.1HA V165PHR0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2016

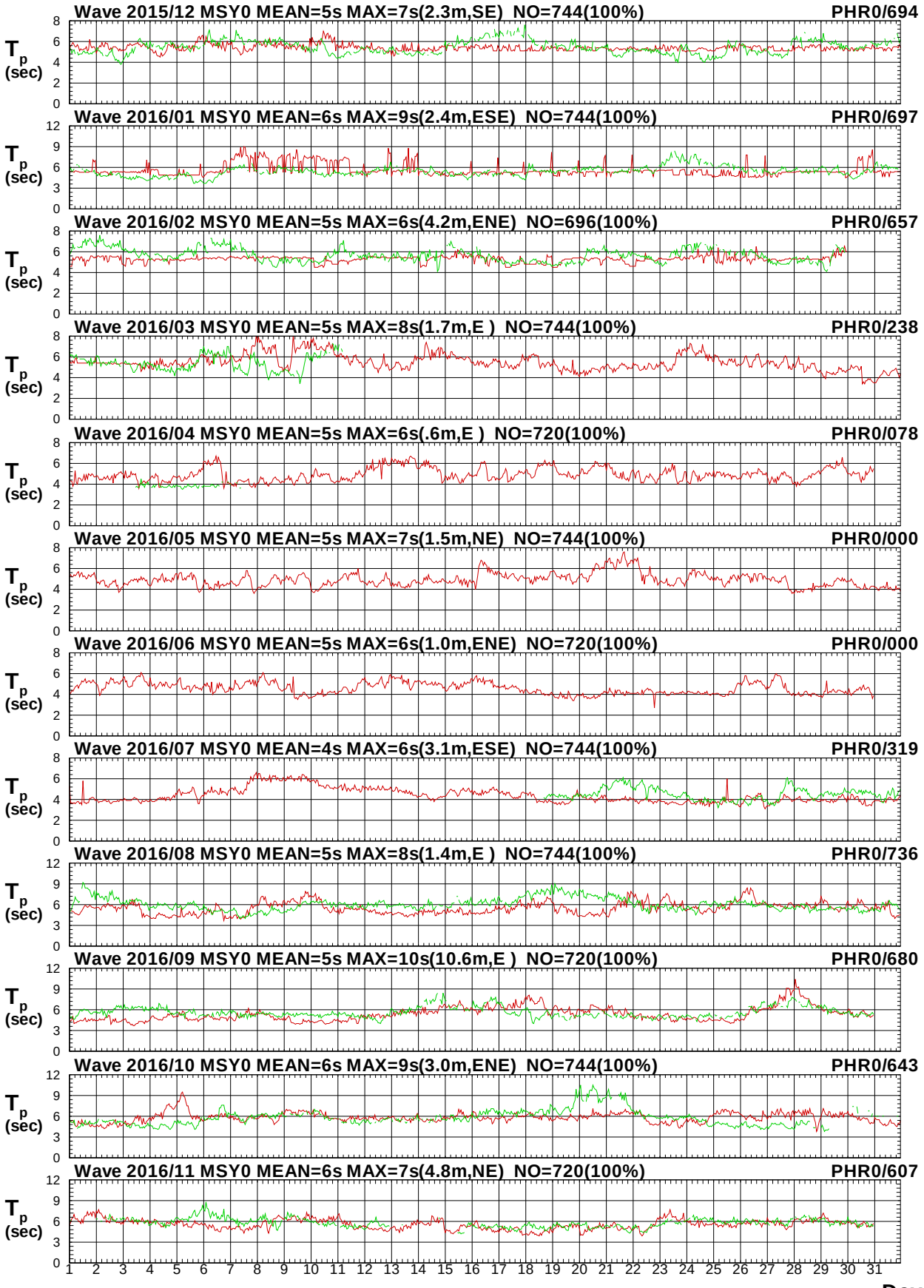

圖 12.13b　2016年每月馬祖海域 Y 站與澎湖海域 R 站週期圖

V15CMSY0.1HA V15CPHR0.1H0 V161MSY0.1HA V161PHR0.1H0 V162MSY0.1HA V162PHR0.1H0
V163MSY0.1HA V163PHR0.1H0 V164MSY0.1HA V164PHR0.1H0 V165MSY0.1HA V165PHR0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2016

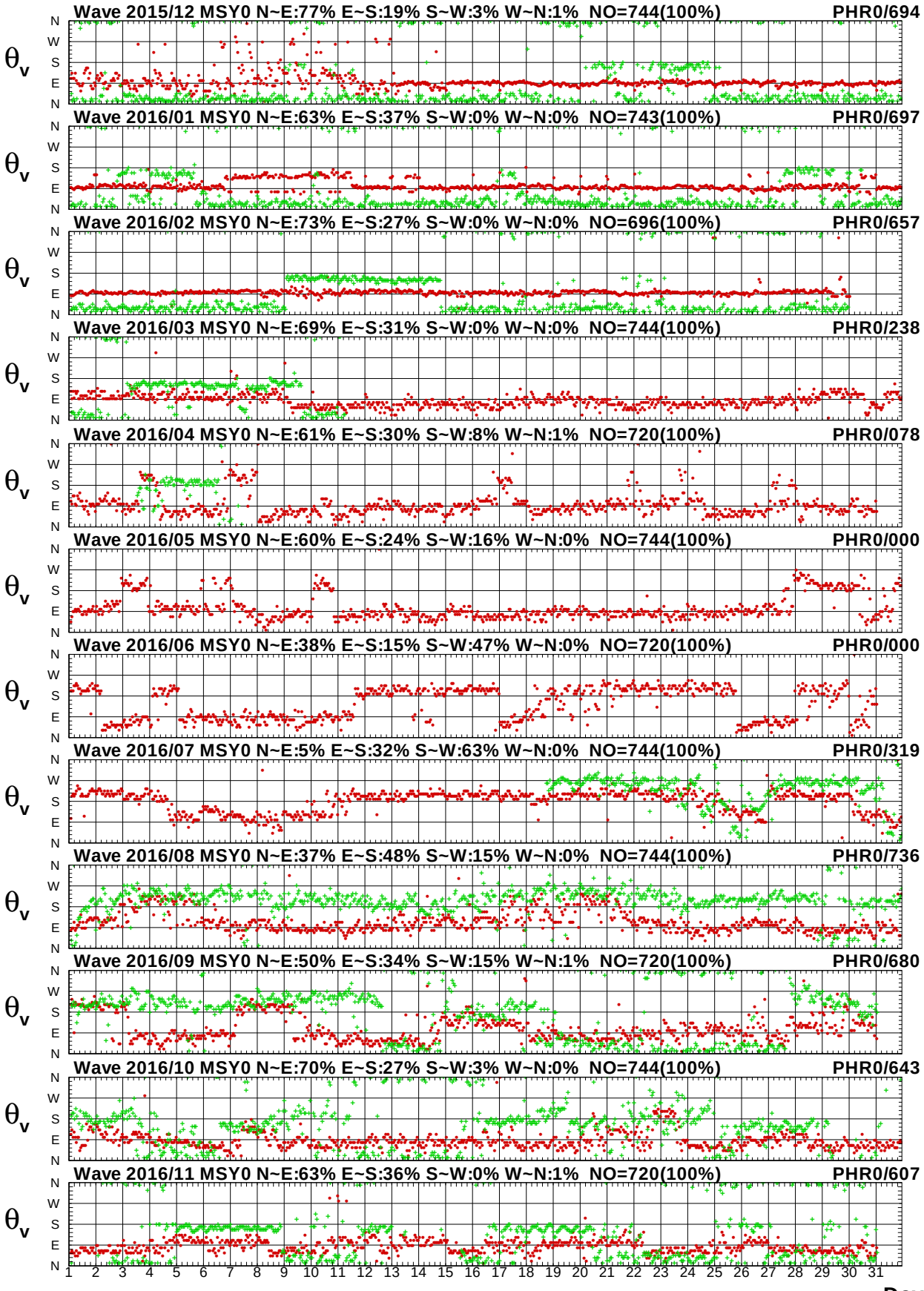

圖 12.13c　2016年每月馬祖海域 Y 站與澎湖海域 R 站波向圖

V15CMSY0.1HA V15CPHR0.1H0 V161MSY0.1HA V161PHR0.1H0 V162MSY0.1HA V162PHR0.1H0
V163MSY0.1HA V163PHR0.1H0 V164MSY0.1HA V164PHR0.1H0 V165MSY0.1HA V165PHR0.1H0

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第十三章 2016 年 12 海域波浪主要觀測站資料比較

(北苗海域)

(北端海域)

(宜蘭海域)

(花蓮海域)

(臺東海域)

(屏東海域)

(高雄海域)

(嘉南海域)

(中雲海域)

(澎湖海域)

(金門海域)

(馬祖海域)

Twelve Harbors Wave H_s at 2015/12

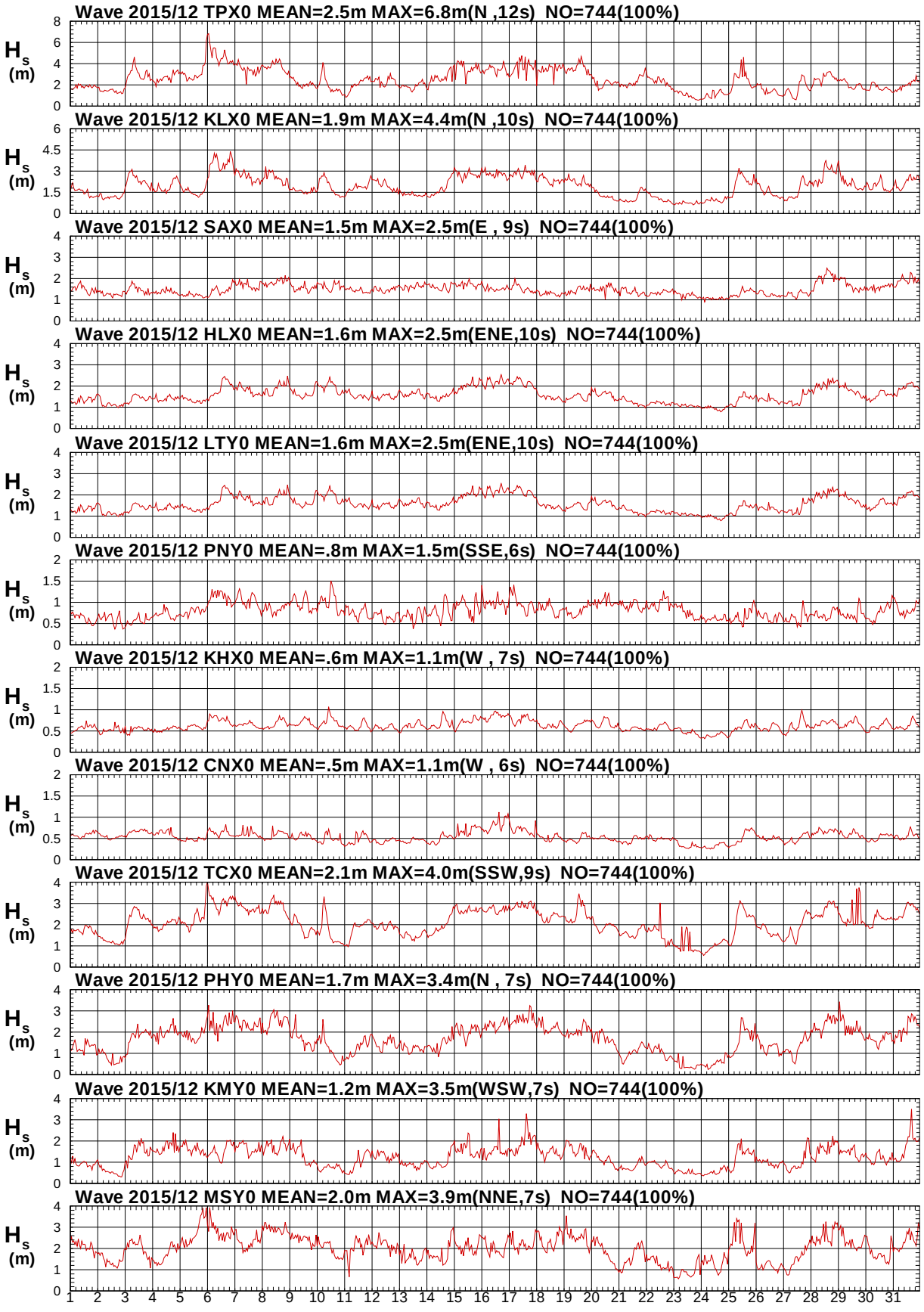

圖 13.1　2015年12月12海域觀測波高歷線圖

V15CTPX0.1HA V15CKLX0.1HA V15CSAX0.1HA V15CHLX0.1HA V15CLTY0.1HA V15CPNY0.1HA
V15CKHX0.1HA V15CCNX0.1HA V15CTCX0.1HA V15CPHY0.1HA V15CKMY0.1HA V15CMSY0.1HA

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Twelve Harbors Wave T_p at 2015/12

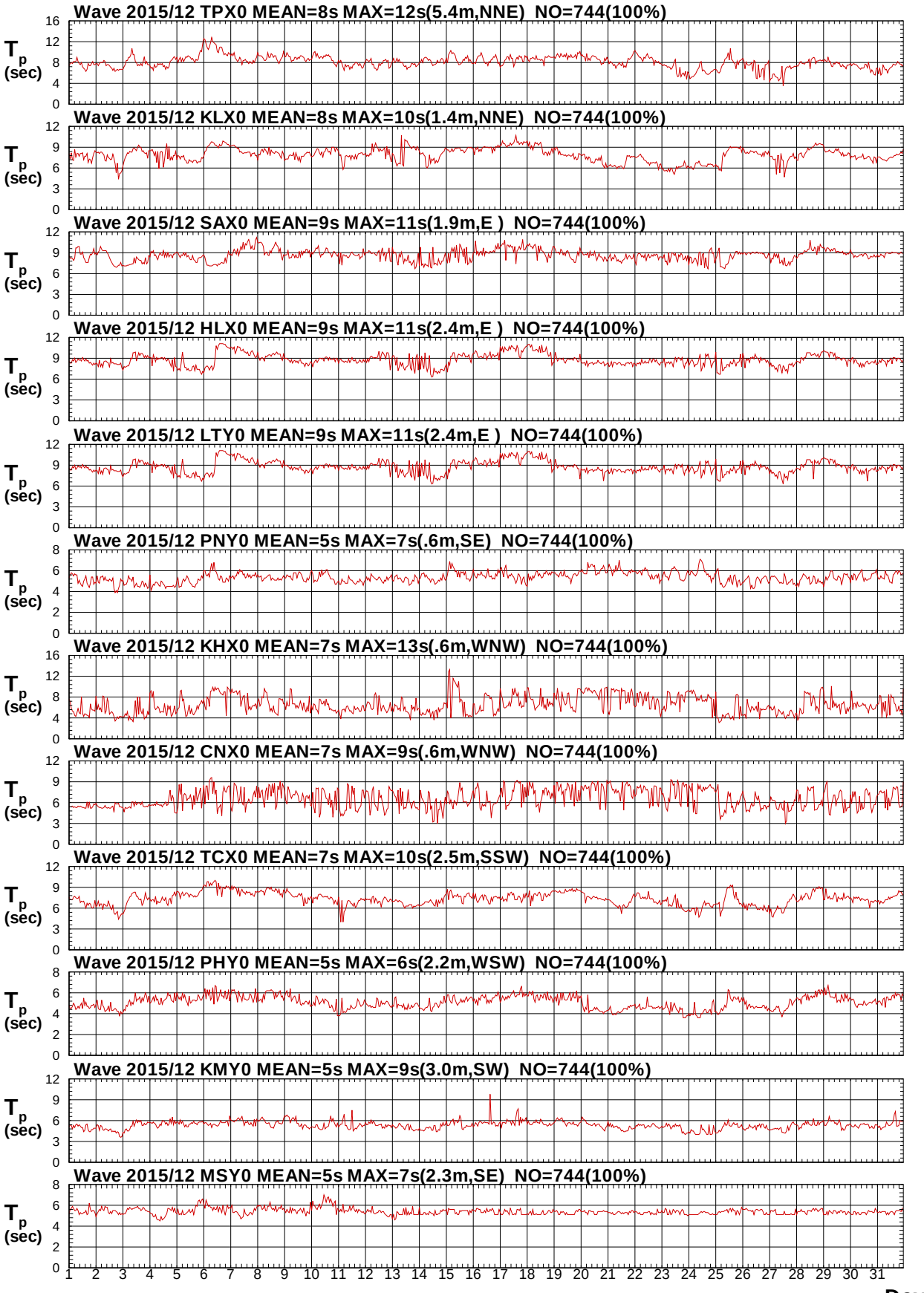

圖 13.2　2015年12月12海域觀測週期歷線圖

V15CTPX0.1HA V15CKLX0.1HA V15CSAX0.1HA V15CHLX0.1HA V15CLTY0.1HA V15CPNY0.1HA
V15CKHX0.1HA V15CCNX0.1HA V15CTCX0.1HA V15CPHY0.1HA V15CKMY0.1HA V15CMSY0.1HA

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Twelve Harbors Wave Direction at 2015/12

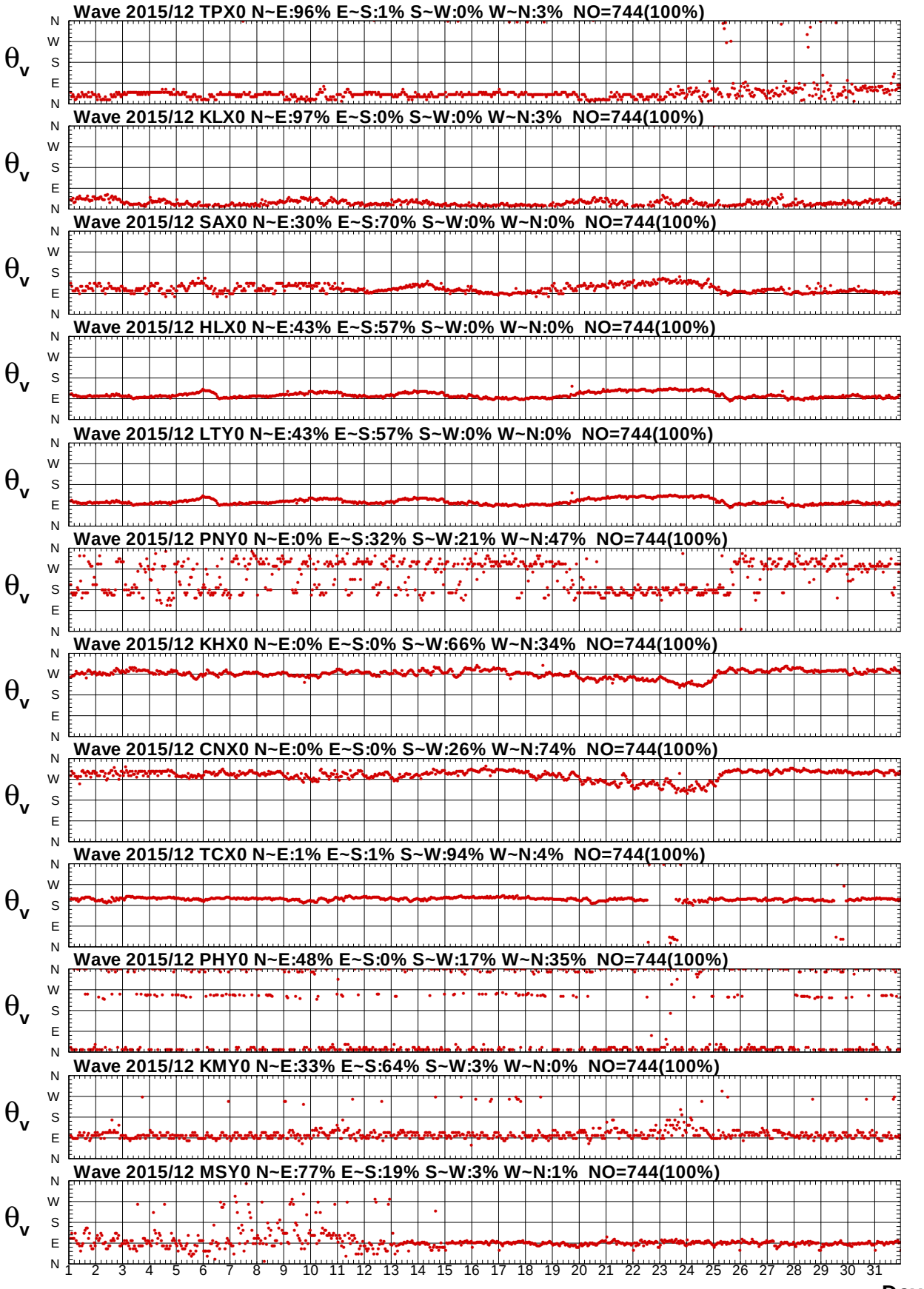

圖 13.3　2015年12月12海域觀測波向歷線圖

V15CTPX0.1HA V15CKLX0.1HA V15CSAX0.1HA V15CHLX0.1HA V15CLTY0.1HA V15CPNY0.1HA
V15CKHX0.1HA V15CCNX0.1HA V15CTCX0.1HA V15CPHY0.1HA V15CKMY0.1HA V15CMSY0.1HA

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Twelve Harbors Wave H_s at 2016/01

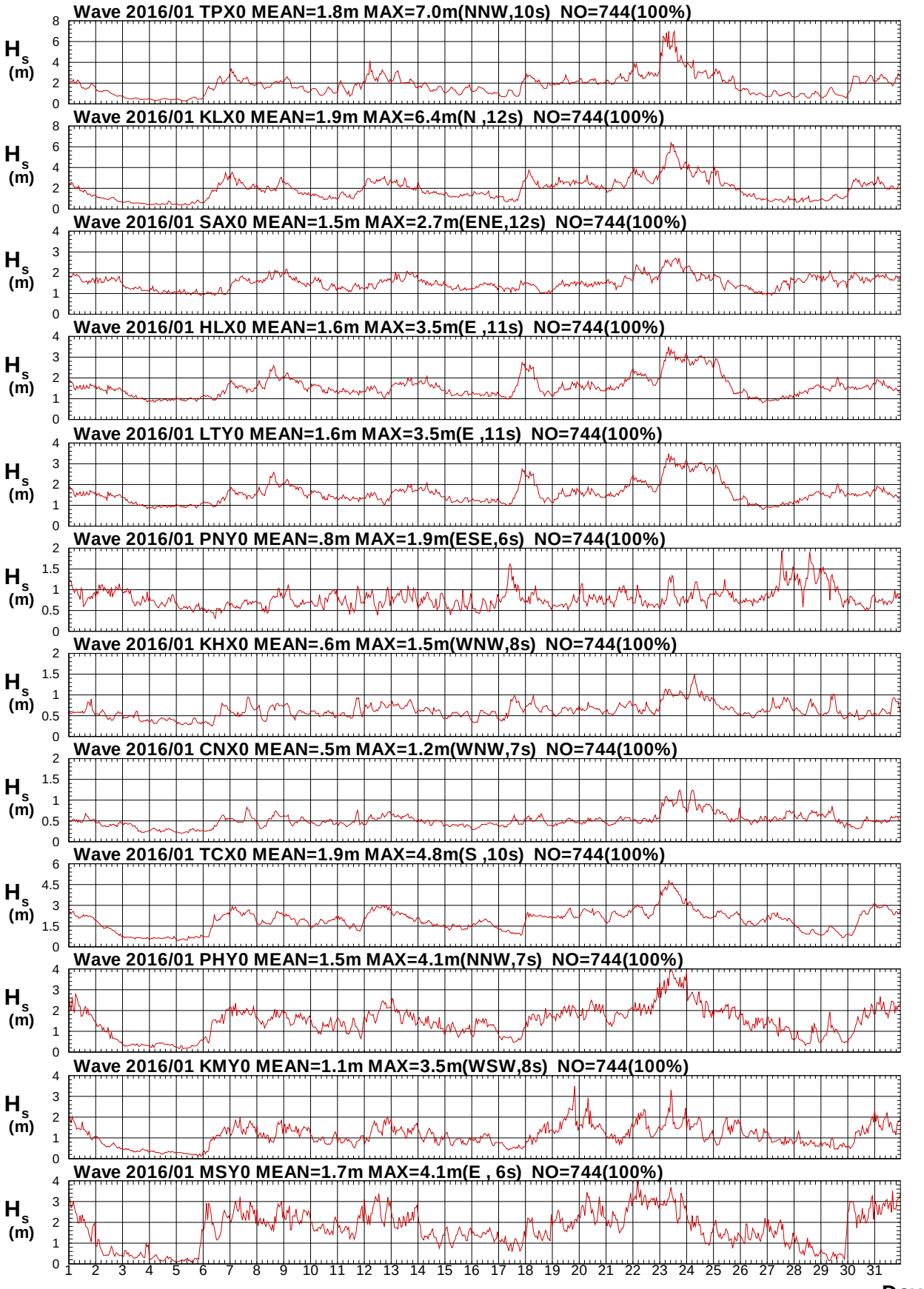

圖13.4　2016年 1月12海域觀測波高歷線圖

V161TPX0.1HA V161KLX0.1HA V161SAX0.1HA V161HLX0.1HA V161LTY0.1HA V161PNY0.1HA
V161KHX0.1HA V161CNX0.1HA V161TCX0.1HA V161PHY0.1HA V161KMY0.1HA V161MSY0.1HA

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Twelve Harbors Wave T_p at 2016/01

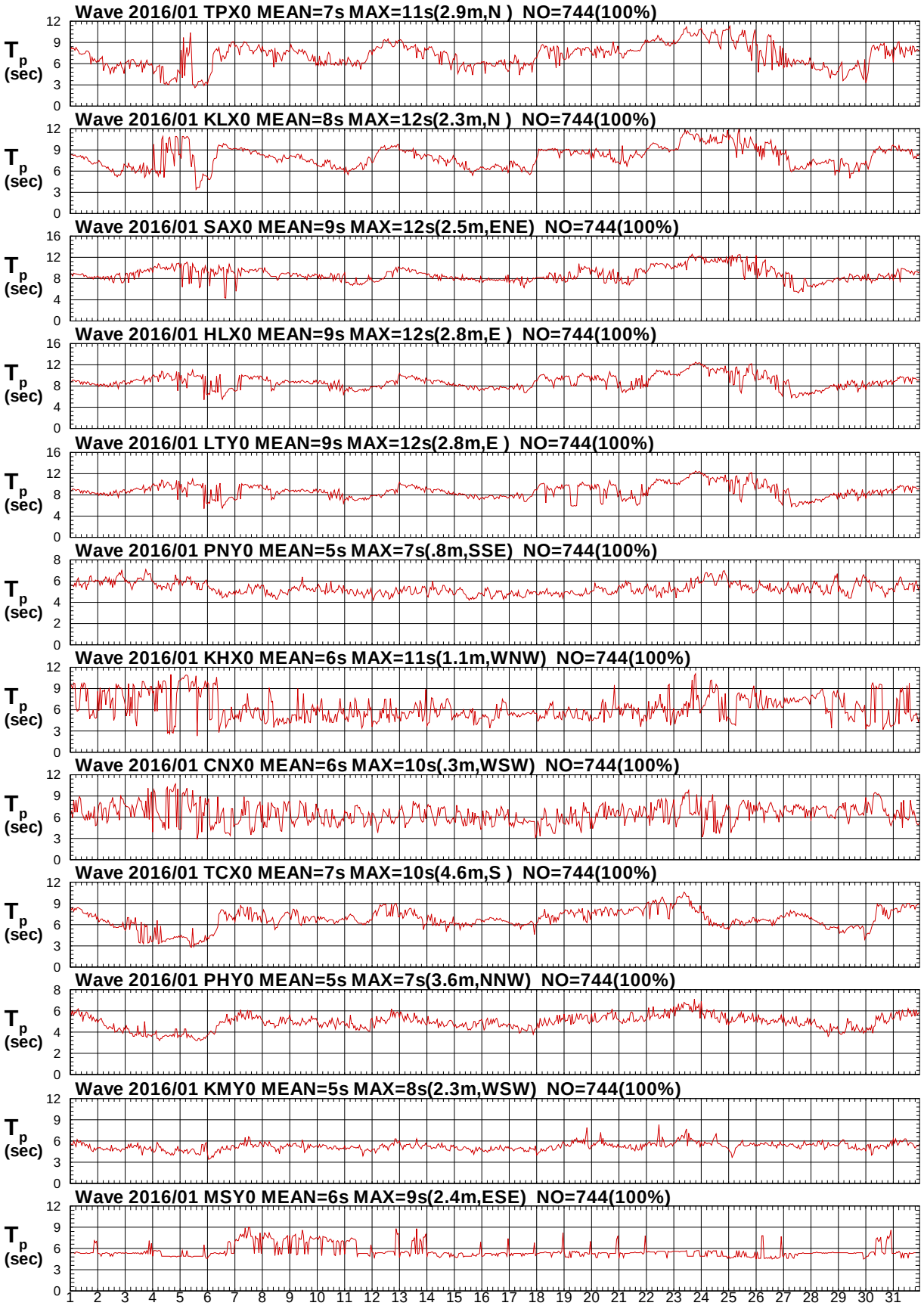

圖 13.5　2016年 1 月12海域觀測週期歷線圖

V161TPX0.1HA V161KLX0.1HA V161SAX0.1HA V161HLX0.1HA V161LTY0.1HA V161PNY0.1HA
V161KHX0.1HA V161CNX0.1HA V161TCX0.1HA V161PHY0.1HA V161KMY0.1HA V161MSY0.1HA

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Twelve Harbors Wave Direction at 2016/01

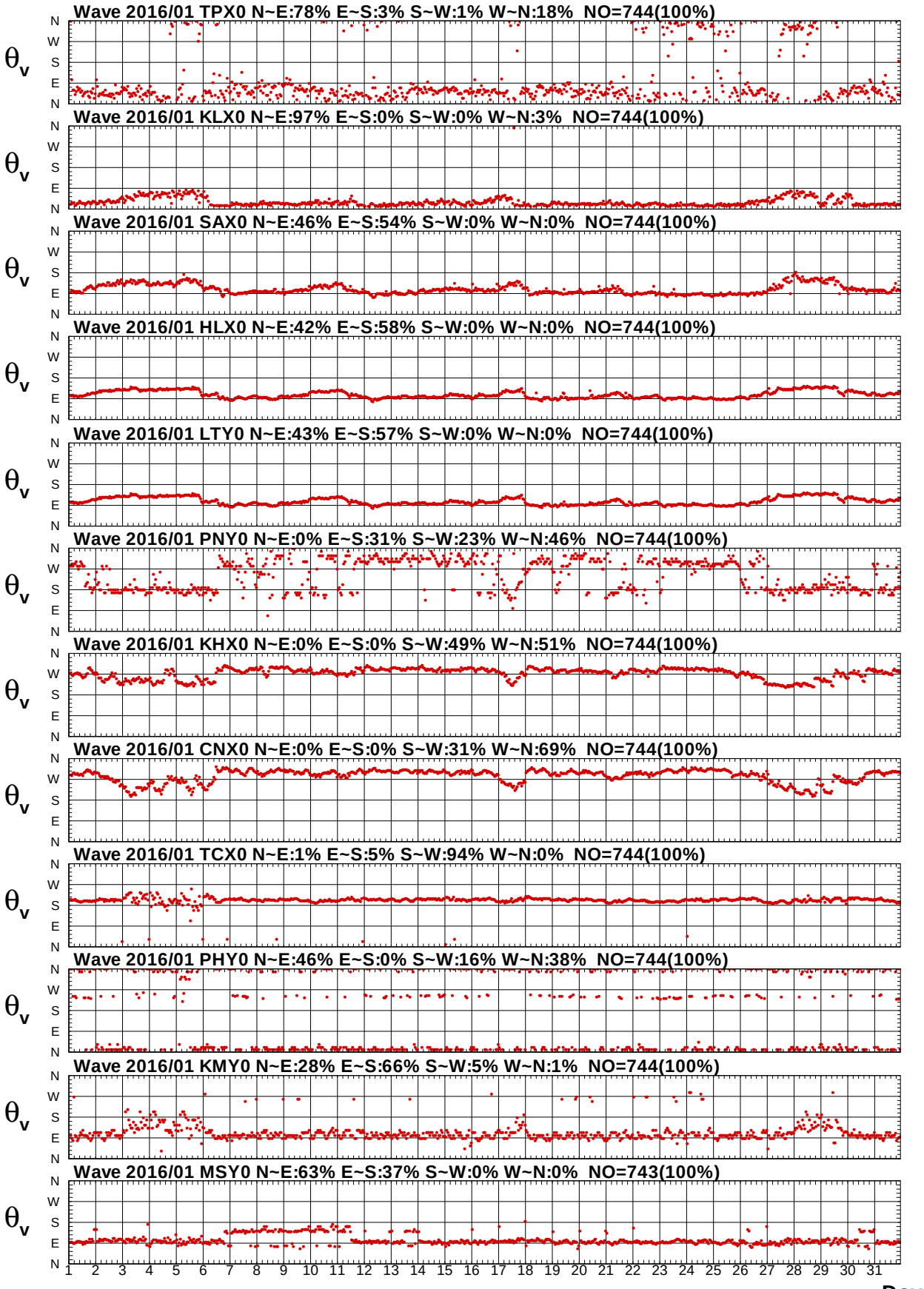

圖13.6　2016年 1月12海域觀測波向歷線圖

V161TPX0.1HA V161KLX0.1HA V161SAX0.1HA V161HLX0.1HA V161LTY0.1HA V161PNY0.1HA
V161KHX0.1HA V161CNX0.1HA V161TCX0.1HA V161PHY0.1HA V161KMY0.1HA V161MSY0.1HA

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Twelve Harbors Wave H_s at 2016/02

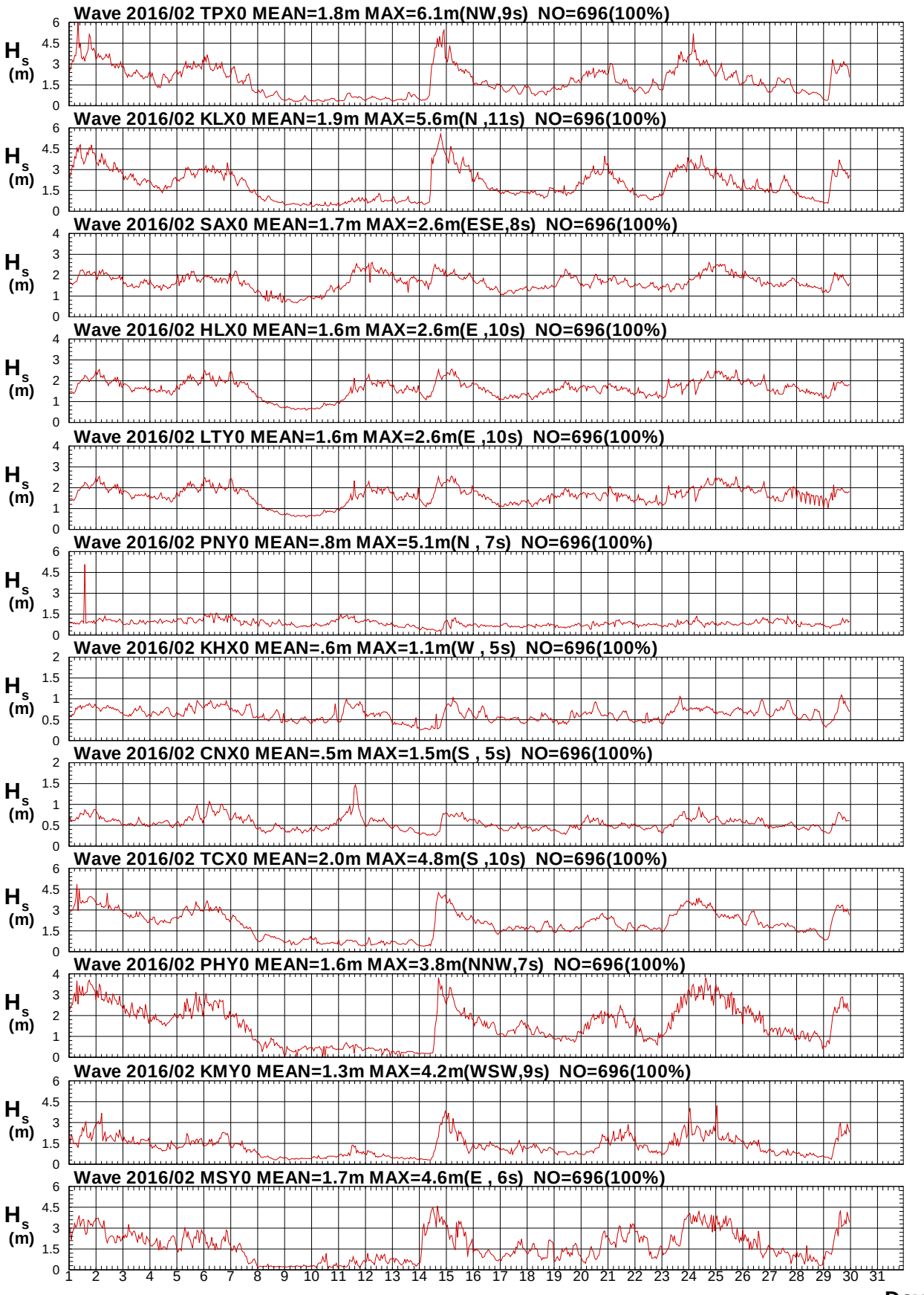

圖 13.7　2016年 2 月 12 海域觀測波高歷線圖

V162TPX0.1HA V162KLX0.1HA V162SAX0.1HA V162HLX0.1HA V162LTY0.1HA V162PNY0.1HA
V162KHX0.1HA V162CNX0.1HA V162TCX0.1HA V162PHY0.1HA V162KMY0.1HA V162MSY0.1HA

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Twelve Harbors Wave T_p at 2016/02

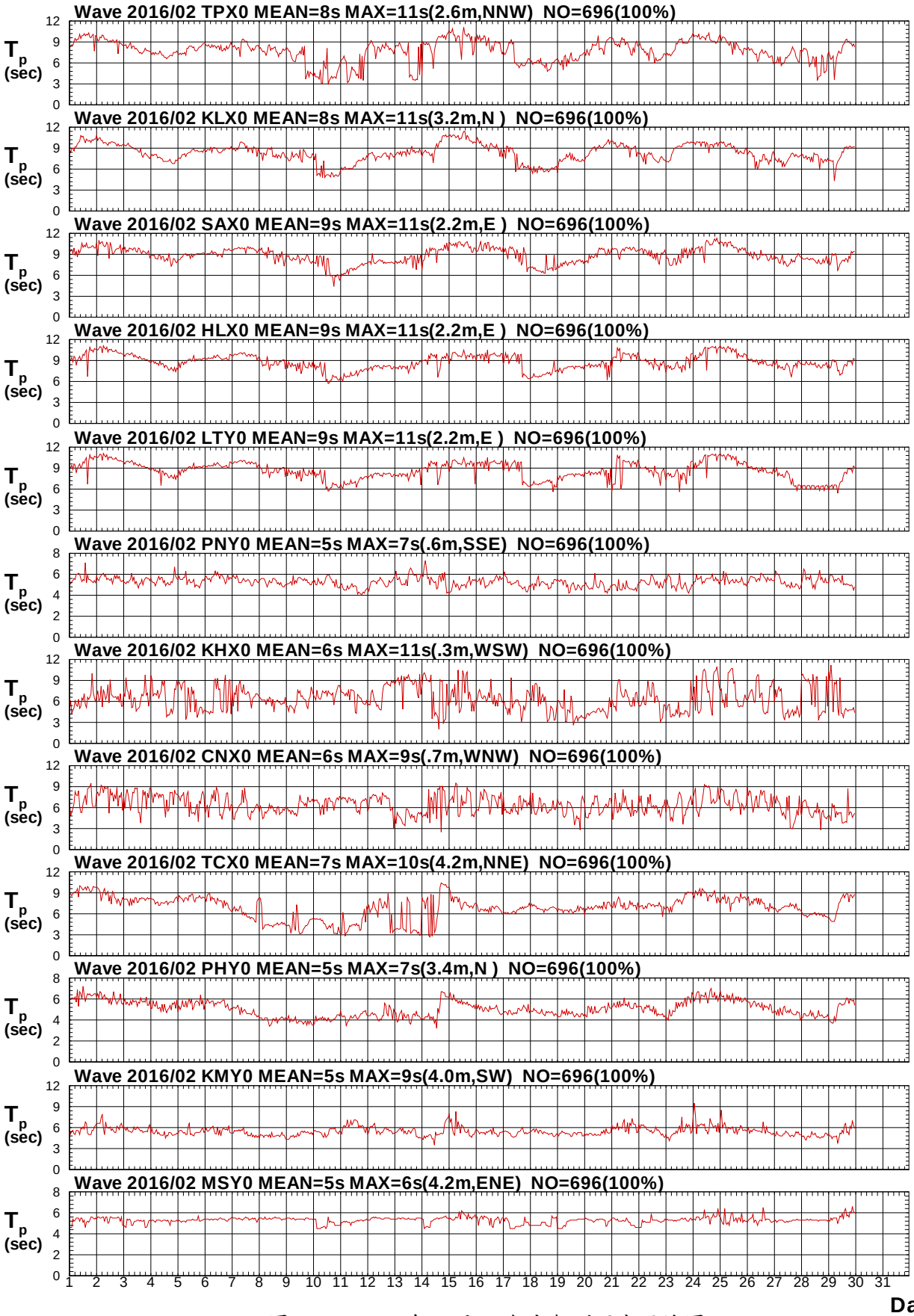

圖 13.8　2016年 2 月 12 海域觀測週期歷線圖

V162TPX0.1HA V162KLX0.1HA V162SAX0.1HA V162HLX0.1HA V162LTY0.1HA V162PNY0.1HA
V162KHX0.1HA V162CNX0.1HA V162TCX0.1HA V162PHY0.1HA V162KMY0.1HA V162MSY0.1HA

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Twelve Harbors Wave Direction at 2016/02

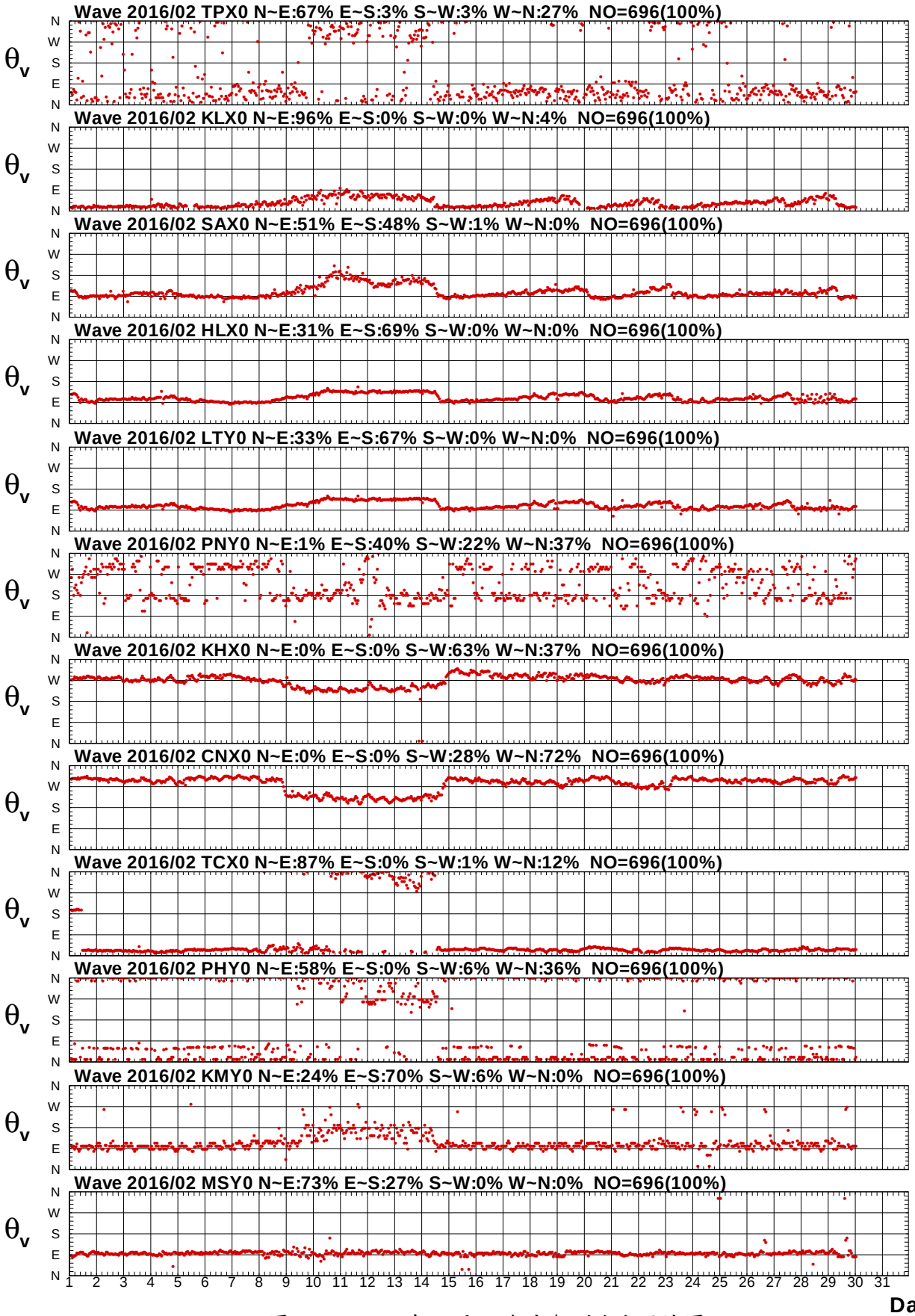

圖13.9　2016年 2月12海域觀測波向歷線圖

V162TPX0.1HA V162KLX0.1HA V162SAX0.1HA V162HLX0.1HA V162LTY0.1HA V162PNY0.1HA
V162KHX0.1HA V162CNX0.1HA V162TCX0.1HA V162PHY0.1HA V162KMY0.1HA V162MSY0.1HA

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Twelve Harbors Wave H_s at 2016/03

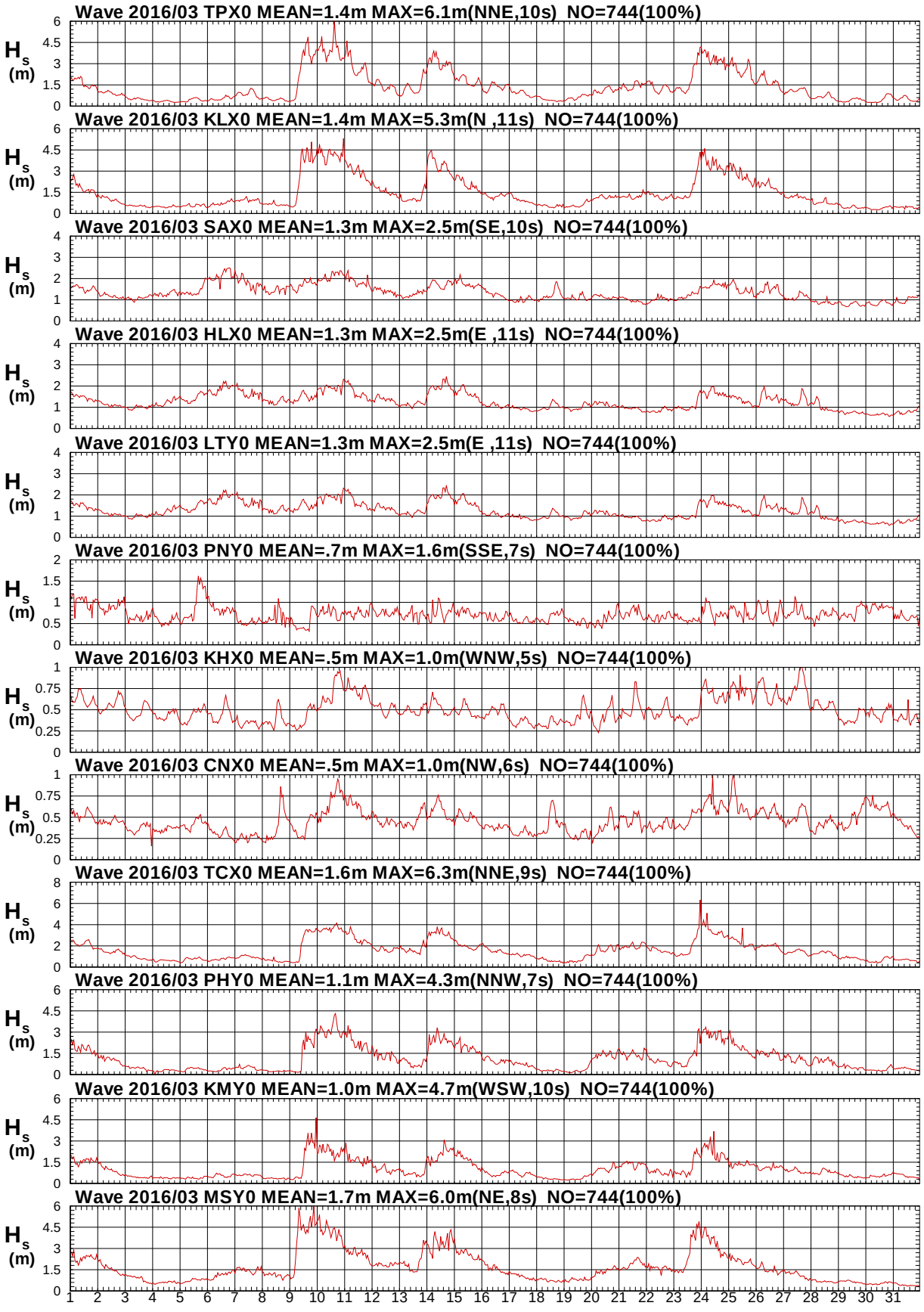

圖 13.10　2016年 3月12海域觀測波高歷線圖

V163TPX0.1HA V163KLX0.1HA V163SAX0.1HA V163HLX0.1HA V163LTY0.1HA V163PNY0.1HA
V163KHX0.1HA V163CNX0.1HA V163TCX0.1HA V163PHY0.1HA V163KMY0.1HA V163MSY0.1HA

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Twelve Harbors Wave T_p at 2016/03

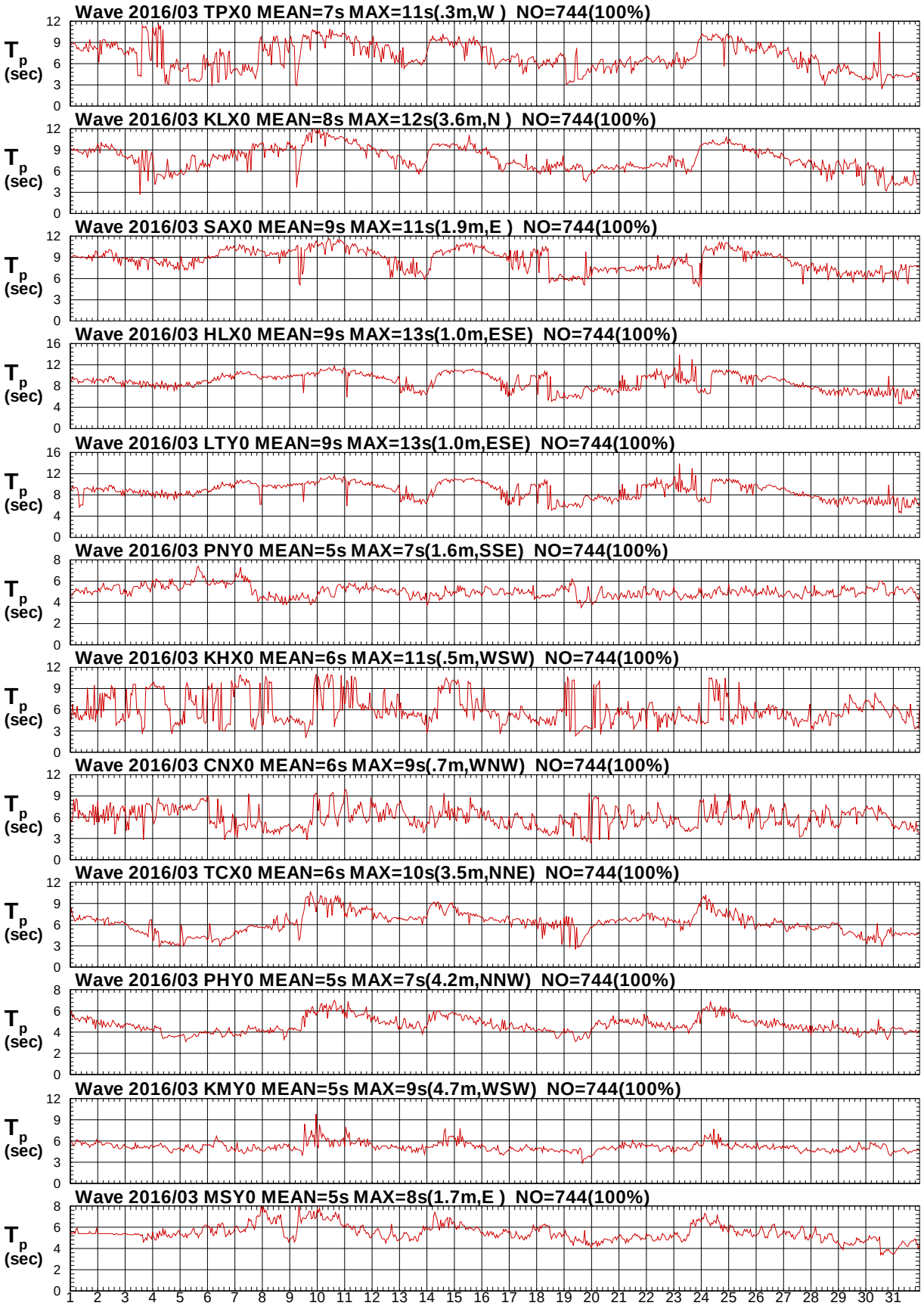

圖 13.11　2016年 3月12海域觀測週期歷線圖

V163TPX0.1HA V163KLX0.1HA V163SAX0.1HA V163HLX0.1HA V163LTY0.1HA V163PNY0.1HA
V163KHX0.1HA V163CNX0.1HA V163TCX0.1HA V163PHY0.1HA V163KMY0.1HA V163MSY0.1HA

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Twelve Harbors Wave Direction at 2016/03

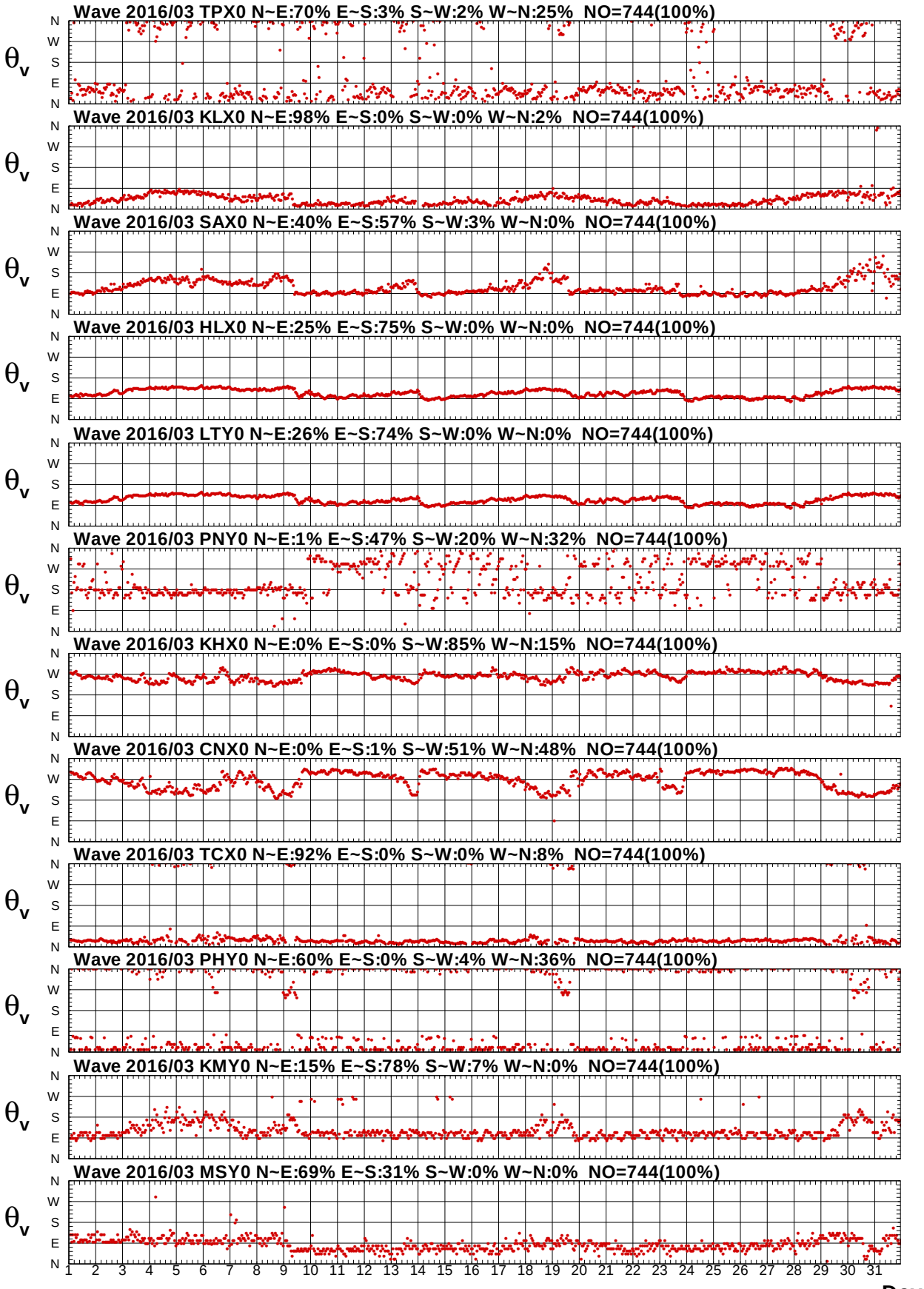

圖13.12　2016年 3月12海域觀測波向歷線圖

V163TPX0.1HA V163KLX0.1HA V163SAX0.1HA V163HLX0.1HA V163LTY0.1HA V163PNY0.1HA
V163KHX0.1HA V163CNX0.1HA V163TCX0.1HA V163PHY0.1HA V163KMY0.1HA V163MSY0.1HA

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Twelve Harbors Wave H_s at 2016/04

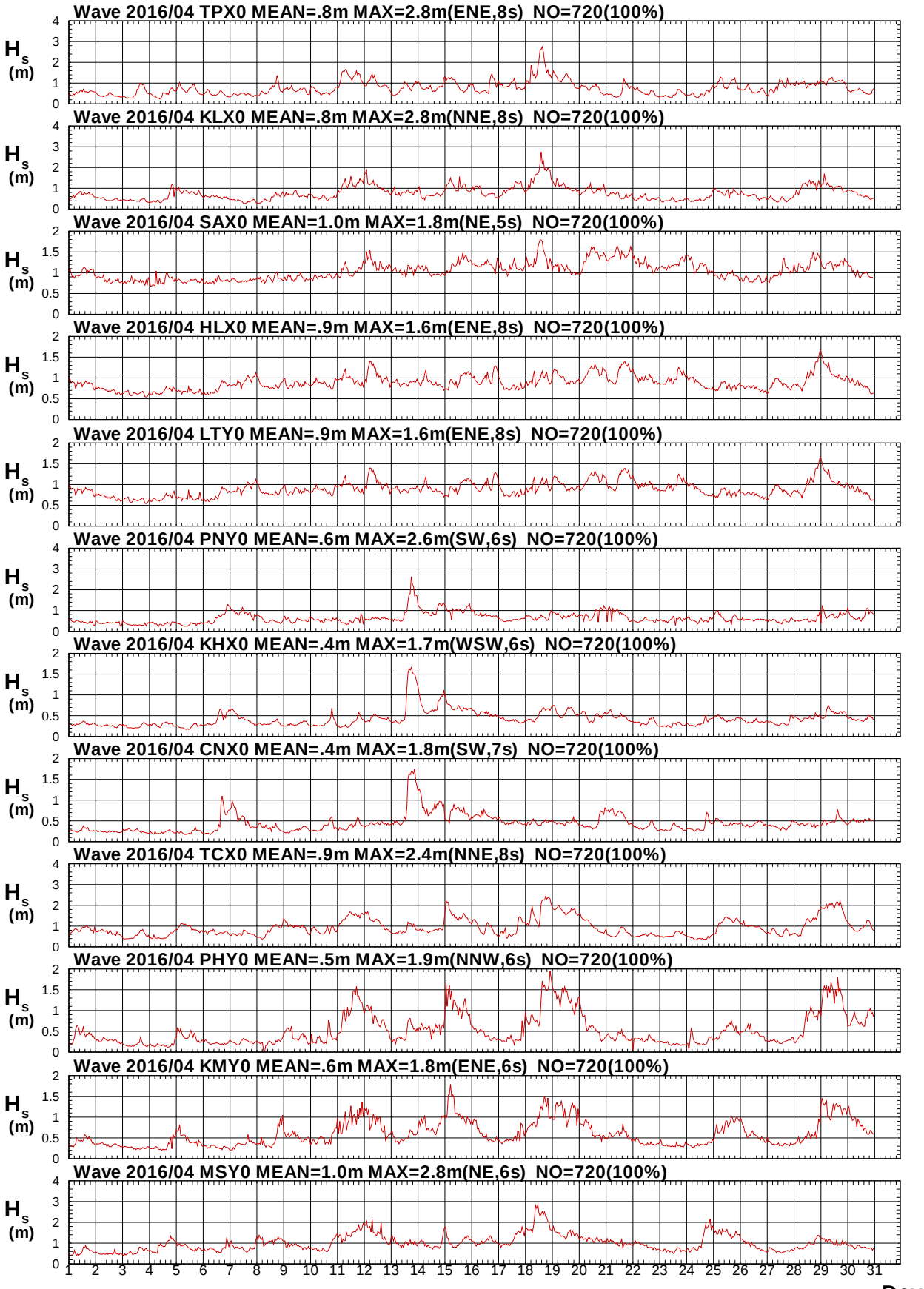

圖 13.13　2016年 4 月12海域觀測波高歷線圖

V164TPX0.1HA V164KLX0.1HA V164SAX0.1HA V164HLX0.1HA V164LTY0.1HA V164PNY0.1HA
V164KHX0.1HA V164CNX0.1HA V164TCX0.1HA V164PHY0.1HA V164KMY0.1HA V164MSY0.1HA

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Twelve Harbors Wave T_p at 2016/04

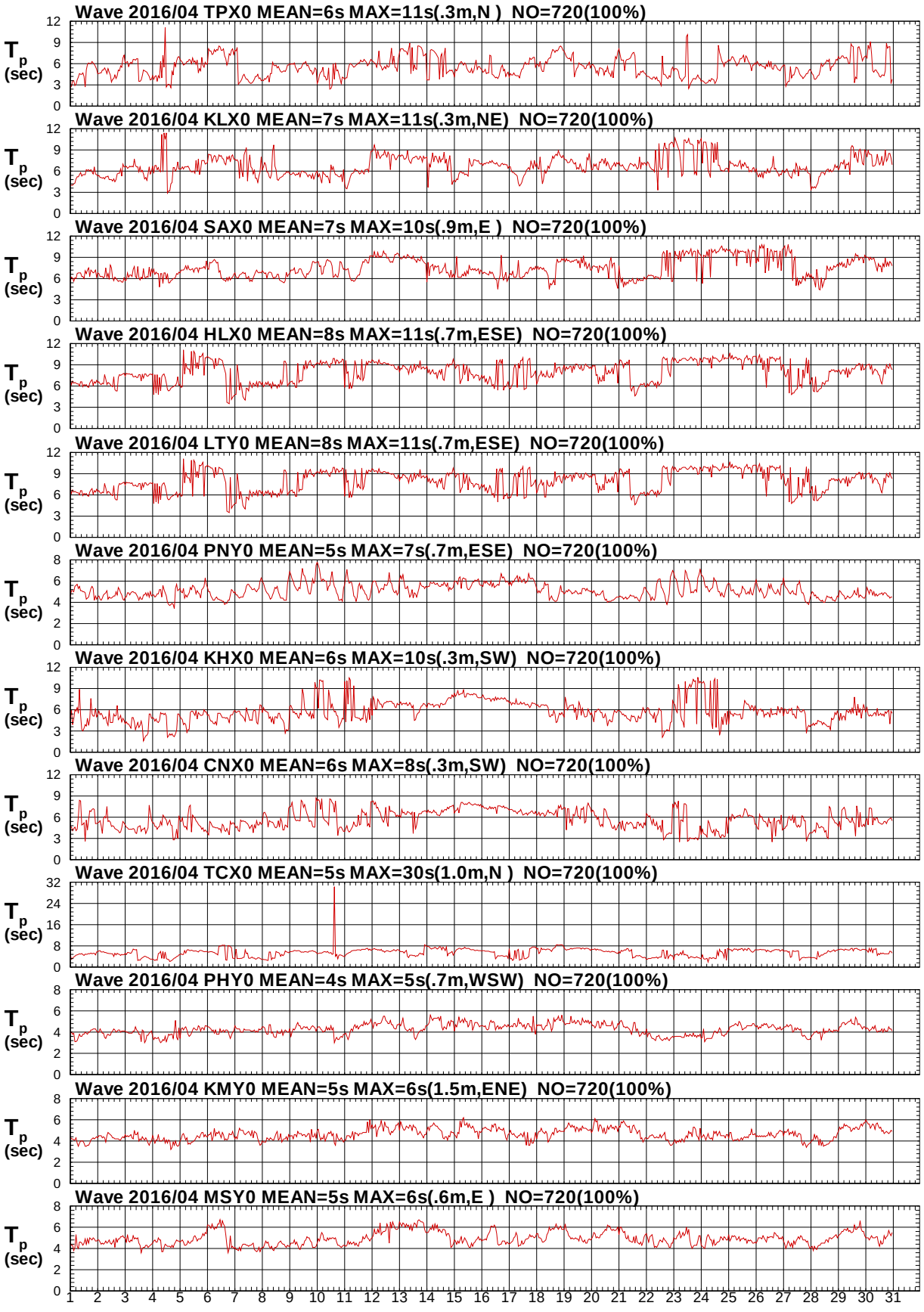

圖 13.14　2016年 4月12海域觀測週期歷線圖

V164TPX0.1HA V164KLX0.1HA V164SAX0.1HA V164HLX0.1HA V164LTY0.1HA V164PNY0.1HA
V164KHX0.1HA V164CNX0.1HA V164TCX0.1HA V164PHY0.1HA V164KMY0.1HA V164MSY0.1HA

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Twelve Harbors Wave Direction at 2016/04

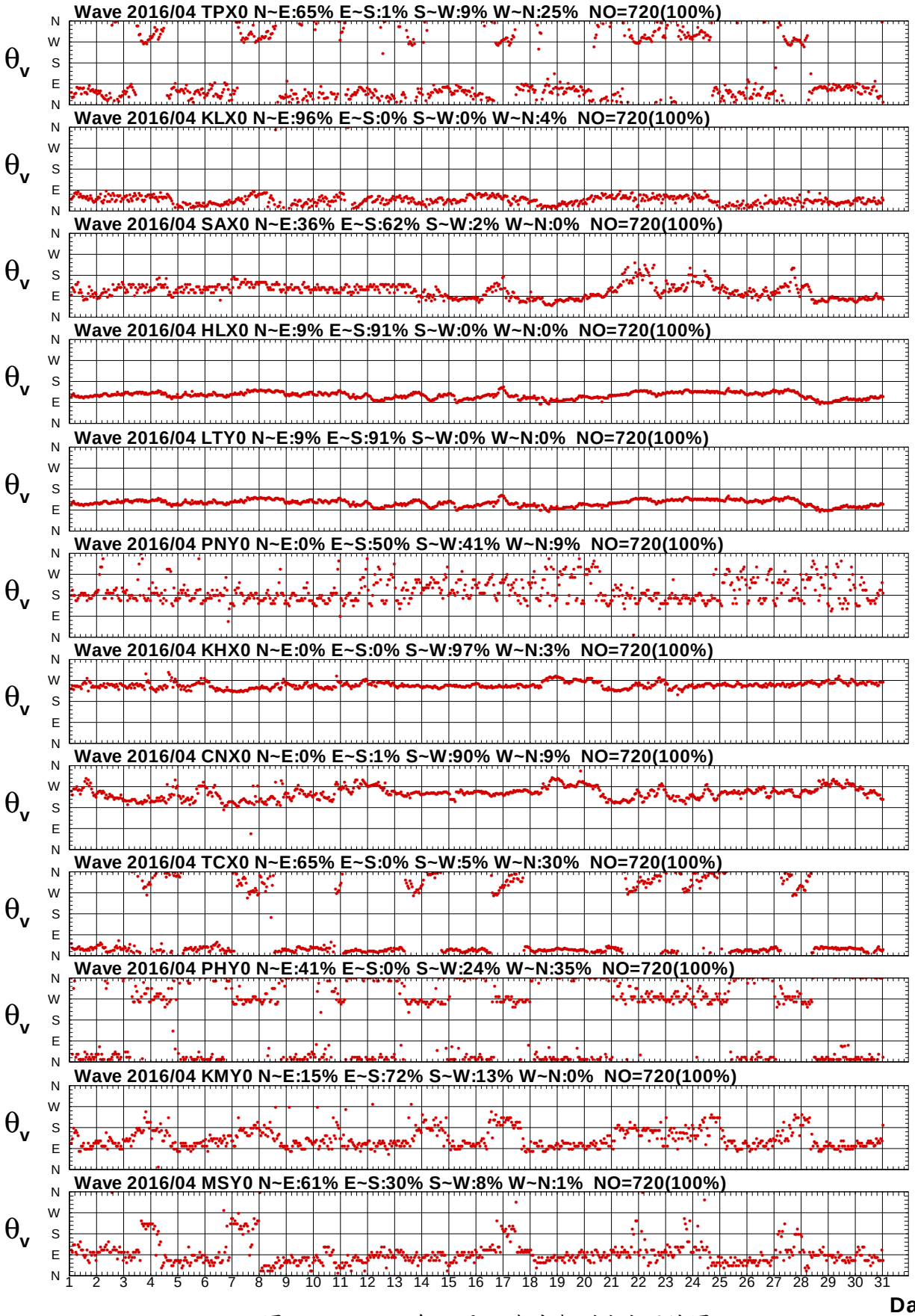

圖13.15　2016年 4月12海域觀測波向歷線圖

V164TPX0.1HA V164KLX0.1HA V164SAX0.1HA V164HLX0.1HA V164LTY0.1HA V164PNY0.1HA
V164KHX0.1HA V164CNX0.1HA V164TCX0.1HA V164PHY0.1HA V164KMY0.1HA V164MSY0.1HA

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Twelve Harbors Wave H_s at 2016/05

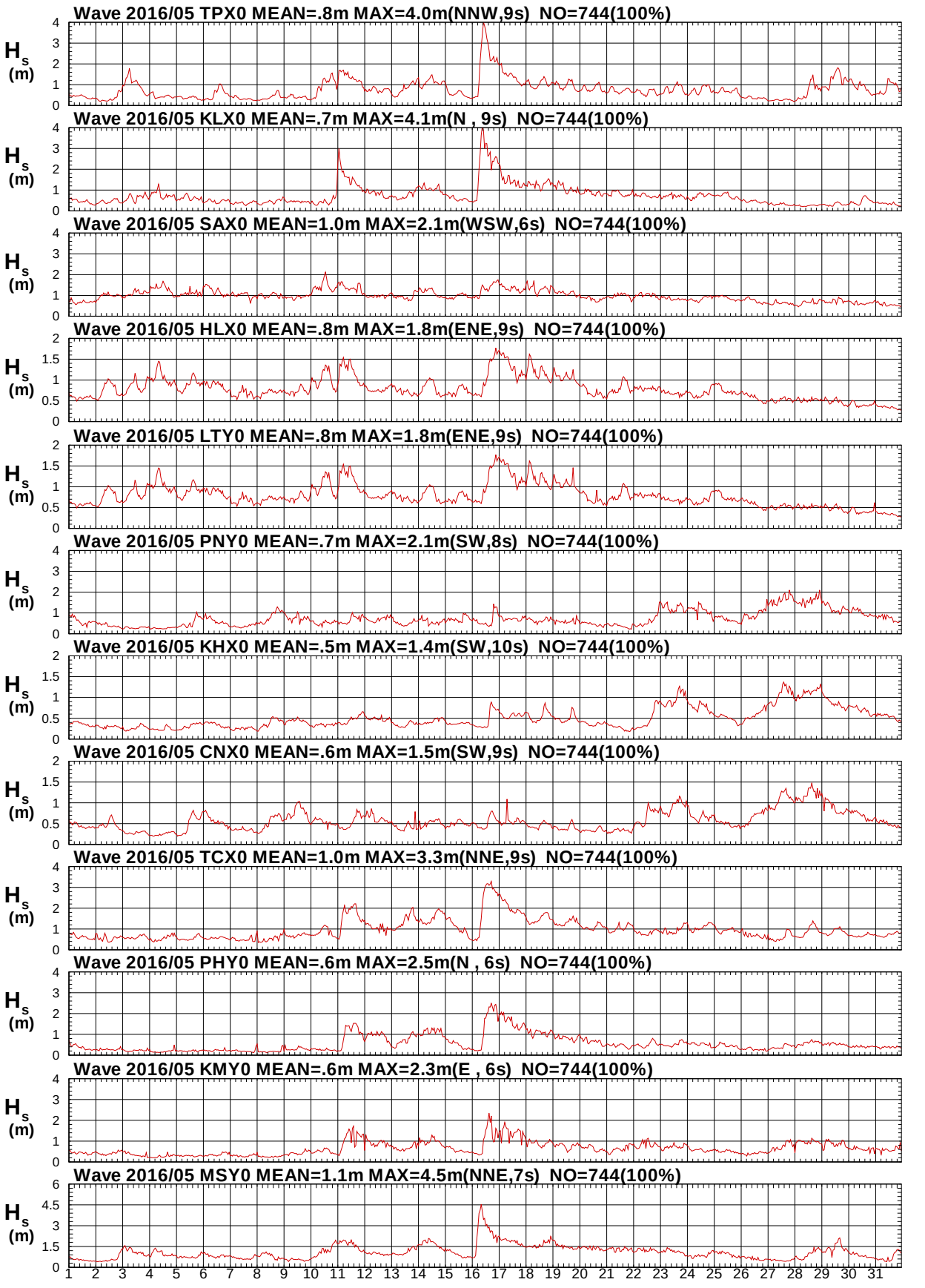

圖 13.16　2016年 5 月12海域觀測波高歷線圖

V165TPX0.1HA V165KLX0.1HA V165SAX0.1HA V165HLX0.1HA V165LTY0.1HA V165PNY0.1HA
V165KHX0.1HA V165CNX0.1HA V165TCX0.1HA V165PHY0.1HA V165KMY0.1HA V165MSY0.1HA

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Twelve Harbors Wave T_p at 2016/05

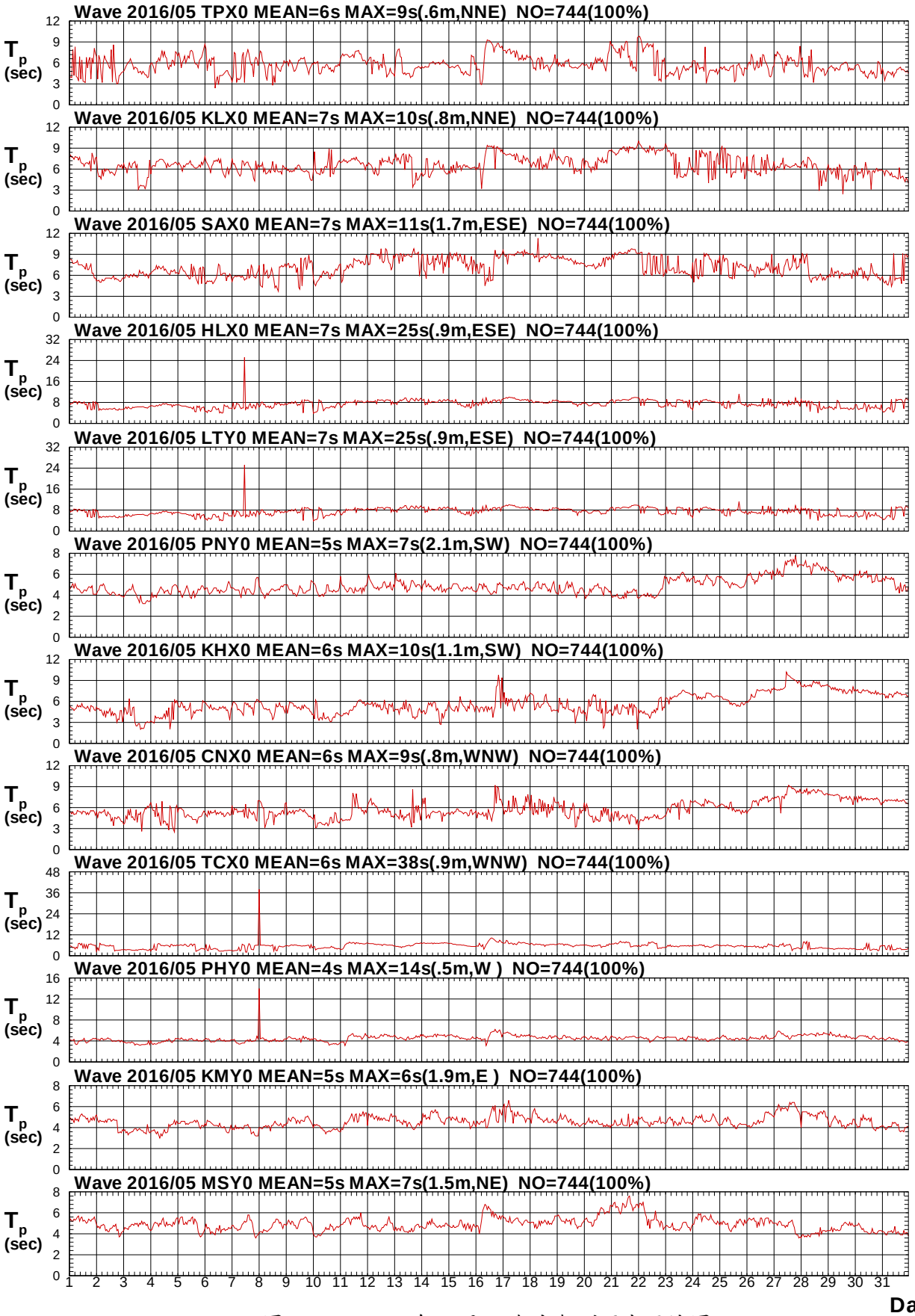

圖 13.17　2016年 5月12海域觀測週期歷線圖

V165TPX0.1HA V165KLX0.1HA V165SAX0.1HA V165HLX0.1HA V165LTY0.1HA V165PNY0.1HA
V165KHX0.1HA V165CNX0.1HA V165TCX0.1HA V165PHY0.1HA V165KMY0.1HA V165MSY0.1HA

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Twelve Harbors Wave Direction at 2016/05

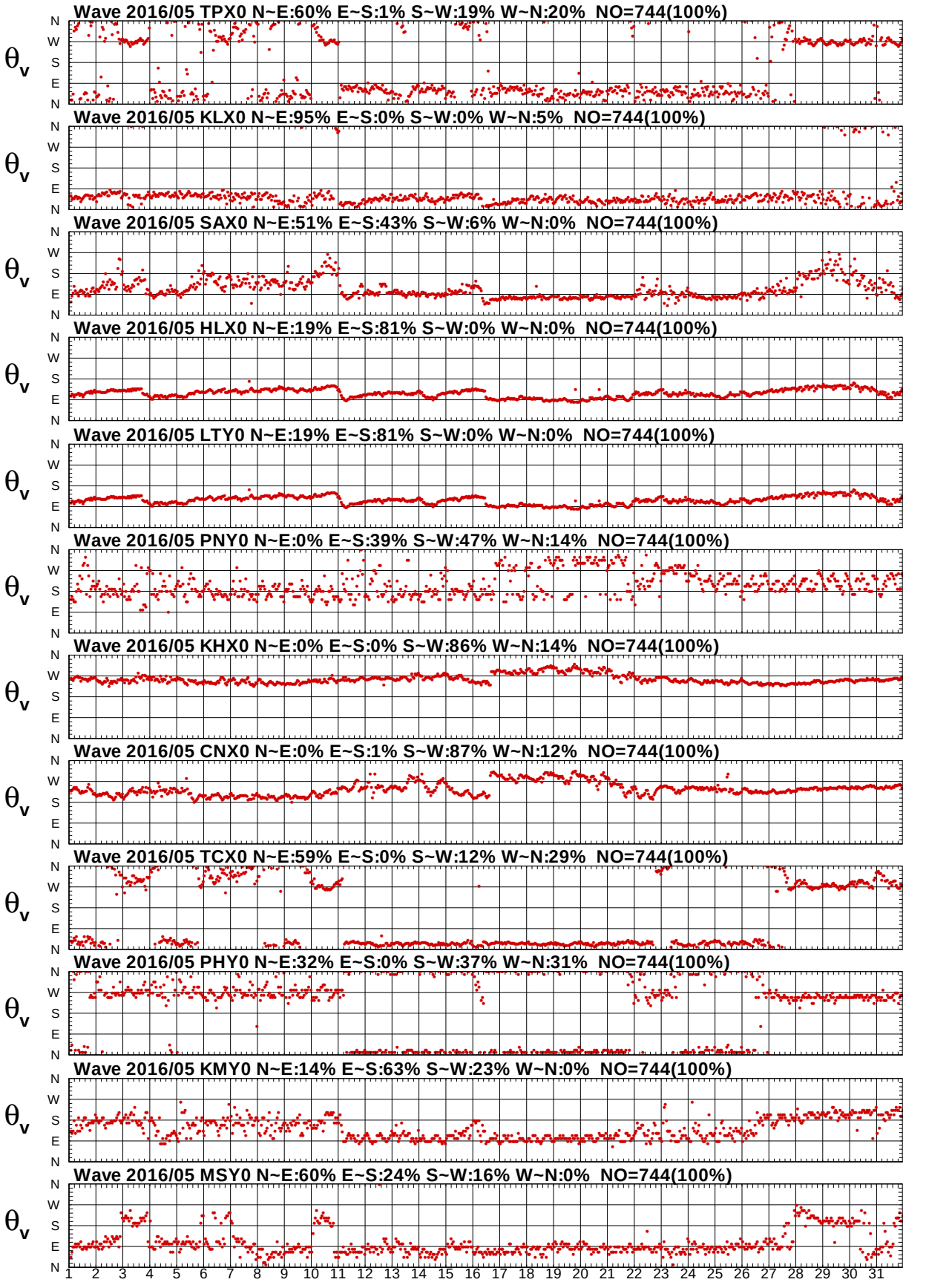

圖 13.18　2016年 5月12海域觀測波向歷線圖

V165TPX0.1HA V165KLX0.1HA V165SAX0.1HA V165HLX0.1HA V165LTY0.1HA V165PNY0.1HA
V165KHX0.1HA V165CNX0.1HA V165TCX0.1HA V165PHY0.1HA V165KMY0.1HA V165MSY0.1HA

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Twelve Harbors Wave H_s at 2016/06

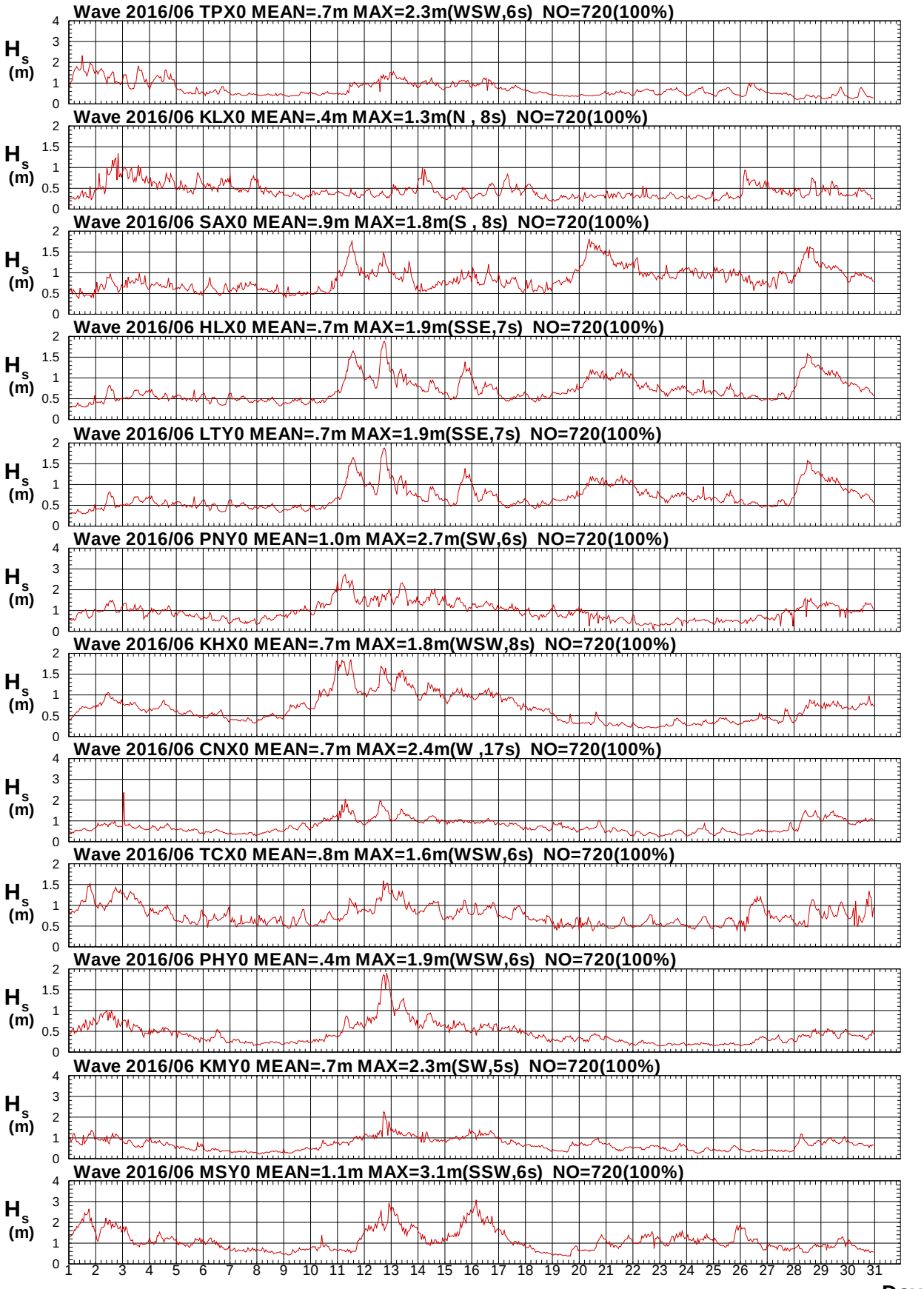

圖 13.19　2016年 6 月12海域觀測波高歷線圖

V166TPX0.1HA V166KLX0.1HA V166SAX0.1HA V166HLX0.1HA V166LTY0.1HA V166PNY0.1HA
V166KHX0.1HA V166CNX0.1HA V166TCX0.1HA V166PHY0.1HA V166KMY0.1HA V166MSY0.1HA

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Twelve Harbors Wave T_p at 2016/06

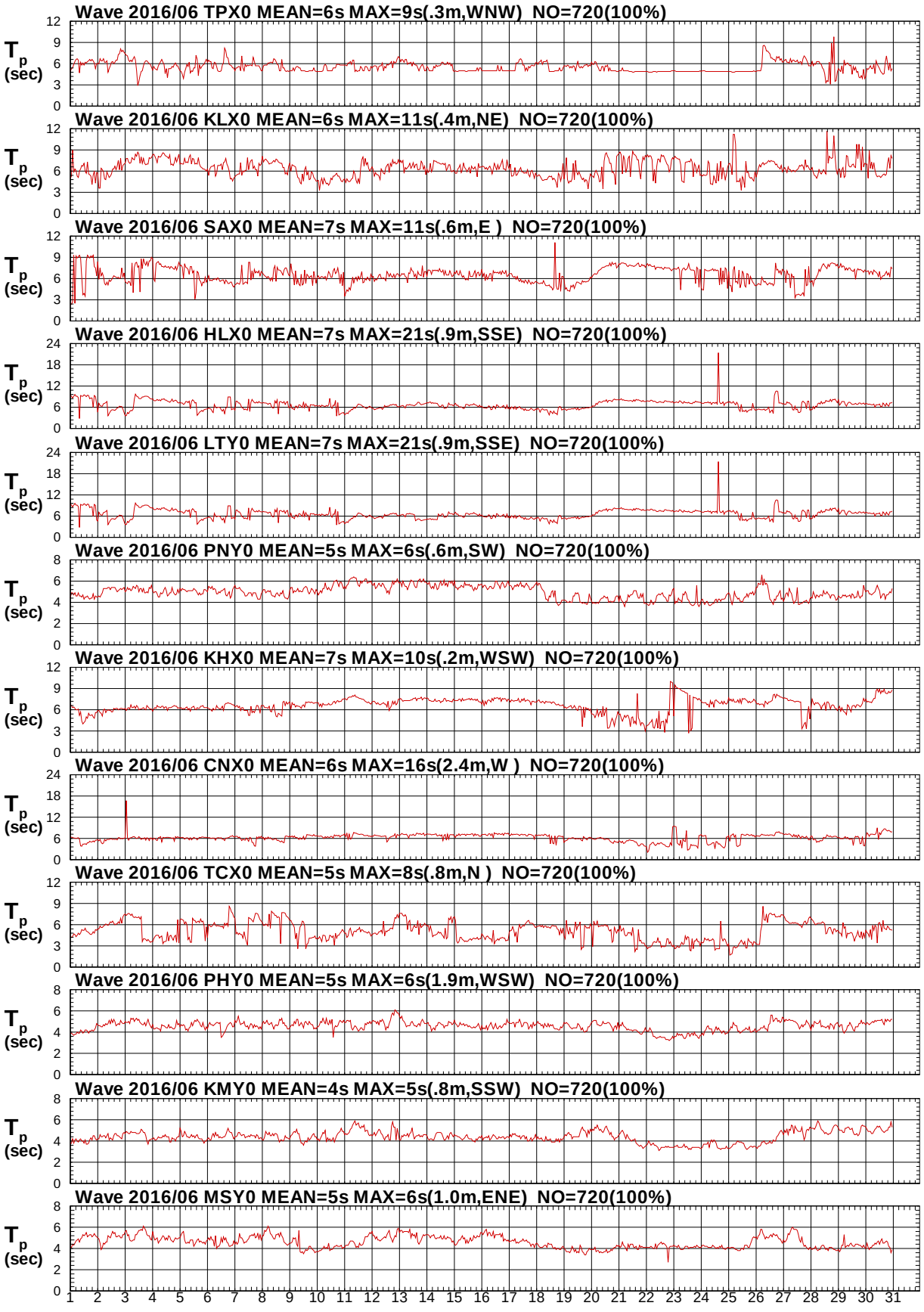

圖 13.20　2016年 6月12海域觀測週期歷線圖

V166TPX0.1HA V166KLX0.1HA V166SAX0.1HA V166HLX0.1HA V166LTY0.1HA V166PNY0.1HA
V166KHX0.1HA V166CNX0.1HA V166TCX0.1HA V166PHY0.1HA V166KMY0.1HA V166MSY0.1HA

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Twelve Harbors Wave Direction at 2016/06

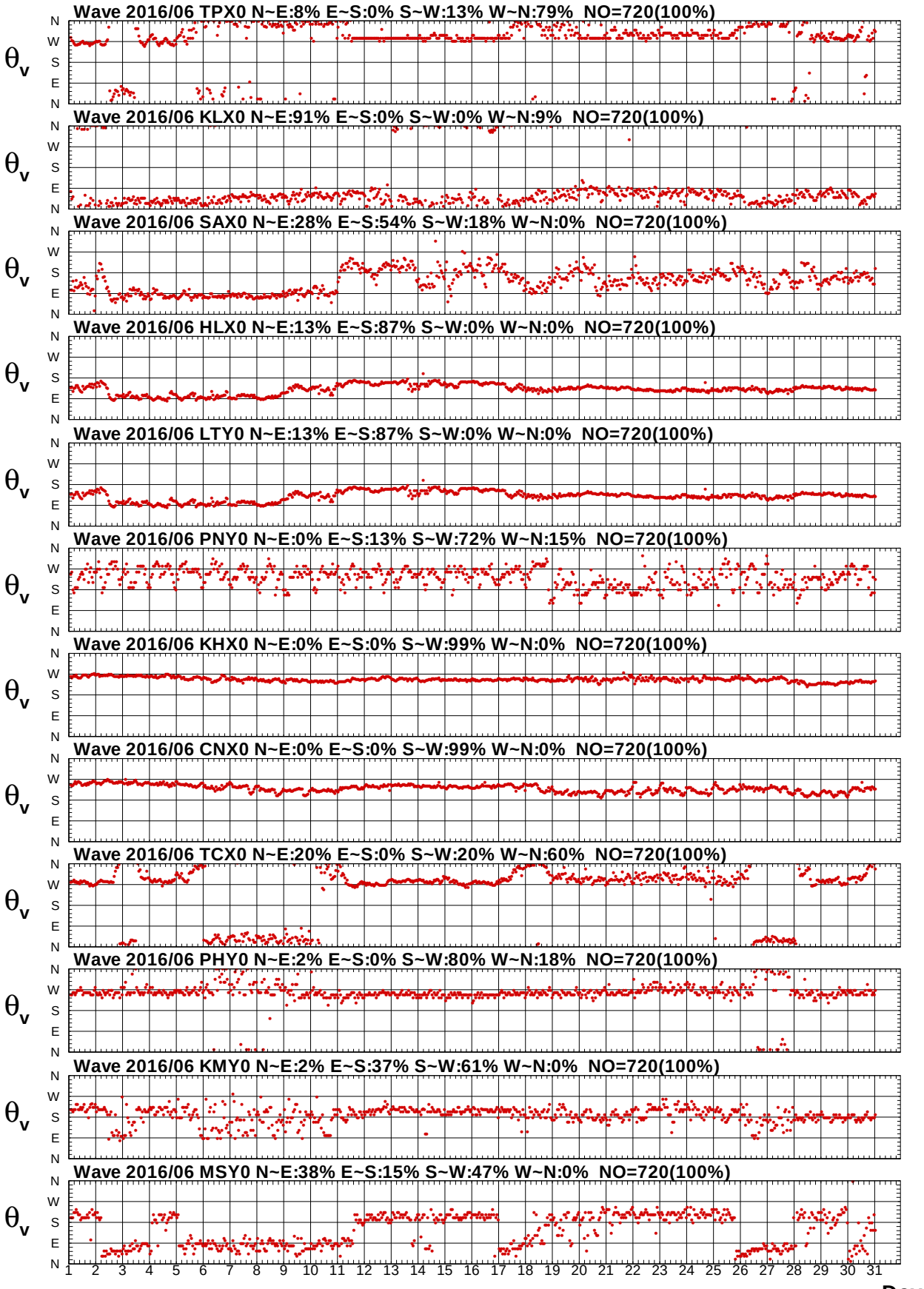

圖 13.21　2016年 6月12海域觀測波向歷線圖

V166TPX0.1HA V166KLX0.1HA V166SAX0.1HA V166HLX0.1HA V166LTY0.1HA V166PNY0.1HA
V166KHX0.1HA V166CNX0.1HA V166TCX0.1HA V166PHY0.1HA V166KMY0.1HA V166MSY0.1HA

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Twelve Harbors Wave H_s at 2016/07

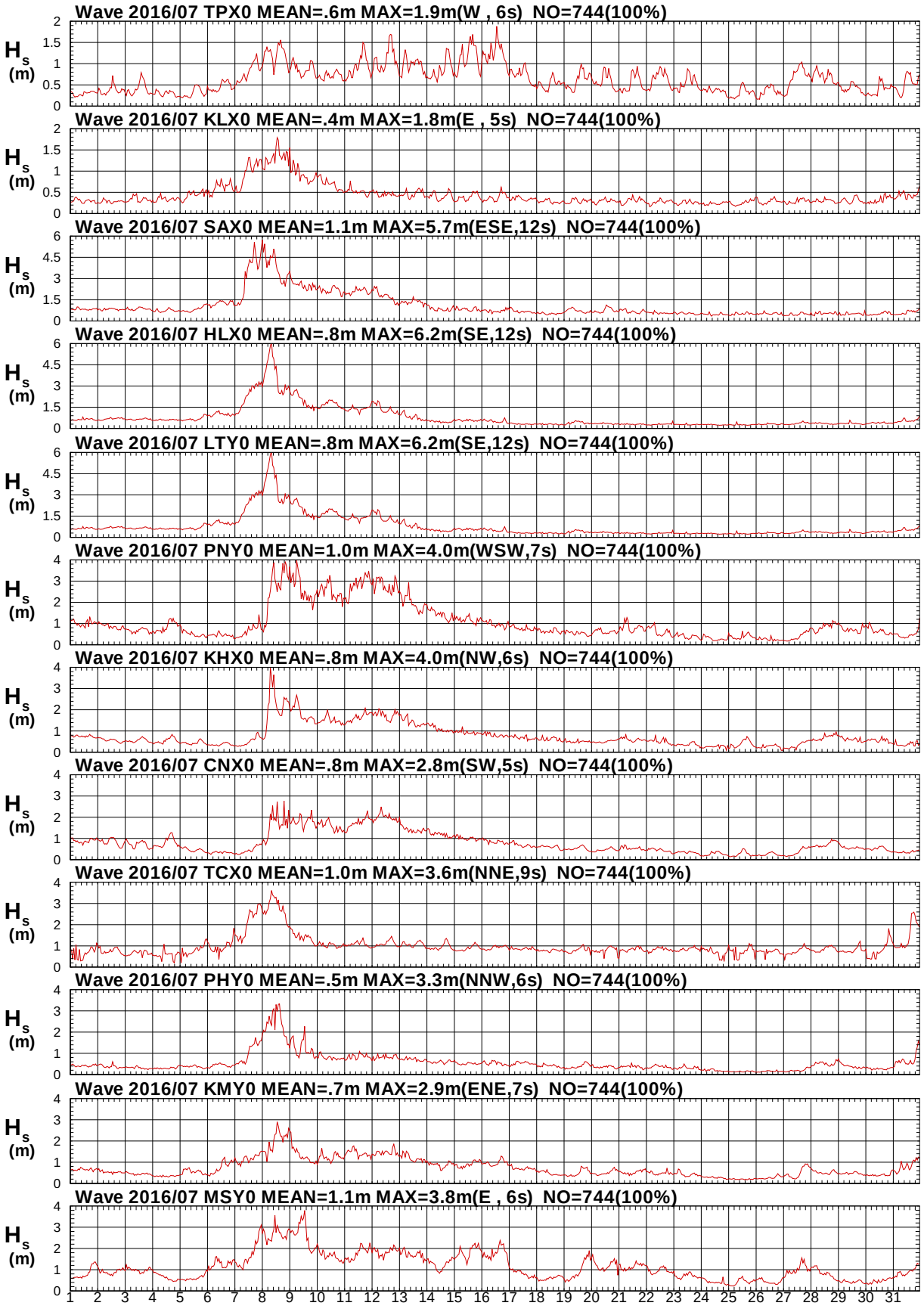

圖 13.22　2016年 7月12海域觀測波高歷線圖

V167TPX0.1HA V167KLX0.1HA V167SAX0.1HA V167HLX0.1HA V167LTY0.1HA V167PNY0.1HA
V167KHX0.1HA V167CNX0.1HA V167TCX0.1HA V167PHY0.1HA V167KMY0.1HA V167MSY0.1HA

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Twelve Harbors Wave T_p at 2016/07

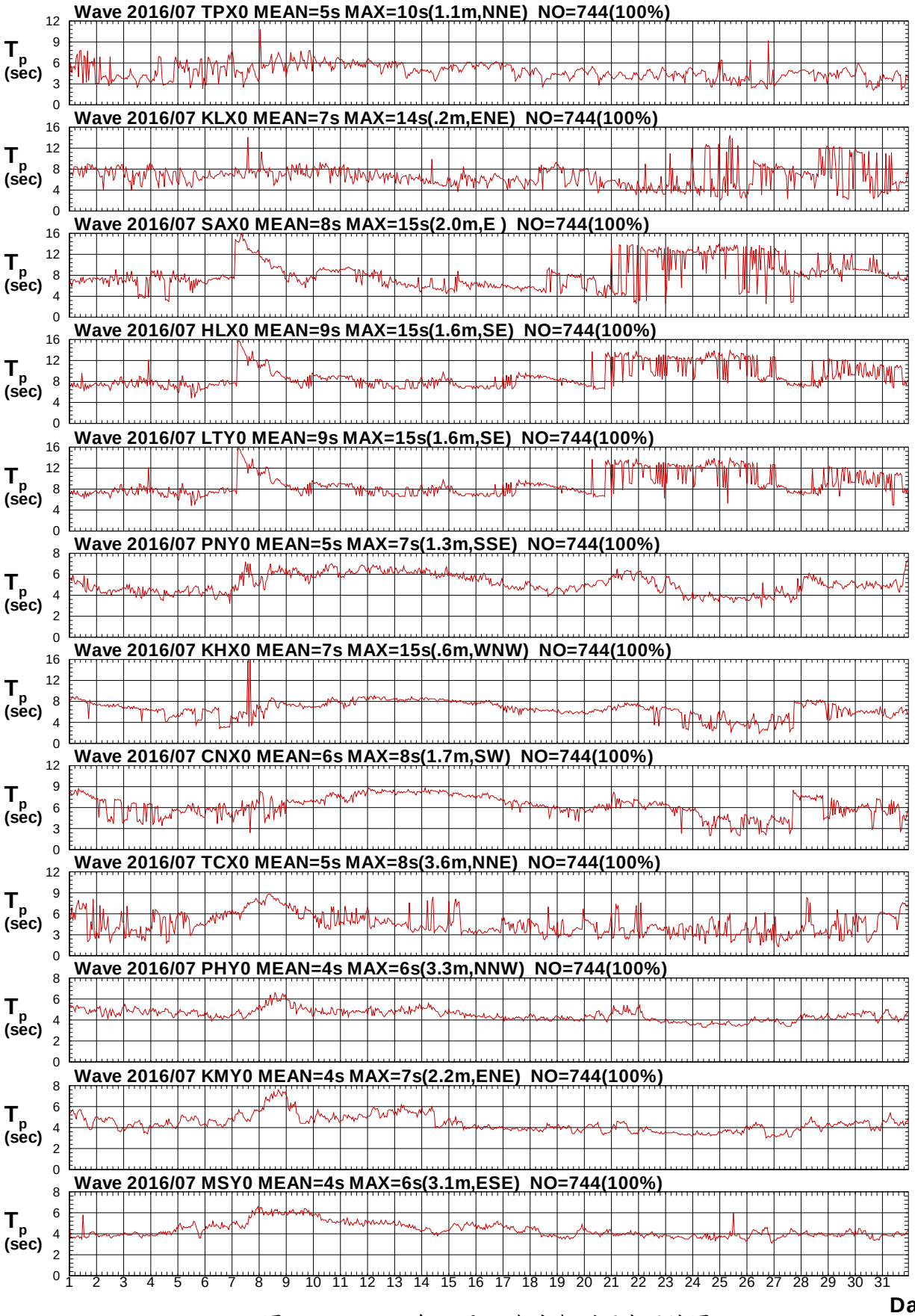

圖 13.23　2016年 7月12海域觀測週期歷線圖

V167TPX0.1HA V167KLX0.1HA V167SAX0.1HA V167HLX0.1HA V167LTY0.1HA V167PNY0.1HA
V167KHX0.1HA V167CNX0.1HA V167TCX0.1HA V167PHY0.1HA V167KMY0.1HA V167MSY0.1HA

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Twelve Harbors Wave Direction at 2016/07

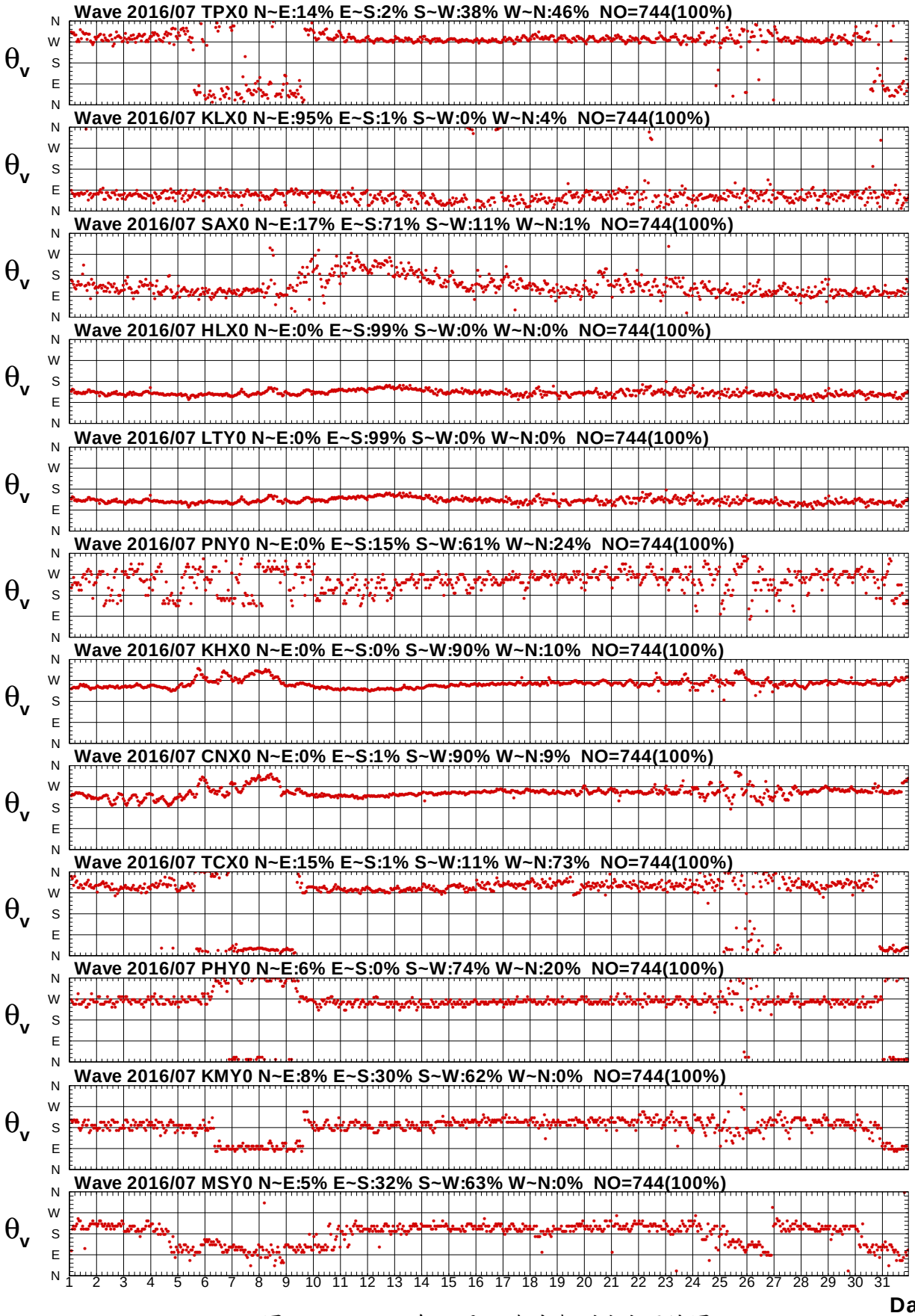

圖13.24　2016年 7月12海域觀測波向歷線圖

V167TPX0.1HA V167KLX0.1HA V167SAX0.1HA V167HLX0.1HA V167LTY0.1HA V167PNY0.1HA
V167KHX0.1HA V167CNX0.1HA V167TCX0.1HA V167PHY0.1HA V167KMY0.1HA V167MSY0.1HA

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Twelve Harbors Wave H_s at 2016/08

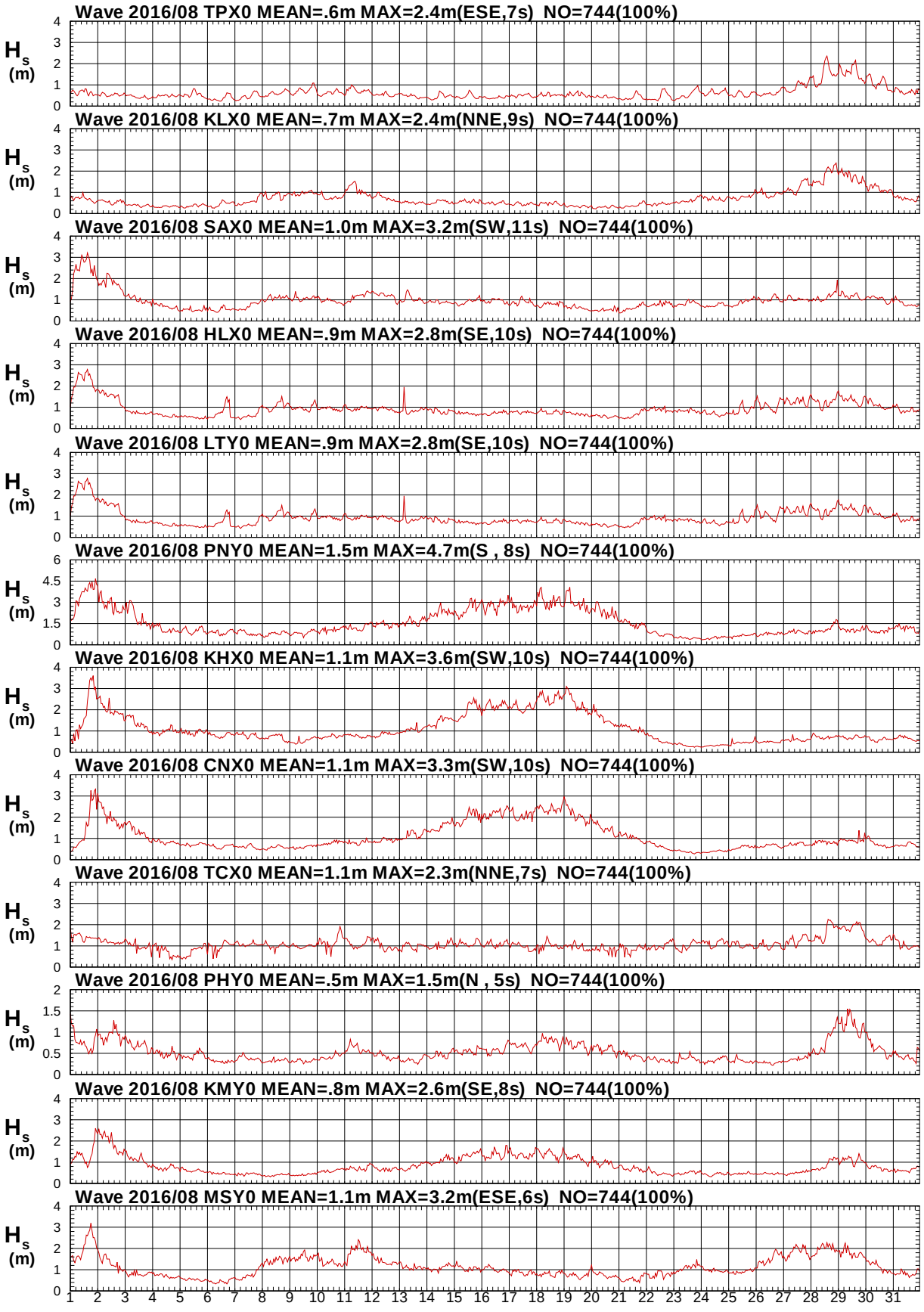

圖 13.25　2016年 8 月12海域觀測波高歷線圖

V168TPX0.1HA V168KLX0.1HA V168SAX0.1HA V168HLX0.1HA V168LTY0.1HA V168PNY0.1HA
V168KHX0.1HA V168CNX0.1HA V168TCX0.1HA V168PHY0.1HA V168KMY0.1HA V168MSY0.1HA

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Twelve Harbors Wave T_p at 2016/08

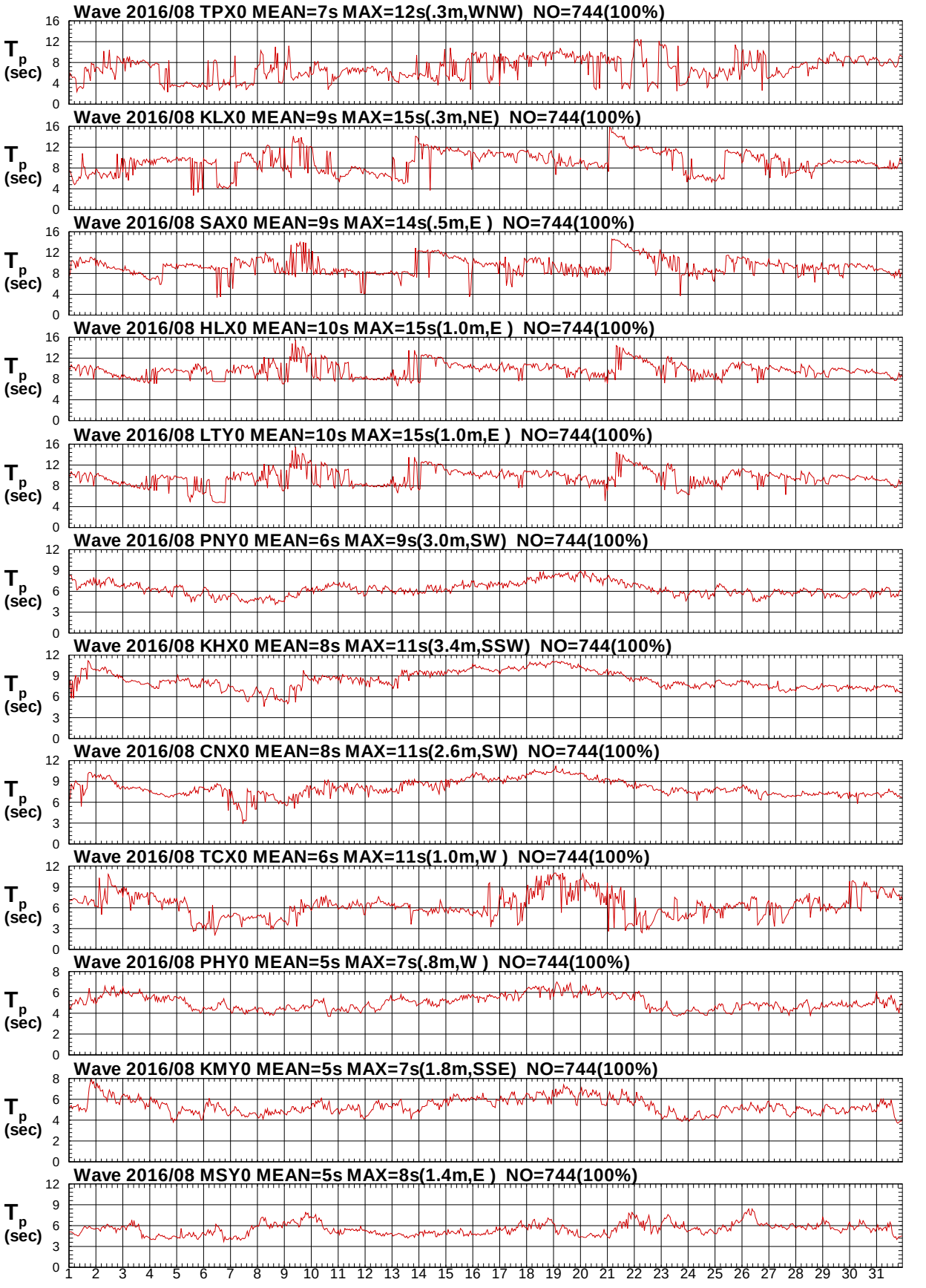

圖 13.26　2016年 8月12海域觀測週期歷線圖

V168TPX0.1HA V168KLX0.1HA V168SAX0.1HA V168HLX0.1HA V168LTY0.1HA V168PNY0.1HA
V168KHX0.1HA V168CNX0.1HA V168TCX0.1HA V168PHY0.1HA V168KMY0.1HA V168MSY0.1HA

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Twelve Harbors Wave Direction at 2016/08

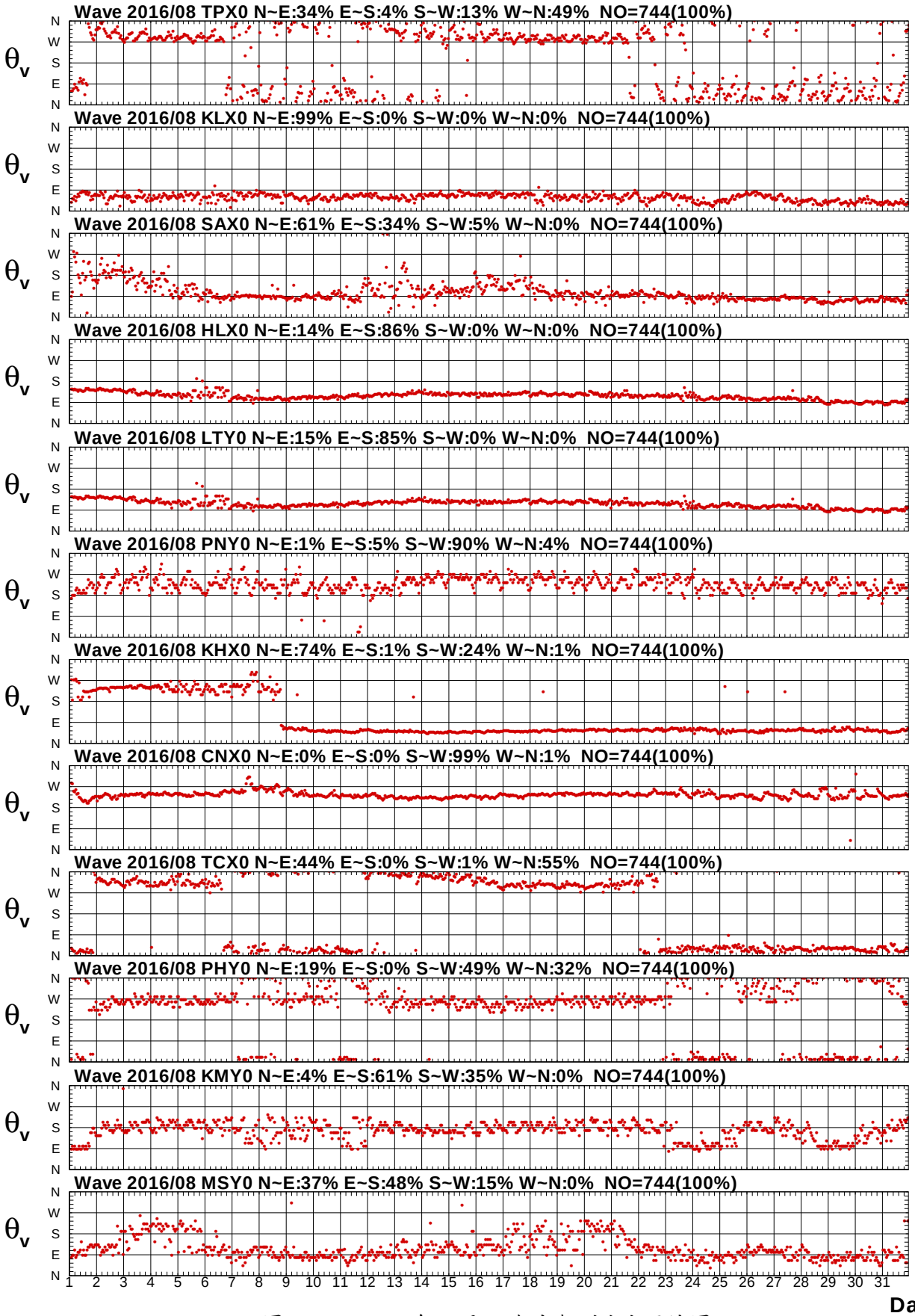

圖 13.27　2016年 8月12海域觀測波向歷線圖

V168TPX0.1HA V168KLX0.1HA V168SAX0.1HA V168HLX0.1HA V168LTY0.1HA V168PNY0.1HA
V168KHX0.1HA V168CNX0.1HA V168TCX0.1HA V168PHY0.1HA V168KMY0.1HA V168MSY0.1HA

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Twelve Harbors Wave H_s at 2016/09

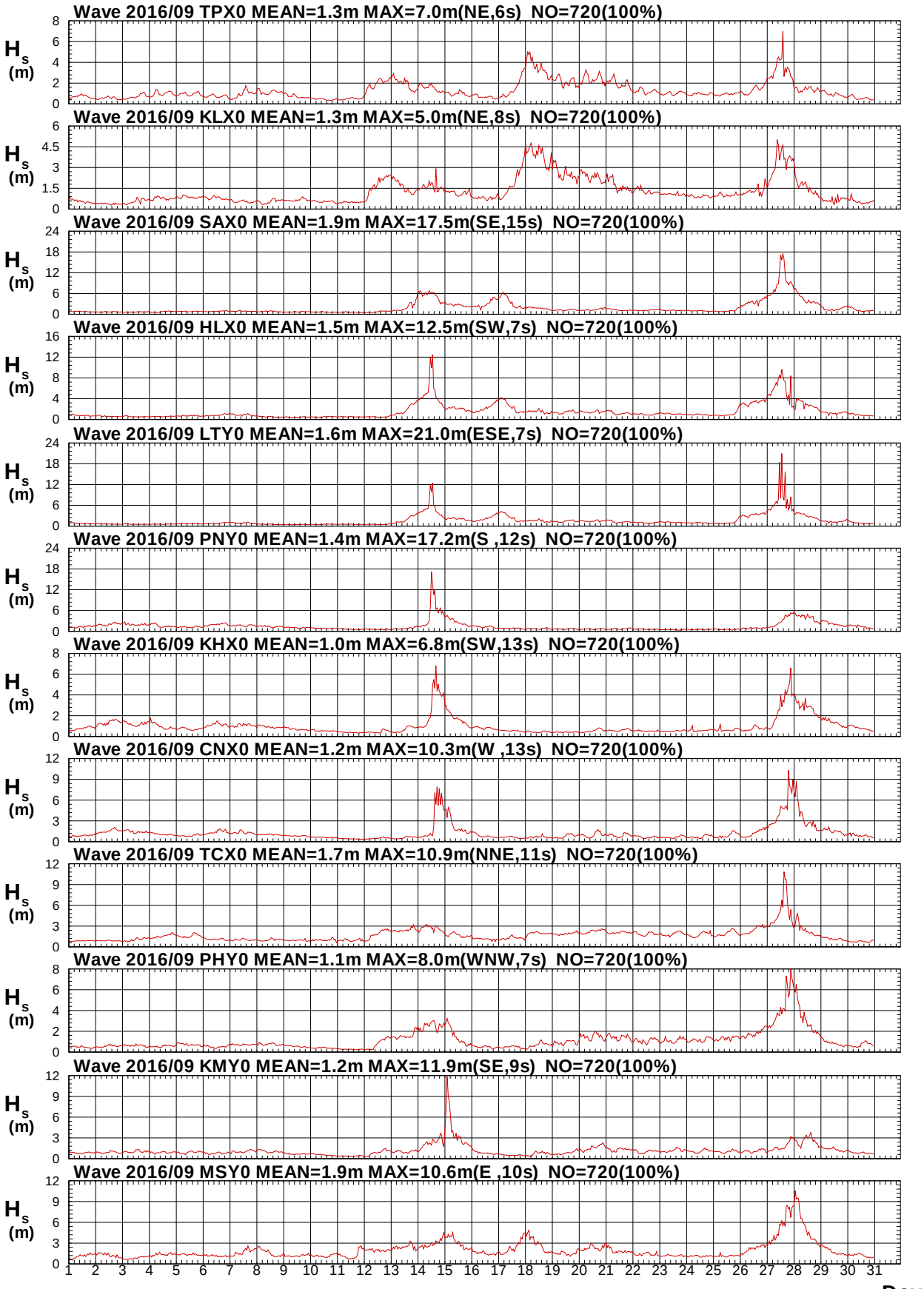

圖 13.28　2016年 9月12海域觀測波高歷線圖

V169TPX0.1HA V169KLX0.1HA V169SAX0.1HA V169HLX0.1HA V169LTY0.1HA V169PNY0.1HA
V169KHX0.1HA V169CNX0.1HA V169TCX0.1HA V169PHY0.1HA V169KMY0.1HA V169MSY0.1HA

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Twelve Harbors Wave T_p at 2016/09

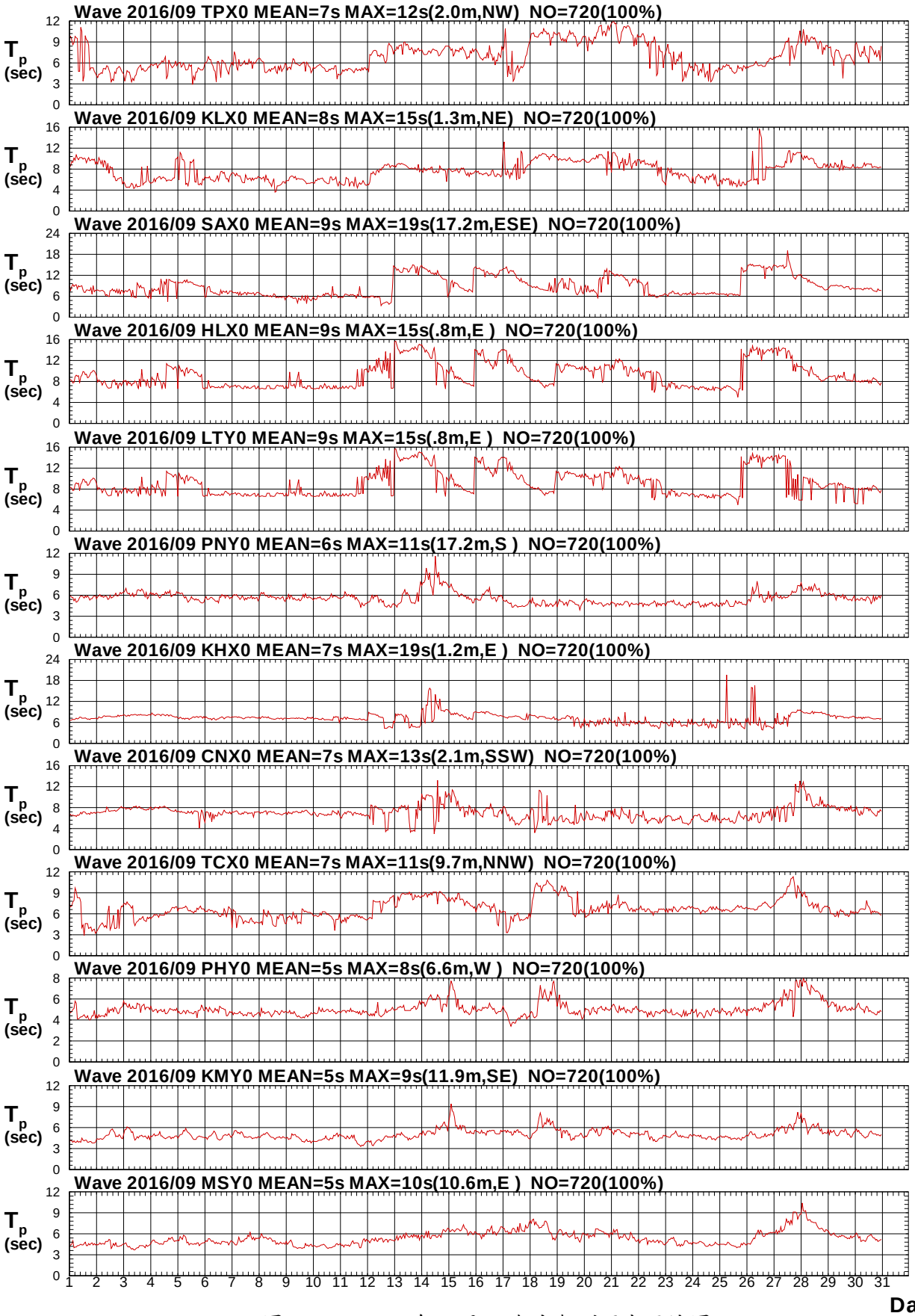

圖 13.29　2016年 9月12海域觀測週期歷線圖

V169TPX0.1HA V169KLX0.1HA V169SAX0.1HA V169HLX0.1HA V169LTY0.1HA V169PNY0.1HA
V169KHX0.1HA V169CNX0.1HA V169TCX0.1HA V169PHY0.1HA V169KMY0.1HA V169MSY0.1HA

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Twelve Harbors Wave Direction at 2016/09

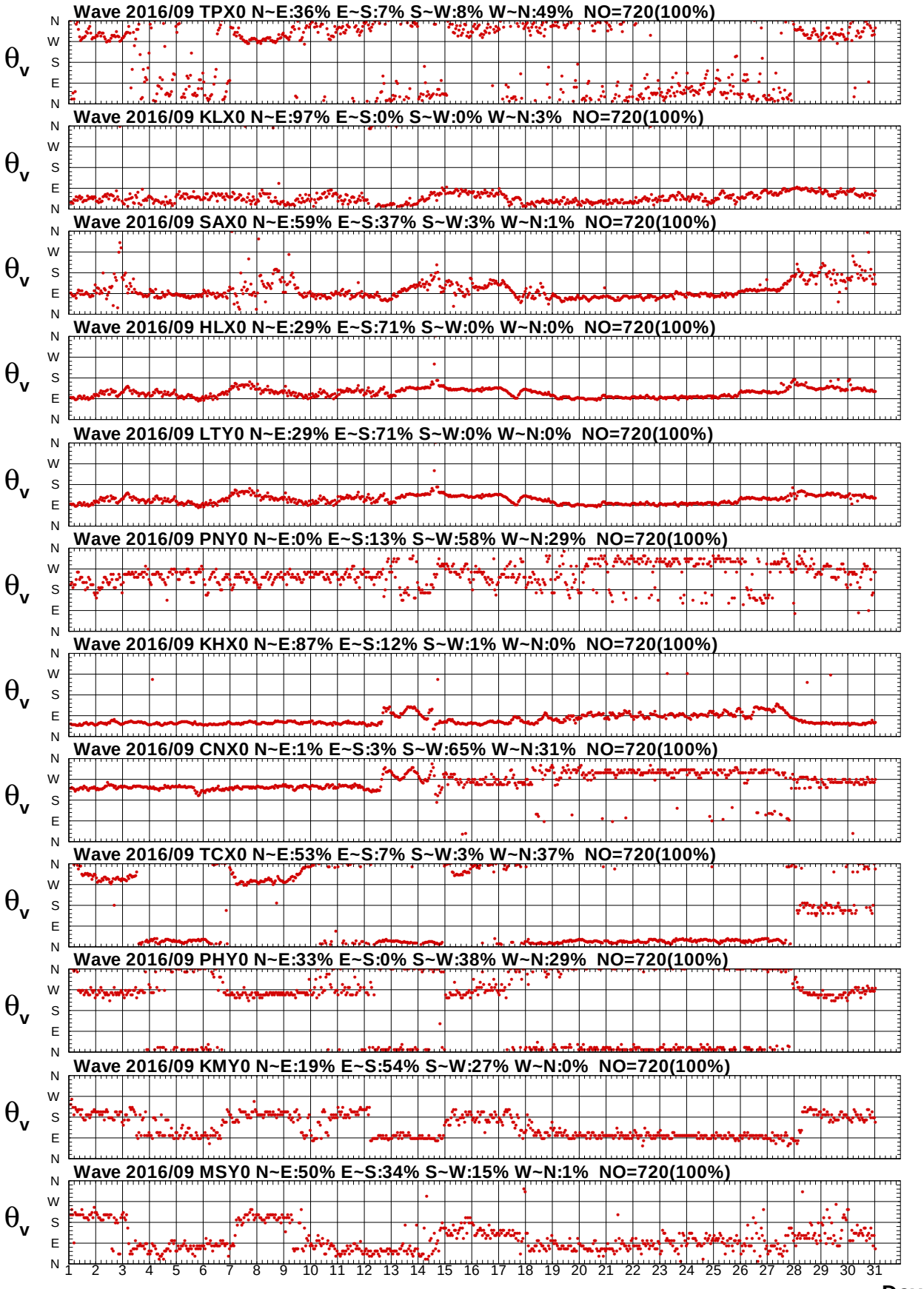

圖 13.30　2016年 9 月 12 海域觀測波向歷線圖

V169TPX0.1HA V169KLX0.1HA V169SAX0.1HA V169HLX0.1HA V169LTY0.1HA V169PNY0.1HA
V169KHX0.1HA V169CNX0.1HA V169TCX0.1HA V169PHY0.1HA V169KMY0.1HA V169MSY0.1HA

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Twelve Harbors Wave H_s at 2016/10

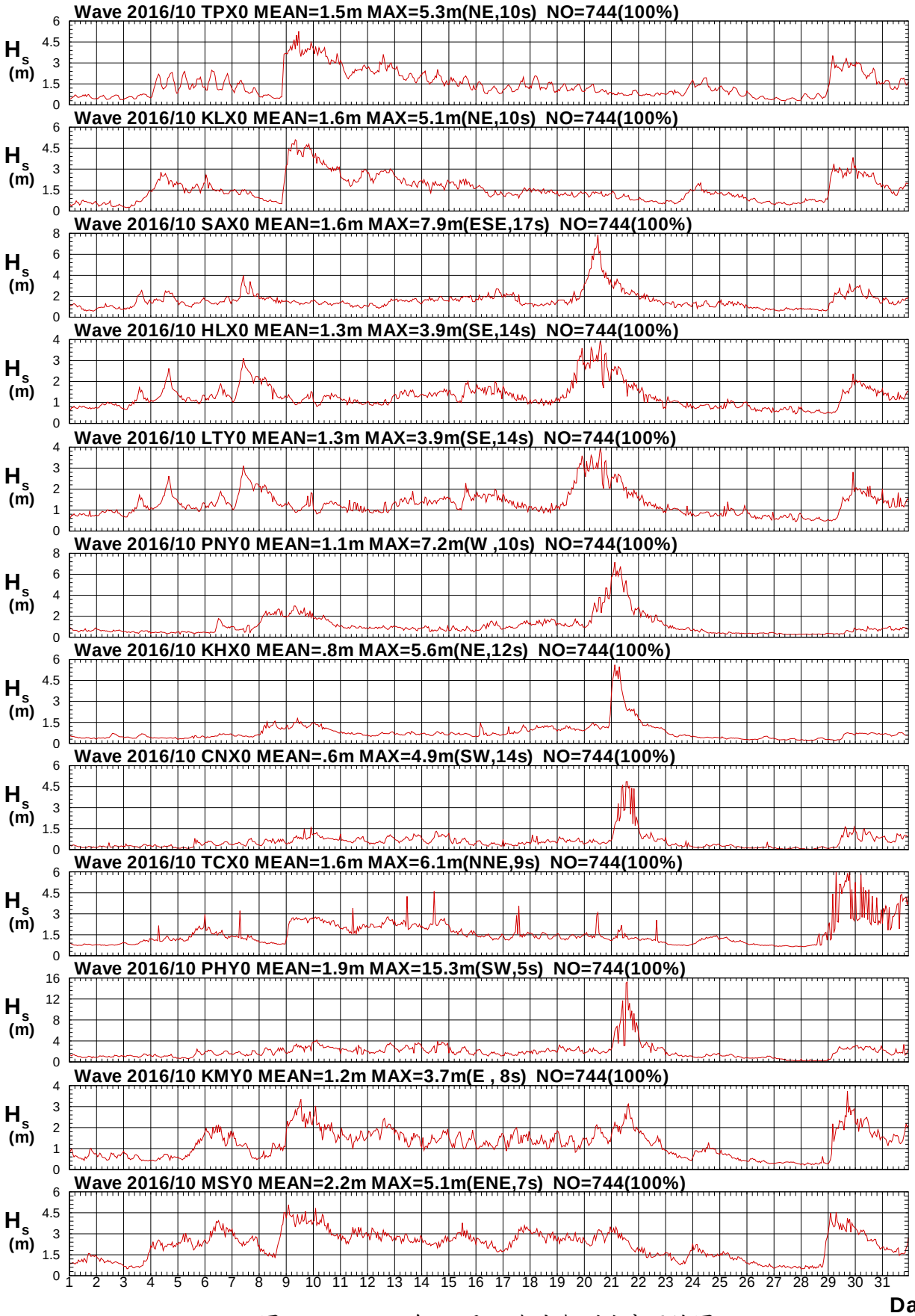

圖 13.31　2016年10月12海域觀測波高歷線圖

V16ATPX0.1HA V16AKLX0.1HA V16ASAX0.1HA V16AHLX0.1HA V16ALTY0.1HA V16APNY0.1HA
V16AKHX0.1HA V16ACNX0.1HA V16ATCX0.1HA V16APHY0.1HA V16AKMY0.1HA V16AMSY0.1HA

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Twelve Harbors Wave T_p at 2016/10

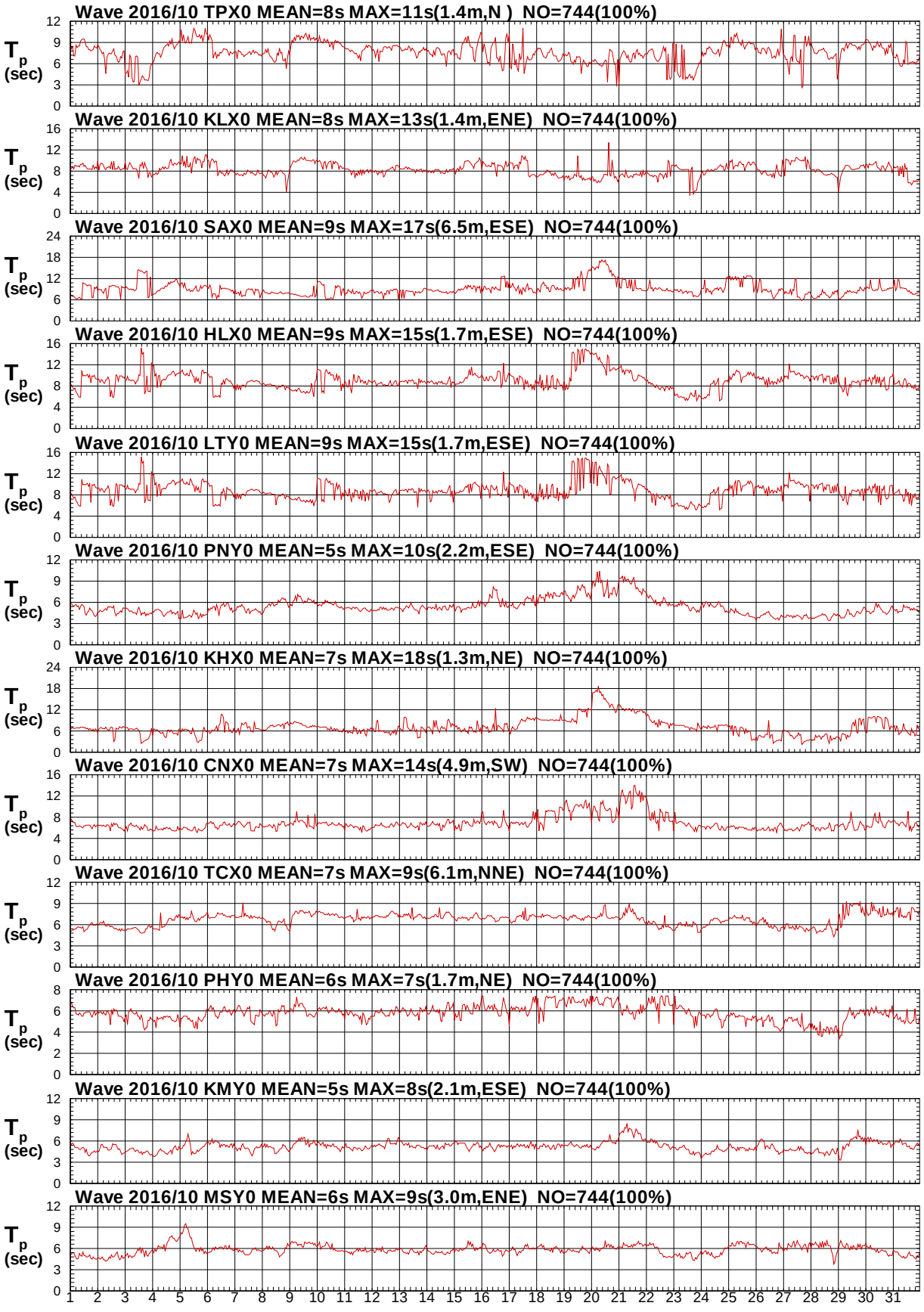

圖 13.32　2016年10月12海域觀測週期歷線圖

V16ATPX0.1HA V16AKLX0.1HA V16ASAX0.1HA V16AHLX0.1HA V16ALTY0.1HA V16APNY0.1HA
V16AKHX0.1HA V16ACNX0.1HA V16ATCX0.1HA V16APHY0.1HA V16AKMY0.1HA V16AMSY0.1HA

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Twelve Harbors Wave Direction at 2016/10

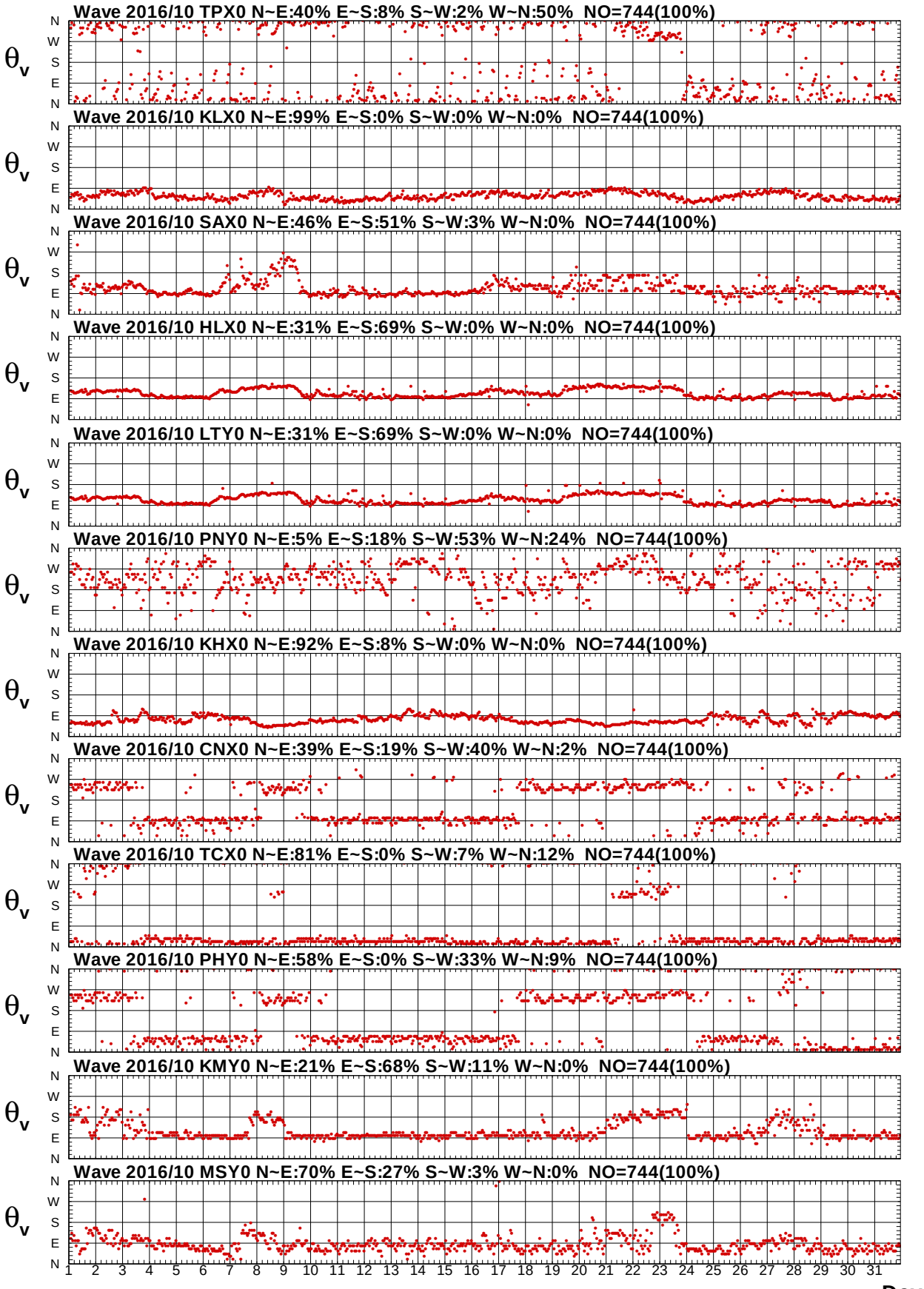

圖13.33　2016年10月12海域觀測波向歷線圖

V16ATPX0.1HA V16AKLX0.1HA V16ASAX0.1HA V16AHLX0.1HA V16ALTY0.1HA V16APNY0.1HA
V16AKHX0.1HA V16ACNX0.1HA V16ATCX0.1HA V16APHY0.1HA V16AKMY0.1HA V16AMSY0.1HA

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Twelve Harbors Wave H_s at 2016/11

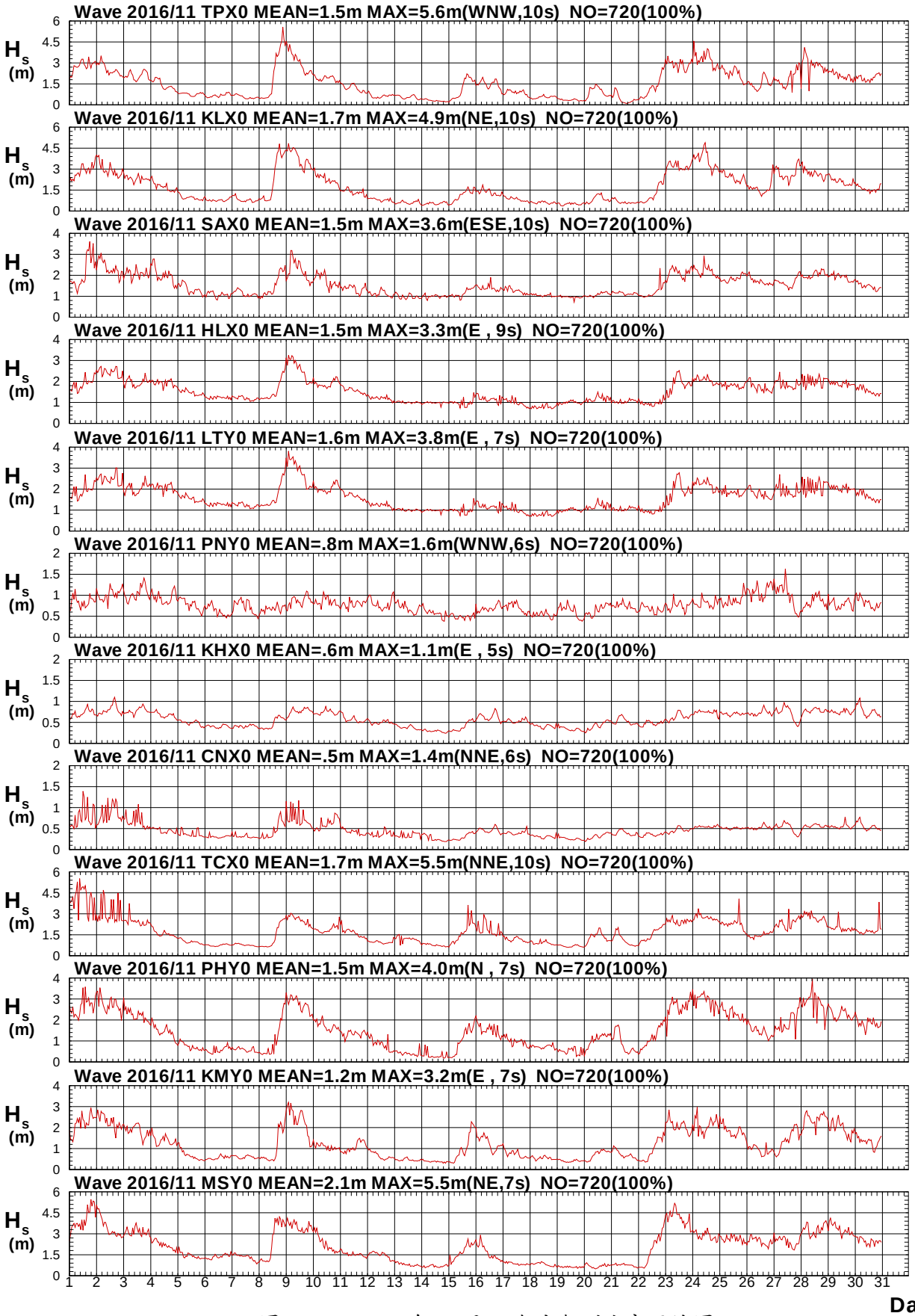

圖13.34　2016年11月12海域觀測波高歷線圖

V16BTPX0.1HA V16BKLX0.1HA V16BSAX0.1HA V16BHLX0.1HA V16BLTY0.1HA V16BPNY0.1HA
V16BKHX0.1HA V16BCNX0.1HA V16BTCX0.1HA V16BPHY0.1HA V16BKMY0.1HA V16BMSY0.1HA

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Twelve Harbors Wave T_p at 2016/11

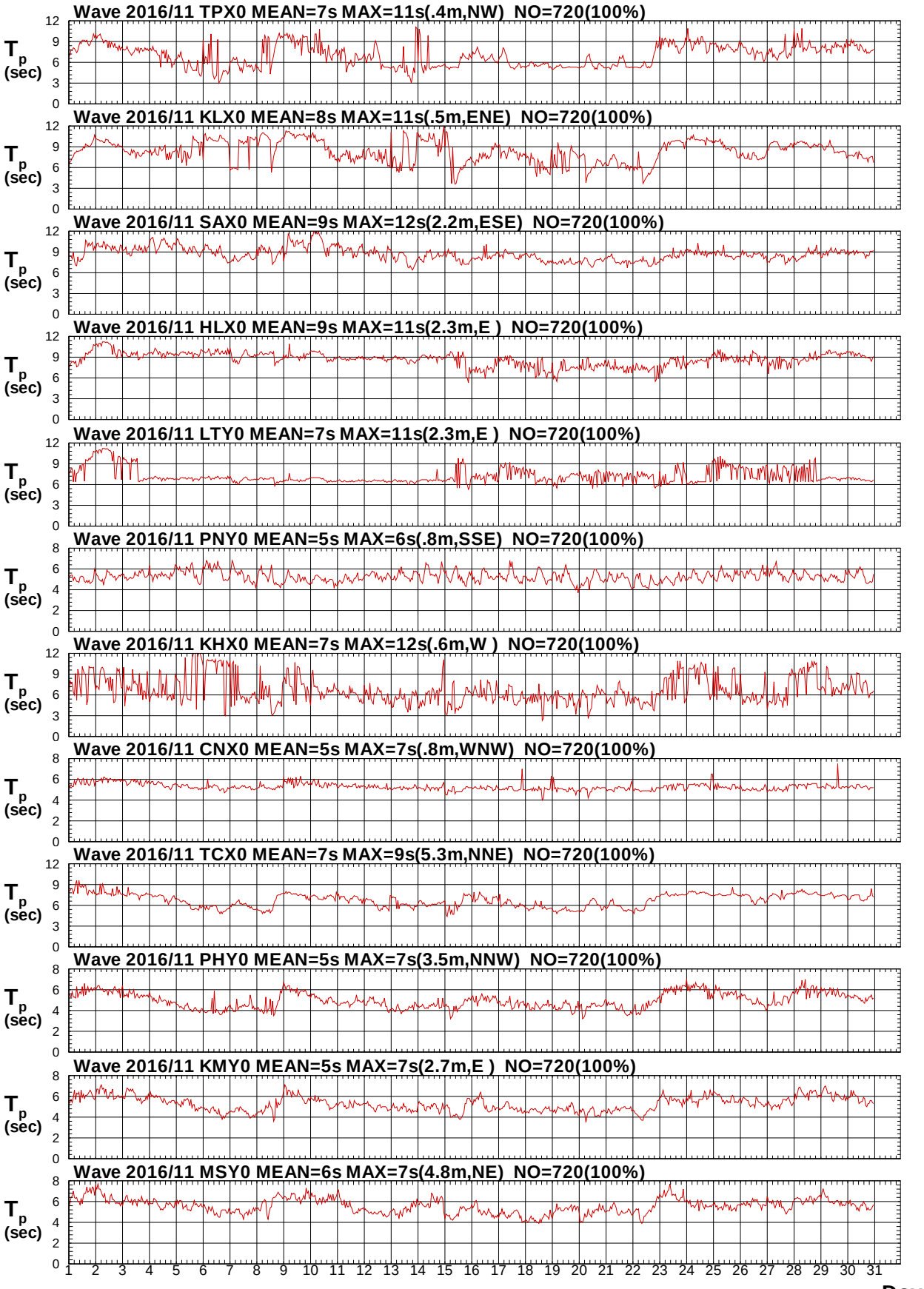

圖 13.35　2016年11月12海域觀測週期歷線圖

V16BTPX0.1HA V16BKLX0.1HA V16BSAX0.1HA V16BHLX0.1HA V16BLTY0.1HA V16BPNY0.1HA
V16BKHX0.1HA V16BCNX0.1HA V16BTCX0.1HA V16BPHY0.1HA V16BKMY0.1HA V16BMSY0.1HA

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Twelve Harbors Wave Direction at 2016/11

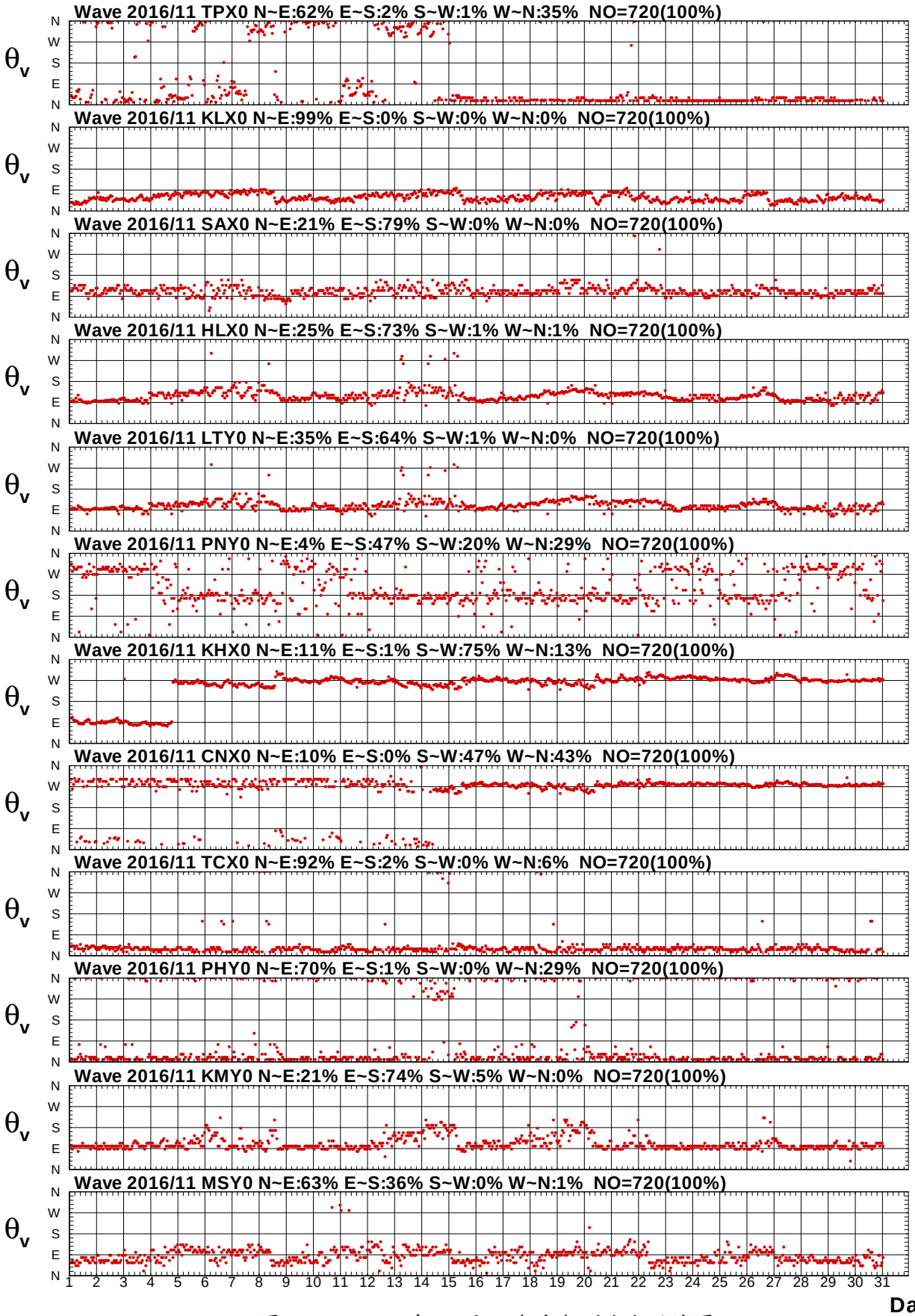

圖13.36　2016年11月12海域觀測波向歷線圖

V16BTPX0.1HA V16BKLX0.1HA V16BSAX0.1HA V16BHLX0.1HA V16BLTY0.1HA V16BPNY0.1HA
V16BKHX0.1HA V16BCNX0.1HA V16BTCX0.1HA V16BPHY0.1HA V16BKMY0.1HA V16BMSY0.1HA

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