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2015 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，2015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 2015 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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2015 年港灣環境資訊網觀測資料年報
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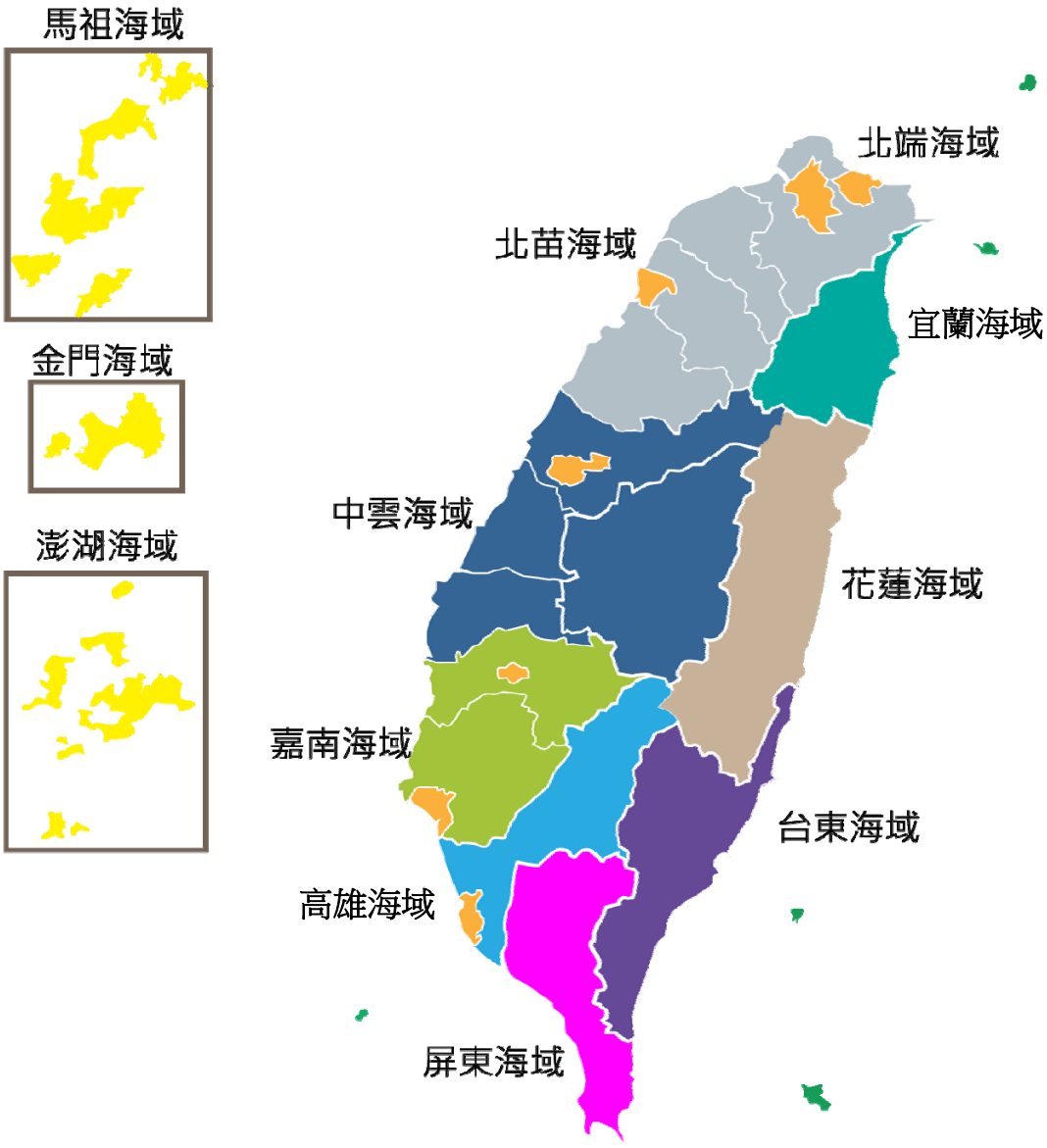
誌　　謝

2015 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　2015 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**，2015 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，2015 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 2015 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	2005/01-2015/11(觀測中)	港研中心	台北港新觀測樁
Y	24°45'39N	120°50'38"E	1997/06-2015/11(觀測中)	中央氣象局	新竹浮標站

北苗海域

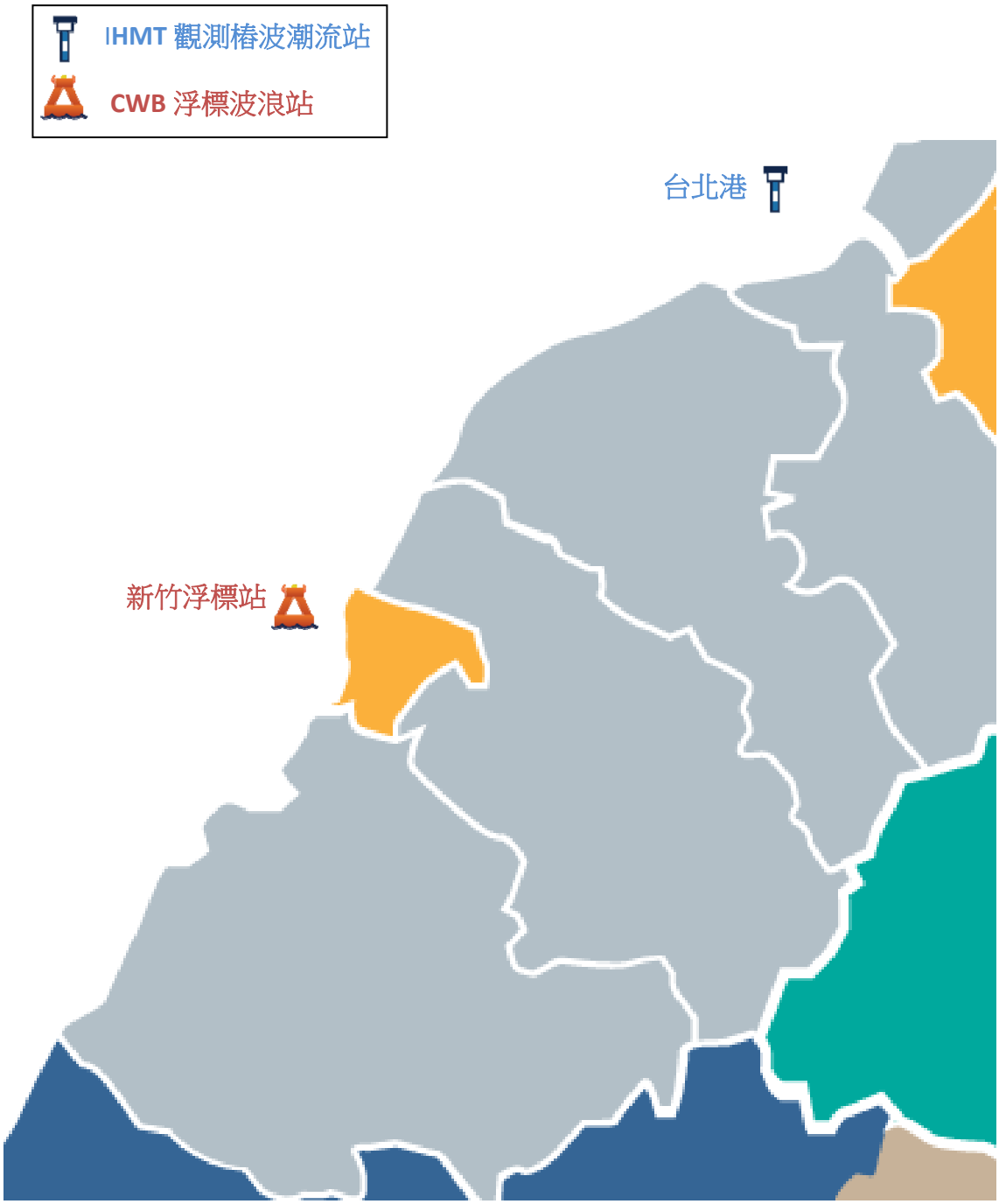


圖 1 北苗海域波浪觀測站位置示意圖

表1.1a 2015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
2014/12月	736 (98.9%)	732 (98.4%)	*	*	*	*	*	*
2015/ 1月	734 (98.7%)	732 (98.4%)	*	*	*	*	*	*
2015/ 2月	672 (100%)	670 (99.7%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	739 (99.3%)	*	*	*	*	*	*
2015/ 4月	312 (43.3%)	693 (96.3%)	*	*	*	*	*	*
2015/ 5月	*	725 (97.4%)	*	*	*	*	*	*
2015/ 6月	*	698 (96.9%)	*	*	*	*	*	*
2015/ 7月	*	740 (99.5%)	*	*	*	*	*	*
2015/ 8月	*	723 (97.2%)	*	*	*	*	*	*
2015/ 9月	*	713 (99.0%)	*	*	*	*	*	*
2015/10月	*	740 (99.5%)	*	*	*	*	*	*
2015/11月	*	716 (99.4%)	*	*	*	*	*	*
2015/冬季	2142 (99.2%)	2134 (98.8%)	*	*	*	*	*	*
2015/春季	1056 (47.8%)	2157 (97.7%)	*	*	*	*	*	*
2015/夏季	*	2161 (97.9%)	*	*	*	*	*	*
2015/秋季	*	2169 (99.3%)	*	*	*	*	*	*
2015/整年	3198 (36.5%)	8621 (98.4%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/04	2015/11	*	*	*	*	*	*

表1.1b 2015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
2014/12月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	*	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	*	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

Wave H_s in Pei-Miao Seas of TPX0 at 2015

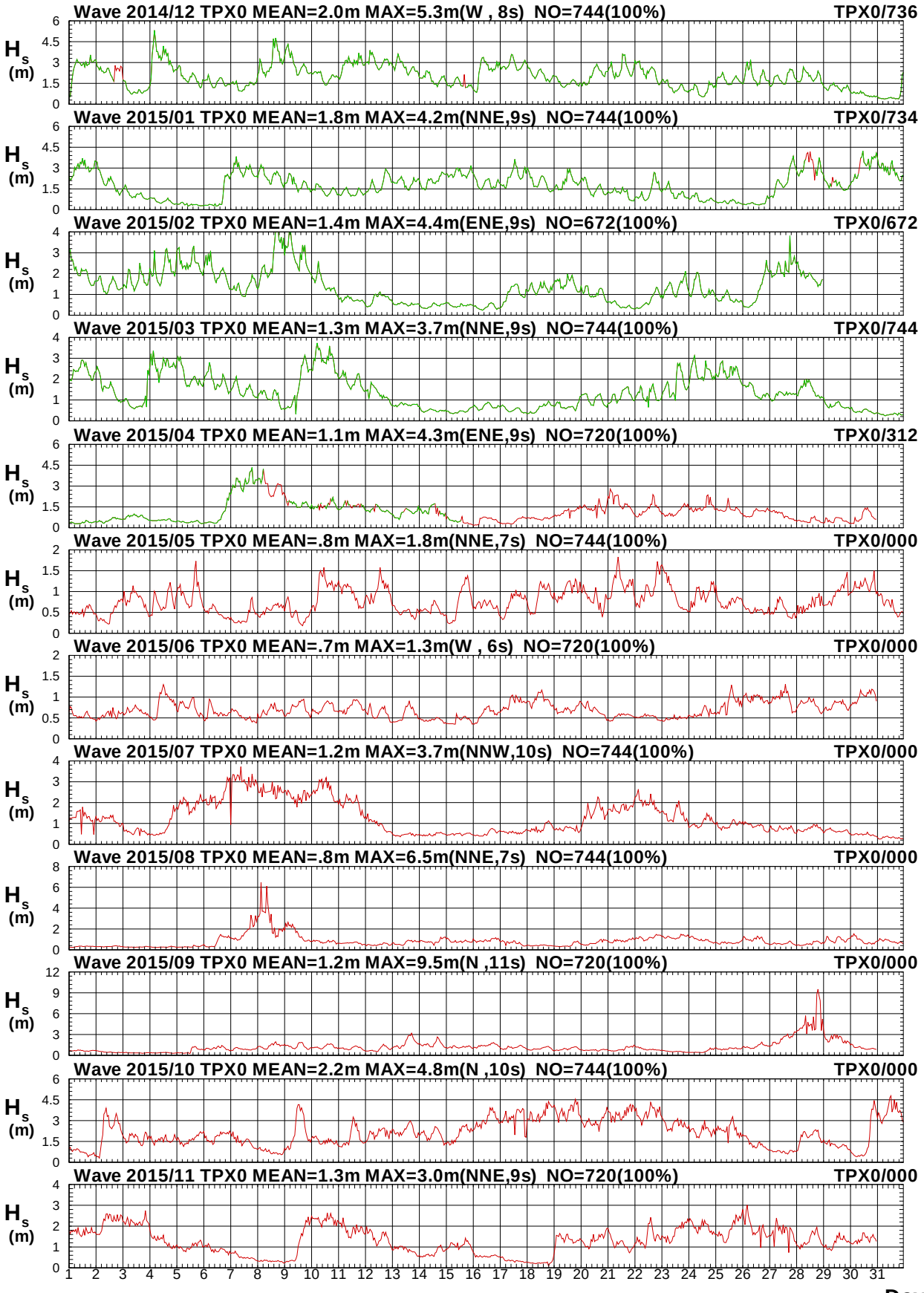


圖 1.1a　2015年每月北苗海域 X 站修補前後之波高比較圖

V14CTPX0.1HA V14CTPX0.1H0 V151TPX0.1HA V151TPX0.1H0 V152TPX0.1HA V152TPX0.1H0
V153TPX0.1HA V153TPX0.1H0 V154TPX0.1HA V154TPX0.1H0 V155TPX0.1HA V155TPX0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

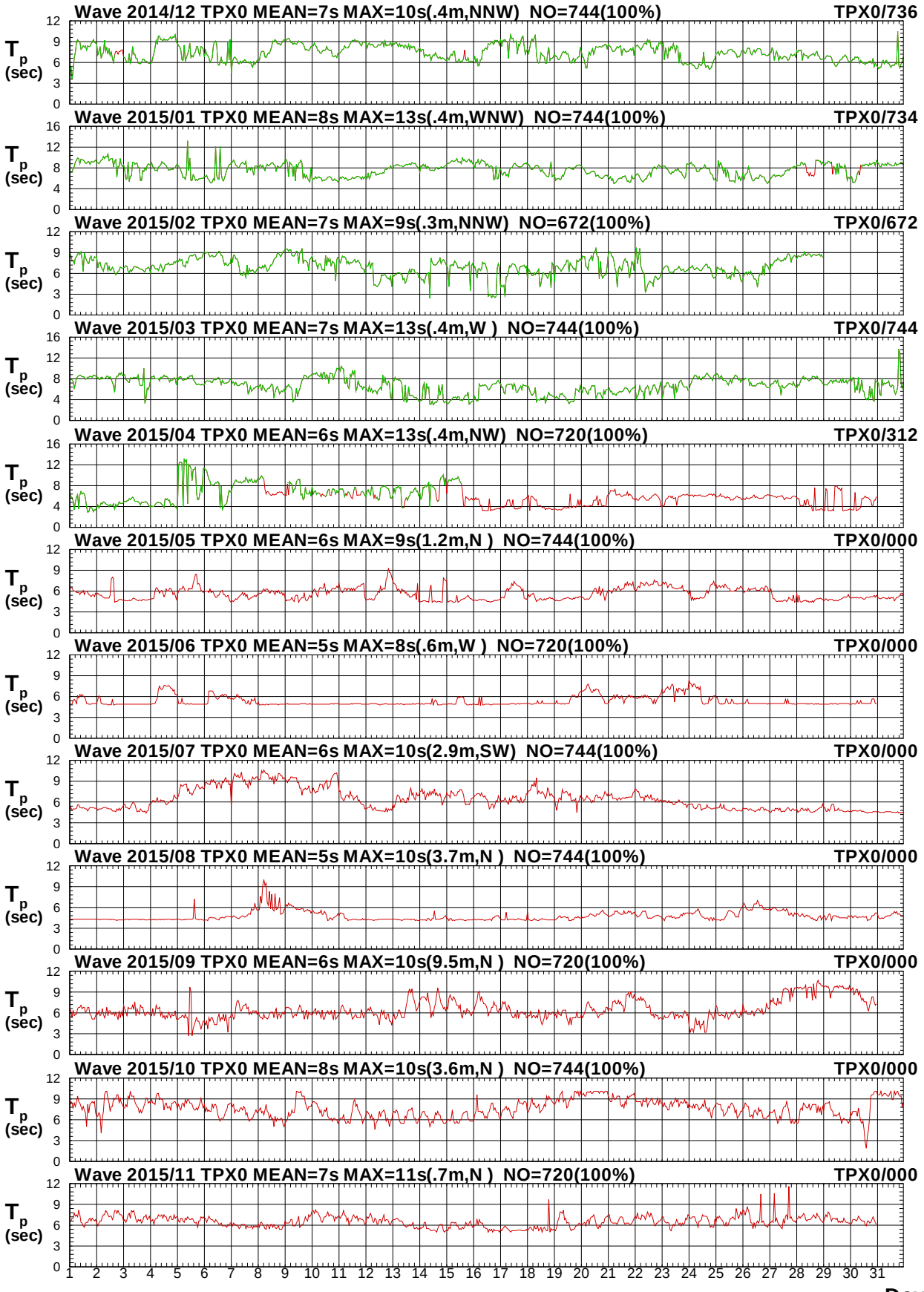


圖1.1b　2015年每月北苗海域 X 站修補前後之週期比較圖

V14CTPX0.1HA V14CTPX0.1H0 V151TPX0.1HA V151TPX0.1H0 V152TPX0.1HA V152TPX0.1H0
V153TPX0.1HA V153TPX0.1H0 V154TPX0.1HA V154TPX0.1H0 V155TPX0.1HA V155TPX0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

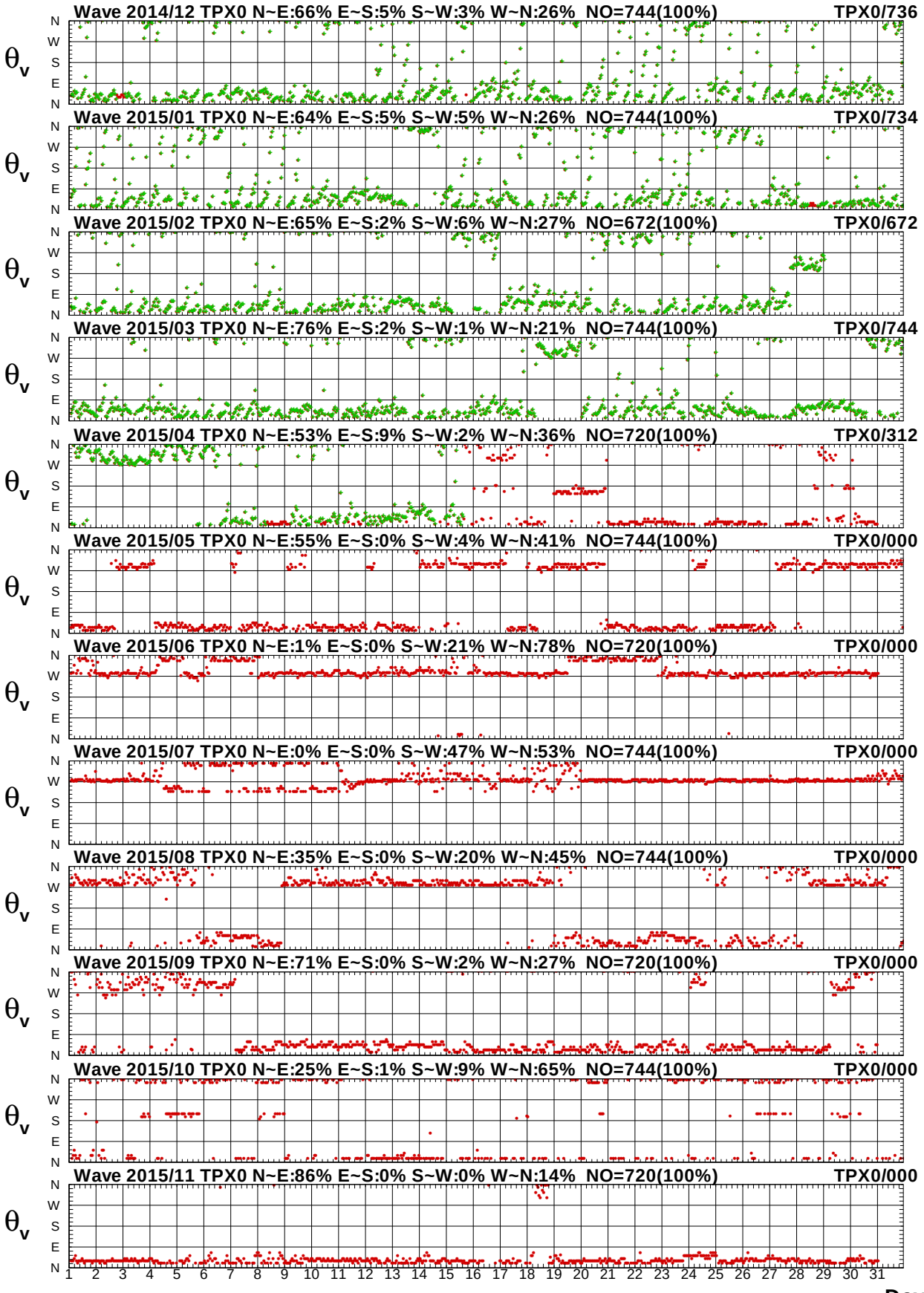


圖 1.1c　2015年每月北苗海域 X 站修補前後之波向比較圖

Wave H_s in Pei-Miao Seas of TPX0 at 2015

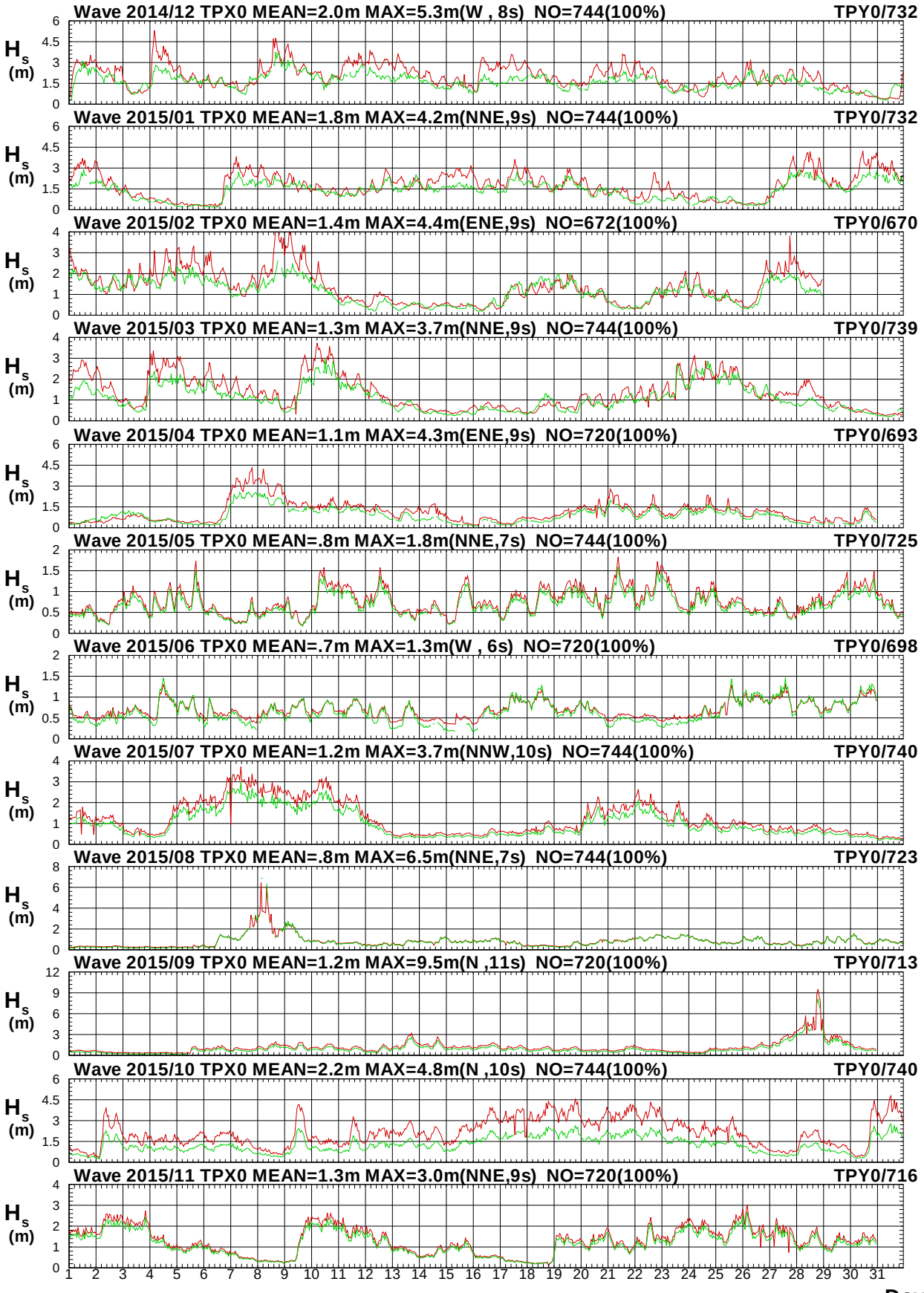


圖1.2a　2015年每月北苗海域 X 站與 Y 站波高比較圖

V14CTPX0.1HA V14CTPY0.1H0 V151TPX0.1HA V151TPY0.1H0 V152TPX0.1HA V152TPY0.1H0
V153TPX0.1HA V153TPY0.1H0 V154TPX0.1HA V154TPY0.1H0 V155TPX0.1HA V155TPY0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

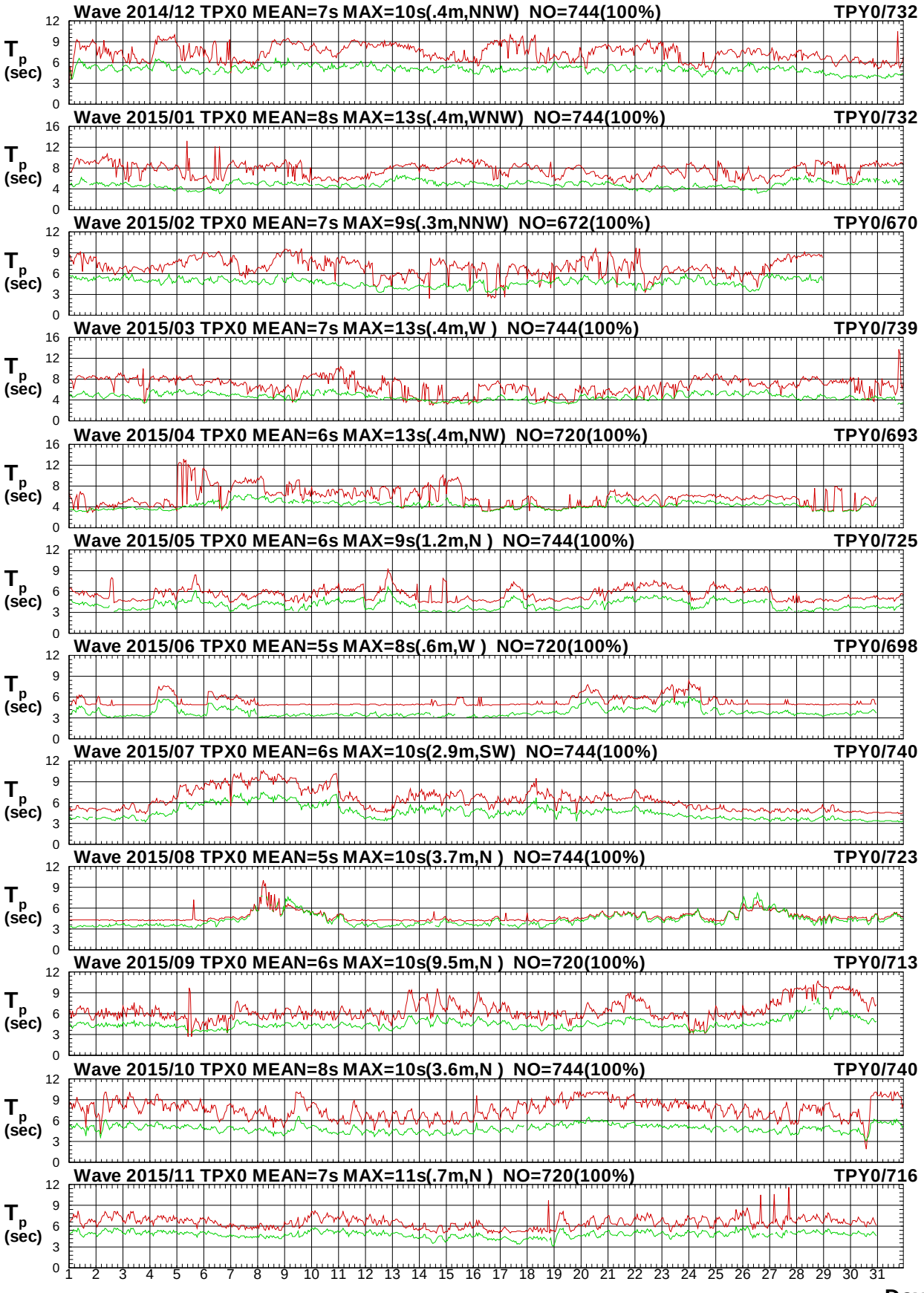


圖 1.2b　2015年每月北苗海域 X 站與 Y 站週期比較圖

V14CTPX0.1HA V14CTPY0.1H0 V151TPX0.1HA V151TPY0.1H0 V152TPX0.1HA V152TPY0.1H0
V153TPX0.1HA V153TPY0.1H0 V154TPX0.1HA V154TPY0.1H0 V155TPX0.1HA V155TPY0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

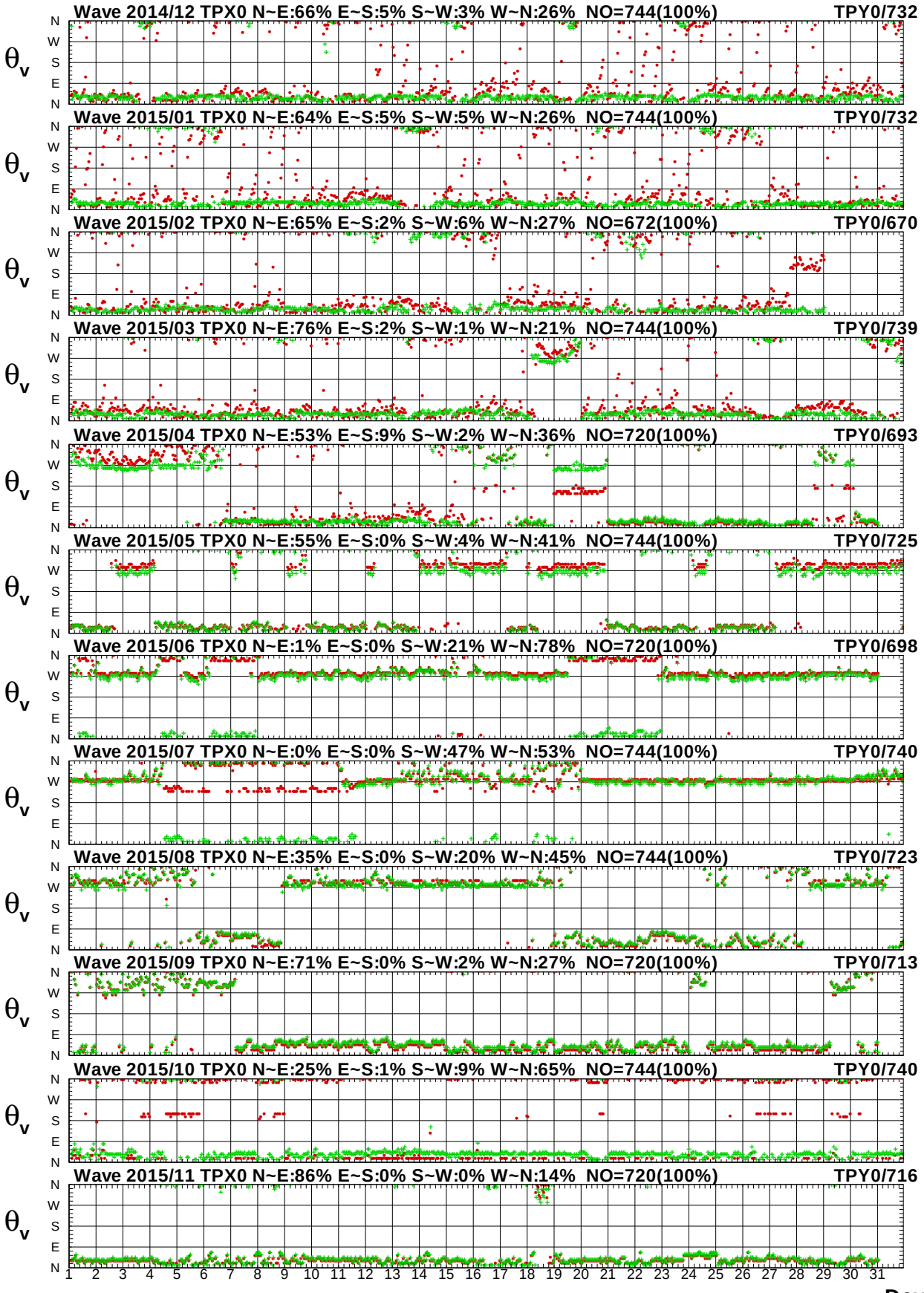


圖 1.2c　2015年每月北苗海域 X 站與 Y 站波向比較圖

V14CTPX0.1HA V14CTPY0.1H0 V151TPX0.1HA V151TPY0.1H0 V152TPX0.1HA V152TPY0.1H0
V153TPX0.1HA V153TPY0.1H0 V154TPX0.1HA V154TPY0.1H0 V155TPX0.1HA V155TPY0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2015

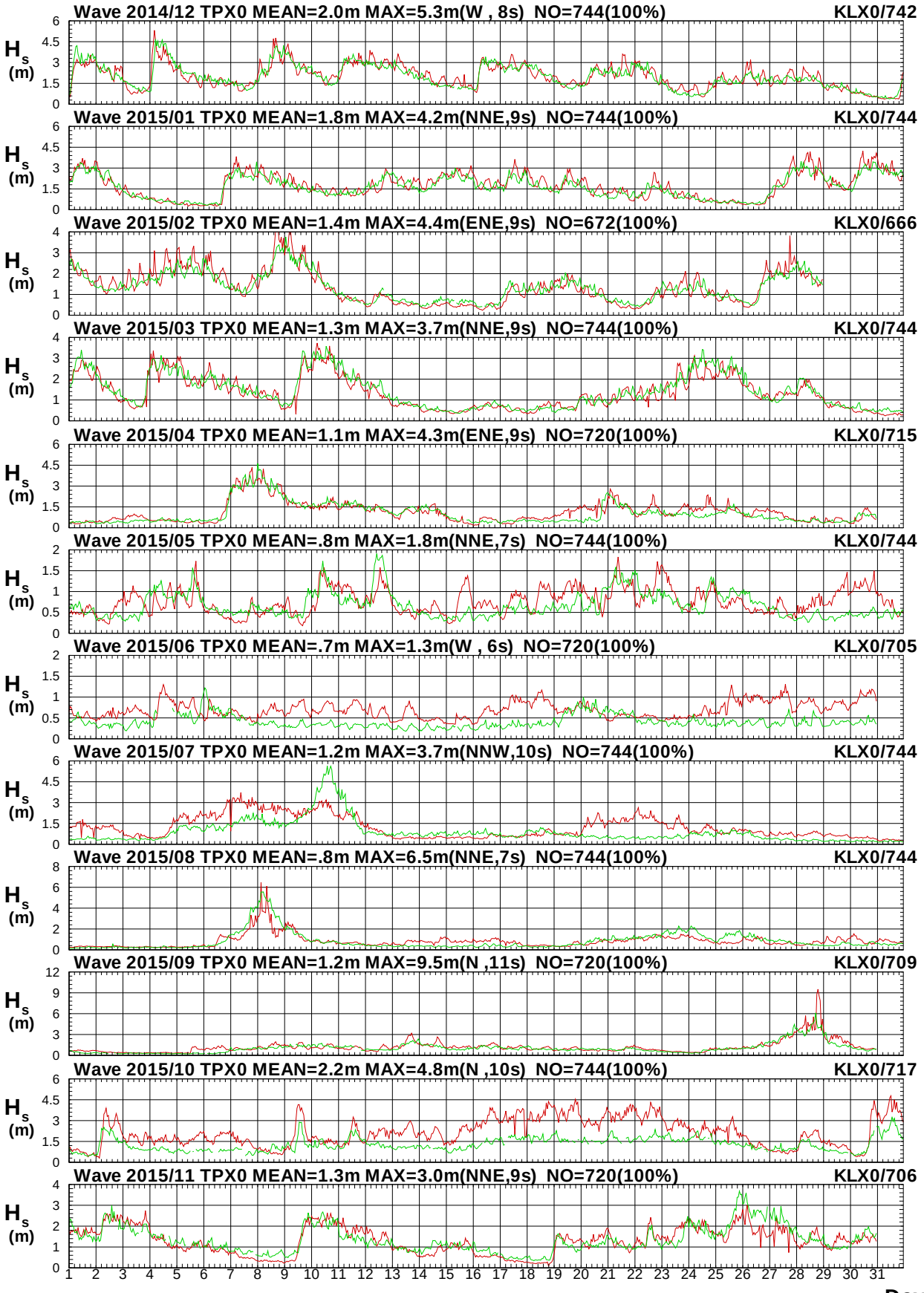


圖 1.3a　2015年每月北苗海域 X 站與北端海域 X 站波高圖

V14CTPX0.1HA V14CKLX0.1H0 V151TPX0.1HA V151KLX0.1H0 V152TPX0.1HA V152KLX0.1H0
V153TPX0.1HA V153KLX0.1H0 V154TPX0.1HA V154KLX0.1H0 V155TPX0.1HA V155KLX0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

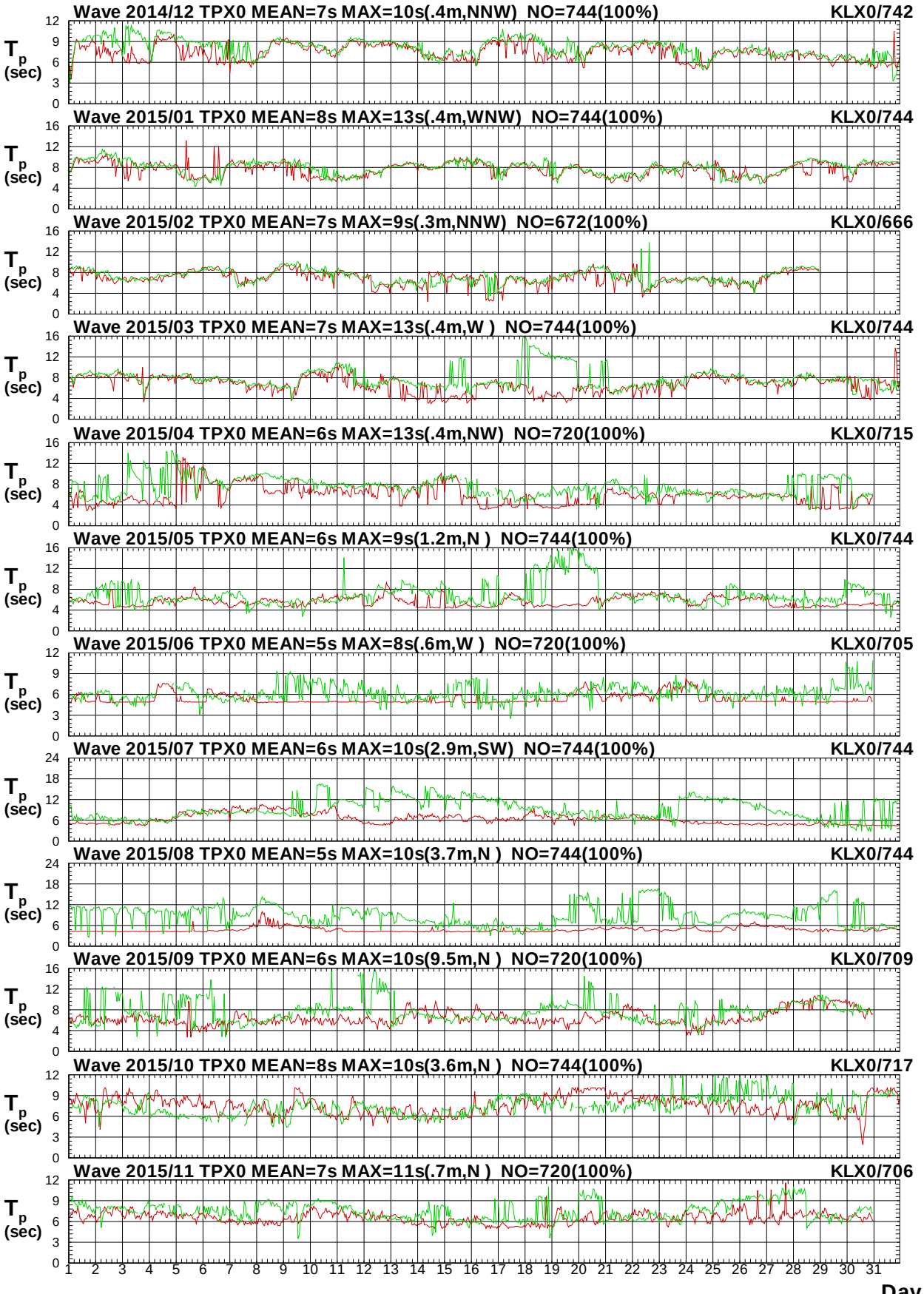


圖 1.3b　2015年每月北苗海域 X 站與北端海域 X 站週期圖

V14CTPX0.1HA V14CKLX0.1H0 V151TPX0.1HA V151KLX0.1H0 V152TPX0.1HA V152KLX0.1H0
V153TPX0.1HA V153KLX0.1H0 V154TPX0.1HA V154KLX0.1H0 V155TPX0.1HA V155KLX0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

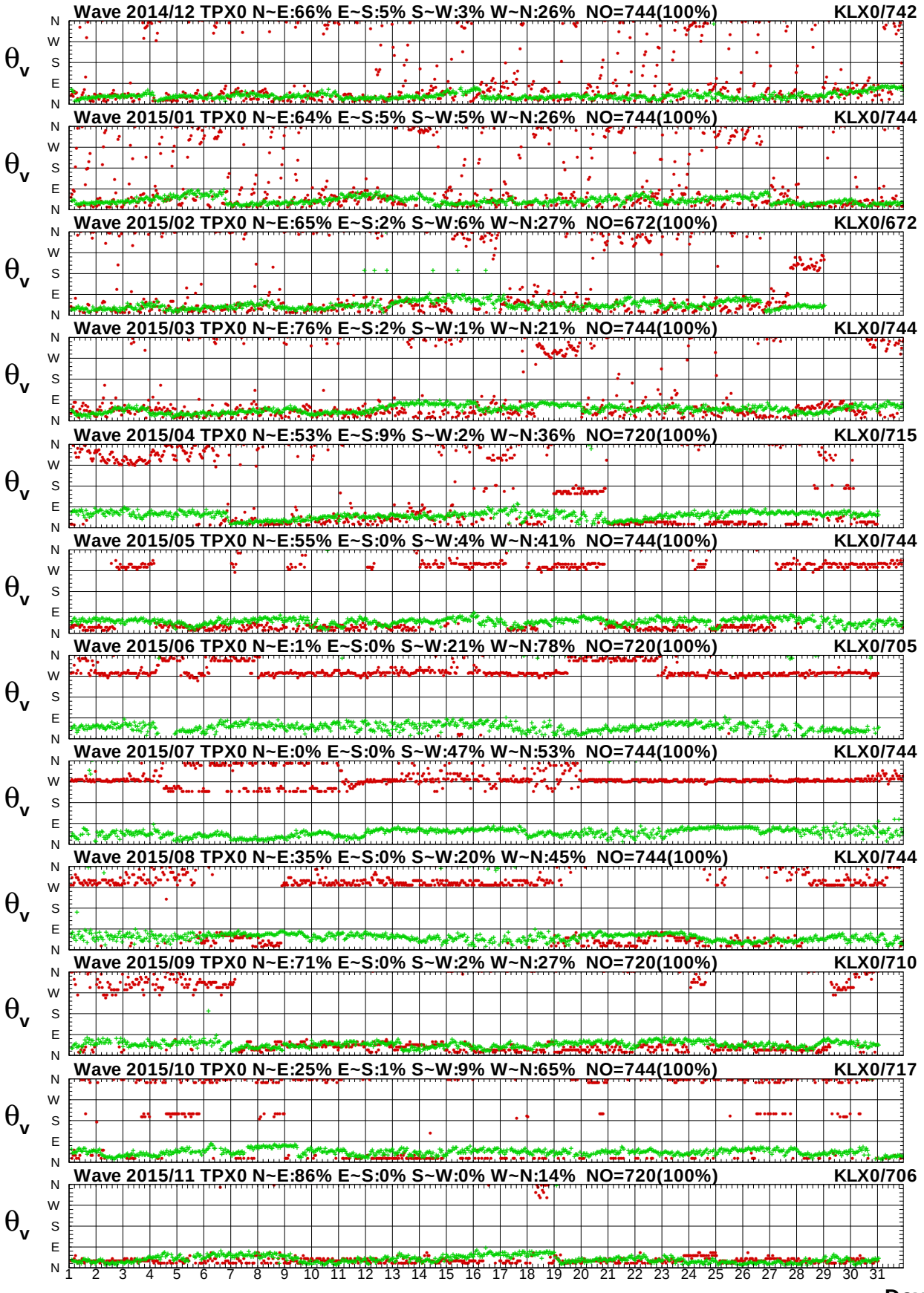


圖 1.3c　2015年每月北苗海域 X 站與北端海域 X 站波向圖

V14CTPX0.1HA V14CKLX0.1H0 V151TPX0.1HA V151KLX0.1H0 V152TPX0.1HA V152KLX0.1H0
V153TPX0.1HA V153KLX0.1H0 V154TPX0.1HA V154KLX0.1H0 V155TPX0.1HA V155KLX0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2015

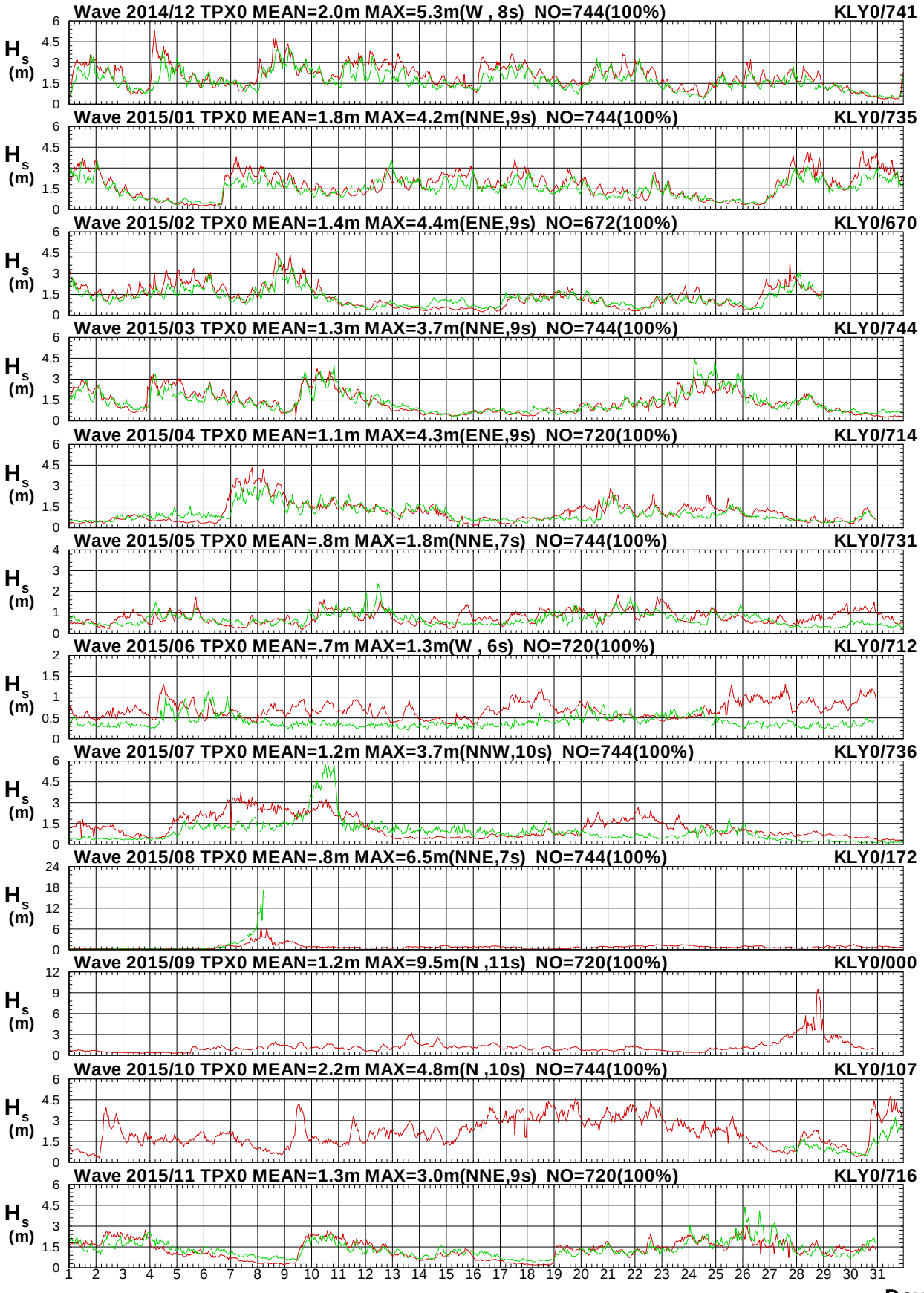


圖 1.4a　2015年每月北苗海域 X 站與北端海域 Y 站波高圖

V14CTPX0.1HA V14CKLY0.1H0 V151TPX0.1HA V151KLY0.1H0 V152TPX0.1HA V152KLY0.1H0
V153TPX0.1HA V153KLY0.1H0 V154TPX0.1HA V154KLY0.1H0 V155TPX0.1HA V155KLY0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

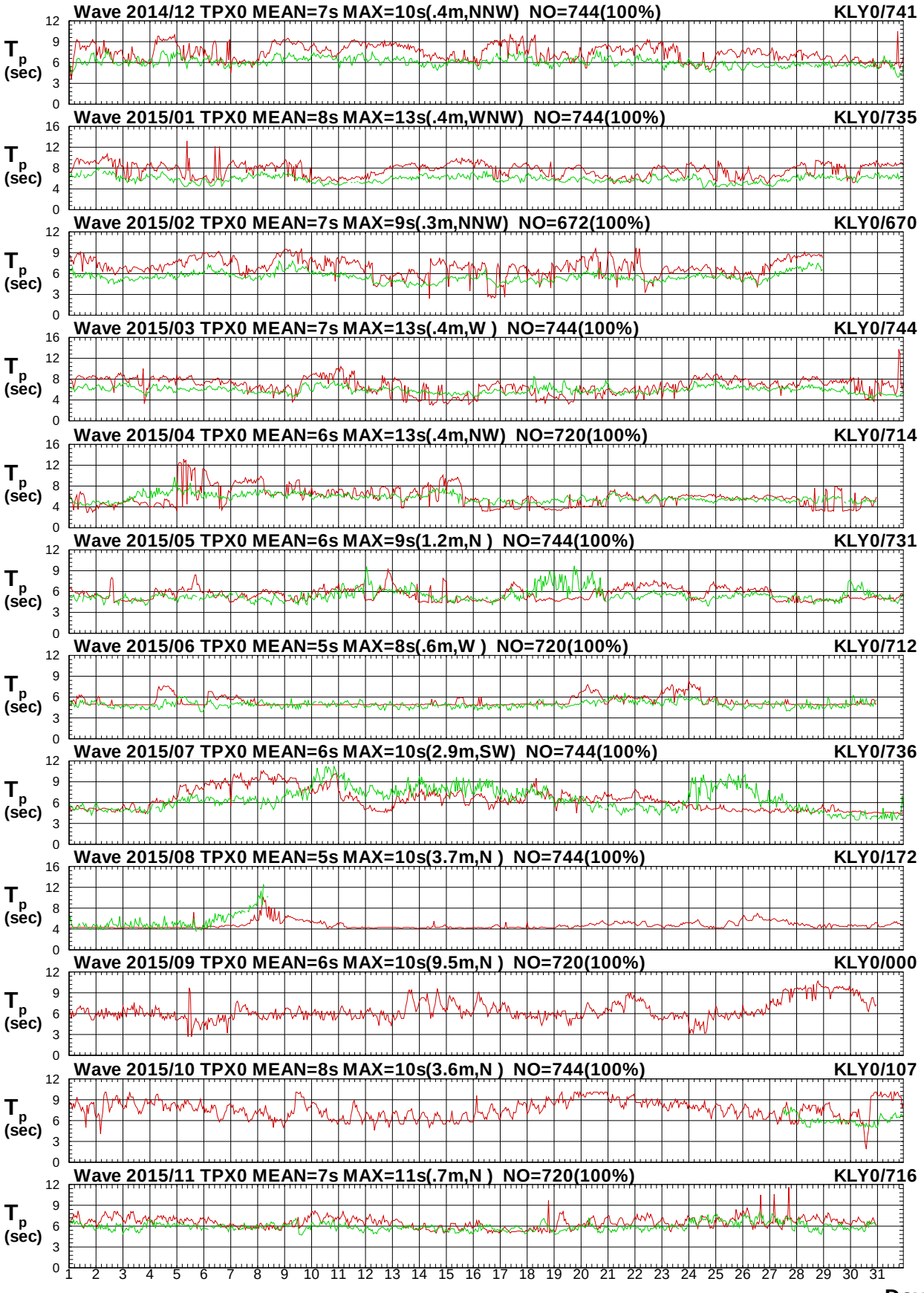


圖 1.4b　2015年每月北苗海域 X 站與北端海域 Y 站週期圖

V14CTPX0.1HA V14CKLY0.1H0 V151TPX0.1HA V151KLY0.1H0 V152TPX0.1HA V152KLY0.1H0
V153TPX0.1HA V153KLY0.1H0 V154TPX0.1HA V154KLY0.1H0 V155TPX0.1HA V155KLY0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

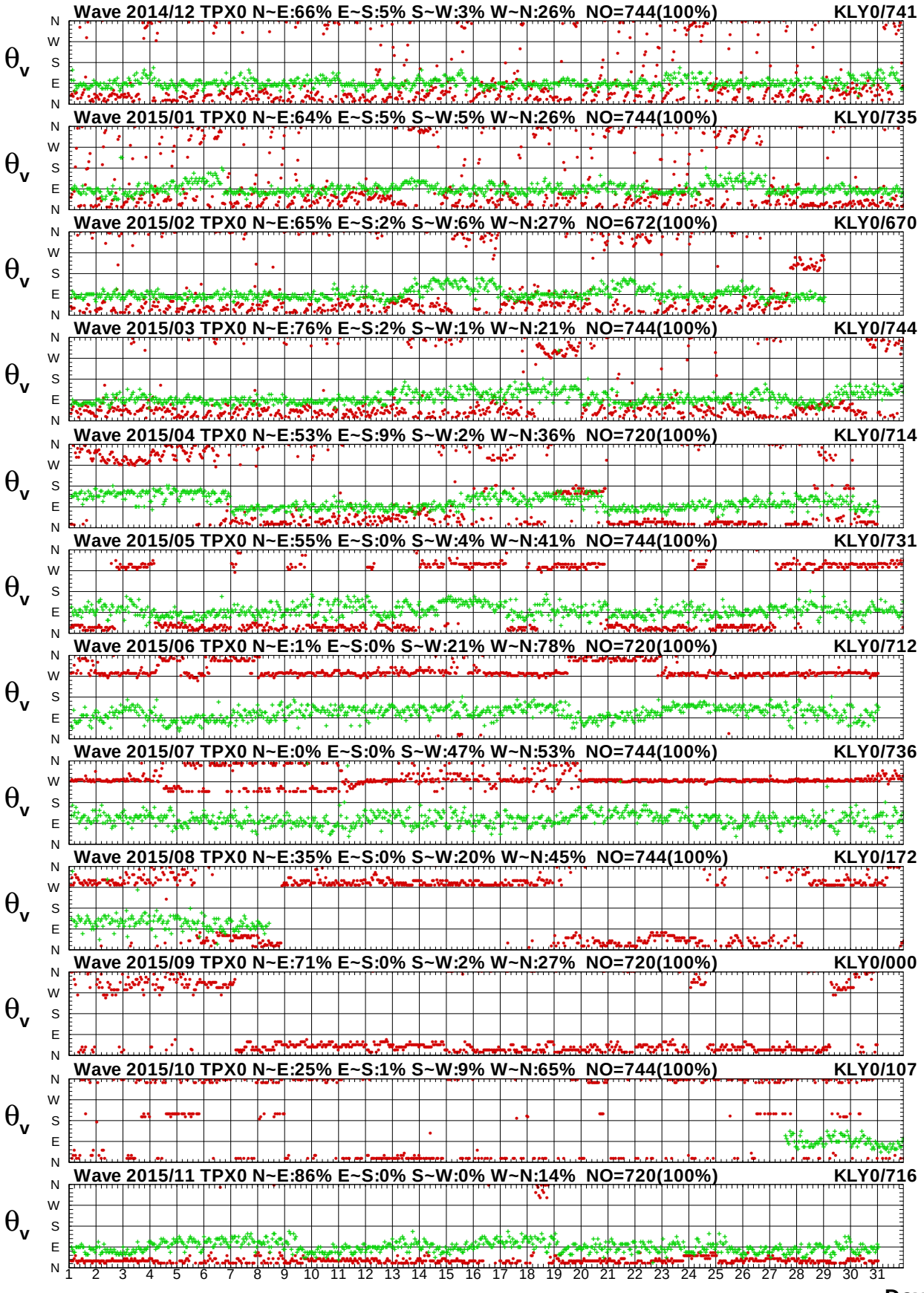


圖 1.4c　2015年每月北苗海域 X 站與北端海域 Y 站波向圖

V14CTPX0.1HA V14CKLY0.1H0 V151TPX0.1HA V151KLY0.1H0 V152TPX0.1HA V152KLY0.1H0
V153TPX0.1HA V153KLY0.1H0 V154TPX0.1HA V154KLY0.1H0 V155TPX0.1HA V155KLY0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2015

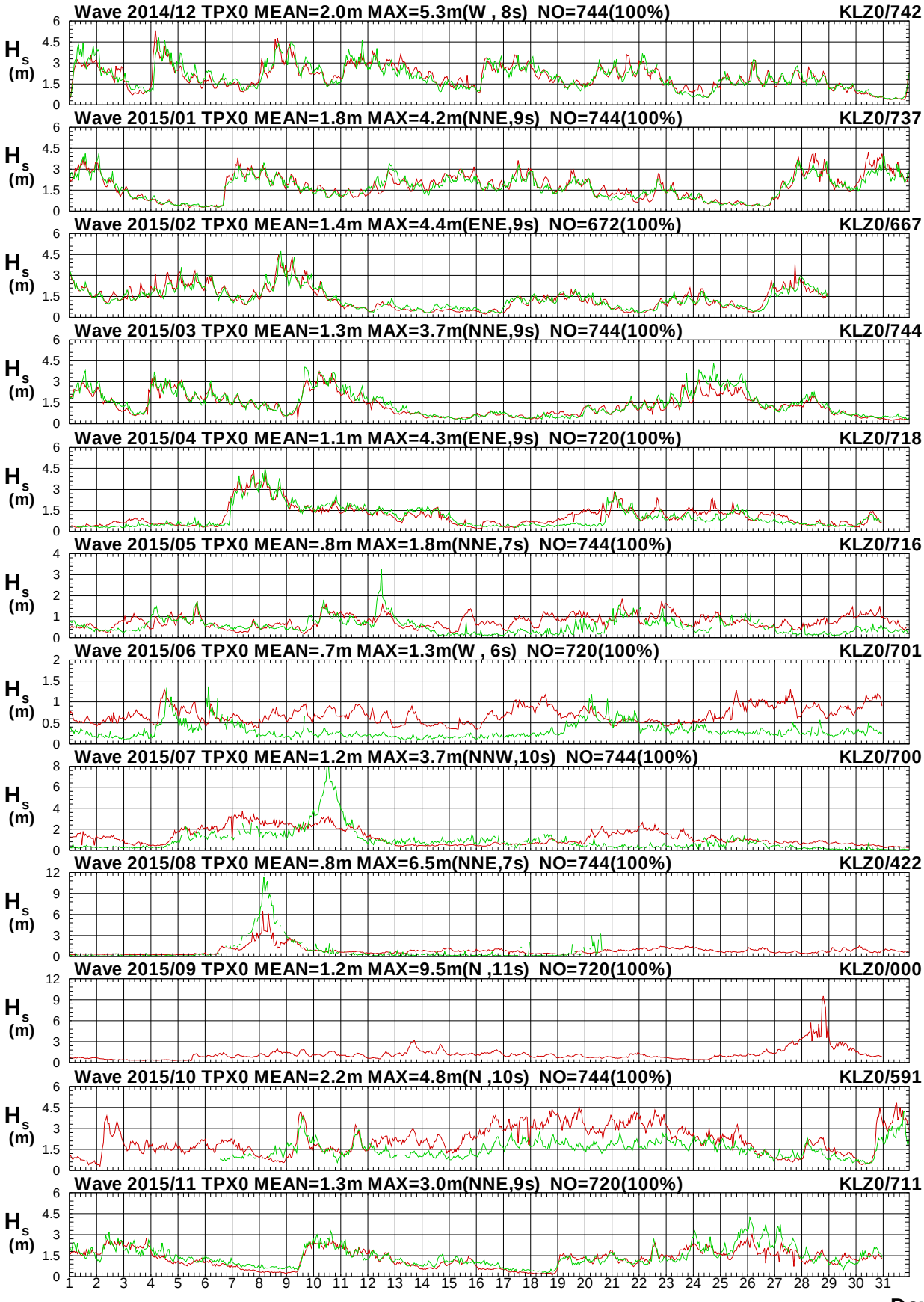


圖 1.5a　2015年每月北苗海域 X 站與北端海域 Z 站波高圖

V14CTPX0.1HA V14CKLZ0.1H0 V151TPX0.1HA V151KLZ0.1H0 V152TPX0.1HA V152KLZ0.1H0
V153TPX0.1HA V153KLZ0.1H0 V154TPX0.1HA V154KLZ0.1H0 V155TPX0.1HA V155KLZ0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

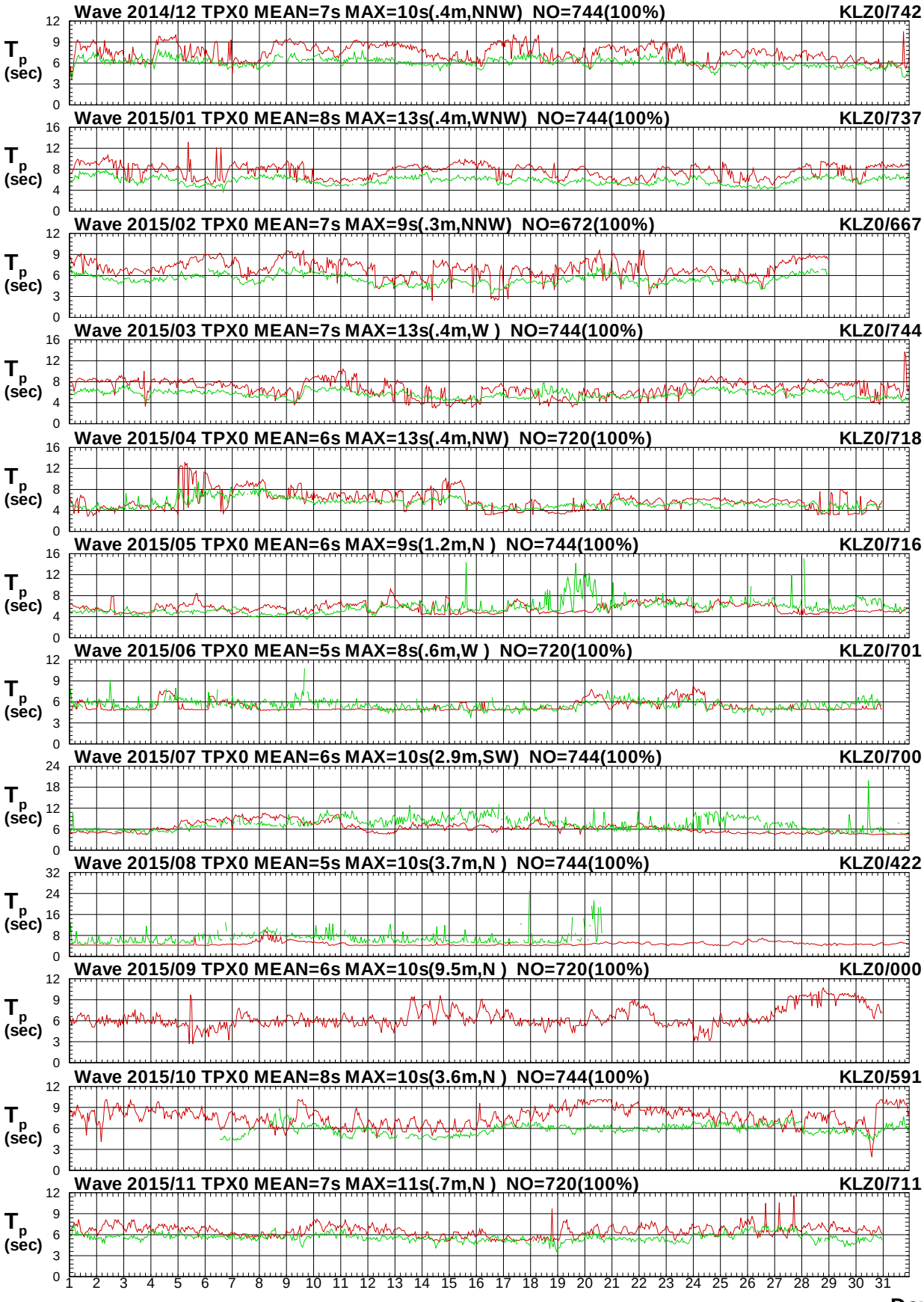


圖 1.5b　2015年每月北苗海域 X 站與北端海域 Z 站週期圖

V14CTPX0.1HA V14CKLZ0.1H0 V151TPX0.1HA V151KLZ0.1H0 V152TPX0.1HA V152KLZ0.1H0
V153TPX0.1HA V153KLZ0.1H0 V154TPX0.1HA V154KLZ0.1H0 V155TPX0.1HA V155KLZ0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

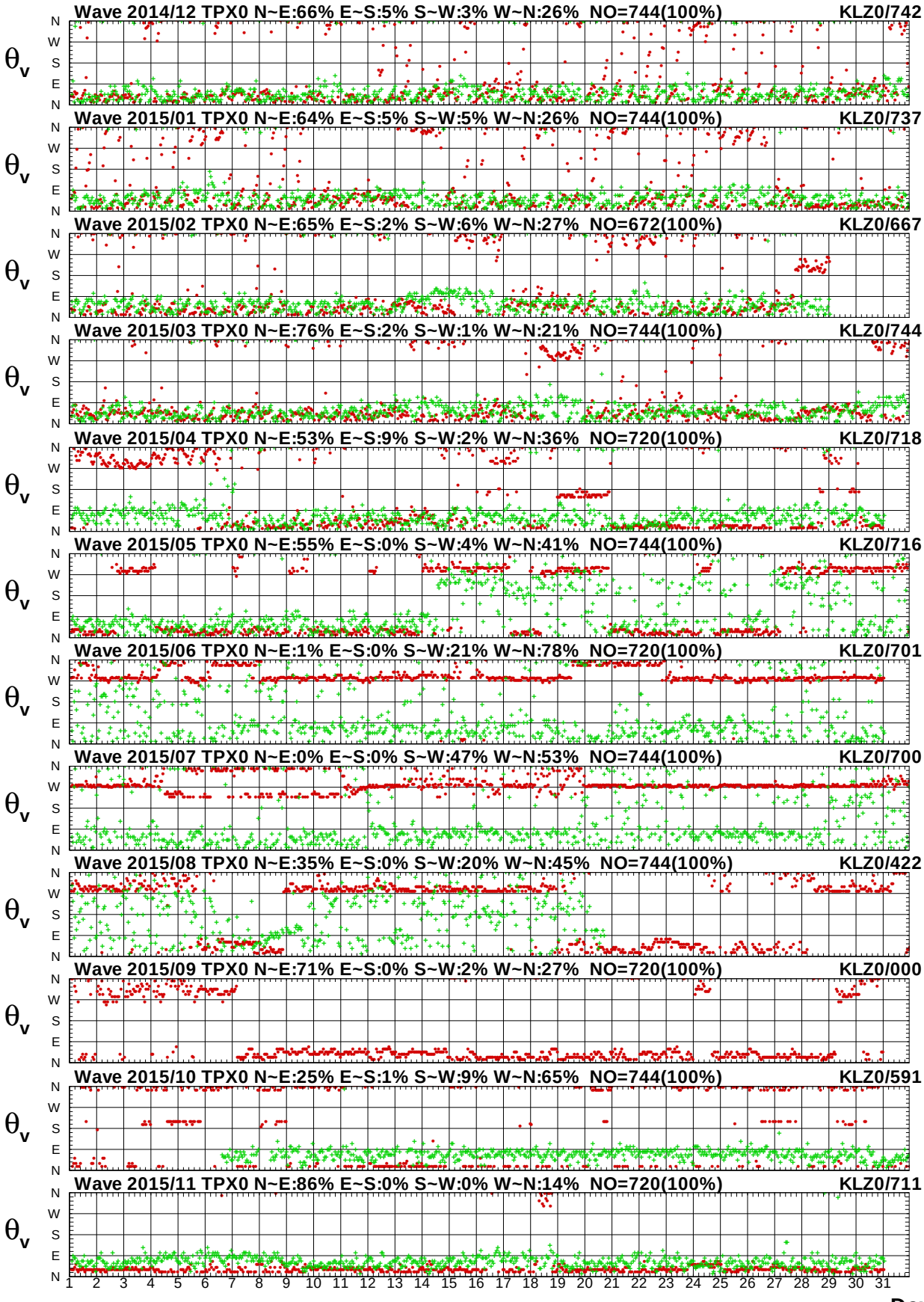


圖1.5c　2015年每月北苗海域 X 站與北端海域 Z 站波向圖

V14CTPX0.1HA V14CKLZ0.1H0 V151TPX0.1HA V151KLZ0.1H0 V152TPX0.1HA V152KLZ0.1H0
V153TPX0.1HA V153KLZ0.1H0 V154TPX0.1HA V154KLZ0.1H0 V155TPX0.1HA V155KLZ0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2015

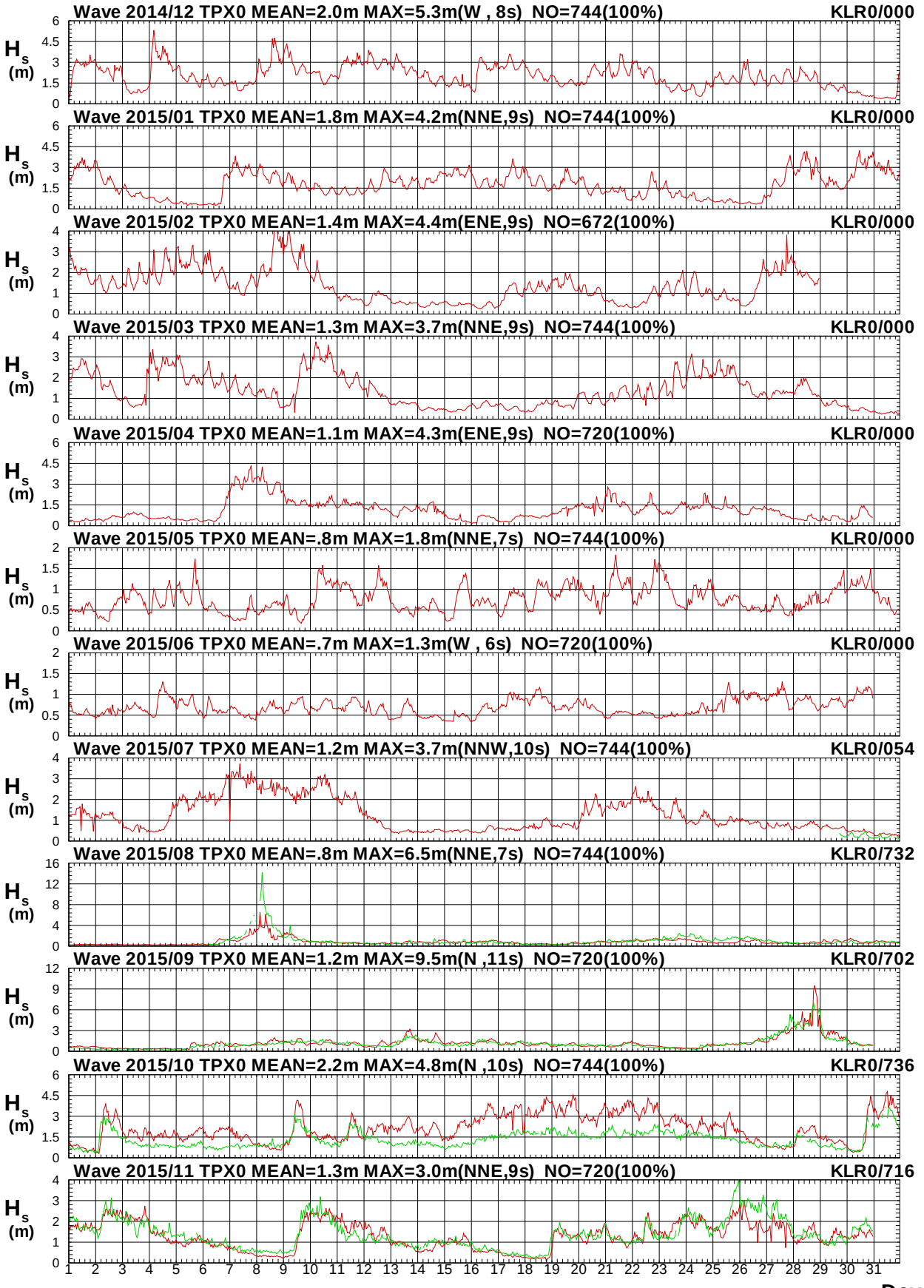


圖 1.6a　2015年每月北苗海域 X 站與北端海域 R 站波高圖

V14CTPX0.1HA V14CKLR0.1H0 V151TPX0.1HA V151KLR0.1H0 V152TPX0.1HA V152KLR0.1H0
V153TPX0.1HA V153KLR0.1H0 V154TPX0.1HA V154KLR0.1H0 V155TPX0.1HA V155KLR0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

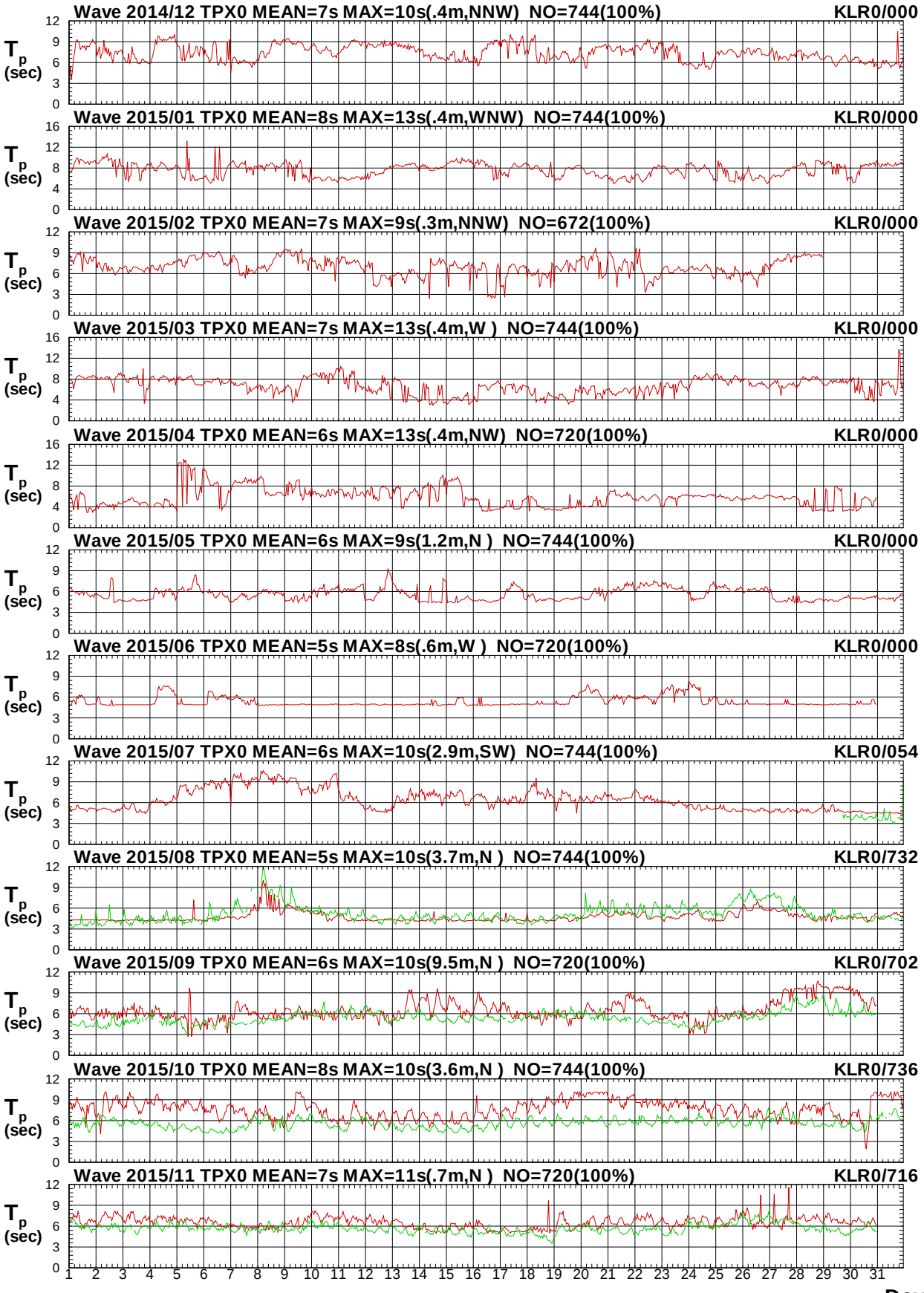


圖 1.6b　2015年每月北苗海域 X 站與北端海域 R 站週期圖

V14CTPX0.1HA V14CKLR0.1H0 V151TPX0.1HA V151KLR0.1H0 V152TPX0.1HA V152KLR0.1H0
V153TPX0.1HA V153KLR0.1H0 V154TPX0.1HA V154KLR0.1H0 V155TPX0.1HA V155KLR0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

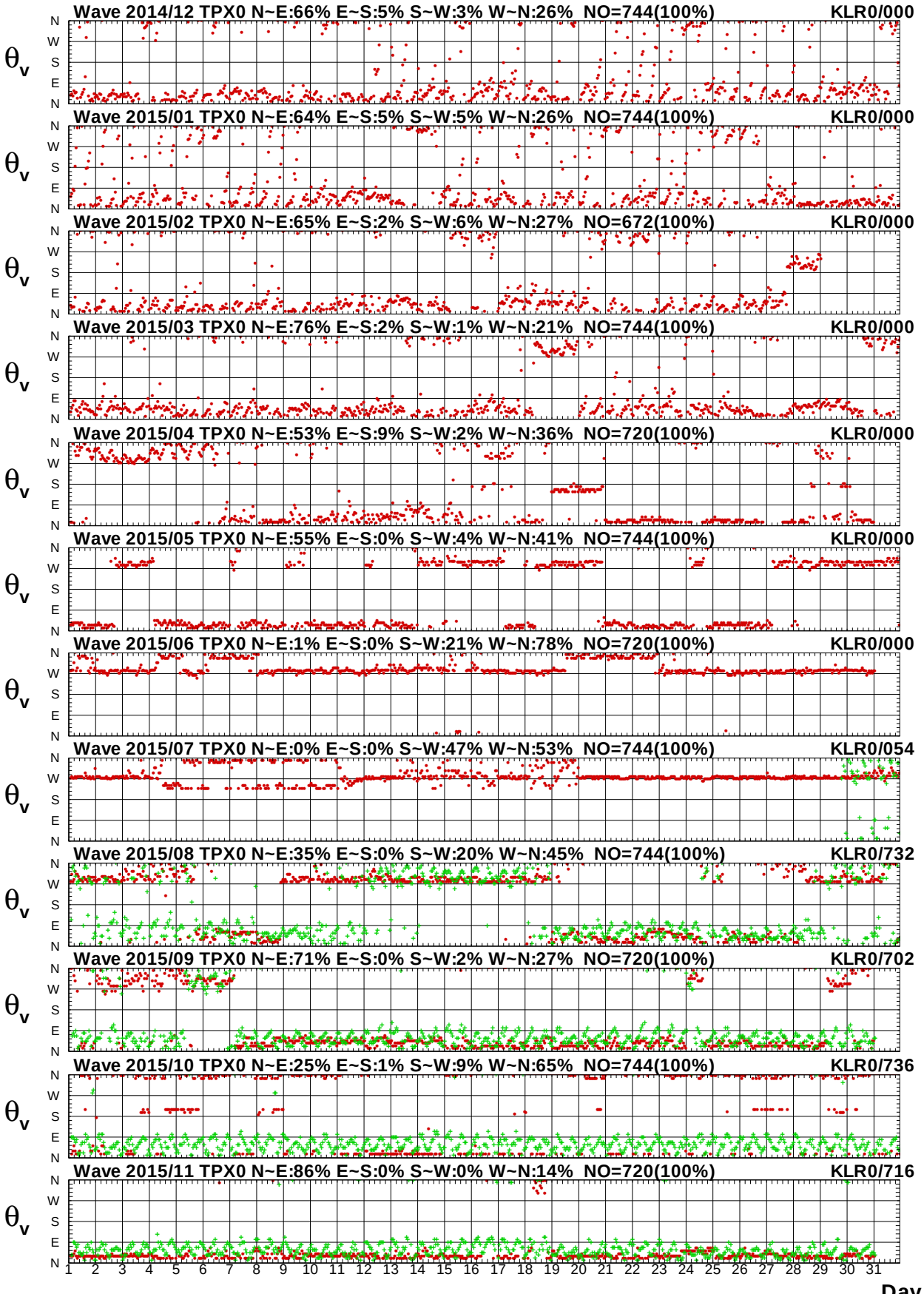


圖 1.6c　2015年每月北苗海域 X 站與北端海域 R 站波向圖

V14CTPX0.1HA V14CKLR0.1H0 V151TPX0.1HA V151KLR0.1H0 V152TPX0.1HA V152KLR0.1H0
V153TPX0.1HA V153KLR0.1H0 V154TPX0.1HA V154KLR0.1H0 V155TPX0.1HA V155KLR0.1H0

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Wave H_s in Pei-Miao Seas of TPX0 at 2015

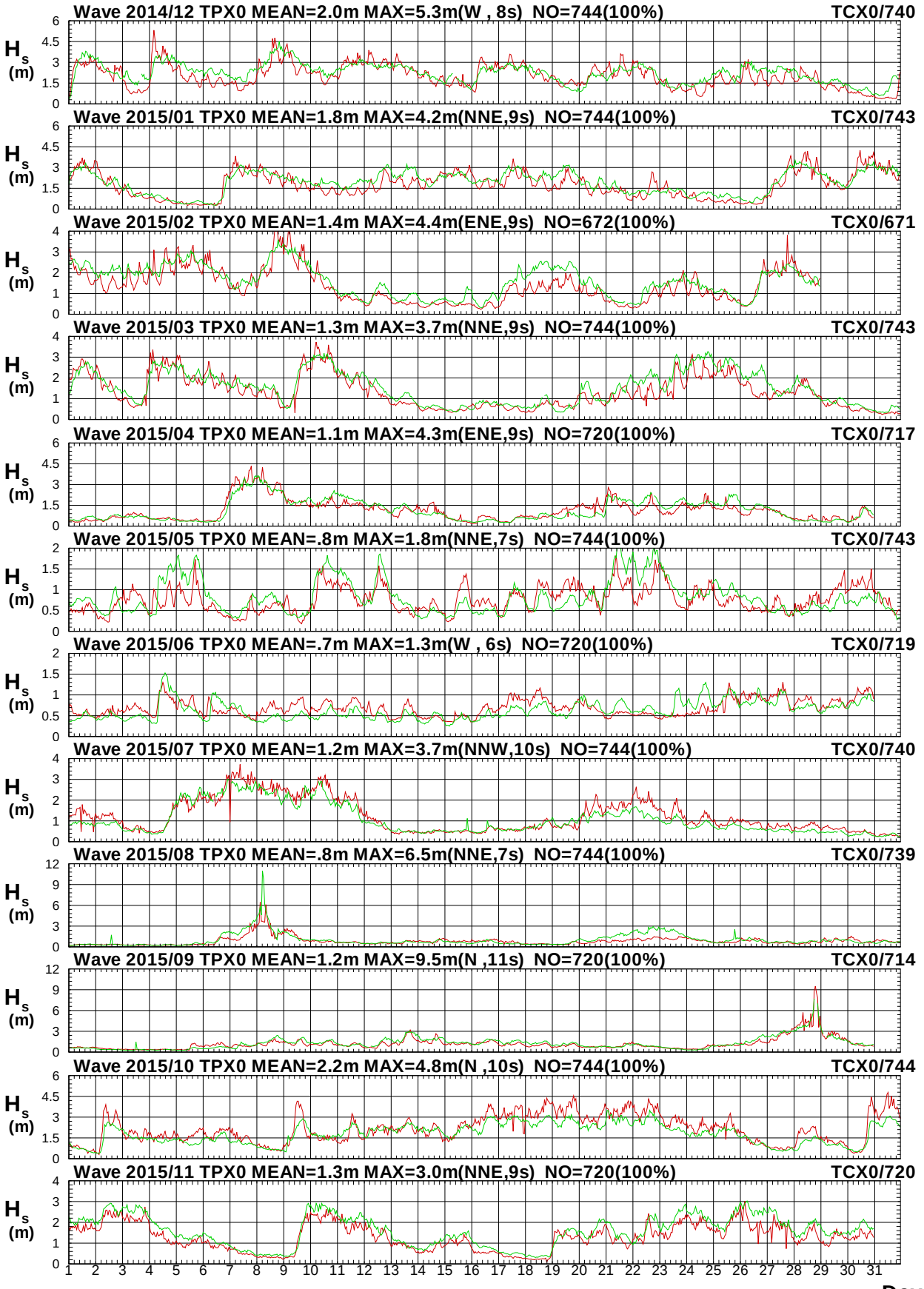


圖 1.7a　2015年每月北苗海域 X 站與中雲海域 X 站波高圖

V14CTPX0.1HA V14CTCX0.1H0 V151TPX0.1HA V151TCX0.1H0 V152TPX0.1HA V152TCX0.1H0
V153TPX0.1HA V153TCX0.1H0 V154TPX0.1HA V154TCX0.1H0 V155TPX0.1HA V155TCX0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

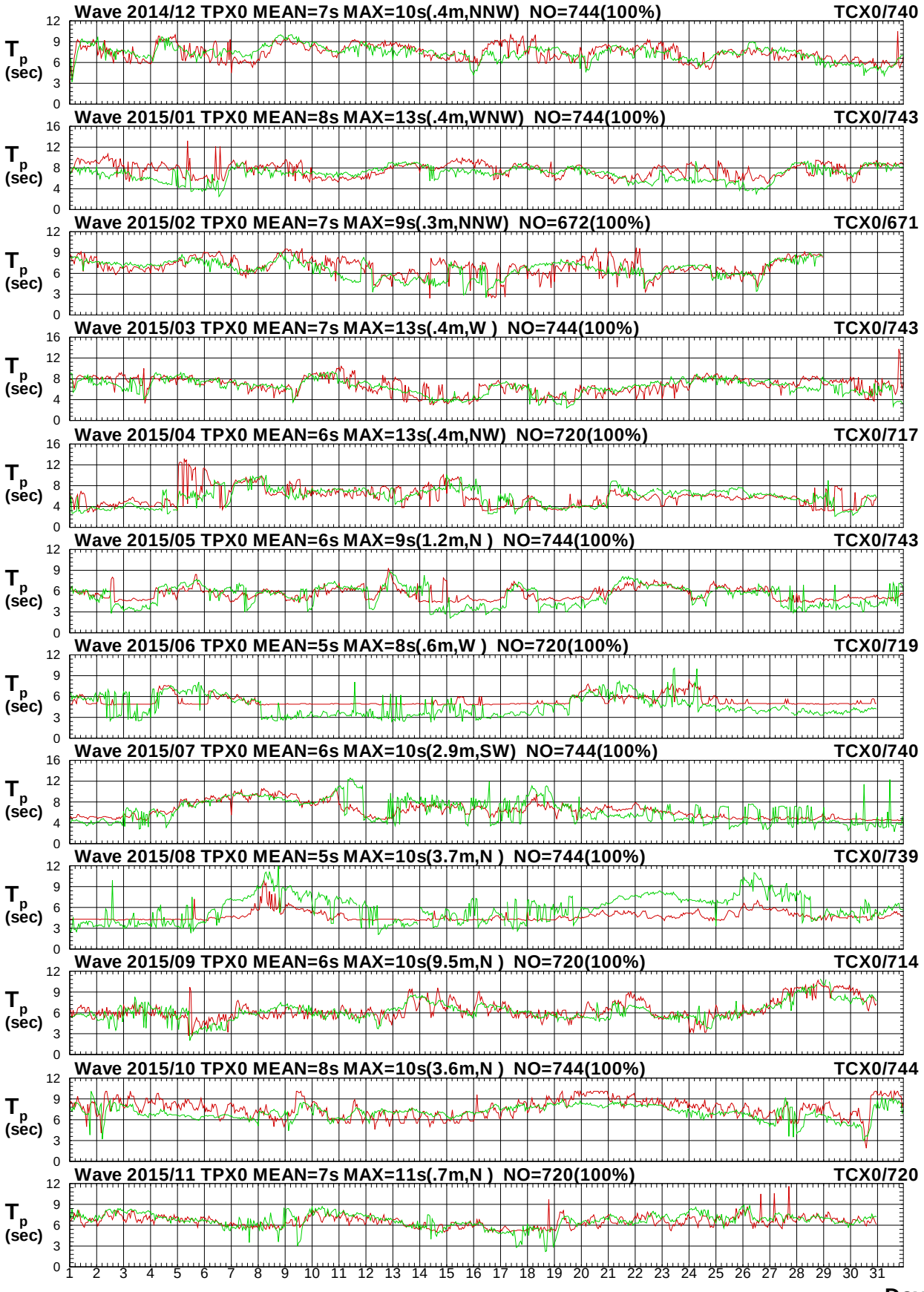


圖 1.7b　2015年每月北苗海域 X 站與中雲海域 X 站週期圖

V14CTPX0.1HA V14CTCX0.1H0 V151TPX0.1HA V151TCX0.1H0 V152TPX0.1HA V152TCX0.1H0
V153TPX0.1HA V153TCX0.1H0 V154TPX0.1HA V154TCX0.1H0 V155TPX0.1HA V155TCX0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

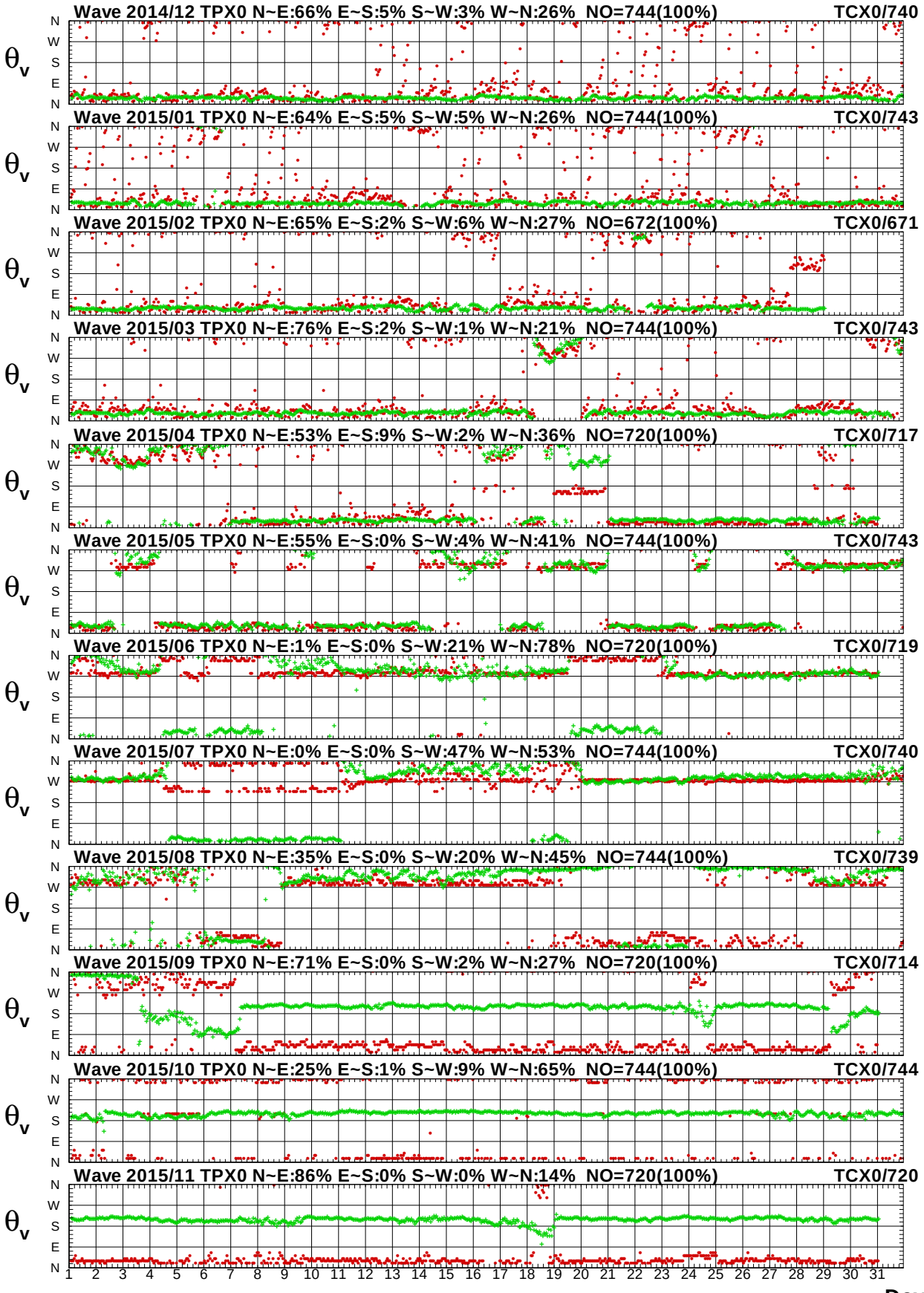


圖 1.7c　2015年每月北苗海域 X 站與中雲海域 X 站波向圖

Wave H_s in Pei-Miao Seas of TPX0 at 2015

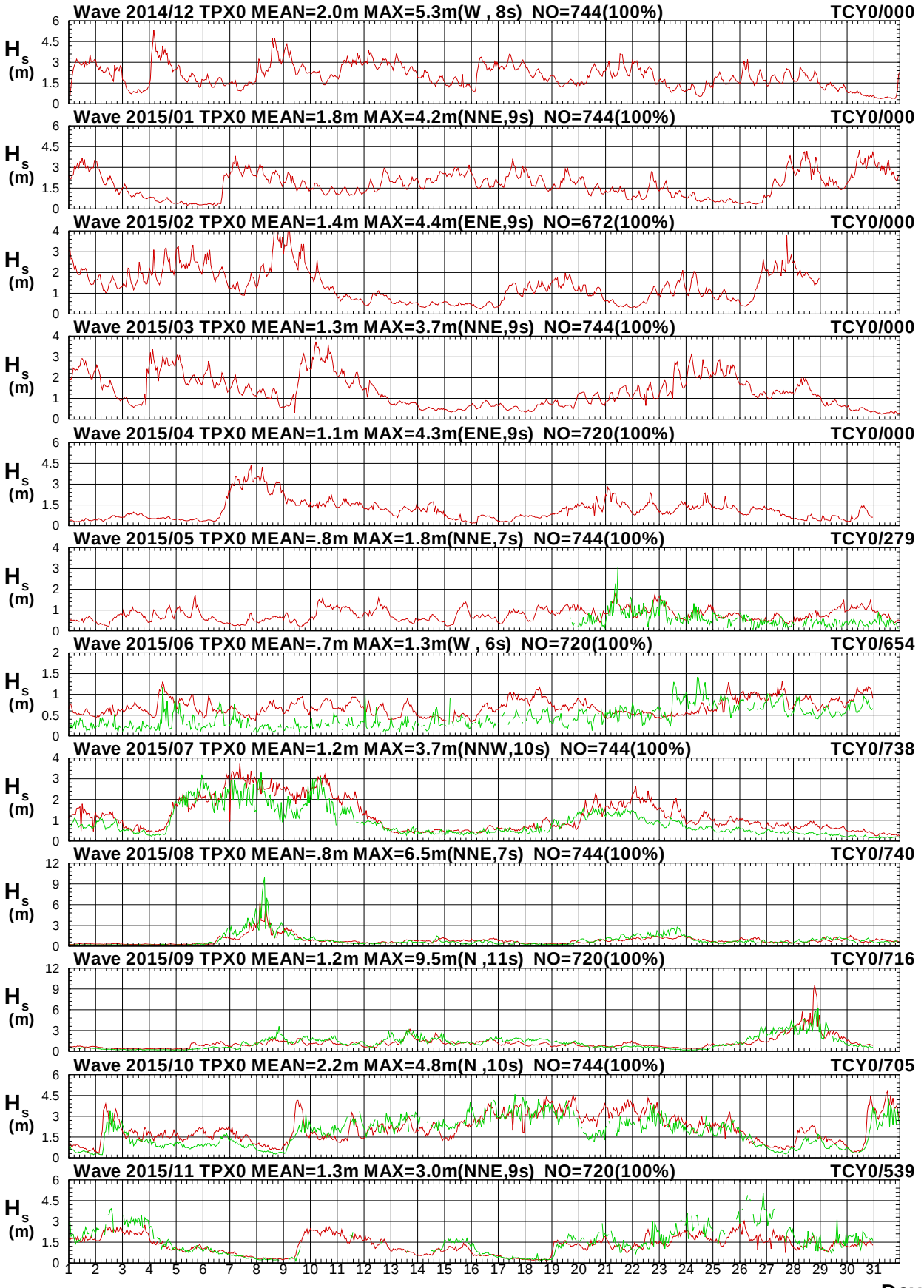


圖 1.8a　2015年每月北苗海域 X 站與中雲海域 Y 站波高圖

V14CTPX0.1HA V14CTCY0.1H0 V151TPX0.1HA V151TCY0.1H0 V152TPX0.1HA V152TCY0.1H0
V153TPX0.1HA V153TCY0.1H0 V154TPX0.1HA V154TCY0.1H0 V155TPX0.1HA V155TCY0.1H0

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Wave T_p in Pei-Miao Seas of TPX0 at 2015

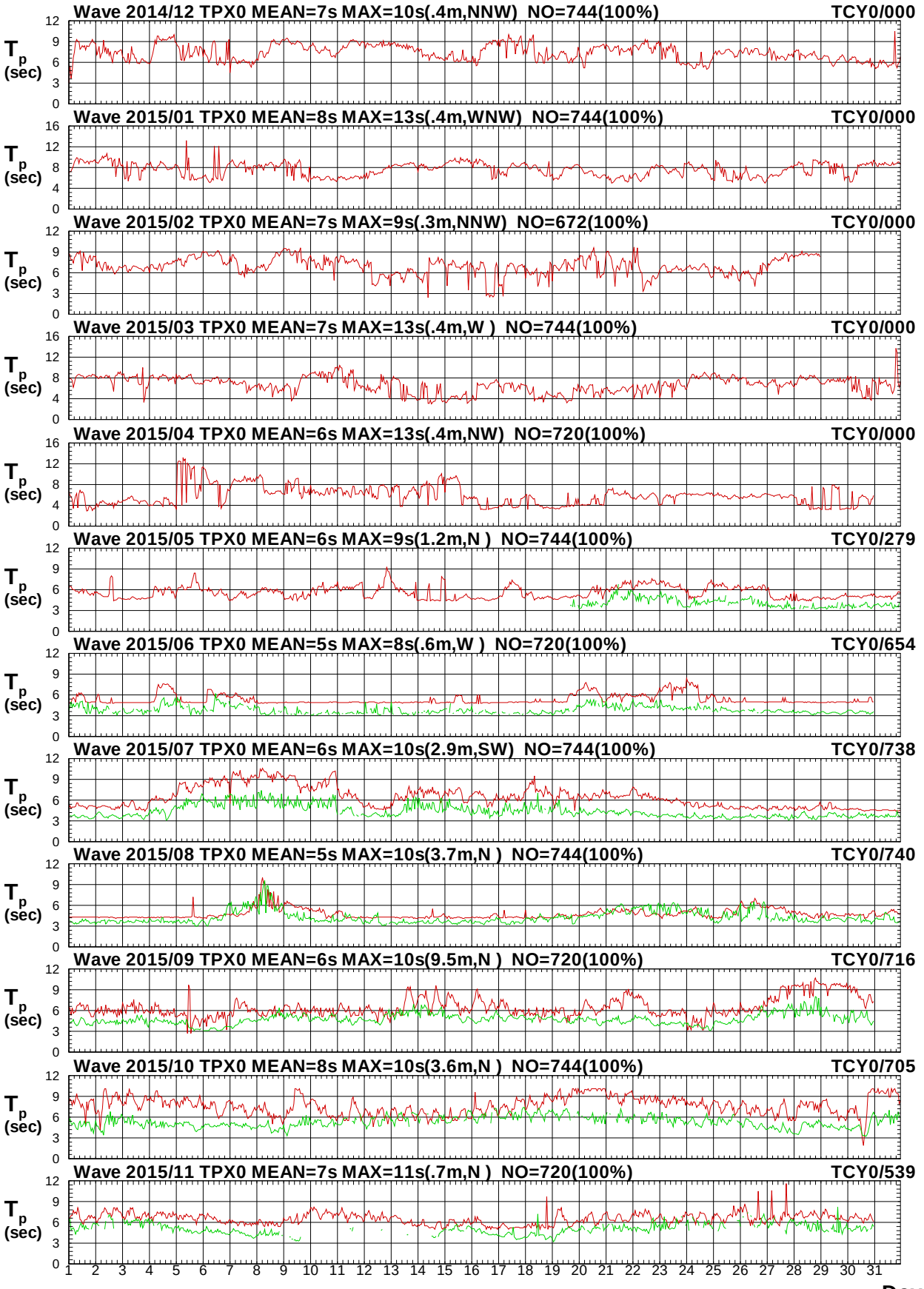


圖 1.8b　2015年每月北苗海域 X 站與中雲海域 Y 站週期圖

V14CTPX0.1HA V14CTCY0.1H0 V151TPX0.1HA V151TCY0.1H0 V152TPX0.1HA V152TCY0.1H0
V153TPX0.1HA V153TCY0.1H0 V154TPX0.1HA V154TCY0.1H0 V155TPX0.1HA V155TCY0.1H0

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Wave Direction in Pei-Miao Seas of TPX0 at 2015

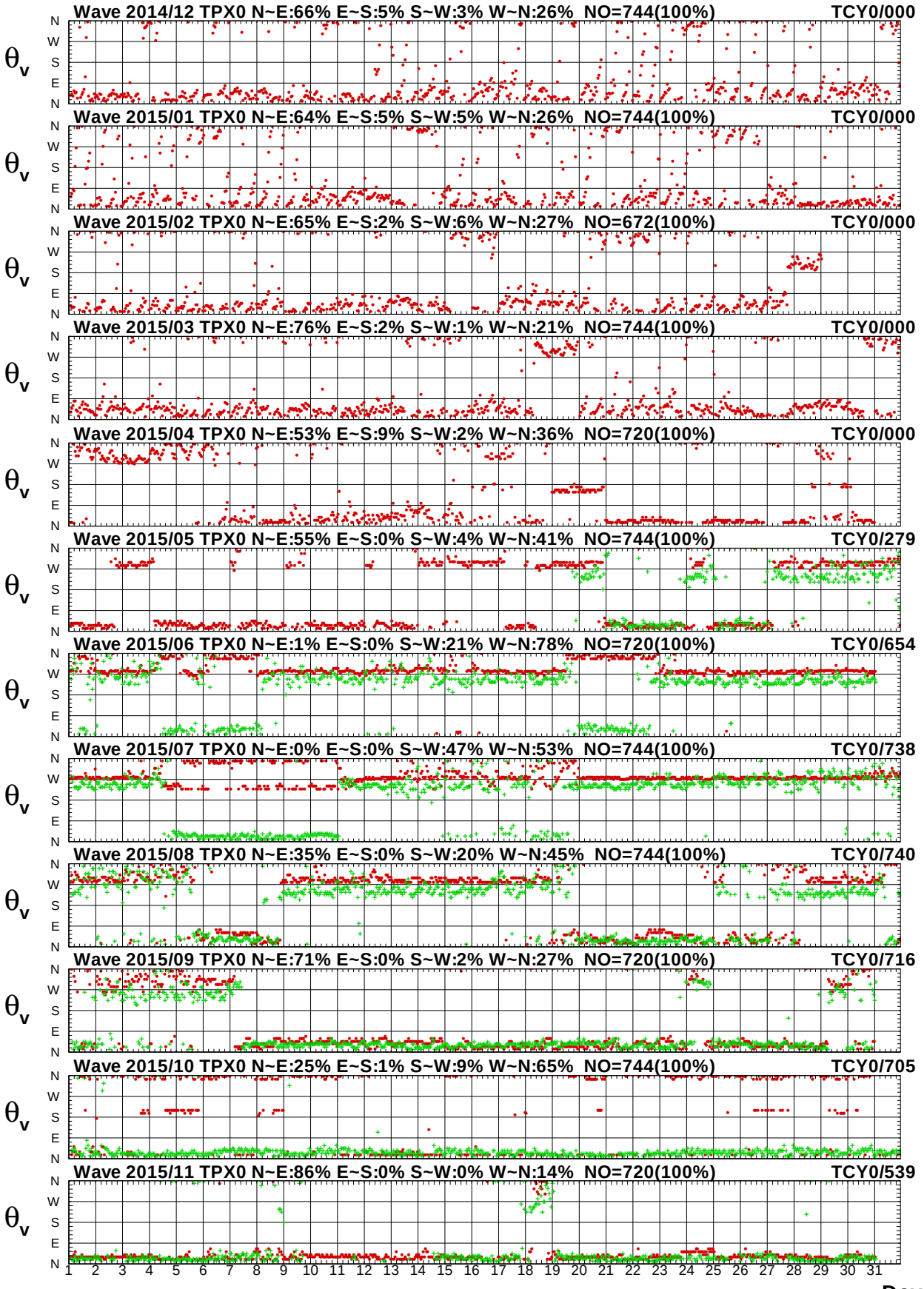


圖 1.8c　2015年每月北苗海域 X 站與中雲海域 Y 站波向圖

V14CTPX0.1HA V14CTCY0.1H0 V151TPX0.1HA V151TCY0.1H0 V152TPX0.1HA V152TCY0.1H0
V153TPX0.1HA V153TCY0.1H0 V154TPX0.1HA V154TCY0.1H0 V155TPX0.1HA V155TCY0.1H0

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第二章　2015 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**，2015 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，2015 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 2015 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	2011/08-2015/11(觀測中)	港研中心	基隆港東堤外海
Y	25°05'54"N	121°55'22"E	1998/09-2015/11(觀測中)	中央氣象局	龍洞浮標站
Z	25°09'17"N	121°47'06"E	2012/05-2015/11(觀測中)	臺灣海洋大學	基隆浮標站
R	25°18'15"N	121°32'05"E	2015/07-2015/11(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 2015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				
2014/12月	742 (99.7%)	741 (99.6%)	742 (99.7%)	*	*	*	*	*
2015/ 1月	744 (100%)	735 (98.8%)	737 (99.1%)	*	*	*	*	*
2015/ 2月	666 (99.1%)	670 (99.7%)	667 (99.3%)	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 4月	715 (99.3%)	714 (99.2%)	718 (99.7%)	*	*	*	*	*
2015/ 5月	744 (100%)	731 (98.3%)	716 (96.2%)	*	*	*	*	*
2015/ 6月	705 (97.9%)	712 (98.9%)	701 (97.4%)	*	*	*	*	*
2015/ 7月	744 (100%)	736 (98.9%)	700 (94.1%)	54 (7.3%)	*	*	*	*
2015/ 8月	744 (100%)	172 (23.1%)	422 (56.7%)	732 (98.4%)	*	*	*	*
2015/ 9月	709 (98.5%)	*	*	702 (97.5%)	*	*	*	*
2015/10月	717 (96.4%)	107 (14.4%)	591 (79.4%)	736 (98.9%)	*	*	*	*
2015/11月	706 (98.1%)	716 (99.4%)	711 (98.8%)	716 (99.4%)	*	*	*	*
2015/冬季	2152 (99.6%)	2146 (99.4%)	2146 (99.4%)	*	*	*	*	*
2015/春季	2203 (99.8%)	2189 (99.1%)	2178 (98.6%)	*	*	*	*	*
2015/夏季	2193 (99.3%)	1620 (73.4%)	1823 (82.6%)	786 (35.6%)	*	*	*	*
2015/秋季	2132 (97.6%)	823 (37.7%)	1302 (59.6%)	2154 (98.6%)	*	*	*	*
2015/整年	8680 (99.1%)	6778 (77.4%)	7449 (85.0%)	2940 (33.6%)	*	*	*	*
起始年月	2014/12	2014/12	2014/12	2015/07	*	*	*	*
結束年月	2015/11	2015/11	2015/11	2015/11	*	*	*	*

表2.1b 2015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				
2014/12月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	672 (100%)	672 (100%)	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*	*	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/11月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	2160 (100%)	2160 (100%)	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	2184 (100%)	2184 (100%)	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	8760 (100%)	8760 (100%)	*	*	*	*
起始年月	2014/12	2014/12	2014/12	2014/12	*	*	*	*
結束年月	2015/11	2015/11	2015/11	2015/11	*	*	*	*

Wave H_s in North Seas of KLX0 at 2015

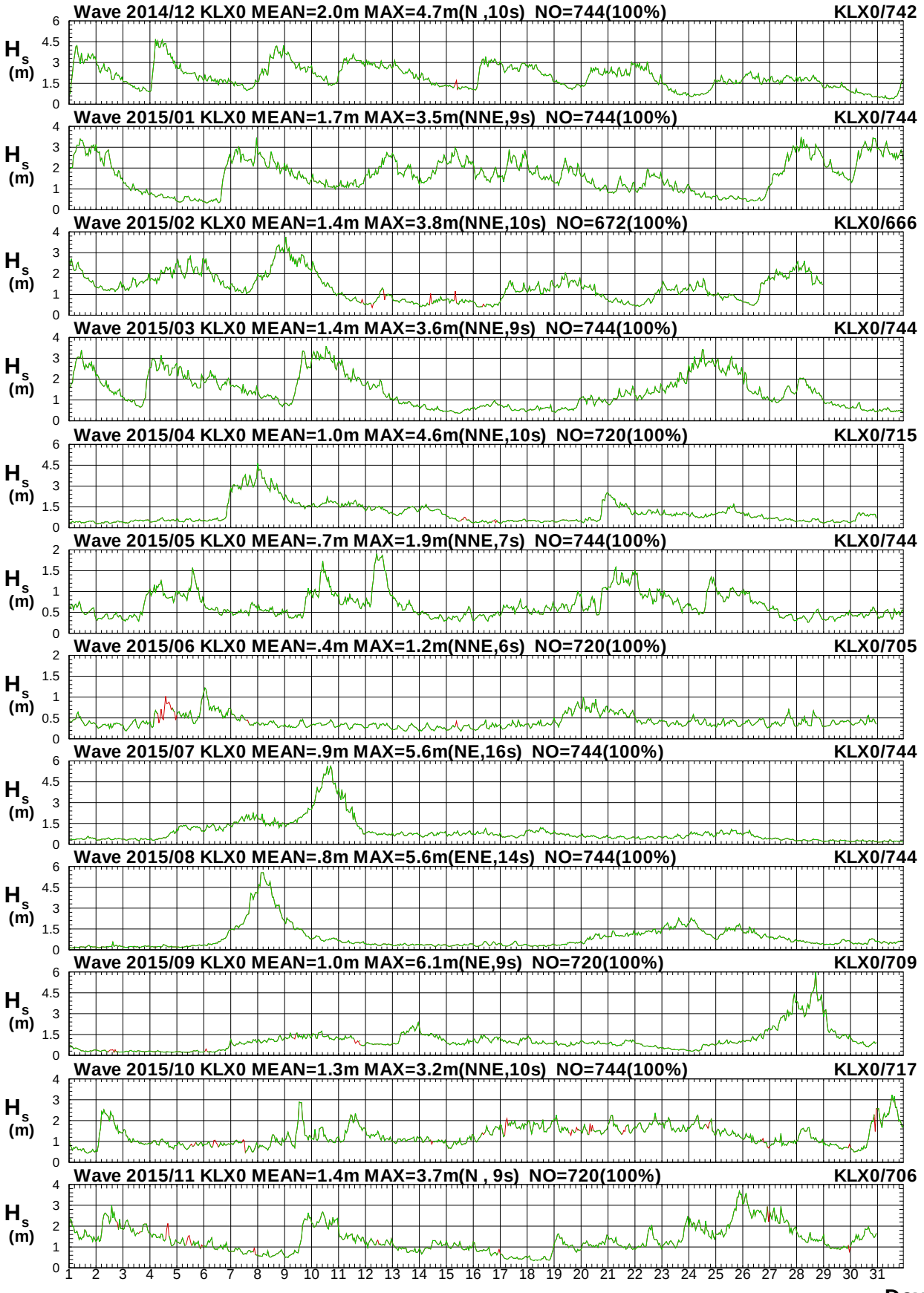


圖 2.1a　2015年每月北端海域 X 站修補前後之波高比較圖

Wave T_p in North Seas of KLX0 at 2015

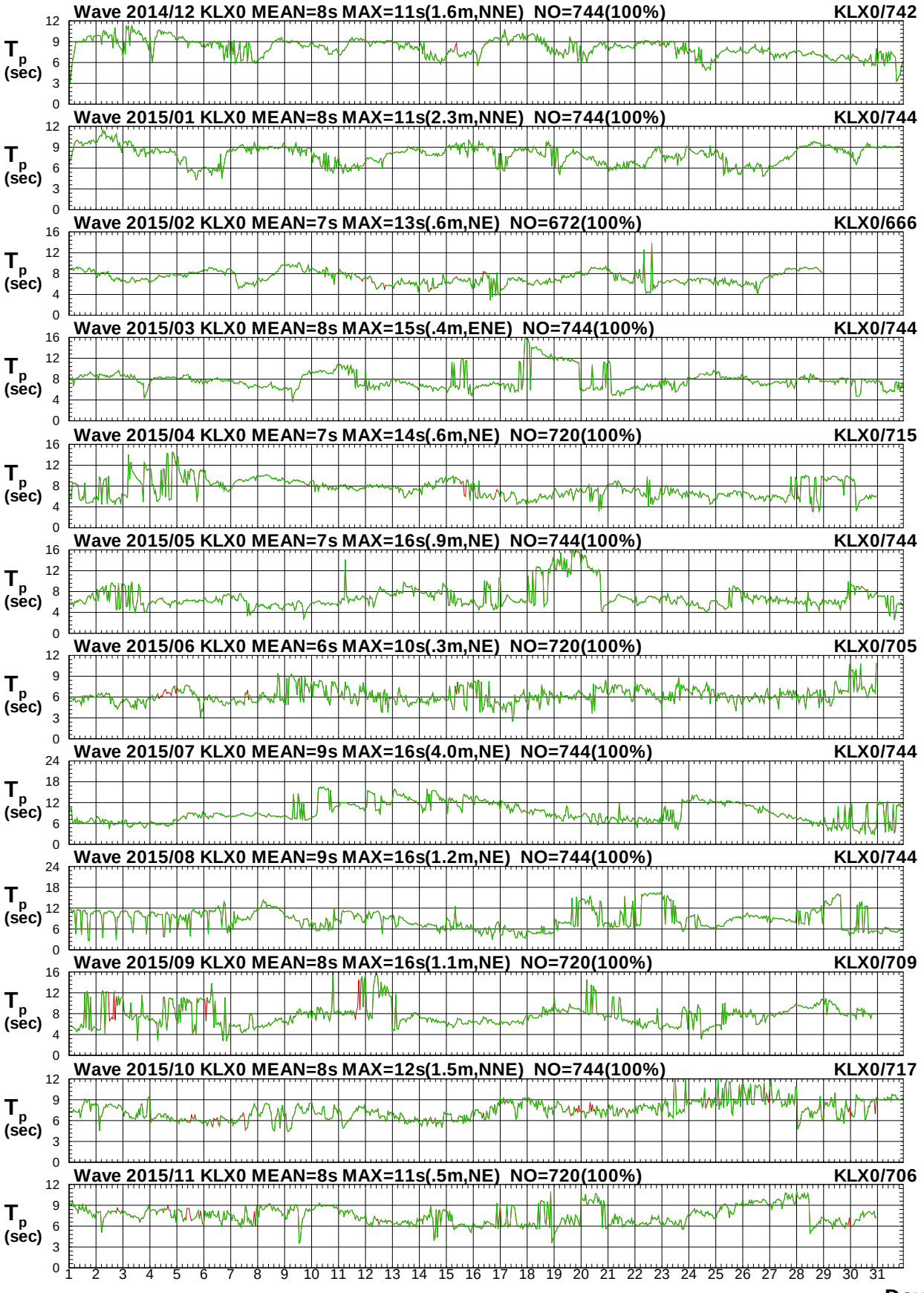


圖 2.1b　2015年每月北端海域 X 站修補前後之週期比較圖

V14CKLX0.1HA V14CKLX0.1H0 V151KLX0.1HA V151KLX0.1H0 V152KLX0.1HA V152KLX0.1H0
V153KLX0.1HA V153KLX0.1H0 V154KLX0.1HA V154KLX0.1H0 V155KLX0.1HA V155KLX0.1H0

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Wave Direction in North Seas of KLX0 at 2015

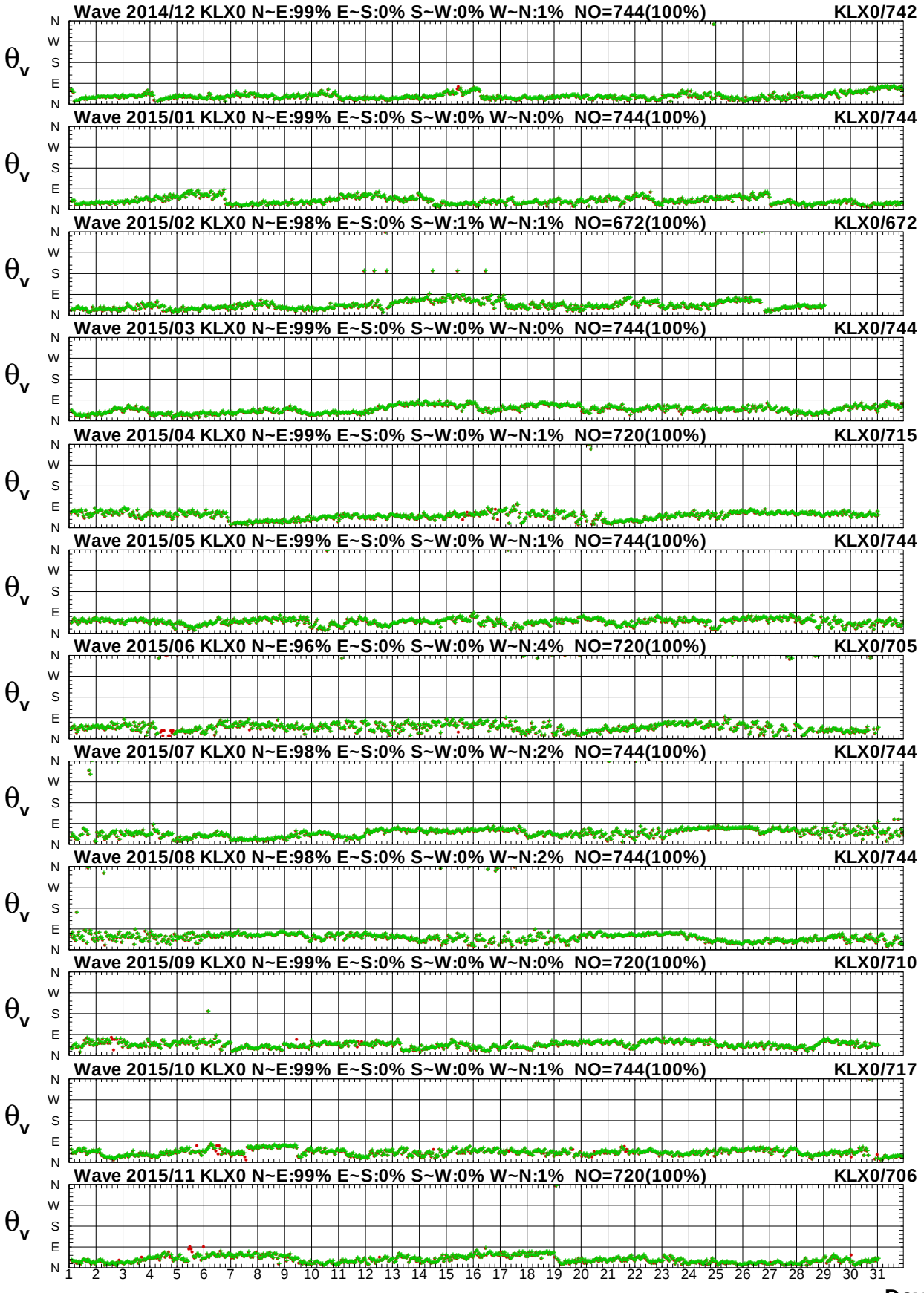


圖2.1c　2015年每月北端海域 X 站修補前後之波向比較圖

Wave H_s in North Seas of KLX0 at 2015

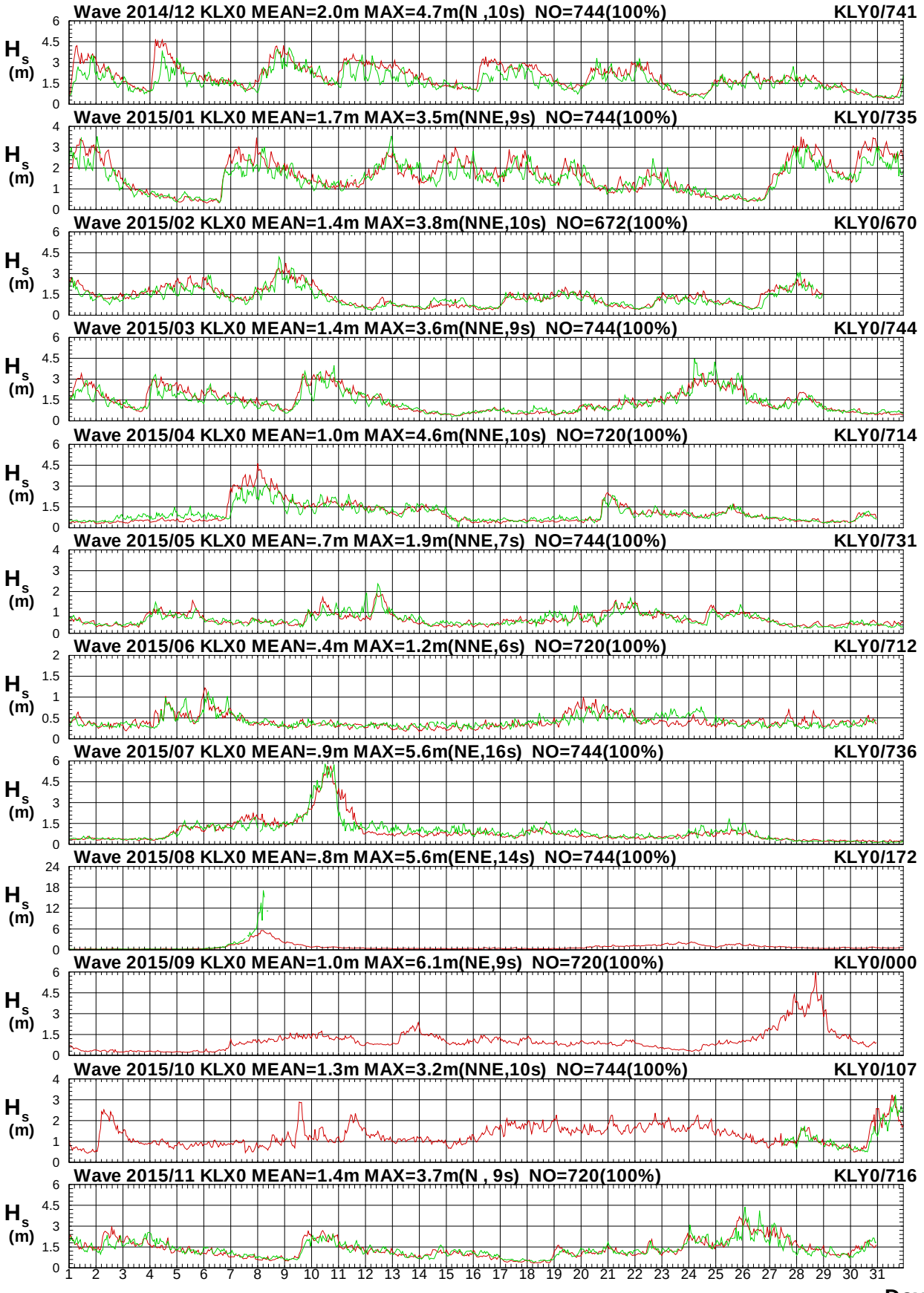


圖 2.2a　2015年每月北端海域 X 站與 Y 站波高比較圖

V14CKLX0.1HA V14CKLY0.1H0 V151KLX0.1HA V151KLY0.1H0 V152KLX0.1HA V152KLY0.1H0
V153KLX0.1HA V153KLY0.1H0 V154KLX0.1HA V154KLY0.1H0 V155KLX0.1HA V155KLY0.1H0

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Wave T_p in North Seas of KLX0 at 2015

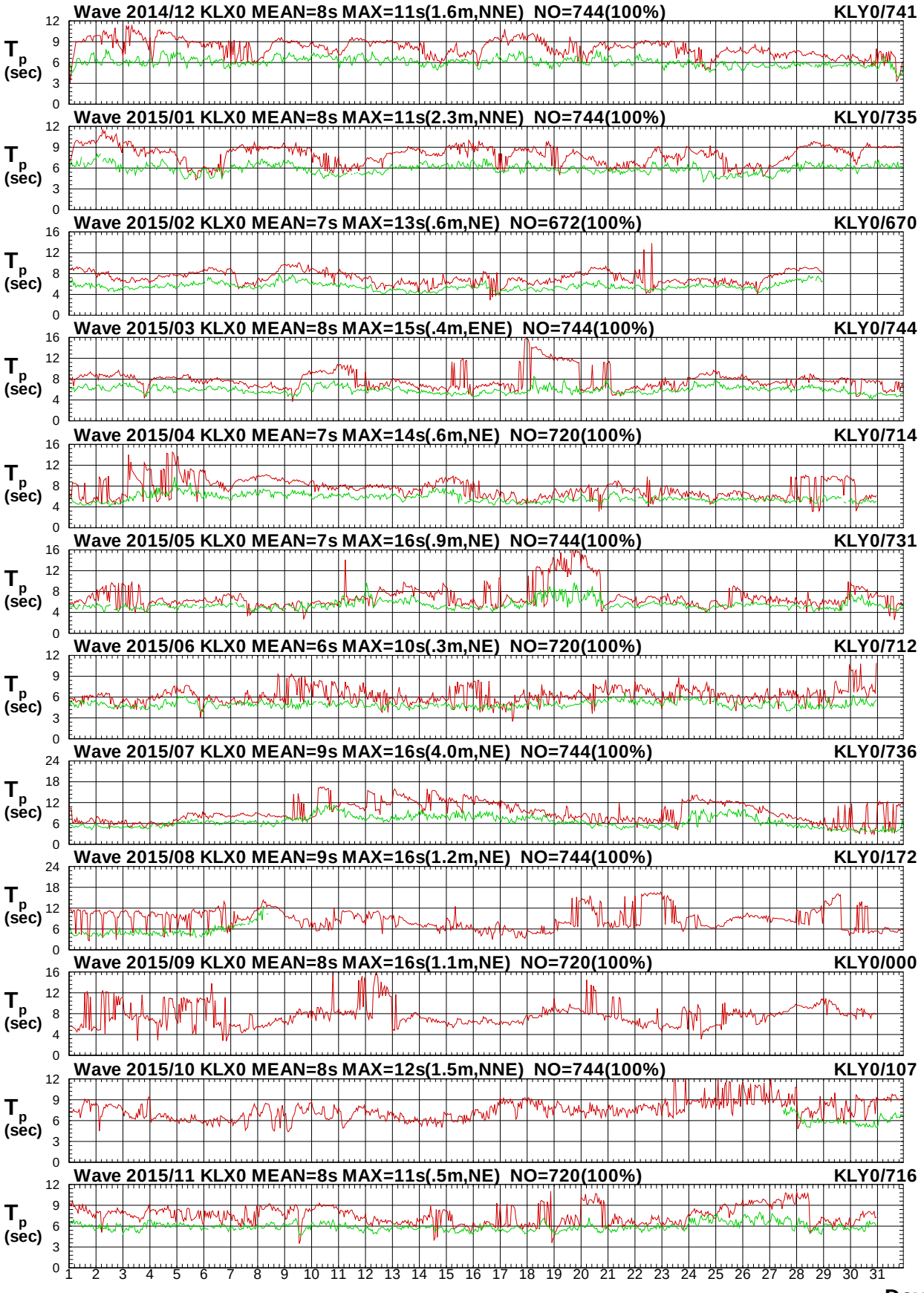


圖 2.2b　2015年每月北端海域 X 站與 Y 站週期比較圖

V14CKLX0.1HA V14CKLY0.1H0 V151KLX0.1HA V151KLY0.1H0 V152KLX0.1HA V152KLY0.1H0
V153KLX0.1HA V153KLY0.1H0 V154KLX0.1HA V154KLY0.1H0 V155KLX0.1HA V155KLY0.1H0

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Wave Direction in North Seas of KLX0 at 2015

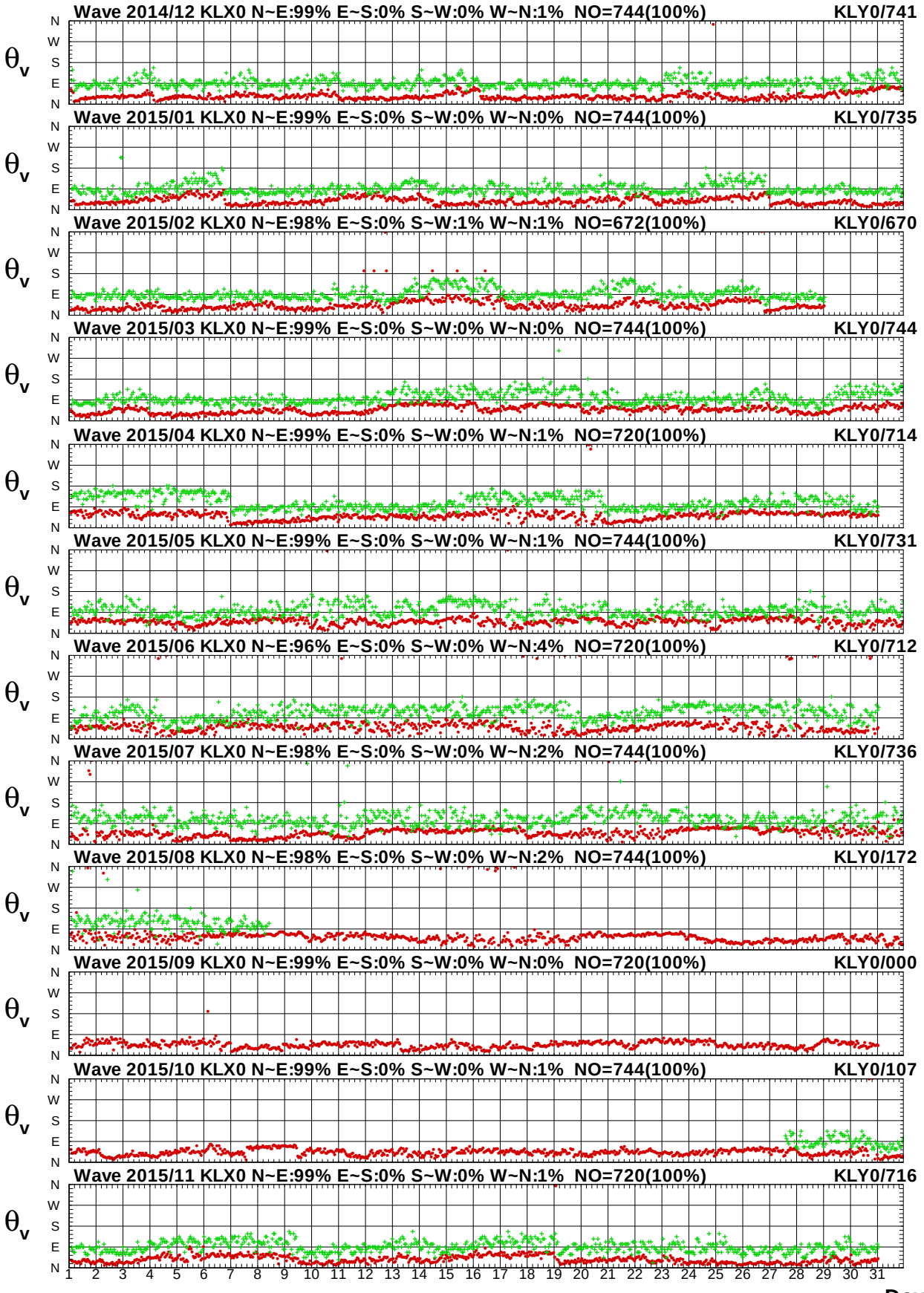


圖 2.2c　2015年每月北端海域 X 站與 Y 站波向比較圖

Wave H_s in North Seas of KLX0 at 2015

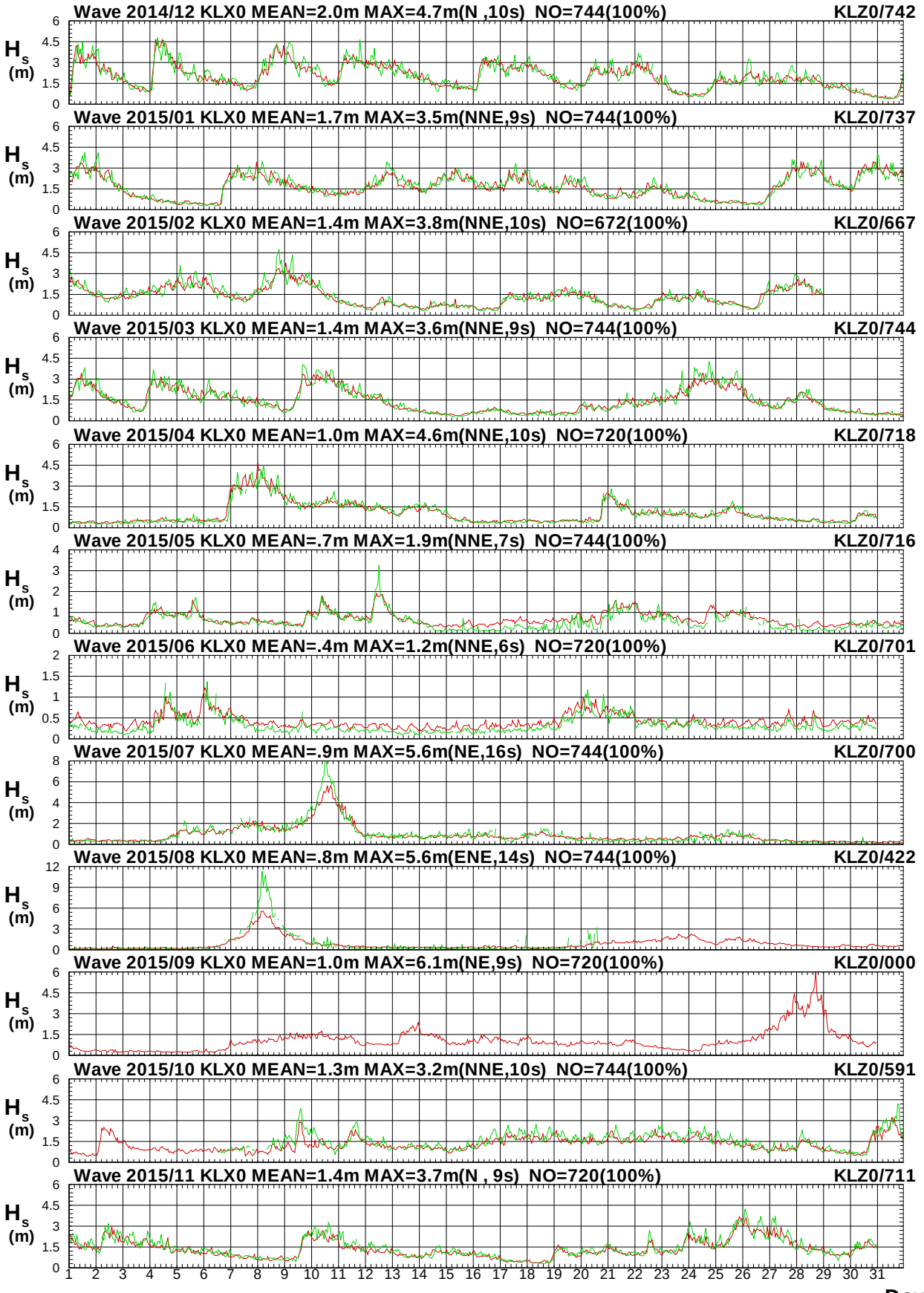


圖 2.3a　2015年每月北端海域 X 站與 Z 站波高比較圖

V14CKLX0.1HA V14CKLZ0.1H0 V151KLX0.1HA V151KLZ0.1H0 V152KLX0.1HA V152KLZ0.1H0
V153KLX0.1HA V153KLZ0.1H0 V154KLX0.1HA V154KLZ0.1H0 V155KLX0.1HA V155KLZ0.1H0

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Wave T_p in North Seas of KLX0 at 2015

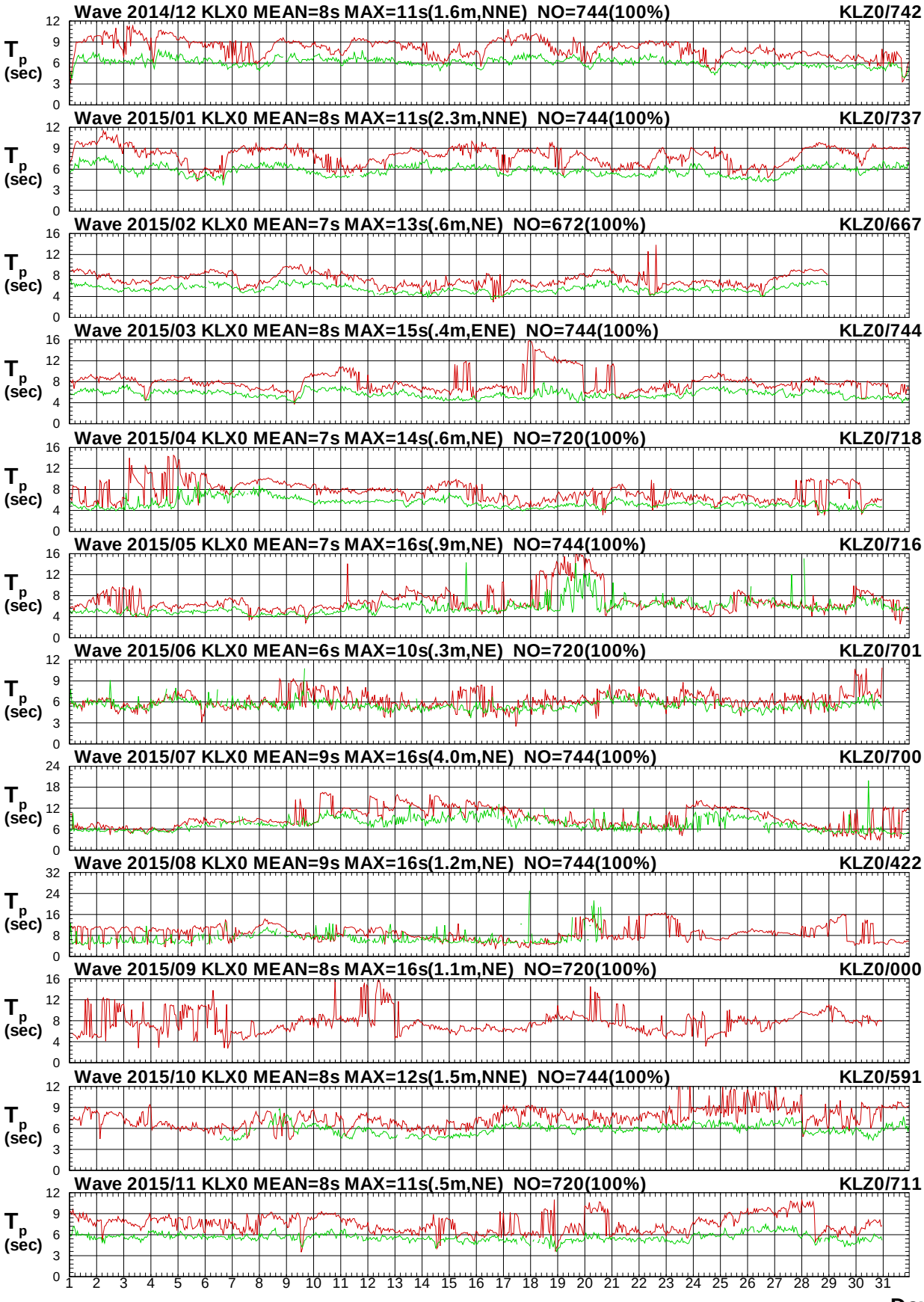


圖 2.3b　2015年每月北端海域 X 站與 Z 站週期比較圖

V14CKLX0.1HA V14CKLZ0.1H0 V151KLX0.1HA V151KLZ0.1H0 V152KLX0.1HA V152KLZ0.1H0
V153KLX0.1HA V153KLZ0.1H0 V154KLX0.1HA V154KLZ0.1H0 V155KLX0.1HA V155KLZ0.1H0

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Wave Direction in North Seas of KLX0 at 2015

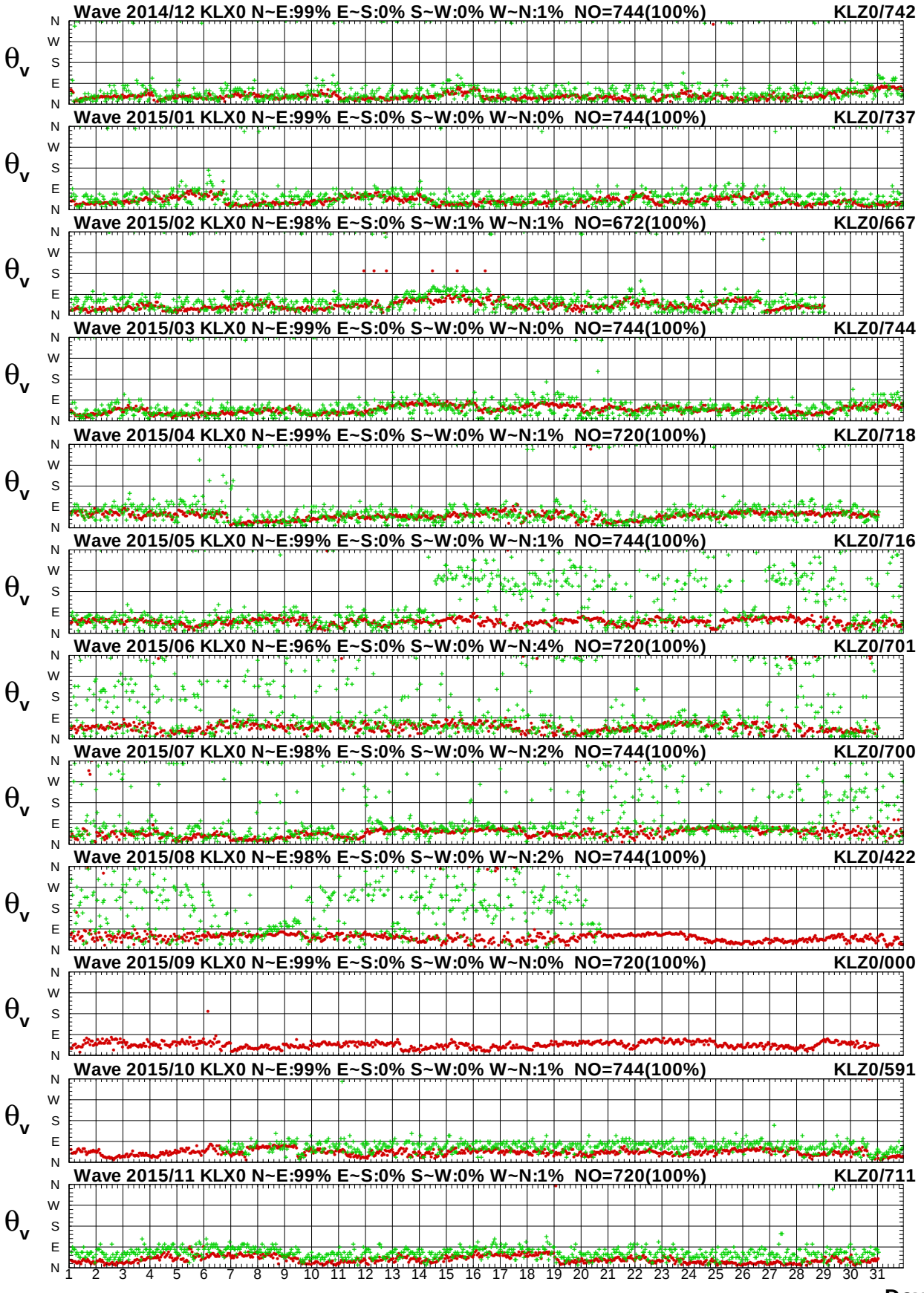


圖 2.3c　2015年每月北端海域 X 站與 Z 站波向比較圖

V14CKLX0.1HA V14CKLZ0.1H0 V151KLX0.1HA V151KLZ0.1H0 V152KLX0.1HA V152KLZ0.1H0
V153KLX0.1HA V153KLZ0.1H0 V154KLX0.1HA V154KLZ0.1H0 V155KLX0.1HA V155KLZ0.1H0

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Wave H_s in North Seas of KLX0 at 2015

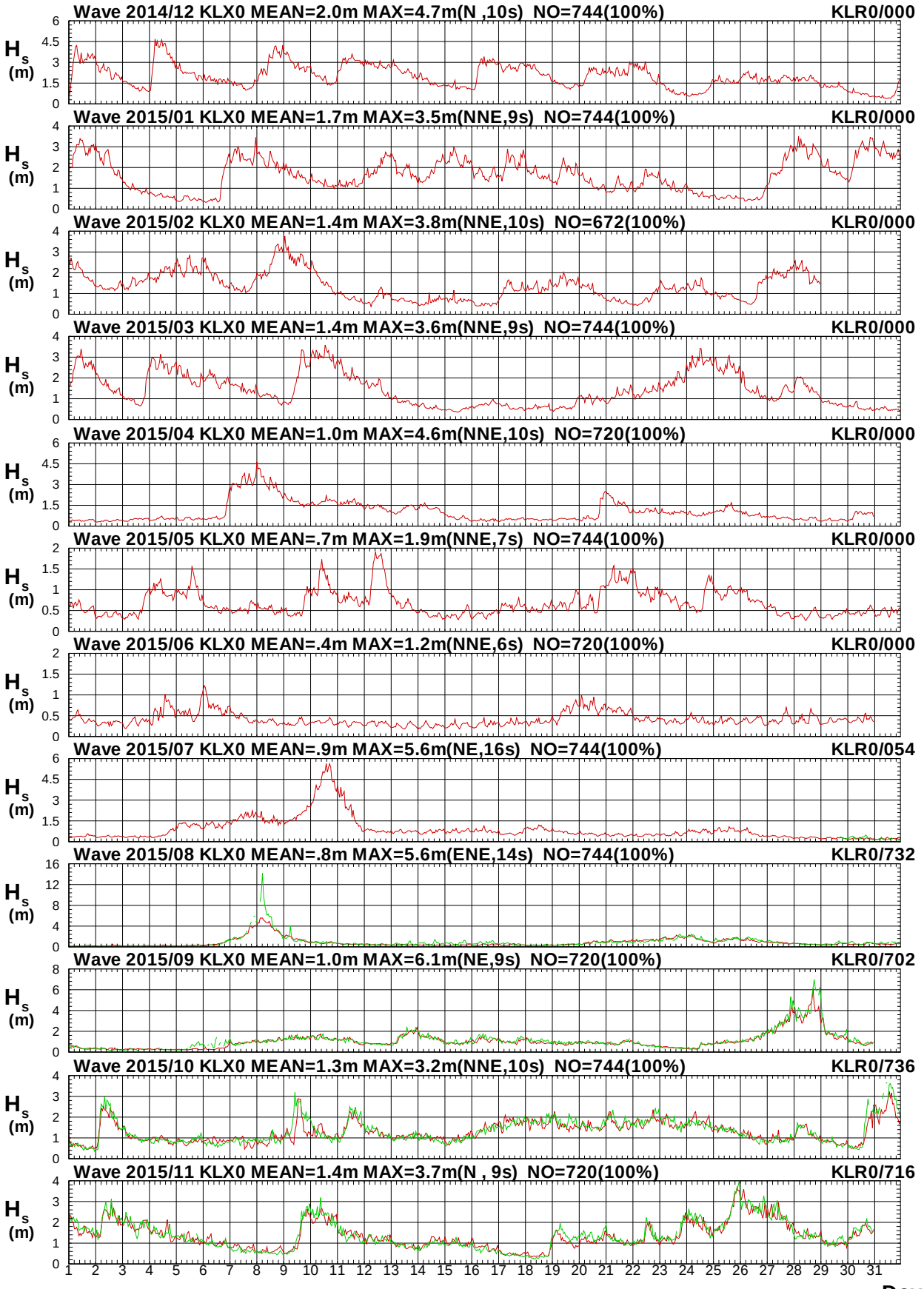


圖 2.4a　2015年每月北端海域 X 站與 R 站波高比較圖

V14CKLX0.1HA V14CKLR0.1H0 V151KLX0.1HA V151KLR0.1H0 V152KLX0.1HA V152KLR0.1H0
V153KLX0.1HA V153KLR0.1H0 V154KLX0.1HA V154KLR0.1H0 V155KLX0.1HA V155KLR0.1H0

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Wave T_p in North Seas of KLX0 at 2015

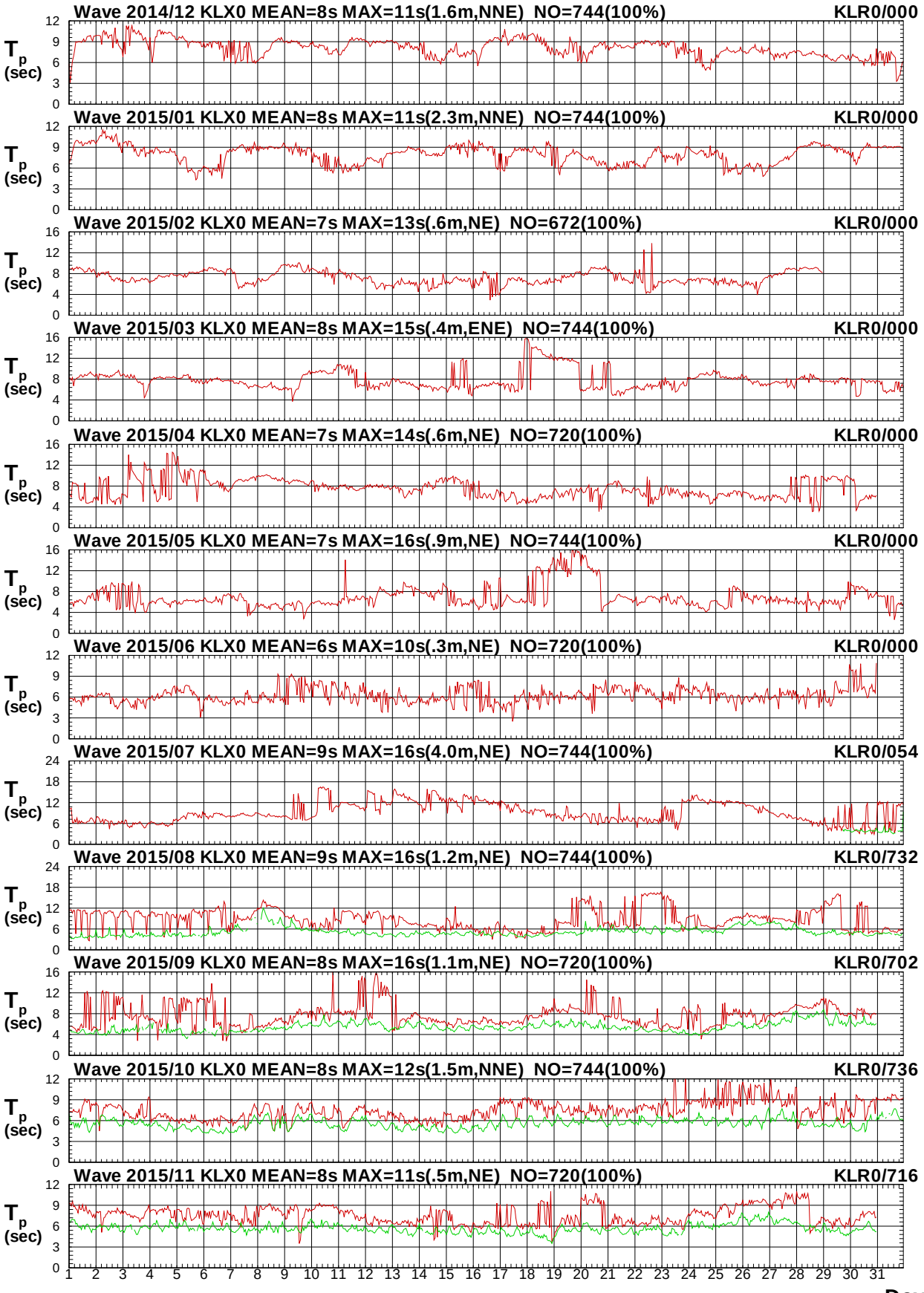


圖 2.4b　2015年每月北端海域 X 站與 R 站週期比較圖

V14CKLX0.1HA V14CKLR0.1H0 V151KLX0.1HA V151KLR0.1H0 V152KLX0.1HA V152KLR0.1H0
V153KLX0.1HA V153KLR0.1H0 V154KLX0.1HA V154KLR0.1H0 V155KLX0.1HA V155KLR0.1H0

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Wave Direction in North Seas of KLX0 at 2015

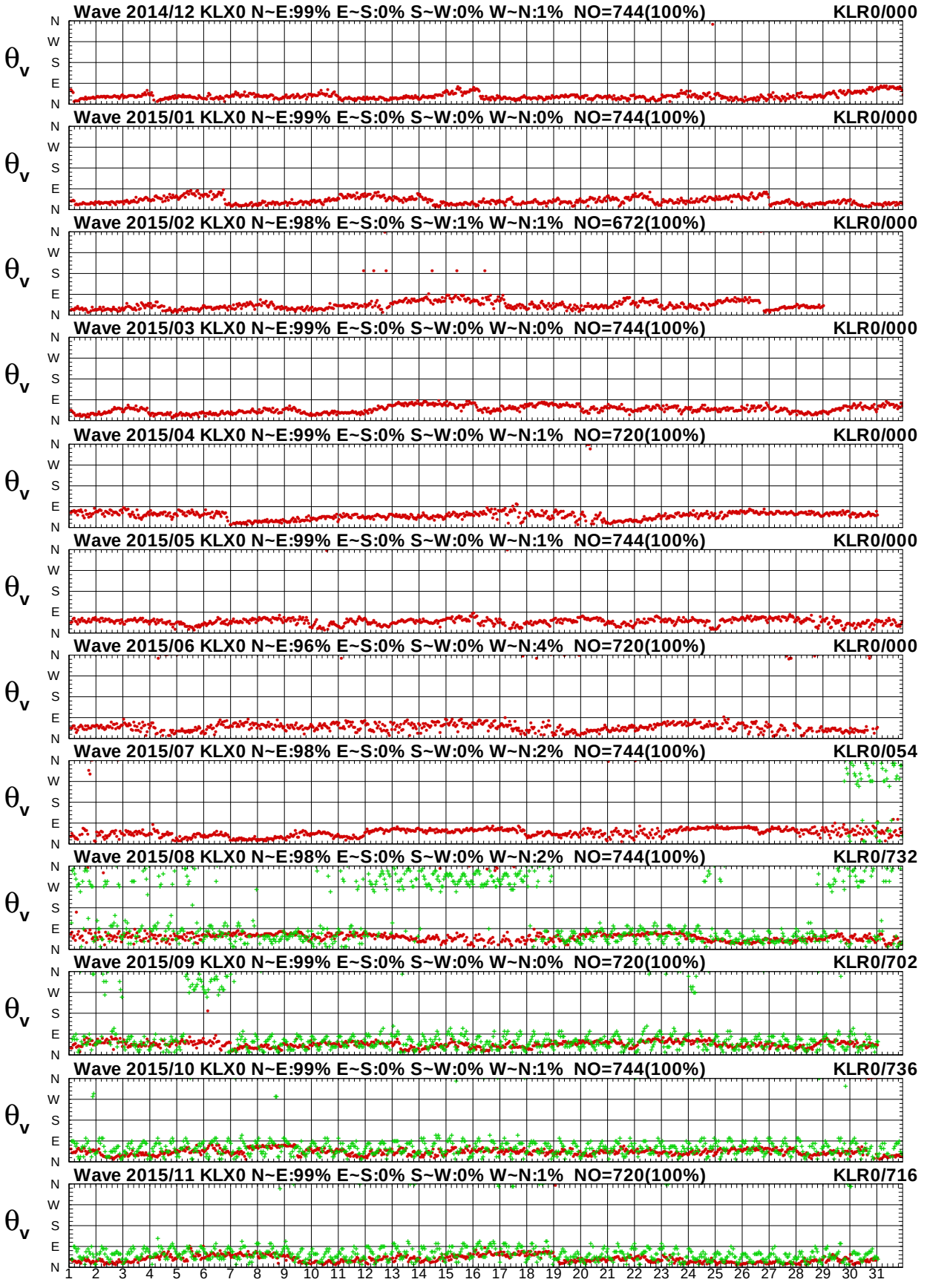


圖 2.4c　2015年每月北端海域 X 站與 R 站波向比較圖

V14CKLX0.1HA V14CKLR0.1H0 V151KLX0.1HA V151KLR0.1H0 V152KLX0.1HA V152KLR0.1H0
V153KLX0.1HA V153KLR0.1H0 V154KLX0.1HA V154KLR0.1H0 V155KLX0.1HA V155KLR0.1H0

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Wave H_s in North Seas of KLX0 at 2015

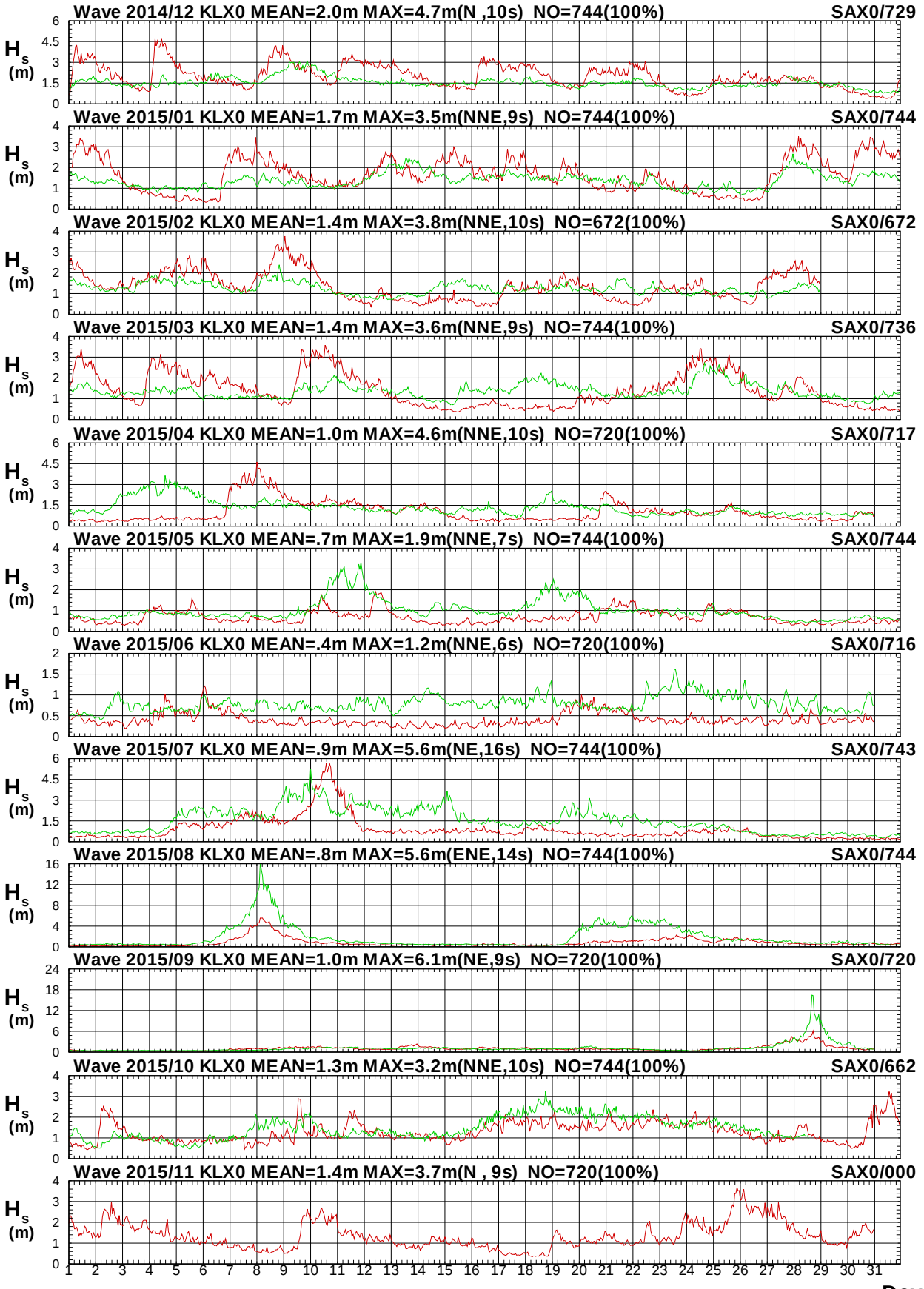


圖 2.5a　2015年每月北端海域 X 站與宜蘭海域 X 站波高圖

V14CKLX0.1HA V14CSAX0.1H0 V151KLX0.1HA V151SAX0.1H0 V152KLX0.1HA V152SAX0.1H0
V153KLX0.1HA V153SAX0.1H0 V154KLX0.1HA V154SAX0.1H0 V155KLX0.1HA V155SAX0.1H0

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Wave T_p in North Seas of KLX0 at 2015

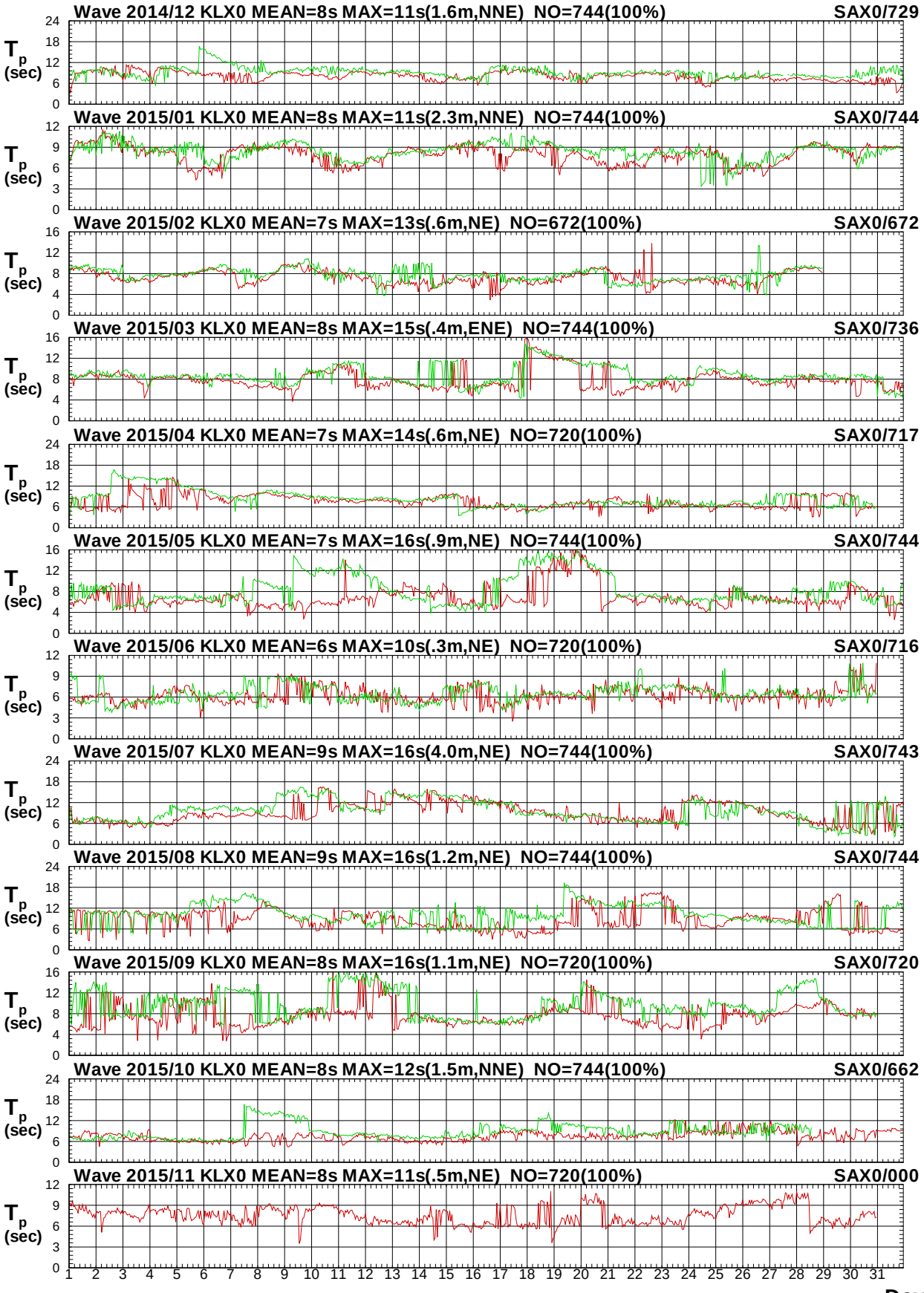


圖 2.5b　2015年每月北端海域 X 站與宜蘭海域 X 站週期圖

V14CKLX0.1HA V14CSAX0.1H0 V151KLX0.1HA V151SAX0.1H0 V152KLX0.1HA V152SAX0.1H0
V153KLX0.1HA V153SAX0.1H0 V154KLX0.1HA V154SAX0.1H0 V155KLX0.1HA V155SAX0.1H0

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Wave Direction in North Seas of KLX0 at 2015

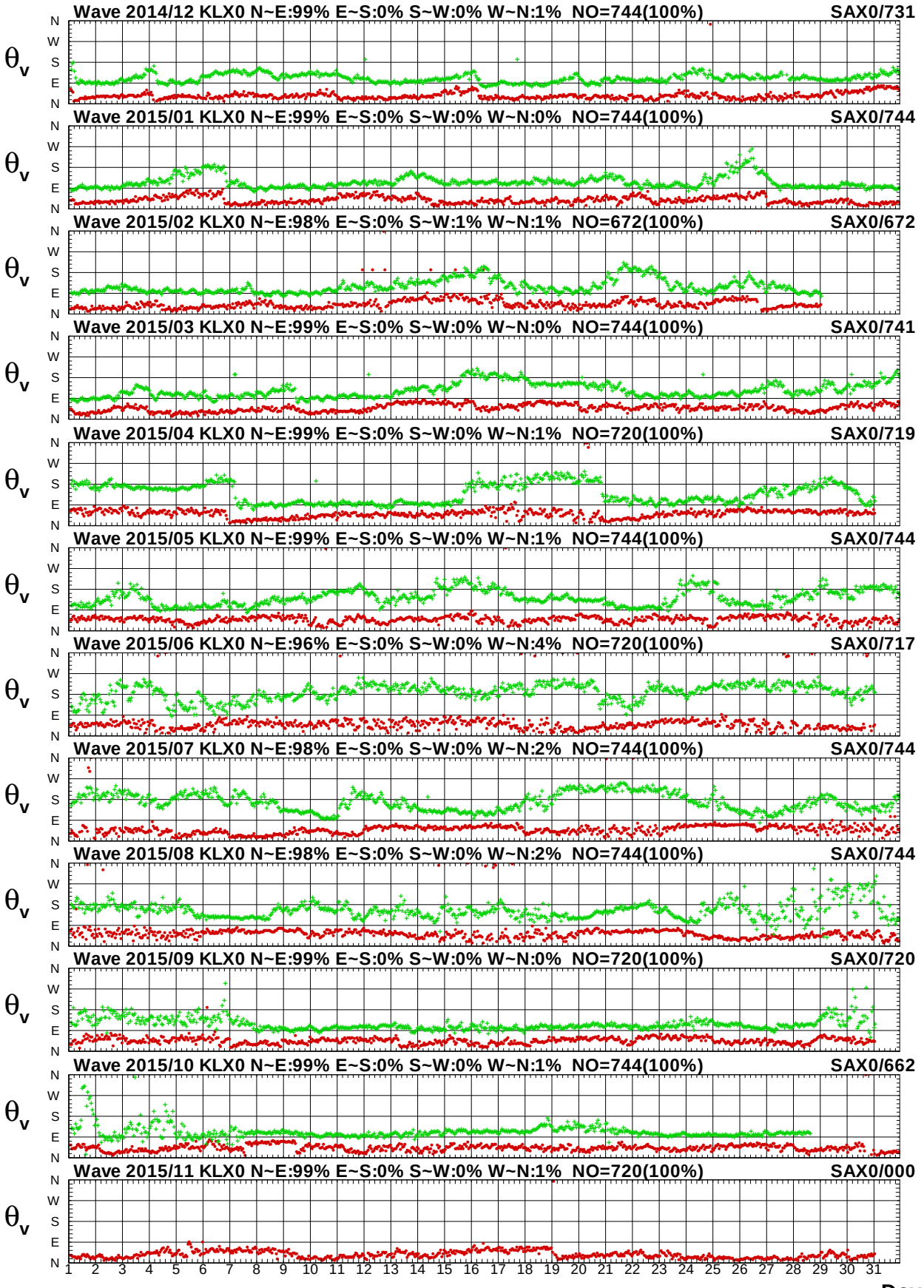


圖 2.5c　2015年每月北端海域 X 站與宜蘭海域 X 站波向圖

V14CKLX0.1HA V14CSAX0.1H0 V151KLX0.1HA V151SAX0.1H0 V152KLX0.1HA V152SAX0.1H0
V153KLX0.1HA V153SAX0.1H0 V154KLX0.1HA V154SAX0.1H0 V155KLX0.1HA V155SAX0.1H0

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Wave H_s in North Seas of KLX0 at 2015

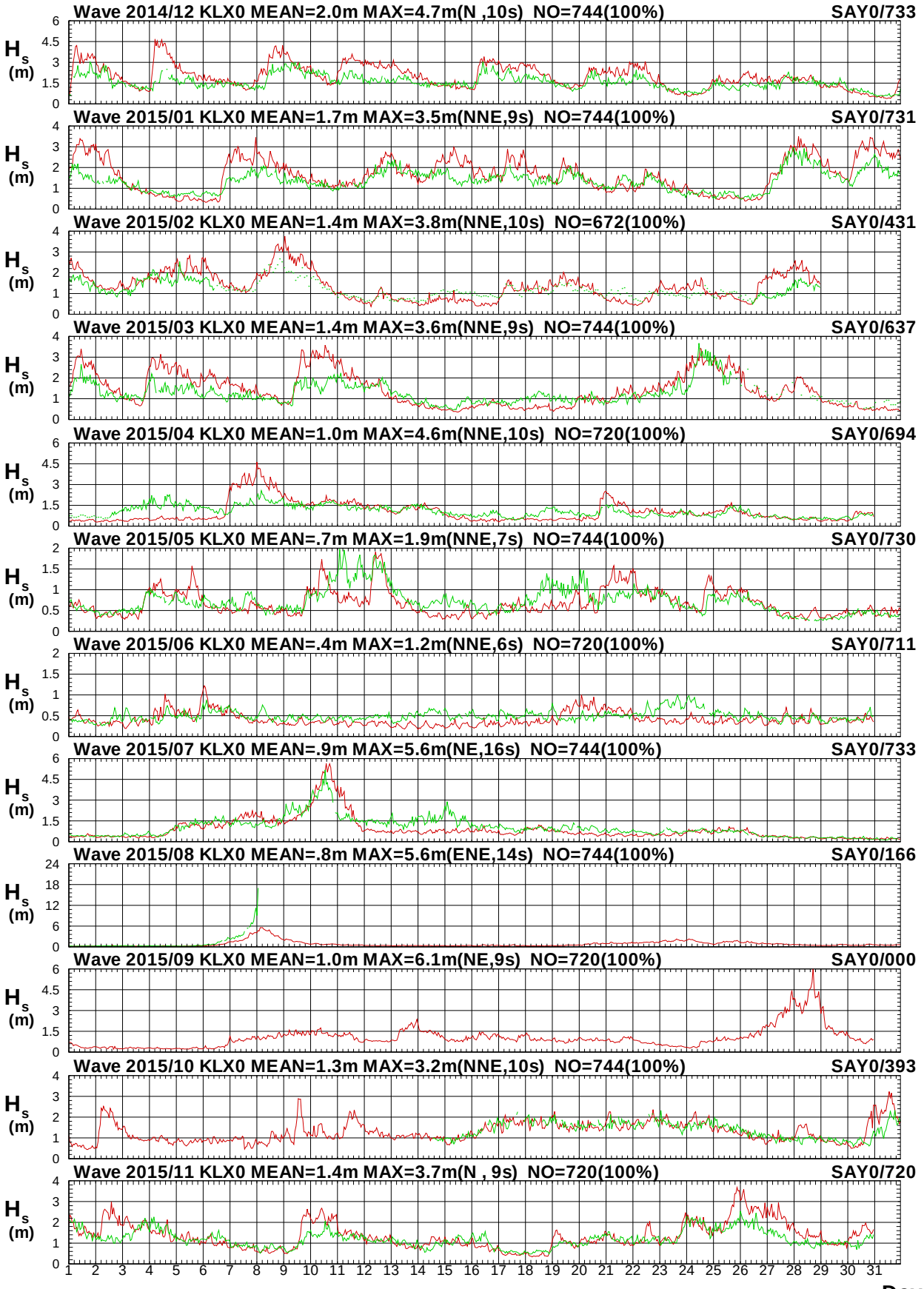


圖 2.6a　2015年每月北端海域 X 站與宜蘭海域 Y 站波高圖

V14CKLX0.1HA V14CSAY0.1H0 V151KLX0.1HA V151SAY0.1H0 V152KLX0.1HA V152SAY0.1H0
V153KLX0.1HA V153SAY0.1H0 V154KLX0.1HA V154SAY0.1H0 V155KLX0.1HA V155SAY0.1H0

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Wave T_p in North Seas of KLX0 at 2015

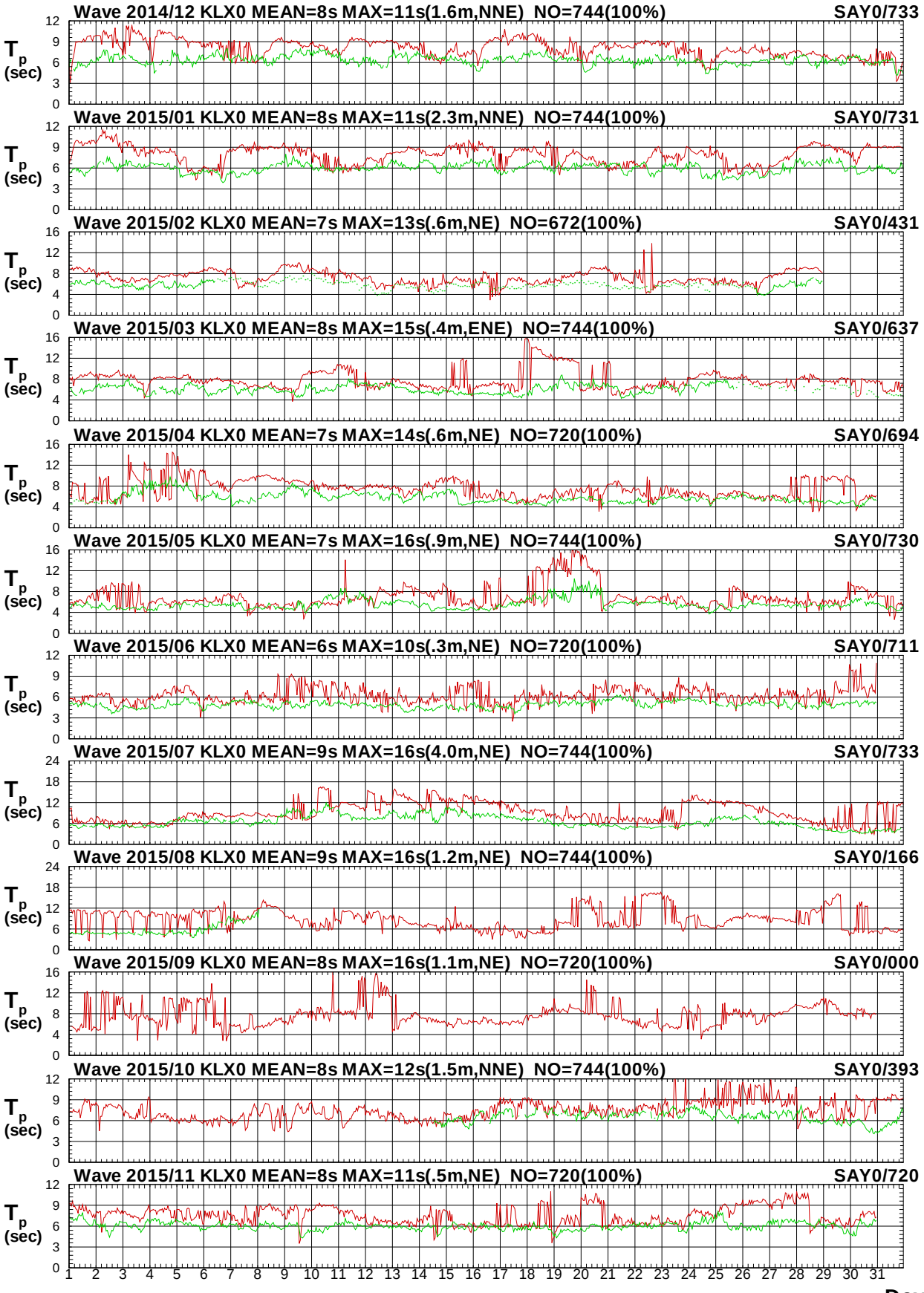


圖 2.6b　2015年每月北端海域 X 站與宜蘭海域 Y 站週期圖

V14CKLX0.1HA V14CSAY0.1H0 V151KLX0.1HA V151SAY0.1H0 V152KLX0.1HA V152SAY0.1H0
V153KLX0.1HA V153SAY0.1H0 V154KLX0.1HA V154SAY0.1H0 V155KLX0.1HA V155SAY0.1H0

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Wave Direction in North Seas of KLX0 at 2015

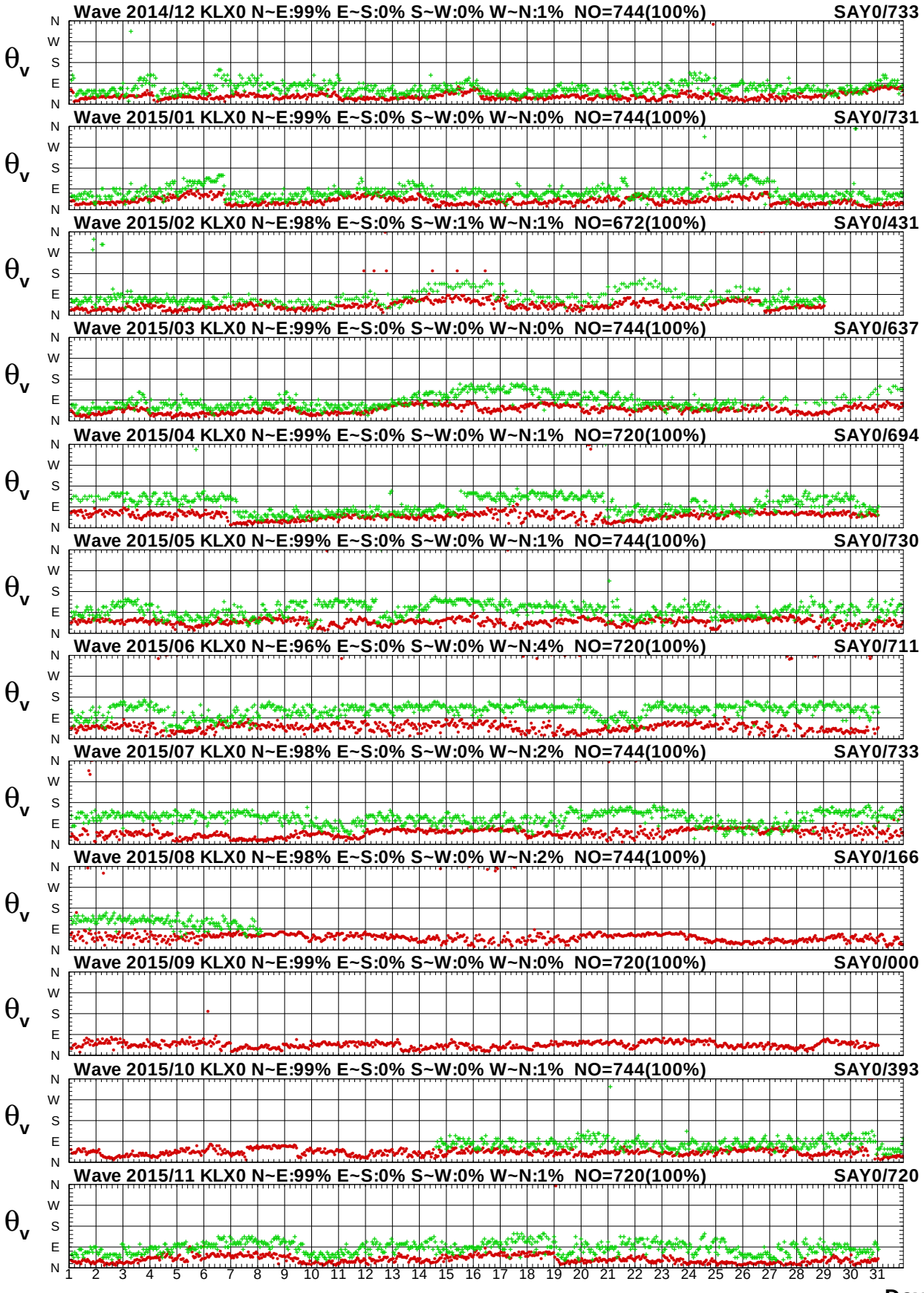


圖 2.6c　2015年每月北端海域 X 站與宜蘭海域 Y 站波向圖

V14CKLX0.1HA V14CSAY0.1H0 V151KLX0.1HA V151SAY0.1H0 V152KLX0.1HA V152SAY0.1H0
V153KLX0.1HA V153SAY0.1H0 V154KLX0.1HA V154SAY0.1H0 V155KLX0.1HA V155SAY0.1H0

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Wave H_s in North Seas of KLX0 at 2015

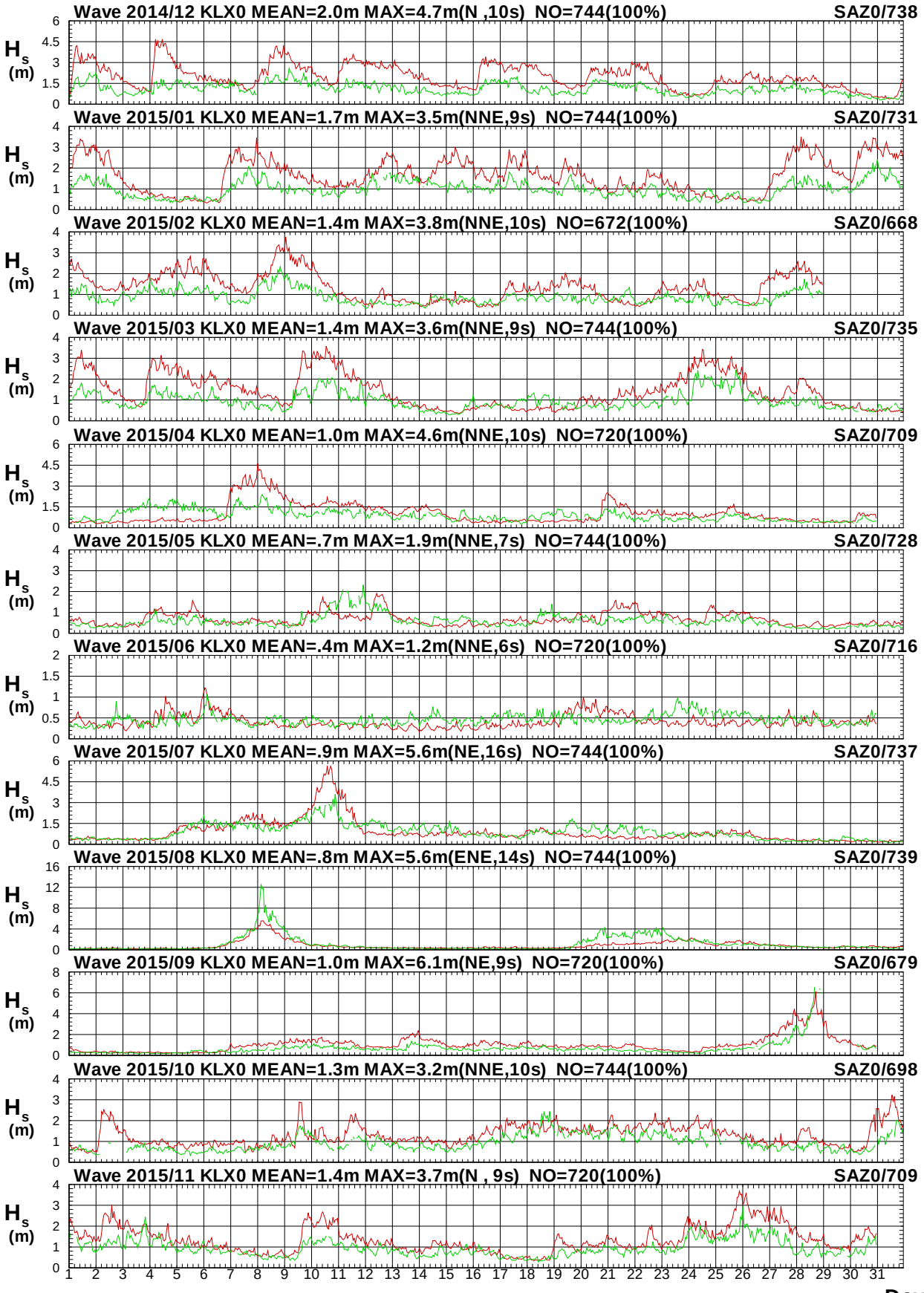


圖 2.7a　2015年每月北端海域 X 站與宜蘭海域 Z 站波高圖

V14CKLX0.1HA V14CSAZ0.1H0 V151KLX0.1HA V151SAZ0.1H0 V152KLX0.1HA V152SAZ0.1H0
V153KLX0.1HA V153SAZ0.1H0 V154KLX0.1HA V154SAZ0.1H0 V155KLX0.1HA V155SAZ0.1H0

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Wave T_p in North Seas of KLX0 at 2015

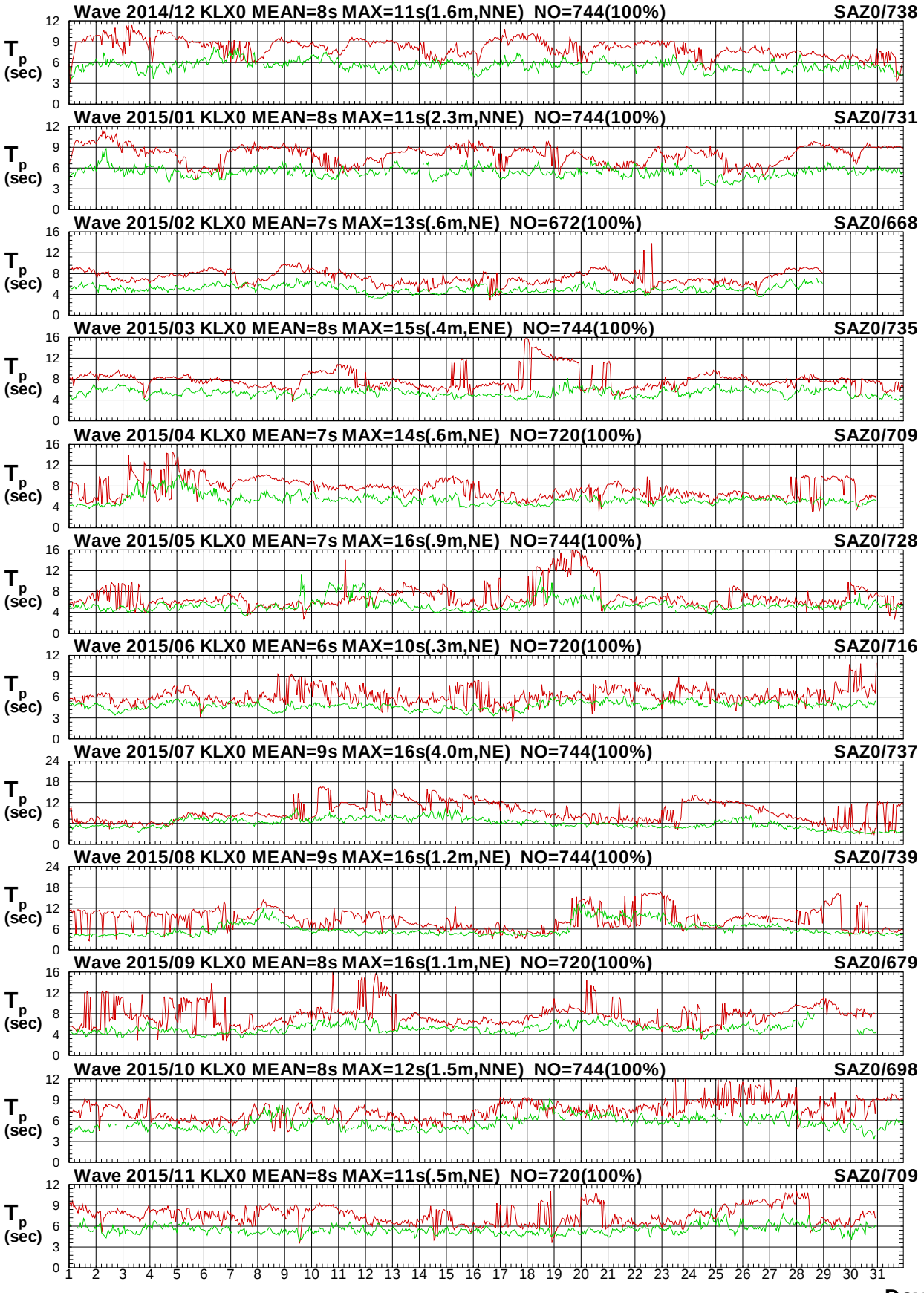


圖 2.7b　2015年每月北端海域 X 站與宜蘭海域 Z 站週期圖

V14CKLX0.1HA V14CSAZ0.1H0 V151KLX0.1HA V151SAZ0.1H0 V152KLX0.1HA V152SAZ0.1H0
V153KLX0.1HA V153SAZ0.1H0 V154KLX0.1HA V154SAZ0.1H0 V155KLX0.1HA V155SAZ0.1H0

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Wave Direction in North Seas of KLX0 at 2015

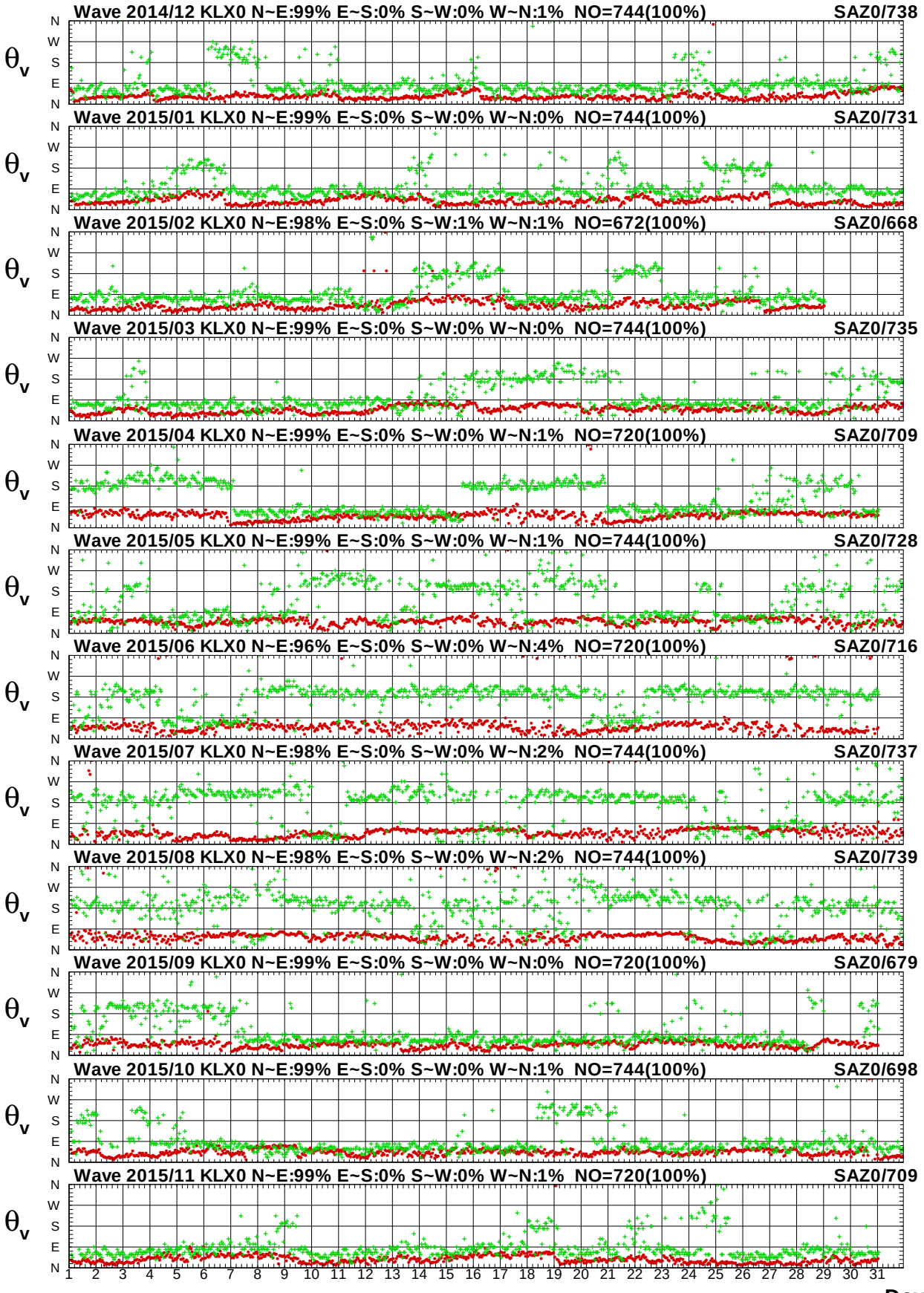


圖2.7c　2015年每月北端海域 X 站與宜蘭海域 Z 站波向圖

V14CKLX0.1HA V14CSAZ0.1H0 V151KLX0.1HA V151SAZ0.1H0 V152KLX0.1HA V152SAZ0.1H0
V153KLX0.1HA V153SAZ0.1H0 V154KLX0.1HA V154SAZ0.1H0 V155KLX0.1HA V155SAZ0.1H0

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Wave H_s in North Seas of KLX0 at 2015

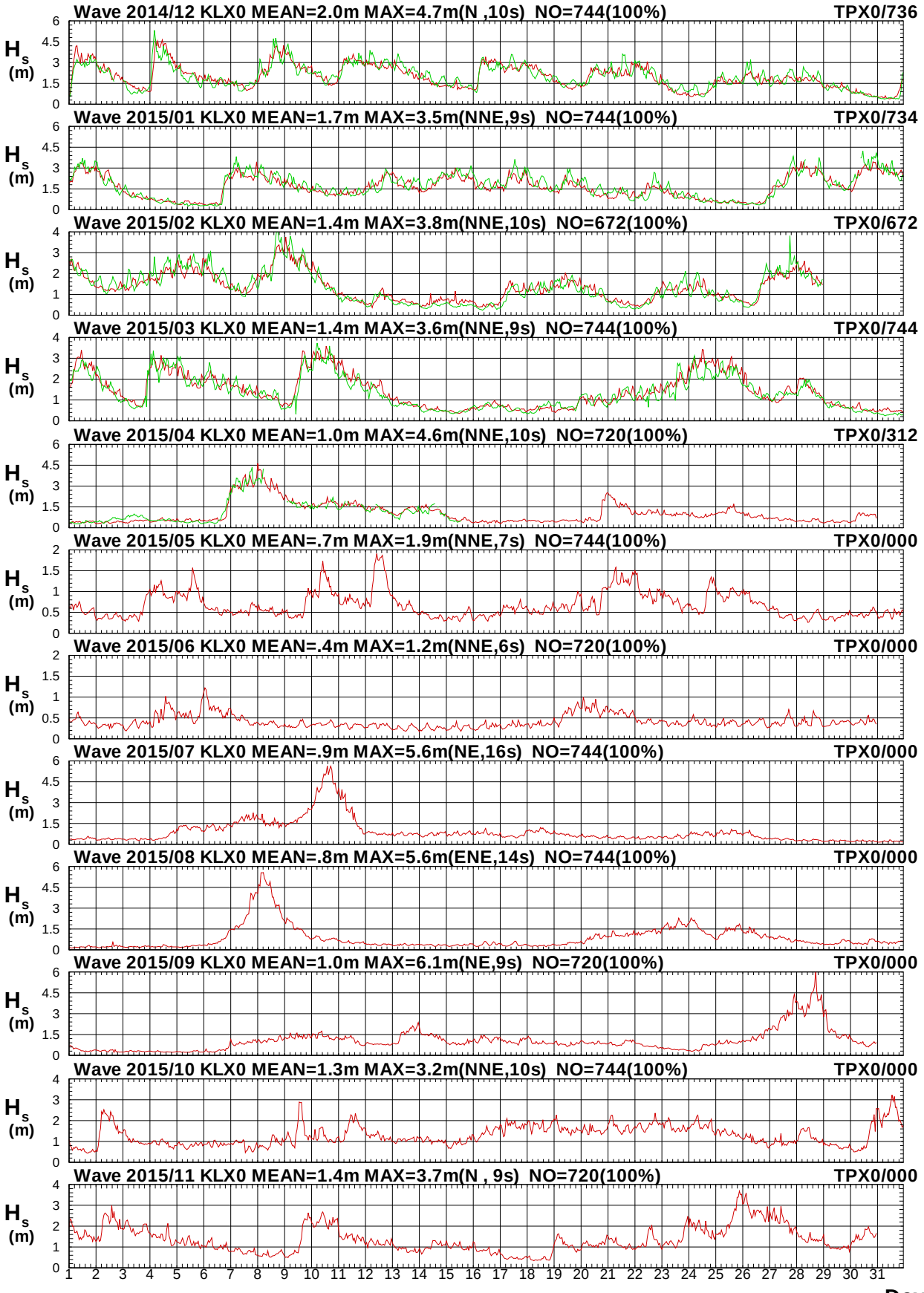


圖 2.8a　2015年每月北端海域 X 站與北苗海域 X 站波高圖

V14CKLX0.1HA V14CTPX0.1H0 V151KLX0.1HA V151TPX0.1H0 V152KLX0.1HA V152TPX0.1H0
V153KLX0.1HA V153TPX0.1H0 V154KLX0.1HA V154TPX0.1H0 V155KLX0.1HA V155TPX0.1H0

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Wave T_p in North Seas of KLX0 at 2015

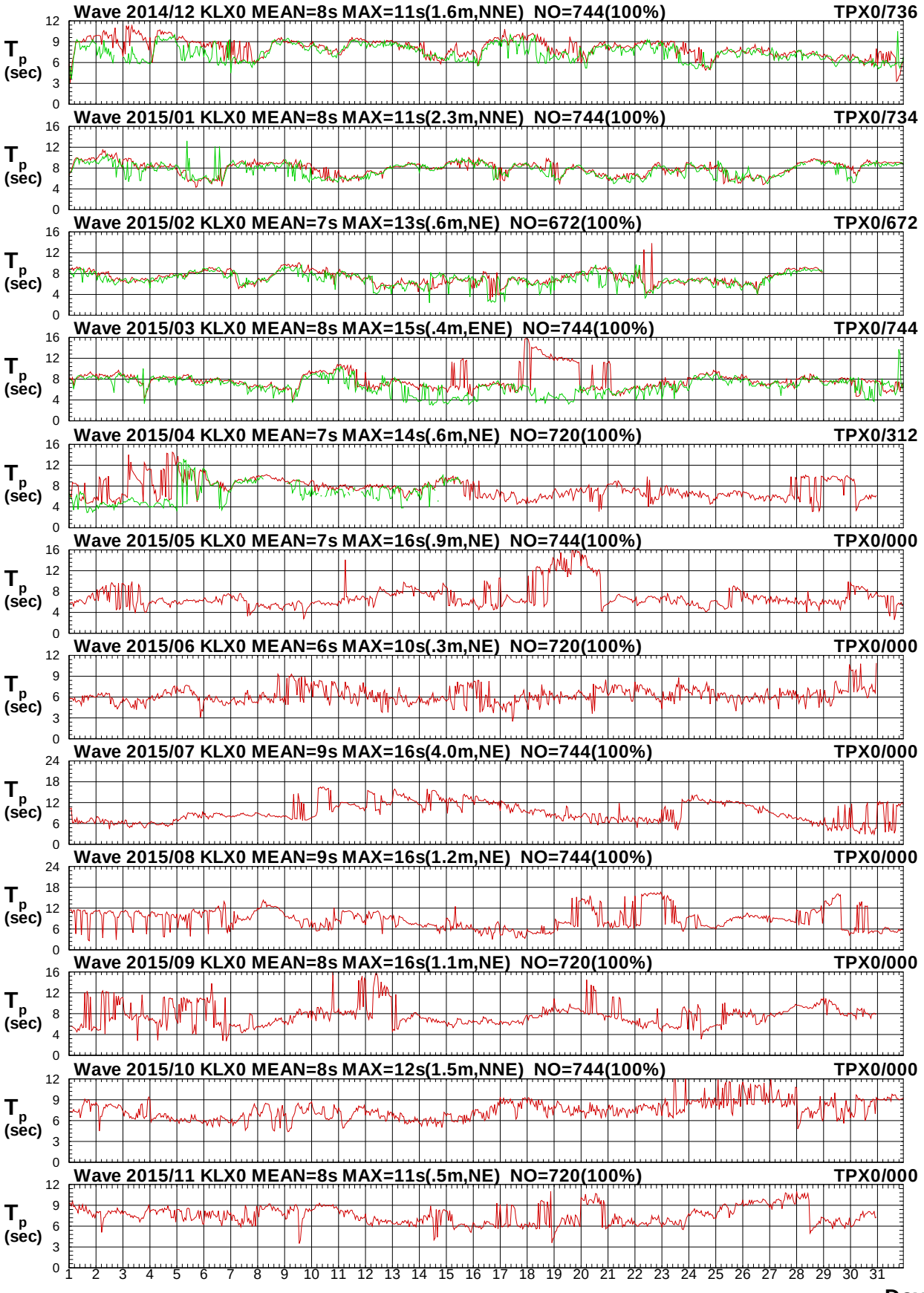


圖 2.8b　2015年每月北端海域 X 站與北苗海域 X 站週期圖

V14CKLX0.1HA V14CTPX0.1H0 V151KLX0.1HA V151TPX0.1H0 V152KLX0.1HA V152TPX0.1H0
V153KLX0.1HA V153TPX0.1H0 V154KLX0.1HA V154TPX0.1H0 V155KLX0.1HA V155TPX0.1H0

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Wave Direction in North Seas of KLX0 at 2015

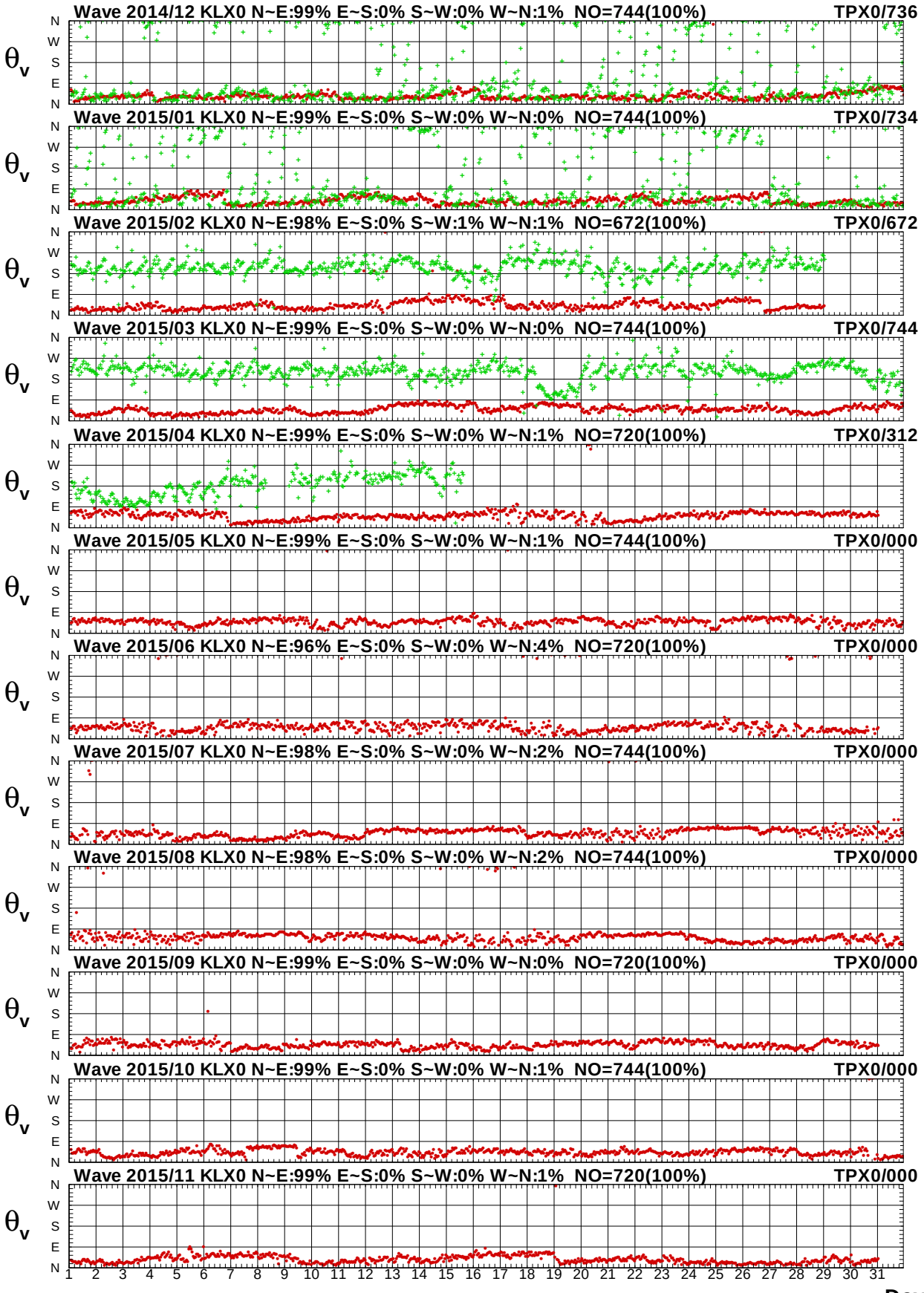


圖 2.8c　2015年每月北端海域 X 站與北苗海域 X 站波向圖

Wave H_s in North Seas of KLX0 at 2015

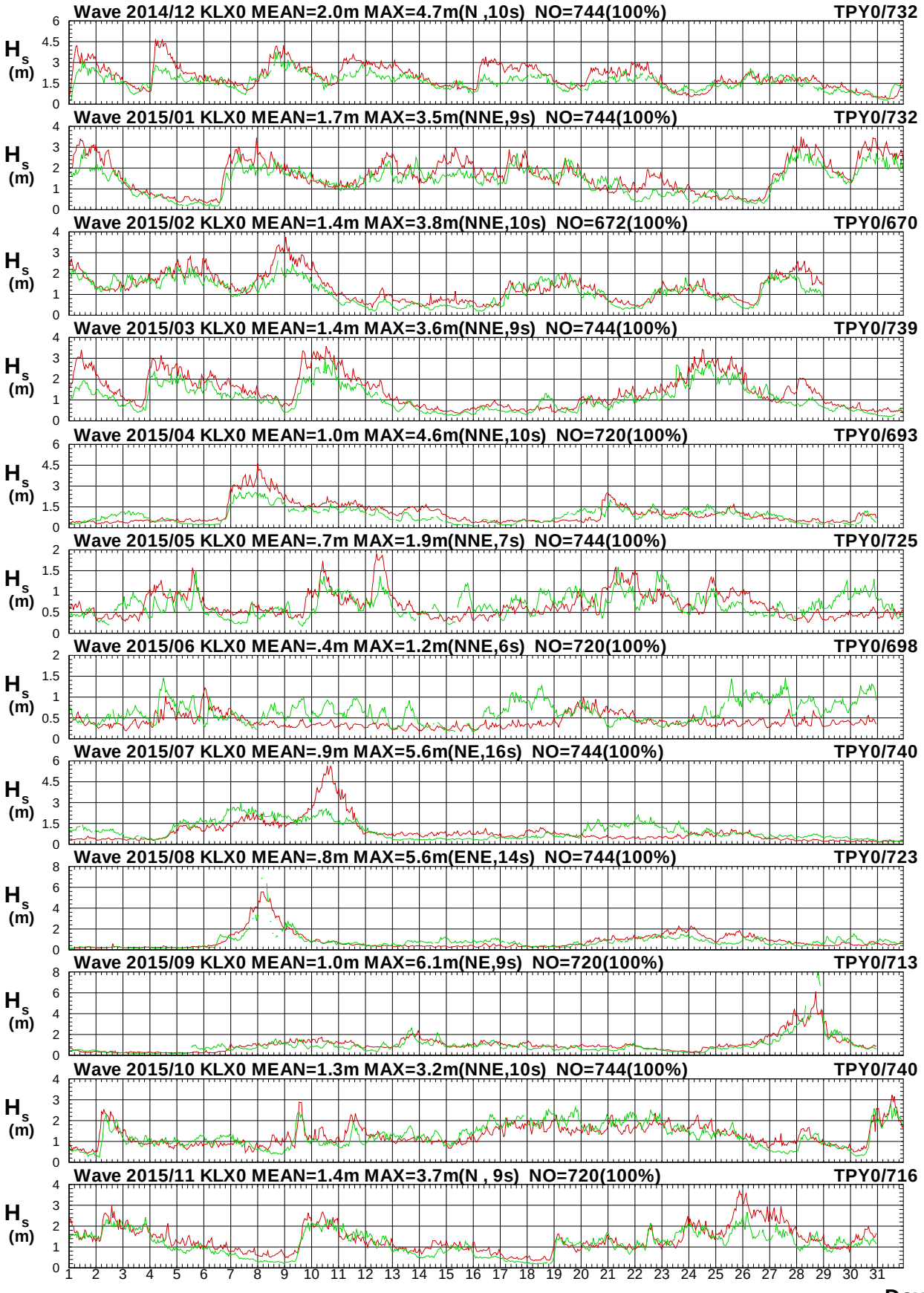


圖 2.9a　2015年每月北端海域 X 站與北苗海域 Y 站波高圖

V14CKLX0.1HA V14CTPY0.1H0 V151KLX0.1HA V151TPY0.1H0 V152KLX0.1HA V152TPY0.1H0
V153KLX0.1HA V153TPY0.1H0 V154KLX0.1HA V154TPY0.1H0 V155KLX0.1HA V155TPY0.1H0

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Wave T_p in North Seas of KLX0 at 2015

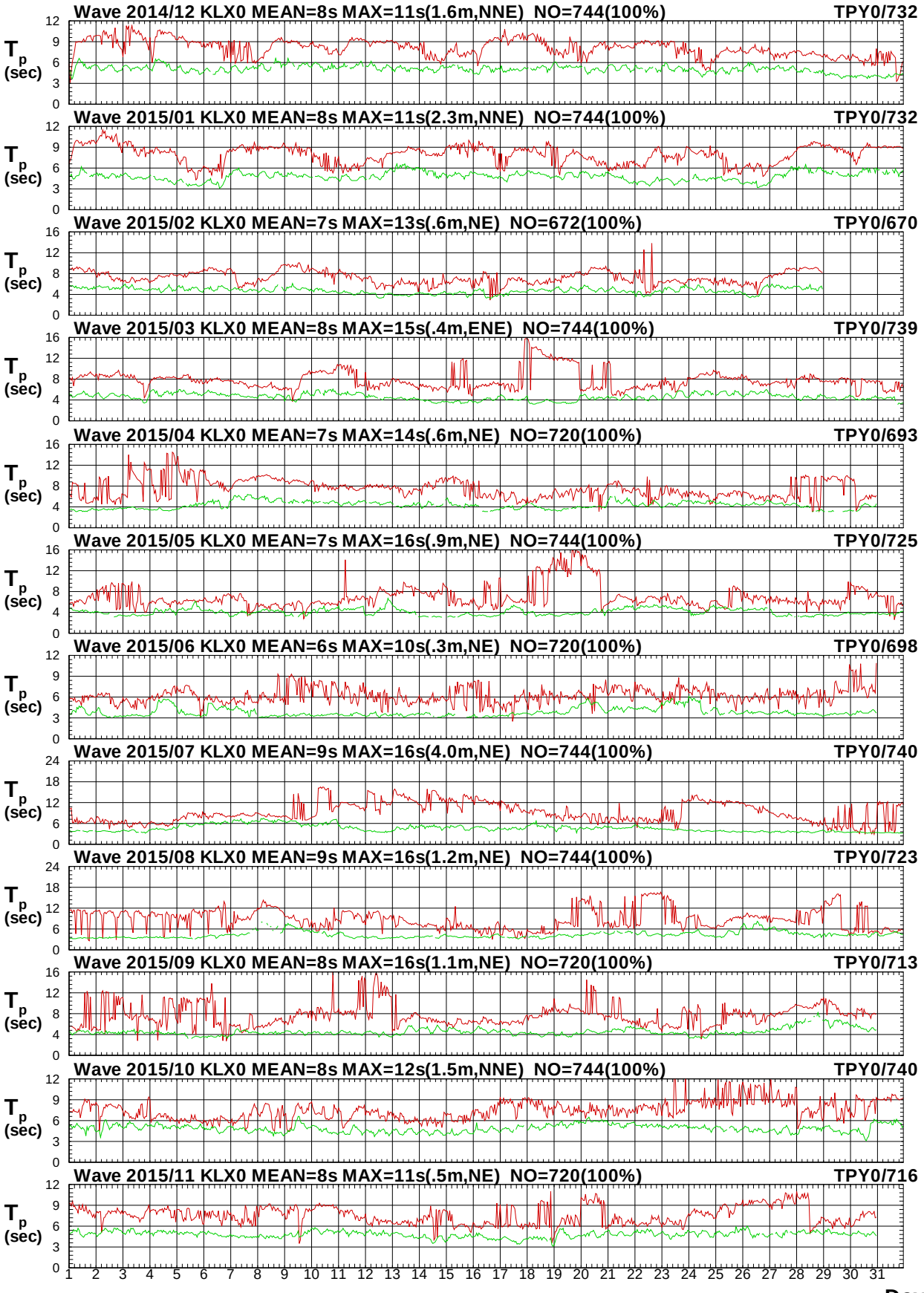


圖 2.9b　2015年每月北端海域 X 站與北苗海域 Y 站週期圖

V14CKLX0.1HA V14CTPY0.1H0 V151KLX0.1HA V151TPY0.1H0 V152KLX0.1HA V152TPY0.1H0
V153KLX0.1HA V153TPY0.1H0 V154KLX0.1HA V154TPY0.1H0 V155KLX0.1HA V155TPY0.1H0

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Wave Direction in North Seas of KLX0 at 2015

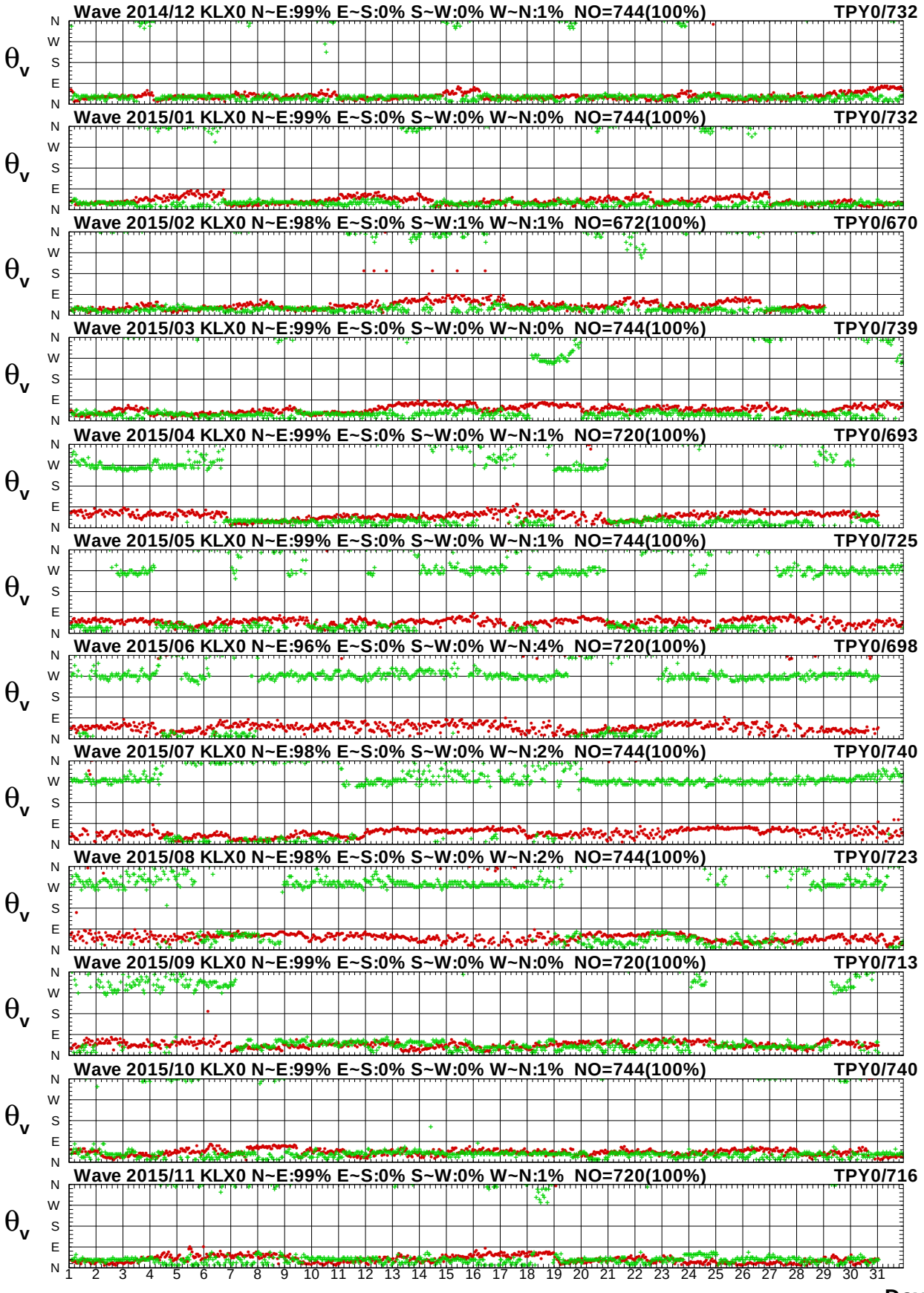


圖 2.9c　2015年每月北端海域 X 站與北苗海域 Y 站波向圖

第三章　2015 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**，2015 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，2015 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 2015 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	2002/08-2015/11(觀測中)	港研中心	AWCP 蘇澳港
Y	24°37'38"N	121°52'36"E	1999/09-2015/11(觀測中)	水利署	蘇澳浮標站
Z	24°50'52"N	121°55'39"E	2002/05-2015/11(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 2015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				
2014/12月	729 (98.0%)	733 (98.5%)	738 (99.2%)	*	*	*	*	*
2015/ 1月	744 (100%)	731 (98.3%)	731 (98.3%)	*	*	*	*	*
2015/ 2月	672 (100%)	431 (64.1%)	668 (99.4%)	*	*	*	*	*
2015/ 3月	736 (98.9%)	637 (85.6%)	735 (98.8%)	*	*	*	*	*
2015/ 4月	717 (99.6%)	694 (96.4%)	709 (98.5%)	*	*	*	*	*
2015/ 5月	744 (100%)	730 (98.1%)	728 (97.8%)	*	*	*	*	*
2015/ 6月	716 (99.4%)	711 (98.8%)	716 (99.4%)	*	*	*	*	*
2015/ 7月	743 (99.9%)	733 (98.5%)	737 (99.1%)	*	*	*	*	*
2015/ 8月	744 (100%)	166 (22.3%)	739 (99.3%)	*	*	*	*	*
2015/ 9月	720 (100%)	*	679 (94.3%)	*	*	*	*	*
2015/10月	662 (89.0%)	393 (52.8%)	698 (93.8%)	*	*	*	*	*
2015/11月	*	720 (100%)	709 (98.5%)	*	*	*	*	*
2015/冬季	2145 (99.3%)	1895 (87.7%)	2137 (98.9%)	*	*	*	*	*
2015/春季	2197 (99.5%)	2061 (93.3%)	2172 (98.4%)	*	*	*	*	*
2015/夏季	2203 (99.8%)	1610 (72.9%)	2192 (99.3%)	*	*	*	*	*
2015/秋季	1382 (63.3%)	1113 (51.0%)	2086 (95.5%)	*	*	*	*	*
2015/整年	7927 (90.5%)	6679 (76.2%)	8587 (98.0%)	*	*	*	*	*
起始年月	2014/12	2014/12	2014/12	*	*	*	*	*
結束年月	2015/10	2015/11	2015/11	*	*	*	*	*

表3.1b 2015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				
2014/12月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	672 (100%)	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	2160 (100%)	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	2184 (100%)	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	8760 (100%)	*	*	*	*	*
起始年月	2014/12	2014/12	2014/12	*	*	*	*	*
結束年月	2015/11	2015/11	2015/11	*	*	*	*	*

Wave H_s in Yi-Lan Seas of SAX0 at 2015

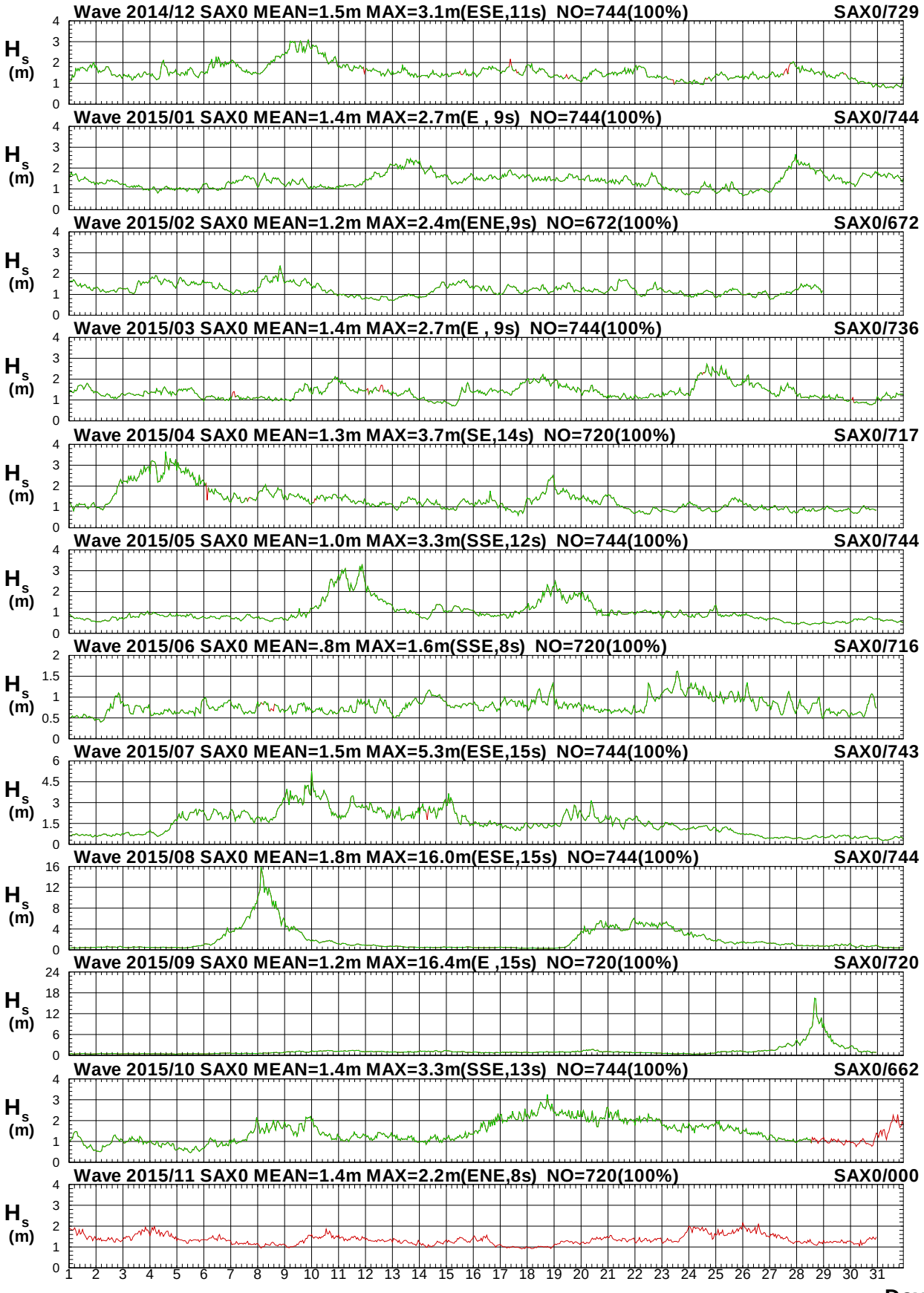


圖3.1a　2015年每月宜蘭海域 X 站修補前後之波高比較圖

V14CSAX0.1HA V14CSAX0.1H0 V151SAX0.1HA V151SAX0.1H0 V152SAX0.1HA V152SAX0.1H0
V153SAX0.1HA V153SAX0.1H0 V154SAX0.1HA V154SAX0.1H0 V155SAX0.1HA V155SAX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

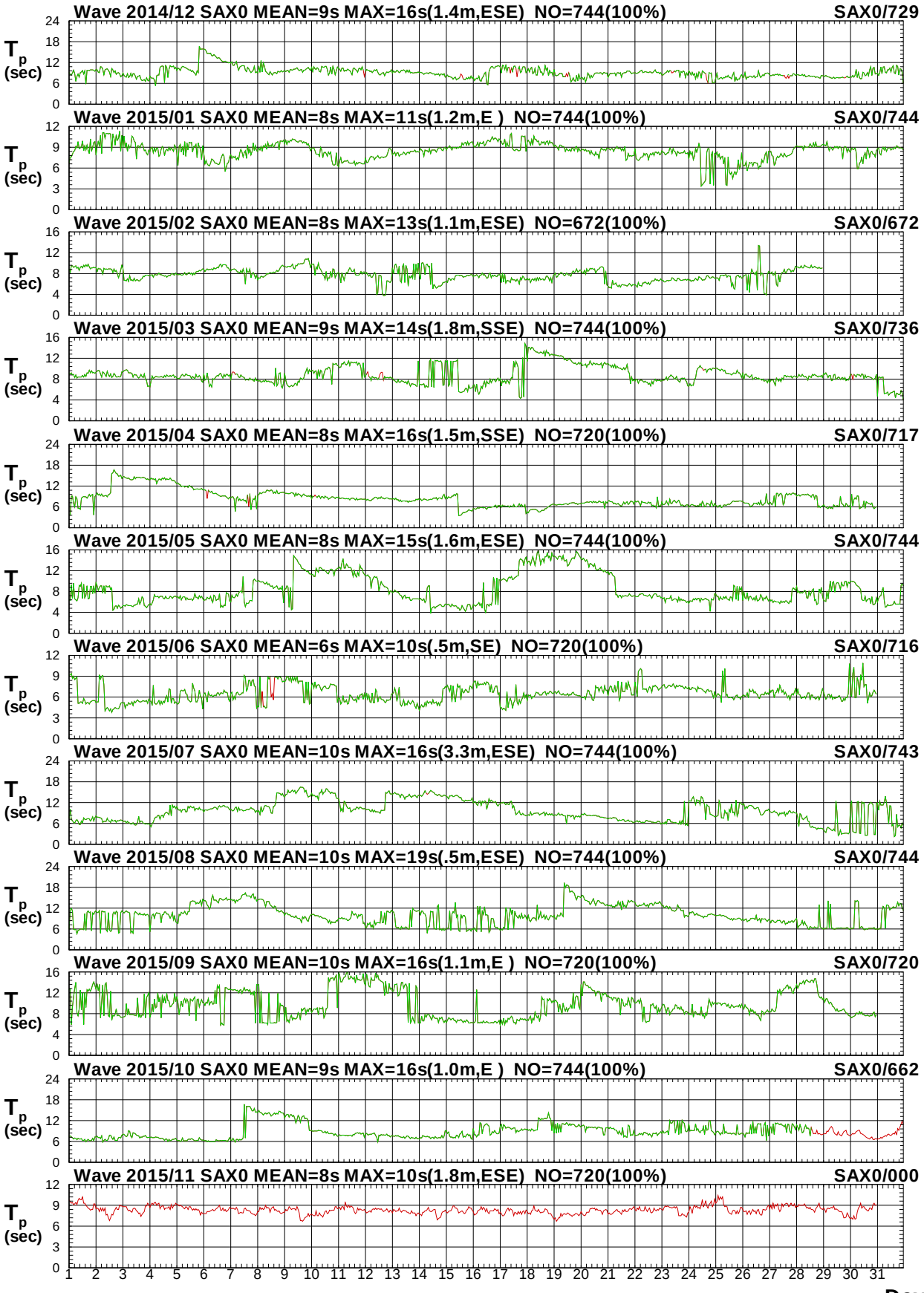


圖3.1b　2015年每月宜蘭海域 X 站修補前後之週期比較圖

Wave Direction in Yi-Lan Seas of SAX0 at 2015

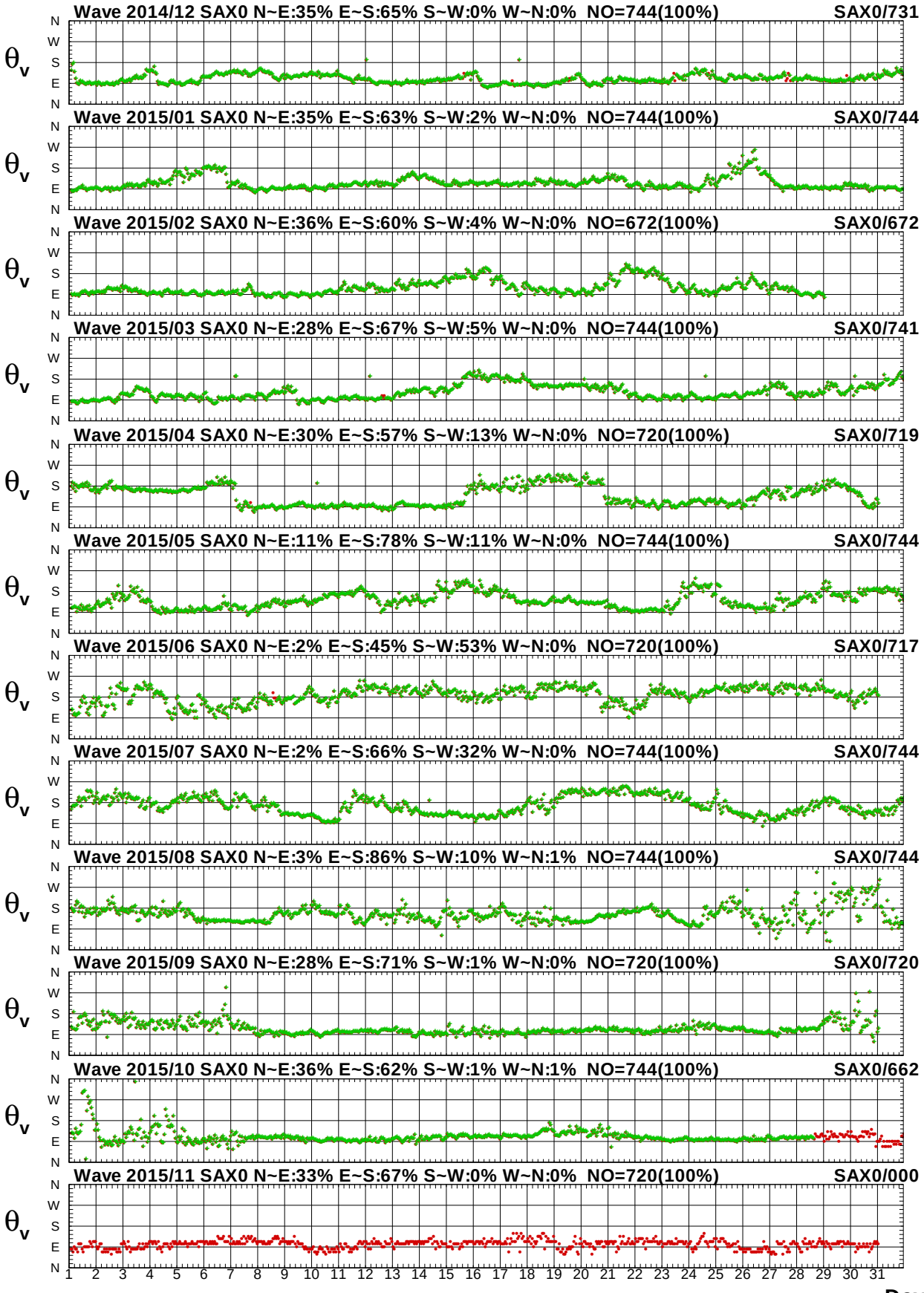


圖3.1c　2015年每月宜蘭海域 X 站修補前後之波向比較圖

Wave H_s in Yi-Lan Seas of SAX0 at 2015

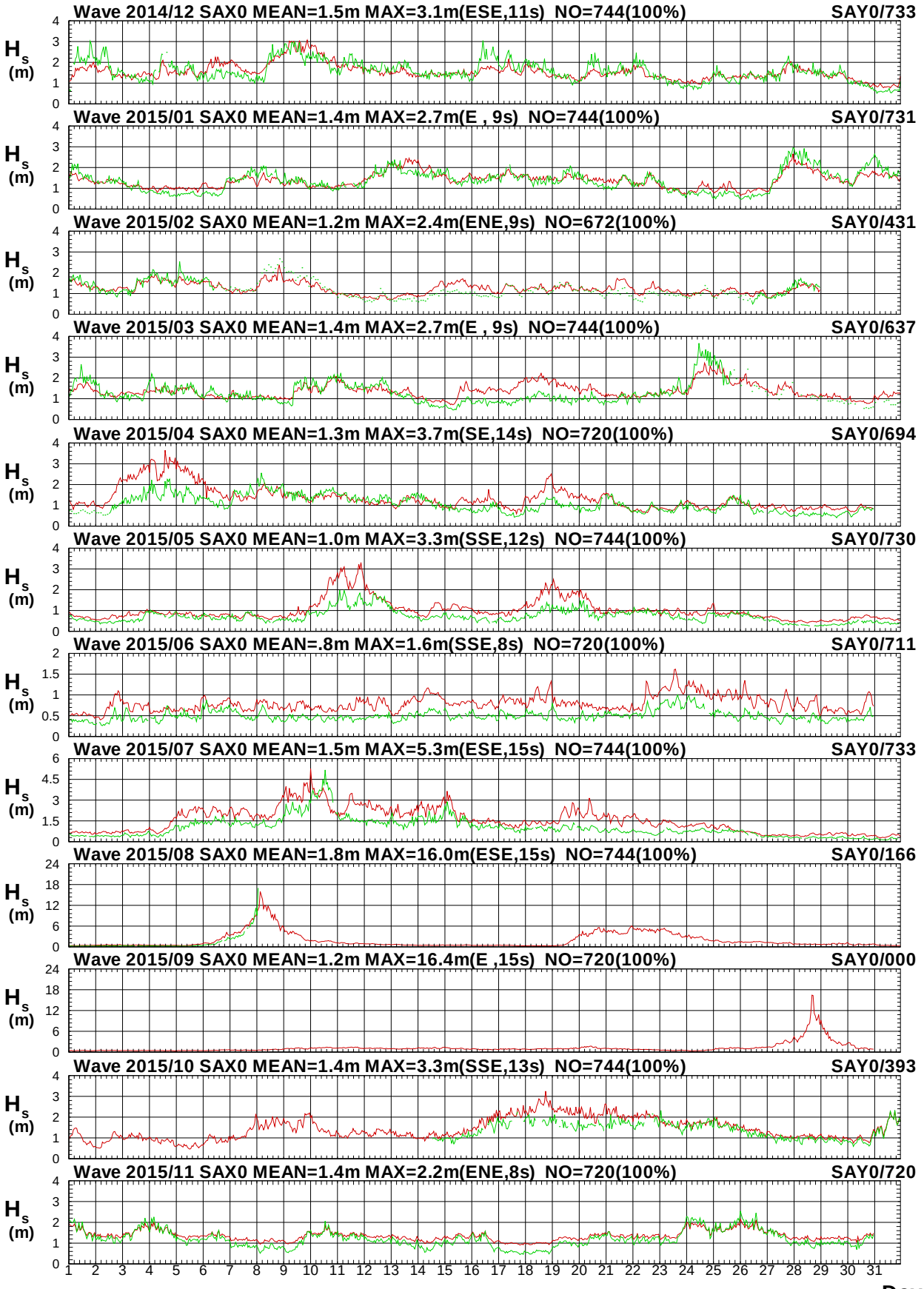


圖 3.2a　2015年每月宜蘭海域 X 站與 Y 站波高比較圖

V14CSAX0.1HA V14CSAY0.1H0 V151SAX0.1HA V151SAY0.1H0 V152SAX0.1HA V152SAY0.1H0
V153SAX0.1HA V153SAY0.1H0 V154SAX0.1HA V154SAY0.1H0 V155SAX0.1HA V155SAY0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

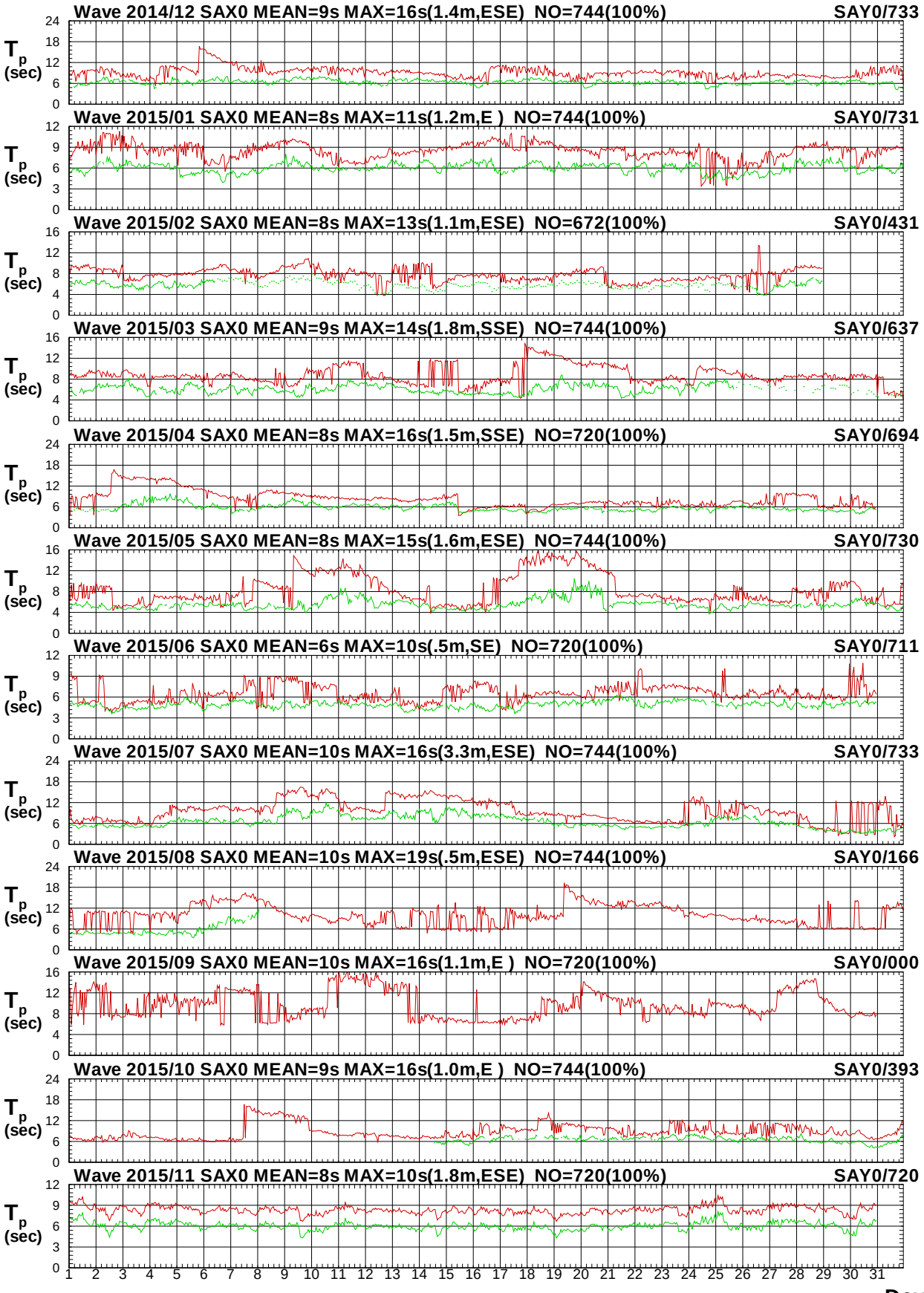


圖3.2b　2015年每月宜蘭海域 X 站與 Y 站週期比較圖

V14CSAX0.1HA V14CSAY0.1H0 V151SAX0.1HA V151SAY0.1H0 V152SAX0.1HA V152SAY0.1H0
V153SAX0.1HA V153SAY0.1H0 V154SAX0.1HA V154SAY0.1H0 V155SAX0.1HA V155SAY0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

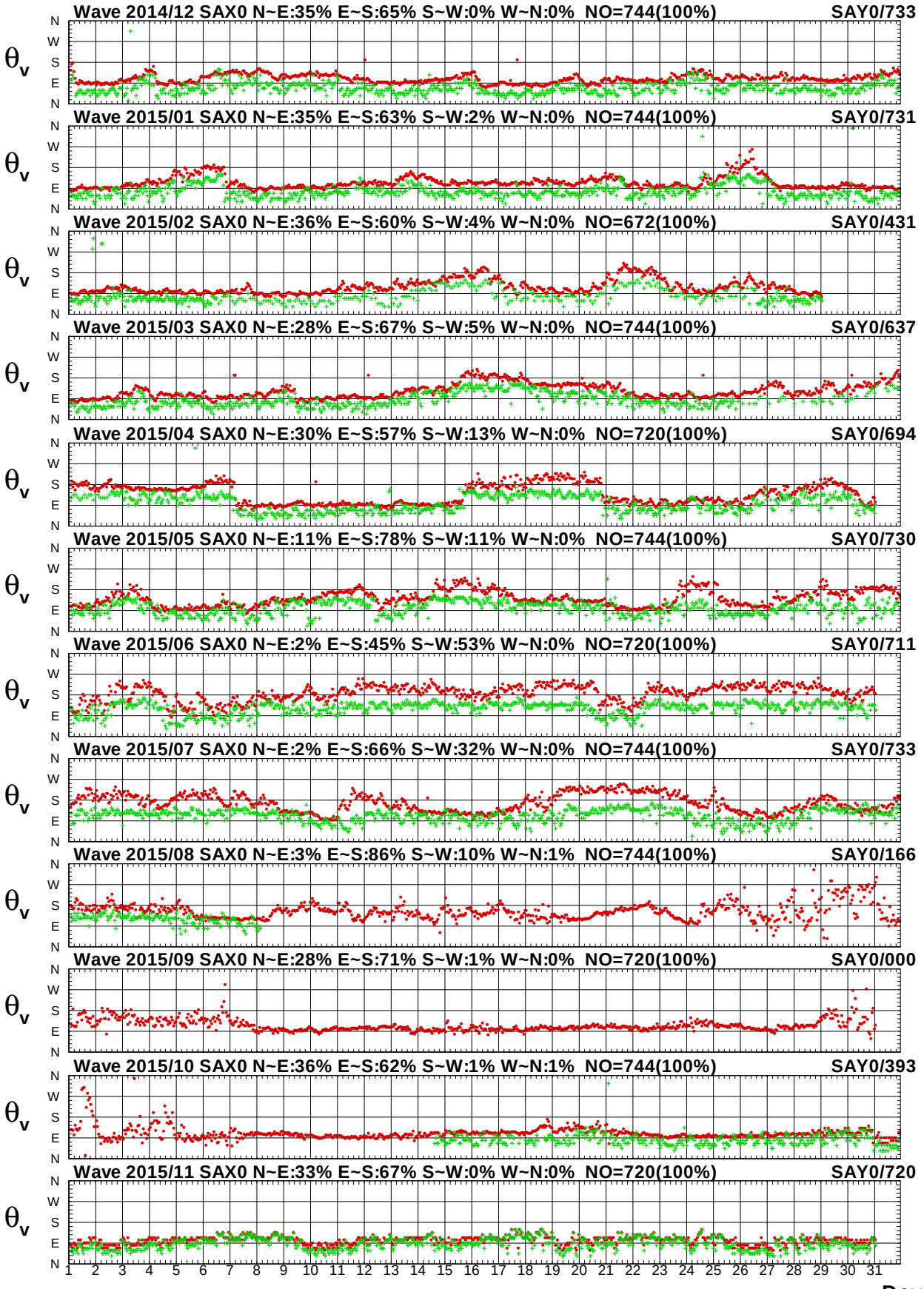


圖 3.2c　2015年每月宜蘭海域 X 站與 Y 站波向比較圖

Wave H_s in Yi-Lan Seas of SAX0 at 2015

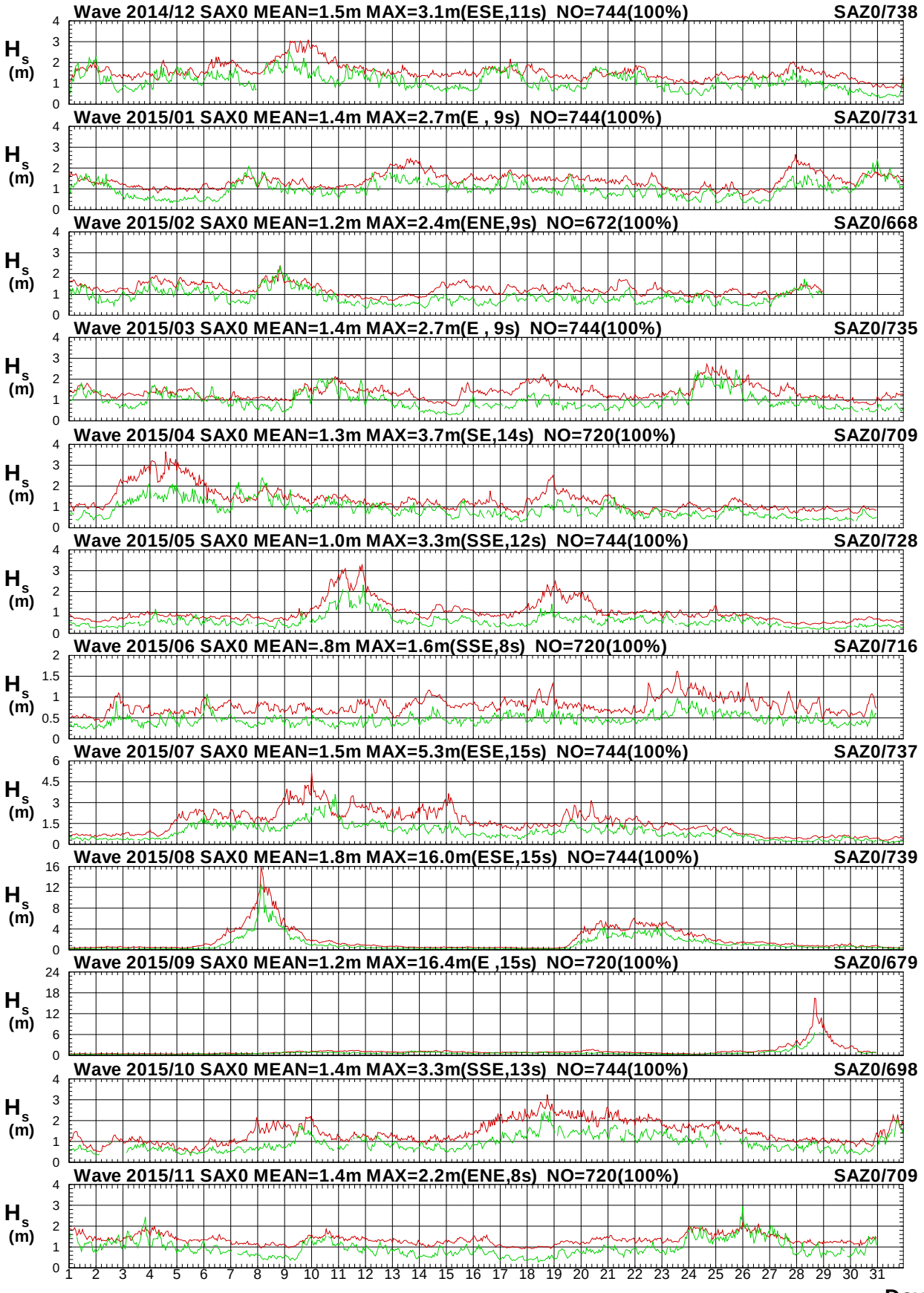


圖 3.3a　2015年每月宜蘭海域 X 站與 Z 站波高比較圖

V14CSAX0.1HA V14CSAZ0.1H0 V151SAX0.1HA V151SAZ0.1H0 V152SAX0.1HA V152SAZ0.1H0
V153SAX0.1HA V153SAZ0.1H0 V154SAX0.1HA V154SAZ0.1H0 V155SAX0.1HA V155SAZ0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

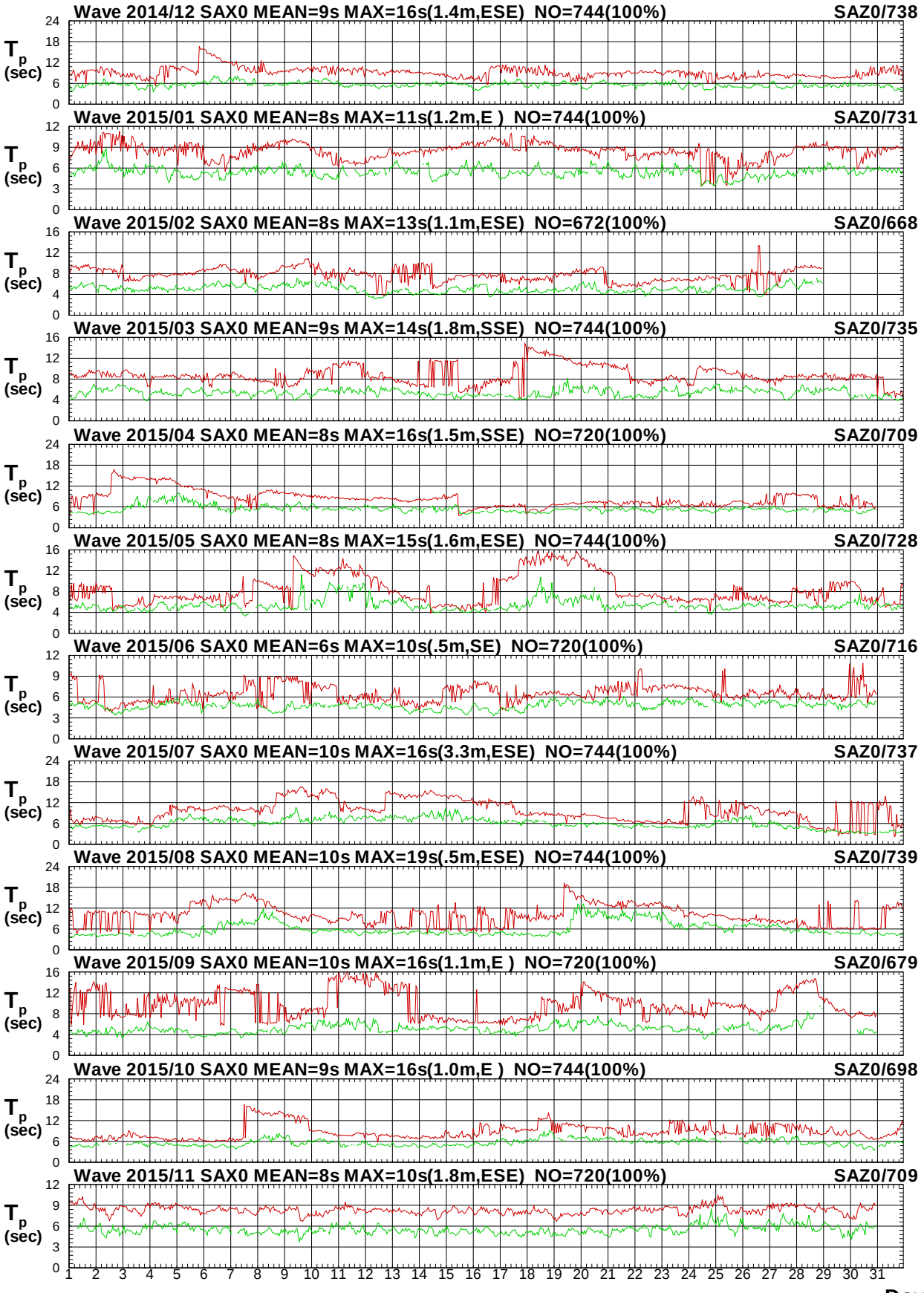


圖 3.3b　2015年每月宜蘭海域 X 站與 Z 站週期比較圖

V14CSAX0.1HA V14CSAZ0.1H0 V151SAX0.1HA V151SAZ0.1H0 V152SAX0.1HA V152SAZ0.1H0
V153SAX0.1HA V153SAZ0.1H0 V154SAX0.1HA V154SAZ0.1H0 V155SAX0.1HA V155SAZ0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

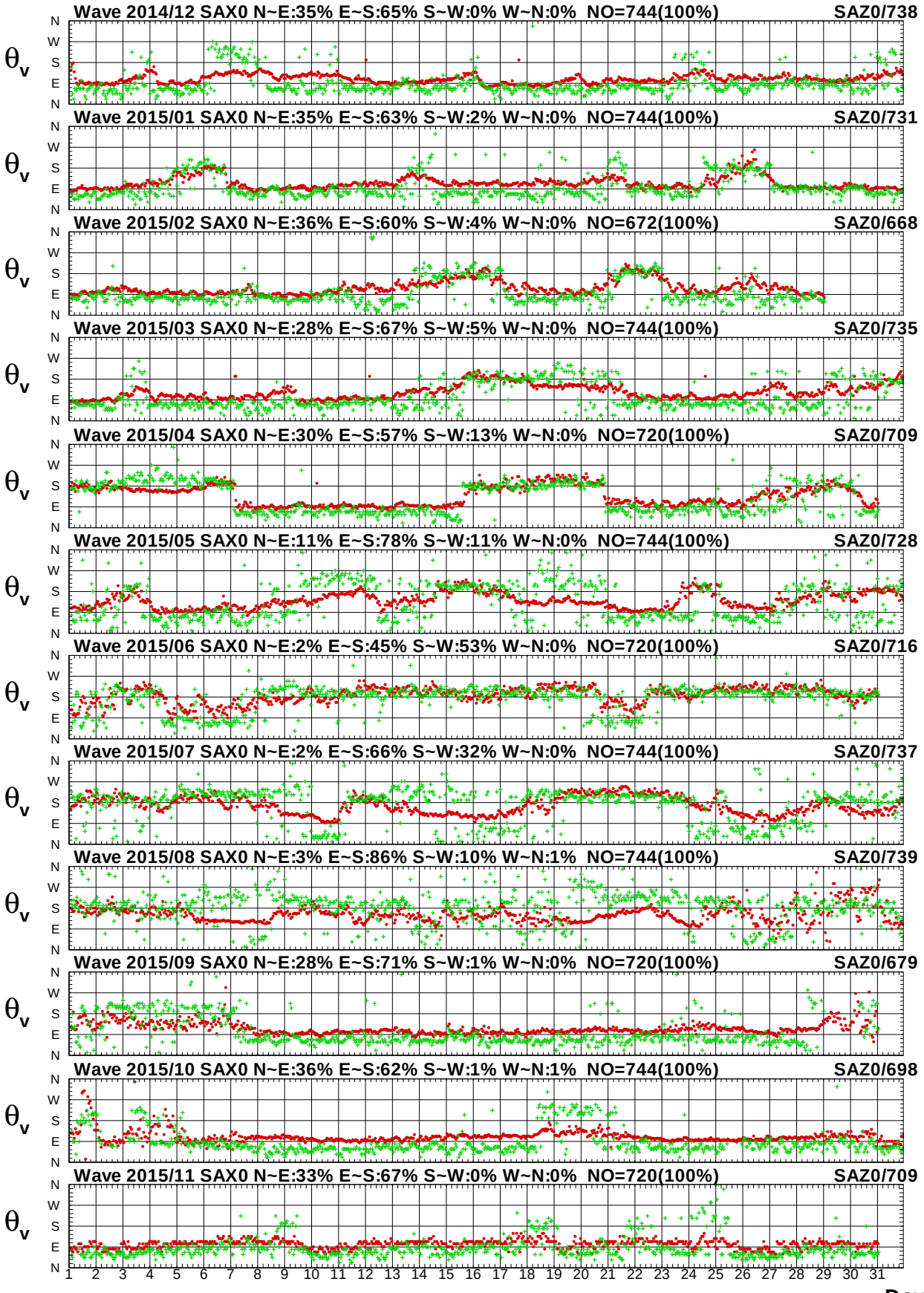


圖3.3c　2015年每月宜蘭海域 X 站與 Z 站波向比較圖

V14CSAX0.1HA V14CSAZ0.1H0 V151SAX0.1HA V151SAZ0.1H0 V152SAX0.1HA V152SAZ0.1H0
V153SAX0.1HA V153SAZ0.1H0 V154SAX0.1HA V154SAZ0.1H0 V155SAX0.1HA V155SAZ0.1H0

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Wave H_s in Yi-Lan Seas of SAX0 at 2015

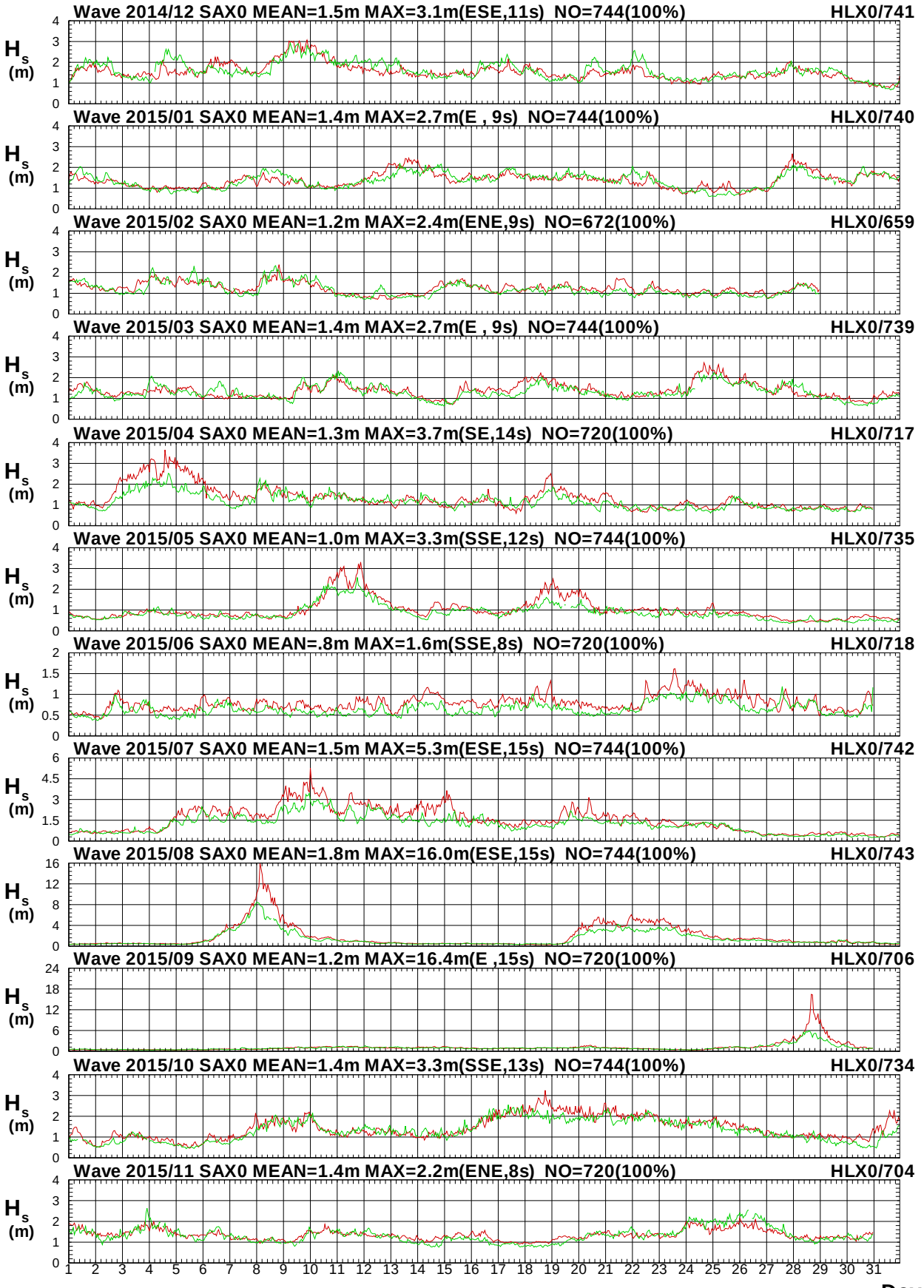


圖 3.4a　2015年每月宜蘭海域 X 站與花蓮海域 X 站波高圖

V14CSAX0.1HA V14CHLX0.1H0 V151SAX0.1HA V151HLX0.1H0 V152SAX0.1HA V152HLX0.1H0
V153SAX0.1HA V153HLX0.1H0 V154SAX0.1HA V154HLX0.1H0 V155SAX0.1HA V155HLX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

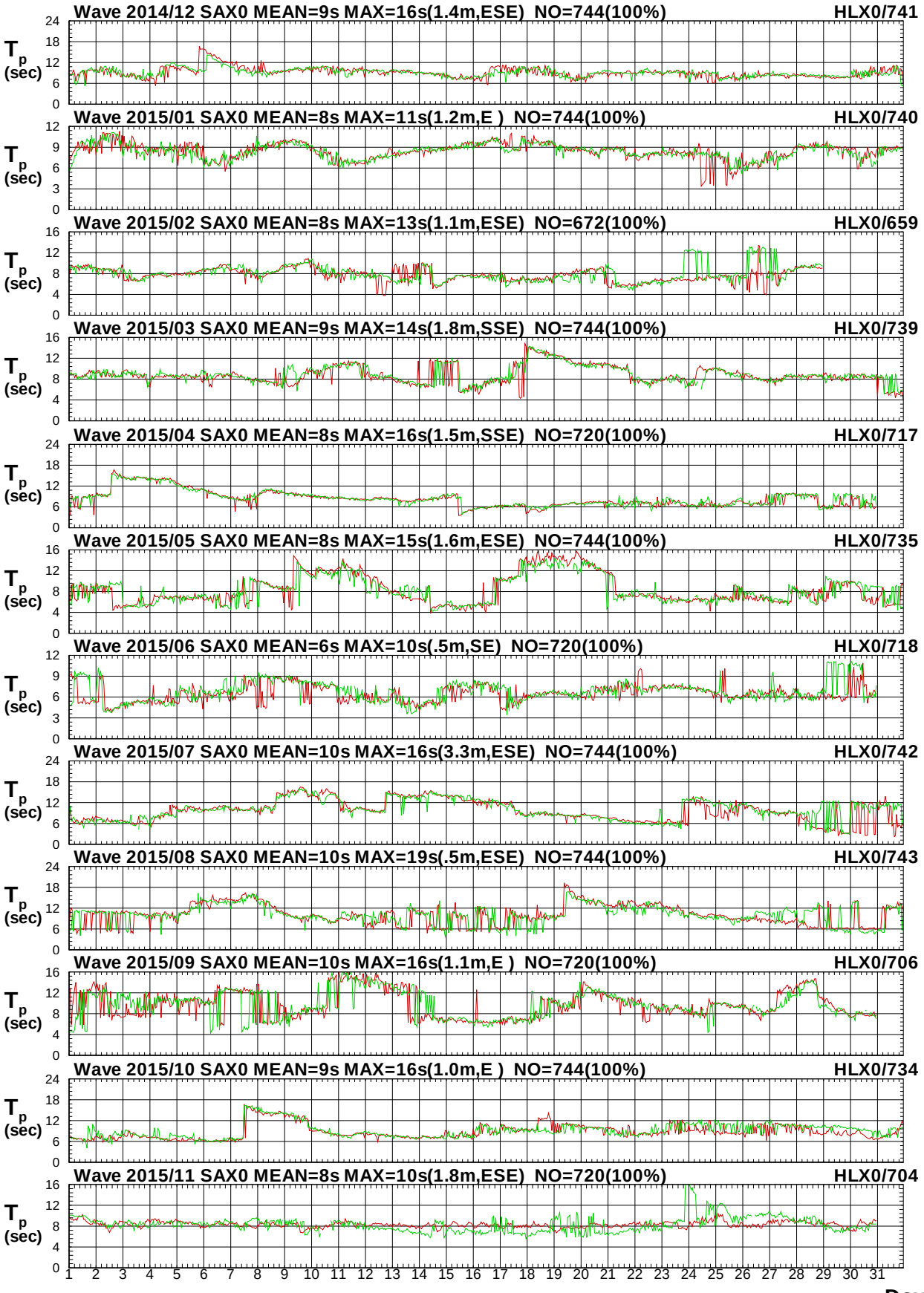


圖 3.4b　2015年每月宜蘭海域 X 站與花蓮海域 X 站週期圖

V14CSAX0.1HA V14CHLX0.1H0 V151SAX0.1HA V151HLX0.1H0 V152SAX0.1HA V152HLX0.1H0
V153SAX0.1HA V153HLX0.1H0 V154SAX0.1HA V154HLX0.1H0 V155SAX0.1HA V155HLX0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

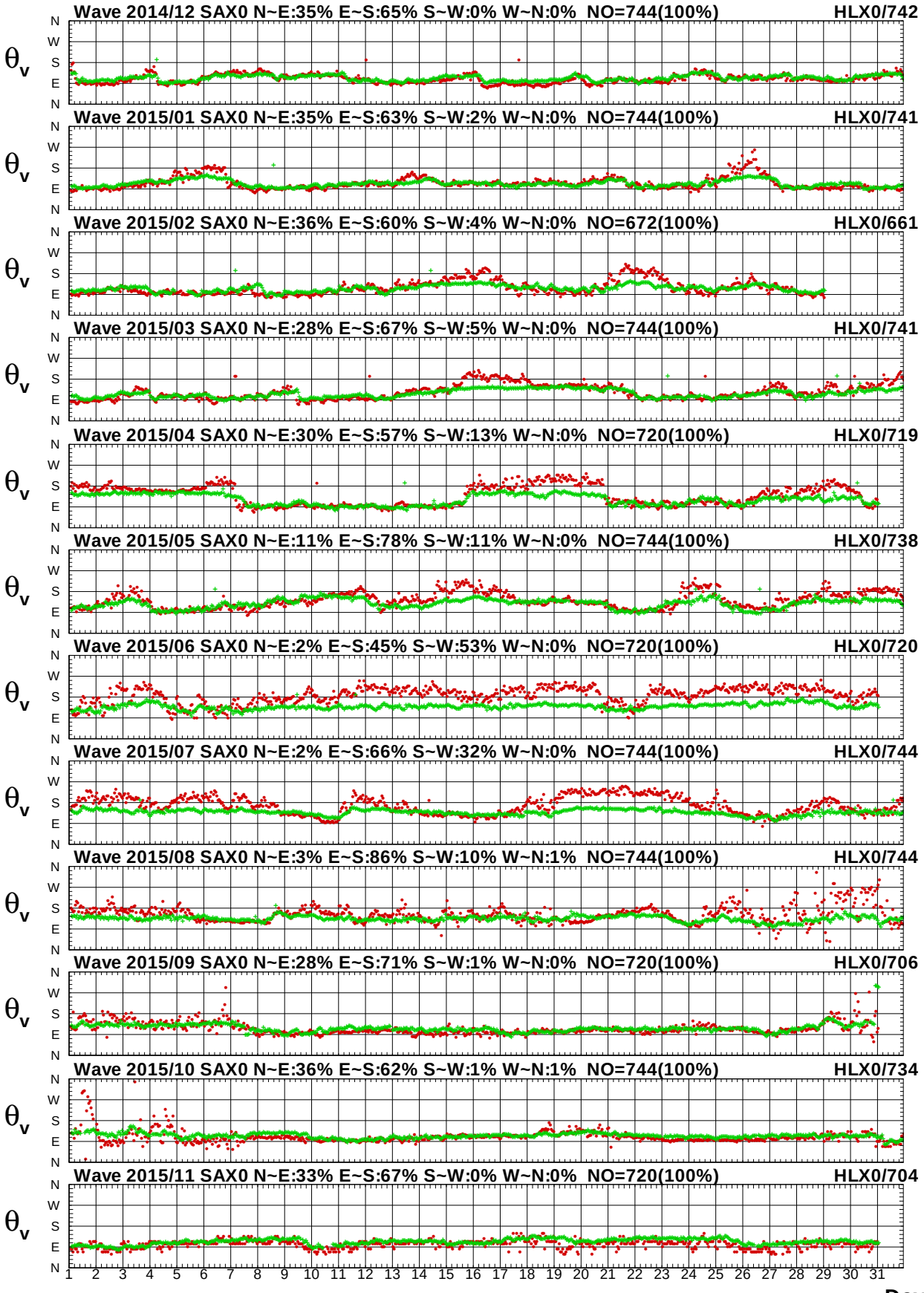


圖 3.4c　2015年每月宜蘭海域 X 站與花蓮海域 X 站波向圖

V14CSAX0.1HA V14CHLX0.1H0 V151SAX0.1HA V151HLX0.1H0 V152SAX0.1HA V152HLX0.1H0
V153SAX0.1HA V153HLX0.1H0 V154SAX0.1HA V154HLX0.1H0 V155SAX0.1HA V155HLX0.1H0

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Wave H_s in Yi-Lan Seas of SAX0 at 2015

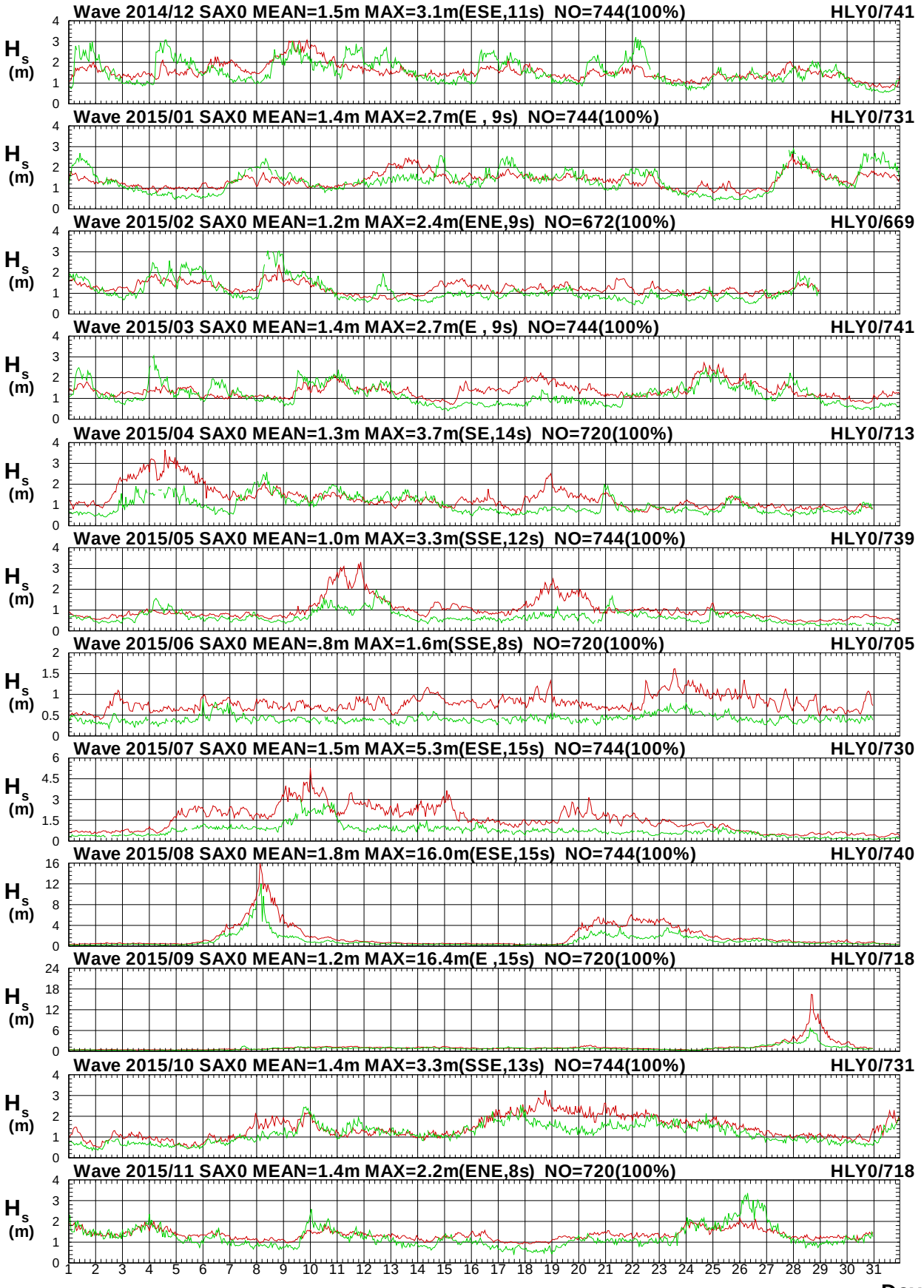


圖3.5a　2015年每月宜蘭海域 X 站與花蓮海域 Y 站波高圖

V14CSAX0.1HA V14CHLY0.1H0 V151SAX0.1HA V151HLY0.1H0 V152SAX0.1HA V152HLY0.1H0
V153SAX0.1HA V153HLY0.1H0 V154SAX0.1HA V154HLY0.1H0 V155SAX0.1HA V155HLY0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

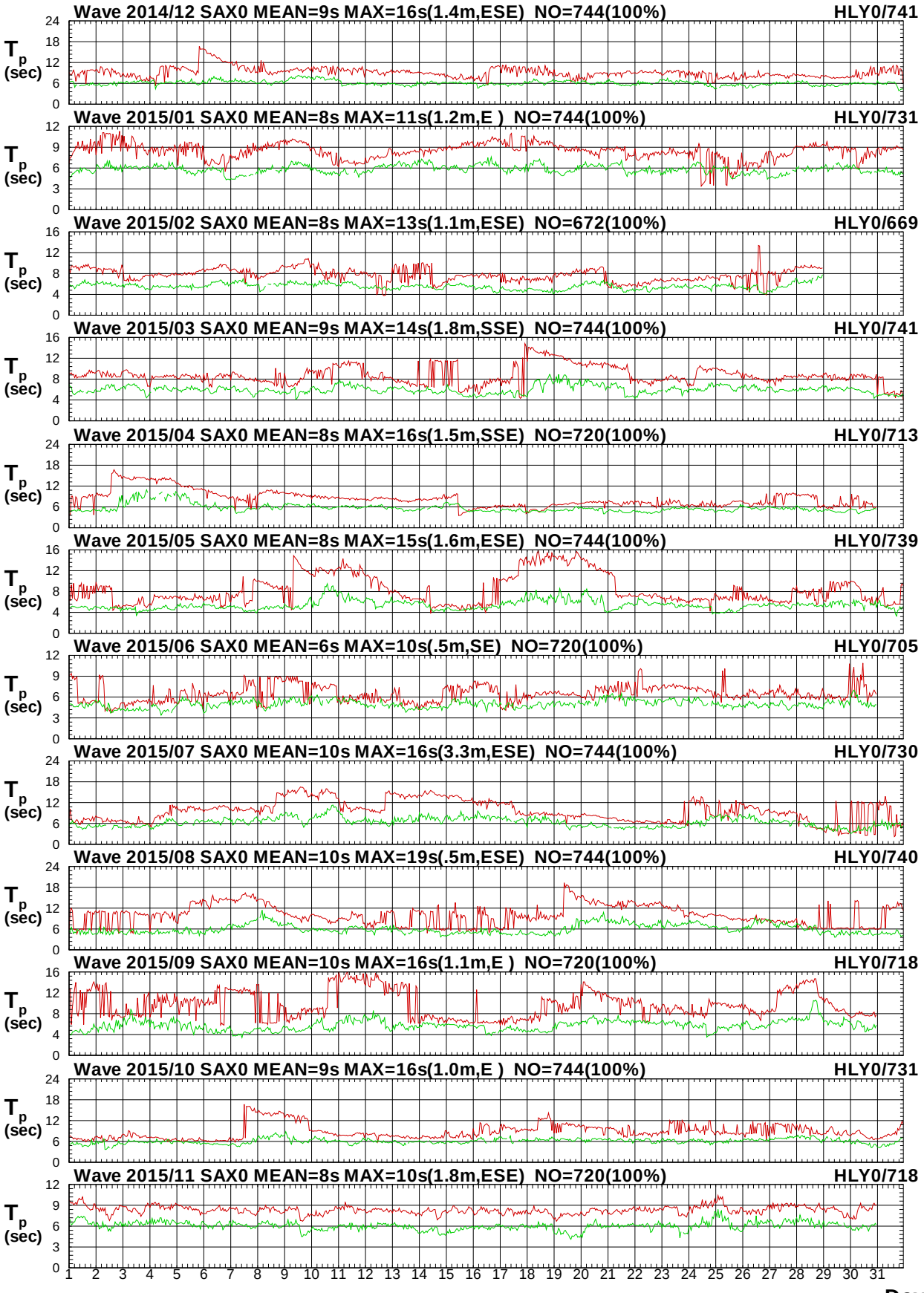


圖 3.5b　2015年每月宜蘭海域 X 站與花蓮海域 Y 站週期圖

V14CSAX0.1HA V14CHLY0.1H0 V151SAX0.1HA V151HLY0.1H0 V152SAX0.1HA V152HLY0.1H0
V153SAX0.1HA V153HLY0.1H0 V154SAX0.1HA V154HLY0.1H0 V155SAX0.1HA V155HLY0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

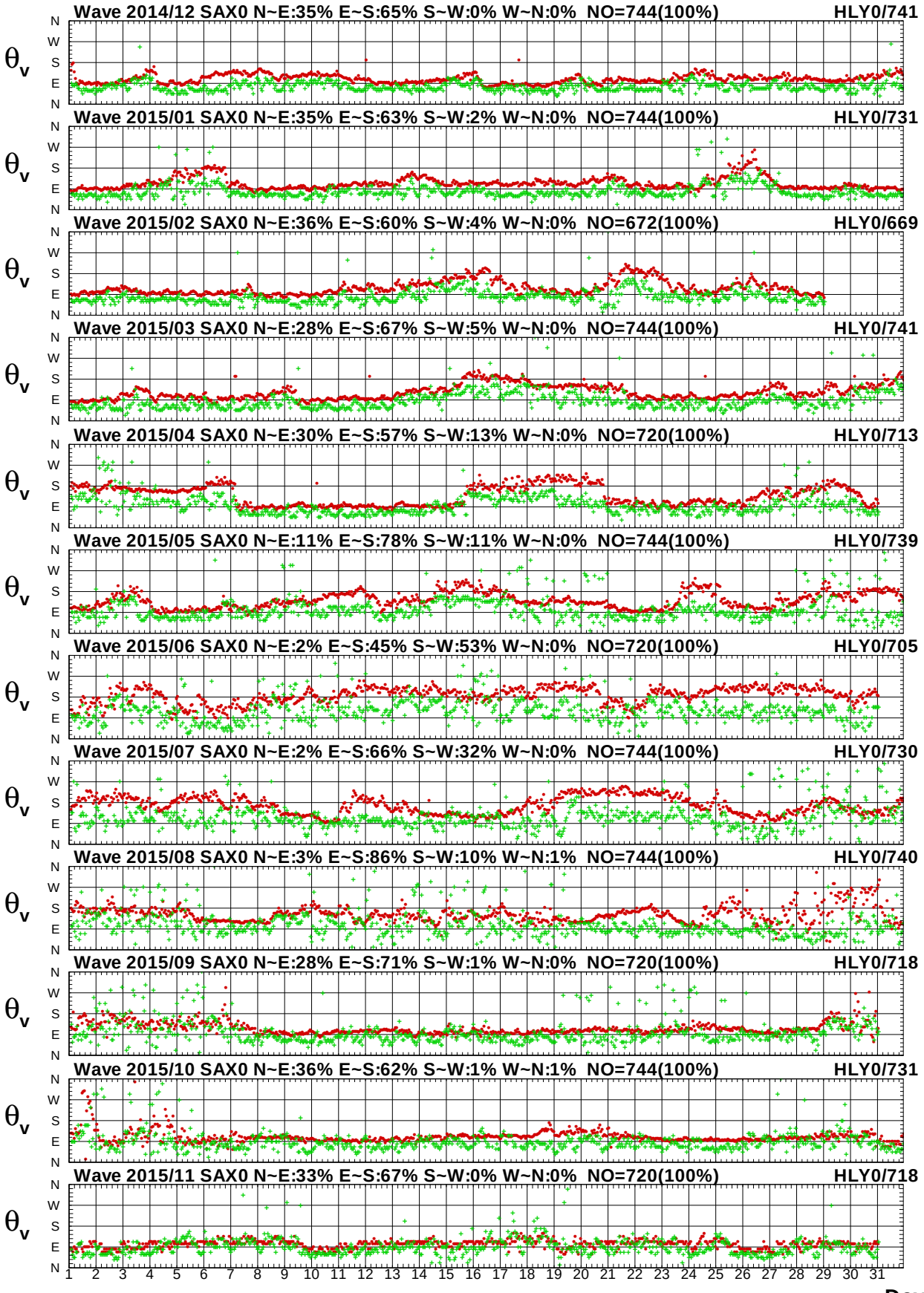


圖 3.5c　2015年每月宜蘭海域 X 站與花蓮海域 Y 站波向圖

Wave H_s in Yi-Lan Seas of SAX0 at 2015

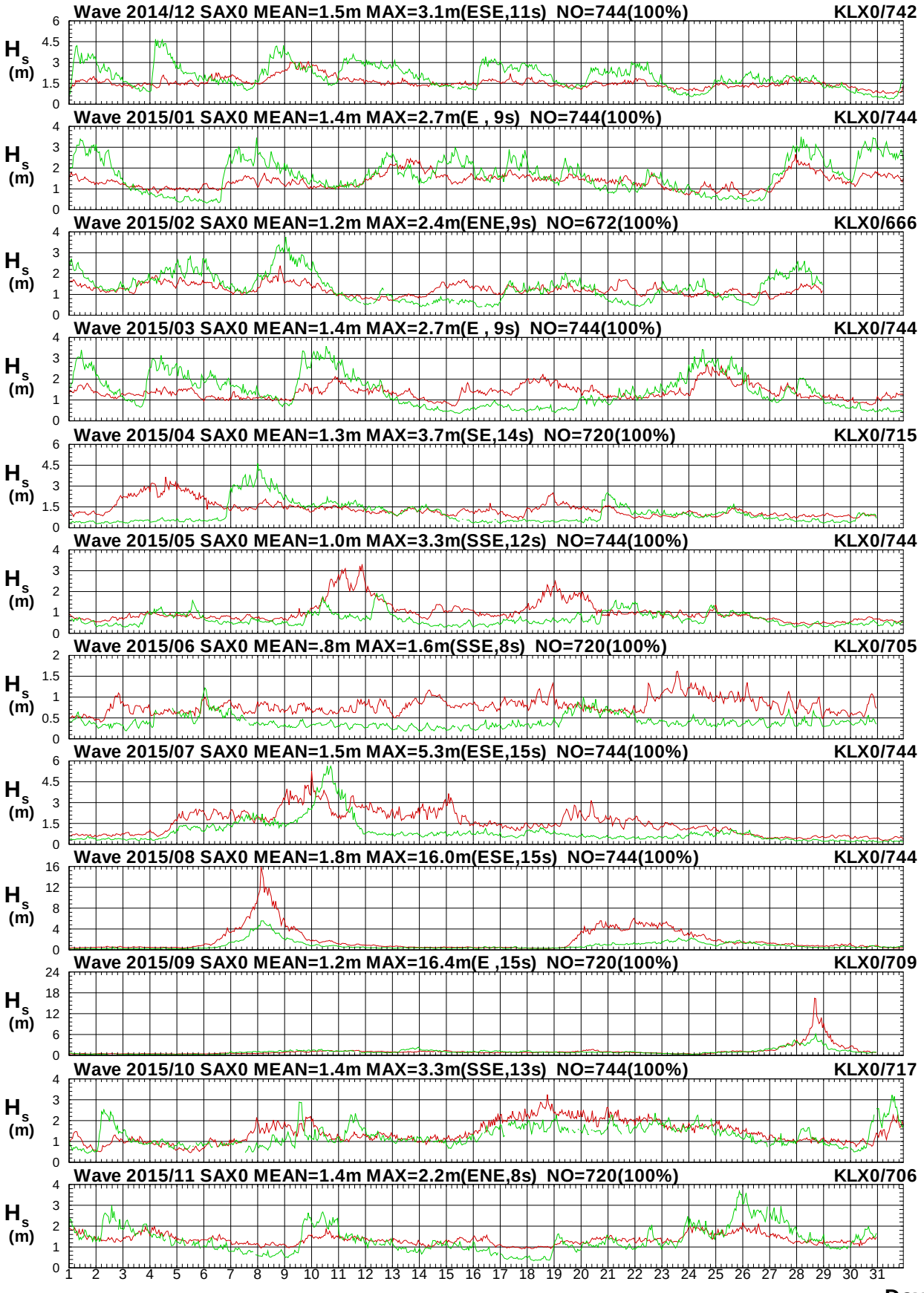


圖 3.6a　2015年每月宜蘭海域 X 站與北端海域 X 站波高圖

V14CSAX0.1HA V14CKLX0.1H0 V151SAX0.1HA V151KLX0.1H0 V152SAX0.1HA V152KLX0.1H0
V153SAX0.1HA V153KLX0.1H0 V154SAX0.1HA V154KLX0.1H0 V155SAX0.1HA V155KLX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

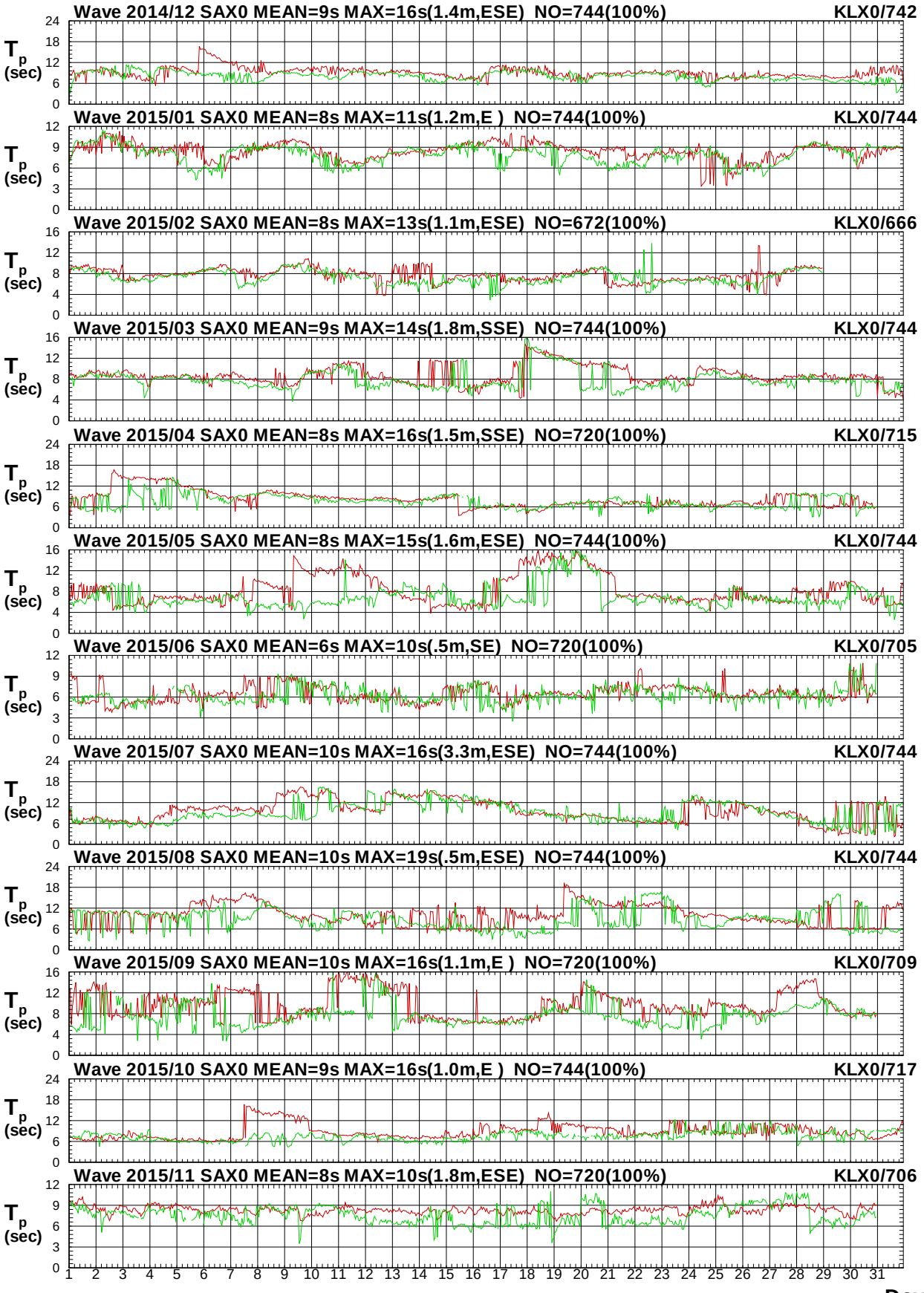


圖 3.6b　2015年每月宜蘭海域 X 站與北端海域 X 站週期圖

V14CSAX0.1HA V14CKLX0.1H0 V151SAX0.1HA V151KLX0.1H0 V152SAX0.1HA V152KLX0.1H0
V153SAX0.1HA V153KLX0.1H0 V154SAX0.1HA V154KLX0.1H0 V155SAX0.1HA V155KLX0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

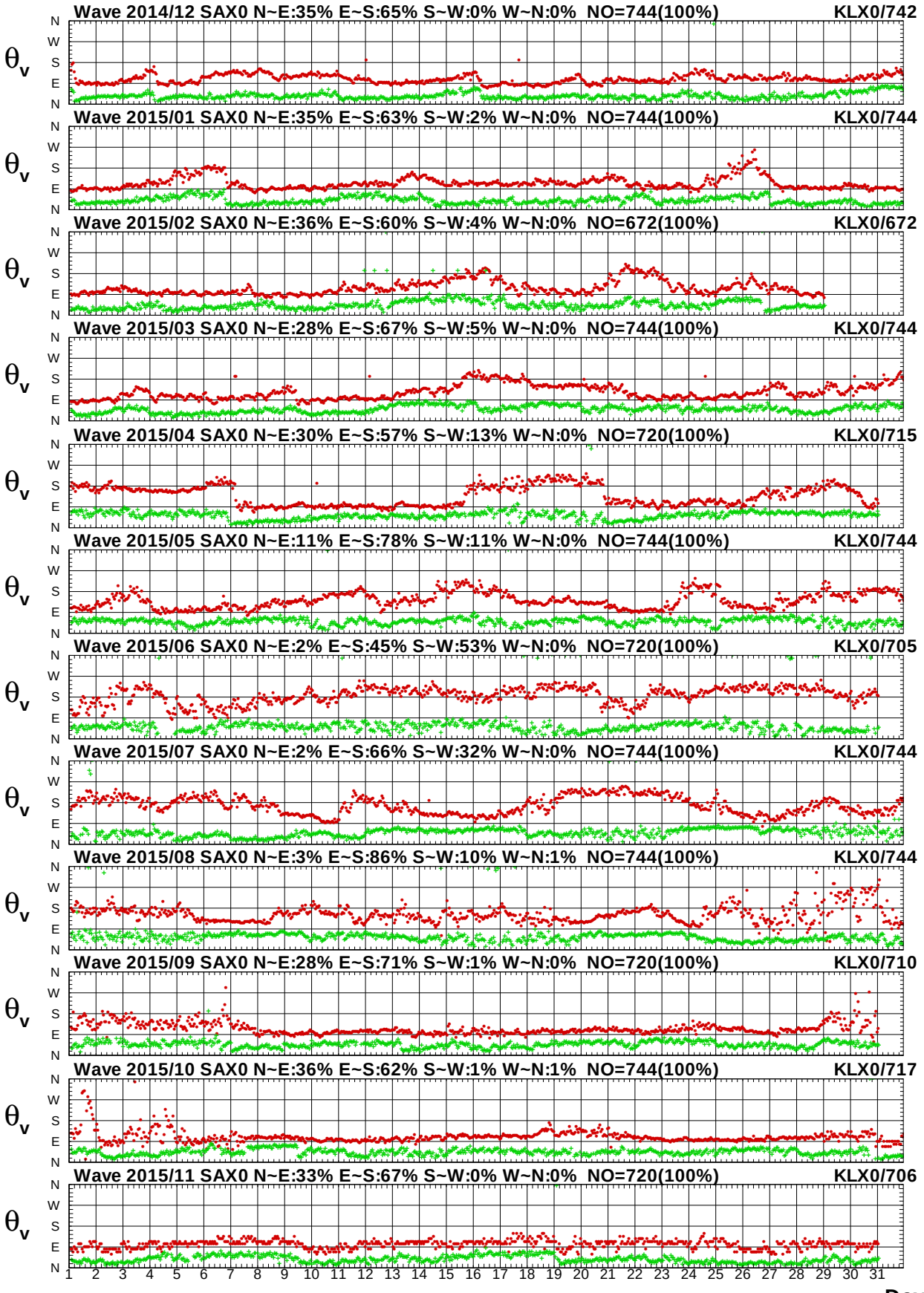


圖 3.6c　2015年每月宜蘭海域 X 站與北端海域 X 站波向圖

Wave H_s in Yi-Lan Seas of SAX0 at 2015

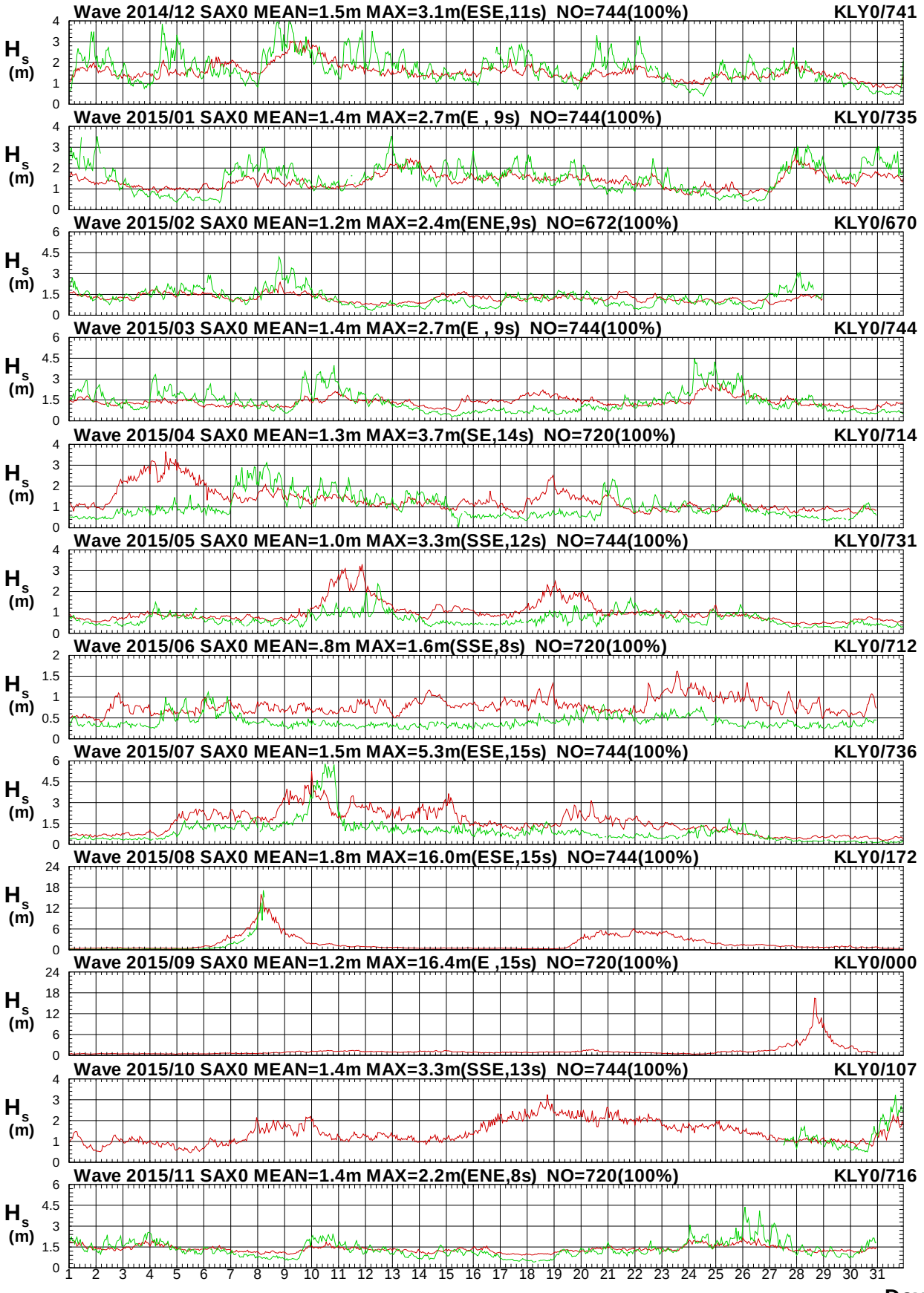


圖 3.7a　2015年每月宜蘭海域 X 站與北端海域 Y 站波高圖

V14CSAX0.1HA V14CKLY0.1H0 V151SAX0.1HA V151KLY0.1H0 V152SAX0.1HA V152KLY0.1H0
V153SAX0.1HA V153KLY0.1H0 V154SAX0.1HA V154KLY0.1H0 V155SAX0.1HA V155KLY0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

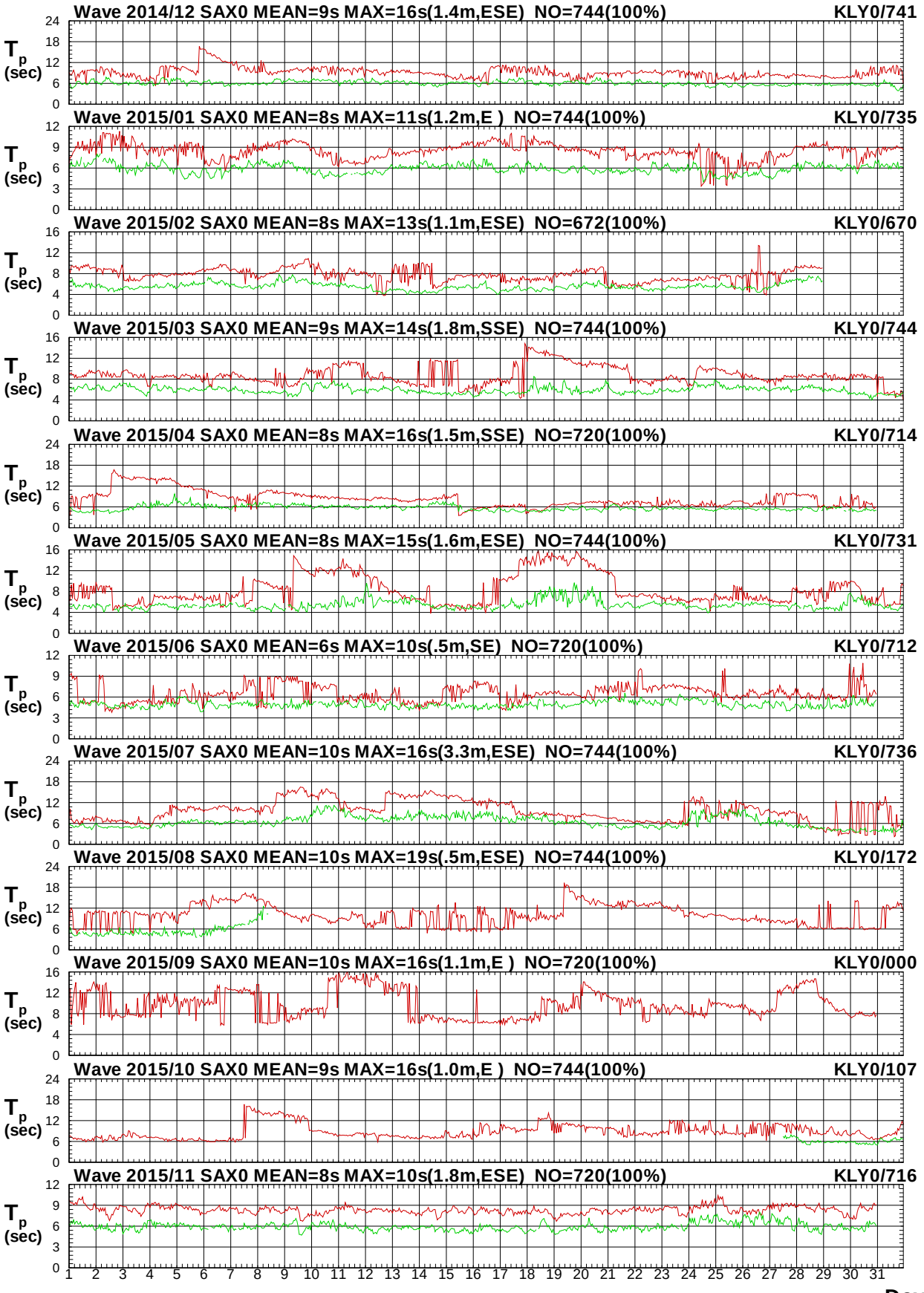


圖 3.7b　2015年每月宜蘭海域 X 站與北端海域 Y 站週期圖

V14CSAX0.1HA V14CKLY0.1H0 V151SAX0.1HA V151KLY0.1H0 V152SAX0.1HA V152KLY0.1H0
V153SAX0.1HA V153KLY0.1H0 V154SAX0.1HA V154KLY0.1H0 V155SAX0.1HA V155KLY0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

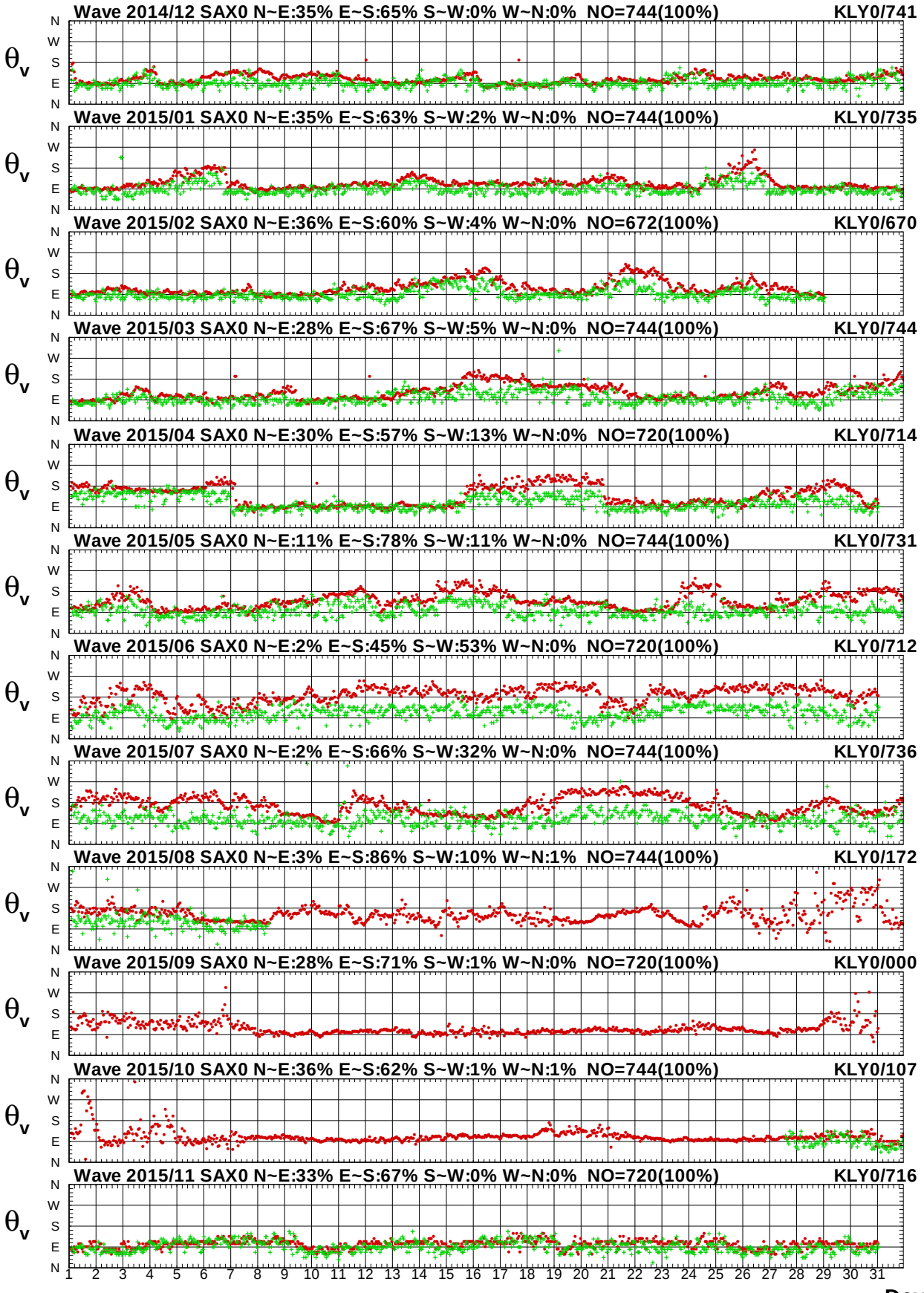


圖 3.7c　2015年每月宜蘭海域 X 站與北端海域 Y 站波向圖

V14CSAX0.1HA V14CKLY0.1H0 V151SAX0.1HA V151KLY0.1H0 V152SAX0.1HA V152KLY0.1H0
V153SAX0.1HA V153KLY0.1H0 V154SAX0.1HA V154KLY0.1H0 V155SAX0.1HA V155KLY0.1H0

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Wave H_s in Yi-Lan Seas of SAX0 at 2015

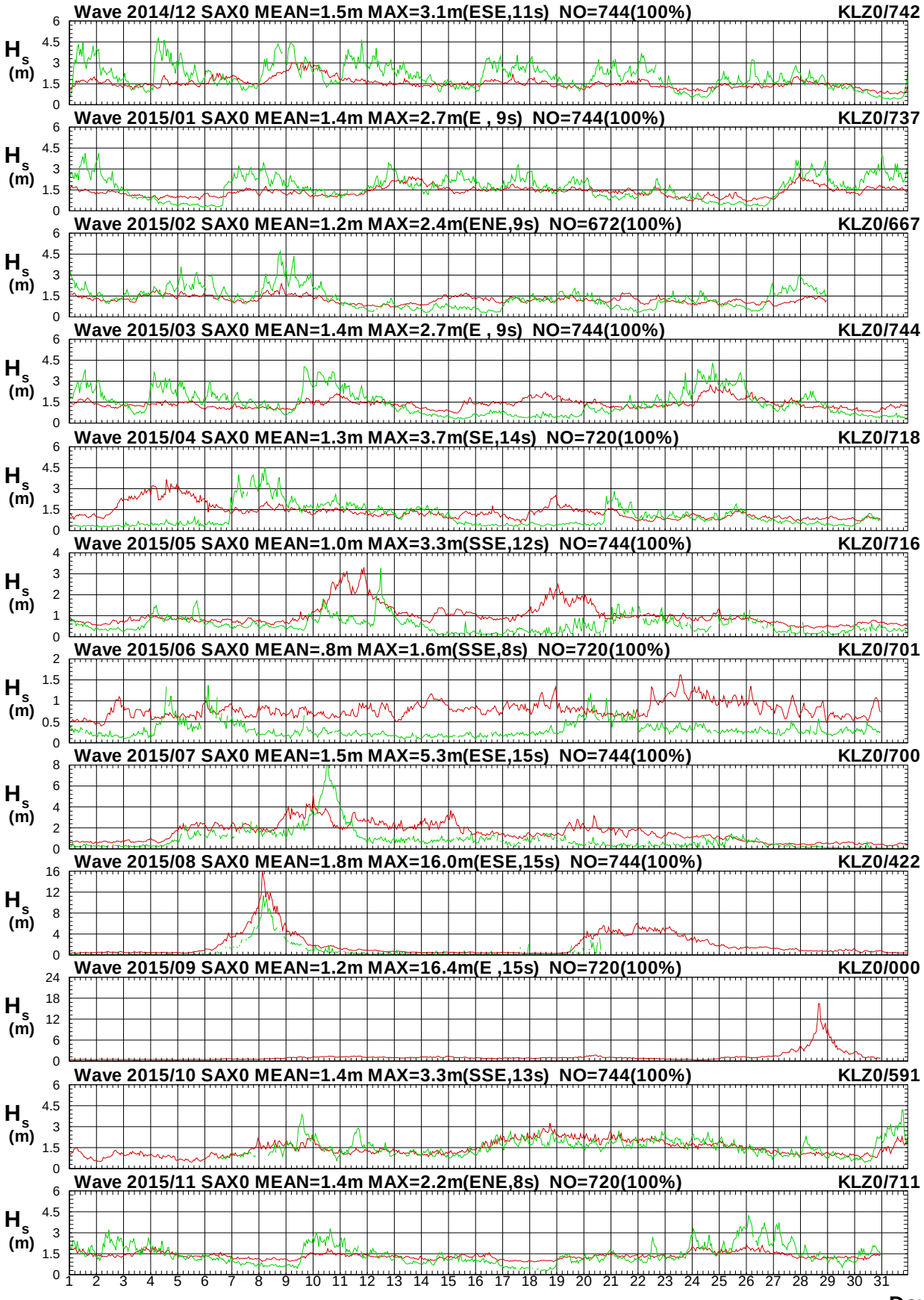


圖 3.8a　2015年每月宜蘭海域 X 站與北端海域 Z 站波高圖

V14CSAX0.1HA V14CKLZ0.1H0 V151SAX0.1HA V151KLZ0.1H0 V152SAX0.1HA V152KLZ0.1H0
V153SAX0.1HA V153KLZ0.1H0 V154SAX0.1HA V154KLZ0.1H0 V155SAX0.1HA V155KLZ0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

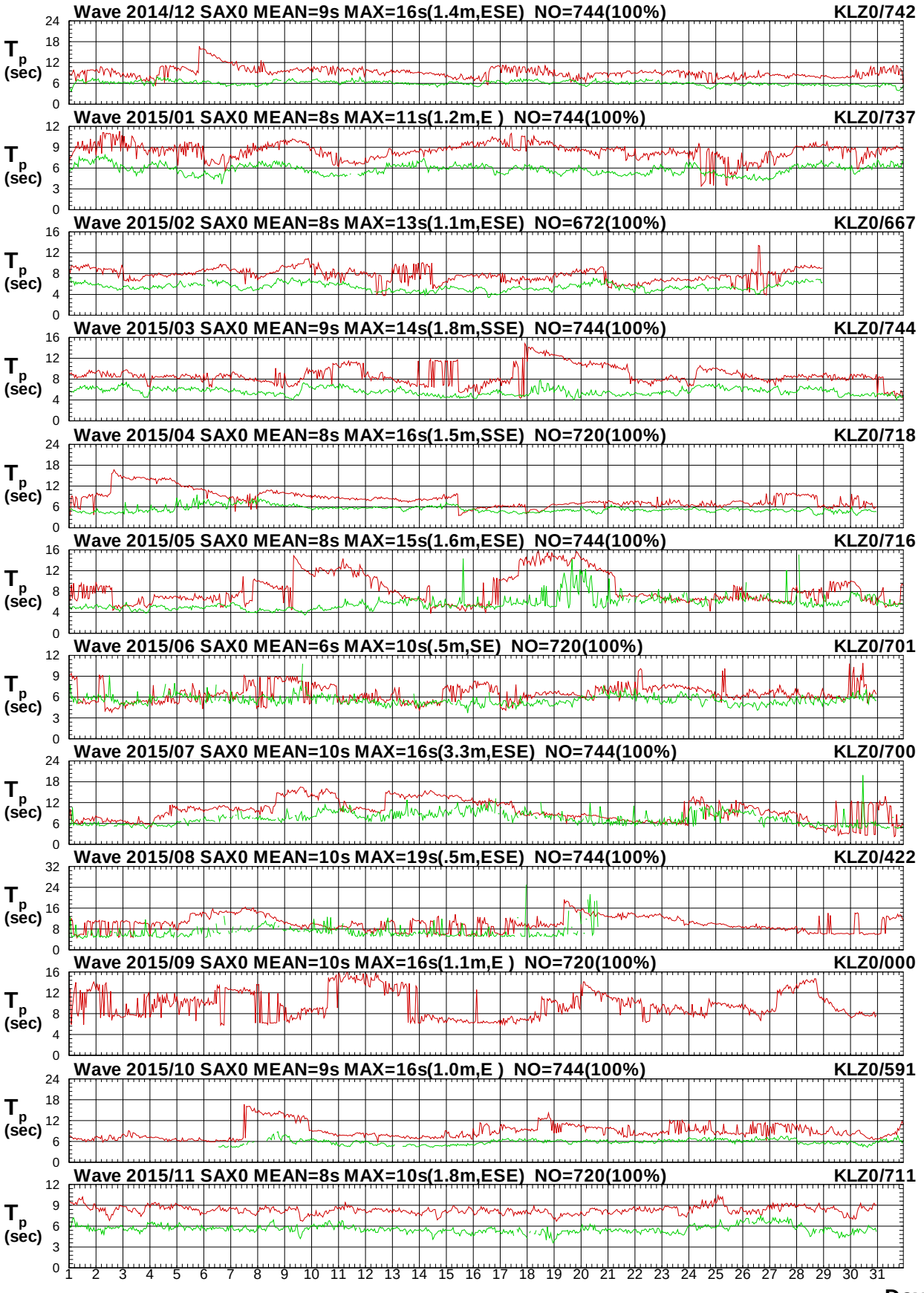


圖 3.8b　2015年每月宜蘭海域 X 站與北端海域 Z 站週期圖

V14CSAX0.1HA V14CKLZ0.1H0 V151SAX0.1HA V151KLZ0.1H0 V152SAX0.1HA V152KLZ0.1H0
V153SAX0.1HA V153KLZ0.1H0 V154SAX0.1HA V154KLZ0.1H0 V155SAX0.1HA V155KLZ0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

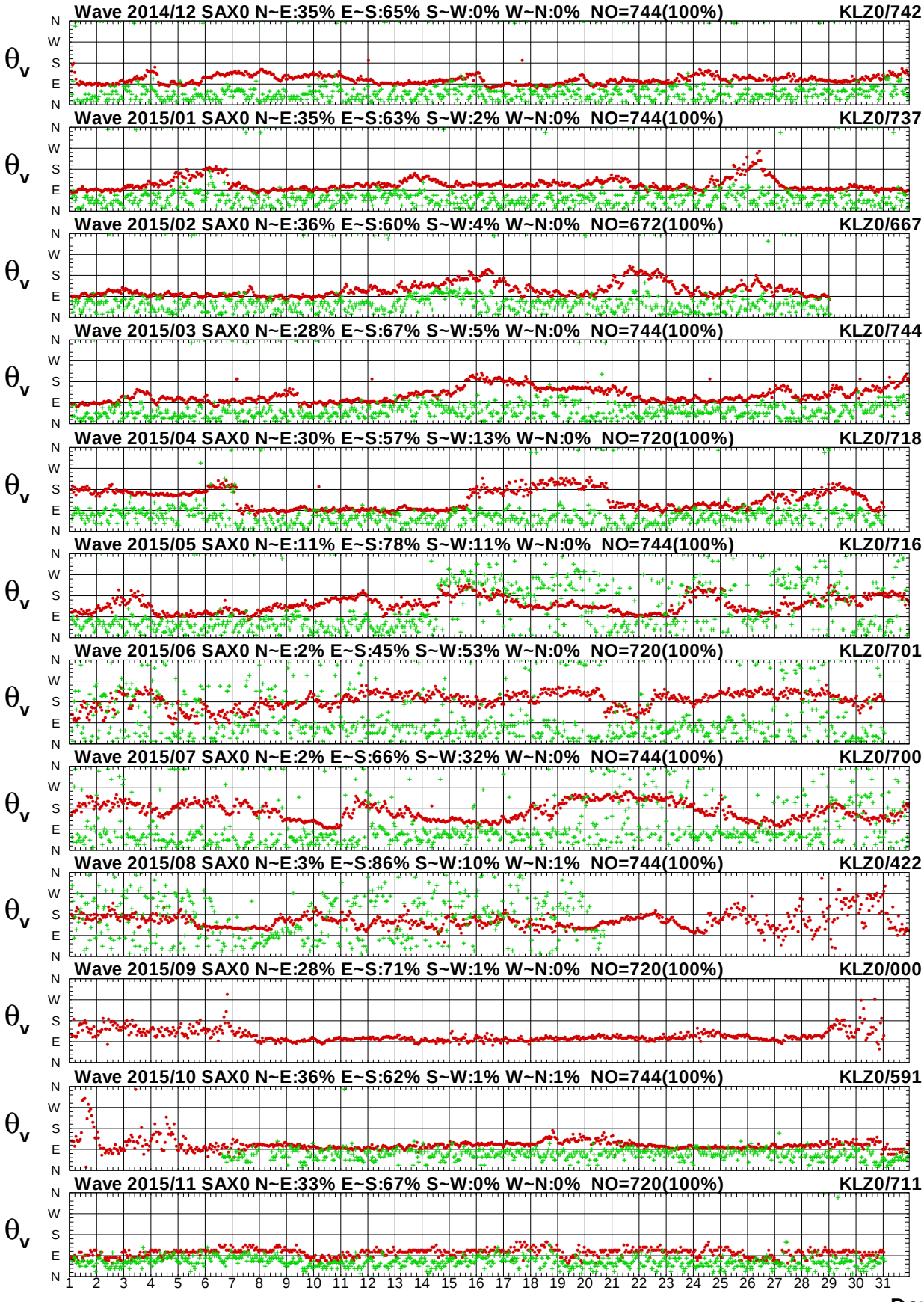


圖3.8c　2015年每月宜蘭海域 X 站與北端海域 Z 站波向圖

V14CSAX0.1HA V14CKLZ0.1H0 V151SAX0.1HA V151KLZ0.1H0 V152SAX0.1HA V152KLZ0.1H0
V153SAX0.1HA V153KLZ0.1H0 V154SAX0.1HA V154KLZ0.1H0 V155SAX0.1HA V155KLZ0.1H0

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Wave H_s in Yi-Lan Seas of SAX0 at 2015

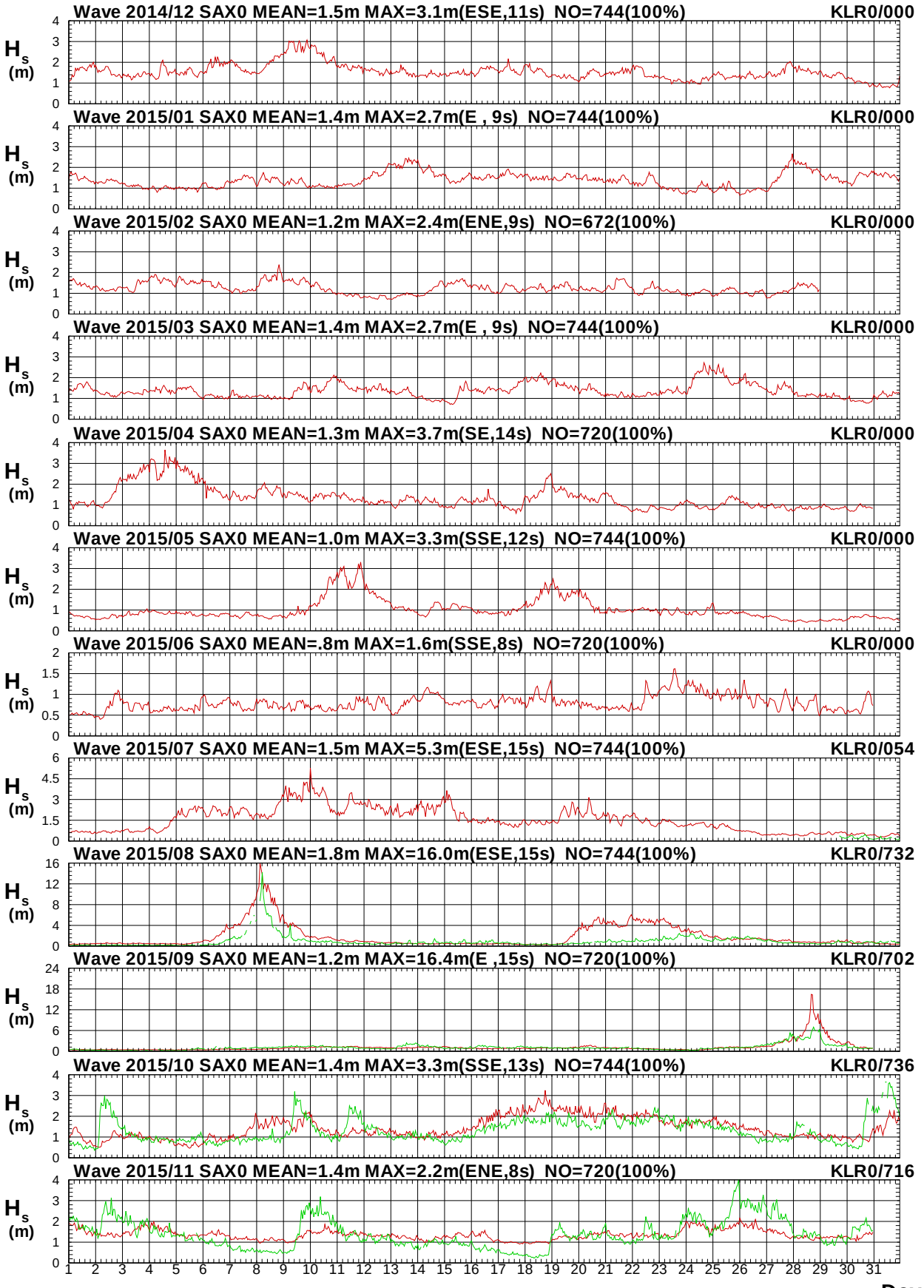


圖 3.9a　2015年每月宜蘭海域 X 站與北端海域 R 站波高圖

V14CSAX0.1HA V14CKLR0.1H0 V151SAX0.1HA V151KLR0.1H0 V152SAX0.1HA V152KLR0.1H0
V153SAX0.1HA V153KLR0.1H0 V154SAX0.1HA V154KLR0.1H0 V155SAX0.1HA V155KLR0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2015

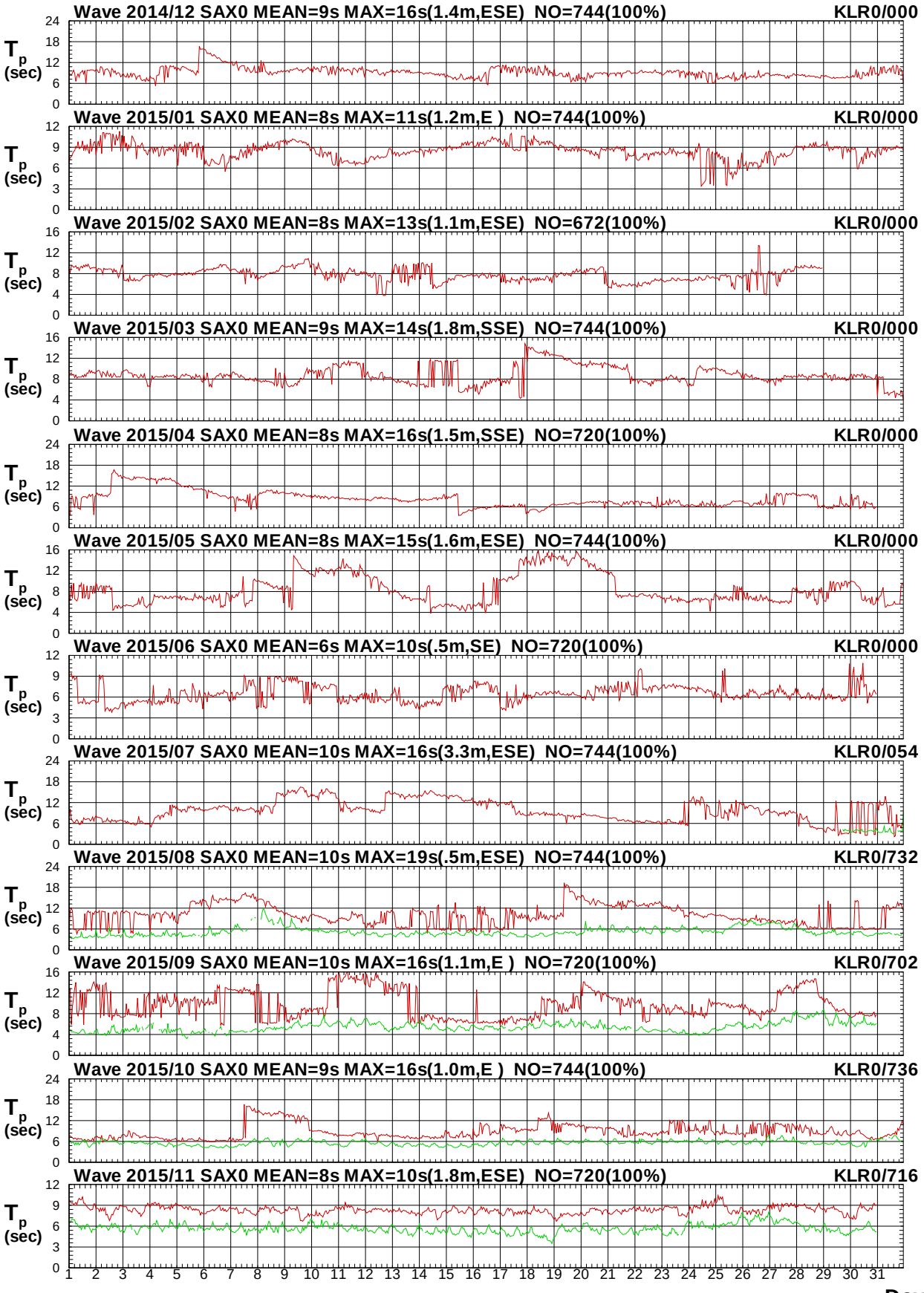


圖 3.9b　2015年每月宜蘭海域 X 站與北端海域 R 站週期圖

V14CSAX0.1HA V14CKLR0.1H0 V151SAX0.1HA V151KLR0.1H0 V152SAX0.1HA V152KLR0.1H0
V153SAX0.1HA V153KLR0.1H0 V154SAX0.1HA V154KLR0.1H0 V155SAX0.1HA V155KLR0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2015

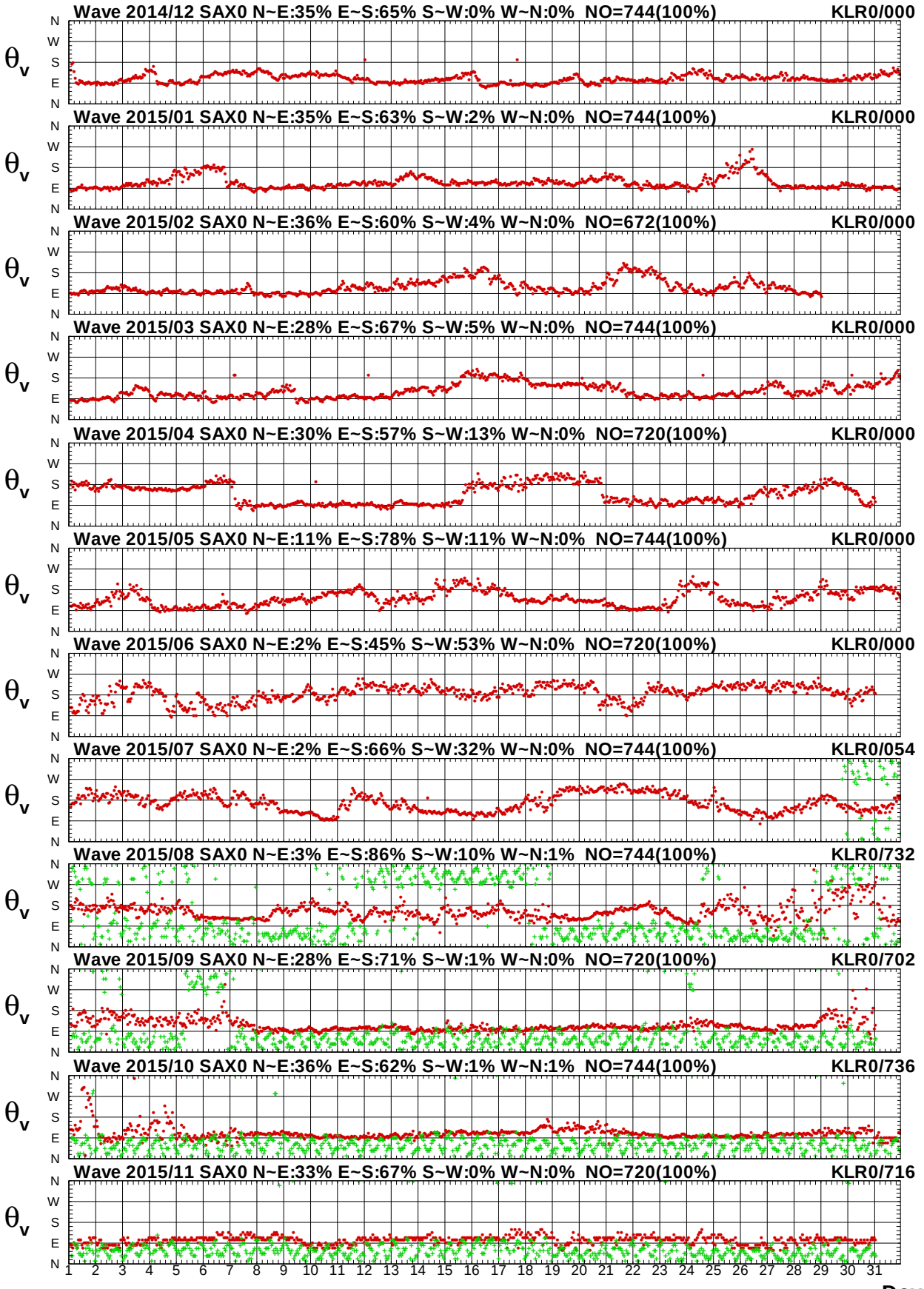


圖 3.9c　2015年每月宜蘭海域 X 站與北端海域 R 站波向圖

V14CSAX0.1HA V14CKLR0.1H0 V151SAX0.1HA V151KLR0.1H0 V152SAX0.1HA V152KLR0.1H0
V153SAX0.1HA V153KLR0.1H0 V154SAX0.1HA V154KLR0.1H0 V155SAX0.1HA V155KLR0.1H0

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第四章　2015 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**，2015 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，2015 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 2015 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	2000/09-2015/11(觀測中)	港研中心	花蓮港東堤外海
Y	24°01'58"	121°37'50"E	1997/07-2015/11(觀測中)	中央氣象局	花蓮浮標站

花蓮海域

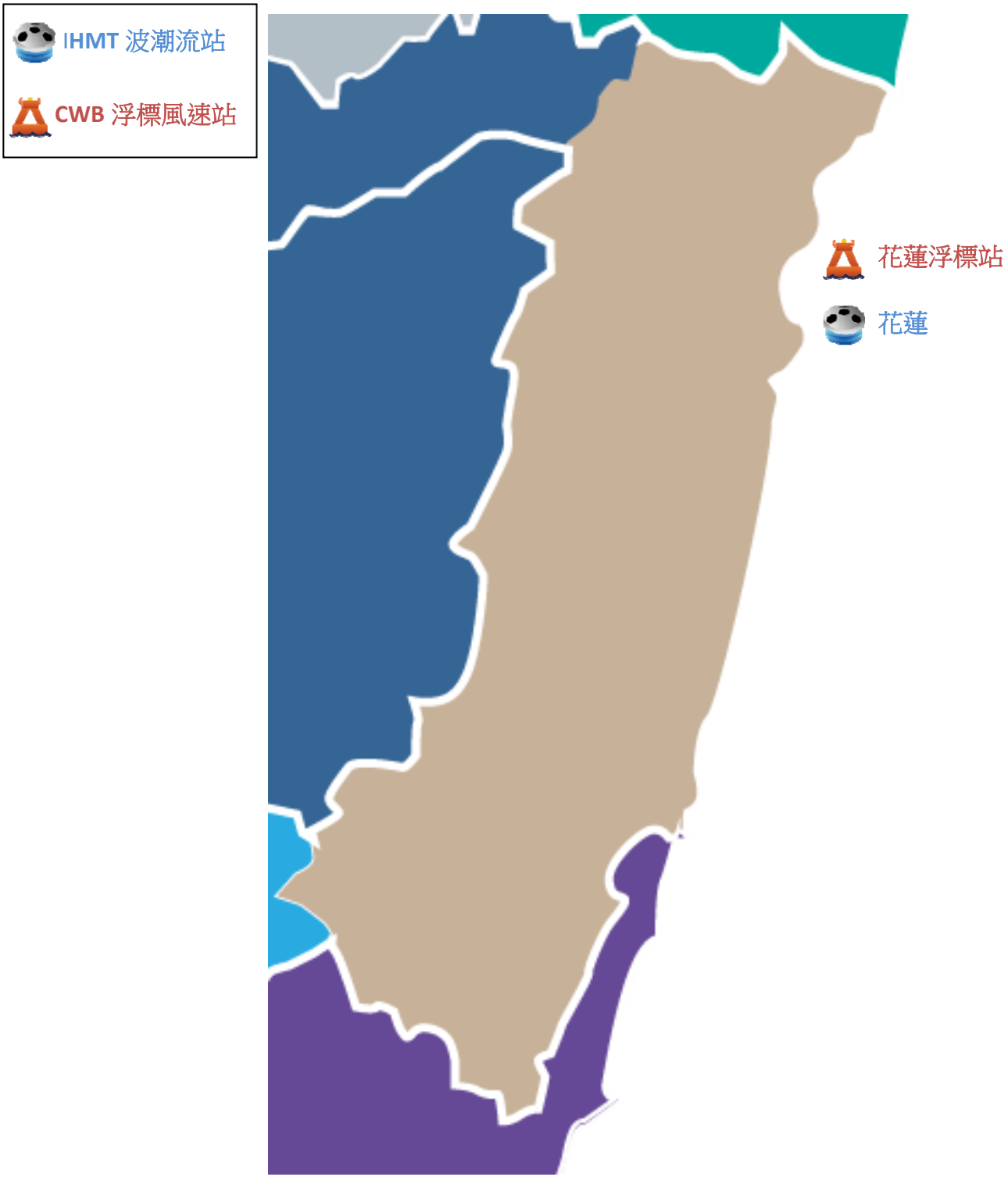


圖 4 花蓮海域波浪觀測站位置示意圖

表4.1a 2015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						
2014/12月	741 (99.6%)	741 (99.6%)	*	*	*	*	*	*
2015/ 1月	740 (99.5%)	731 (98.3%)	*	*	*	*	*	*
2015/ 2月	659 (98.1%)	669 (99.6%)	*	*	*	*	*	*
2015/ 3月	739 (99.3%)	741 (99.6%)	*	*	*	*	*	*
2015/ 4月	717 (99.6%)	713 (99.0%)	*	*	*	*	*	*
2015/ 5月	735 (98.8%)	739 (99.3%)	*	*	*	*	*	*
2015/ 6月	718 (99.7%)	705 (97.9%)	*	*	*	*	*	*
2015/ 7月	742 (99.7%)	730 (98.1%)	*	*	*	*	*	*
2015/ 8月	743 (99.9%)	740 (99.5%)	*	*	*	*	*	*
2015/ 9月	706 (98.1%)	718 (99.7%)	*	*	*	*	*	*
2015/10月	734 (98.7%)	731 (98.3%)	*	*	*	*	*	*
2015/11月	704 (97.8%)	718 (99.7%)	*	*	*	*	*	*
2015/冬季	2140 (99.1%)	2141 (99.1%)	*	*	*	*	*	*
2015/春季	2191 (99.2%)	2193 (99.3%)	*	*	*	*	*	*
2015/夏季	2203 (99.8%)	2175 (98.5%)	*	*	*	*	*	*
2015/秋季	2144 (98.2%)	2167 (99.2%)	*	*	*	*	*	*
2015/整年	8678 (99.1%)	8676 (99.0%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

表4.1b 2015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						
2014/12月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	*	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	*	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

Wave H_s in Hua-Lien Seas of HLX0 at 2015

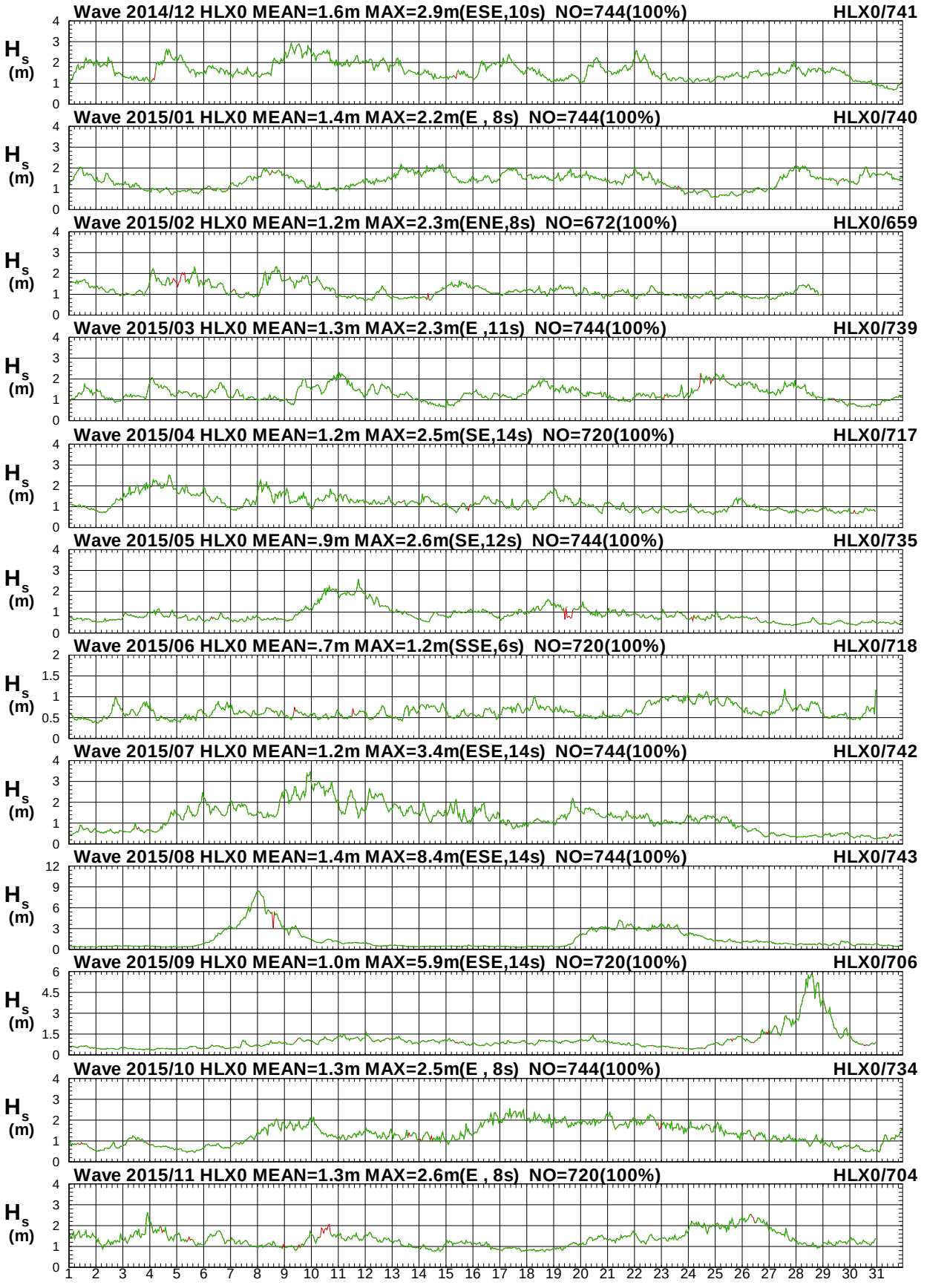


圖 4.1a　2015年每月花蓮海域 X 站修補前後之波高比較圖

V14CHLX0.1HA V14CHLX0.1H0 V151HLX0.1HA V151HLX0.1H0 V152HLX0.1HA V152HLX0.1H0
V153HLX0.1HA V153HLX0.1H0 V154HLX0.1HA V154HLX0.1H0 V155HLX0.1HA V155HLX0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

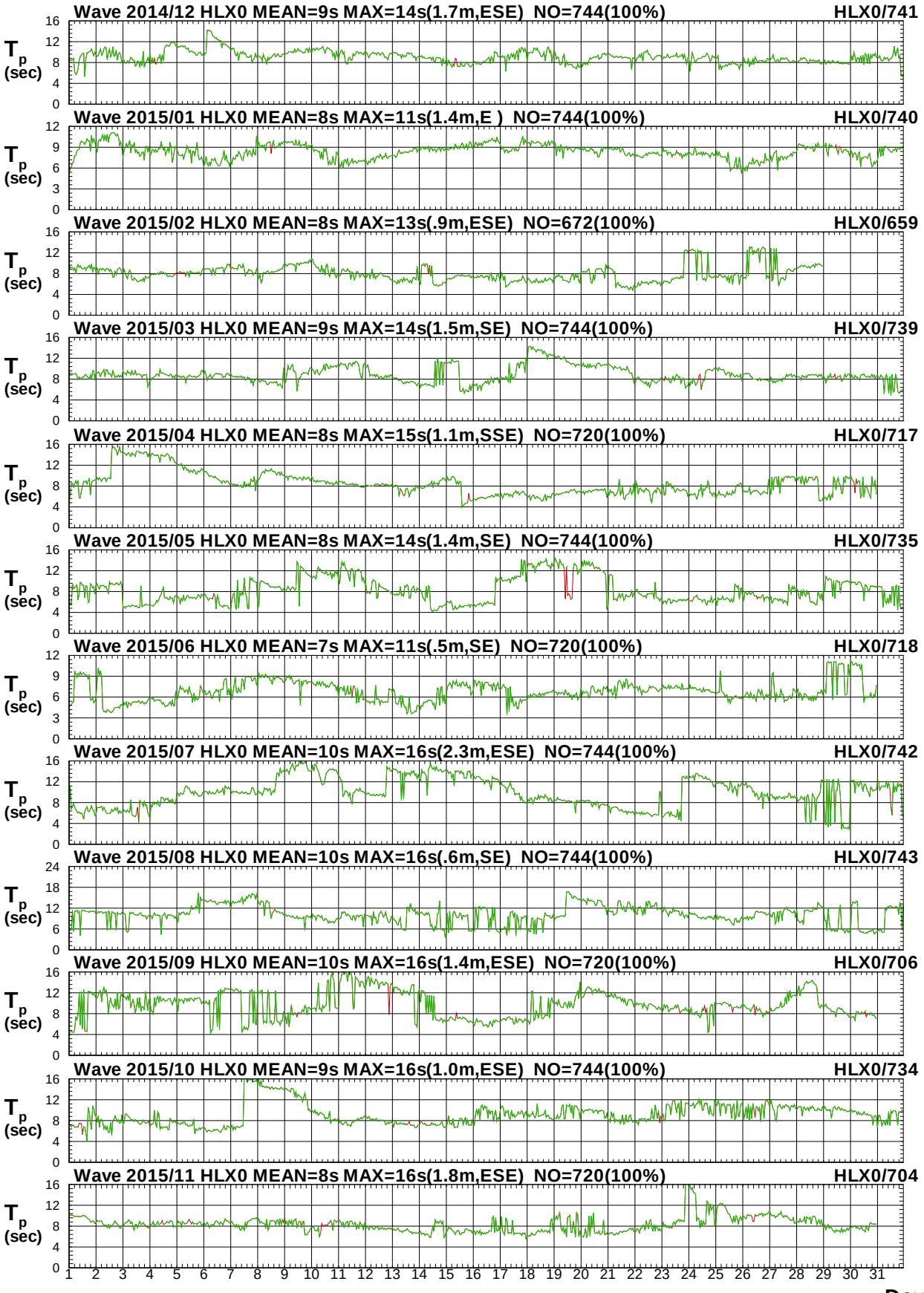


圖 4.1b　2015年每月花蓮海域 X 站修補前後之週期比較圖

Wave Direction in Hua-Lien Seas of HLX0 at 2015

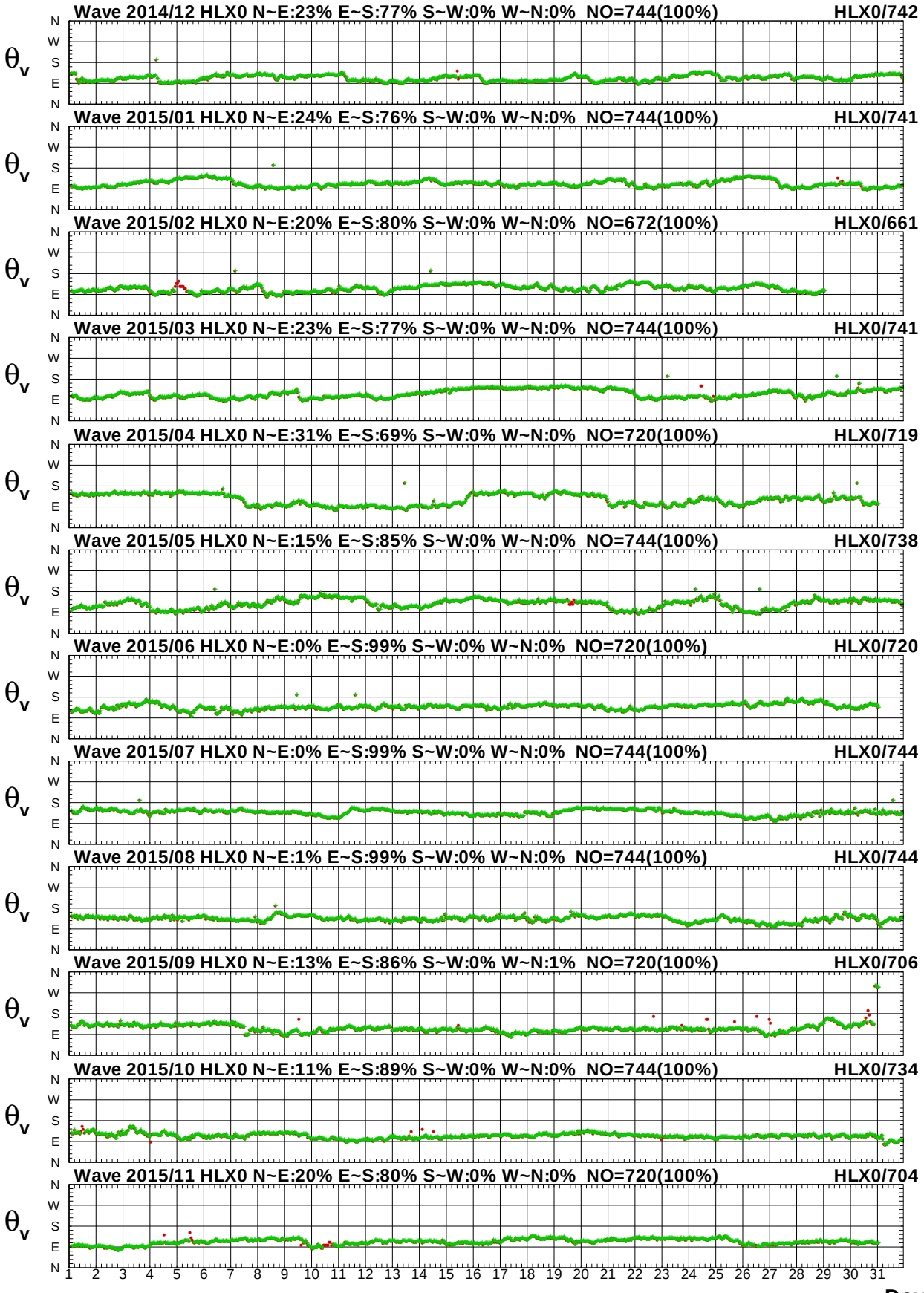


圖 4.1c　2015年每月花蓮海域 X 站修補前後之波向比較圖

Wave H_s in Hua-Lien Seas of HLX0 at 2015

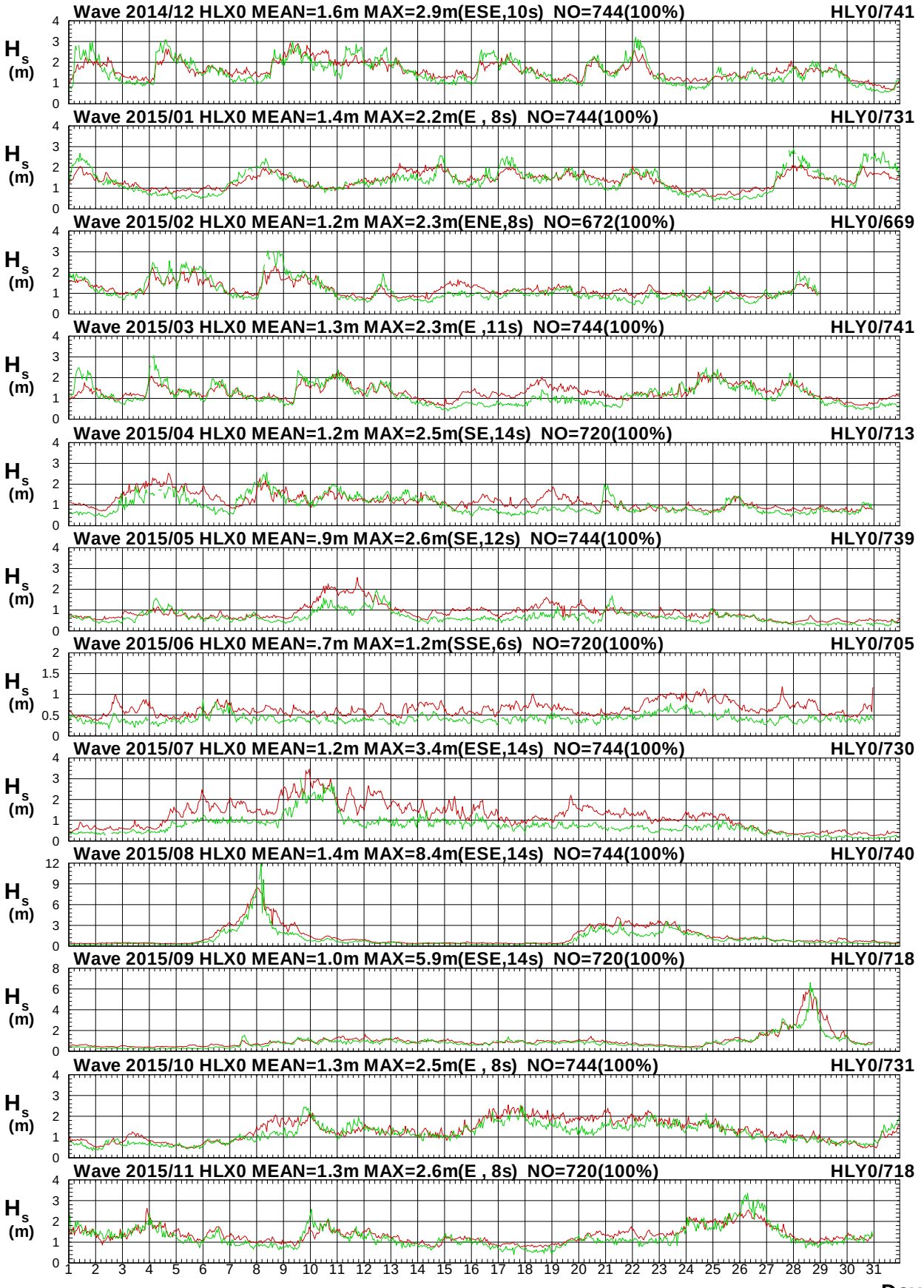


圖 4.2a　2015年每月花蓮海域 X 站與 Y 站波高比較圖

V14CHLX0.1HA V14CHLY0.1H0 V151HLX0.1HA V151HLY0.1H0 V152HLX0.1HA V152HLY0.1H0
V153HLX0.1HA V153HLY0.1H0 V154HLX0.1HA V154HLY0.1H0 V155HLX0.1HA V155HLY0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

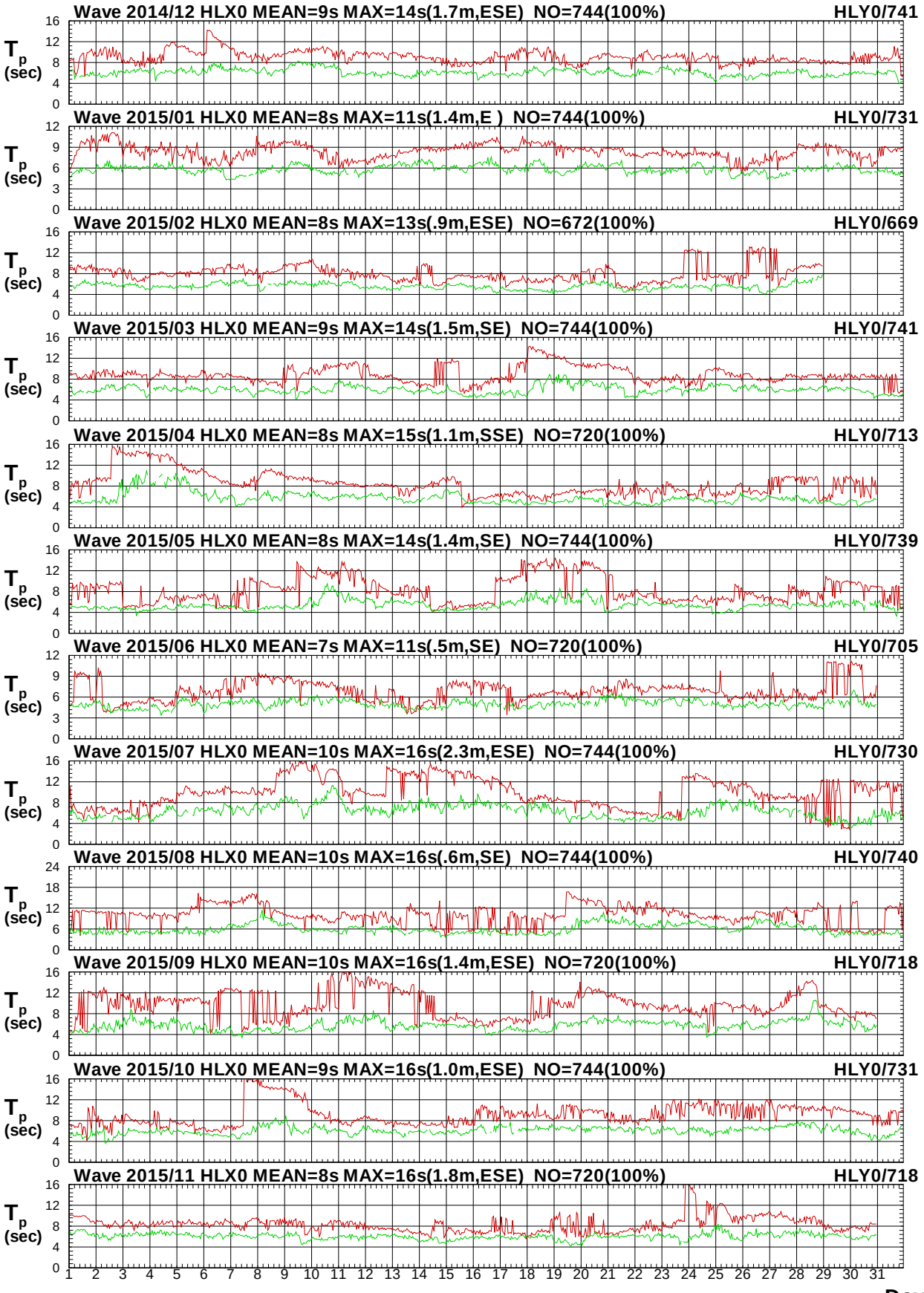


圖 4.2b　2015年每月花蓮海域 X 站與 Y 站週期比較圖

V14CHLX0.1HA V14CHLY0.1H0 V151HLX0.1HA V151HLY0.1H0 V152HLX0.1HA V152HLY0.1H0
V153HLX0.1HA V153HLY0.1H0 V154HLX0.1HA V154HLY0.1H0 V155HLX0.1HA V155HLY0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2015

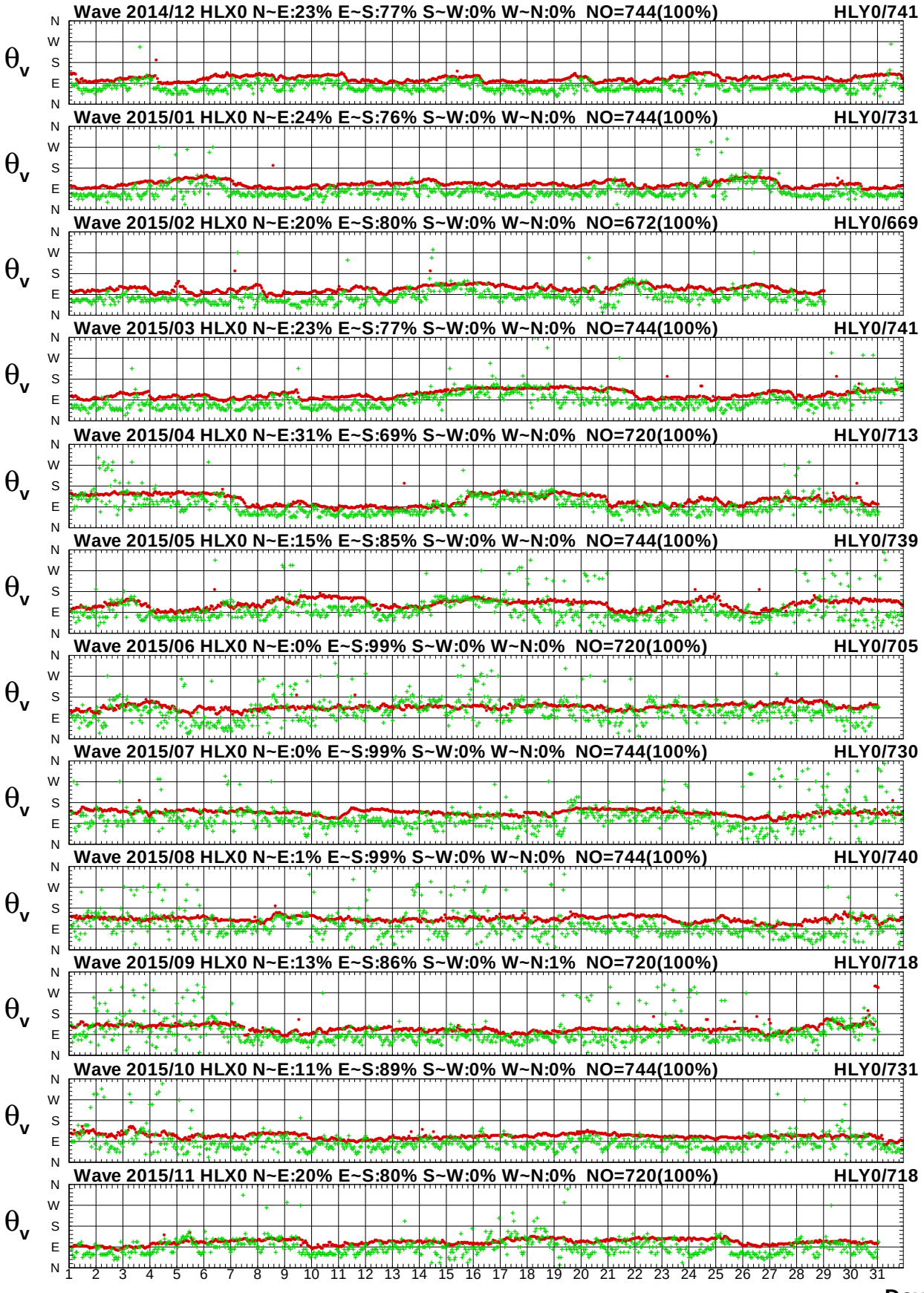


圖 4.2c　2015年每月花蓮海域 X 站與 Y 站波向比較圖

Wave H_s in Hua-Lien Seas of HLX0 at 2015

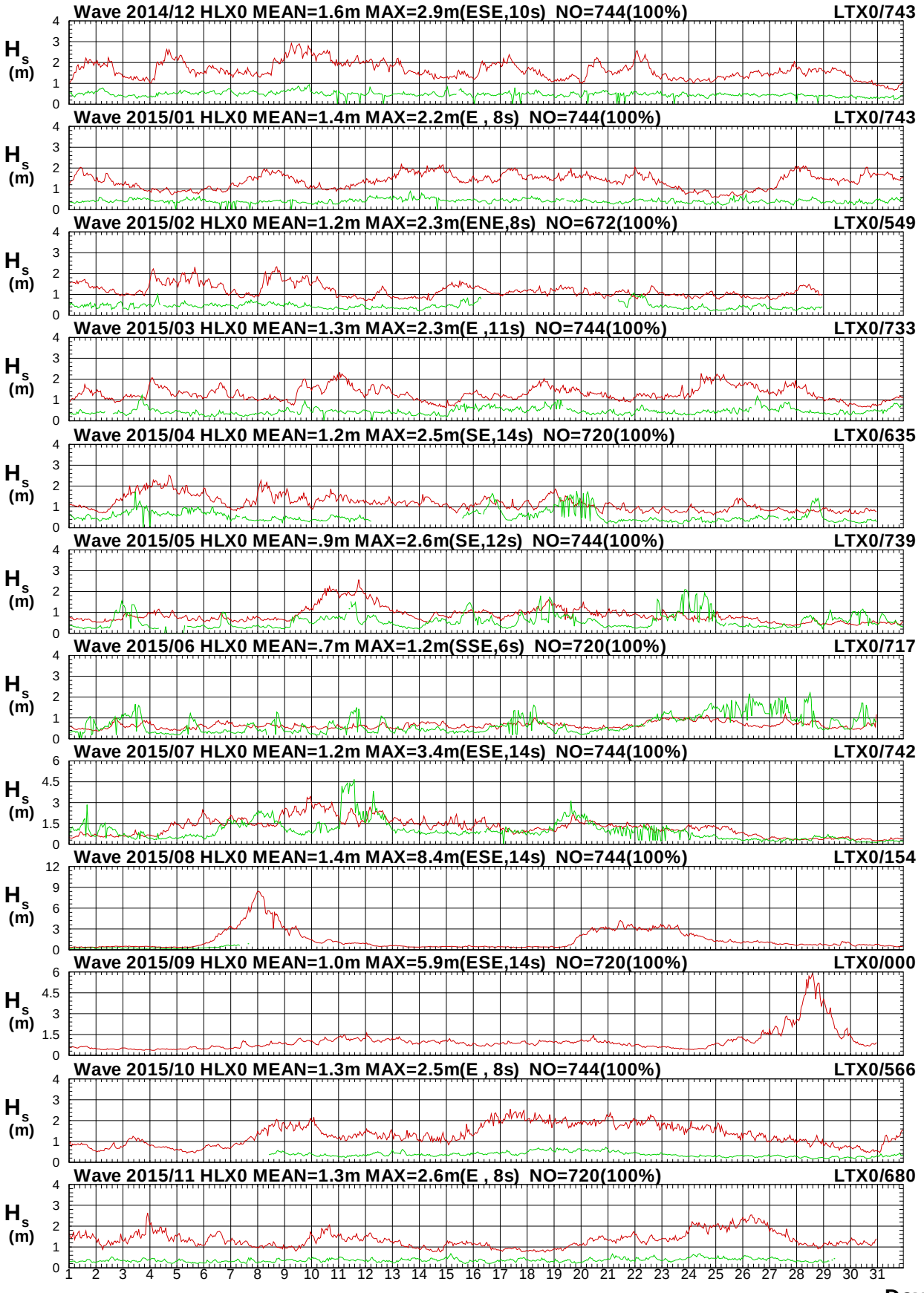


圖 4.3a　2015年每月花蓮海域 X 站與臺東海域 X 站波高圖

V14CHLX0.1HA V14CLTX0.1H0 V151HLX0.1HA V151LTX0.1H0 V152HLX0.1HA V152LTX0.1H0
V153HLX0.1HA V153LTX0.1H0 V154HLX0.1HA V154LTX0.1H0 V155HLX0.1HA V155LTX0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

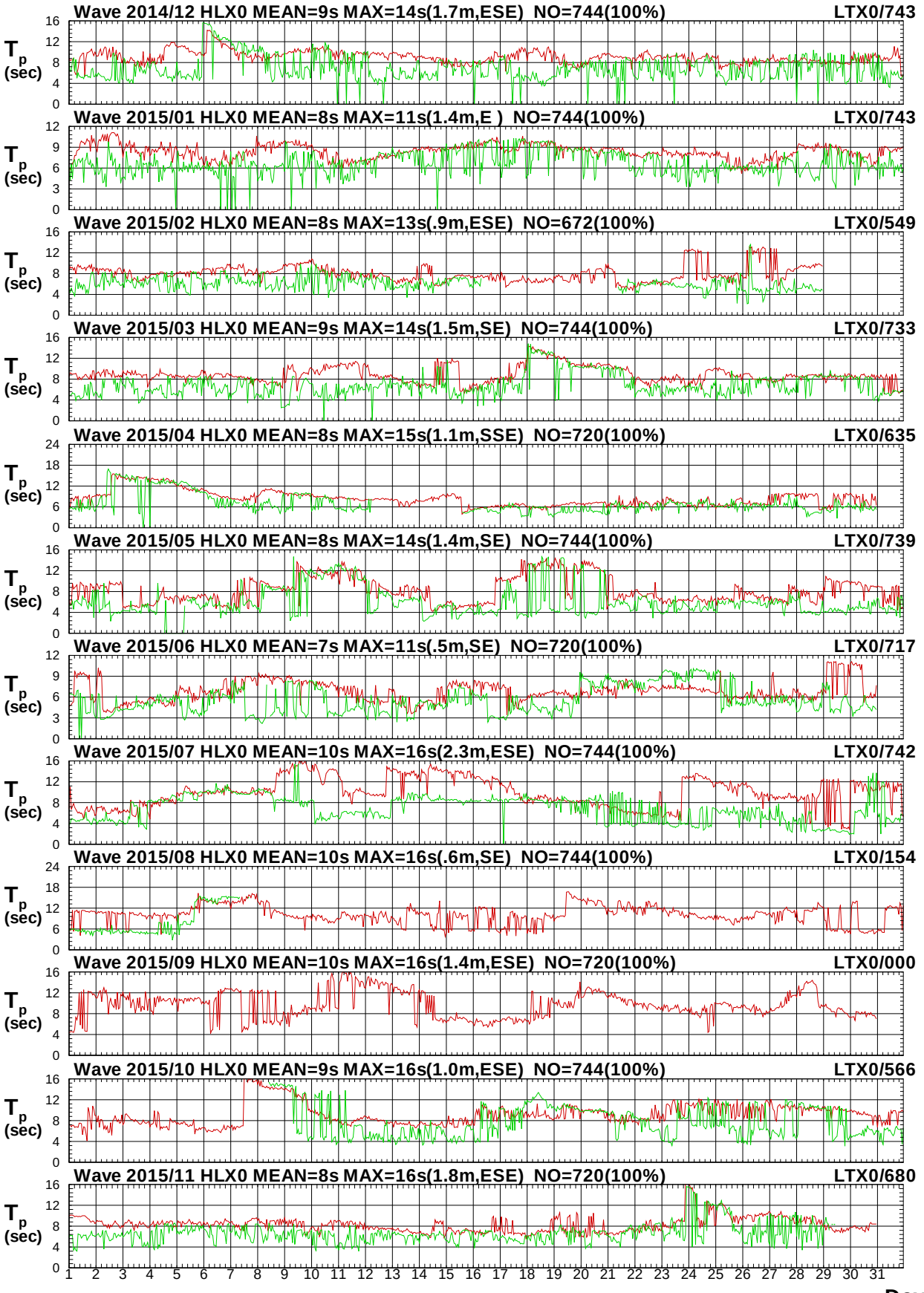


圖 4.3b　2015年每月花蓮海域 X 站與臺東海域 X 站週期圖

V14CHLX0.1HA V14CLTX0.1H0 V151HLX0.1HA V151LTX0.1H0 V152HLX0.1HA V152LTX0.1H0
V153HLX0.1HA V153LTX0.1H0 V154HLX0.1HA V154LTX0.1H0 V155HLX0.1HA V155LTX0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2015

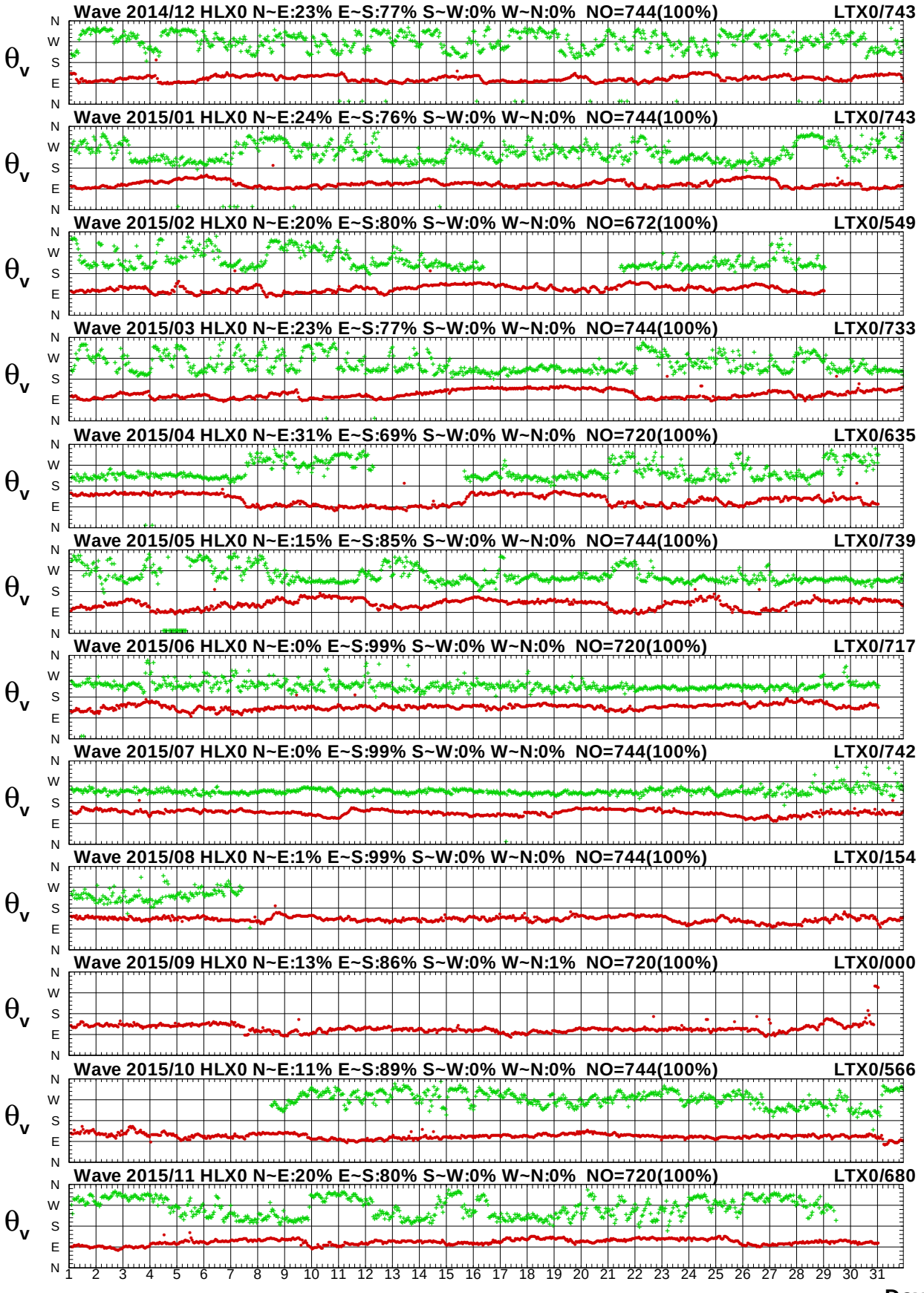


圖 4.3c　2015年每月花蓮海域 X 站與臺東海域 X 站波向圖

Wave H_s in Hua-Lien Seas of HLX0 at 2015

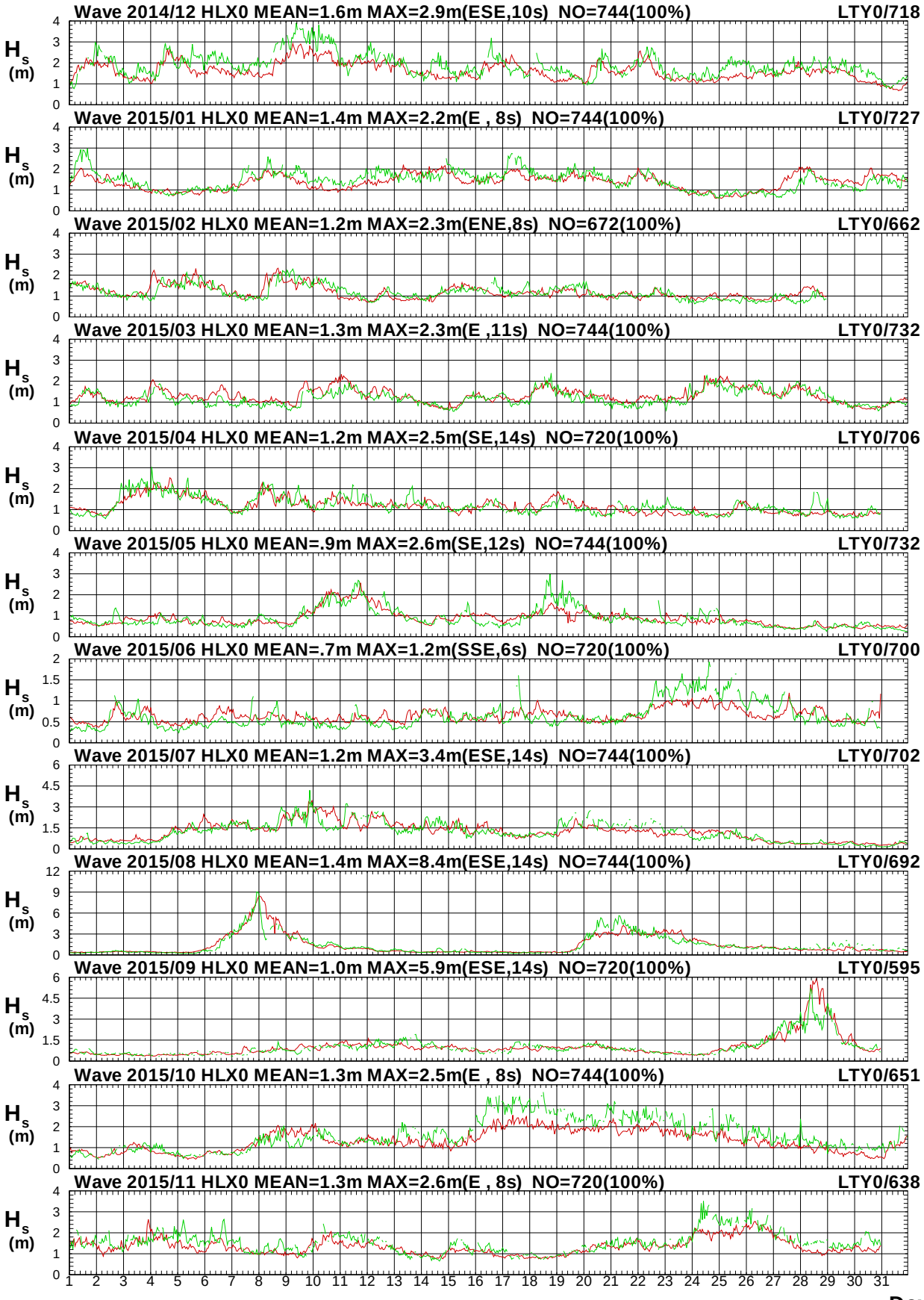


圖 4.4a　2015年每月花蓮海域 X 站與臺東海域 Y 站波高圖

V14CHLX0.1HA V14CLTY0.1H0 V151HLX0.1HA V151LTY0.1H0 V152HLX0.1HA V152LTY0.1H0
V153HLX0.1HA V153LTY0.1H0 V154HLX0.1HA V154LTY0.1H0 V155HLX0.1HA V155LTY0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

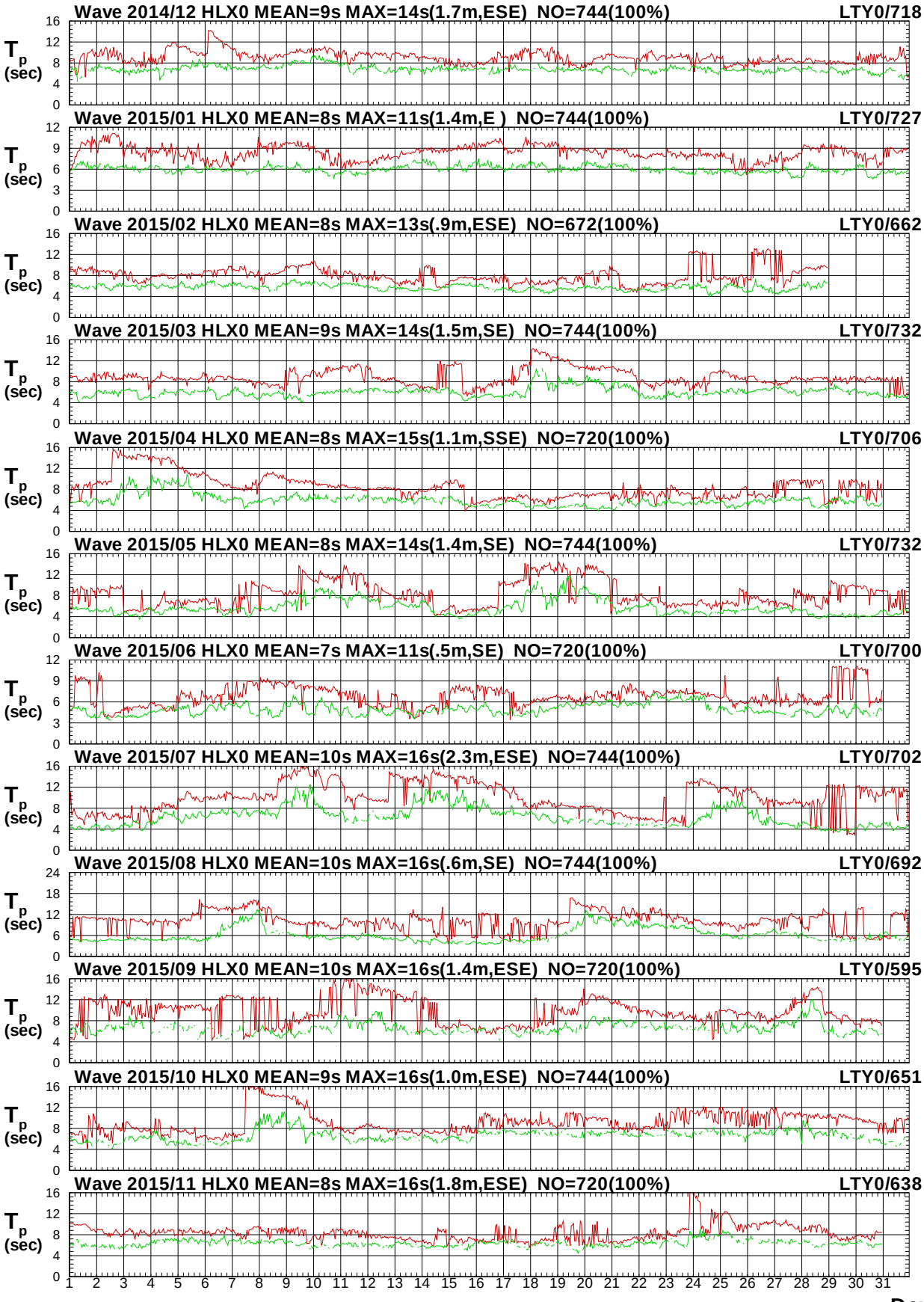


圖 4.4b　2015年每月花蓮海域 X 站與臺東海域 Y 站週期圖

V14CHLX0.1HA V14CLTY0.1H0 V151HLX0.1HA V151LTY0.1H0 V152HLX0.1HA V152LTY0.1H0
V153HLX0.1HA V153LTY0.1H0 V154HLX0.1HA V154LTY0.1H0 V155HLX0.1HA V155LTY0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2015

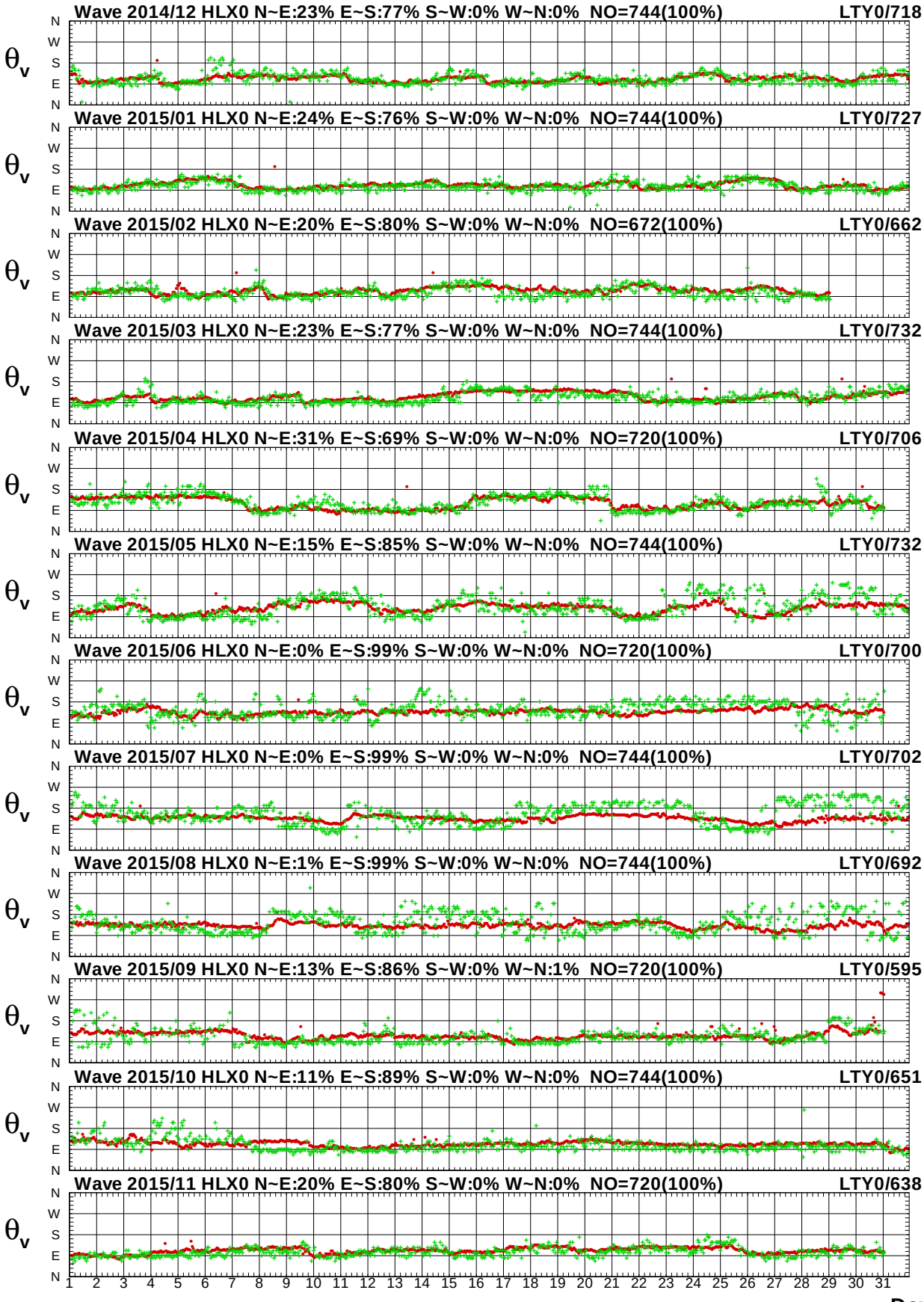


圖 4.4c　2015年每月花蓮海域 X 站與臺東海域 Y 站波向圖

V14CHLX0.1HA V14CLTY0.1H0 V151HLX0.1HA V151LTY0.1H0 V152HLX0.1HA V152LTY0.1H0
V153HLX0.1HA V153LTY0.1H0 V154HLX0.1HA V154LTY0.1H0 V155HLX0.1HA V155LTY0.1H0

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Wave H_s in Hua-Lien Seas of HLX0 at 2015

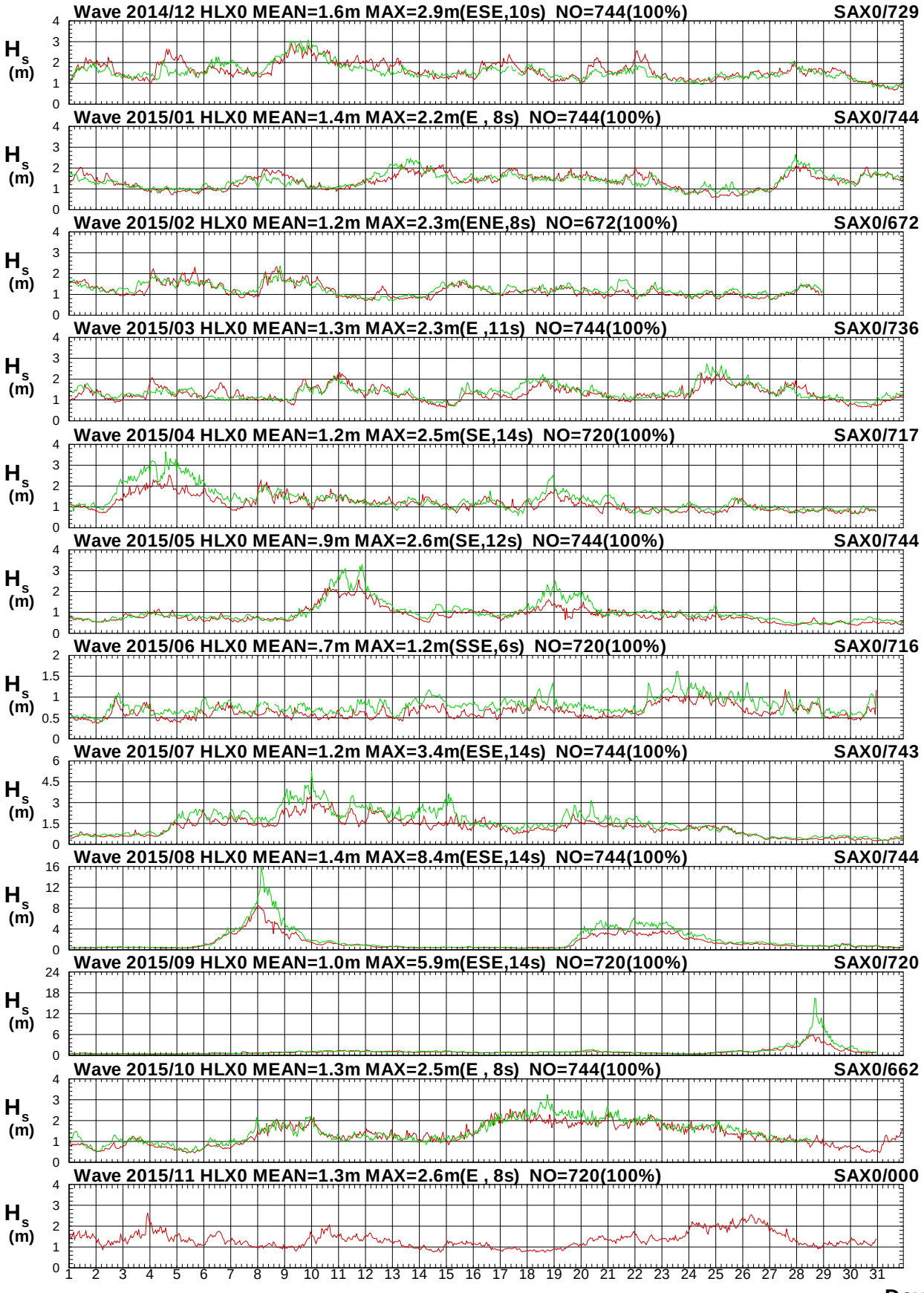


圖 4.5a　2015年每月花蓮海域 X 站與宜蘭海域 X 站波高圖

V14CHLX0.1HA V14CSAX0.1H0 V151HLX0.1HA V151SAX0.1H0 V152HLX0.1HA V152SAX0.1H0
V153HLX0.1HA V153SAX0.1H0 V154HLX0.1HA V154SAX0.1H0 V155HLX0.1HA V155SAX0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

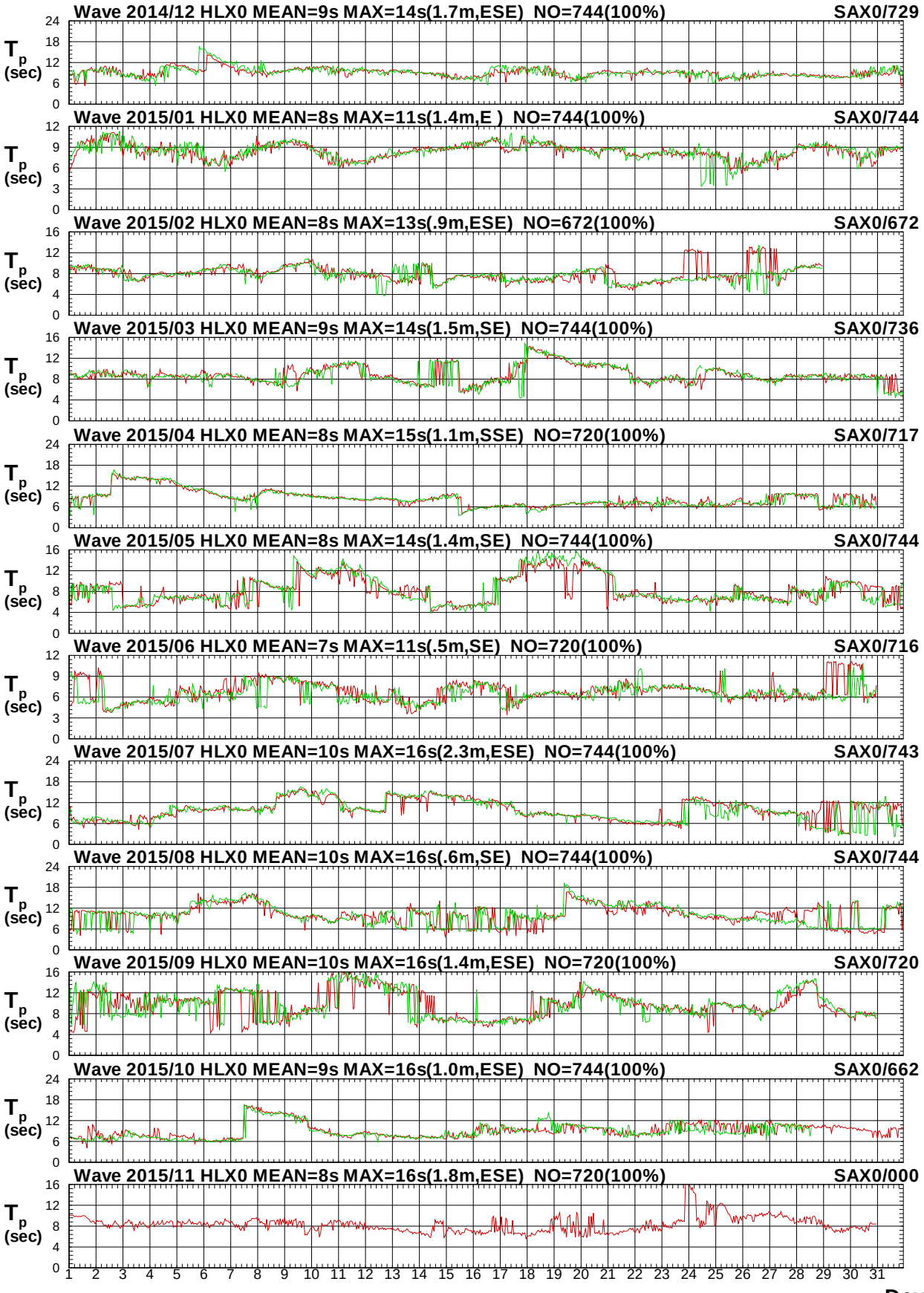


圖 4.5b　2015年每月花蓮海域 X 站與宜蘭海域 X 站週期圖

V14CHLX0.1HA V14CSAX0.1H0 V151HLX0.1HA V151SAX0.1H0 V152HLX0.1HA V152SAX0.1H0
V153HLX0.1HA V153SAX0.1H0 V154HLX0.1HA V154SAX0.1H0 V155HLX0.1HA V155SAX0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2015

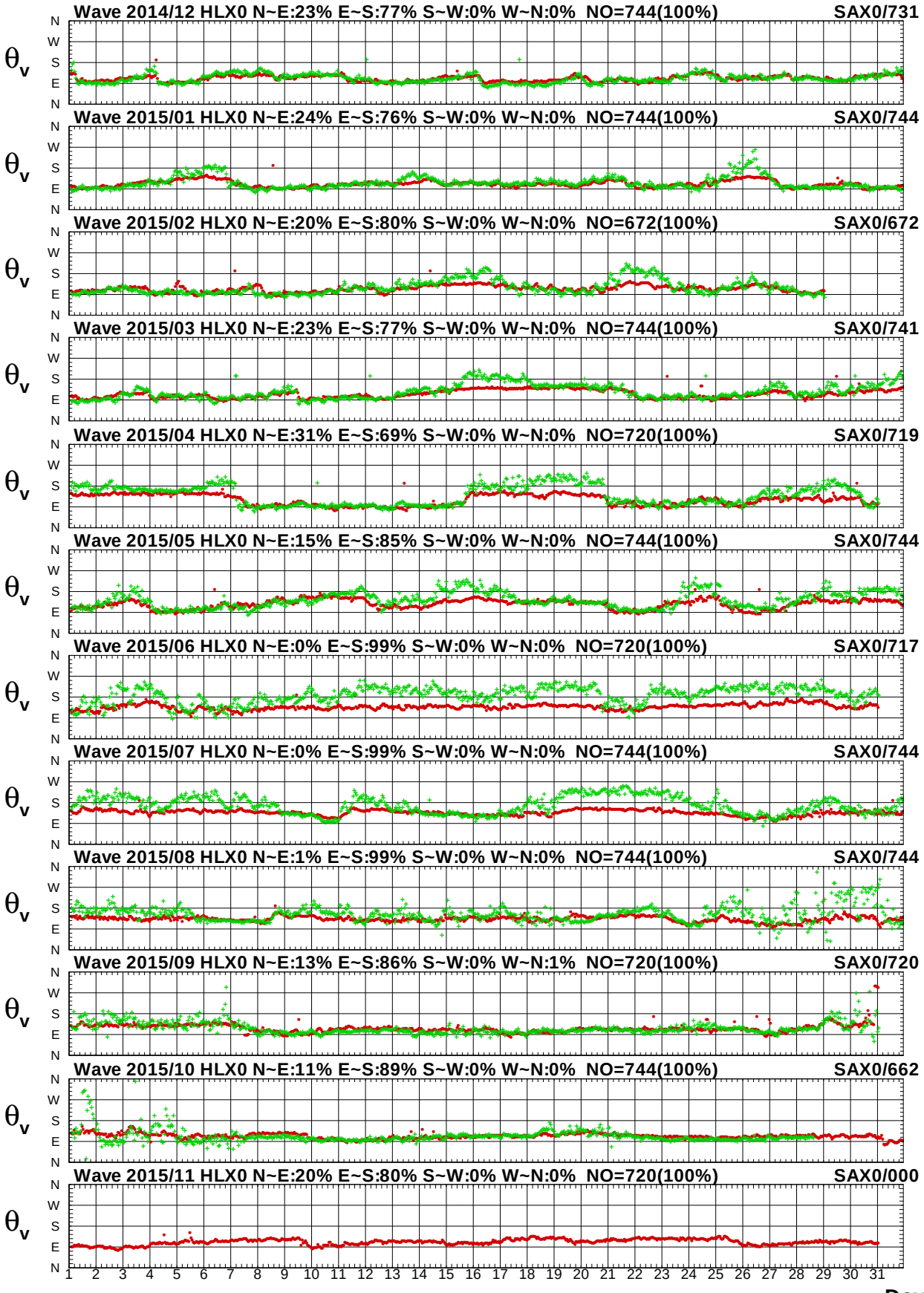


圖 4.5c　2015年每月花蓮海域 X 站與宜蘭海域 X 站波向圖

V14CHLX0.1HA V14CSAX0.1H0 V151HLX0.1HA V151SAX0.1H0 V152HLX0.1HA V152SAX0.1H0
V153HLX0.1HA V153SAX0.1H0 V154HLX0.1HA V154SAX0.1H0 V155HLX0.1HA V155SAX0.1H0

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Wave H_s in Hua-Lien Seas of HLX0 at 2015

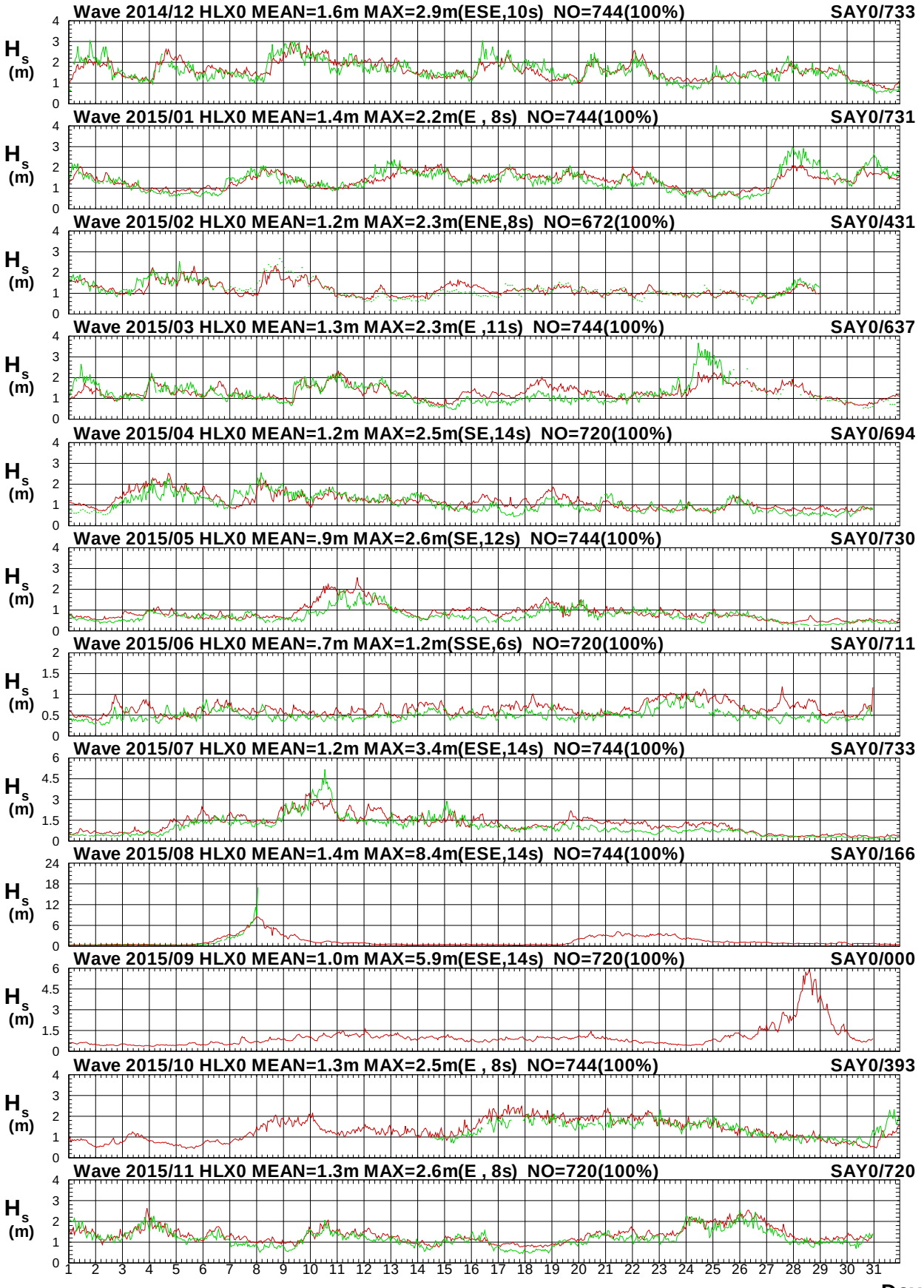


圖 4.6a　2015年每月花蓮海域 X 站與宜蘭海域 Y 站波高圖

V14CHLX0.1HA V14CSAY0.1H0 V151HLX0.1HA V151SAY0.1H0 V152HLX0.1HA V152SAY0.1H0
V153HLX0.1HA V153SAY0.1H0 V154HLX0.1HA V154SAY0.1H0 V155HLX0.1HA V155SAY0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

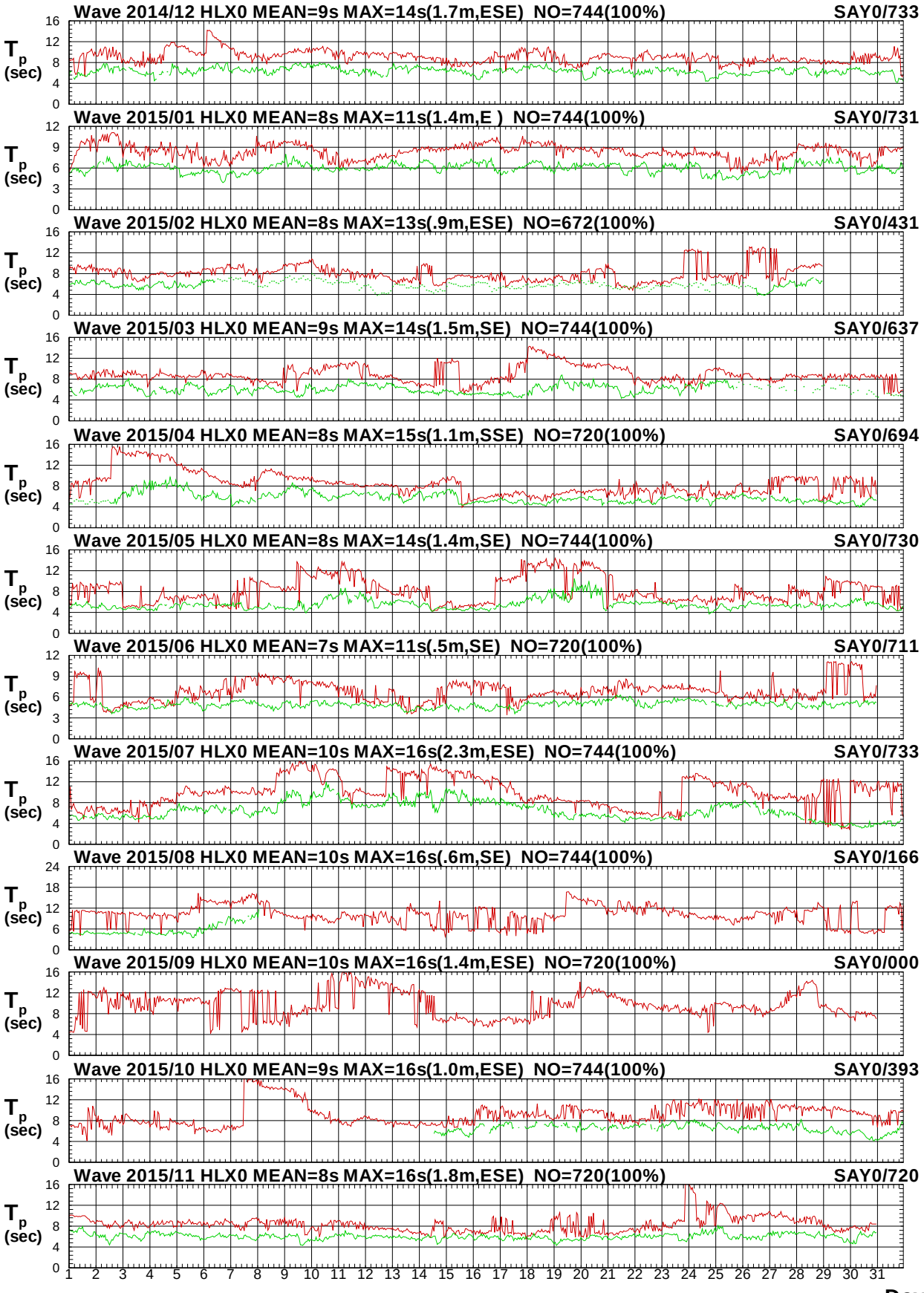


圖 4.6b　2015年每月花蓮海域 X 站與宜蘭海域 Y 站週期圖

V14CHLX0.1HA V14CSAY0.1H0 V151HLX0.1HA V151SAY0.1H0 V152HLX0.1HA V152SAY0.1H0
V153HLX0.1HA V153SAY0.1H0 V154HLX0.1HA V154SAY0.1H0 V155HLX0.1HA V155SAY0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2015

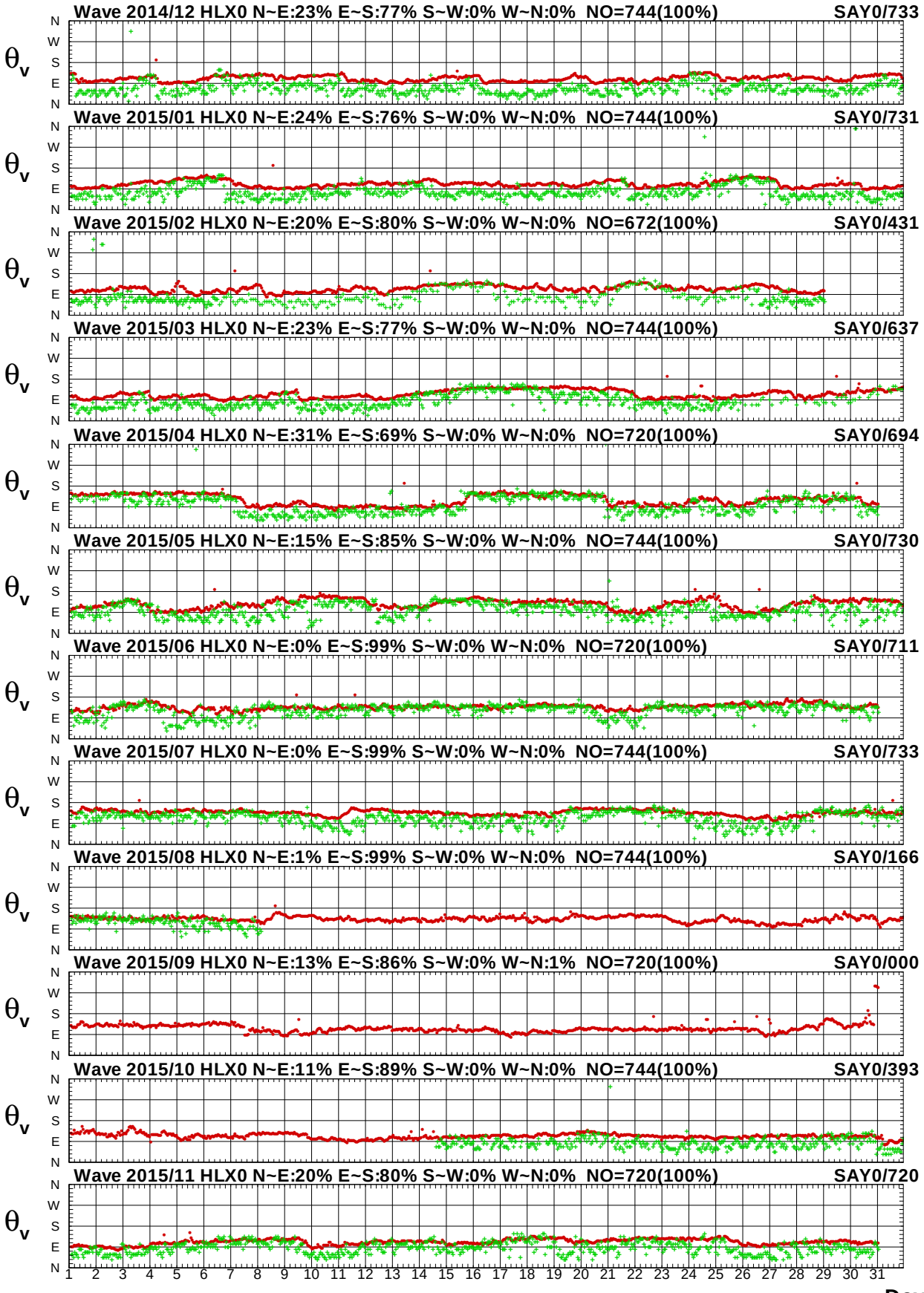


圖 4.6c　2015年每月花蓮海域 X 站與宜蘭海域 Y 站波向圖

V14CHLX0.1HA V14CSAY0.1H0 V151HLX0.1HA V151SAY0.1H0 V152HLX0.1HA V152SAY0.1H0
V153HLX0.1HA V153SAY0.1H0 V154HLX0.1HA V154SAY0.1H0 V155HLX0.1HA V155SAY0.1H0

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Wave H_s in Hua-Lien Seas of HLX0 at 2015

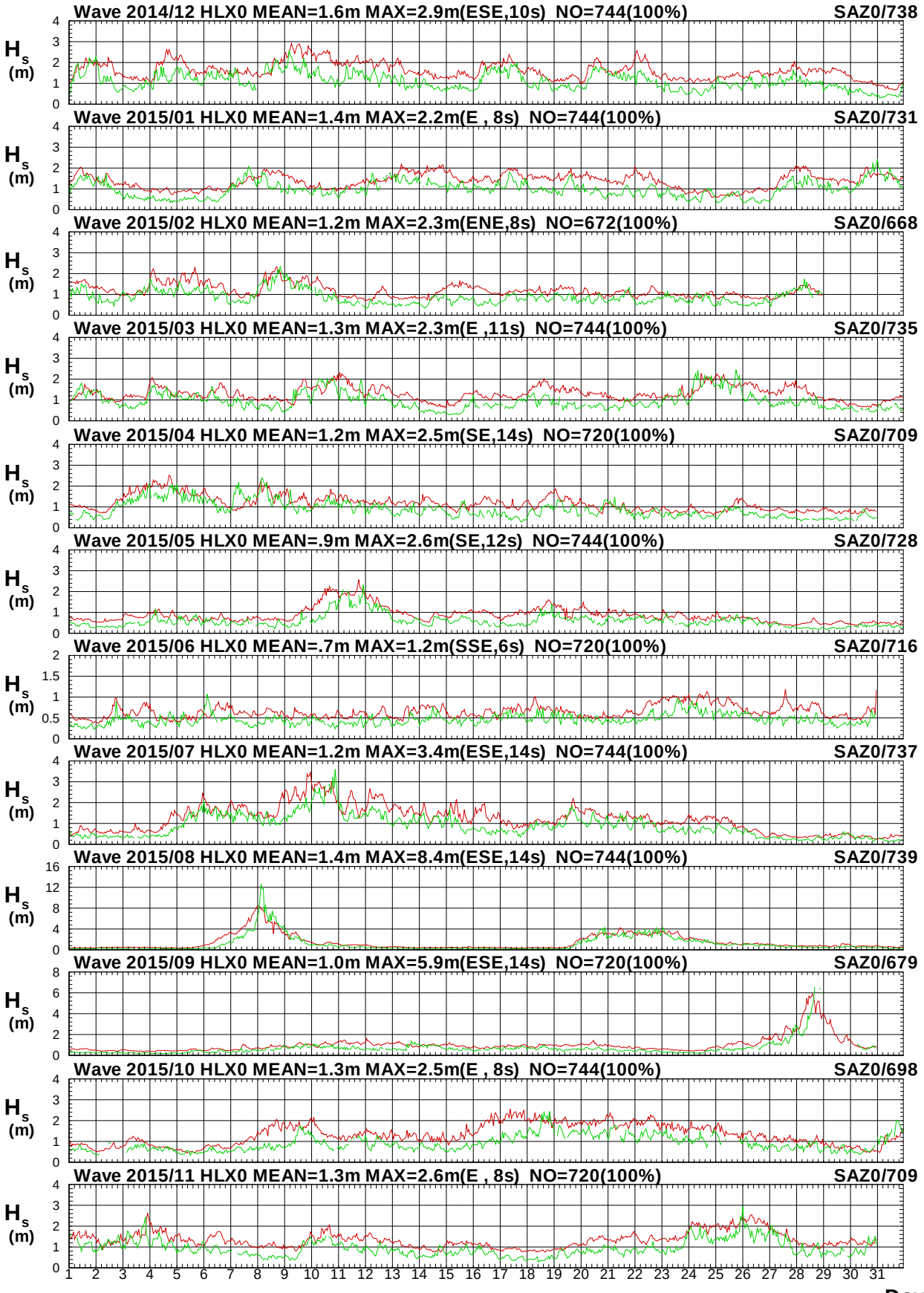


圖 4.7a　2015年每月花蓮海域 X 站與宜蘭海域 Z 站波高圖

V14CHLX0.1HA V14CSAZ0.1H0 V151HLX0.1HA V151SAZ0.1H0 V152HLX0.1HA V152SAZ0.1H0
V153HLX0.1HA V153SAZ0.1H0 V154HLX0.1HA V154SAZ0.1H0 V155HLX0.1HA V155SAZ0.1H0

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Wave T_p in Hua-Lien Seas of HLX0 at 2015

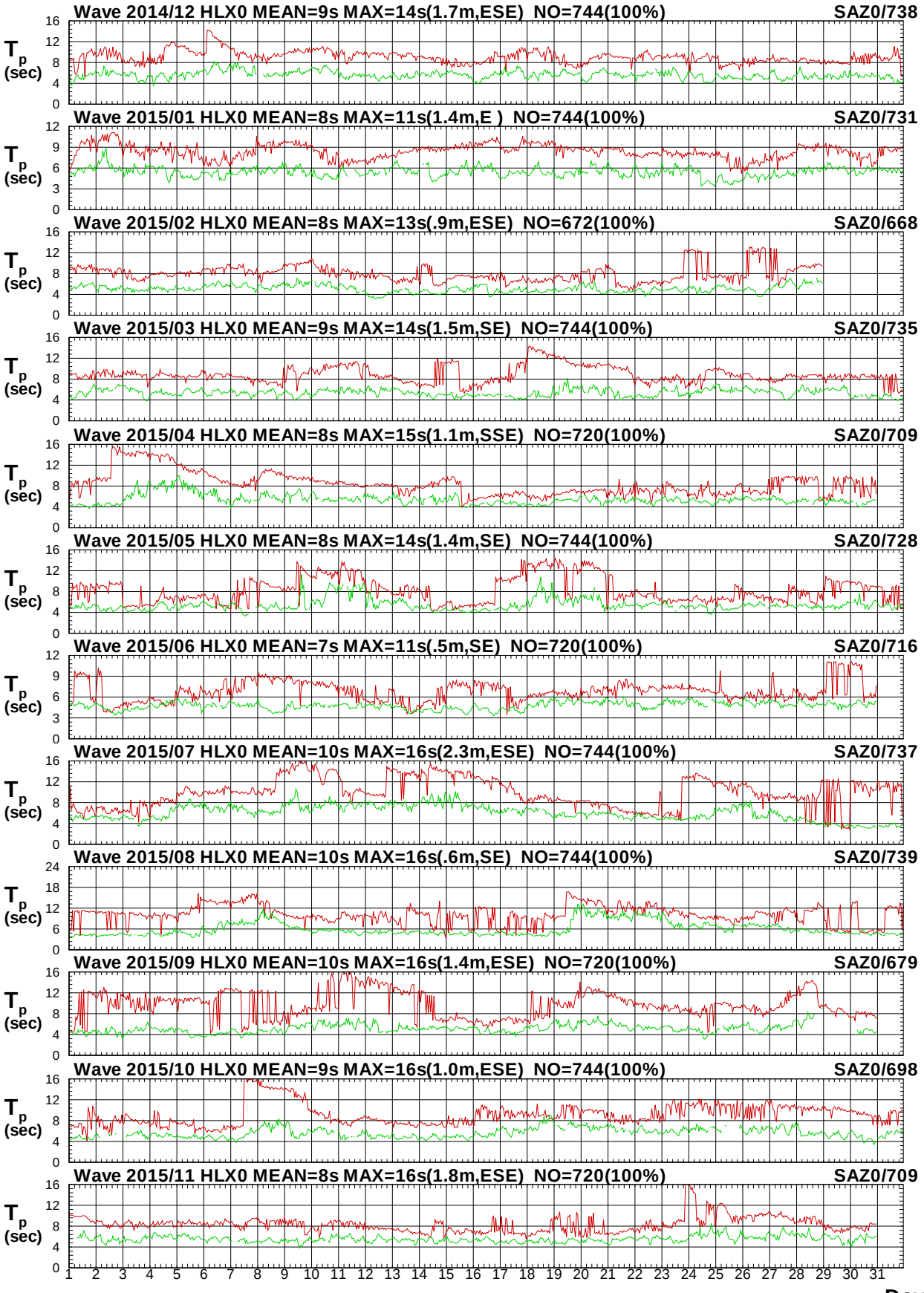


圖 4.7b　2015年每月花蓮海域 X 站與宜蘭海域 Z 站週期圖

V14CHLX0.1HA V14CSAZ0.1H0 V151HLX0.1HA V151SAZ0.1H0 V152HLX0.1HA V152SAZ0.1H0
V153HLX0.1HA V153SAZ0.1H0 V154HLX0.1HA V154SAZ0.1H0 V155HLX0.1HA V155SAZ0.1H0

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Wave Direction in Hua-Lien Seas of HLX0 at 2015

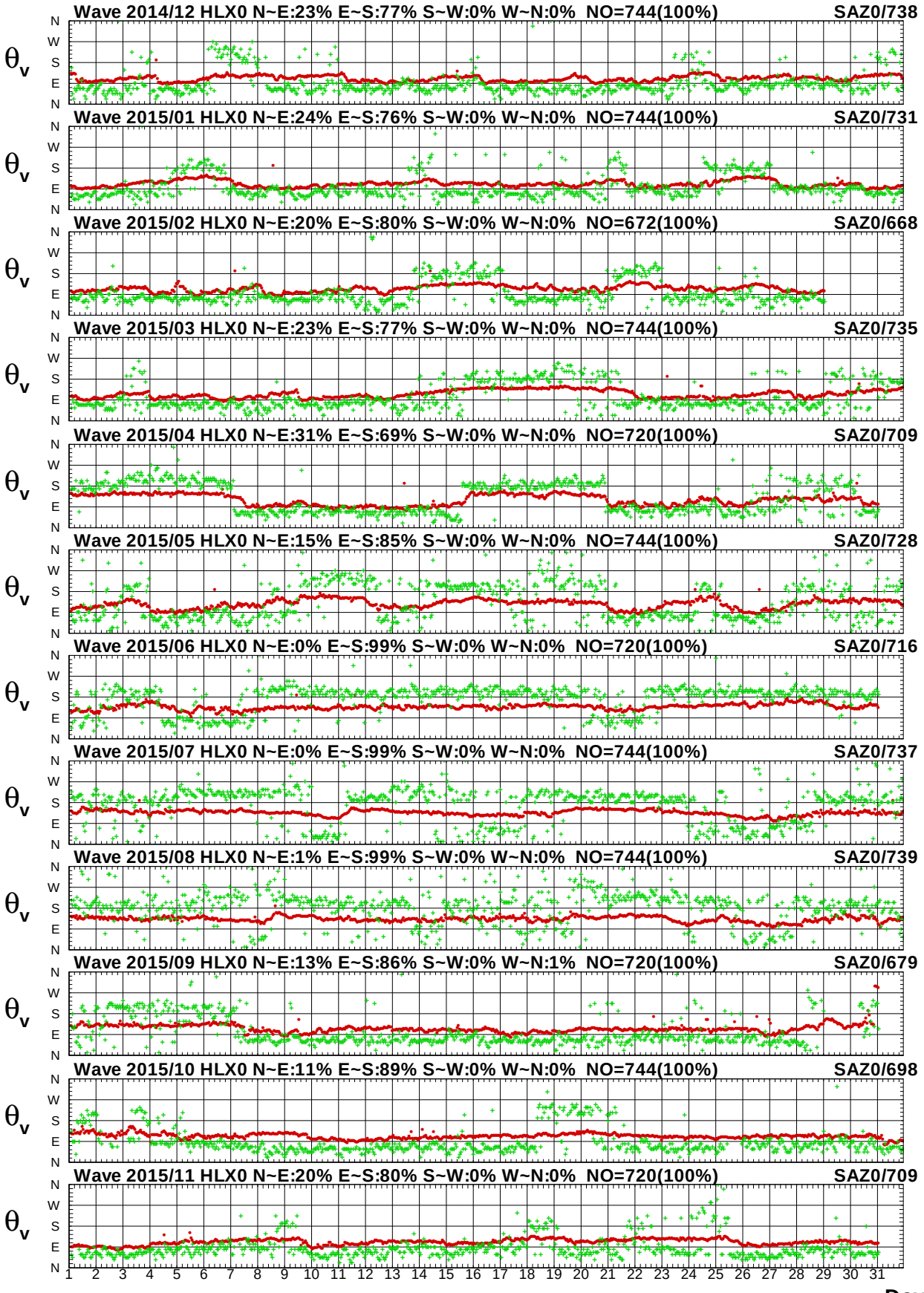


圖4.7c　2015年每月花蓮海域 X 站與宜蘭海域 Z 站波向圖

V14CHLX0.1HA V14CSAZ0.1H0 V151HLX0.1HA V151SAZ0.1H0 V152HLX0.1HA V152SAZ0.1H0
V153HLX0.1HA V153SAZ0.1H0 V154HLX0.1HA V154SAZ0.1H0 V155HLX0.1HA V155SAZ0.1H0

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第五章　2015 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**，2015 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，2015 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 2015 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	2014/10-2015/11(觀測中)	港研中心	綠島南寮港區外海
Y	22°43'27"N	121°08'40"E	2010/09-2015/11(觀測中)	水利署	台東外海浮標站

臺東海域

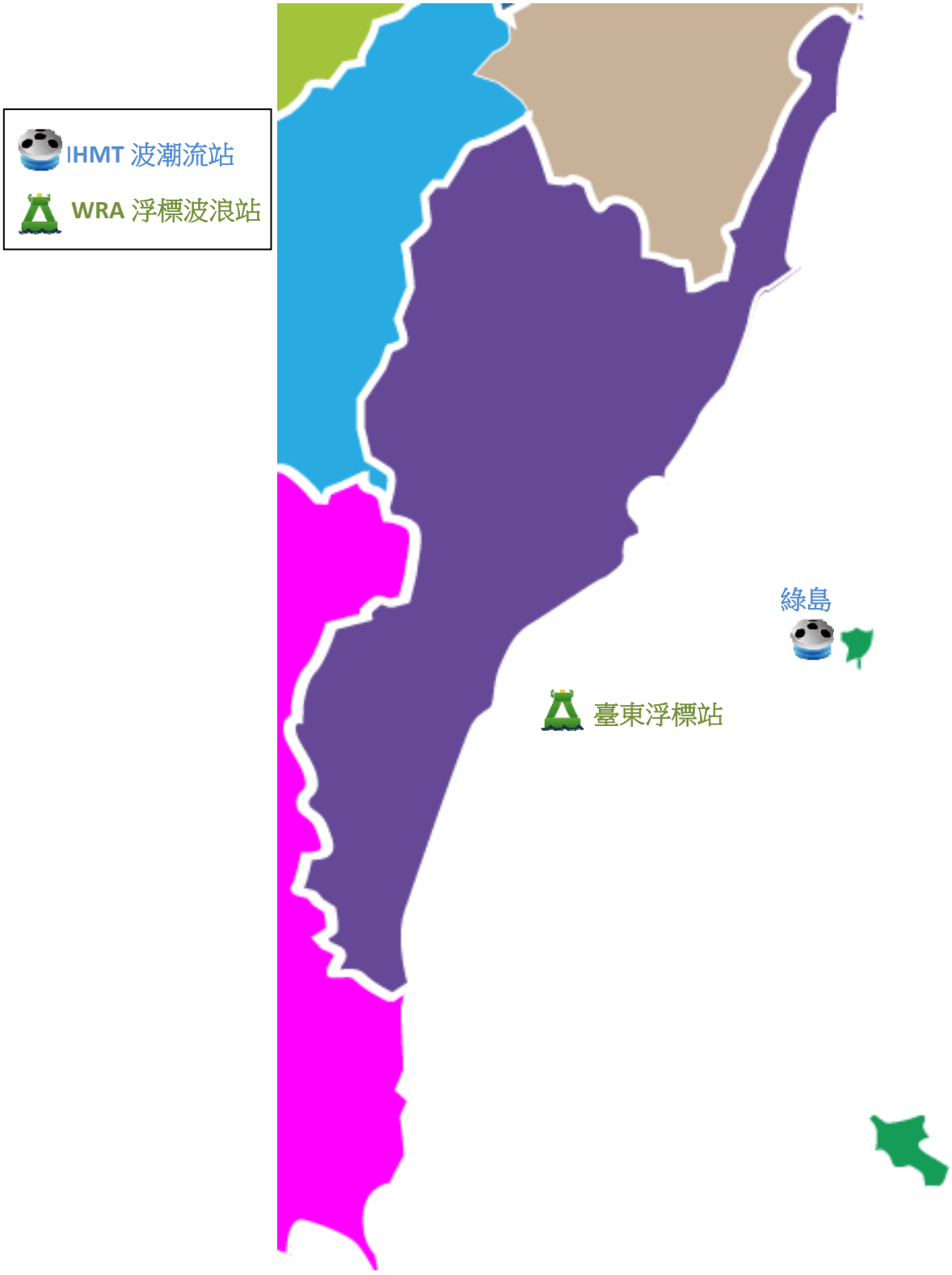


圖 5 臺東海域波浪觀測站位置示意圖

表5.1a 2015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						
2014/12月	743 (99.9%)	718 (96.5%)	*	*	*	*	*	*
2015/ 1月	743 (99.9%)	727 (97.7%)	*	*	*	*	*	*
2015/ 2月	549 (81.7%)	662 (98.5%)	*	*	*	*	*	*
2015/ 3月	733 (98.5%)	732 (98.4%)	*	*	*	*	*	*
2015/ 4月	635 (88.2%)	706 (98.1%)	*	*	*	*	*	*
2015/ 5月	739 (99.3%)	732 (98.4%)	*	*	*	*	*	*
2015/ 6月	717 (99.6%)	700 (97.2%)	*	*	*	*	*	*
2015/ 7月	742 (99.7%)	702 (94.4%)	*	*	*	*	*	*
2015/ 8月	154 (20.7%)	692 (93.0%)	*	*	*	*	*	*
2015/ 9月	*	595 (82.6%)	*	*	*	*	*	*
2015/10月	566 (76.1%)	651 (87.5%)	*	*	*	*	*	*
2015/11月	680 (94.4%)	638 (88.6%)	*	*	*	*	*	*
2015/冬季	2035 (94.2%)	2107 (97.5%)	*	*	*	*	*	*
2015/春季	2107 (95.4%)	2170 (98.3%)	*	*	*	*	*	*
2015/夏季	1613 (73.1%)	2094 (94.8%)	*	*	*	*	*	*
2015/秋季	1246 (57.1%)	1884 (86.3%)	*	*	*	*	*	*
2015/整年	7001 (79.9%)	8255 (94.2%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

表5.1b 2015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						
2014/12月	*	744 (100%)	*	*	*	*	*	*
2015/ 1月	*	744 (100%)	*	*	*	*	*	*
2015/ 2月	*	672 (100%)	*	*	*	*	*	*
2015/ 3月	*	744 (100%)	*	*	*	*	*	*
2015/ 4月	*	720 (100%)	*	*	*	*	*	*
2015/ 5月	*	744 (100%)	*	*	*	*	*	*
2015/ 6月	*	720 (100%)	*	*	*	*	*	*
2015/ 7月	*	744 (100%)	*	*	*	*	*	*
2015/ 8月	*	744 (100%)	*	*	*	*	*	*
2015/ 9月	*	720 (100%)	*	*	*	*	*	*
2015/10月	*	744 (100%)	*	*	*	*	*	*
2015/11月	*	720 (100%)	*	*	*	*	*	*
2015/冬季	*	2160 (100%)	*	*	*	*	*	*
2015/春季	*	2208 (100%)	*	*	*	*	*	*
2015/夏季	*	2208 (100%)	*	*	*	*	*	*
2015/秋季	*	2184 (100%)	*	*	*	*	*	*
2015/整年	*	8760 (100%)	*	*	*	*	*	*
起始年月	*	2014/12	*	*	*	*	*	*
結束年月	*	2015/11	*	*	*	*	*	*

Wave H_s in Ta-Tung Seas of LTY0 at 2015

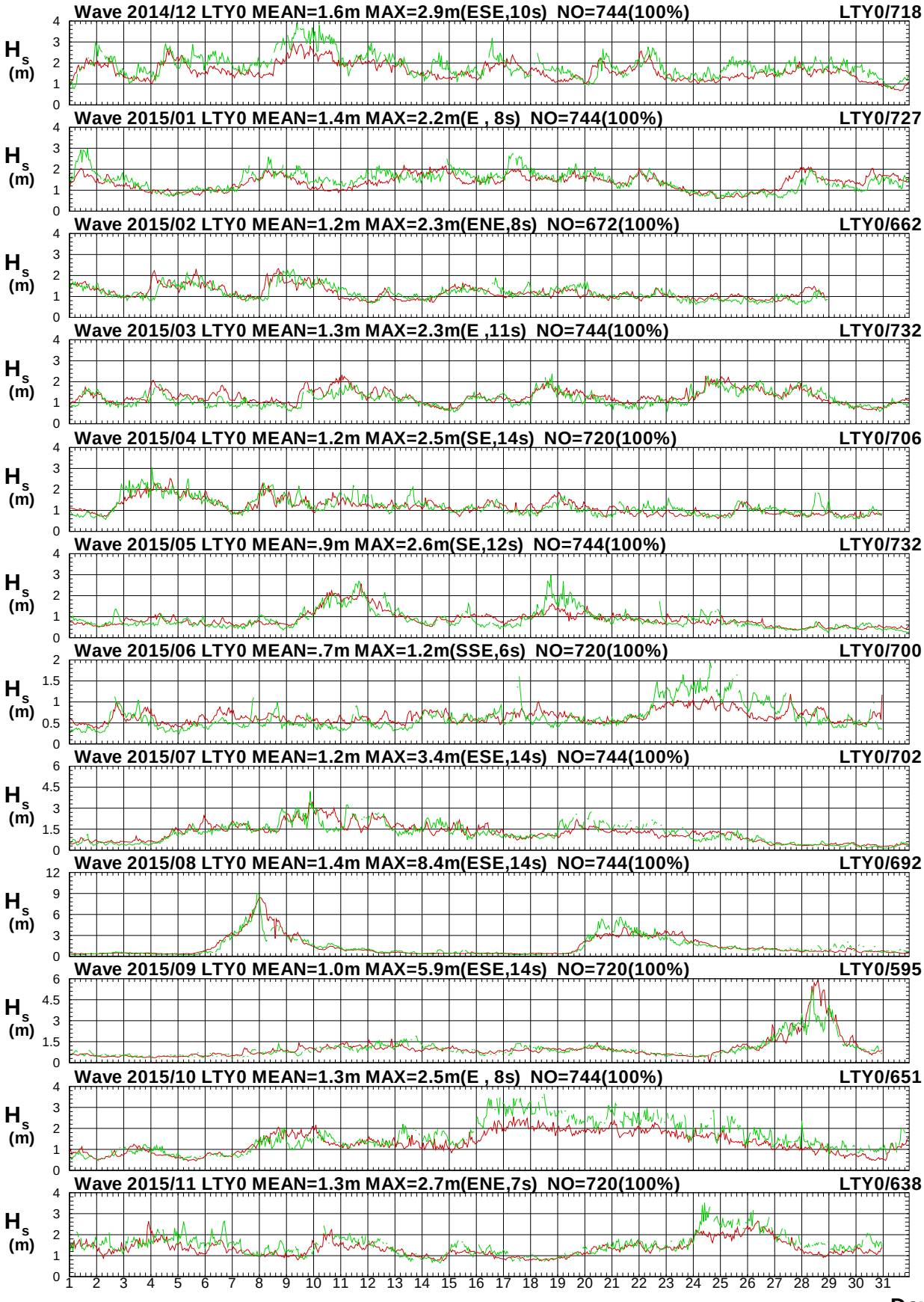


圖5.1a　2015年每月臺東海域 Y 站修補前後之波高比較圖

V14CLTY0.1HA V14CLTY0.1H0 V151LTY0.1HA V151LTY0.1H0 V152LTY0.1HA V152LTY0.1H0
V153LTY0.1HA V153LTY0.1H0 V154LTY0.1HA V154LTY0.1H0 V155LTY0.1HA V155LTY0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

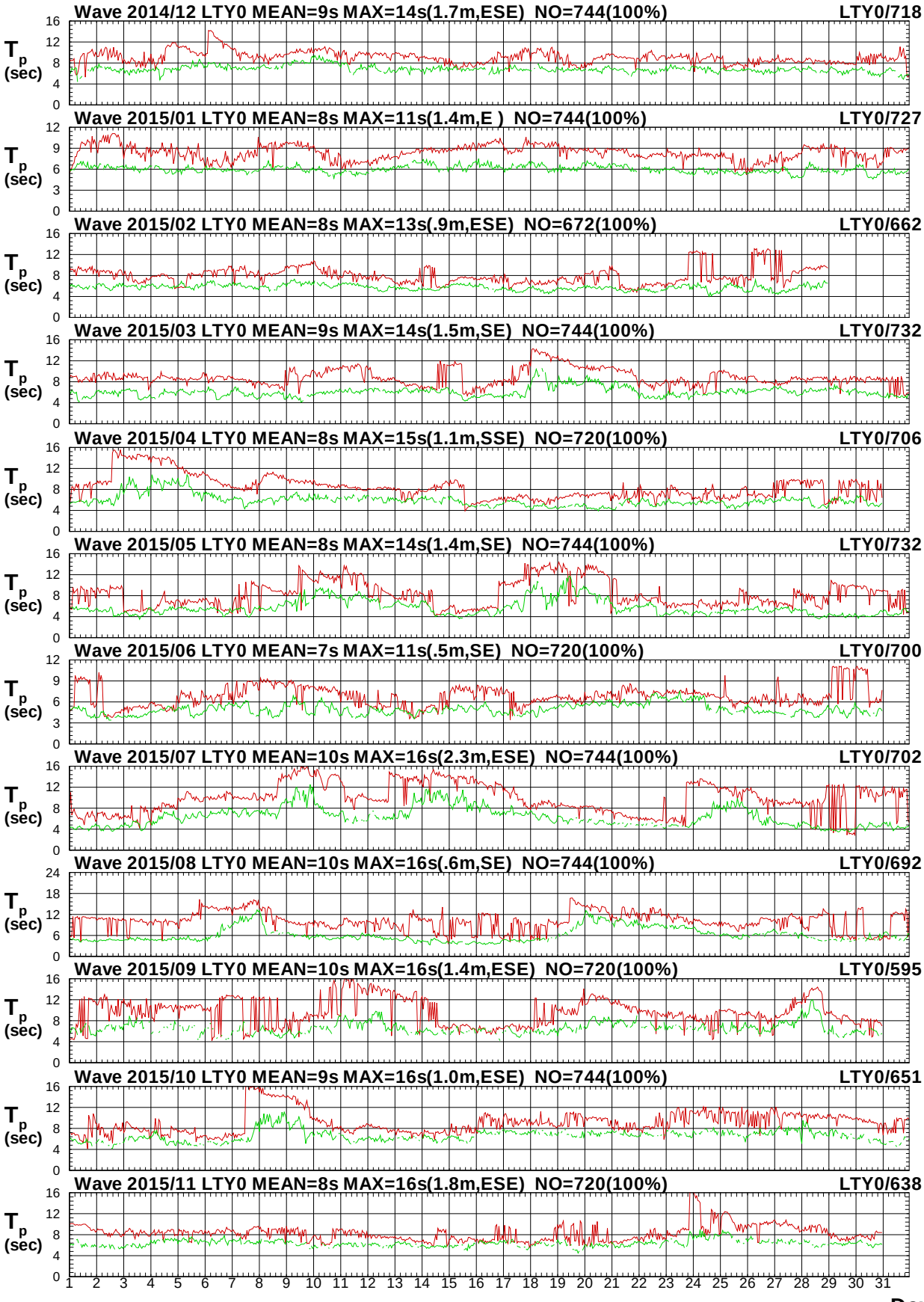


圖5.1b　2015年每月臺東海域 Y 站修補前後之週期比較圖

V14CLTY0.1HA V14CLTY0.1H0 V151LTY0.1HA V151LTY0.1H0 V152LTY0.1HA V152LTY0.1H0
V153LTY0.1HA V153LTY0.1H0 V154LTY0.1HA V154LTY0.1H0 V155LTY0.1HA V155LTY0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

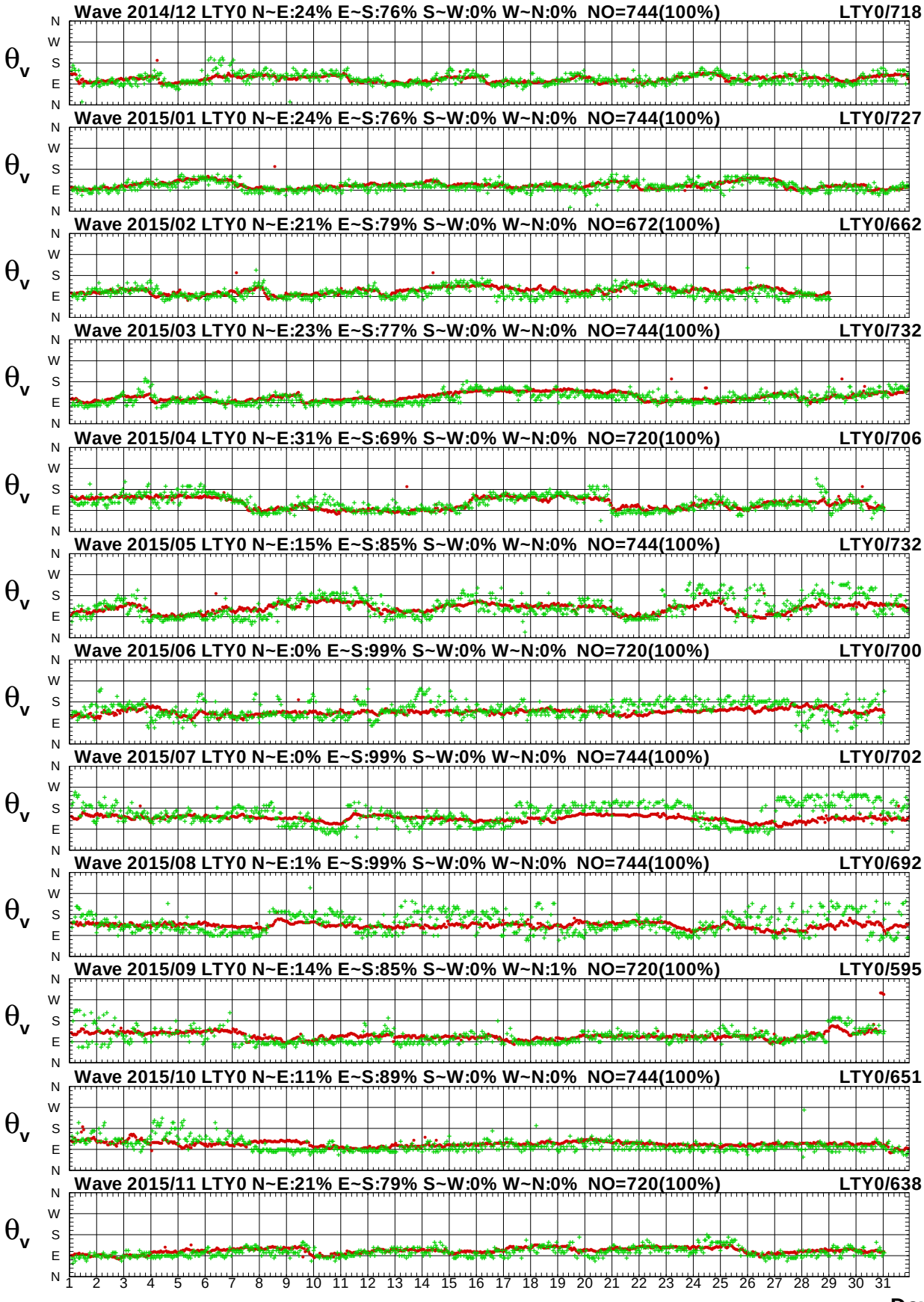


圖5.1c　2015年每月臺東海域 Y 站修補前後之波向比較圖

V14CLTY0.1HA V14CLTY0.1H0 V151LTY0.1HA V151LTY0.1H0 V152LTY0.1HA V152LTY0.1H0
V153LTY0.1HA V153LTY0.1H0 V154LTY0.1HA V154LTY0.1H0 V155LTY0.1HA V155LTY0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2015

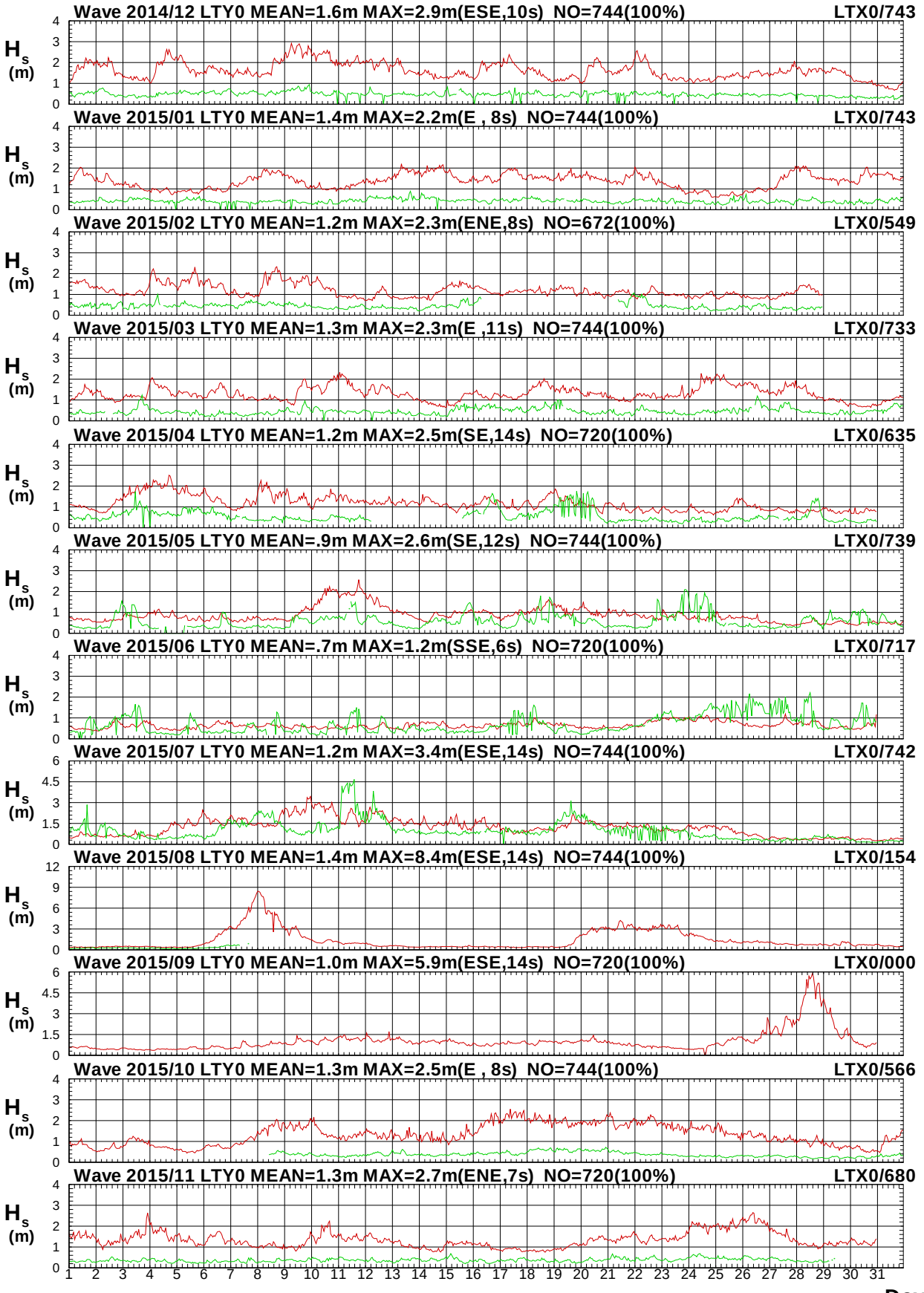


圖 5.2a　2015年每月臺東海域 Y 站與 X 站波高比較圖

V14CLTY0.1HA V14CLTX0.1H0 V151LTY0.1HA V151LTX0.1H0 V152LTY0.1HA V152LTX0.1H0
V153LTY0.1HA V153LTX0.1H0 V154LTY0.1HA V154LTX0.1H0 V155LTY0.1HA V155LTX0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

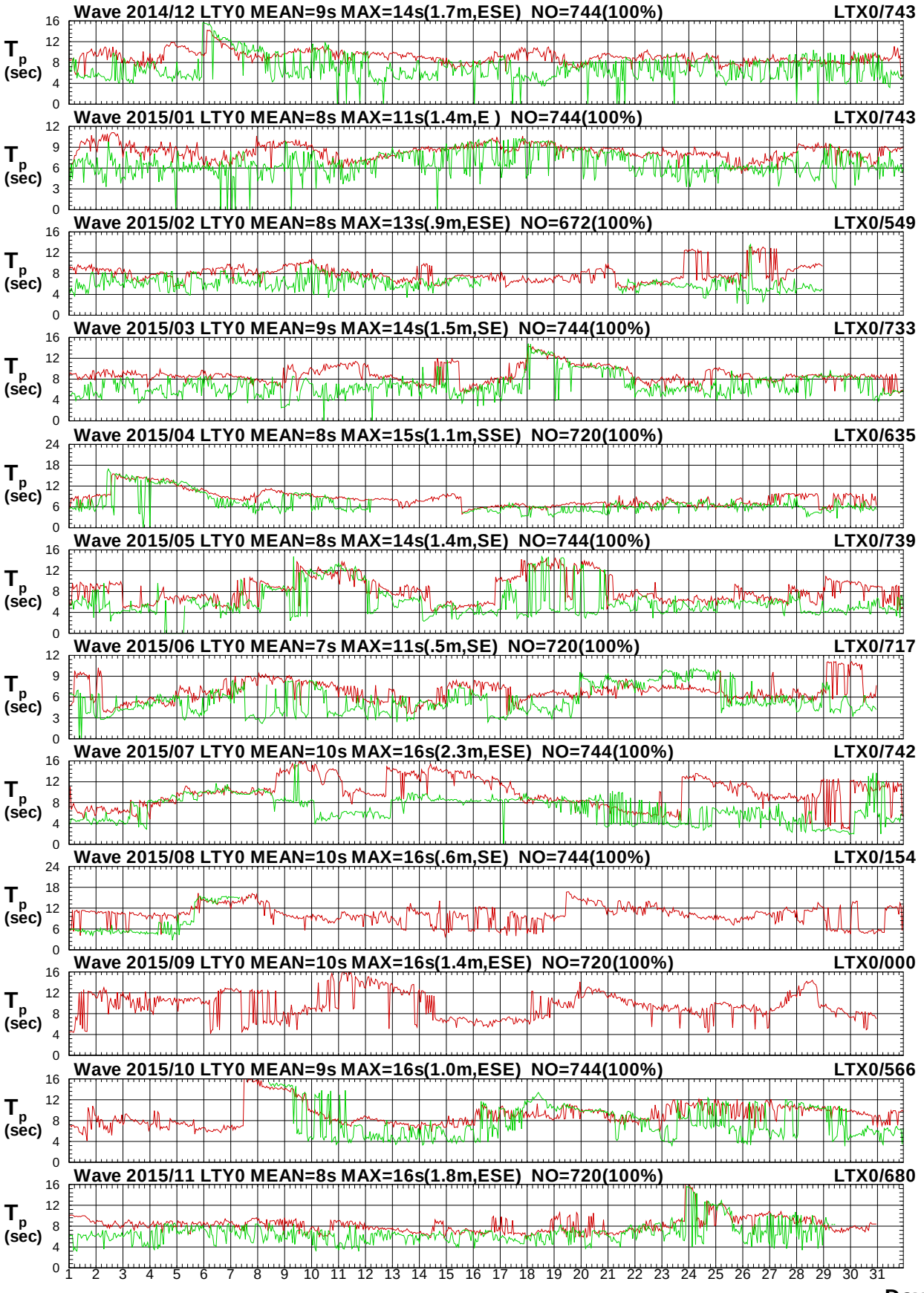


圖 5.2b　2015年每月臺東海域 Y 站與 X 站週期比較圖

V14CLTY0.1HA V14CLTX0.1H0 V151LTY0.1HA V151LTX0.1H0 V152LTY0.1HA V152LTX0.1H0
V153LTY0.1HA V153LTX0.1H0 V154LTY0.1HA V154LTX0.1H0 V155LTY0.1HA V155LTX0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

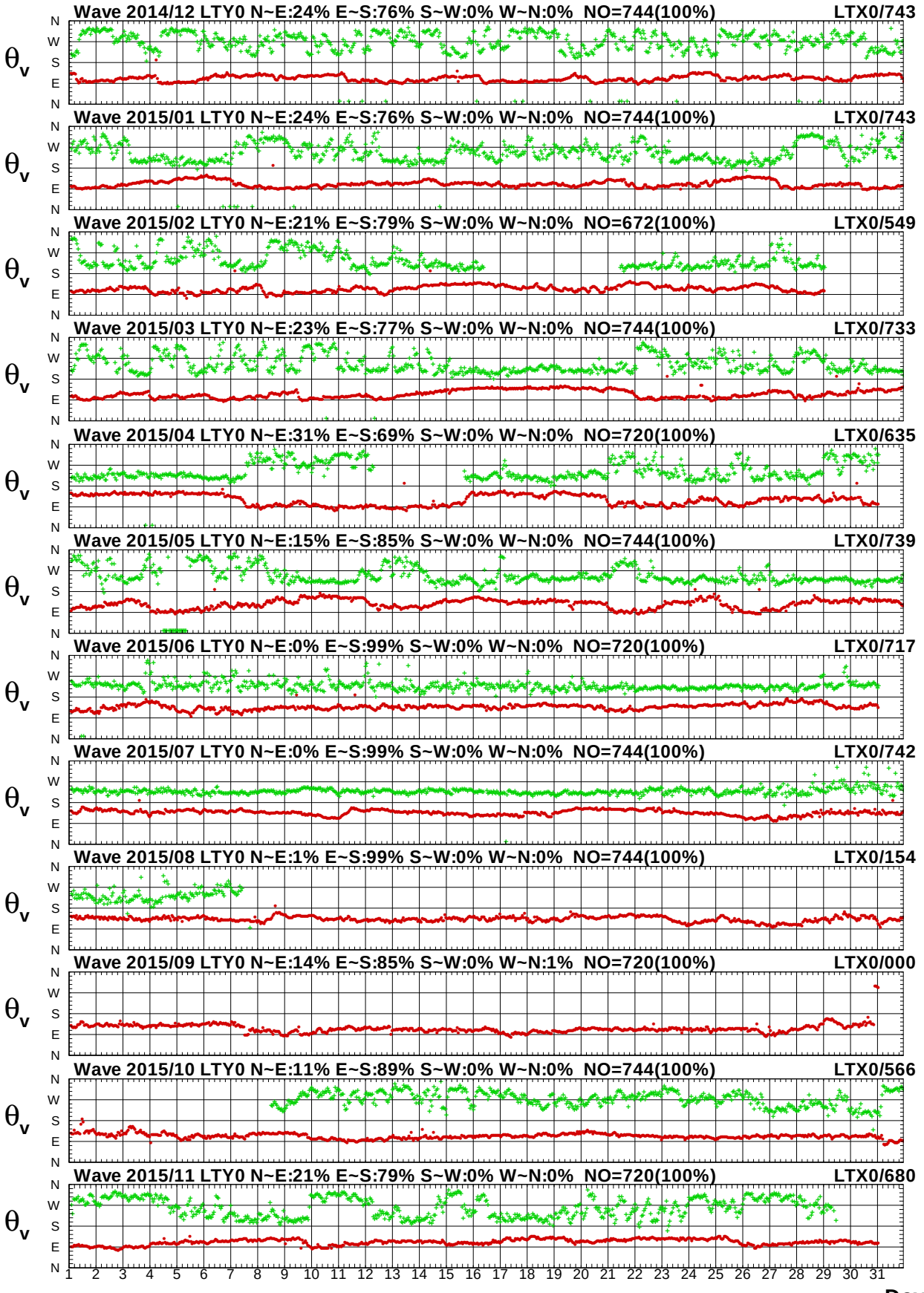


圖 5.2c　2015年每月臺東海域 Y 站與 X 站波向比較圖

Wave H_s in Ta-Tung Seas of LTY0 at 2015

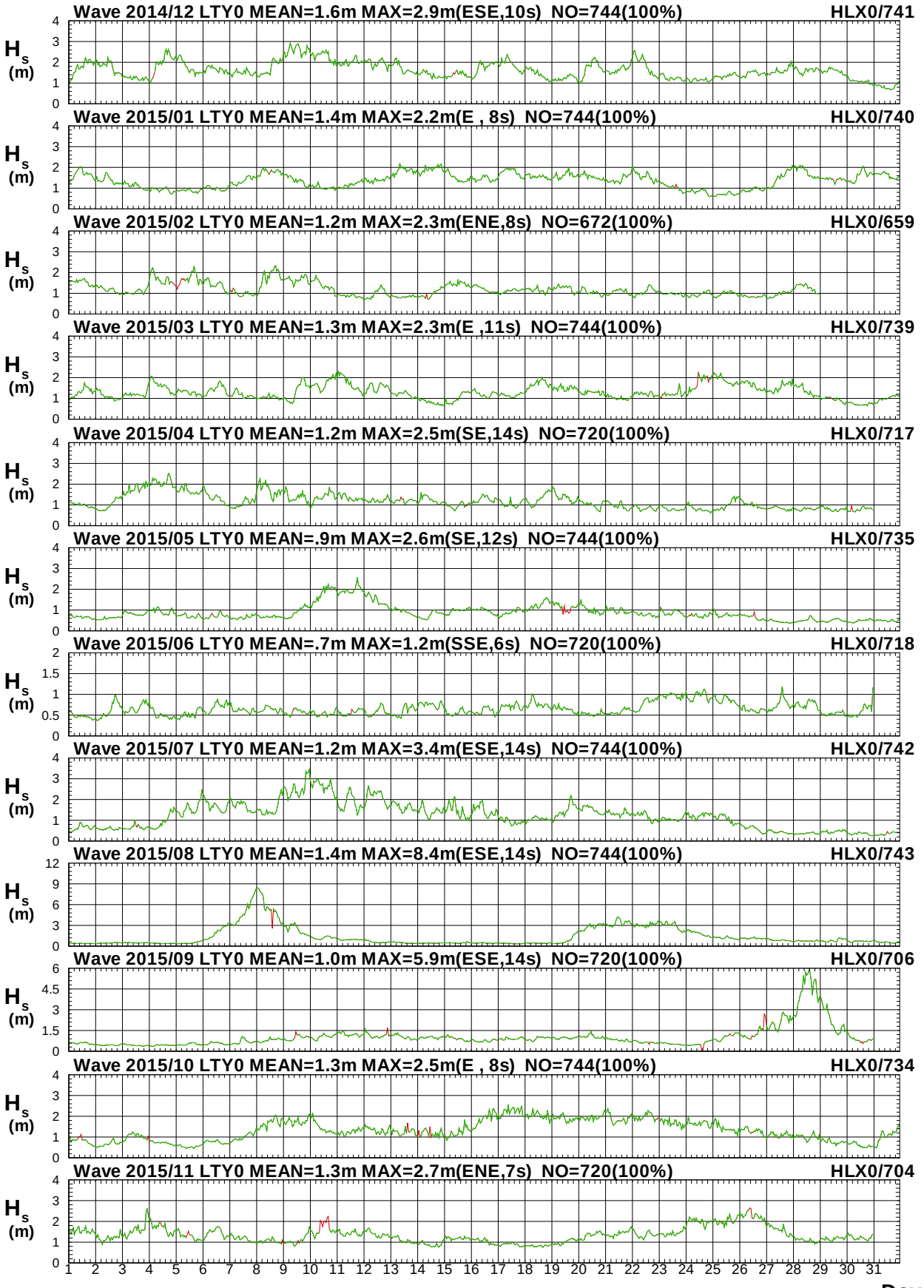


圖 5.3a　2015年每月臺東海域 Y 站與花蓮海域 X 站波高圖

V14CLTY0.1HA V14CHLX0.1H0 V151LTY0.1HA V151HLX0.1H0 V152LTY0.1HA V152HLX0.1H0
V153LTY0.1HA V153HLX0.1H0 V154LTY0.1HA V154HLX0.1H0 V155LTY0.1HA V155HLX0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

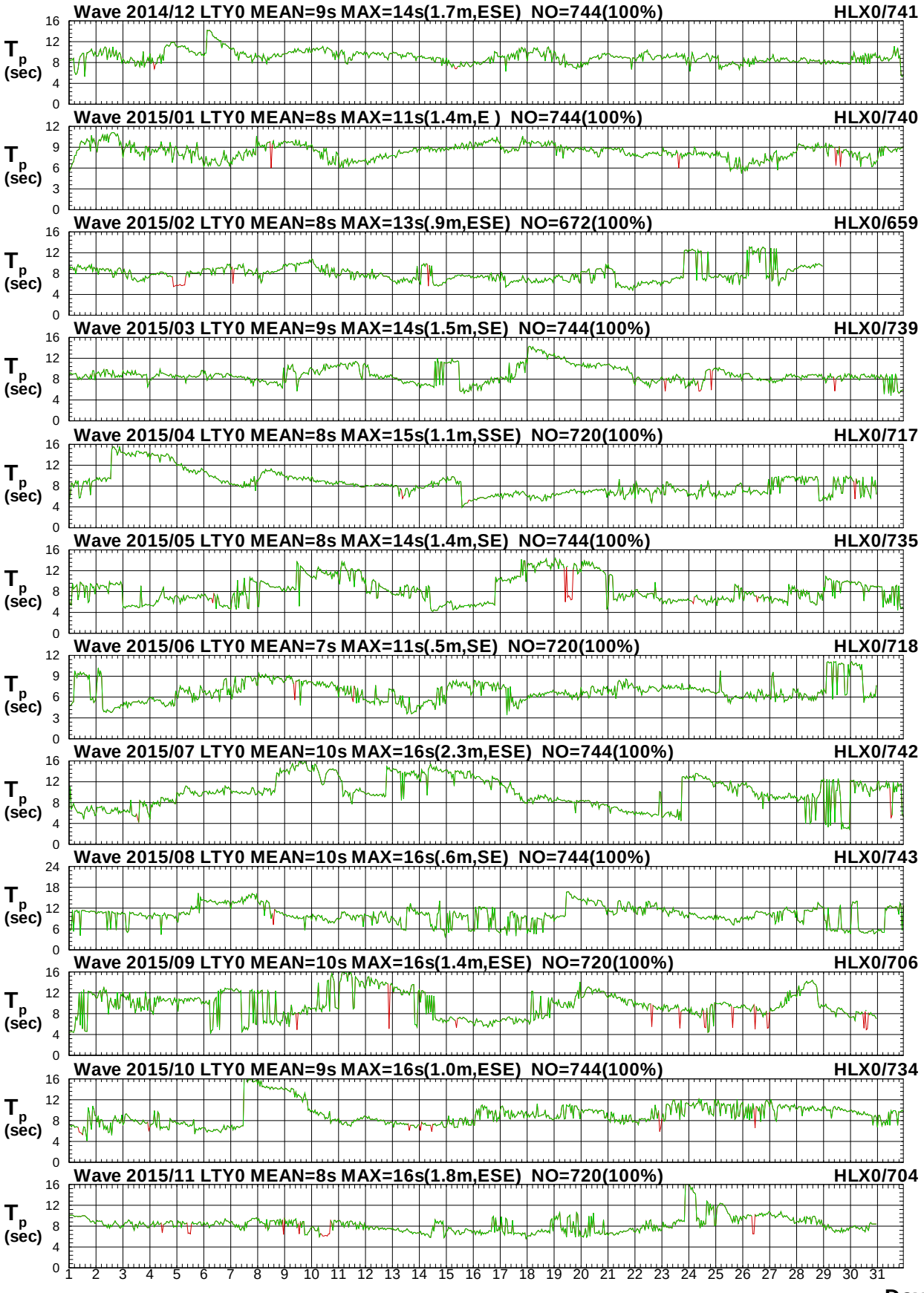


圖 5.3b　2015年每月臺東海域 Y 站與花蓮海域 X 站週期圖

V14CLTY0.1HA V14CHLX0.1H0 V151LTY0.1HA V151HLX0.1H0 V152LTY0.1HA V152HLX0.1H0
V153LTY0.1HA V153HLX0.1H0 V154LTY0.1HA V154HLX0.1H0 V155LTY0.1HA V155HLX0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

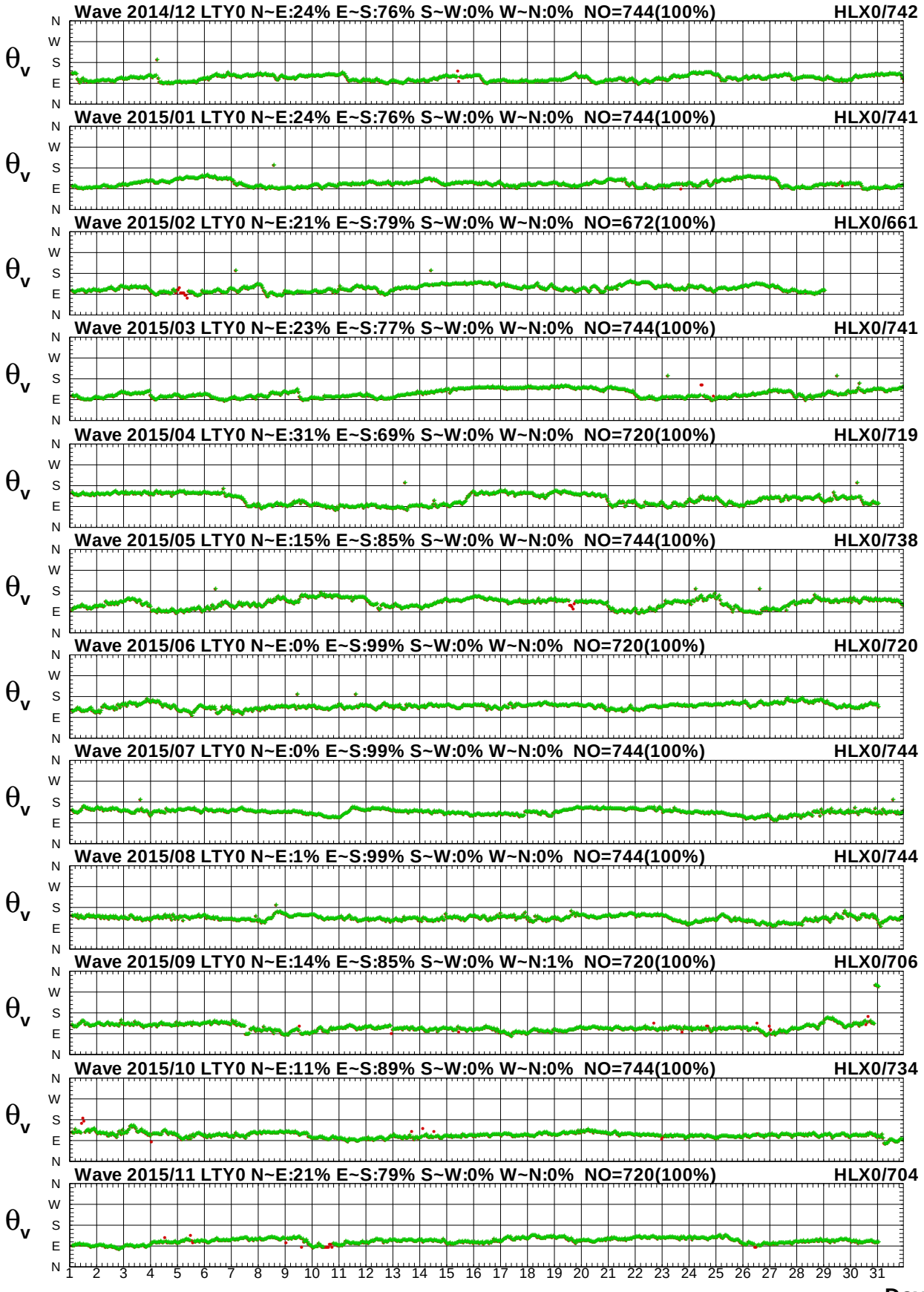


圖 5.3c　2015年每月臺東海域 Y 站與花蓮海域 X 站波向圖

Wave H_s in Ta-Tung Seas of LTY0 at 2015

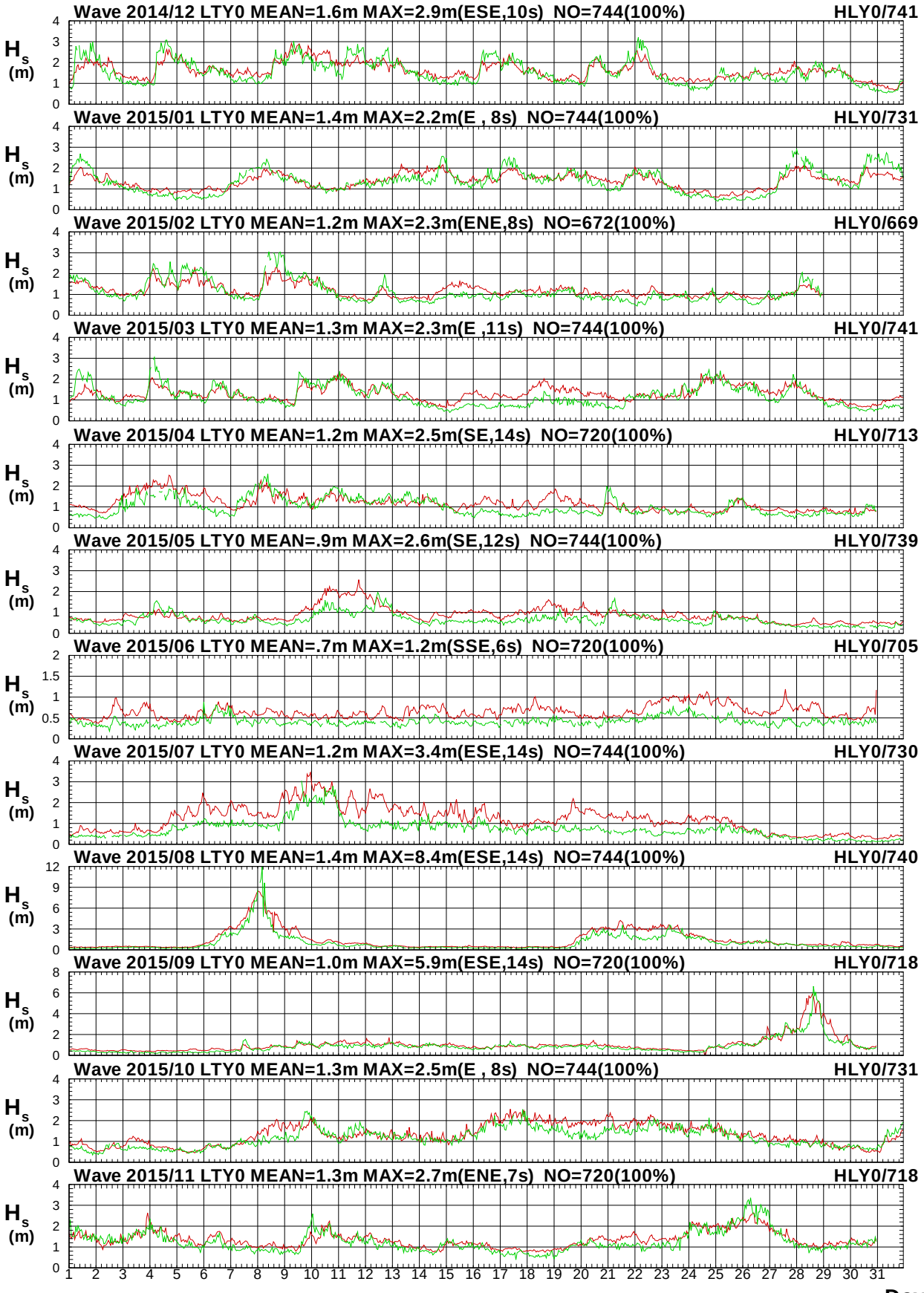


圖5.4a　2015年每月臺東海域 Y 站與花蓮海域 Y 站波高圖

V14CLTY0.1HA V14CHLY0.1H0 V151LTY0.1HA V151HLY0.1H0 V152LTY0.1HA V152HLY0.1H0
V153LTY0.1HA V153HLY0.1H0 V154LTY0.1HA V154HLY0.1H0 V155LTY0.1HA V155HLY0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

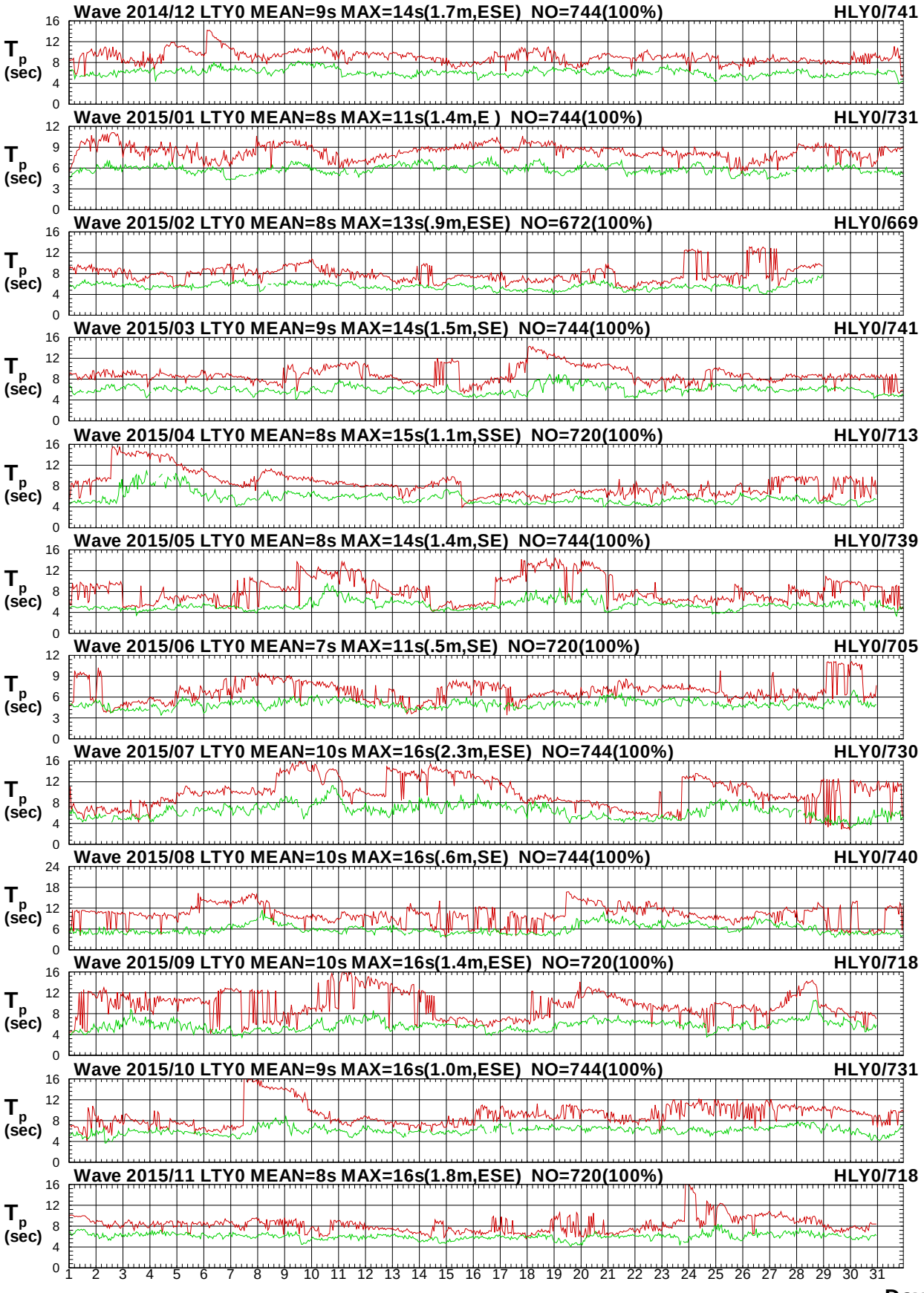


圖 5.4b　2015年每月臺東海域 Y 站與花蓮海域 Y 站週期圖

V14CLTY0.1HA V14CHLY0.1H0 V151LTY0.1HA V151HLY0.1H0 V152LTY0.1HA V152HLY0.1H0
V153LTY0.1HA V153HLY0.1H0 V154LTY0.1HA V154HLY0.1H0 V155LTY0.1HA V155HLY0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

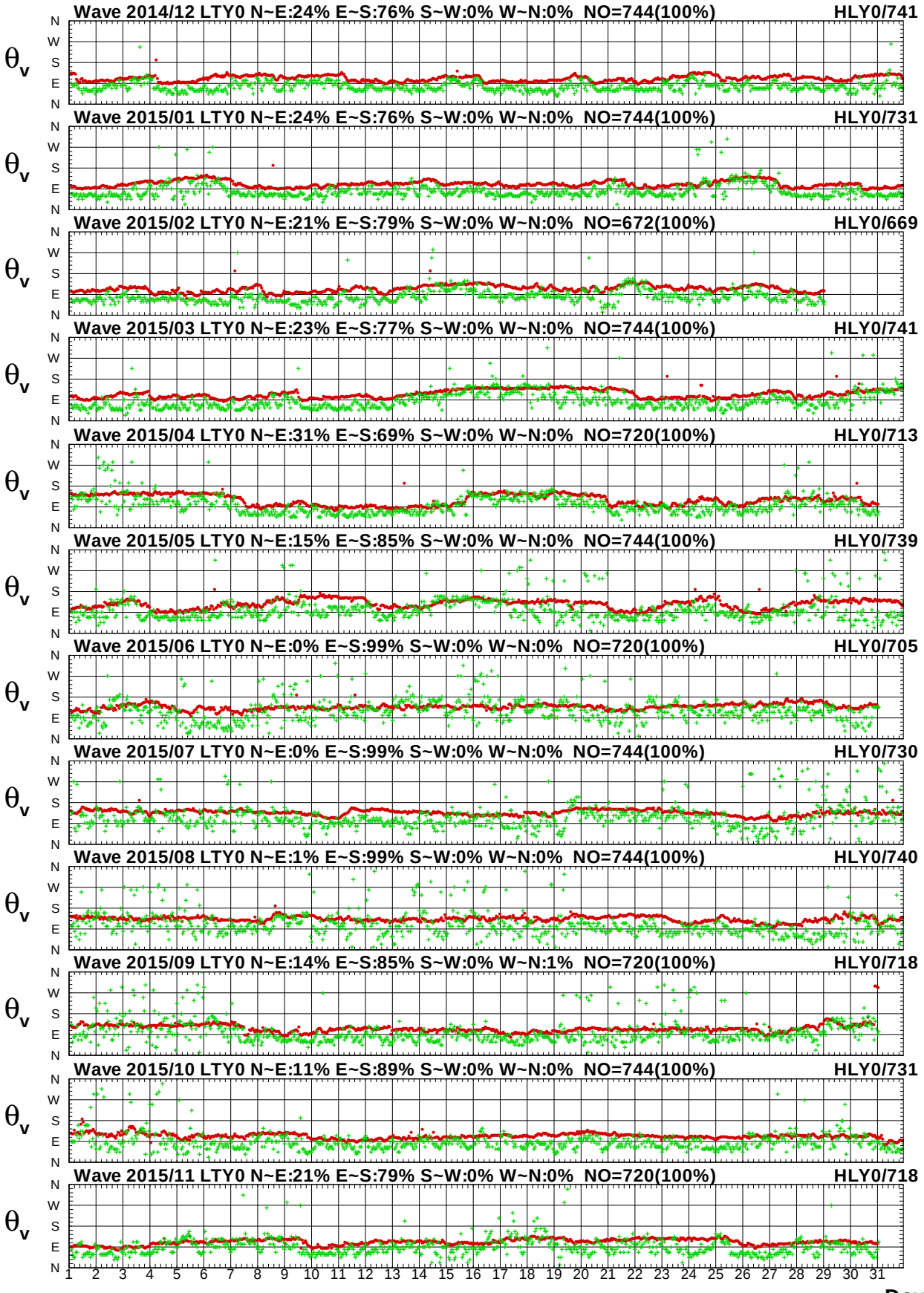


圖 5.4c　2015年每月臺東海域 Y 站與花蓮海域 Y 站波向圖

V14CLTY0.1HA V14CHLY0.1H0 V151LTY0.1HA V151HLY0.1H0 V152LTY0.1HA V152HLY0.1H0
V153LTY0.1HA V153HLY0.1H0 V154LTY0.1HA V154HLY0.1H0 V155LTY0.1HA V155HLY0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2015

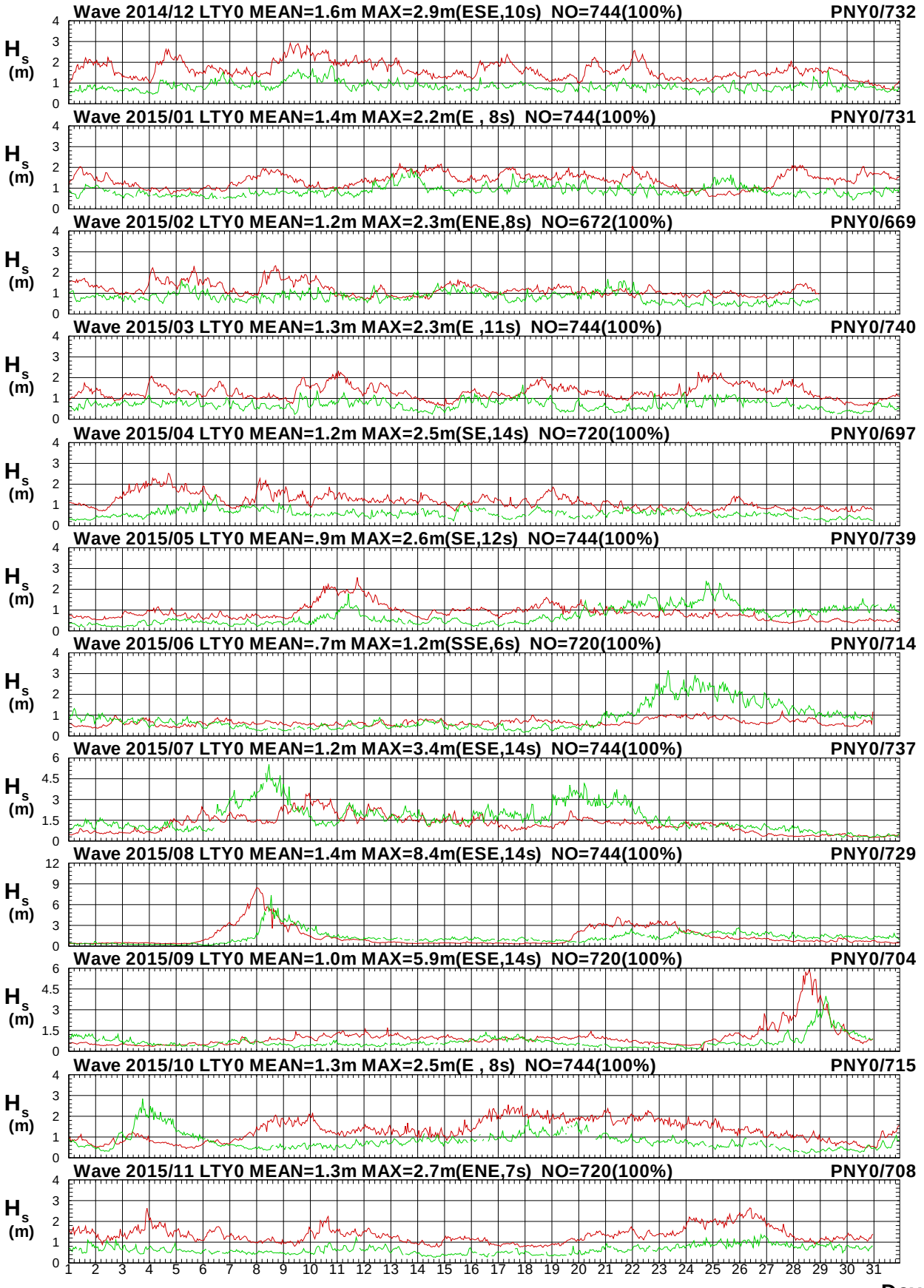


圖5.5a　2015年每月臺東海域 Y 站與屏東海域 Y 站波高圖

V14CLTY0.1HA V14CPNY0.1H0 V151LTY0.1HA V151PNY0.1H0 V152LTY0.1HA V152PNY0.1H0
V153LTY0.1HA V153PNY0.1H0 V154LTY0.1HA V154PNY0.1H0 V155LTY0.1HA V155PNY0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

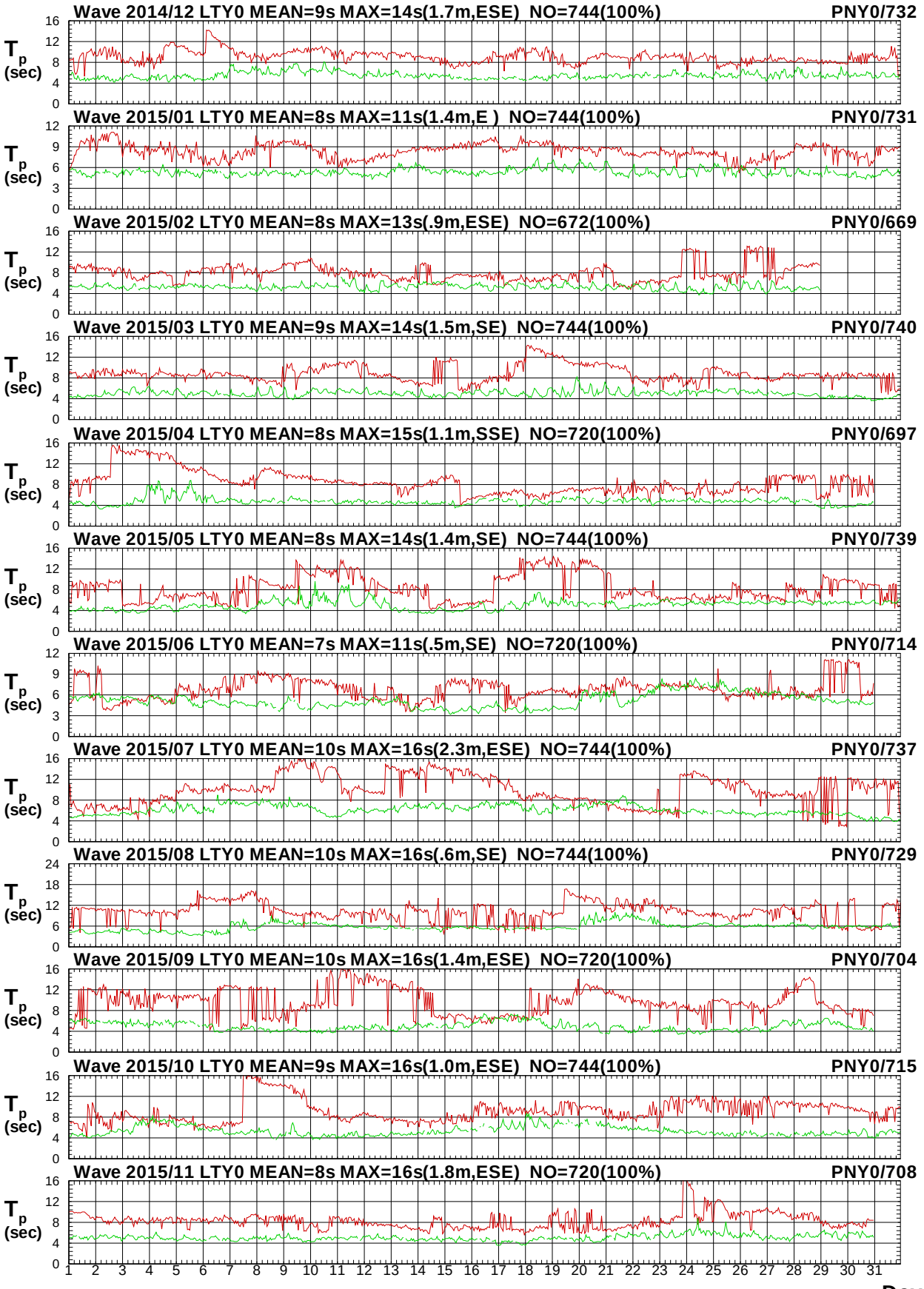


圖 5.5b　2015年每月臺東海域 Y 站與屏東海域 Y 站週期圖

V14CLTY0.1HA V14CPNY0.1H0 V151LTY0.1HA V151PNY0.1H0 V152LTY0.1HA V152PNY0.1H0
V153LTY0.1HA V153PNY0.1H0 V154LTY0.1HA V154PNY0.1H0 V155LTY0.1HA V155PNY0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

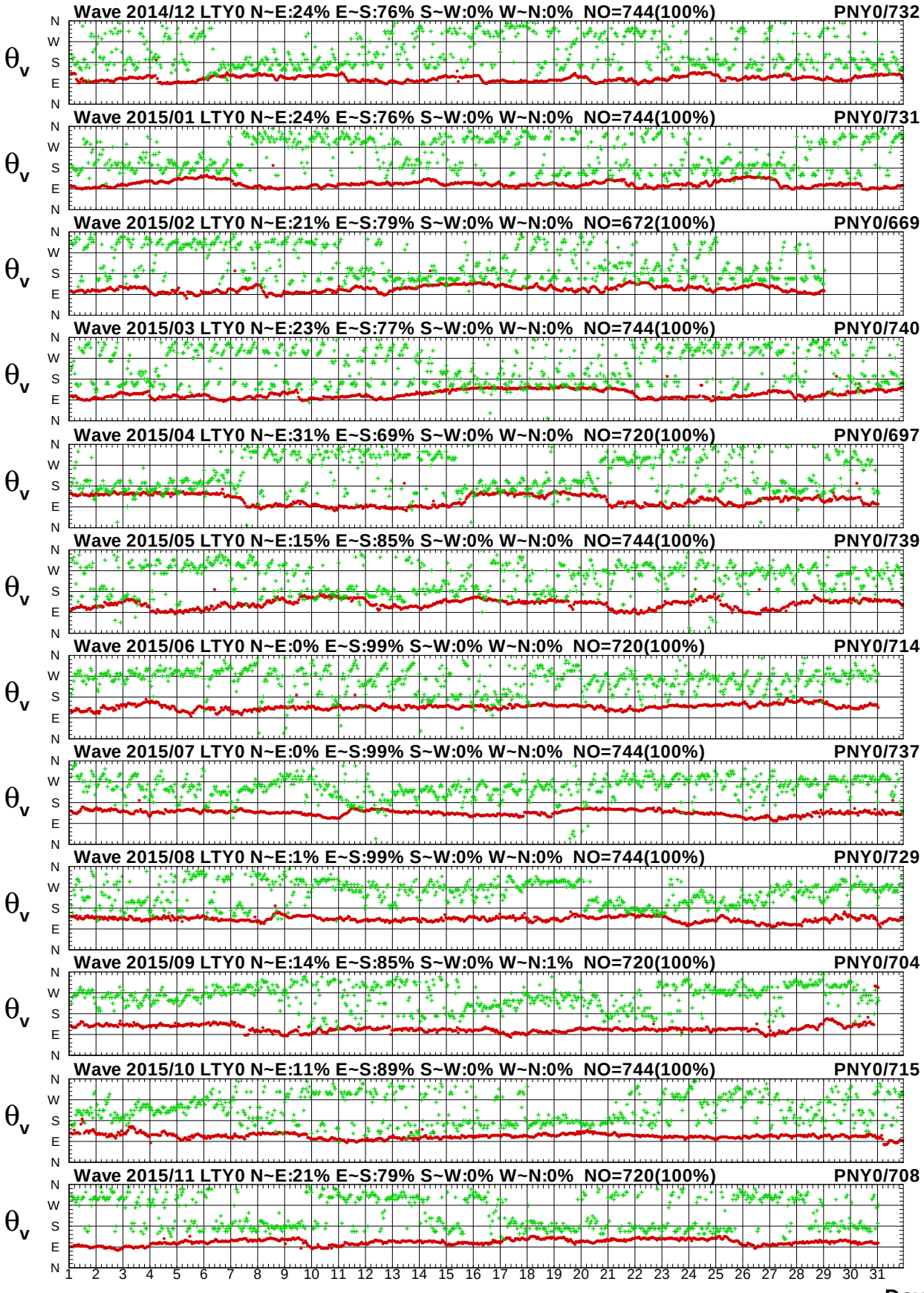


圖 5.5c　2015年每月臺東海域 Y 站與屏東海域 Y 站波向圖

V14CLTY0.1HA V14CPNY0.1H0 V151LTY0.1HA V151PNY0.1H0 V152LTY0.1HA V152PNY0.1H0
V153LTY0.1HA V153PNY0.1H0 V154LTY0.1HA V154PNY0.1H0 V155LTY0.1HA V155PNY0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2015

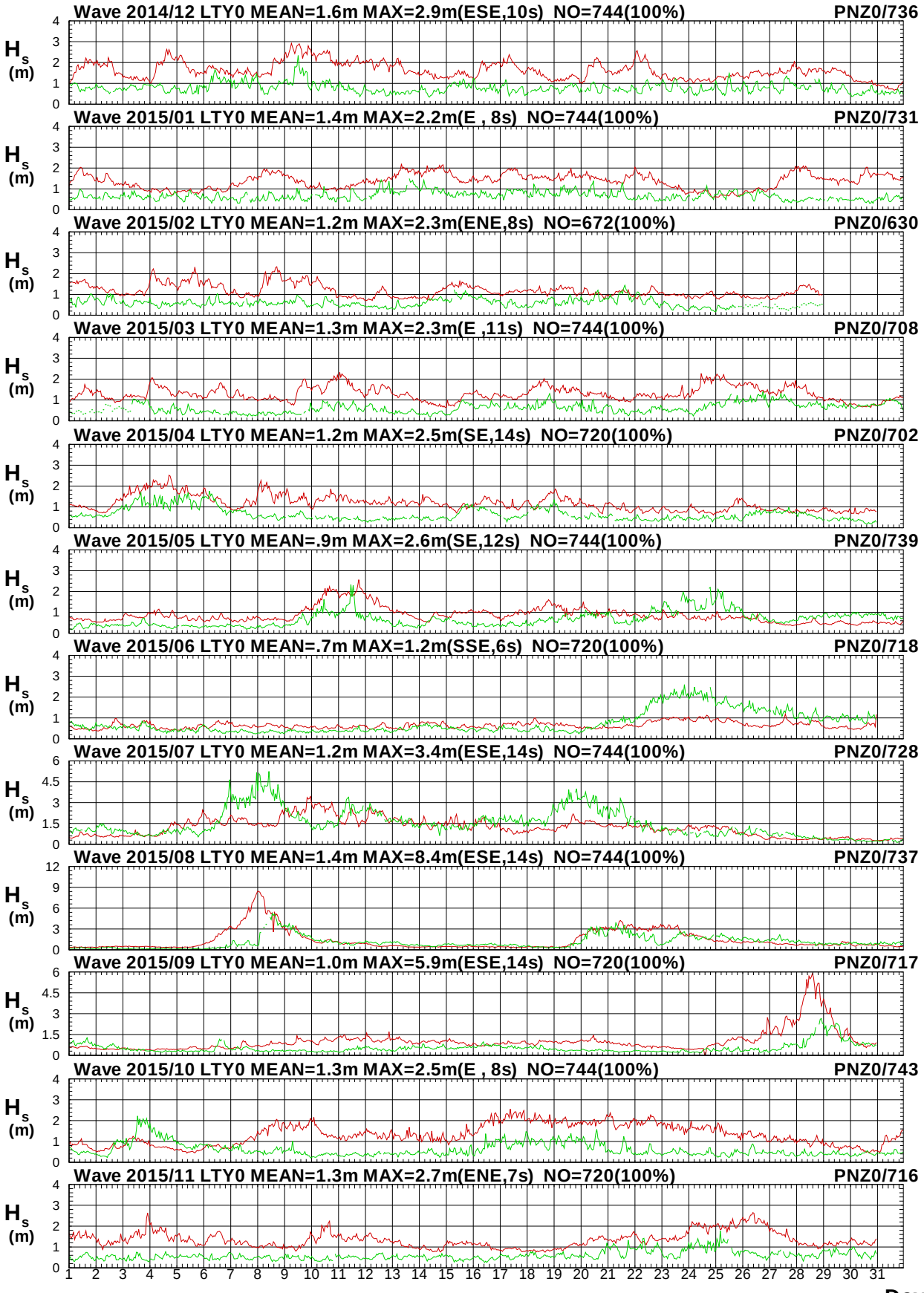


圖 5.6a　2015年每月臺東海域 Y 站與屏東海域 Z 站波高圖

V14CLTY0.1HA V14CPNZ0.1H0 V151LTY0.1HA V151PNZ0.1H0 V152LTY0.1HA V152PNZ0.1H0
V153LTY0.1HA V153PNZ0.1H0 V154LTY0.1HA V154PNZ0.1H0 V155LTY0.1HA V155PNZ0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

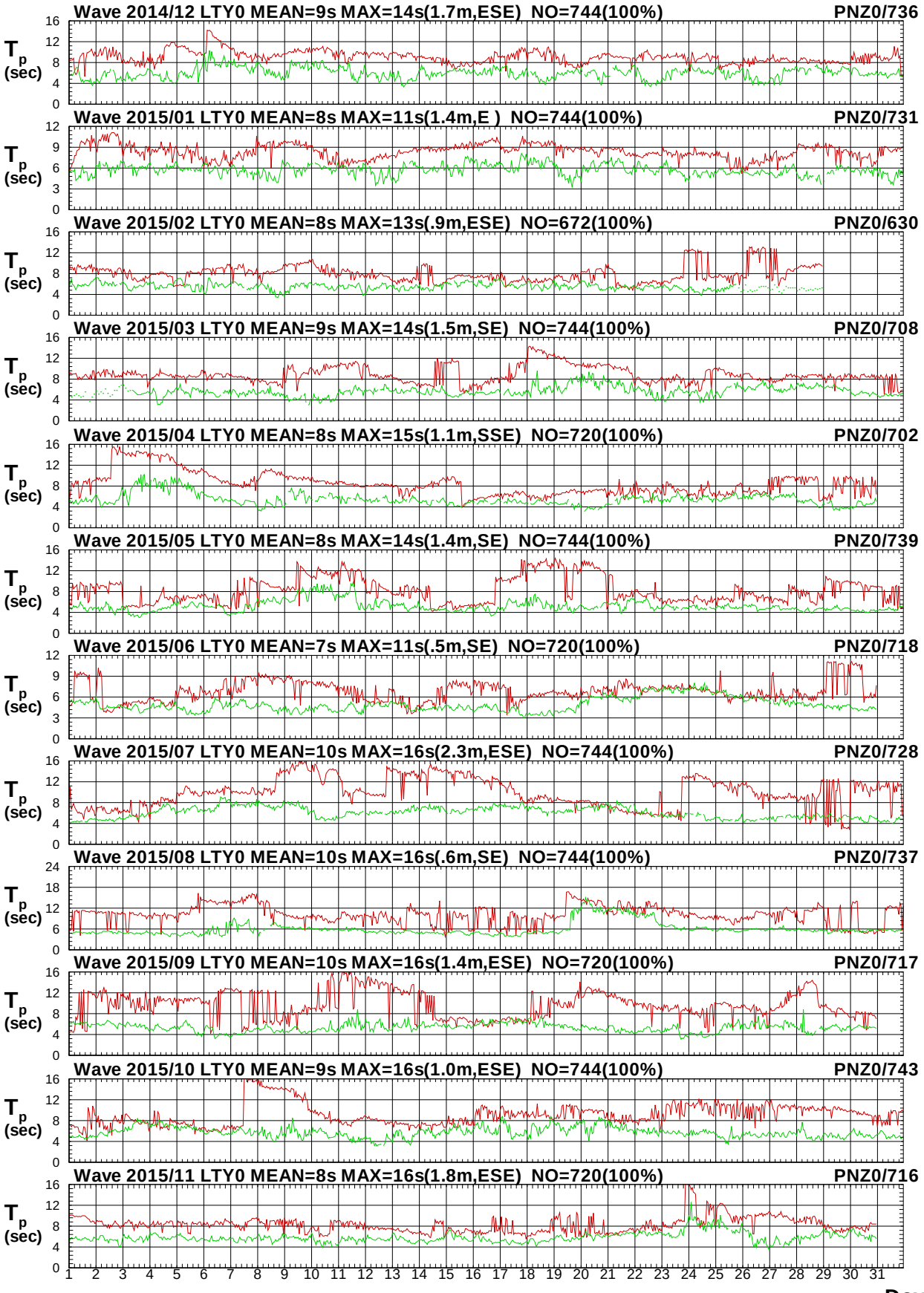


圖 5.6b　2015年每月臺東海域 Y 站與屏東海域 Z 站週期圖

V14CLTY0.1HA V14CPNZ0.1H0 V151LTY0.1HA V151PNZ0.1H0 V152LTY0.1HA V152PNZ0.1H0
V153LTY0.1HA V153PNZ0.1H0 V154LTY0.1HA V154PNZ0.1H0 V155LTY0.1HA V155PNZ0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

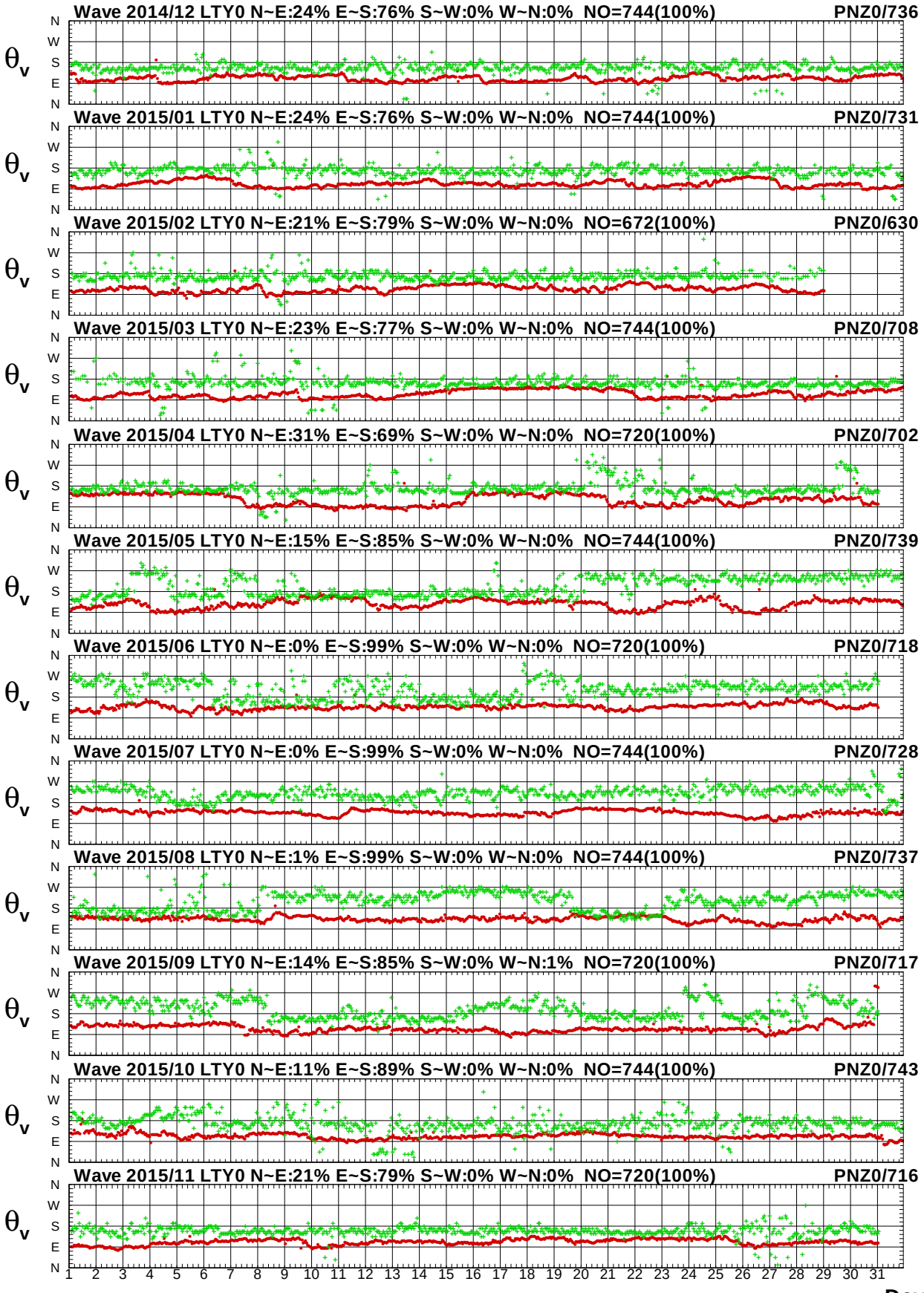


圖5.6c　2015年每月臺東海域 Y 站與屏東海域 Z 站波向圖

V14CLTY0.1HA V14CPNZ0.1H0 V151LTY0.1HA V151PNZ0.1H0 V152LTY0.1HA V152PNZ0.1H0
V153LTY0.1HA V153PNZ0.1H0 V154LTY0.1HA V154PNZ0.1H0 V155LTY0.1HA V155PNZ0.1H0

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Wave H_s in Ta-Tung Seas of LTY0 at 2015

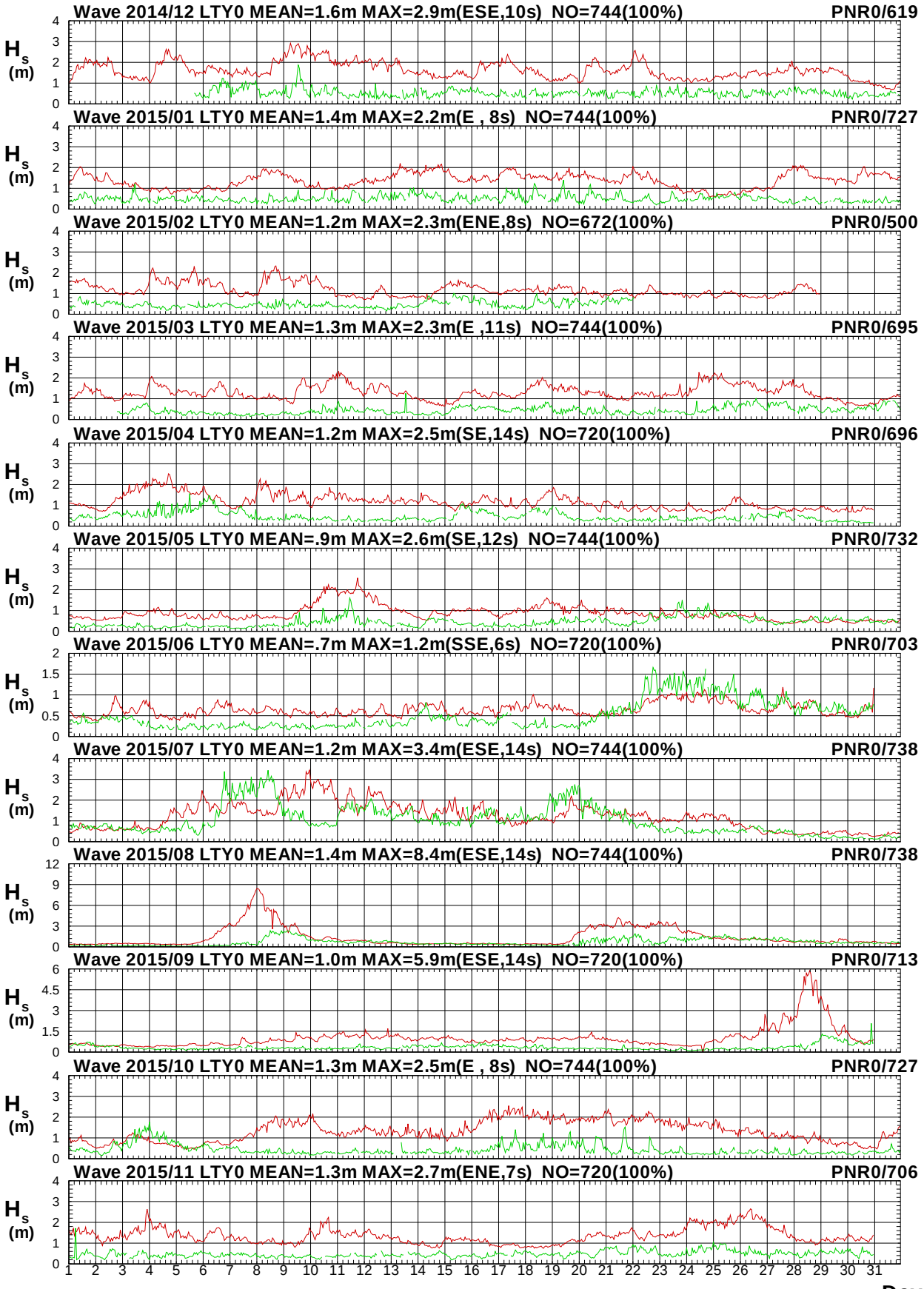


圖 5.7a　2015年每月臺東海域 Y 站與屏東海域 R 站波高圖

V14CLTY0.1HA V14CPNR0.1H0 V151LTY0.1HA V151PNR0.1H0 V152LTY0.1HA V152PNR0.1H0
V153LTY0.1HA V153PNR0.1H0 V154LTY0.1HA V154PNR0.1H0 V155LTY0.1HA V155PNR0.1H0

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Wave T_p in Ta-Tung Seas of LTY0 at 2015

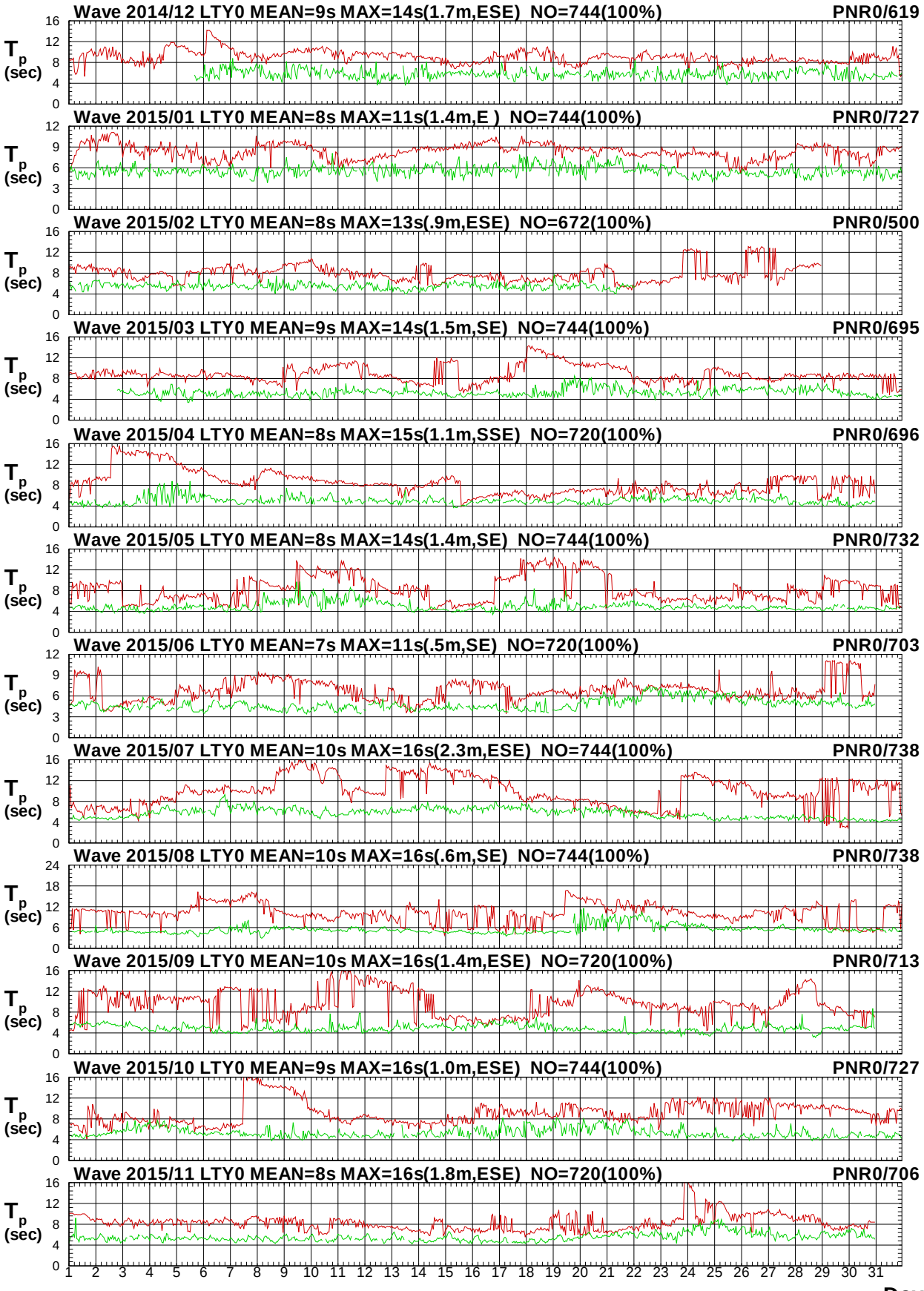


圖 5.7b　2015年每月臺東海域 Y 站與屏東海域 R 站週期圖

V14CLTY0.1HA V14CPNR0.1H0 V151LTY0.1HA V151PNR0.1H0 V152LTY0.1HA V152PNR0.1H0
V153LTY0.1HA V153PNR0.1H0 V154LTY0.1HA V154PNR0.1H0 V155LTY0.1HA V155PNR0.1H0

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Wave Direction in Ta-Tung Seas of LTY0 at 2015

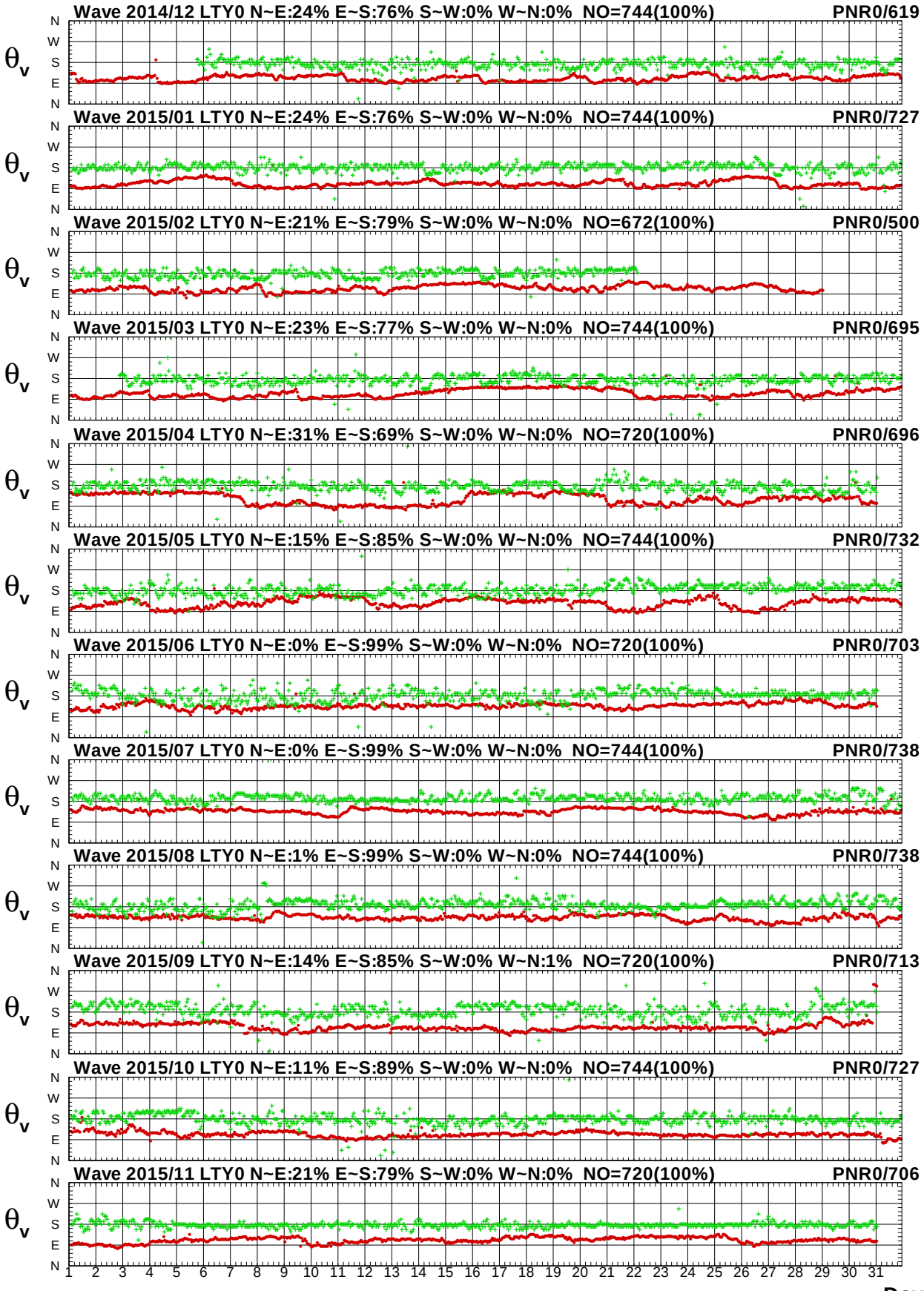


圖 5.7c　2015年每月臺東海域 Y 站與屏東海域 R 站波向圖

V14CLTY0.1HA V14CPNR0.1H0 V151LTY0.1HA V151PNR0.1H0 V152LTY0.1HA V152PNR0.1H0
V153LTY0.1HA V153PNR0.1H0 V154LTY0.1HA V154PNR0.1H0 V155LTY0.1HA V155PNR0.1H0

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第六章　2015 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**，2015 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，2015 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 2015 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	2003/11-2015/11(觀測中)	中央氣象局	小琉球浮標站
Z	21°54'01"N	120°49'21"E	2000/10-2015/11(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	2003/11-2015/11(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 2015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				
2014/12月	732 (98.4%)	736 (98.9%)	619 (83.2%)	*	*	*	*	*
2015/ 1月	731 (98.3%)	731 (98.3%)	727 (97.7%)	*	*	*	*	*
2015/ 2月	669 (99.6%)	630 (93.8%)	500 (74.4%)	*	*	*	*	*
2015/ 3月	740 (99.5%)	708 (95.2%)	695 (93.4%)	*	*	*	*	*
2015/ 4月	697 (96.8%)	702 (97.5%)	696 (96.7%)	*	*	*	*	*
2015/ 5月	739 (99.3%)	739 (99.3%)	732 (98.4%)	*	*	*	*	*
2015/ 6月	714 (99.2%)	718 (99.7%)	703 (97.6%)	*	*	*	*	*
2015/ 7月	737 (99.1%)	728 (97.8%)	738 (99.2%)	*	*	*	*	*
2015/ 8月	729 (98.0%)	737 (99.1%)	738 (99.2%)	*	*	*	*	*
2015/ 9月	704 (97.8%)	717 (99.6%)	713 (99.0%)	*	*	*	*	*
2015/10月	715 (96.1%)	743 (99.9%)	727 (97.7%)	*	*	*	*	*
2015/11月	708 (98.3%)	716 (99.4%)	706 (98.1%)	*	*	*	*	*
2015/冬季	2132 (98.7%)	2097 (97.1%)	1846 (85.5%)	*	*	*	*	*
2015/春季	2176 (98.6%)	2149 (97.3%)	2123 (96.2%)	*	*	*	*	*
2015/夏季	2180 (98.7%)	2183 (98.9%)	2179 (98.7%)	*	*	*	*	*
2015/秋季	2127 (97.4%)	2176 (99.6%)	2146 (98.3%)	*	*	*	*	*
2015/整年	8615 (98.3%)	8605 (98.2%)	8294 (94.7%)	*	*	*	*	*
起始年月	2014/12	2014/12	2014/12	*	*	*	*	*
結束年月	2015/11	2015/11	2015/11	*	*	*	*	*

表6.1b 2015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				
2014/12月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	672 (100%)	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	2160 (100%)	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	2184 (100%)	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	8760 (100%)	*	*	*	*	*
起始年月	2014/12	2014/12	2014/12	*	*	*	*	*
結束年月	2015/11	2015/11	2015/11	*	*	*	*	*

Wave H_s in Peng-Tung Seas of PNY0 at 2015

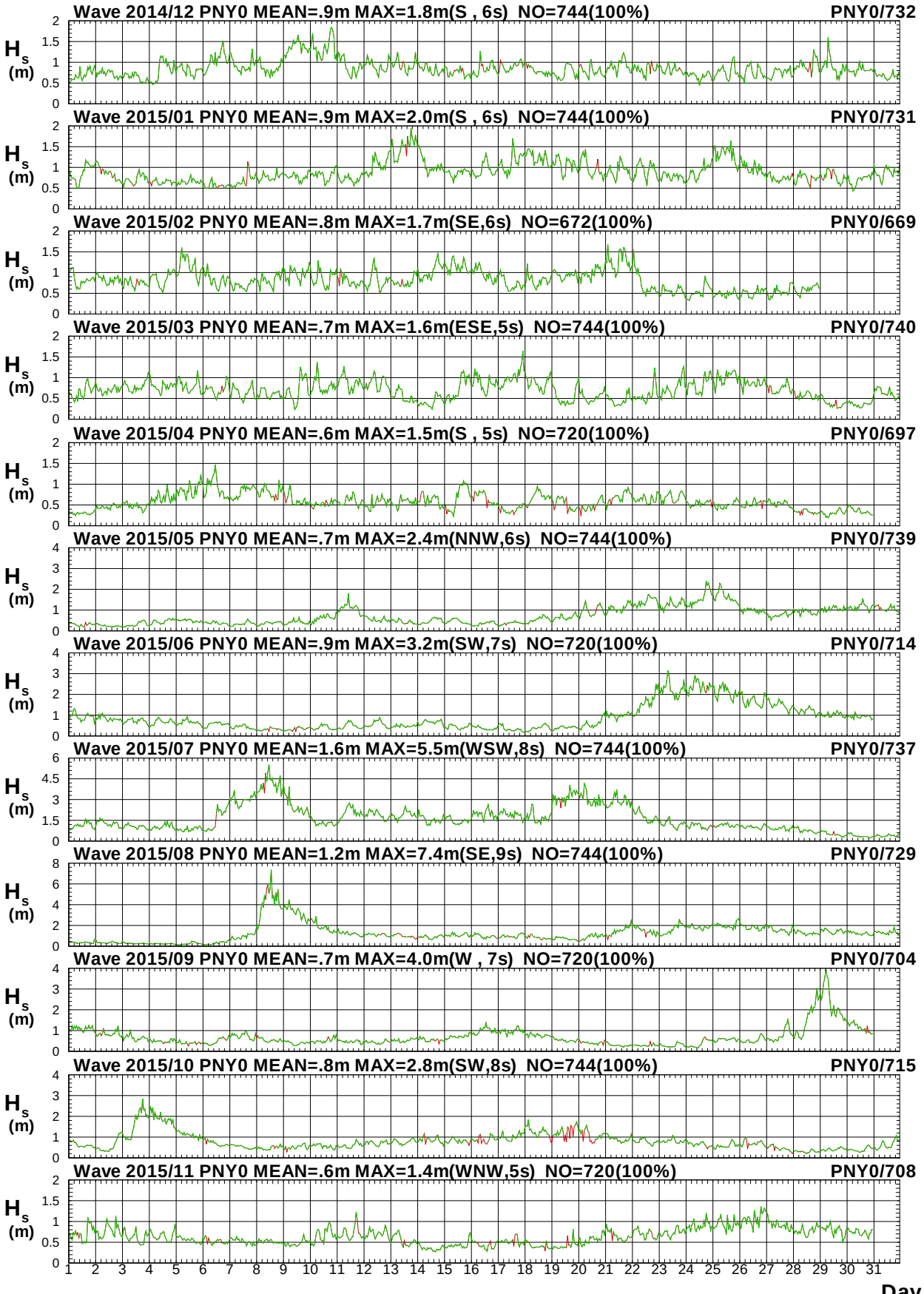


圖 6.1a　2015年每月屏東海域 Y 站修補前後之波高比較圖

V14CPNY0.1HA V14CPNY0.1H0 V151PNY0.1HA V151PNY0.1H0 V152PNY0.1HA V152PNY0.1H0
V153PNY0.1HA V153PNY0.1H0 V154PNY0.1HA V154PNY0.1H0 V155PNY0.1HA V155PNY0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

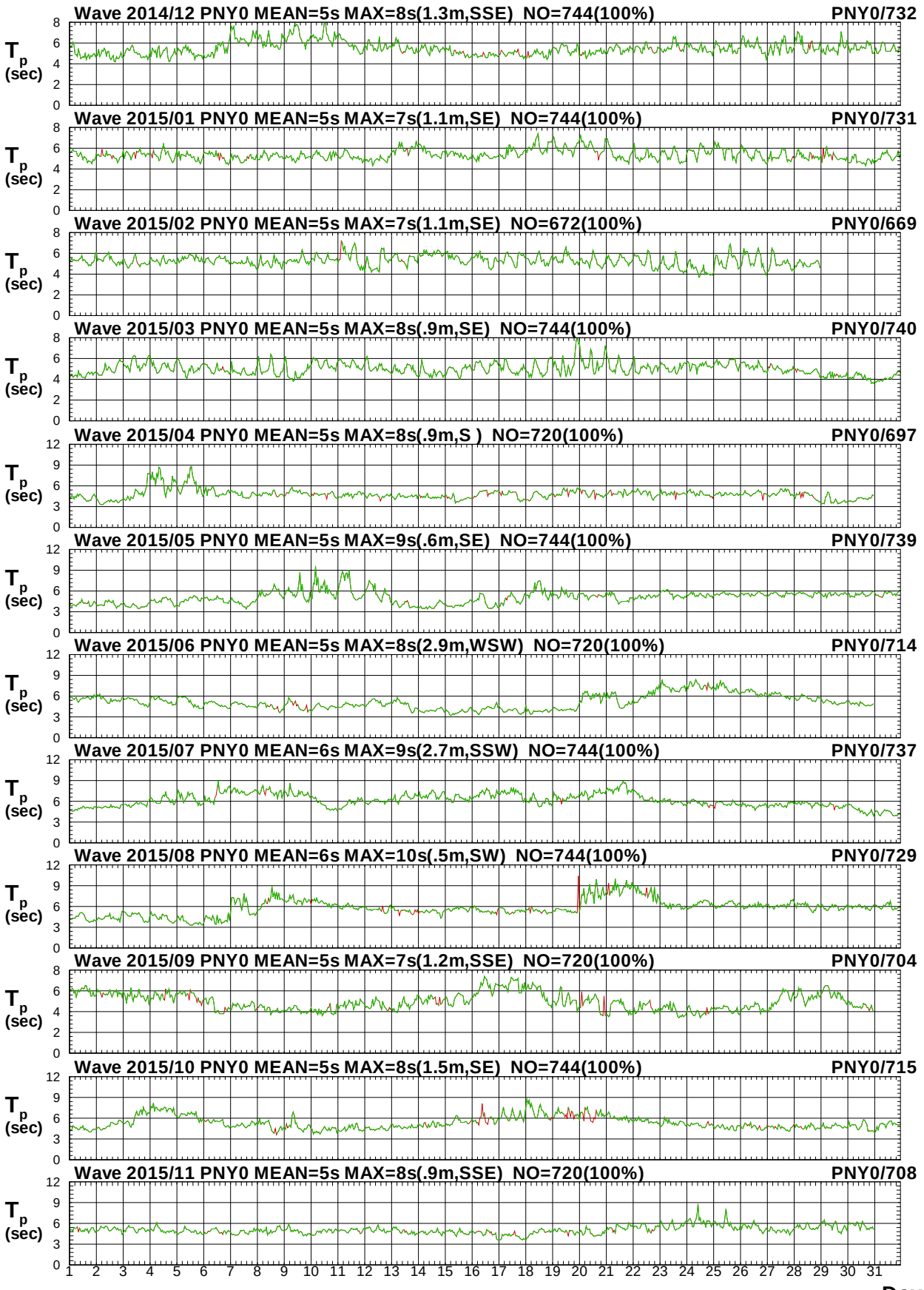


圖6.1b　2015年每月屏東海域 Y 站修補前後之週期比較圖

V14CPNY0.1HA V14CPNY0.1H0 V151PNY0.1HA V151PNY0.1H0 V152PNY0.1HA V152PNY0.1H0
V153PNY0.1HA V153PNY0.1H0 V154PNY0.1HA V154PNY0.1H0 V155PNY0.1HA V155PNY0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

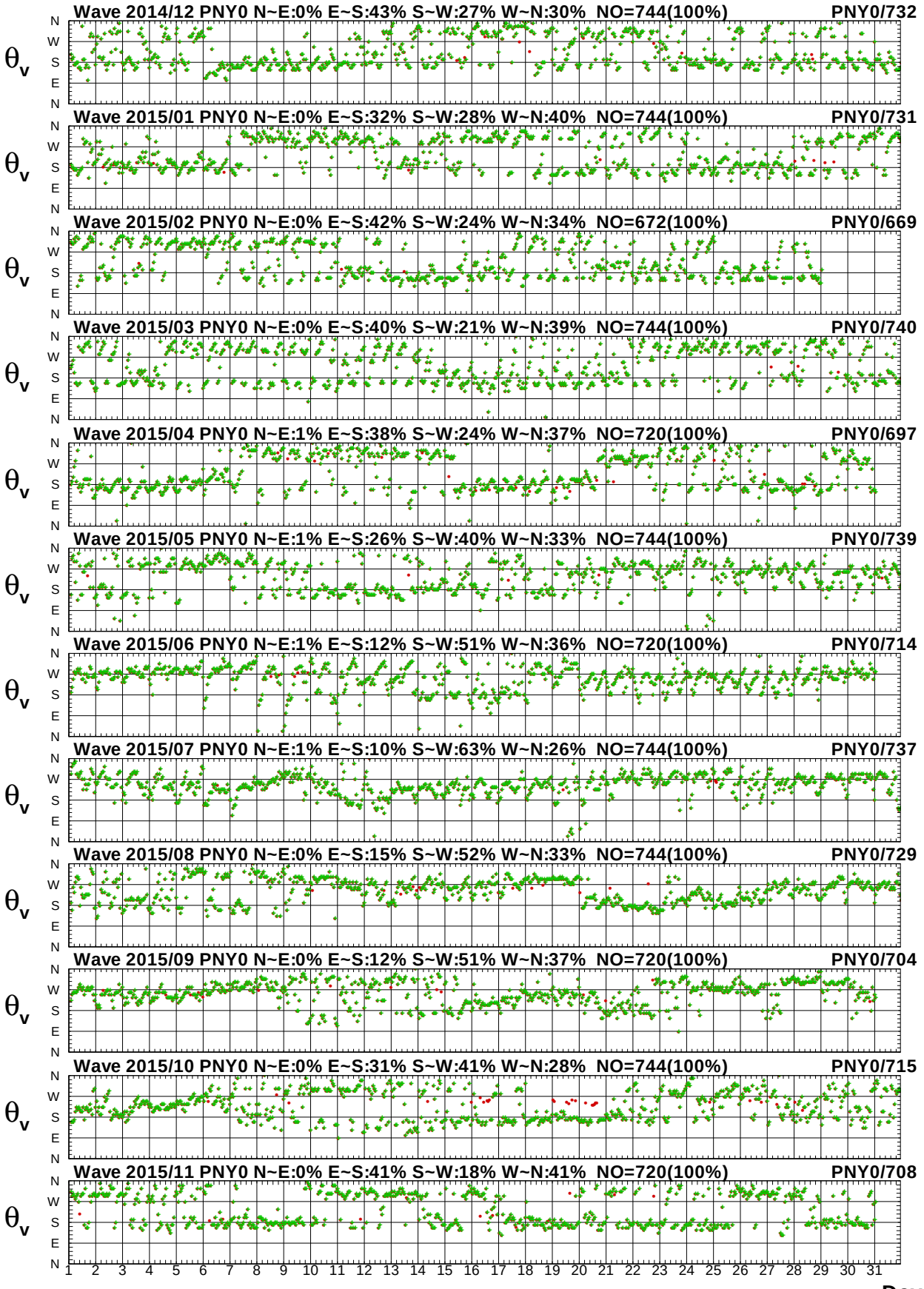


圖6.1c　2015年每月屏東海域 Y 站修補前後之波向比較圖

V14CPNY0.1HA V14CPNY0.1H0 V151PNY0.1HA V151PNY0.1H0 V152PNY0.1HA V152PNY0.1H0
V153PNY0.1HA V153PNY0.1H0 V154PNY0.1HA V154PNY0.1H0 V155PNY0.1HA V155PNY0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

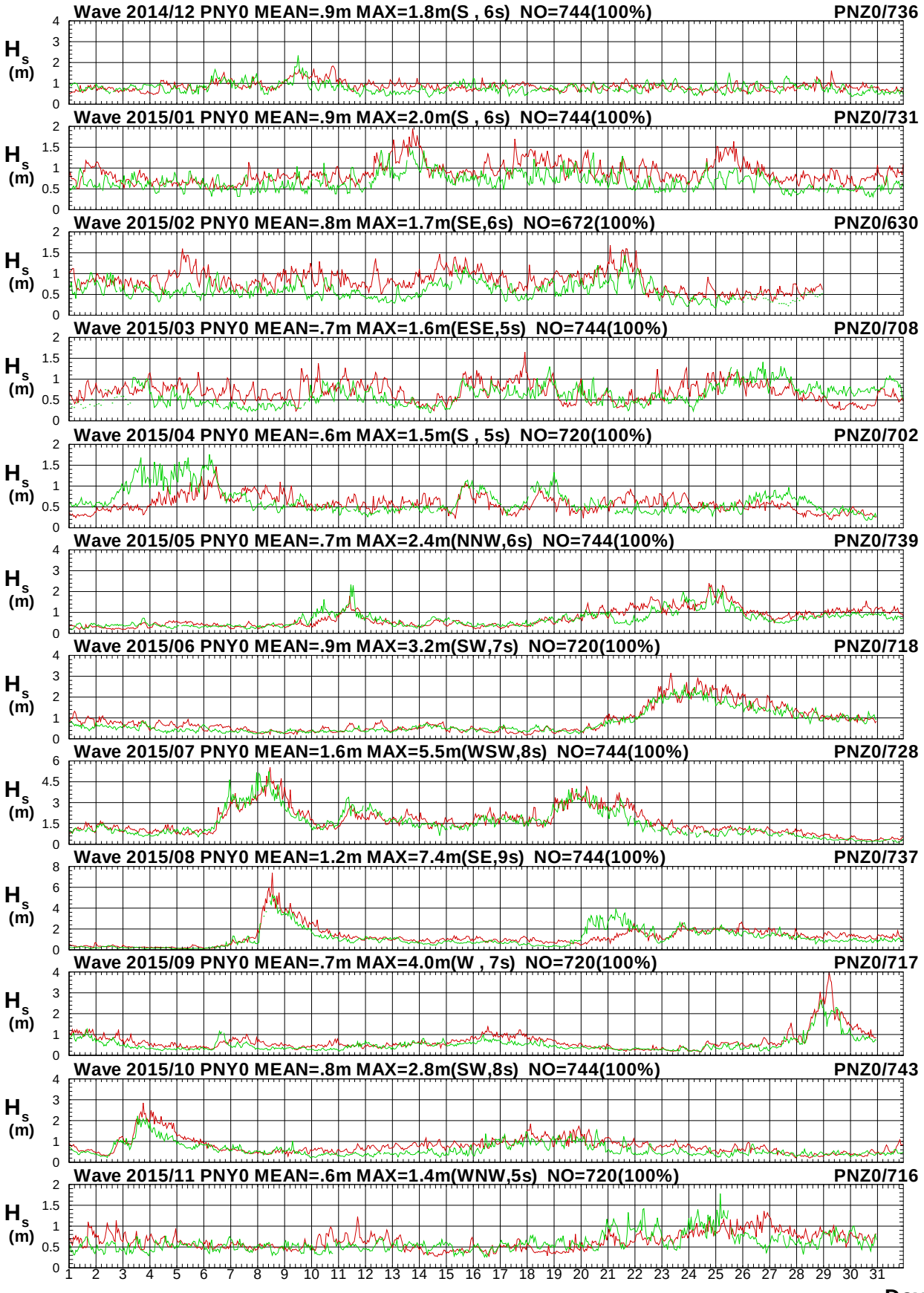


圖 6.2a　2015年每月屏東海域 Y 站與 Z 站波高比較圖

V14CPNY0.1HA V14CPNZ0.1H0 V151PNY0.1HA V151PNZ0.1H0 V152PNY0.1HA V152PNZ0.1H0
V153PNY0.1HA V153PNZ0.1H0 V154PNY0.1HA V154PNZ0.1H0 V155PNY0.1HA V155PNZ0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

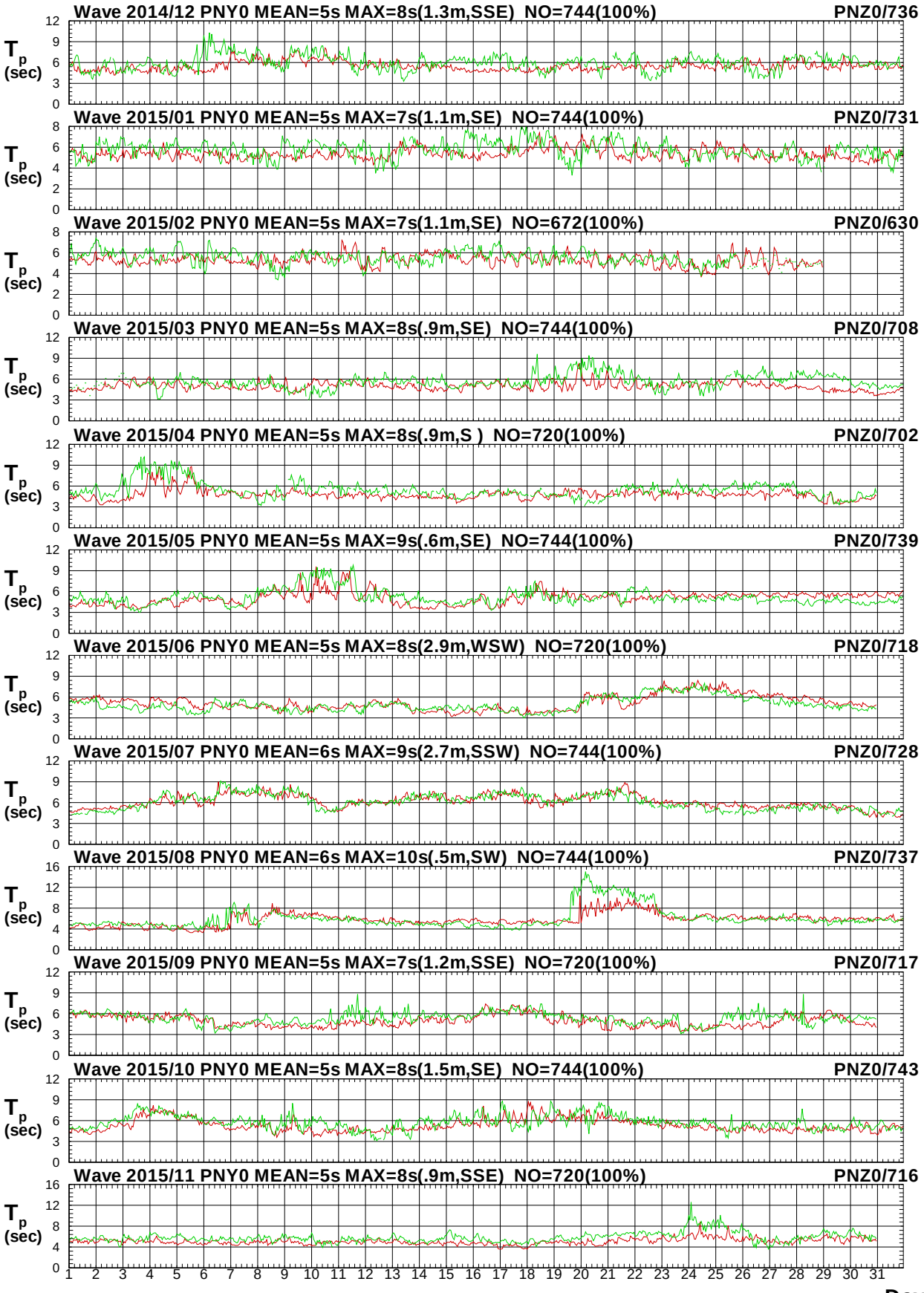


圖 6.2b　2015年每月屏東海域 Y 站與 Z 站週期比較圖

V14CPNY0.1HA V14CPNZ0.1H0 V151PNY0.1HA V151PNZ0.1H0 V152PNY0.1HA V152PNZ0.1H0
V153PNY0.1HA V153PNZ0.1H0 V154PNY0.1HA V154PNZ0.1H0 V155PNY0.1HA V155PNZ0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

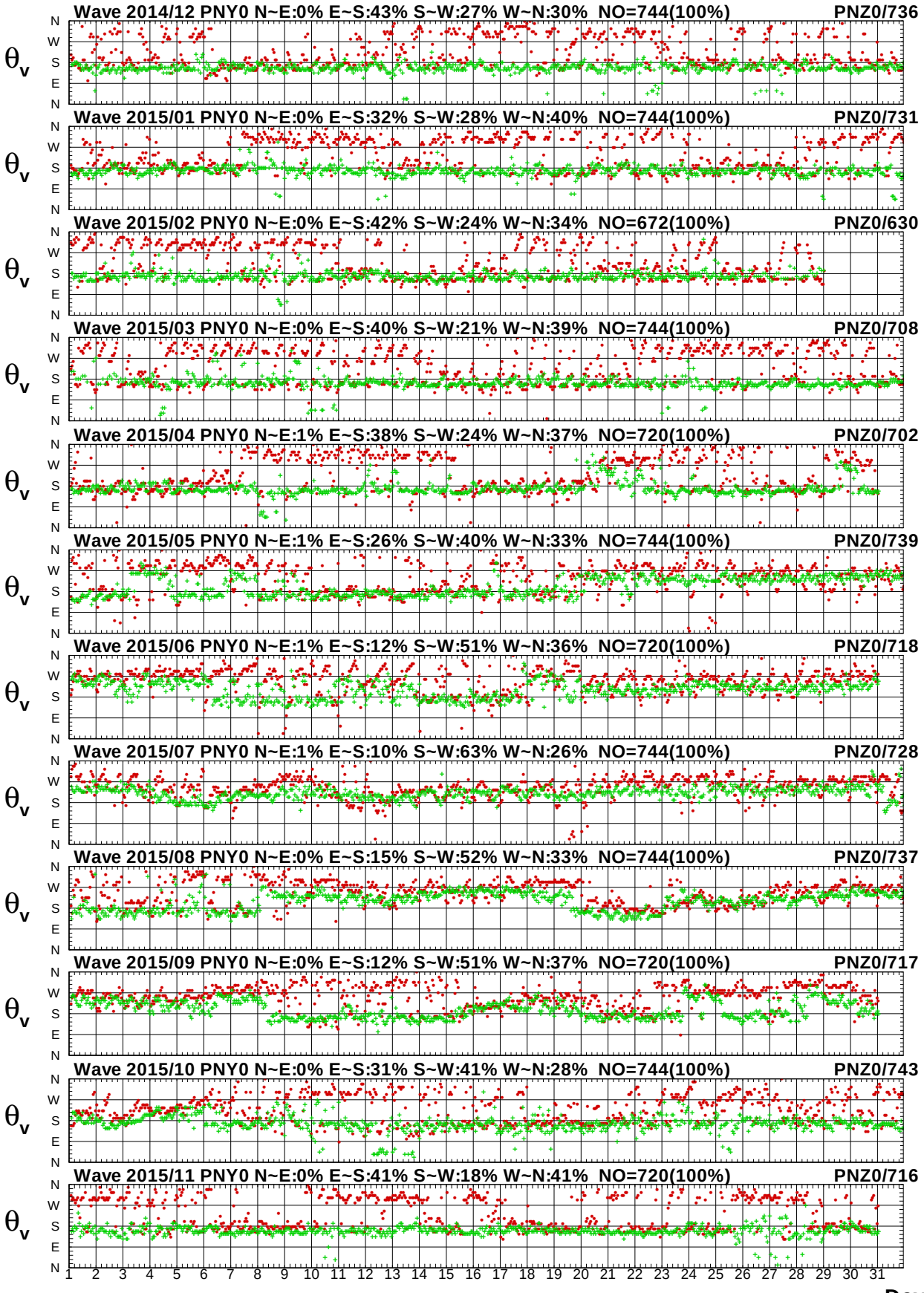


圖6.2c　2015年每月屏東海域 Y 站與 Z 站波向比較圖

V14CPNY0.1HA V14CPNZ0.1H0 V151PNY0.1HA V151PNZ0.1H0 V152PNY0.1HA V152PNZ0.1H0
V153PNY0.1HA V153PNZ0.1H0 V154PNY0.1HA V154PNZ0.1H0 V155PNY0.1HA V155PNZ0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

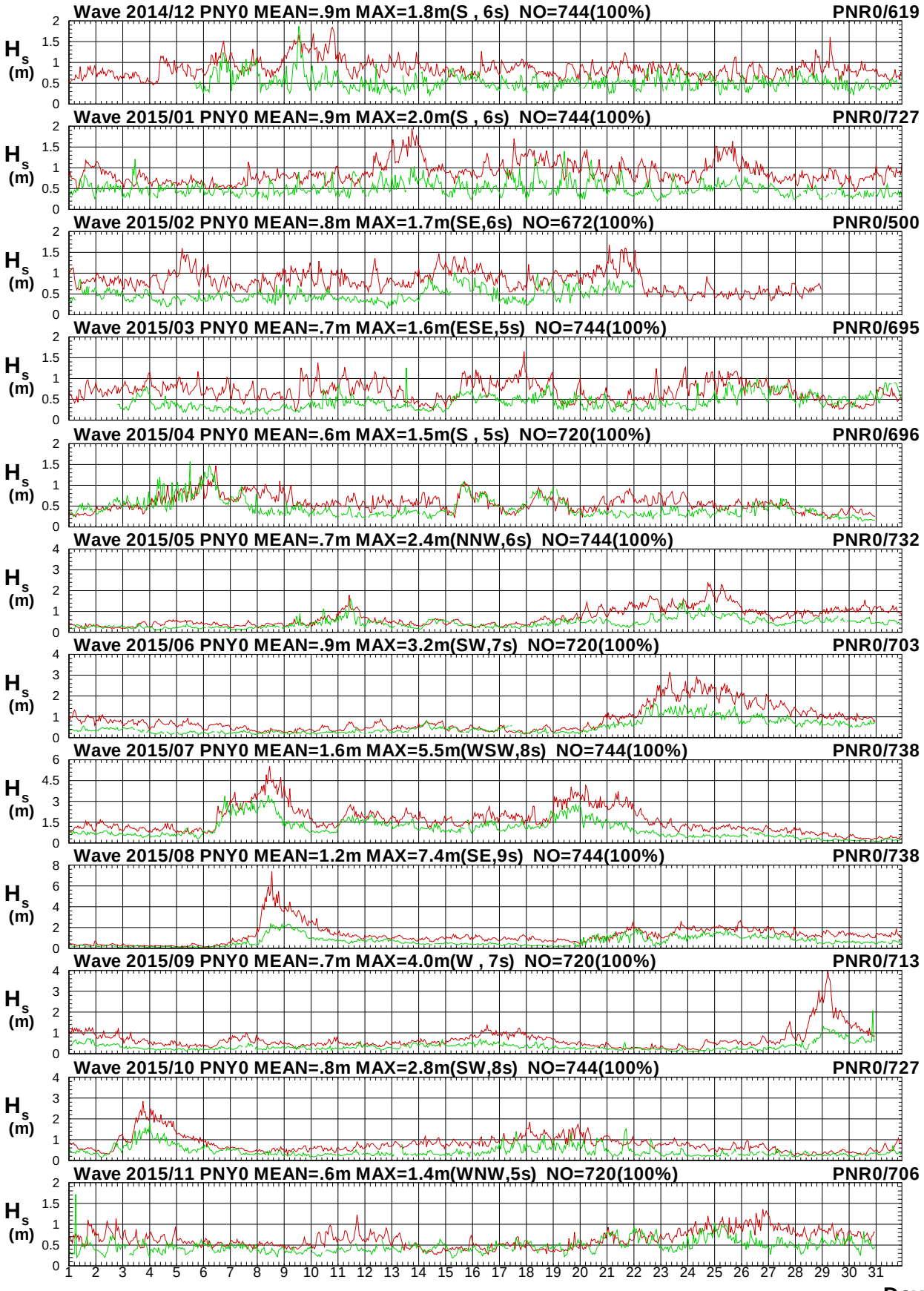


圖 6.3a　2015年每月屏東海域 Y 站與 R 站波高比較圖

V14CPNY0.1HA V14CPNR0.1H0 V151PNY0.1HA V151PNR0.1H0 V152PNY0.1HA V152PNR0.1H0
V153PNY0.1HA V153PNR0.1H0 V154PNY0.1HA V154PNR0.1H0 V155PNY0.1HA V155PNR0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

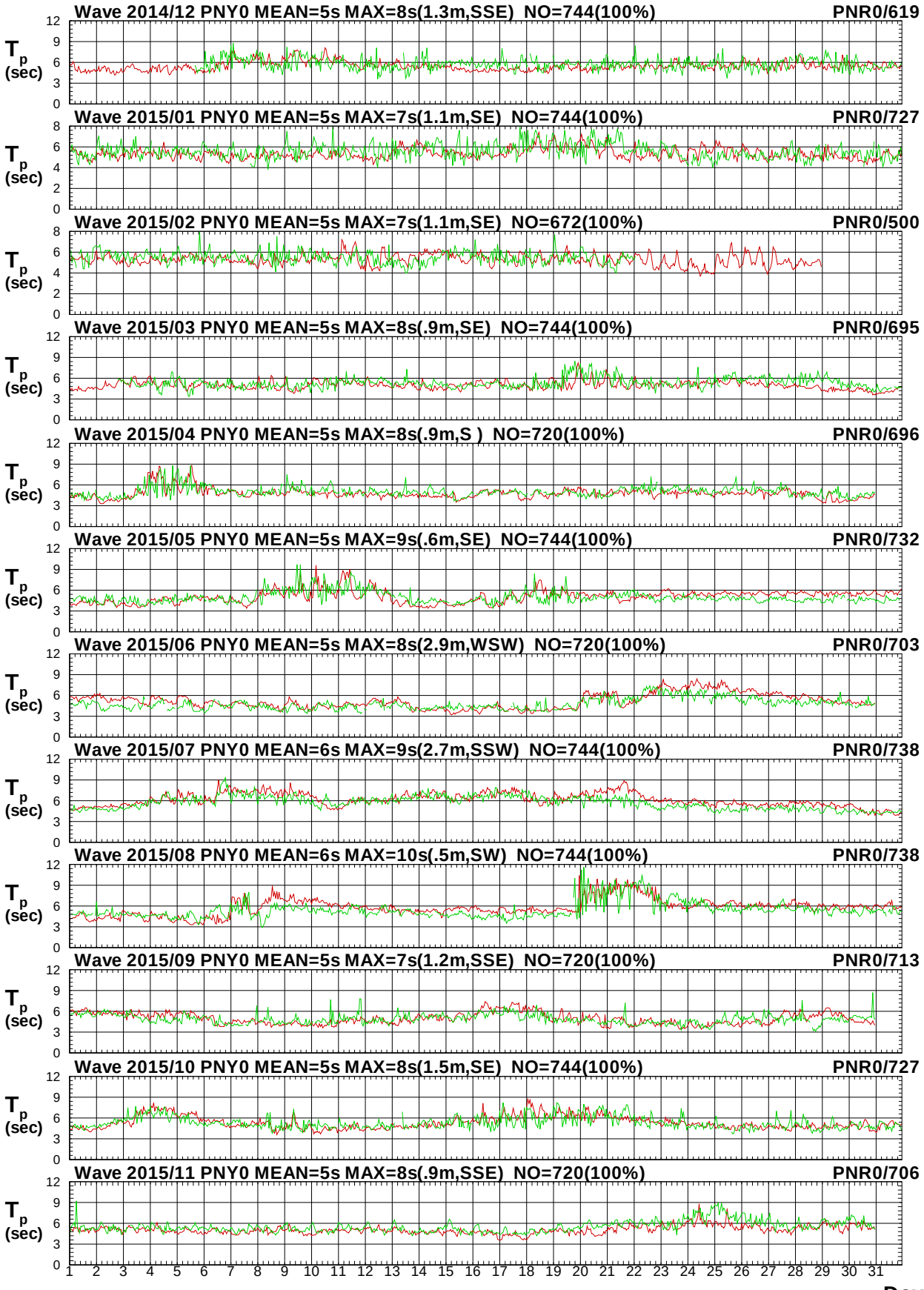


圖 6.3b　2015年每月屏東海域 Y 站與 R 站週期比較圖

V14CPNY0.1HA V14CPNR0.1H0 V151PNY0.1HA V151PNR0.1H0 V152PNY0.1HA V152PNR0.1H0
V153PNY0.1HA V153PNR0.1H0 V154PNY0.1HA V154PNR0.1H0 V155PNY0.1HA V155PNR0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

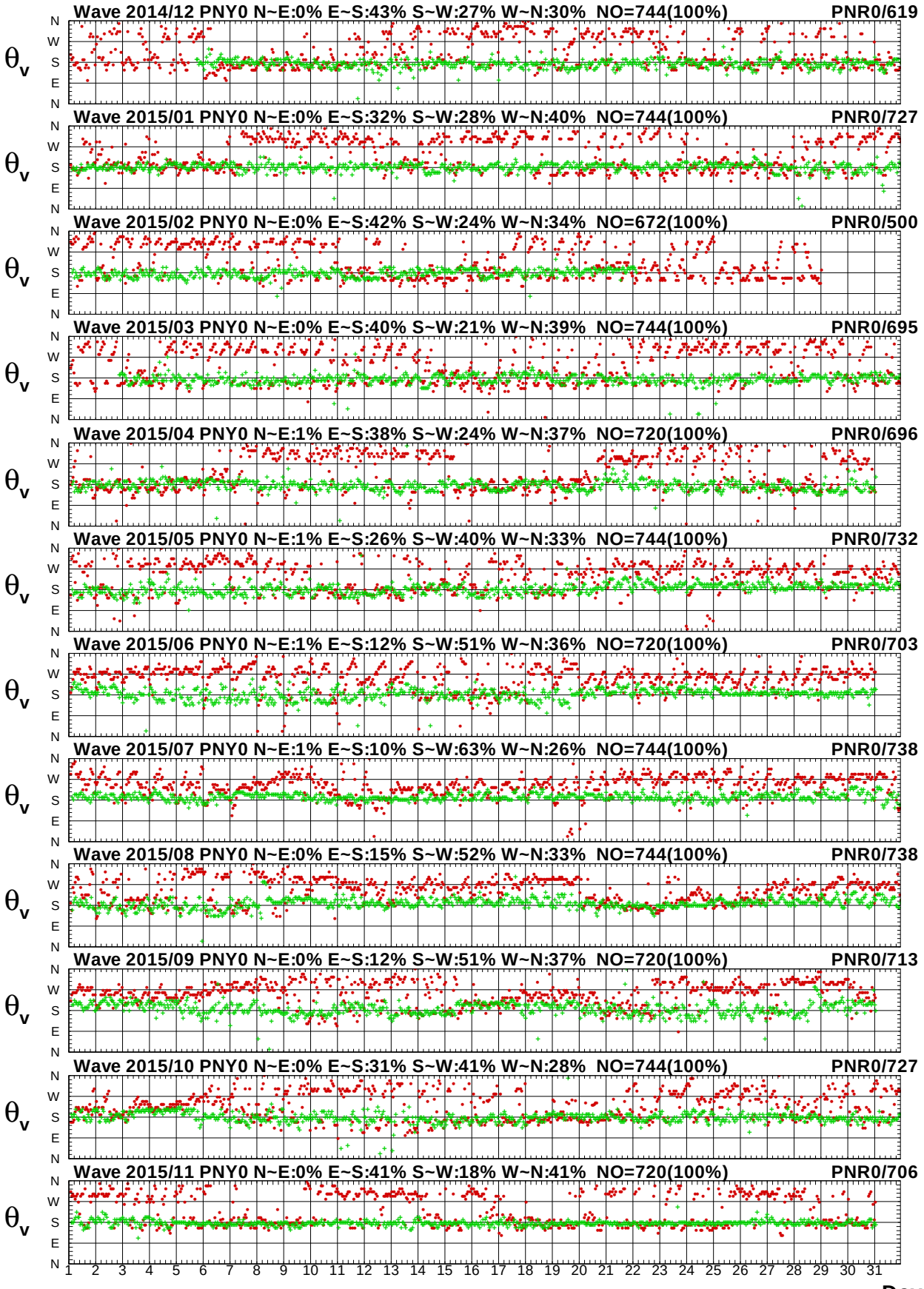


圖 6.3c　2015年每月屏東海域 Y 站與 R 站波向比較圖

V14CPNY0.1HA V14CPNR0.1H0 V151PNY0.1HA V151PNR0.1H0 V152PNY0.1HA V152PNR0.1H0
V153PNY0.1HA V153PNR0.1H0 V154PNY0.1HA V154PNR0.1H0 V155PNY0.1HA V155PNR0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

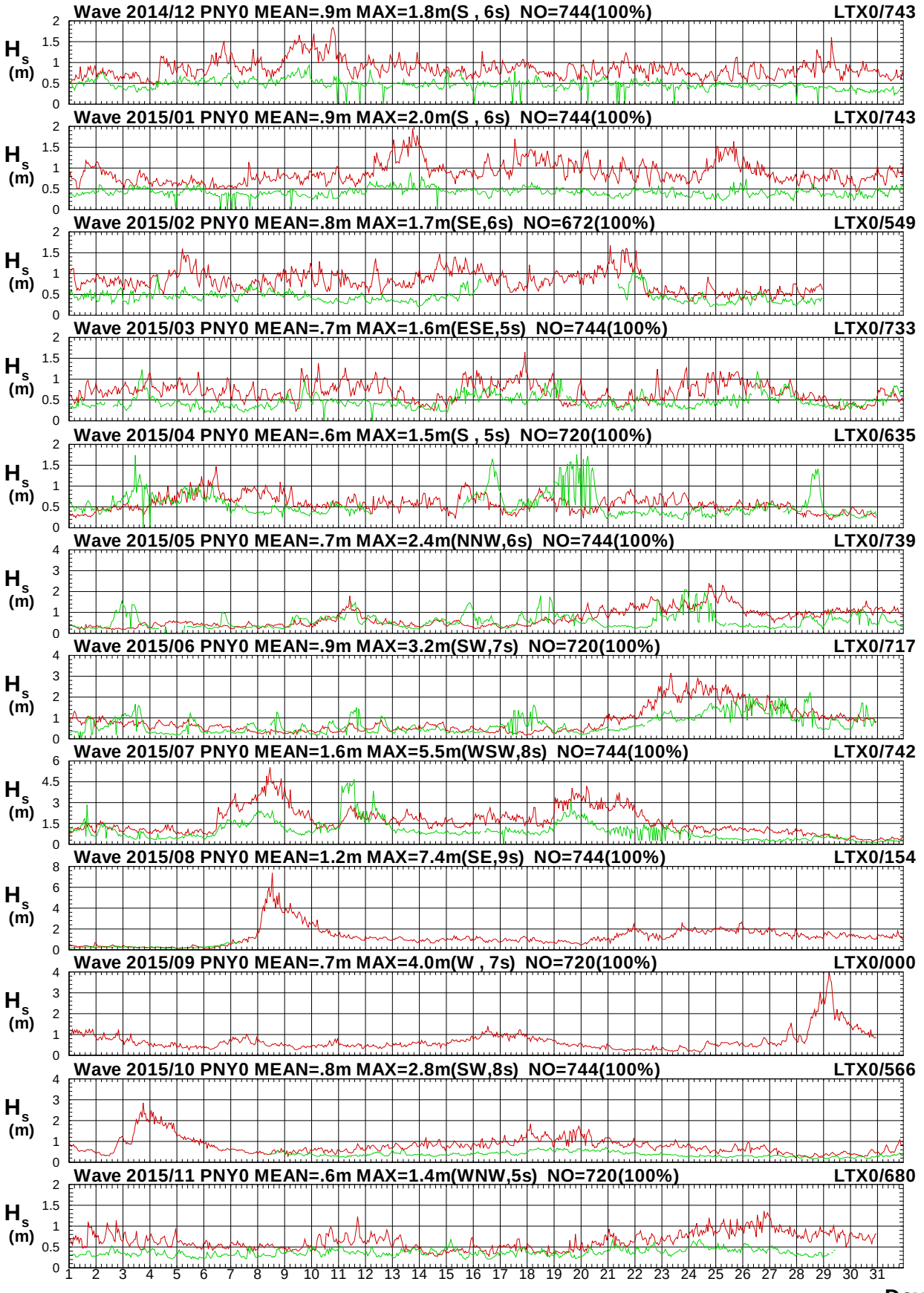


圖 6.4a　2015年每月屏東海域 Y 站與臺東海域 X 站波高圖

V14CPNY0.1HA V14CLTX0.1H0 V151PNY0.1HA V151LTX0.1H0 V152PNY0.1HA V152LTX0.1H0
V153PNY0.1HA V153LTX0.1H0 V154PNY0.1HA V154LTX0.1H0 V155PNY0.1HA V155LTX0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

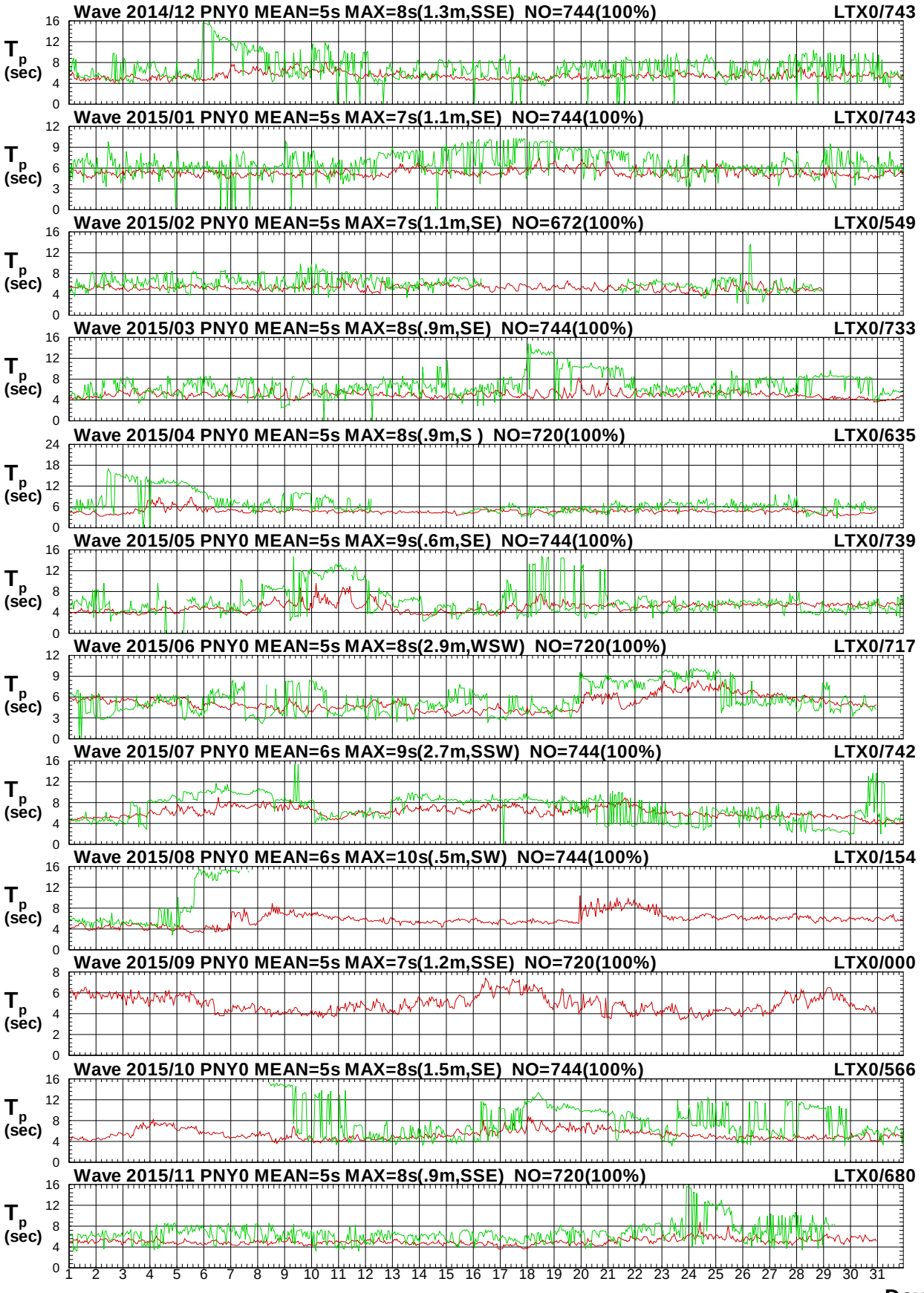


圖 6.4b　2015年每月屏東海域 Y 站與臺東海域 X 站週期圖

V14CPNY0.1HA V14CLTX0.1H0 V151PNY0.1HA V151LTX0.1H0 V152PNY0.1HA V152LTX0.1H0
V153PNY0.1HA V153LTX0.1H0 V154PNY0.1HA V154LTX0.1H0 V155PNY0.1HA V155LTX0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

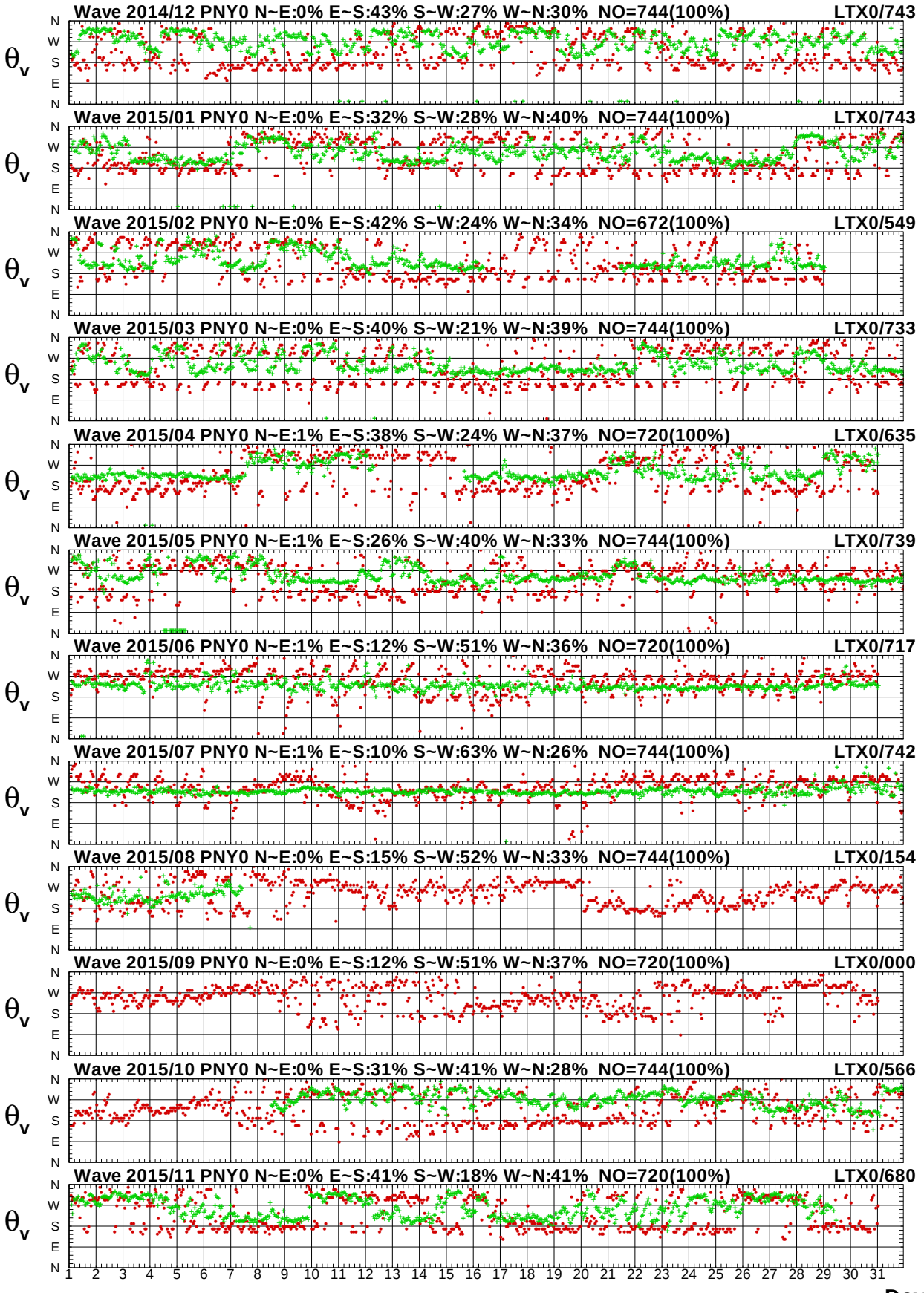


圖 6.4c　2015年每月屏東海域 Y 站與臺東海域 X 站波向圖

V14CPNY0.1HA V14CLTX0.1H0 V151PNY0.1HA V151LTX0.1H0 V152PNY0.1HA V152LTX0.1H0
V153PNY0.1HA V153LTX0.1H0 V154PNY0.1HA V154LTX0.1H0 V155PNY0.1HA V155LTX0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

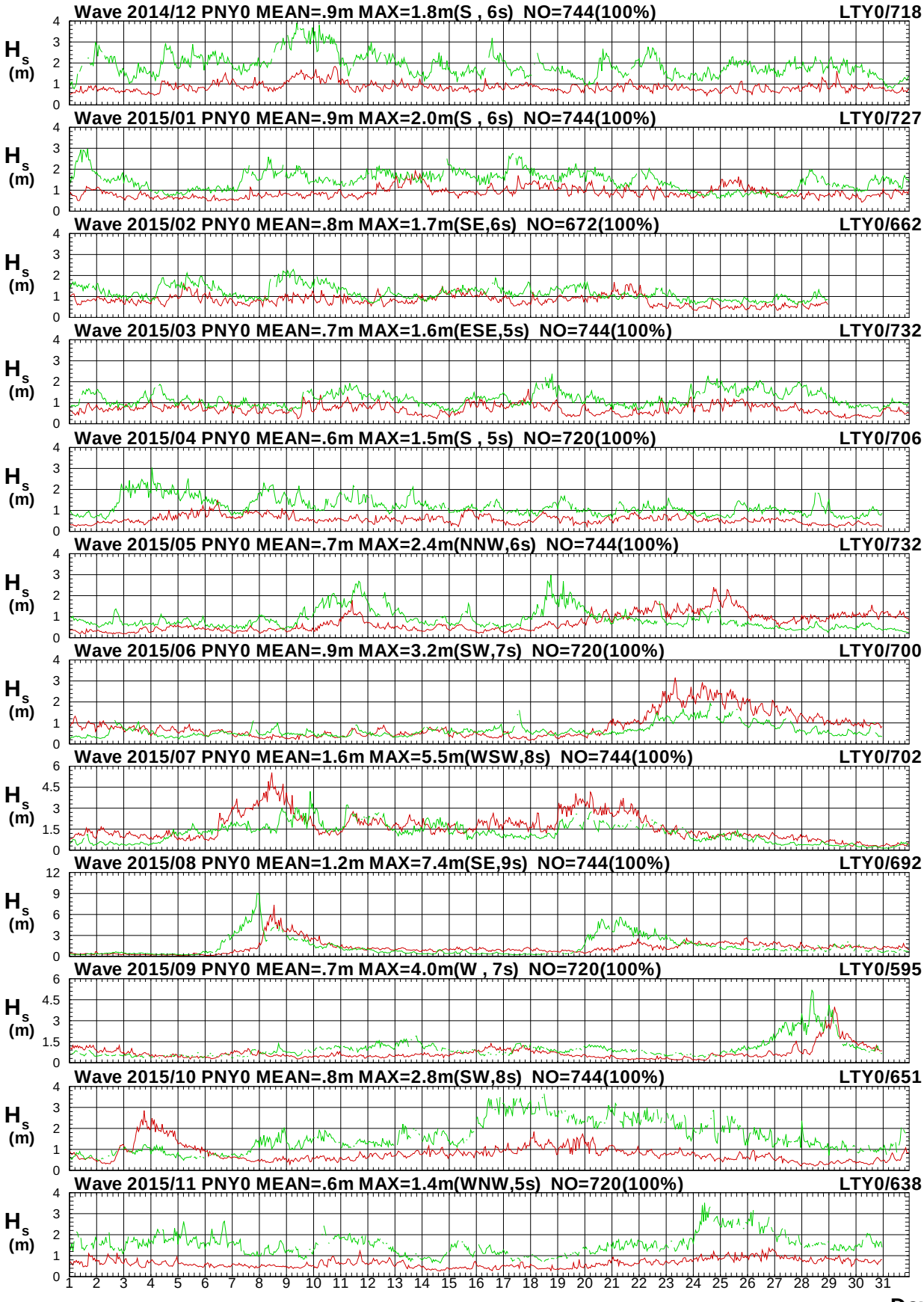


圖 6.5a　2015年每月屏東海域 Y 站與臺東海域 Y 站波高圖

V14CPNY0.1HA V14CLTY0.1H0 V151PNY0.1HA V151LTY0.1H0 V152PNY0.1HA V152LTY0.1H0
V153PNY0.1HA V153LTY0.1H0 V154PNY0.1HA V154LTY0.1H0 V155PNY0.1HA V155LTY0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

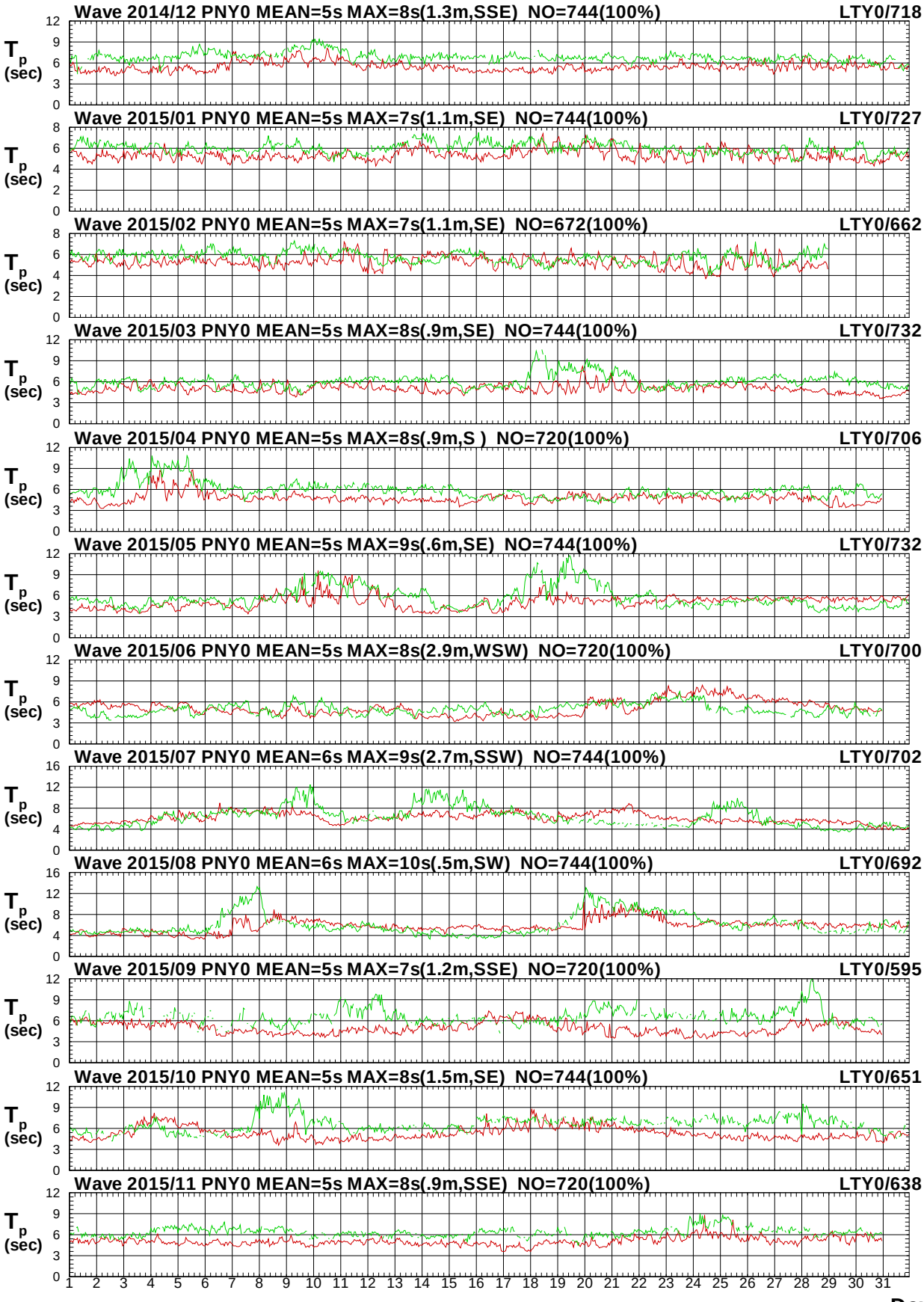


圖 6.5b　2015年每月屏東海域 Y 站與臺東海域 Y 站週期圖

V14CPNY0.1HA V14CLTY0.1H0 V151PNY0.1HA V151LTY0.1H0 V152PNY0.1HA V152LTY0.1H0
V153PNY0.1HA V153LTY0.1H0 V154PNY0.1HA V154LTY0.1H0 V155PNY0.1HA V155LTY0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

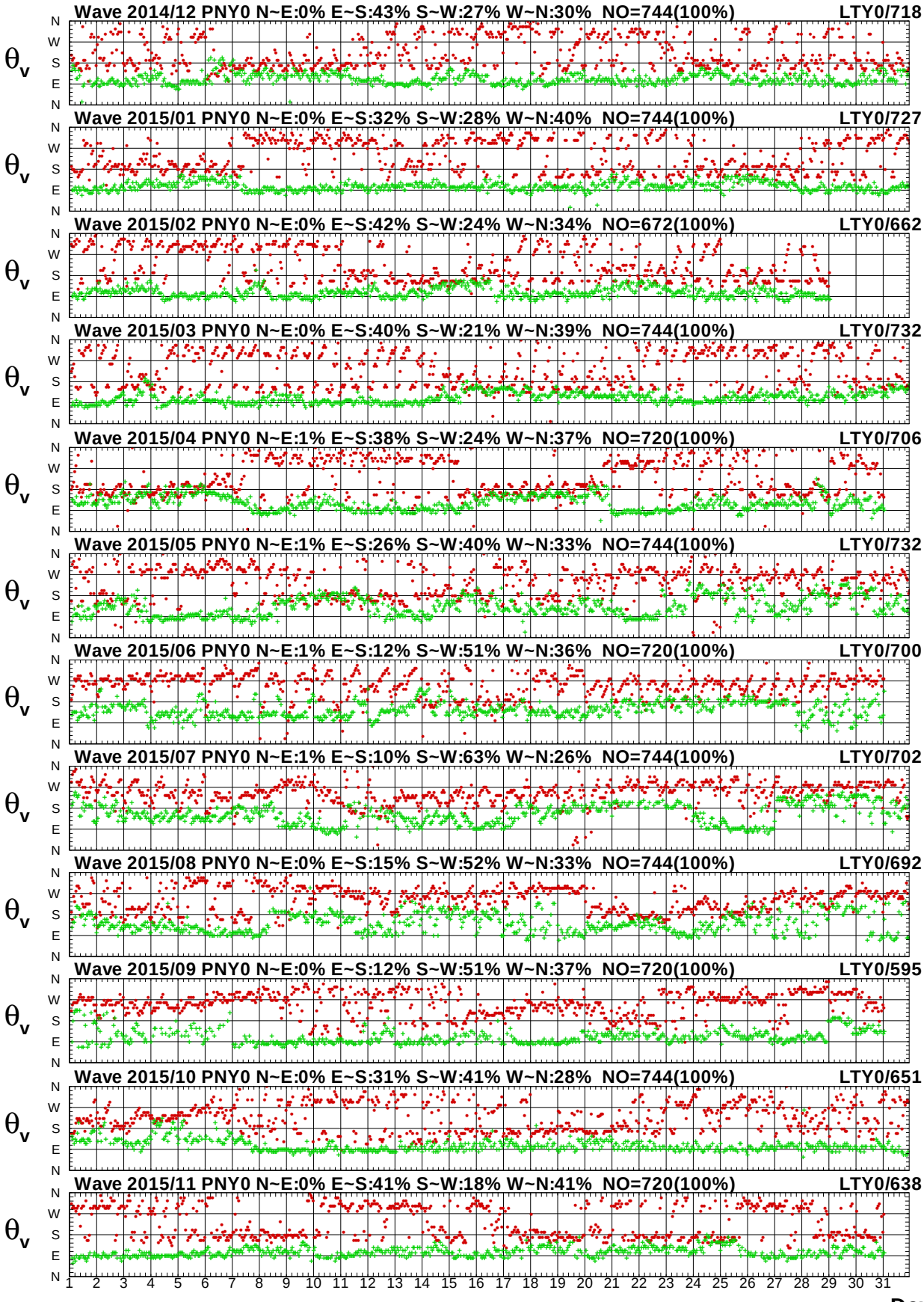


圖 6.5c　2015年每月屏東海域 Y 站與臺東海域 Y 站波向圖

V14CPNY0.1HA V14CLTY0.1H0 V151PNY0.1HA V151LTY0.1H0 V152PNY0.1HA V152LTY0.1H0
V153PNY0.1HA V153LTY0.1H0 V154PNY0.1HA V154LTY0.1H0 V155PNY0.1HA V155LTY0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

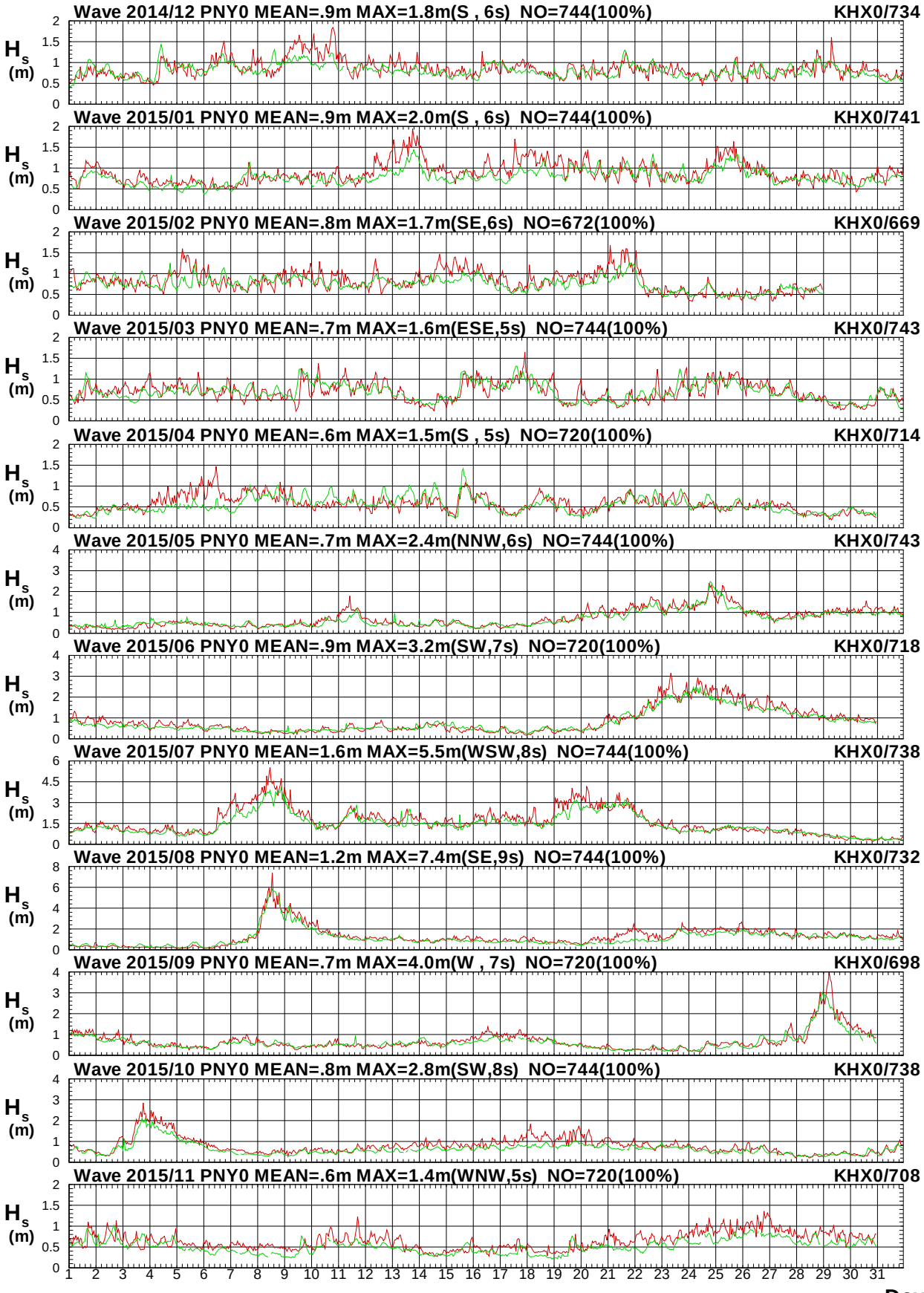


圖 6.6a　2015年每月屏東海域 Y 站與高雄海域 X 站波高圖

V14CPNY0.1HA V14CKHX0.1H0 V151PNY0.1HA V151KHX0.1H0 V152PNY0.1HA V152KHX0.1H0
V153PNY0.1HA V153KHX0.1H0 V154PNY0.1HA V154KHX0.1H0 V155PNY0.1HA V155KHX0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

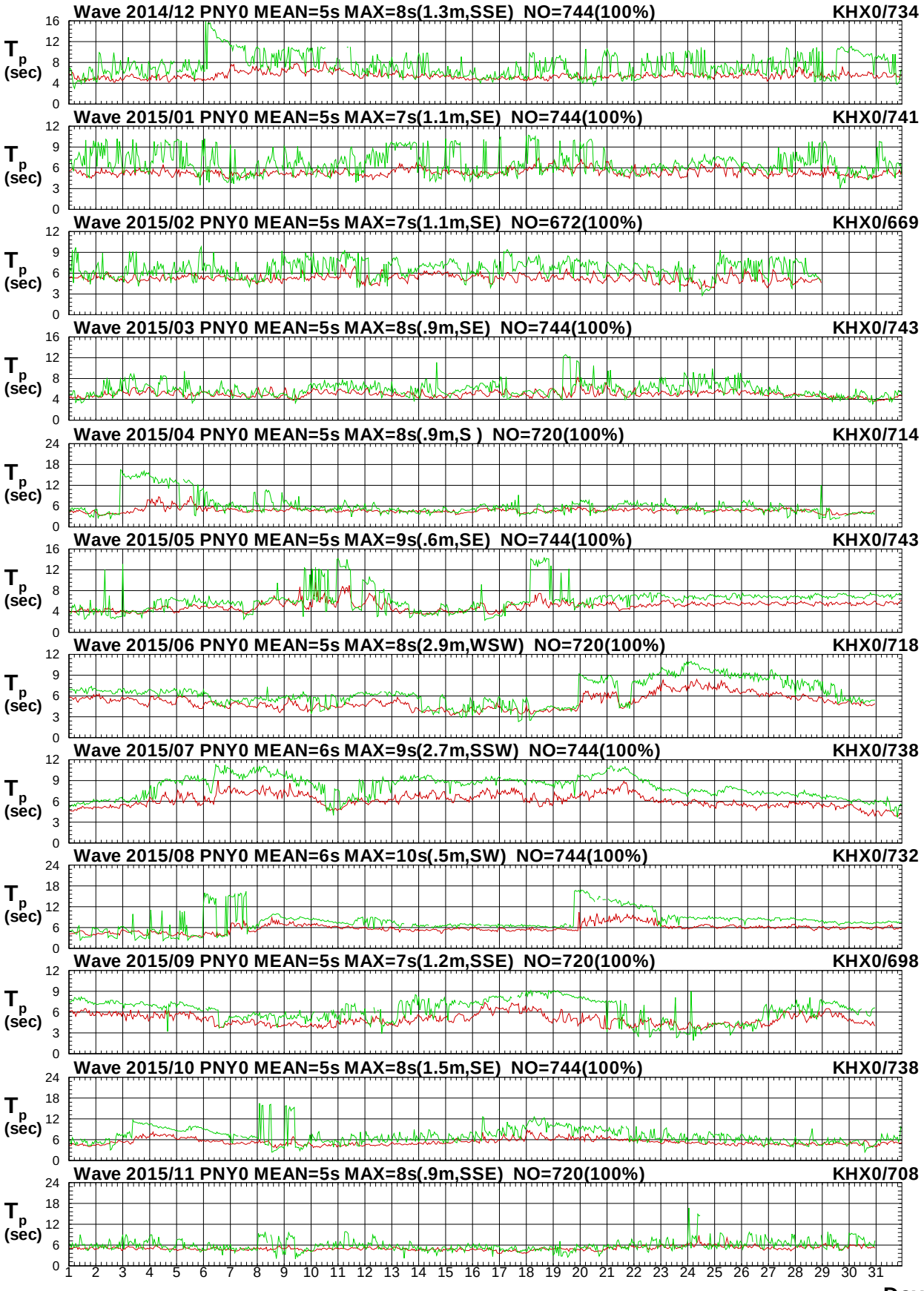


圖 6.6b　2015年每月屏東海域 Y 站與高雄海域 X 站週期圖

V14CPNY0.1HA V14CKHX0.1H0 V151PNY0.1HA V151KHX0.1H0 V152PNY0.1HA V152KHX0.1H0
V153PNY0.1HA V153KHX0.1H0 V154PNY0.1HA V154KHX0.1H0 V155PNY0.1HA V155KHX0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

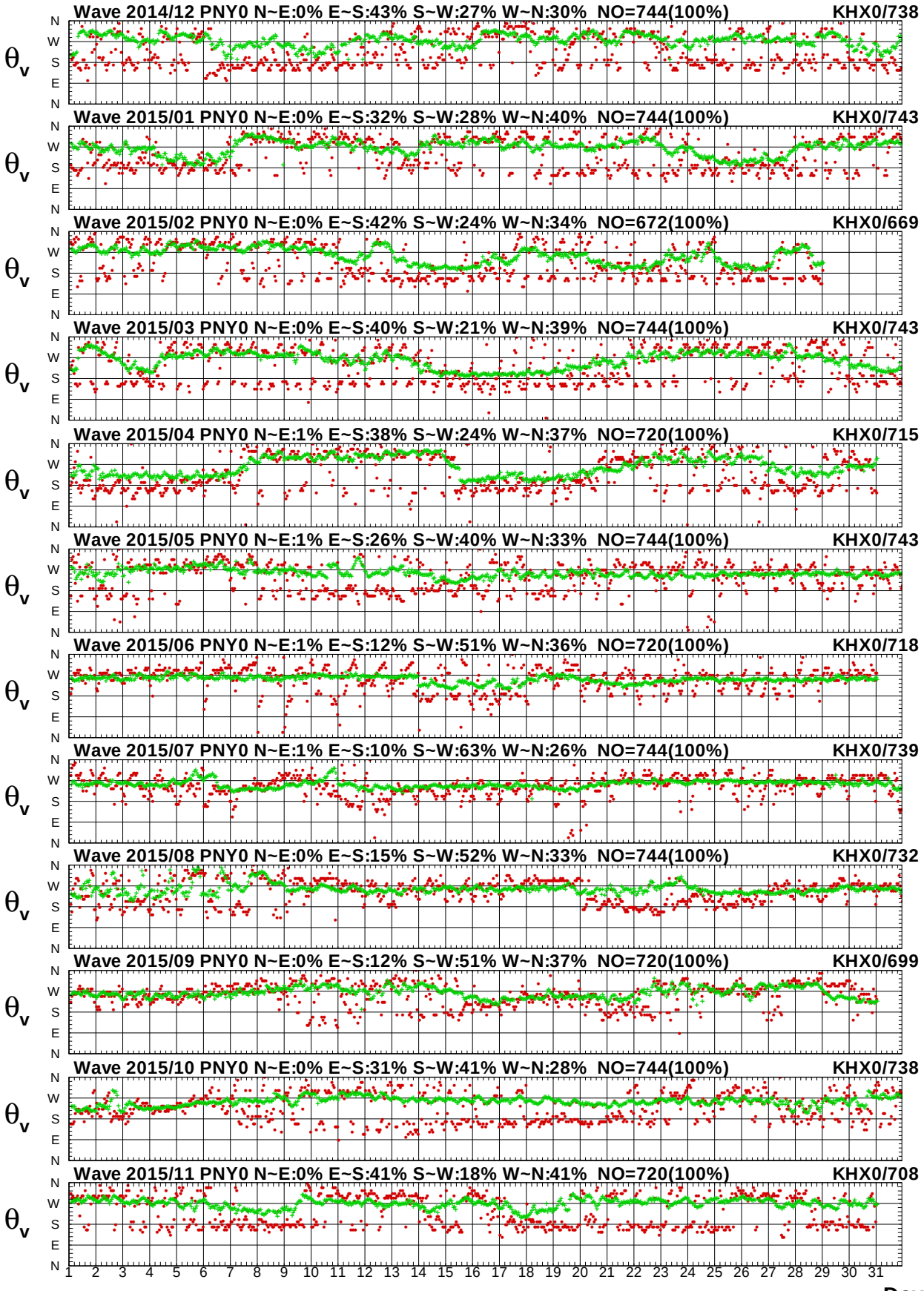


圖 6.6c　2015年每月屏東海域 Y 站與高雄海域 X 站波向圖

V14CPNY0.1HA V14CKHX0.1H0 V151PNY0.1HA V151KHX0.1H0 V152PNY0.1HA V152KHX0.1H0
V153PNY0.1HA V153KHX0.1H0 V154PNY0.1HA V154KHX0.1H0 V155PNY0.1HA V155KHX0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

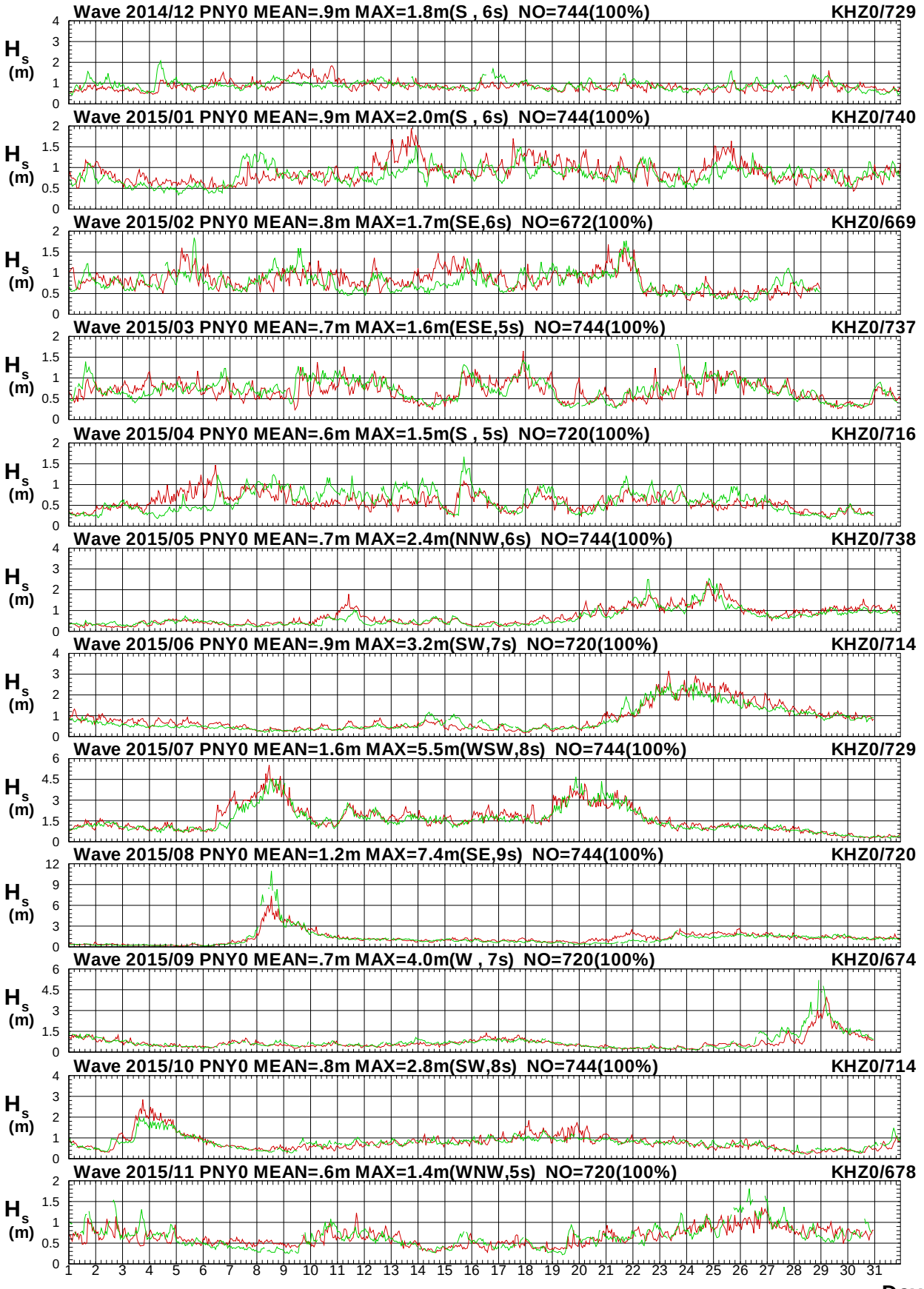


圖 6.7a　2015年每月屏東海域 Y 站與高雄海域 Z 站波高圖

V14CPNY0.1HA V14CKHZ0.1H0 V151PNY0.1HA V151KHZ0.1H0 V152PNY0.1HA V152KHZ0.1H0
V153PNY0.1HA V153KHZ0.1H0 V154PNY0.1HA V154KHZ0.1H0 V155PNY0.1HA V155KHZ0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

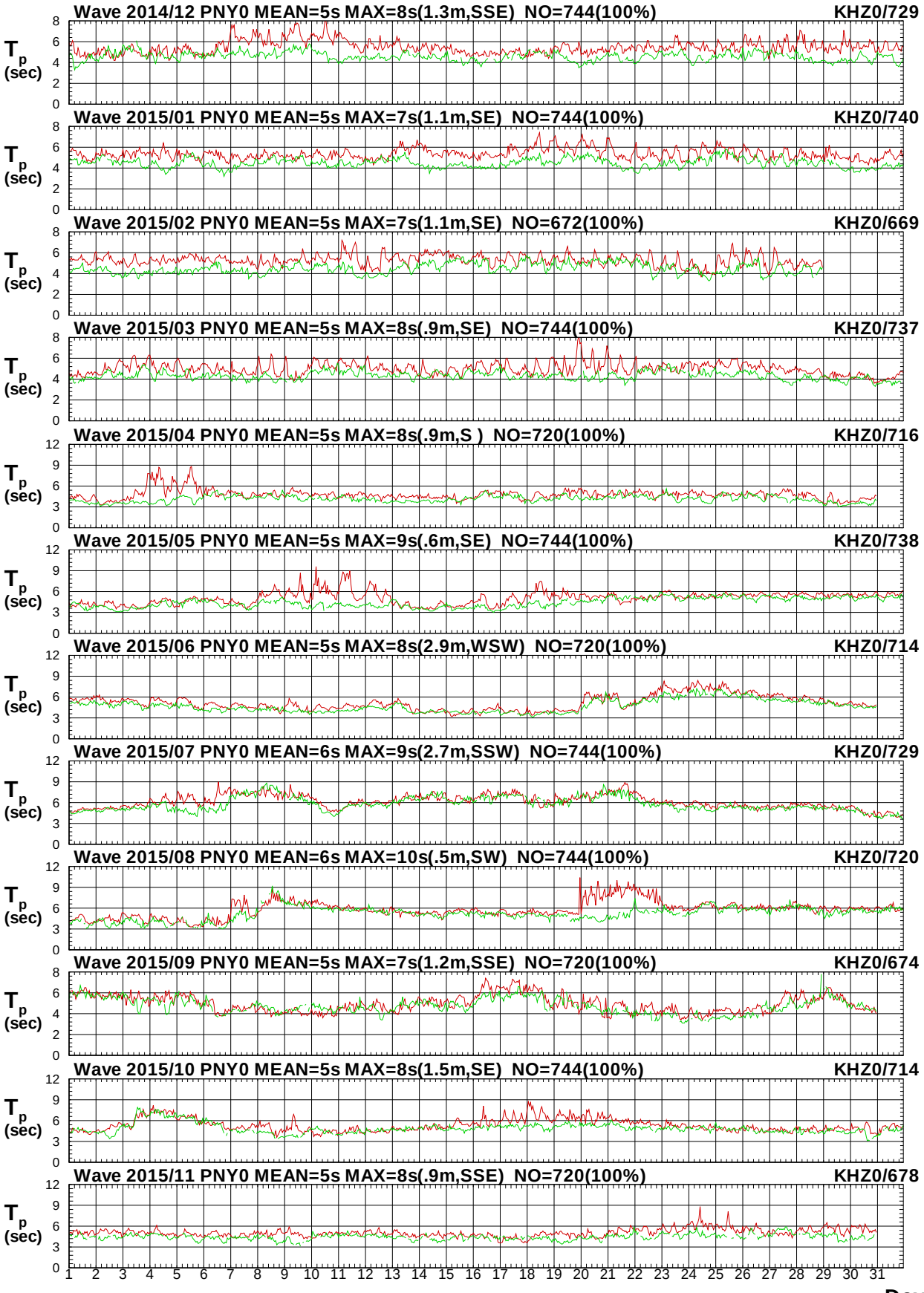


圖 6.7b　2015年每月屏東海域 Y 站與高雄海域 Z 站週期圖

V14CPNY0.1HA V14CKHZ0.1H0 V151PNY0.1HA V151KHZ0.1H0 V152PNY0.1HA V152KHZ0.1H0
V153PNY0.1HA V153KHZ0.1H0 V154PNY0.1HA V154KHZ0.1H0 V155PNY0.1HA V155KHZ0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

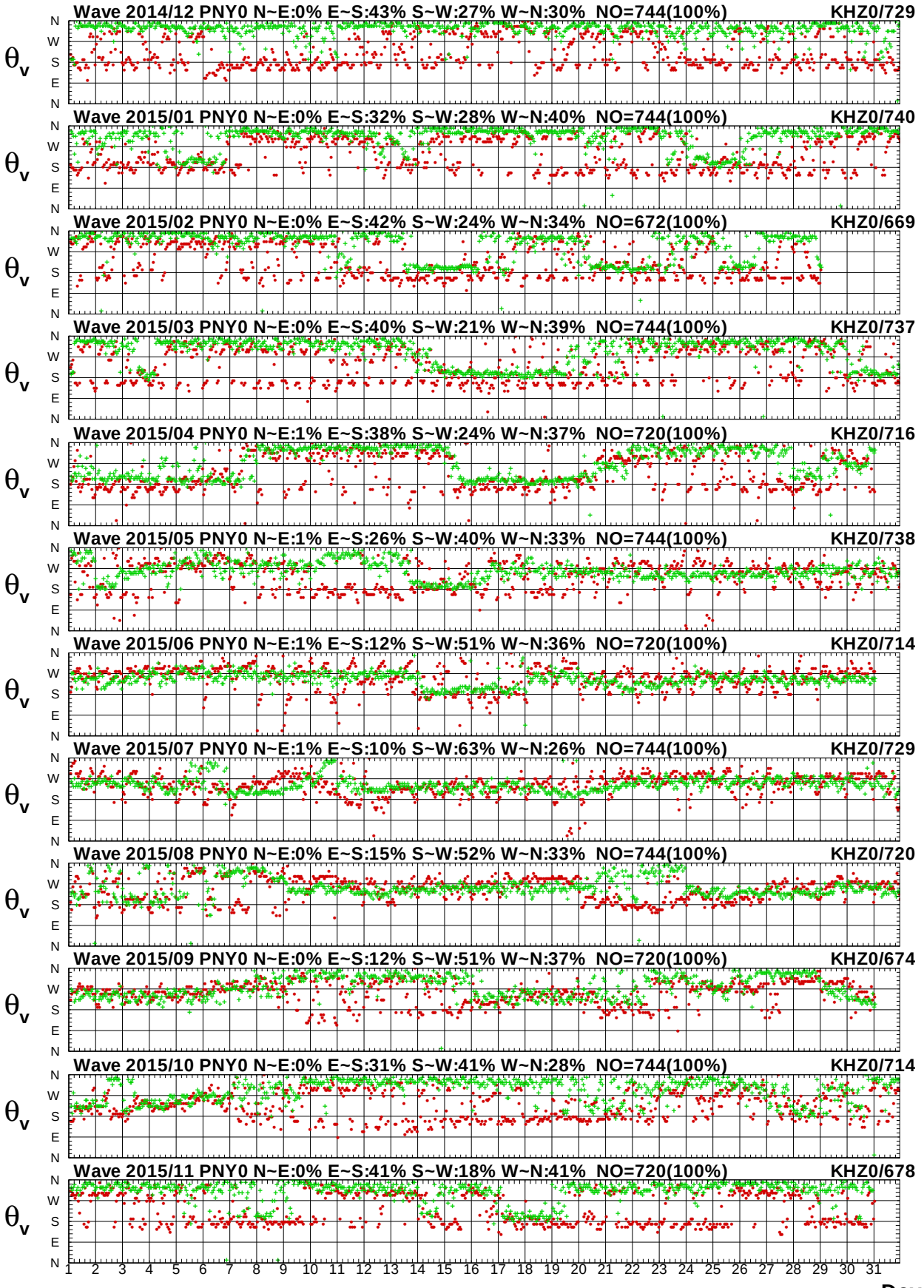


圖6.7c　2015年每月屏東海域 Y 站與高雄海域 Z 站波向圖

V14CPNY0.1HA V14CKHZ0.1H0 V151PNY0.1HA V151KHZ0.1H0 V152PNY0.1HA V152KHZ0.1H0
V153PNY0.1HA V153KHZ0.1H0 V154PNY0.1HA V154KHZ0.1H0 V155PNY0.1HA V155KHZ0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

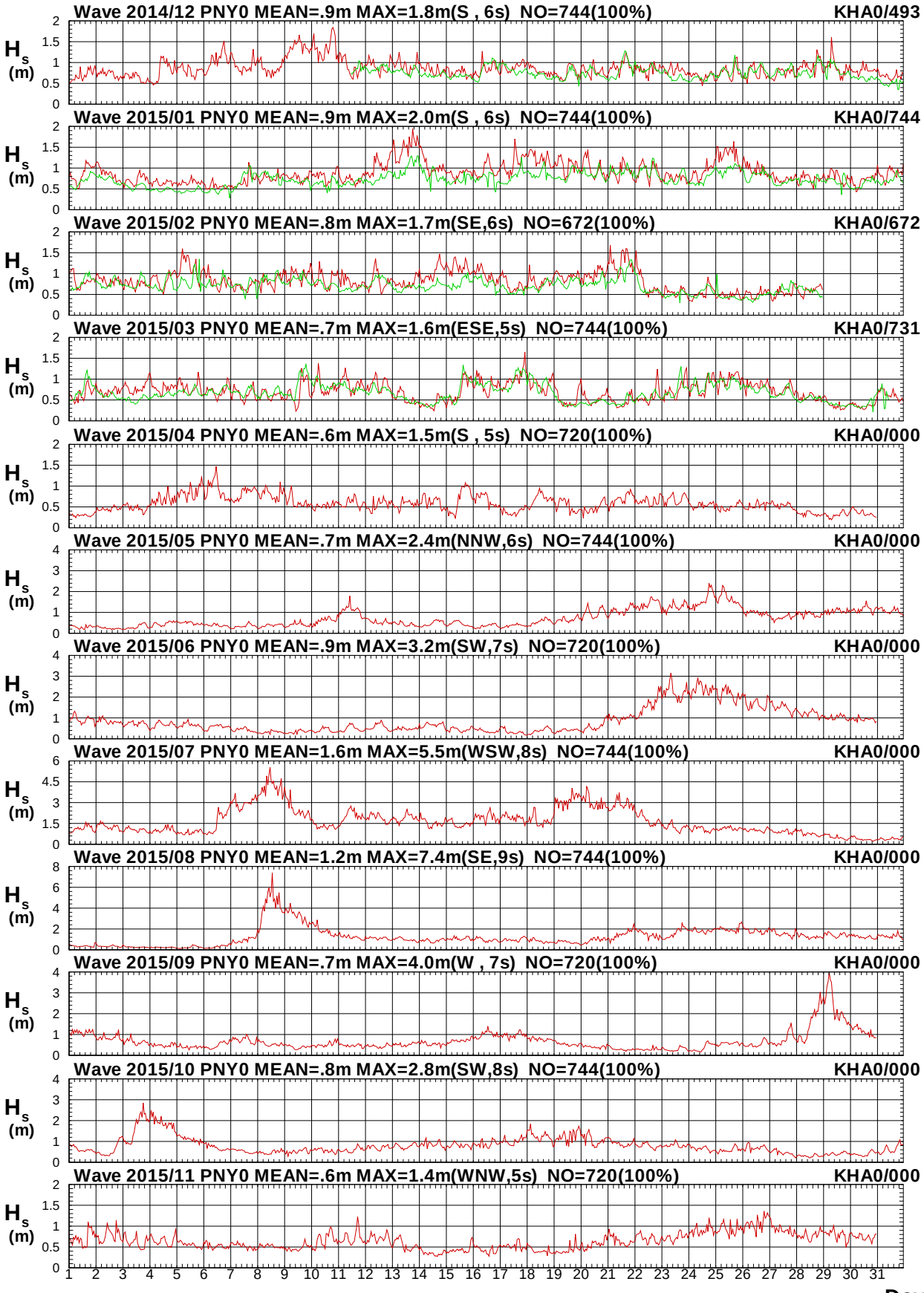


圖 6.8a　2015年每月屏東海域 Y 站與高雄海域 A 站波高圖

V14CPNY0.1HA V14CKHA0.1H0 V151PNY0.1HA V151KHA0.1H0 V152PNY0.1HA V152KHA0.1H0
V153PNY0.1HA V153KHA0.1H0 V154PNY0.1HA V154KHA0.1H0 V155PNY0.1HA V155KHA0.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

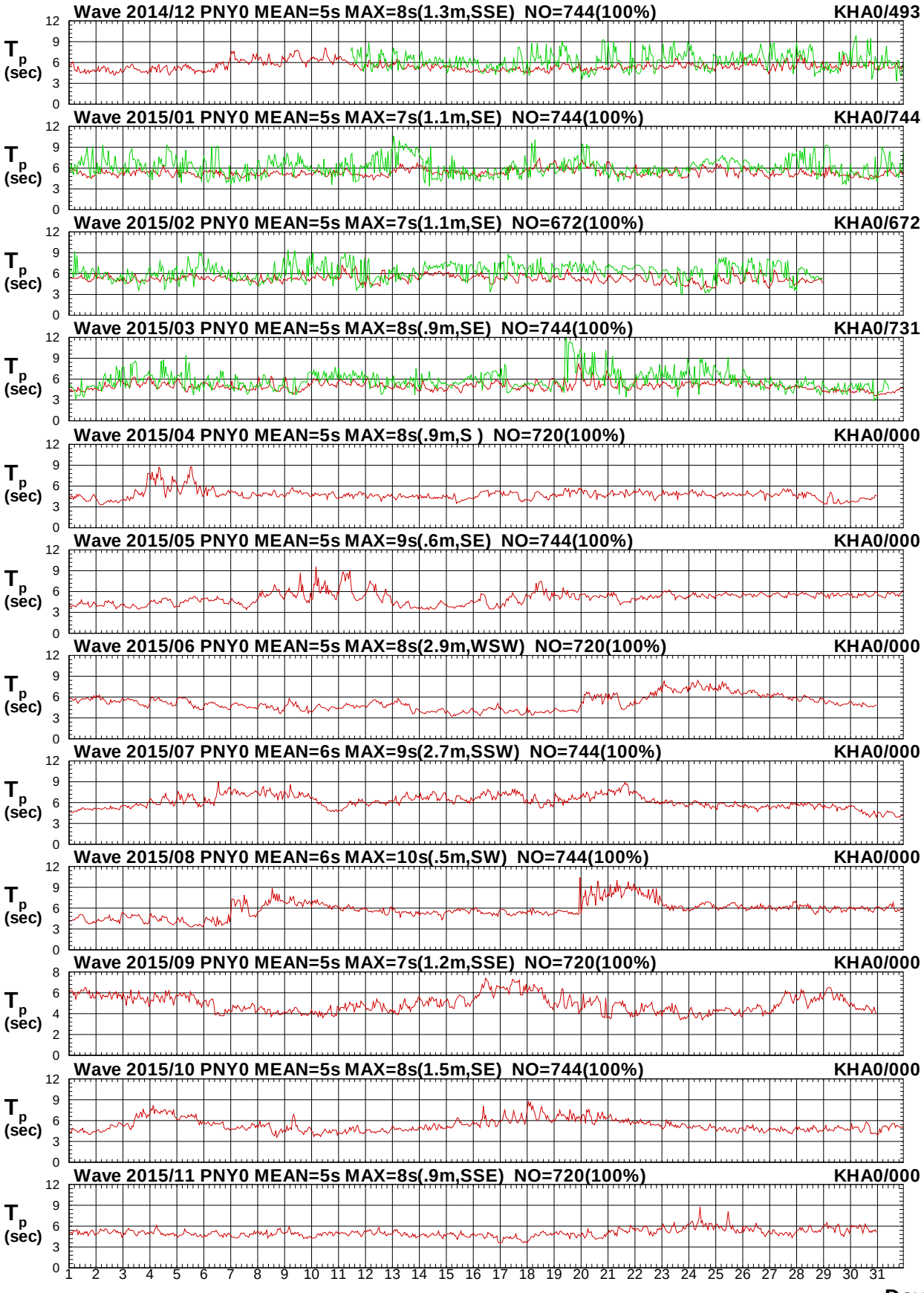


圖 6.8b　2015年每月屏東海域 Y 站與高雄海域 A 站週期圖

V14CPNY0.1HA V14CKHA0.1H0 V151PNY0.1HA V151KHA0.1H0 V152PNY0.1HA V152KHA0.1H0
V153PNY0.1HA V153KHA0.1H0 V154PNY0.1HA V154KHA0.1H0 V155PNY0.1HA V155KHA0.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

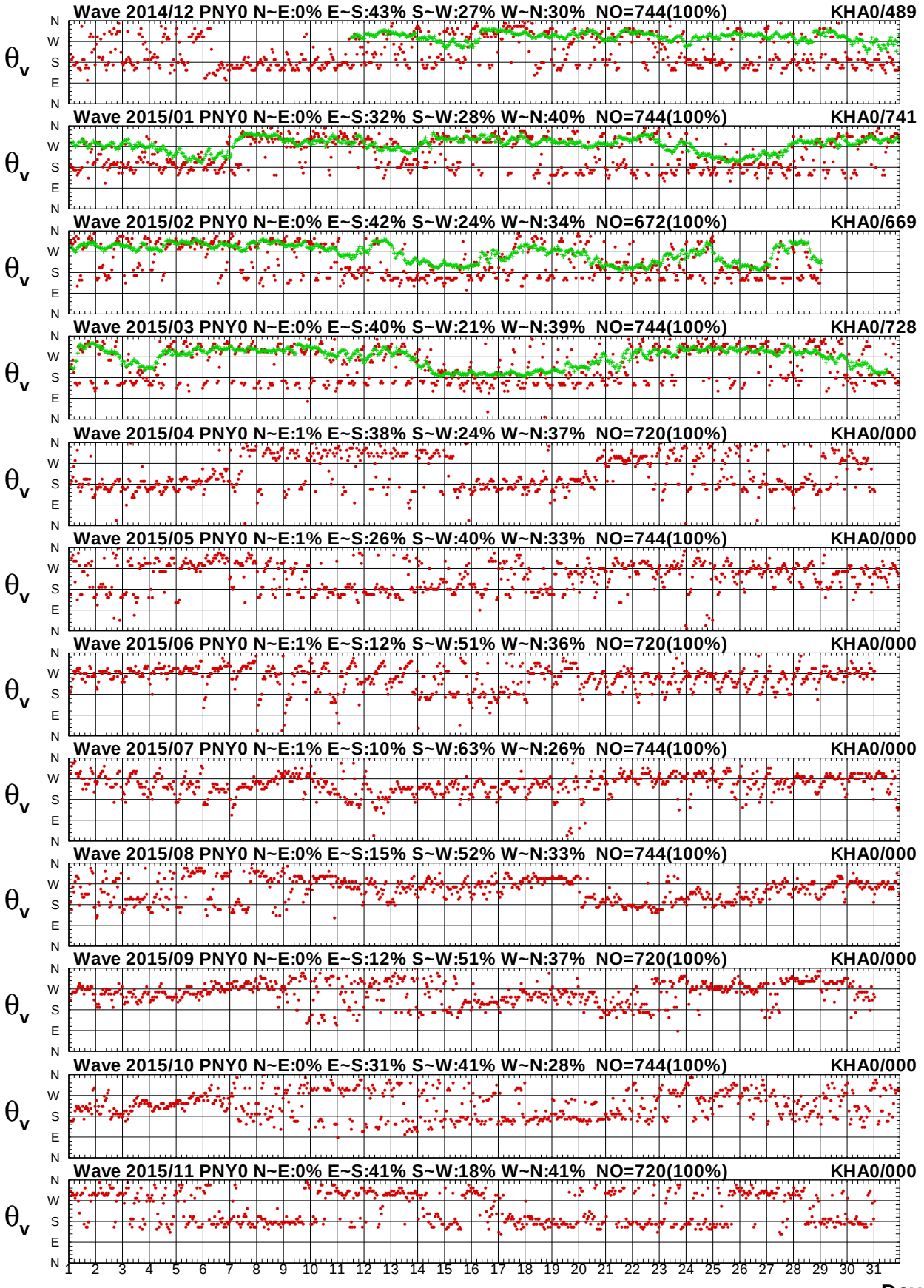


圖 6.8c　2015年每月屏東海域 Y 站與高雄海域 A 站波向圖

V14CPNY0.1HA V14CKHA0.1H0 V151PNY0.1HA V151KHA0.1H0 V152PNY0.1HA V152KHA0.1H0
V153PNY0.1HA V153KHA0.1H0 V154PNY0.1HA V154KHA0.1H0 V155PNY0.1HA V155KHA0.1H0

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Wave H_s in Peng-Tung Seas of PNY0 at 2015

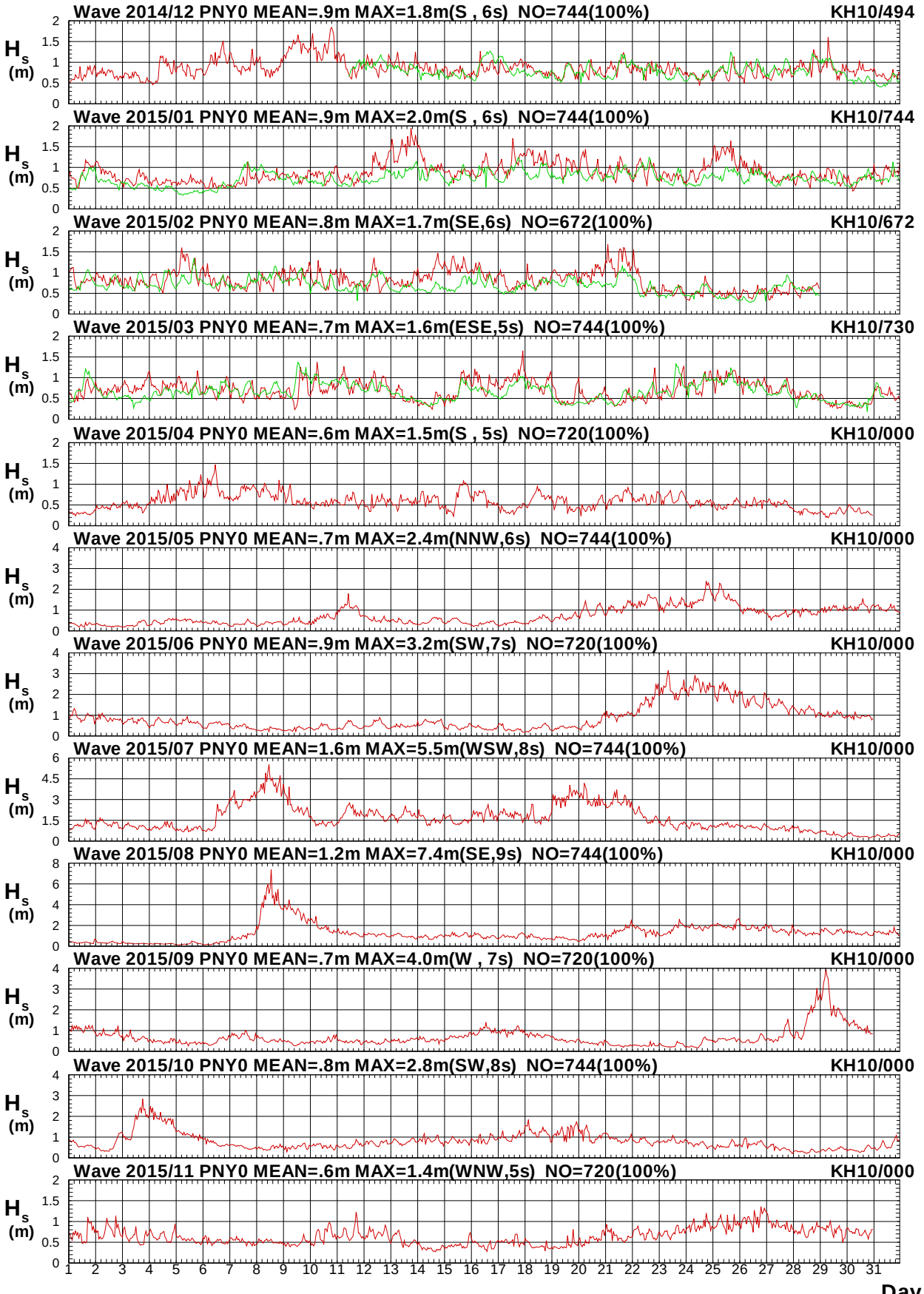


圖6.9a　2015年每月屏東海域Y站與高雄海域1站波高圖

V14CPNY0.1HA V14CKH10.1H0 V151PNY0.1HA V151KH10.1H0 V152PNY0.1HA V152KH10.1H0
V153PNY0.1HA V153KH10.1H0 V154PNY0.1HA V154KH10.1H0 V155PNY0.1HA V155KH10.1H0

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Wave T_p in Peng-Tung Seas of PNY0 at 2015

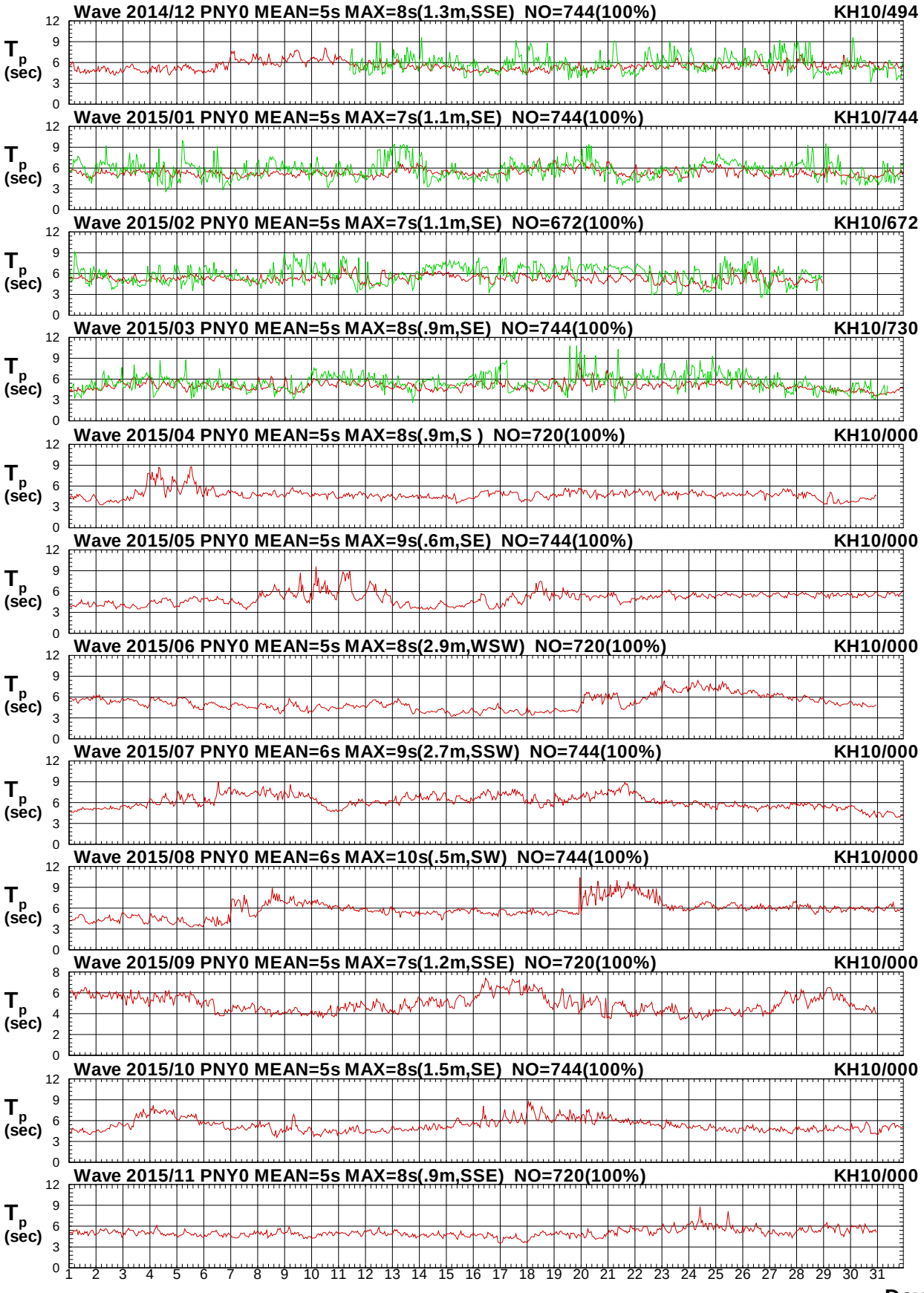


圖 6.9b　2015年每月屏東海域 Y 站與高雄海域1站週期圖

V14CPNY0.1HA V14CKH10.1H0 V151PNY0.1HA V151KH10.1H0 V152PNY0.1HA V152KH10.1H0
V153PNY0.1HA V153KH10.1H0 V154PNY0.1HA V154KH10.1H0 V155PNY0.1HA V155KH10.1H0

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Wave Direction in Peng-Tung Seas of PNY0 at 2015

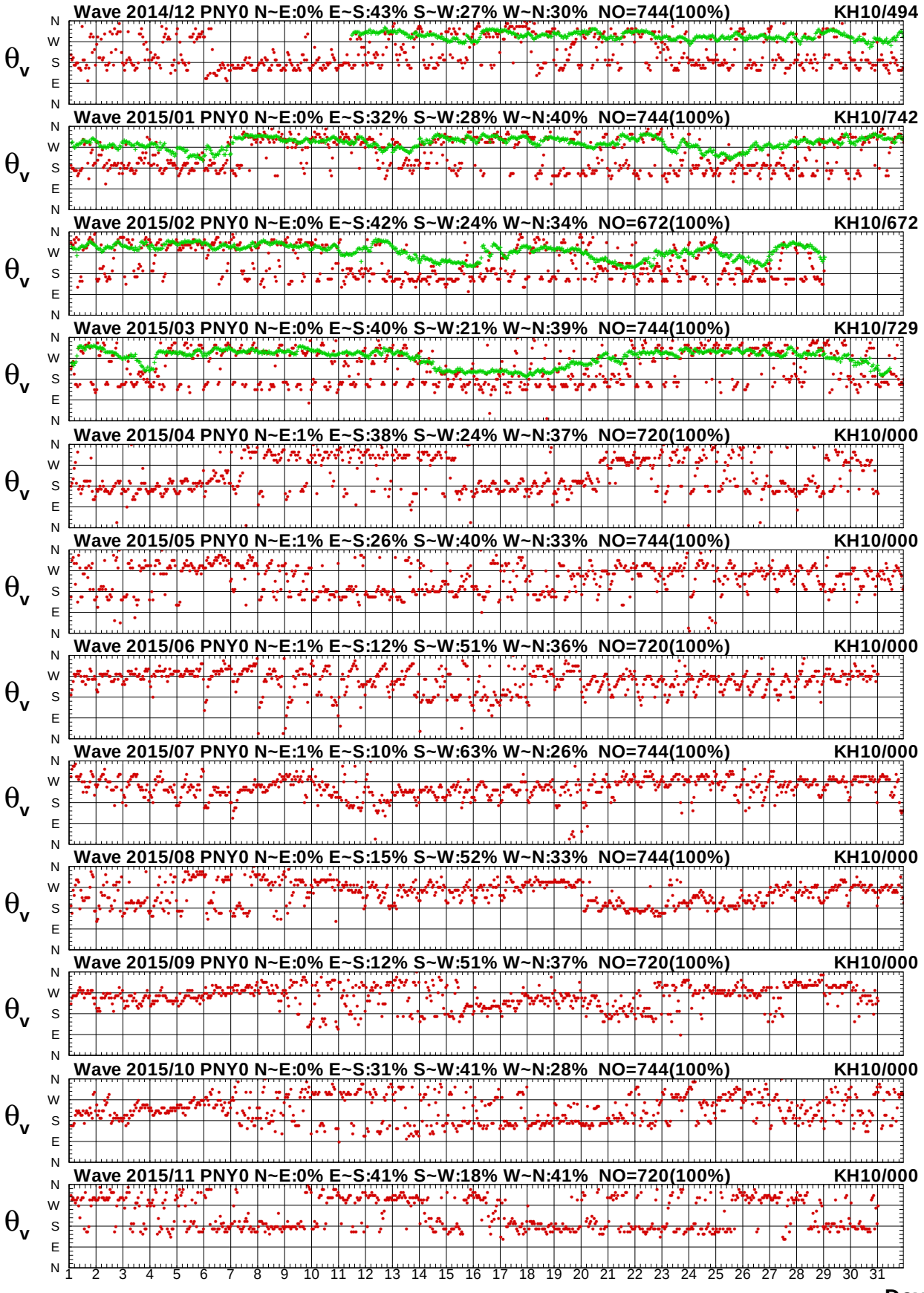


圖 6.9c　2015年每月屏東海域 Y 站與高雄海域1站波向圖

V14CPNY0.1HA V14CKH10.1H0 V151PNY0.1HA V151KH10.1H0 V152PNY0.1HA V152KH10.1H0
V153PNY0.1HA V153KH10.1H0 V154PNY0.1HA V154KH10.1H0 V155PNY0.1HA V155KH10.1H0

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第七章　2015 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**，2015 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，2015 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 2015 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	2005/08-2015/11(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			2015/12-2015/11	港研中心	高雄 2 港口外海
Z	22°45'50"N	120°09'49"E	2012/09-2015/11(觀測中)	水利署	彌陀外海浮標站

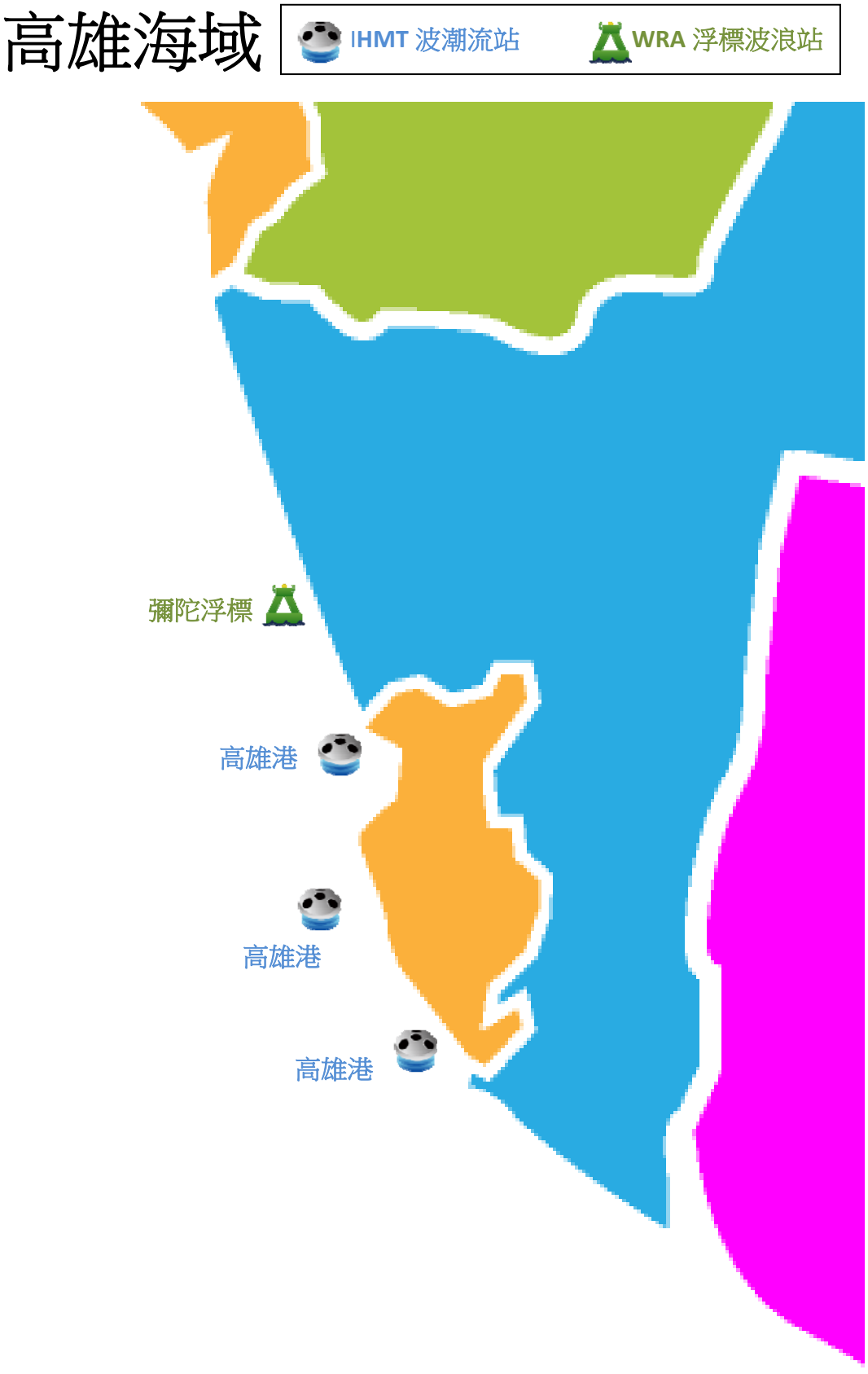


圖 7 高雄海域波浪觀測站位置示意圖

表7.1a 2015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			
2014/12月	734 (98.7%)	729 (98.0%)	493 (66.3%)	494 (66.4%)	*	*	*	*
2015/ 1月	741 (99.6%)	740 (99.5%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 2月	669 (99.6%)	669 (99.6%)	672 (100%)	672 (100%)	*	*	*	*
2015/ 3月	743 (99.9%)	737 (99.1%)	731 (98.3%)	730 (98.1%)	*	*	*	*
2015/ 4月	714 (99.2%)	716 (99.4%)	*	*	*	*	*	*
2015/ 5月	743 (99.9%)	738 (99.2%)	*	*	*	*	*	*
2015/ 6月	718 (99.7%)	714 (99.2%)	*	*	*	*	*	*
2015/ 7月	738 (99.2%)	729 (98.0%)	*	*	*	*	*	*
2015/ 8月	732 (98.4%)	720 (96.8%)	*	*	*	*	*	*
2015/ 9月	698 (96.9%)	674 (93.6%)	*	*	*	*	*	*
2015/10月	738 (99.2%)	714 (96.0%)	*	*	*	*	*	*
2015/11月	708 (98.3%)	678 (94.2%)	*	*	*	*	*	*
2015/冬季	2144 (99.3%)	2138 (99.0%)	1909 (88.4%)	1910 (88.4%)	*	*	*	*
2015/春季	2200 (99.6%)	2191 (99.2%)	731 (33.1%)	730 (33.1%)	*	*	*	*
2015/夏季	2188 (99.1%)	2163 (98.0%)	*	*	*	*	*	*
2015/秋季	2144 (98.2%)	2066 (94.6%)	*	*	*	*	*	*
2015/整年	8676 (99.0%)	8558 (97.7%)	2640 (30.1%)	2640 (30.1%)	*	*	*	*
起始年月	2014/12	2014/12	2014/12	2014/12	*	*	*	*
結束年月	2015/11	2015/11	2015/03	2015/03	*	*	*	*

表7.1b 2015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			
2014/12月	744 (100%)	744 (100%)	*	744 (100%)	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	672 (100%)	672 (100%)	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	1416 (65.6%)	2160 (100%)	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	744 (33.7%)	744 (33.7%)	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	*	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	2160 (24.7%)	2904 (33.2%)	*	*	*	*
起始年月	2014/12	2014/12	2015/01	2014/12	*	*	*	*
結束年月	2015/11	2015/11	2015/03	2015/03	*	*	*	*

Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

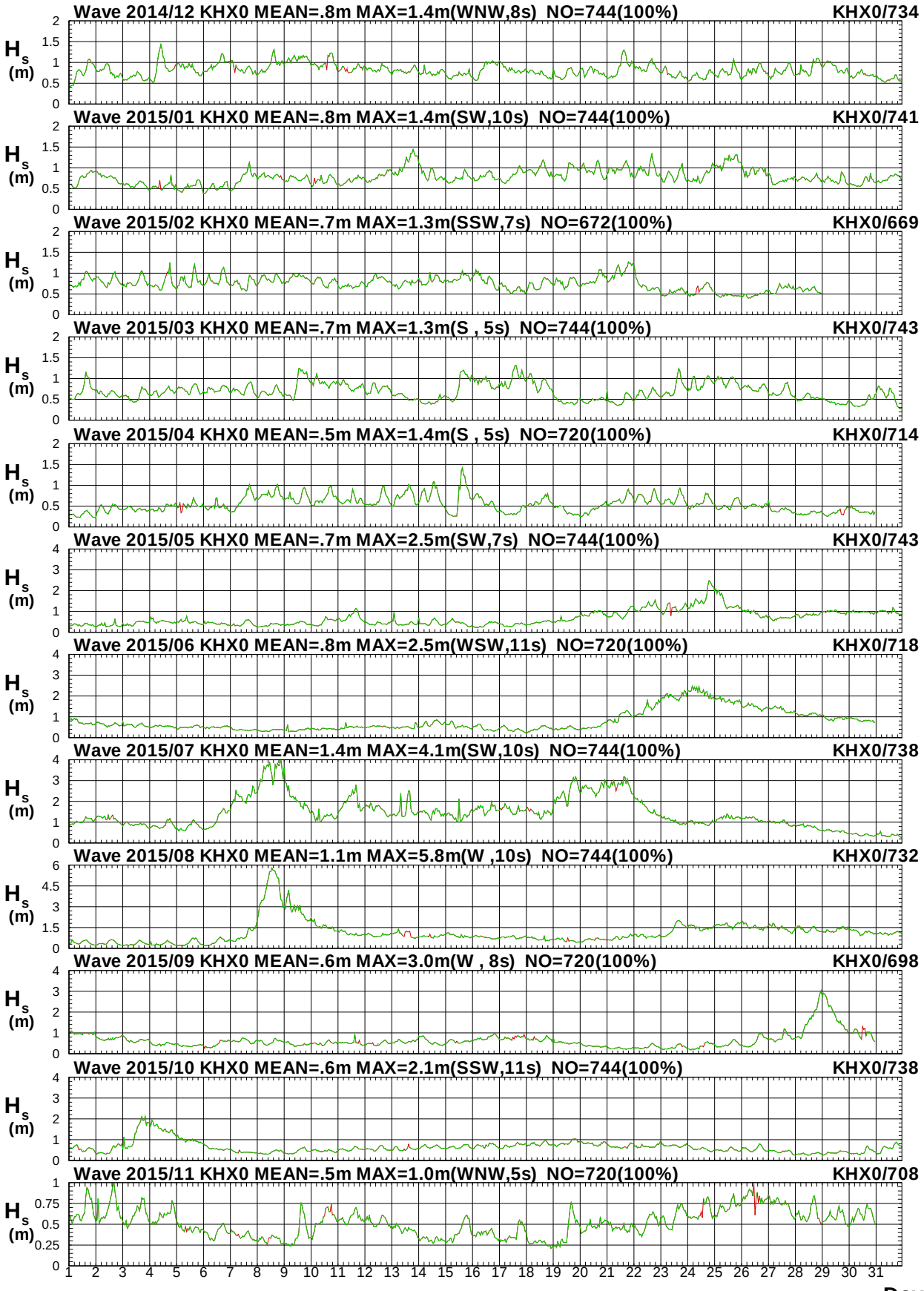


圖7.1a　2015年每月高雄海域 X 站修補前後之波高比較圖

V14CKHX0.1HA V14CKHX0.1H0 V151KHX0.1HA V151KHX0.1H0 V152KHX0.1HA V152KHX0.1H0
V153KHX0.1HA V153KHX0.1H0 V154KHX0.1HA V154KHX0.1H0 V155KHX0.1HA V155KHX0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

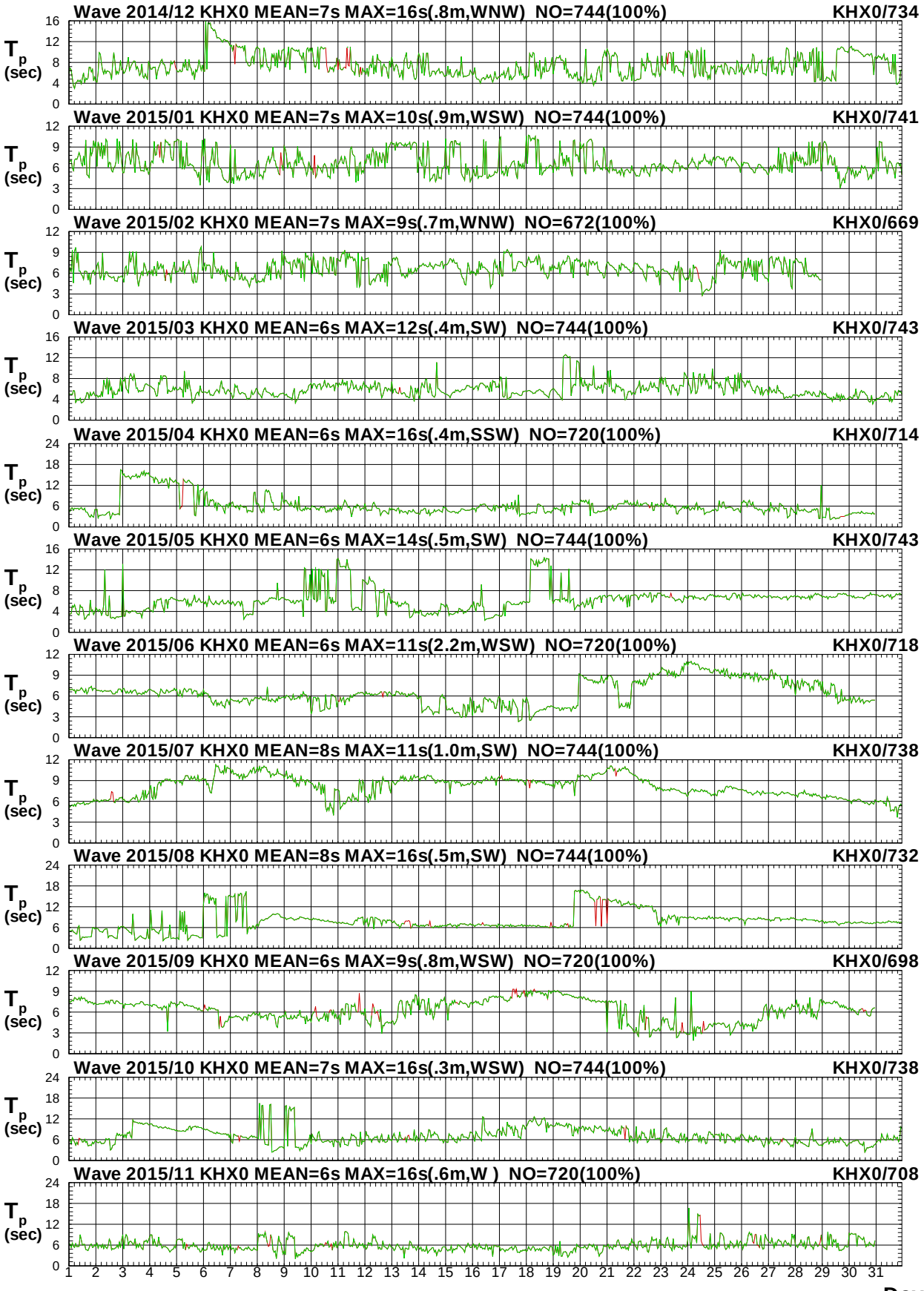


圖7.1b　2015年每月高雄海域 X 站修補前後之週期比較圖

V14CKHX0.1HA V14CKHX0.1H0 V151KHX0.1HA V151KHX0.1H0 V152KHX0.1HA V152KHX0.1H0
V153KHX0.1HA V153KHX0.1H0 V154KHX0.1HA V154KHX0.1H0 V155KHX0.1HA V155KHX0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

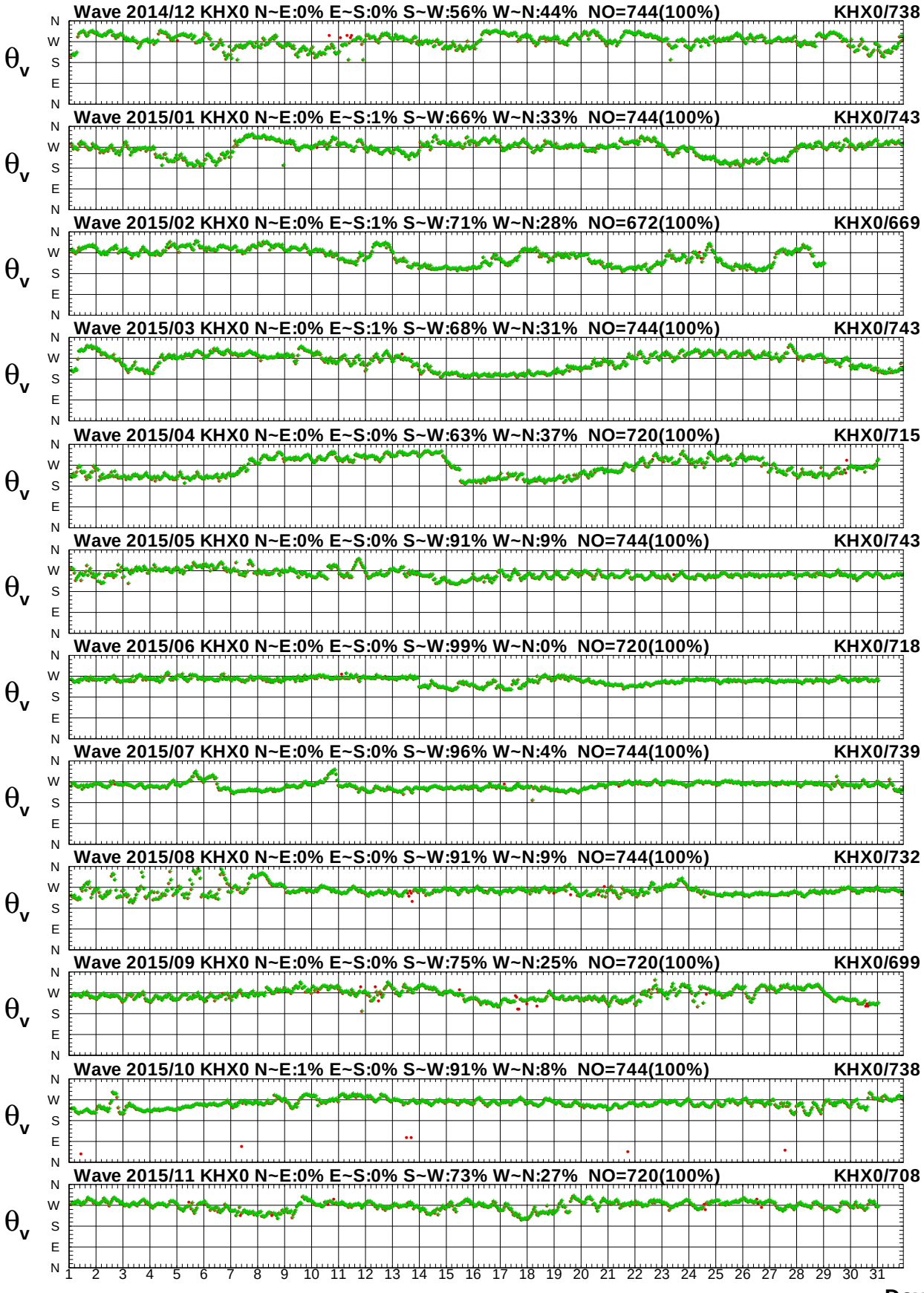


圖7.1c　2015年每月高雄海域 X 站修補前後之波向比較圖

Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

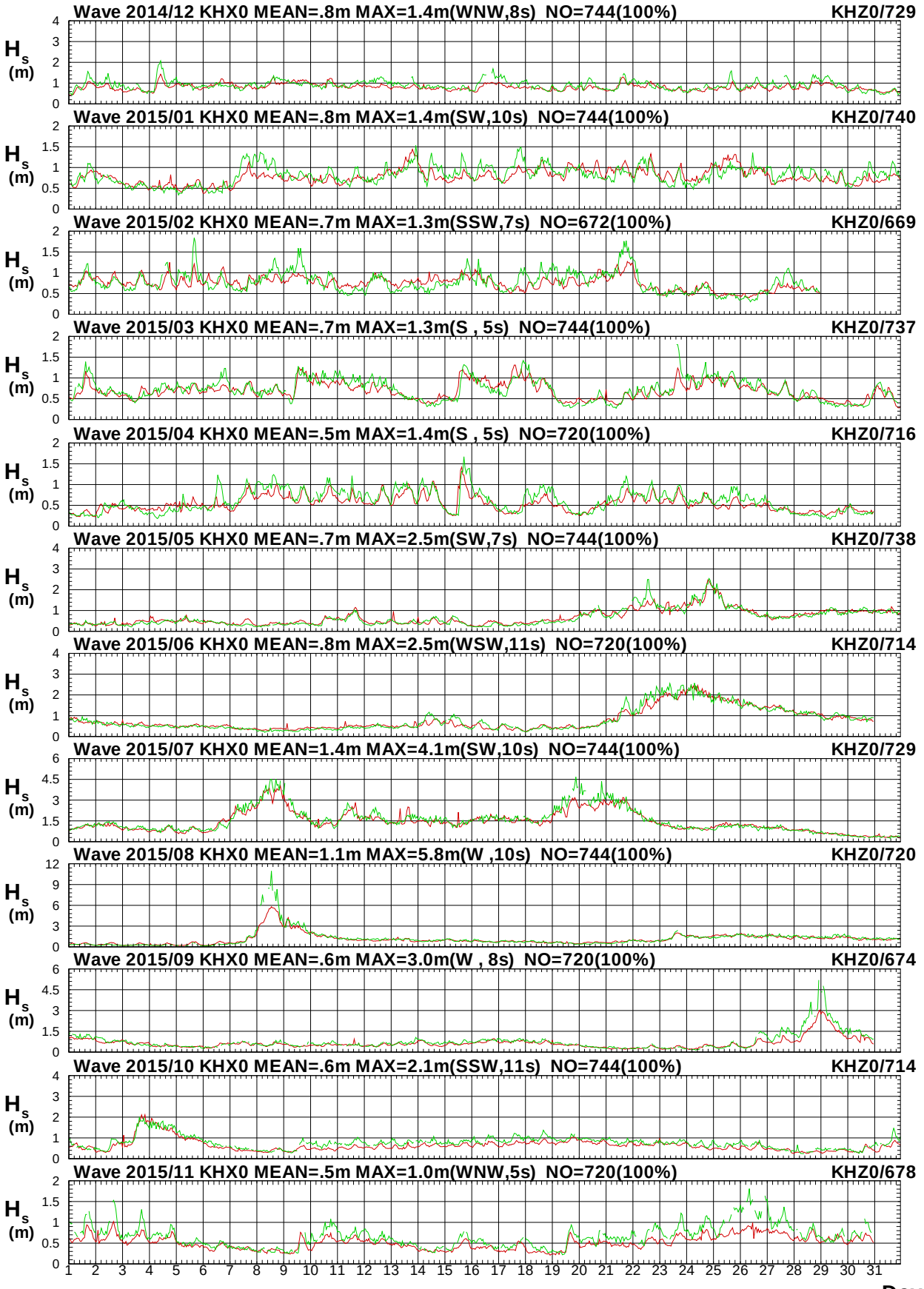


圖 7.2a　2015年每月高雄海域 X 站與 Z 站波高比較圖

V14CKHX0.1HA V14CKHZ0.1H0 V151KHX0.1HA V151KHZ0.1H0 V152KHX0.1HA V152KHZ0.1H0
V153KHX0.1HA V153KHZ0.1H0 V154KHX0.1HA V154KHZ0.1H0 V155KHX0.1HA V155KHZ0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

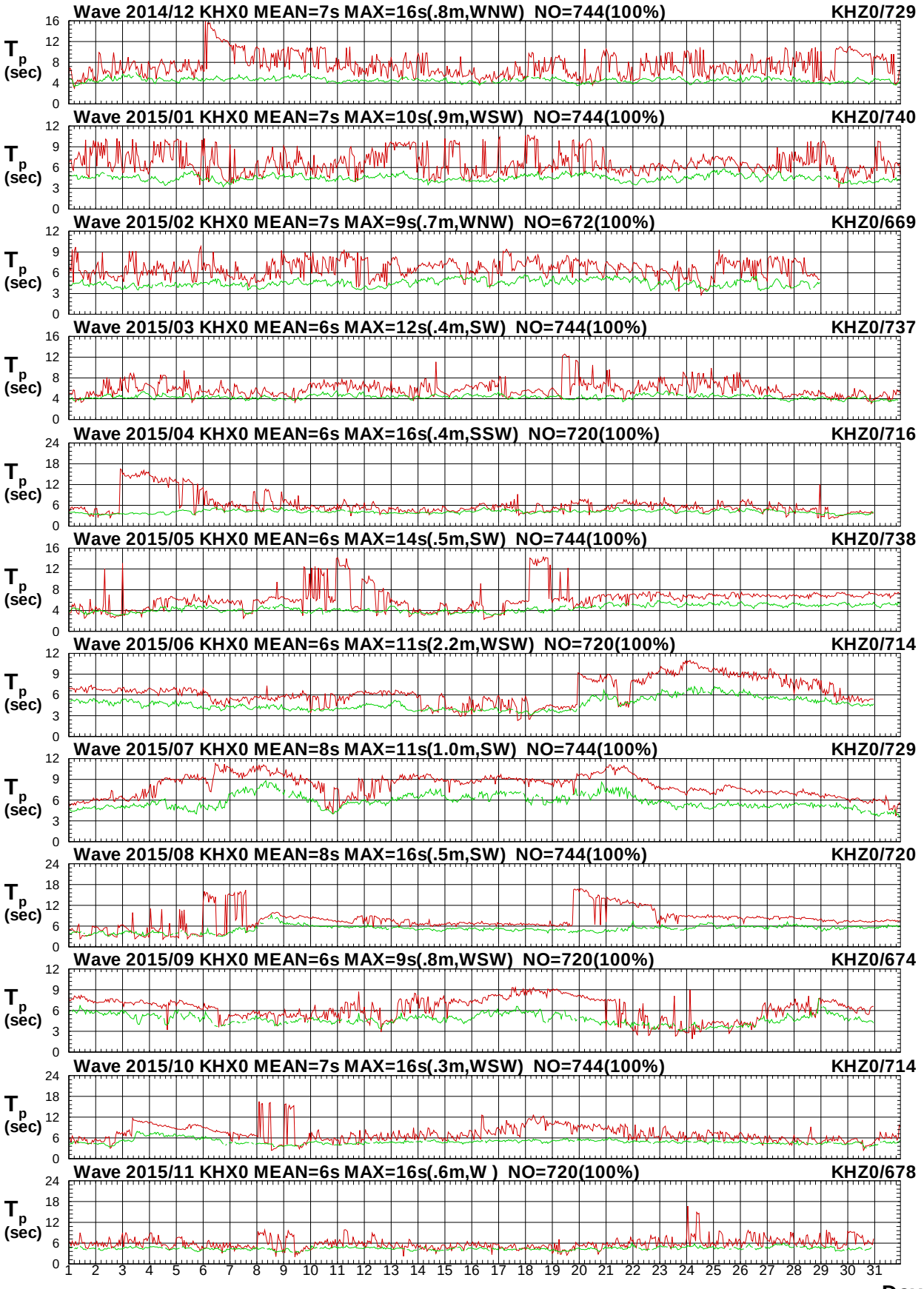


圖 7.2b　2015年每月高雄海域 X 站與 Z 站週期比較圖

V14CKHX0.1HA V14CKHZ0.1H0 V151KHX0.1HA V151KHZ0.1H0 V152KHX0.1HA V152KHZ0.1H0
V153KHX0.1HA V153KHZ0.1H0 V154KHX0.1HA V154KHZ0.1H0 V155KHX0.1HA V155KHZ0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

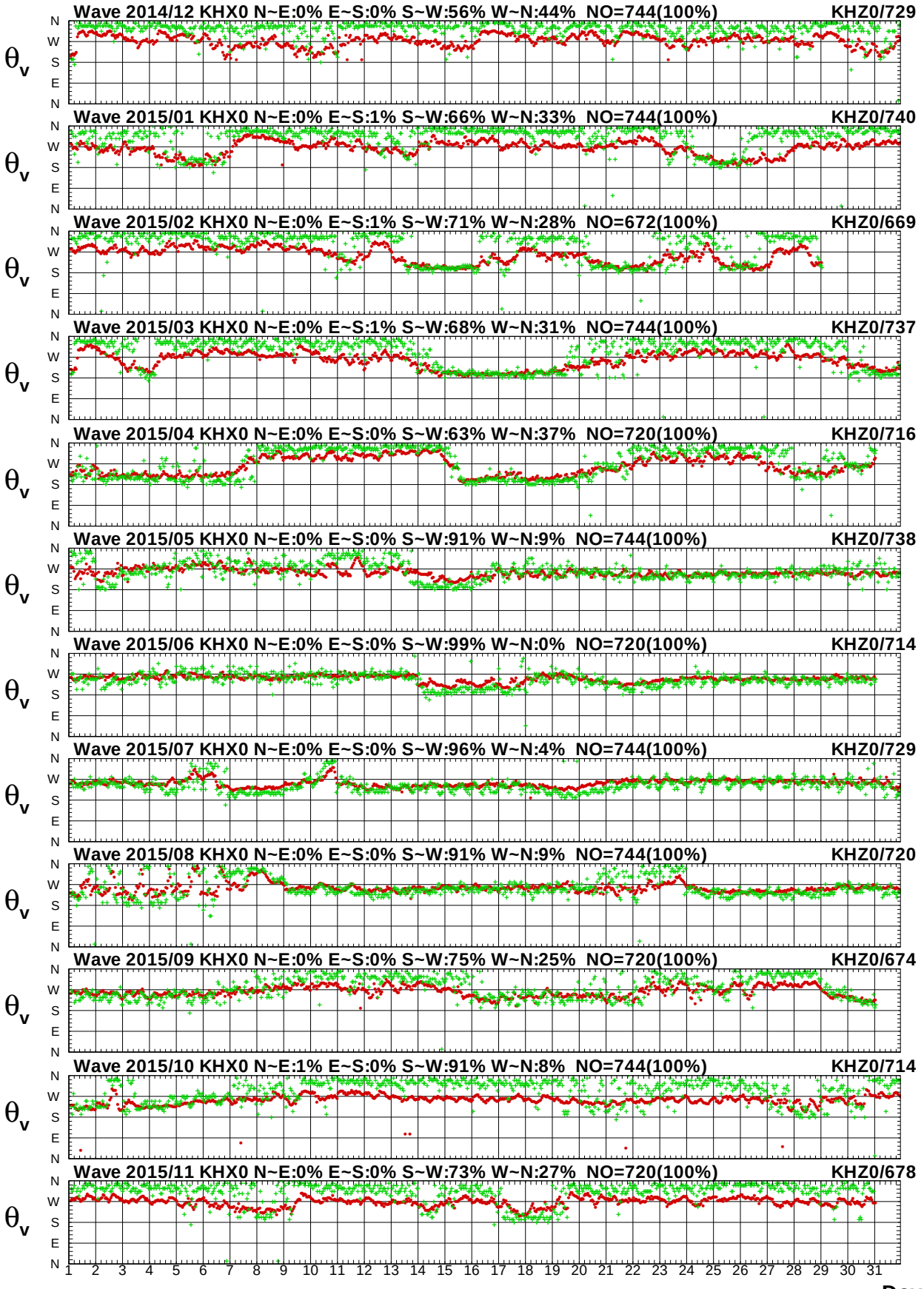


圖7.2c　2015年每月高雄海域 X 站與 Z 站波向比較圖

V14CKHX0.1HA V14CKHZ0.1H0 V151KHX0.1HA V151KHZ0.1H0 V152KHX0.1HA V152KHZ0.1H0
V153KHX0.1HA V153KHZ0.1H0 V154KHX0.1HA V154KHZ0.1H0 V155KHX0.1HA V155KHZ0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

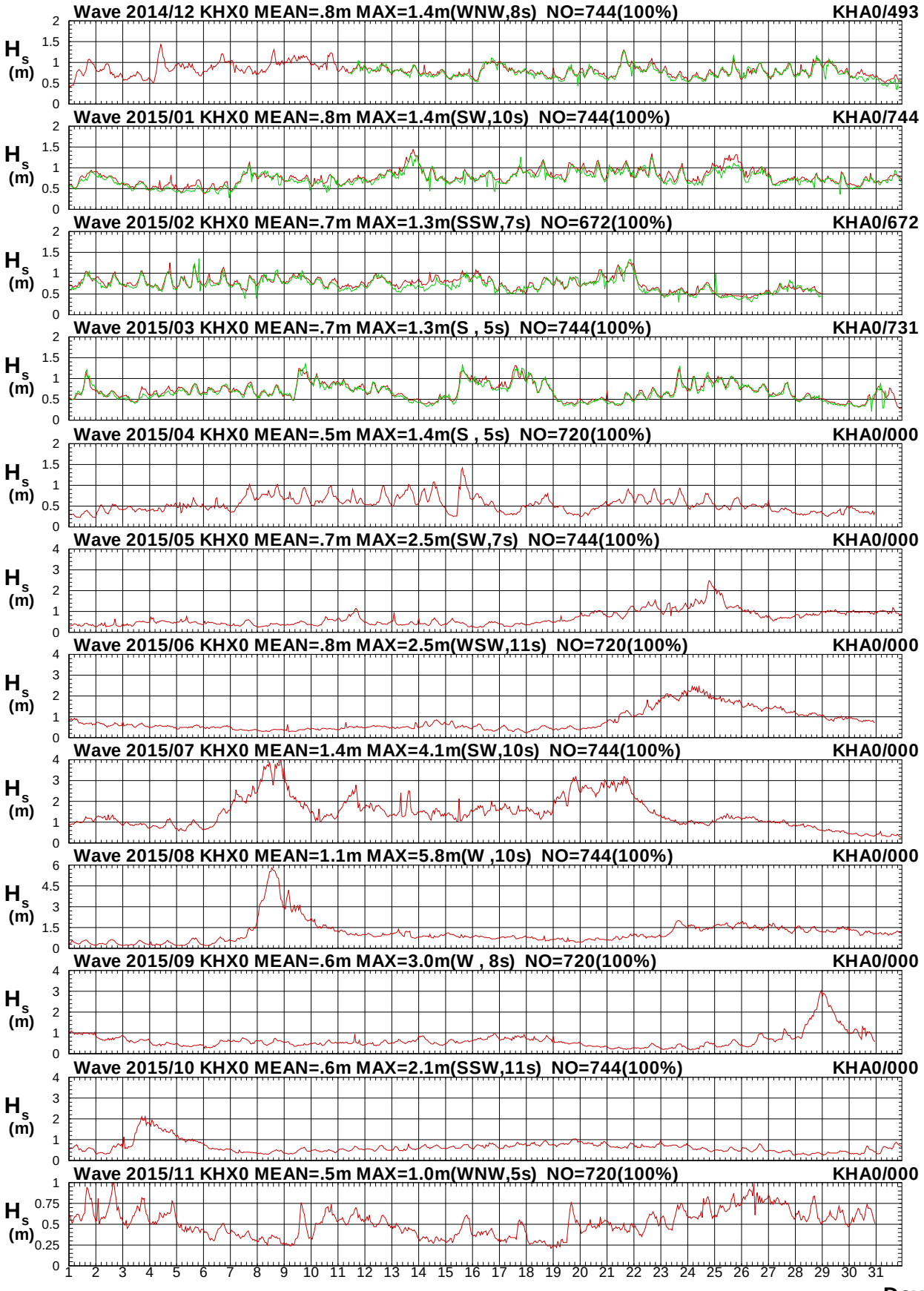


圖 7.3a　2015年每月高雄海域 X 站與 A 站波高比較圖

V14CKHX0.1HA V14CKHA0.1H0 V151KHX0.1HA V151KHA0.1H0 V152KHX0.1HA V152KHA0.1H0
V153KHX0.1HA V153KHA0.1H0 V154KHX0.1HA V154KHA0.1H0 V155KHX0.1HA V155KHA0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

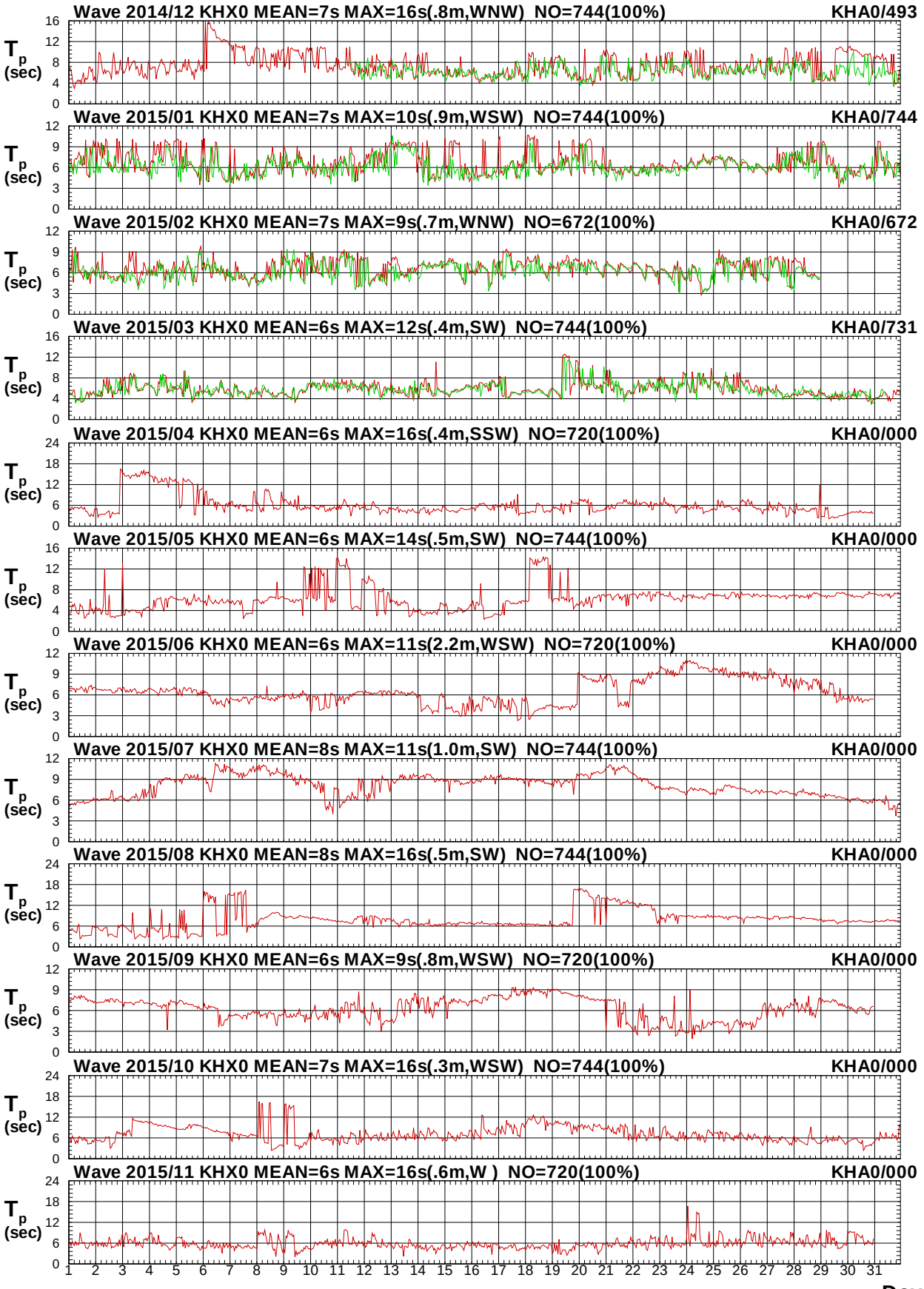


圖 7.3b　2015年每月高雄海域 X 站與 A 站週期比較圖

V14CKHX0.1HA V14CKHA0.1H0 V151KHX0.1HA V151KHA0.1H0 V152KHX0.1HA V152KHA0.1H0
V153KHX0.1HA V153KHA0.1H0 V154KHX0.1HA V154KHA0.1H0 V155KHX0.1HA V155KHA0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

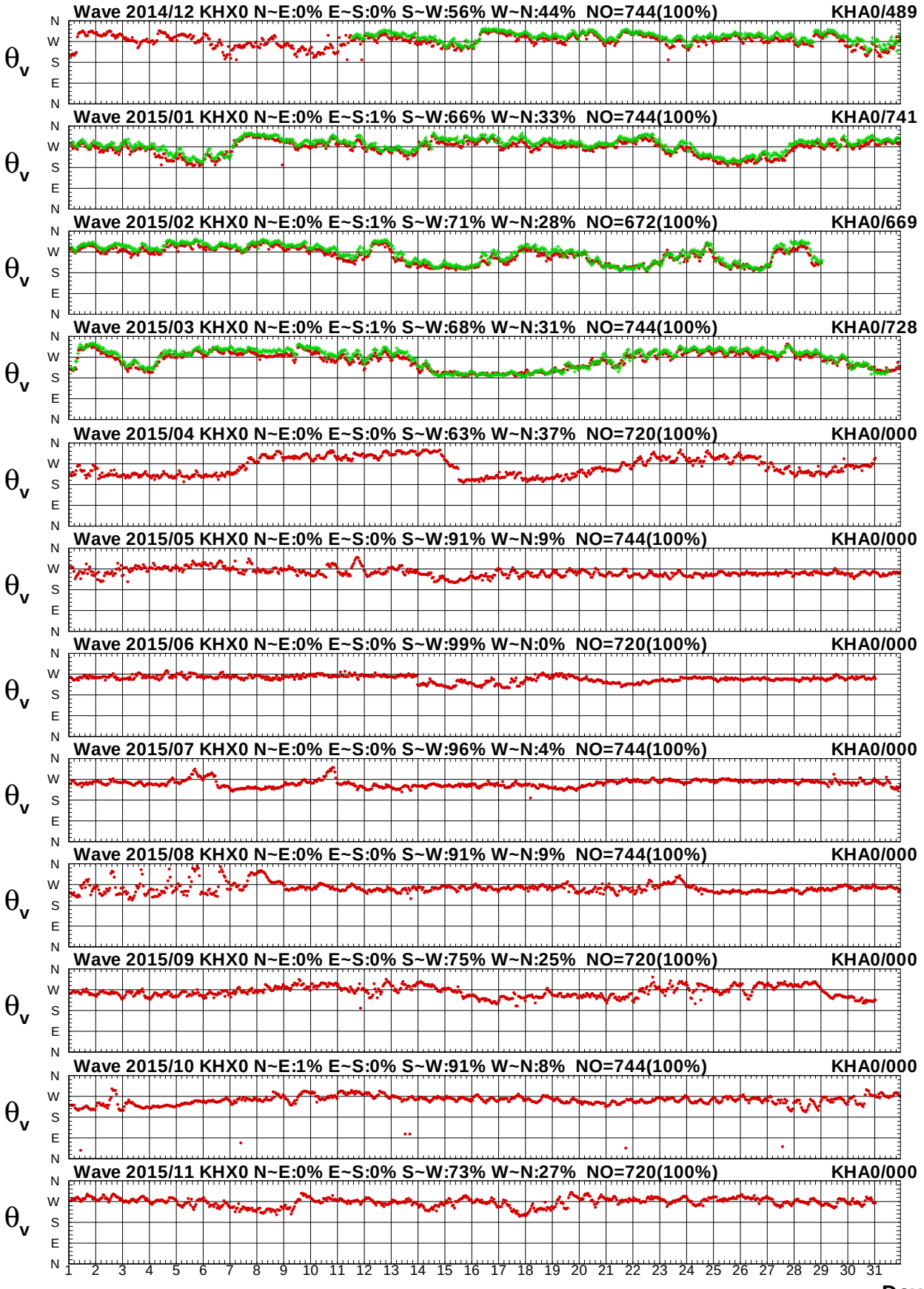


圖 7.3c　2015年每月高雄海域 X 站與 A 站波向比較圖

Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

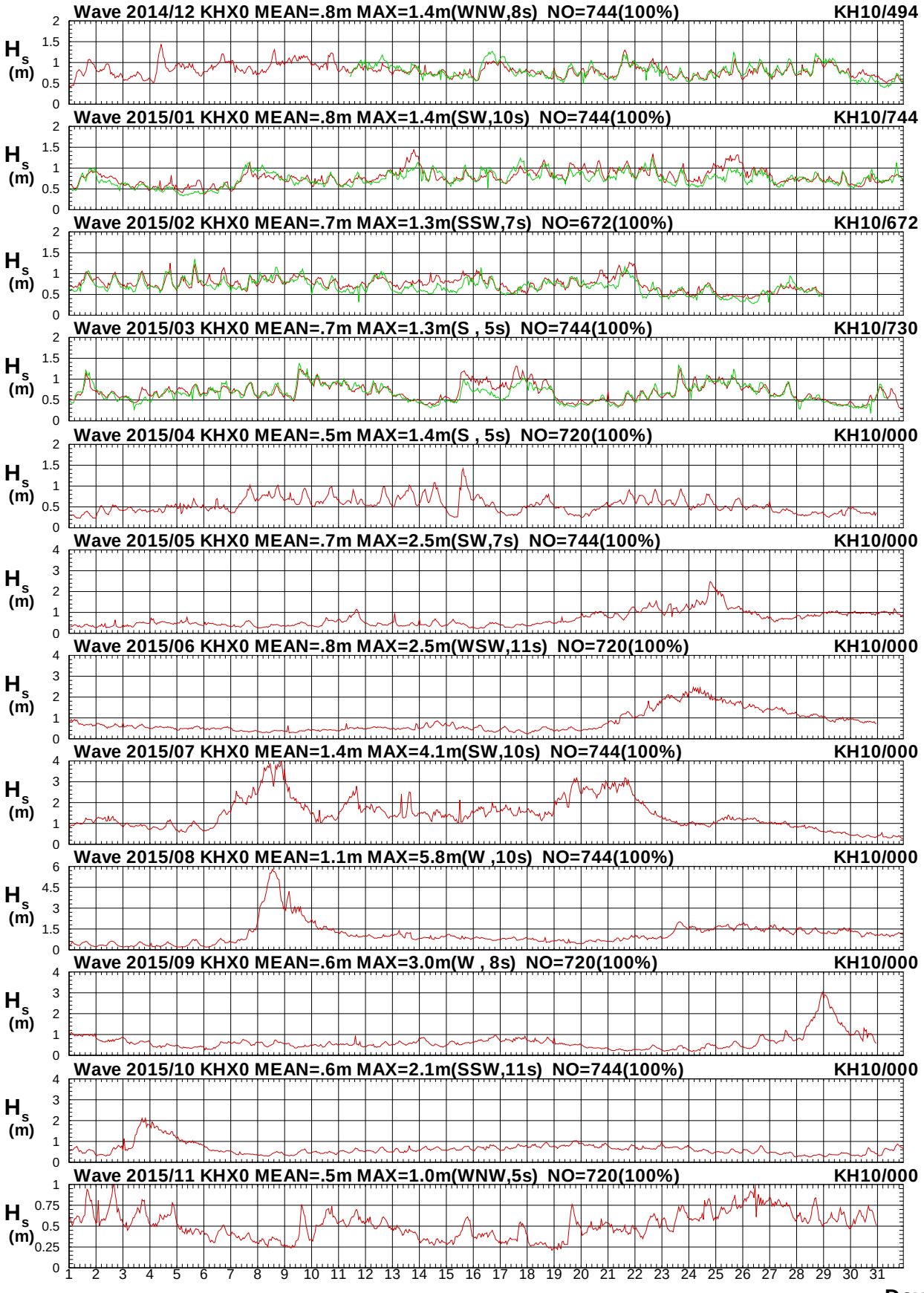


圖 7.4a　2015年每月高雄海域 X 站與 1 站波高比較圖

V14CKHX0.1HA V14CKH10.1H0 V151KHX0.1HA V151KH10.1H0 V152KHX0.1HA V152KH10.1H0
V153KHX0.1HA V153KH10.1H0 V154KHX0.1HA V154KH10.1H0 V155KHX0.1HA V155KH10.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

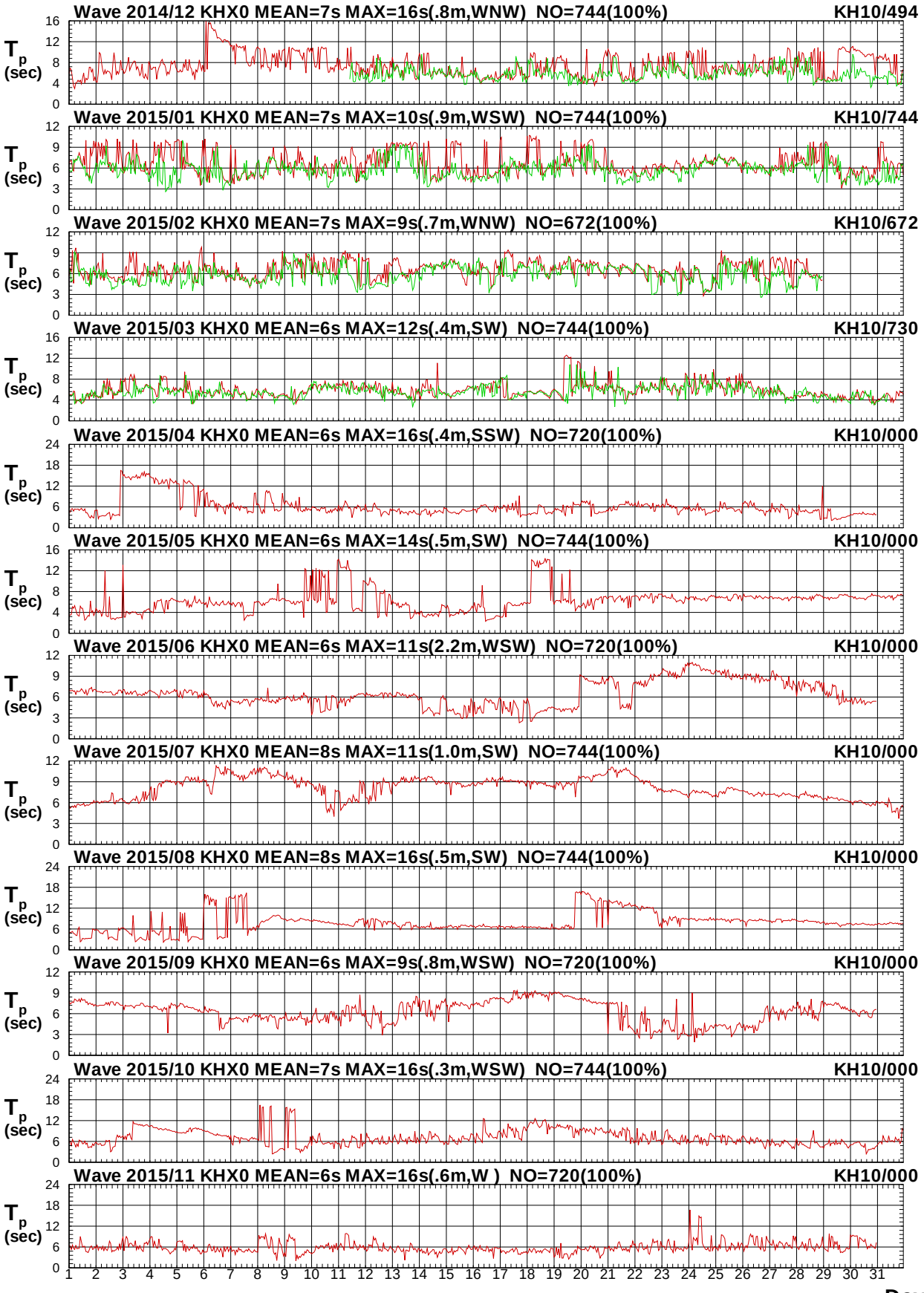


圖 7.4b　2015年每月高雄海域 X 站與 1 站週期比較圖

V14CKHX0.1HA V14CKH10.1H0 V151KHX0.1HA V151KH10.1H0 V152KHX0.1HA V152KH10.1H0
V153KHX0.1HA V153KH10.1H0 V154KHX0.1HA V154KH10.1H0 V155KHX0.1HA V155KH10.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

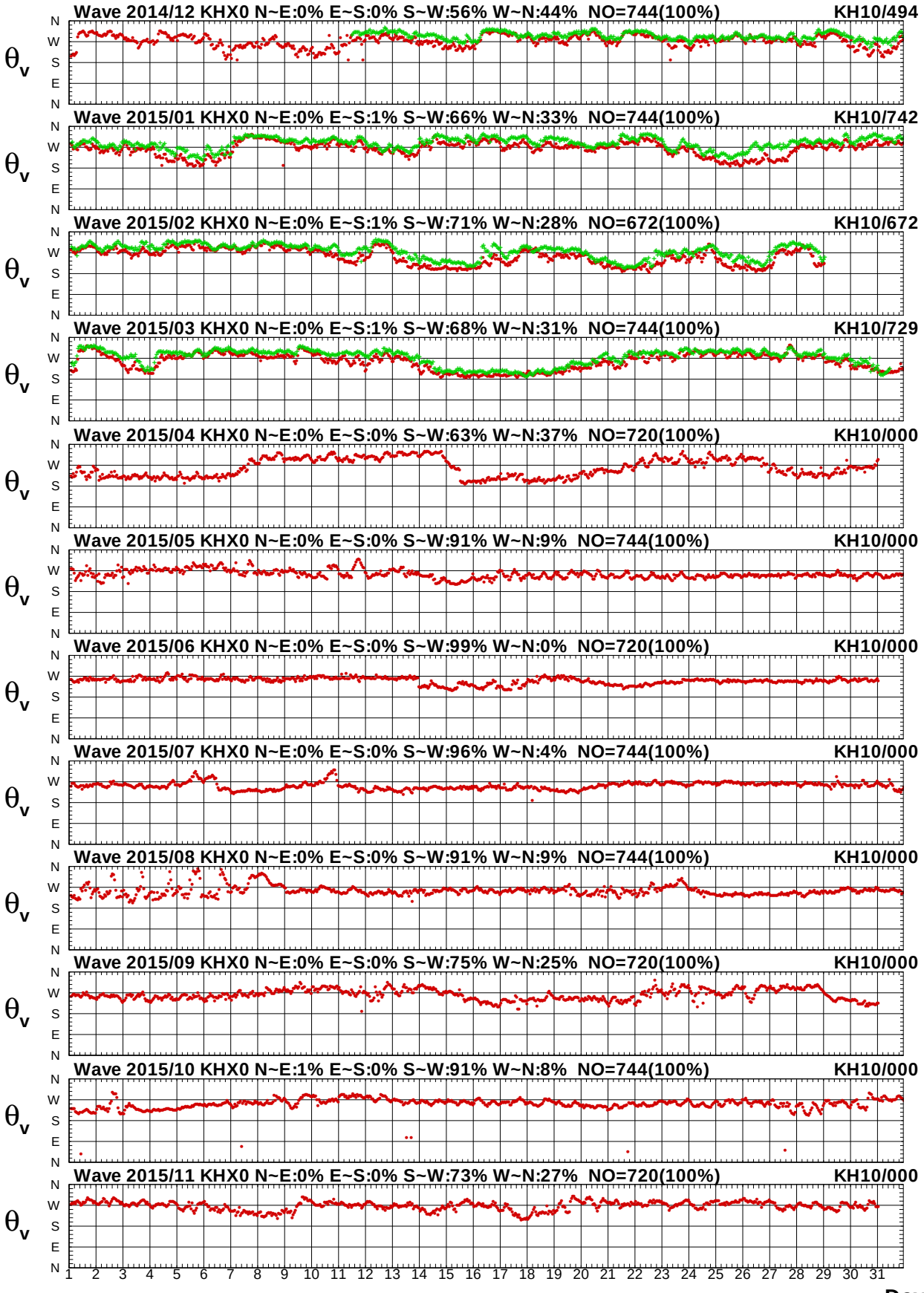


圖 7.4c　2015年每月高雄海域 X 站與 1 站波向比較圖

V14CKHX0.1HA V14CKH10.1H0 V151KHX0.1HA V151KH10.1H0 V152KHX0.1HA V152KH10.1H0
V153KHX0.1HA V153KH10.1H0 V154KHX0.1HA V154KH10.1H0 V155KHX0.1HA V155KH10.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

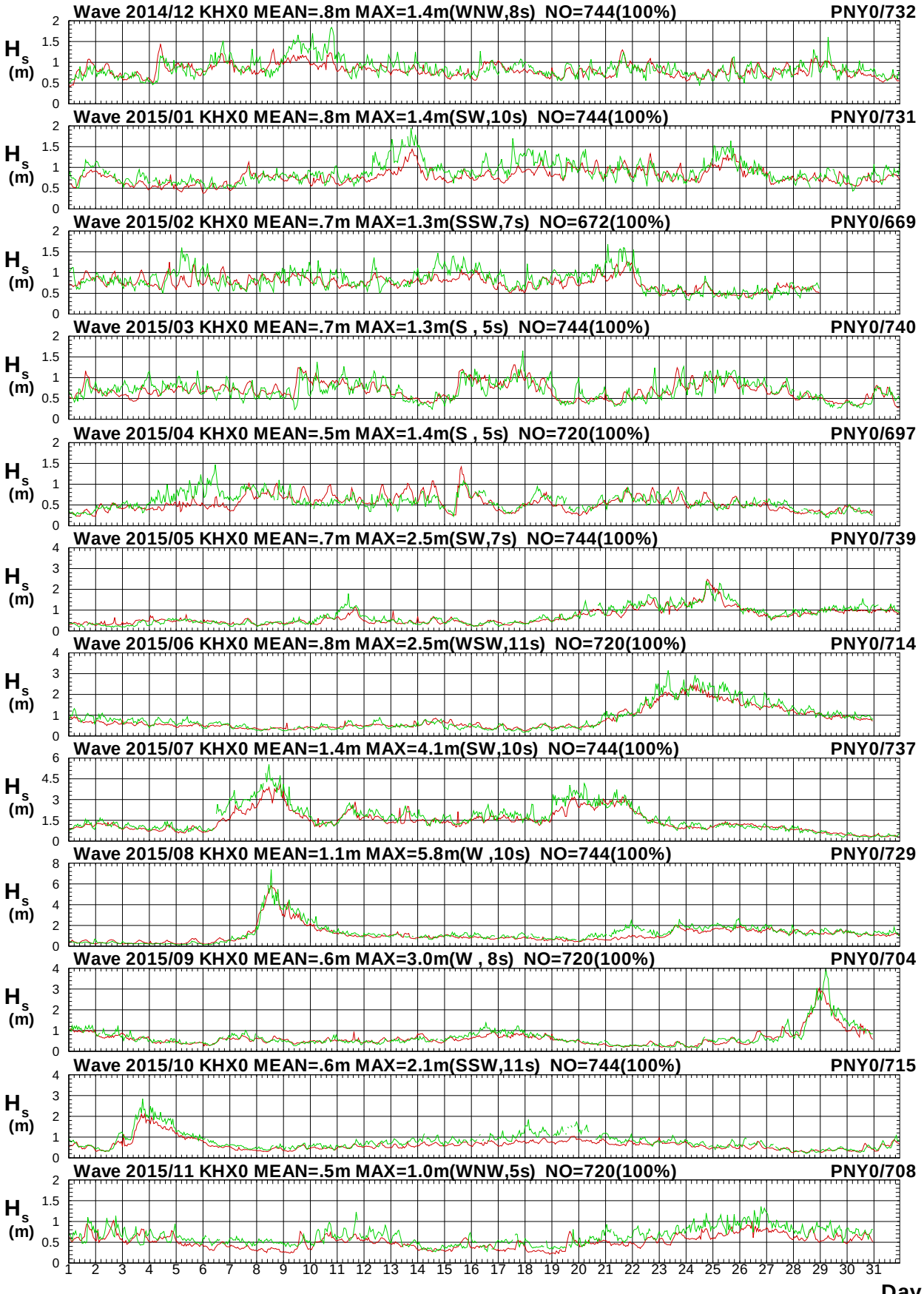


圖 7.5a　2015年每月高雄海域 X 站與屏東海域 Y 站波高圖

V14CKHX0.1HA V14CPNY0.1H0 V151KHX0.1HA V151PNY0.1H0 V152KHX0.1HA V152PNY0.1H0
V153KHX0.1HA V153PNY0.1H0 V154KHX0.1HA V154PNY0.1H0 V155KHX0.1HA V155PNY0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

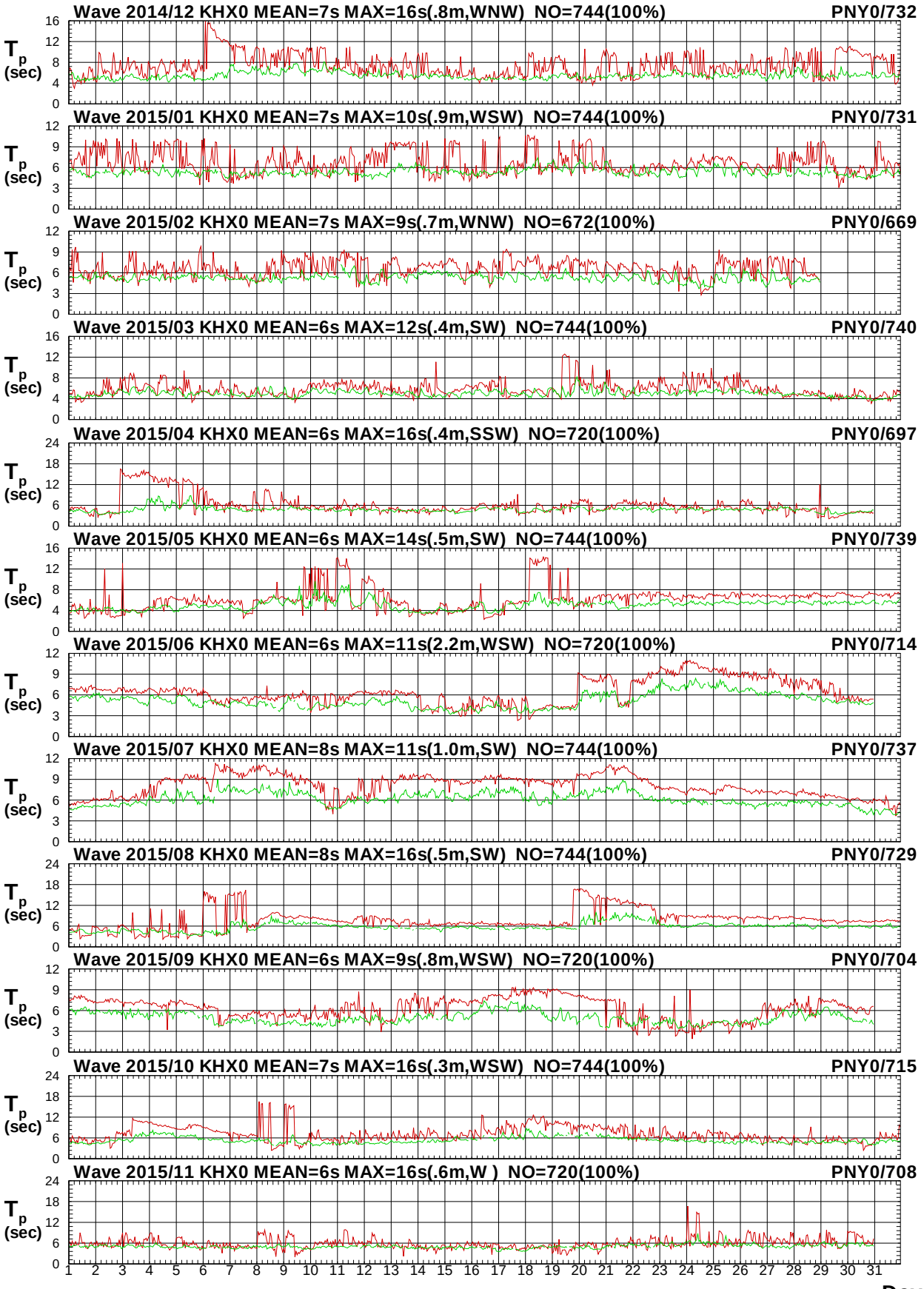


圖 7.5b　2015年每月高雄海域 X 站與屏東海域 Y 站週期圖

V14CKHX0.1HA V14CPNY0.1H0 V151KHX0.1HA V151PNY0.1H0 V152KHX0.1HA V152PNY0.1H0
V153KHX0.1HA V153PNY0.1H0 V154KHX0.1HA V154PNY0.1H0 V155KHX0.1HA V155PNY0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

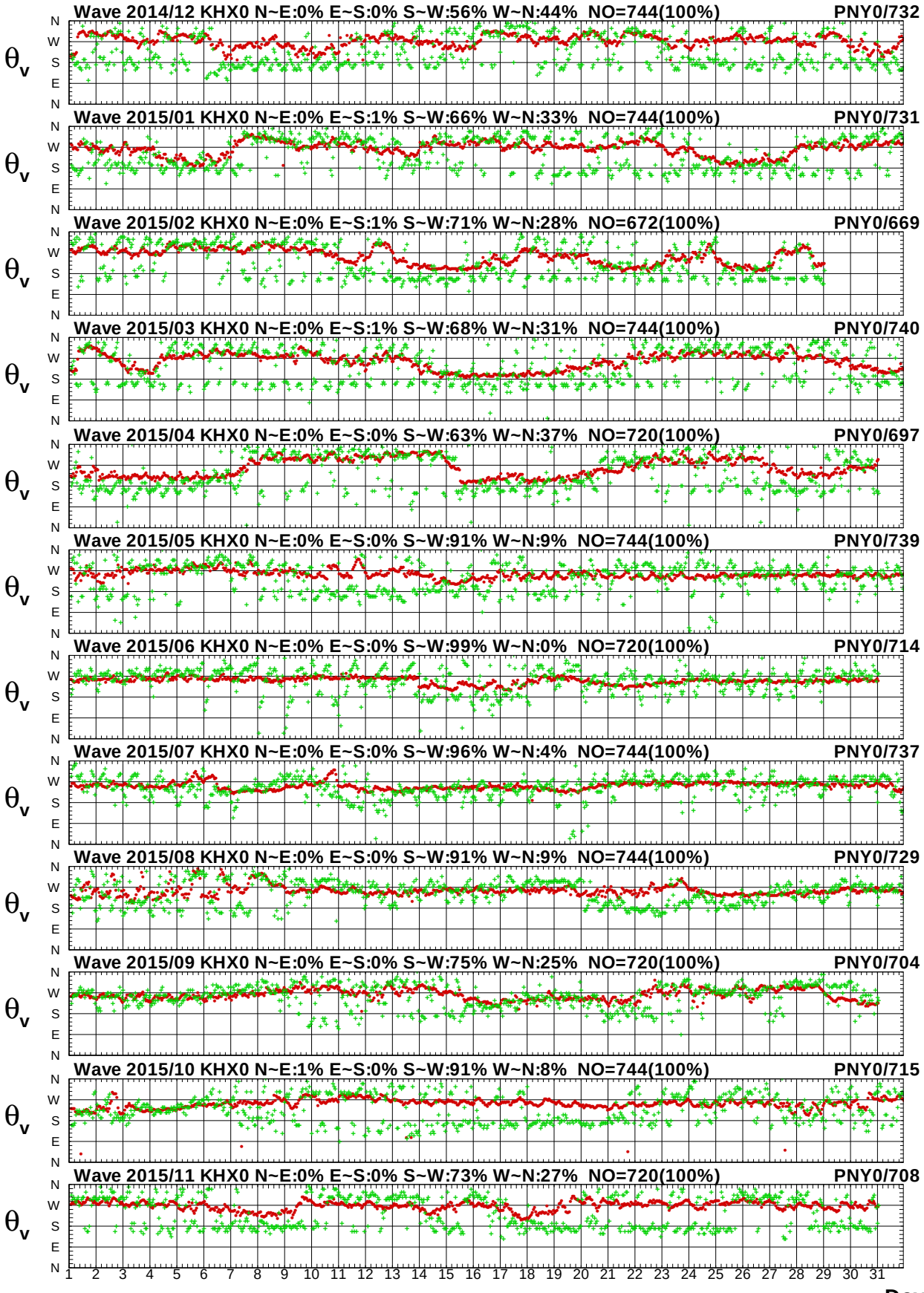


圖 7.5c　2015年每月高雄海域 X 站與屏東海域 Y 站波向圖

V14CKHX0.1HA V14CPNY0.1H0 V151KHX0.1HA V151PNY0.1H0 V152KHX0.1HA V152PNY0.1H0
V153KHX0.1HA V153PNY0.1H0 V154KHX0.1HA V154PNY0.1H0 V155KHX0.1HA V155PNY0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

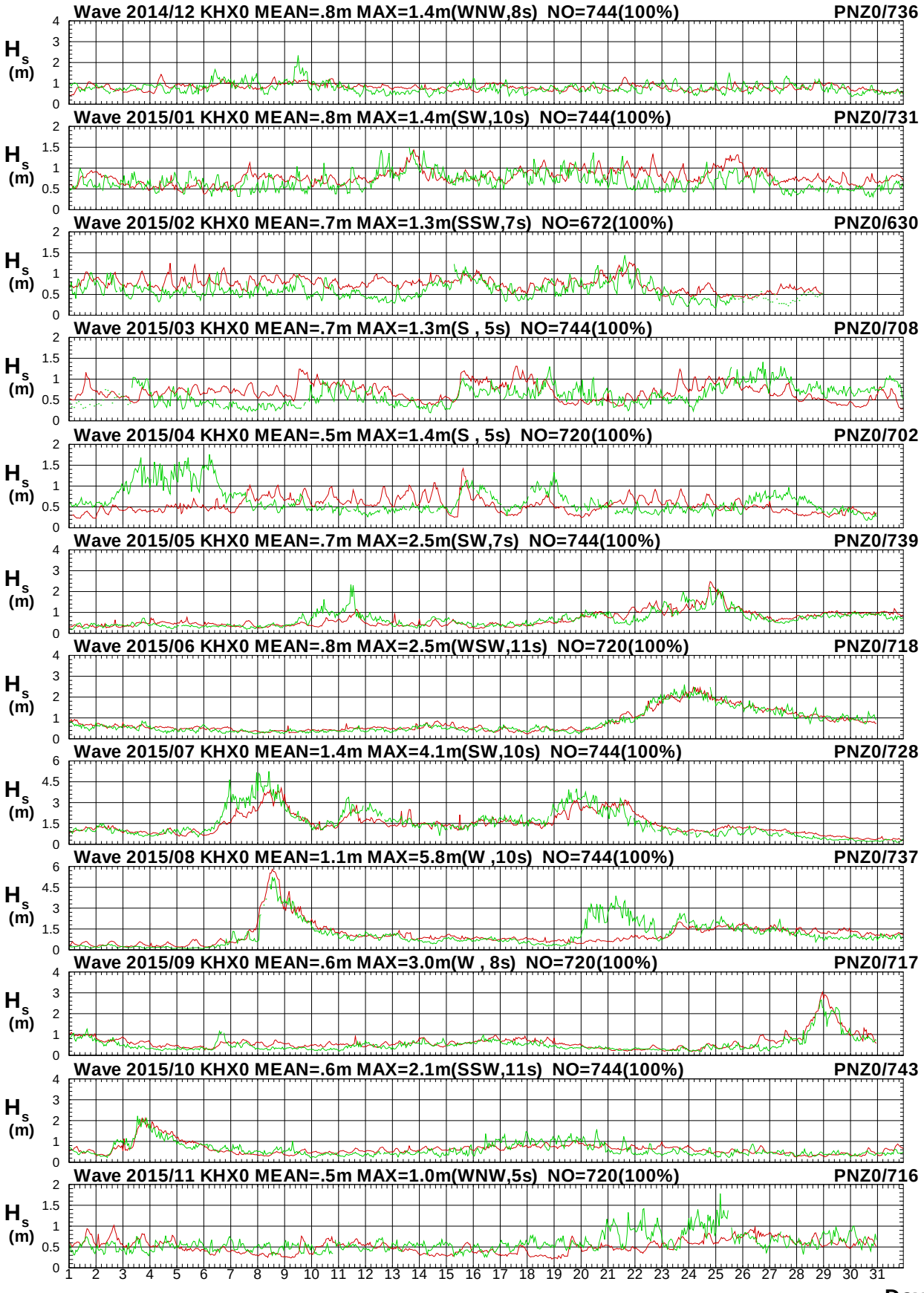


圖 7.6a　2015年每月高雄海域 X 站與屏東海域 Z 站波高圖

V14CKHX0.1HA V14CPNZ0.1H0 V151KHX0.1HA V151PNZ0.1H0 V152KHX0.1HA V152PNZ0.1H0
V153KHX0.1HA V153PNZ0.1H0 V154KHX0.1HA V154PNZ0.1H0 V155KHX0.1HA V155PNZ0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

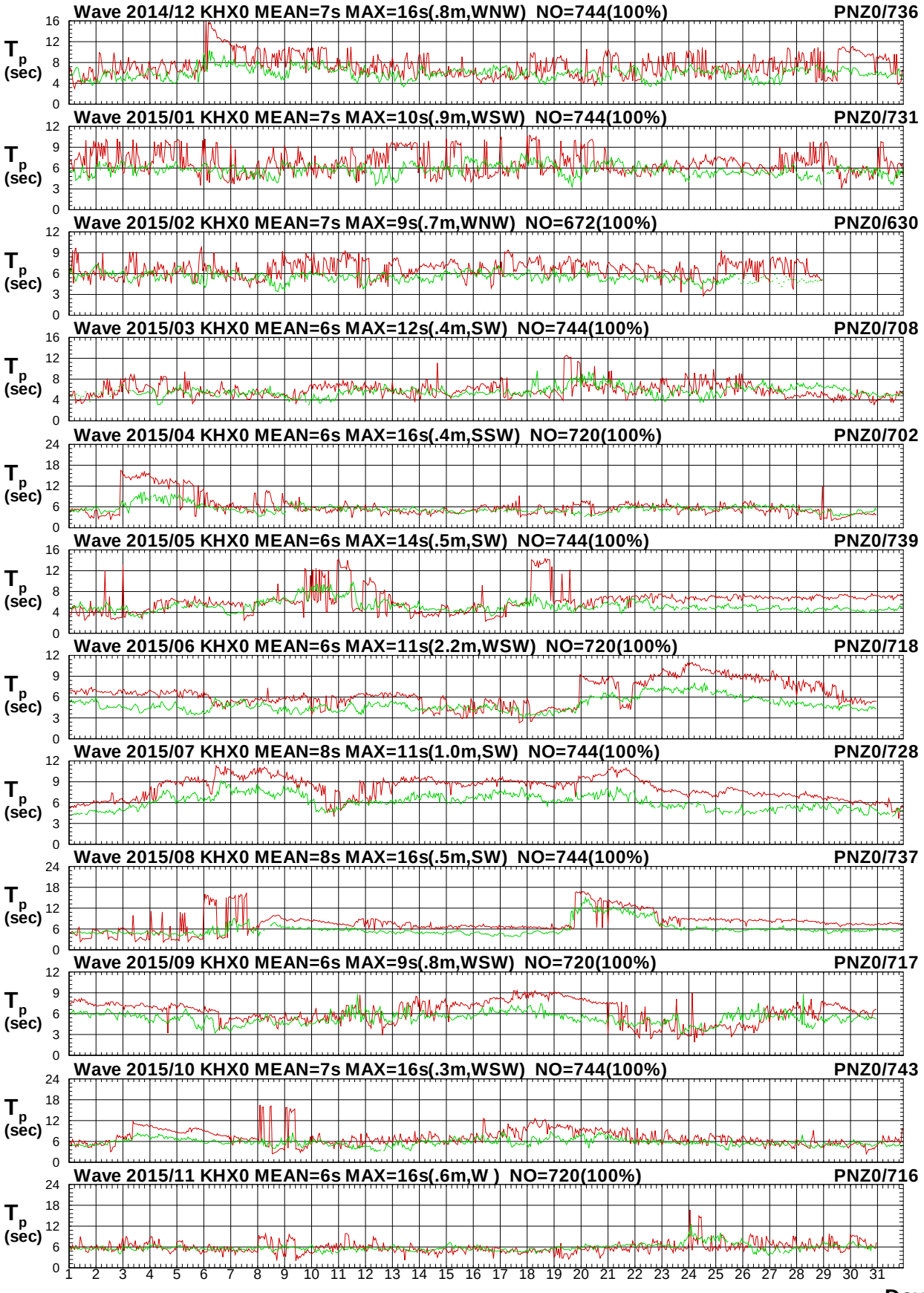


圖 7.6b　2015年每月高雄海域 X 站與屏東海域 Z 站週期圖

V14CKHX0.1HA V14CPNZ0.1H0 V151KHX0.1HA V151PNZ0.1H0 V152KHX0.1HA V152PNZ0.1H0
V153KHX0.1HA V153PNZ0.1H0 V154KHX0.1HA V154PNZ0.1H0 V155KHX0.1HA V155PNZ0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

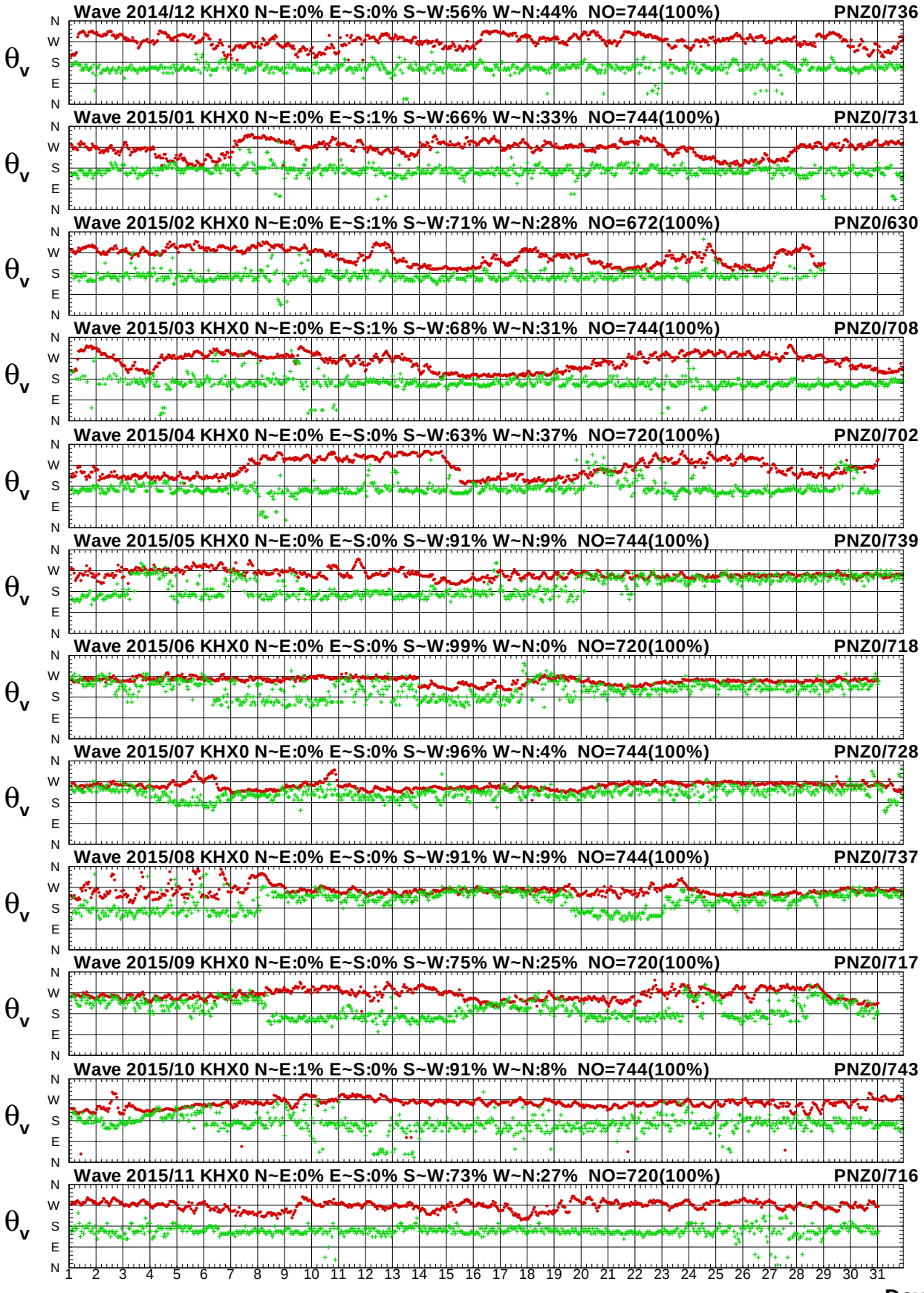


圖 7.6c　2015年每月高雄海域 X 站與屏東海域 Z 站波向圖

V14CKHX0.1HA V14CPNZ0.1H0 V151KHX0.1HA V151PNZ0.1H0 V152KHX0.1HA V152PNZ0.1H0
V153KHX0.1HA V153PNZ0.1H0 V154KHX0.1HA V154PNZ0.1H0 V155KHX0.1HA V155PNZ0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

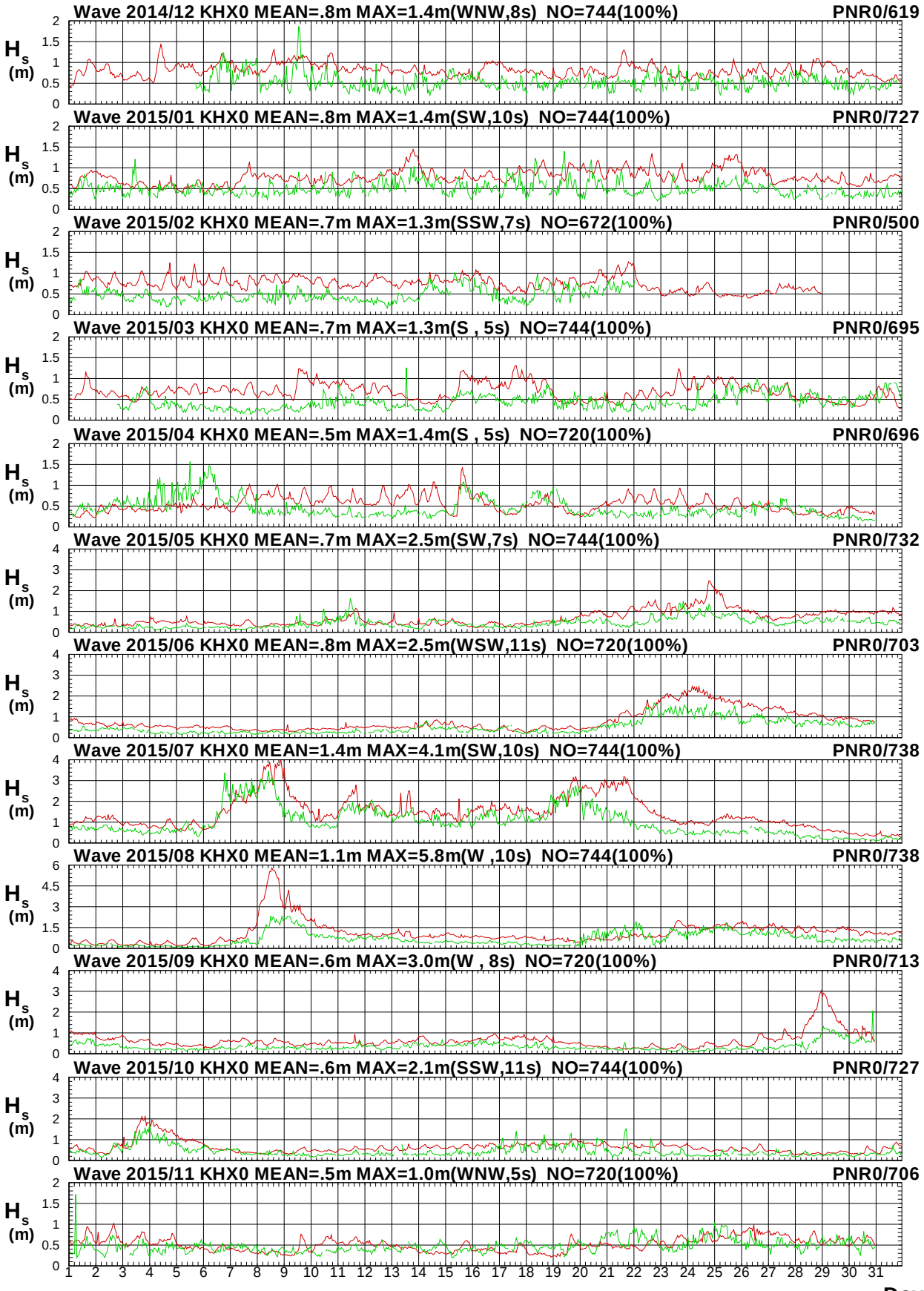


圖 7.7a　2015年每月高雄海域 X 站與屏東海域 R 站波高圖

V14CKHX0.1HA V14CPNR0.1H0 V151KHX0.1HA V151PNR0.1H0 V152KHX0.1HA V152PNR0.1H0
V153KHX0.1HA V153PNR0.1H0 V154KHX0.1HA V154PNR0.1H0 V155KHX0.1HA V155PNR0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

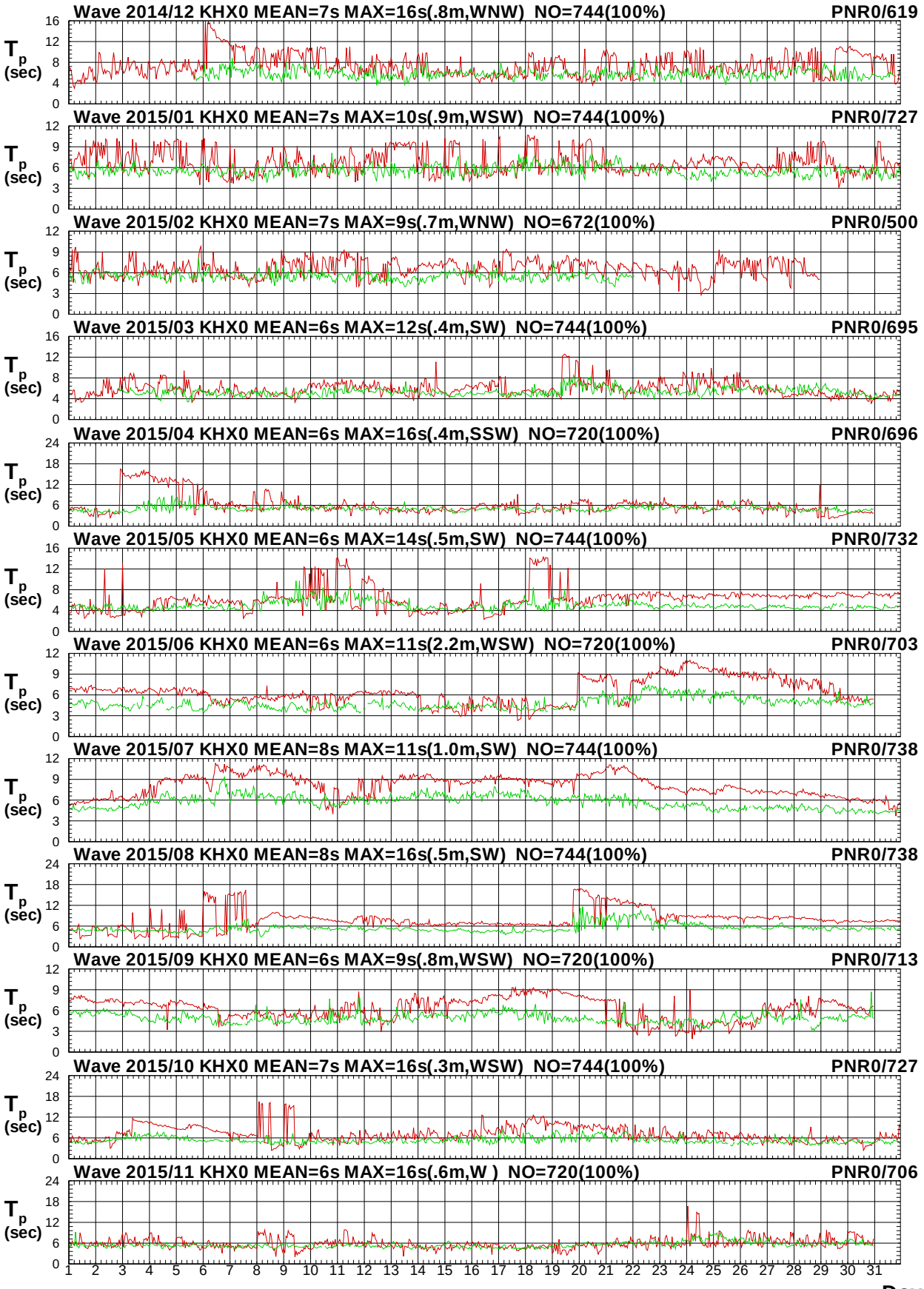


圖 7.7b　2015年每月高雄海域 X 站與屏東海域 R 站週期圖

V14CKHX0.1HA V14CPNR0.1H0 V151KHX0.1HA V151PNR0.1H0 V152KHX0.1HA V152PNR0.1H0
V153KHX0.1HA V153PNR0.1H0 V154KHX0.1HA V154PNR0.1H0 V155KHX0.1HA V155PNR0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

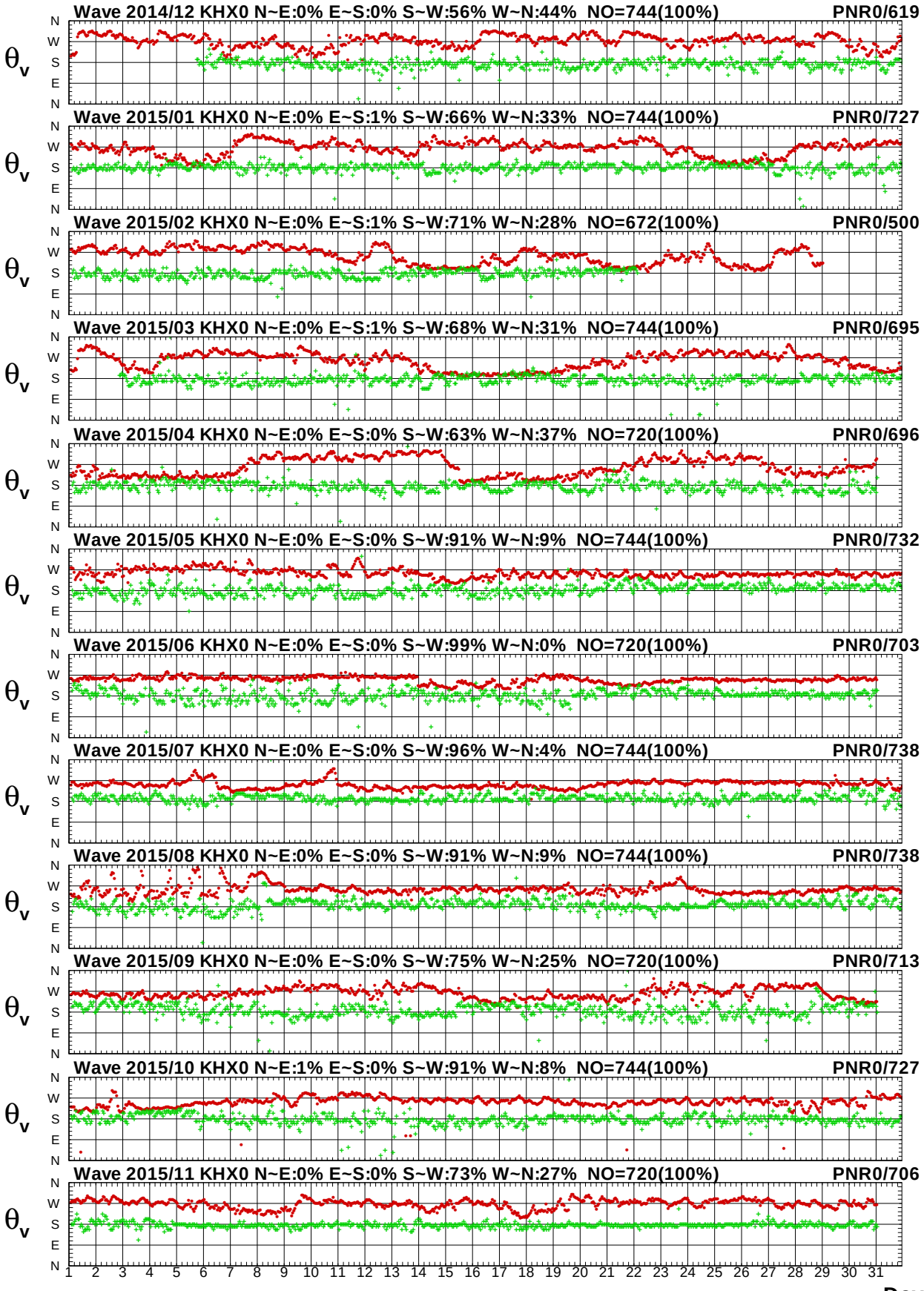


圖 7.7c　2015年每月高雄海域 X 站與屏東海域 R 站波向圖

V14CKHX0.1HA V14CPNR0.1H0 V151KHX0.1HA V151PNR0.1H0 V152KHX0.1HA V152PNR0.1H0
V153KHX0.1HA V153PNR0.1H0 V154KHX0.1HA V154PNR0.1H0 V155KHX0.1HA V155PNR0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

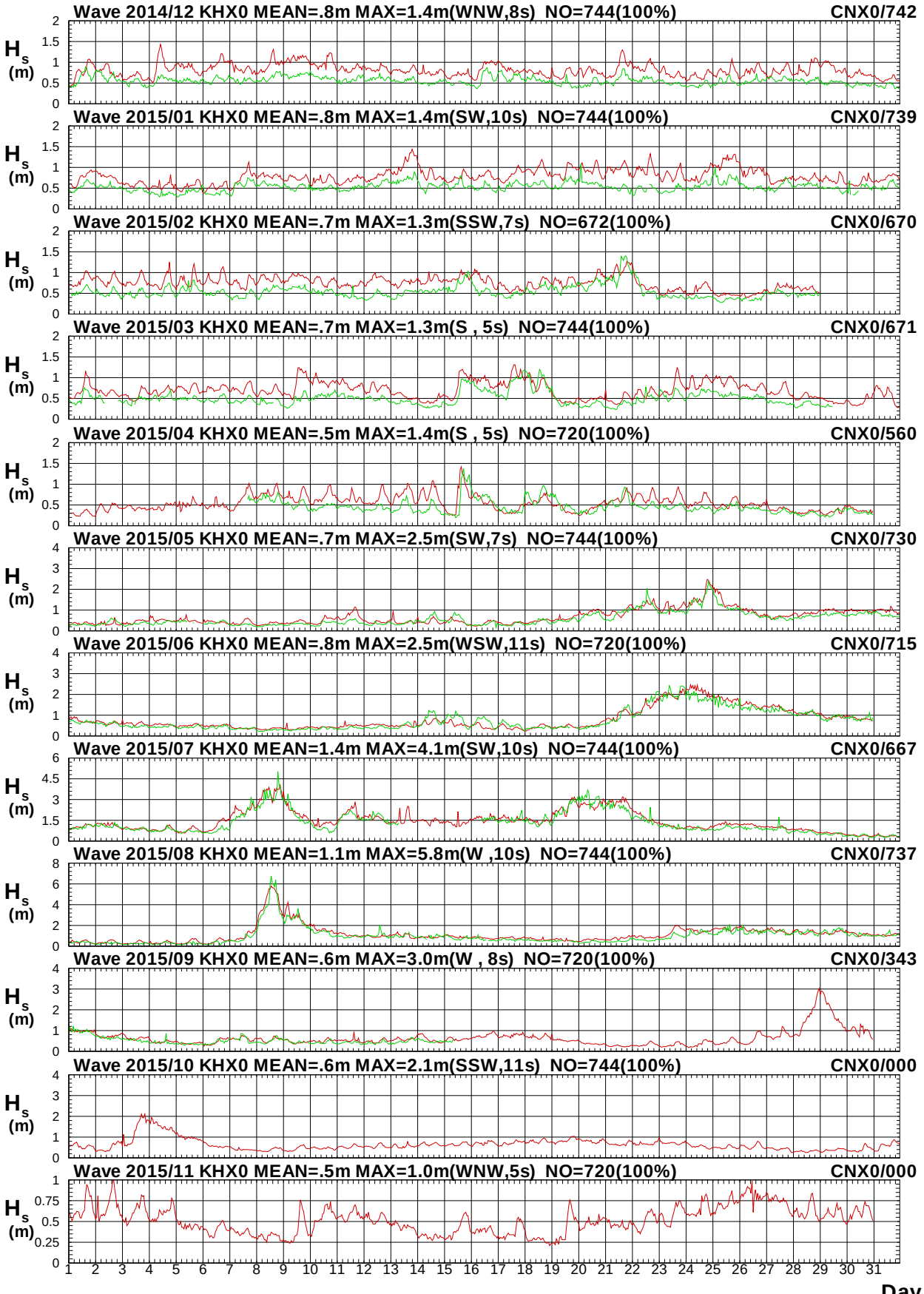


圖 7.8a　2015年每月高雄海域 X 站與嘉南海域 X 站波高圖

V14CKHX0.1HA V14CCNX0.1H0 V151KHX0.1HA V151CNX0.1H0 V152KHX0.1HA V152CNX0.1H0
V153KHX0.1HA V153CNX0.1H0 V154KHX0.1HA V154CNX0.1H0 V155KHX0.1HA V155CNX0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

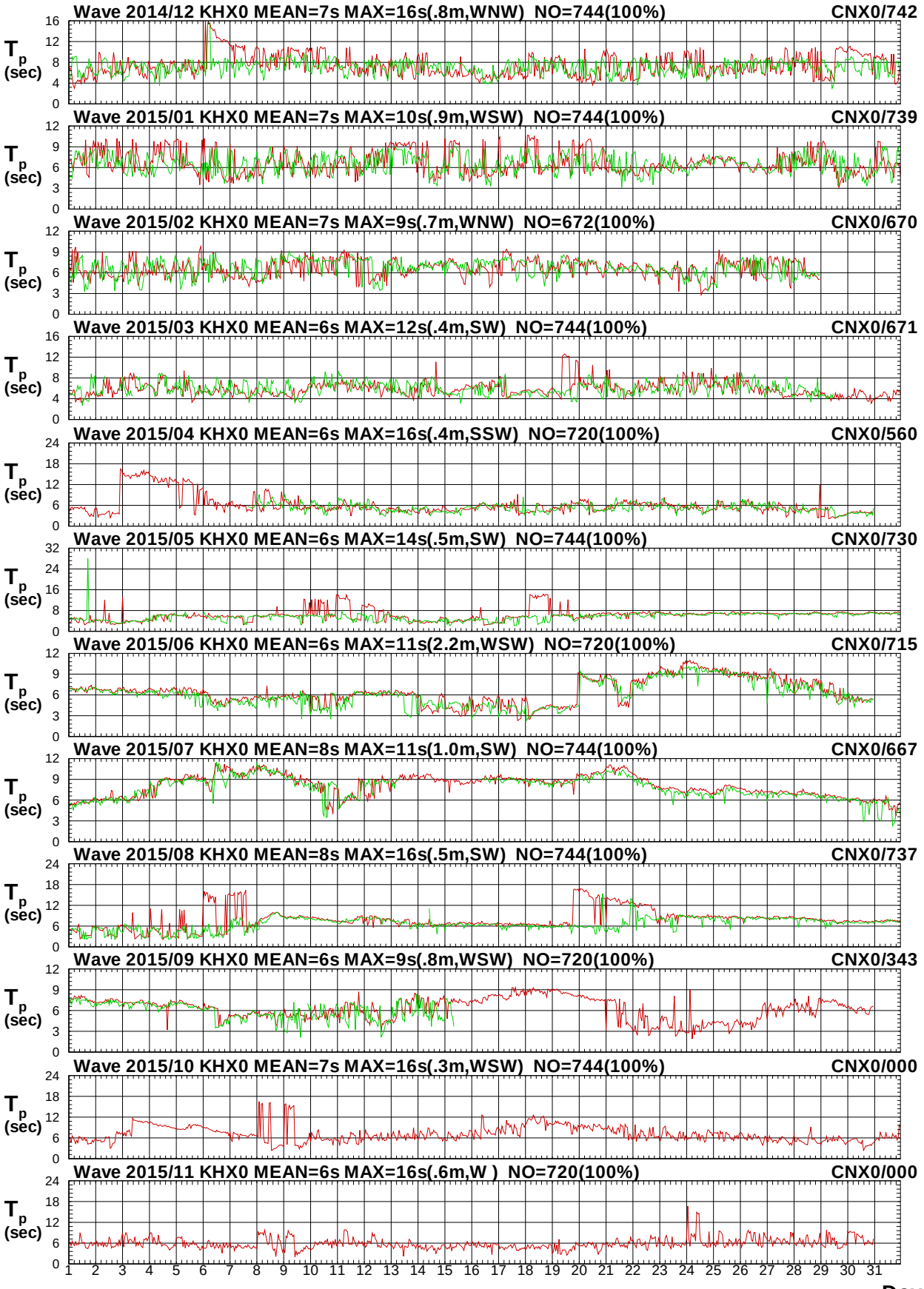


圖 7.8b　2015年每月高雄海域 X 站與嘉南海域 X 站週期圖

V14CKHX0.1HA V14CCNX0.1H0 V151KHX0.1HA V151CNX0.1H0 V152KHX0.1HA V152CNX0.1H0
V153KHX0.1HA V153CNX0.1H0 V154KHX0.1HA V154CNX0.1H0 V155KHX0.1HA V155CNX0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

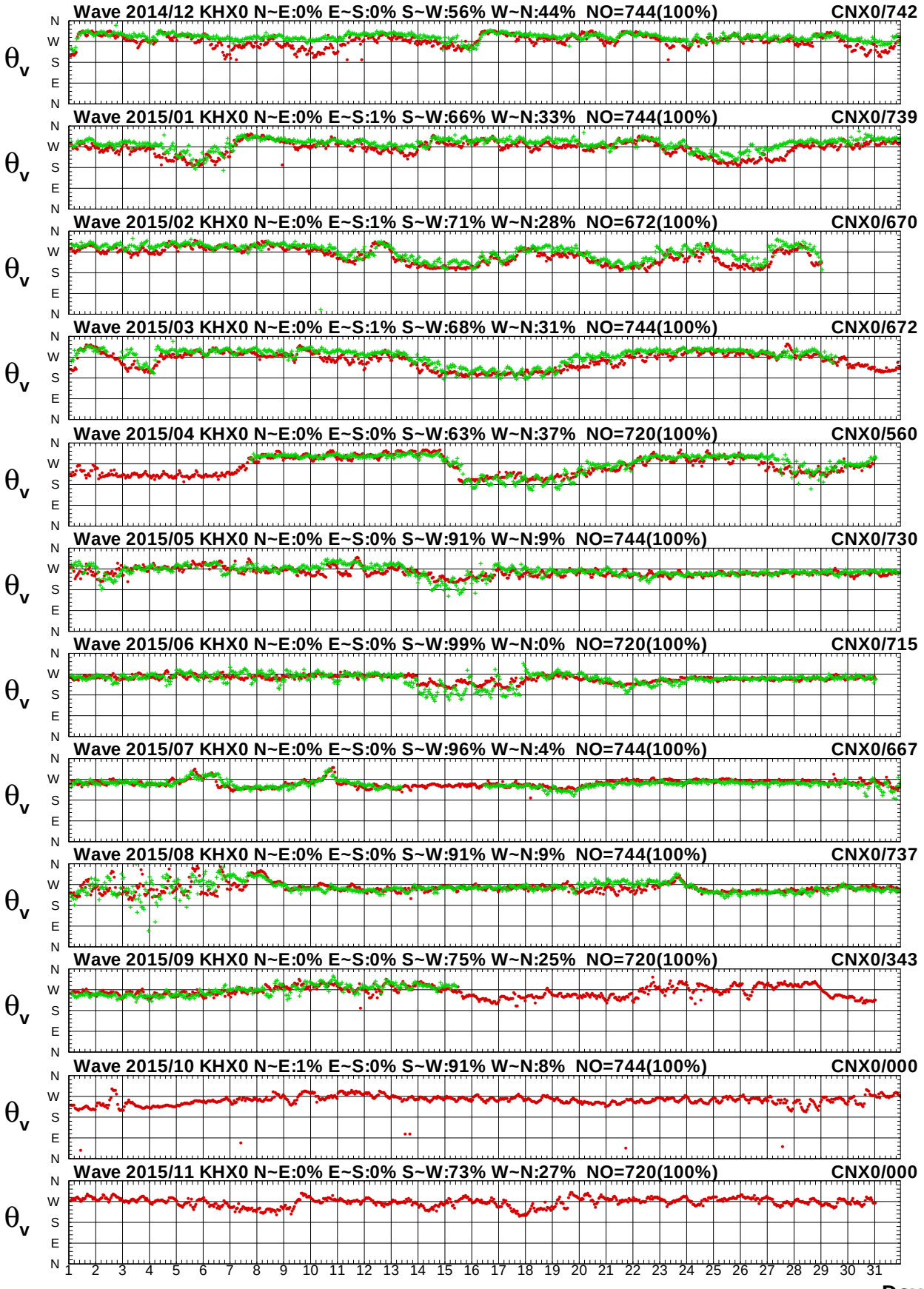


圖 7.8c　2015年每月高雄海域 X 站與嘉南海域 X 站波向圖

V14CKHX0.1HA V14CCNX0.1H0 V151KHX0.1HA V151CNX0.1H0 V152KHX0.1HA V152CNX0.1H0
V153KHX0.1HA V153CNX0.1H0 V154KHX0.1HA V154CNX0.1H0 V155KHX0.1HA V155CNX0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

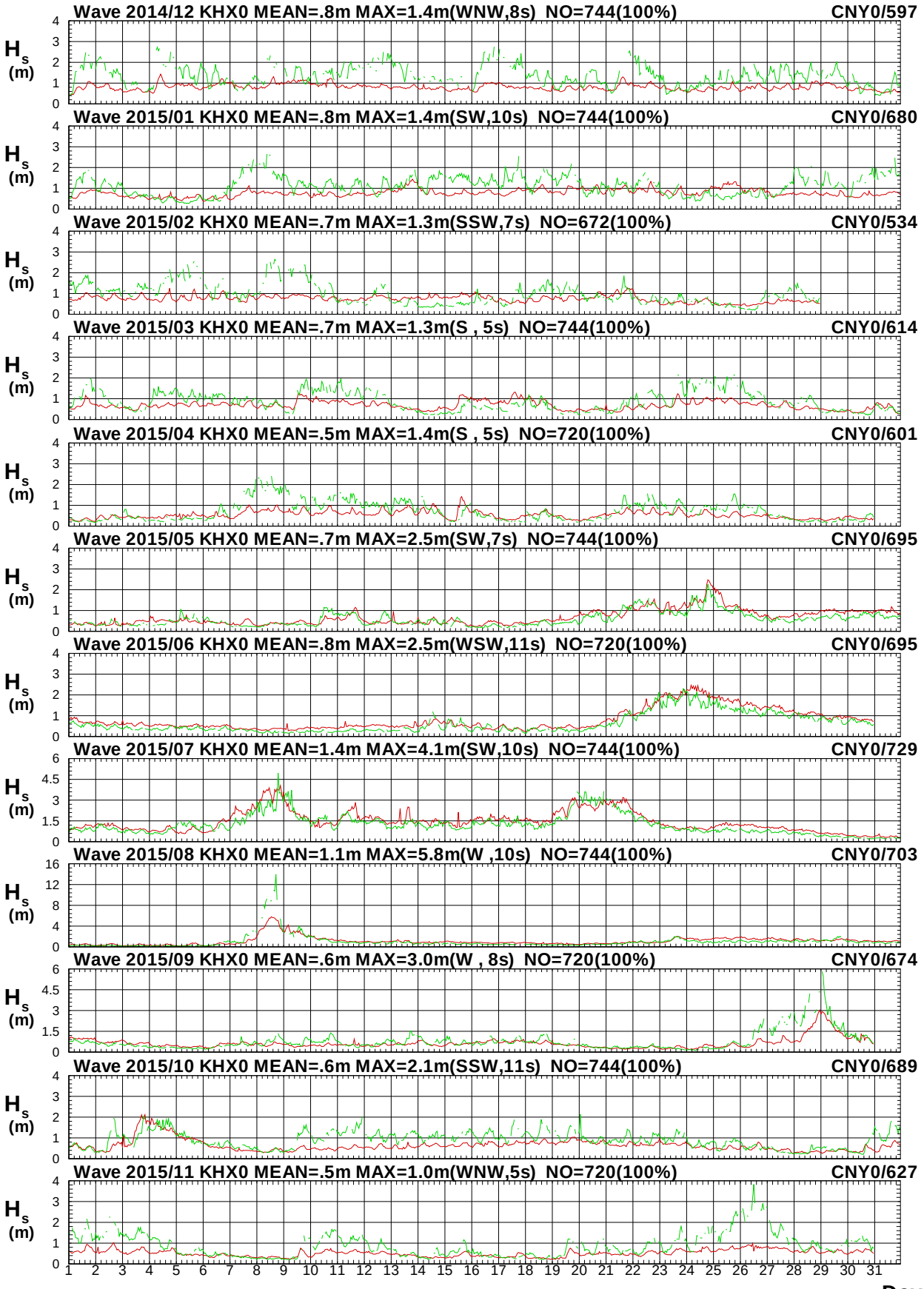


圖 7.9a　2015年每月高雄海域 X 站與嘉南海域 Y 站波高圖

V14CKHX0.1HA V14CCNY0.1H0 V151KHX0.1HA V151CNY0.1H0 V152KHX0.1HA V152CNY0.1H0
V153KHX0.1HA V153CNY0.1H0 V154KHX0.1HA V154CNY0.1H0 V155KHX0.1HA V155CNY0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

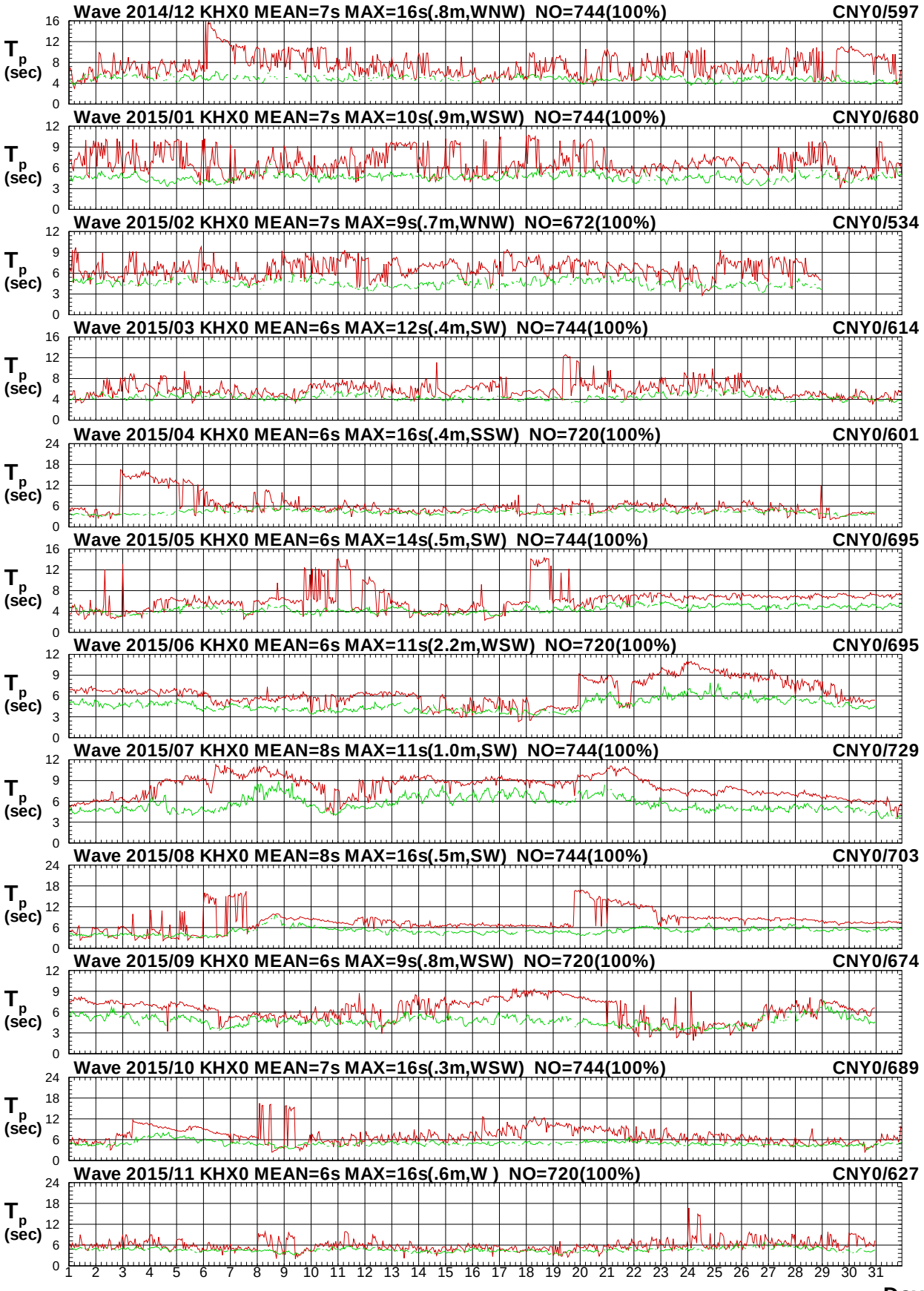


圖 7.9b　2015年每月高雄海域 X 站與嘉南海域 Y 站週期圖

V14CKHX0.1HA V14CCNY0.1H0 V151KHX0.1HA V151CNY0.1H0 V152KHX0.1HA V152CNY0.1H0
V153KHX0.1HA V153CNY0.1H0 V154KHX0.1HA V154CNY0.1H0 V155KHX0.1HA V155CNY0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

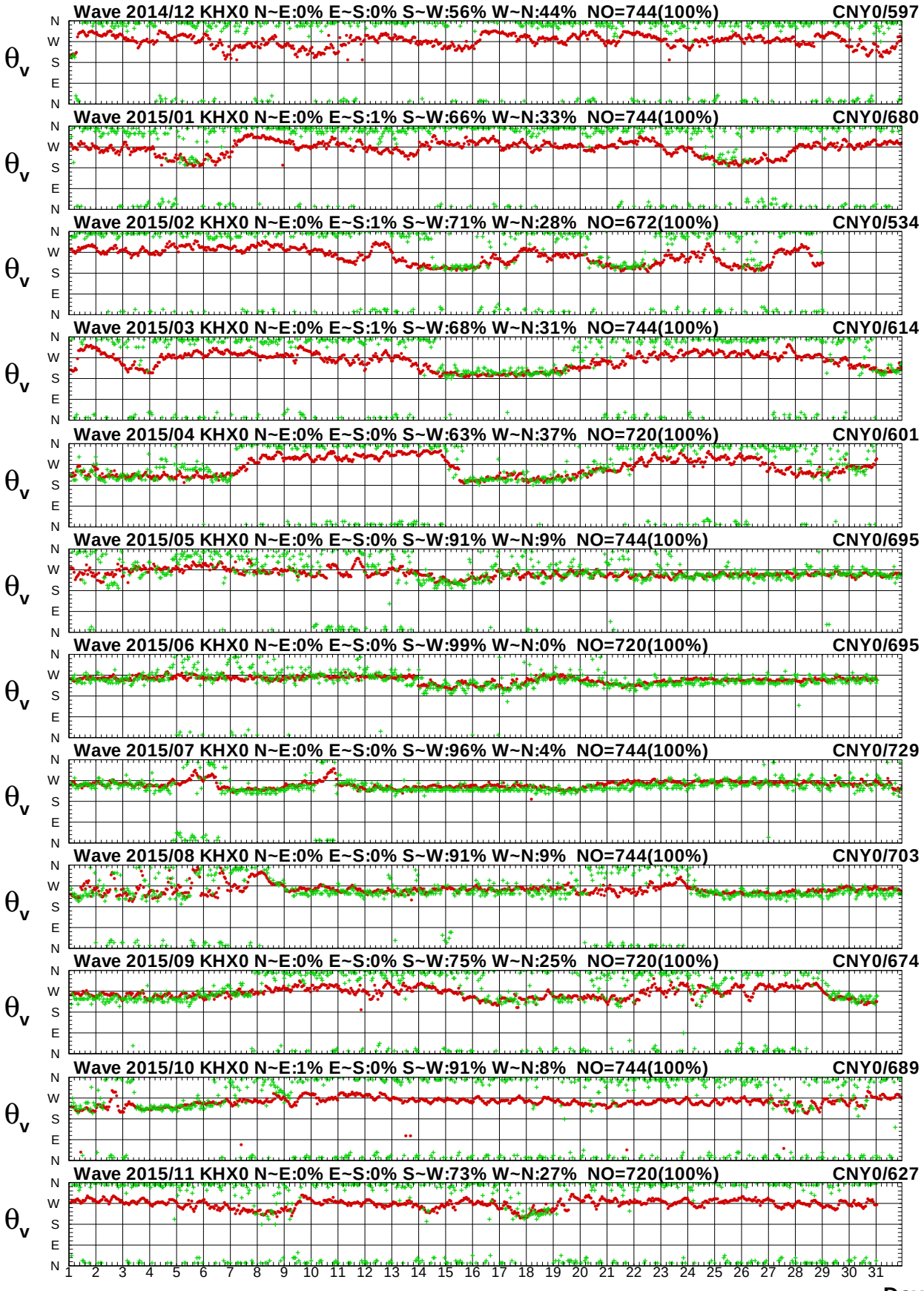


圖 7.9c　2015年每月高雄海域 X 站與嘉南海域 Y 站波向圖

Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

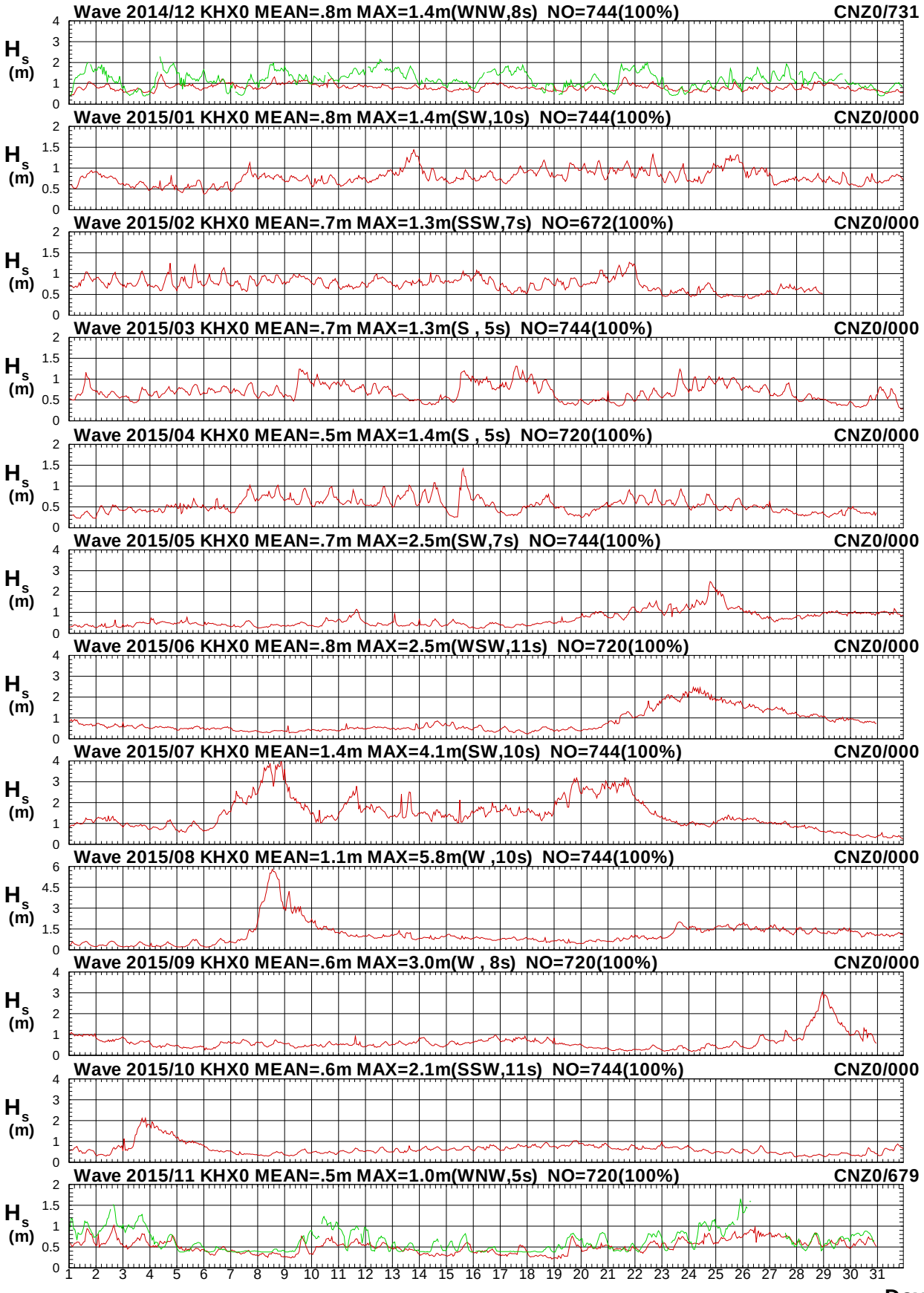


圖7.10a　2015年每月高雄海域 X 站與嘉南海域 Z 站波高圖

V14CKHX0.1HA V14CCNZ0.1H0 V151KHX0.1HA V151CNZ0.1H0 V152KHX0.1HA V152CNZ0.1H0
V153KHX0.1HA V153CNZ0.1H0 V154KHX0.1HA V154CNZ0.1H0 V155KHX0.1HA V155CNZ0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

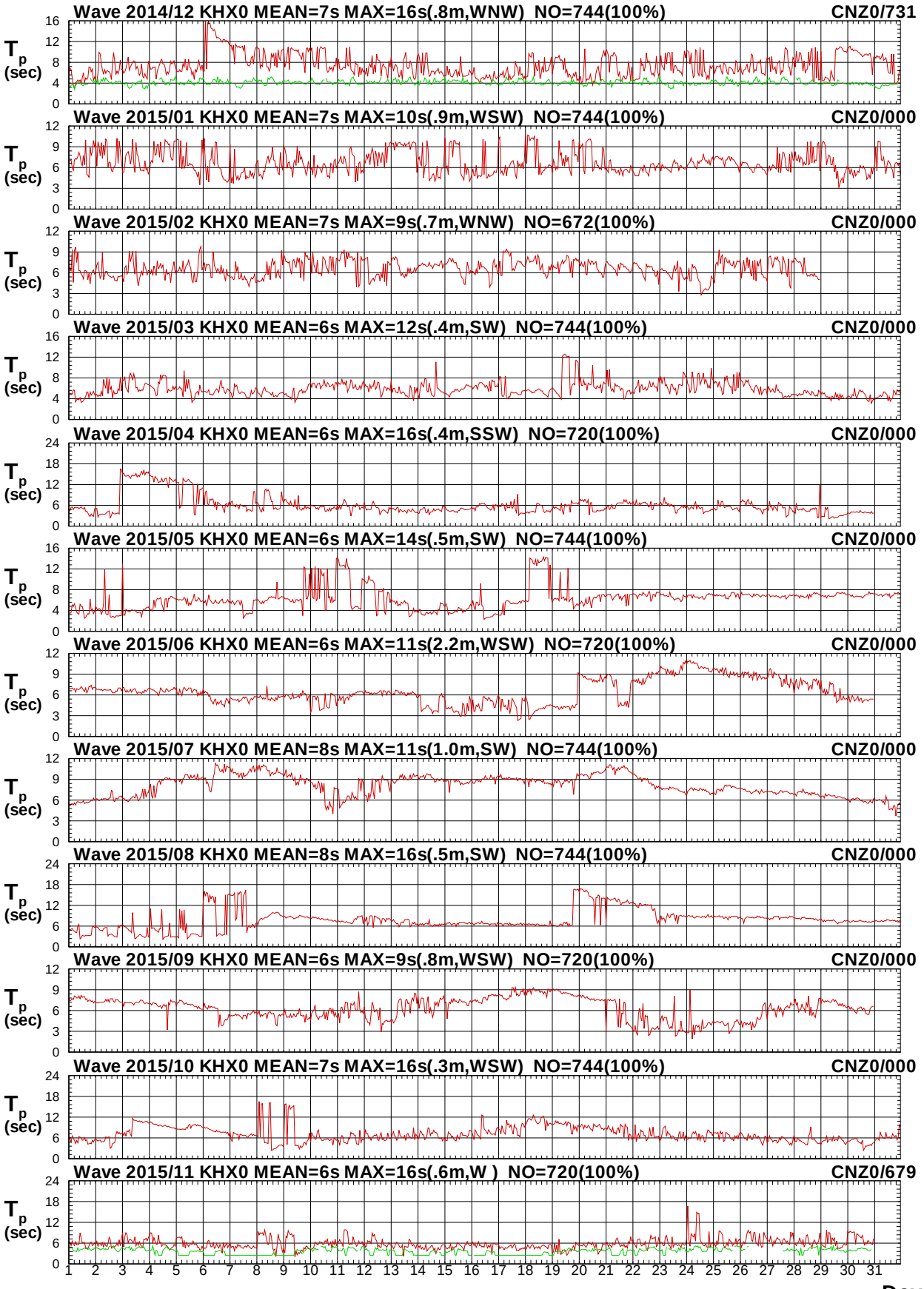


圖7.10b　2015年每月高雄海域 X 站與嘉南海域 Z 站週期圖

V14CKHX0.1HA V14CCNZ0.1H0 V151KHX0.1HA V151CNZ0.1H0 V152KHX0.1HA V152CNZ0.1H0
V153KHX0.1HA V153CNZ0.1H0 V154KHX0.1HA V154CNZ0.1H0 V155KHX0.1HA V155CNZ0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

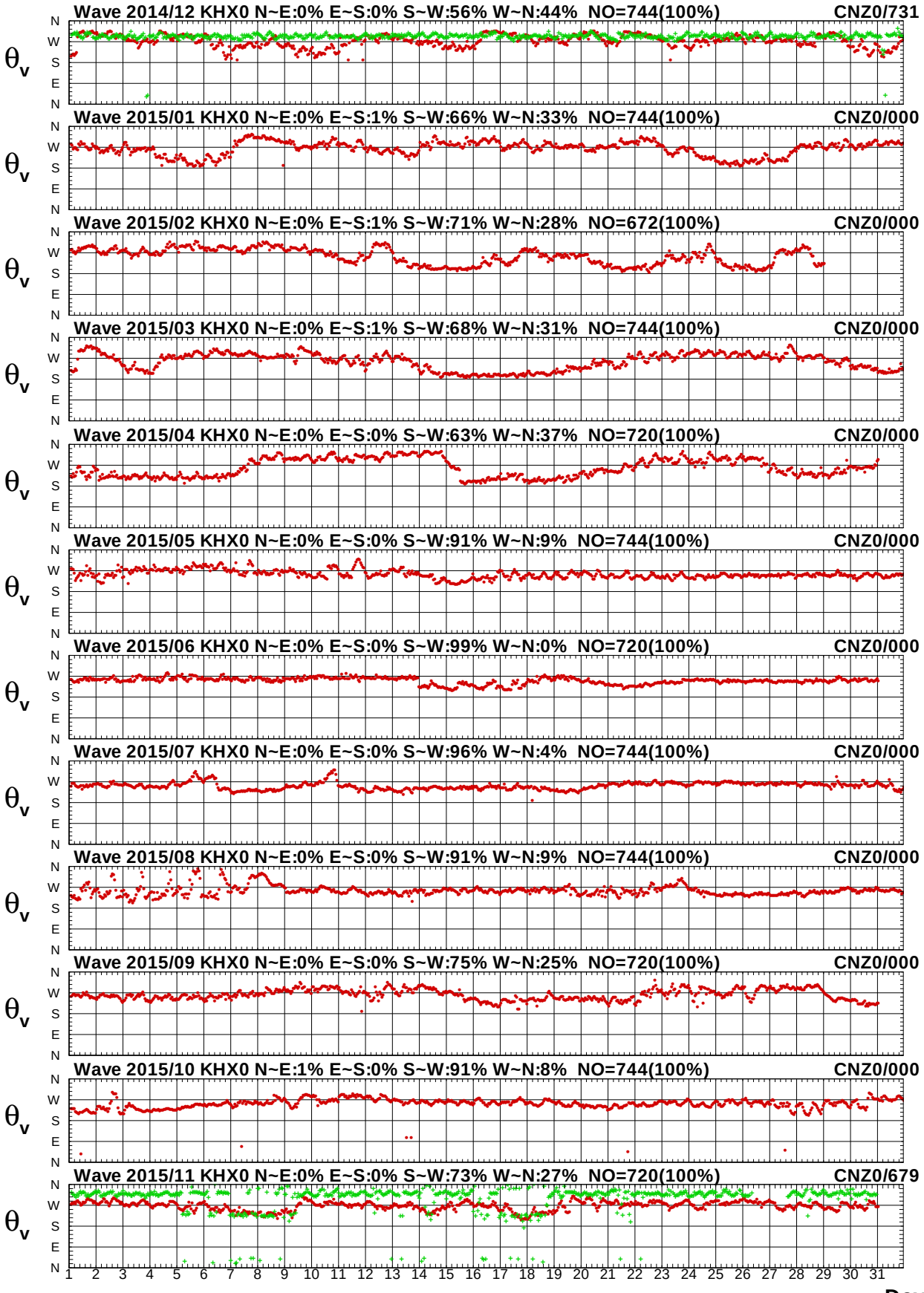


圖7.10c　2015年每月高雄海域 X 站與嘉南海域 Z 站波向圖

V14CKHX0.1HA V14CCNZ0.1H0 V151KHX0.1HA V151CNZ0.1H0 V152KHX0.1HA V152CNZ0.1H0
V153KHX0.1HA V153CNZ0.1H0 V154KHX0.1HA V154CNZ0.1H0 V155KHX0.1HA V155CNZ0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

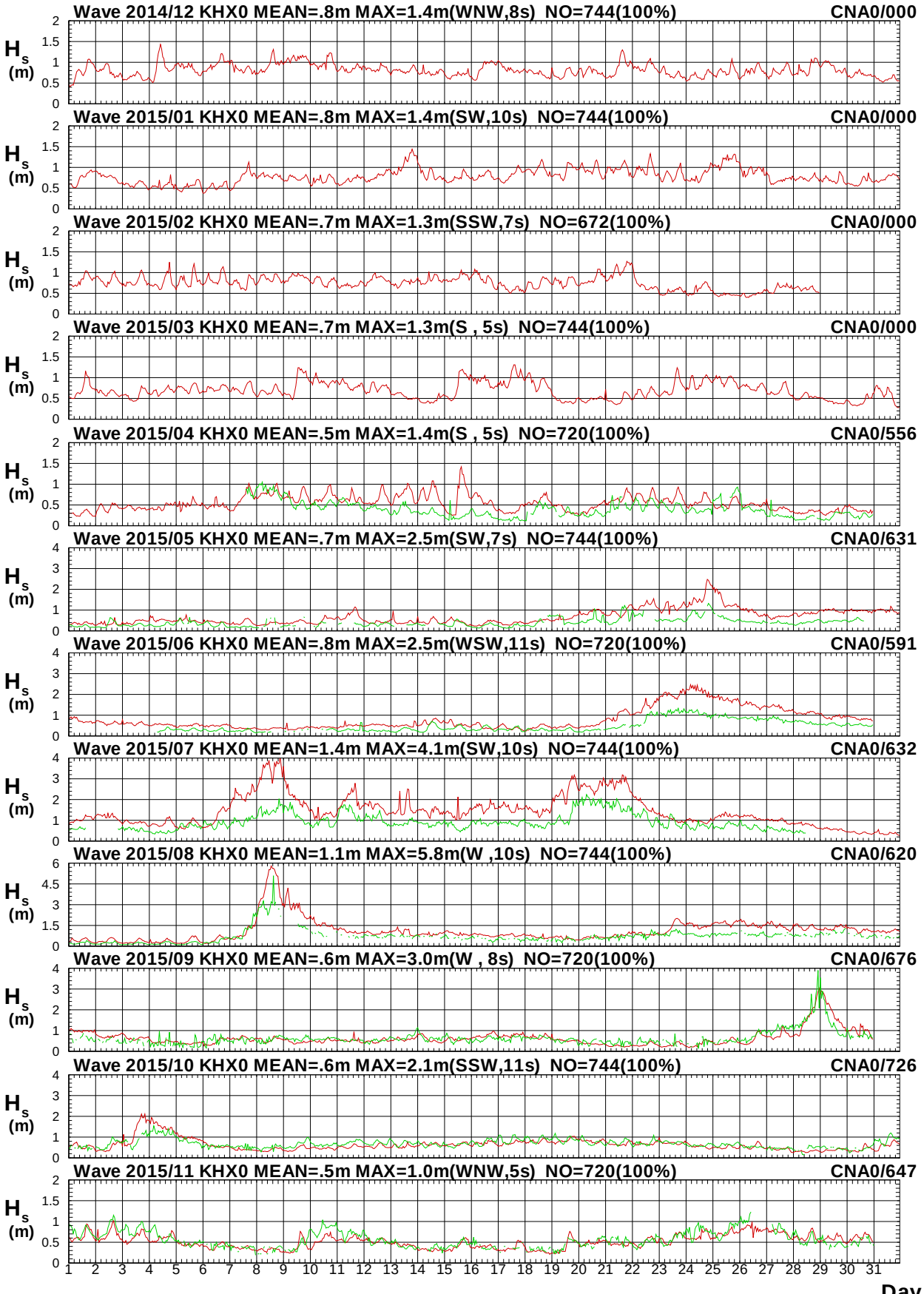


圖7.11a　2015年每月高雄海域 X 站與嘉南海域 A 站波高圖

V14CKHX0.1HA V14CCNA0.1H0 V151KHX0.1HA V151CNA0.1H0 V152KHX0.1HA V152CNA0.1H0
V153KHX0.1HA V153CNA0.1H0 V154KHX0.1HA V154CNA0.1H0 V155KHX0.1HA V155CNA0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

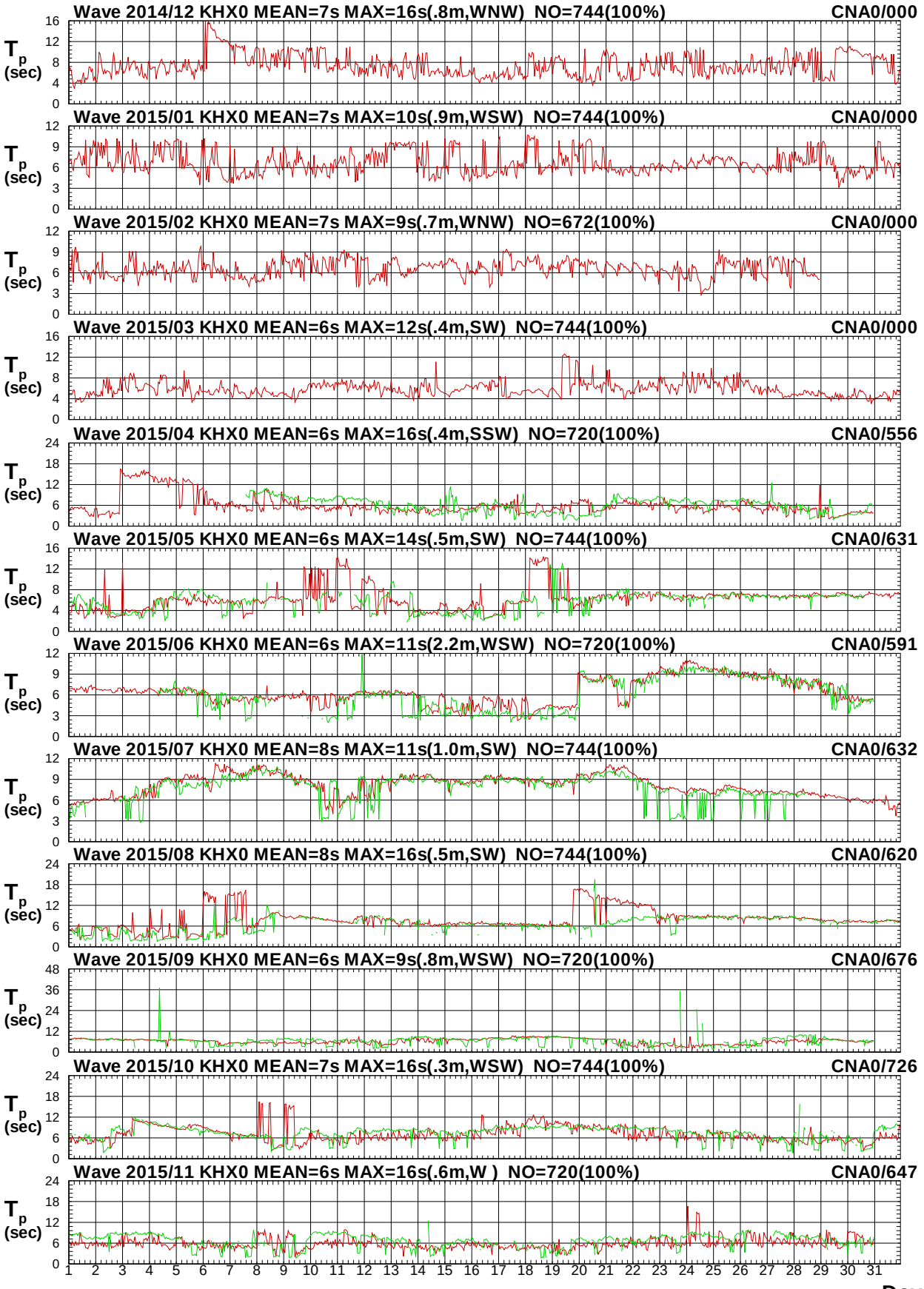


圖7.11b　2015年每月高雄海域 X 站與嘉南海域 A 站週期圖

V14CKHX0.1HA V14CCNA0.1H0 V151KHX0.1HA V151CNA0.1H0 V152KHX0.1HA V152CNA0.1H0
V153KHX0.1HA V153CNA0.1H0 V154KHX0.1HA V154CNA0.1H0 V155KHX0.1HA V155CNA0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

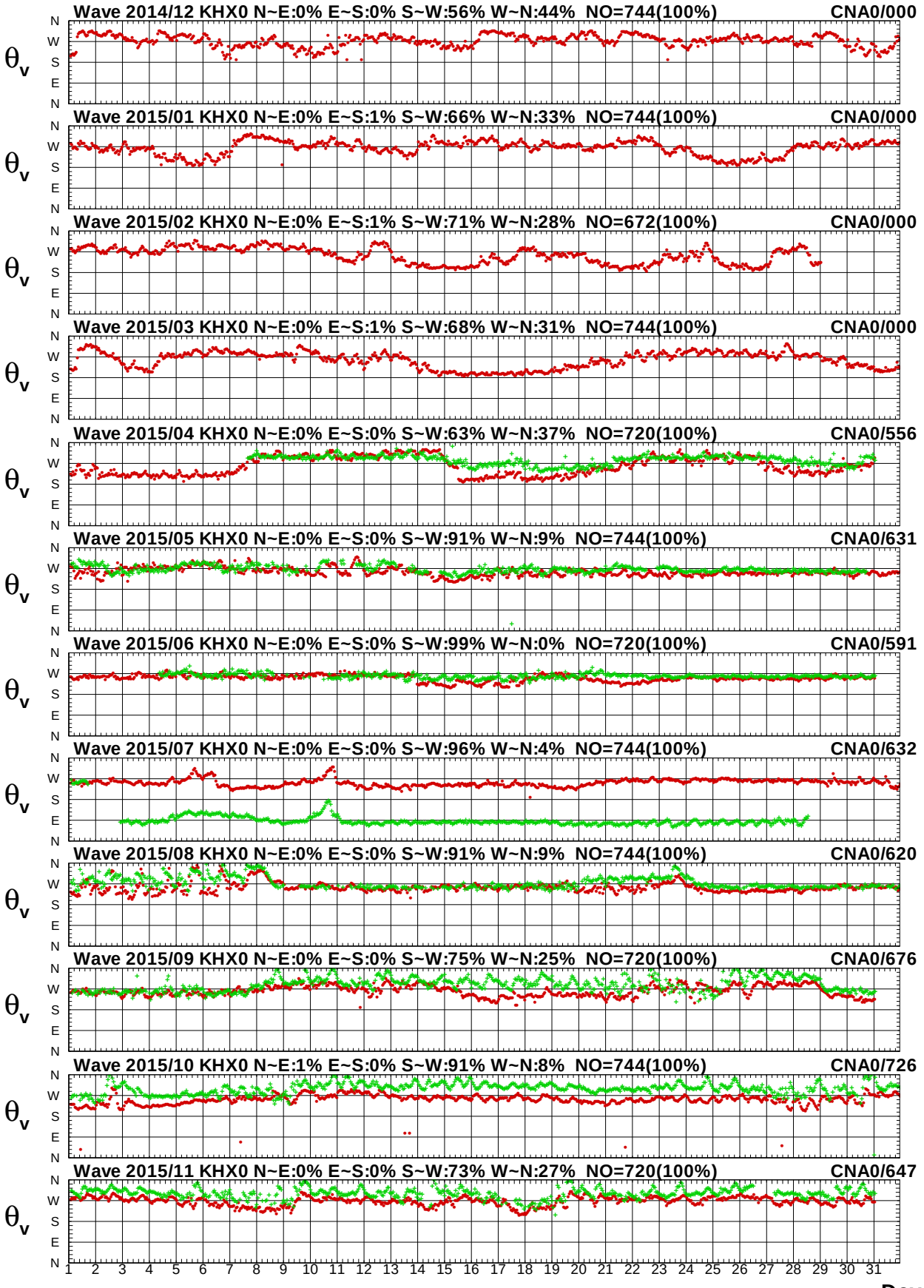


圖7.11c　2015年每月高雄海域 X 站與嘉南海域 A 站波向圖

V14CKHX0.1HA V14CCNA0.1H0 V151KHX0.1HA V151CNA0.1H0 V152KHX0.1HA V152CNA0.1H0
V153KHX0.1HA V153CNA0.1H0 V154KHX0.1HA V154CNA0.1H0 V155KHX0.1HA V155CNA0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

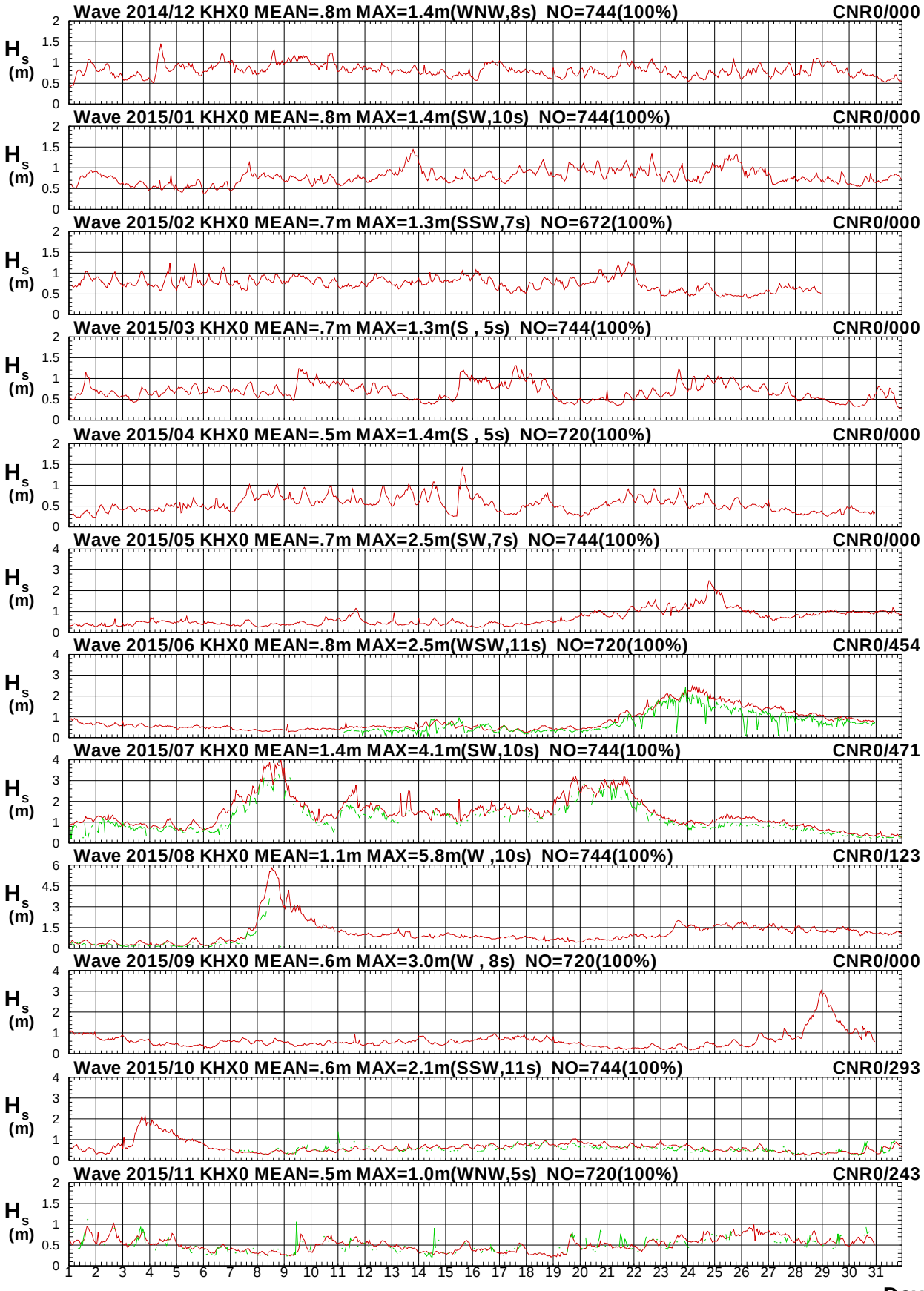


圖7.12a　2015年每月高雄海域 X 站與嘉南海域 R 站波高圖

V14CKHX0.1HA V14CCNR0.1H0 V151KHX0.1HA V151CNR0.1H0 V152KHX0.1HA V152CNR0.1H0
V153KHX0.1HA V153CNR0.1H0 V154KHX0.1HA V154CNR0.1H0 V155KHX0.1HA V155CNR0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

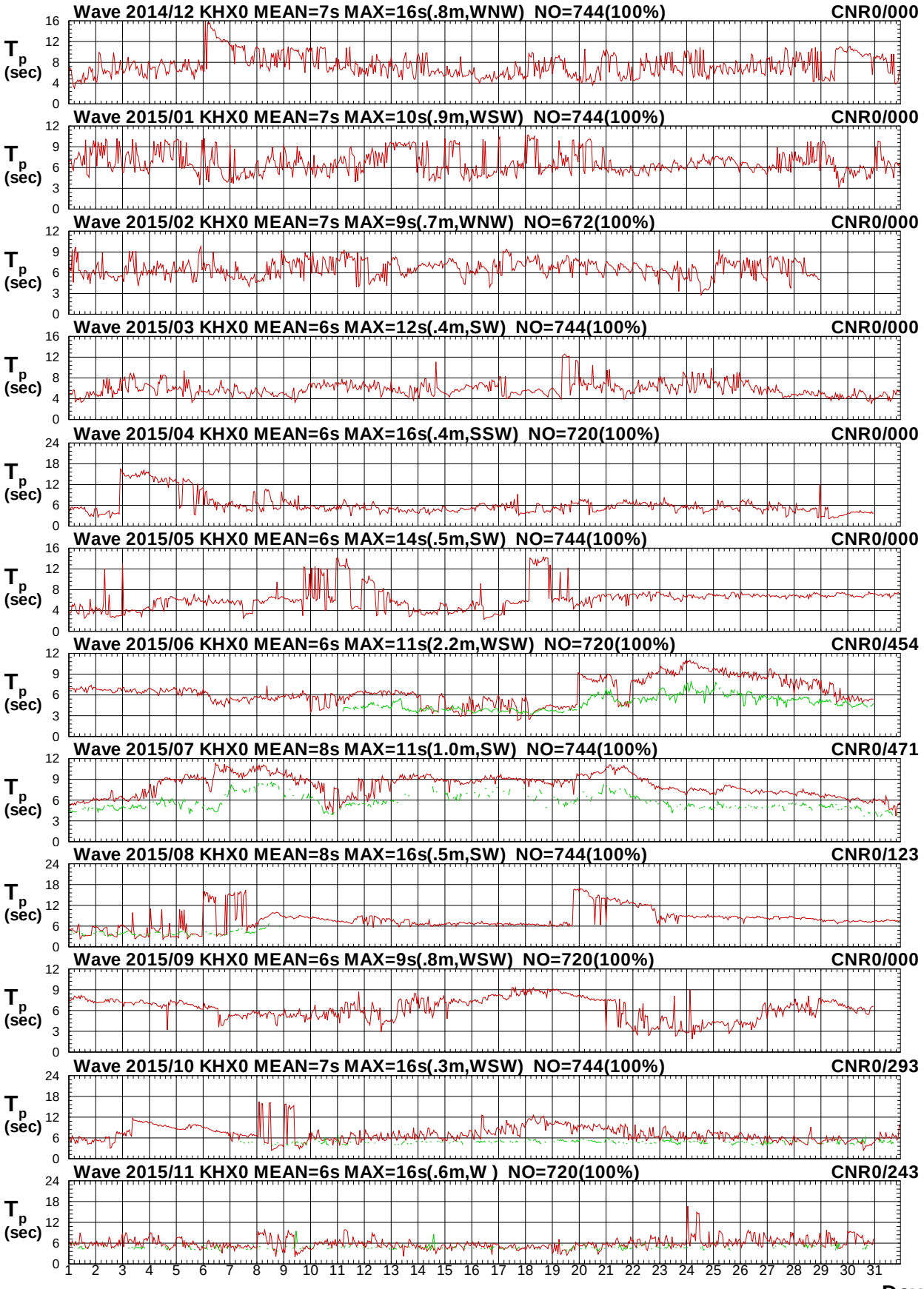


圖7.12b　2015年每月高雄海域 X 站與嘉南海域 R 站週期圖

V14CKHX0.1HA V14CCNR0.1H0 V151KHX0.1HA V151CNR0.1H0 V152KHX0.1HA V152CNR0.1H0
V153KHX0.1HA V153CNR0.1H0 V154KHX0.1HA V154CNR0.1H0 V155KHX0.1HA V155CNR0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

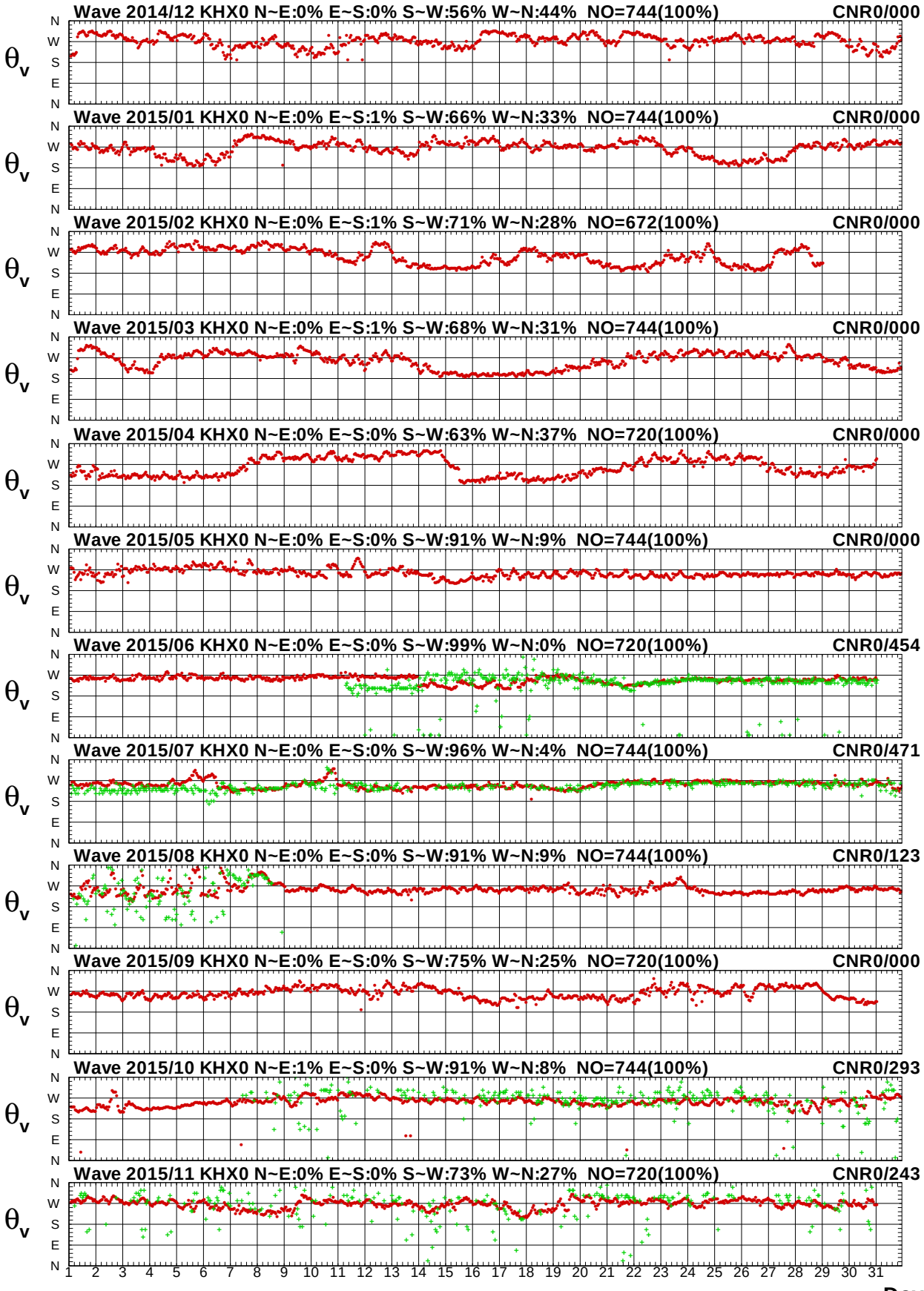


圖7.12c　2015年每月高雄海域 X 站與嘉南海域 R 站波向圖

V14CKHX0.1HA V14CCNR0.1H0 V151KHX0.1HA V151CNR0.1H0 V152KHX0.1HA V152CNR0.1H0
V153KHX0.1HA V153CNR0.1H0 V154KHX0.1HA V154CNR0.1H0 V155KHX0.1HA V155CNR0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

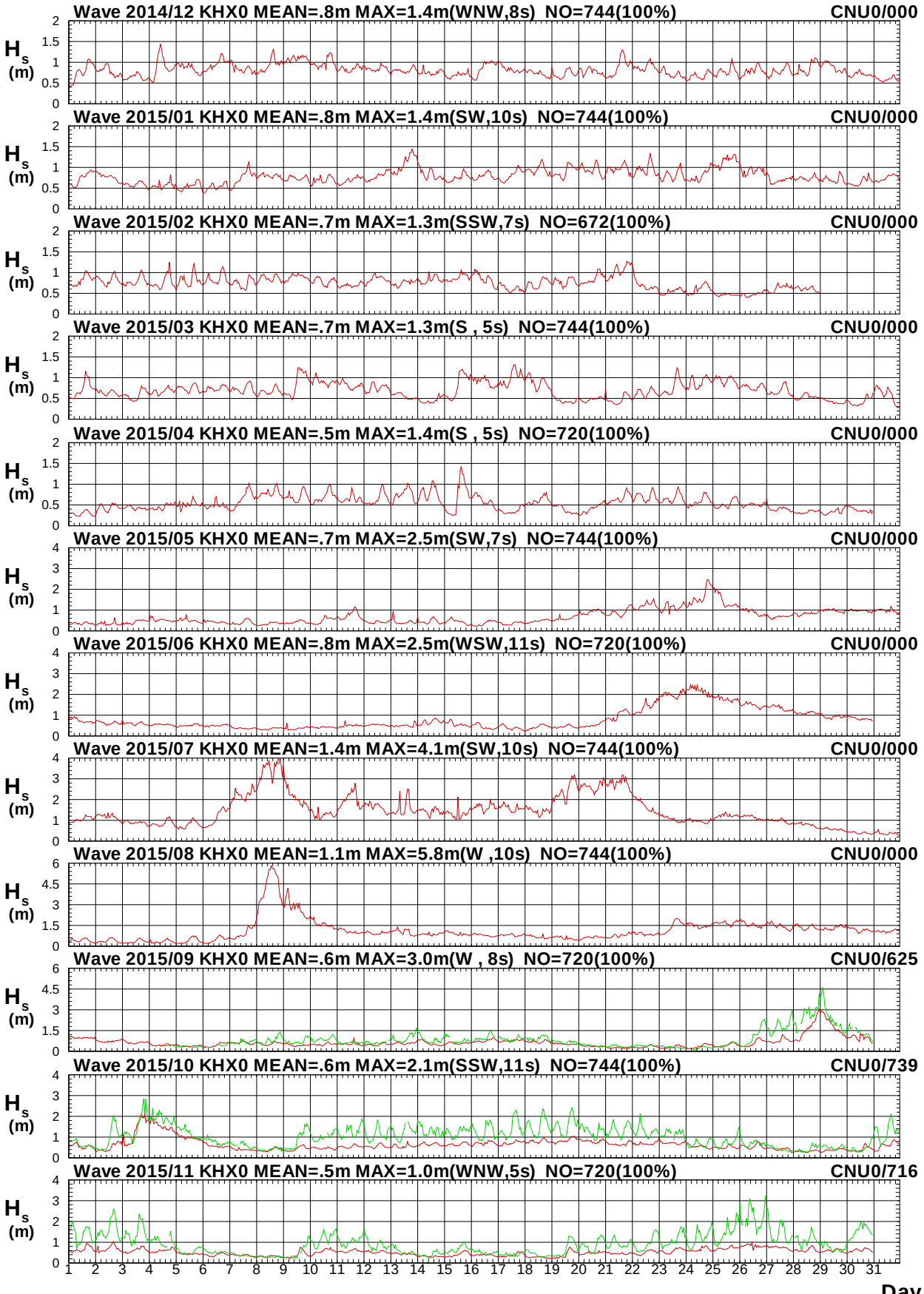


圖7.13a　2015年每月高雄海域 X 站與嘉南海域 U 站波高圖

V14CKHX0.1HA V14CCNU0.1H0 V151KHX0.1HA V151CNU0.1H0 V152KHX0.1HA V152CNU0.1H0
V153KHX0.1HA V153CNU0.1H0 V154KHX0.1HA V154CNU0.1H0 V155KHX0.1HA V155CNU0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

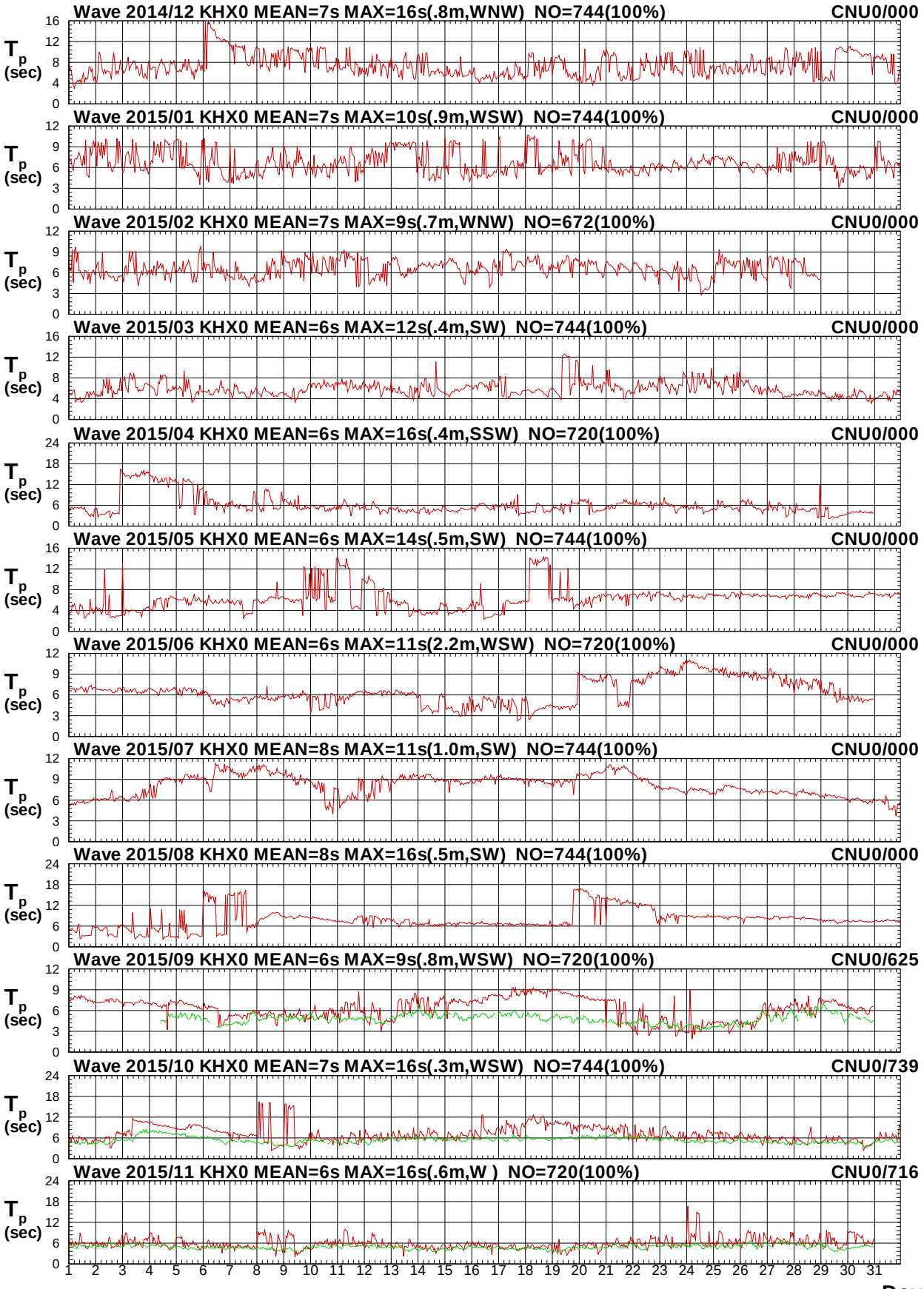


圖7.13b　2015年每月高雄海域 X 站與嘉南海域 U 站週期圖

V14CKHX0.1HA V14CCNU0.1H0 V151KHX0.1HA V151CNU0.1H0 V152KHX0.1HA V152CNU0.1H0
V153KHX0.1HA V153CNU0.1H0 V154KHX0.1HA V154CNU0.1H0 V155KHX0.1HA V155CNU0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

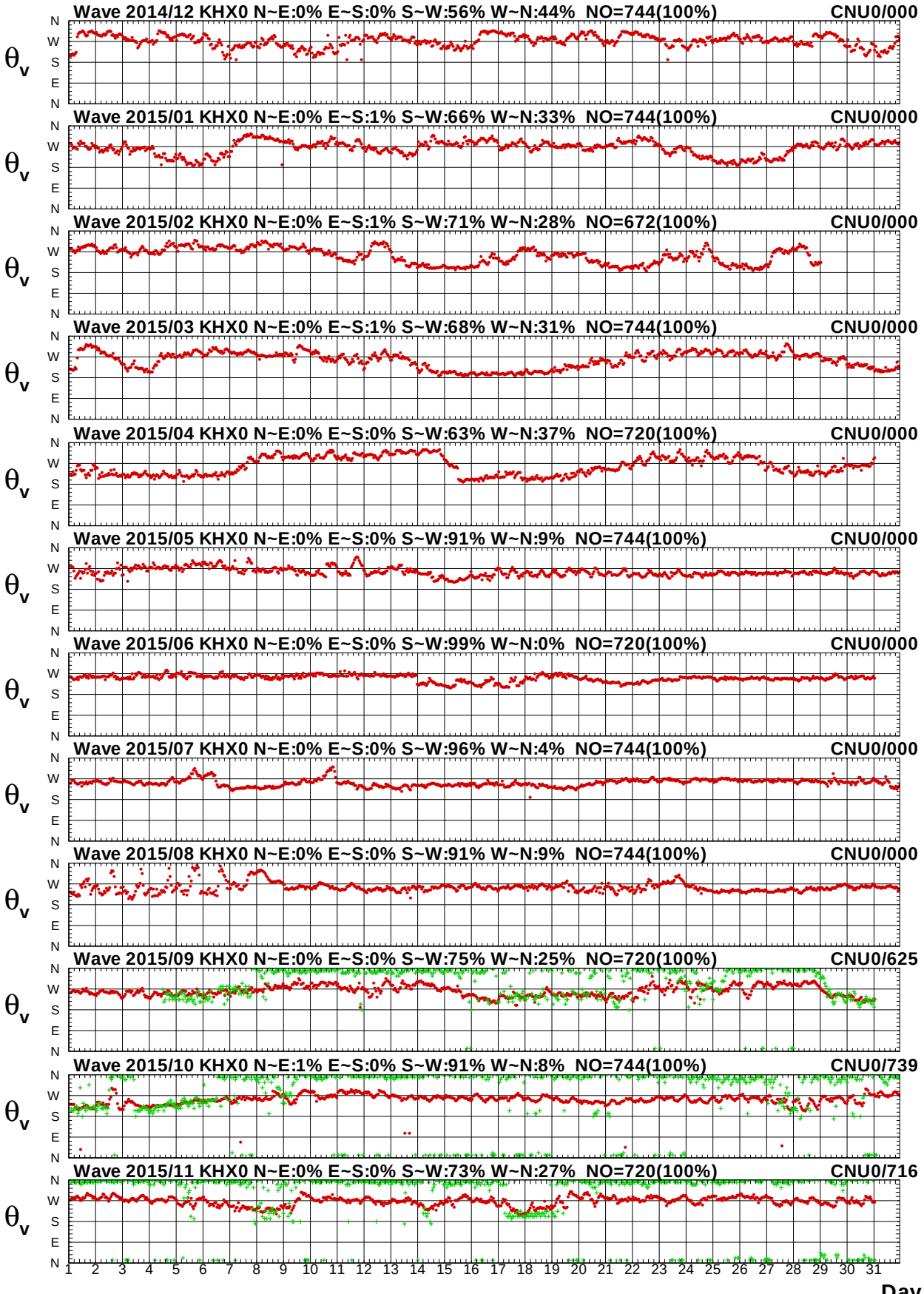


圖7.13c　2015年每月高雄海域 X 站與嘉南海域 U 站波向圖

V14CKHX0.1HA V14CCNU0.1H0 V151KHX0.1HA V151CNU0.1H0 V152KHX0.1HA V152CNU0.1H0
V153KHX0.1HA V153CNU0.1H0 V154KHX0.1HA V154CNU0.1H0 V155KHX0.1HA V155CNU0.1H0

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Wave H_s in Kao-Hsiung Seas of KHX0 at 2015

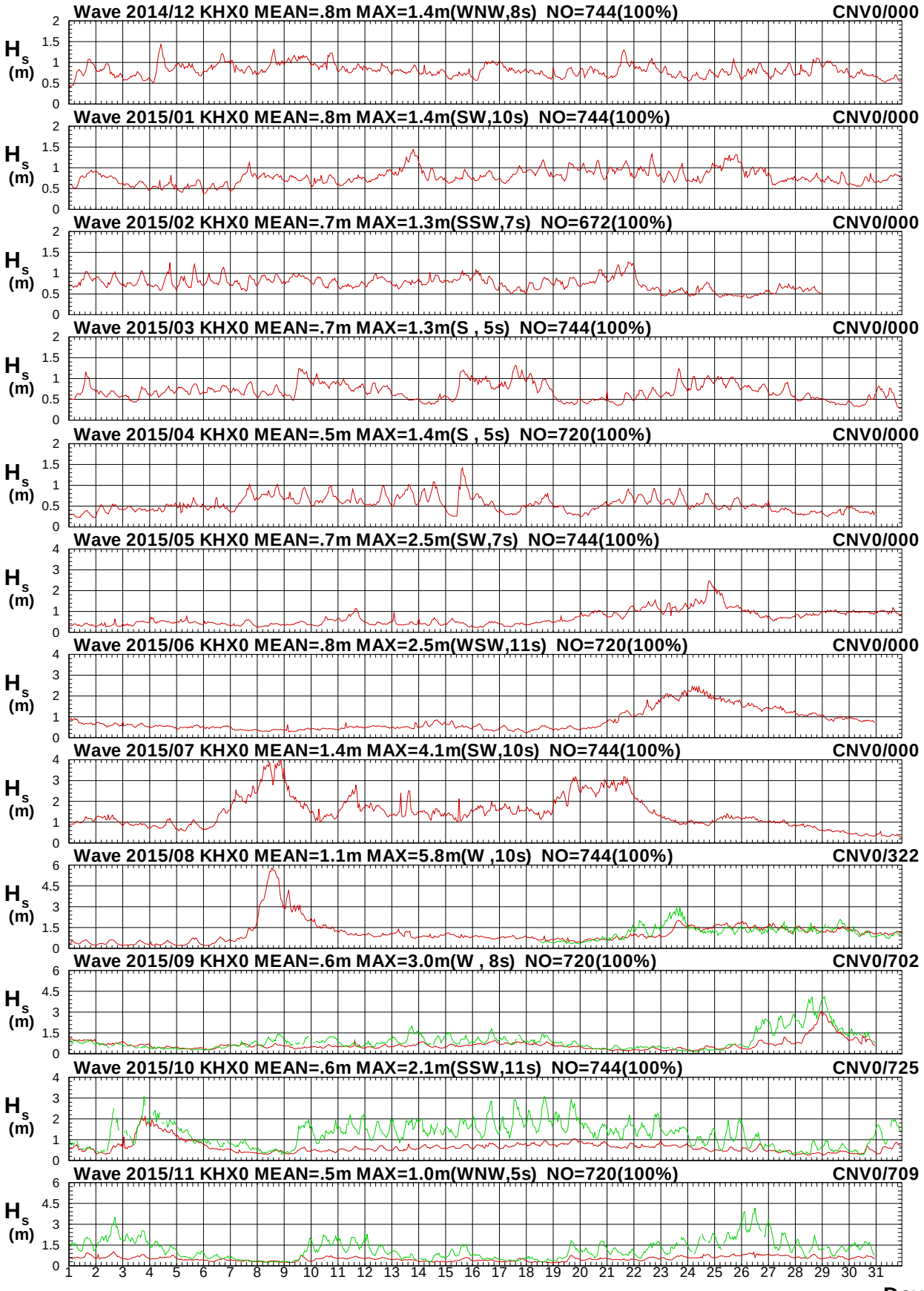


圖7.14a　2015年每月高雄海域 X 站與嘉南海域 V 站波高圖

V14CKHX0.1HA V14CCNV0.1H0 V151KHX0.1HA V151CNV0.1H0 V152KHX0.1HA V152CNV0.1H0
V153KHX0.1HA V153CNV0.1H0 V154KHX0.1HA V154CNV0.1H0 V155KHX0.1HA V155CNV0.1H0

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Wave T_p in Kao-Hsiung Seas of KHX0 at 2015

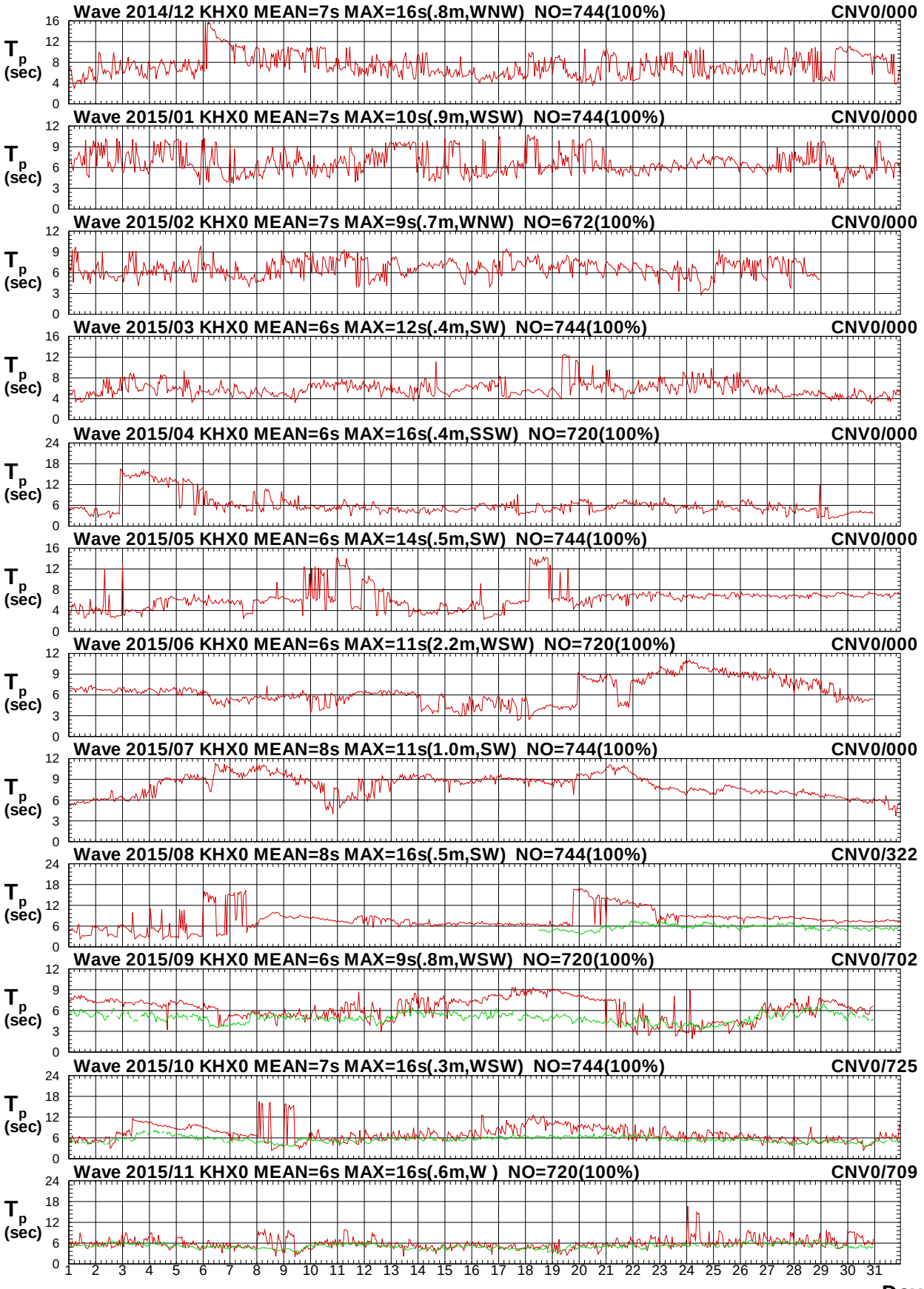


圖7.14b　2015年每月高雄海域 X 站與嘉南海域 V 站週期圖

V14CKHX0.1HA V14CCNV0.1H0 V151KHX0.1HA V151CNV0.1H0 V152KHX0.1HA V152CNV0.1H0
V153KHX0.1HA V153CNV0.1H0 V154KHX0.1HA V154CNV0.1H0 V155KHX0.1HA V155CNV0.1H0

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Wave Direction in Kao-Hsiung Seas of KHX0 at 2015

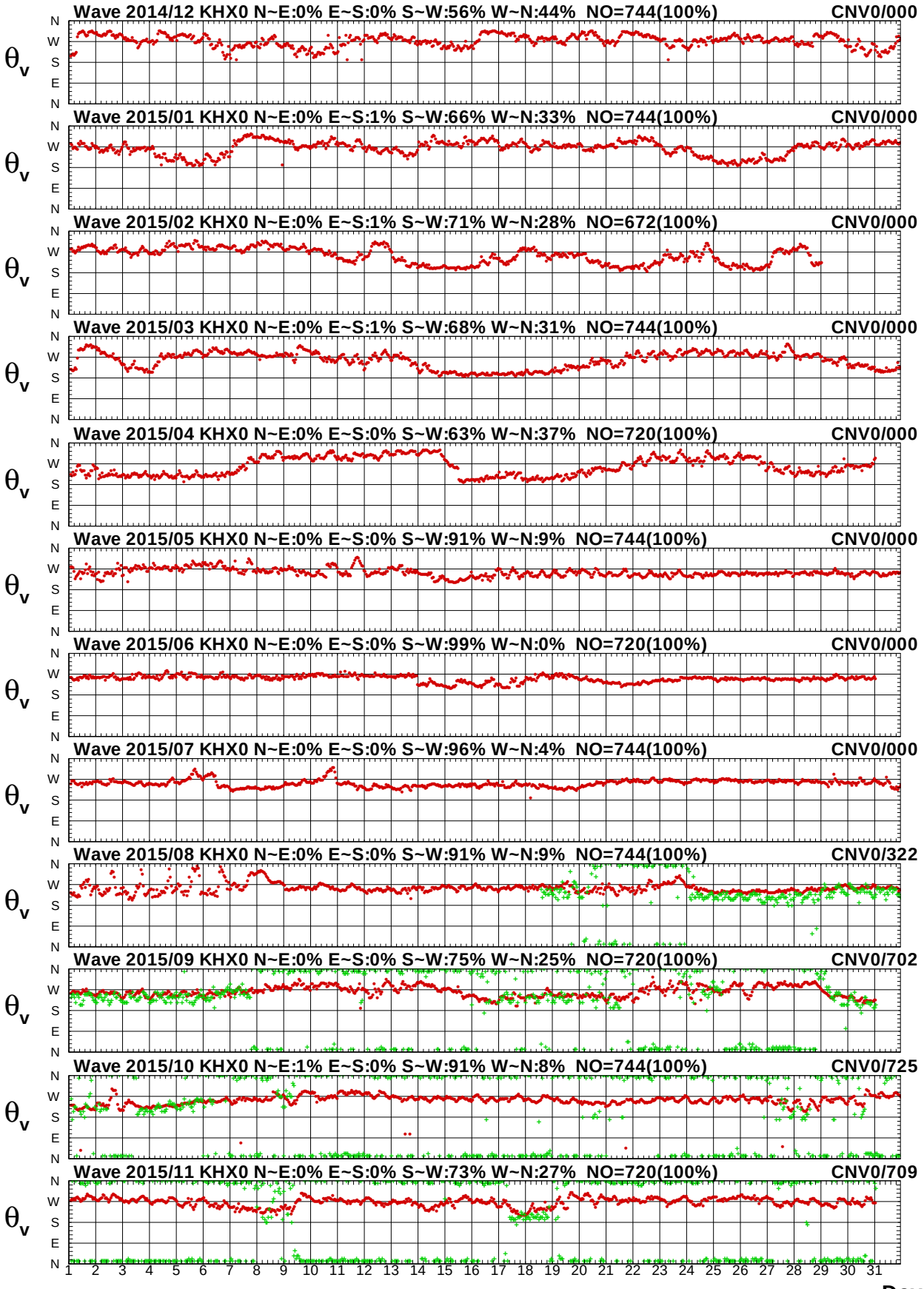


圖7.14c　2015年每月高雄海域 X 站與嘉南海域 V 站波向圖

V14CKHX0.1HA V14CCNV0.1H0 V151KHX0.1HA V151CNV0.1H0 V152KHX0.1HA V152CNV0.1H0
V153KHX0.1HA V153CNV0.1H0 V154KHX0.1HA V154CNV0.1H0 V155KHX0.1HA V155CNV0.1H0

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第八章　2015 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。嘉南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**，2015 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，2015 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 2015 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	2010/12-2015/11(觀測中)	港研中心	安平港南堤
Y	23°05'55"	120°00'20"E	2006/06-2015/11(觀測中)	水利署	七股浮標站
Z	23°06'48"	120°03'8"E	2005/10-2015/11(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	2015/09-2015/11(觀測中)	臺灣中油	鹿耳門浮標站
R	22°54'54"N	129°09'55"E	2015/06-2015/11(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 2015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	
2014/12月	742 (99.7%)	597 (80.2%)	*	731 (98.3%)	*	*	*	*
2015/ 1月	739 (99.3%)	680 (91.4%)	*	*	*	*	*	*
2015/ 2月	670 (99.7%)	534 (79.5%)	*	*	*	*	*	*
2015/ 3月	671 (90.2%)	614 (82.5%)	*	*	*	*	*	*
2015/ 4月	560 (77.8%)	601 (83.5%)	556 (77.2%)	*	*	*	*	*
2015/ 5月	730 (98.1%)	695 (93.4%)	631 (84.8%)	*	*	*	*	*
2015/ 6月	715 (99.3%)	695 (96.5%)	591 (82.1%)	*	*	*	454 (63.1%)	*
2015/ 7月	667 (89.7%)	729 (98.0%)	632 (84.9%)	*	*	*	471 (63.3%)	*
2015/ 8月	737 (99.1%)	703 (94.5%)	620 (83.3%)	*	322 (43.3%)	*	123 (16.5%)	*
2015/ 9月	343 (47.6%)	674 (93.6%)	676 (93.9%)	*	702 (97.5%)	625 (86.8%)	*	*
2015/10月	*	689 (92.6%)	726 (97.6%)	*	725 (97.4%)	739 (99.3%)	293 (39.4%)	*
2015/11月	*	627 (87.1%)	647 (89.9%)	679 (94.3%)	709 (98.5%)	716 (99.4%)	243 (33.8%)	*
2015/冬季	2151 (99.6%)	1811 (83.8%)	*	731 (33.8%)	*	*	*	*
2015/春季	1961 (88.8%)	1910 (86.5%)	1187 (53.8%)	*	*	*	*	*
2015/夏季	2119 (96.0%)	2127 (96.3%)	1843 (83.5%)	*	322 (14.6%)	*	1048 (47.5%)	*
2015/秋季	343 (15.7%)	1990 (91.1%)	2049 (93.8%)	679 (31.1%)	2136 (97.8%)	2080 (95.2%)	536 (24.5%)	*
2015/整年	6574 (75.0%)	7838 (89.5%)	5079 (58.0%)	1410 (16.1%)	2458 (28.1%)	2080 (23.7%)	1584 (18.1%)	*
起始年月	2014/12	2014/12	2015/04	2014/12	2015/08	2015/09	2015/06	*
結束年月	2015/09	2015/11	2015/11	2015/11	2015/11	2015/11	2015/11	*

表8.1b 2015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	
2014/12月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	*	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	*	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

Wave H_s in Chia-Nan Seas of CNX0 at 2015

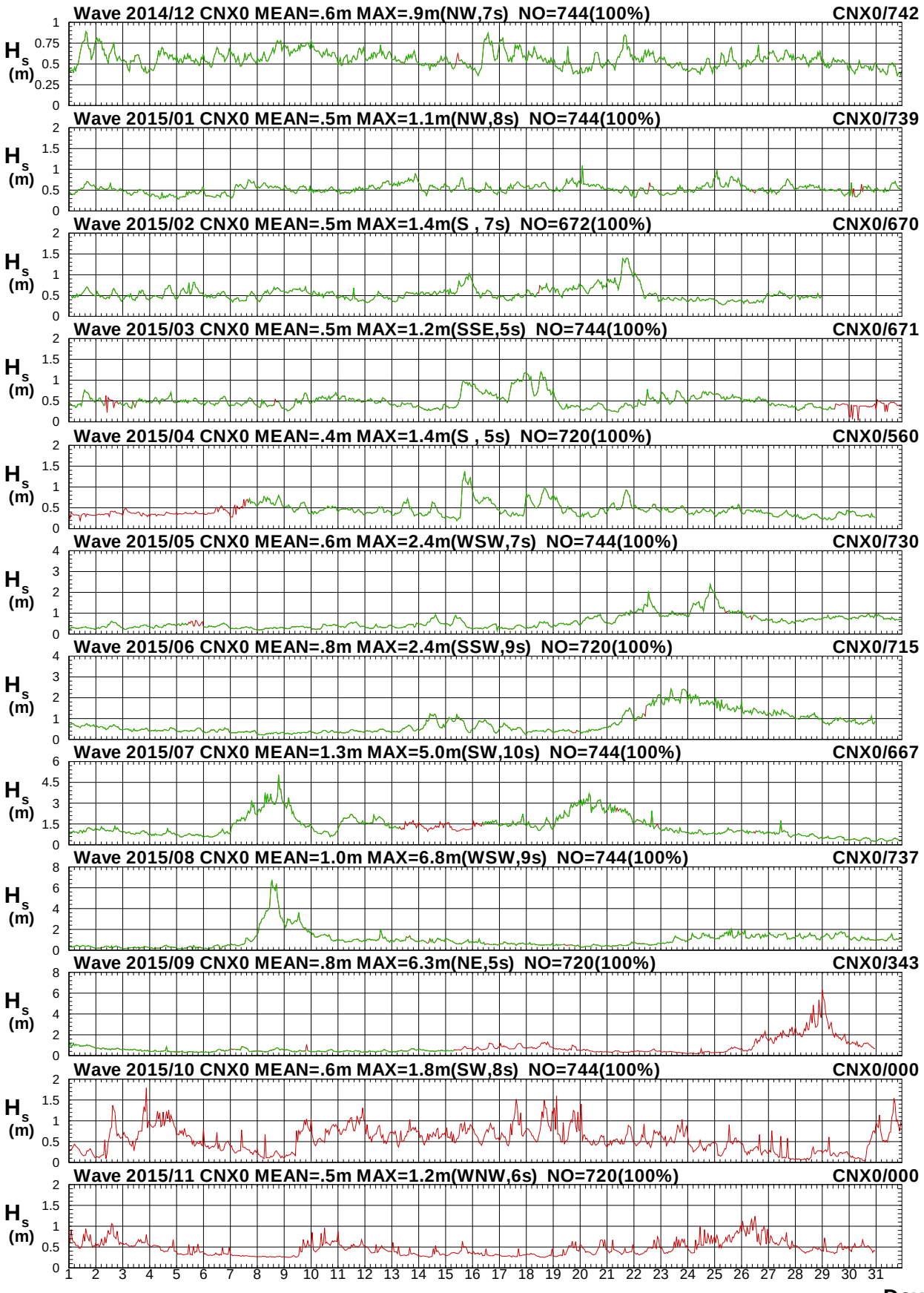


圖 8.1a　2015年每月嘉南海域 X 站修補前後之波高比較圖

Wave T_p in Chia-Nan Seas of CNX0 at 2015

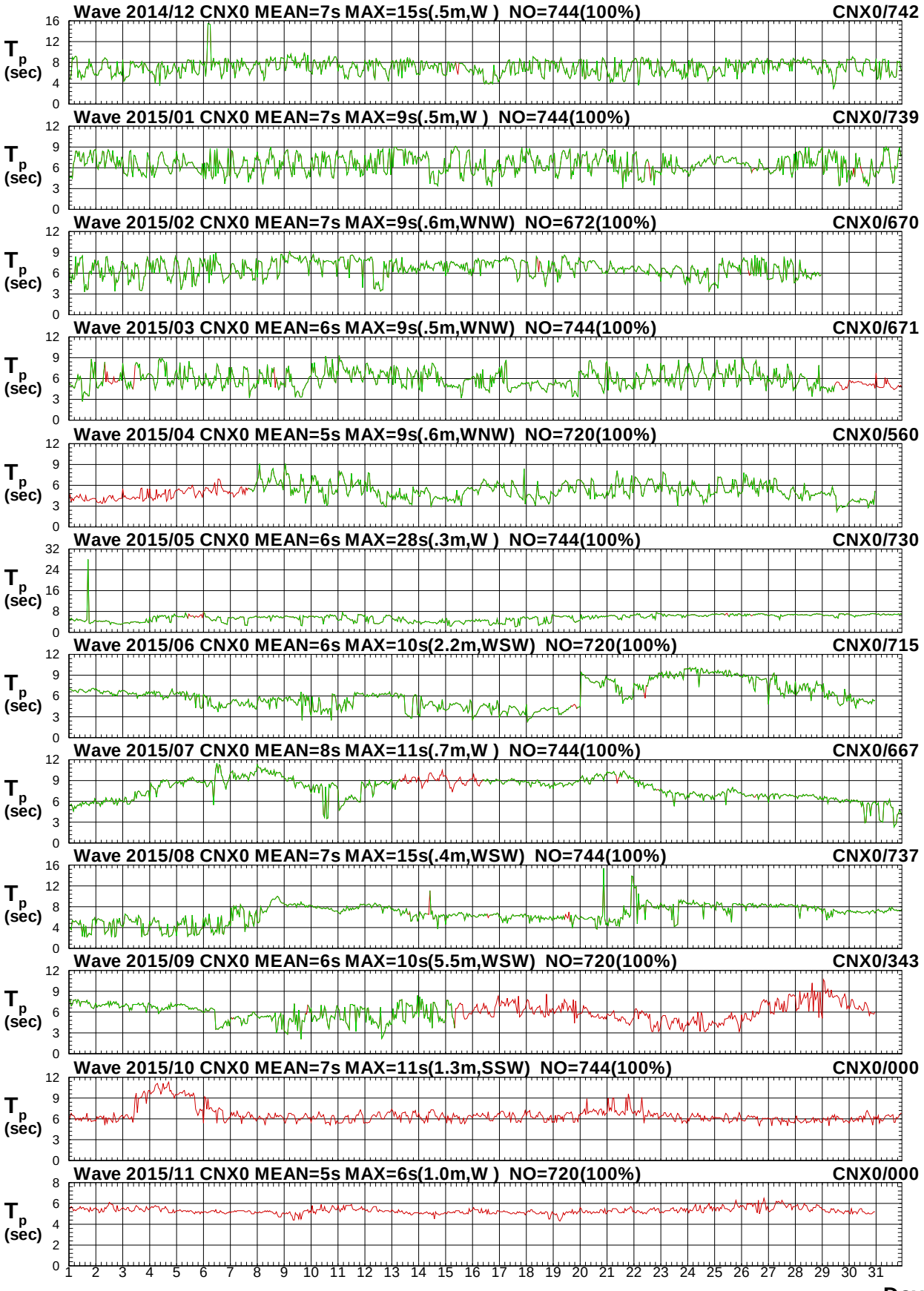


圖 8.1b　2015年每月嘉南海域 X 站修補前後之週期比較圖

V14CCNX0.1HA V14CCNX0.1H0 V151CNX0.1HA V151CNX0.1H0 V152CNX0.1HA V152CNX0.1H0
V153CNX0.1HA V153CNX0.1H0 V154CNX0.1HA V154CNX0.1H0 V155CNX0.1HA V155CNX0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

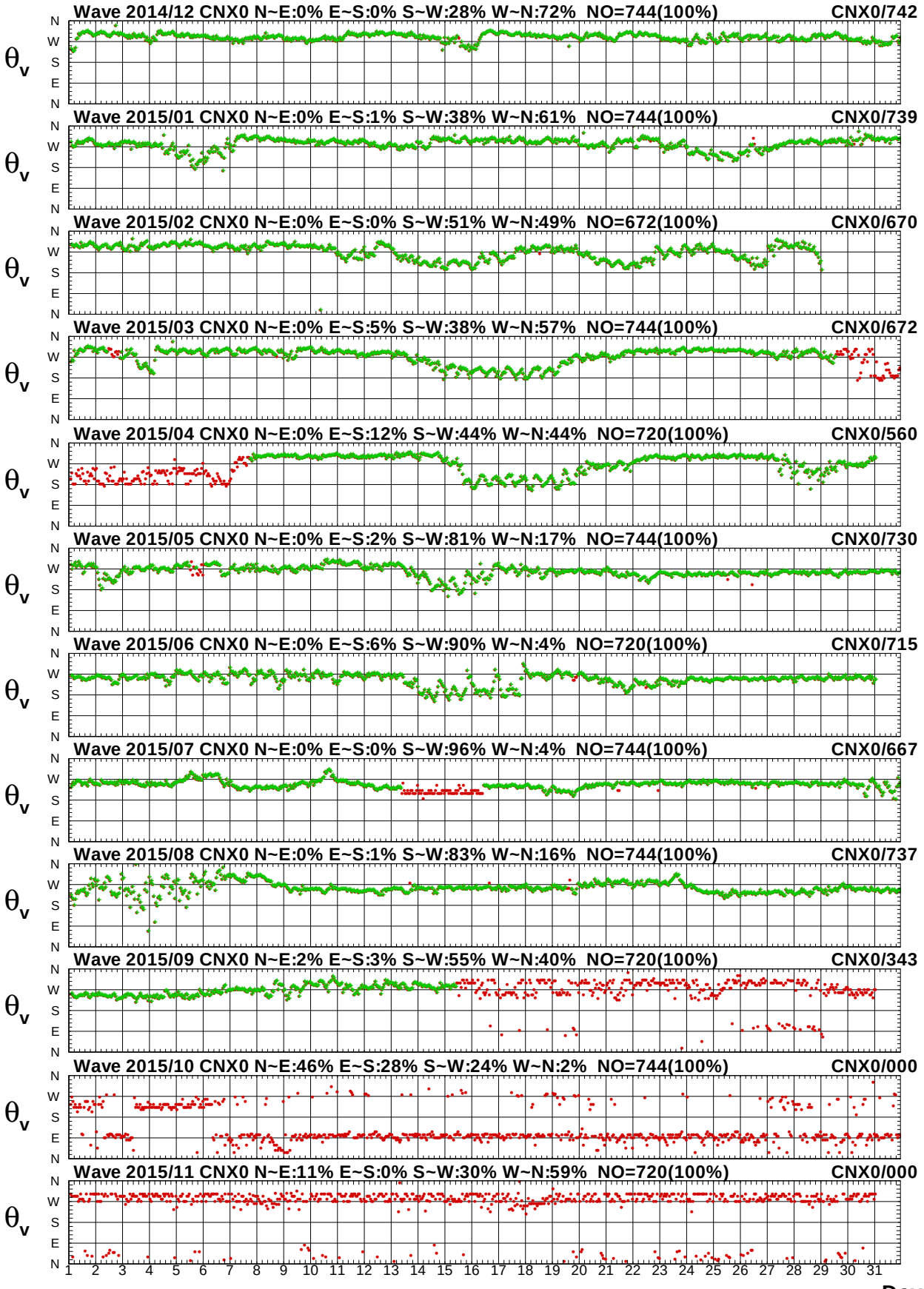


圖8.1c　2015年每月嘉南海域 X 站修補前後之波向比較圖

V14CCNX0.1HA V14CCNX0.1H0 V151CNX0.1HA V151CNX0.1H0 V152CNX0.1HA V152CNX0.1H0
V153CNX0.1HA V153CNX0.1H0 V154CNX0.1HA V154CNX0.1H0 V155CNX0.1HA V155CNX0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

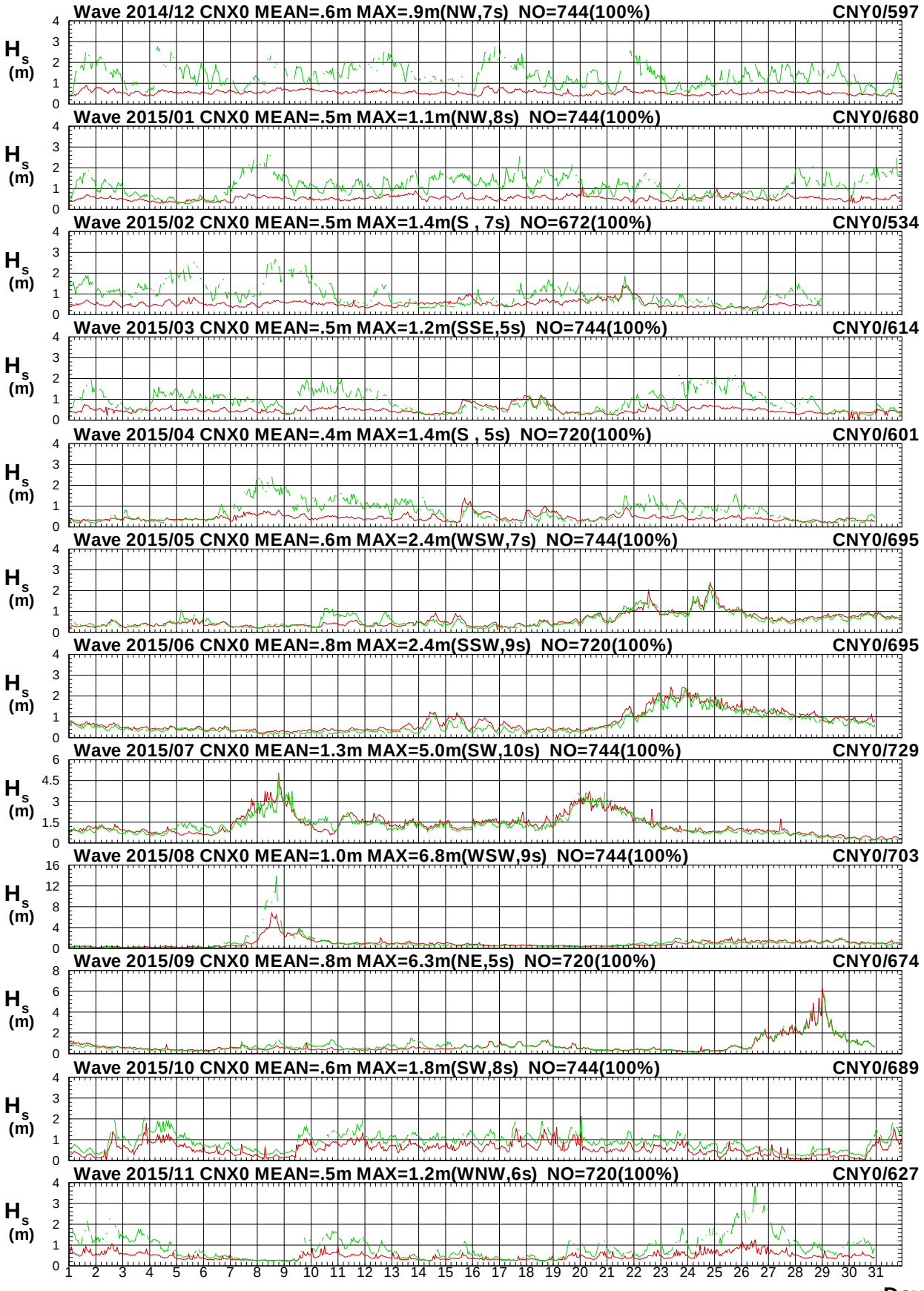


圖 8.2a　2015年每月嘉南海域 X 站與 Y 站波高比較圖

V14CCNX0.1HA V14CCNY0.1H0 V151CNX0.1HA V151CNY0.1H0 V152CNX0.1HA V152CNY0.1H0
V153CNX0.1HA V153CNY0.1H0 V154CNX0.1HA V154CNY0.1H0 V155CNX0.1HA V155CNY0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

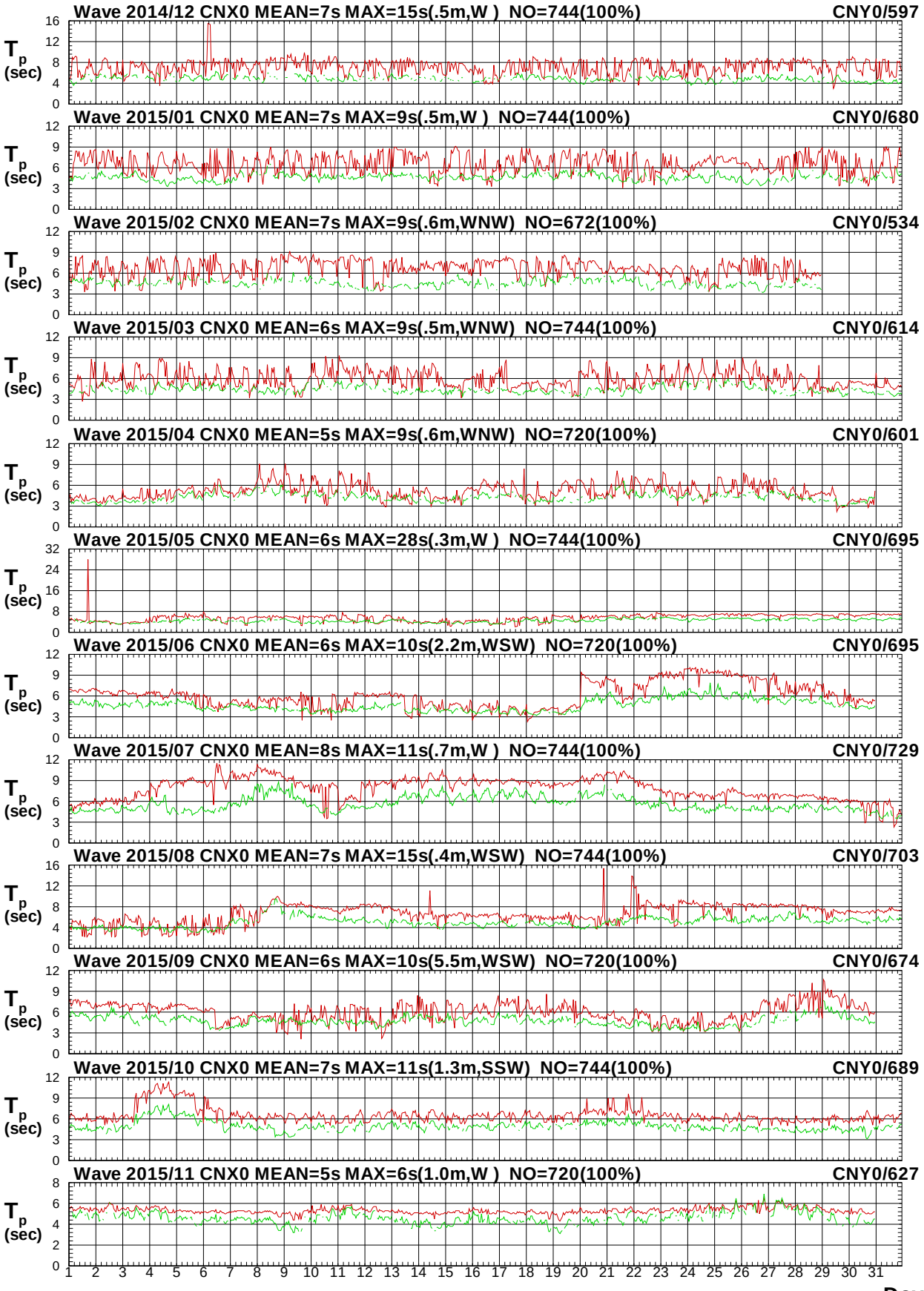


圖 8.2b　2015年每月嘉南海域 X 站與 Y 站週期比較圖

V14CCNX0.1HA V14CCNY0.1H0 V151CNX0.1HA V151CNY0.1H0 V152CNX0.1HA V152CNY0.1H0
V153CNX0.1HA V153CNY0.1H0 V154CNX0.1HA V154CNY0.1H0 V155CNX0.1HA V155CNY0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

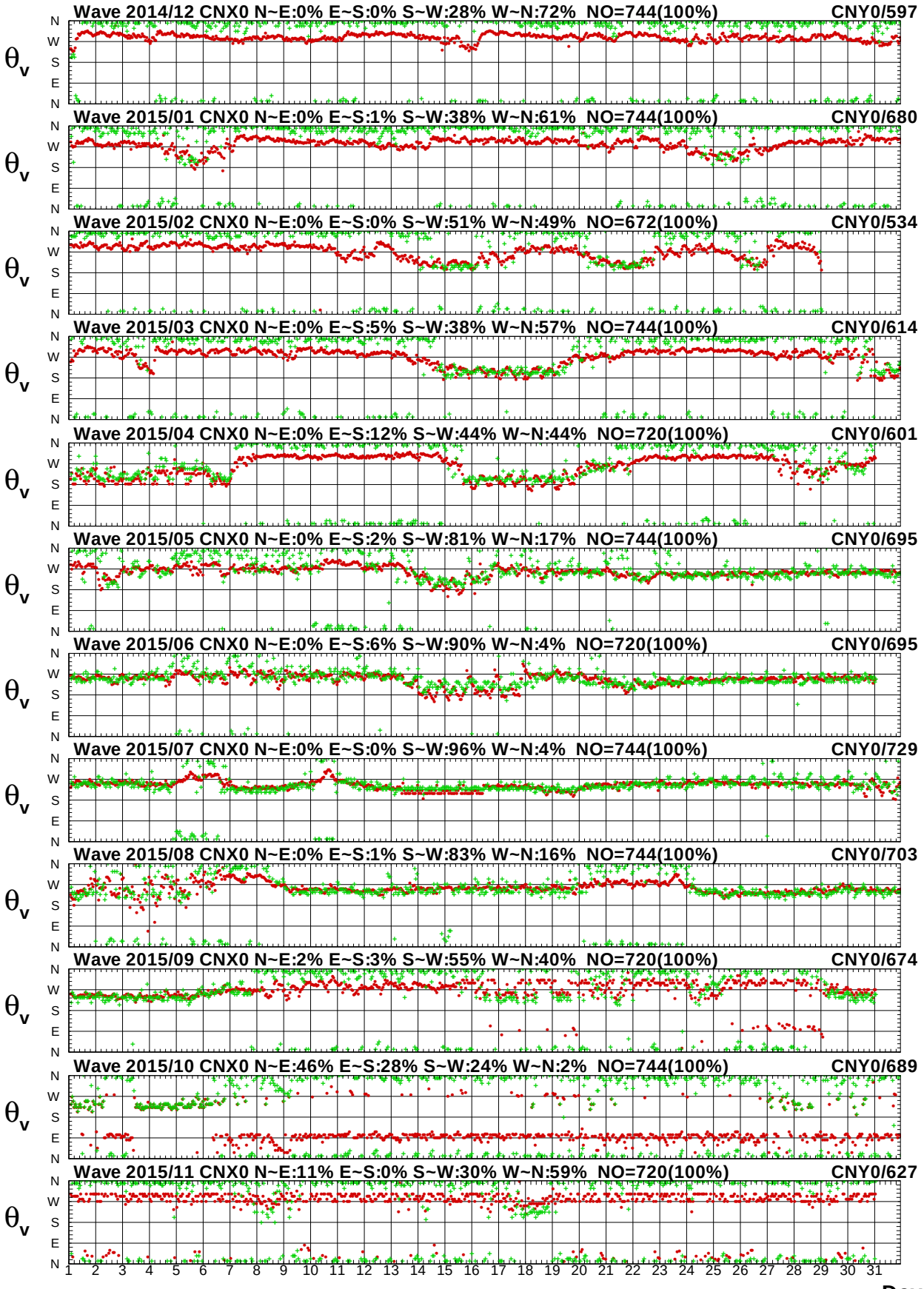


圖 8.2c　2015年每月嘉南海域 X 站與 Y 站波向比較圖

V14CCNX0.1HA V14CCNY0.1H0 V151CNX0.1HA V151CNY0.1H0 V152CNX0.1HA V152CNY0.1H0
V153CNX0.1HA V153CNY0.1H0 V154CNX0.1HA V154CNY0.1H0 V155CNX0.1HA V155CNY0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

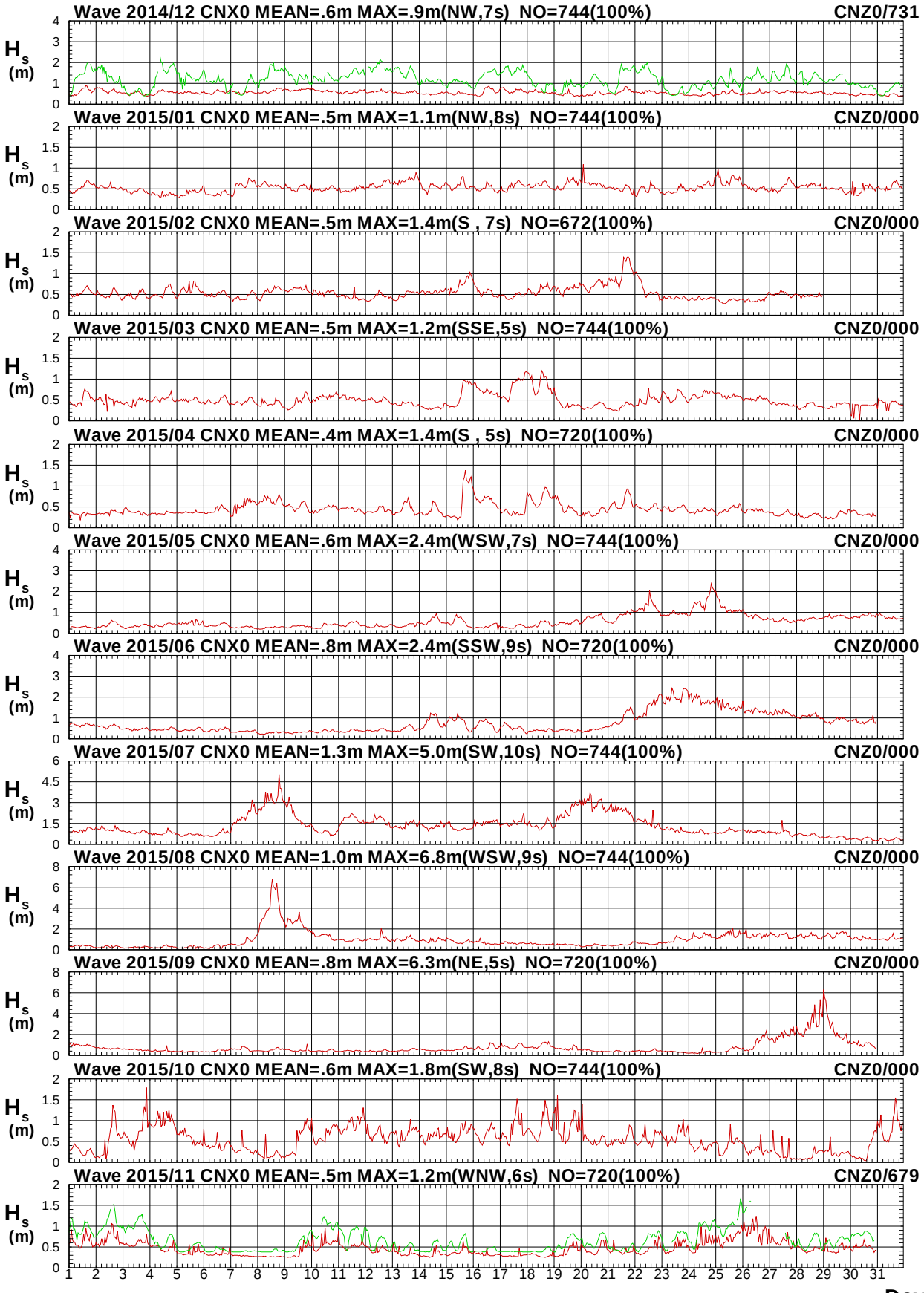


圖 8.3a　2015年每月嘉南海域 X 站與 Z 站波高比較圖

V14CCNX0.1HA V14CCNZ0.1H0 V151CNX0.1HA V151CNZ0.1H0 V152CNX0.1HA V152CNZ0.1H0
V153CNX0.1HA V153CNZ0.1H0 V154CNX0.1HA V154CNZ0.1H0 V155CNX0.1HA V155CNZ0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

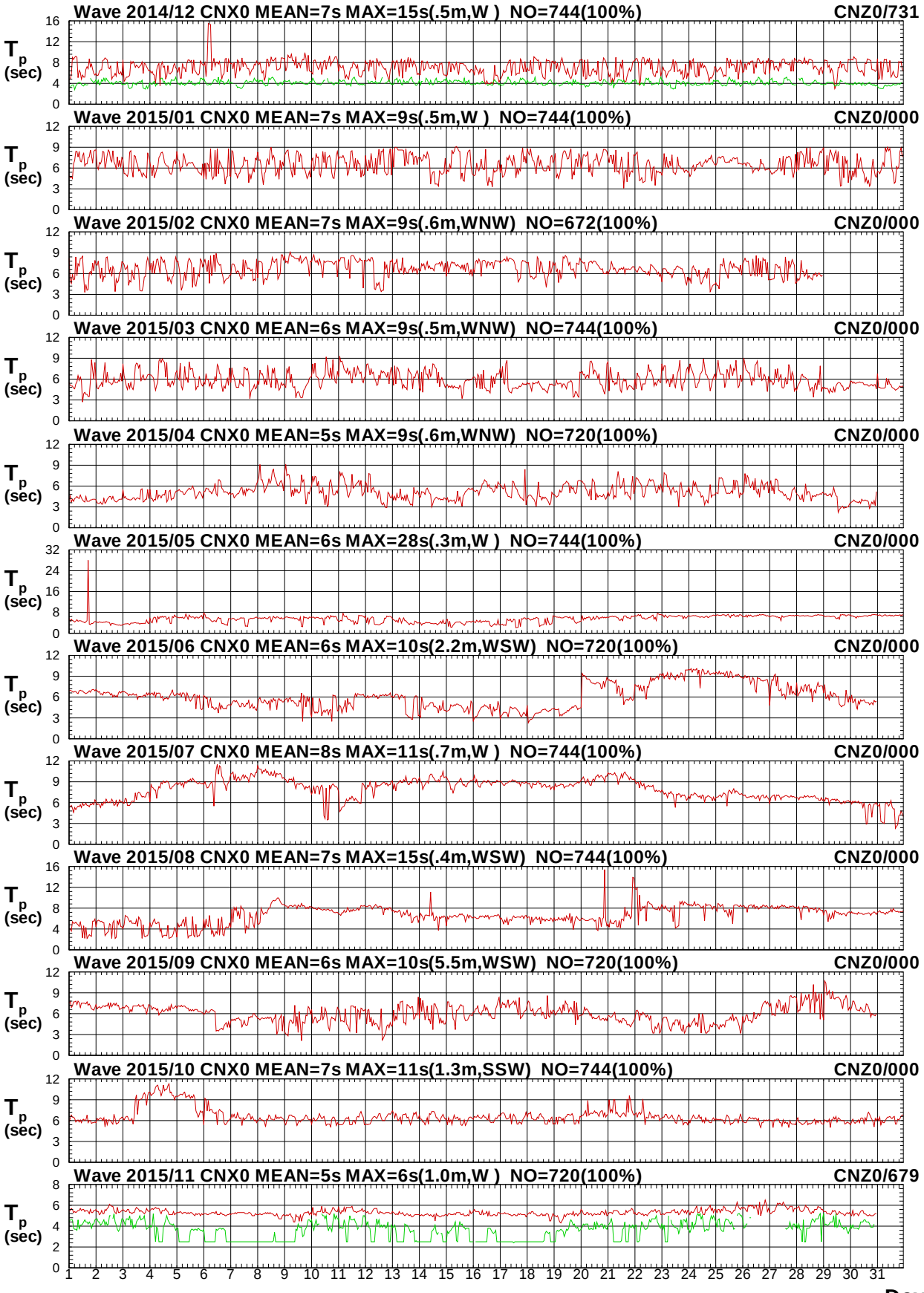


圖 8.3b　2015年每月嘉南海域 X 站與 Z 站週期比較圖

V14CCNX0.1HA V14CCNZ0.1H0 V151CNX0.1HA V151CNZ0.1H0 V152CNX0.1HA V152CNZ0.1H0
V153CNX0.1HA V153CNZ0.1H0 V154CNX0.1HA V154CNZ0.1H0 V155CNX0.1HA V155CNZ0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

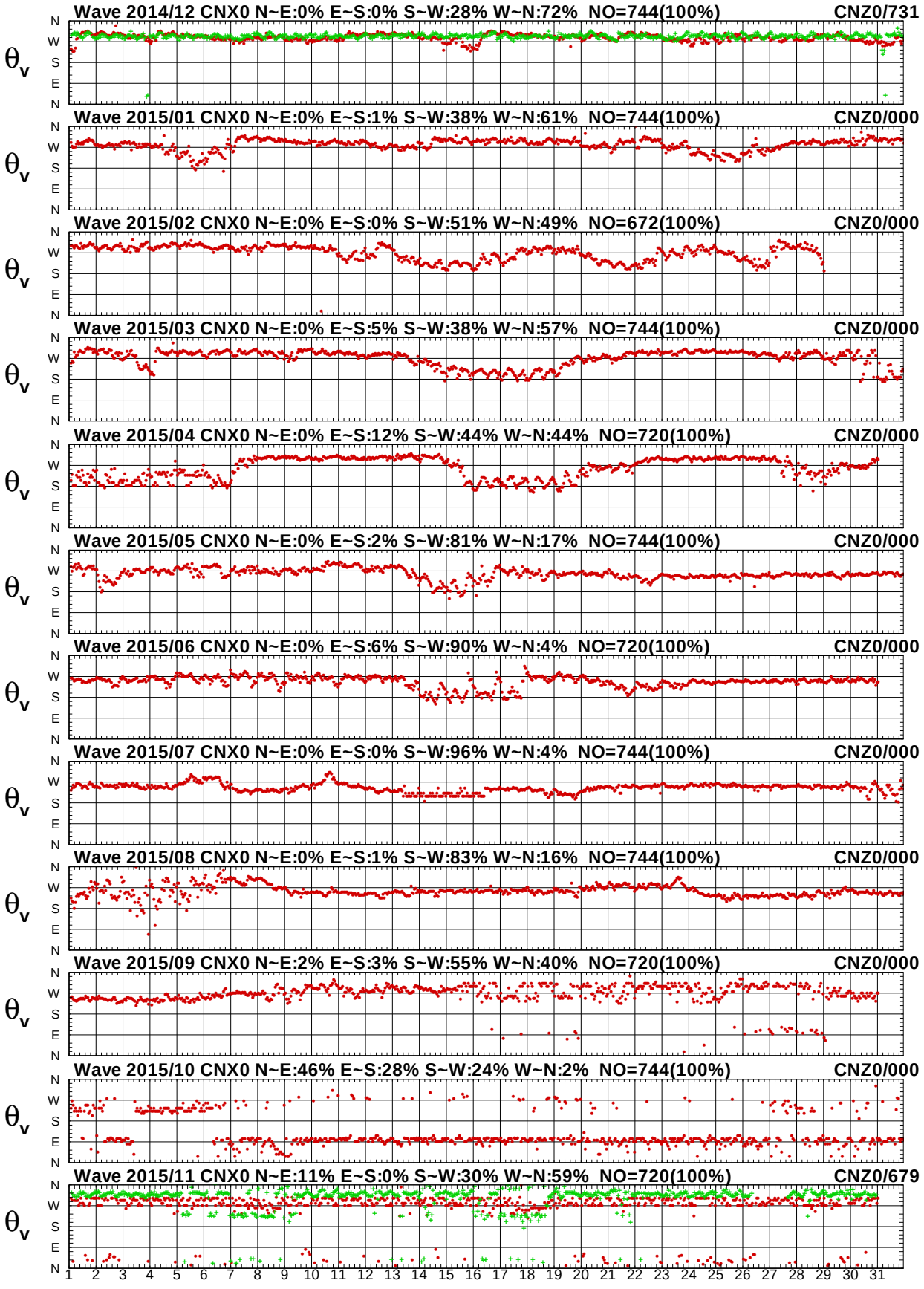


圖 8.3c　2015年每月嘉南海域 X 站與 Z 站波向比較圖

V14CCNX0.1HA V14CCNZ0.1H0 V151CNX0.1HA V151CNZ0.1H0 V152CNX0.1HA V152CNZ0.1H0
V153CNX0.1HA V153CNZ0.1H0 V154CNX0.1HA V154CNZ0.1H0 V155CNX0.1HA V155CNZ0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

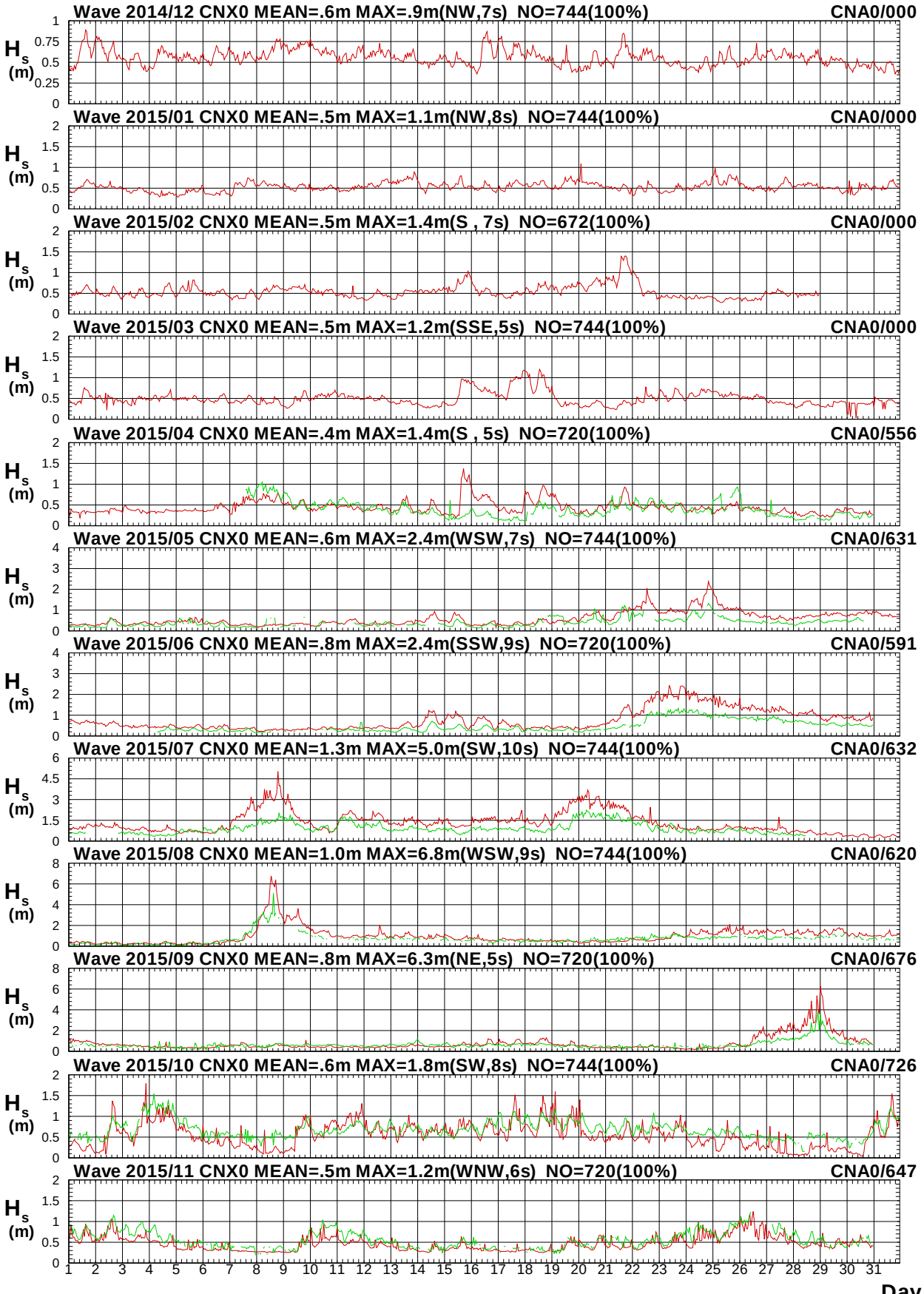


圖 8.4a　2015年每月嘉南海域 X 站與 A 站波高比較圖

V14CCNX0.1HA V14CCNA0.1H0 V151CNX0.1HA V151CNA0.1H0 V152CNX0.1HA V152CNA0.1H0
V153CNX0.1HA V153CNA0.1H0 V154CNX0.1HA V154CNA0.1H0 V155CNX0.1HA V155CNA0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

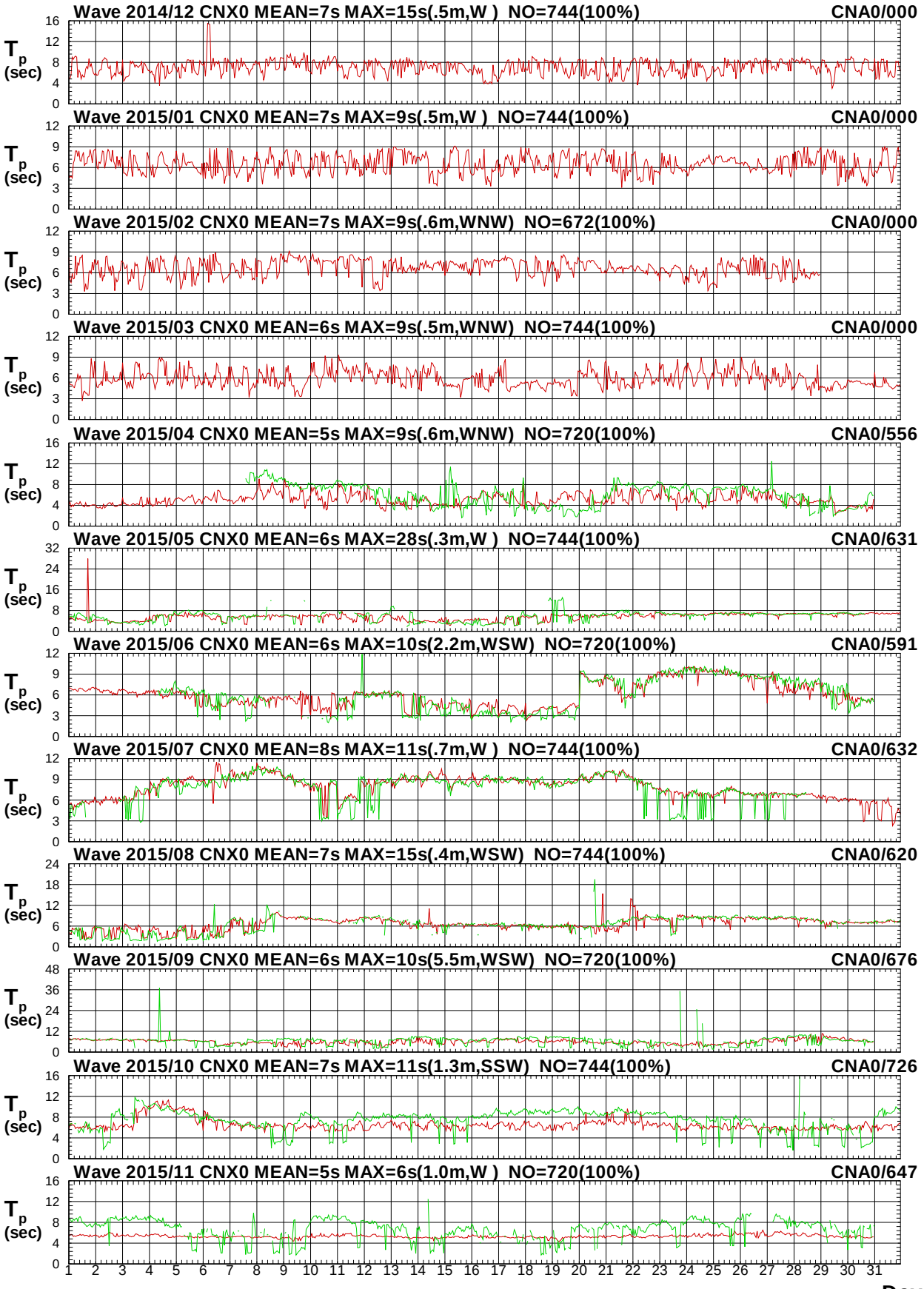


圖 8.4b　2015年每月嘉南海域 X 站與 A 站週期比較圖

V14CCNX0.1HA V14CCNA0.1H0 V151CNX0.1HA V151CNA0.1H0 V152CNX0.1HA V152CNA0.1H0
V153CNX0.1HA V153CNA0.1H0 V154CNX0.1HA V154CNA0.1H0 V155CNX0.1HA V155CNA0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

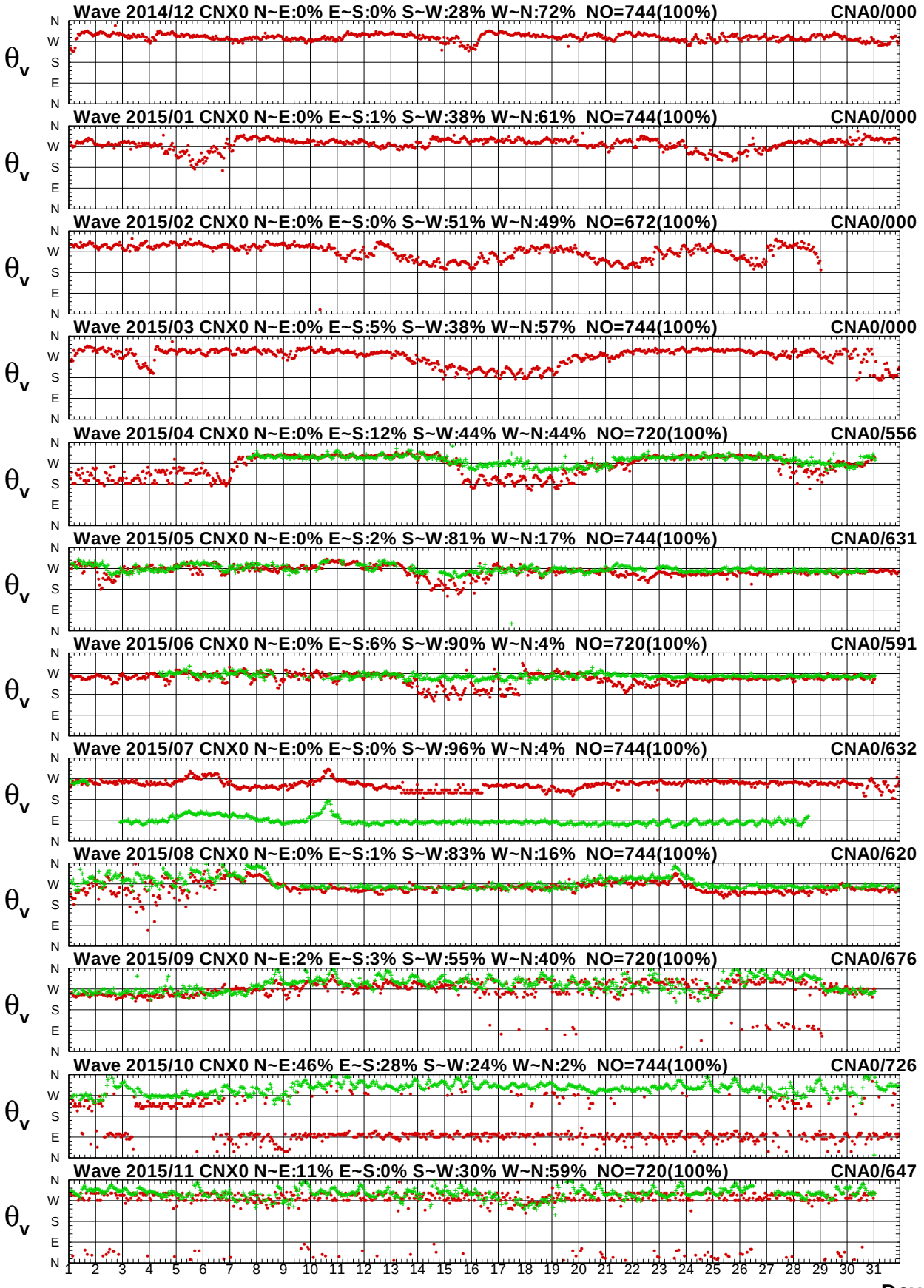


圖 8.4c　2015年每月嘉南海域 X 站與 A 站波向比較圖

V14CCNX0.1HA V14CCNA0.1H0 V151CNX0.1HA V151CNA0.1H0 V152CNX0.1HA V152CNA0.1H0
V153CNX0.1HA V153CNA0.1H0 V154CNX0.1HA V154CNA0.1H0 V155CNX0.1HA V155CNA0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

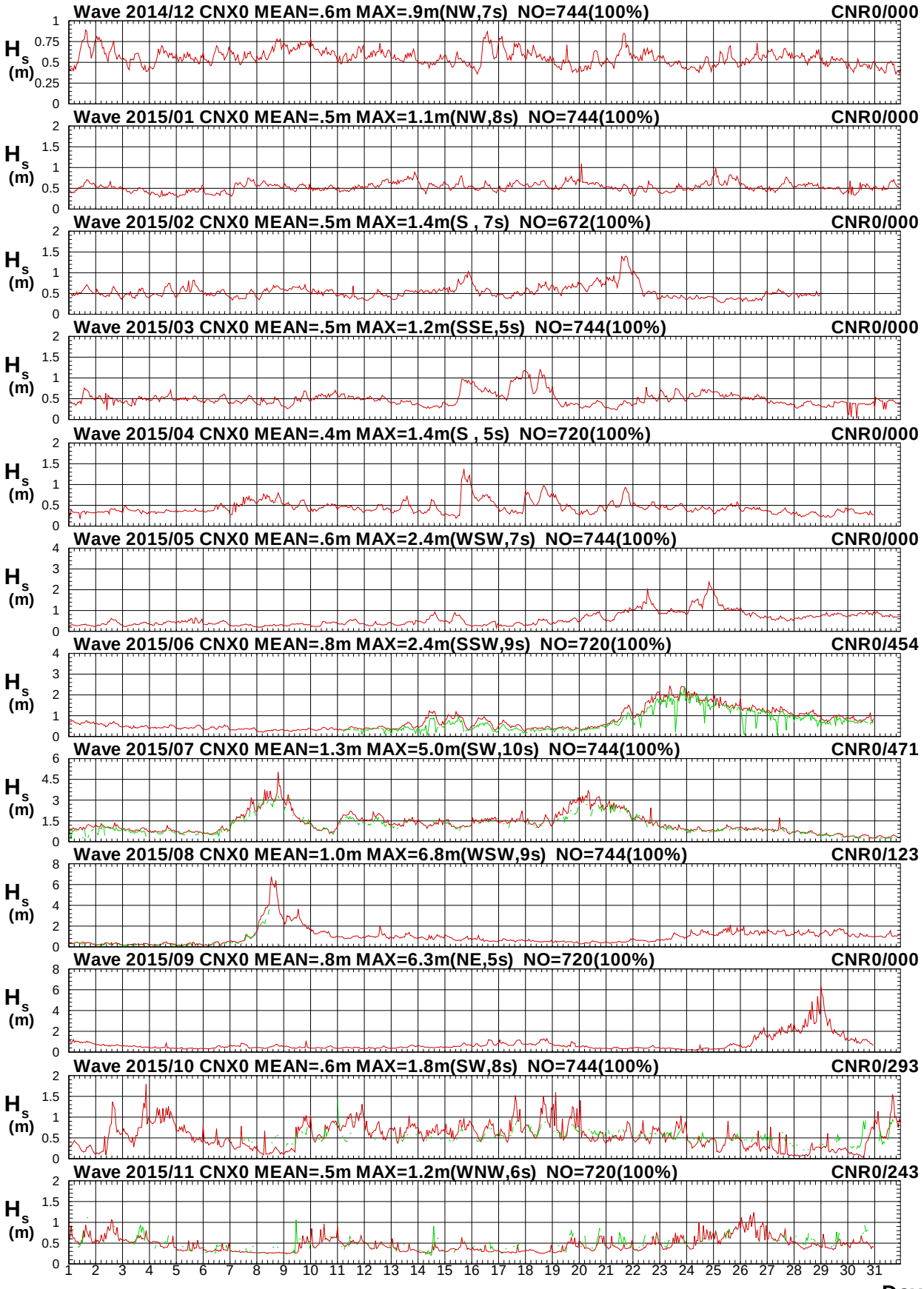


圖 8.5a　2015年每月嘉南海域 X 站與 R 站波高比較圖

V14CCNX0.1HA V14CCNR0.1H0 V151CNX0.1HA V151CNR0.1H0 V152CNX0.1HA V152CNR0.1H0
V153CNX0.1HA V153CNR0.1H0 V154CNX0.1HA V154CNR0.1H0 V155CNX0.1HA V155CNR0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

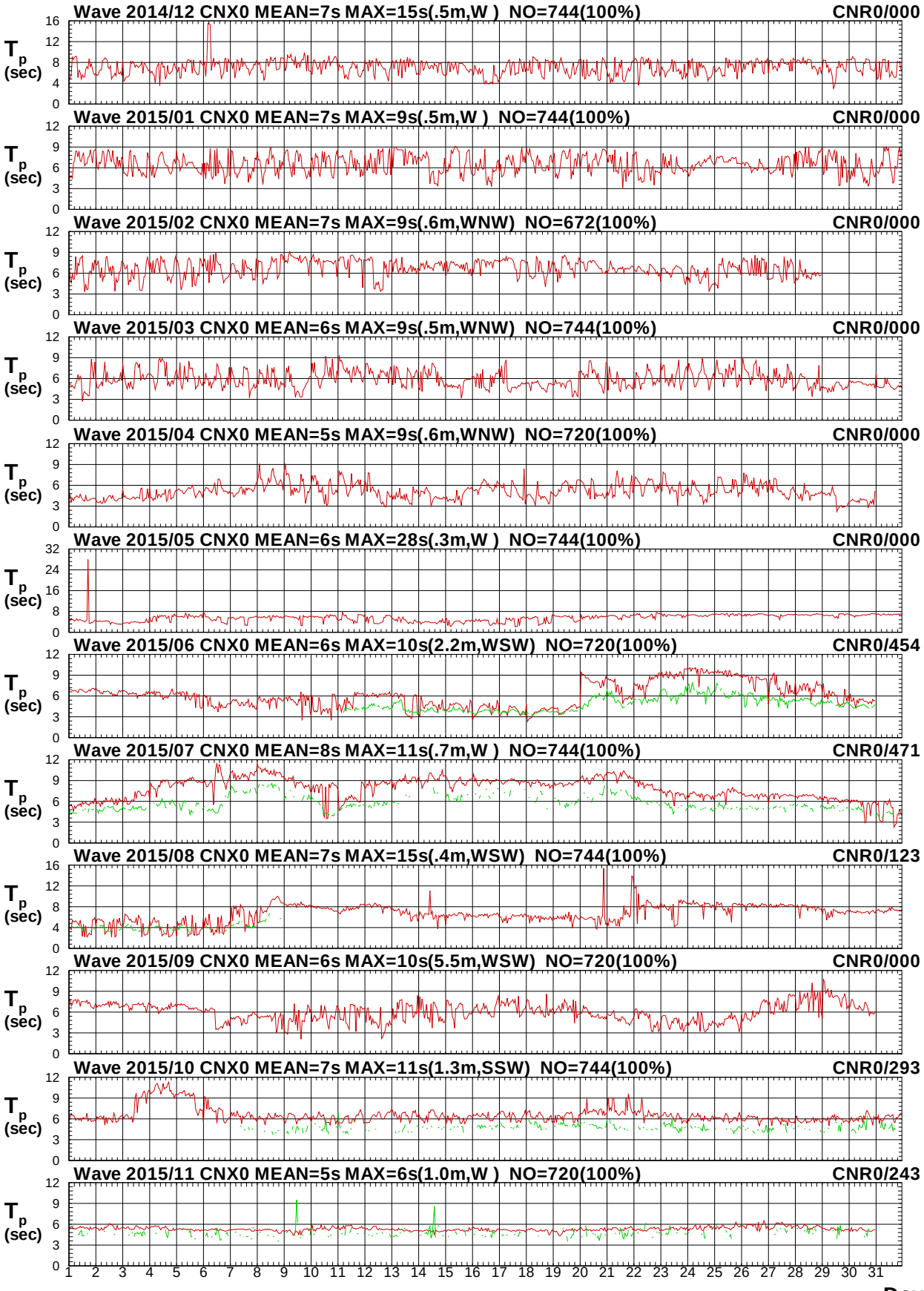


圖 8.5b　2015年每月嘉南海域 X 站與 R 站週期比較圖

V14CCNX0.1HA V14CCNR0.1H0 V151CNX0.1HA V151CNR0.1H0 V152CNX0.1HA V152CNR0.1H0
V153CNX0.1HA V153CNR0.1H0 V154CNX0.1HA V154CNR0.1H0 V155CNX0.1HA V155CNR0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

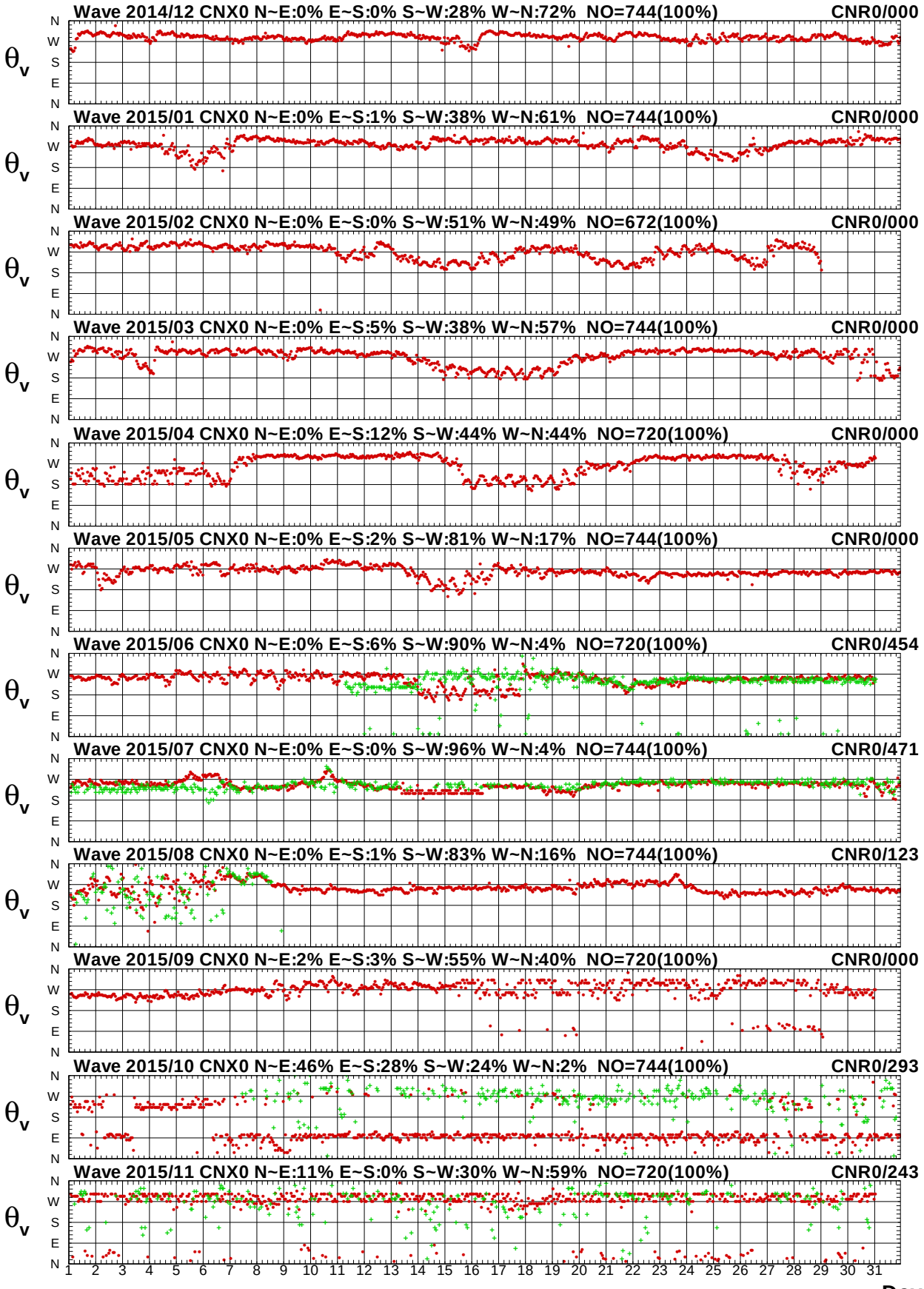


圖 8.5c　2015年每月嘉南海域 X 站與 R 站波向比較圖

V14CCNX0.1HA V14CCNR0.1H0 V151CNX0.1HA V151CNR0.1H0 V152CNX0.1HA V152CNR0.1H0
V153CNX0.1HA V153CNR0.1H0 V154CNX0.1HA V154CNR0.1H0 V155CNX0.1HA V155CNR0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

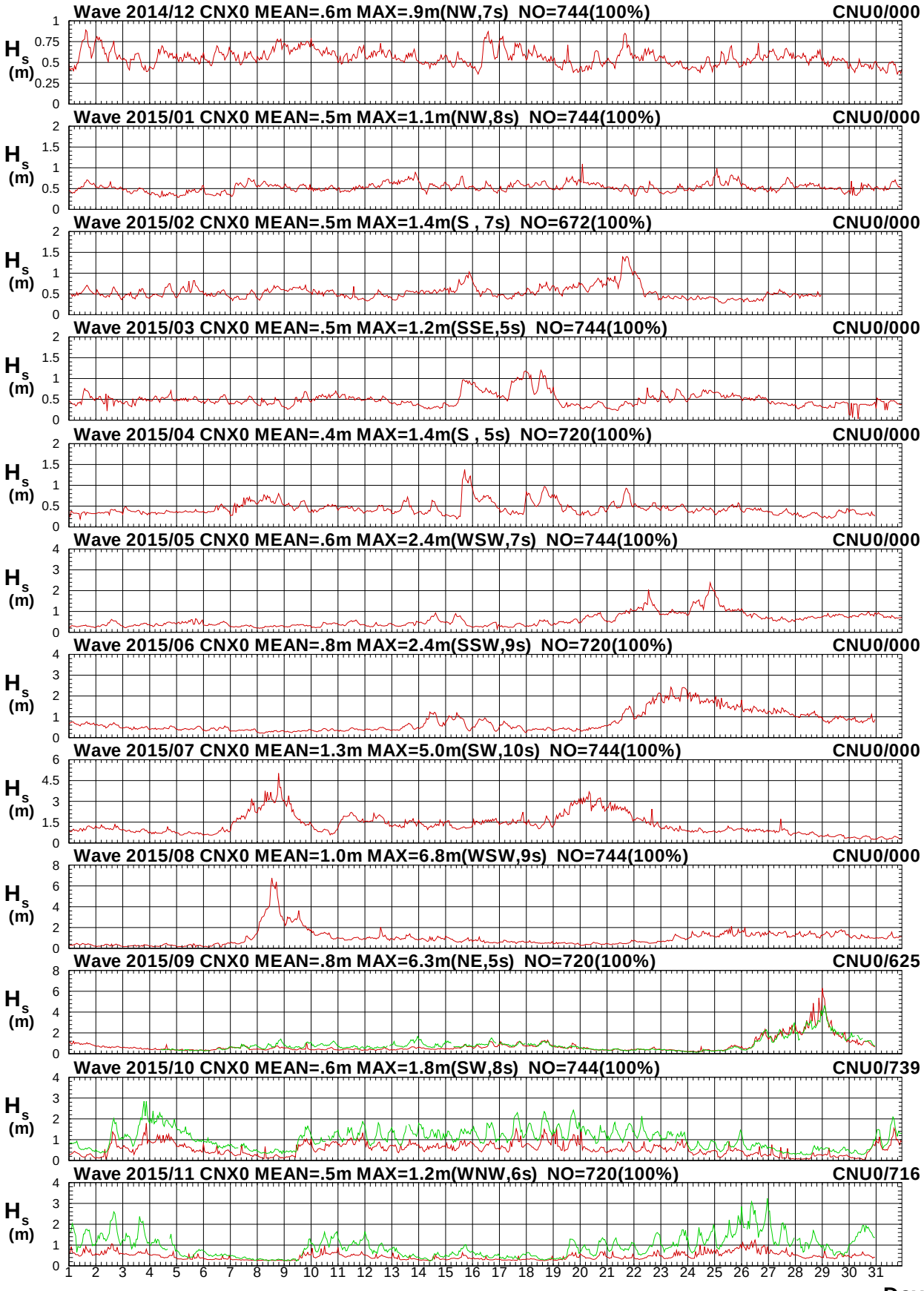


圖 8.6a　2015年每月嘉南海域 X 站與 U 站波高比較圖

V14CCNX0.1HA V14CCNU0.1H0 V151CNX0.1HA V151CNU0.1H0 V152CNX0.1HA V152CNU0.1H0
V153CNX0.1HA V153CNU0.1H0 V154CNX0.1HA V154CNU0.1H0 V155CNX0.1HA V155CNU0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

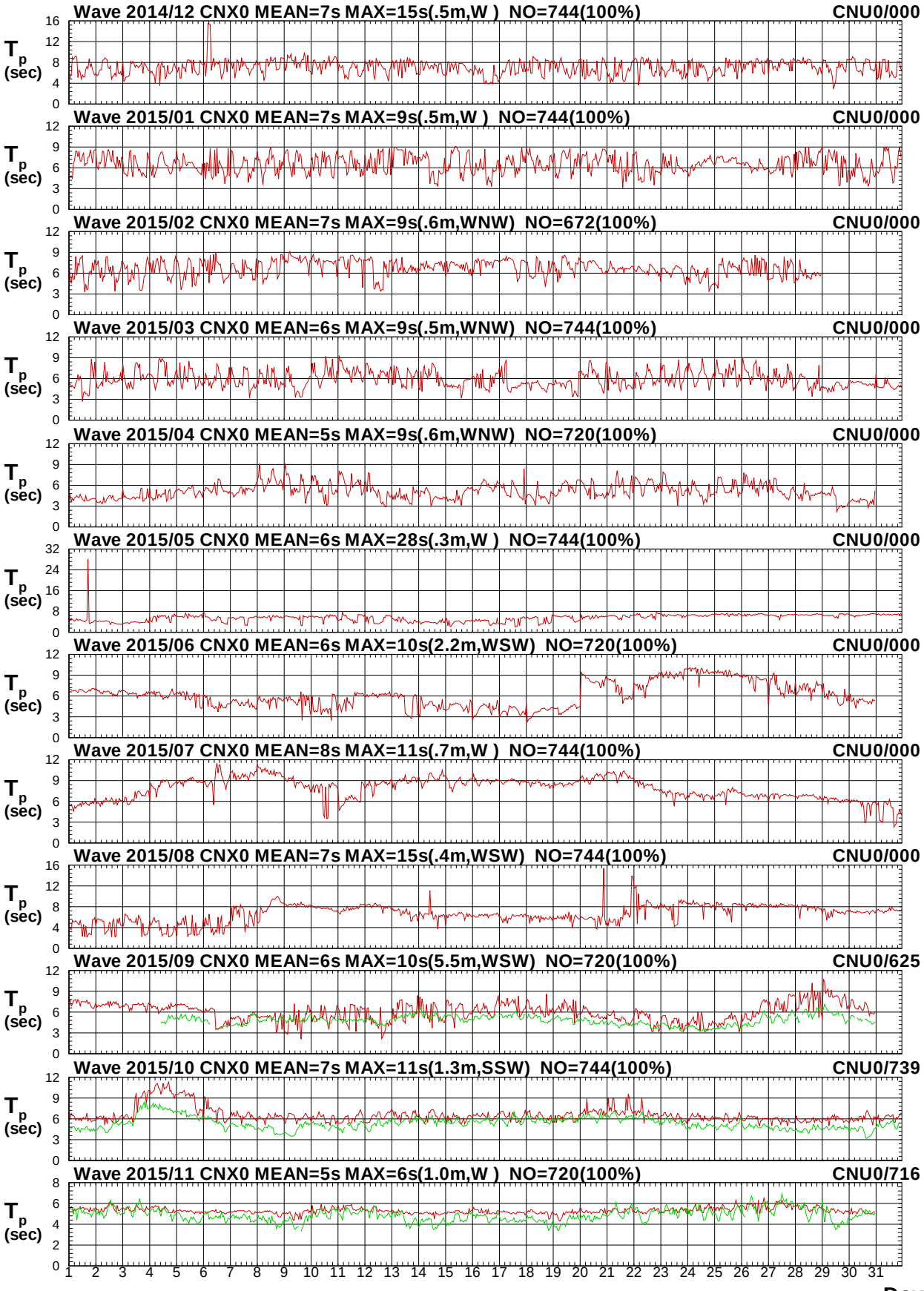


圖 8.6b　2015年每月嘉南海域 X 站與 U 站週期比較圖

V14CCNX0.1HA V14CCNU0.1H0 V151CNX0.1HA V151CNU0.1H0 V152CNX0.1HA V152CNU0.1H0
V153CNX0.1HA V153CNU0.1H0 V154CNX0.1HA V154CNU0.1H0 V155CNX0.1HA V155CNU0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

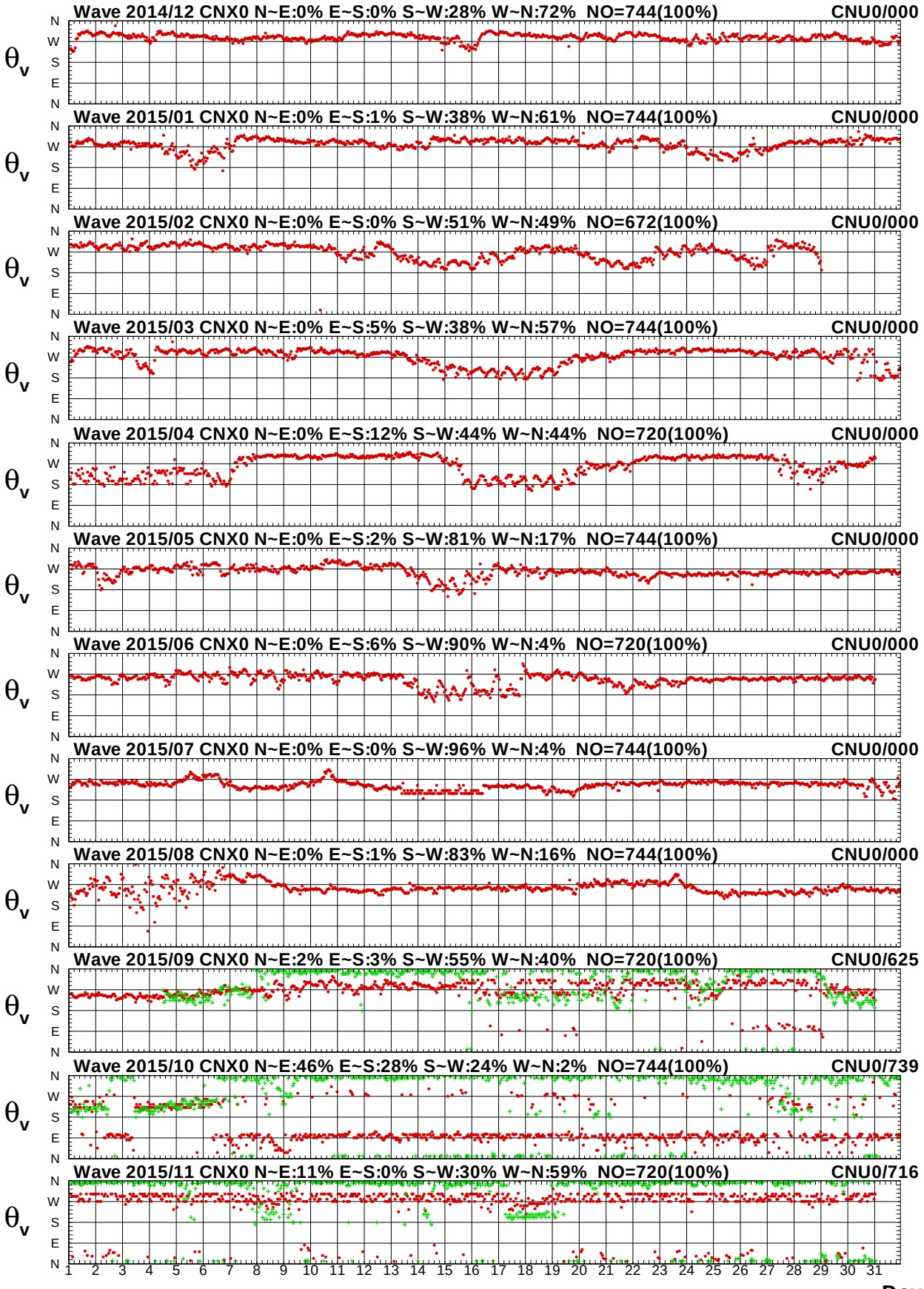


圖 8.6c　2015年每月嘉南海域 X 站與 U 站波向比較圖

V14CCNX0.1HA V14CCNU0.1H0 V151CNX0.1HA V151CNU0.1H0 V152CNX0.1HA V152CNU0.1H0
V153CNX0.1HA V153CNU0.1H0 V154CNX0.1HA V154CNU0.1H0 V155CNX0.1HA V155CNU0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

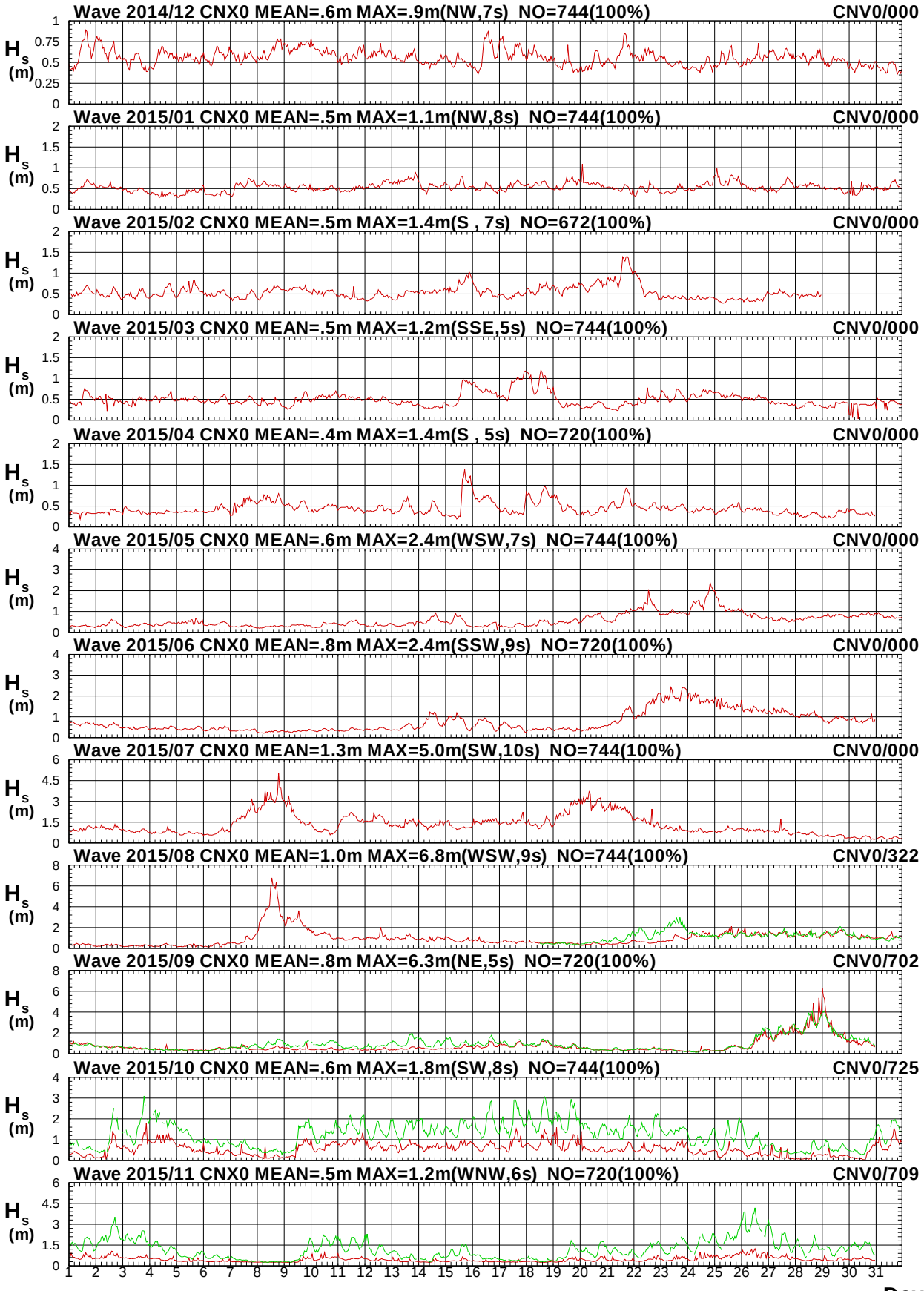


圖 8.7a　2015年每月嘉南海域 X 站與 V 站波高比較圖

V14CCNX0.1HA V14CCNV0.1H0 V151CNX0.1HA V151CNV0.1H0 V152CNX0.1HA V152CNV0.1H0
V153CNX0.1HA V153CNV0.1H0 V154CNX0.1HA V154CNV0.1H0 V155CNX0.1HA V155CNV0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

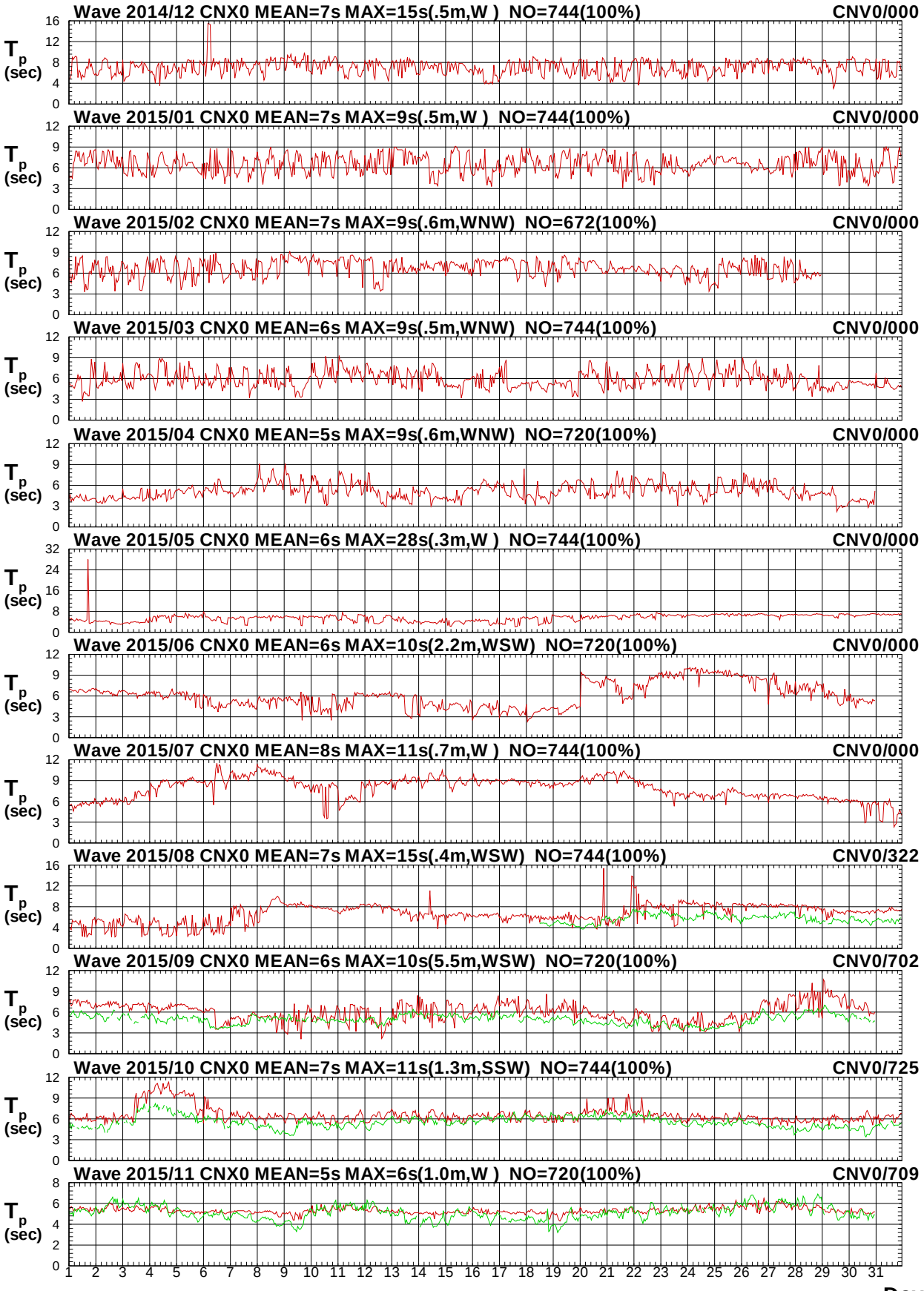


圖 8.7b　2015年每月嘉南海域 X 站與 V 站週期比較圖

V14CCNX0.1HA V14CCNV0.1H0 V151CNX0.1HA V151CNV0.1H0 V152CNX0.1HA V152CNV0.1H0
V153CNX0.1HA V153CNV0.1H0 V154CNX0.1HA V154CNV0.1H0 V155CNX0.1HA V155CNV0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

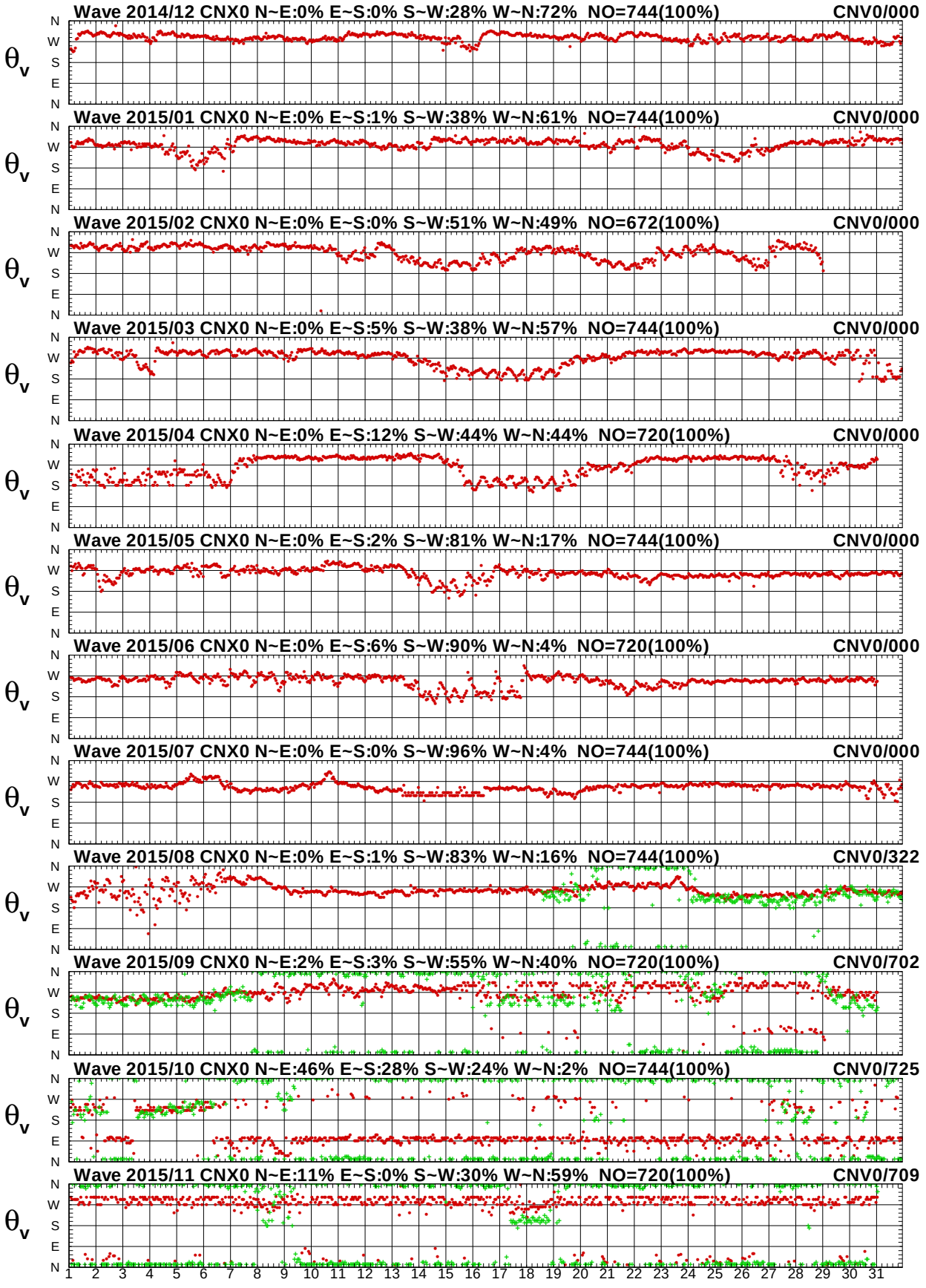


圖8.7c　2015年每月嘉南海域 X 站與 V 站波向比較圖

V14CCNX0.1HA V14CCNV0.1H0 V151CNX0.1HA V151CNV0.1H0 V152CNX0.1HA V152CNV0.1H0
V153CNX0.1HA V153CNV0.1H0 V154CNX0.1HA V154CNV0.1H0 V155CNX0.1HA V155CNV0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

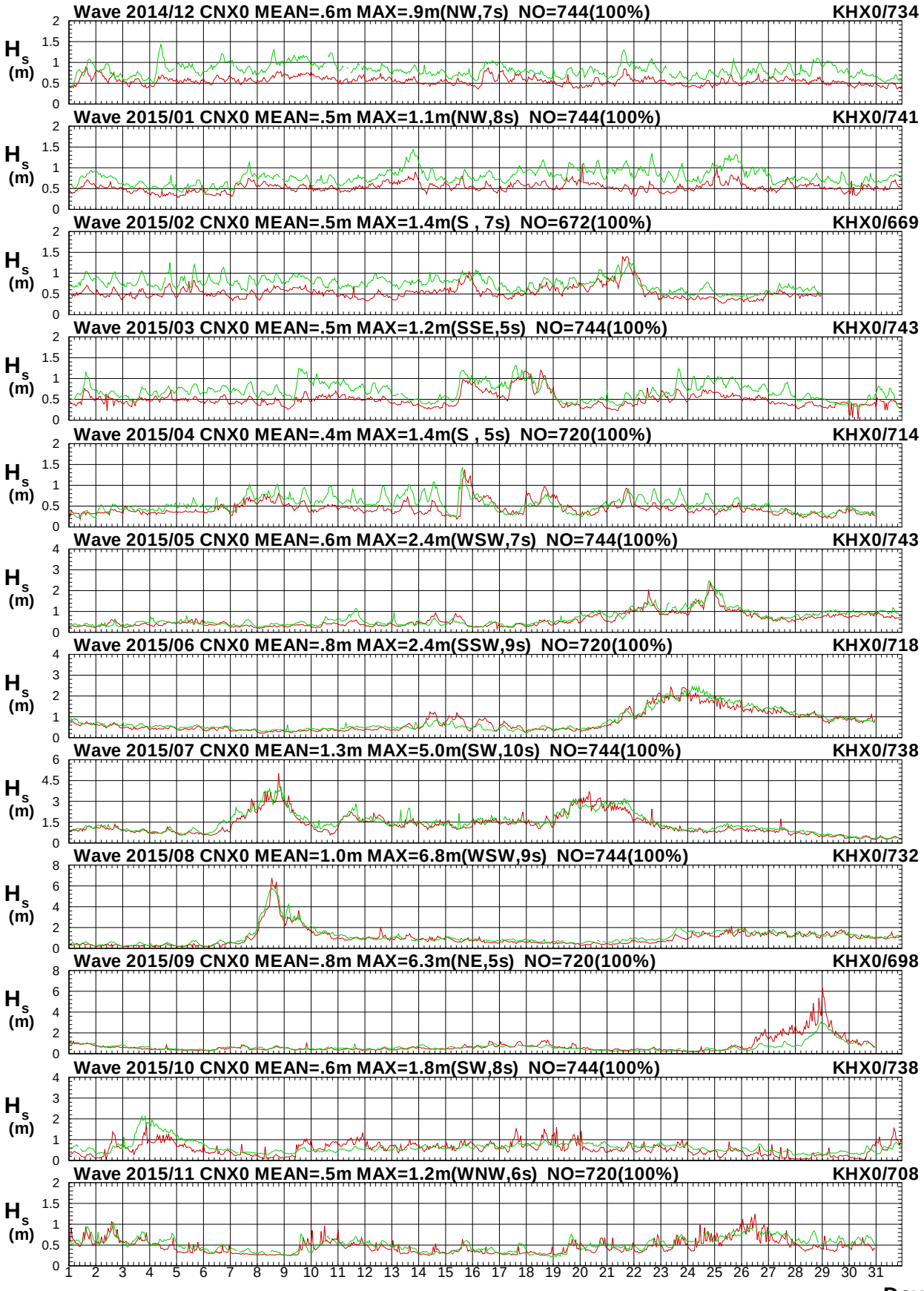


圖 8.8a　2015年每月嘉南海域 X 站與高雄海域 X 站波高圖

V14CCNX0.1HA V14CKHX0.1H0 V151CNX0.1HA V151KHX0.1H0 V152CNX0.1HA V152KHX0.1H0
V153CNX0.1HA V153KHX0.1H0 V154CNX0.1HA V154KHX0.1H0 V155CNX0.1HA V155KHX0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

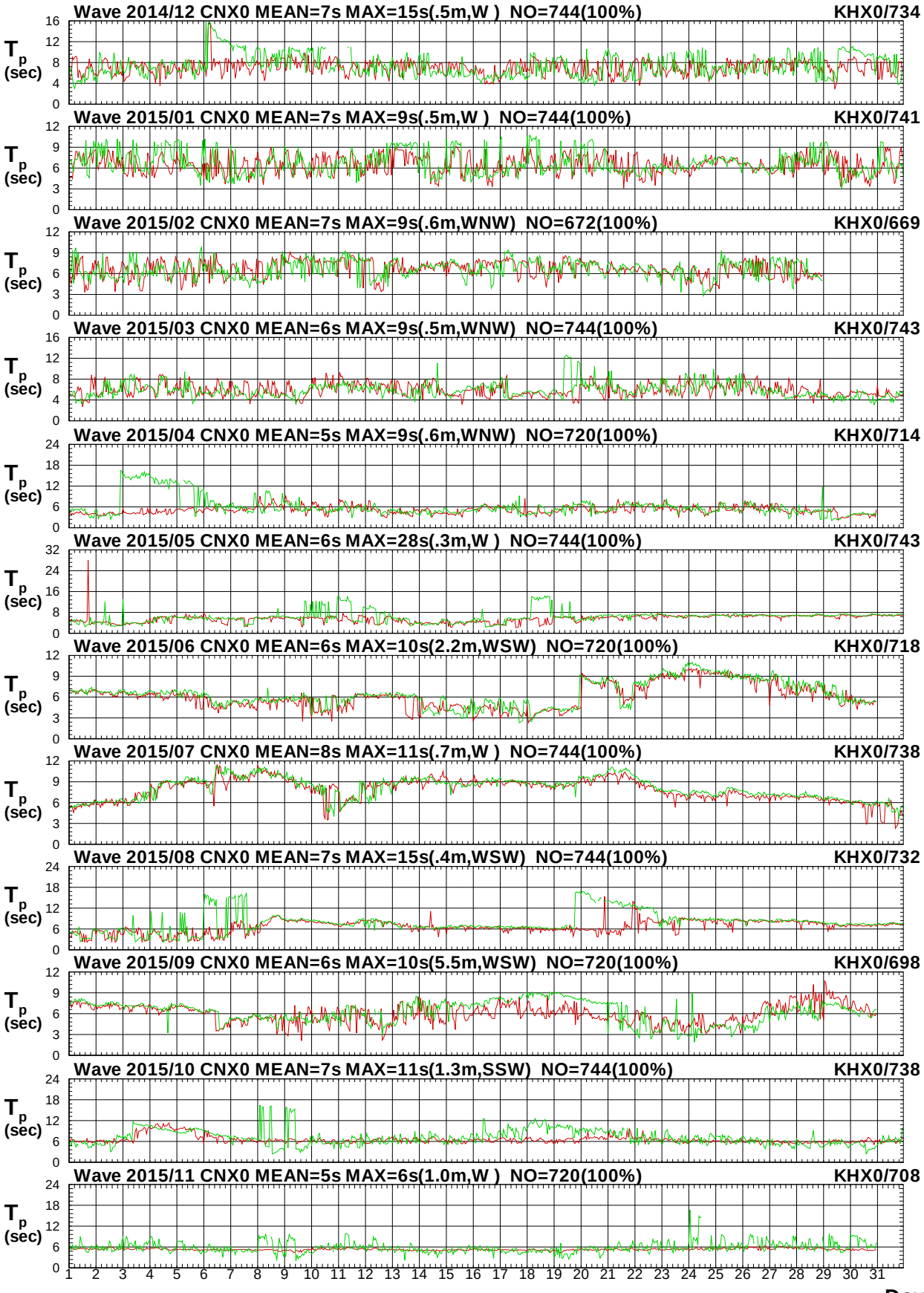


圖 8.8b　2015年每月嘉南海域 X 站與高雄海域 X 站週期圖

V14CCNX0.1HA V14CKHX0.1H0 V151CNX0.1HA V151KHX0.1H0 V152CNX0.1HA V152KHX0.1H0
V153CNX0.1HA V153KHX0.1H0 V154CNX0.1HA V154KHX0.1H0 V155CNX0.1HA V155KHX0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

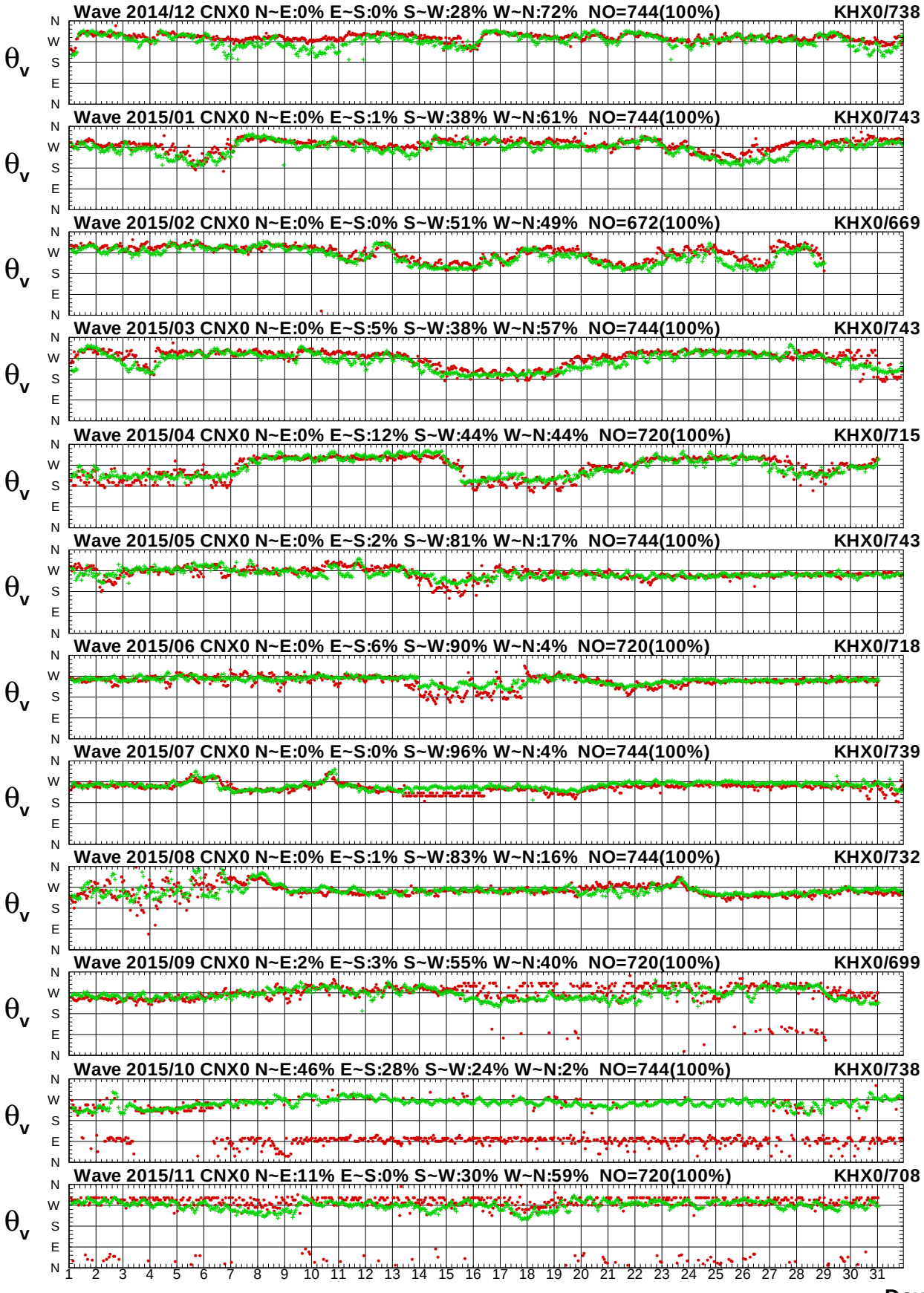


圖 8.8c　2015年每月嘉南海域 X 站與高雄海域 X 站波向圖

V14CCNX0.1HA V14CKHX0.1H0 V151CNX0.1HA V151KHX0.1H0 V152CNX0.1HA V152KHX0.1H0
V153CNX0.1HA V153KHX0.1H0 V154CNX0.1HA V154KHX0.1H0 V155CNX0.1HA V155KHX0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

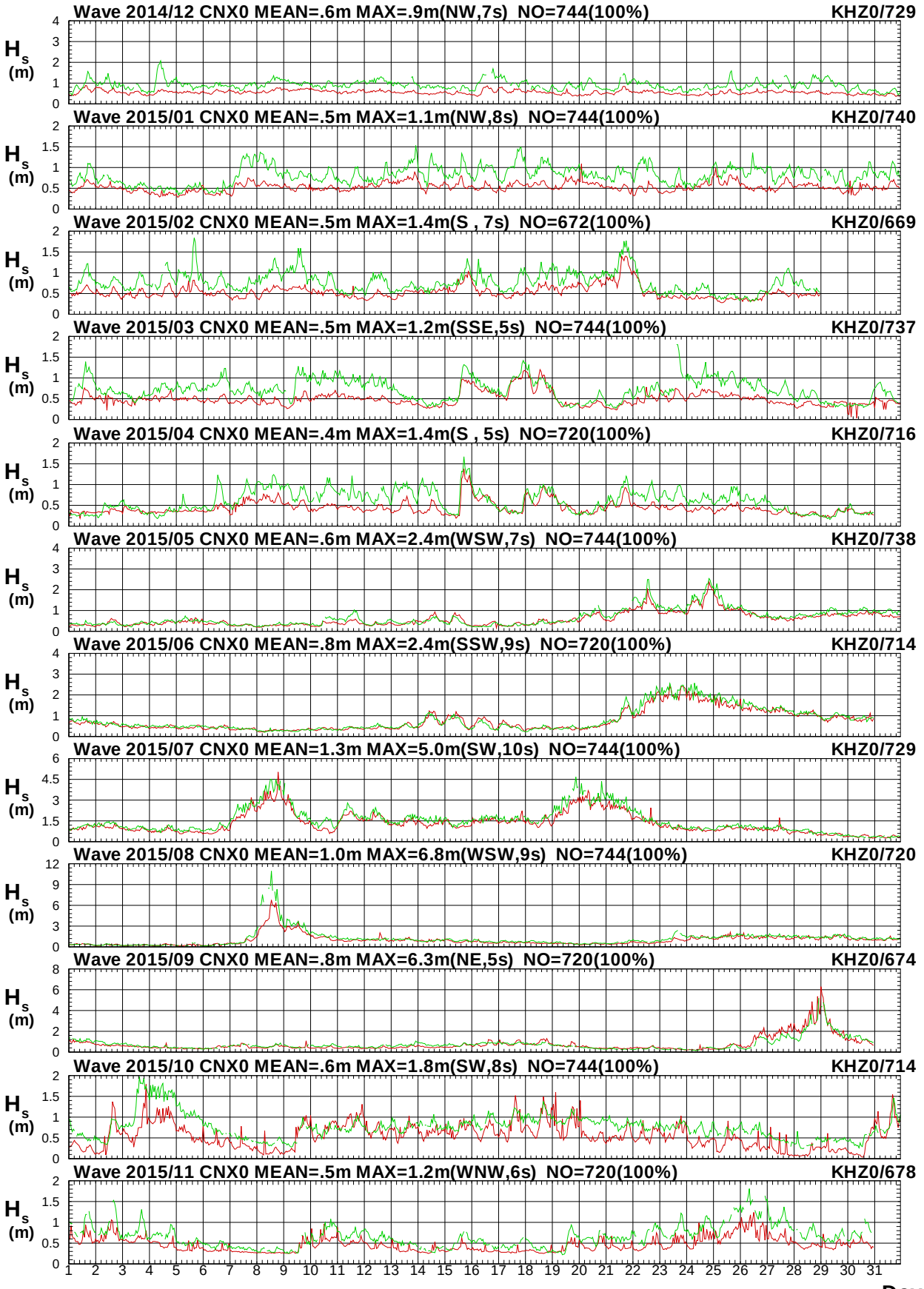


圖 8.9a　2015年每月嘉南海域 X 站與高雄海域 Z 站波高圖

V14CCNX0.1HA V14CKHZ0.1H0 V151CNX0.1HA V151KHZ0.1H0 V152CNX0.1HA V152KHZ0.1H0
V153CNX0.1HA V153KHZ0.1H0 V154CNX0.1HA V154KHZ0.1H0 V155CNX0.1HA V155KHZ0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

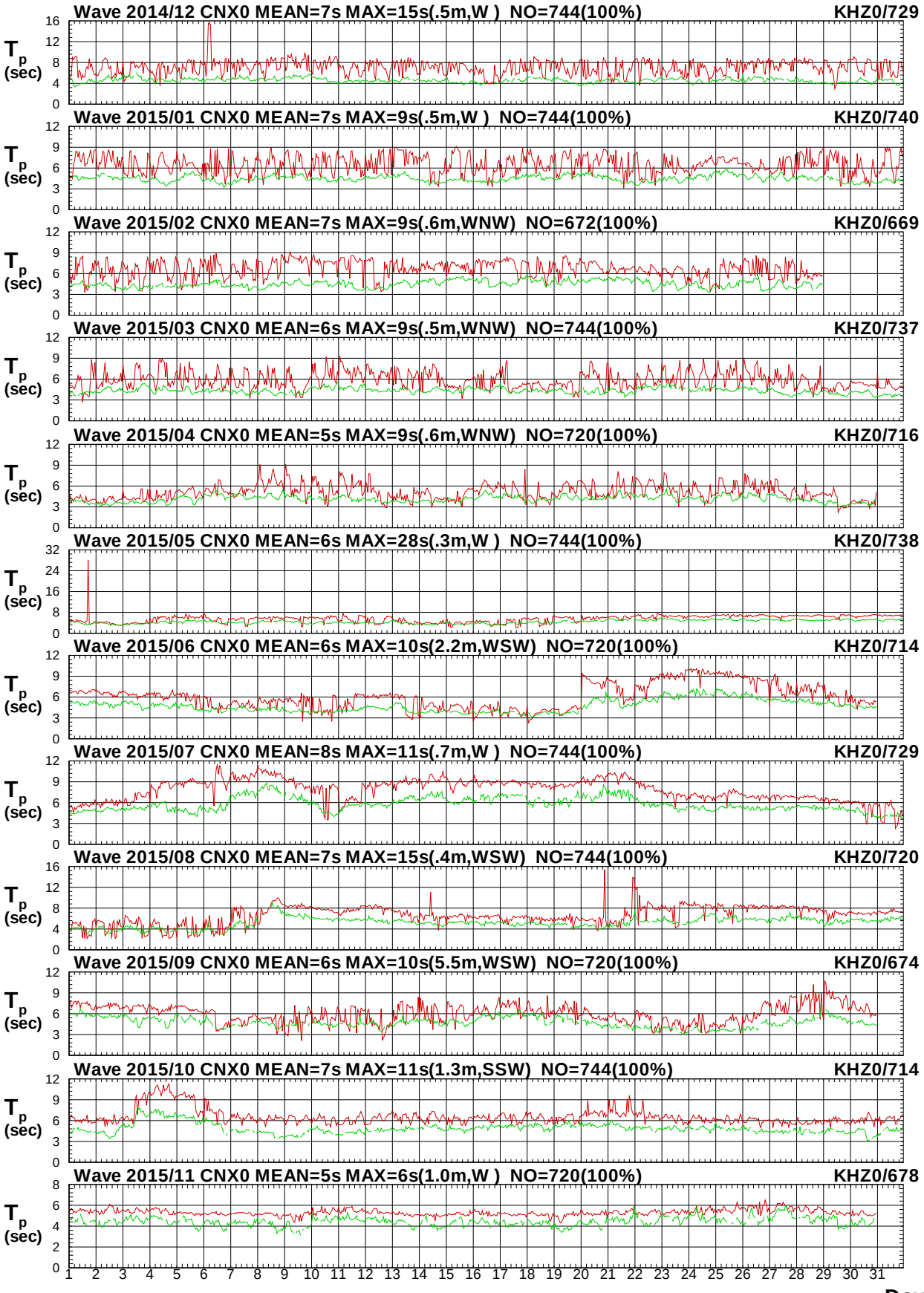


圖 8.9b　2015年每月嘉南海域 X 站與高雄海域 Z 站週期圖

V14CCNX0.1HA V14CKHZ0.1H0 V151CNX0.1HA V151KHZ0.1H0 V152CNX0.1HA V152KHZ0.1H0
V153CNX0.1HA V153KHZ0.1H0 V154CNX0.1HA V154KHZ0.1H0 V155CNX0.1HA V155KHZ0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

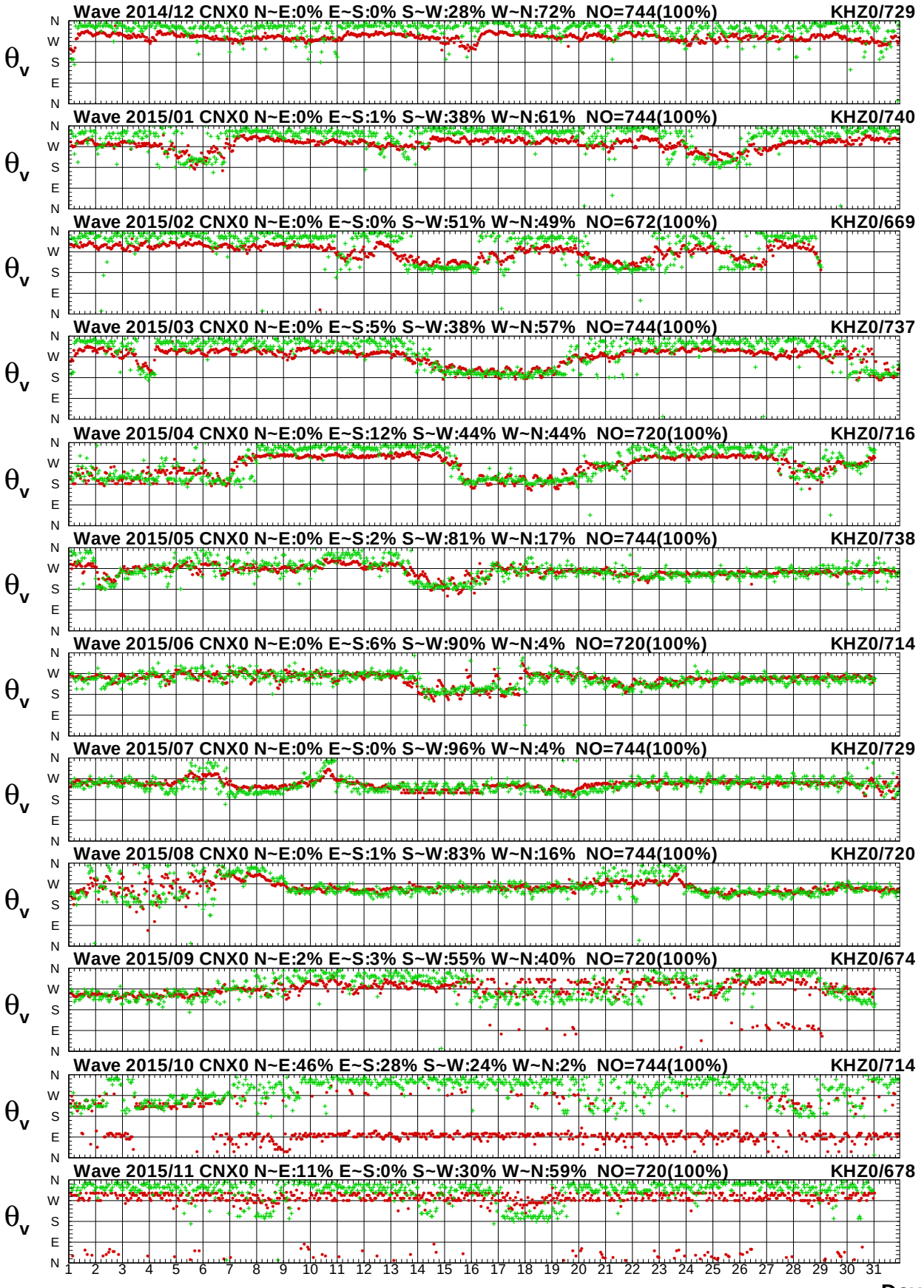


圖 8.9c　2015年每月嘉南海域 X 站與高雄海域 Z 站波向圖

V14CCNX0.1HA V14CKHZ0.1H0 V151CNX0.1HA V151KHZ0.1H0 V152CNX0.1HA V152KHZ0.1H0
V153CNX0.1HA V153KHZ0.1H0 V154CNX0.1HA V154KHZ0.1H0 V155CNX0.1HA V155KHZ0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

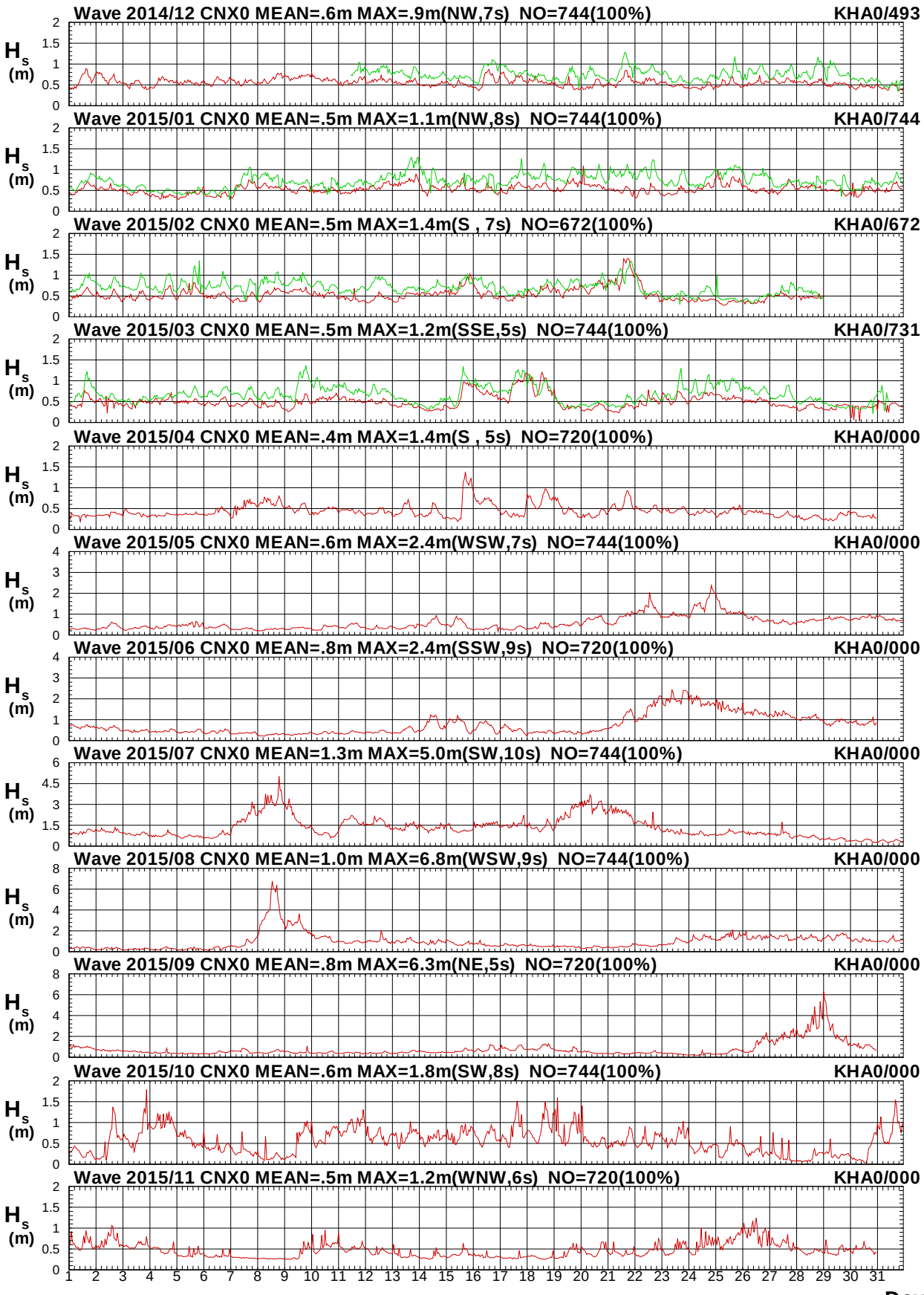


圖8.10a　2015年每月嘉南海域 X 站與高雄海域 A 站波高圖

V14CCNX0.1HA V14CKHA0.1H0 V151CNX0.1HA V151KHA0.1H0 V152CNX0.1HA V152KHA0.1H0
V153CNX0.1HA V153KHA0.1H0 V154CNX0.1HA V154KHA0.1H0 V155CNX0.1HA V155KHA0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

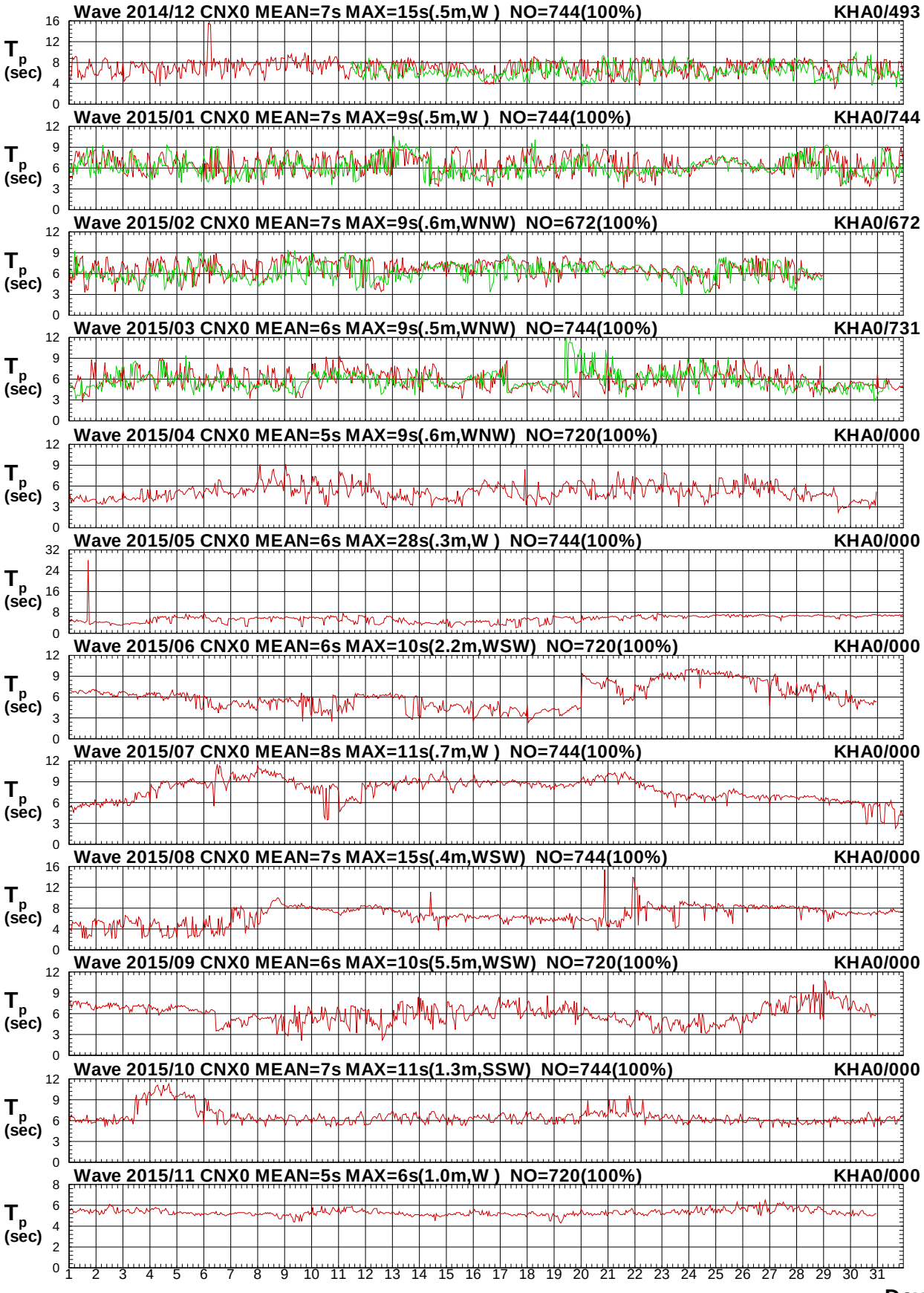


圖 8.10b　2015年每月嘉南海域 X 站與高雄海域 A 站週期圖

V14CCNX0.1HA V14CKHA0.1H0 V151CNX0.1HA V151KHA0.1H0 V152CNX0.1HA V152KHA0.1H0
V153CNX0.1HA V153KHA0.1H0 V154CNX0.1HA V154KHA0.1H0 V155CNX0.1HA V155KHA0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

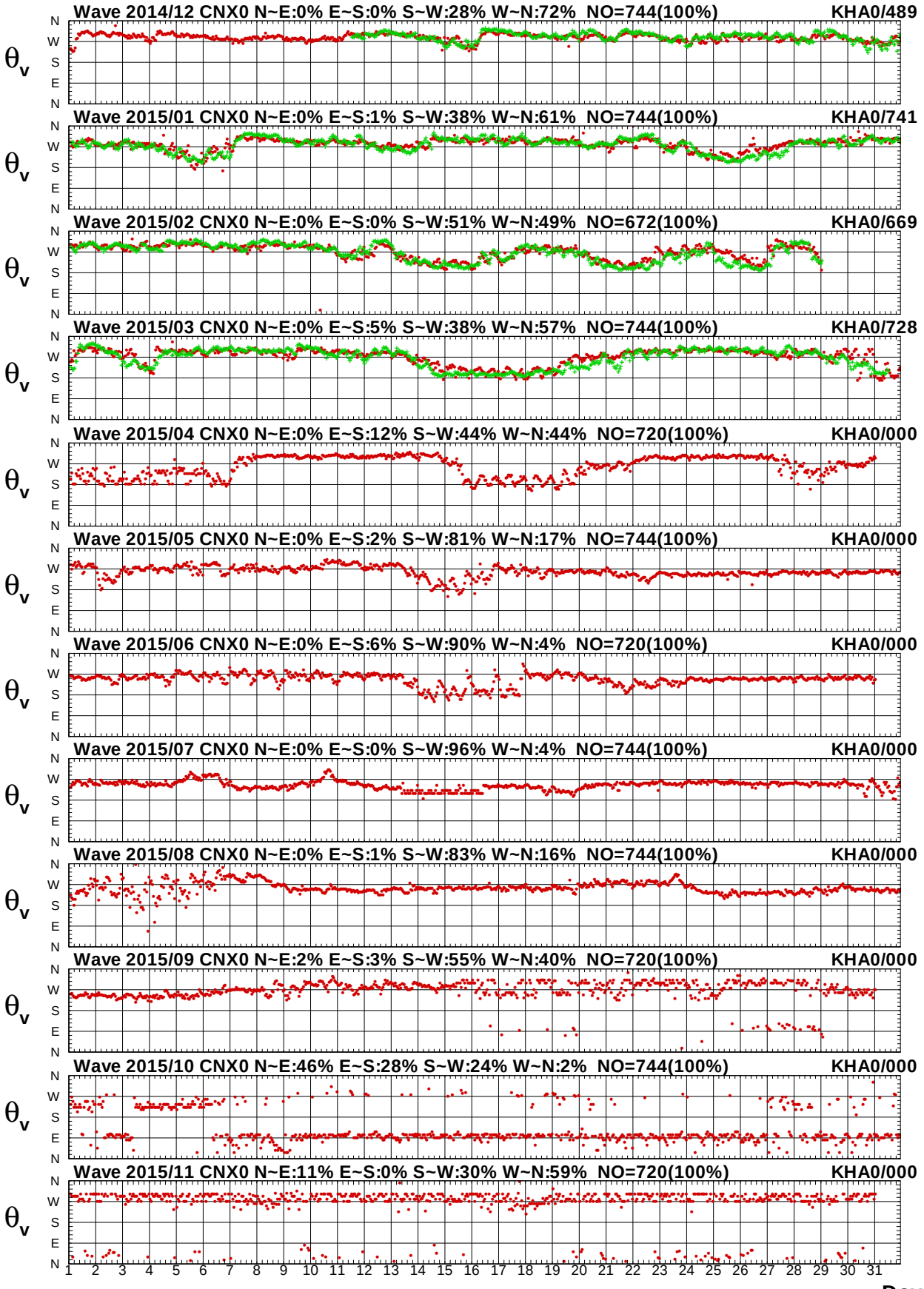


圖8.10c　2015年每月嘉南海域 X 站與高雄海域 A 站波向圖

V14CCNX0.1HA V14CKHA0.1H0 V151CNX0.1HA V151KHA0.1H0 V152CNX0.1HA V152KHA0.1H0
V153CNX0.1HA V153KHA0.1H0 V154CNX0.1HA V154KHA0.1H0 V155CNX0.1HA V155KHA0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

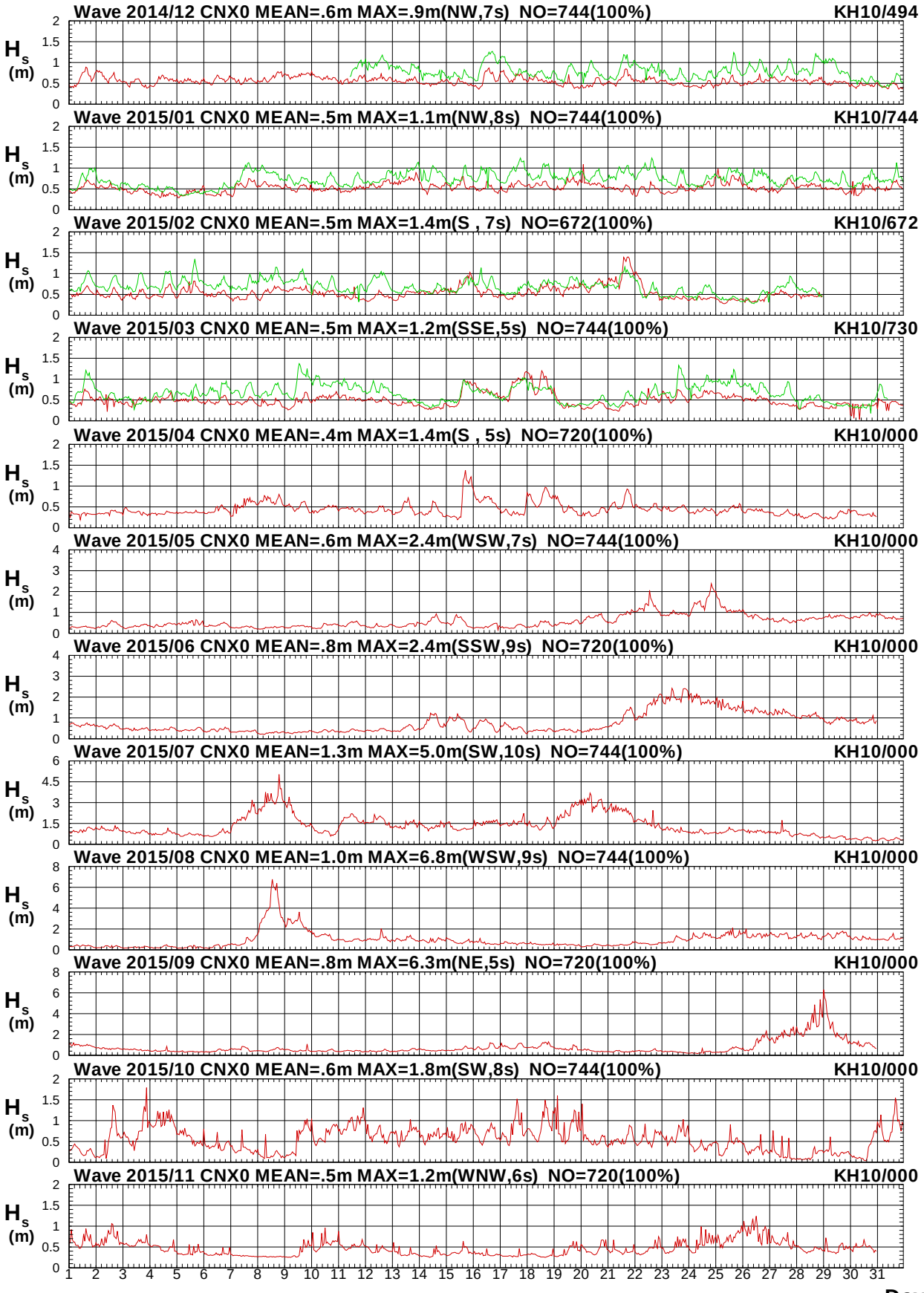


圖8.11a　2015年每月嘉南海域 X 站與高雄海域1站波高圖

V14CCNX0.1HA V14CKH10.1H0 V151CNX0.1HA V151KH10.1H0 V152CNX0.1HA V152KH10.1H0
V153CNX0.1HA V153KH10.1H0 V154CNX0.1HA V154KH10.1H0 V155CNX0.1HA V155KH10.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

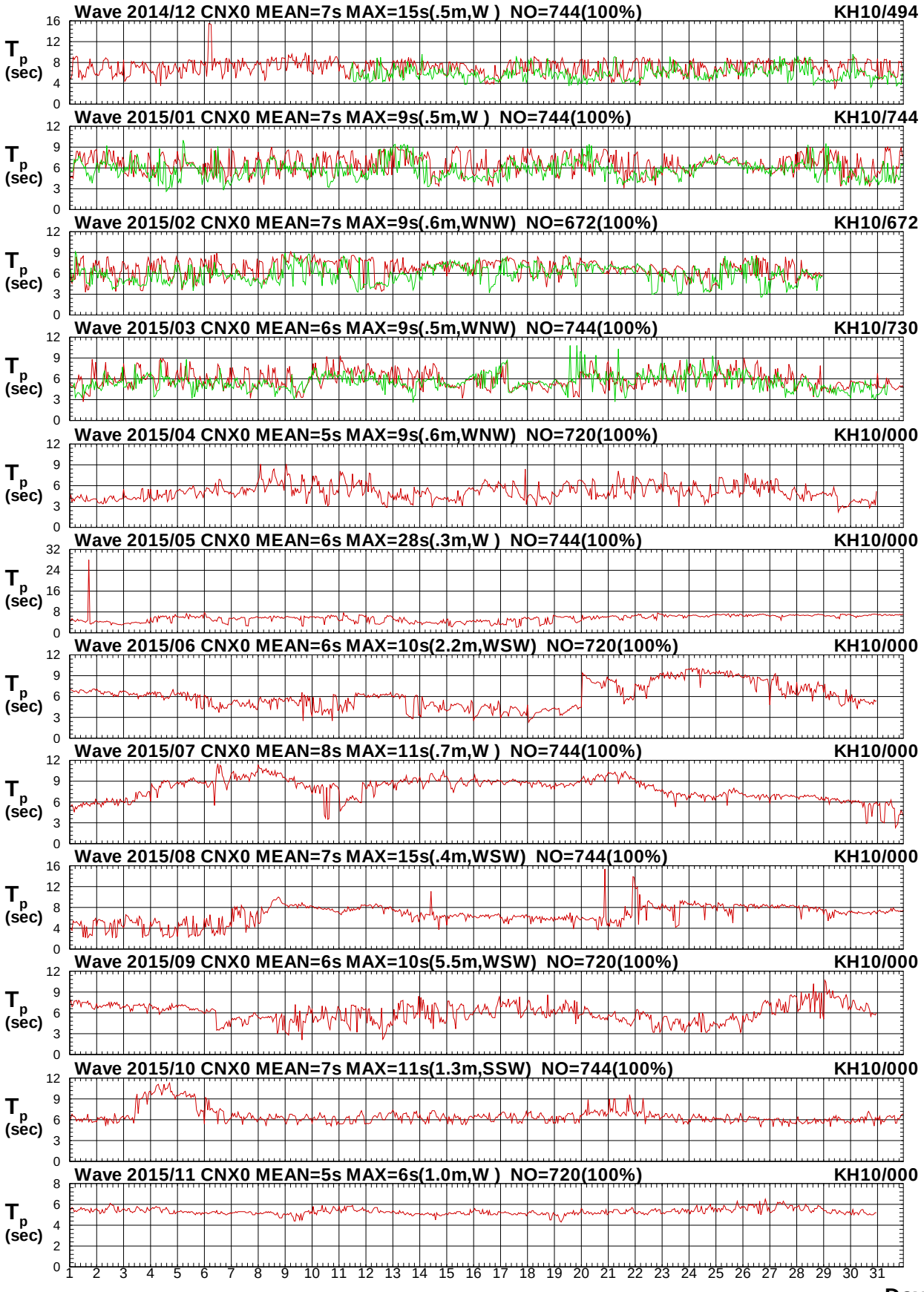


圖 8.11b　2015年每月嘉南海域 X 站與高雄海域1站週期圖

V14CCNX0.1HA V14CKH10.1H0 V151CNX0.1HA V151KH10.1H0 V152CNX0.1HA V152KH10.1H0
V153CNX0.1HA V153KH10.1H0 V154CNX0.1HA V154KH10.1H0 V155CNX0.1HA V155KH10.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

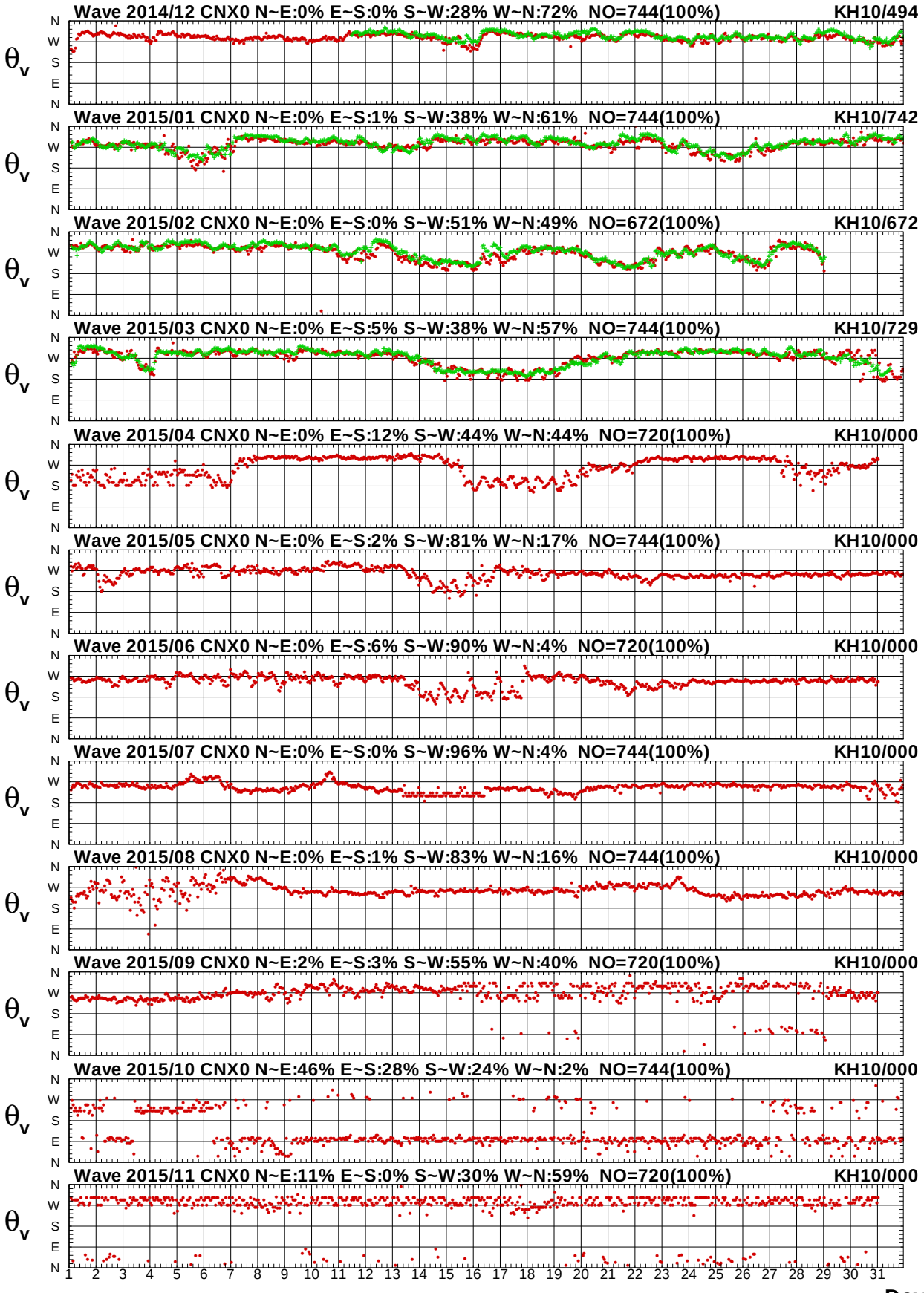


圖8.11c　2015年每月嘉南海域 X 站與高雄海域1站波向圖

V14CCNX0.1HA V14CKH10.1H0 V151CNX0.1HA V151KH10.1H0 V152CNX0.1HA V152KH10.1H0
V153CNX0.1HA V153KH10.1H0 V154CNX0.1HA V154KH10.1H0 V155CNX0.1HA V155KH10.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

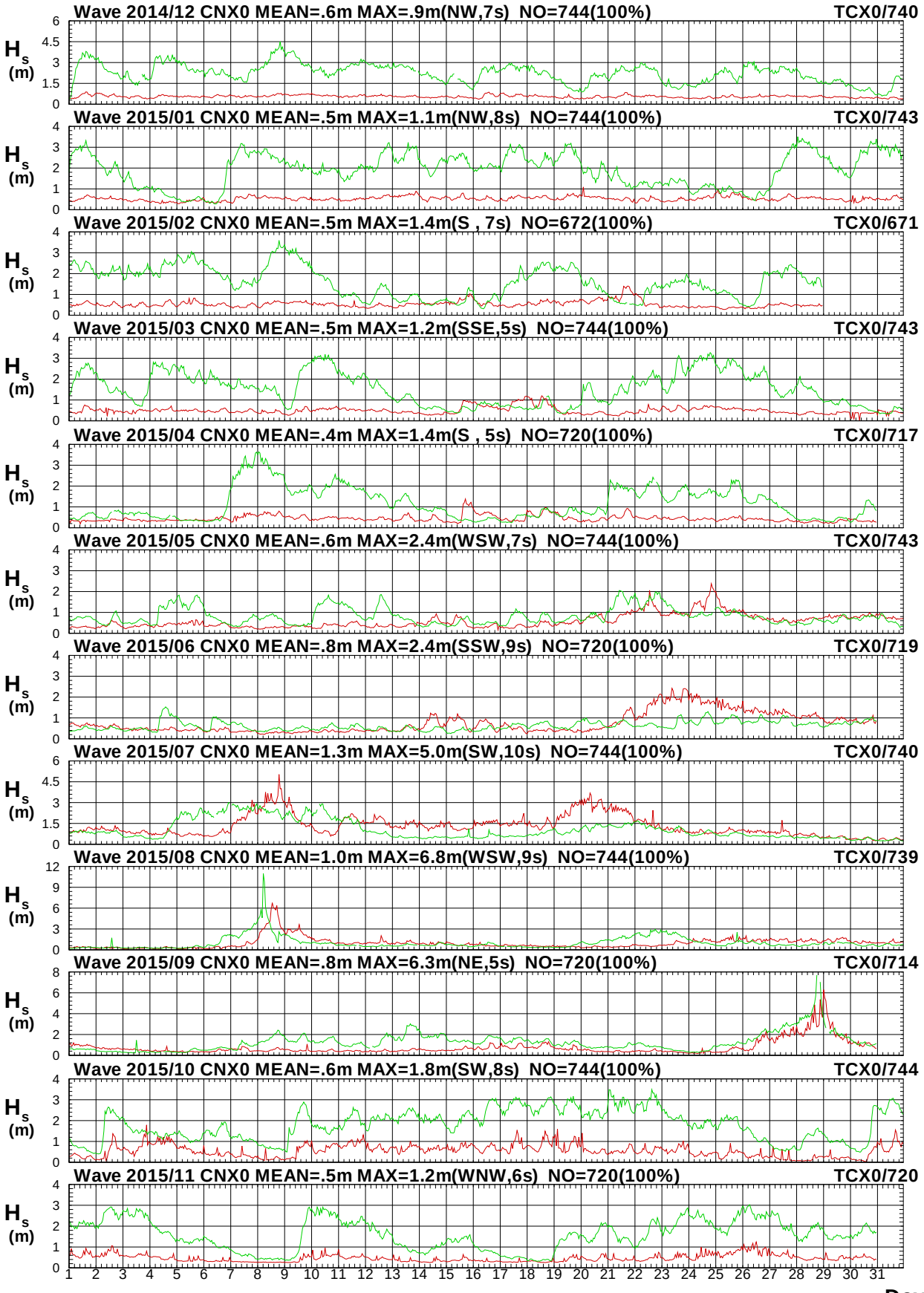


圖8.12a　2015年每月嘉南海域 X 站與中雲海域 X 站波高圖

V14CCNX0.1HA V14CTCX0.1H0 V151CNX0.1HA V151TCX0.1H0 V152CNX0.1HA V152TCX0.1H0
V153CNX0.1HA V153TCX0.1H0 V154CNX0.1HA V154TCX0.1H0 V155CNX0.1HA V155TCX0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

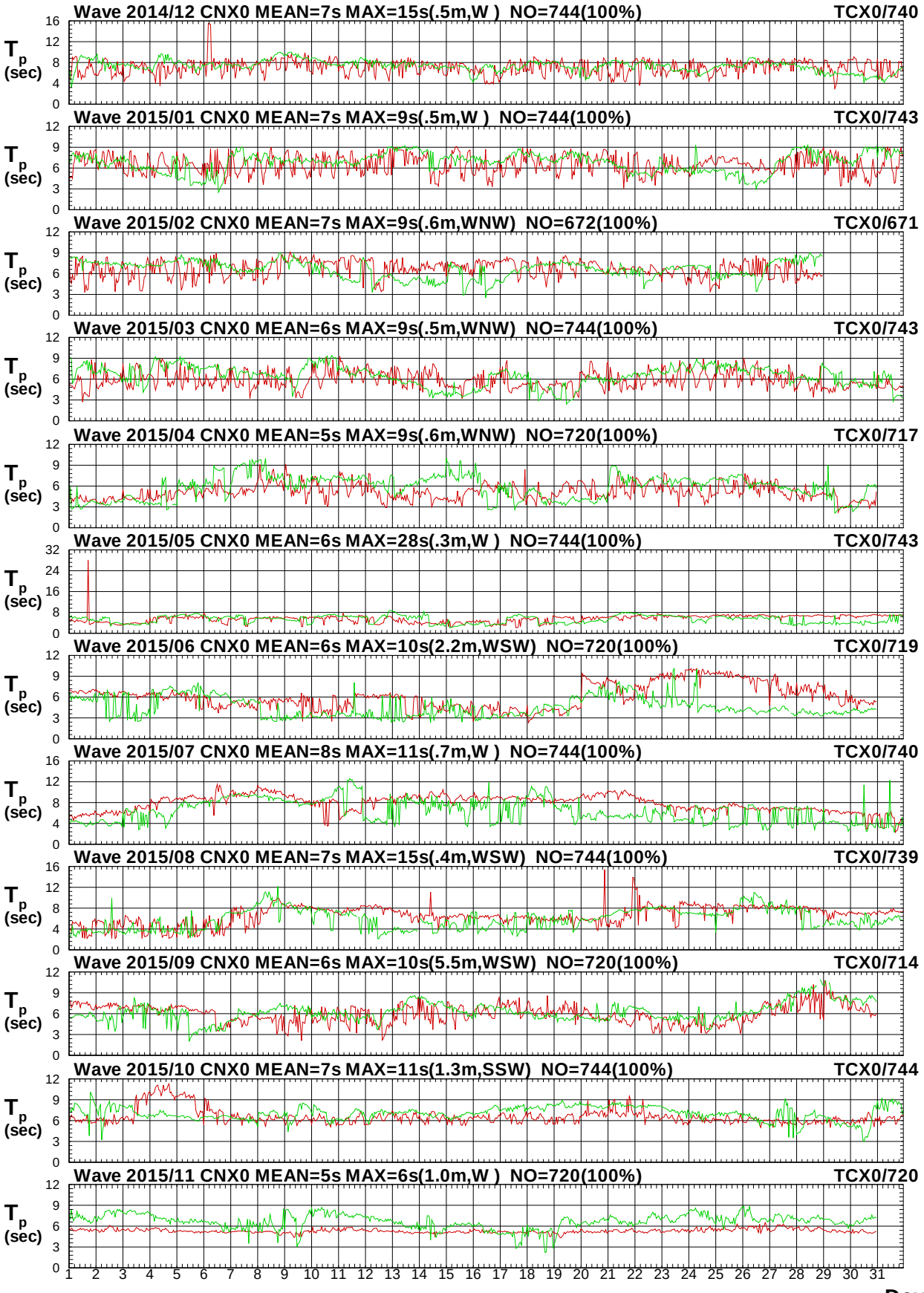


圖8.12b　2015年每月嘉南海域 X 站與中雲海域 X 站週期圖

V14CCNX0.1HA V14CTCX0.1H0 V151CNX0.1HA V151TCX0.1H0 V152CNX0.1HA V152TCX0.1H0
V153CNX0.1HA V153TCX0.1H0 V154CNX0.1HA V154TCX0.1H0 V155CNX0.1HA V155TCX0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

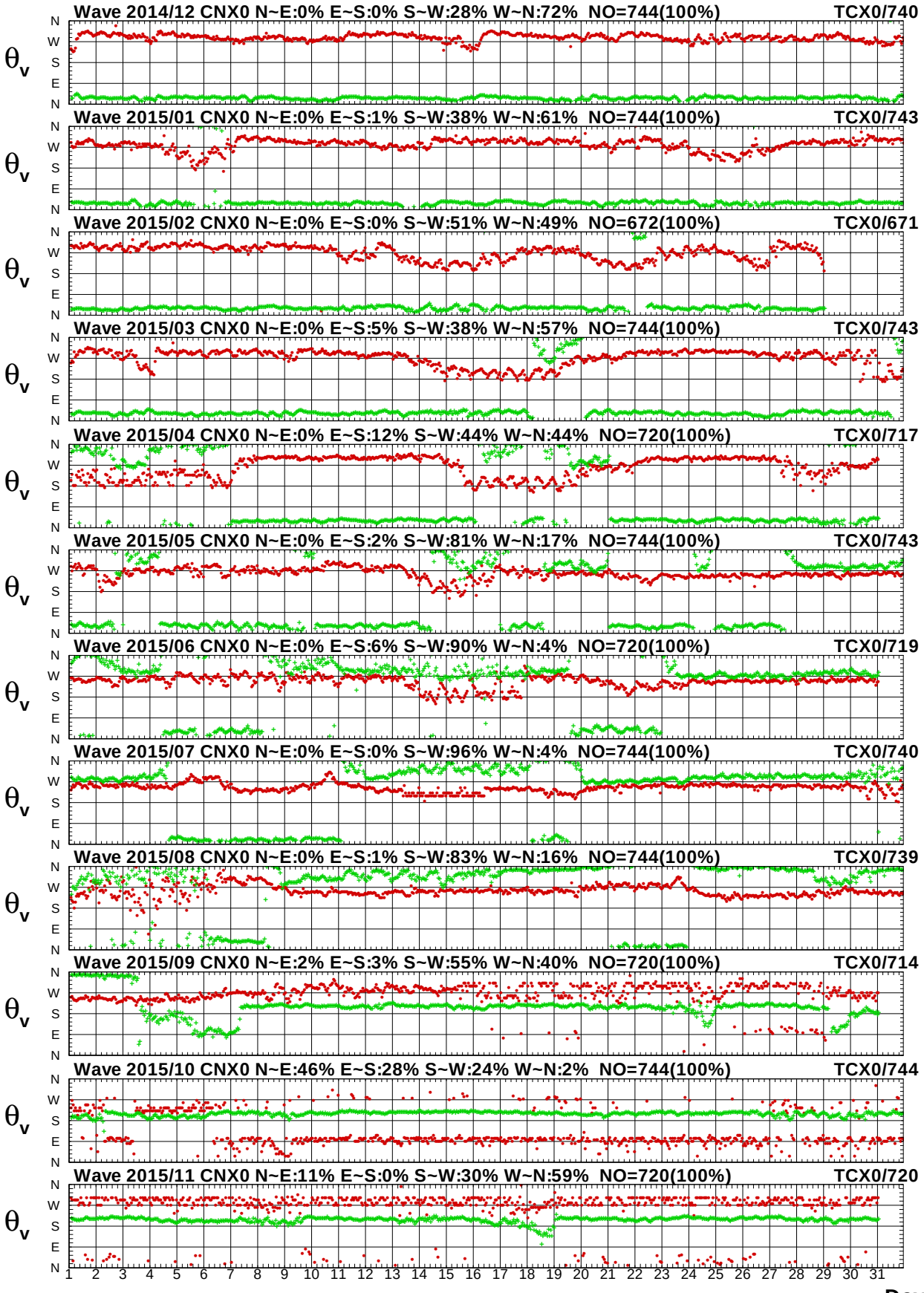


圖8.12c　2015年每月嘉南海域 X 站與中雲海域 X 站波向圖

V14CCNX0.1HA V14CTCX0.1H0 V151CNX0.1HA V151TCX0.1H0 V152CNX0.1HA V152TCX0.1H0
V153CNX0.1HA V153TCX0.1H0 V154CNX0.1HA V154TCX0.1H0 V155CNX0.1HA V155TCX0.1H0

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Wave H_s in Chia-Nan Seas of CNX0 at 2015

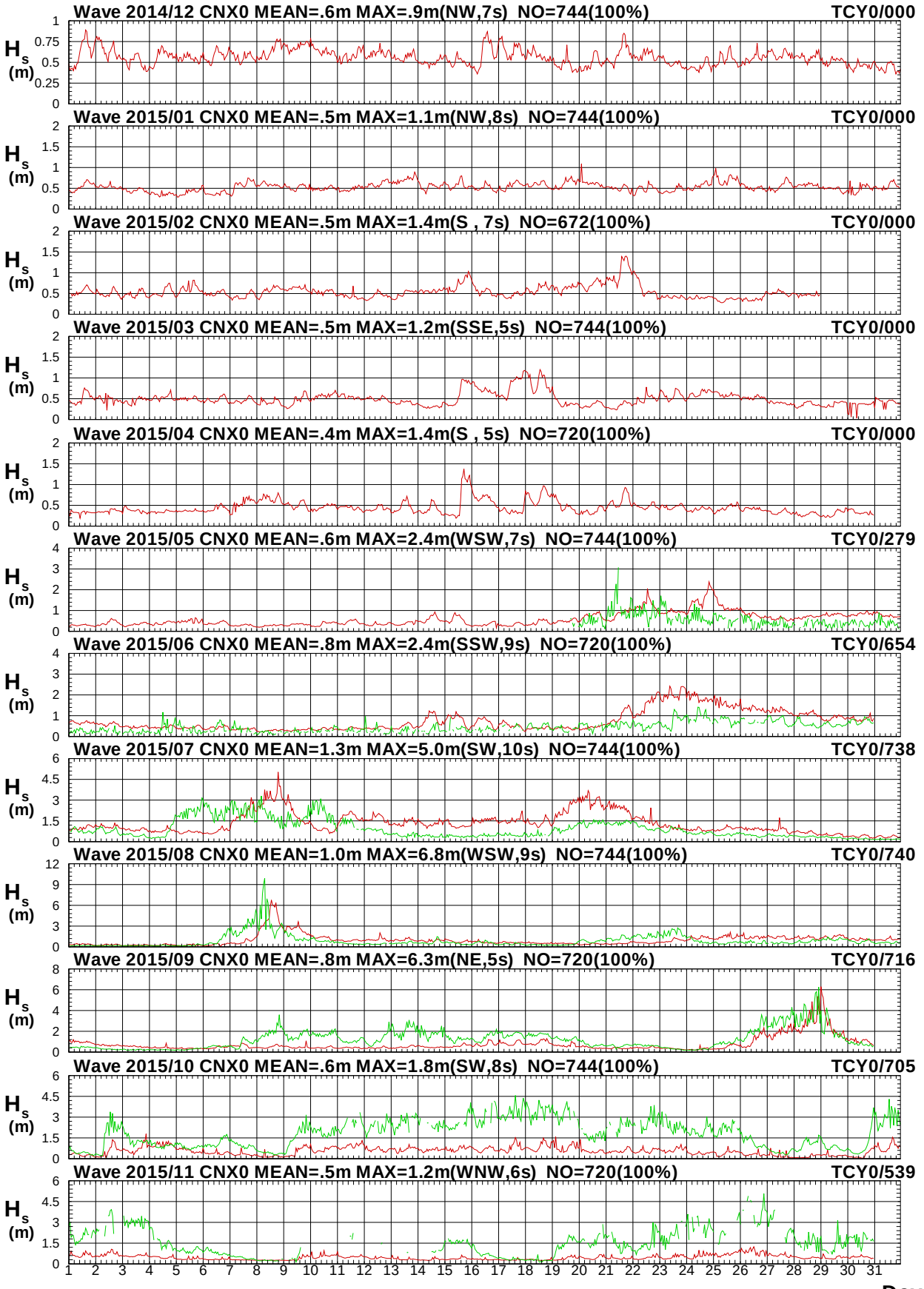


圖8.13a　2015年每月嘉南海域 X 站與中雲海域 Y 站波高圖

V14CCNX0.1HA V14CTCY0.1H0 V151CNX0.1HA V151TCY0.1H0 V152CNX0.1HA V152TCY0.1H0
V153CNX0.1HA V153TCY0.1H0 V154CNX0.1HA V154TCY0.1H0 V155CNX0.1HA V155TCY0.1H0

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Wave T_p in Chia-Nan Seas of CNX0 at 2015

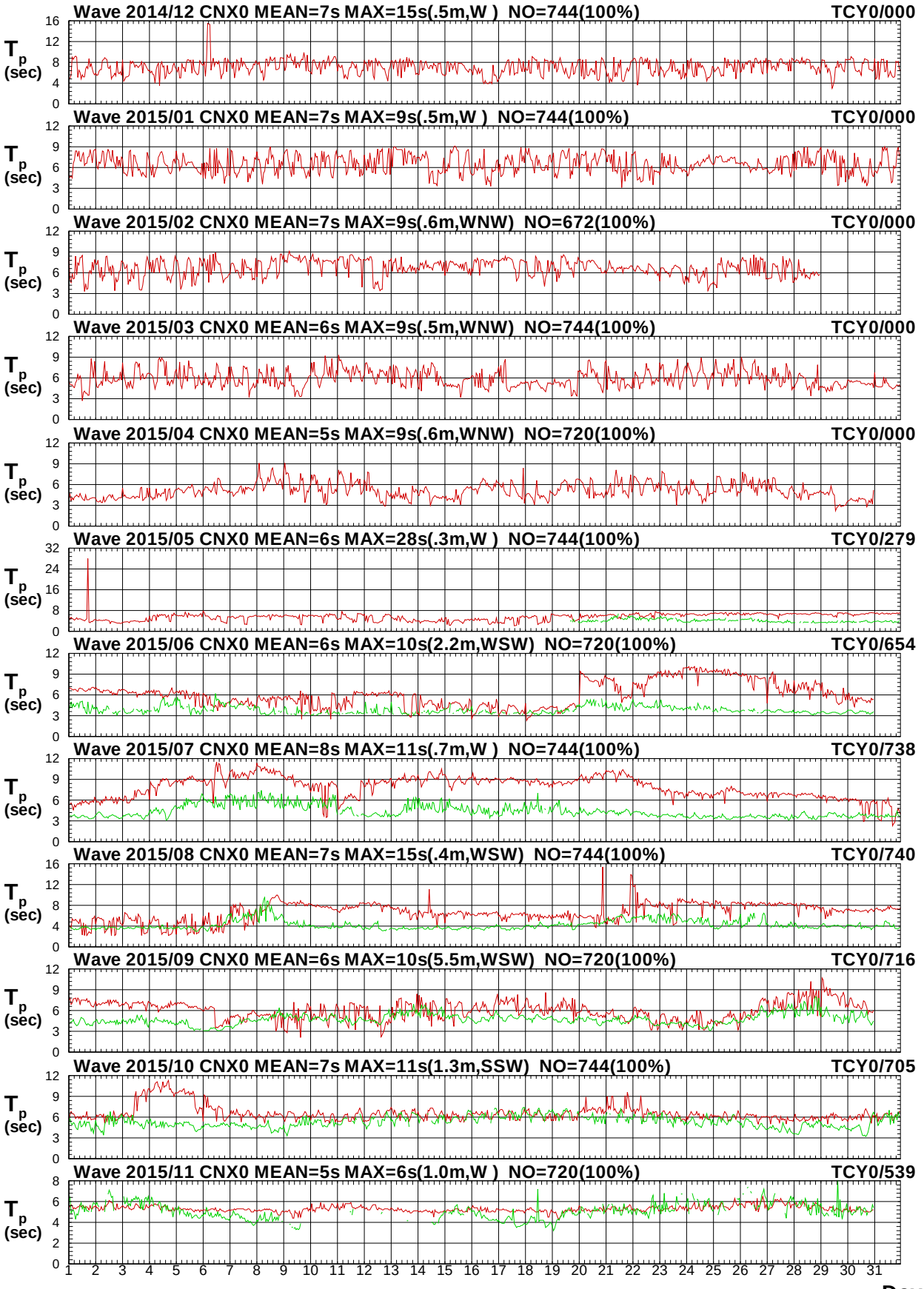


圖8.13b　2015年每月嘉南海域 X 站與中雲海域 Y 站週期圖

V14CCNX0.1HA V14CTCY0.1H0 V151CNX0.1HA V151TCY0.1H0 V152CNX0.1HA V152TCY0.1H0
V153CNX0.1HA V153TCY0.1H0 V154CNX0.1HA V154TCY0.1H0 V155CNX0.1HA V155TCY0.1H0

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Wave Direction in Chia-Nan Seas of CNX0 at 2015

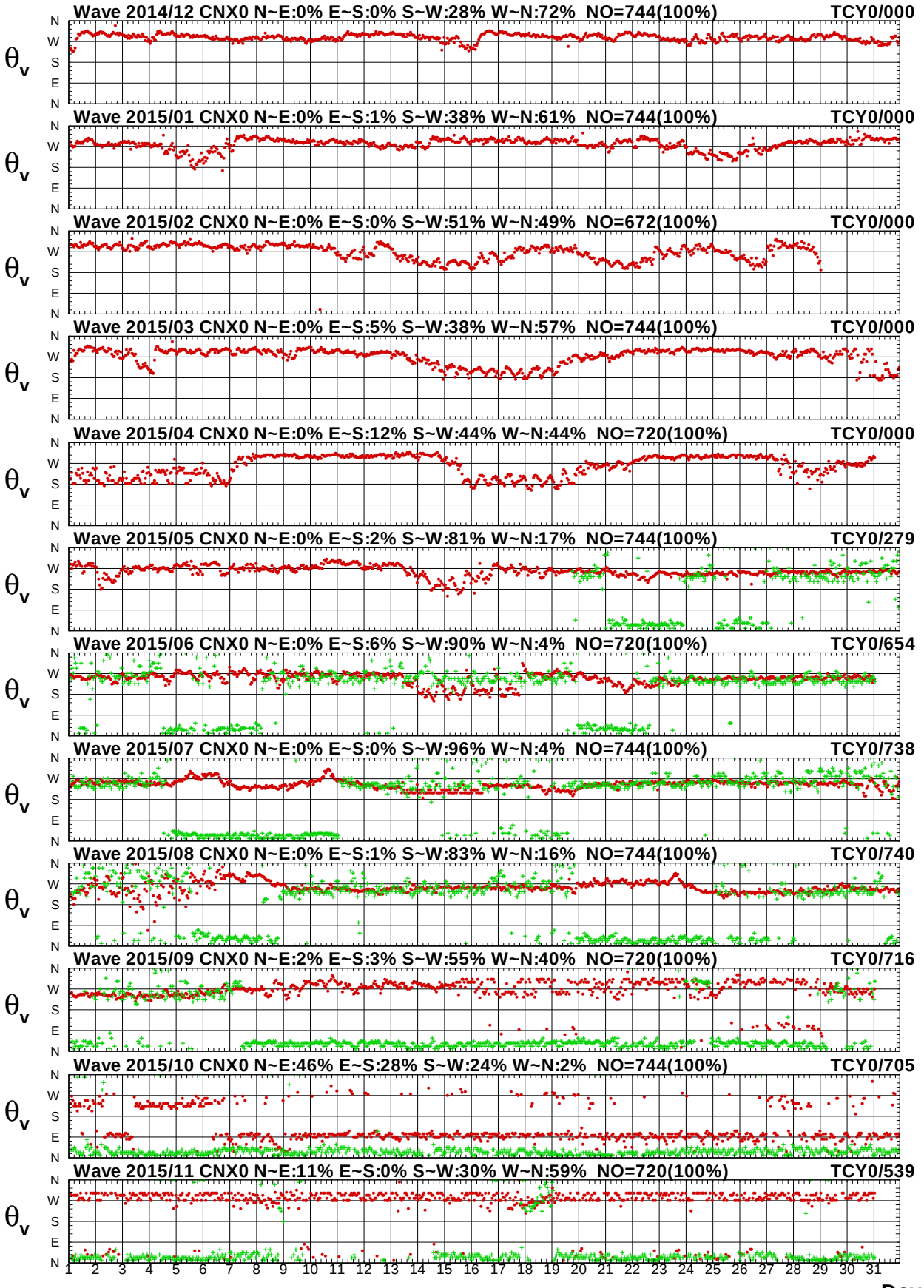


圖8.13c　2015年每月嘉南海域 X 站與中雲海域 Y 站波向圖

V14CCNX0.1HA V14CTCY0.1H0 V151CNX0.1HA V151TCY0.1H0 V152CNX0.1HA V152TCY0.1H0
V153CNX0.1HA V153TCY0.1H0 V154CNX0.1HA V154TCY0.1H0 V155CNX0.1HA V155TCY0.1H0

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第九章　2015 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。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**，2015 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，2015 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 2015 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	2003/07-2015/11(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

中雲海域



圖 9 中雲海域波浪觀測站位置示意圖

表9.1a 2015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				
2014/12月	740 (99.5%)	*	*	*	*	*	*	*
2015/ 1月	743 (99.9%)	*	*	*	*	*	*	*
2015/ 2月	671 (99.9%)	*	*	*	*	*	*	*
2015/ 3月	743 (99.9%)	*	*	*	*	*	*	*
2015/ 4月	717 (99.6%)	*	*	*	*	*	*	*
2015/ 5月	743 (99.9%)	279 (37.5%)	*	*	*	*	*	*
2015/ 6月	719 (99.9%)	654 (90.8%)	*	*	*	*	*	*
2015/ 7月	740 (99.5%)	738 (99.2%)	*	*	*	*	*	*
2015/ 8月	739 (99.3%)	740 (99.5%)	*	*	*	*	*	*
2015/ 9月	714 (99.2%)	716 (99.4%)	*	*	*	*	*	*
2015/10月	744 (100%)	705 (94.8%)	*	*	*	*	*	*
2015/11月	720 (100%)	539 (74.9%)	*	*	*	*	*	*
2015/冬季	2154 (99.7%)	*	*	*	*	*	*	*
2015/春季	2203 (99.8%)	279 (12.6%)	*	*	*	*	*	*
2015/夏季	2198 (99.5%)	2132 (96.6%)	*	*	*	*	*	*
2015/秋季	2178 (99.7%)	1960 (89.7%)	*	*	*	*	*	*
2015/整年	8733 (99.7%)	4371 (49.9%)	*	*	*	*	*	*
起始年月	2014/12	2015/05	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

表9.1b 2015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				
2014/12月	744 (100%)	*	*	*	*	*	*	*
2015/ 1月	744 (100%)	*	*	*	*	*	*	*
2015/ 2月	672 (100%)	*	*	*	*	*	*	*
2015/ 3月	744 (100%)	*	*	*	*	*	*	*
2015/ 4月	720 (100%)	*	*	*	*	*	*	*
2015/ 5月	744 (100%)	*	*	*	*	*	*	*
2015/ 6月	720 (100%)	*	*	*	*	*	*	*
2015/ 7月	744 (100%)	*	*	*	*	*	*	*
2015/ 8月	744 (100%)	*	*	*	*	*	*	*
2015/ 9月	720 (100%)	*	*	*	*	*	*	*
2015/10月	744 (100%)	*	*	*	*	*	*	*
2015/11月	720 (100%)	*	*	*	*	*	*	*
2015/冬季	2160 (100%)	*	*	*	*	*	*	*
2015/春季	2208 (100%)	*	*	*	*	*	*	*
2015/夏季	2208 (100%)	*	*	*	*	*	*	*
2015/秋季	2184 (100%)	*	*	*	*	*	*	*
2015/整年	8760 (100%)	*	*	*	*	*	*	*
起始年月	2014/12	*	*	*	*	*	*	*
結束年月	2015/11	*	*	*	*	*	*	*

Wave H_s in Chung-Yun Seas of TCX0 at 2015

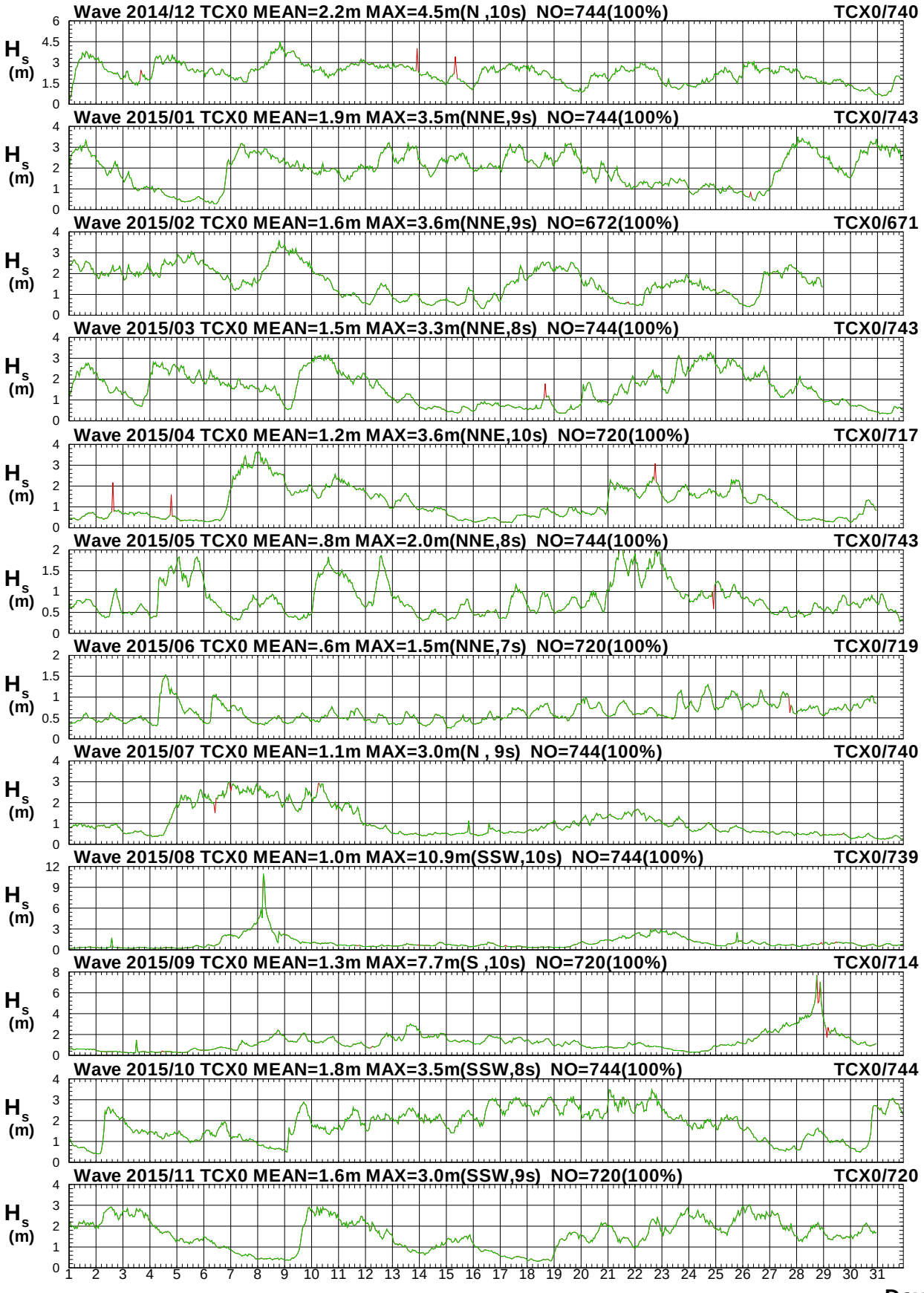


圖 9.1a　2015年每月中雲海域 X 站修補前後之波高比較圖

V14CTCX0.1HA V14CTCX0.1H0 V151TCX0.1HA V151TCX0.1H0 V152TCX0.1HA V152TCX0.1H0
V153TCX0.1HA V153TCX0.1H0 V154TCX0.1HA V154TCX0.1H0 V155TCX0.1HA V155TCX0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

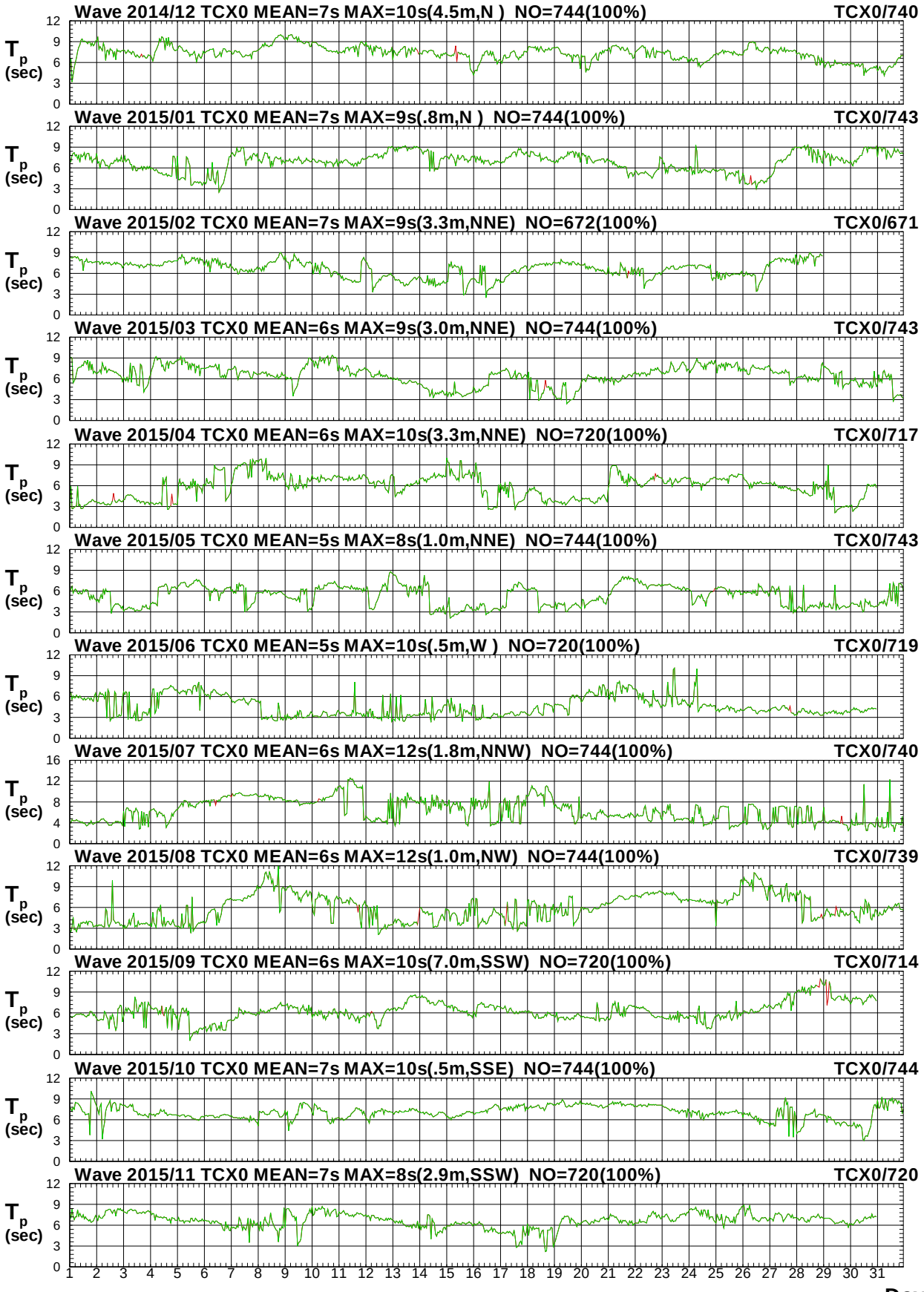


圖 9.1b　2015年每月中雲海域 X 站修補前後之週期比較圖

V14CTCX0.1HA V14CTCX0.1H0 V151TCX0.1HA V151TCX0.1H0 V152TCX0.1HA V152TCX0.1H0
V153TCX0.1HA V153TCX0.1H0 V154TCX0.1HA V154TCX0.1H0 V155TCX0.1HA V155TCX0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

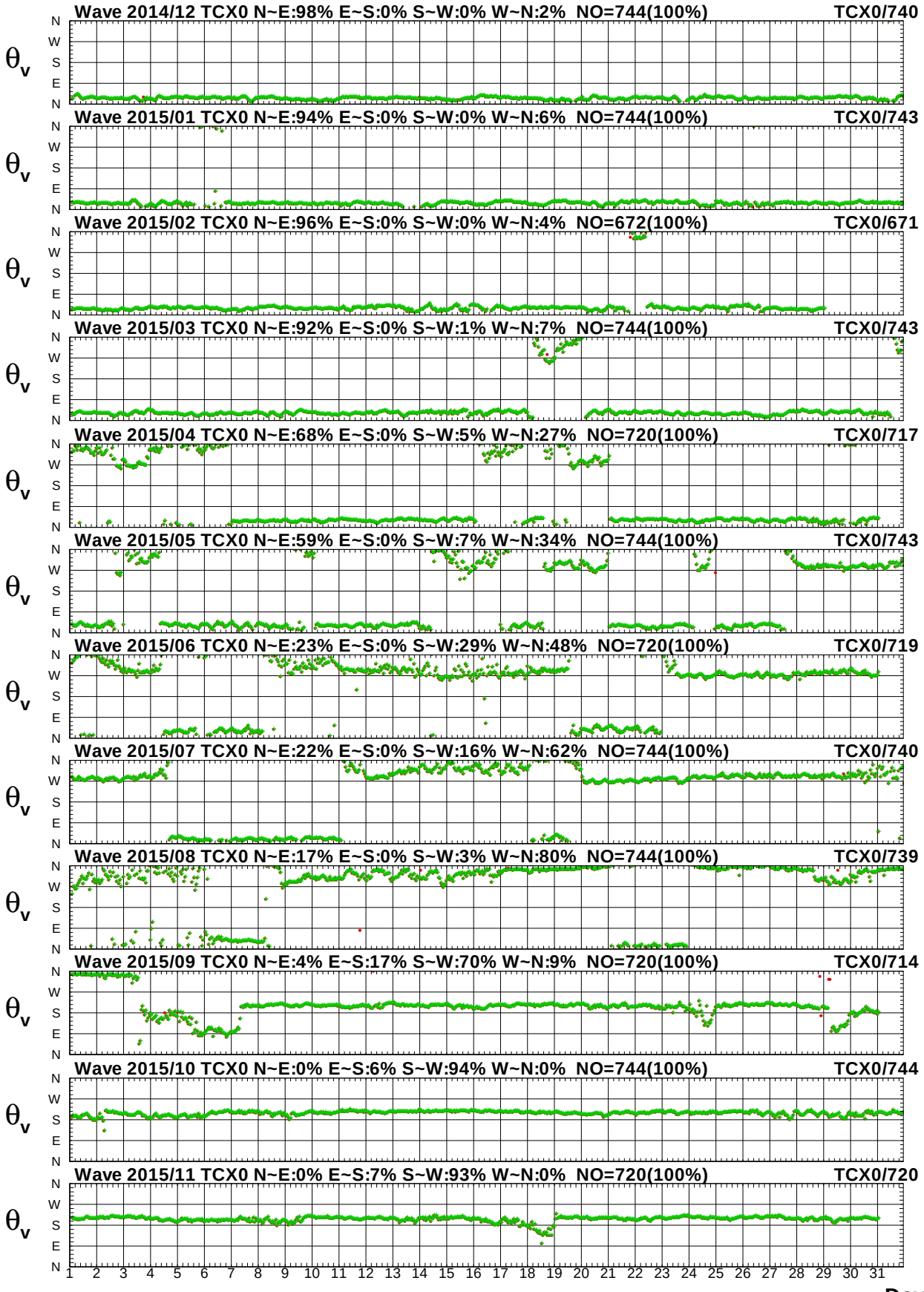


圖 9.1c　2015年每月中雲海域 X 站修補前後之波向比較圖

V14CTCX0.1HA V14CTCX0.1H0 V151TCX0.1HA V151TCX0.1H0 V152TCX0.1HA V152TCX0.1H0
V153TCX0.1HA V153TCX0.1H0 V154TCX0.1HA V154TCX0.1H0 V155TCX0.1HA V155TCX0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

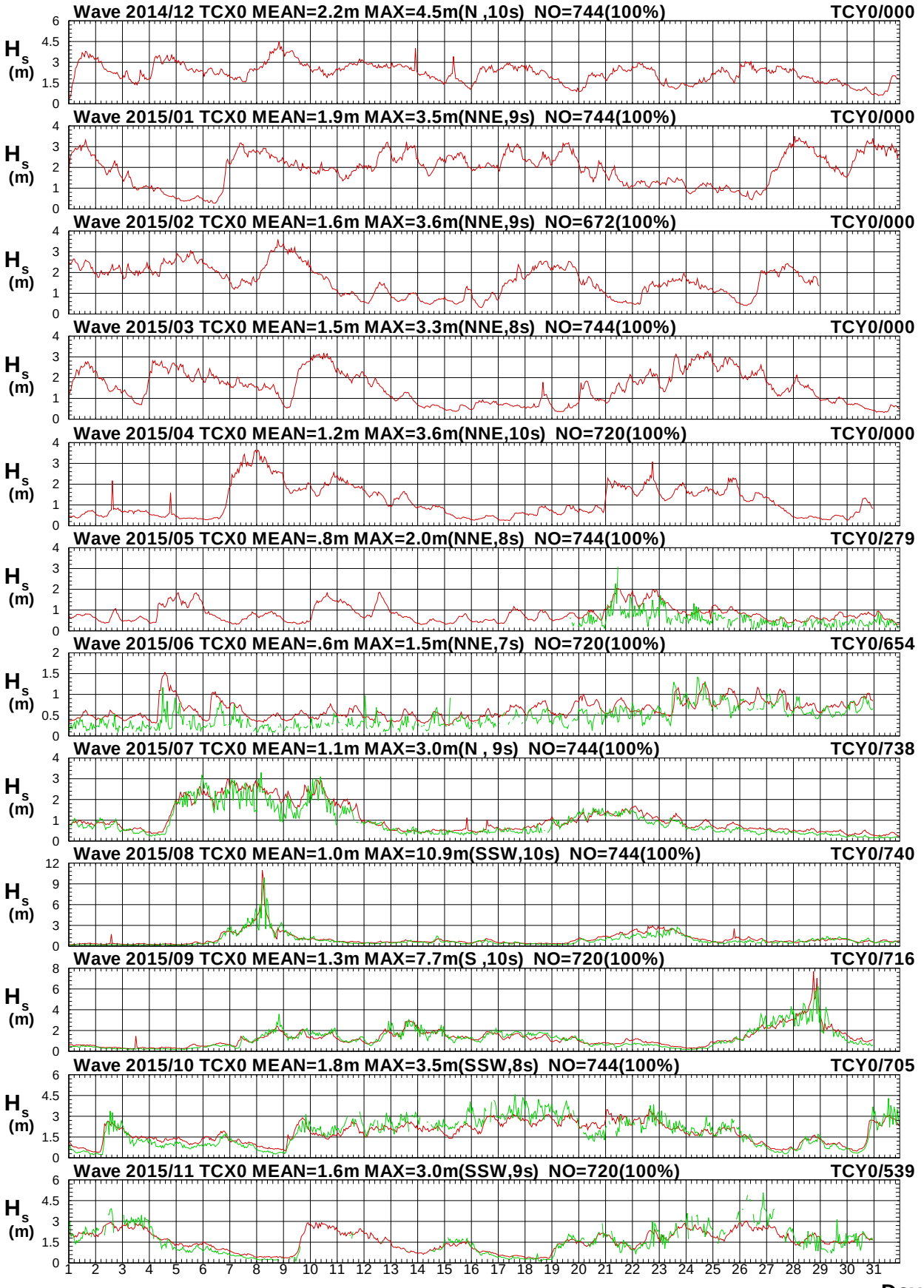


圖 9.2a　2015年每月中雲海域 X 站與 Y 站波高比較圖

V14CTCX0.1HA V14CTCY0.1H0 V151TCX0.1HA V151TCY0.1H0 V152TCX0.1HA V152TCY0.1H0
V153TCX0.1HA V153TCY0.1H0 V154TCX0.1HA V154TCY0.1H0 V155TCX0.1HA V155TCY0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

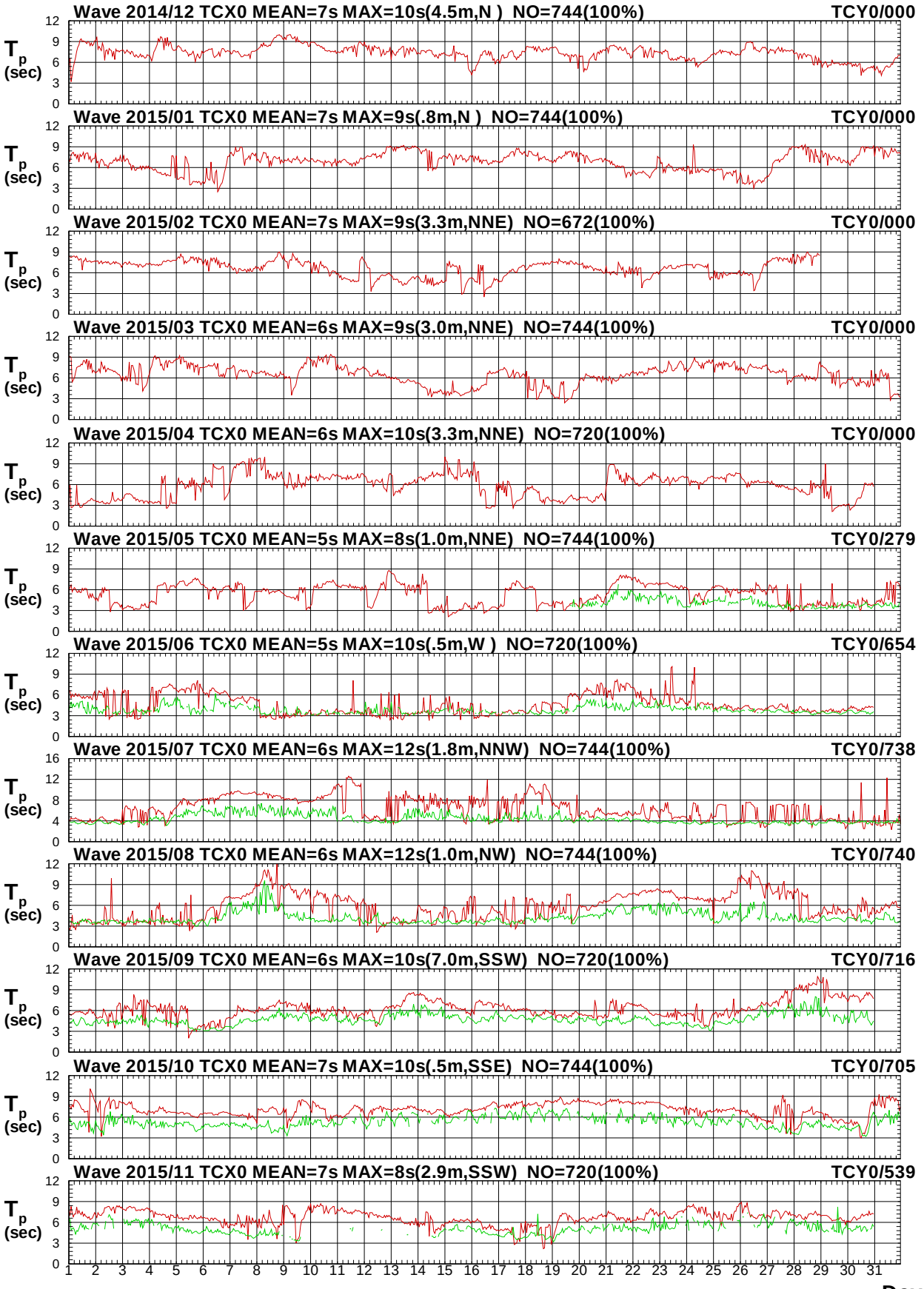


圖 9.2b　2015年每月中雲海域 X 站與 Y 站週期比較圖

V14CTCX0.1HA V14CTCY0.1H0 V151TCX0.1HA V151TCY0.1H0 V152TCX0.1HA V152TCY0.1H0
V153TCX0.1HA V153TCY0.1H0 V154TCX0.1HA V154TCY0.1H0 V155TCX0.1HA V155TCY0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

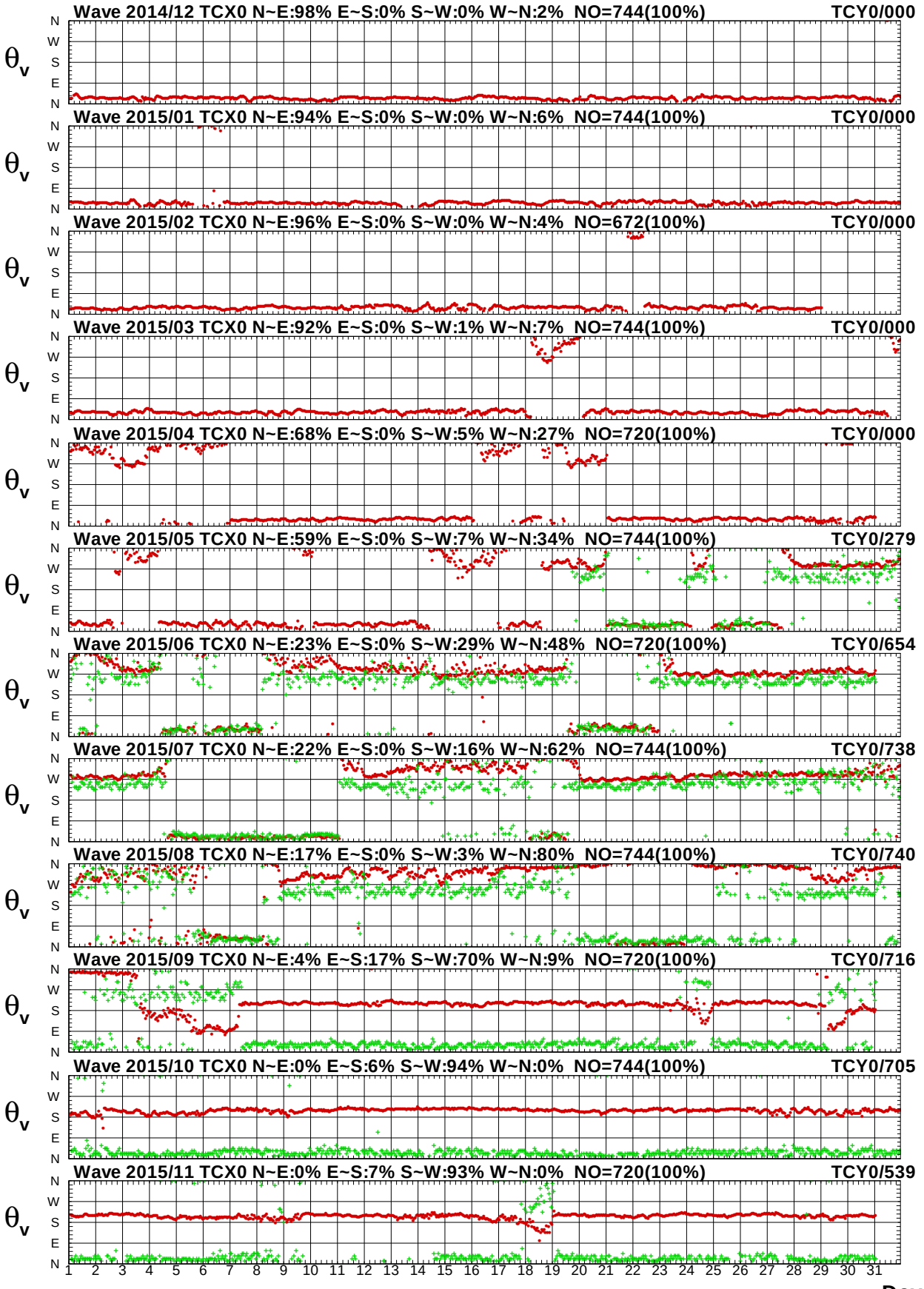


圖 9.2c　2015年每月中雲海域 X 站與 Y 站波向比較圖

V14CTCX0.1HA V14CTCY0.1H0 V151TCX0.1HA V151TCY0.1H0 V152TCX0.1HA V152TCY0.1H0
V153TCX0.1HA V153TCY0.1H0 V154TCX0.1HA V154TCY0.1H0 V155TCX0.1HA V155TCY0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

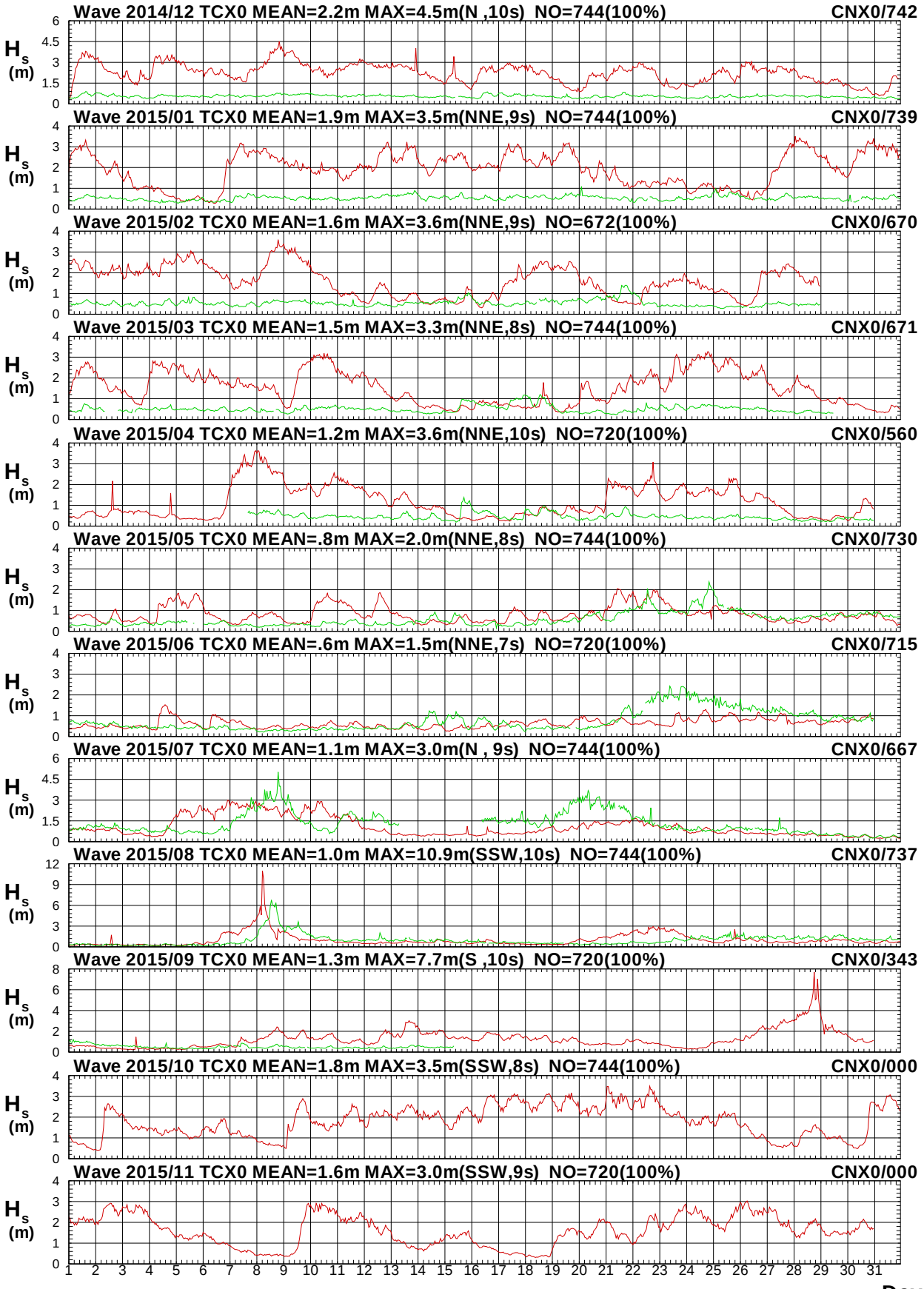


圖 9.3a　2015年每月中雲海域 X 站與嘉南海域 X 站波高圖

V14CTCX0.1HA V14CCNX0.1H0 V151TCX0.1HA V151CNX0.1H0 V152TCX0.1HA V152CNX0.1H0
V153TCX0.1HA V153CNX0.1H0 V154TCX0.1HA V154CNX0.1H0 V155TCX0.1HA V155CNX0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

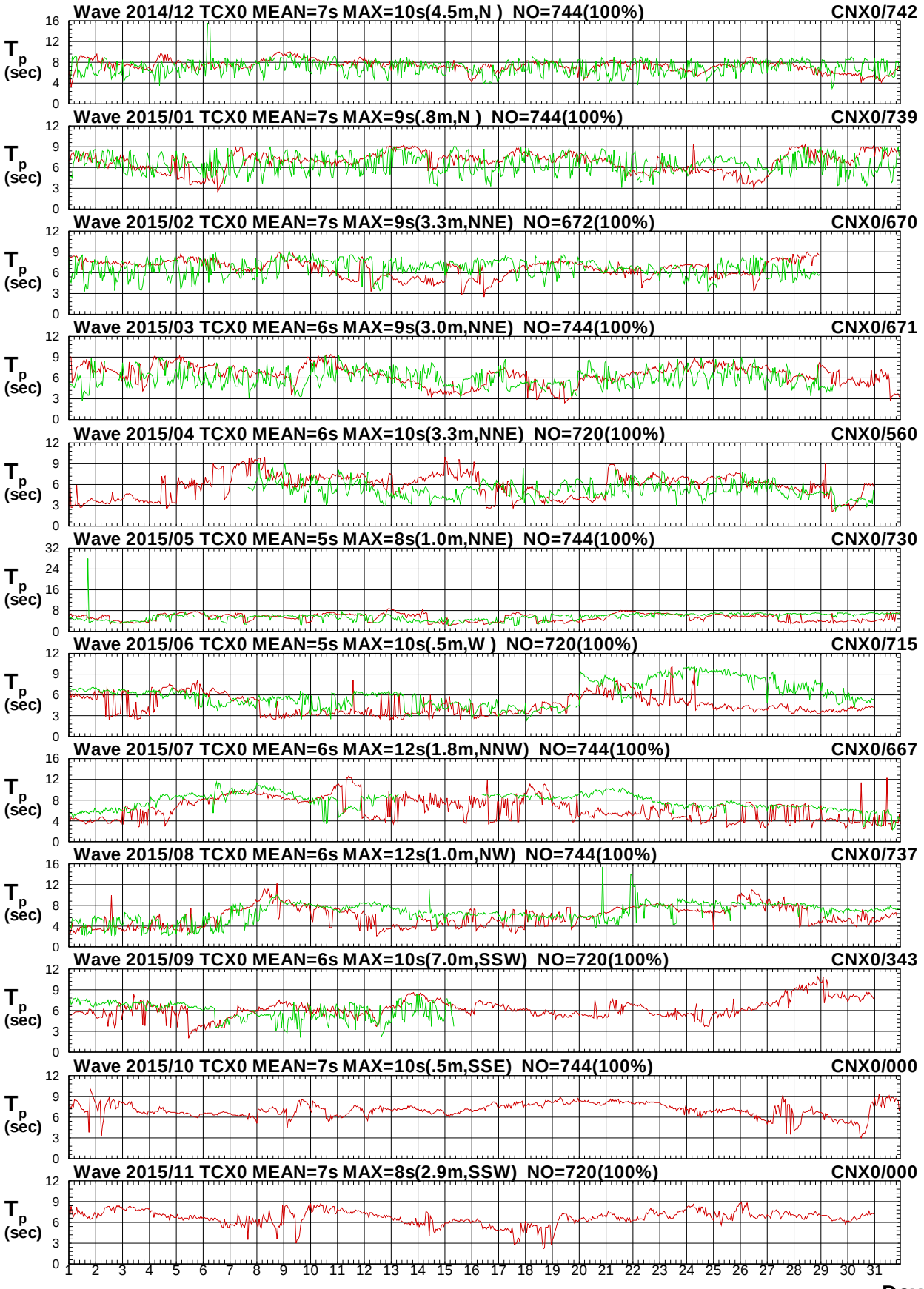


圖 9.3b　2015年每月中雲海域 X 站與嘉南海域 X 站週期圖

V14CTCX0.1HA V14CCNX0.1H0 V151TCX0.1HA V151CNX0.1H0 V152TCX0.1HA V152CNX0.1H0
V153TCX0.1HA V153CNX0.1H0 V154TCX0.1HA V154CNX0.1H0 V155TCX0.1HA V155CNX0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

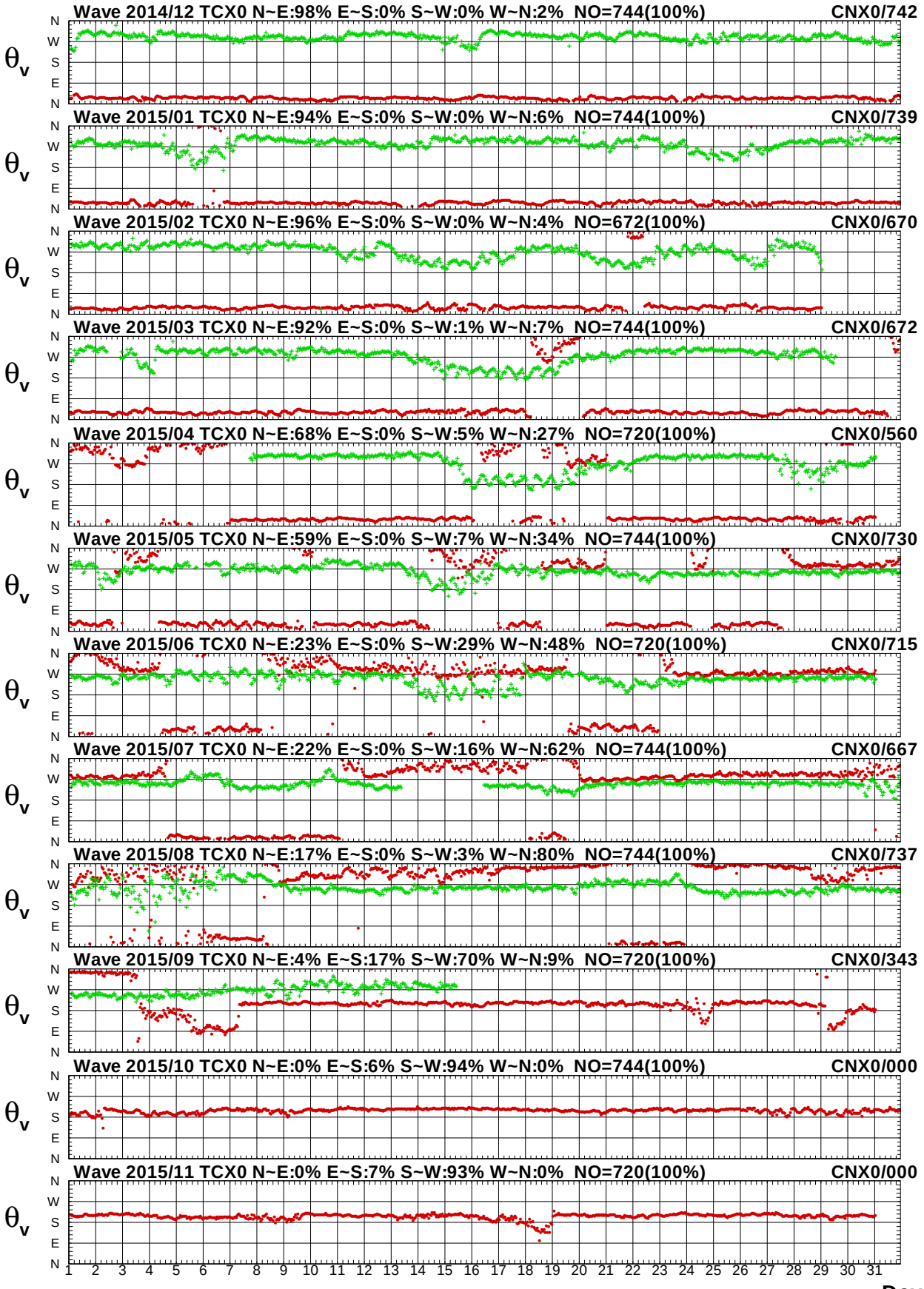


圖 9.3c　2015年每月中雲海域 X 站與嘉南海域 X 站波向圖

V14CTCX0.1HA V14CCNX0.1H0 V151TCX0.1HA V151CNX0.1H0 V152TCX0.1HA V152CNX0.1H0
V153TCX0.1HA V153CNX0.1H0 V154TCX0.1HA V154CNX0.1H0 V155TCX0.1HA V155CNX0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

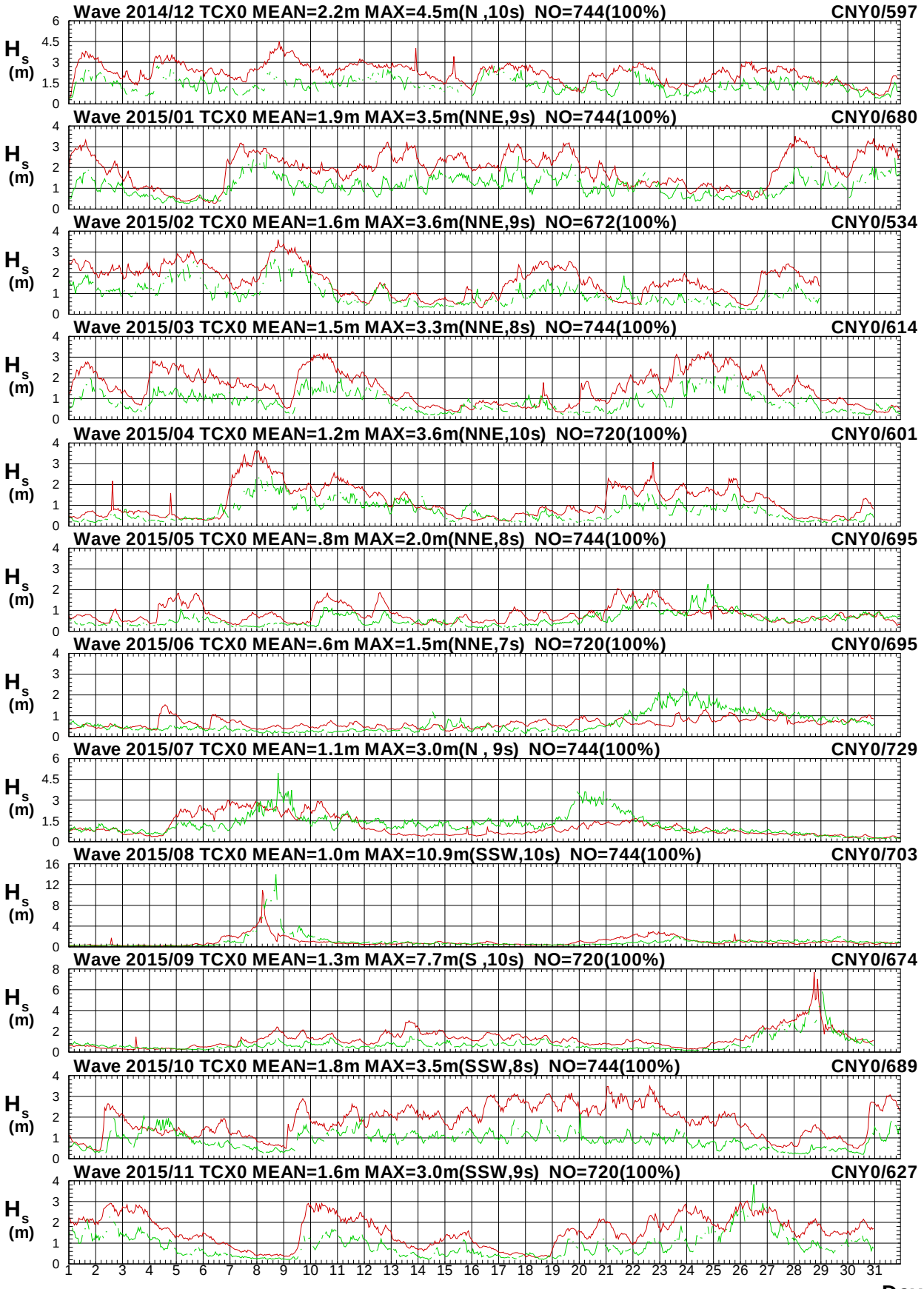


圖 9.4a　2015年每月中雲海域 X 站與嘉南海域 Y 站波高圖

V14CTCX0.1HA V14CCNY0.1H0 V151TCX0.1HA V151CNY0.1H0 V152TCX0.1HA V152CNY0.1H0
V153TCX0.1HA V153CNY0.1H0 V154TCX0.1HA V154CNY0.1H0 V155TCX0.1HA V155CNY0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

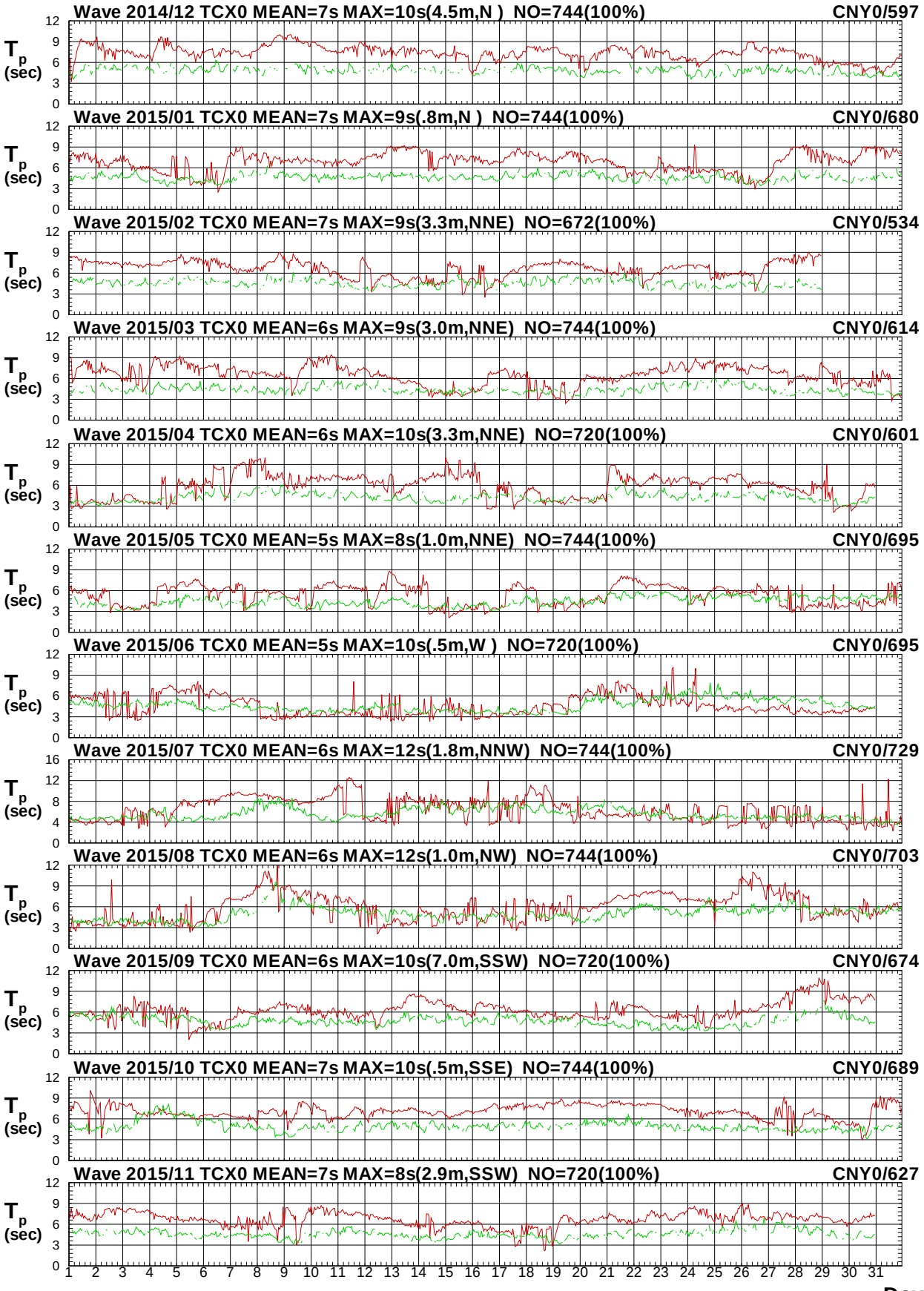


圖 9.4b　2015年每月中雲海域 X 站與嘉南海域 Y 站週期圖

V14CTCX0.1HA V14CCNY0.1H0 V151TCX0.1HA V151CNY0.1H0 V152TCX0.1HA V152CNY0.1H0
V153TCX0.1HA V153CNY0.1H0 V154TCX0.1HA V154CNY0.1H0 V155TCX0.1HA V155CNY0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

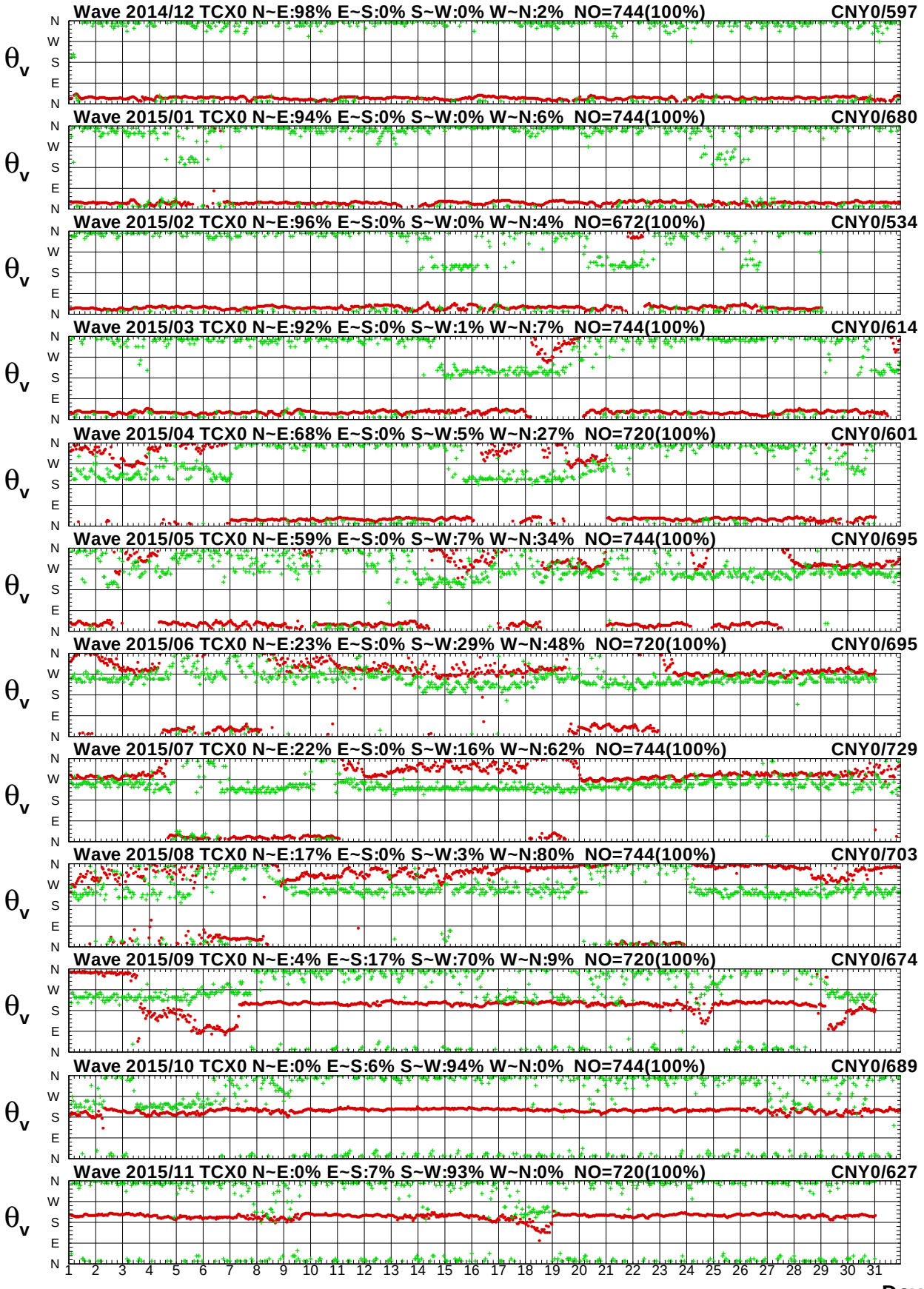


圖 9.4c　2015年每月中雲海域 X 站與嘉南海域 Y 站波向圖

V14CTCX0.1HA V14CCNY0.1H0 V151TCX0.1HA V151CNY0.1H0 V152TCX0.1HA V152CNY0.1H0
V153TCX0.1HA V153CNY0.1H0 V154TCX0.1HA V154CNY0.1H0 V155TCX0.1HA V155CNY0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

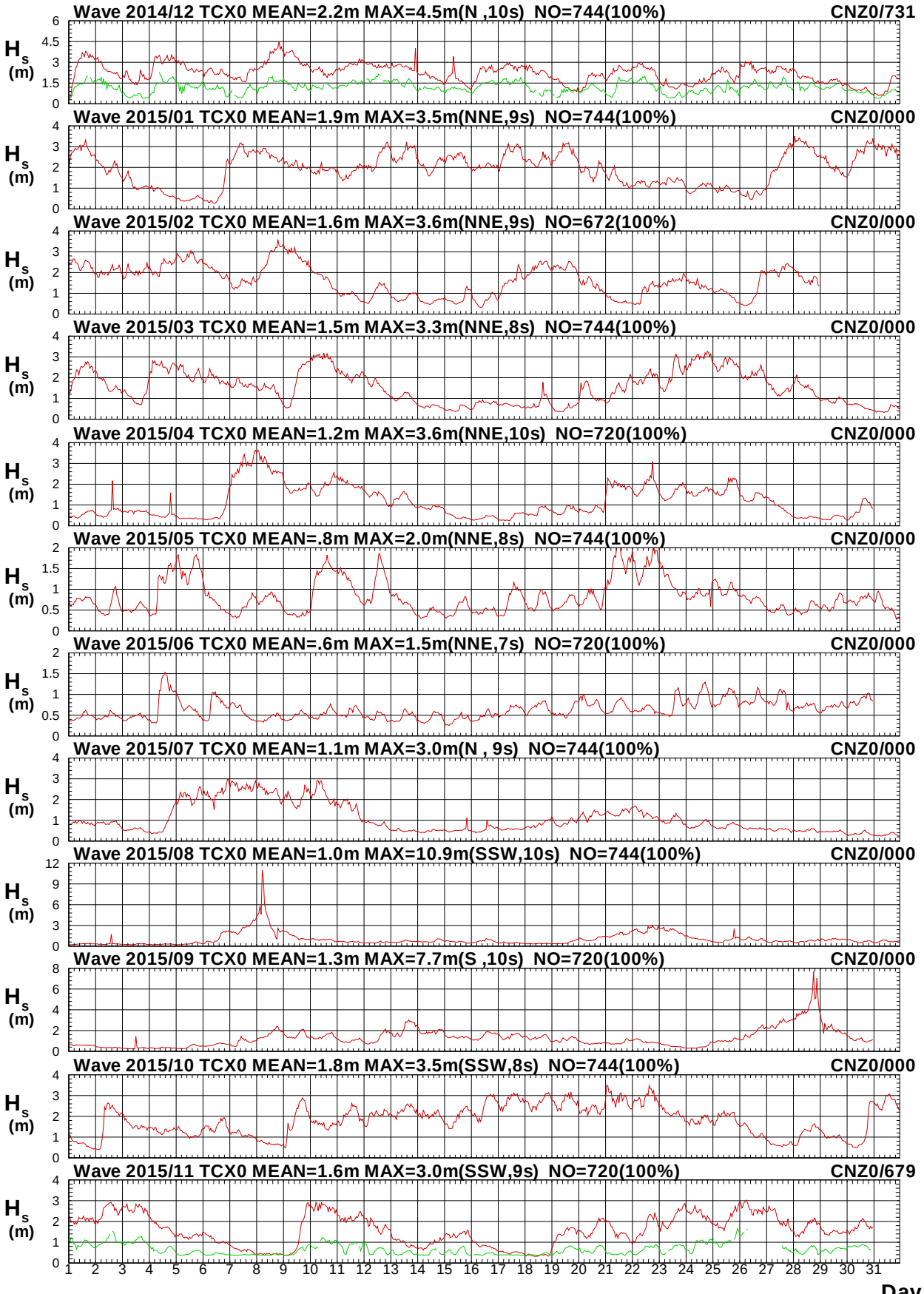


圖 9.5a　2015年每月中雲海域 X 站與嘉南海域 Z 站波高圖

V14CTCX0.1HA V14CCNZ0.1H0 V151TCX0.1HA V151CNZ0.1H0 V152TCX0.1HA V152CNZ0.1H0
V153TCX0.1HA V153CNZ0.1H0 V154TCX0.1HA V154CNZ0.1H0 V155TCX0.1HA V155CNZ0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

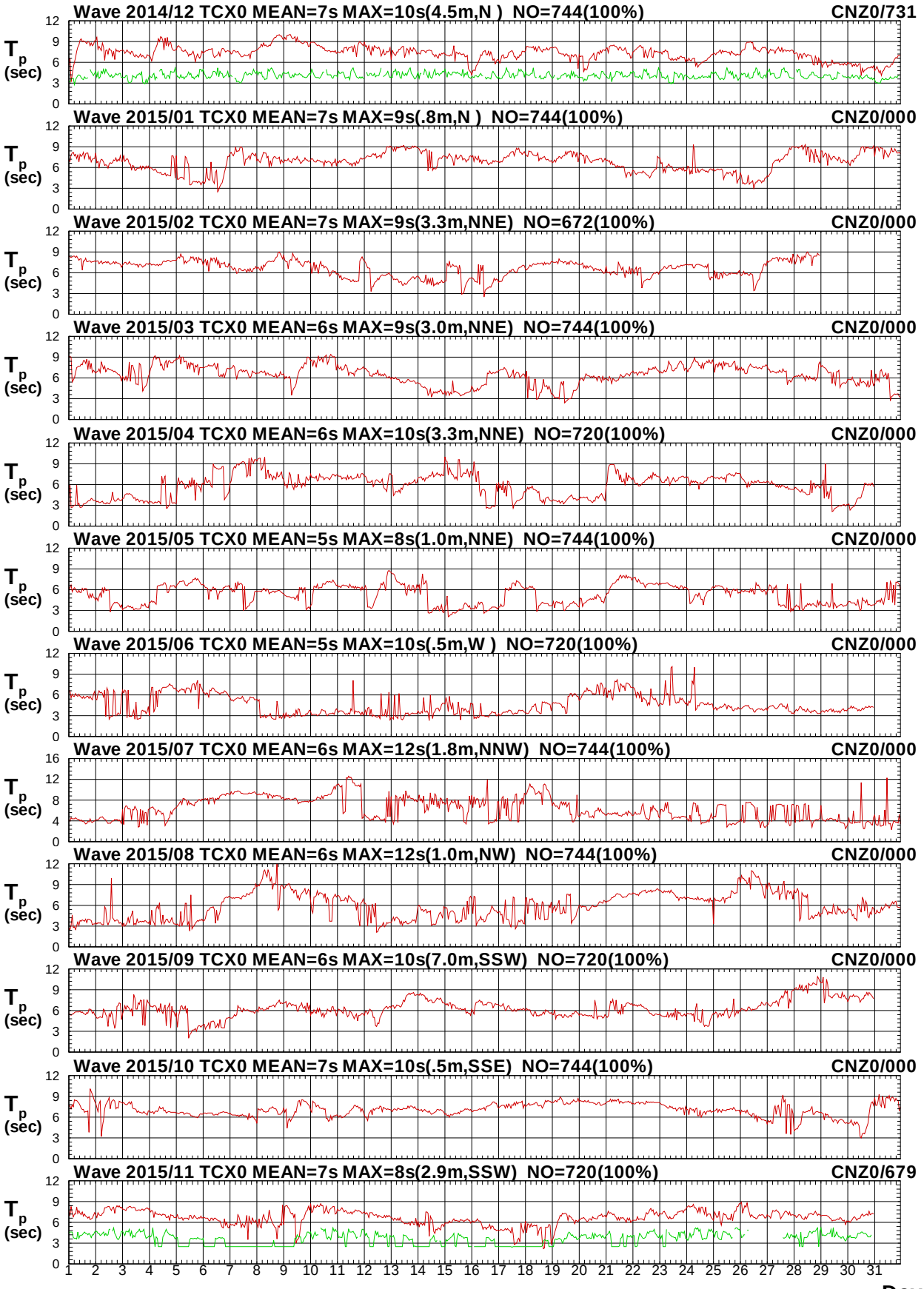


圖 9.5b　2015年每月中雲海域 X 站與嘉南海域 Z 站週期圖

V14CTCX0.1HA V14CCNZ0.1H0 V151TCX0.1HA V151CNZ0.1H0 V152TCX0.1HA V152CNZ0.1H0
V153TCX0.1HA V153CNZ0.1H0 V154TCX0.1HA V154CNZ0.1H0 V155TCX0.1HA V155CNZ0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

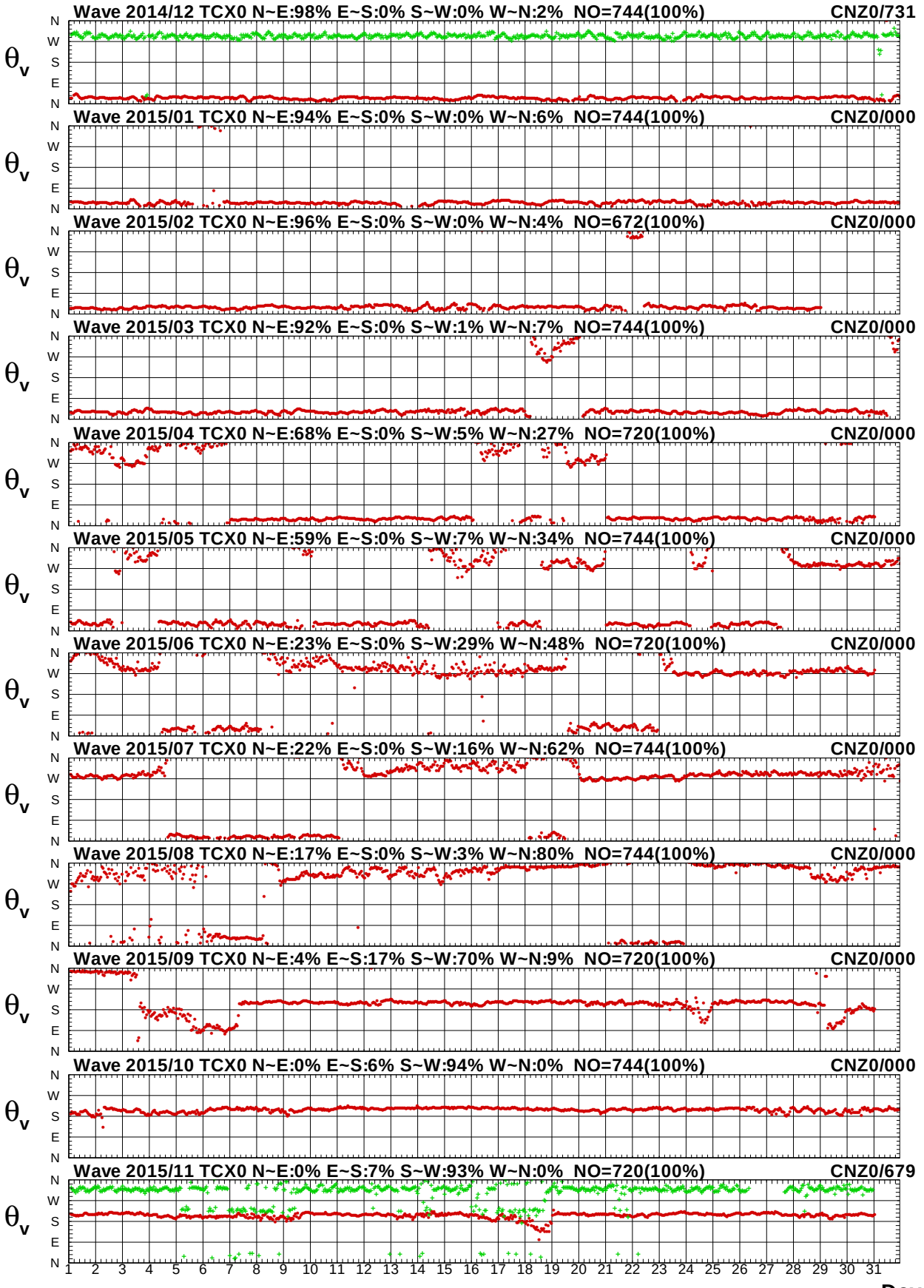


圖 9.5c　2015年每月中雲海域 X 站與嘉南海域 Z 站波向圖

V14CTCX0.1HA V14CCNZ0.1H0 V151TCX0.1HA V151CNZ0.1H0 V152TCX0.1HA V152CNZ0.1H0
V153TCX0.1HA V153CNZ0.1H0 V154TCX0.1HA V154CNZ0.1H0 V155TCX0.1HA V155CNZ0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

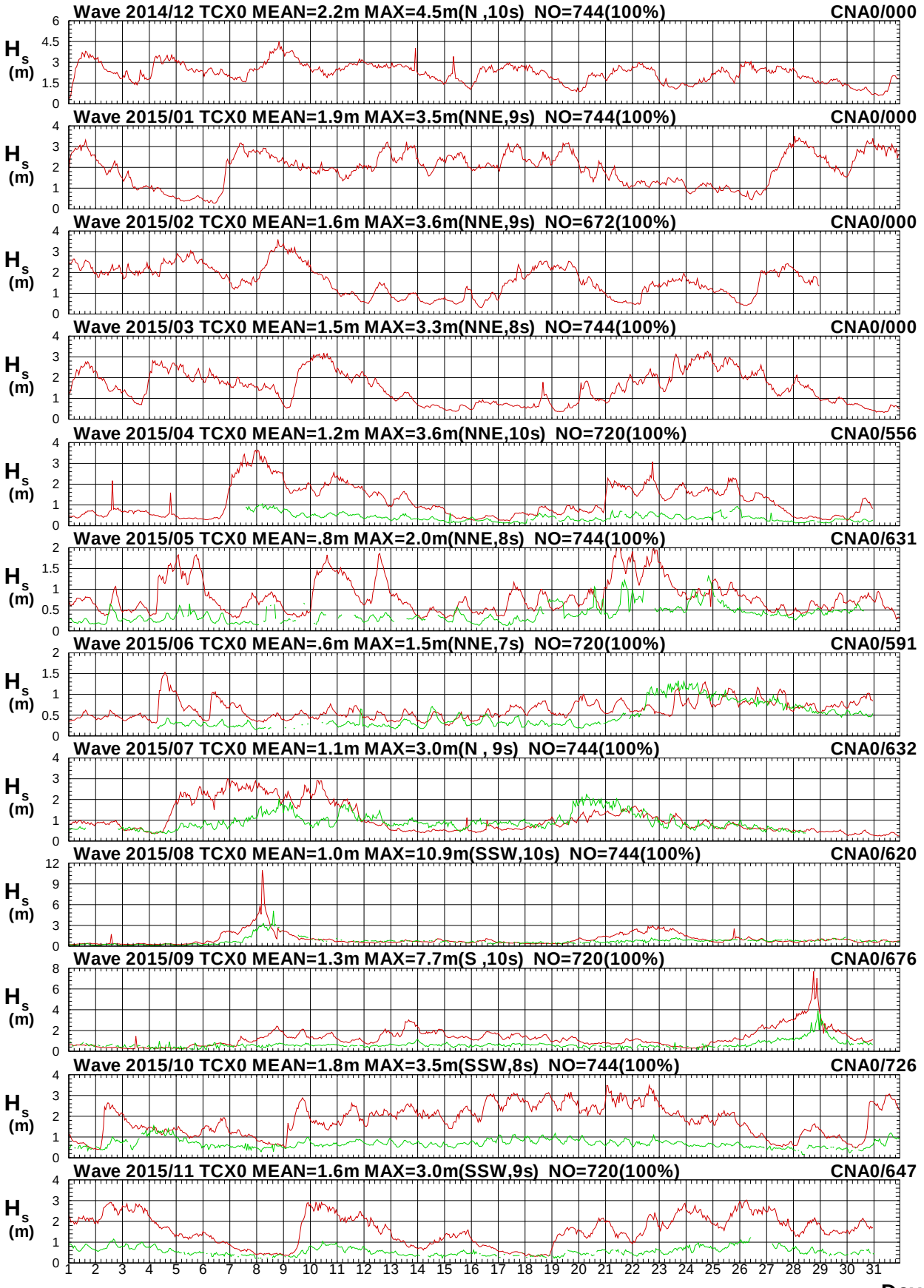


圖 9.6a　2015年每月中雲海域 X 站與嘉南海域 A 站波高圖

V14CTCX0.1HA V14CCNA0.1H0 V151TCX0.1HA V151CNA0.1H0 V152TCX0.1HA V152CNA0.1H0
V153TCX0.1HA V153CNA0.1H0 V154TCX0.1HA V154CNA0.1H0 V155TCX0.1HA V155CNA0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

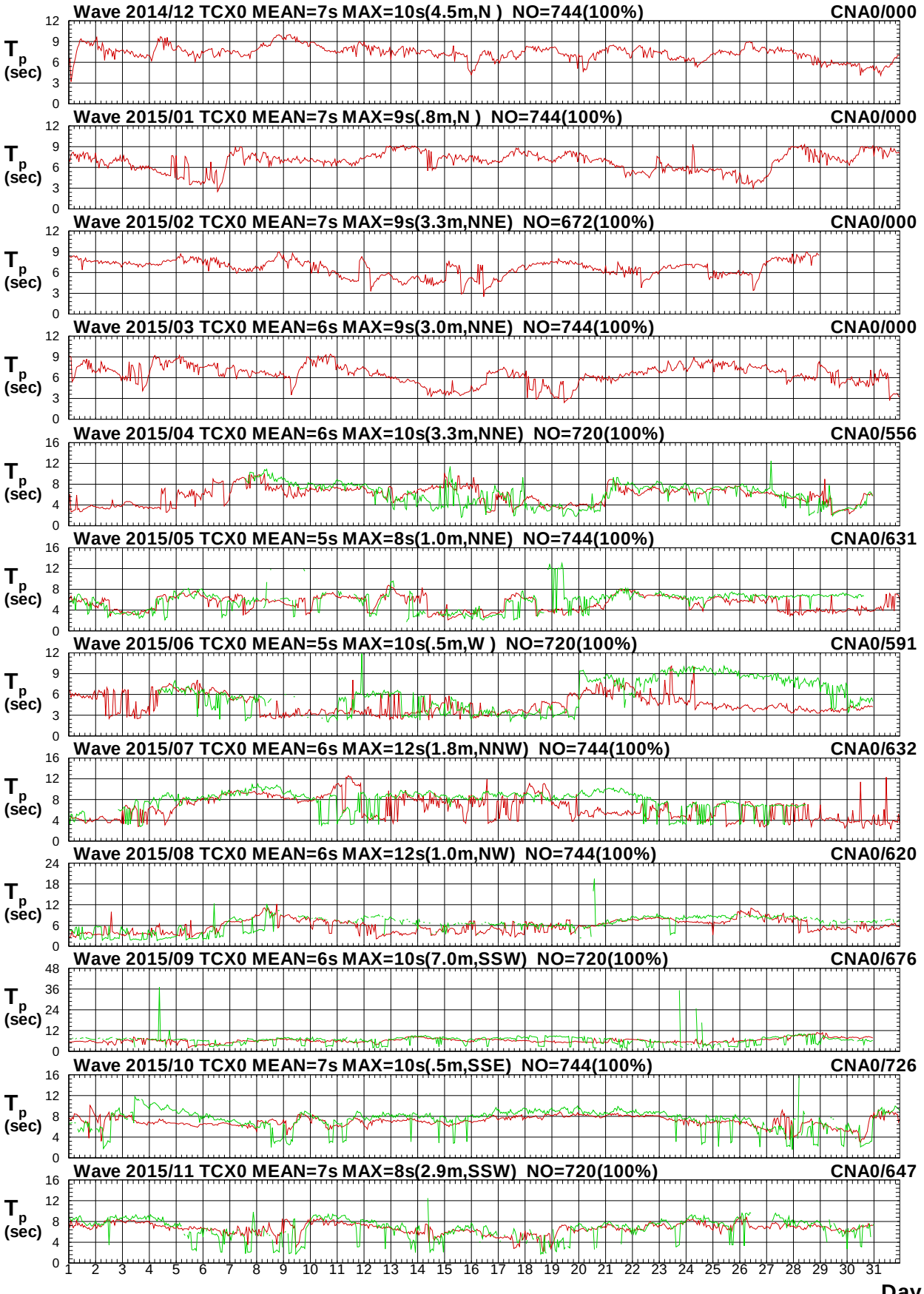


圖 9.6b　2015年每月中雲海域 X 站與嘉南海域 A 站週期圖

V14CTCX0.1HA V14CCNA0.1H0 V151TCX0.1HA V151CNA0.1H0 V152TCX0.1HA V152CNA0.1H0
V153TCX0.1HA V153CNA0.1H0 V154TCX0.1HA V154CNA0.1H0 V155TCX0.1HA V155CNA0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

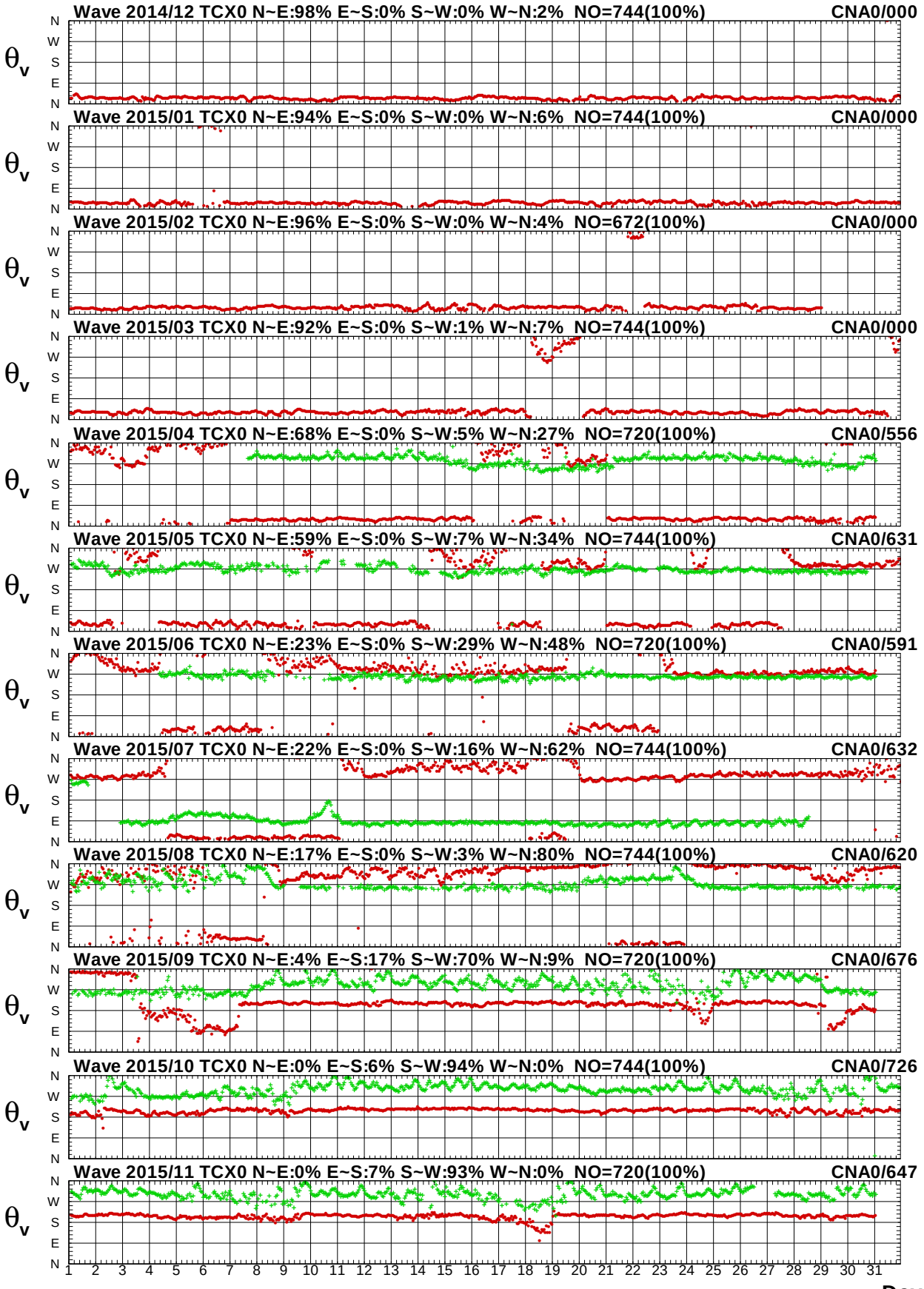


圖 9.6c　2015年每月中雲海域 X 站與嘉南海域 A 站波向圖

V14CTCX0.1HA V14CCNA0.1H0 V151TCX0.1HA V151CNA0.1H0 V152TCX0.1HA V152CNA0.1H0
V153TCX0.1HA V153CNA0.1H0 V154TCX0.1HA V154CNA0.1H0 V155TCX0.1HA V155CNA0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

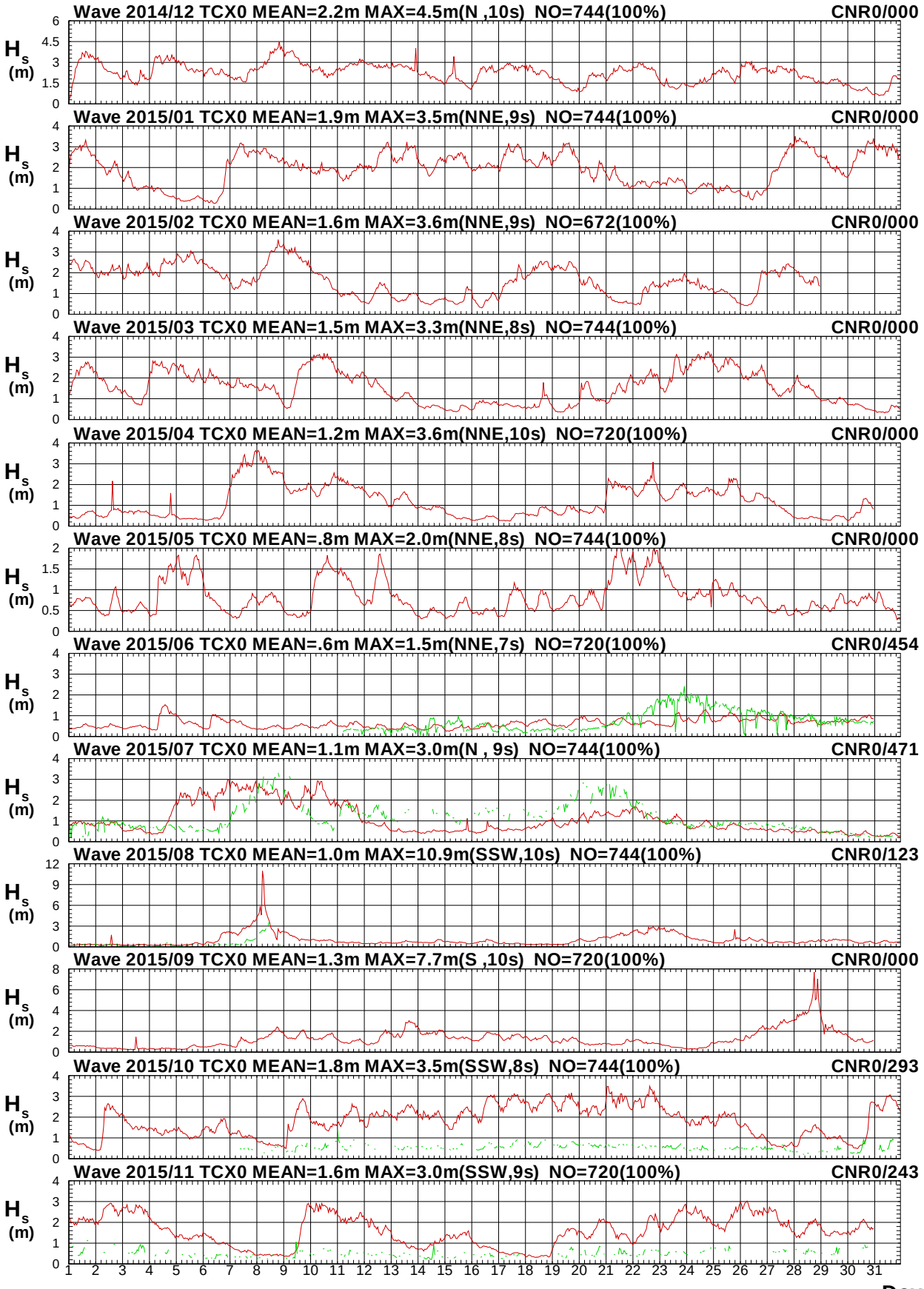


圖 9.7a　2015年每月中雲海域 X 站與嘉南海域 R 站波高圖

V14CTCX0.1HA V14CCNR0.1H0 V151TCX0.1HA V151CNR0.1H0 V152TCX0.1HA V152CNR0.1H0
V153TCX0.1HA V153CNR0.1H0 V154TCX0.1HA V154CNR0.1H0 V155TCX0.1HA V155CNR0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

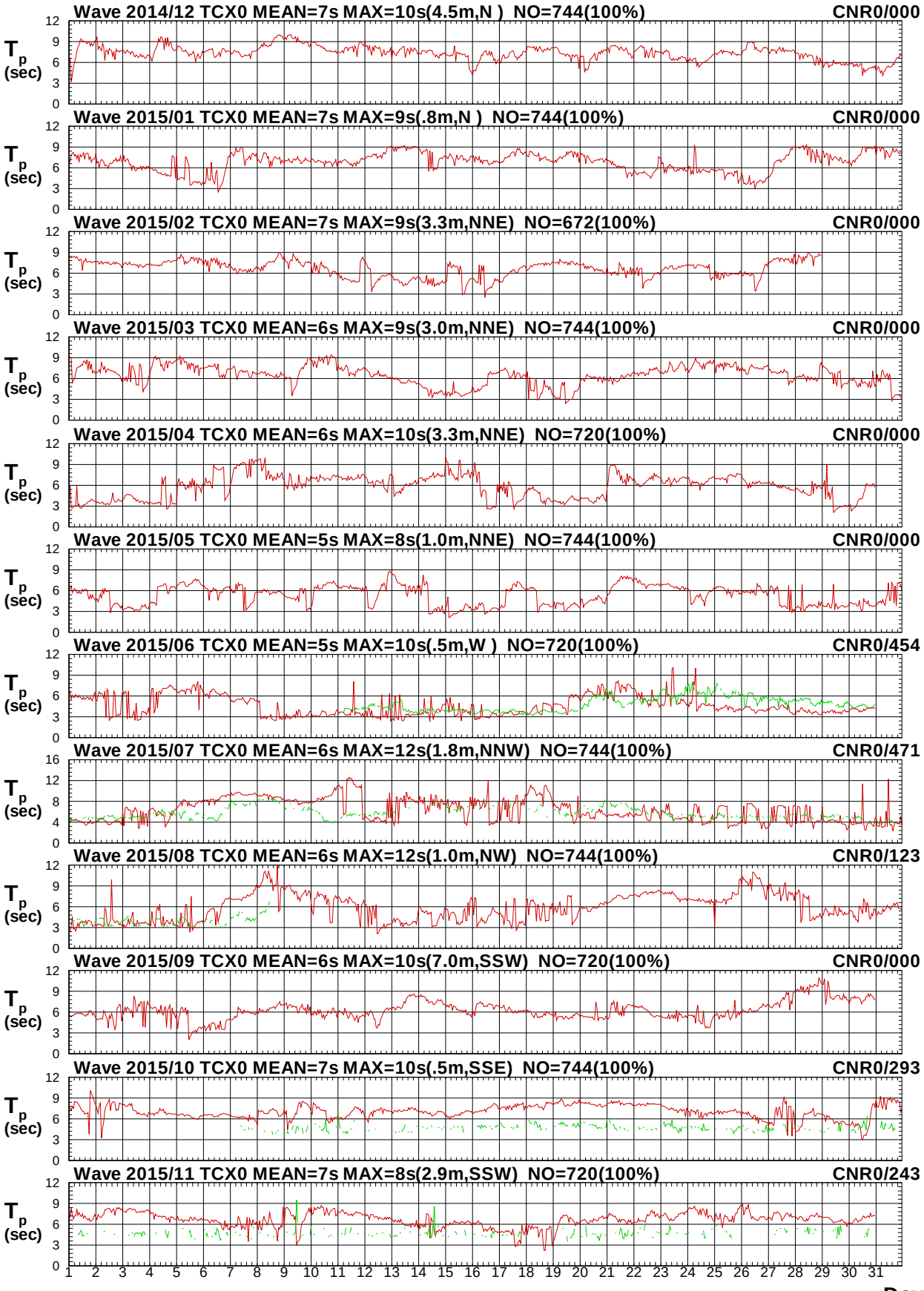


圖 9.7b　2015年每月中雲海域 X 站與嘉南海域 R 站週期圖

V14CTCX0.1HA V14CCNR0.1H0 V151TCX0.1HA V151CNR0.1H0 V152TCX0.1HA V152CNR0.1H0
V153TCX0.1HA V153CNR0.1H0 V154TCX0.1HA V154CNR0.1H0 V155TCX0.1HA V155CNR0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

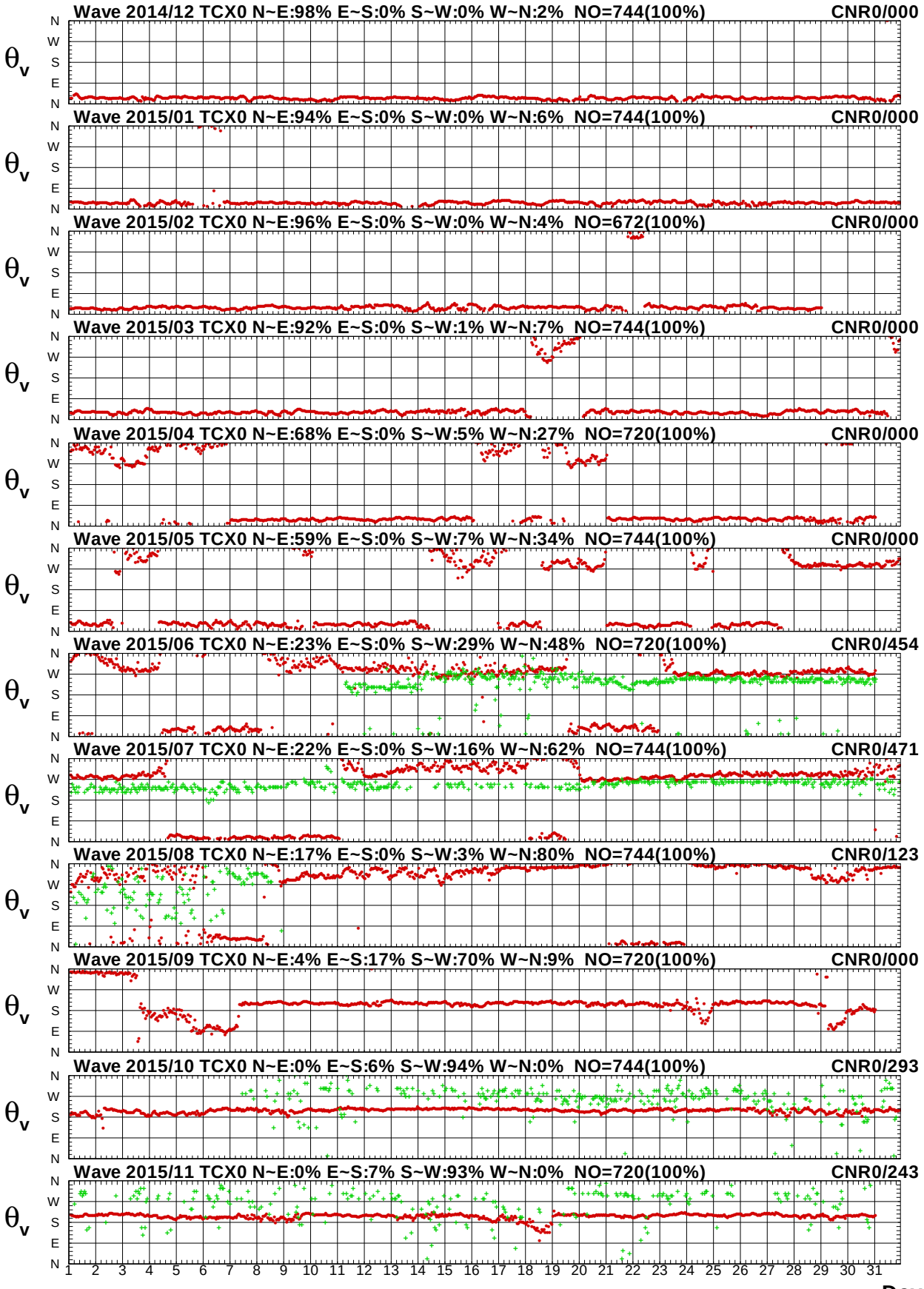


圖 9.7c　2015年每月中雲海域 X 站與嘉南海域 R 站波向圖

V14CTCX0.1HA V14CCNR0.1H0 V151TCX0.1HA V151CNR0.1H0 V152TCX0.1HA V152CNR0.1H0
V153TCX0.1HA V153CNR0.1H0 V154TCX0.1HA V154CNR0.1H0 V155TCX0.1HA V155CNR0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

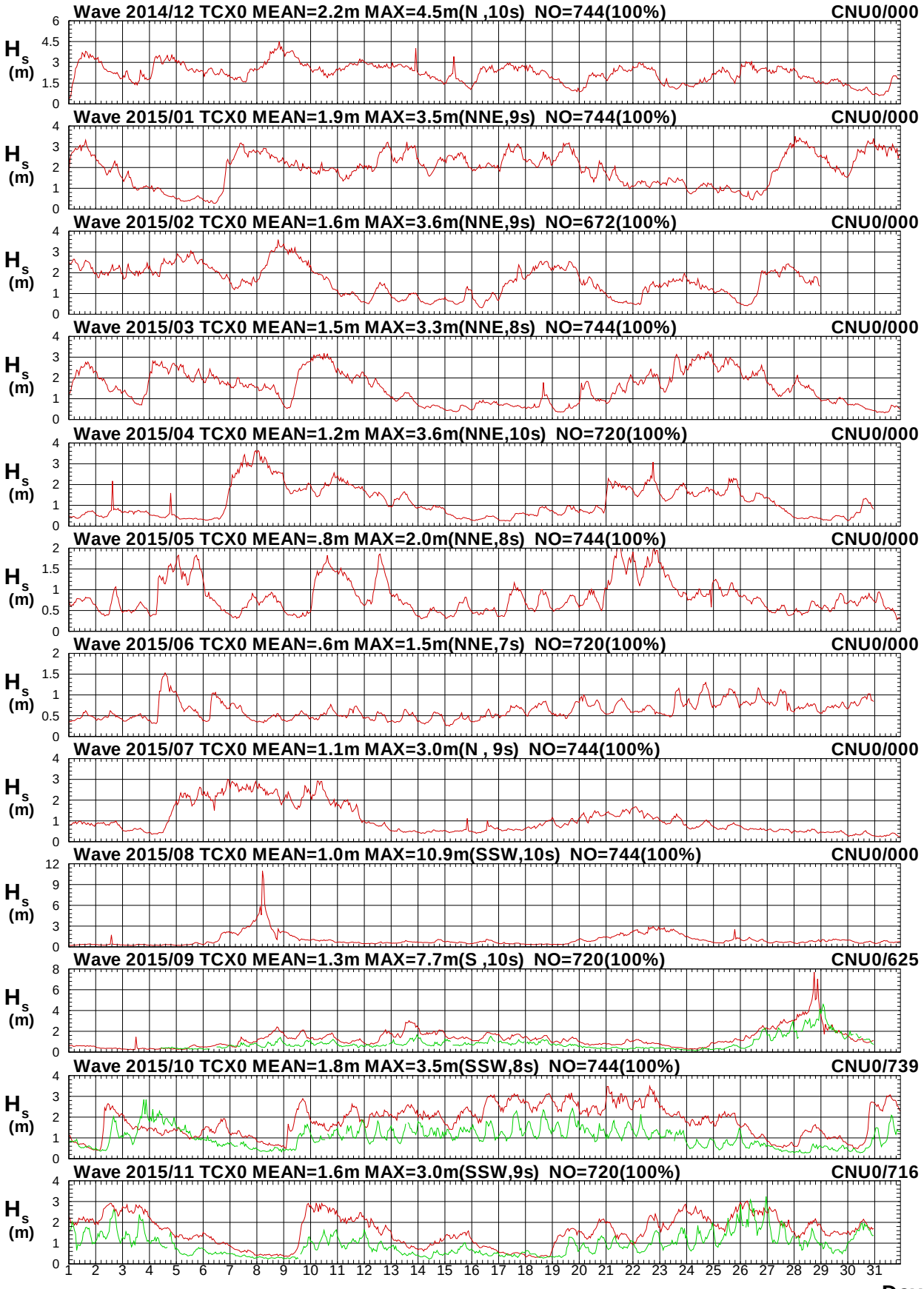


圖 9.8a　2015年每月中雲海域 X 站與嘉南海域 U 站波高圖

V14CTCX0.1HA V14CCNU0.1H0 V151TCX0.1HA V151CNU0.1H0 V152TCX0.1HA V152CNU0.1H0
V153TCX0.1HA V153CNU0.1H0 V154TCX0.1HA V154CNU0.1H0 V155TCX0.1HA V155CNU0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

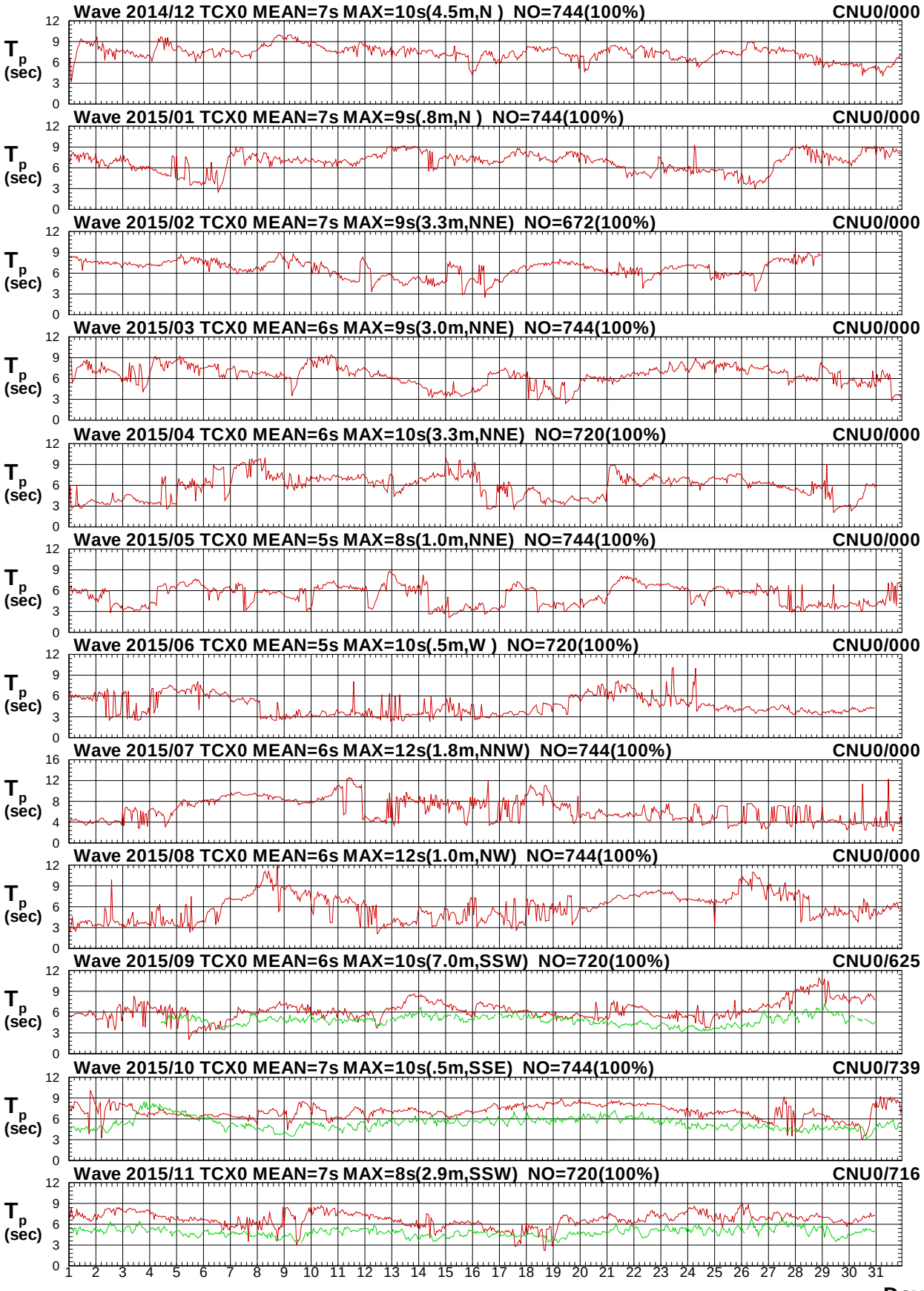


圖 9.8b　2015年每月中雲海域 X 站與嘉南海域 U 站週期圖

V14CTCX0.1HA V14CCNU0.1H0 V151TCX0.1HA V151CNU0.1H0 V152TCX0.1HA V152CNU0.1H0
V153TCX0.1HA V153CNU0.1H0 V154TCX0.1HA V154CNU0.1H0 V155TCX0.1HA V155CNU0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

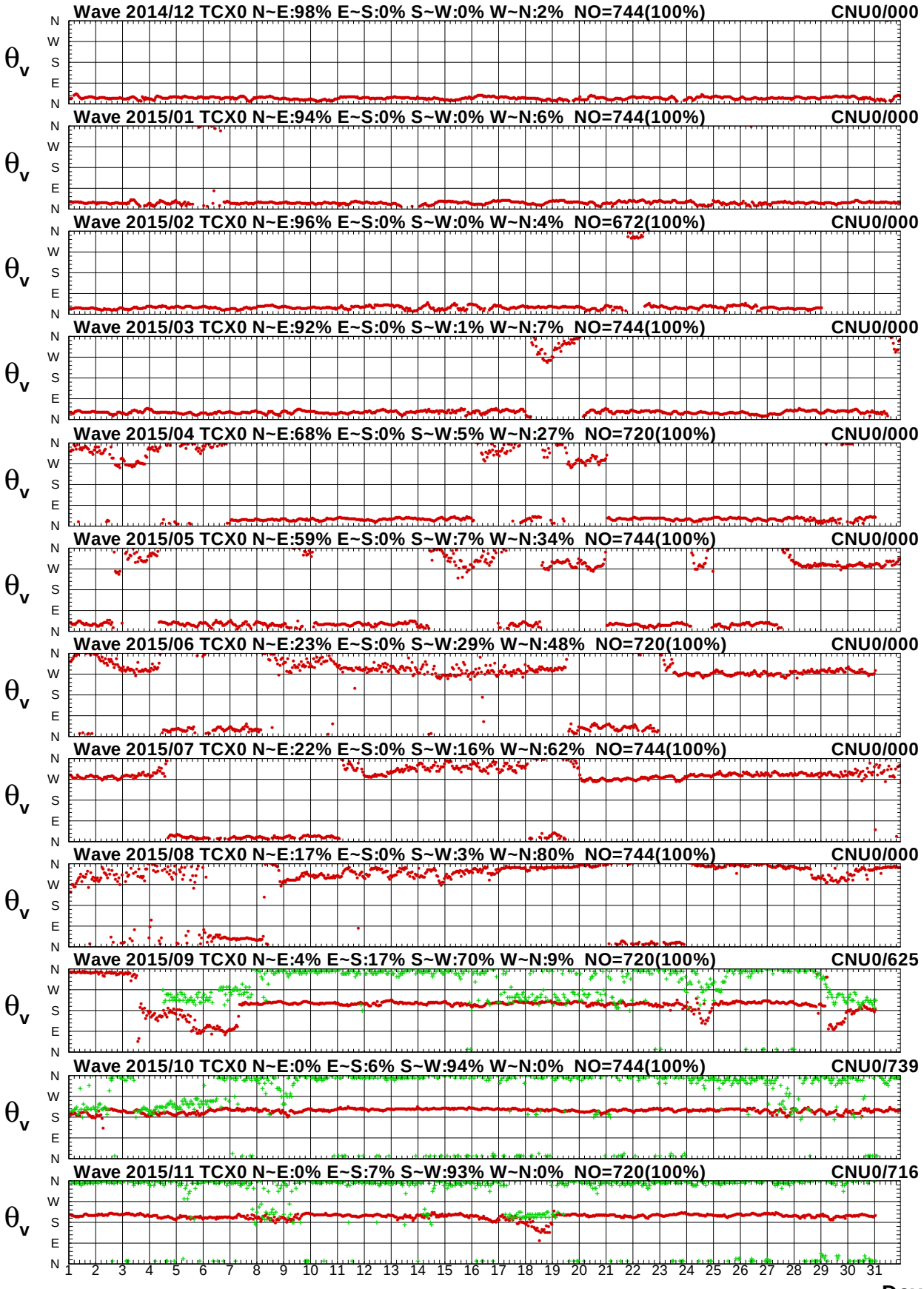


圖 9.8c　2015年每月中雲海域 X 站與嘉南海域 U 站波向圖

V14CTCX0.1HA V14CCNU0.1H0 V151TCX0.1HA V151CNU0.1H0 V152TCX0.1HA V152CNU0.1H0
V153TCX0.1HA V153CNU0.1H0 V154TCX0.1HA V154CNU0.1H0 V155TCX0.1HA V155CNU0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

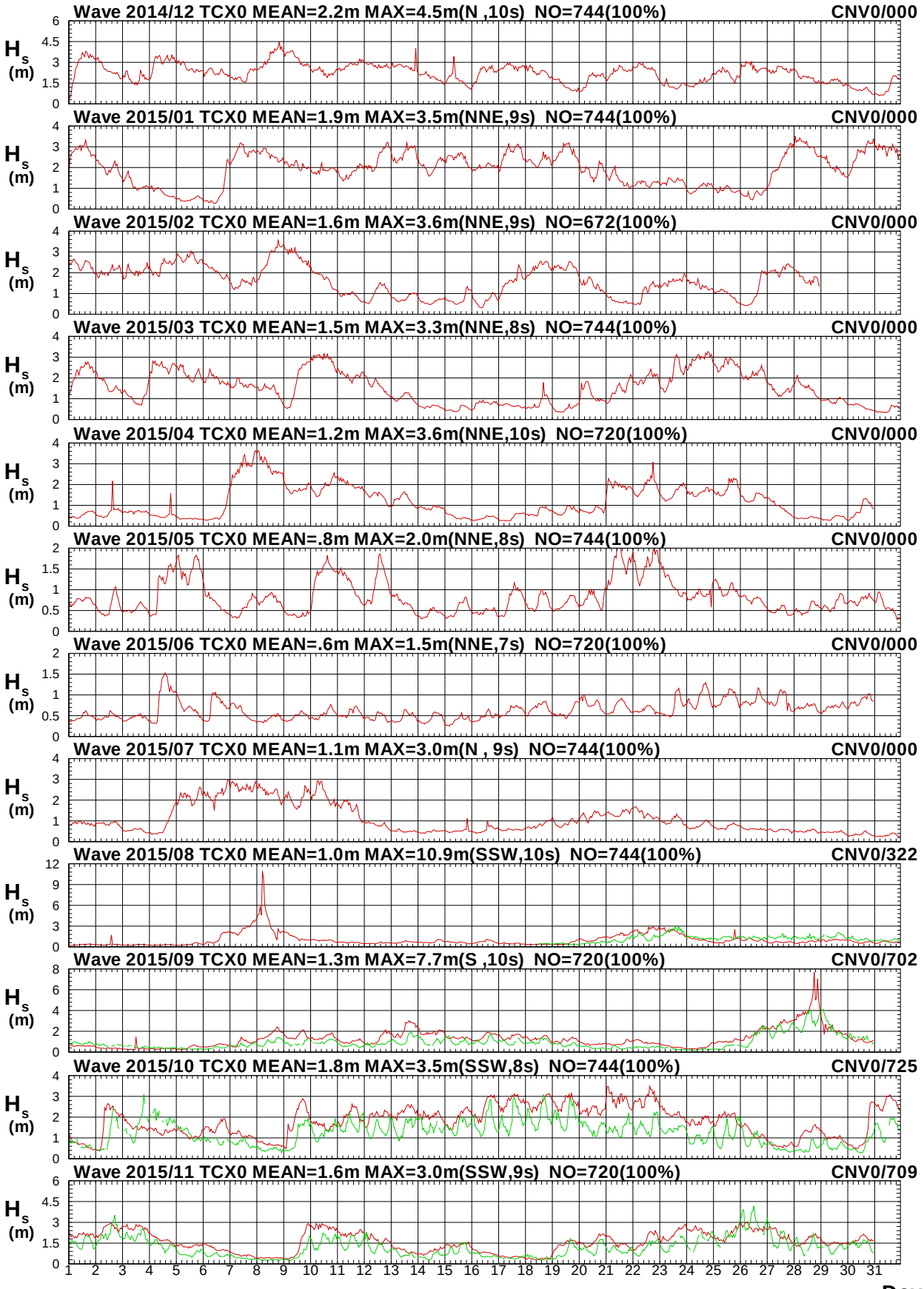


圖 9.9a　2015年每月中雲海域 X 站與嘉南海域 V 站波高圖

V14CTCX0.1HA V14CCNV0.1H0 V151TCX0.1HA V151CNV0.1H0 V152TCX0.1HA V152CNV0.1H0
V153TCX0.1HA V153CNV0.1H0 V154TCX0.1HA V154CNV0.1H0 V155TCX0.1HA V155CNV0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

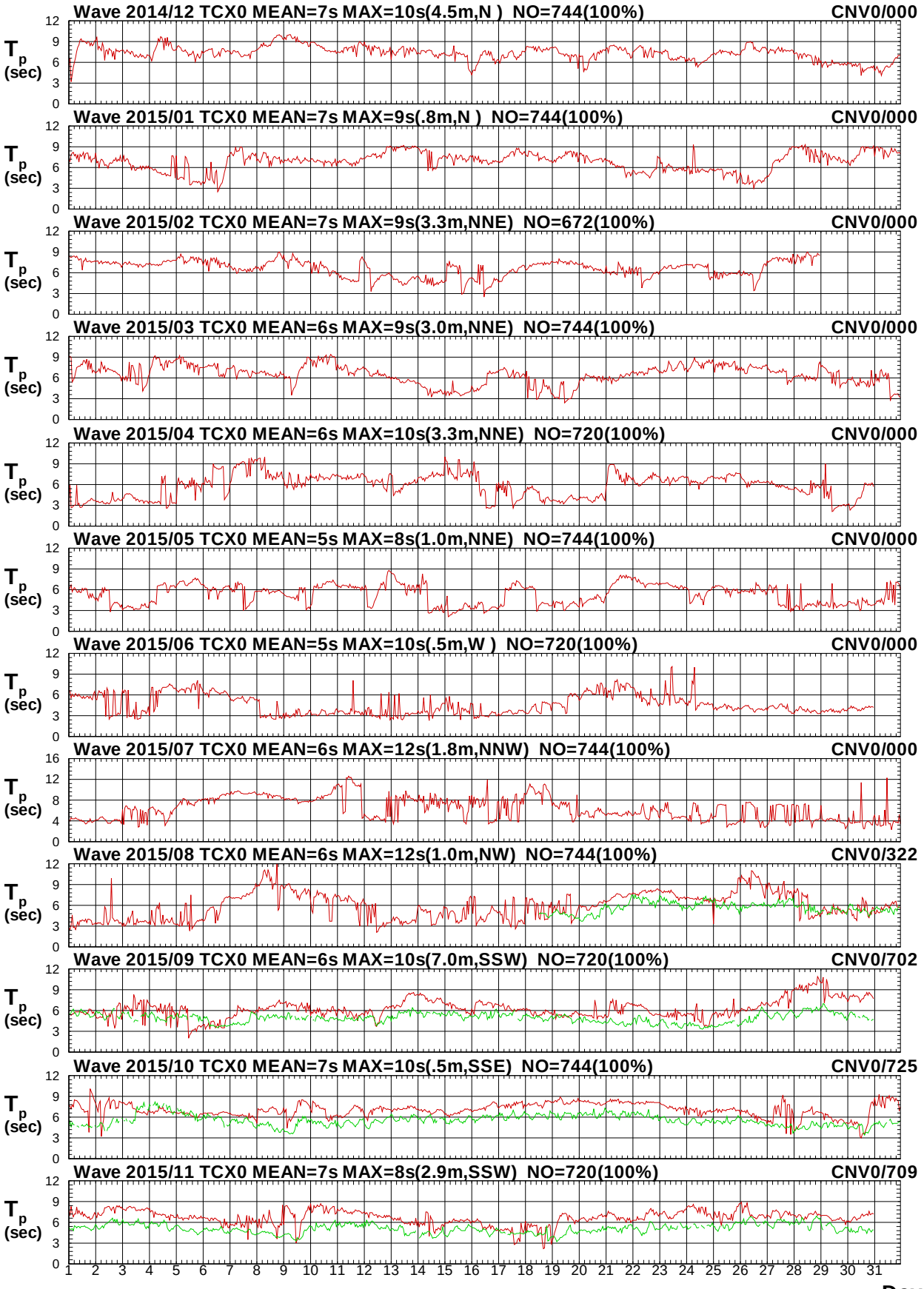


圖 9.9b　2015年每月中雲海域 X 站與嘉南海域 V 站週期圖

V14CTCX0.1HA V14CCNV0.1H0 V151TCX0.1HA V151CNV0.1H0 V152TCX0.1HA V152CNV0.1H0
V153TCX0.1HA V153CNV0.1H0 V154TCX0.1HA V154CNV0.1H0 V155TCX0.1HA V155CNV0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

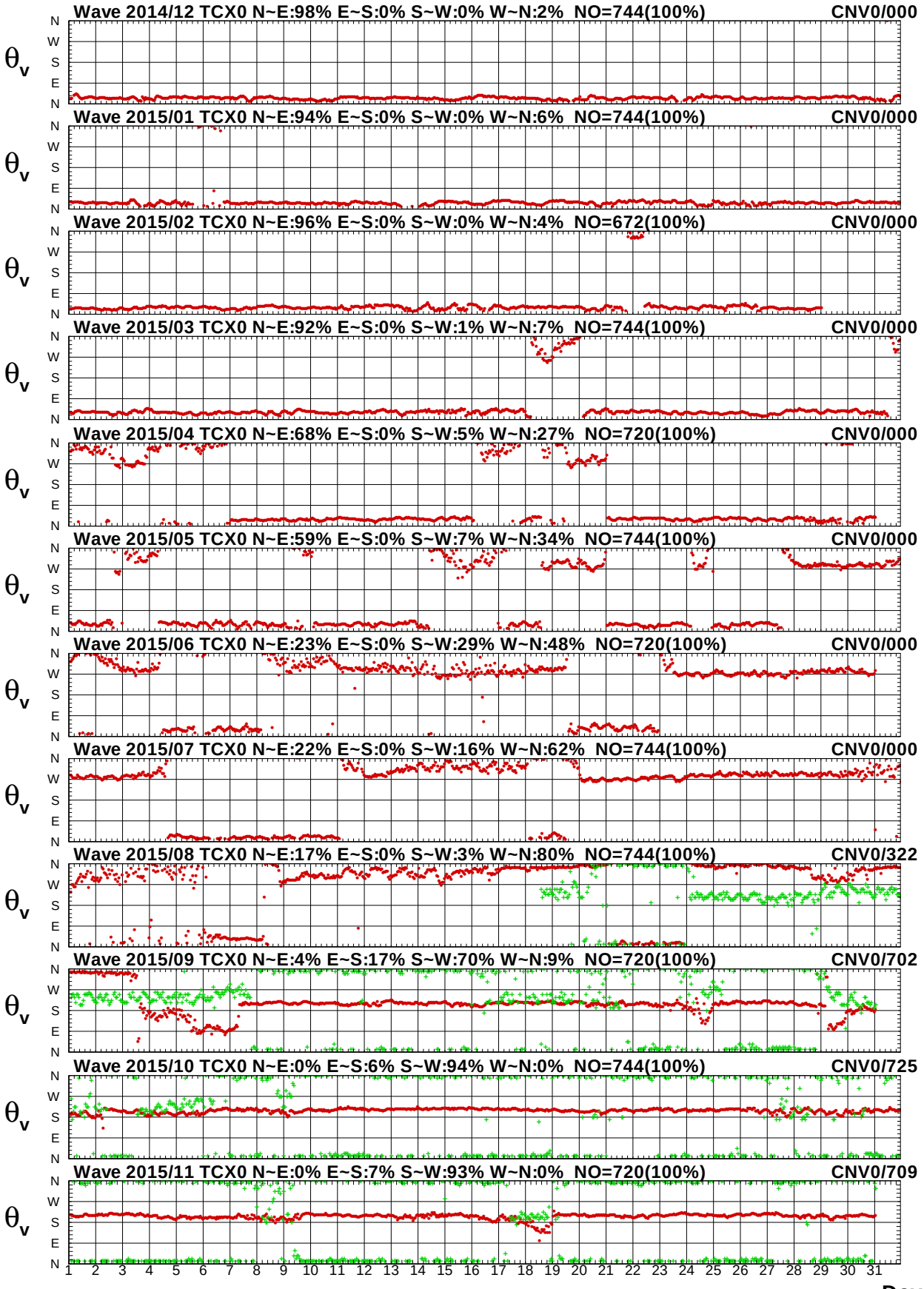


圖 9.9c　2015年每月中雲海域 X 站與嘉南海域 V 站波向圖

V14CTCX0.1HA V14CCNV0.1H0 V151TCX0.1HA V151CNV0.1H0 V152TCX0.1HA V152CNV0.1H0
V153TCX0.1HA V153CNV0.1H0 V154TCX0.1HA V154CNV0.1H0 V155TCX0.1HA V155CNV0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

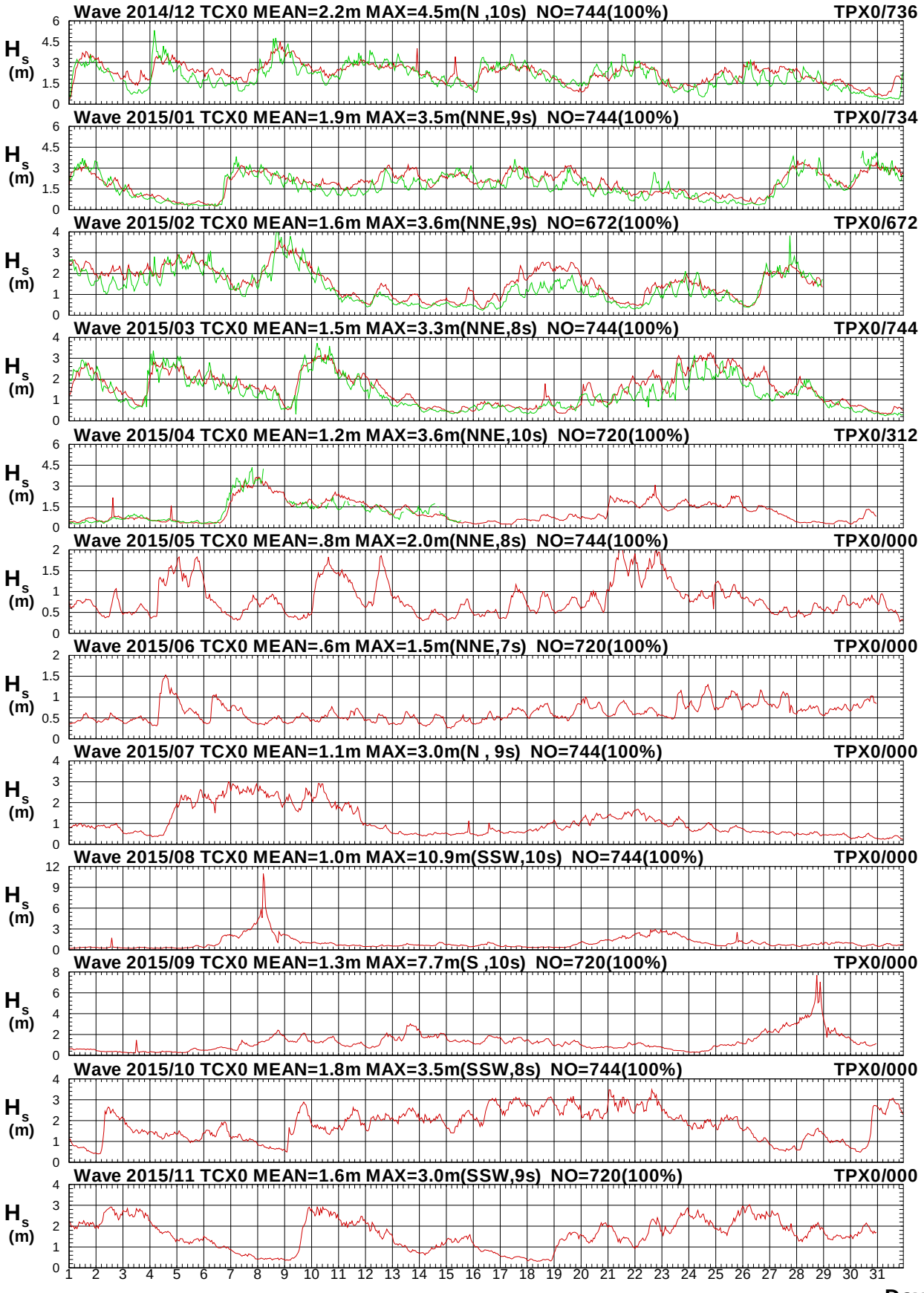


圖 9.10a　2015年每月中雲海域 X 站與北苗海域 X 站波高圖

V14CTCX0.1HA V14CTPX0.1H0 V151TCX0.1HA V151TPX0.1H0 V152TCX0.1HA V152TPX0.1H0
V153TCX0.1HA V153TPX0.1H0 V154TCX0.1HA V154TPX0.1H0 V155TCX0.1HA V155TPX0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

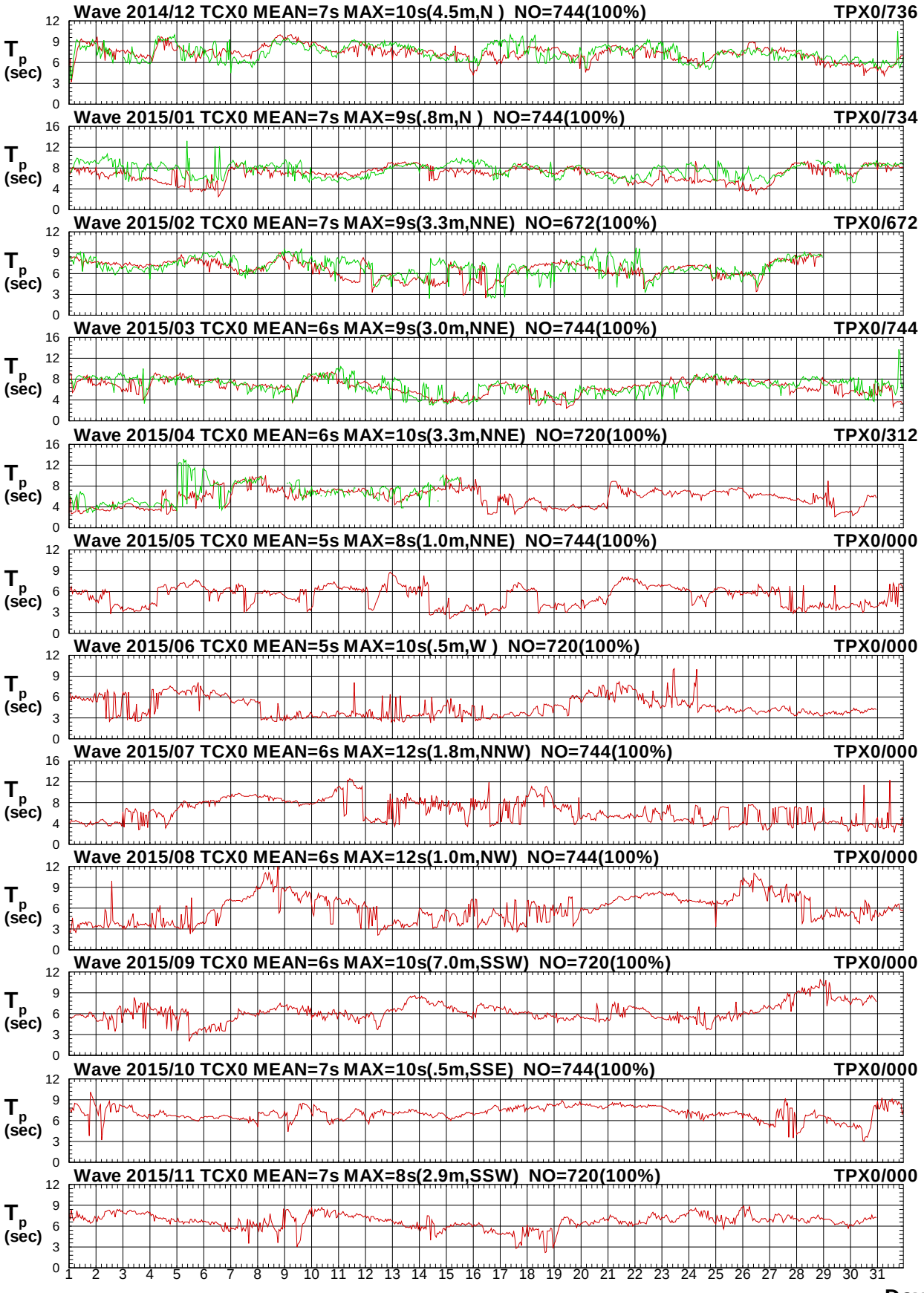


圖 9.10b　2015年每月中雲海域 X 站與北苗海域 X 站週期圖

V14CTCX0.1HA V14CTPX0.1H0 V151TCX0.1HA V151TPX0.1H0 V152TCX0.1HA V152TPX0.1H0
V153TCX0.1HA V153TPX0.1H0 V154TCX0.1HA V154TPX0.1H0 V155TCX0.1HA V155TPX0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

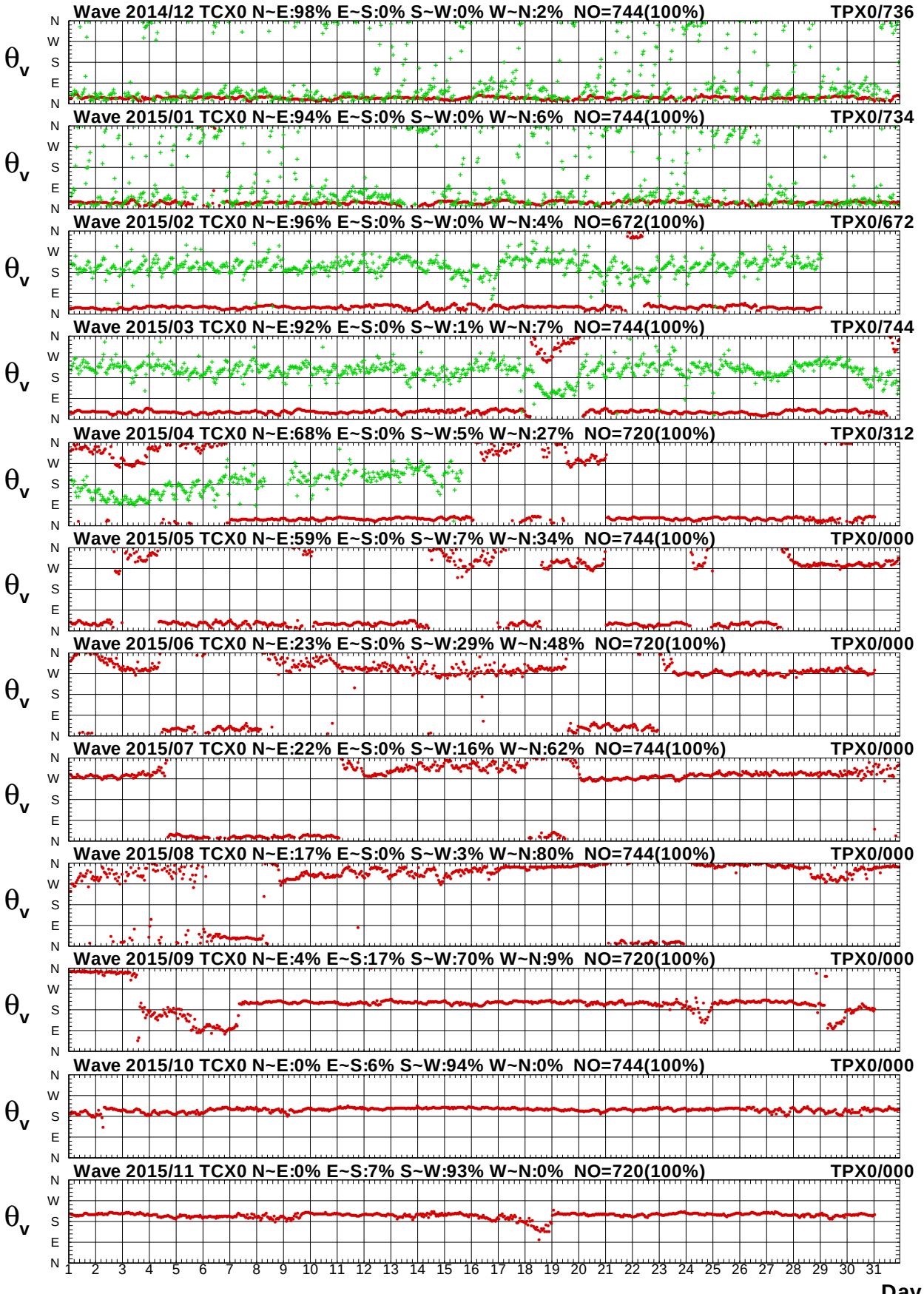


圖 9.10c　2015年每月中雲海域 X 站與北苗海域 X 站波向圖

V14CTCX0.1HA V14CTPX0.1H0 V151TCX0.1HA V151TPX0.1H0 V152TCX0.1HA V152TPX0.1H0
V153TCX0.1HA V153TPX0.1H0 V154TCX0.1HA V154TPX0.1H0 V155TCX0.1HA V155TPX0.1H0

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Wave H_s in Chung-Yun Seas of TCX0 at 2015

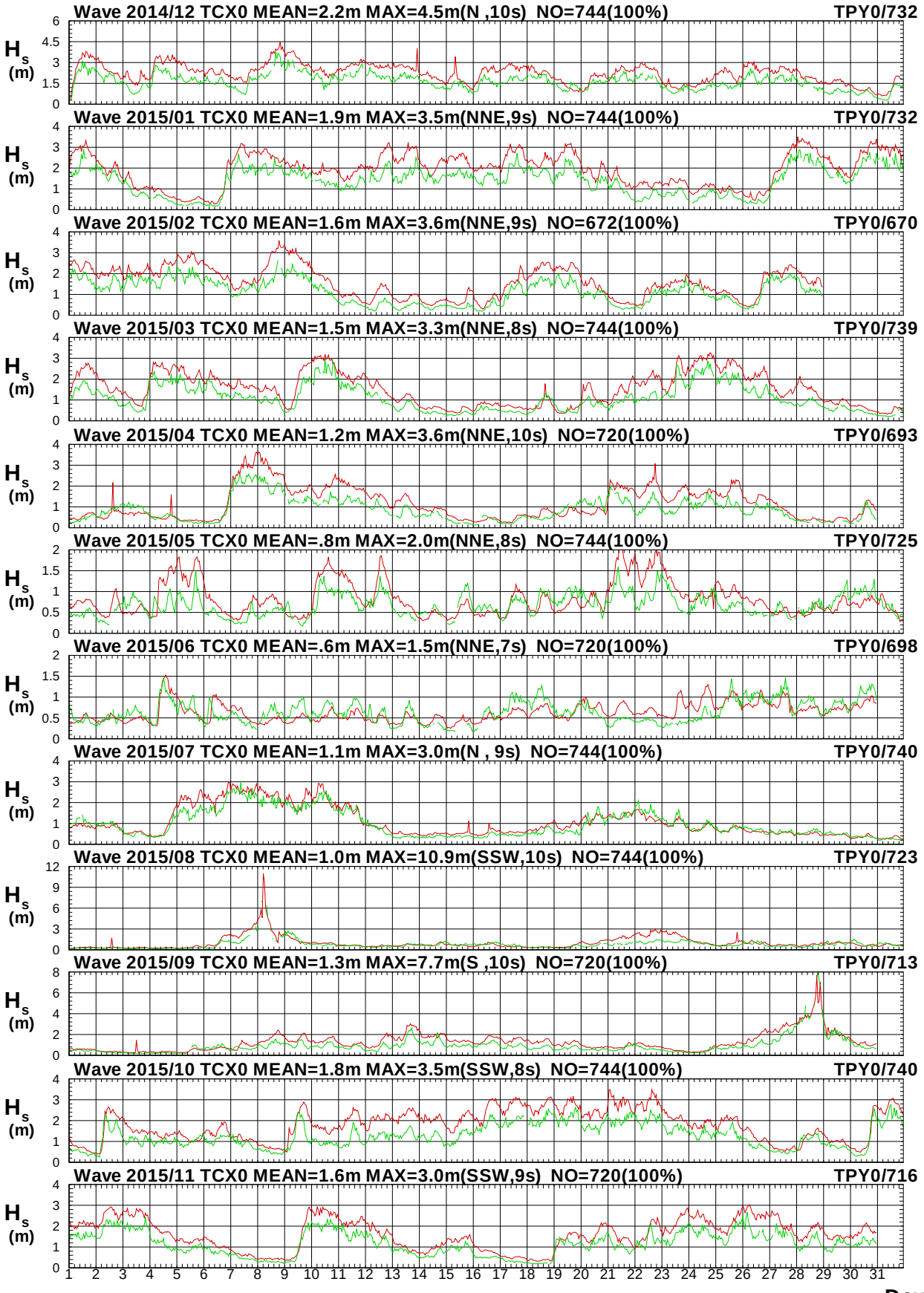


圖 9.11a　2015年每月中雲海域 X 站與北苗海域 Y 站波高圖

V14CTCX0.1HA V14CTPY0.1H0 V151TCX0.1HA V151TPY0.1H0 V152TCX0.1HA V152TPY0.1H0
V153TCX0.1HA V153TPY0.1H0 V154TCX0.1HA V154TPY0.1H0 V155TCX0.1HA V155TPY0.1H0

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Wave T_p in Chung-Yun Seas of TCX0 at 2015

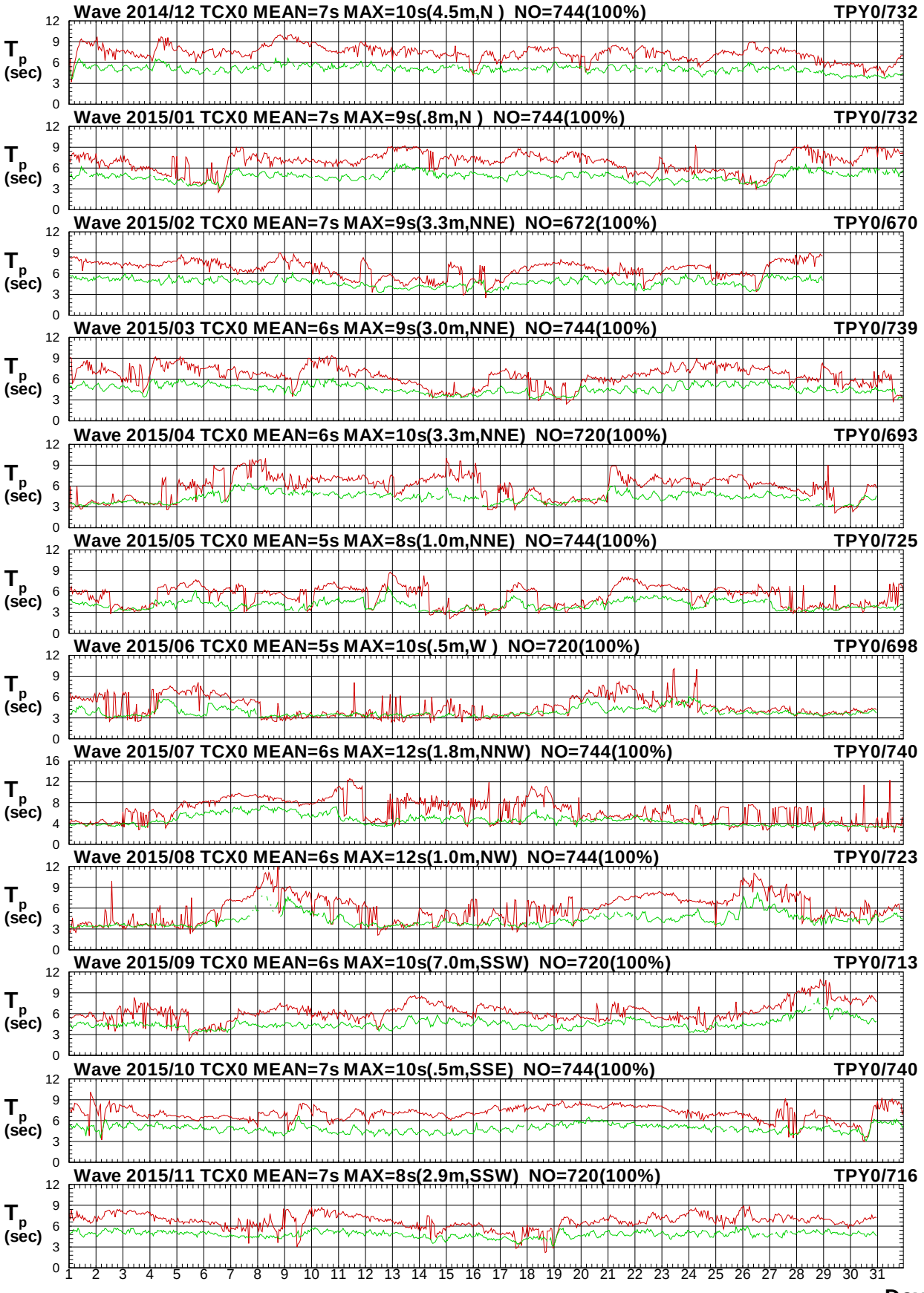


圖 9.11b　2015年每月中雲海域 X 站與北苗海域 Y 站週期圖

V14CTCX0.1HA V14CTPY0.1H0 V151TCX0.1HA V151TPY0.1H0 V152TCX0.1HA V152TPY0.1H0
V153TCX0.1HA V153TPY0.1H0 V154TCX0.1HA V154TPY0.1H0 V155TCX0.1HA V155TPY0.1H0

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Wave Direction in Chung-Yun Seas of TCX0 at 2015

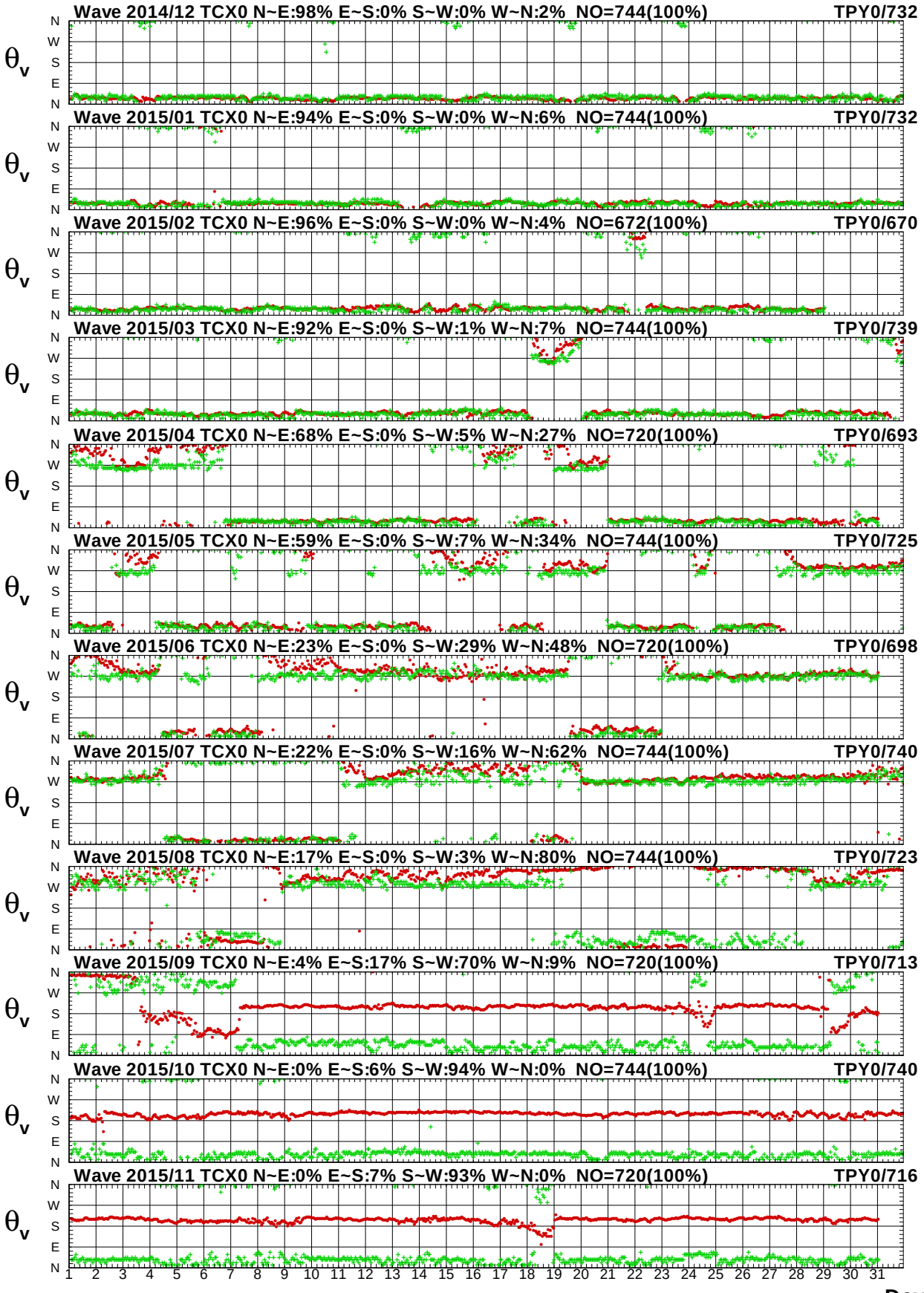


圖 9.11c　2015年每月中雲海域 X 站與北苗海域 Y 站波向圖

V14CTCX0.1HA V14CTPY0.1H0 V151TCX0.1HA V151TPY0.1H0 V152TCX0.1HA V152TPY0.1H0
V153TCX0.1HA V153TPY0.1H0 V154TCX0.1HA V154TPY0.1H0 V155TCX0.1HA V155TPY0.1H0

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第十章　2015 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**，2015 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，2015 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 2015 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	2011/01-2015/11(觀測中)	港研中心	龍門尖山港外海
Y	23°43'37"N	119°33'07"E	2006/09-2015/11(觀測中)	水利署	澎湖資料浮標
Z	23°15'23"N	119°41'2"E	2013/10-2015/11(觀測中)	中央氣象局	東吉島波浪站
R	22°45'16"N	119°25'42"E	2015/07-2015/11(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 2015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				
2014/12月	599 (80.5%)	741 (99.6%)	87 (11.7%)	*	*	*	*	*
2015/ 1月	618 (83.1%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	605 (90.0%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	690 (92.7%)	427 (57.4%)	*	*	*	*	*	*
2015/ 4月	633 (87.9%)	223 (31.0%)	*	*	*	*	*	*
2015/ 5月	699 (94.0%)	743 (99.9%)	*	*	*	*	*	*
2015/ 6月	704 (97.8%)	718 (99.7%)	*	*	*	*	*	*
2015/ 7月	697 (93.7%)	594 (79.8%)	*	360 (48.4%)	*	*	*	*
2015/ 8月	693 (93.1%)	738 (99.2%)	*	704 (94.6%)	*	*	*	*
2015/ 9月	664 (92.2%)	720 (100%)	*	685 (95.1%)	*	*	*	*
2015/10月	641 (86.2%)	191 (25.7%)	*	700 (94.1%)	*	*	*	*
2015/11月	626 (86.9%)	*	*	653 (90.7%)	*	*	*	*
2015/冬季	1822 (84.4%)	2157 (99.9%)	87 (4.0%)	*	*	*	*	*
2015/春季	2022 (91.6%)	1393 (63.1%)	*	*	*	*	*	*
2015/夏季	2094 (94.8%)	2050 (92.8%)	*	1064 (48.2%)	*	*	*	*
2015/秋季	1931 (88.4%)	911 (41.7%)	*	2038 (93.3%)	*	*	*	*
2015/整年	7869 (89.8%)	6511 (74.3%)	87 (1.0%)	3102 (35.4%)	*	*	*	*
起始年月	2014/12	2014/12	2014/12	2015/07	*	*	*	*
結束年月	2015/11	2015/10	2014/12	2015/11	*	*	*	*

表10.1b 2015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				
2014/12月	744 (100%)	*	*	*	*	*	*	*
2015/ 1月	744 (100%)	*	*	*	*	*	*	*
2015/ 2月	672 (100%)	*	*	*	*	*	*	*
2015/ 3月	744 (100%)	*	*	*	*	*	*	*
2015/ 4月	720 (100%)	*	*	*	*	*	*	*
2015/ 5月	744 (100%)	*	*	*	*	*	*	*
2015/ 6月	720 (100%)	*	*	*	*	*	*	*
2015/ 7月	744 (100%)	*	*	*	*	*	*	*
2015/ 8月	744 (100%)	*	*	*	*	*	*	*
2015/ 9月	720 (100%)	*	*	*	*	*	*	*
2015/10月	744 (100%)	*	*	*	*	*	*	*
2015/11月	720 (100%)	*	*	*	*	*	*	*
2015/冬季	2160 (100%)	*	*	*	*	*	*	*
2015/春季	2208 (100%)	*	*	*	*	*	*	*
2015/夏季	2208 (100%)	*	*	*	*	*	*	*
2015/秋季	2184 (100%)	*	*	*	*	*	*	*
2015/整年	8760 (100%)	*	*	*	*	*	*	*
起始年月	2014/12	*	*	*	*	*	*	*
結束年月	2015/11	*	*	*	*	*	*	*

Wave H_s in Peng-Hu Seas of PHY0 at 2015

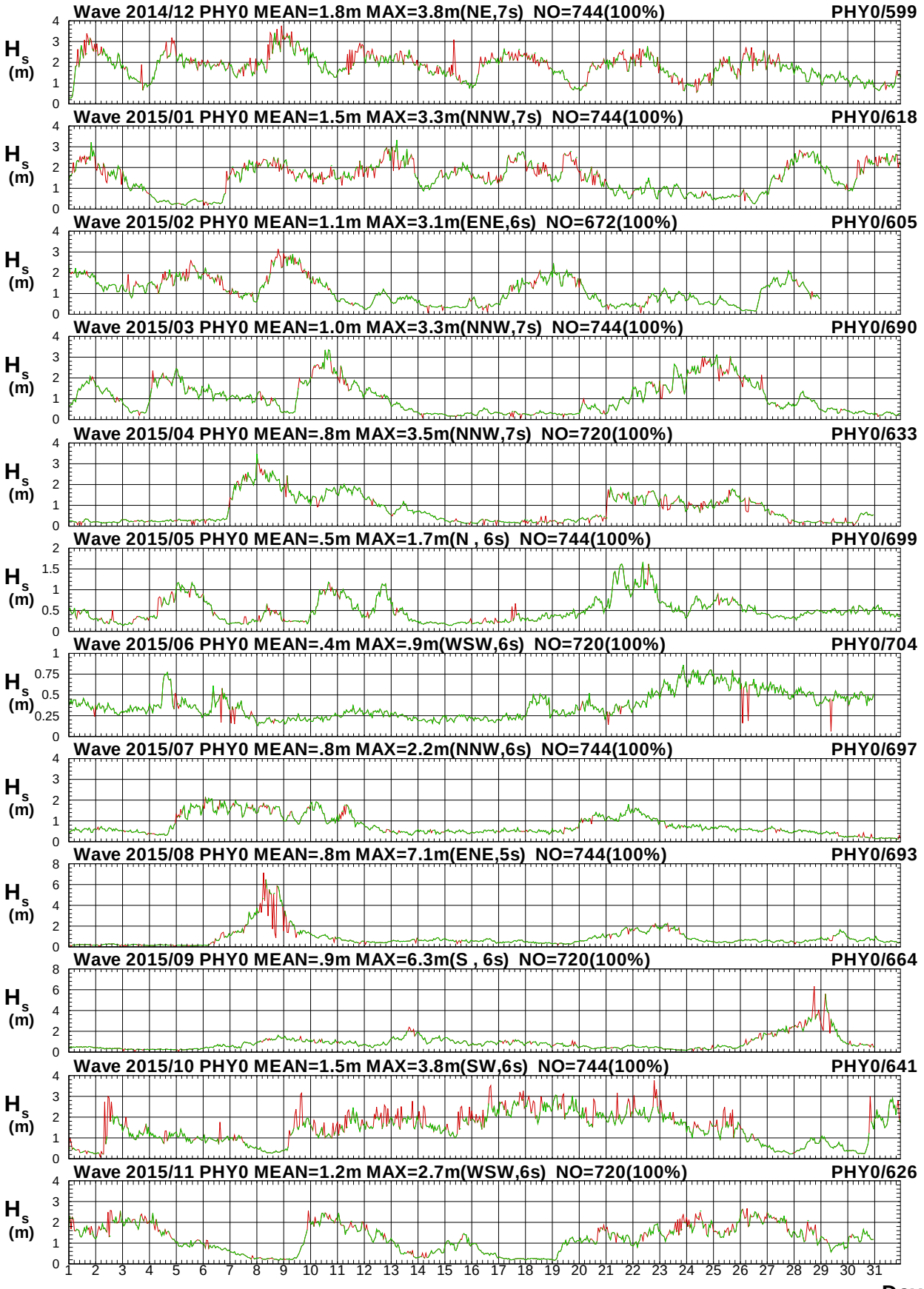


圖 10.1a　2015年每月澎湖海域 Y 站修補前後之波高比較圖

V14CPHY0.1HA V14CPHY0.1H0 V151PHY0.1HA V151PHY0.1H0 V152PHY0.1HA V152PHY0.1H0
V153PHY0.1HA V153PHY0.1H0 V154PHY0.1HA V154PHY0.1H0 V155PHY0.1HA V155PHY0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

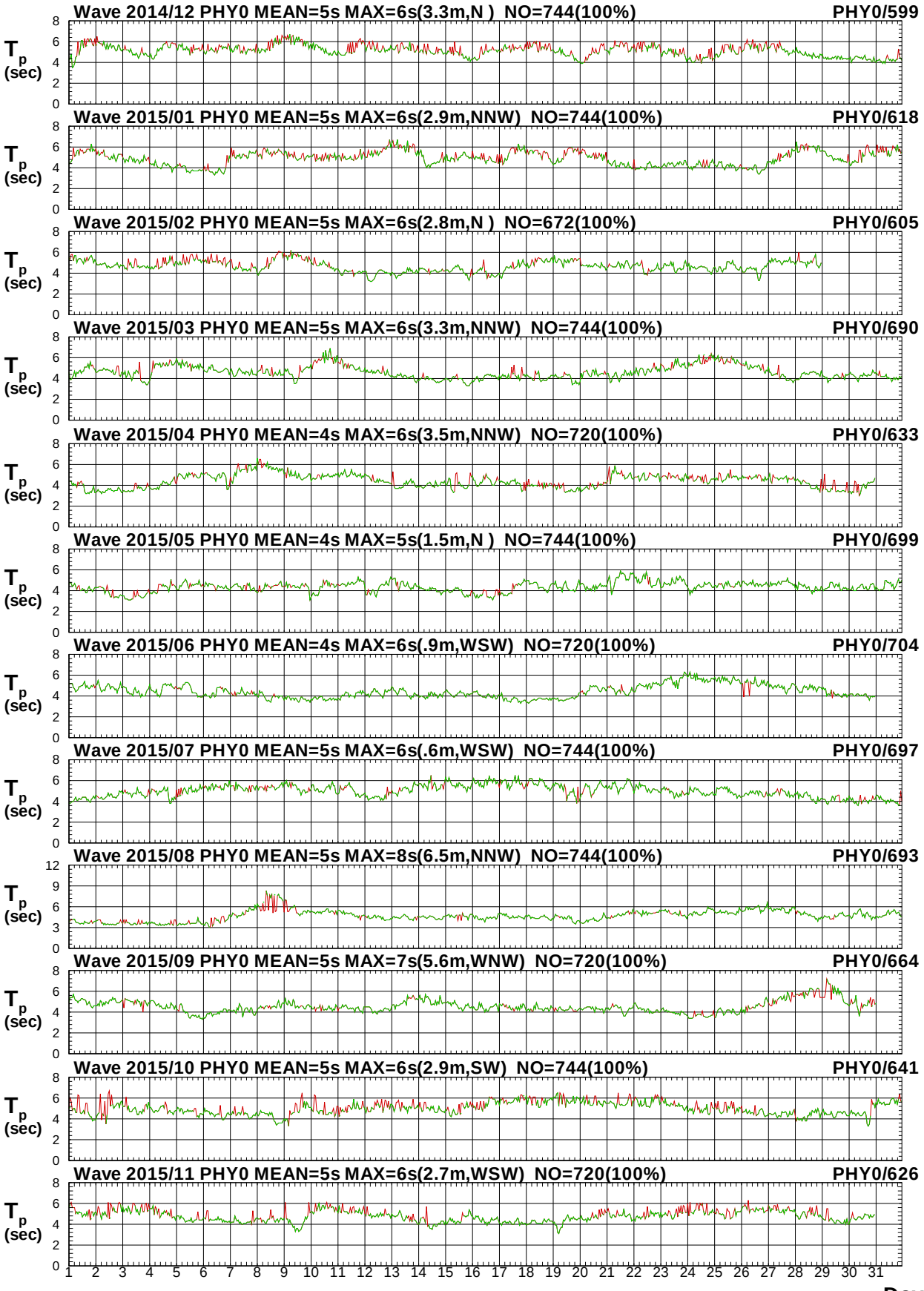


圖 10.1b　2015年每月澎湖海域 Y 站修補前後之週期比較圖

V14CPHY0.1HA V14CPHY0.1H0 V151PHY0.1HA V151PHY0.1H0 V152PHY0.1HA V152PHY0.1H0
V153PHY0.1HA V153PHY0.1H0 V154PHY0.1HA V154PHY0.1H0 V155PHY0.1HA V155PHY0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

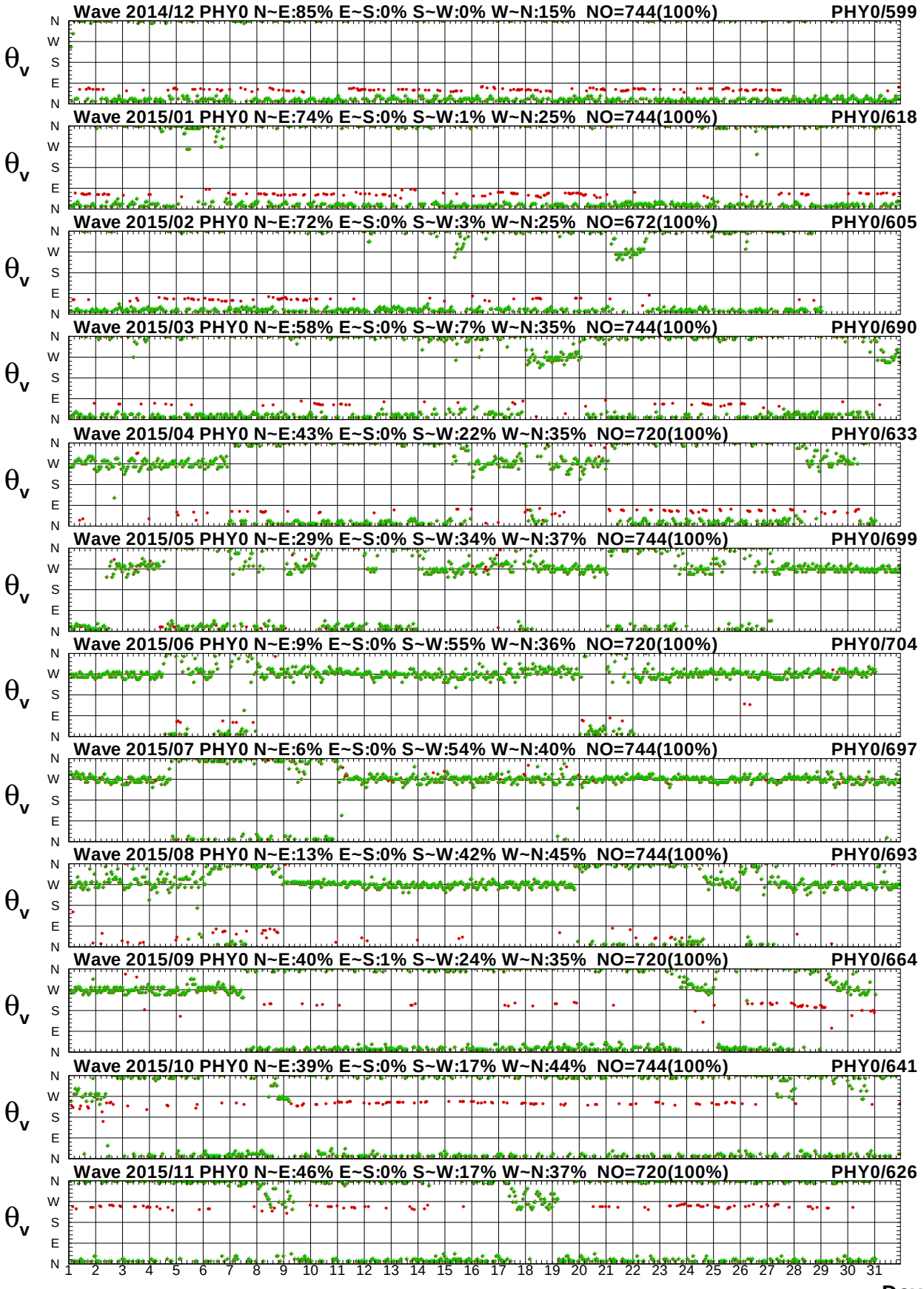


圖 10.1c　2015年每月澎湖海域 Y 站修補前後之波向比較圖

Wave H_s in Peng-Hu Seas of PHY0 at 2015

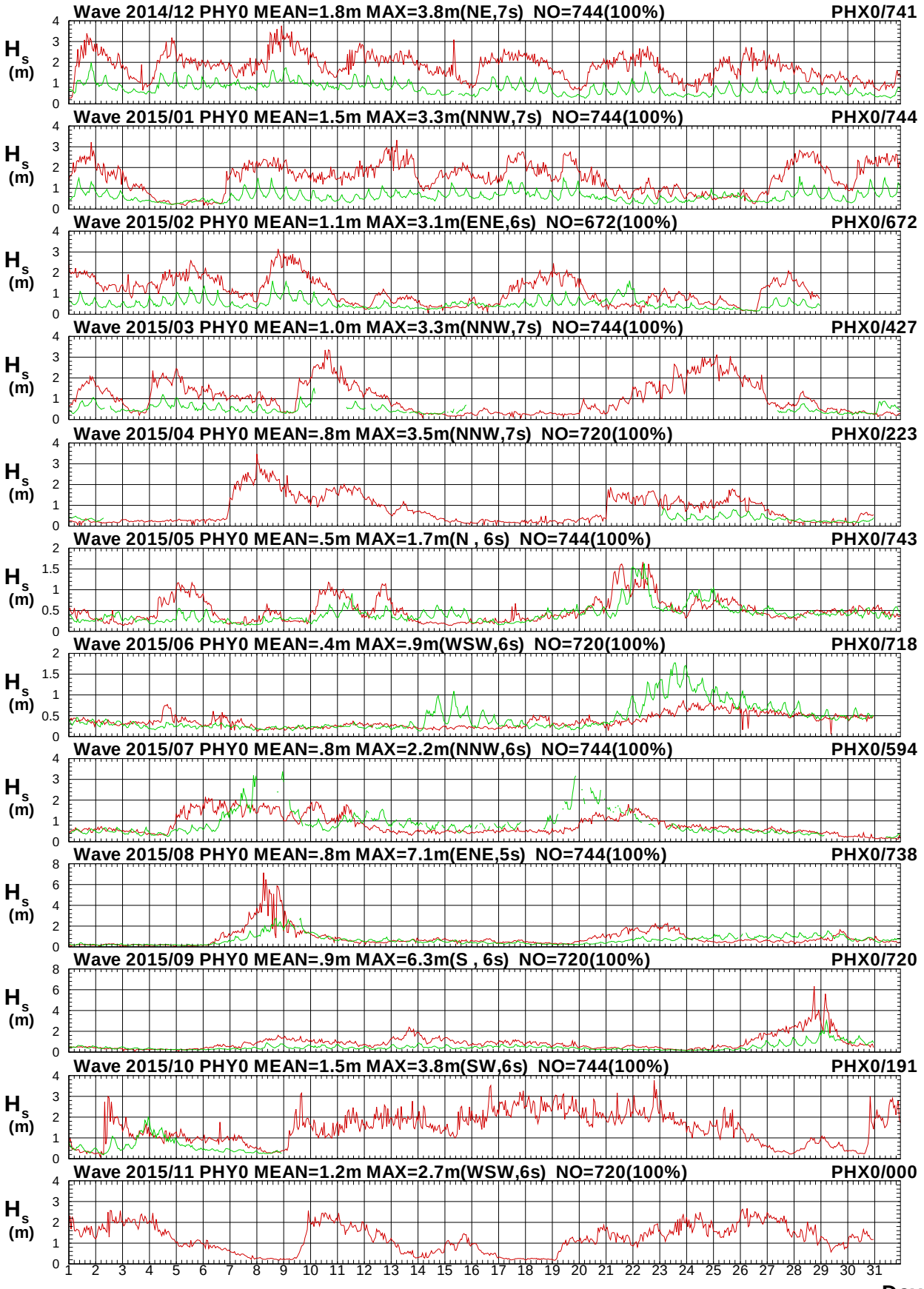


圖 10.2a　2015年每月澎湖海域 Y 站與 X 站波高比較圖

V14CPHY0.1HA V14CPHX0.1H0 V151PHY0.1HA V151PHX0.1H0 V152PHY0.1HA V152PHX0.1H0
V153PHY0.1HA V153PHX0.1H0 V154PHY0.1HA V154PHX0.1H0 V155PHY0.1HA V155PHX0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

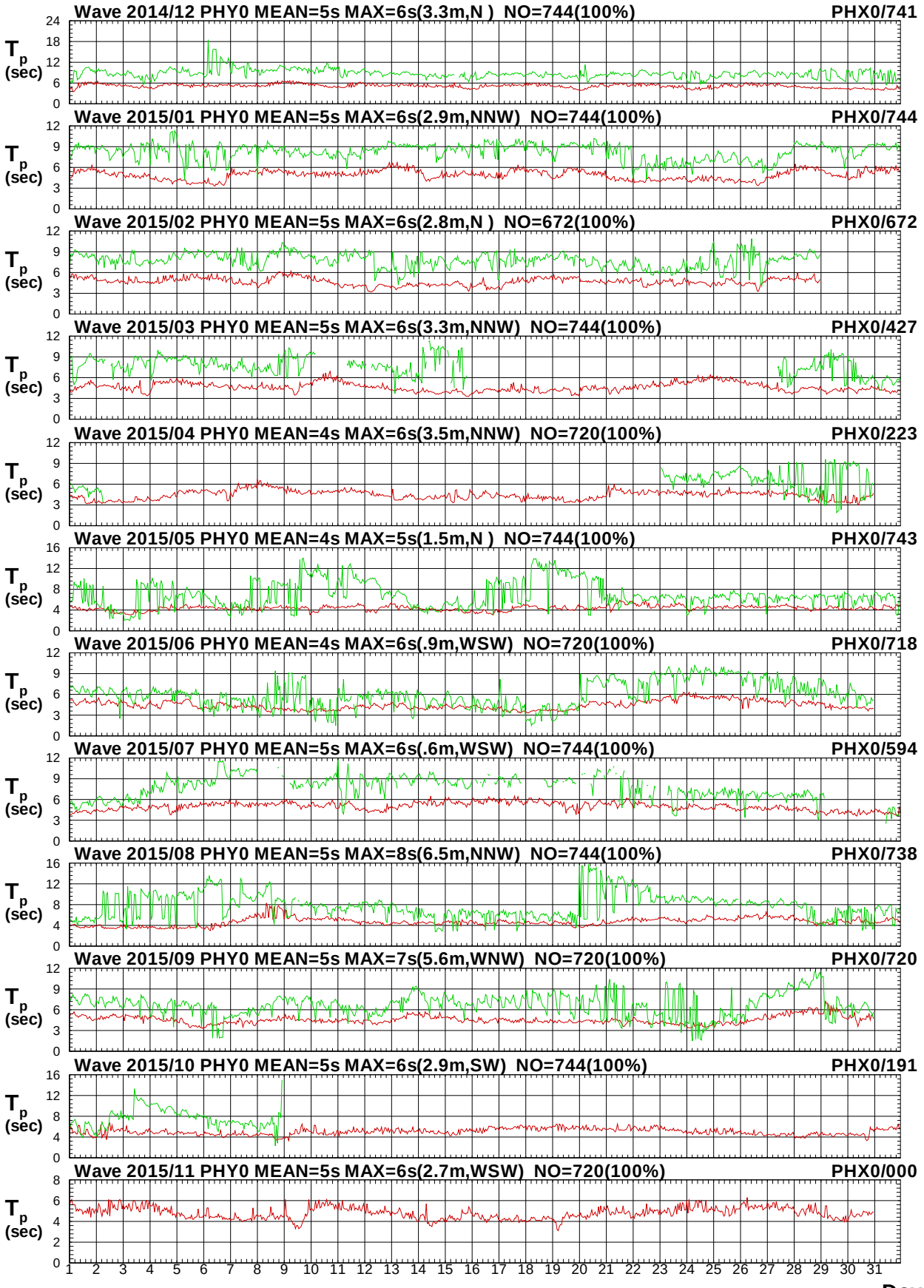


圖 10.2b　2015年每月澎湖海域 Y 站與 X 站週期比較圖

V14CPHY0.1HA V14CPHX0.1H0 V151PHY0.1HA V151PHX0.1H0 V152PHY0.1HA V152PHX0.1H0
V153PHY0.1HA V153PHX0.1H0 V154PHY0.1HA V154PHX0.1H0 V155PHY0.1HA V155PHX0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

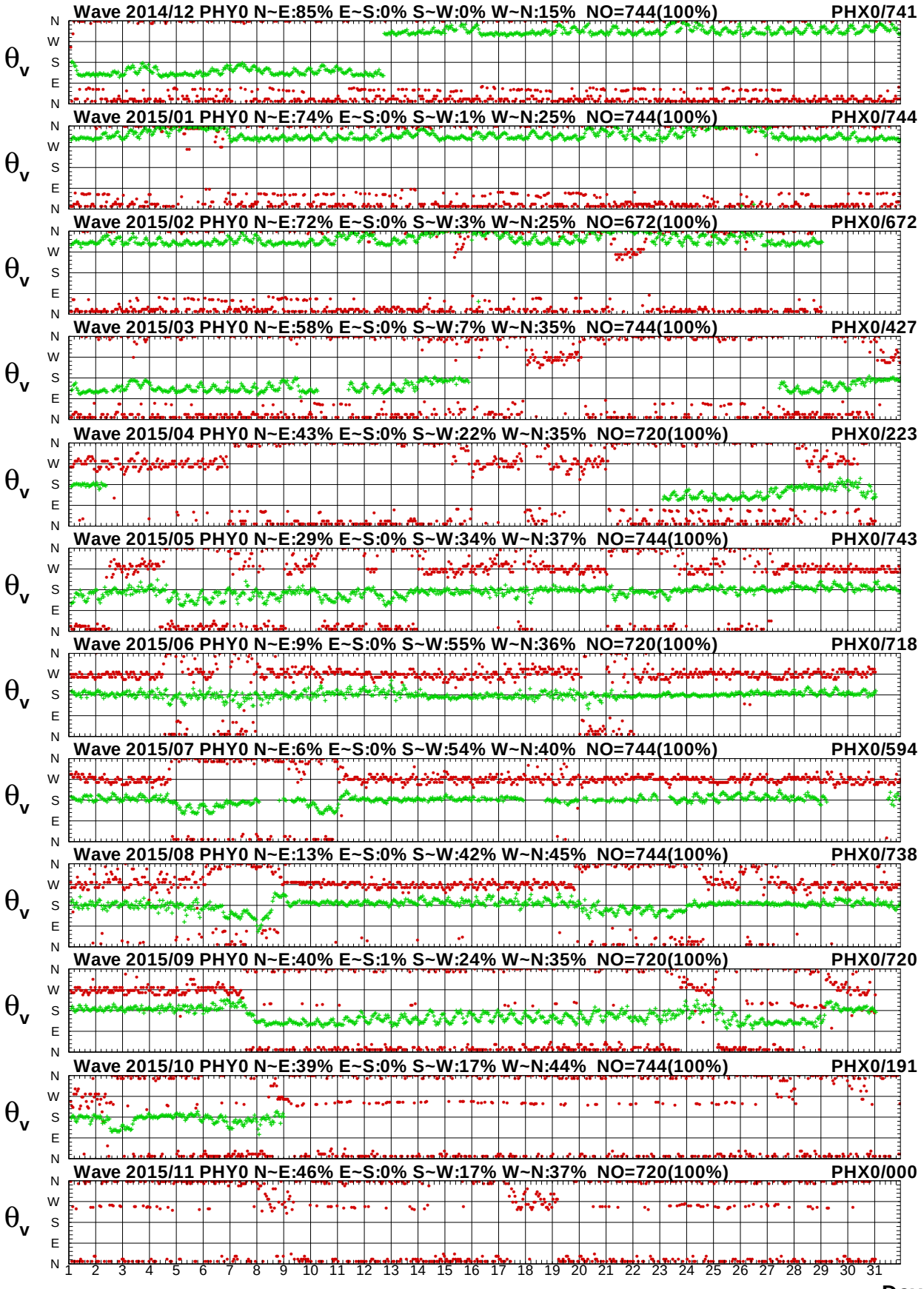


圖10.2c　2015年每月澎湖海域 Y 站與 X 站波向比較圖

V14CPHY0.1HA V14CPHX0.1H0 V151PHY0.1HA V151PHX0.1H0 V152PHY0.1HA V152PHX0.1H0
V153PHY0.1HA V153PHX0.1H0 V154PHY0.1HA V154PHX0.1H0 V155PHY0.1HA V155PHX0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

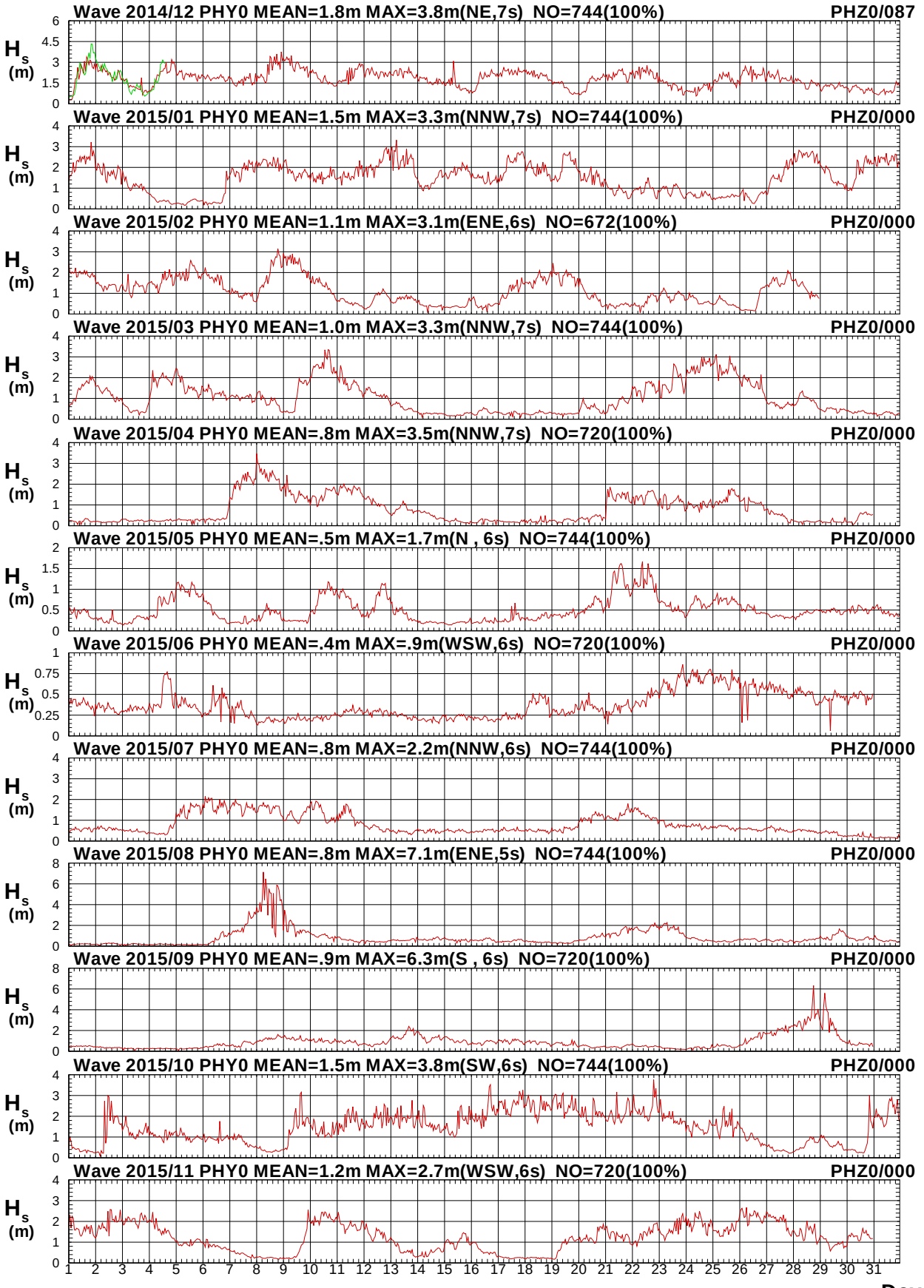


圖 10.3a　2015年每月澎湖海域 Y 站與 Z 站波高比較圖

V14CPHY0.1HA V14CPHZ0.1H0 V151PHY0.1HA V151PHZ0.1H0 V152PHY0.1HA V152PHZ0.1H0
V153PHY0.1HA V153PHZ0.1H0 V154PHY0.1HA V154PHZ0.1H0 V155PHY0.1HA V155PHZ0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

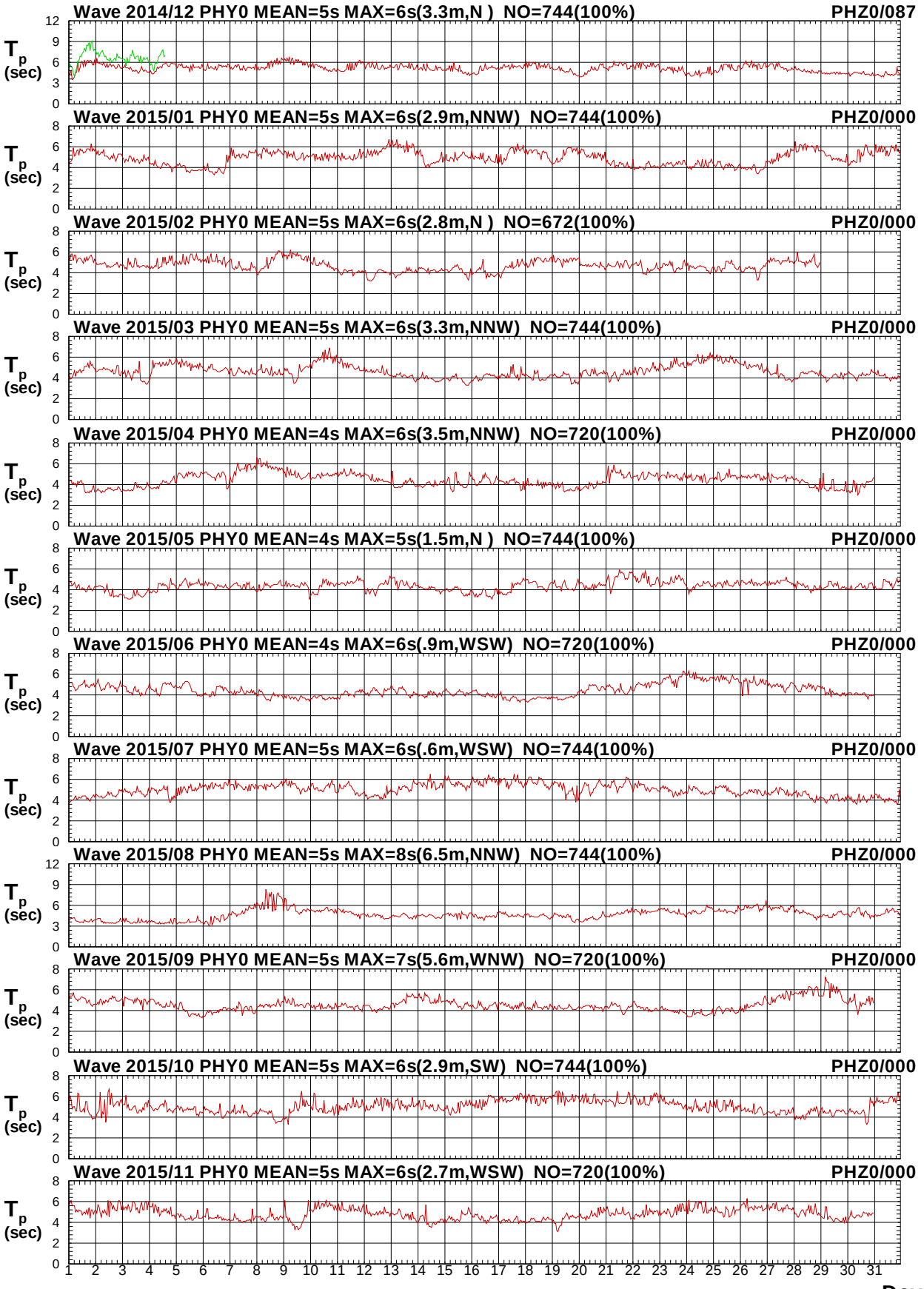


圖 10.3b　2015年每月澎湖海域 Y 站與 Z 站週期比較圖

V14CPHY0.1HA V14CPHZ0.1H0 V151PHY0.1HA V151PHZ0.1H0 V152PHY0.1HA V152PHZ0.1H0
V153PHY0.1HA V153PHZ0.1H0 V154PHY0.1HA V154PHZ0.1H0 V155PHY0.1HA V155PHZ0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

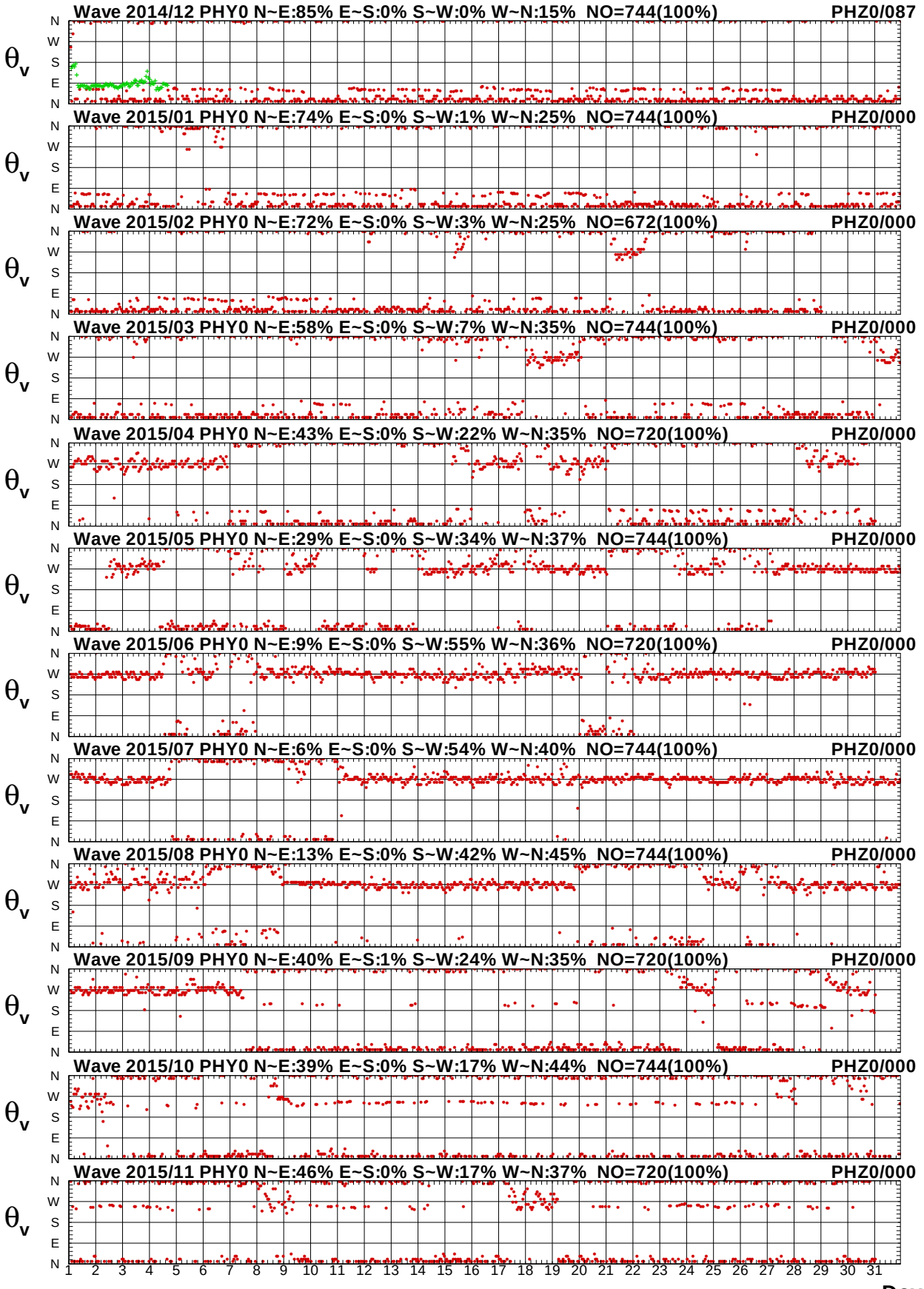


圖 10.3c　2015年每月澎湖海域 Y 站與 Z 站波向比較圖

V14CPHY0.1HA V14CPHZ0.1H0 V151PHY0.1HA V151PHZ0.1H0 V152PHY0.1HA V152PHZ0.1H0
V153PHY0.1HA V153PHZ0.1H0 V154PHY0.1HA V154PHZ0.1H0 V155PHY0.1HA V155PHZ0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

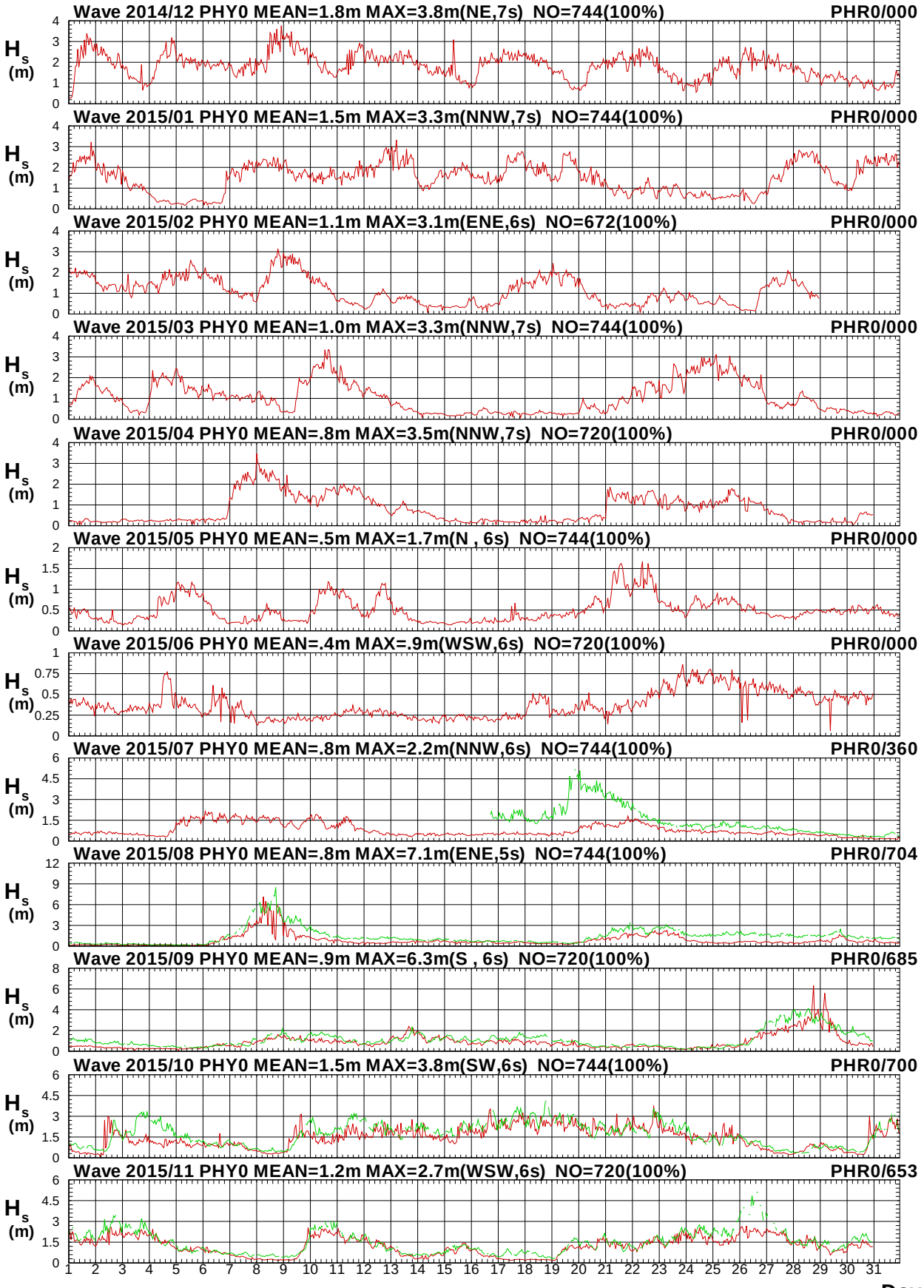


圖 10.4a　2015年每月澎湖海域 Y 站與 R 站波高比較圖

V14CPHY0.1HA V14CPHR0.1H0 V151PHY0.1HA V151PHR0.1H0 V152PHY0.1HA V152PHR0.1H0
V153PHY0.1HA V153PHR0.1H0 V154PHY0.1HA V154PHR0.1H0 V155PHY0.1HA V155PHR0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

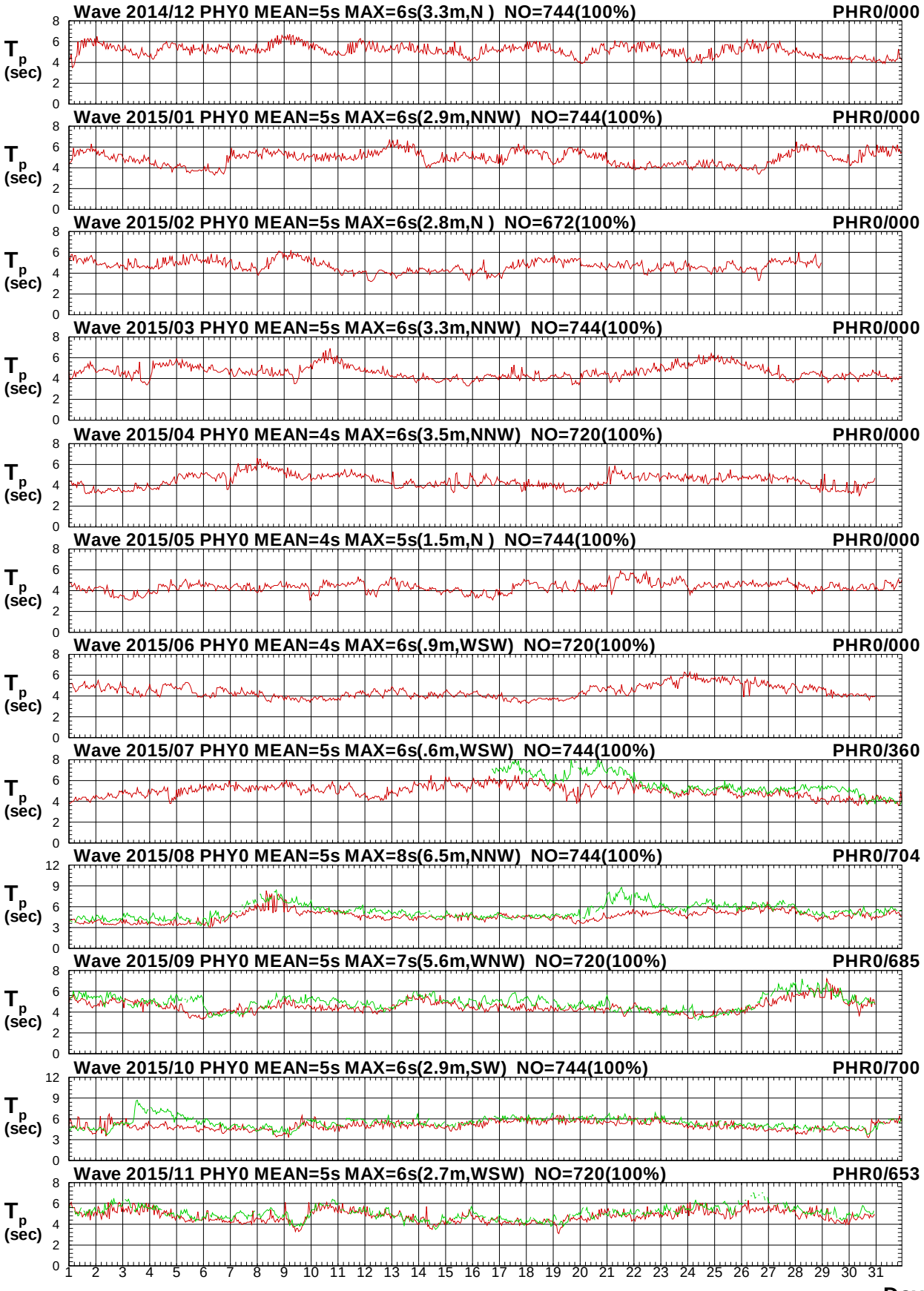


圖 10.4b　2015年每月澎湖海域 Y 站與 R 站週期比較圖

V14CPHY0.1HA V14CPHR0.1H0 V151PHY0.1HA V151PHR0.1H0 V152PHY0.1HA V152PHR0.1H0
V153PHY0.1HA V153PHR0.1H0 V154PHY0.1HA V154PHR0.1H0 V155PHY0.1HA V155PHR0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

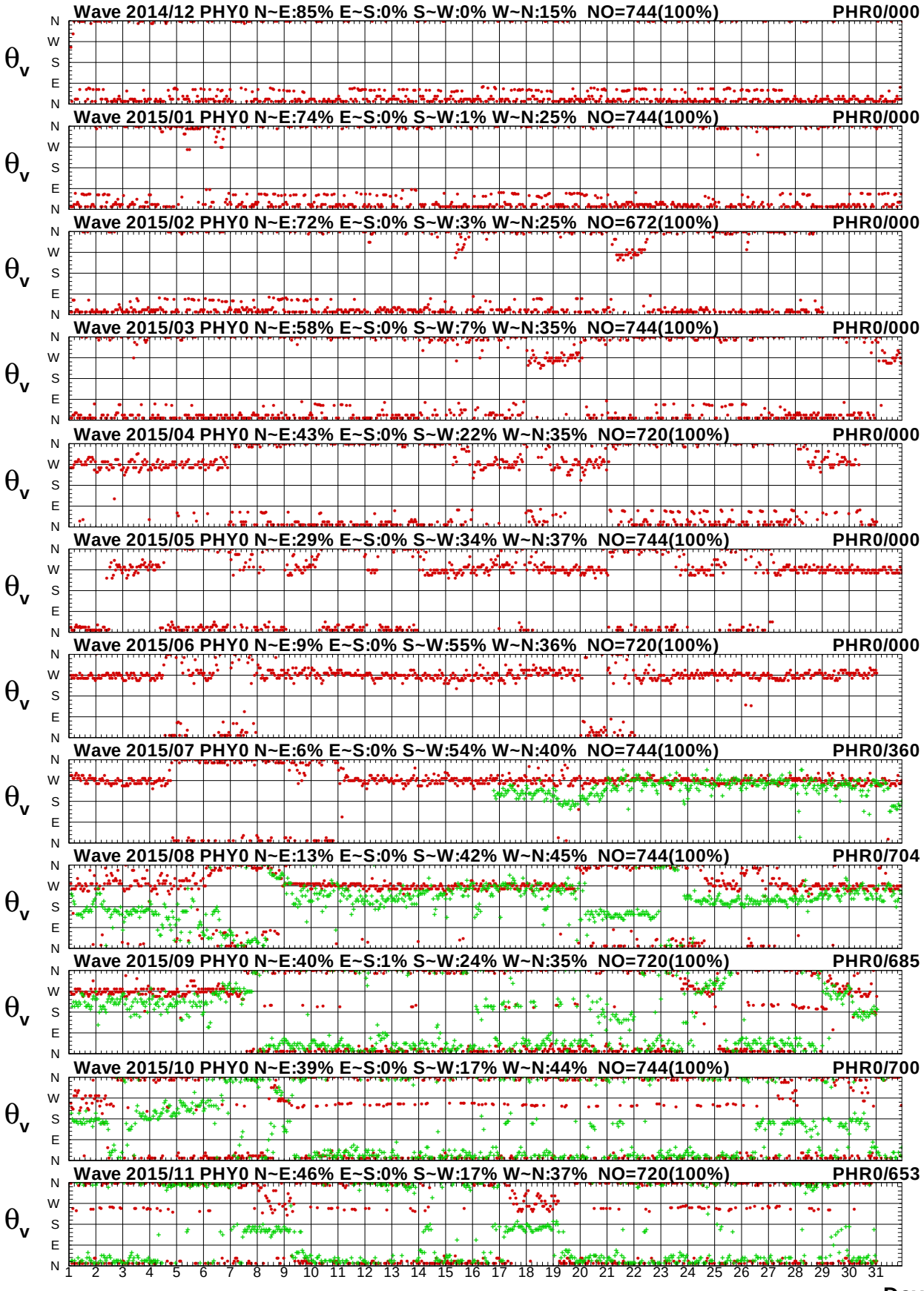


圖10.4c　2015年每月澎湖海域 Y 站與 R 站波向比較圖

V14CPHY0.1HA V14CPHR0.1H0 V151PHY0.1HA V151PHR0.1H0 V152PHY0.1HA V152PHR0.1H0
V153PHY0.1HA V153PHR0.1H0 V154PHY0.1HA V154PHR0.1H0 V155PHY0.1HA V155PHR0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

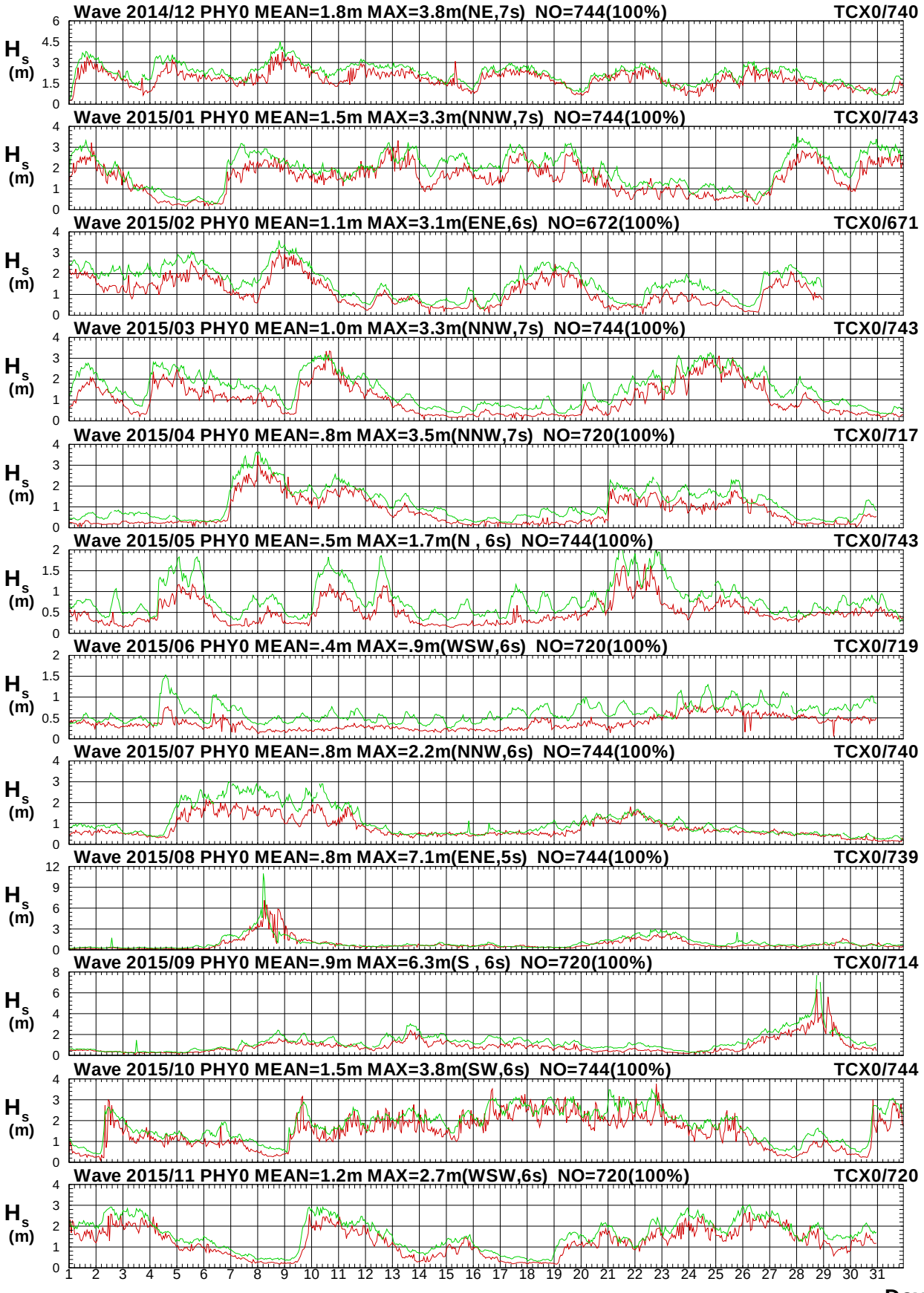


圖 10.5a　2015年每月澎湖海域 Y 站與中雲海域 X 站波高圖

V14CPHY0.1HA V14CTCX0.1H0 V151PHY0.1HA V151TCX0.1H0 V152PHY0.1HA V152TCX0.1H0
V153PHY0.1HA V153TCX0.1H0 V154PHY0.1HA V154TCX0.1H0 V155PHY0.1HA V155TCX0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

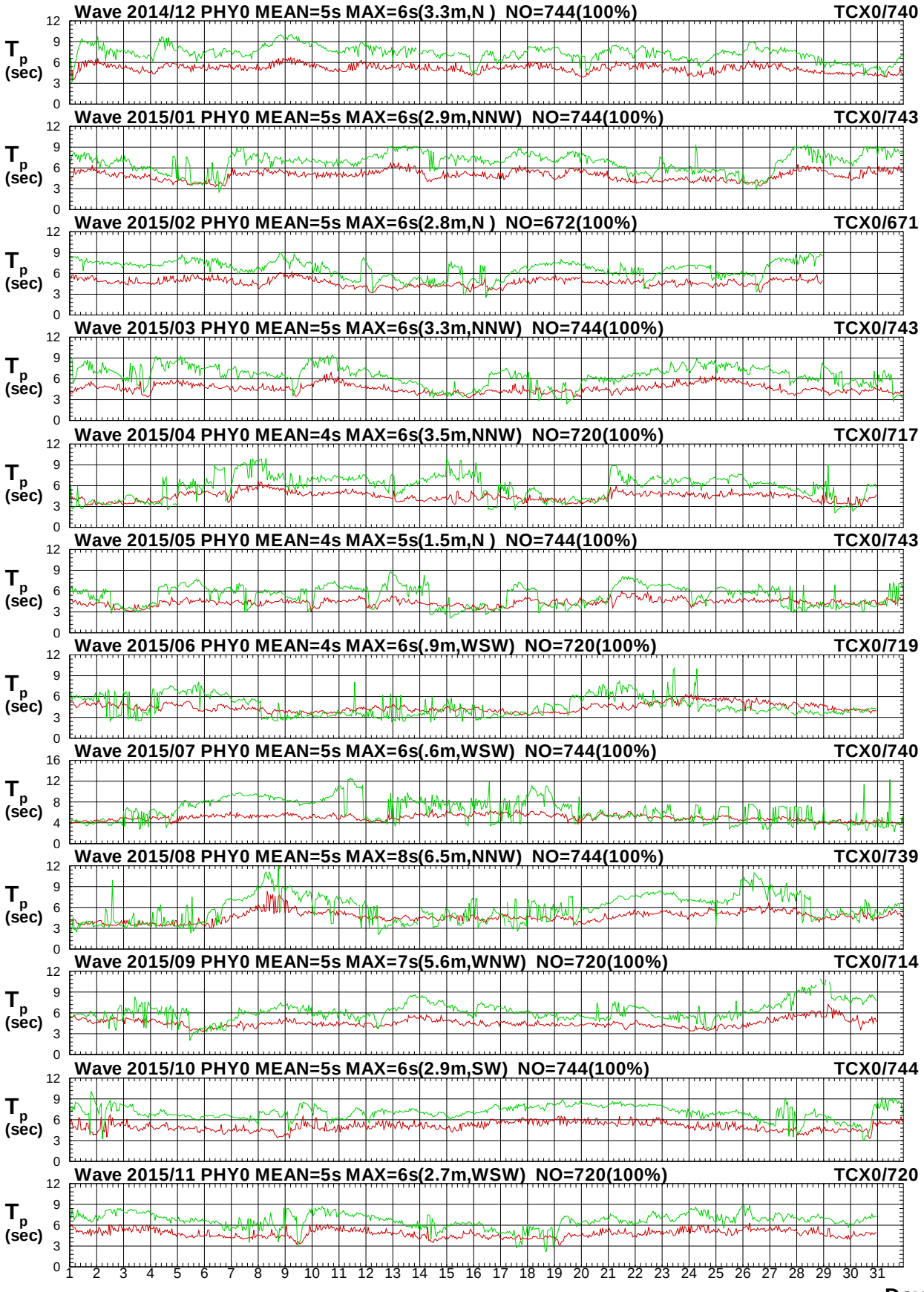


圖 10.5b　2015年每月澎湖海域 Y 站與中雲海域 X 站週期圖

V14CPHY0.1HA V14CTCX0.1H0 V151PHY0.1HA V151TCX0.1H0 V152PHY0.1HA V152TCX0.1H0
V153PHY0.1HA V153TCX0.1H0 V154PHY0.1HA V154TCX0.1H0 V155PHY0.1HA V155TCX0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

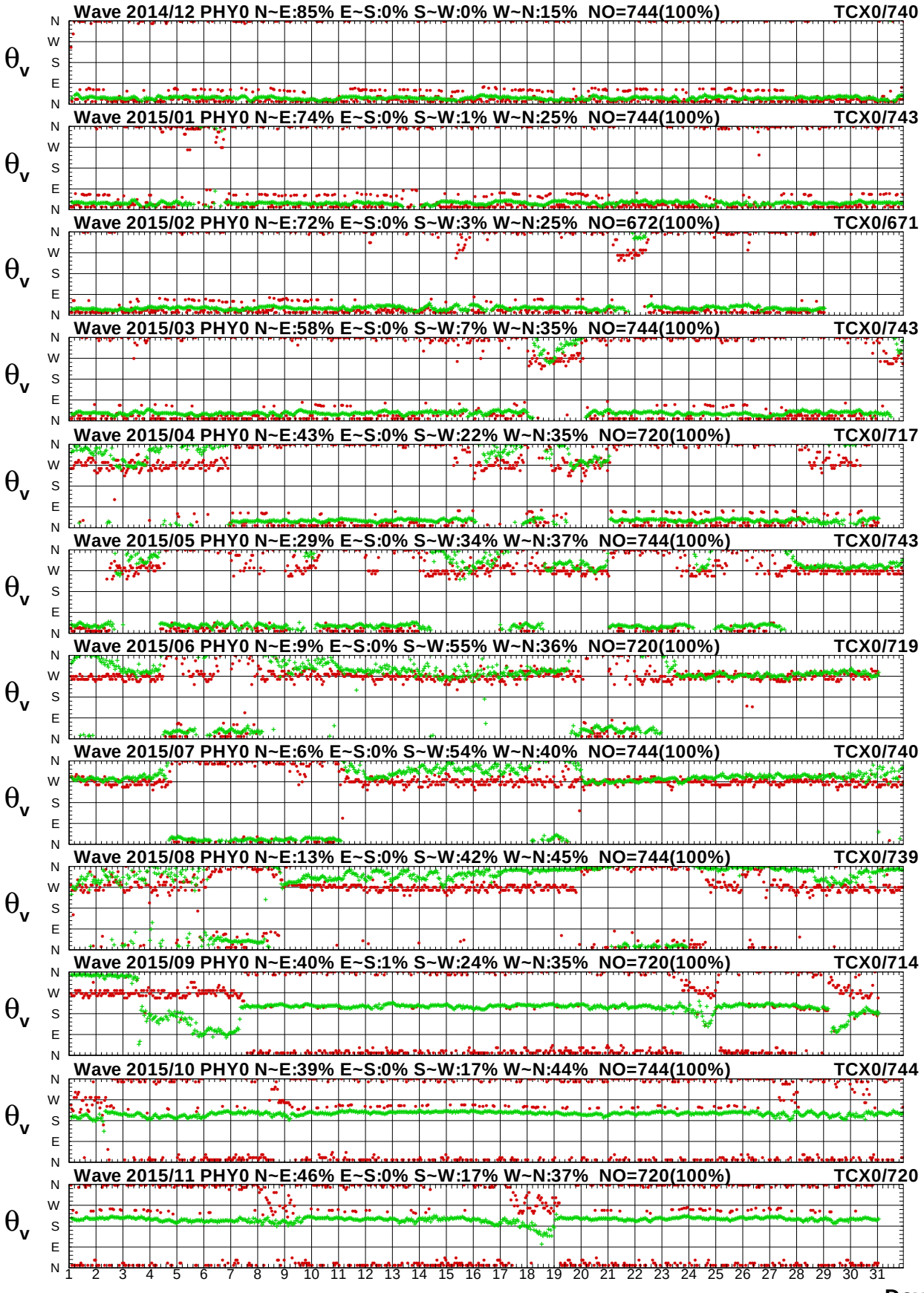


圖 10.5c　2015年每月澎湖海域 Y 站與中雲海域 X 站波向圖

V14CPHY0.1HA V14CTCX0.1H0 V151PHY0.1HA V151TCX0.1H0 V152PHY0.1HA V152TCX0.1H0
V153PHY0.1HA V153TCX0.1H0 V154PHY0.1HA V154TCX0.1H0 V155PHY0.1HA V155TCX0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

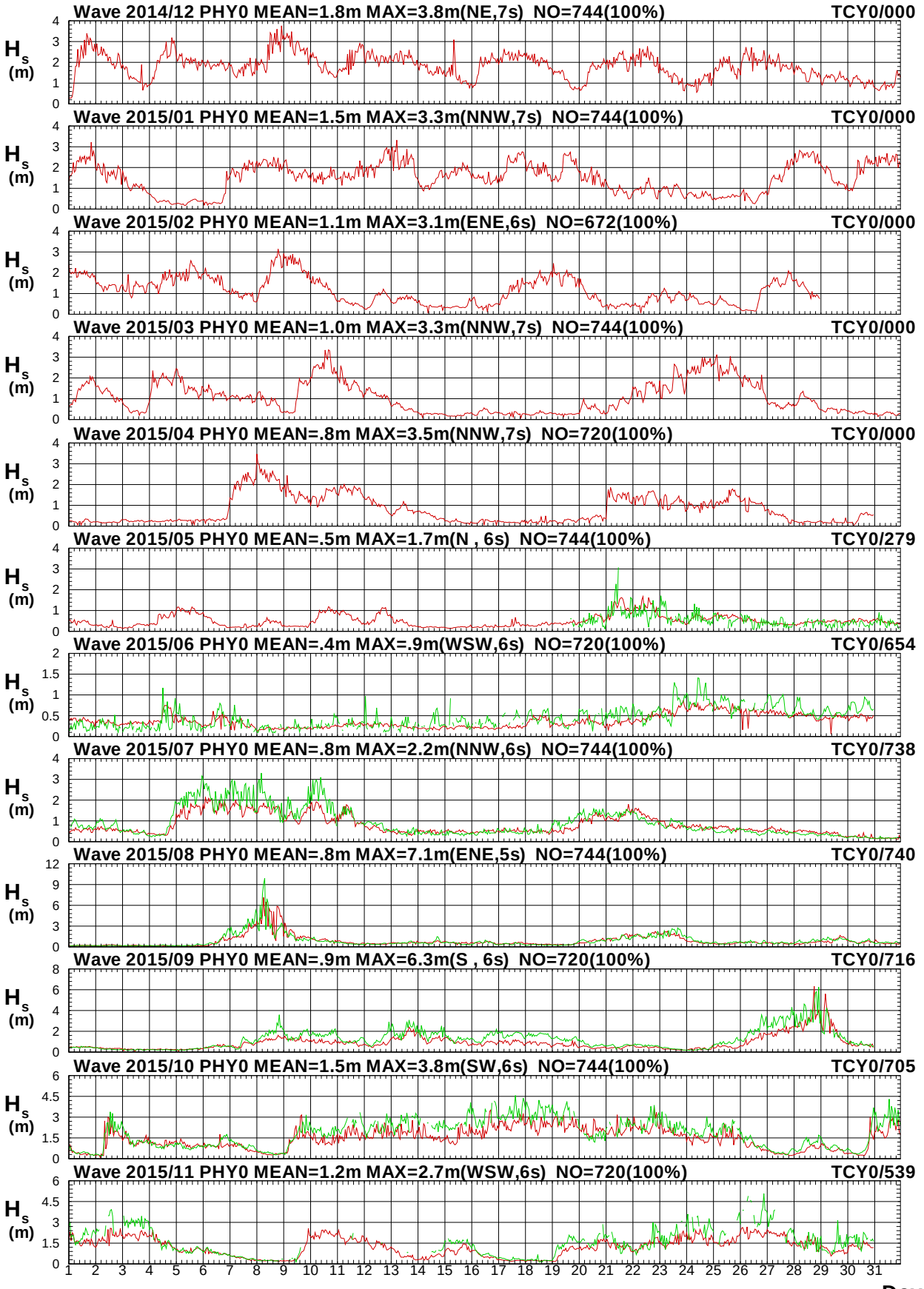


圖 10.6a　2015年每月澎湖海域 Y 站與中雲海域 Y 站波高圖

V14CPHY0.1HA V14CTCY0.1H0 V151PHY0.1HA V151TCY0.1H0 V152PHY0.1HA V152TCY0.1H0
V153PHY0.1HA V153TCY0.1H0 V154PHY0.1HA V154TCY0.1H0 V155PHY0.1HA V155TCY0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

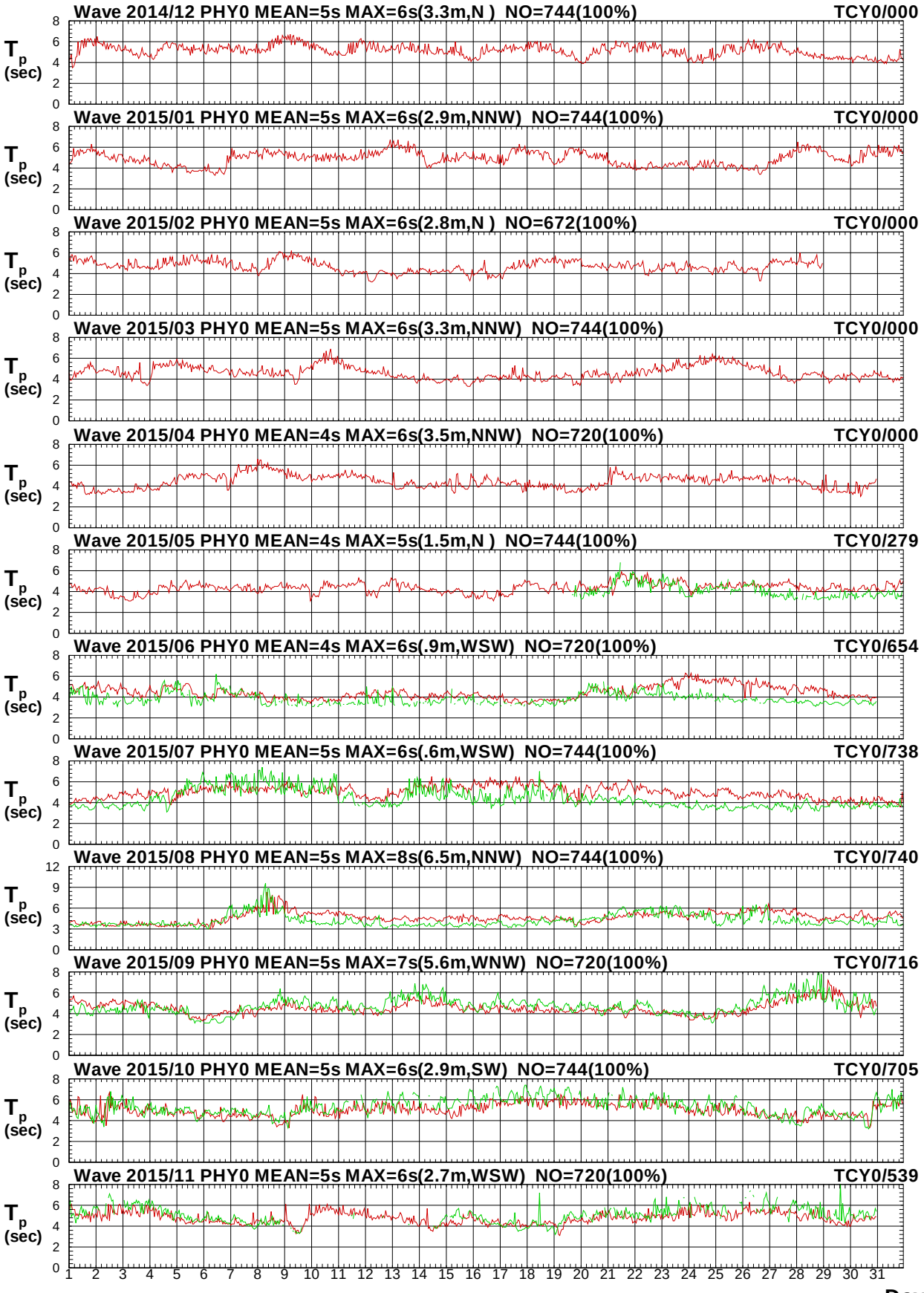


圖 10.6b　2015年每月澎湖海域 Y 站與中雲海域 Y 站週期圖

V14CPHY0.1HA V14CTCY0.1H0 V151PHY0.1HA V151TCY0.1H0 V152PHY0.1HA V152TCY0.1H0
V153PHY0.1HA V153TCY0.1H0 V154PHY0.1HA V154TCY0.1H0 V155PHY0.1HA V155TCY0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

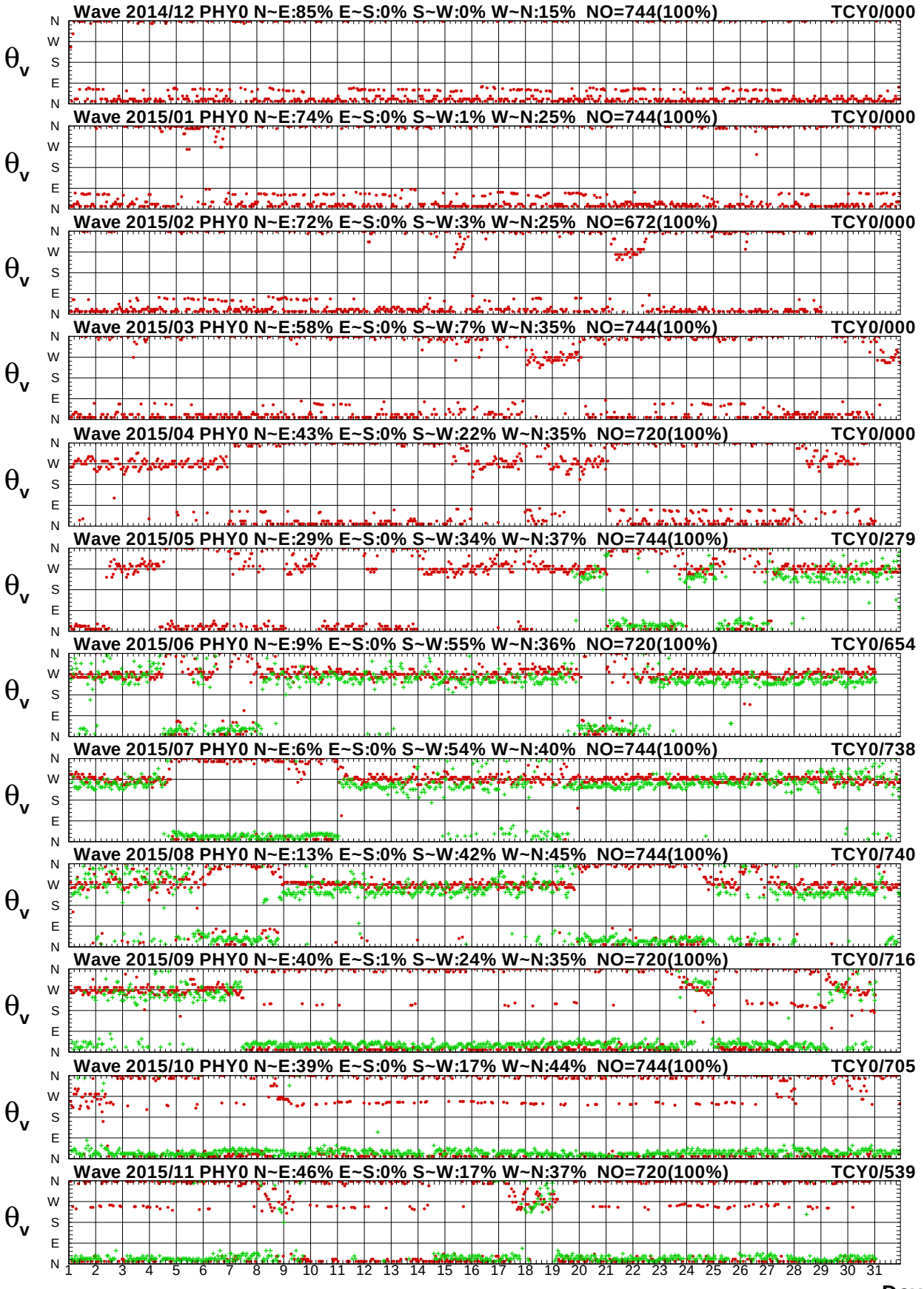


圖 10.6c　2015年每月澎湖海域 Y 站與中雲海域 Y 站波向圖

V14CPHY0.1HA V14CTCY0.1H0 V151PHY0.1HA V151TCY0.1H0 V152PHY0.1HA V152TCY0.1H0
V153PHY0.1HA V153TCY0.1H0 V154PHY0.1HA V154TCY0.1H0 V155PHY0.1HA V155TCY0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

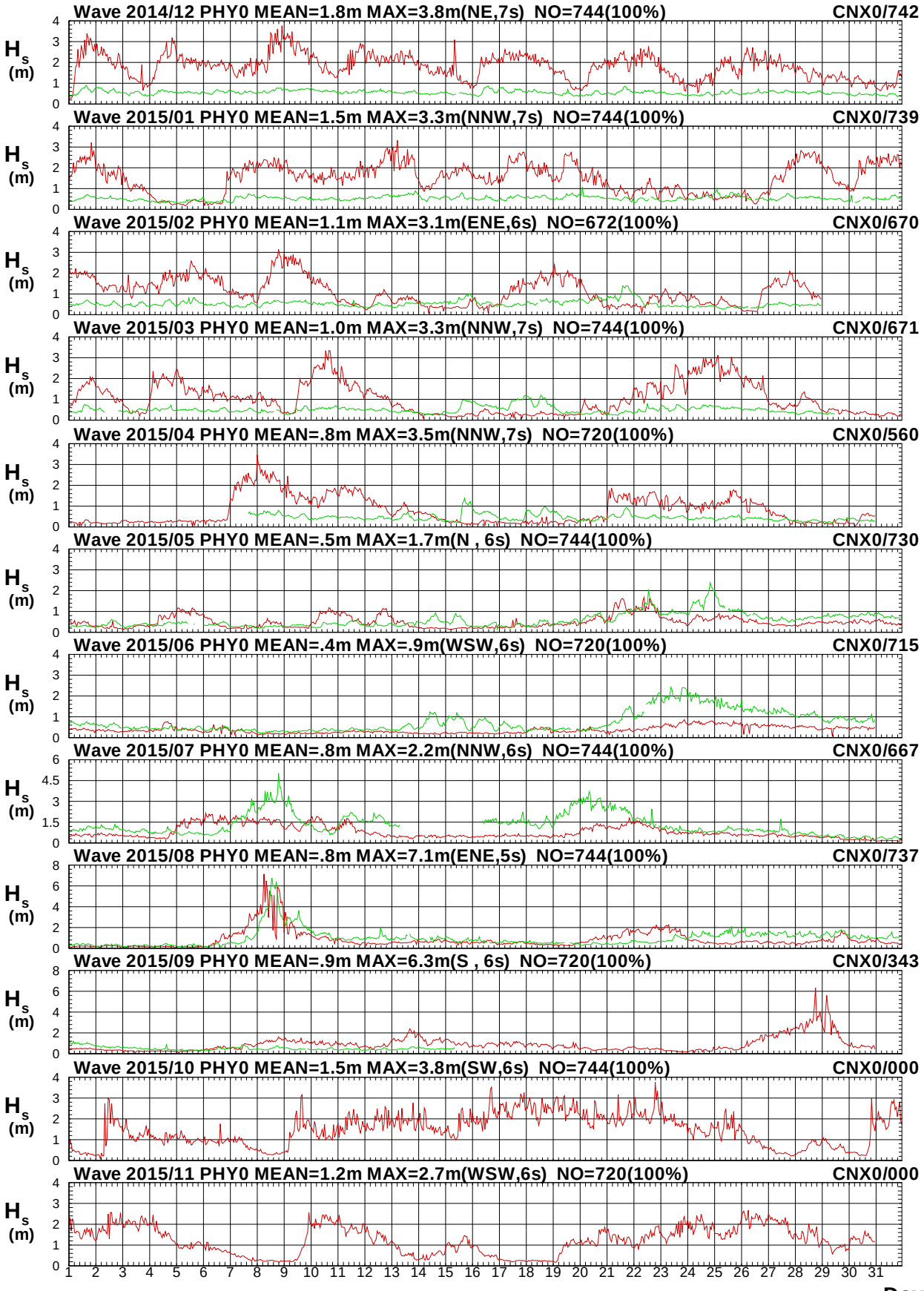


圖 10.7a　2015年每月澎湖海域 Y 站與嘉南海域 X 站波高圖

V14CPHY0.1HA V14CCNX0.1H0 V151PHY0.1HA V151CNX0.1H0 V152PHY0.1HA V152CNX0.1H0
V153PHY0.1HA V153CNX0.1H0 V154PHY0.1HA V154CNX0.1H0 V155PHY0.1HA V155CNX0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

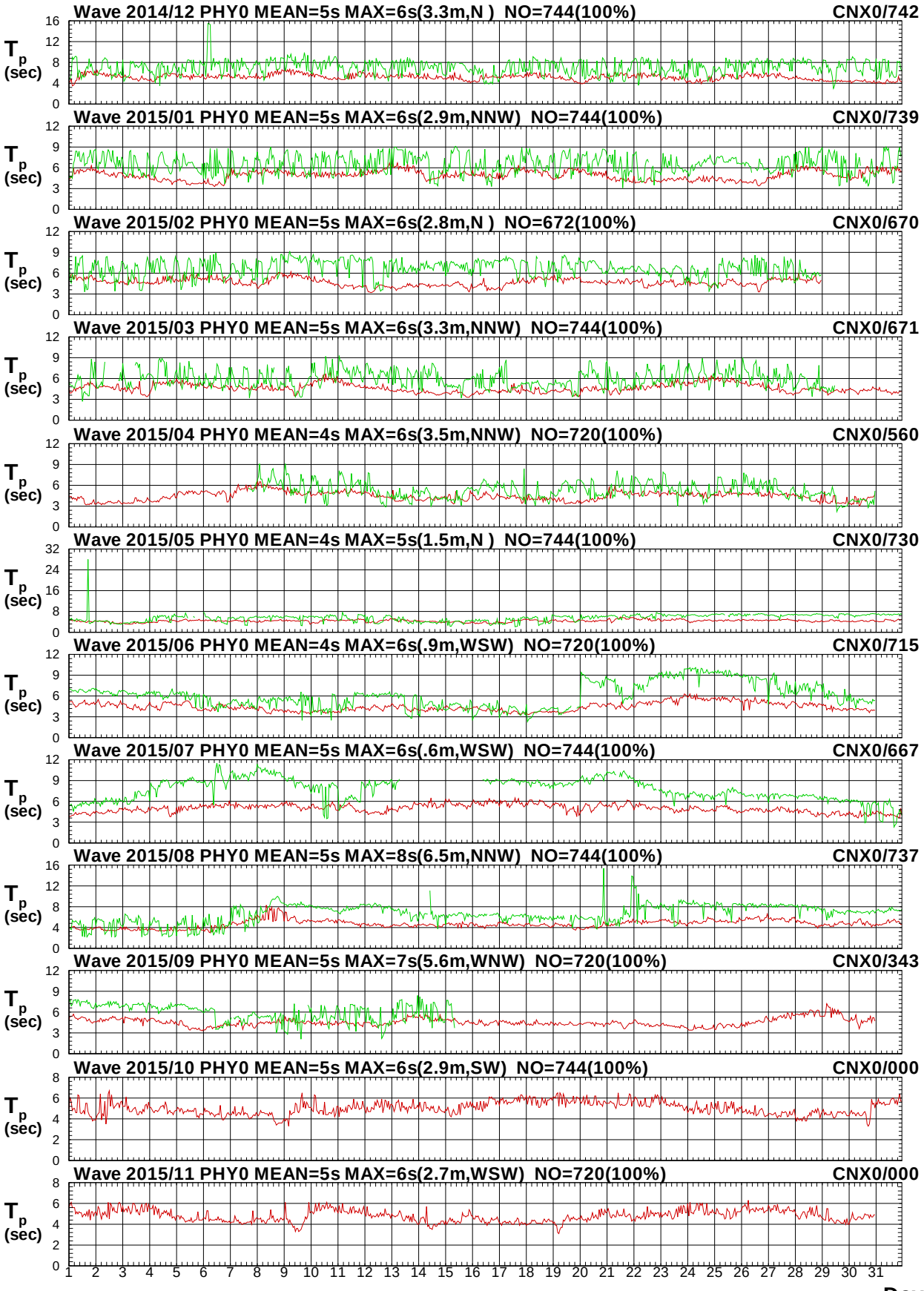


圖 10.7b　2015年每月澎湖海域 Y 站與嘉南海域 X 站週期圖

V14CPHY0.1HA V14CCNX0.1H0 V151PHY0.1HA V151CNX0.1H0 V152PHY0.1HA V152CNX0.1H0
V153PHY0.1HA V153CNX0.1H0 V154PHY0.1HA V154CNX0.1H0 V155PHY0.1HA V155CNX0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

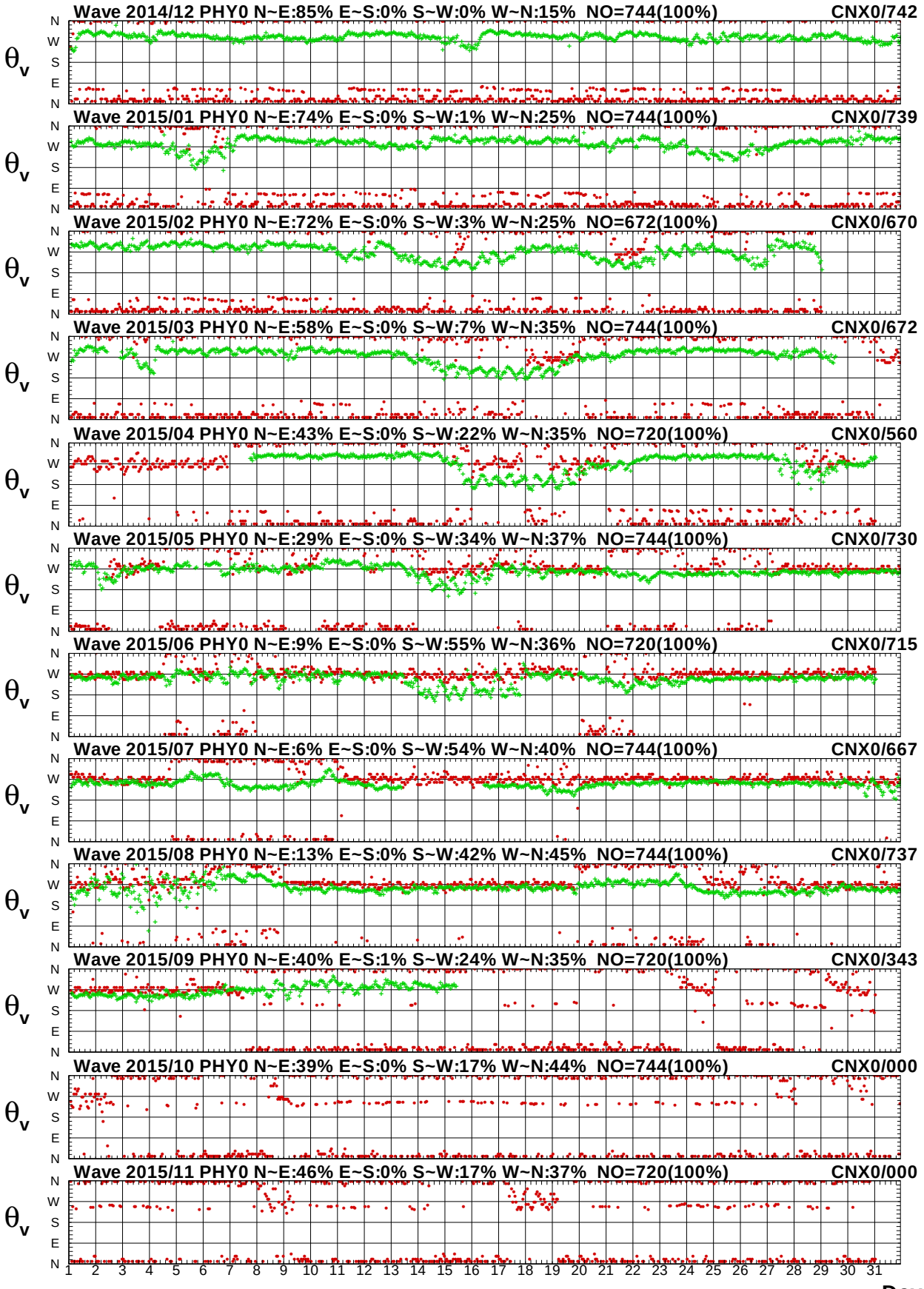


圖 10.7c　2015年每月澎湖海域 Y 站與嘉南海域 X 站波向圖

V14CPHY0.1HA V14CCNX0.1H0 V151PHY0.1HA V151CNX0.1H0 V152PHY0.1HA V152CNX0.1H0
V153PHY0.1HA V153CNX0.1H0 V154PHY0.1HA V154CNX0.1H0 V155PHY0.1HA V155CNX0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

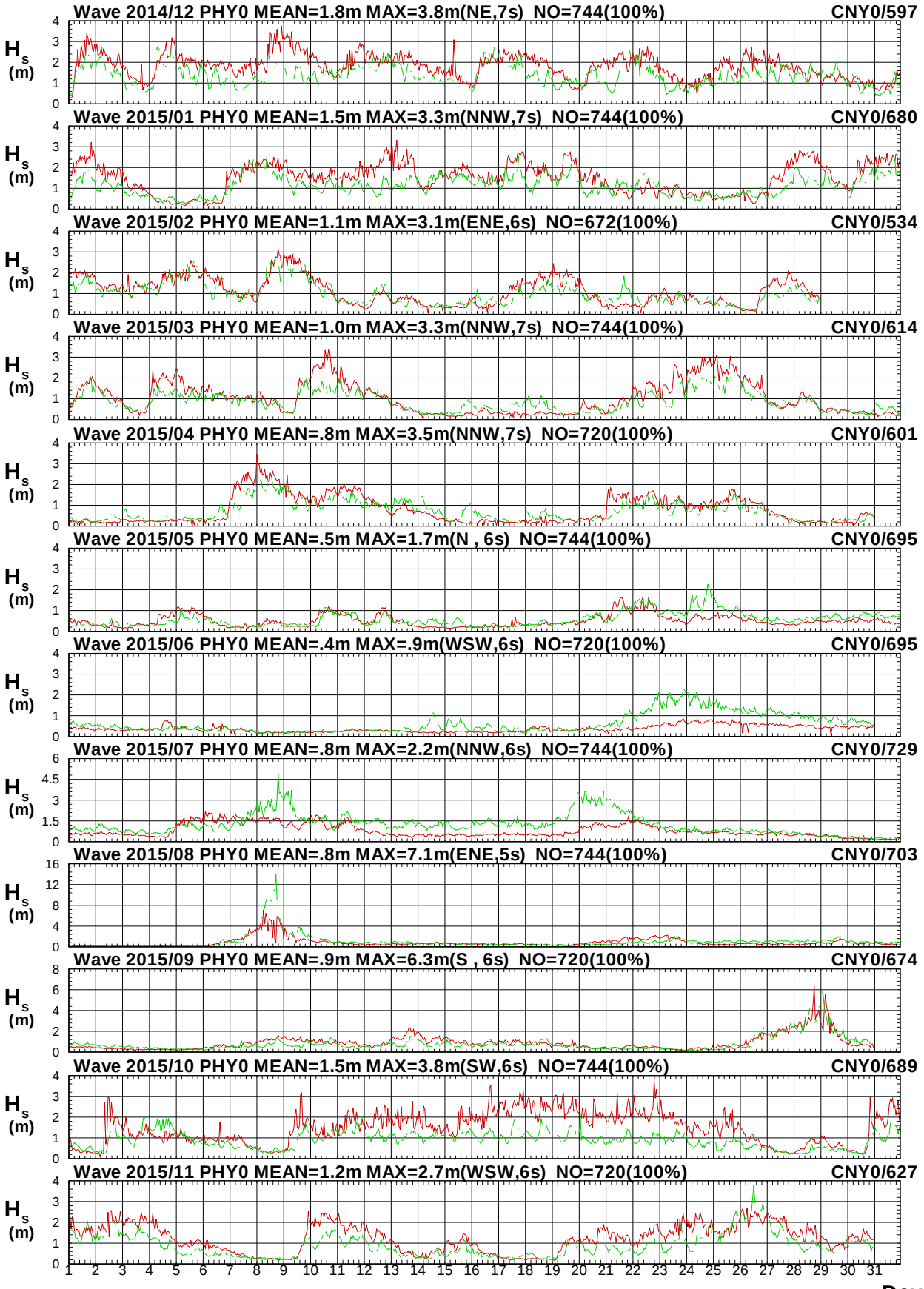


圖 10.8a　2015年每月澎湖海域 Y 站與嘉南海域 Y 站波高圖

V14CPHY0.1HA V14CCNY0.1H0 V151PHY0.1HA V151CNY0.1H0 V152PHY0.1HA V152CNY0.1H0
V153PHY0.1HA V153CNY0.1H0 V154PHY0.1HA V154CNY0.1H0 V155PHY0.1HA V155CNY0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

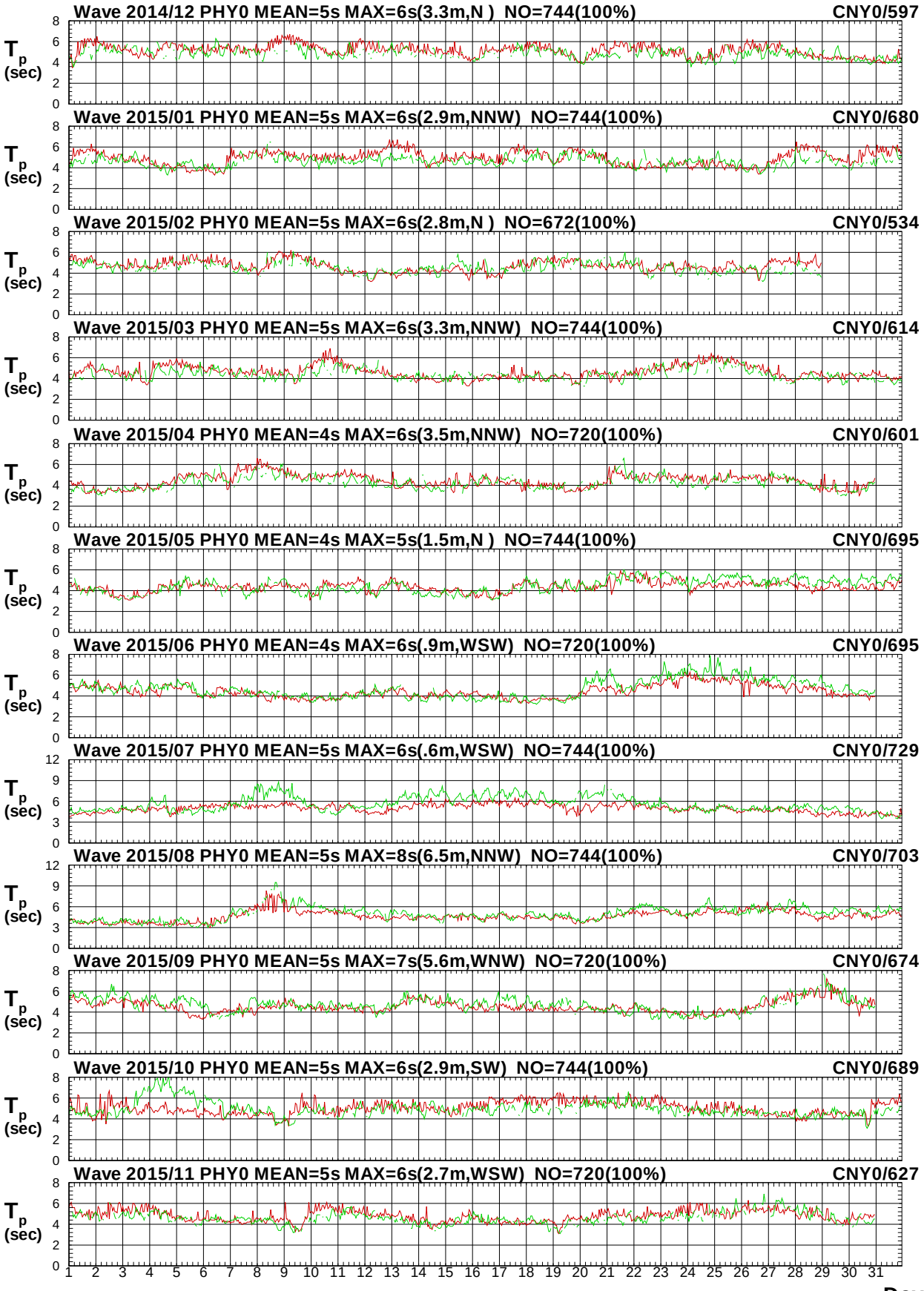


圖 10.8b　2015年每月澎湖海域 Y 站與嘉南海域 Y 站週期圖

V14CPHY0.1HA V14CCNY0.1H0 V151PHY0.1HA V151CNY0.1H0 V152PHY0.1HA V152CNY0.1H0
V153PHY0.1HA V153CNY0.1H0 V154PHY0.1HA V154CNY0.1H0 V155PHY0.1HA V155CNY0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

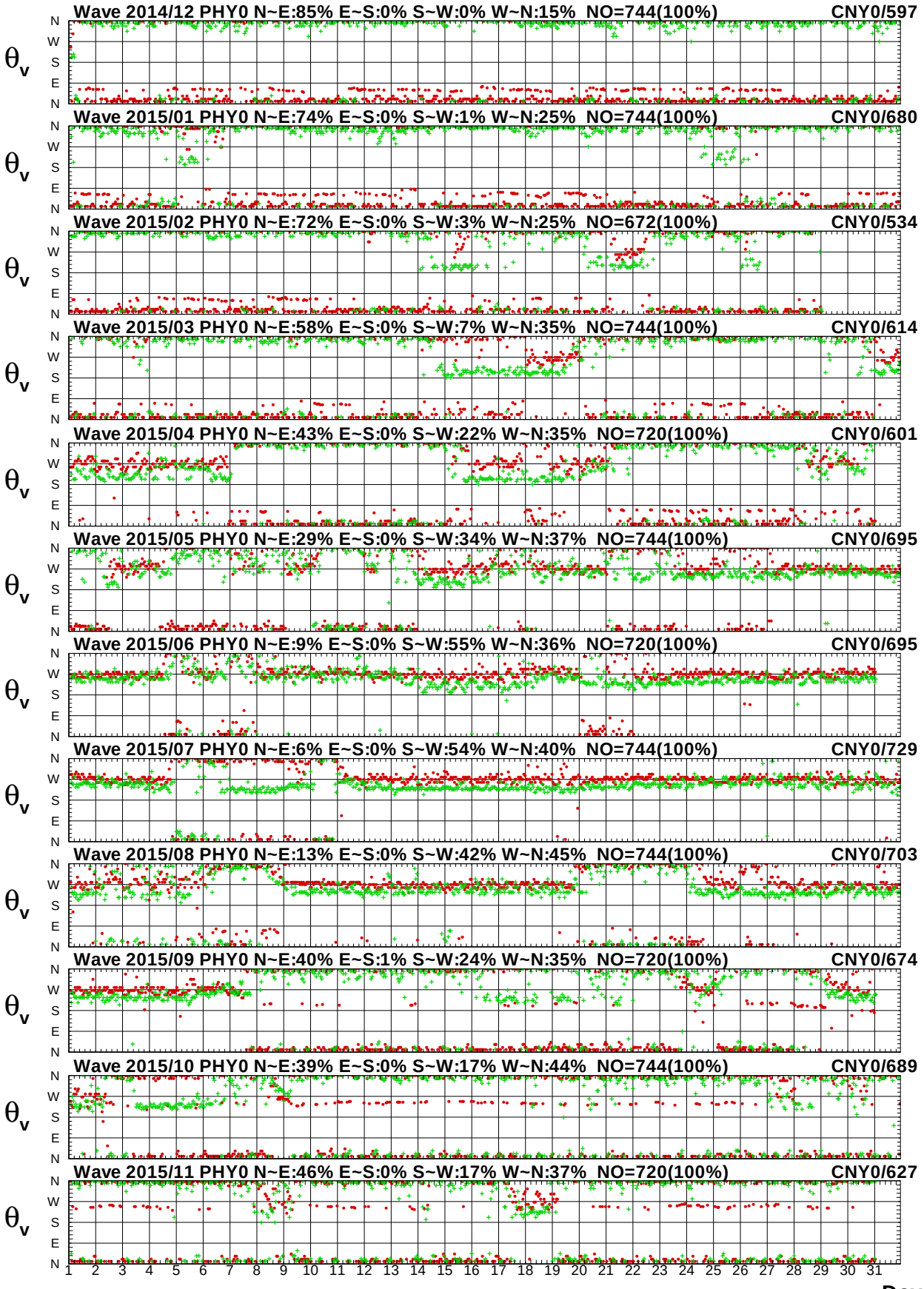


圖 10.8c　2015年每月澎湖海域 Y 站與嘉南海域 Y 站波向圖

V14CPHY0.1HA V14CCNY0.1H0 V151PHY0.1HA V151CNY0.1H0 V152PHY0.1HA V152CNY0.1H0
V153PHY0.1HA V153CNY0.1H0 V154PHY0.1HA V154CNY0.1H0 V155PHY0.1HA V155CNY0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

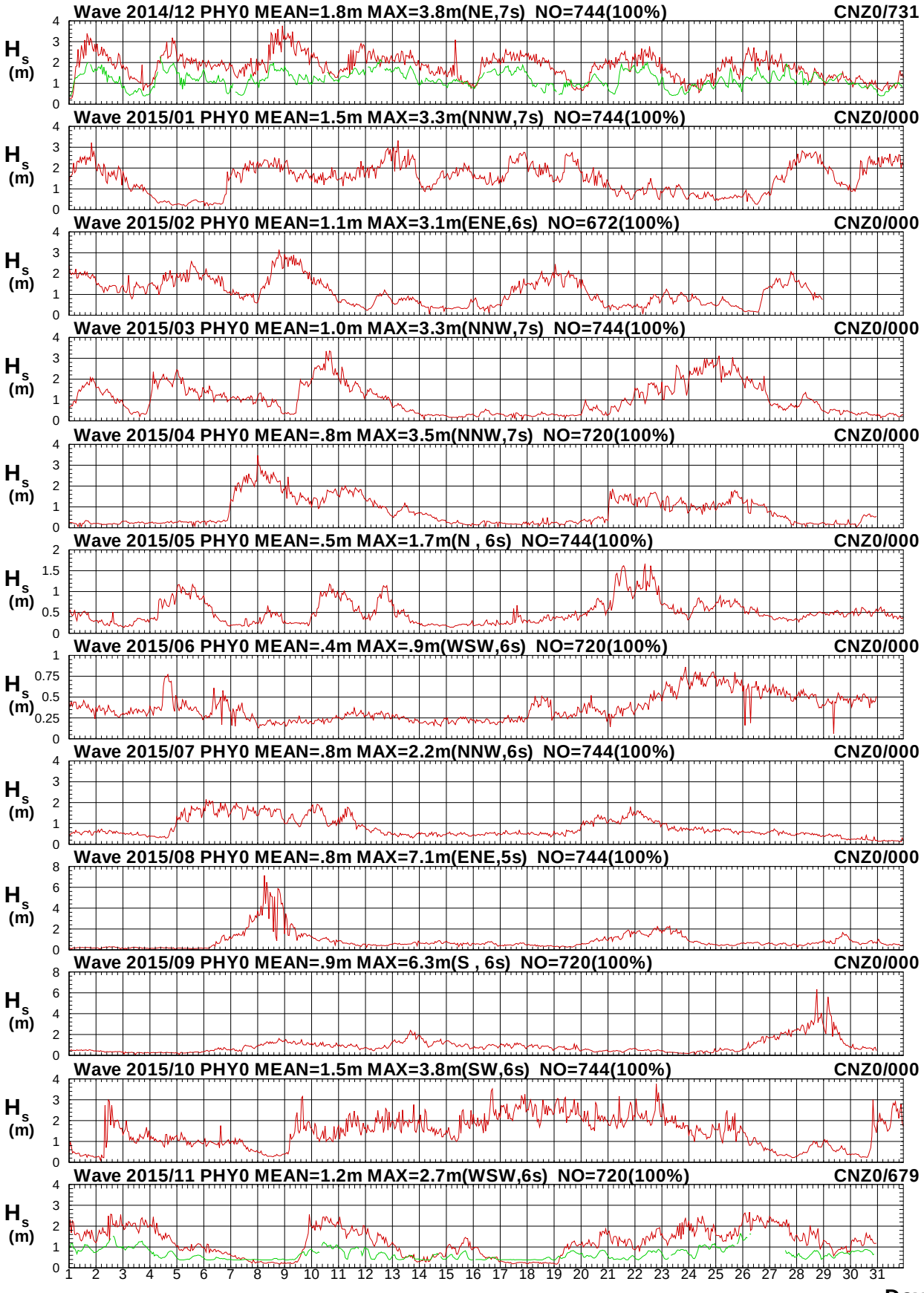


圖 10.9a　2015年每月澎湖海域 Y 站與嘉南海域 Z 站波高圖

V14CPHY0.1HA V14CCNZ0.1H0 V151PHY0.1HA V151CNZ0.1H0 V152PHY0.1HA V152CNZ0.1H0
V153PHY0.1HA V153CNZ0.1H0 V154PHY0.1HA V154CNZ0.1H0 V155PHY0.1HA V155CNZ0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

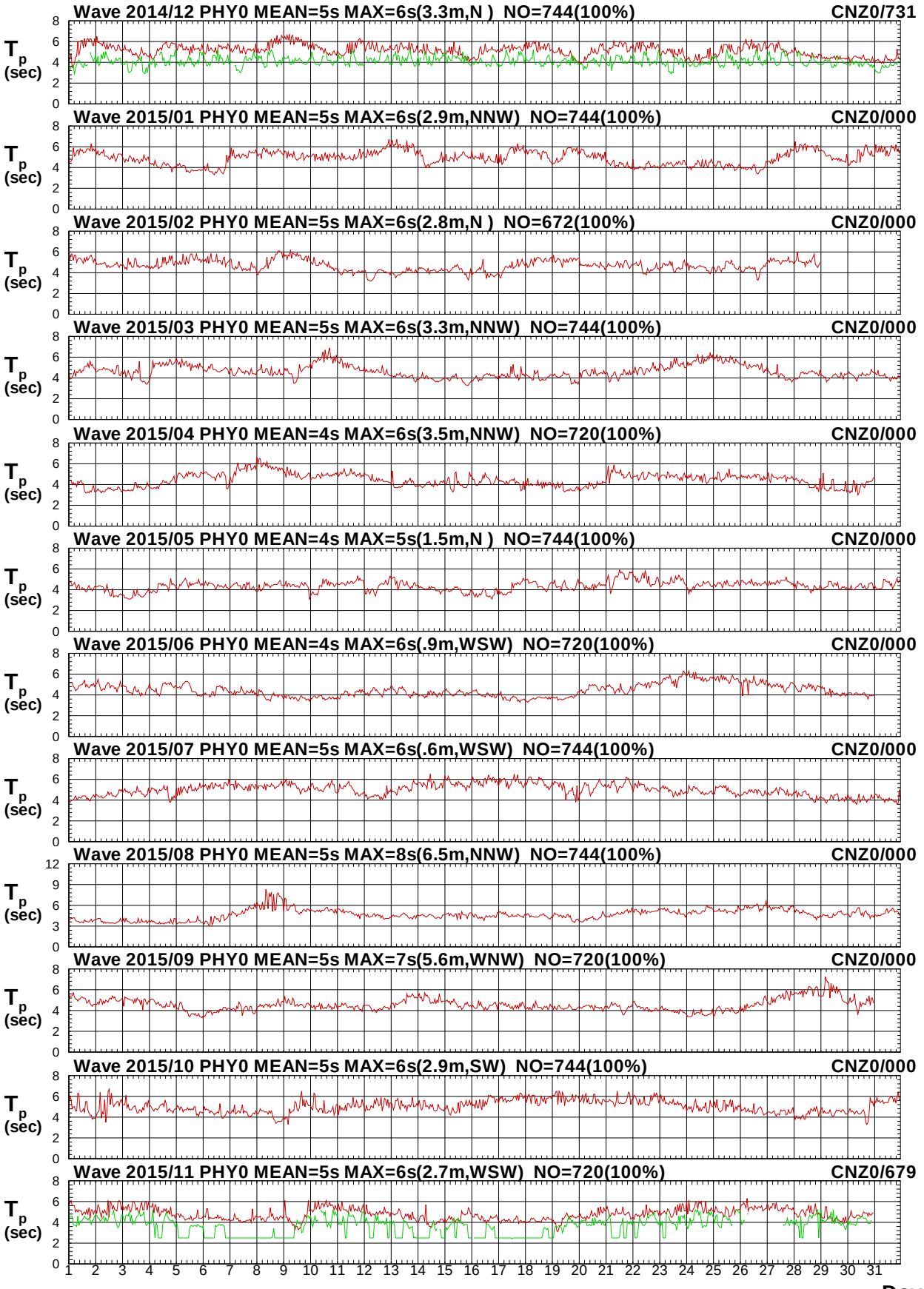


圖 10.9b　2015年每月澎湖海域 Y 站與嘉南海域 Z 站週期圖

V14CPHY0.1HA V14CCNZ0.1H0 V151PHY0.1HA V151CNZ0.1H0 V152PHY0.1HA V152CNZ0.1H0
V153PHY0.1HA V153CNZ0.1H0 V154PHY0.1HA V154CNZ0.1H0 V155PHY0.1HA V155CNZ0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

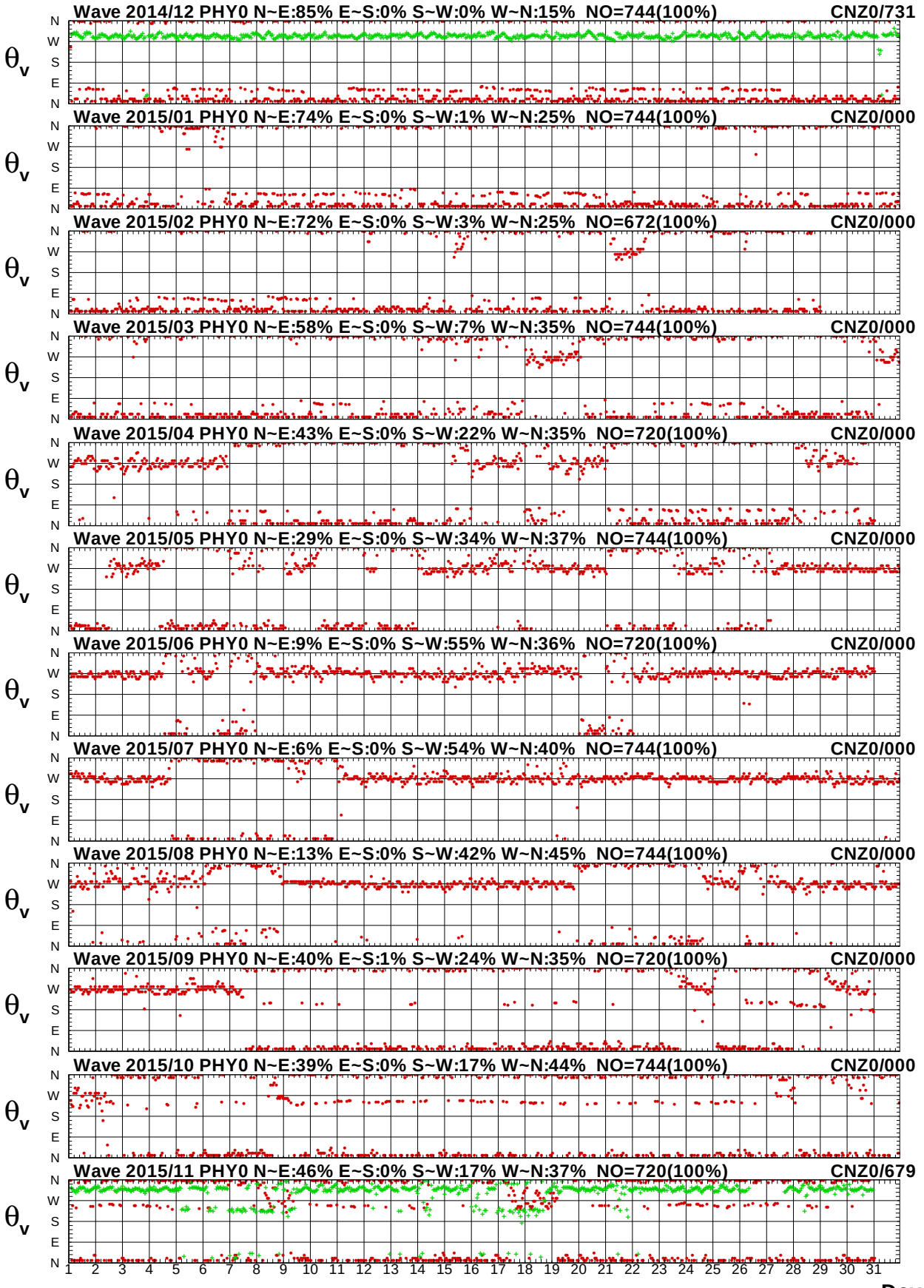


圖10.9c　2015年每月澎湖海域 Y 站與嘉南海域 Z 站波向圖

V14CPHY0.1HA V14CCNZ0.1H0 V151PHY0.1HA V151CNZ0.1H0 V152PHY0.1HA V152CNZ0.1H0
V153PHY0.1HA V153CNZ0.1H0 V154PHY0.1HA V154CNZ0.1H0 V155PHY0.1HA V155CNZ0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

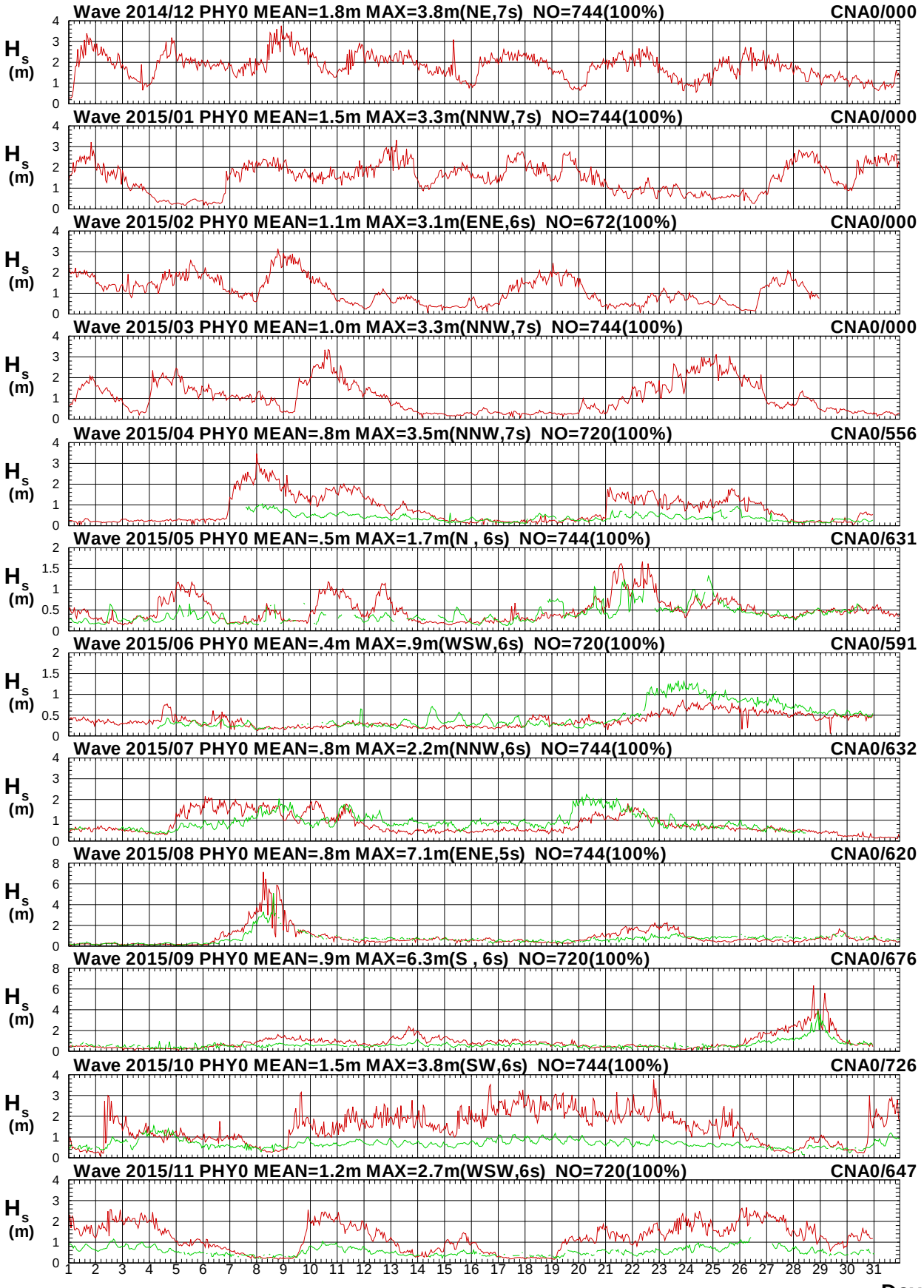


圖 10.10a　2015年每月澎湖海域 Y 站與嘉南海域 A 站波高圖

V14CPHY0.1HA V14CCNA0.1H0 V151PHY0.1HA V151CNA0.1H0 V152PHY0.1HA V152CNA0.1H0
V153PHY0.1HA V153CNA0.1H0 V154PHY0.1HA V154CNA0.1H0 V155PHY0.1HA V155CNA0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

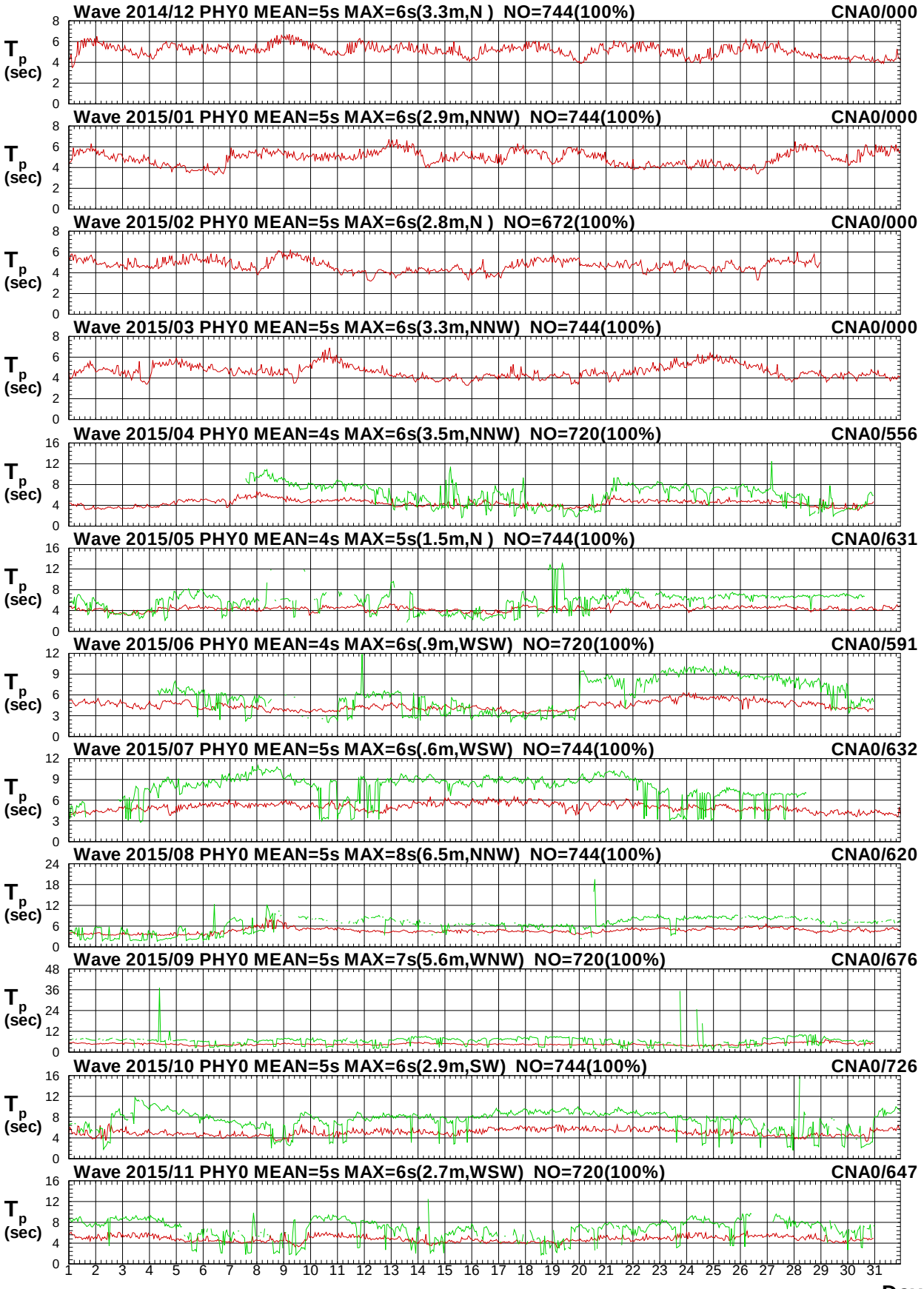


圖 10.10b　2015年每月澎湖海域 Y 站與嘉南海域 A 站週期圖

V14CPHY0.1HA V14CCNA0.1H0 V151PHY0.1HA V151CNA0.1H0 V152PHY0.1HA V152CNA0.1H0
V153PHY0.1HA V153CNA0.1H0 V154PHY0.1HA V154CNA0.1H0 V155PHY0.1HA V155CNA0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

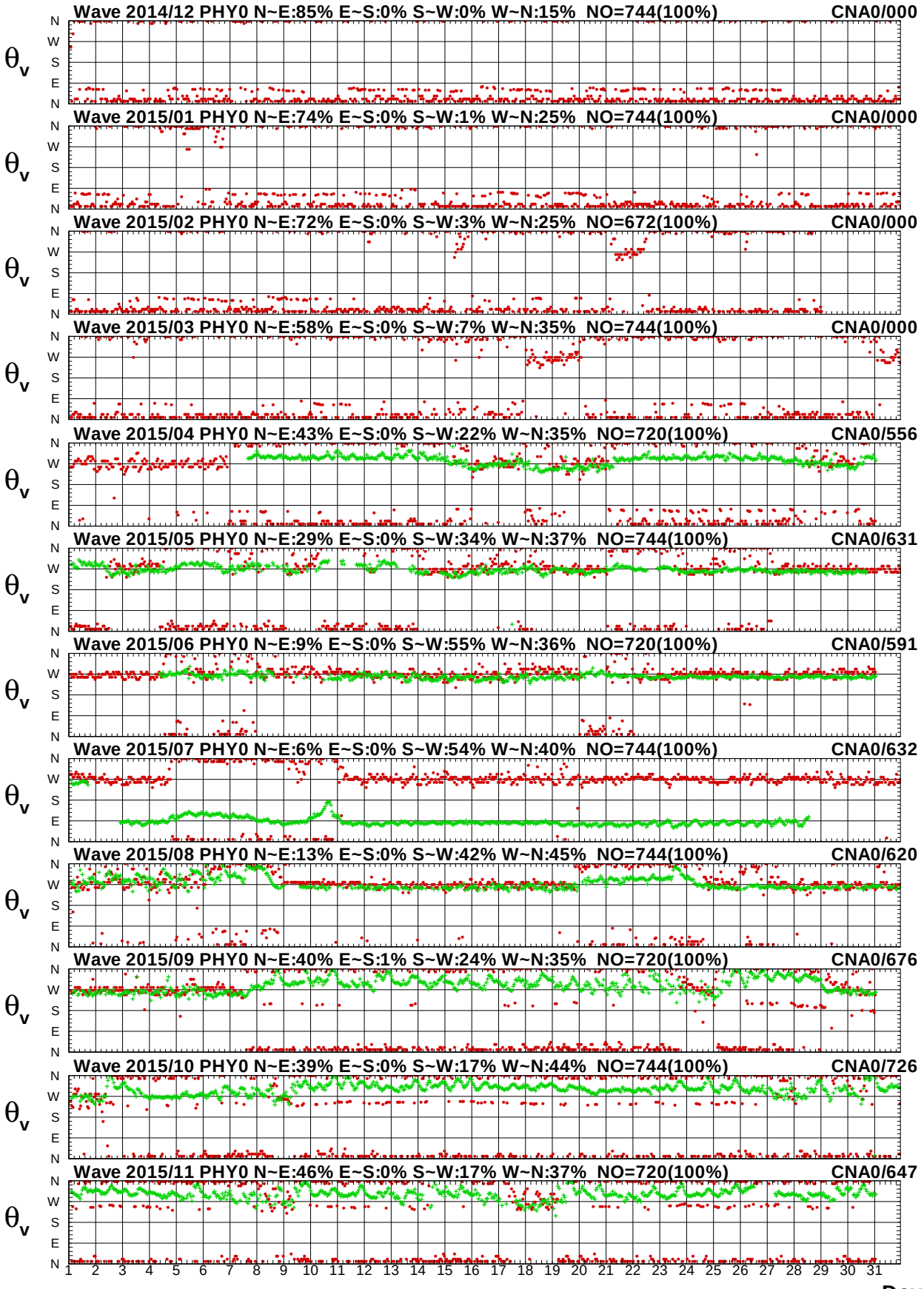


圖 10.10c　2015年每月澎湖海域 Y 站與嘉南海域 A 站波向圖

V14CPHY0.1HA V14CCNA0.1H0 V151PHY0.1HA V151CNA0.1H0 V152PHY0.1HA V152CNA0.1H0
V153PHY0.1HA V153CNA0.1H0 V154PHY0.1HA V154CNA0.1H0 V155PHY0.1HA V155CNA0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

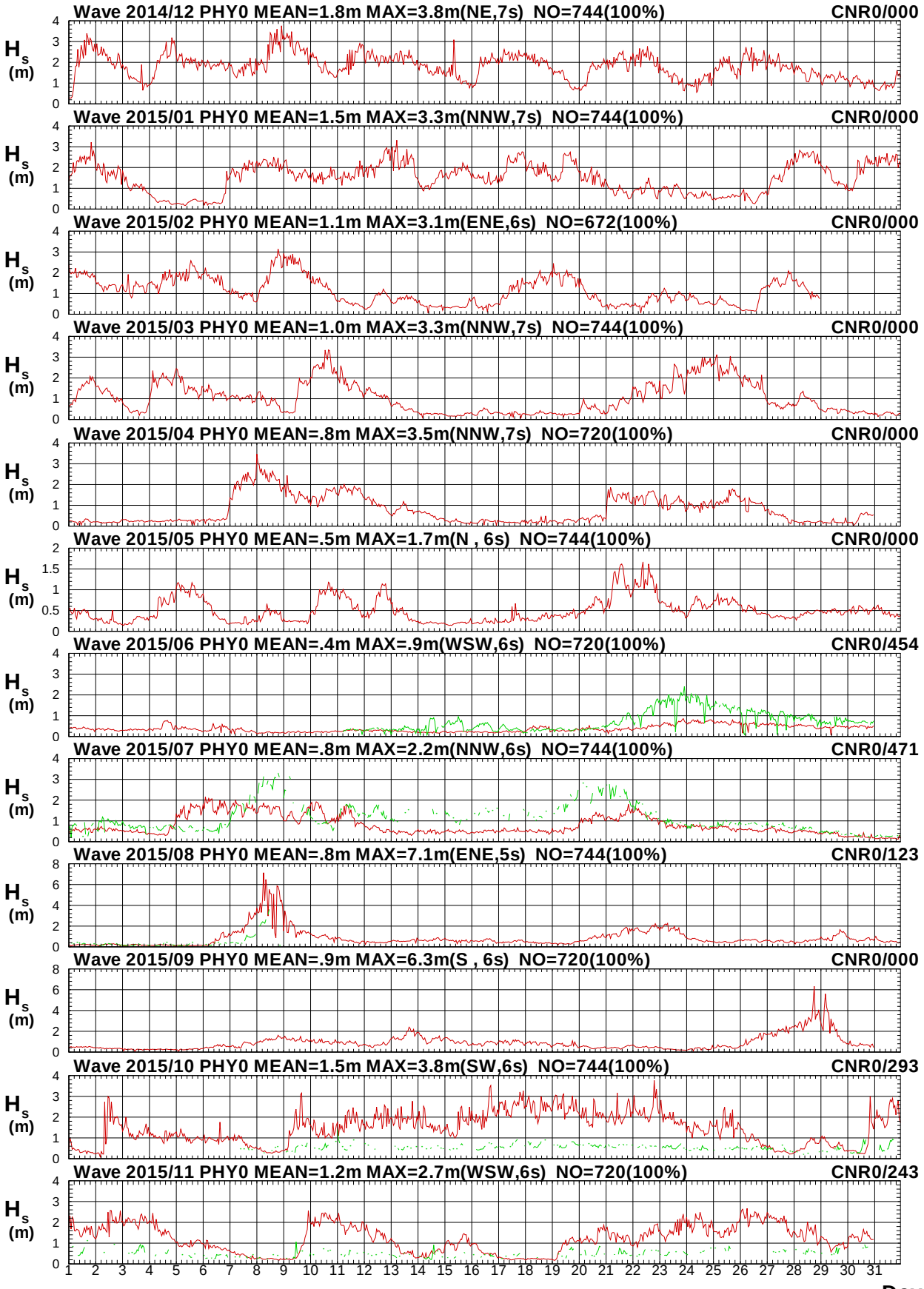


圖 10.11a　2015年每月澎湖海域 Y 站與嘉南海域 R 站波高圖

V14CPHY0.1HA V14CCNR0.1H0 V151PHY0.1HA V151CNR0.1H0 V152PHY0.1HA V152CNR0.1H0
V153PHY0.1HA V153CNR0.1H0 V154PHY0.1HA V154CNR0.1H0 V155PHY0.1HA V155CNR0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

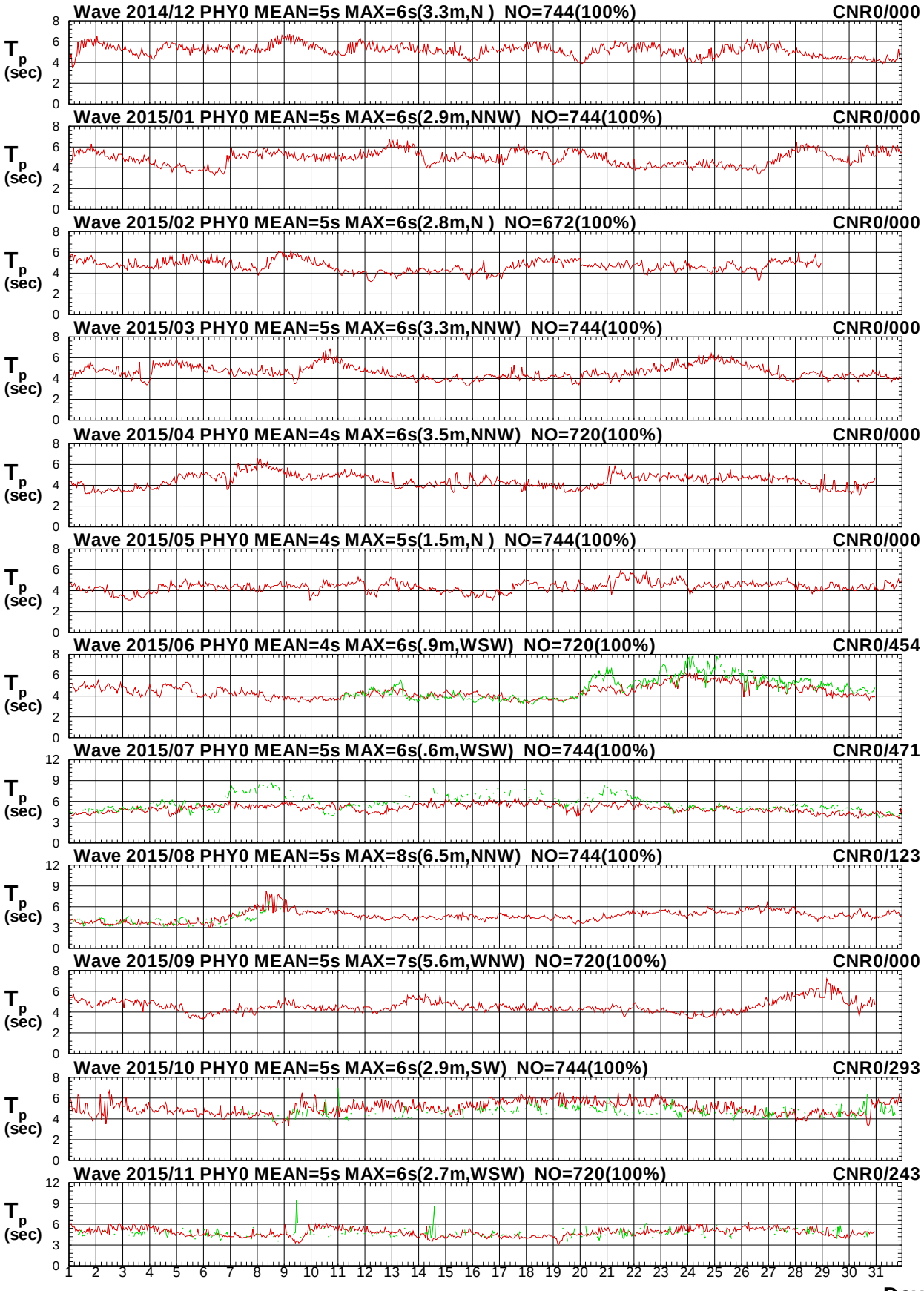


圖 10.11b　2015年每月澎湖海域 Y 站與嘉南海域 R 站週期圖

V14CPHY0.1HA V14CCNR0.1H0 V151PHY0.1HA V151CNR0.1H0 V152PHY0.1HA V152CNR0.1H0
V153PHY0.1HA V153CNR0.1H0 V154PHY0.1HA V154CNR0.1H0 V155PHY0.1HA V155CNR0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

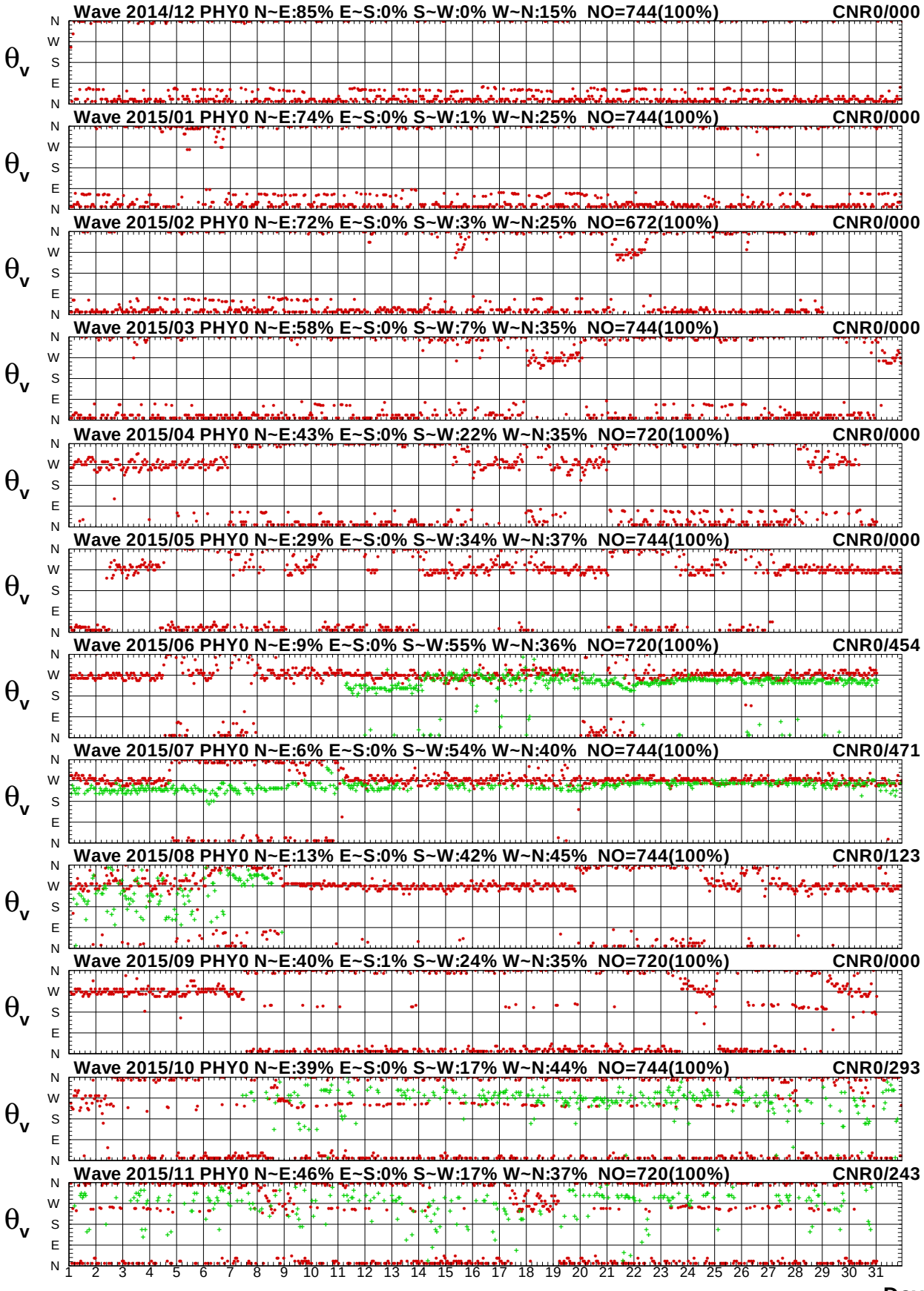


圖 10.11c　2015年每月澎湖海域 Y 站與嘉南海域 R 站波向圖

V14CPHY0.1HA V14CCNR0.1H0 V151PHY0.1HA V151CNR0.1H0 V152PHY0.1HA V152CNR0.1H0
V153PHY0.1HA V153CNR0.1H0 V154PHY0.1HA V154CNR0.1H0 V155PHY0.1HA V155CNR0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

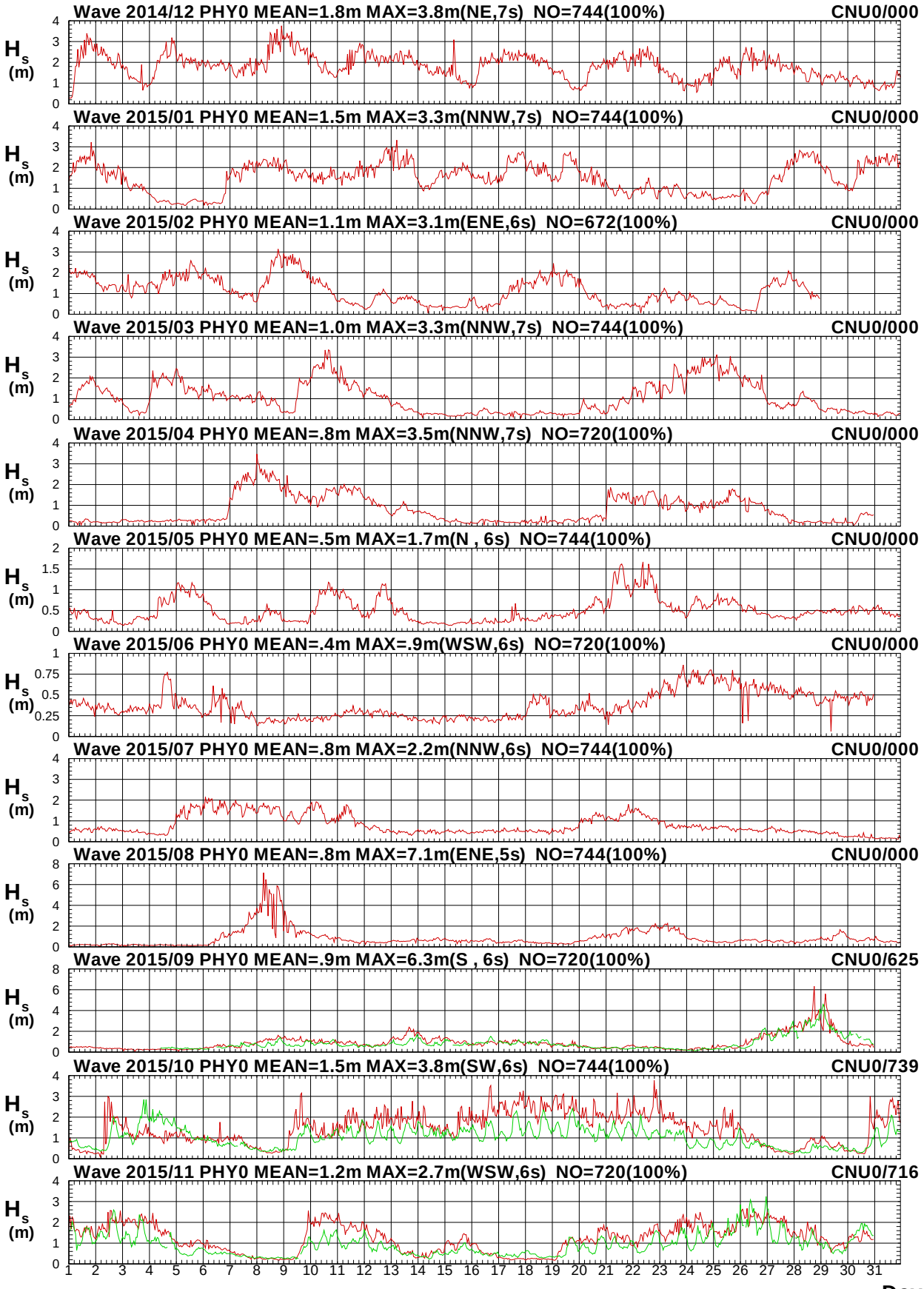


圖 10.12a　2015年每月澎湖海域 Y 站與嘉南海域 U 站波高圖

V14CPHY0.1HA V14CCNU0.1H0 V151PHY0.1HA V151CNU0.1H0 V152PHY0.1HA V152CNU0.1H0
V153PHY0.1HA V153CNU0.1H0 V154PHY0.1HA V154CNU0.1H0 V155PHY0.1HA V155CNU0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

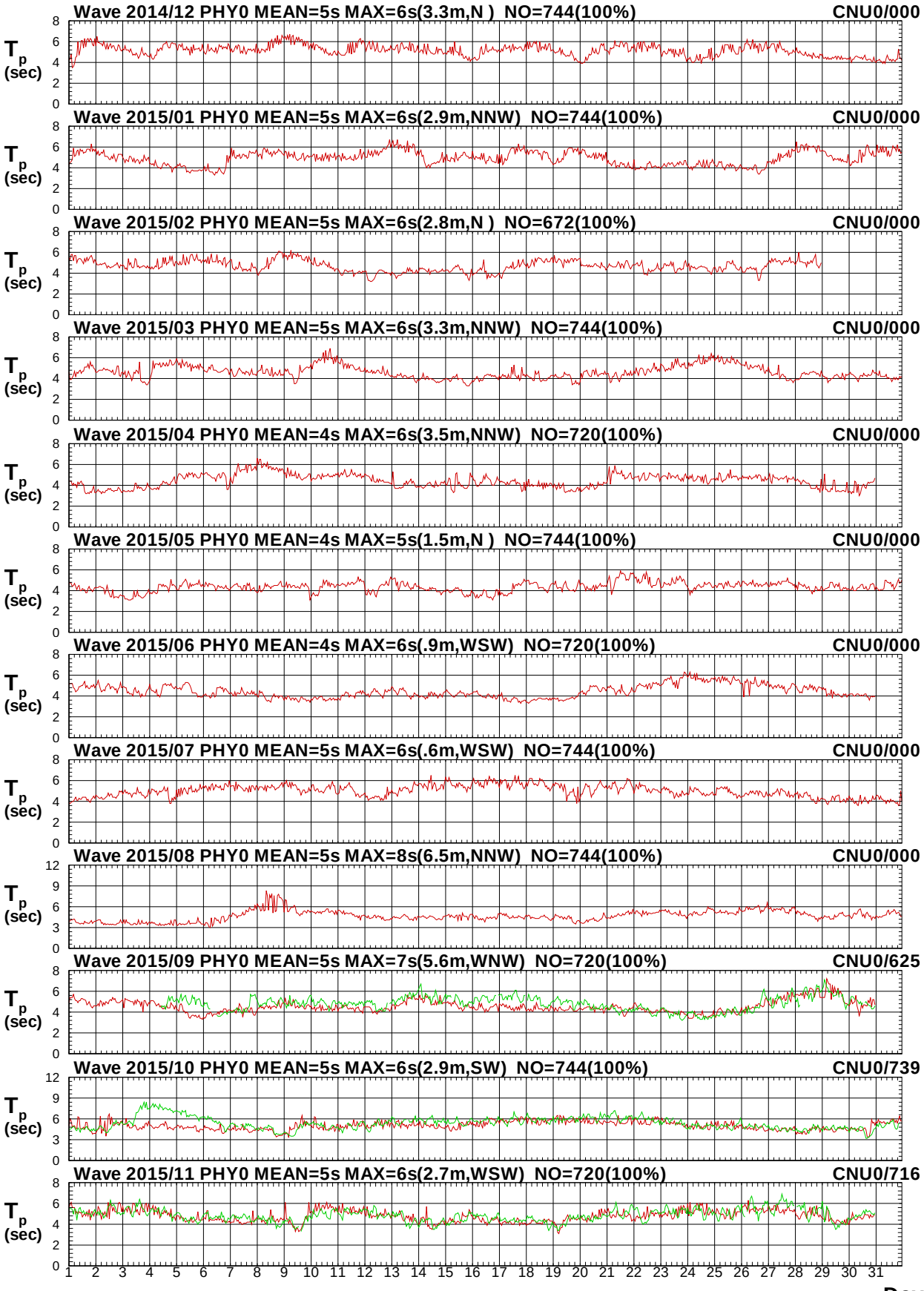


圖 10.12b　2015年每月澎湖海域 Y 站與嘉南海域 U 站週期圖

V14CPHY0.1HA V14CCNU0.1H0 V151PHY0.1HA V151CNU0.1H0 V152PHY0.1HA V152CNU0.1H0
V153PHY0.1HA V153CNU0.1H0 V154PHY0.1HA V154CNU0.1H0 V155PHY0.1HA V155CNU0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

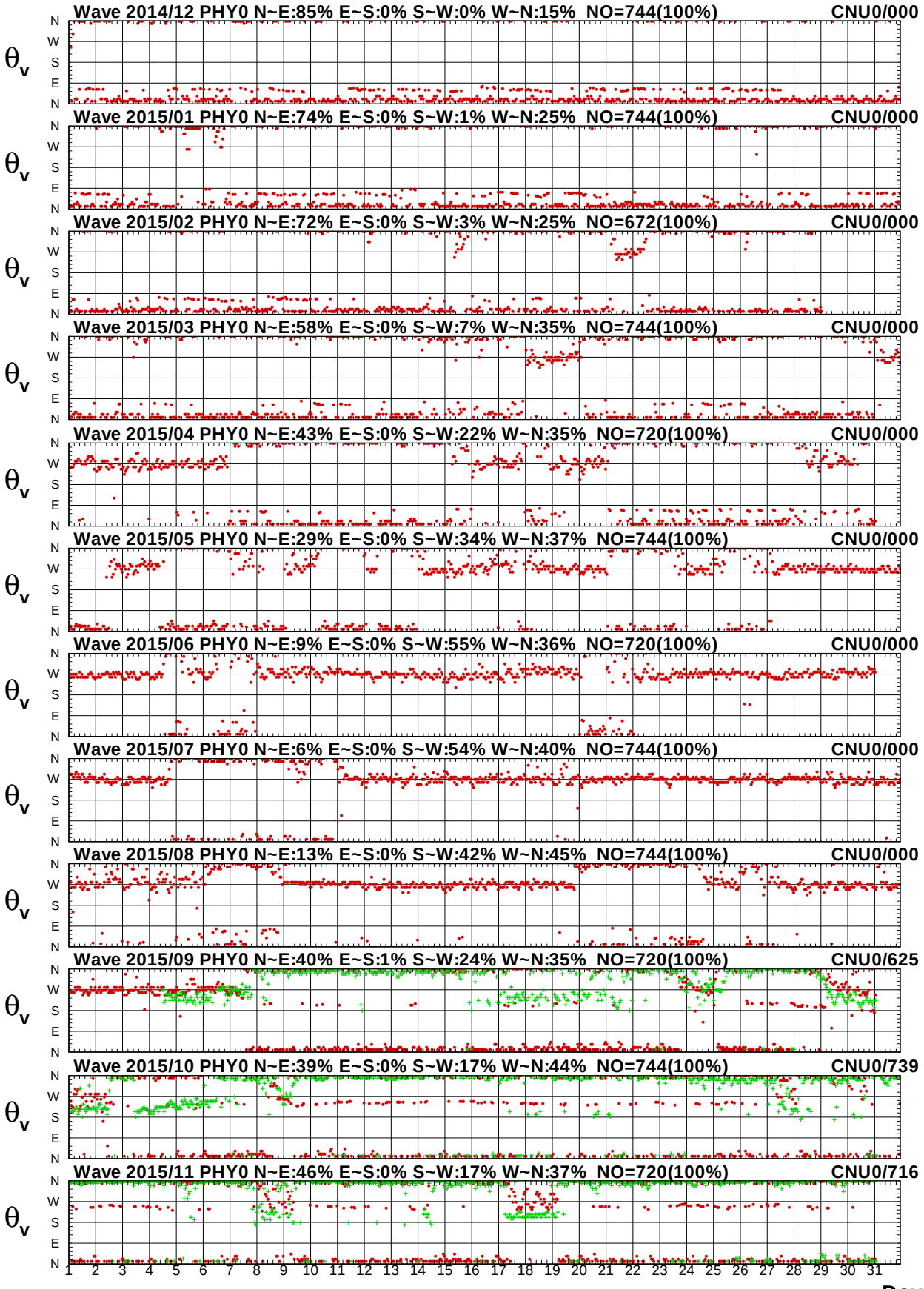


圖 10.12c　2015年每月澎湖海域 Y 站與嘉南海域 U 站波向圖

V14CPHY0.1HA V14CCNU0.1H0 V151PHY0.1HA V151CNU0.1H0 V152PHY0.1HA V152CNU0.1H0
V153PHY0.1HA V153CNU0.1H0 V154PHY0.1HA V154CNU0.1H0 V155PHY0.1HA V155CNU0.1H0

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Wave H_s in Peng-Hu Seas of PHY0 at 2015

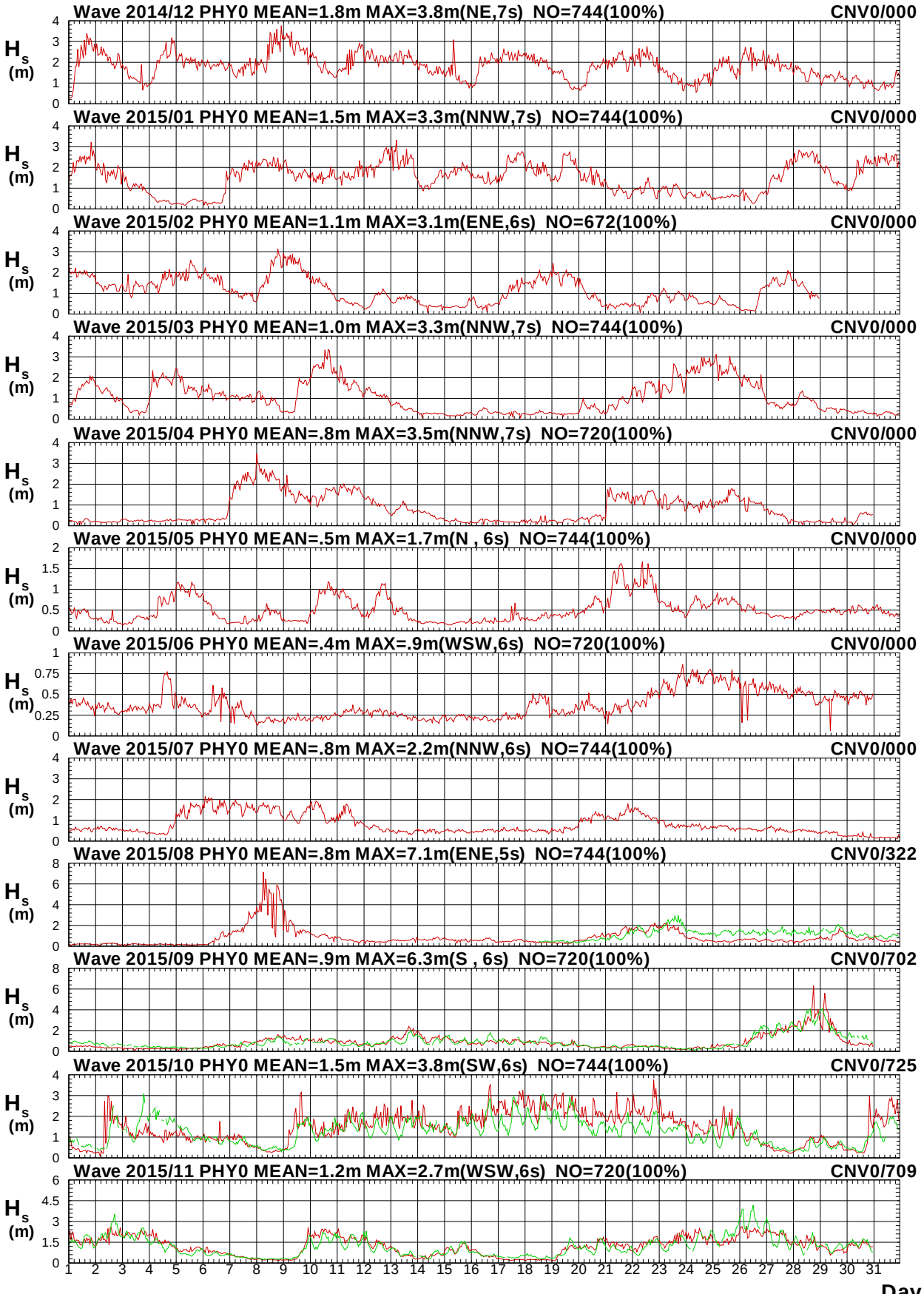


圖 10.13a　2015年每月澎湖海域 Y 站與嘉南海域 V 站波高圖

V14CPHY0.1HA V14CCNV0.1H0 V151PHY0.1HA V151CNV0.1H0 V152PHY0.1HA V152CNV0.1H0
V153PHY0.1HA V153CNV0.1H0 V154PHY0.1HA V154CNV0.1H0 V155PHY0.1HA V155CNV0.1H0

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Wave T_p in Peng-Hu Seas of PHY0 at 2015

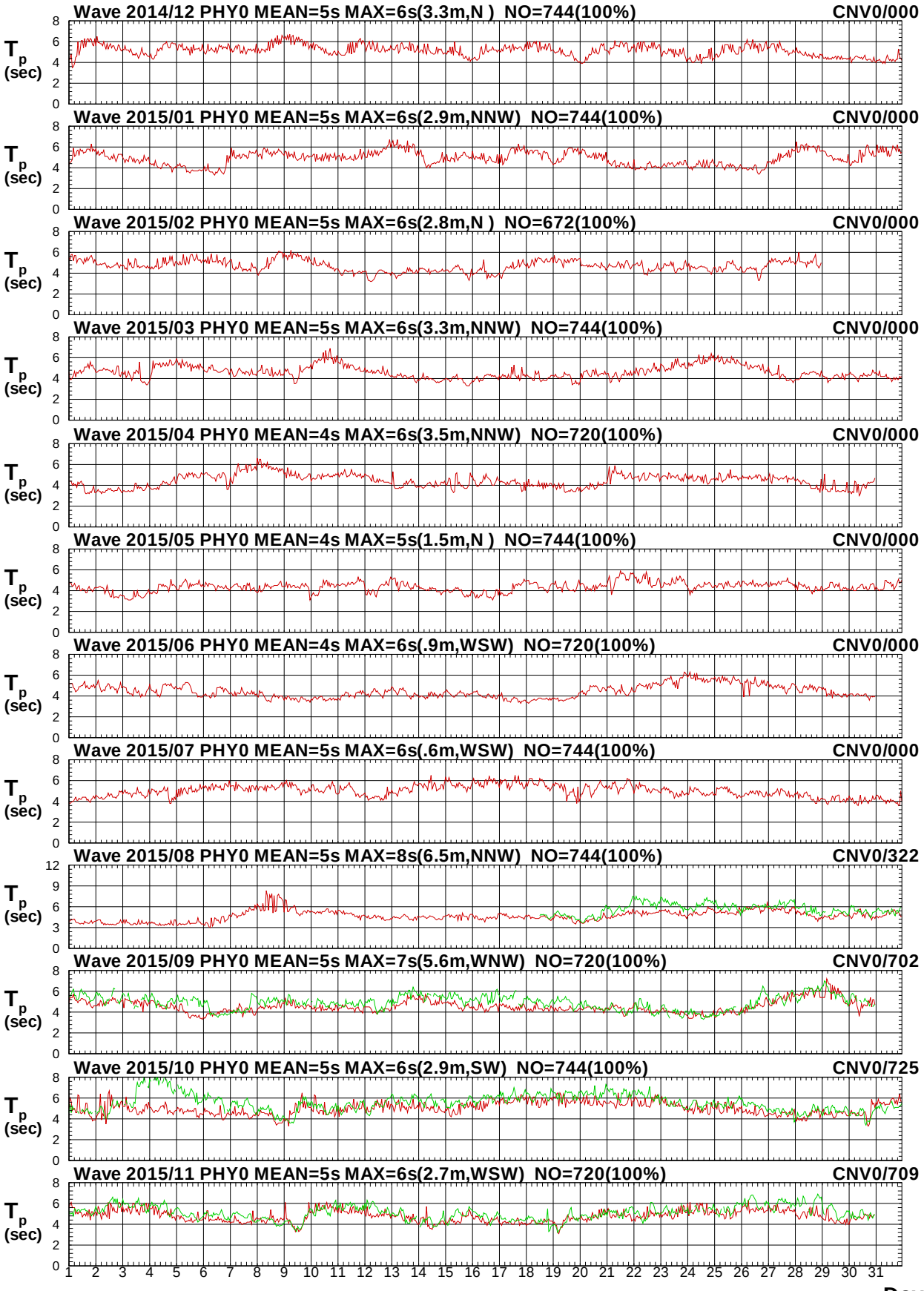


圖 10.13b　2015年每月澎湖海域 Y 站與嘉南海域 V 站週期圖

V14CPHY0.1HA V14CCNV0.1H0 V151PHY0.1HA V151CNV0.1H0 V152PHY0.1HA V152CNV0.1H0
V153PHY0.1HA V153CNV0.1H0 V154PHY0.1HA V154CNV0.1H0 V155PHY0.1HA V155CNV0.1H0

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Wave Direction in Peng-Hu Seas of PHY0 at 2015

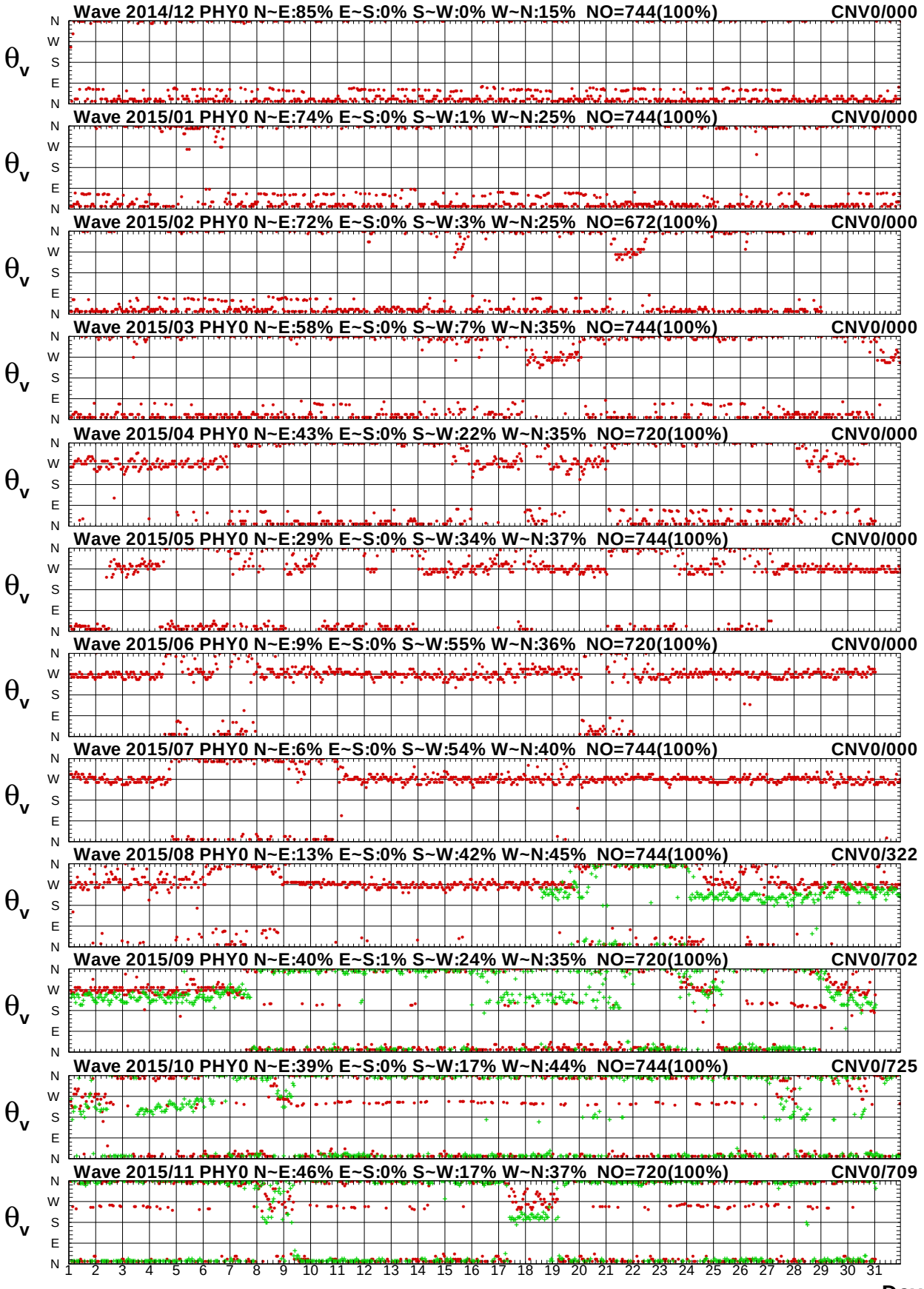


圖 10.13c　2015年每月澎湖海域 Y 站與嘉南海域 V 站波向圖

第十一章　2015 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**，2015 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 2015 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	2014/02-2015/11(觀測中)	港研中心	羅港港區外海
A	24°25'8"N	118°16'41"E	2014/02-2015/11(觀測中)	港研中心	水頭港區外海
Y	23°43'37"N	119°33'07"E	2000/07-2015/11(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 2015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				
2014/12月	727 (97.7%)	709 (95.3%)	725 (97.4%)	*	*	*	*	*
2015/ 1月	691 (92.9%)	685 (92.1%)	742 (99.7%)	*	*	*	*	*
2015/ 2月	665 (99.0%)	657 (97.8%)	663 (98.7%)	*	*	*	*	*
2015/ 3月	736 (98.9%)	741 (99.6%)	719 (96.6%)	*	*	*	*	*
2015/ 4月	711 (98.8%)	714 (99.2%)	683 (94.9%)	*	*	*	*	*
2015/ 5月	740 (99.5%)	743 (99.9%)	739 (99.3%)	*	*	*	*	*
2015/ 6月	711 (98.8%)	719 (99.9%)	718 (99.7%)	*	*	*	*	*
2015/ 7月	731 (98.3%)	595 (80.0%)	743 (99.9%)	*	*	*	*	*
2015/ 8月	736 (98.9%)	732 (98.4%)	736 (98.9%)	*	*	*	*	*
2015/ 9月	665 (92.4%)	632 (87.8%)	716 (99.4%)	*	*	*	*	*
2015/10月	694 (93.3%)	729 (98.0%)	655 (88.0%)	*	*	*	*	*
2015/11月	653 (90.7%)	719 (99.9%)	679 (94.3%)	*	*	*	*	*
2015/冬季	2083 (96.4%)	2051 (95.0%)	2130 (98.6%)	*	*	*	*	*
2015/春季	2187 (99.0%)	2198 (99.5%)	2141 (97.0%)	*	*	*	*	*
2015/夏季	2178 (98.6%)	2046 (92.7%)	2197 (99.5%)	*	*	*	*	*
2015/秋季	2012 (92.1%)	2080 (95.2%)	2050 (93.9%)	*	*	*	*	*
2015/整年	8460 (96.6%)	8375 (95.6%)	8518 (97.2%)	*	*	*	*	*
起始年月	2014/12	2014/12	2014/12	*	*	*	*	*
結束年月	2015/11	2015/11	2015/11	*	*	*	*	*

表11.1b 2015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				
2014/12月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	672 (100%)	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	720 (100%)	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	2160 (100%)	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	2208 (100%)	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	2184 (100%)	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	8760 (100%)	*	*	*	*	*
起始年月	2014/12	2014/12	2014/12	*	*	*	*	*
結束年月	2015/11	2015/11	2015/11	*	*	*	*	*

Wave H_s in Kin-Men seas of KMY0 at 2015

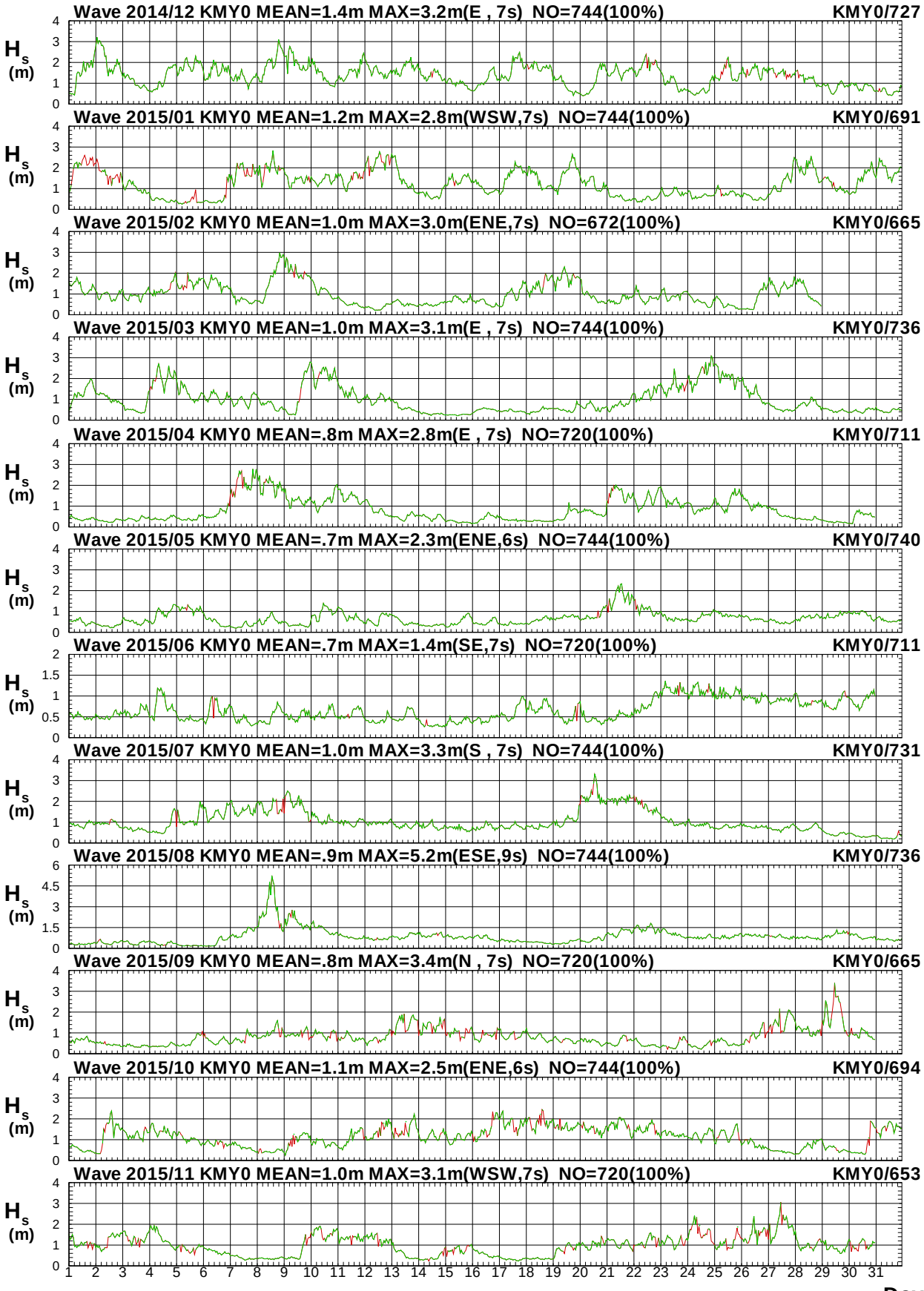


圖 11.1a　2015年每月金門海域 Y 站修補前後之波高比較圖

V14CKMY0.1HA V14CKMY0.1H0 V151KMY0.1HA V151KMY0.1H0 V152KMY0.1HA V152KMY0.1H0
V153KMY0.1HA V153KMY0.1H0 V154KMY0.1HA V154KMY0.1H0 V155KMY0.1HA V155KMY0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

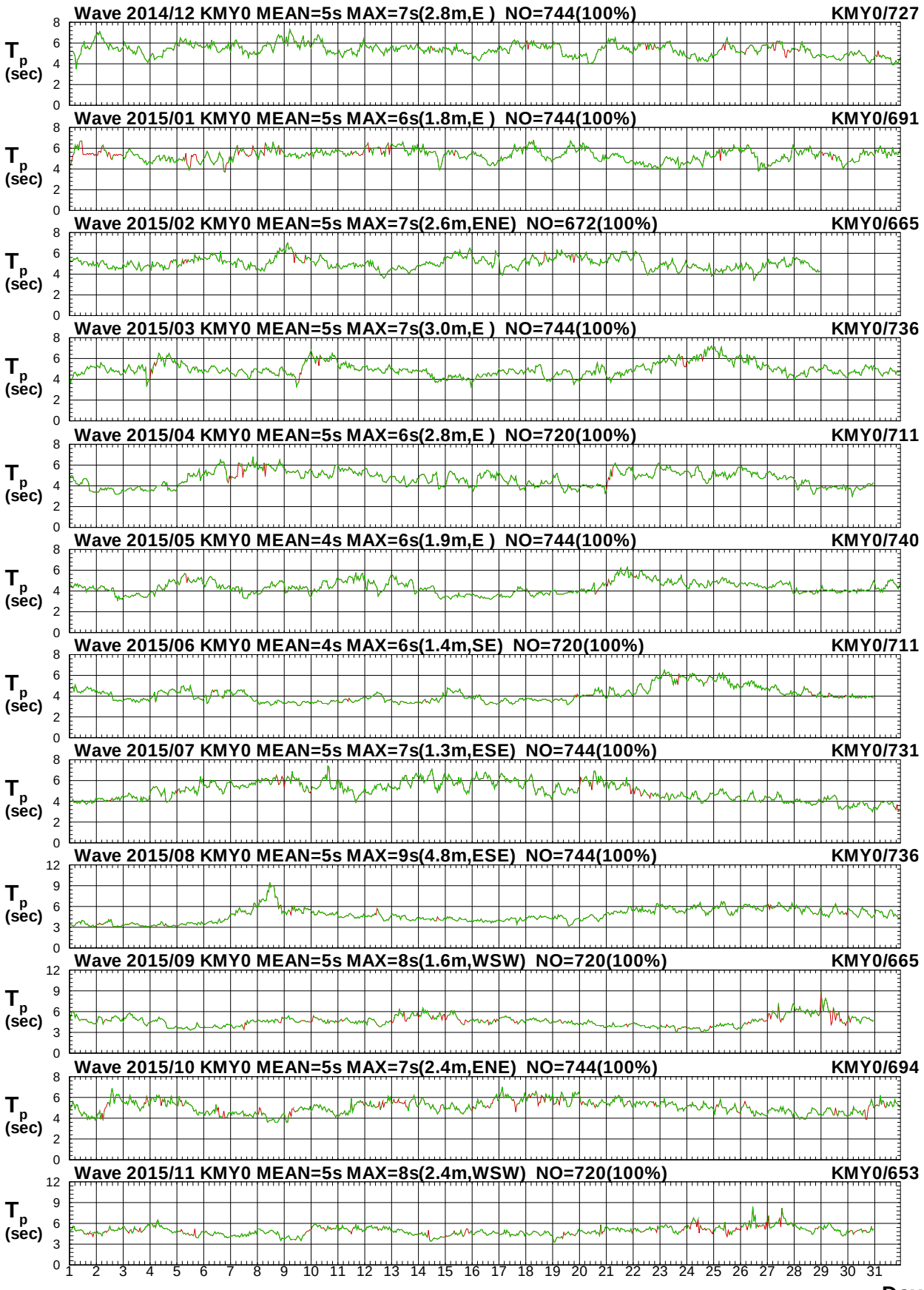


圖 11.1b　2015年每月金門海域 Y 站修補前後之週期比較圖

V14CKMY0.1HA V14CKMY0.1H0 V151KMY0.1HA V151KMY0.1H0 V152KMY0.1HA V152KMY0.1H0
V153KMY0.1HA V153KMY0.1H0 V154KMY0.1HA V154KMY0.1H0 V155KMY0.1HA V155KMY0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

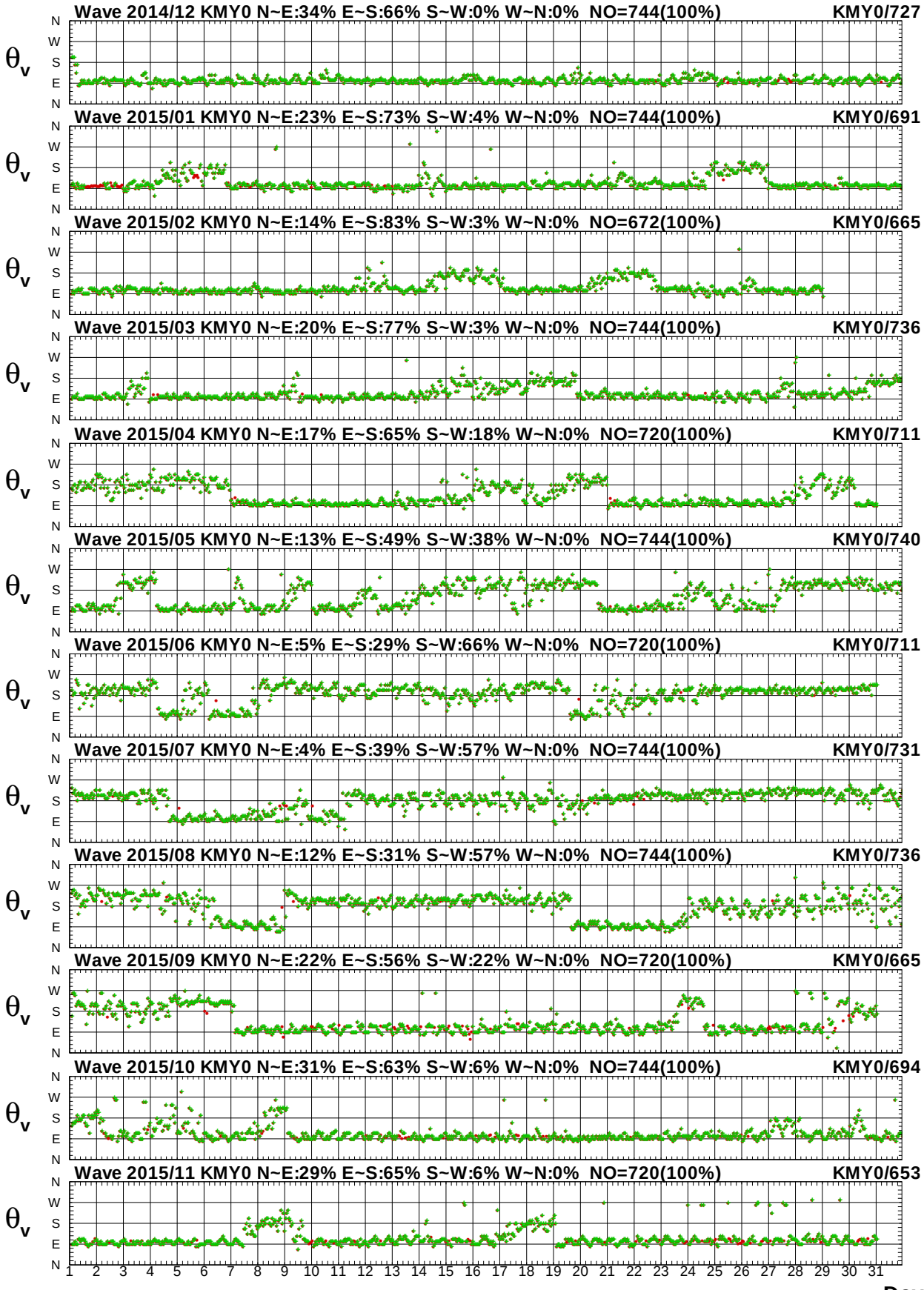


圖 11.1c　2015年每月金門海域 Y 站修補前後之波向比較圖

V14CKMY0.1HA V14CKMY0.1H0 V151KMY0.1HA V151KMY0.1H0 V152KMY0.1HA V152KMY0.1H0
V153KMY0.1HA V153KMY0.1H0 V154KMY0.1HA V154KMY0.1H0 V155KMY0.1HA V155KMY0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

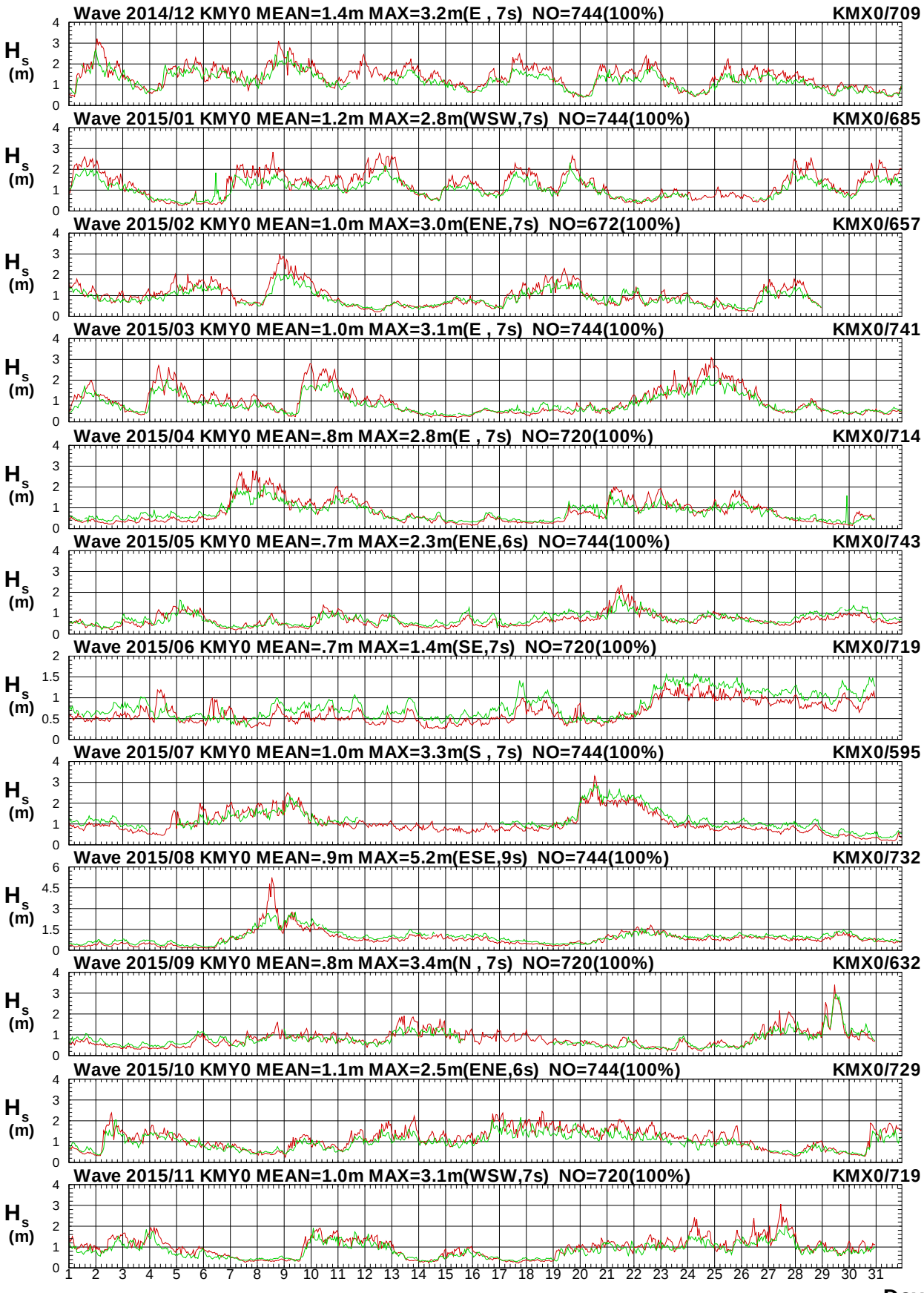


圖11.2a　2015年每月金門海域 Y 站與 X 站波高比較圖

V14CKMY0.1HA V14CKMX0.1H0 V151KMY0.1HA V151KMX0.1H0 V152KMY0.1HA V152KMX0.1H0
V153KMY0.1HA V153KMX0.1H0 V154KMY0.1HA V154KMX0.1H0 V155KMY0.1HA V155KMX0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

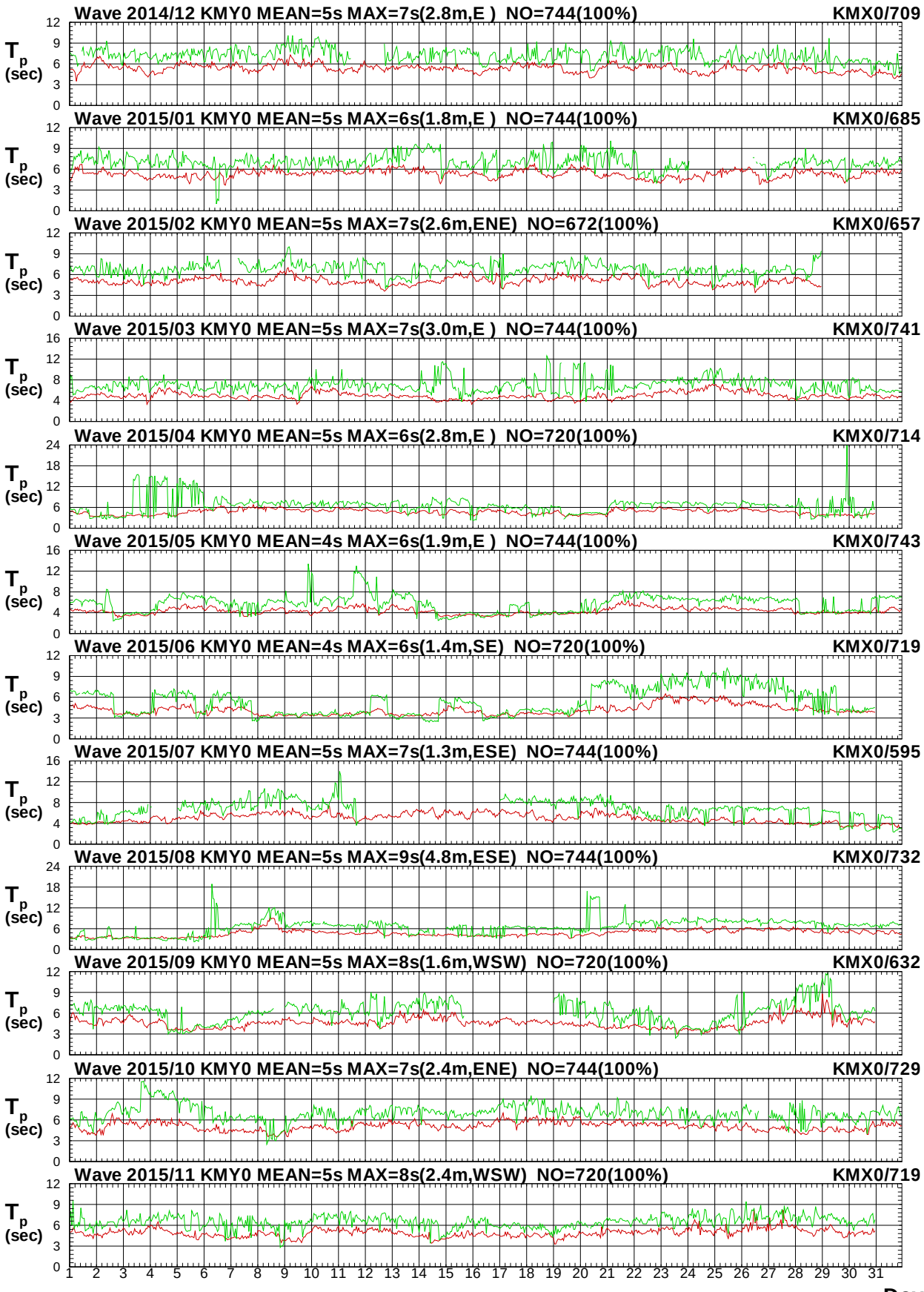


圖11.2b　2015年每月金門海域 Y 站與 X 站週期比較圖

V14CKMY0.1HA V14CKMX0.1H0 V151KMY0.1HA V151KMX0.1H0 V152KMY0.1HA V152KMX0.1H0
V153KMY0.1HA V153KMX0.1H0 V154KMY0.1HA V154KMX0.1H0 V155KMY0.1HA V155KMX0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

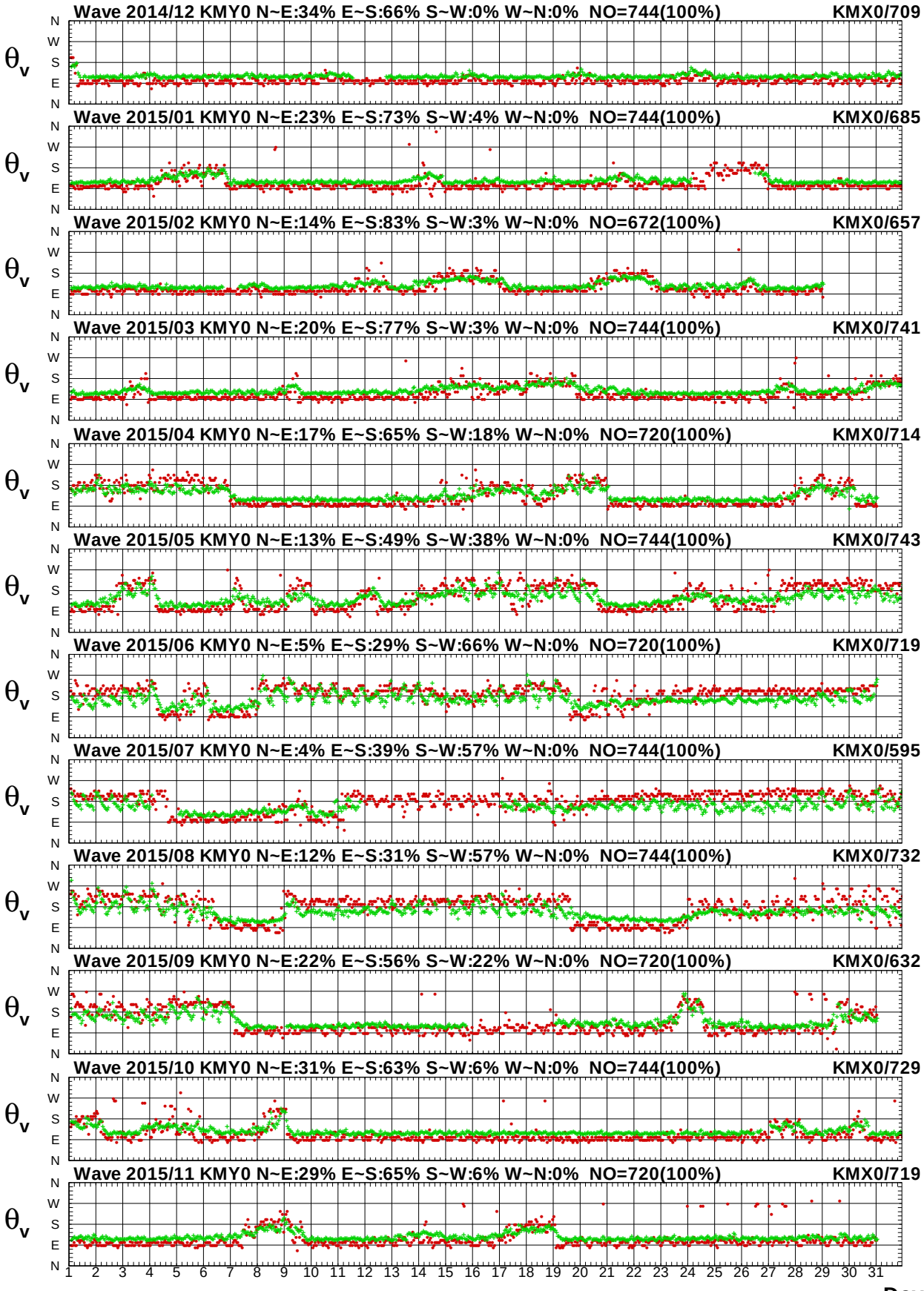


圖11.2c　2015年每月金門海域 Y 站與 X 站波向比較圖

V14CKMY0.1HA V14CKMX0.1H0 V151KMY0.1HA V151KMX0.1H0 V152KMY0.1HA V152KMX0.1H0
V153KMY0.1HA V153KMX0.1H0 V154KMY0.1HA V154KMX0.1H0 V155KMY0.1HA V155KMX0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

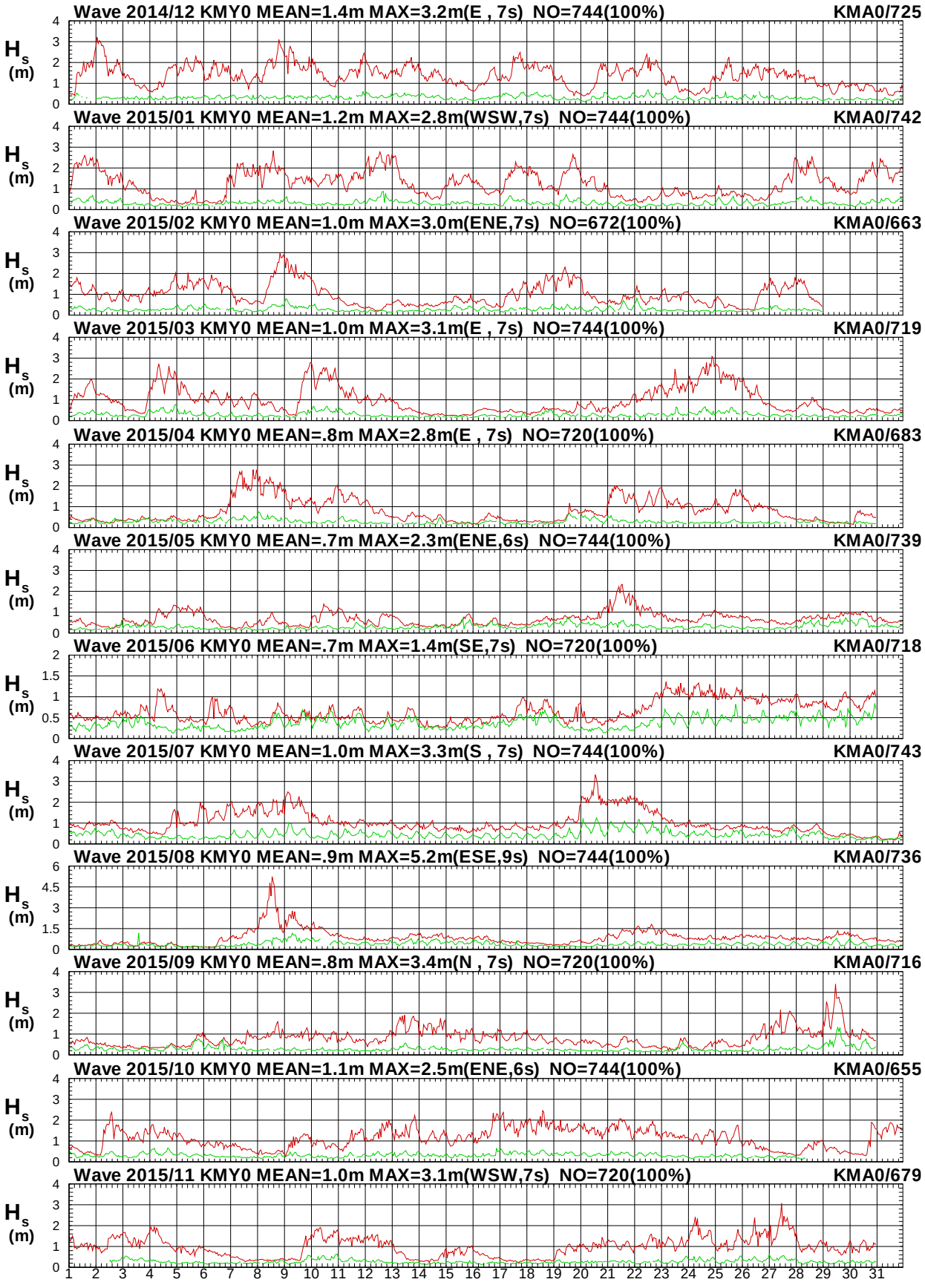


圖 11.3a　2015年每月金門海域 Y 站與 A 站波高比較圖

V14CKMY0.1HA V14CKMA0.1H0 V151KMY0.1HA V151KMA0.1H0 V152KMY0.1HA V152KMA0.1H0
V153KMY0.1HA V153KMA0.1H0 V154KMY0.1HA V154KMA0.1H0 V155KMY0.1HA V155KMA0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

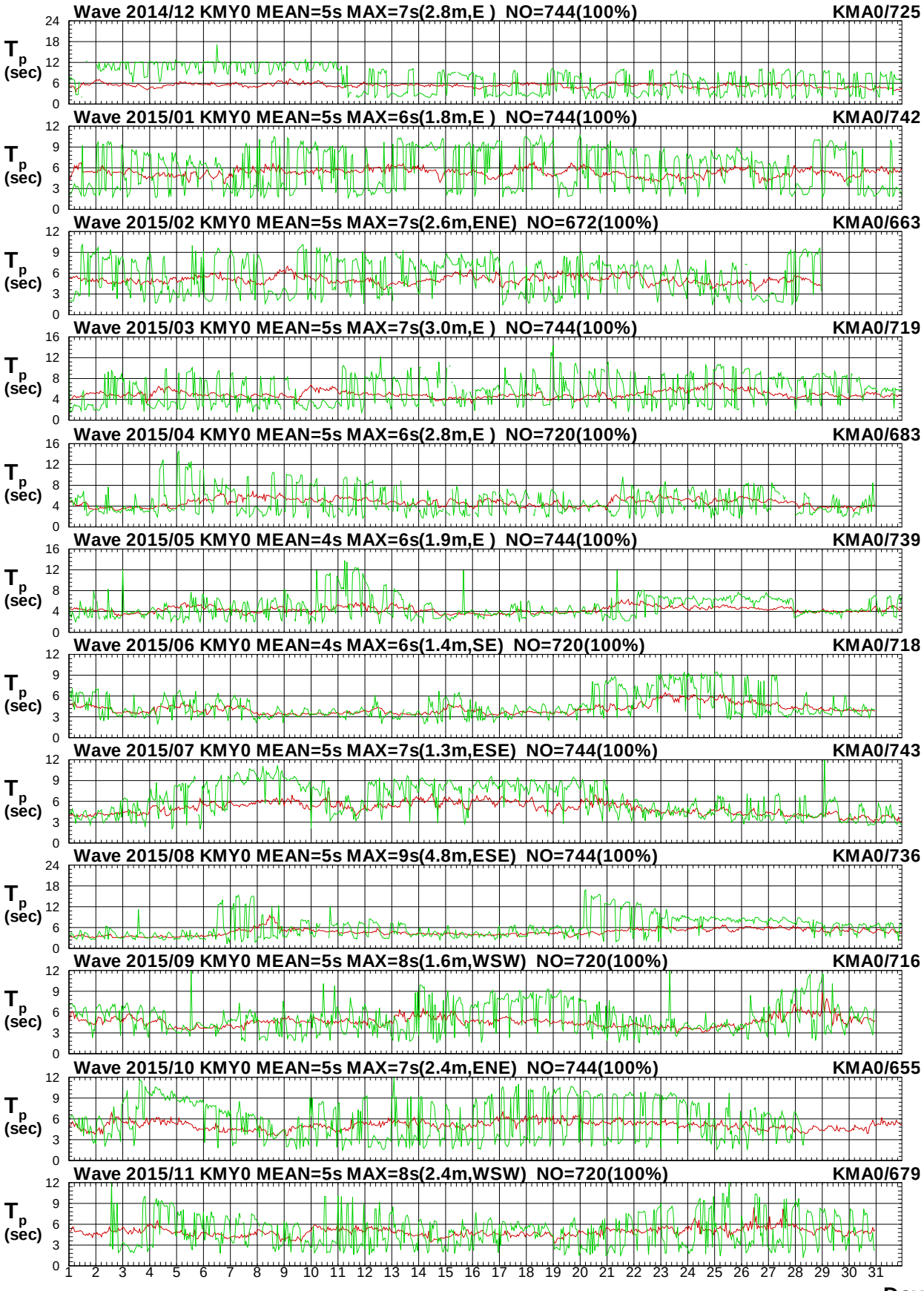


圖 11.3b　2015年每月金門海域 Y 站與 A 站週期比較圖

V14CKMY0.1HA V14CKMA0.1H0 V151KMY0.1HA V151KMA0.1H0 V152KMY0.1HA V152KMA0.1H0
V153KMY0.1HA V153KMA0.1H0 V154KMY0.1HA V154KMA0.1H0 V155KMY0.1HA V155KMA0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

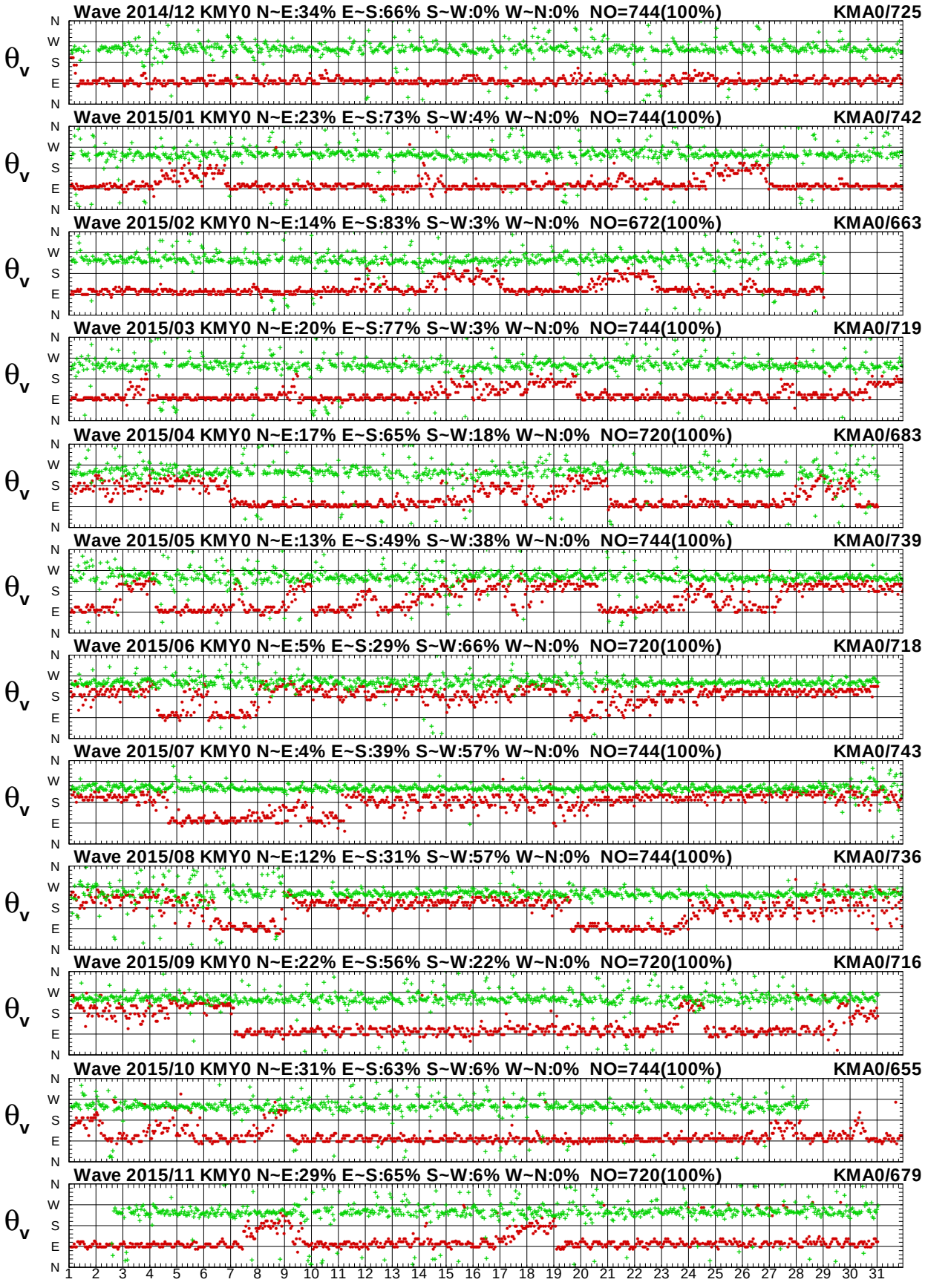


圖11.3c　2015年每月金門海域 Y 站與 A 站波向比較圖

V14CKMY0.1HA V14CKMA0.1H0 V151KMY0.1HA V151KMA0.1H0 V152KMY0.1HA V152KMA0.1H0
V153KMY0.1HA V153KMA0.1H0 V154KMY0.1HA V154KMA0.1H0 V155KMY0.1HA V155KMA0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

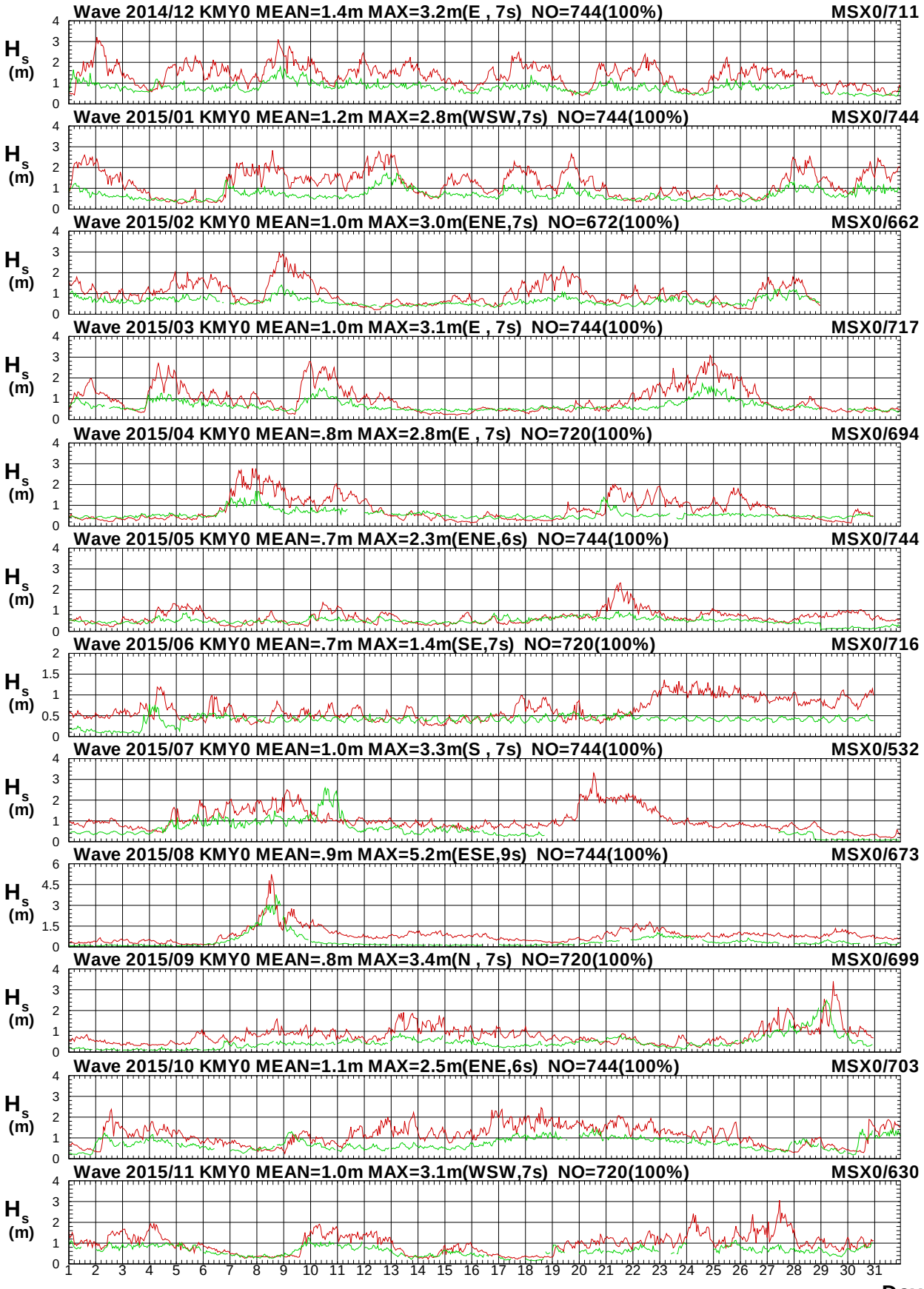


圖11.4a　2015年每月金門海域 Y 站與馬祖海域 X 站波高圖

V14CKMY0.1HA V14CMSX0.1H0 V151KMY0.1HA V151MSX0.1H0 V152KMY0.1HA V152MSX0.1H0
V153KMY0.1HA V153MSX0.1H0 V154KMY0.1HA V154MSX0.1H0 V155KMY0.1HA V155MSX0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

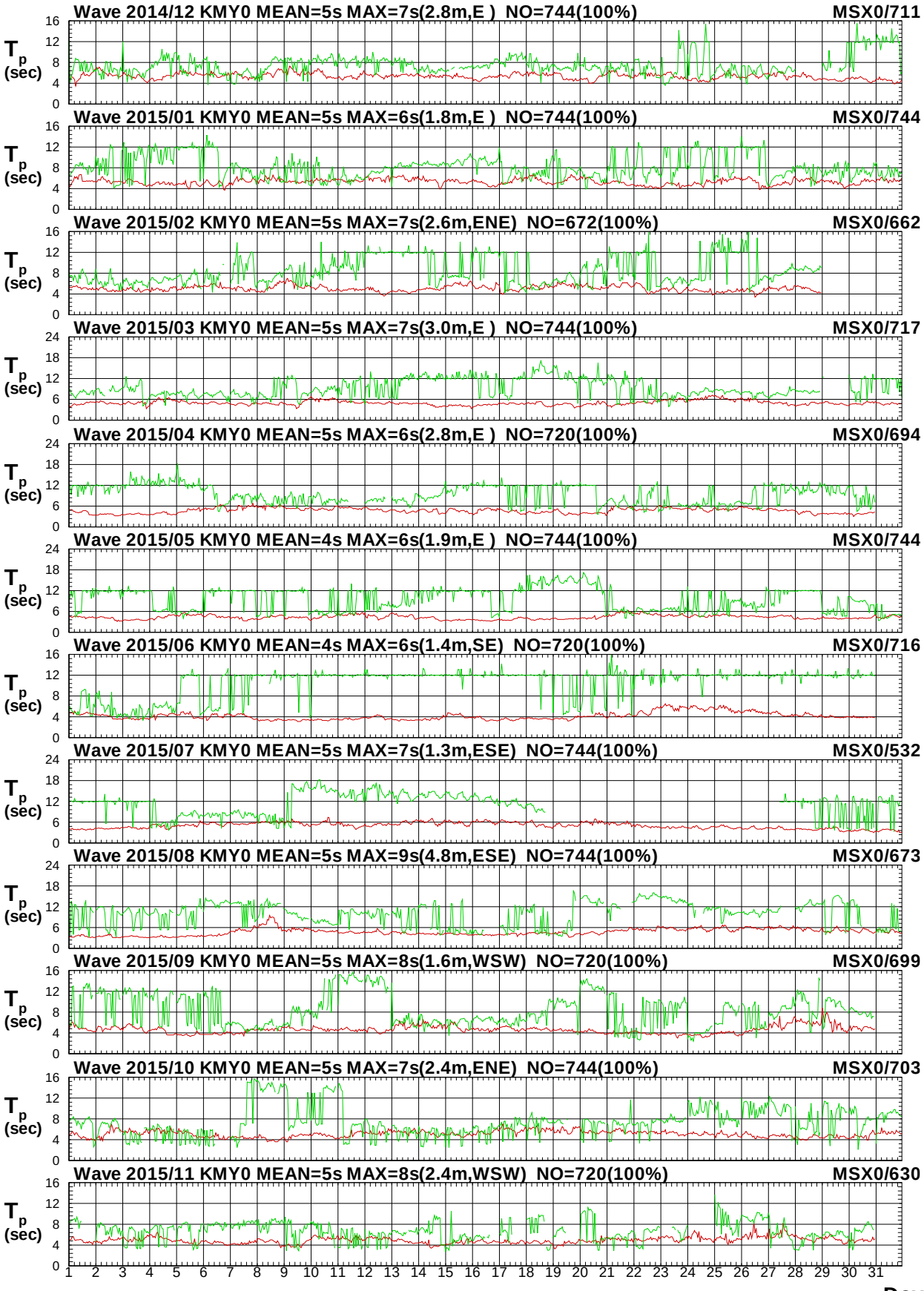


圖11.4b　2015年每月金門海域 Y 站與馬祖海域 X 站週期圖

V14CKMY0.1HA V14CMSX0.1H0 V151KMY0.1HA V151MSX0.1H0 V152KMY0.1HA V152MSX0.1H0
V153KMY0.1HA V153MSX0.1H0 V154KMY0.1HA V154MSX0.1H0 V155KMY0.1HA V155MSX0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

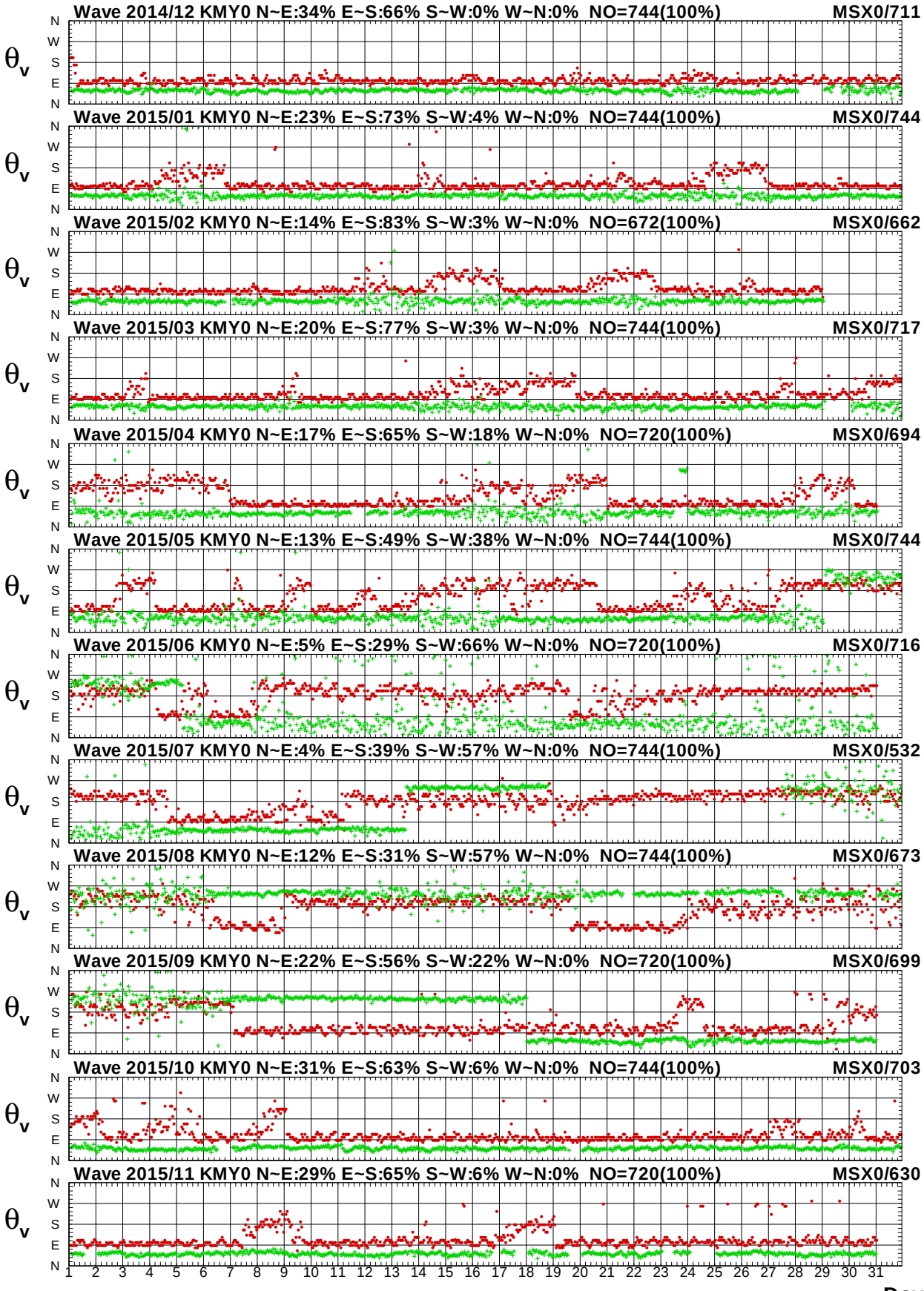


圖11.4c　2015年每月金門海域 Y 站與馬祖海域 X 站波向圖

V14CKMY0.1HA V14CMSX0.1H0 V151KMY0.1HA V151MSX0.1H0 V152KMY0.1HA V152MSX0.1H0
V153KMY0.1HA V153MSX0.1H0 V154KMY0.1HA V154MSX0.1H0 V155KMY0.1HA V155MSX0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

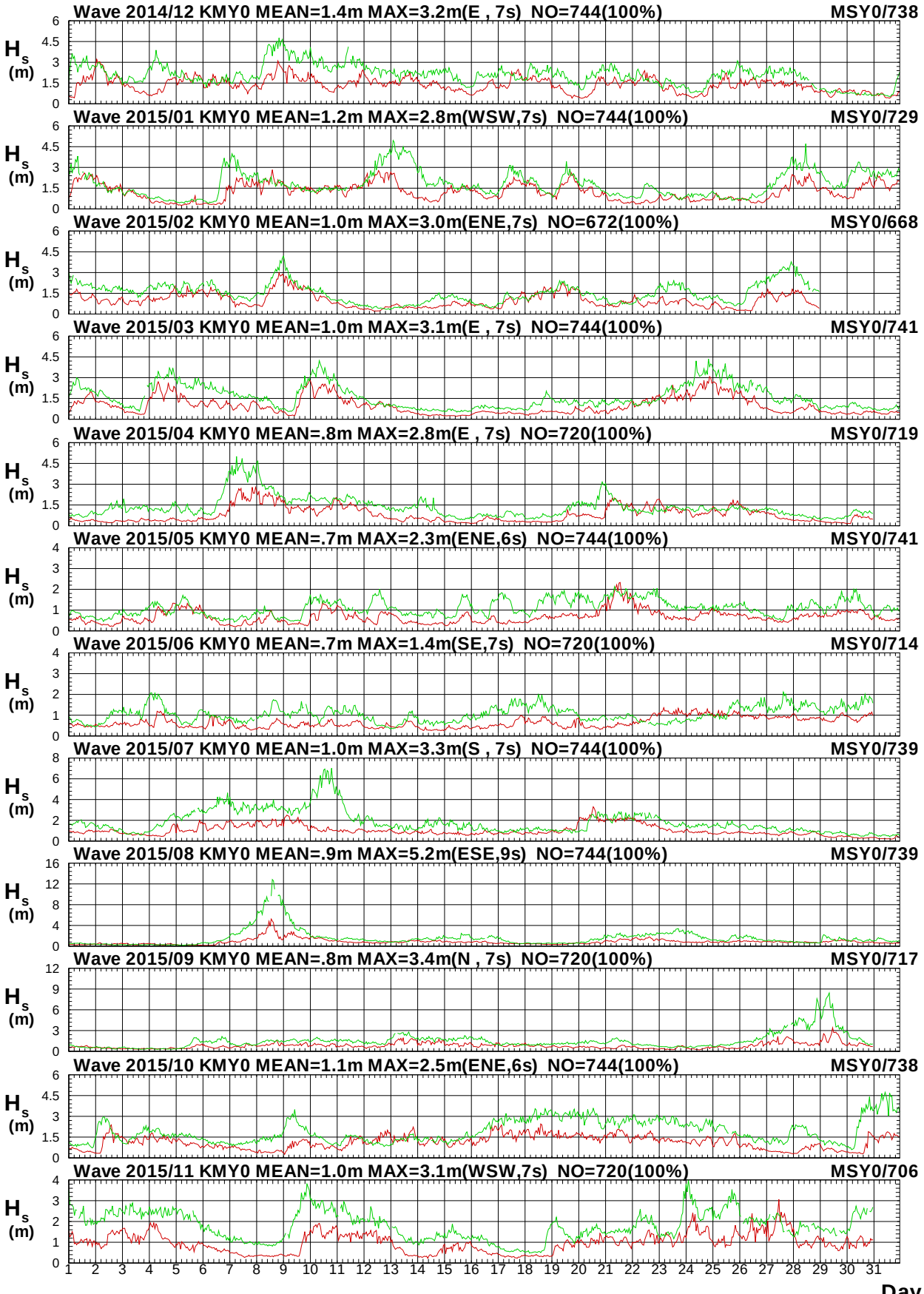


圖11.5a　2015年每月金門海域 Y 站與馬祖海域 Y 站波高圖

V14CKMY0.1HA V14CMSY0.1H0 V151KMY0.1HA V151MSY0.1H0 V152KMY0.1HA V152MSY0.1H0
V153KMY0.1HA V153MSY0.1H0 V154KMY0.1HA V154MSY0.1H0 V155KMY0.1HA V155MSY0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

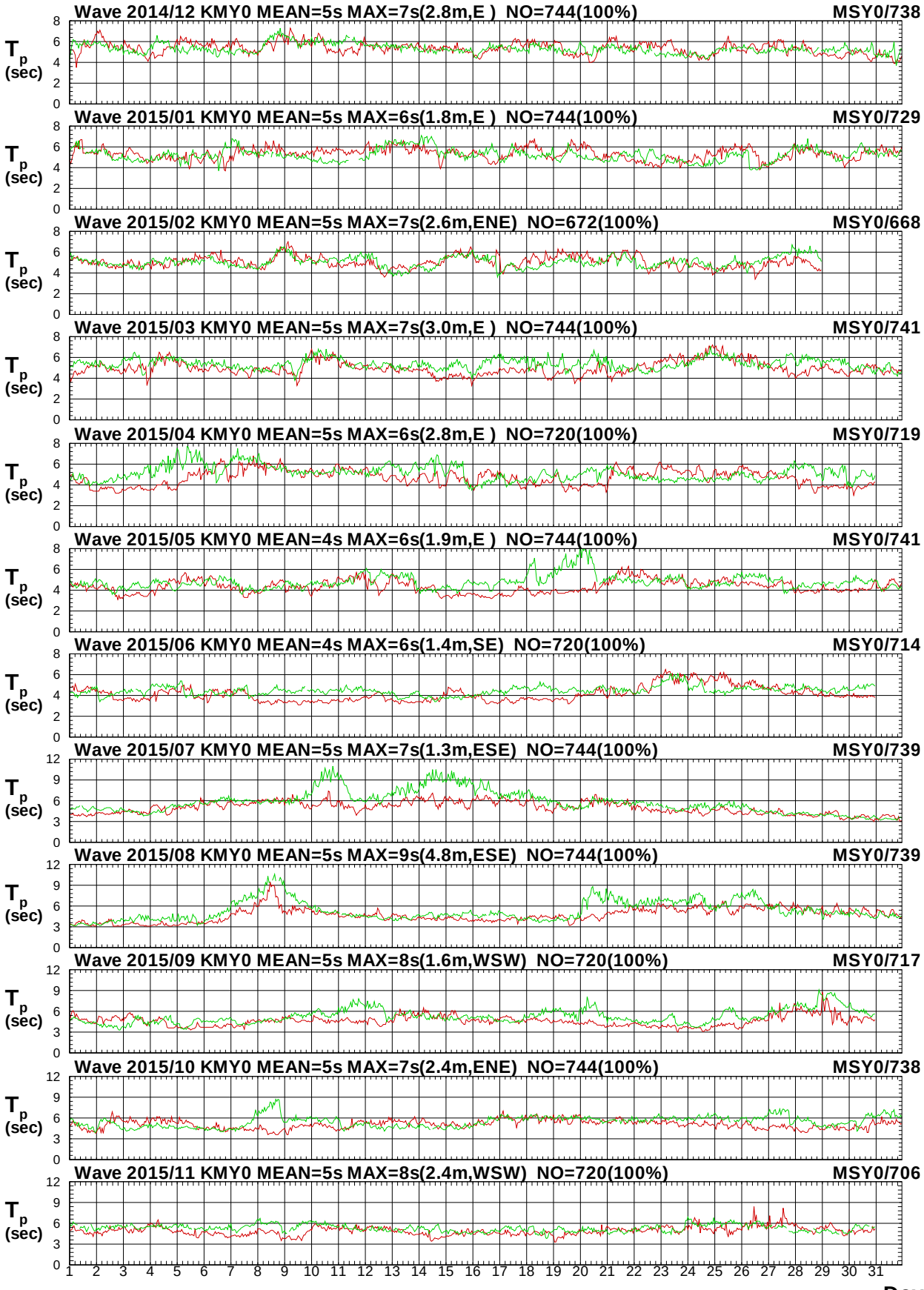


圖 11.5b　2015年每月金門海域 Y 站與馬祖海域 Y 站週期圖

V14CKMY0.1HA V14CMSY0.1H0 V151KMY0.1HA V151MSY0.1H0 V152KMY0.1HA V152MSY0.1H0
V153KMY0.1HA V153MSY0.1H0 V154KMY0.1HA V154MSY0.1H0 V155KMY0.1HA V155MSY0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

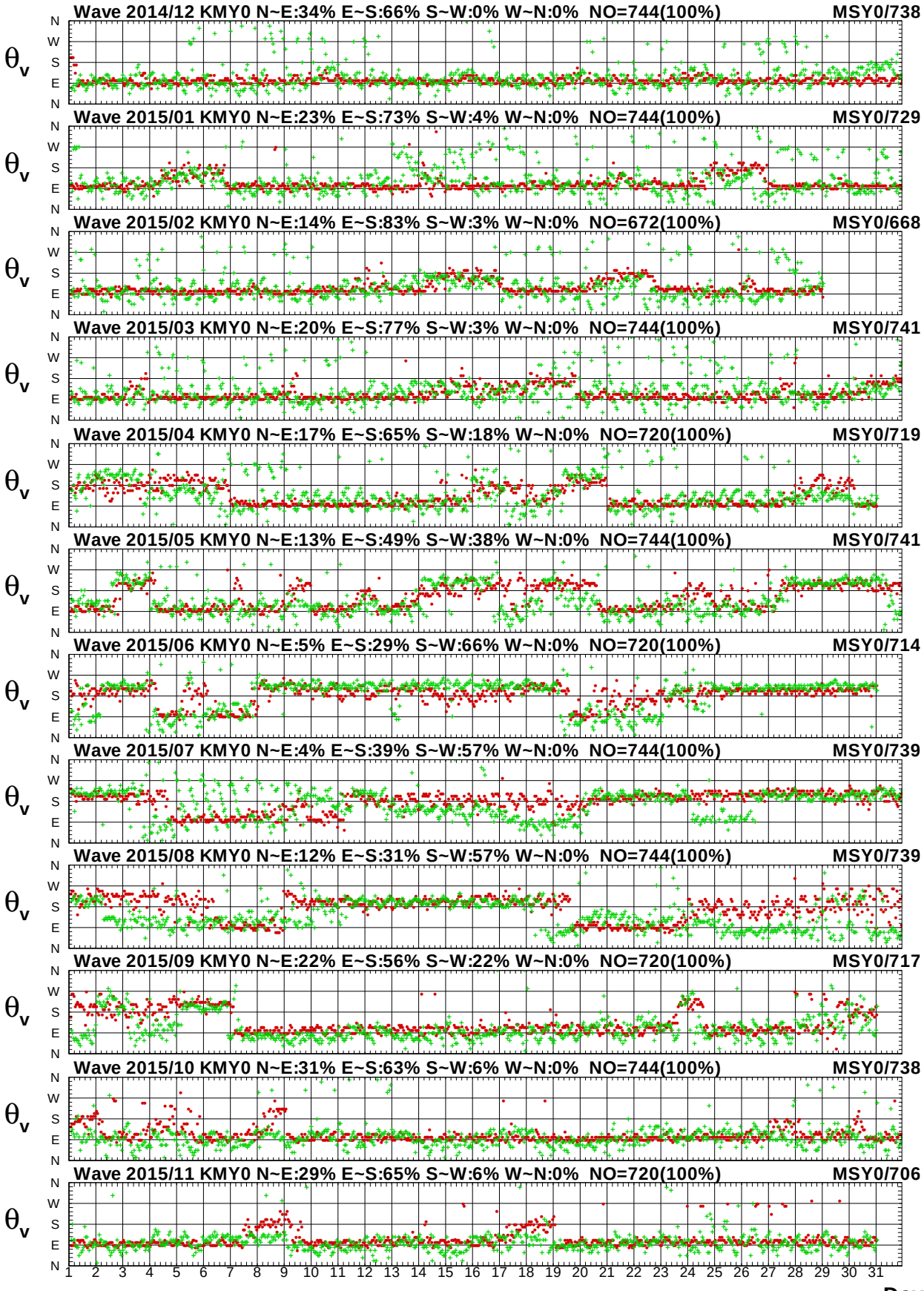


圖11.5c　2015年每月金門海域 Y 站與馬祖海域 Y 站波向圖

V14CKMY0.1HA V14CMSY0.1H0 V151KMY0.1HA V151MSY0.1H0 V152KMY0.1HA V152MSY0.1H0
V153KMY0.1HA V153MSY0.1H0 V154KMY0.1HA V154MSY0.1H0 V155KMY0.1HA V155MSY0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

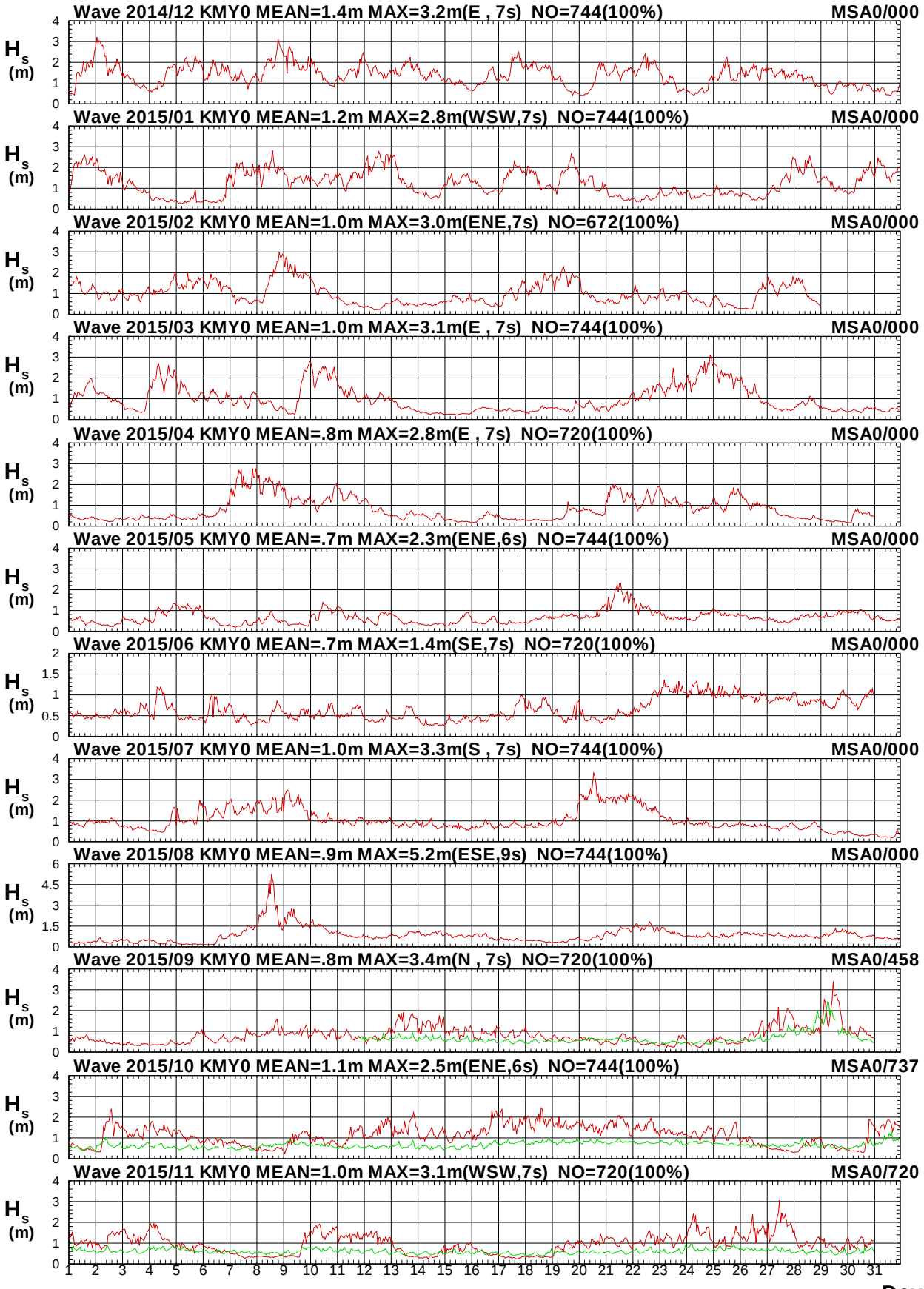


圖11.6a　2015年每月金門海域 Y 站與馬祖海域 A 站波高圖

V14CKMY0.1HA V14CMSA0.1H0 V151KMY0.1HA V151MSA0.1H0 V152KMY0.1HA V152MSA0.1H0
V153KMY0.1HA V153MSA0.1H0 V154KMY0.1HA V154MSA0.1H0 V155KMY0.1HA V155MSA0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

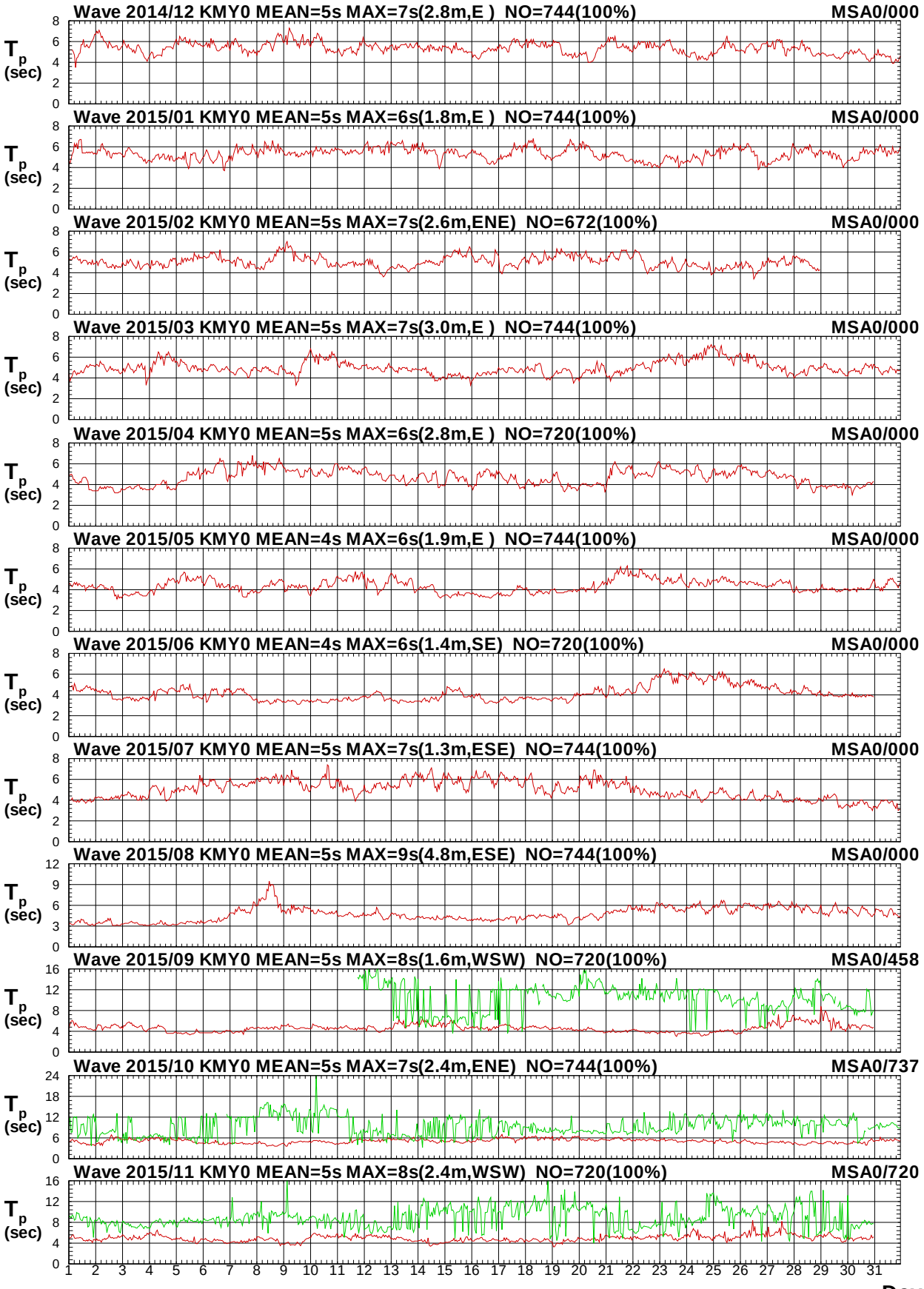


圖11.6b　2015年每月金門海域 Y 站與馬祖海域 A 站週期圖

V14CKMY0.1HA V14CMSA0.1H0 V151KMY0.1HA V151MSA0.1H0 V152KMY0.1HA V152MSA0.1H0
V153KMY0.1HA V153MSA0.1H0 V154KMY0.1HA V154MSA0.1H0 V155KMY0.1HA V155MSA0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

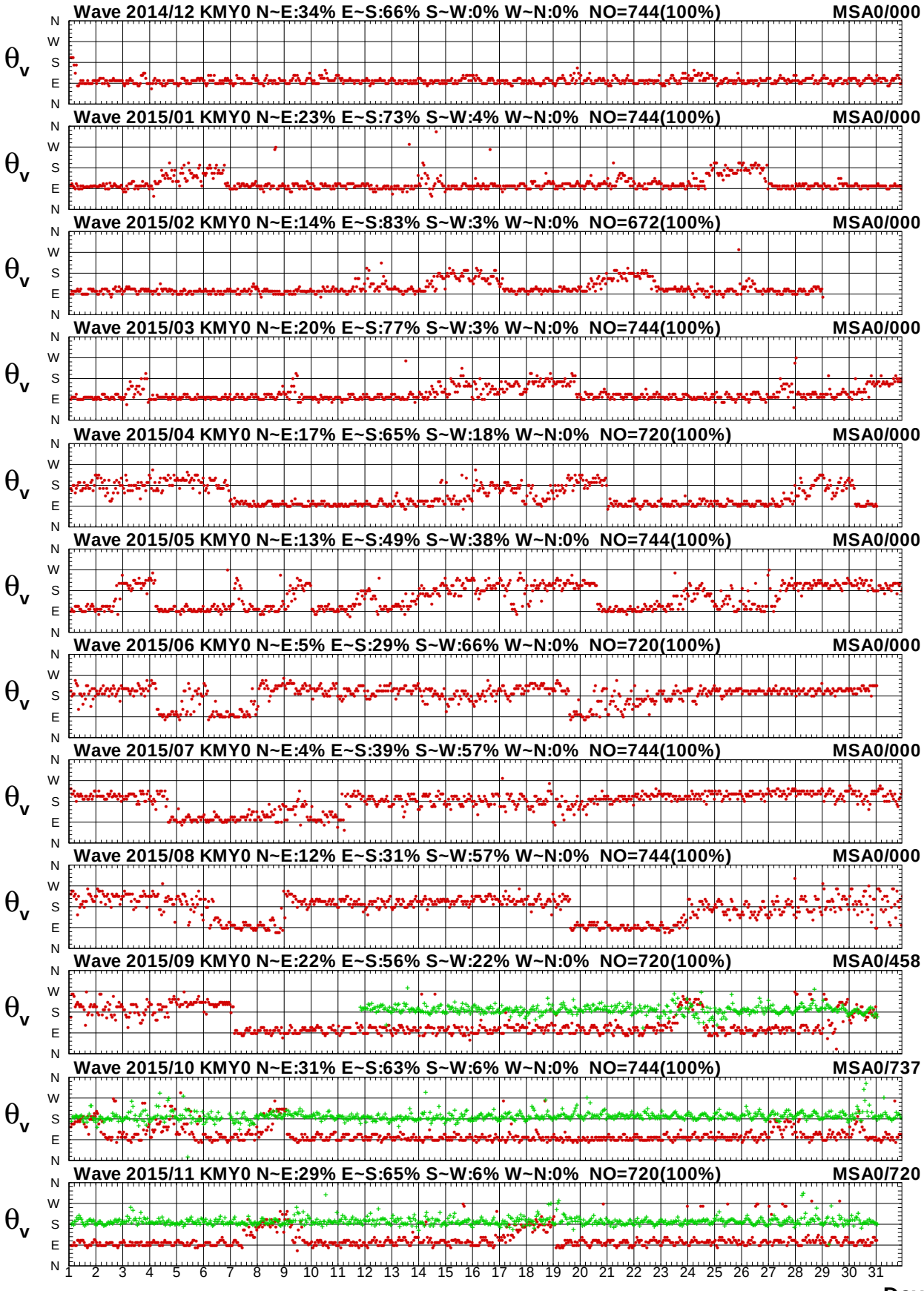


圖11.6c　2015年每月金門海域 Y 站與馬祖海域 A 站波向圖

V14CKMY0.1HA V14CMSA0.1H0 V151KMY0.1HA V151MSA0.1H0 V152KMY0.1HA V152MSA0.1H0
V153KMY0.1HA V153MSA0.1H0 V154KMY0.1HA V154MSA0.1H0 V155KMY0.1HA V155MSA0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

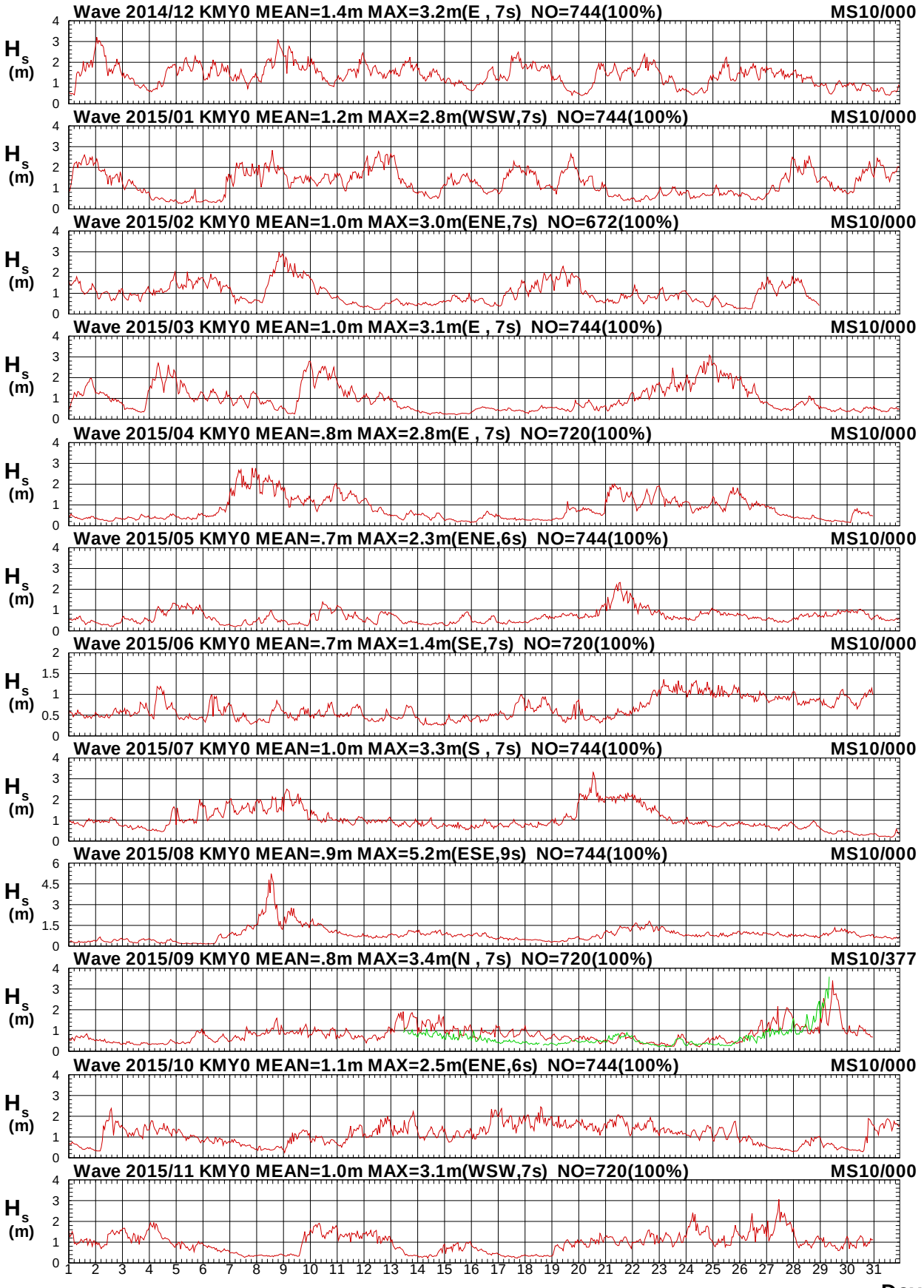


圖11.7a　2015年每月金門海域 Y 站與馬祖海域1站波高圖

V14CKMY0.1HA V14CMS10.1H0 V151KMY0.1HA V151MS10.1H0 V152KMY0.1HA V152MS10.1H0
V153KMY0.1HA V153MS10.1H0 V154KMY0.1HA V154MS10.1H0 V155KMY0.1HA V155MS10.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

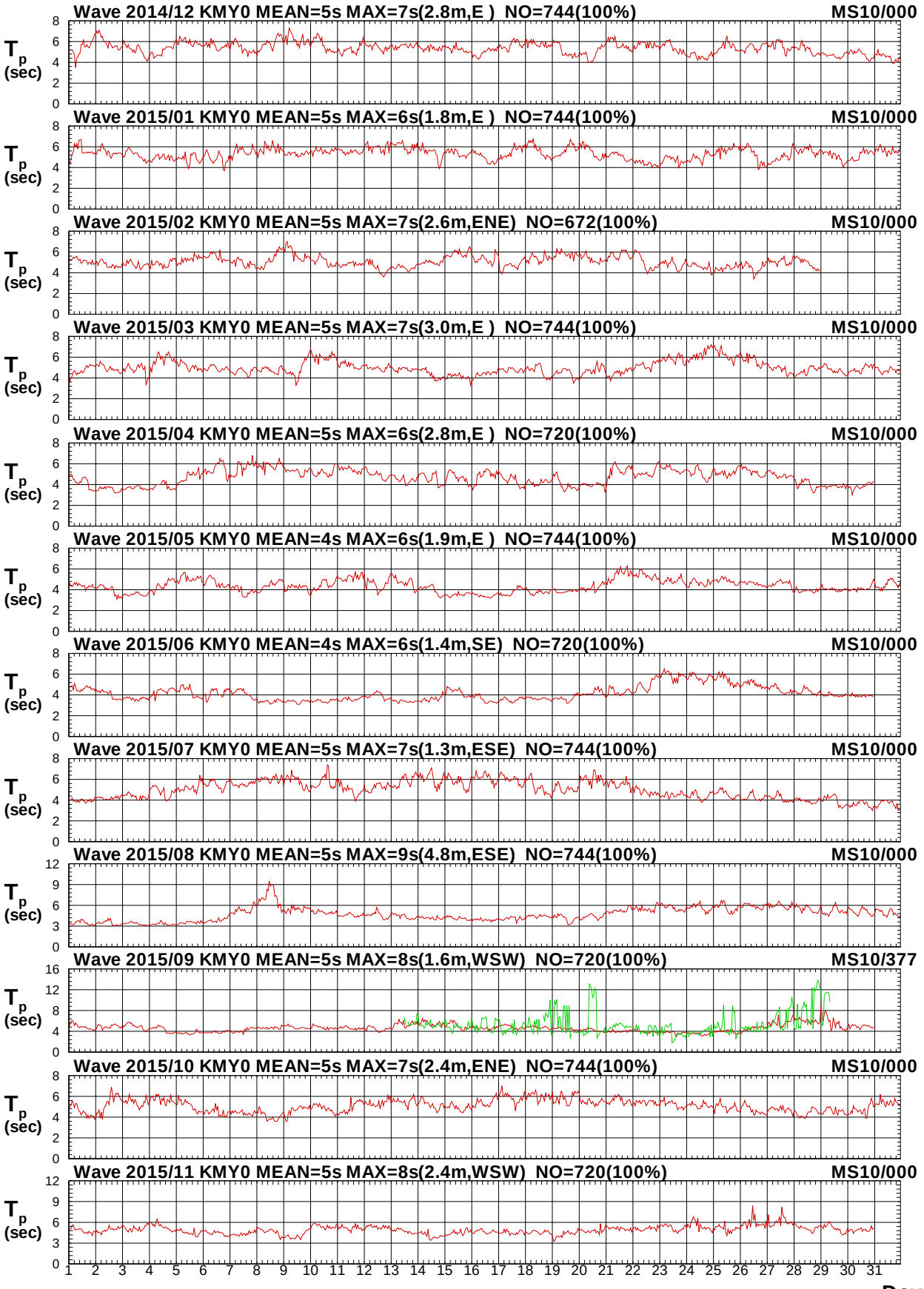


圖 11.7b　2015年每月金門海域 Y 站與馬祖海域1站週期圖

V14CKMY0.1HA V14CMS10.1H0 V151KMY0.1HA V151MS10.1H0 V152KMY0.1HA V152MS10.1H0
V153KMY0.1HA V153MS10.1H0 V154KMY0.1HA V154MS10.1H0 V155KMY0.1HA V155MS10.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

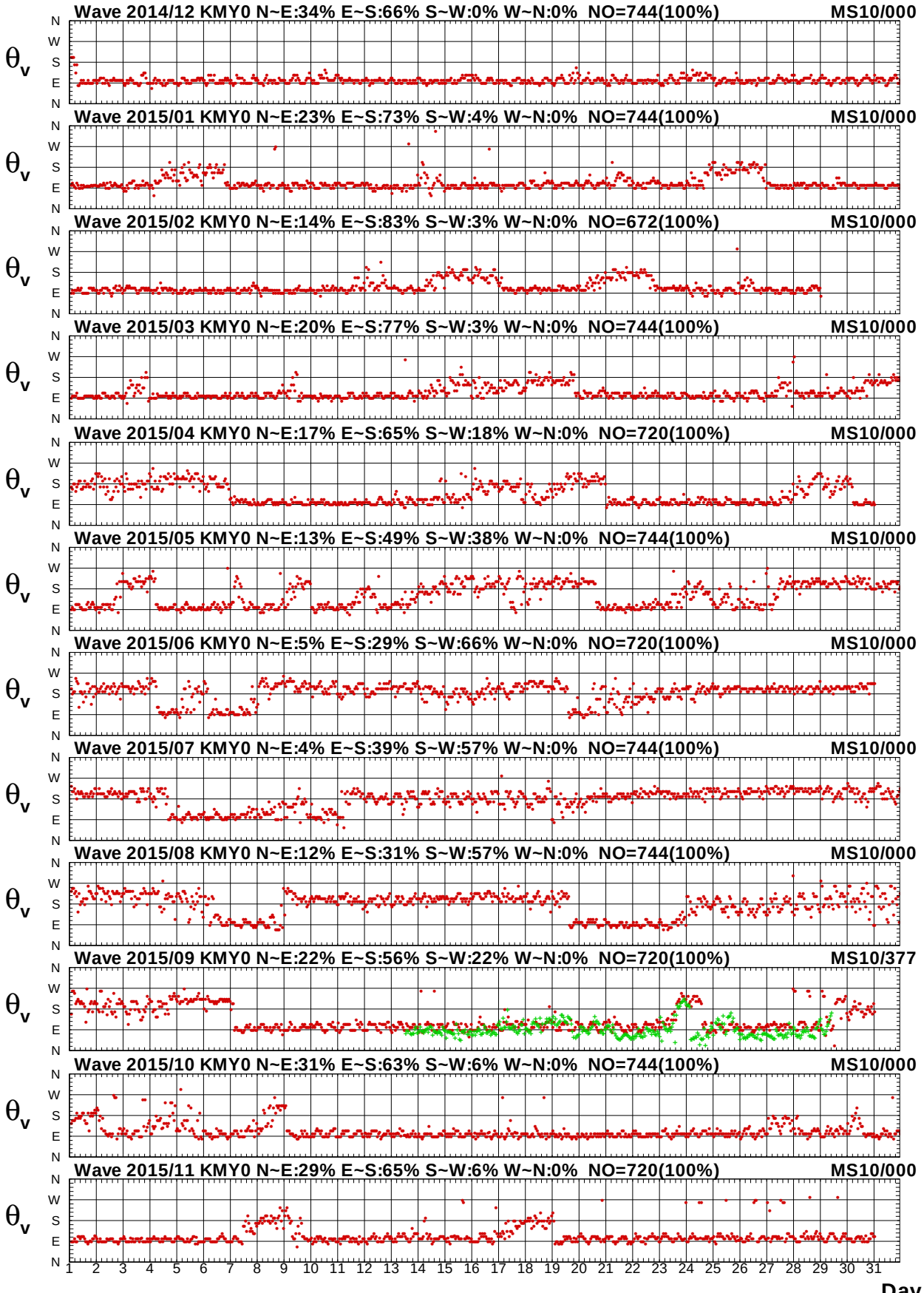


圖11.7c　2015年每月金門海域 Y 站與馬祖海域1站波向圖

Wave H_s in Kin-Men seas of KMY0 at 2015

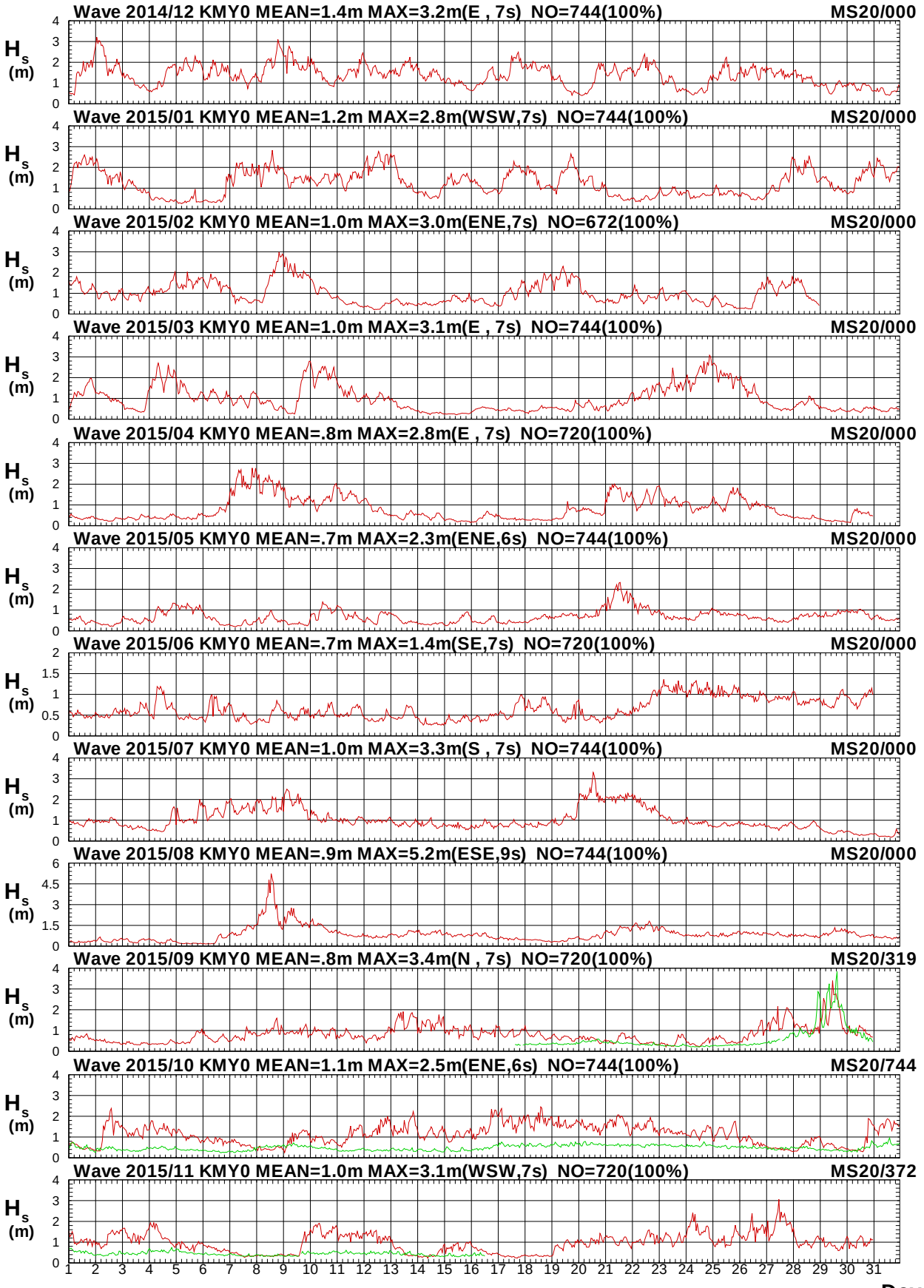


圖11.8a　2015年每月金門海域 Y 站與馬祖海域2站波高圖

V14CKMY0.1HA V14CMS20.1H0 V151KMY0.1HA V151MS20.1H0 V152KMY0.1HA V152MS20.1H0
V153KMY0.1HA V153MS20.1H0 V154KMY0.1HA V154MS20.1H0 V155KMY0.1HA V155MS20.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

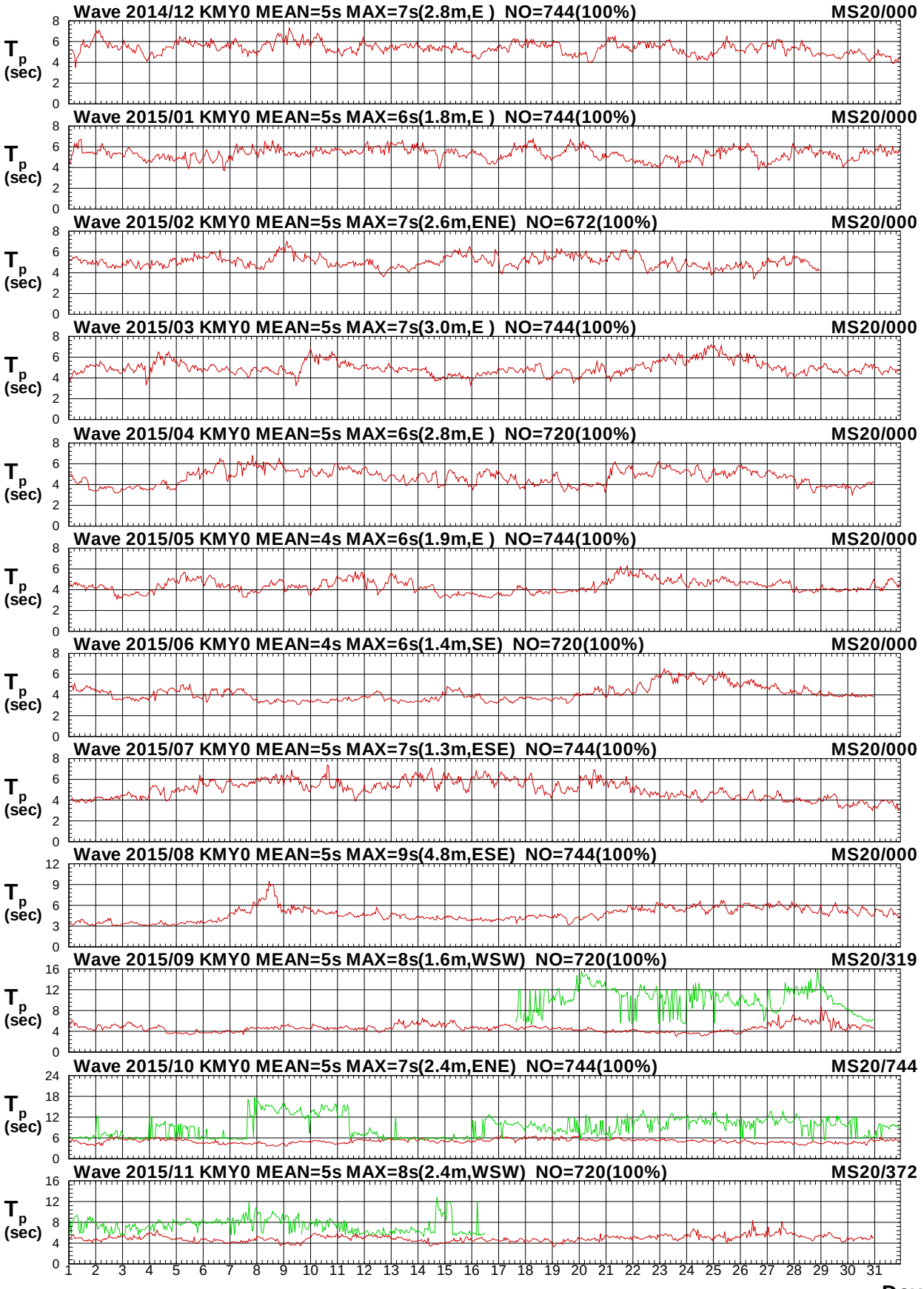


圖 11.8b　2015年每月金門海域 Y 站與馬祖海域2站週期圖

V14CKMY0.1HA V14CMS20.1H0 V151KMY0.1HA V151MS20.1H0 V152KMY0.1HA V152MS20.1H0
V153KMY0.1HA V153MS20.1H0 V154KMY0.1HA V154MS20.1H0 V155KMY0.1HA V155MS20.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

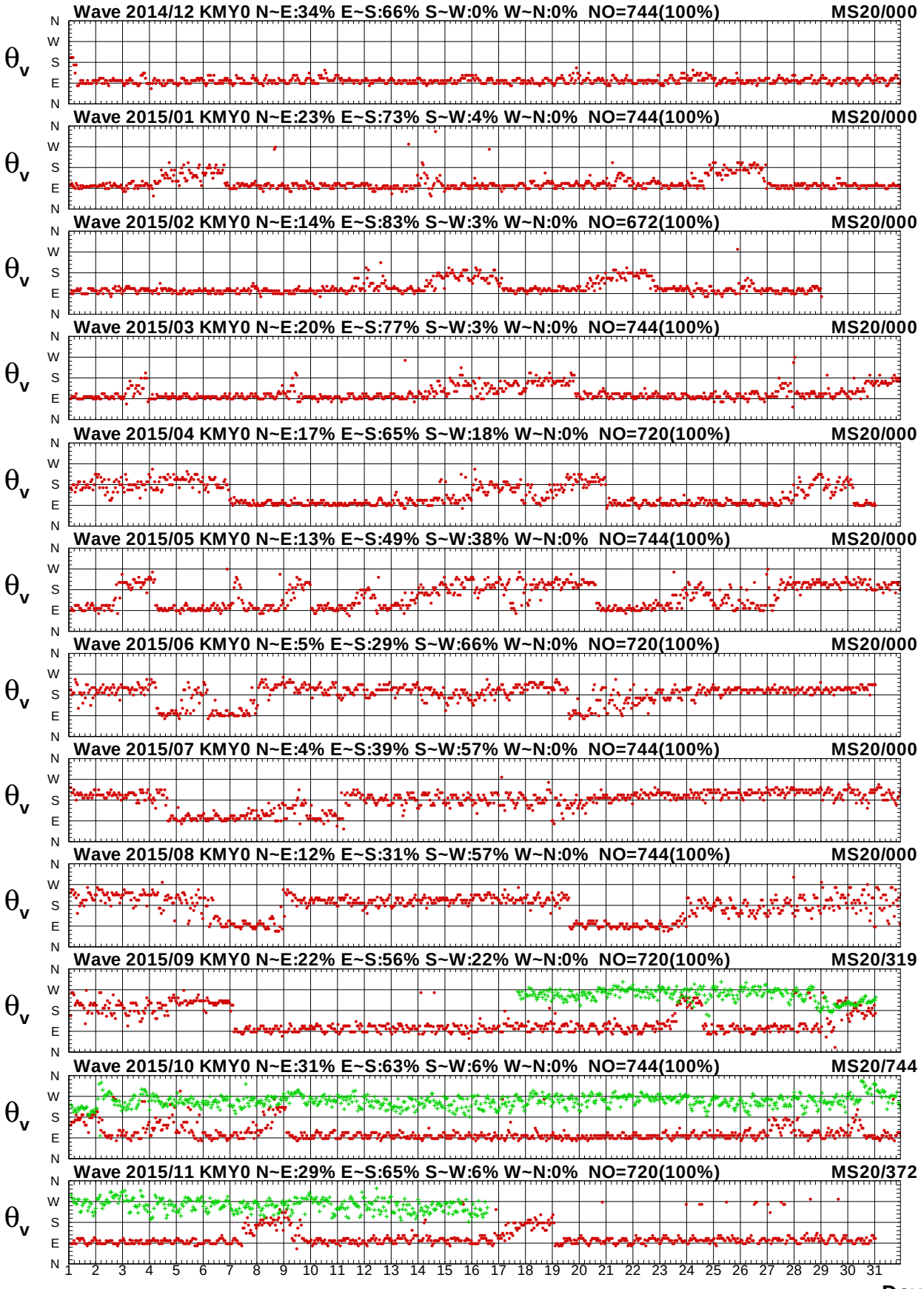


圖11.8c　2015年每月金門海域 Y 站與馬祖海域2站波向圖

V14CKMY0.1HA V14CMS20.1H0 V151KMY0.1HA V151MS20.1H0 V152KMY0.1HA V152MS20.1H0
V153KMY0.1HA V153MS20.1H0 V154KMY0.1HA V154MS20.1H0 V155KMY0.1HA V155MS20.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

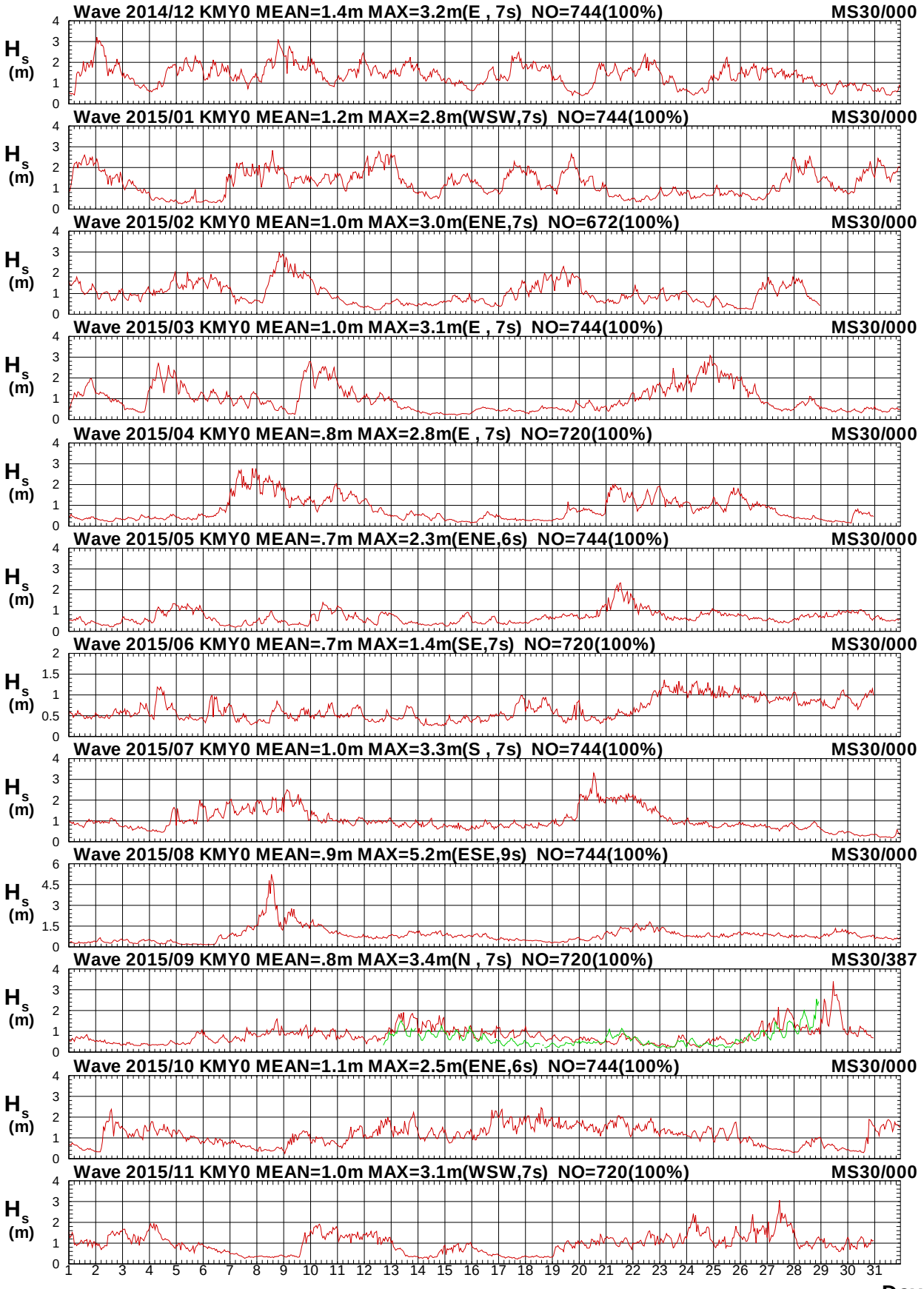


圖11.9a　2015年每月金門海域 Y 站與馬祖海域3站波高圖

V14CKMY0.1HA V14CMS30.1H0 V151KMY0.1HA V151MS30.1H0 V152KMY0.1HA V152MS30.1H0
V153KMY0.1HA V153MS30.1H0 V154KMY0.1HA V154MS30.1H0 V155KMY0.1HA V155MS30.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

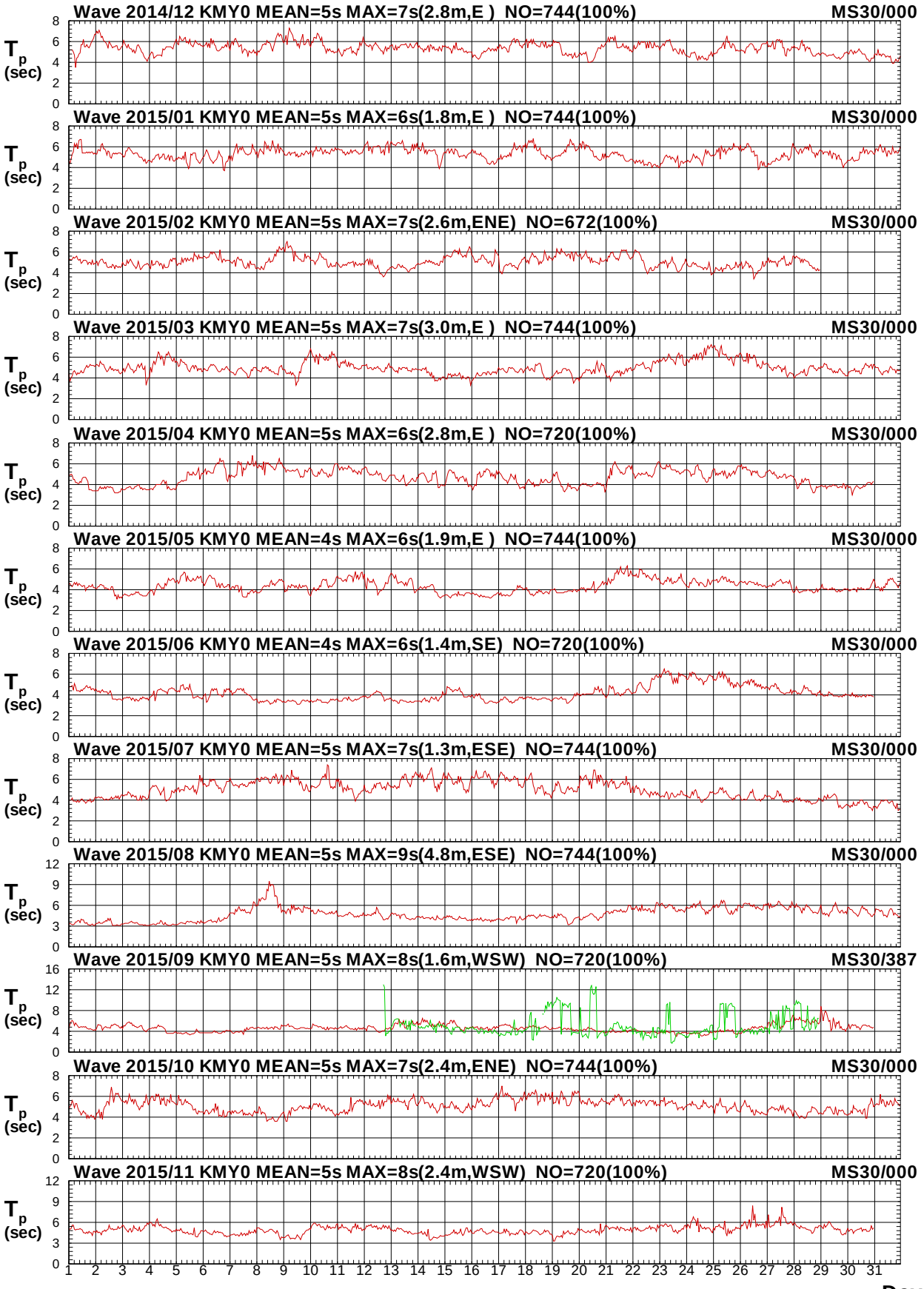


圖 11.9b　2015年每月金門海域 Y 站與馬祖海域3站週期圖

V14CKMY0.1HA V14CMS30.1H0 V151KMY0.1HA V151MS30.1H0 V152KMY0.1HA V152MS30.1H0
V153KMY0.1HA V153MS30.1H0 V154KMY0.1HA V154MS30.1H0 V155KMY0.1HA V155MS30.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

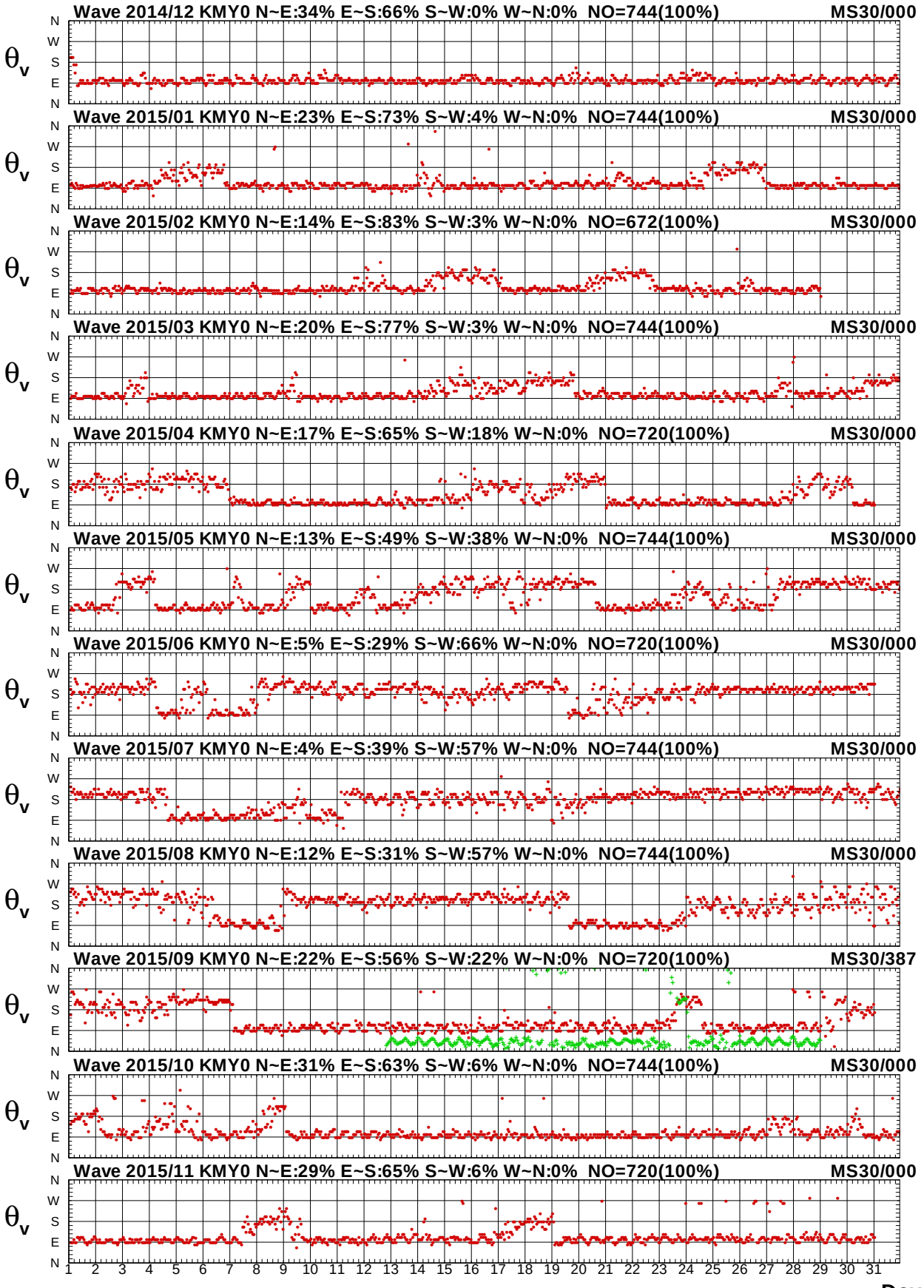


圖11.9c　2015年每月金門海域 Y 站與馬祖海域3站波向圖

V14CKMY0.1HA V14CMS30.1H0 V151KMY0.1HA V151MS30.1H0 V152KMY0.1HA V152MS30.1H0
V153KMY0.1HA V153MS30.1H0 V154KMY0.1HA V154MS30.1H0 V155KMY0.1HA V155MS30.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

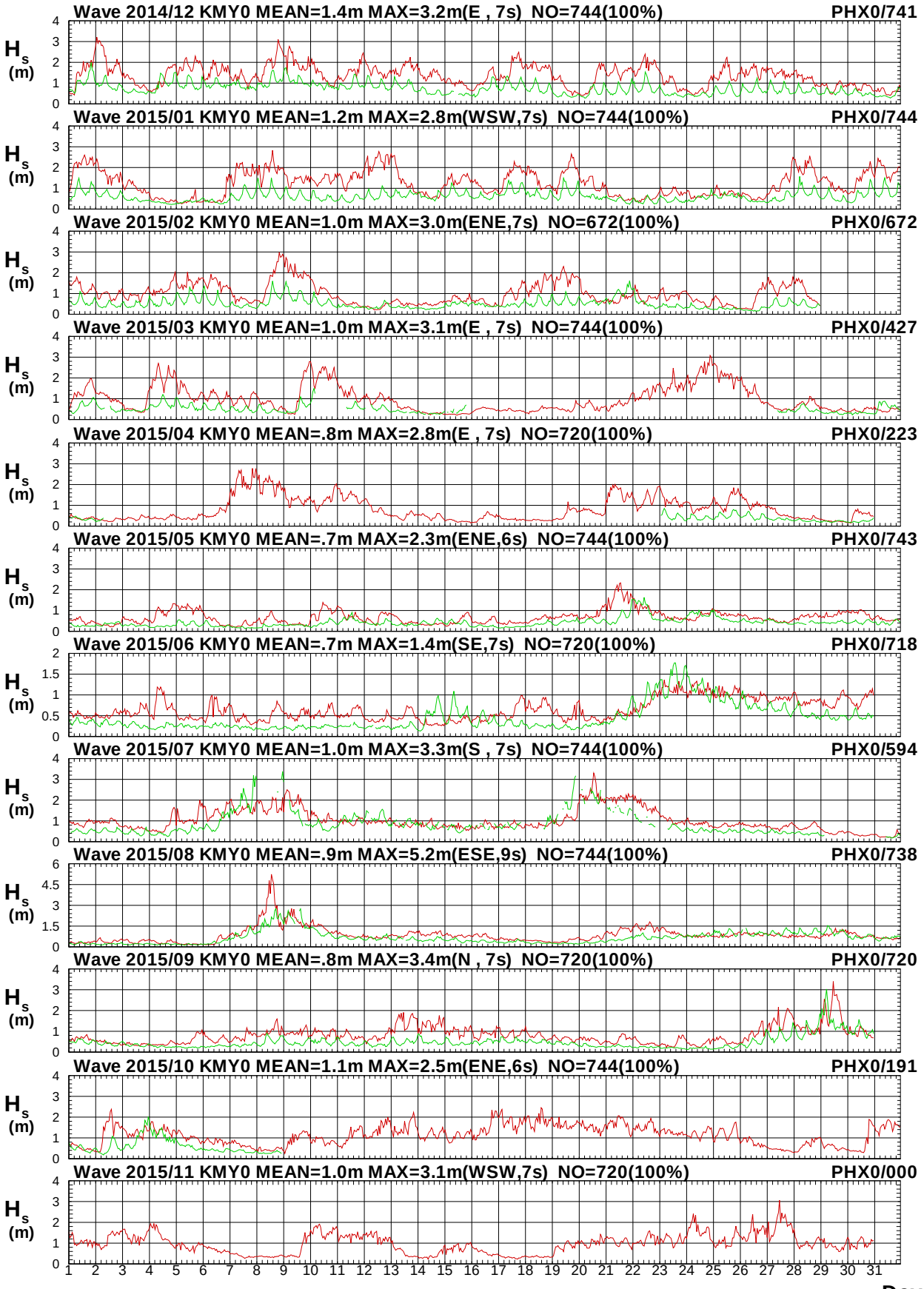


圖 11.10a　2015年每月金門海域 Y 站與澎湖海域 X 站波高圖

V14CKMY0.1HA V14CPHX0.1H0 V151KMY0.1HA V151PHX0.1H0 V152KMY0.1HA V152PHX0.1H0
V153KMY0.1HA V153PHX0.1H0 V154KMY0.1HA V154PHX0.1H0 V155KMY0.1HA V155PHX0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

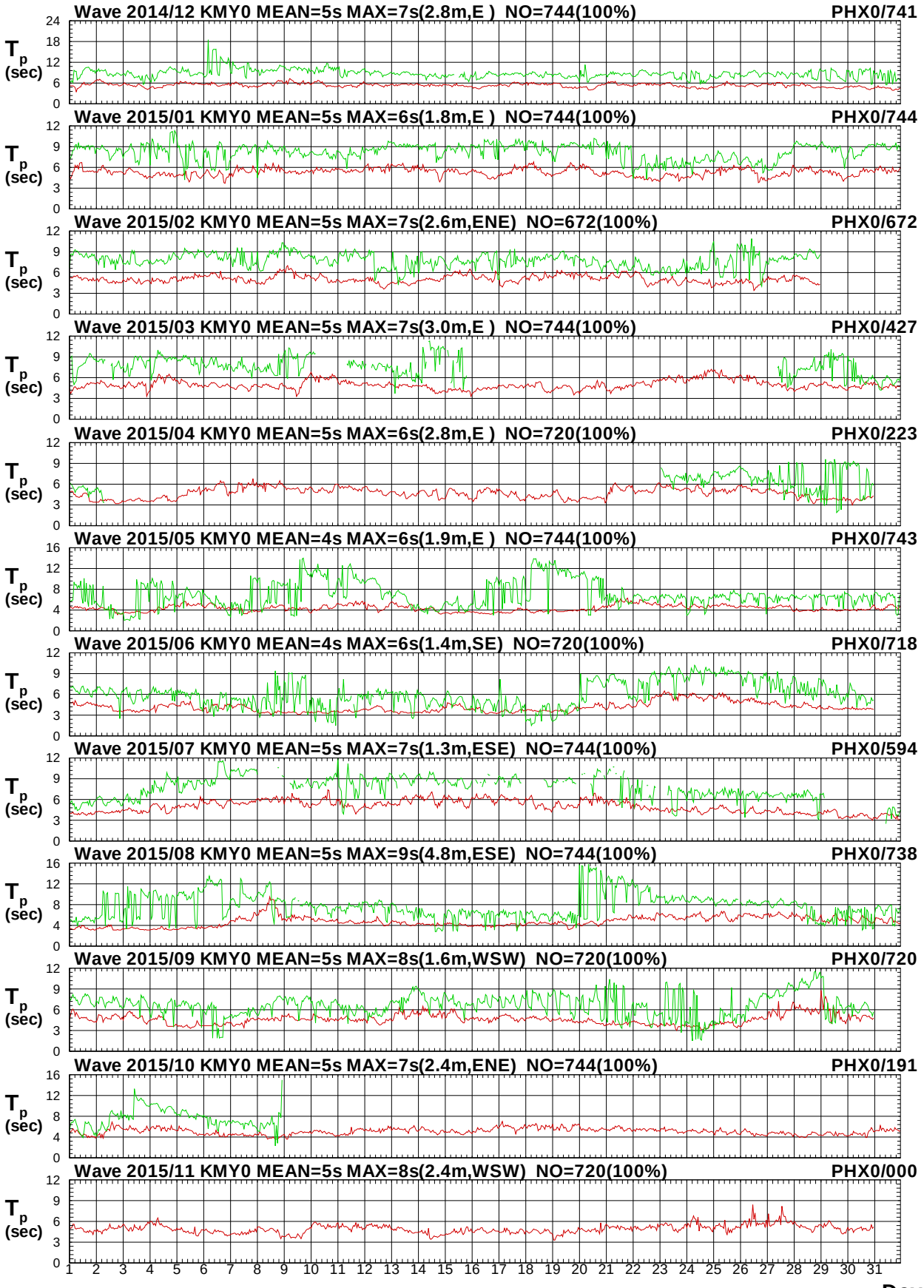


圖 11.10b　2015年每月金門海域 Y 站與澎湖海域 X 站週期圖

V14CKMY0.1HA V14CPHX0.1H0 V151KMY0.1HA V151PHX0.1H0 V152KMY0.1HA V152PHX0.1H0
V153KMY0.1HA V153PHX0.1H0 V154KMY0.1HA V154PHX0.1H0 V155KMY0.1HA V155PHX0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

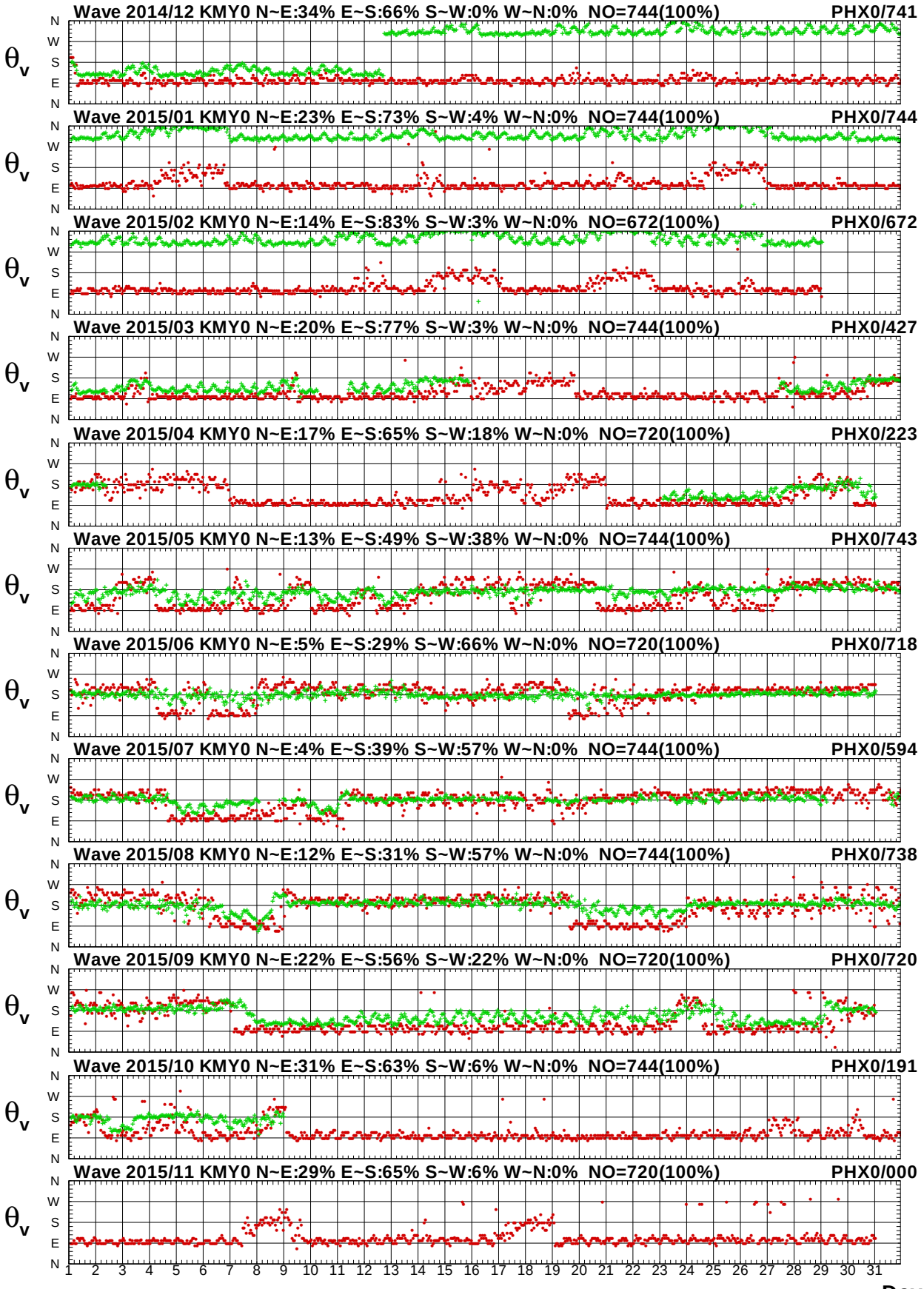


圖 11.10c　2015年每月金門海域 Y 站與澎湖海域 X 站波向圖

Wave H_s in Kin-Men seas of KMY0 at 2015

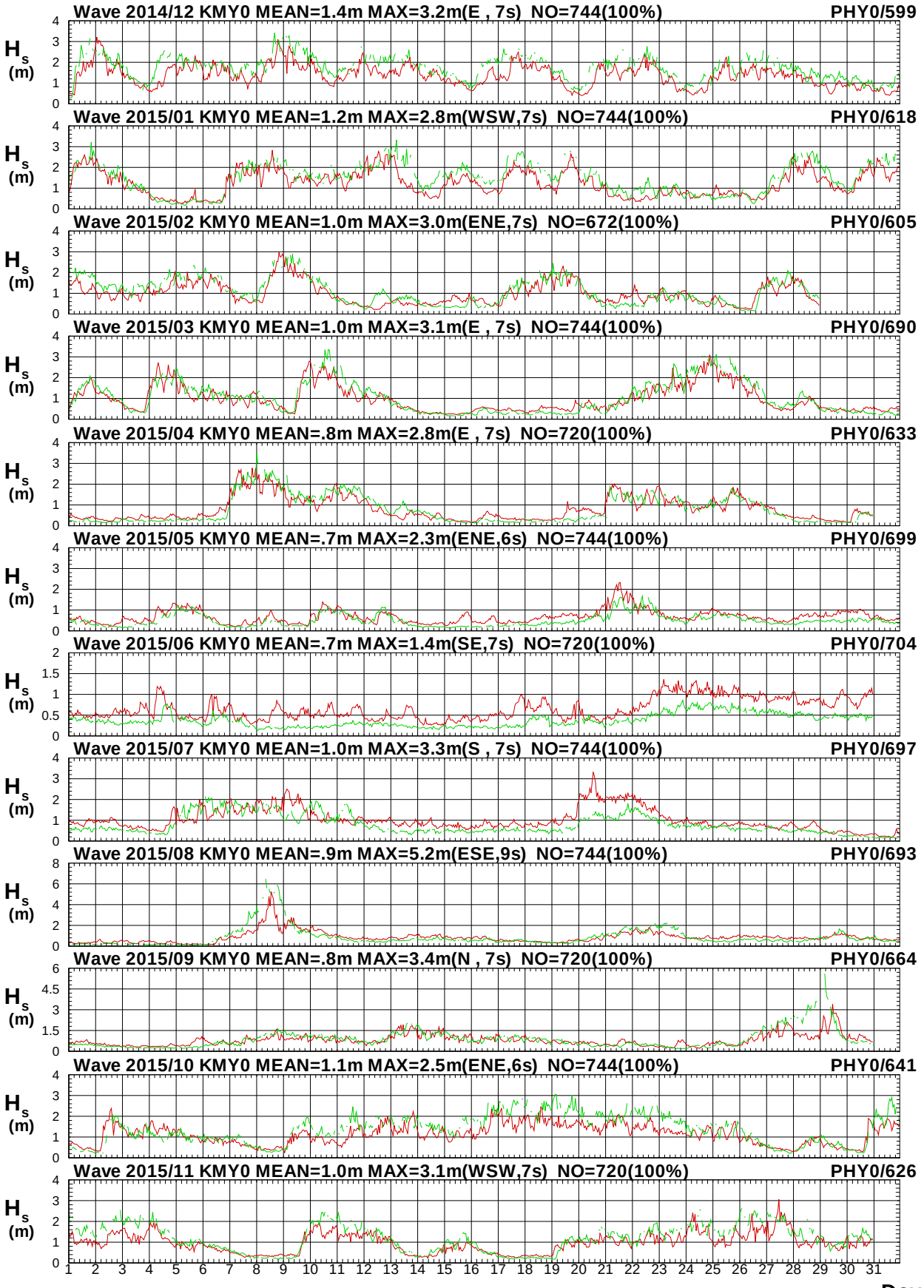


圖 11.11a　2015年每月金門海域 Y 站與澎湖海域 Y 站波高圖

V14CKMY0.1HA V14CPHY0.1H0 V151KMY0.1HA V151PHY0.1H0 V152KMY0.1HA V152PHY0.1H0
V153KMY0.1HA V153PHY0.1H0 V154KMY0.1HA V154PHY0.1H0 V155KMY0.1HA V155PHY0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

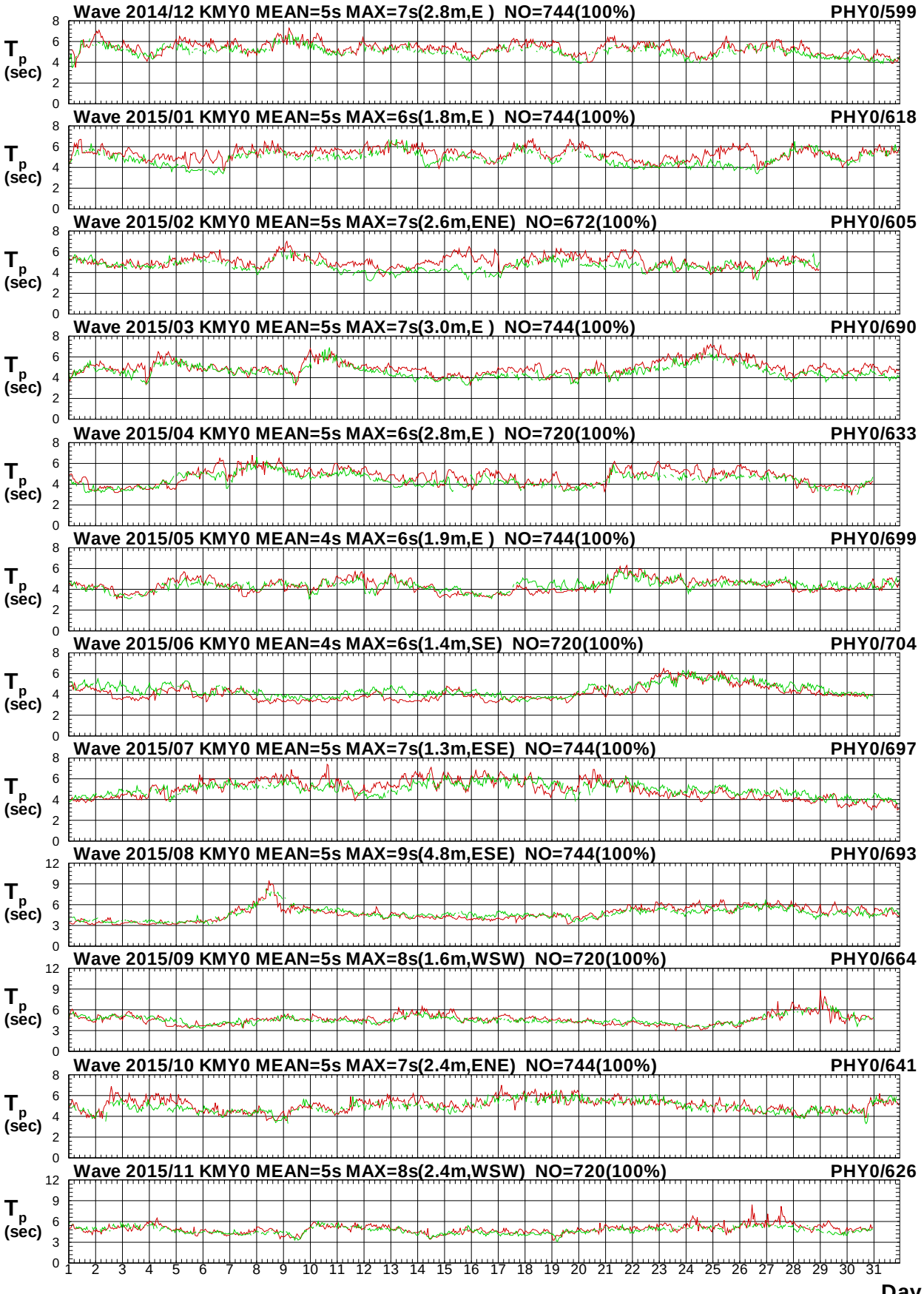


圖 11.11b　2015年每月金門海域 Y 站與澎湖海域 Y 站週期圖

V14CKMY0.1HA V14CPHY0.1H0 V151KMY0.1HA V151PHY0.1H0 V152KMY0.1HA V152PHY0.1H0
V153KMY0.1HA V153PHY0.1H0 V154KMY0.1HA V154PHY0.1H0 V155KMY0.1HA V155PHY0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

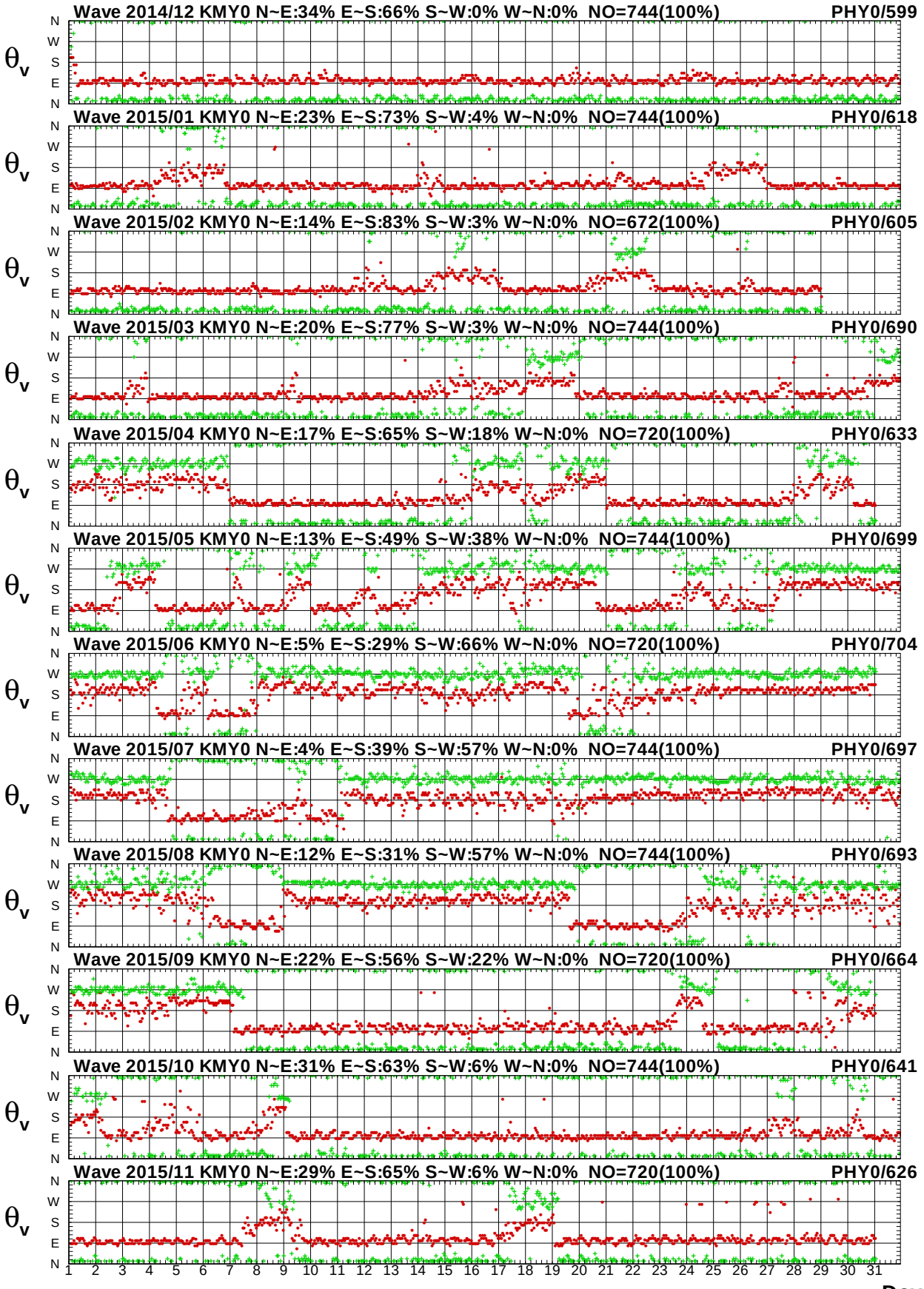


圖 11.11c　2015年每月金門海域 Y 站與澎湖海域 Y 站波向圖

V14CKMY0.1HA V14CPHY0.1H0 V151KMY0.1HA V151PHY0.1H0 V152KMY0.1HA V152PHY0.1H0
V153KMY0.1HA V153PHY0.1H0 V154KMY0.1HA V154PHY0.1H0 V155KMY0.1HA V155PHY0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

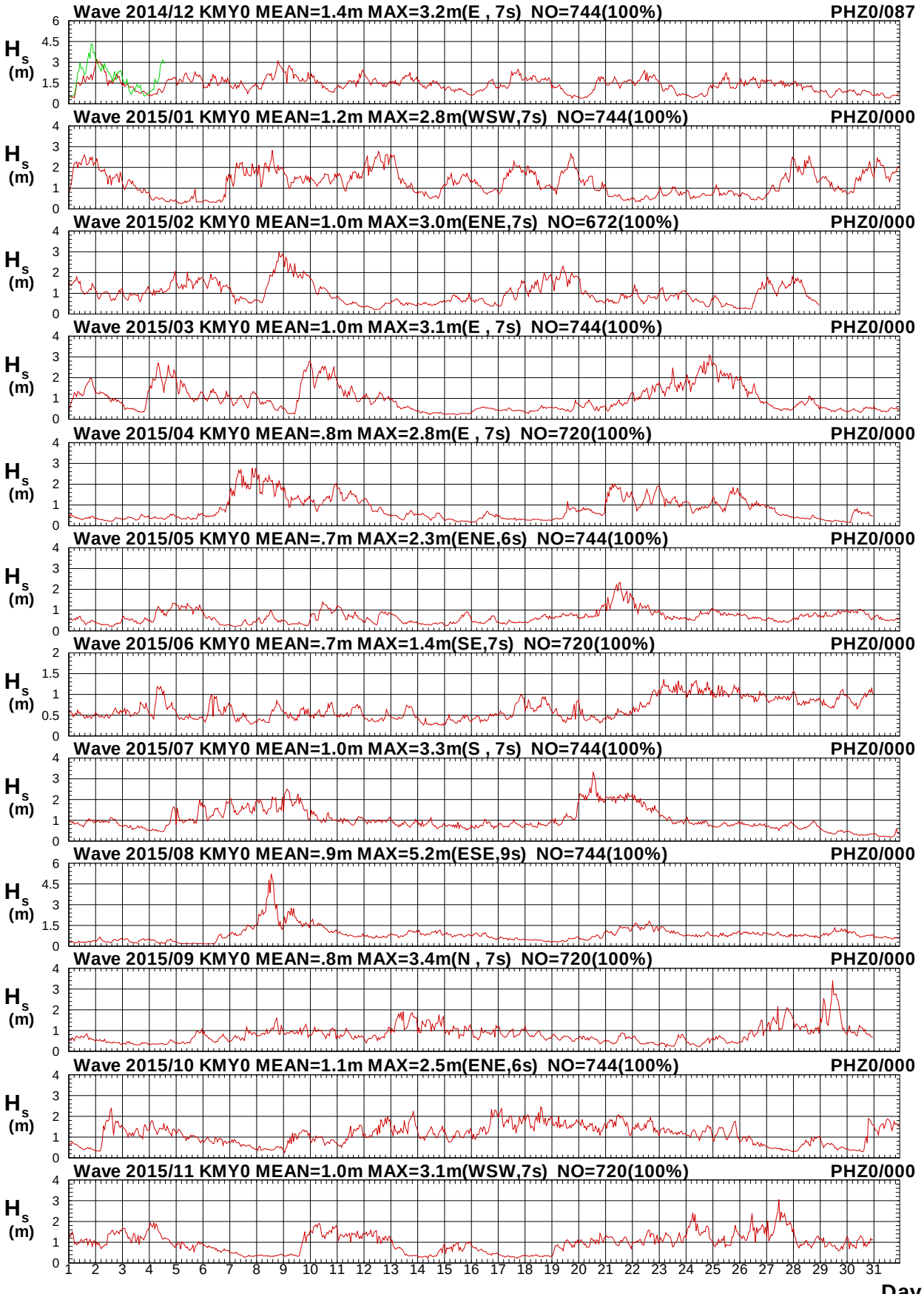


圖 11.12a　2015年每月金門海域 Y 站與澎湖海域 Z 站波高圖

V14CKMY0.1HA V14CPHZ0.1H0 V151KMY0.1HA V151PHZ0.1H0 V152KMY0.1HA V152PHZ0.1H0
V153KMY0.1HA V153PHZ0.1H0 V154KMY0.1HA V154PHZ0.1H0 V155KMY0.1HA V155PHZ0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

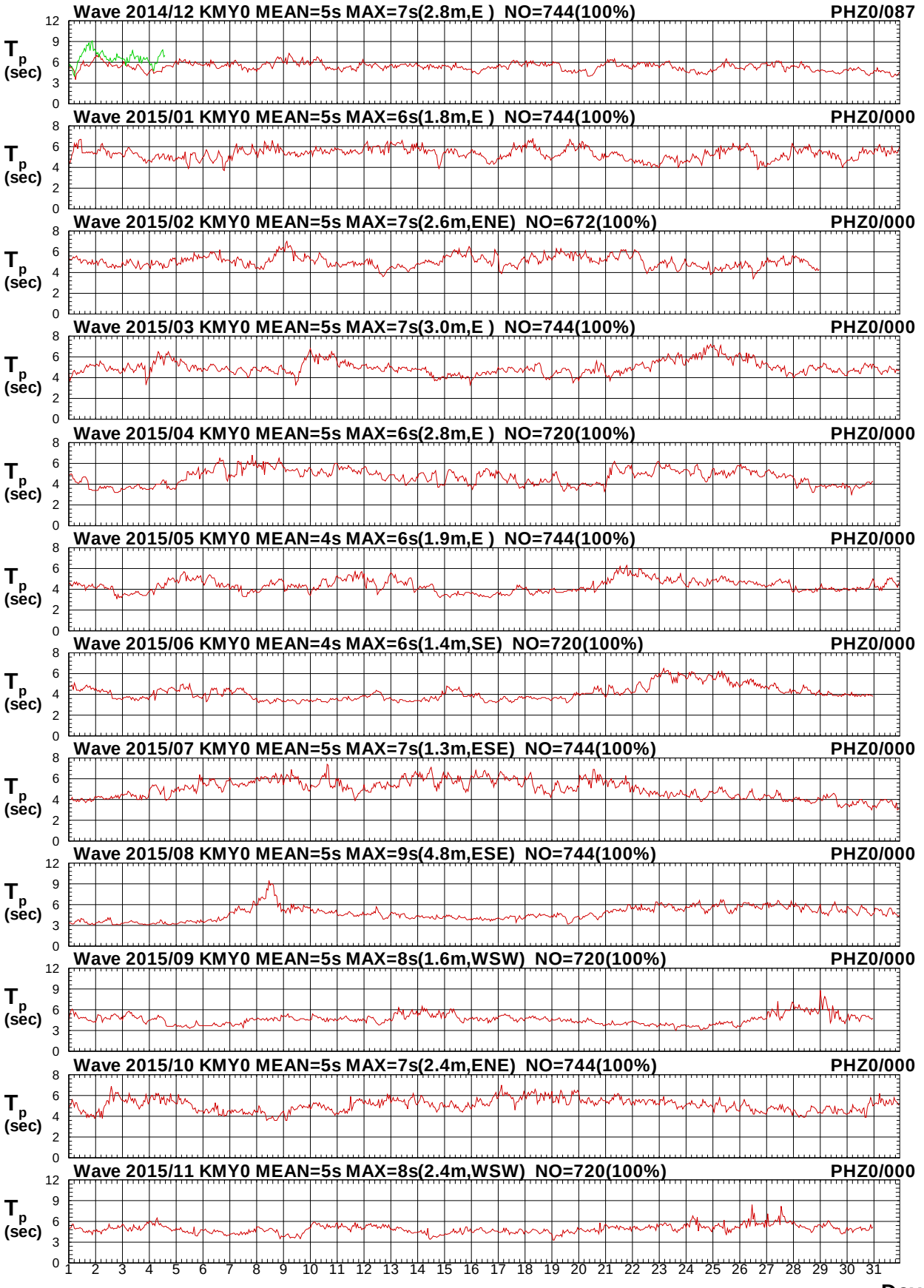


圖 11.12b　2015年每月金門海域 Y 站與澎湖海域 Z 站週期圖

V14CKMY0.1HA V14CPHZ0.1H0 V151KMY0.1HA V151PHZ0.1H0 V152KMY0.1HA V152PHZ0.1H0
V153KMY0.1HA V153PHZ0.1H0 V154KMY0.1HA V154PHZ0.1H0 V155KMY0.1HA V155PHZ0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

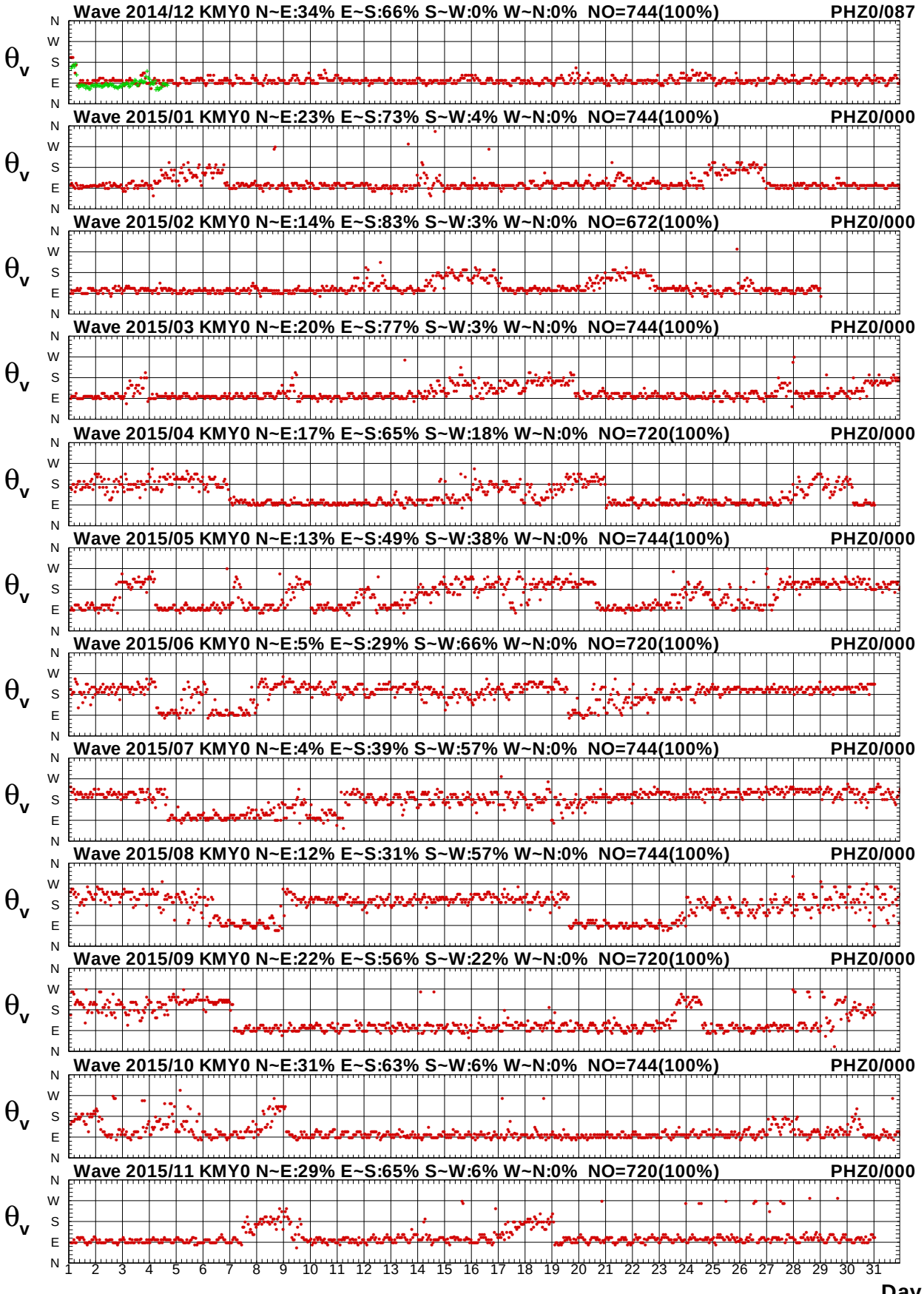


圖11.12c　2015年每月金門海域 Y 站與澎湖海域 Z 站波向圖

V14CKMY0.1HA V14CPHZ0.1H0 V151KMY0.1HA V151PHZ0.1H0 V152KMY0.1HA V152PHZ0.1H0
V153KMY0.1HA V153PHZ0.1H0 V154KMY0.1HA V154PHZ0.1H0 V155KMY0.1HA V155PHZ0.1H0

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Wave H_s in Kin-Men seas of KMY0 at 2015

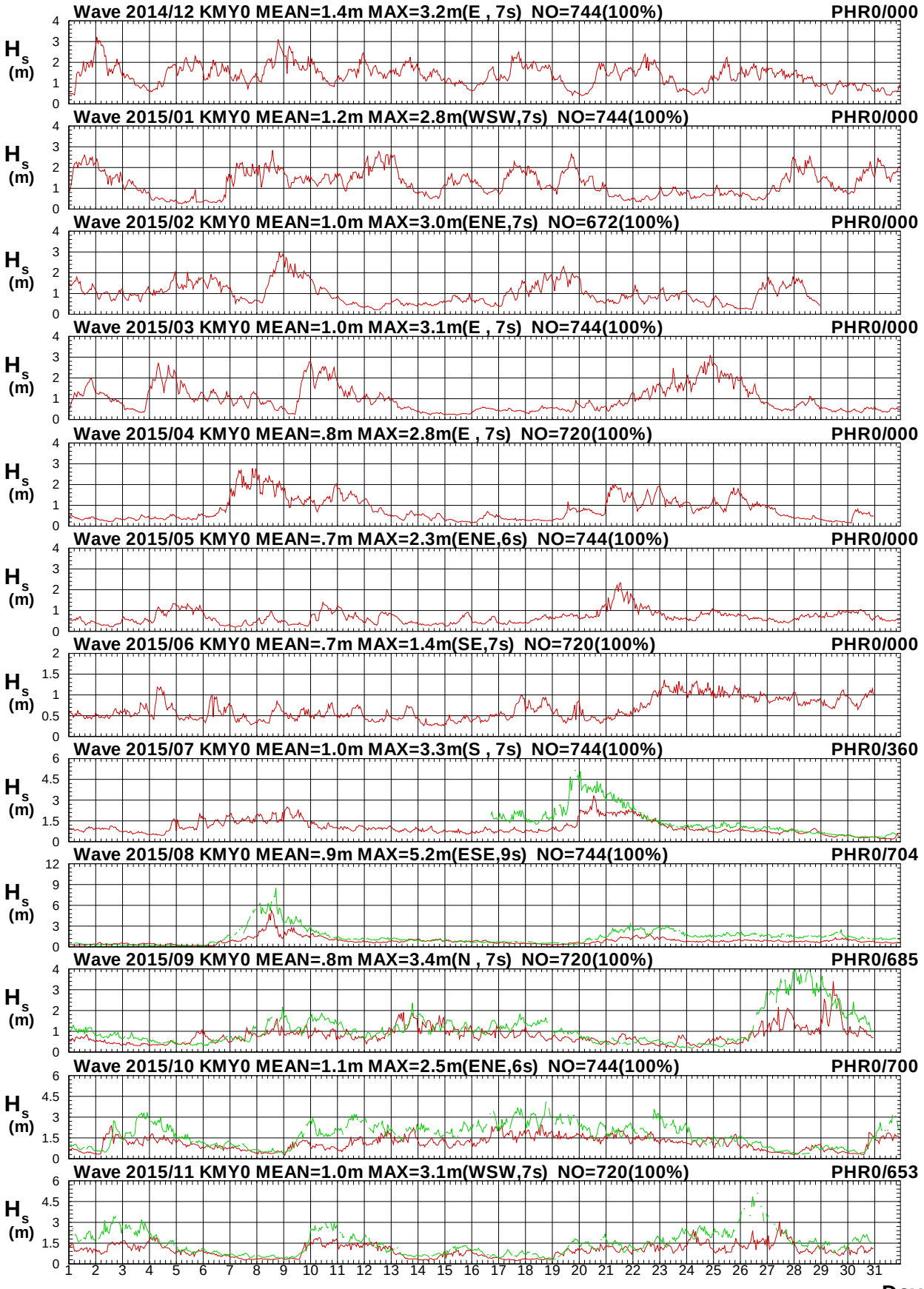


圖 11.13a　2015年每月金門海域 Y 站與澎湖海域 R 站波高圖

V14CKMY0.1HA V14CPHR0.1H0 V151KMY0.1HA V151PHR0.1H0 V152KMY0.1HA V152PHR0.1H0
V153KMY0.1HA V153PHR0.1H0 V154KMY0.1HA V154PHR0.1H0 V155KMY0.1HA V155PHR0.1H0

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Wave T_p in Kin-Men seas of KMY0 at 2015

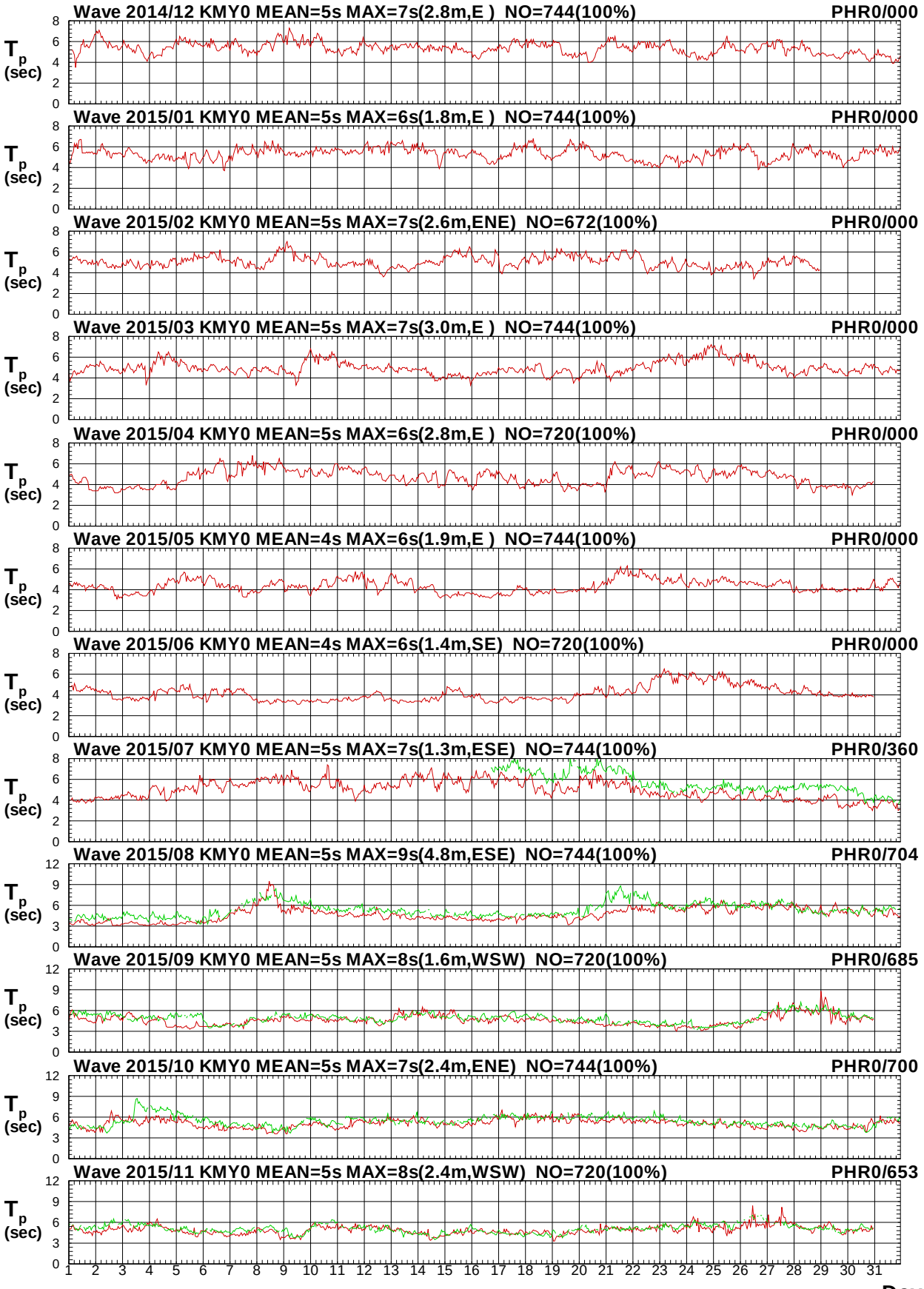


圖 11.13b　2015年每月金門海域 Y 站與澎湖海域 R 站週期圖

V14CKMY0.1HA V14CPHR0.1H0 V151KMY0.1HA V151PHR0.1H0 V152KMY0.1HA V152PHR0.1H0
V153KMY0.1HA V153PHR0.1H0 V154KMY0.1HA V154PHR0.1H0 V155KMY0.1HA V155PHR0.1H0

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Wave Direction in Kin-Men seas of KMY0 at 2015

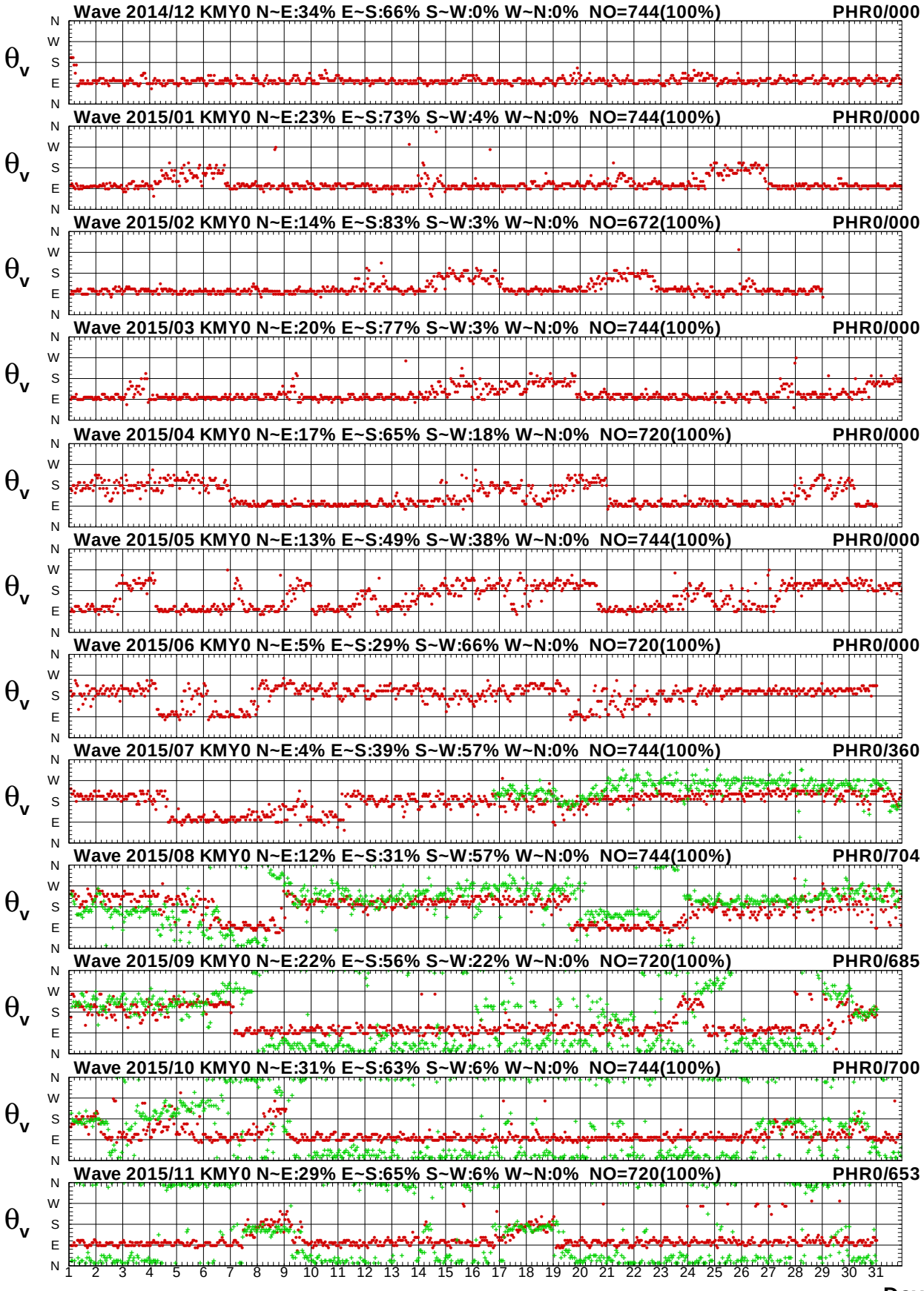


圖 11.13c　2015年每月金門海域 Y 站與澎湖海域 R 站波向圖

V14CKMY0.1HA V14CPHR0.1H0 V151KMY0.1HA V151PHR0.1H0 V152KMY0.1HA V152PHR0.1H0
V153KMY0.1HA V153PHR0.1H0 V154KMY0.1HA V154PHR0.1H0 V155KMY0.1HA V155PHR0.1H0

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第十二章　2015 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**，2015 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，2015 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 2015 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	2014/10-2015/11(觀測中)	港研中心	馬祖福澳港 AWCP
A	26°12'18"N	119°58'1 "E	2015/09-2015/11(觀測中)	港研中心	北竿港區 AWCP
1	25°58'8 "N	119°55'54 "E	2015/09-2015/11(觀測中)	港研中心	西莒 AWCP
2	26°21'55 "N	120°29'2 "E	2015/09-2015/11(觀測中)	港研中心	東引 AWCP
3	25°57'31 "N	119°57'47 "E	2015/09-2015/11(觀測中)	港研中心	東莒 AWCP
Y	26°22'36"N	120°31'53"E	2010/08-2015/11(觀測中)	中央氣象局	馬祖資料浮標

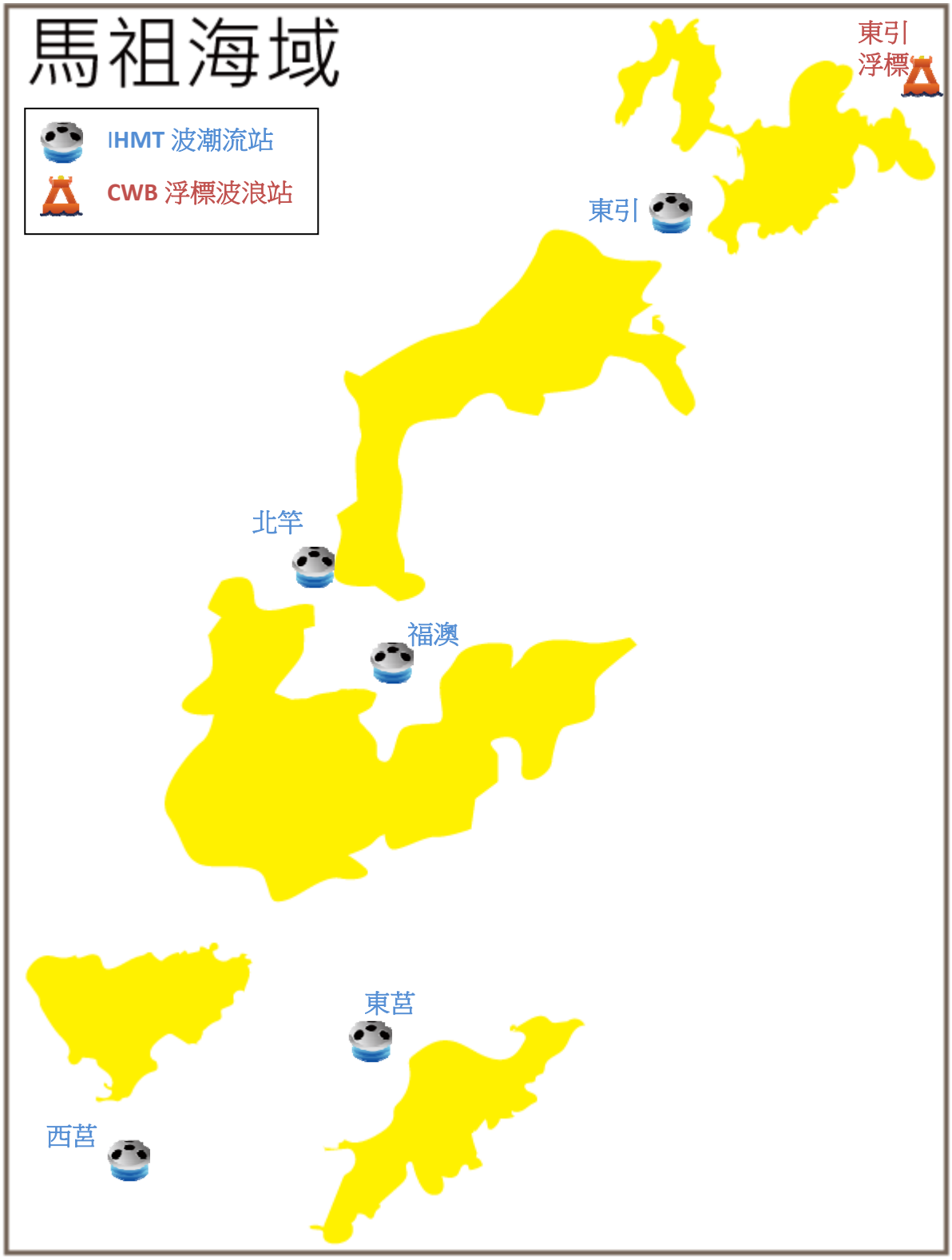


圖 12 馬祖海域波浪觀測站位置示意圖

表12.1a 2015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		
2014/12月	738 (99.2%)	711 (95.6%)	*	*	*	*	*	*
2015/ 1月	729 (98.0%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	668 (99.4%)	662 (98.5%)	*	*	*	*	*	*
2015/ 3月	741 (99.6%)	717 (96.4%)	*	*	*	*	*	*
2015/ 4月	719 (99.9%)	694 (96.4%)	*	*	*	*	*	*
2015/ 5月	741 (99.6%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	714 (99.2%)	716 (99.4%)	*	*	*	*	*	*
2015/ 7月	739 (99.3%)	532 (71.5%)	*	*	*	*	*	*
2015/ 8月	739 (99.3%)	673 (90.5%)	*	*	*	*	*	*
2015/ 9月	717 (99.6%)	699 (97.1%)	458 (63.6%)	377 (52.4%)	319 (44.3%)	387 (53.8%)	*	*
2015/10月	738 (99.2%)	703 (94.5%)	737 (99.1%)	*	744 (100%)	*	*	*
2015/11月	706 (98.1%)	630 (87.5%)	720 (100%)	*	372 (51.7%)	*	*	*
2015/冬季	2135 (98.8%)	2117 (98.0%)	*	*	*	*	*	*
2015/春季	2201 (99.7%)	2155 (97.6%)	*	*	*	*	*	*
2015/夏季	2192 (99.3%)	1921 (87.0%)	*	*	*	*	*	*
2015/秋季	2161 (98.9%)	2032 (93.0%)	1915 (87.7%)	377 (17.3%)	1435 (65.7%)	387 (17.7%)	*	*
2015/整年	8689 (99.2%)	8225 (93.9%)	1915 (21.9%)	377 (4.3%)	1435 (16.4%)	387 (4.4%)	*	*
起始年月	2014/12	2014/12	2015/09	2015/09	2015/09	2015/09	*	*
結束年月	2015/11	2015/11	2015/11	2015/09	2015/11	2015/09	*	*

表12.1b 2015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		
2014/12月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	672 (100%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 4月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/ 7月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 8月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 9月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/10月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/11月	720 (100%)	720 (100%)	*	*	*	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	*	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	*	*	*	*	*	*
2015/整年	8760 (100%)	8760 (100%)	*	*	*	*	*	*
起始年月	2014/12	2014/12	*	*	*	*	*	*
結束年月	2015/11	2015/11	*	*	*	*	*	*

Wave H_s in Ma-Tsu Seas of MSY0 at 2015

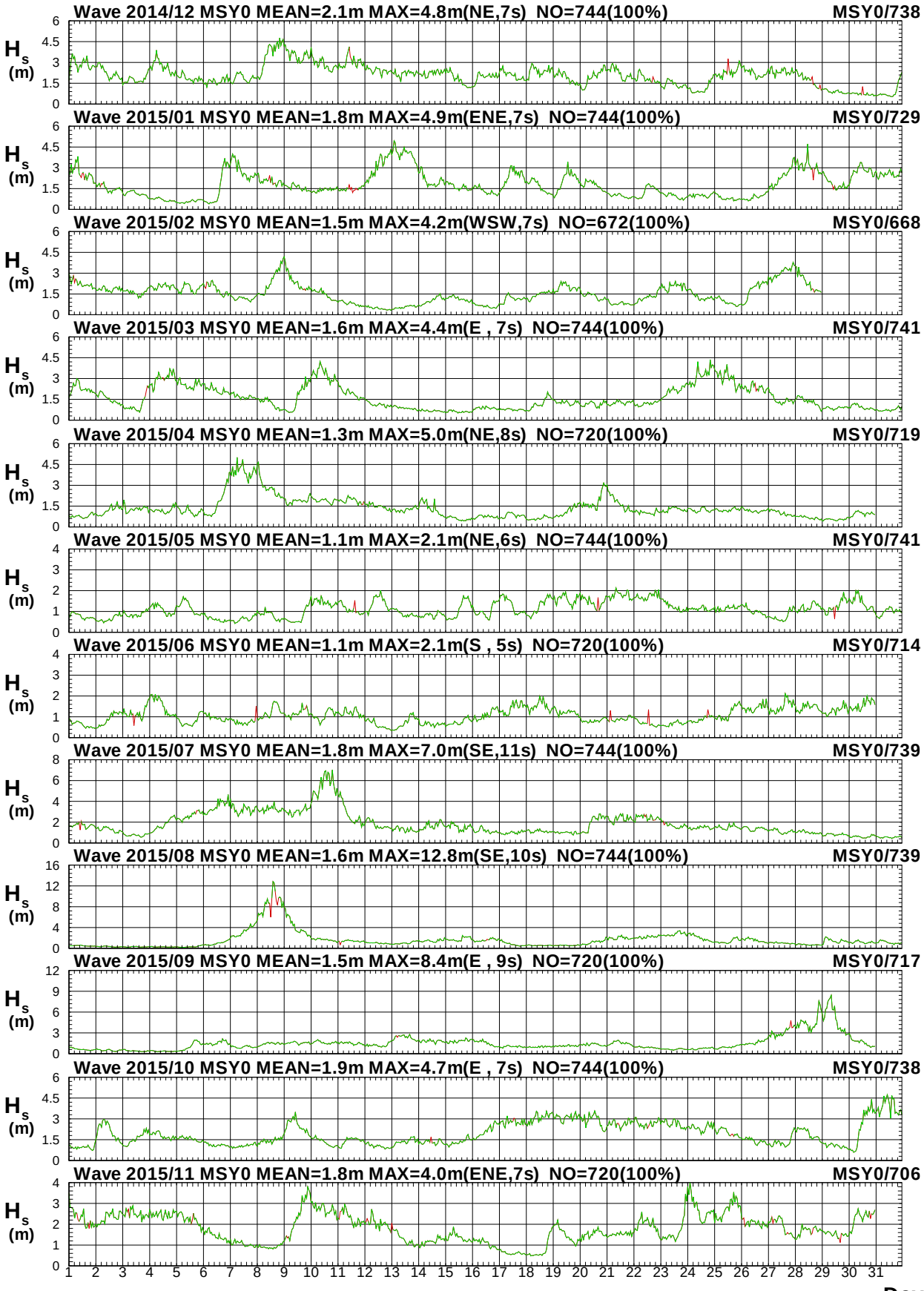


圖 12.1a　2015年每月馬祖海域 Y 站修補前後之波高比較圖

V14CMSY0.1HA V14CMSY0.1H0 V151MSY0.1HA V151MSY0.1H0 V152MSY0.1HA V152MSY0.1H0
V153MSY0.1HA V153MSY0.1H0 V154MSY0.1HA V154MSY0.1H0 V155MSY0.1HA V155MSY0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

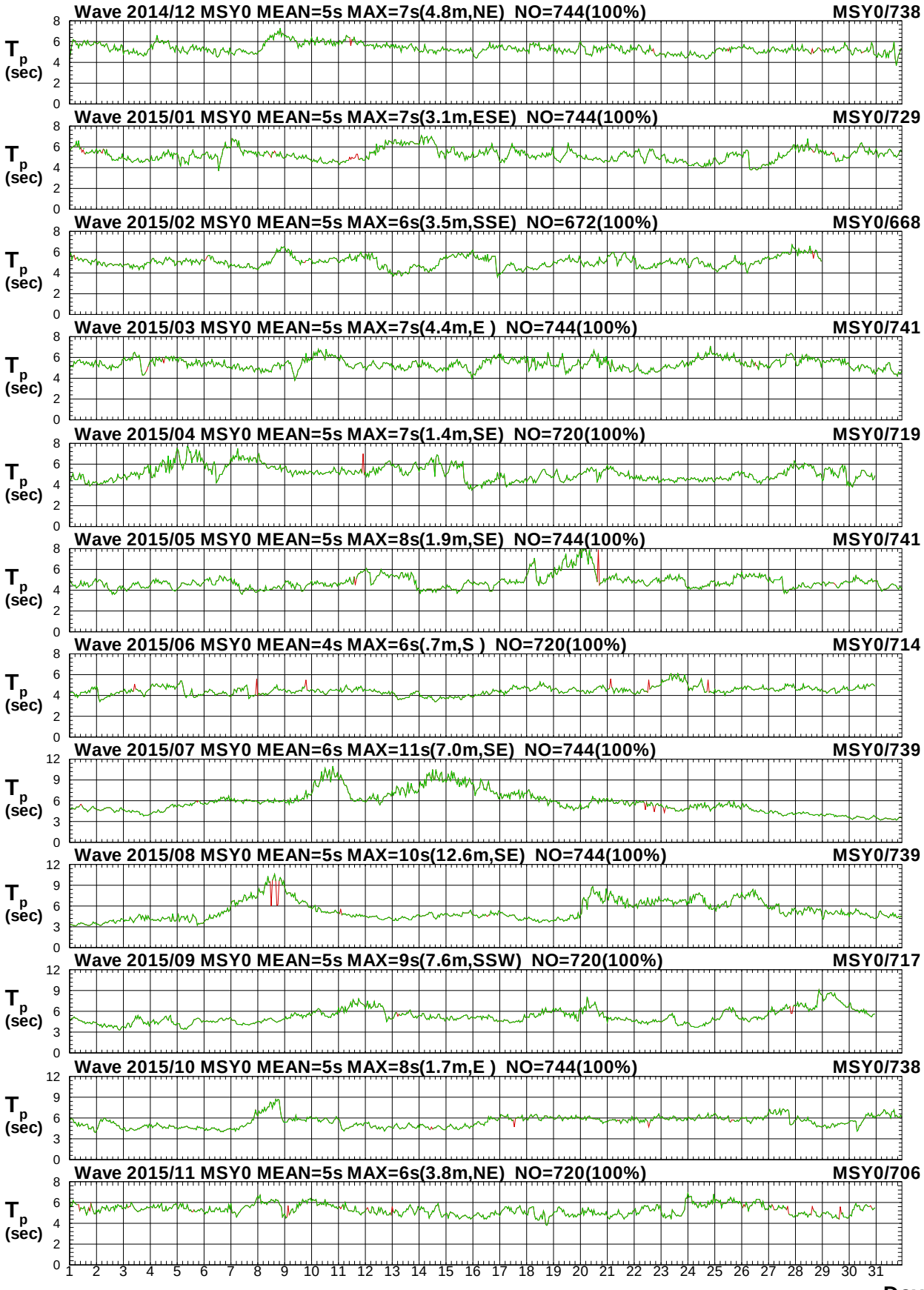


圖 12.1b　2015年每月馬祖海域 Y 站修補前後之週期比較圖

V14CMSY0.1HA V14CMSY0.1H0 V151MSY0.1HA V151MSY0.1H0 V152MSY0.1HA V152MSY0.1H0
V153MSY0.1HA V153MSY0.1H0 V154MSY0.1HA V154MSY0.1H0 V155MSY0.1HA V155MSY0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

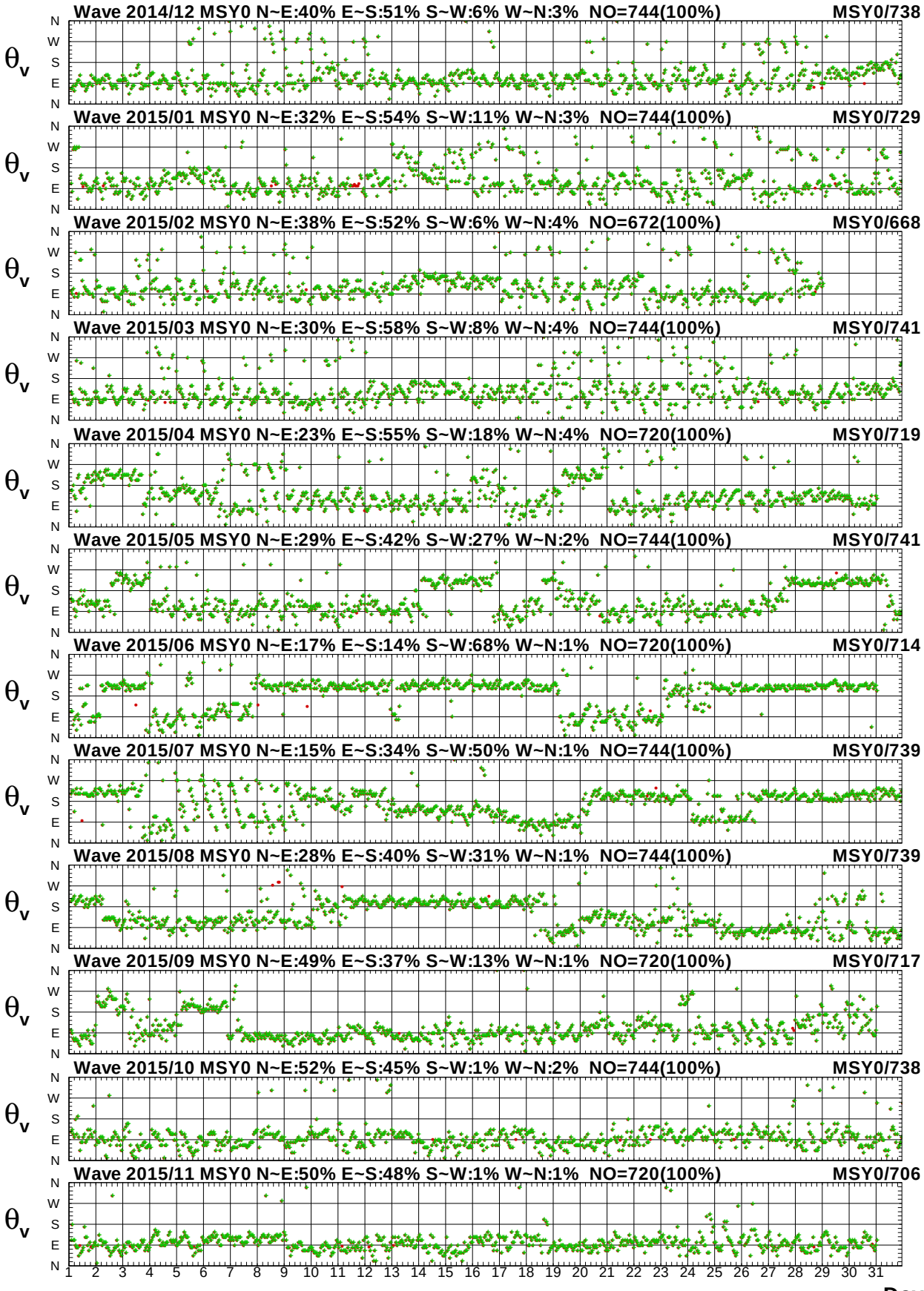


圖 12.1c　2015年每月馬祖海域 Y 站修補前後之波向比較圖

V14CMSY0.1HA V14CMSY0.1H0 V151MSY0.1HA V151MSY0.1H0 V152MSY0.1HA V152MSY0.1H0
V153MSY0.1HA V153MSY0.1H0 V154MSY0.1HA V154MSY0.1H0 V155MSY0.1HA V155MSY0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

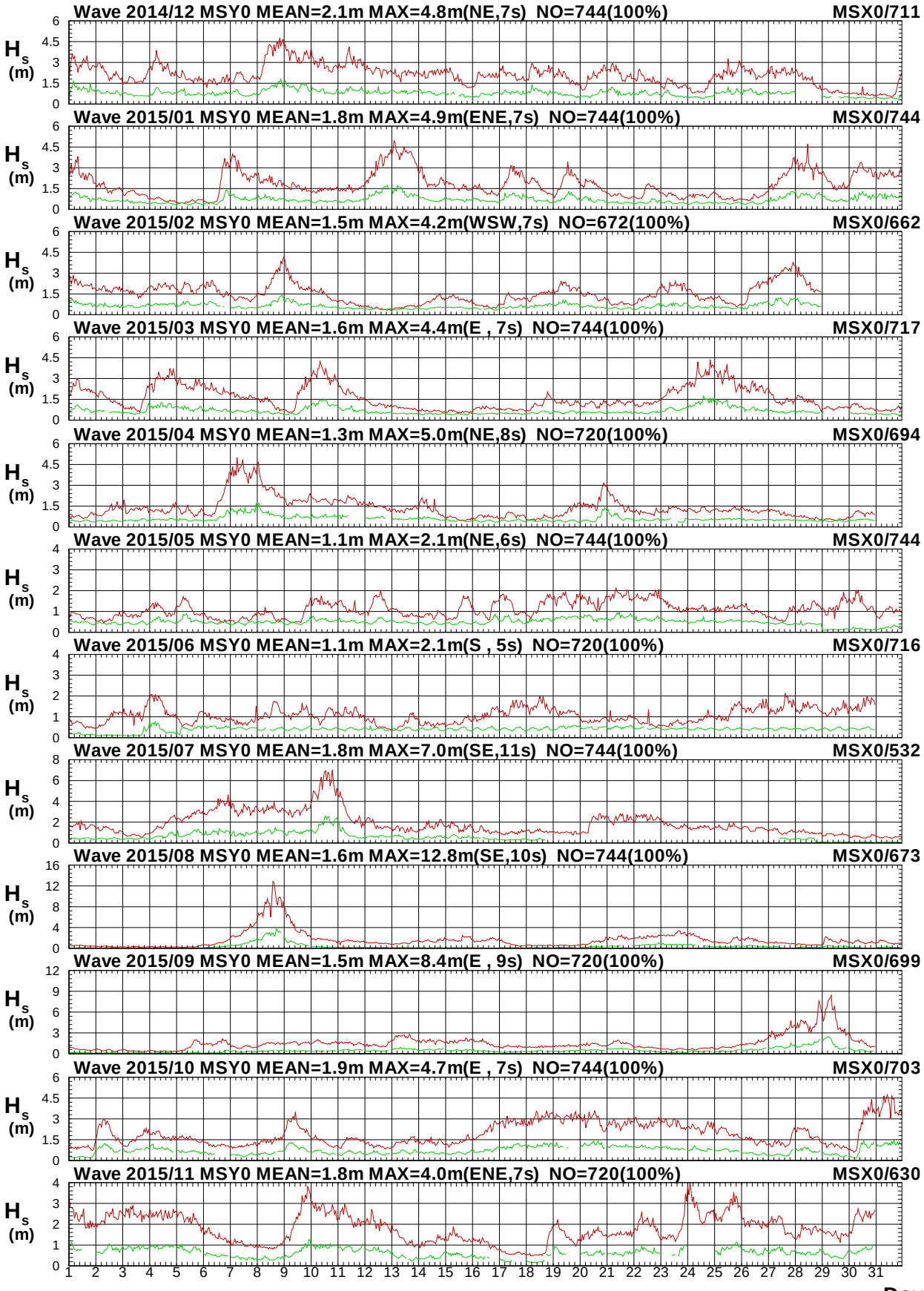


圖 12.2a　2015年每月馬祖海域 Y 站與 X 站波高比較圖

V14CMSY0.1HA V14CMSX0.1H0 V151MSY0.1HA V151MSX0.1H0 V152MSY0.1HA V152MSX0.1H0
V153MSY0.1HA V153MSX0.1H0 V154MSY0.1HA V154MSX0.1H0 V155MSY0.1HA V155MSX0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

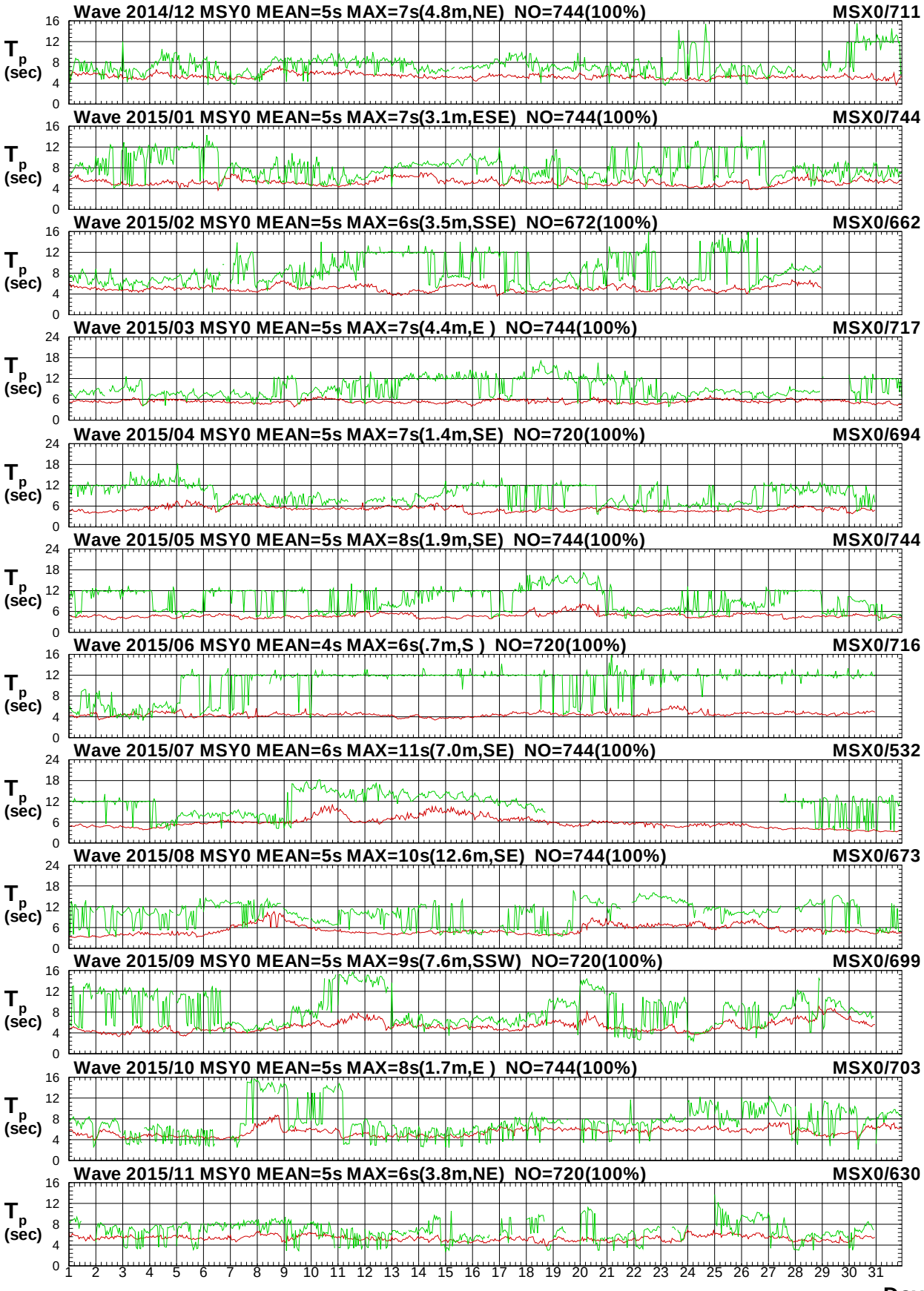


圖 12.2b　2015年每月馬祖海域 Y 站與 X 站週期比較圖

V14CMSY0.1HA V14CMSX0.1H0 V151MSY0.1HA V151MSX0.1H0 V152MSY0.1HA V152MSX0.1H0
V153MSY0.1HA V153MSX0.1H0 V154MSY0.1HA V154MSX0.1H0 V155MSY0.1HA V155MSX0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

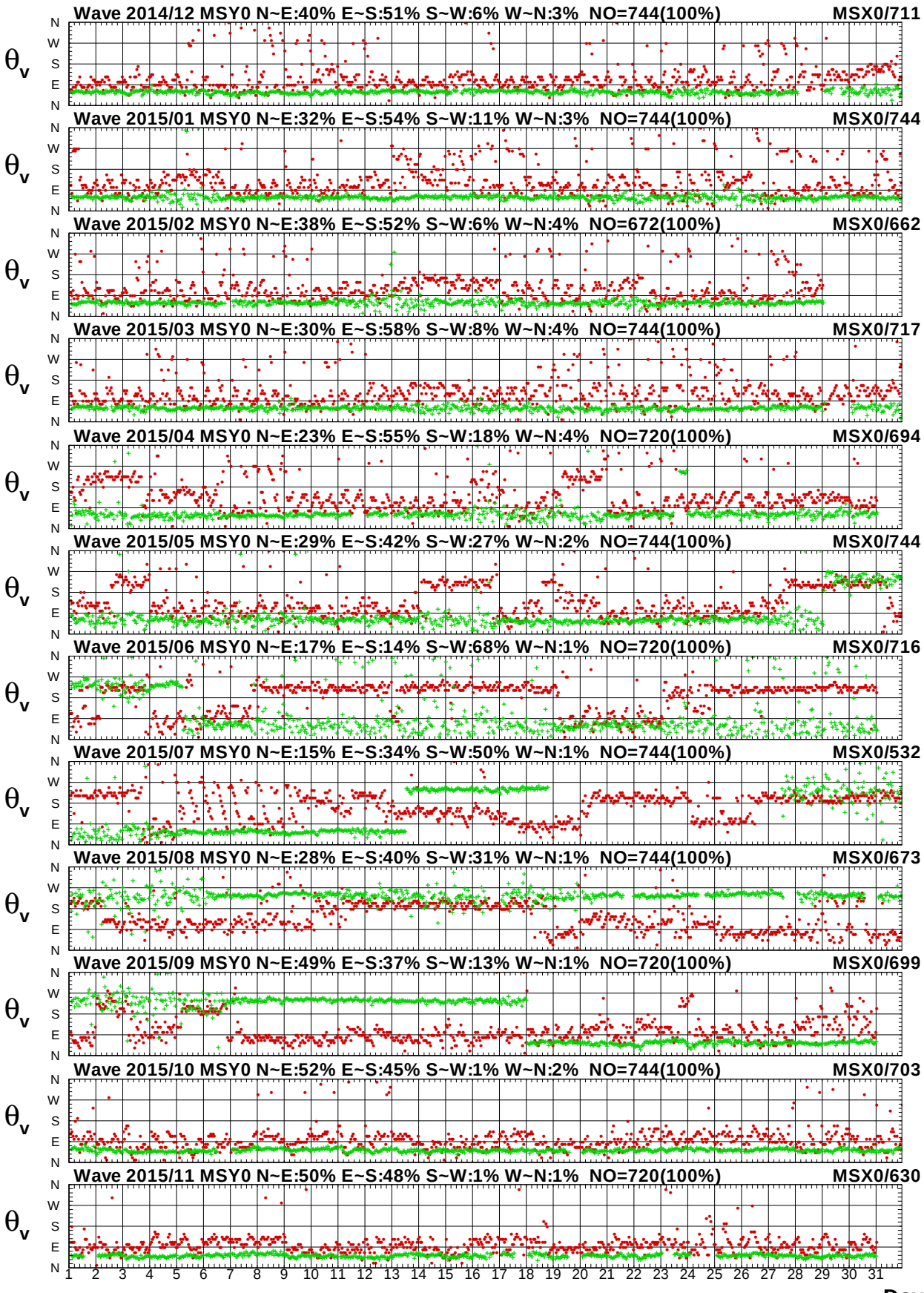


圖 12.2c　2015年每月馬祖海域 Y 站與 X 站波向比較圖

Wave H_s in Ma-Tsu Seas of MSY0 at 2015

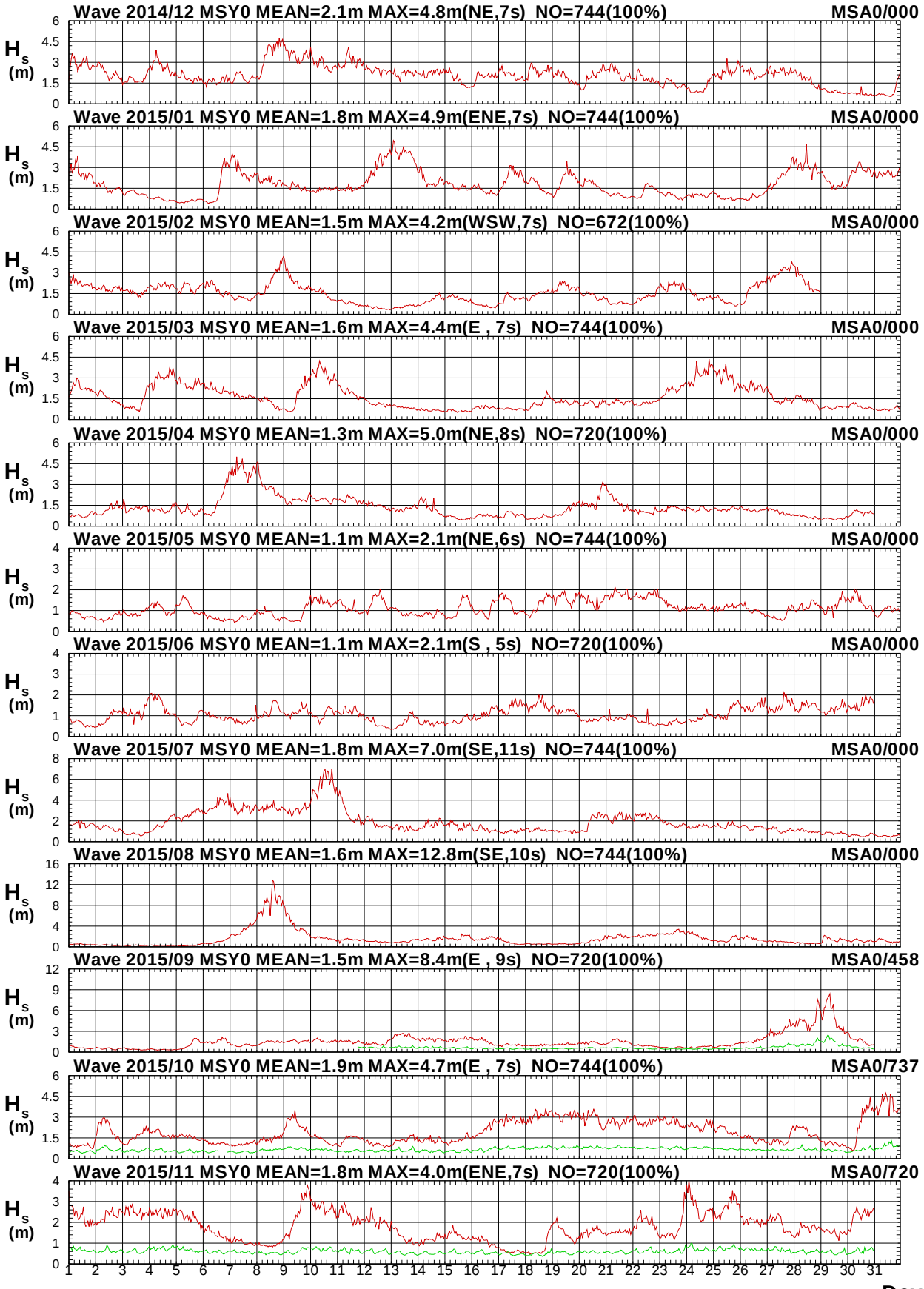


圖 12.3a　2015年每月馬祖海域 Y 站與 A 站波高比較圖

V14CMSY0.1HA V14CMSA0.1H0 V151MSY0.1HA V151MSA0.1H0 V152MSY0.1HA V152MSA0.1H0
V153MSY0.1HA V153MSA0.1H0 V154MSY0.1HA V154MSA0.1H0 V155MSY0.1HA V155MSA0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

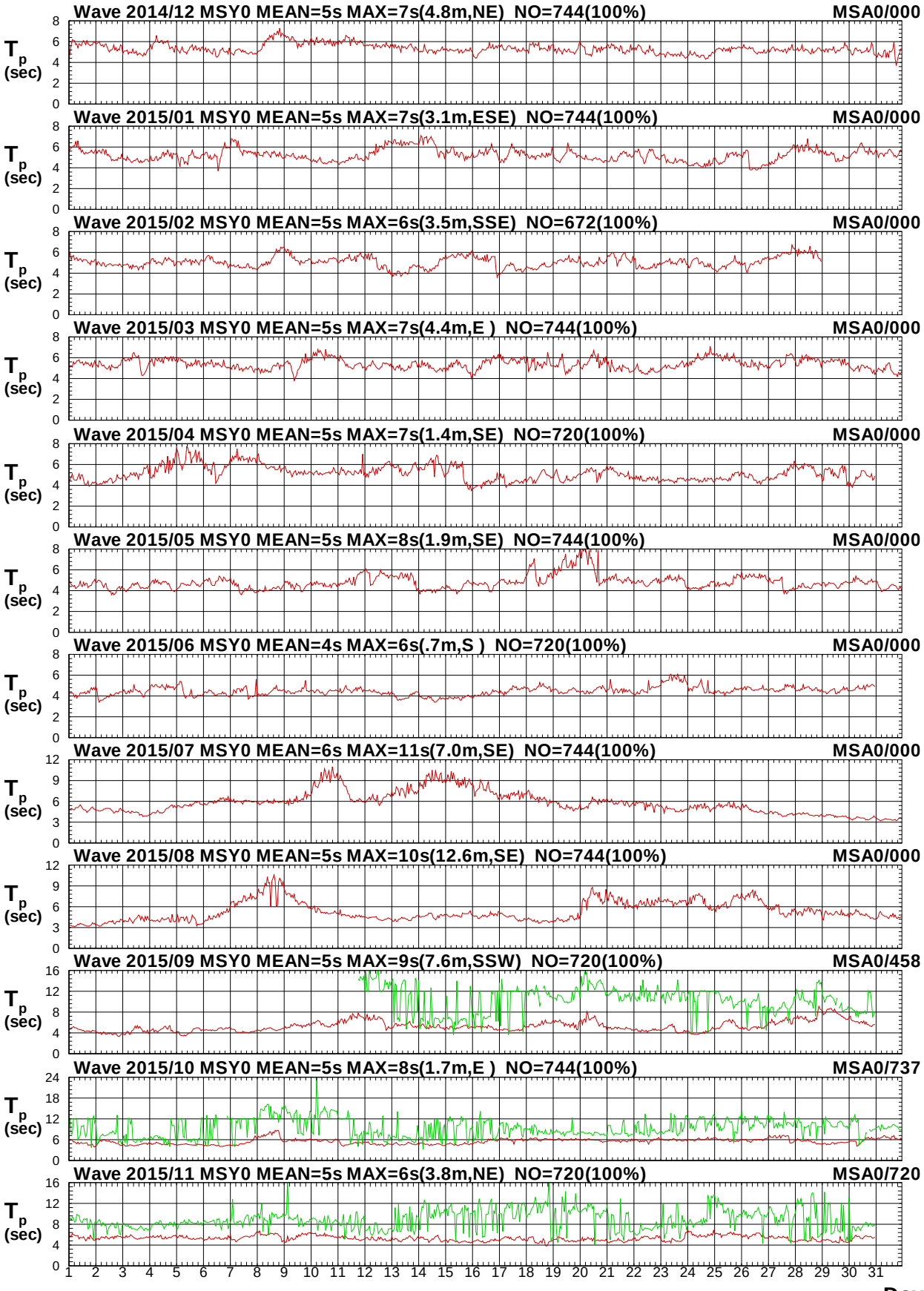


圖 12.3b　2015年每月馬祖海域 Y 站與 A 站週期比較圖

V14CMSY0.1HA V14CMSA0.1H0 V151MSY0.1HA V151MSA0.1H0 V152MSY0.1HA V152MSA0.1H0
V153MSY0.1HA V153MSA0.1H0 V154MSY0.1HA V154MSA0.1H0 V155MSY0.1HA V155MSA0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

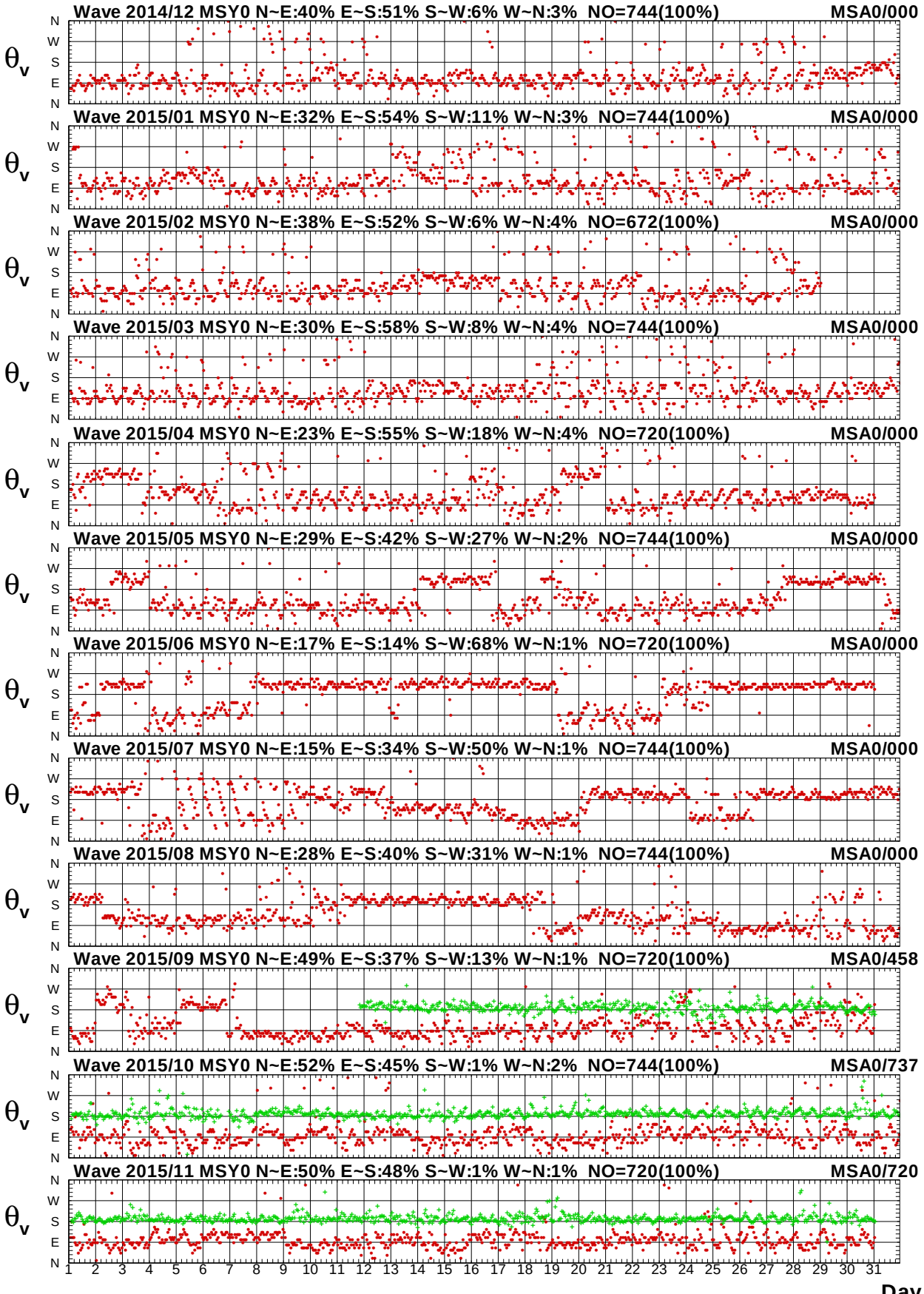


圖 12.3c　2015年每月馬祖海域 Y 站與 A 站波向比較圖

V14CMSY0.1HA V14CMSA0.1H0 V151MSY0.1HA V151MSA0.1H0 V152MSY0.1HA V152MSA0.1H0
V153MSY0.1HA V153MSA0.1H0 V154MSY0.1HA V154MSA0.1H0 V155MSY0.1HA V155MSA0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

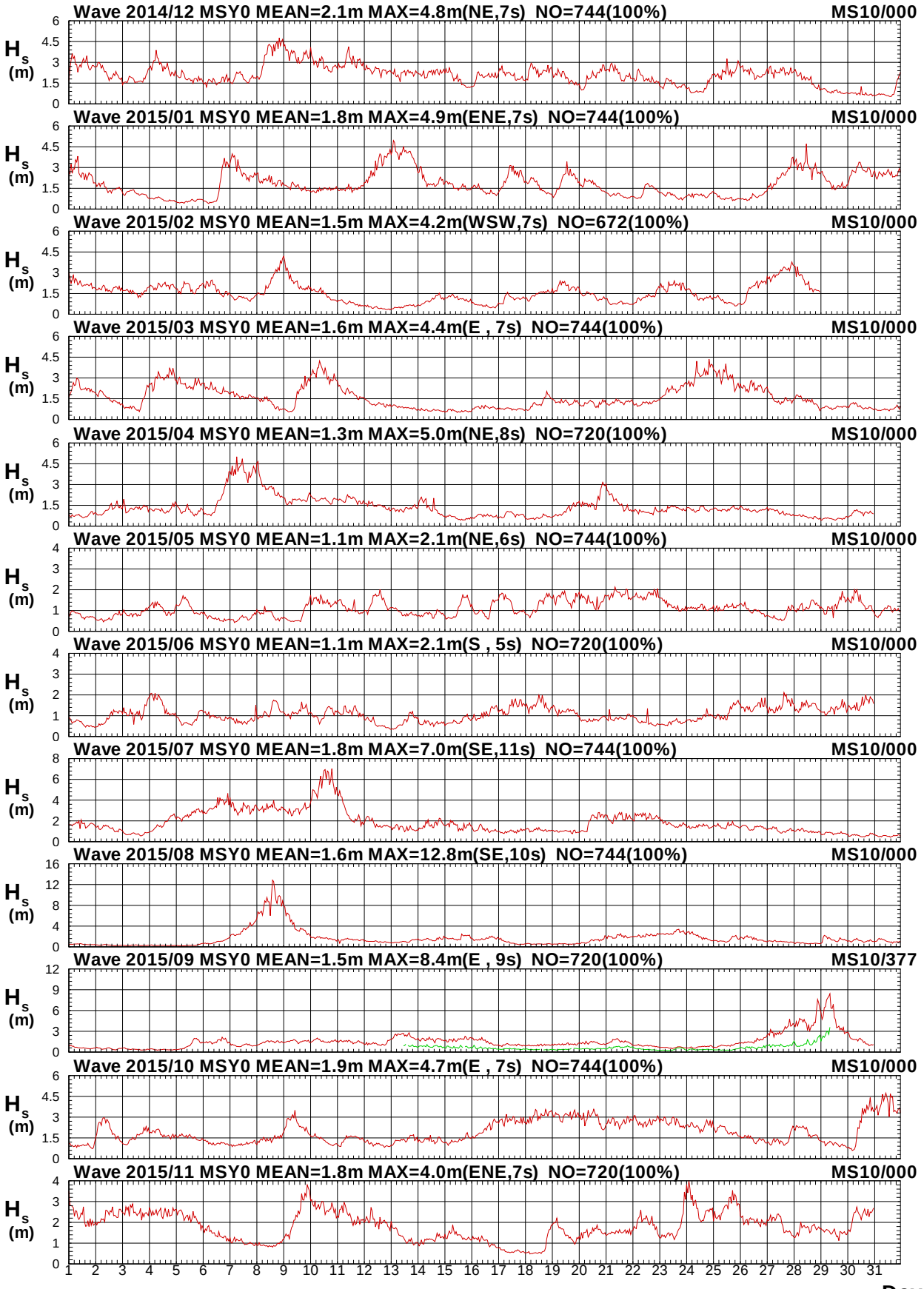


圖 12.4a　2015年每月馬祖海域 Y 站與1站波高比較圖

V14CMSY0.1HA V14CMS10.1H0 V151MSY0.1HA V151MS10.1H0 V152MSY0.1HA V152MS10.1H0
V153MSY0.1HA V153MS10.1H0 V154MSY0.1HA V154MS10.1H0 V155MSY0.1HA V155MS10.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

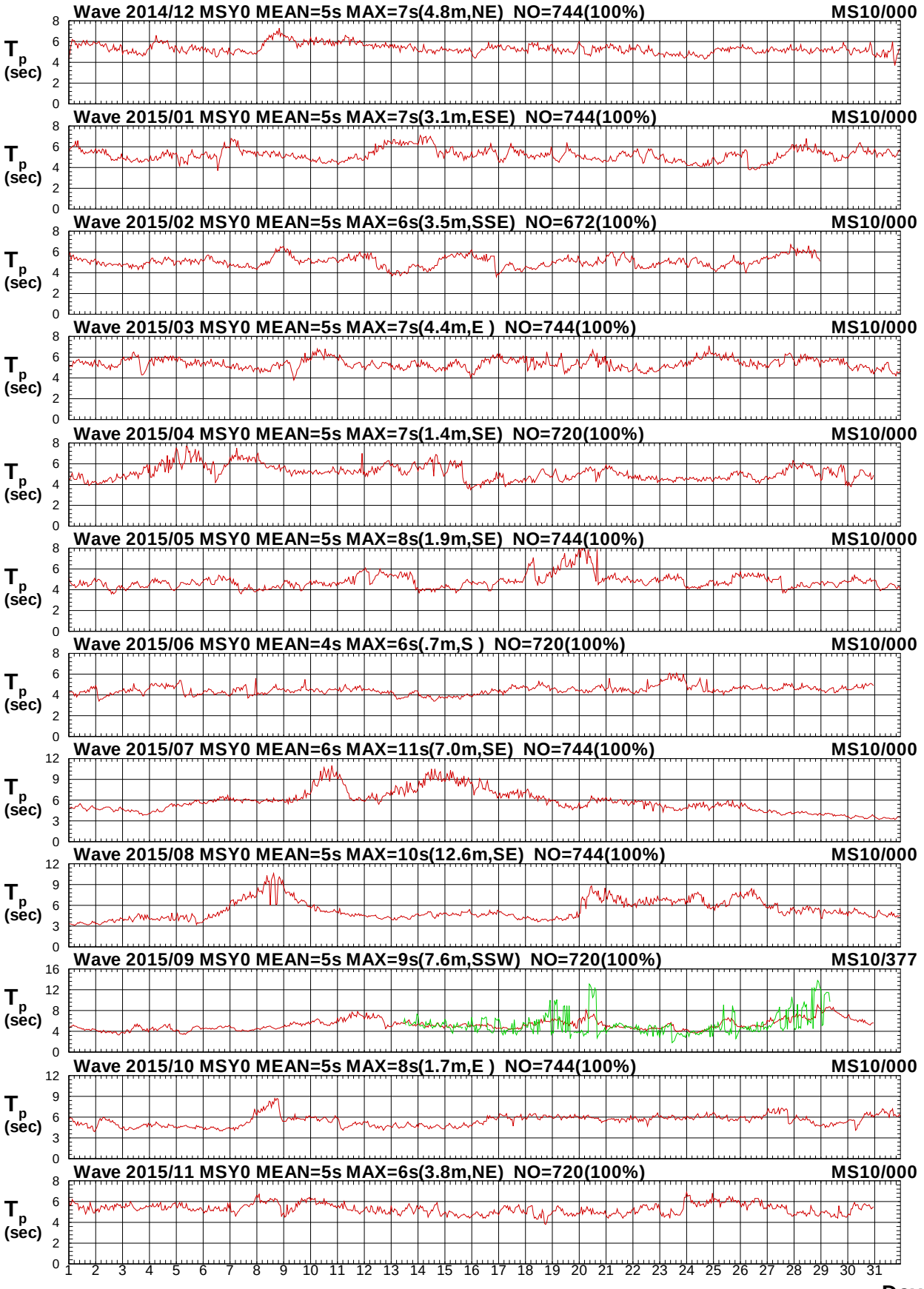


圖 12.4b　2015年每月馬祖海域 Y 站與1站週期比較圖

V14CMSY0.1HA V14CMS10.1H0 V151MSY0.1HA V151MS10.1H0 V152MSY0.1HA V152MS10.1H0
V153MSY0.1HA V153MS10.1H0 V154MSY0.1HA V154MS10.1H0 V155MSY0.1HA V155MS10.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

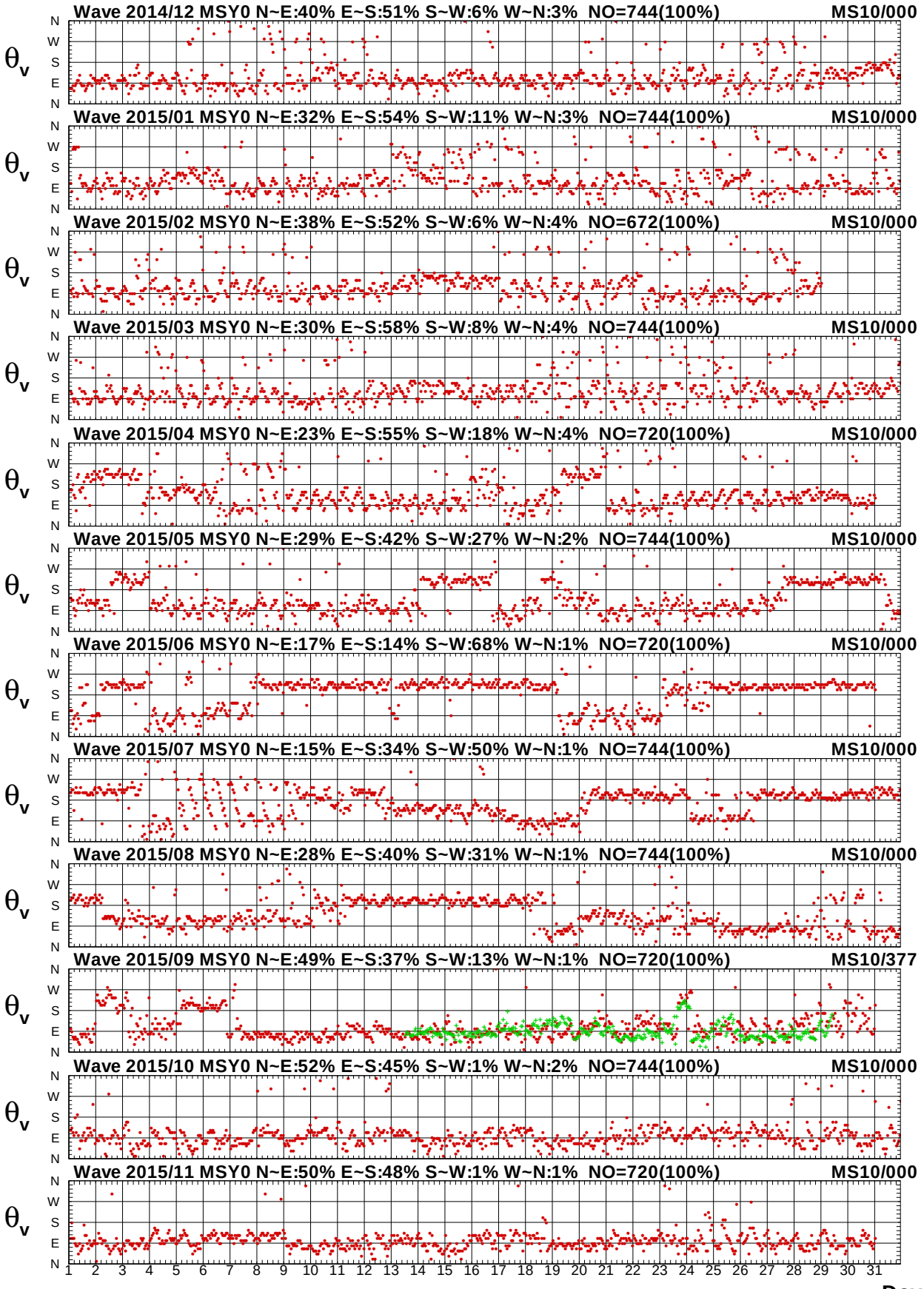


圖 12.4c　2015年每月馬祖海域 Y 站與1站波向比較圖

V14CMSY0.1HA V14CMS10.1H0 V151MSY0.1HA V151MS10.1H0 V152MSY0.1HA V152MS10.1H0
V153MSY0.1HA V153MS10.1H0 V154MSY0.1HA V154MS10.1H0 V155MSY0.1HA V155MS10.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

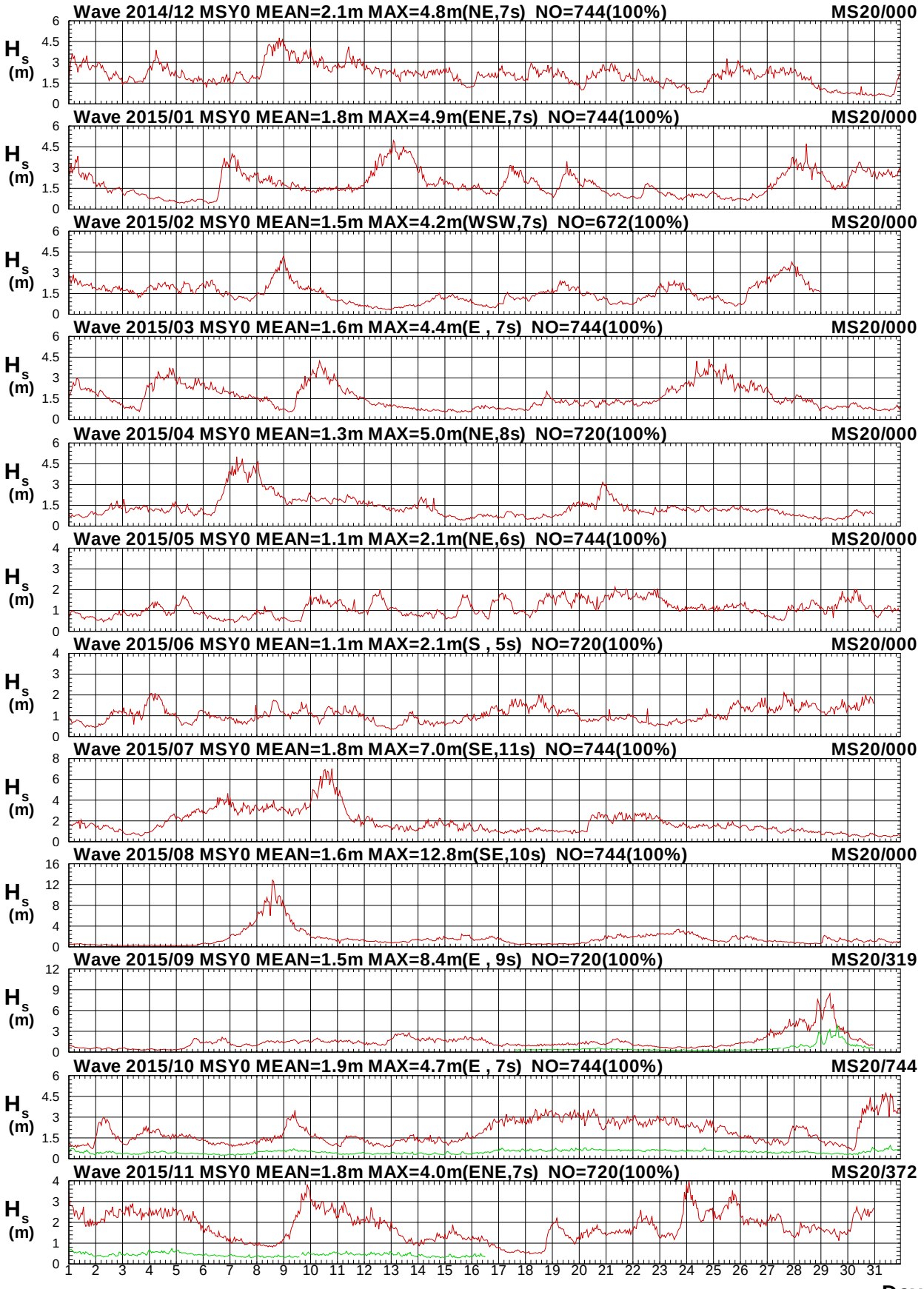


圖 12.5a　2015年每月馬祖海域 Y 站與2站波高比較圖

V14CMSY0.1HA V14CMS20.1H0 V151MSY0.1HA V151MS20.1H0 V152MSY0.1HA V152MS20.1H0
V153MSY0.1HA V153MS20.1H0 V154MSY0.1HA V154MS20.1H0 V155MSY0.1HA V155MS20.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

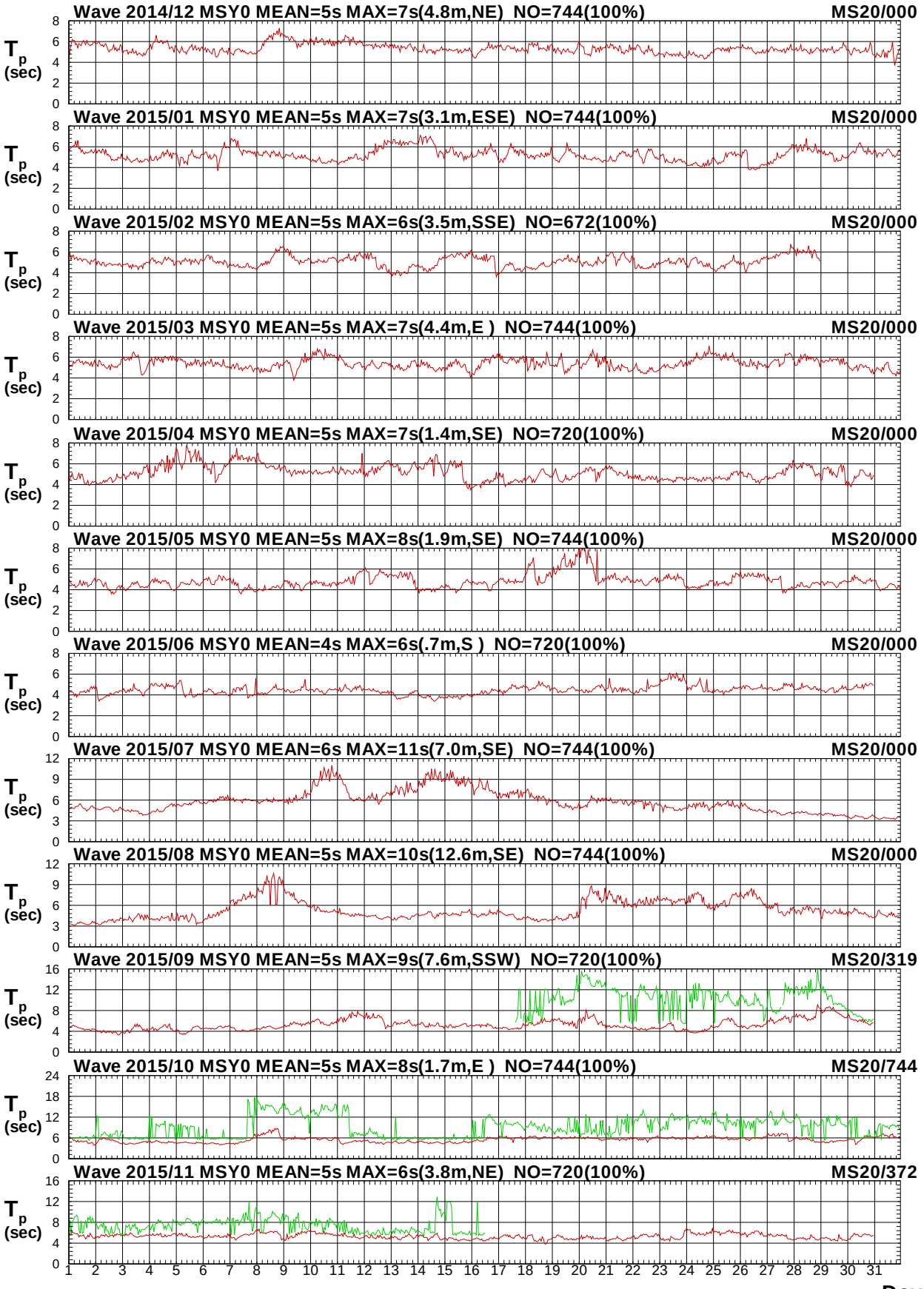


圖 12.5b　2015年每月馬祖海域 Y 站與2站週期比較圖

V14CMSY0.1HA V14CMS20.1H0 V151MSY0.1HA V151MS20.1H0 V152MSY0.1HA V152MS20.1H0
V153MSY0.1HA V153MS20.1H0 V154MSY0.1HA V154MS20.1H0 V155MSY0.1HA V155MS20.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

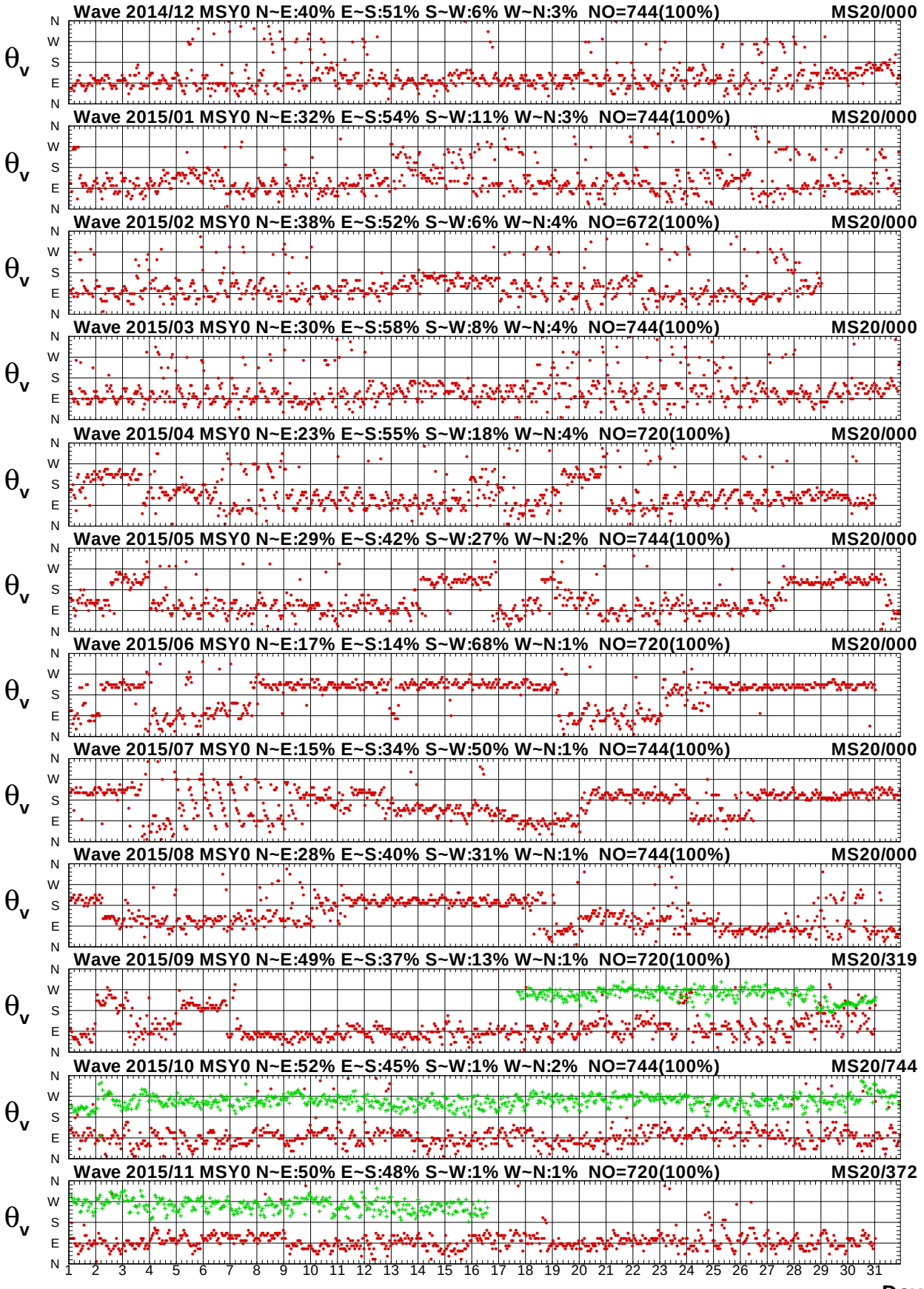


圖 12.5c　2015年每月馬祖海域 Y 站與2站波向比較圖

V14CMSY0.1HA V14CMS20.1H0 V151MSY0.1HA V151MS20.1H0 V152MSY0.1HA V152MS20.1H0
V153MSY0.1HA V153MS20.1H0 V154MSY0.1HA V154MS20.1H0 V155MSY0.1HA V155MS20.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

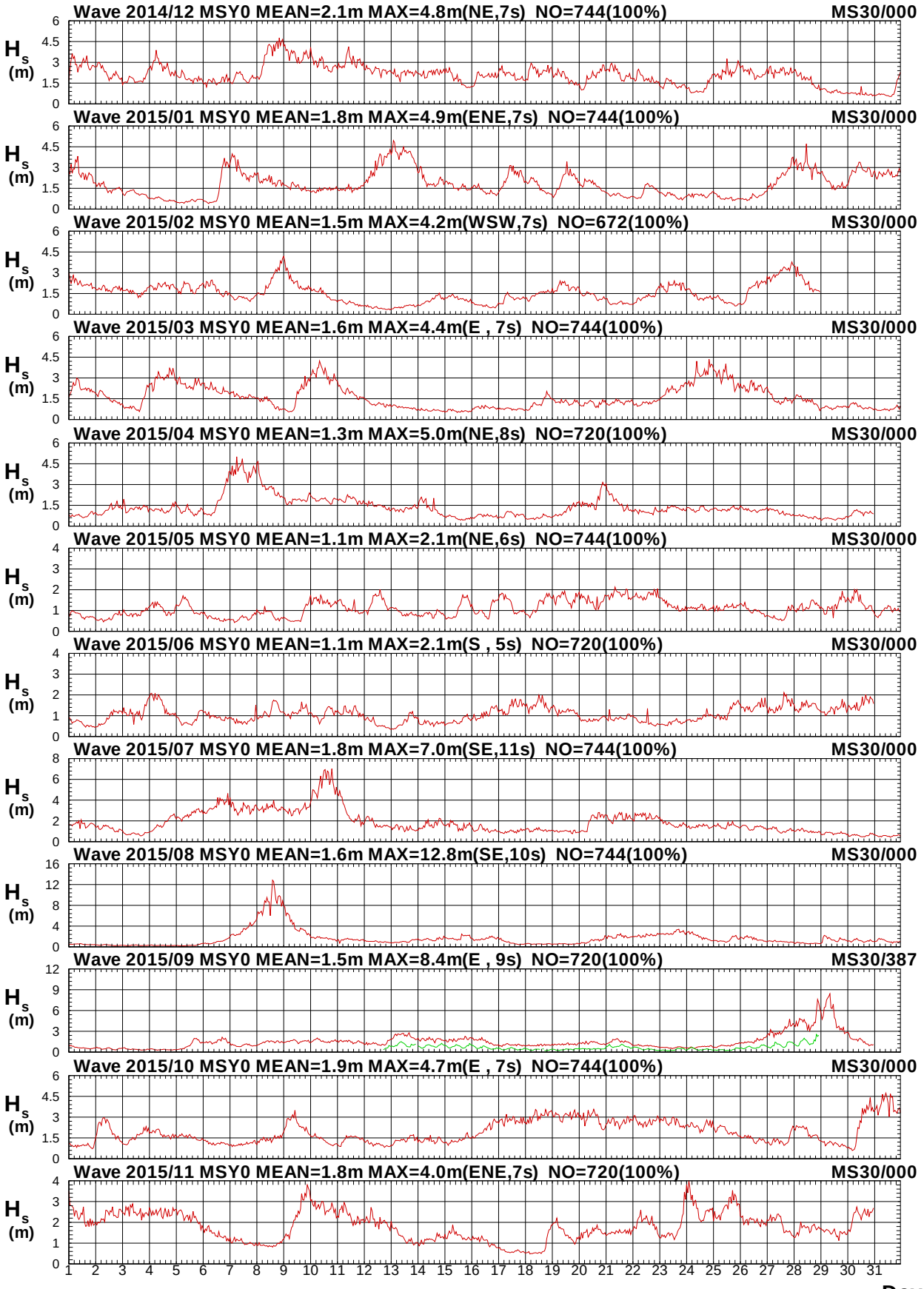


圖 12.6a　2015年每月馬祖海域 Y 站與3站波高比較圖

V14CMSY0.1HA V14CMS30.1H0 V151MSY0.1HA V151MS30.1H0 V152MSY0.1HA V152MS30.1H0
V153MSY0.1HA V153MS30.1H0 V154MSY0.1HA V154MS30.1H0 V155MSY0.1HA V155MS30.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

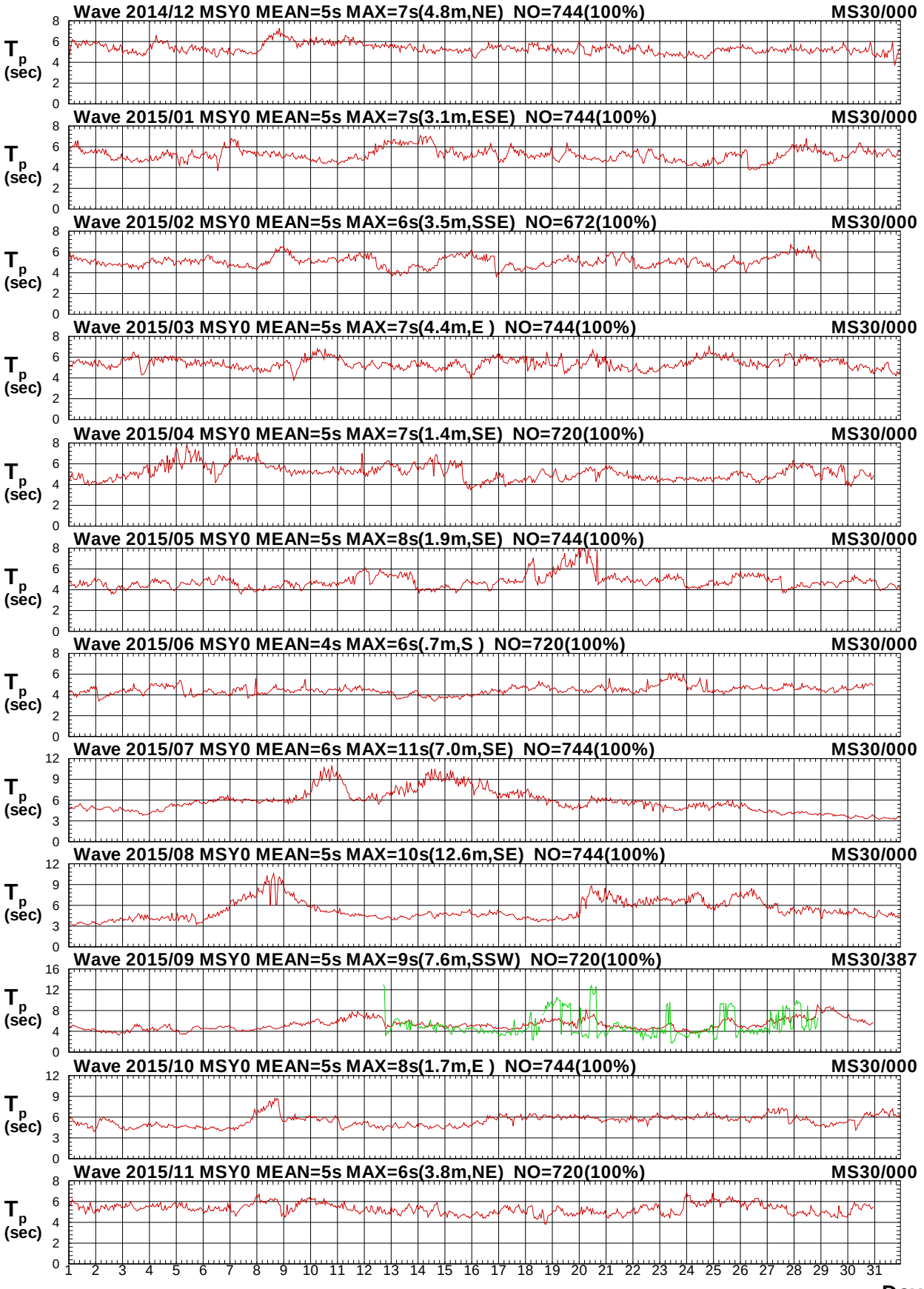


圖 12.6b　2015年每月馬祖海域 Y 站與3站週期比較圖

V14CMSY0.1HA V14CMS30.1H0 V151MSY0.1HA V151MS30.1H0 V152MSY0.1HA V152MS30.1H0
V153MSY0.1HA V153MS30.1H0 V154MSY0.1HA V154MS30.1H0 V155MSY0.1HA V155MS30.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

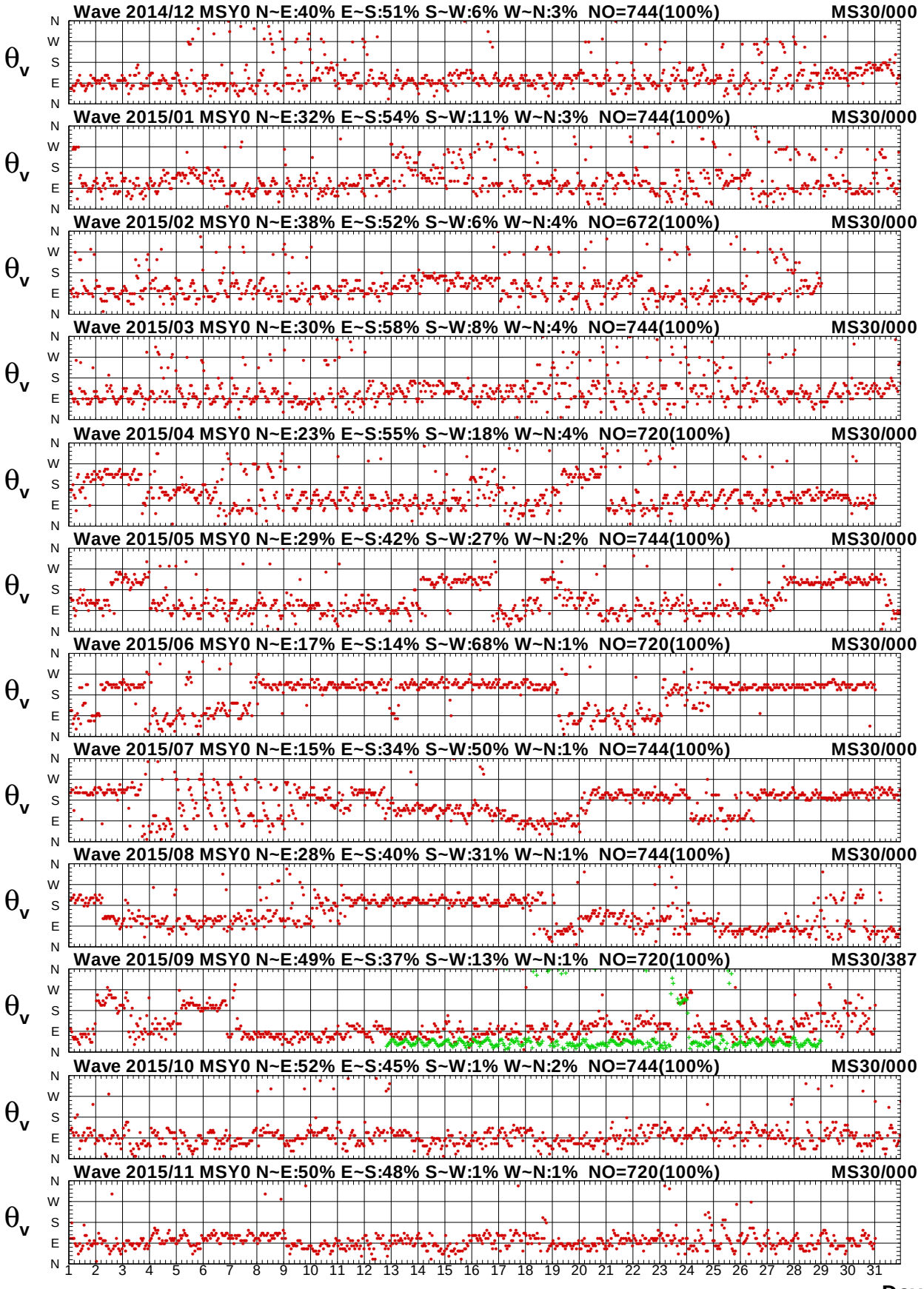


圖 12.6c　2015年每月馬祖海域 Y 站與3站波向比較圖

V14CMSY0.1HA V14CMS30.1H0 V151MSY0.1HA V151MS30.1H0 V152MSY0.1HA V152MS30.1H0
V153MSY0.1HA V153MS30.1H0 V154MSY0.1HA V154MS30.1H0 V155MSY0.1HA V155MS30.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

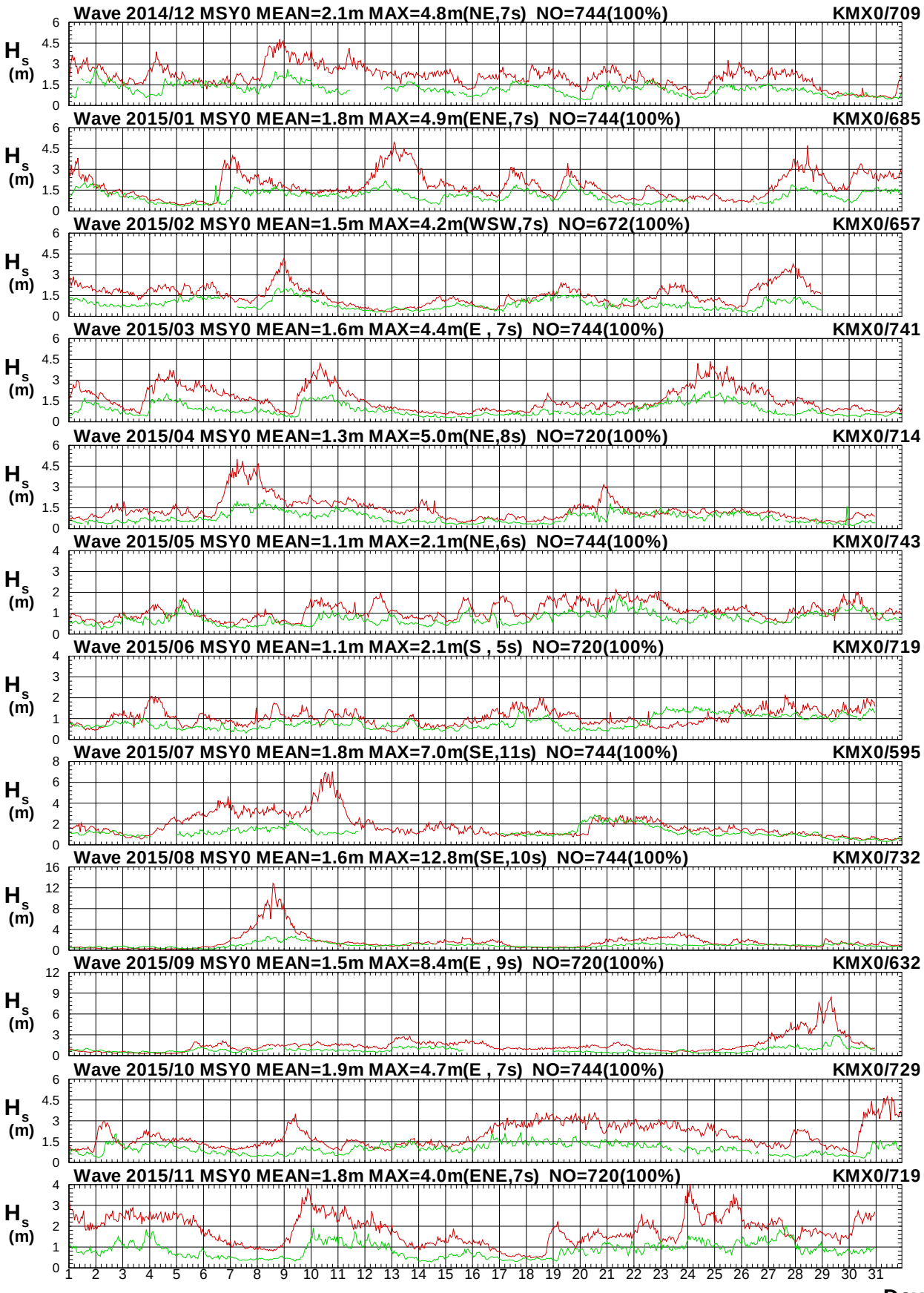


圖12.7a　2015年每月馬祖海域 Y 站與金門海域 X 站波高圖

V14CMSY0.1HA V14CKMX0.1H0 V151MSY0.1HA V151KMX0.1H0 V152MSY0.1HA V152KMX0.1H0
V153MSY0.1HA V153KMX0.1H0 V154MSY0.1HA V154KMX0.1H0 V155MSY0.1HA V155KMX0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

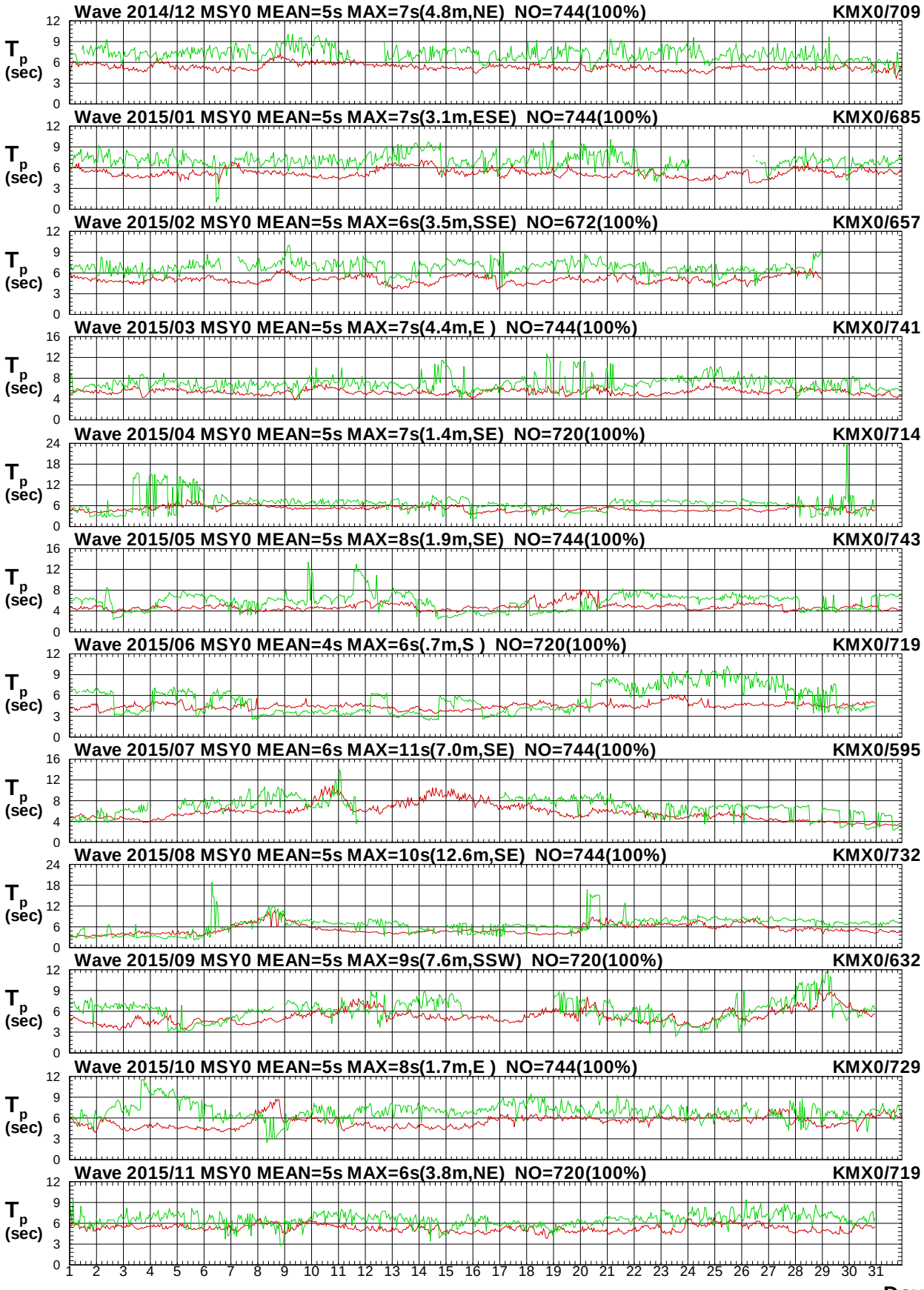


圖 12.7b　2015年每月馬祖海域 Y 站與金門海域 X 站週期圖

V14CMSY0.1HA V14CKMX0.1H0 V151MSY0.1HA V151KMX0.1H0 V152MSY0.1HA V152KMX0.1H0
V153MSY0.1HA V153KMX0.1H0 V154MSY0.1HA V154KMX0.1H0 V155MSY0.1HA V155KMX0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

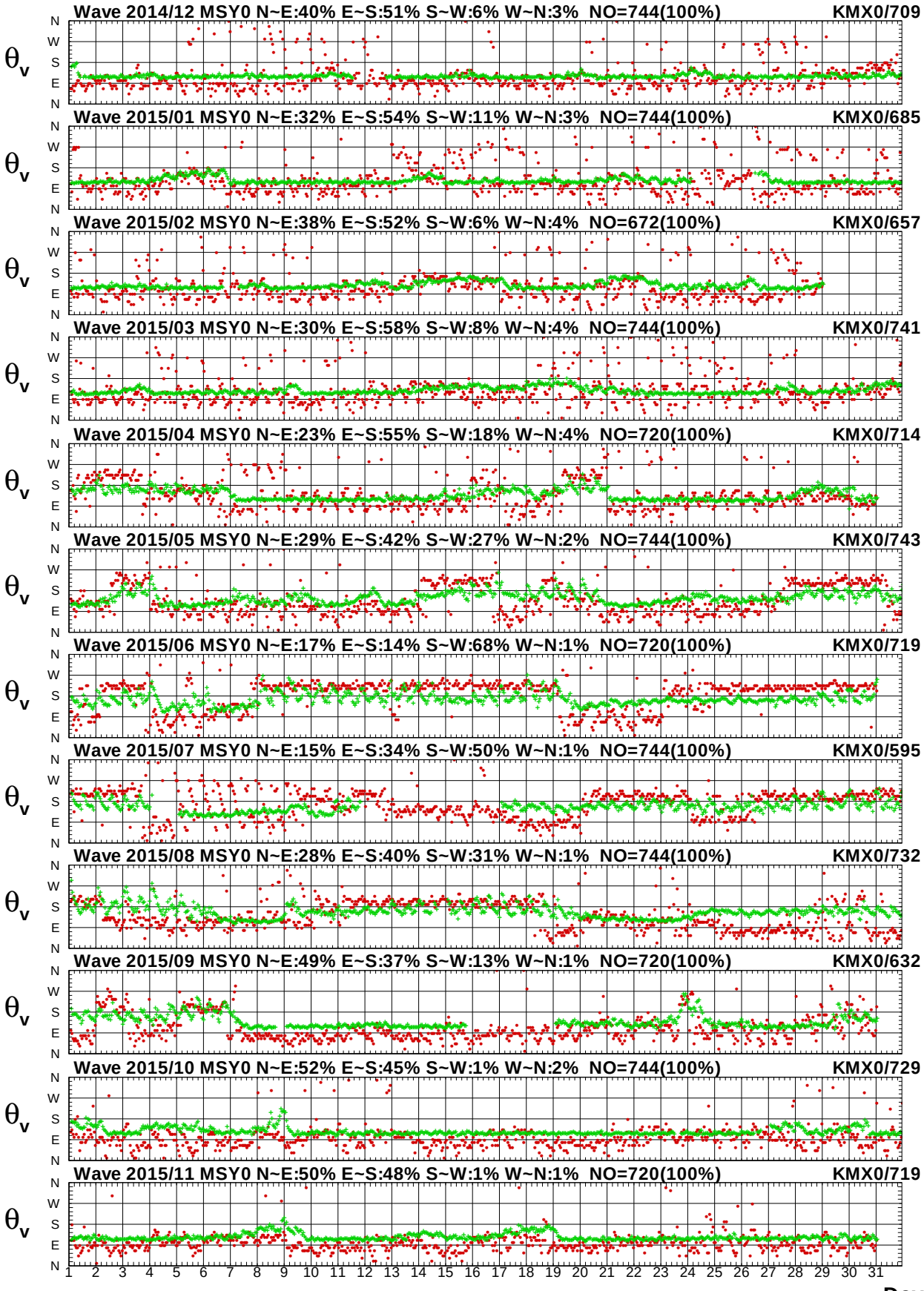


圖 12.7c　2015年每月馬祖海域 Y 站與金門海域 X 站波向圖

V14CMSY0.1HA V14CKMX0.1H0 V151MSY0.1HA V151KMX0.1H0 V152MSY0.1HA V152KMX0.1H0
V153MSY0.1HA V153KMX0.1H0 V154MSY0.1HA V154KMX0.1H0 V155MSY0.1HA V155KMX0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

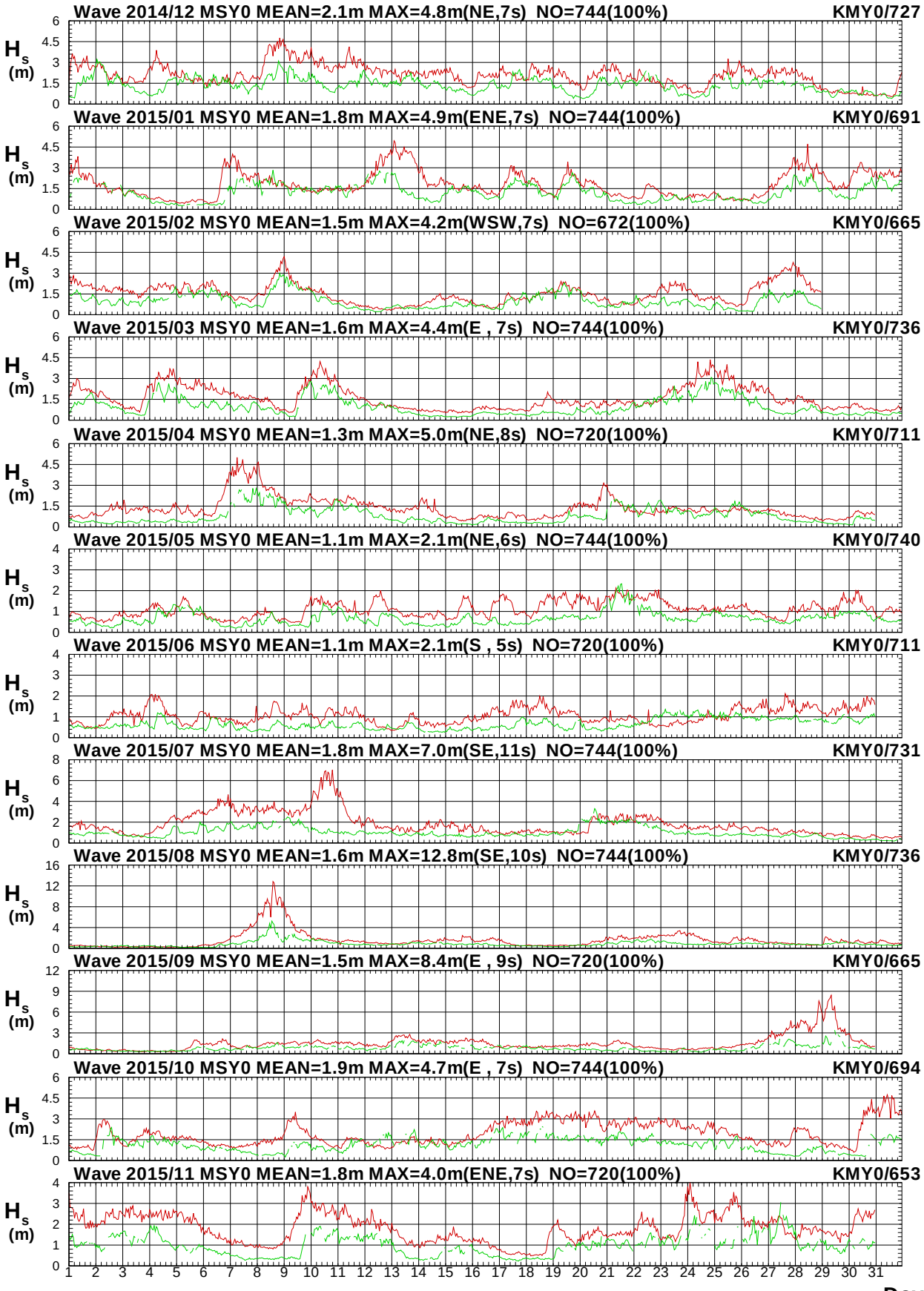


圖12.8a　2015年每月馬祖海域 Y 站與金門海域 Y 站波高圖

V14CMSY0.1HA V14CKMY0.1H0 V151MSY0.1HA V151KMY0.1H0 V152MSY0.1HA V152KMY0.1H0
V153MSY0.1HA V153KMY0.1H0 V154MSY0.1HA V154KMY0.1H0 V155MSY0.1HA V155KMY0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

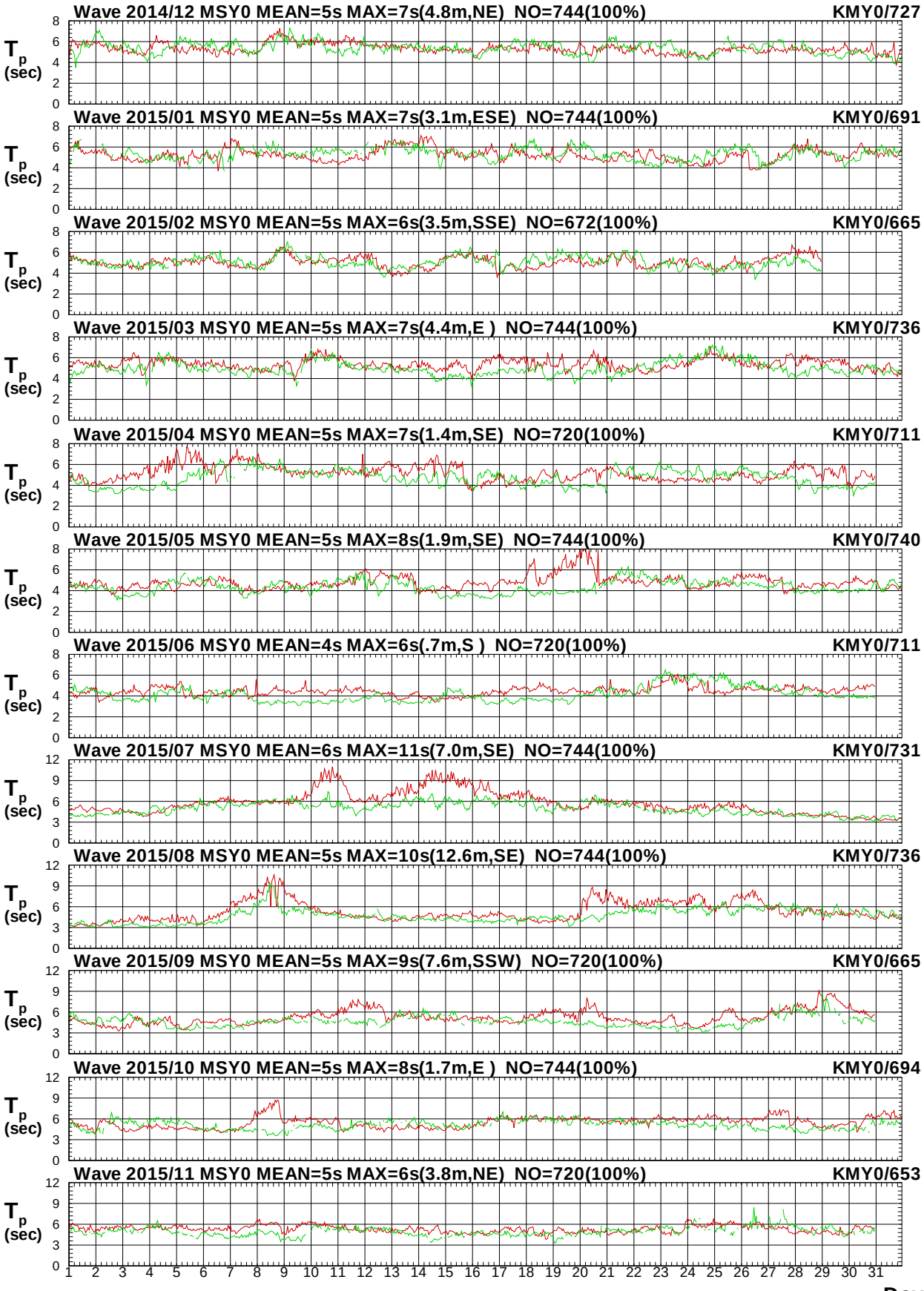


圖 12.8b　2015年每月馬祖海域 Y 站與金門海域 Y 站週期圖

V14CMSY0.1HA V14CKMY0.1H0 V151MSY0.1HA V151KMY0.1H0 V152MSY0.1HA V152KMY0.1H0
V153MSY0.1HA V153KMY0.1H0 V154MSY0.1HA V154KMY0.1H0 V155MSY0.1HA V155KMY0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

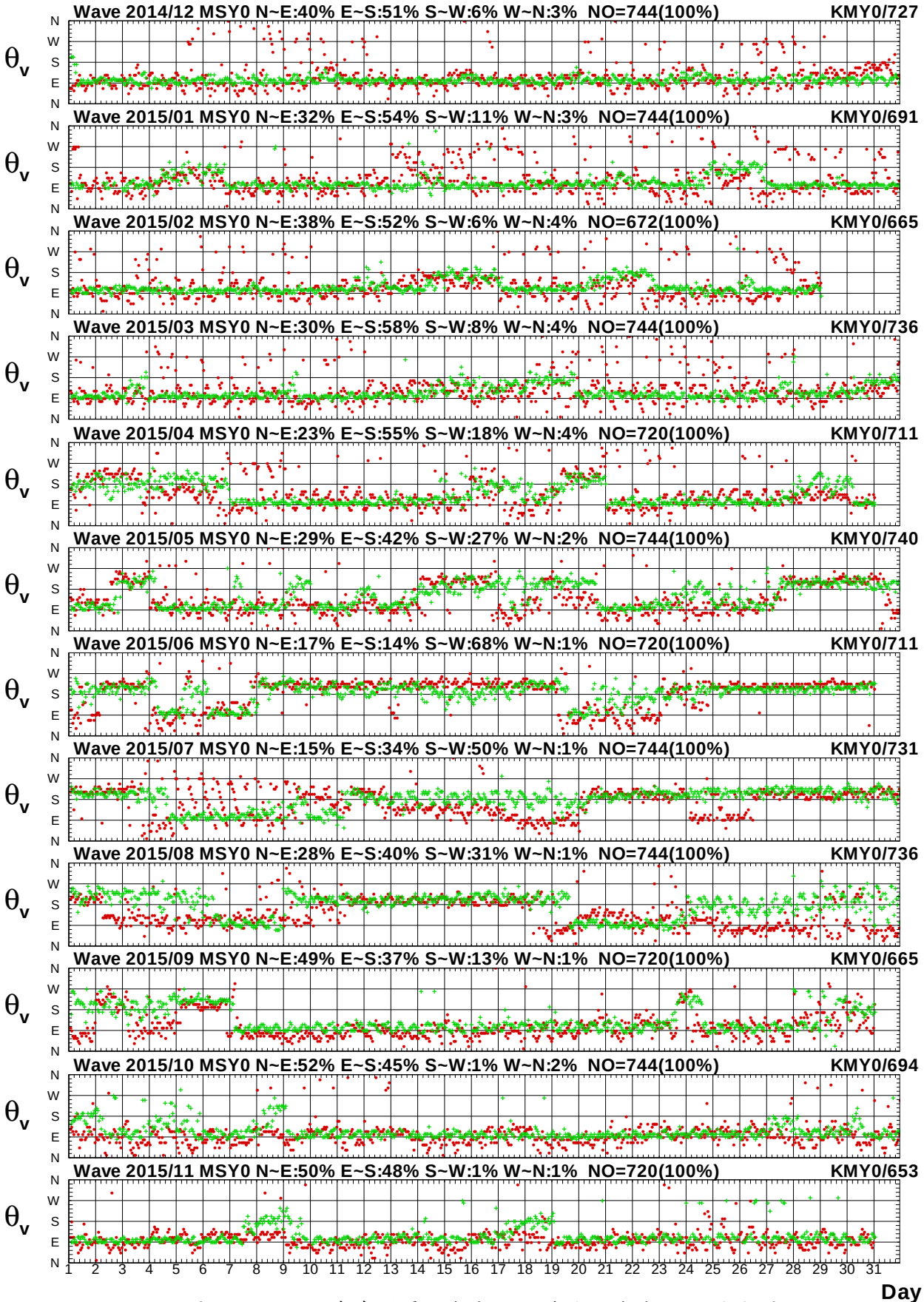


圖 12.8c　2015年每月馬祖海域 Y 站與金門海域 Y 站波向圖

V14CMSY0.1HA V14CKMY0.1H0 V151MSY0.1HA V151KMY0.1H0 V152MSY0.1HA V152KMY0.1H0
V153MSY0.1HA V153KMY0.1H0 V154MSY0.1HA V154KMY0.1H0 V155MSY0.1HA V155KMY0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

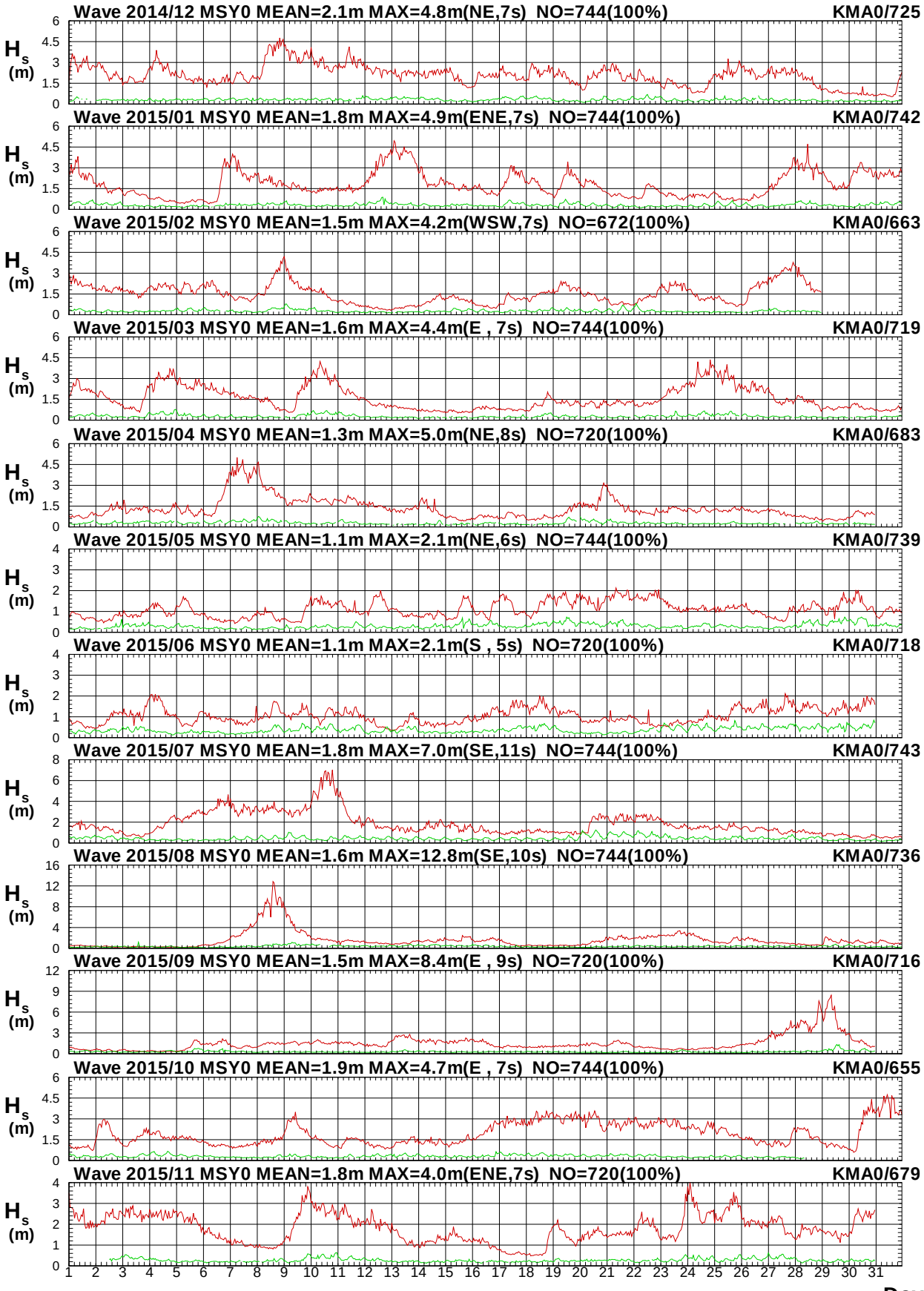


圖 12.9a　2015年每月馬祖海域 Y 站與金門海域 A 站波高圖

V14CMSY0.1HA V14CKMA0.1H0 V151MSY0.1HA V151KMA0.1H0 V152MSY0.1HA V152KMA0.1H0
V153MSY0.1HA V153KMA0.1H0 V154MSY0.1HA V154KMA0.1H0 V155MSY0.1HA V155KMA0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

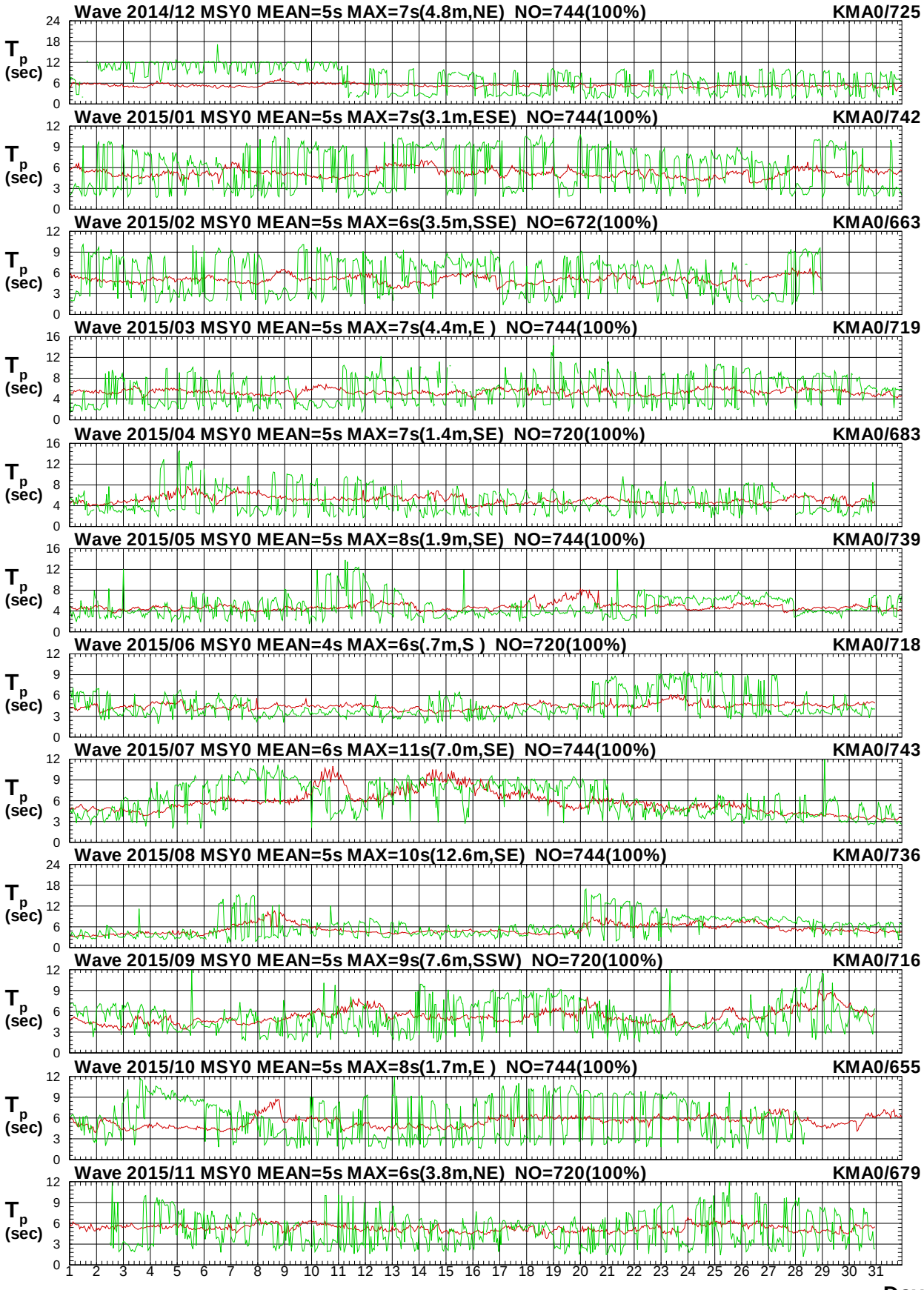


圖 12.9b　2015年每月馬祖海域 Y 站與金門海域 A 站週期圖

V14CMSY0.1HA V14CKMA0.1H0 V151MSY0.1HA V151KMA0.1H0 V152MSY0.1HA V152KMA0.1H0
V153MSY0.1HA V153KMA0.1H0 V154MSY0.1HA V154KMA0.1H0 V155MSY0.1HA V155KMA0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

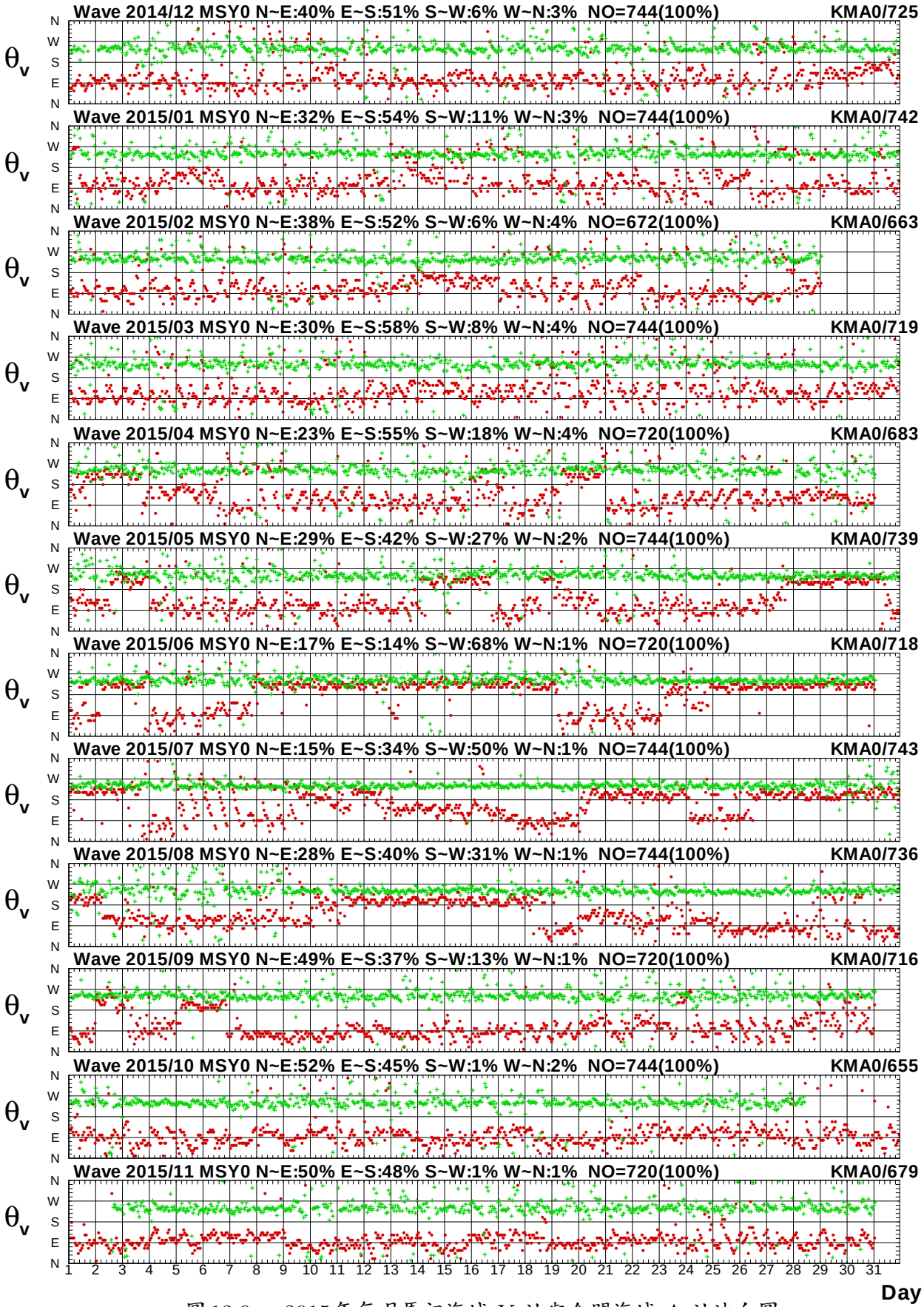


圖 12.9c　2015年每月馬祖海域 Y 站與金門海域 A 站波向圖

V14CMSY0.1HA V14CKMA0.1H0 V151MSY0.1HA V151KMA0.1H0 V152MSY0.1HA V152KMA0.1H0
V153MSY0.1HA V153KMA0.1H0 V154MSY0.1HA V154KMA0.1H0 V155MSY0.1HA V155KMA0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

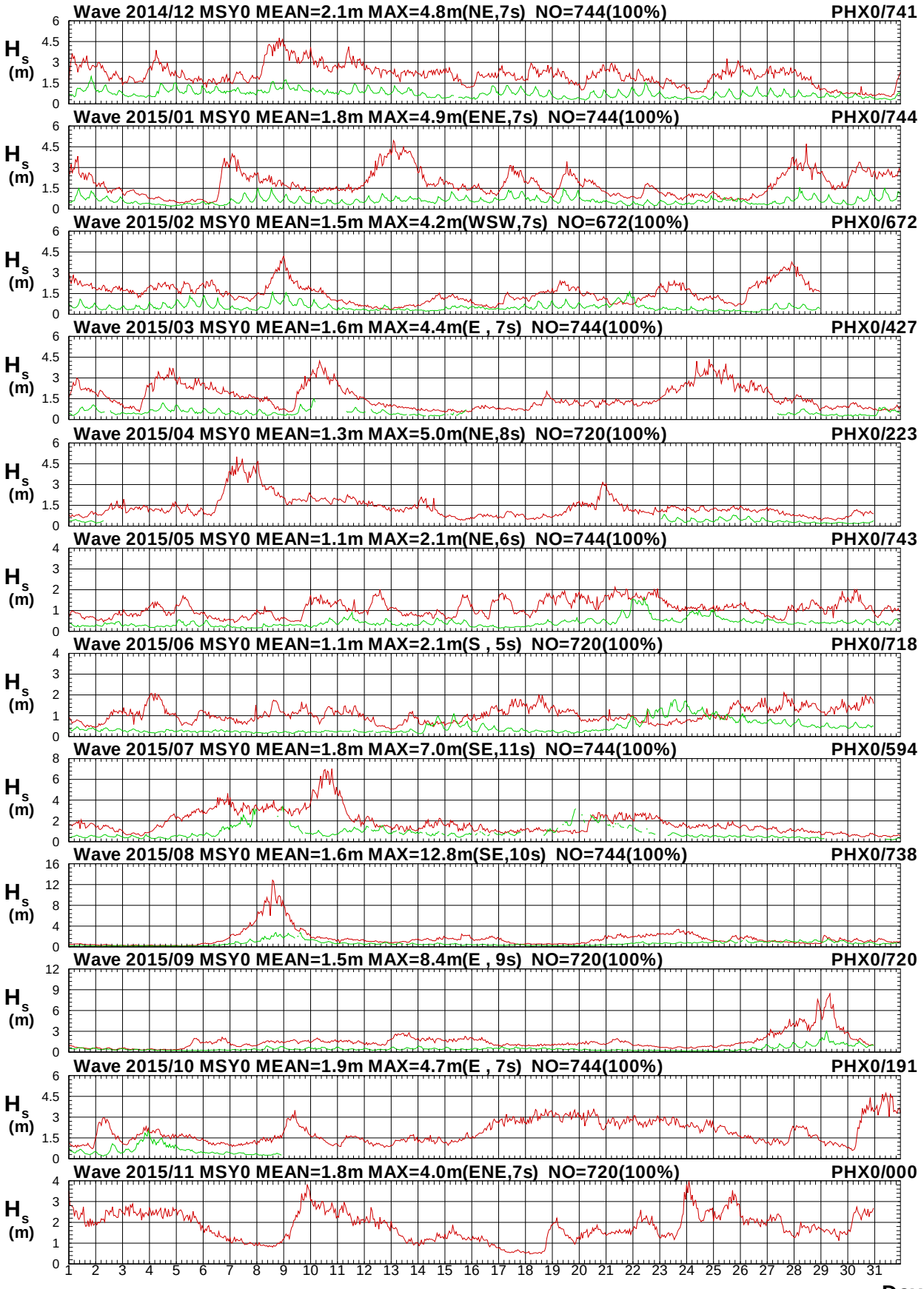


圖 12.10a　2015年每月馬祖海域 Y 站與澎湖海域 X 站波高圖

V14CMSY0.1HA V14CPHX0.1H0 V151MSY0.1HA V151PHX0.1H0 V152MSY0.1HA V152PHX0.1H0
V153MSY0.1HA V153PHX0.1H0 V154MSY0.1HA V154PHX0.1H0 V155MSY0.1HA V155PHX0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

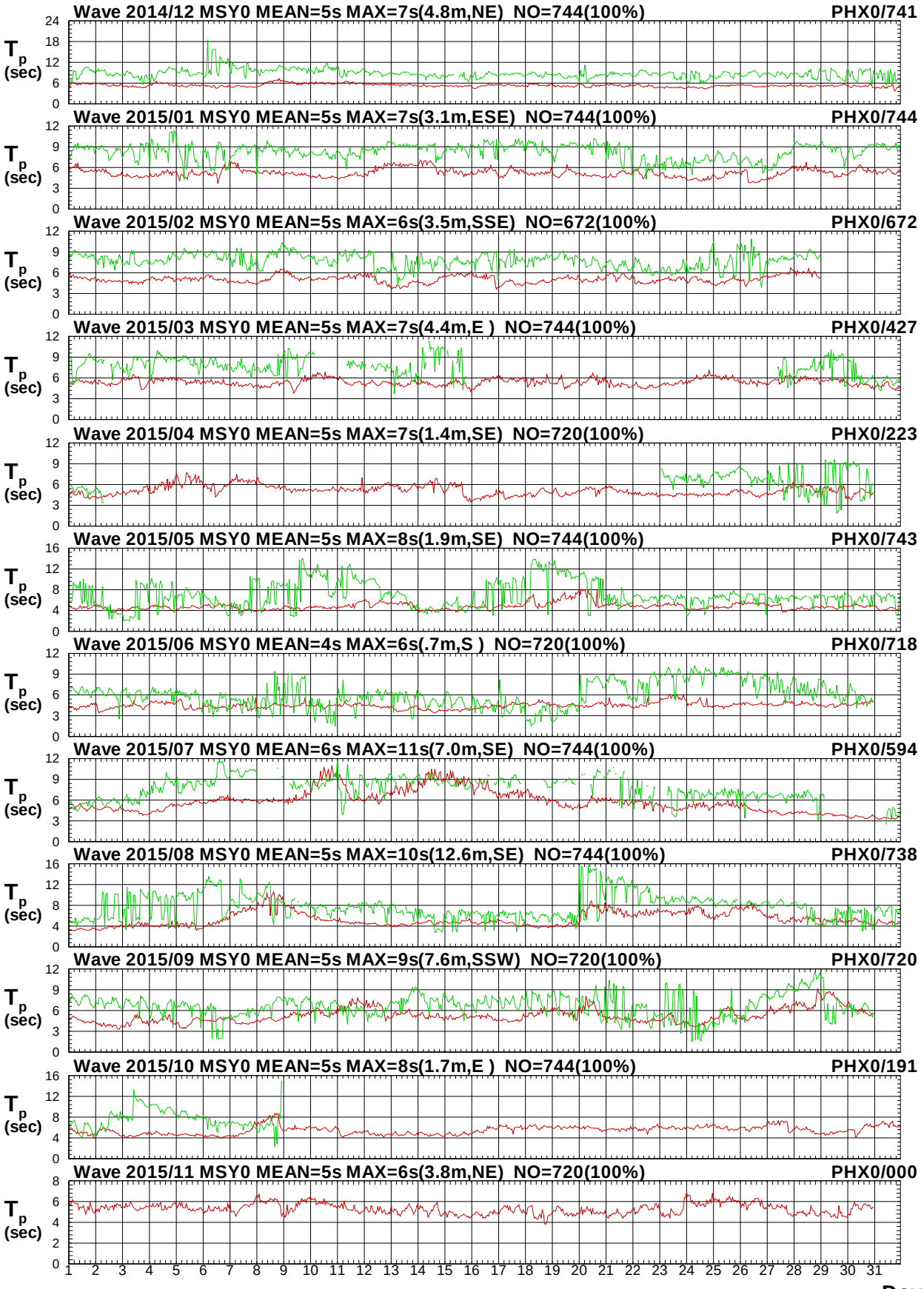


圖 12.10b　2015年每月馬祖海域 Y 站與澎湖海域 X 站週期圖

V14CMSY0.1HA V14CPHX0.1H0 V151MSY0.1HA V151PHX0.1H0 V152MSY0.1HA V152PHX0.1H0
V153MSY0.1HA V153PHX0.1H0 V154MSY0.1HA V154PHX0.1H0 V155MSY0.1HA V155PHX0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

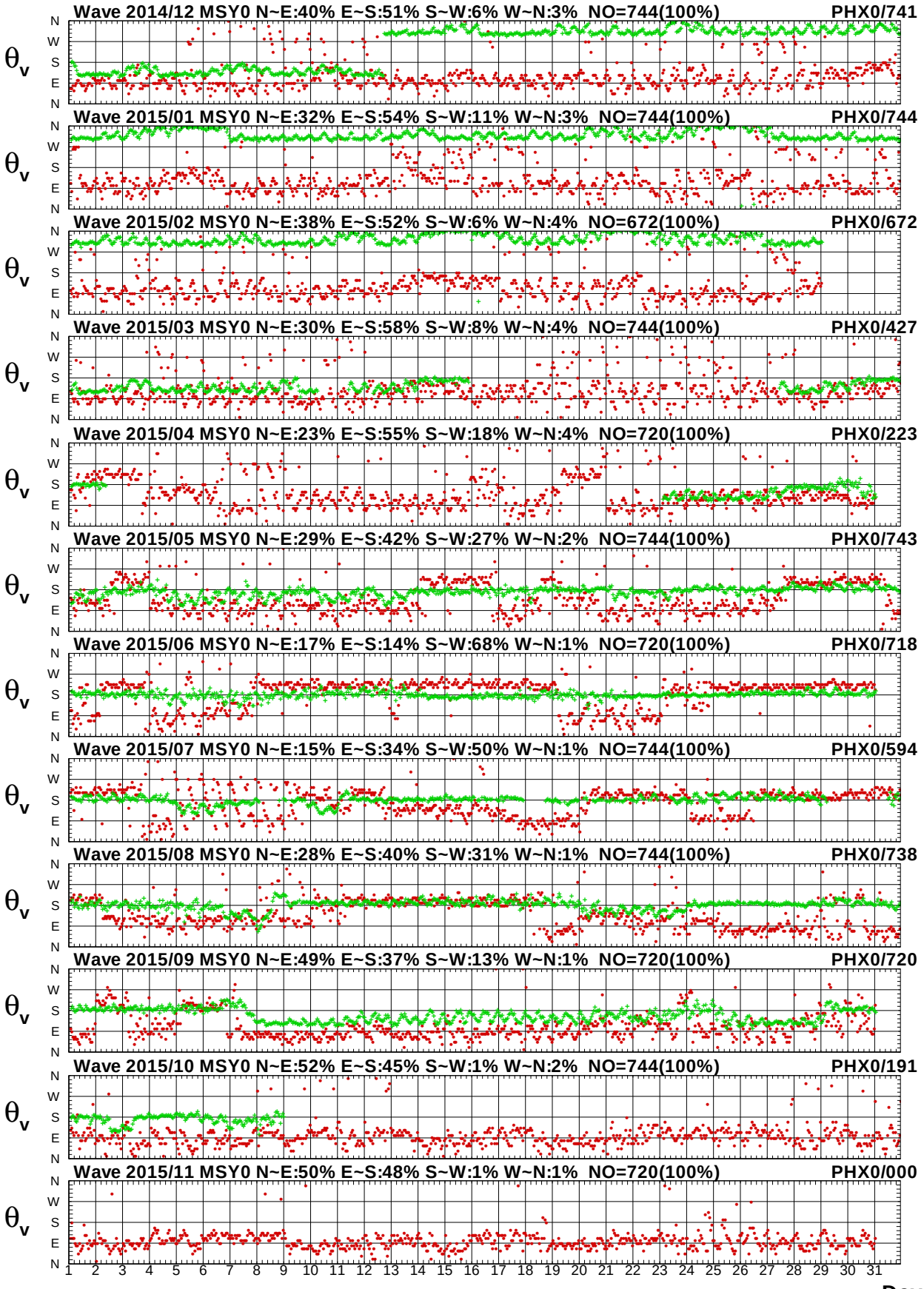


圖 12.10c　2015年每月馬祖海域 Y 站與澎湖海域 X 站波向圖

Wave H_s in Ma-Tsu Seas of MSY0 at 2015

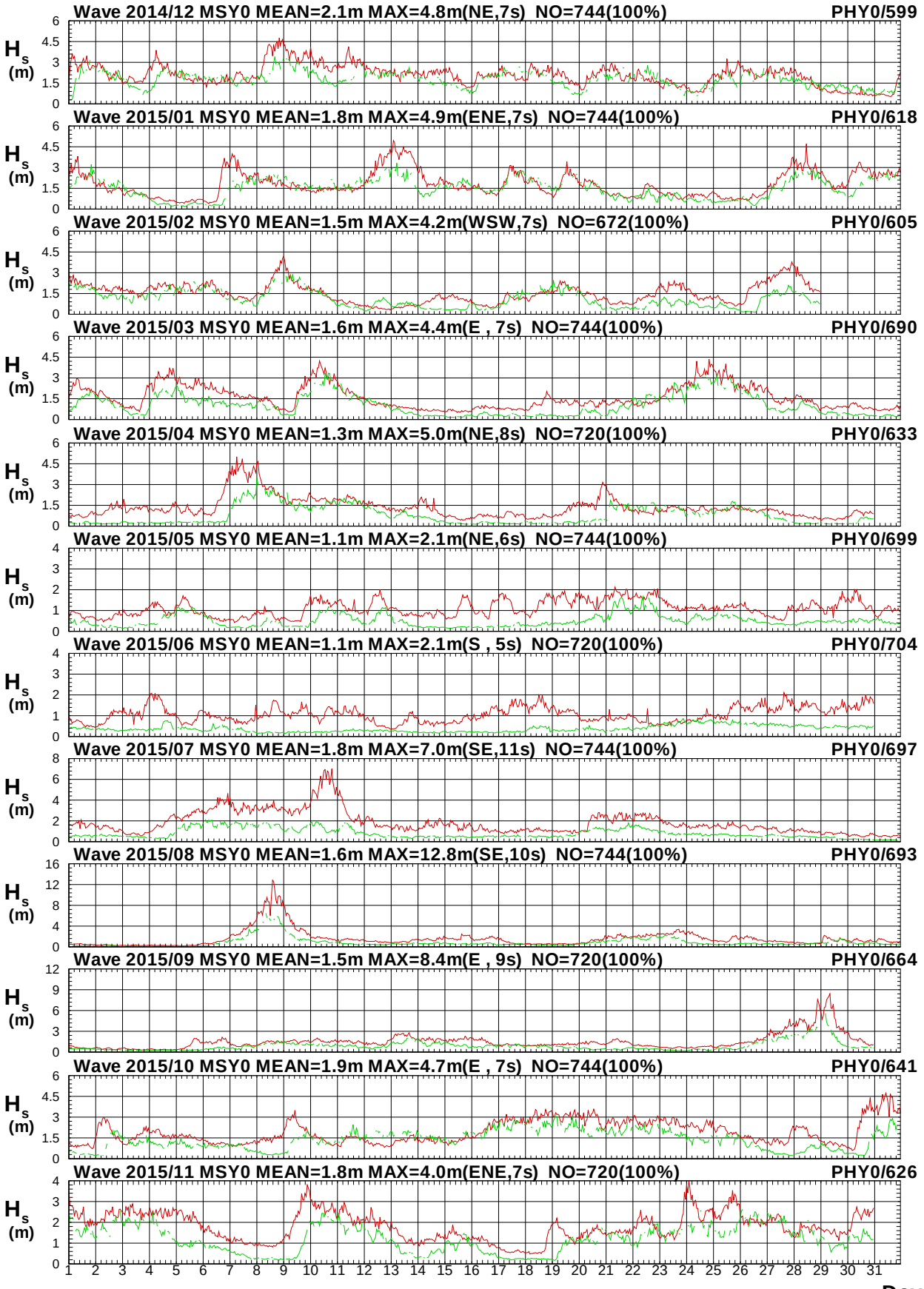


圖 12.11a　2015年每月馬祖海域 Y 站與澎湖海域 Y 站波高圖

V14CMSY0.1HA V14CPHY0.1H0 V151MSY0.1HA V151PHY0.1H0 V152MSY0.1HA V152PHY0.1H0
V153MSY0.1HA V153PHY0.1H0 V154MSY0.1HA V154PHY0.1H0 V155MSY0.1HA V155PHY0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

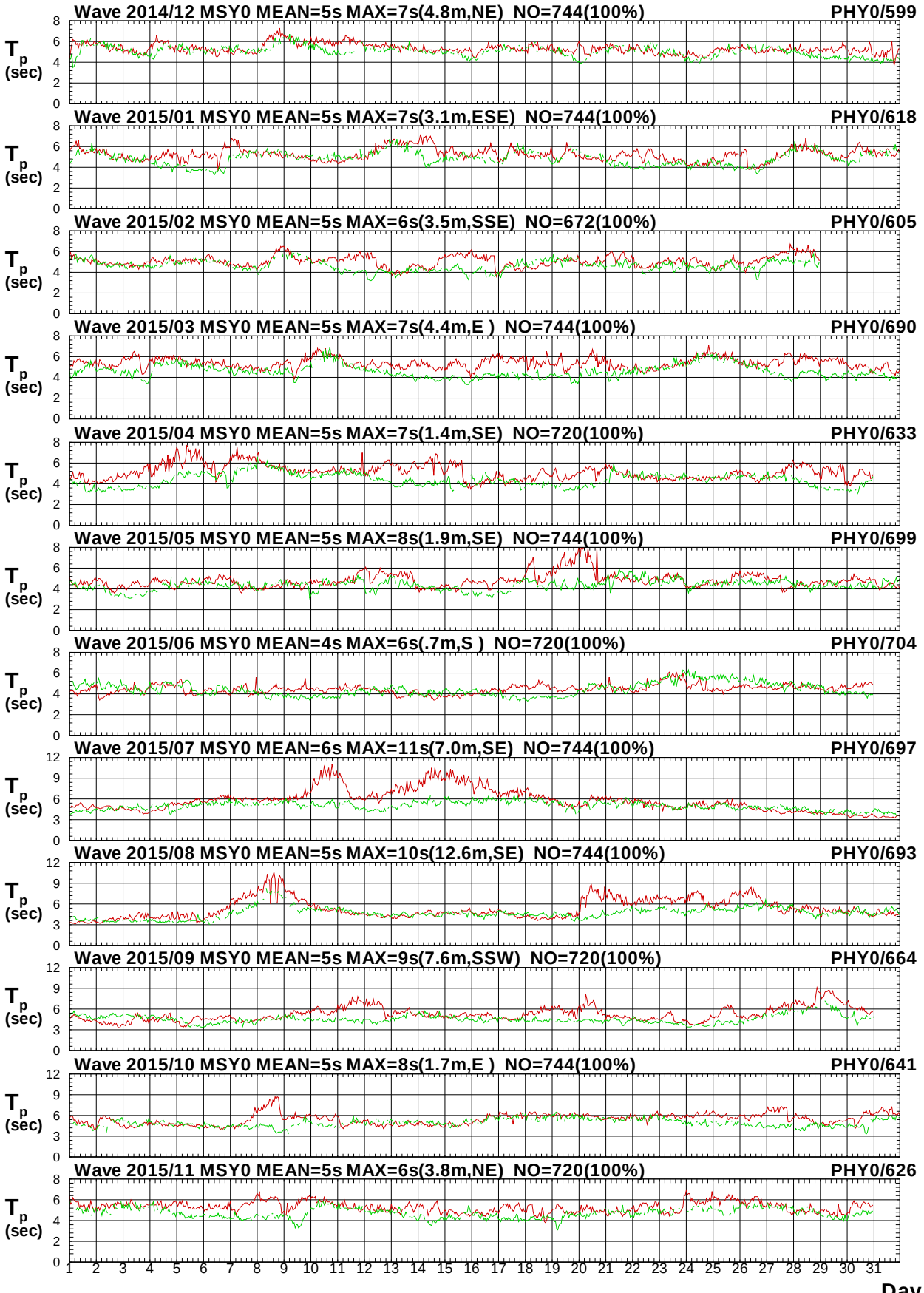


圖 12.11b　2015年每月馬祖海域 Y 站與澎湖海域 Y 站週期圖

V14CMSY0.1HA V14CPHY0.1H0 V151MSY0.1HA V151PHY0.1H0 V152MSY0.1HA V152PHY0.1H0
V153MSY0.1HA V153PHY0.1H0 V154MSY0.1HA V154PHY0.1H0 V155MSY0.1HA V155PHY0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

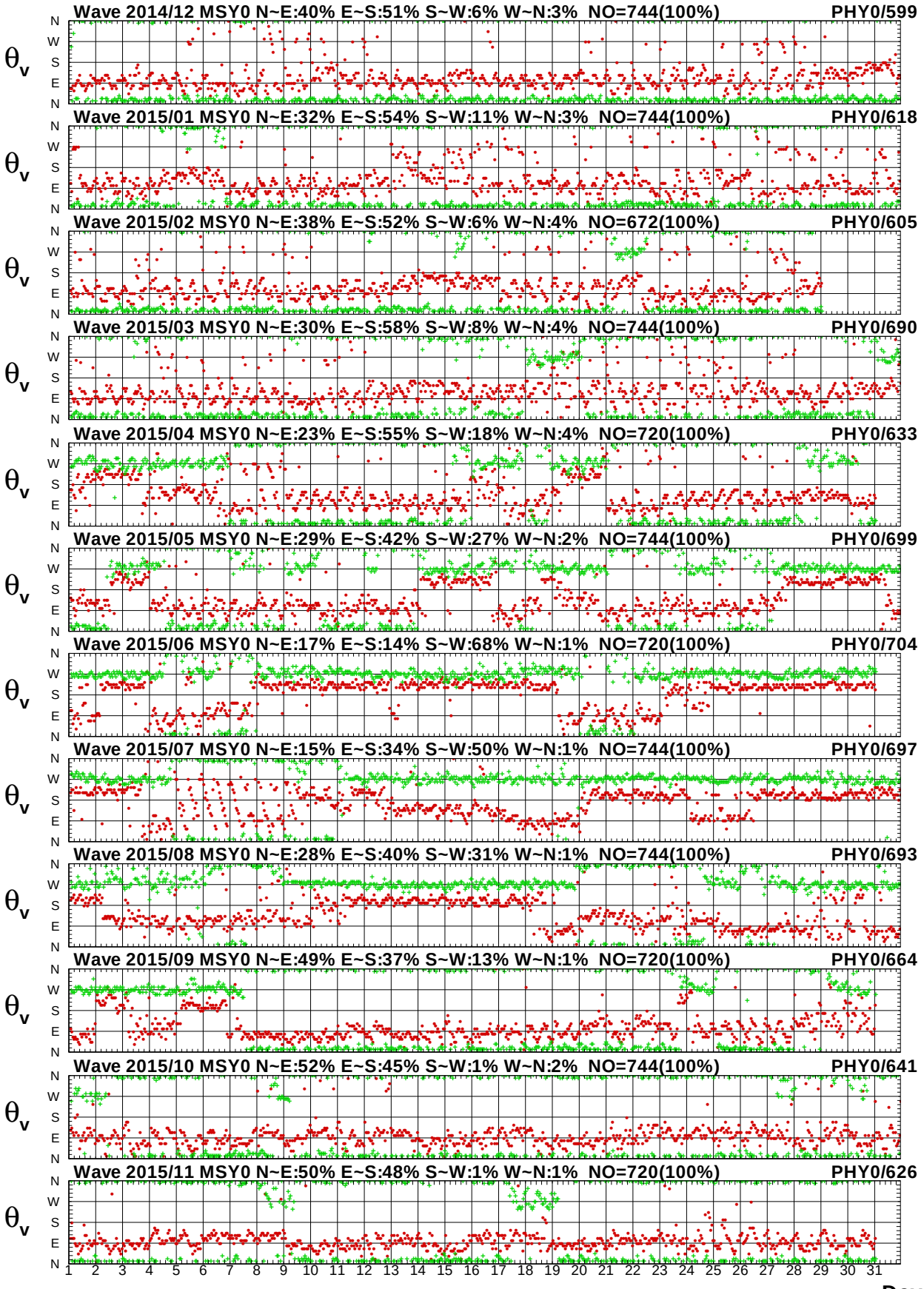


圖 12.11c　2015年每月馬祖海域 Y 站與澎湖海域 Y 站波向圖

V14CMSY0.1HA V14CPHY0.1H0 V151MSY0.1HA V151PHY0.1H0 V152MSY0.1HA V152PHY0.1H0
V153MSY0.1HA V153PHY0.1H0 V154MSY0.1HA V154PHY0.1H0 V155MSY0.1HA V155PHY0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

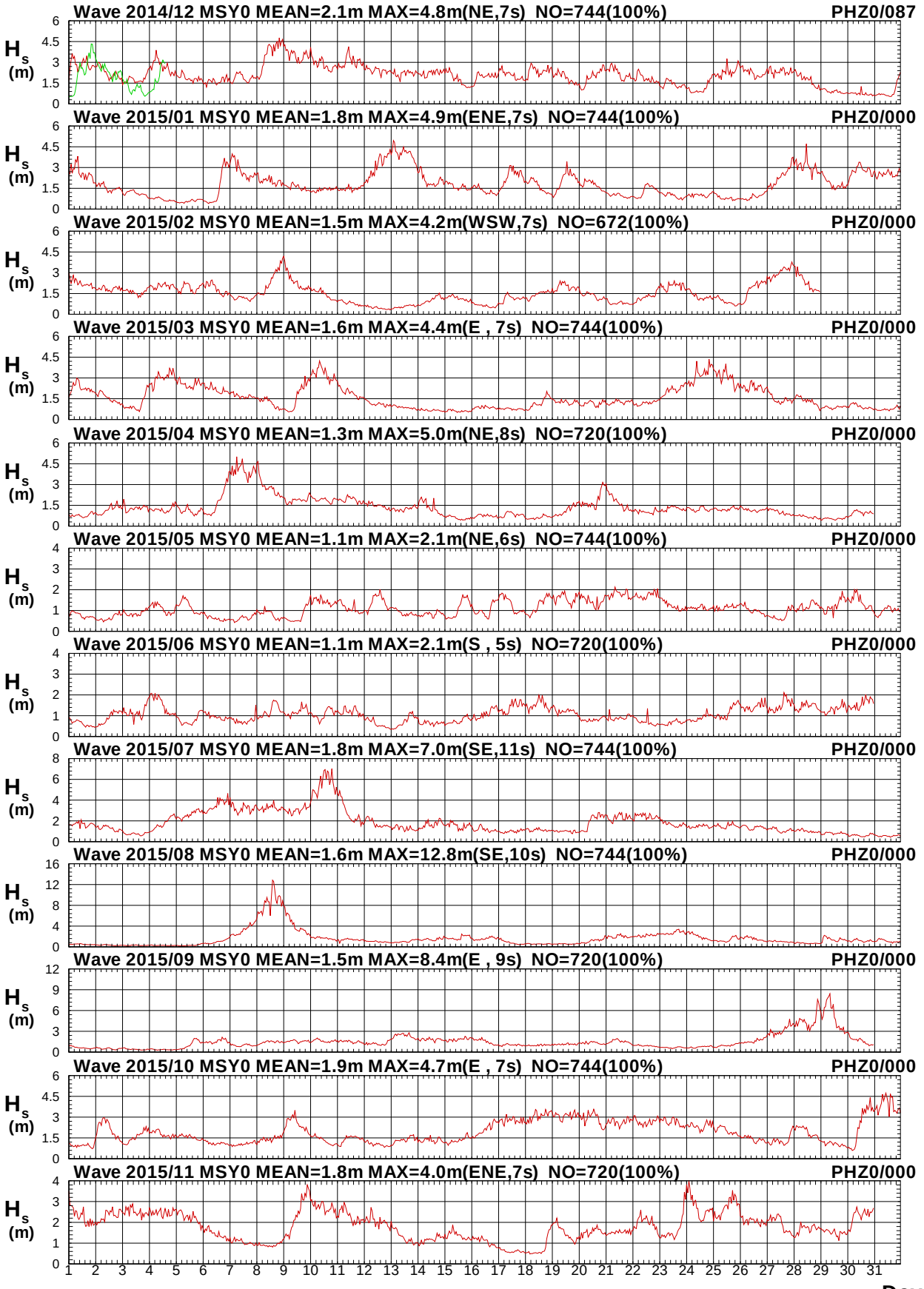


圖 12.12a　2015年每月馬祖海域 Y 站與澎湖海域 Z 站波高圖

V14CMSY0.1HA V14CPHZ0.1H0 V151MSY0.1HA V151PHZ0.1H0 V152MSY0.1HA V152PHZ0.1H0
V153MSY0.1HA V153PHZ0.1H0 V154MSY0.1HA V154PHZ0.1H0 V155MSY0.1HA V155PHZ0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

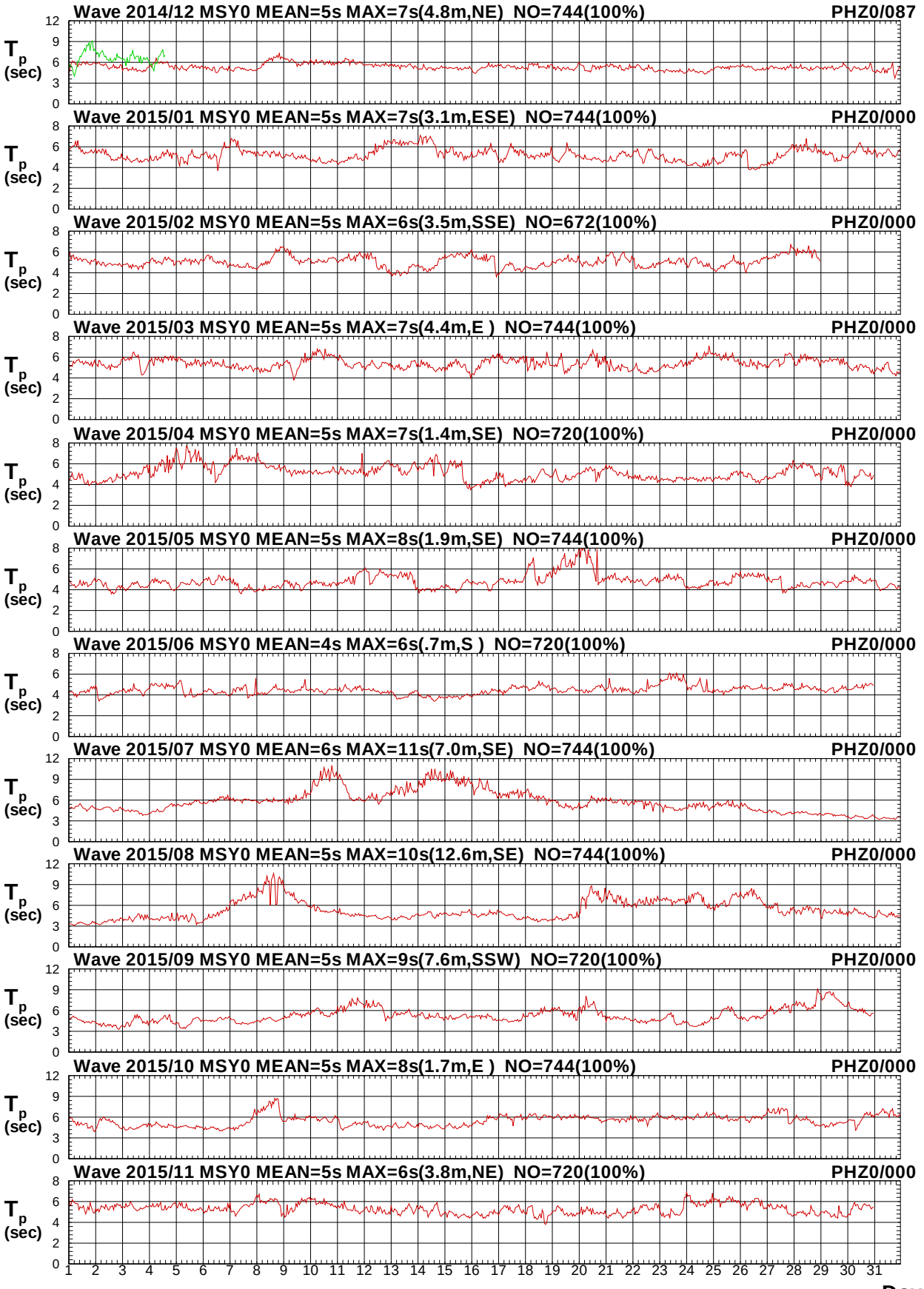


圖 12.12b　2015年每月馬祖海域 Y 站與澎湖海域 Z 站週期圖

V14CMSY0.1HA V14CPHZ0.1H0 V151MSY0.1HA V151PHZ0.1H0 V152MSY0.1HA V152PHZ0.1H0
V153MSY0.1HA V153PHZ0.1H0 V154MSY0.1HA V154PHZ0.1H0 V155MSY0.1HA V155PHZ0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

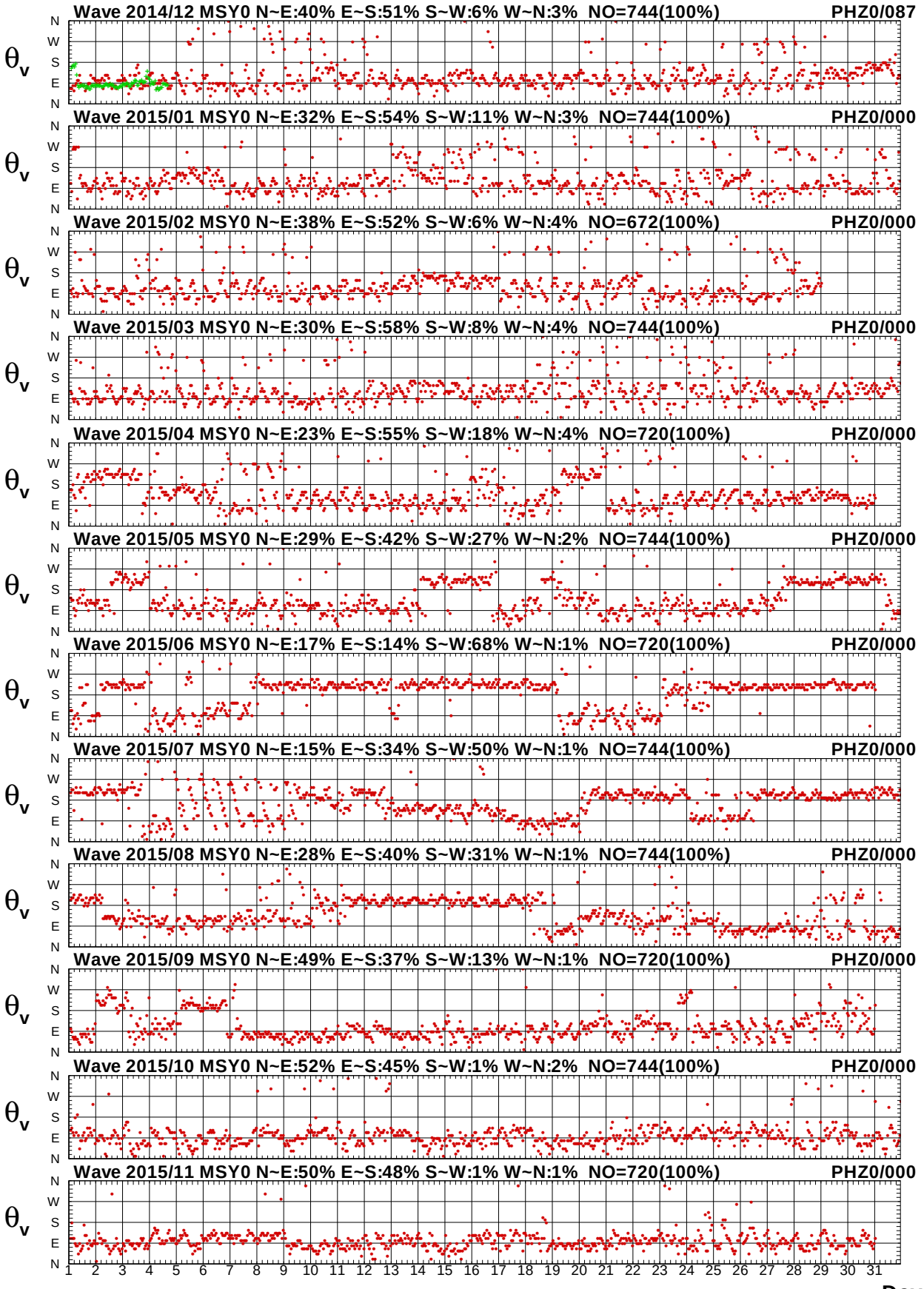


圖 12.12c　2015年每月馬祖海域 Y 站與澎湖海域 Z 站波向圖

V14CMSY0.1HA V14CPHZ0.1H0 V151MSY0.1HA V151PHZ0.1H0 V152MSY0.1HA V152PHZ0.1H0
V153MSY0.1HA V153PHZ0.1H0 V154MSY0.1HA V154PHZ0.1H0 V155MSY0.1HA V155PHZ0.1H0

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Wave H_s in Ma-Tsu Seas of MSY0 at 2015

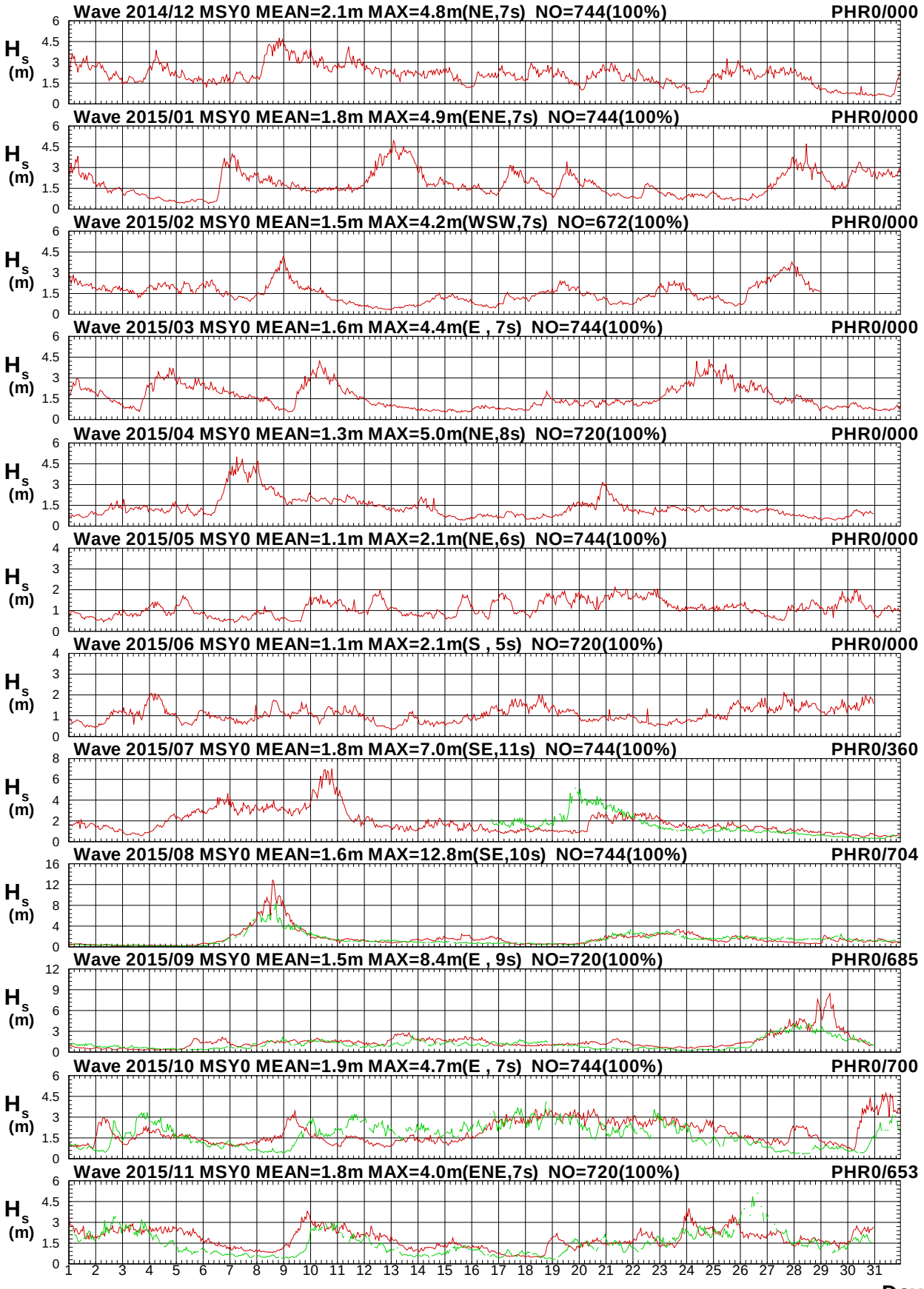


圖 12.13a　2015年每月馬祖海域 Y 站與澎湖海域 R 站波高圖

V14CMSY0.1HA V14CPHR0.1H0 V151MSY0.1HA V151PHR0.1H0 V152MSY0.1HA V152PHR0.1H0
V153MSY0.1HA V153PHR0.1H0 V154MSY0.1HA V154PHR0.1H0 V155MSY0.1HA V155PHR0.1H0

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Wave T_p in Ma-Tsu Seas of MSY0 at 2015

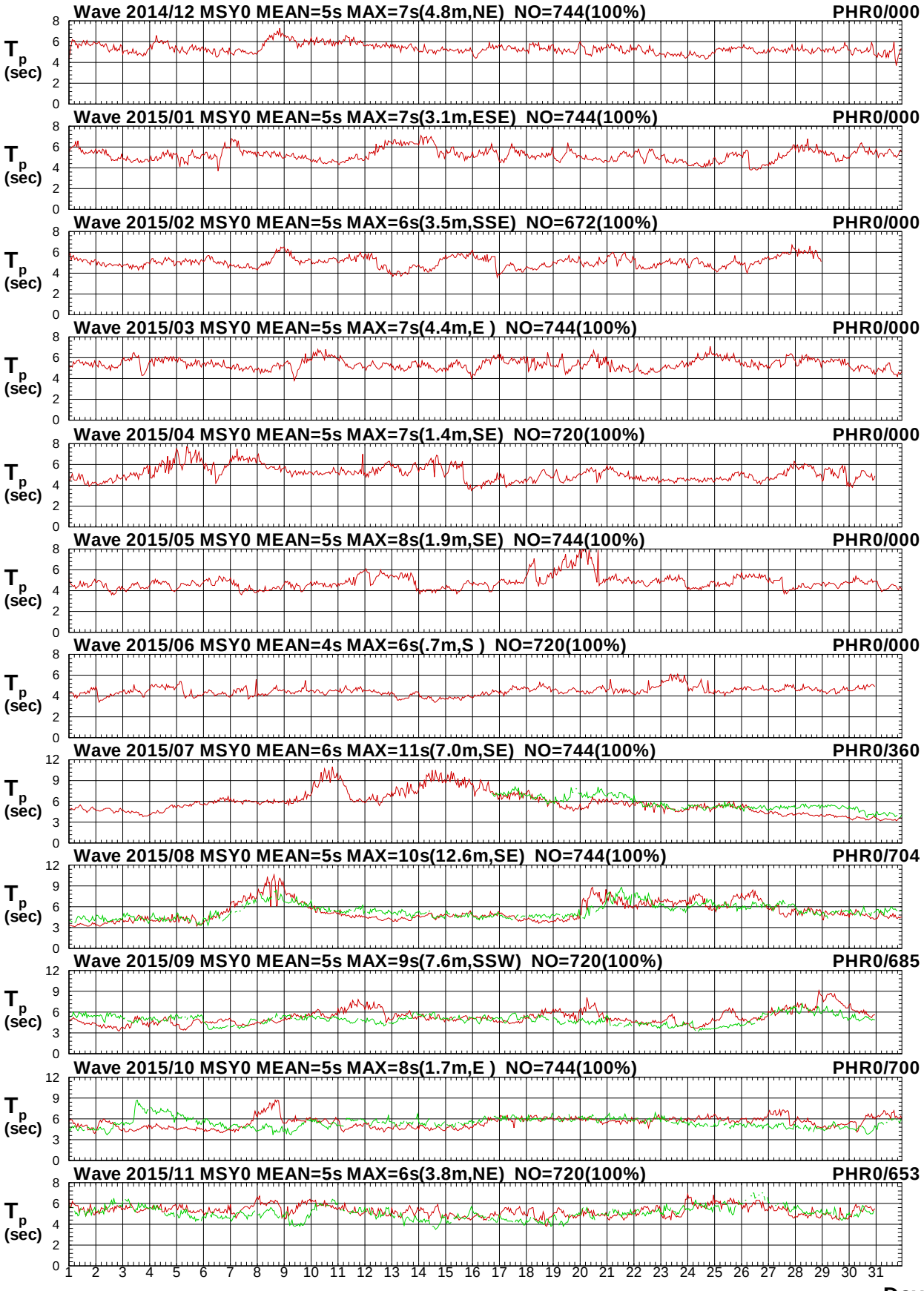


圖 12.13b　2015年每月馬祖海域 Y 站與澎湖海域 R 站週期圖

V14CMSY0.1HA V14CPHR0.1H0 V151MSY0.1HA V151PHR0.1H0 V152MSY0.1HA V152PHR0.1H0
V153MSY0.1HA V153PHR0.1H0 V154MSY0.1HA V154PHR0.1H0 V155MSY0.1HA V155PHR0.1H0

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

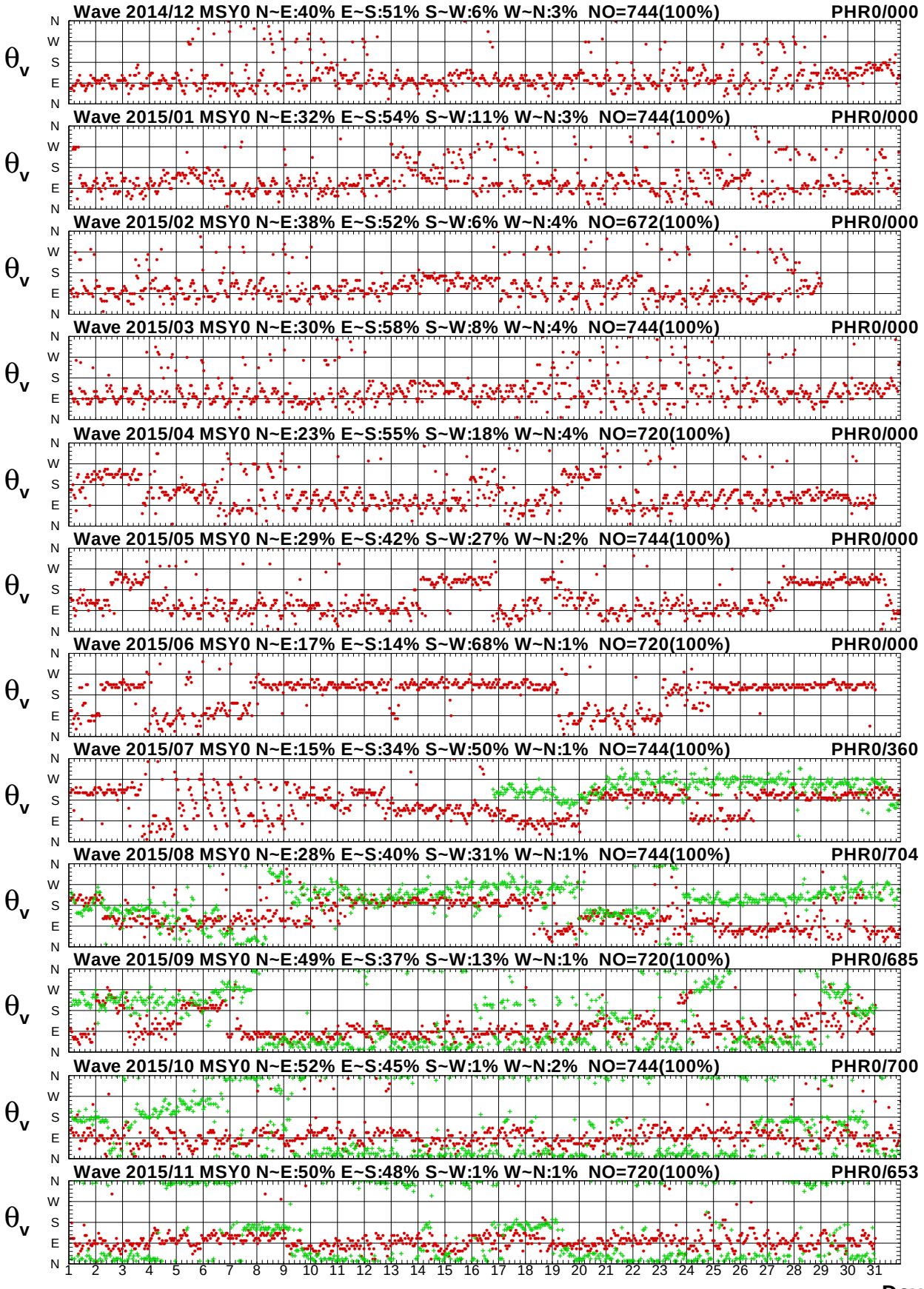


圖 12.13c　2015年每月馬祖海域 Y 站與澎湖海域 R 站波向圖

V14CMSY0.1HA V14CPHR0.1H0 V151MSY0.1HA V151PHR0.1H0 V152MSY0.1HA V152PHR0.1H0
V153MSY0.1HA V153PHR0.1H0 V154MSY0.1HA V154PHR0.1H0 V155MSY0.1HA V155PHR0.1H0

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第十三章 2015 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 2014/12

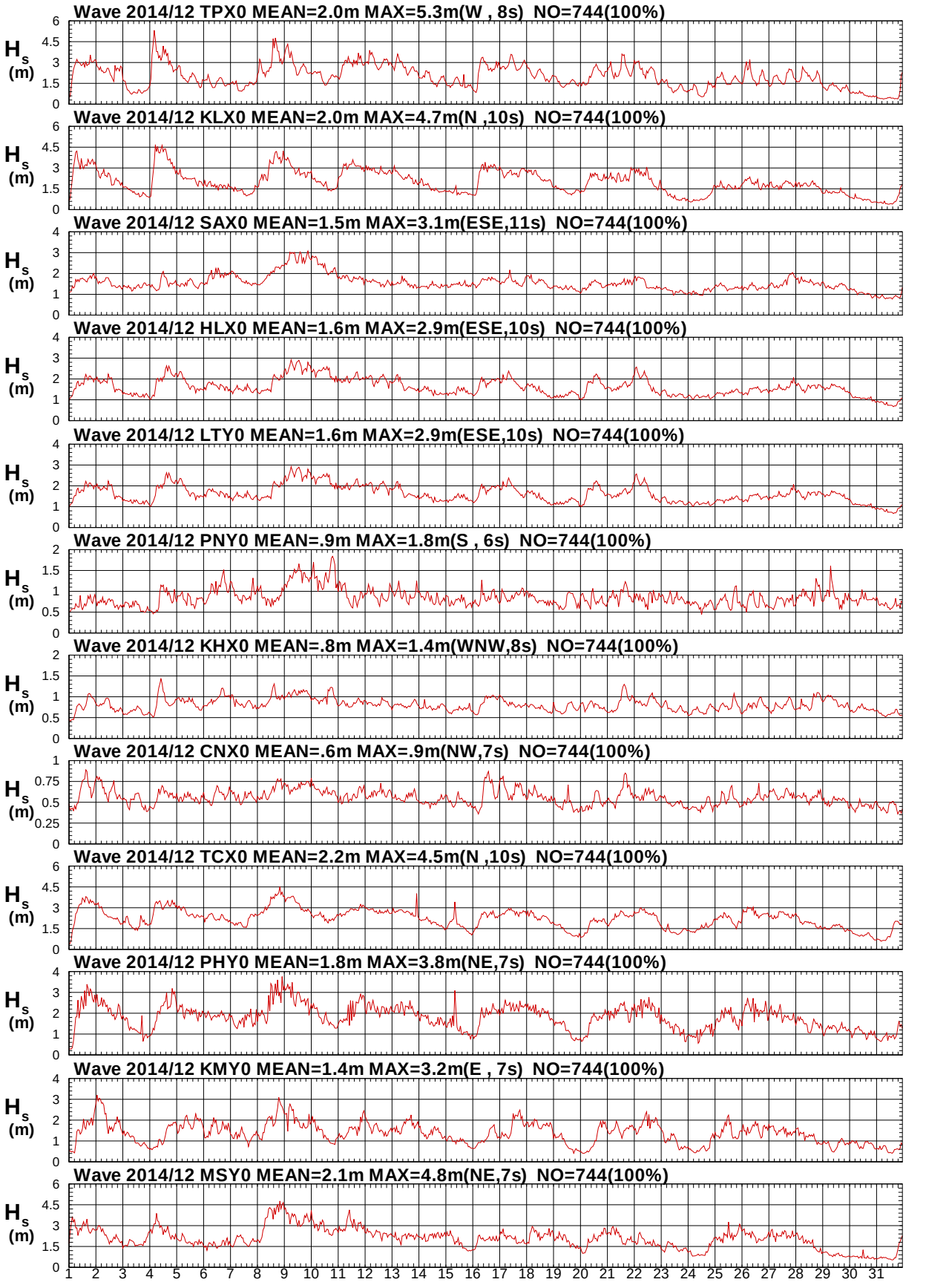


圖 13.1　2014年12月12海域觀測波高歷線圖

V14CTPX0.1HA V14CKLX0.1HA V14CSAX0.1HA V14CHLX0.1HA V14CLTY0.1HA V14CPNY0.1HA
V14CKHX0.1HA V14CCNX0.1HA V14CTCX0.1HA V14CPHY0.1HA V14CKMY0.1HA V14CMSY0.1HA

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Twelve Harbors Wave T_p at 2014/12

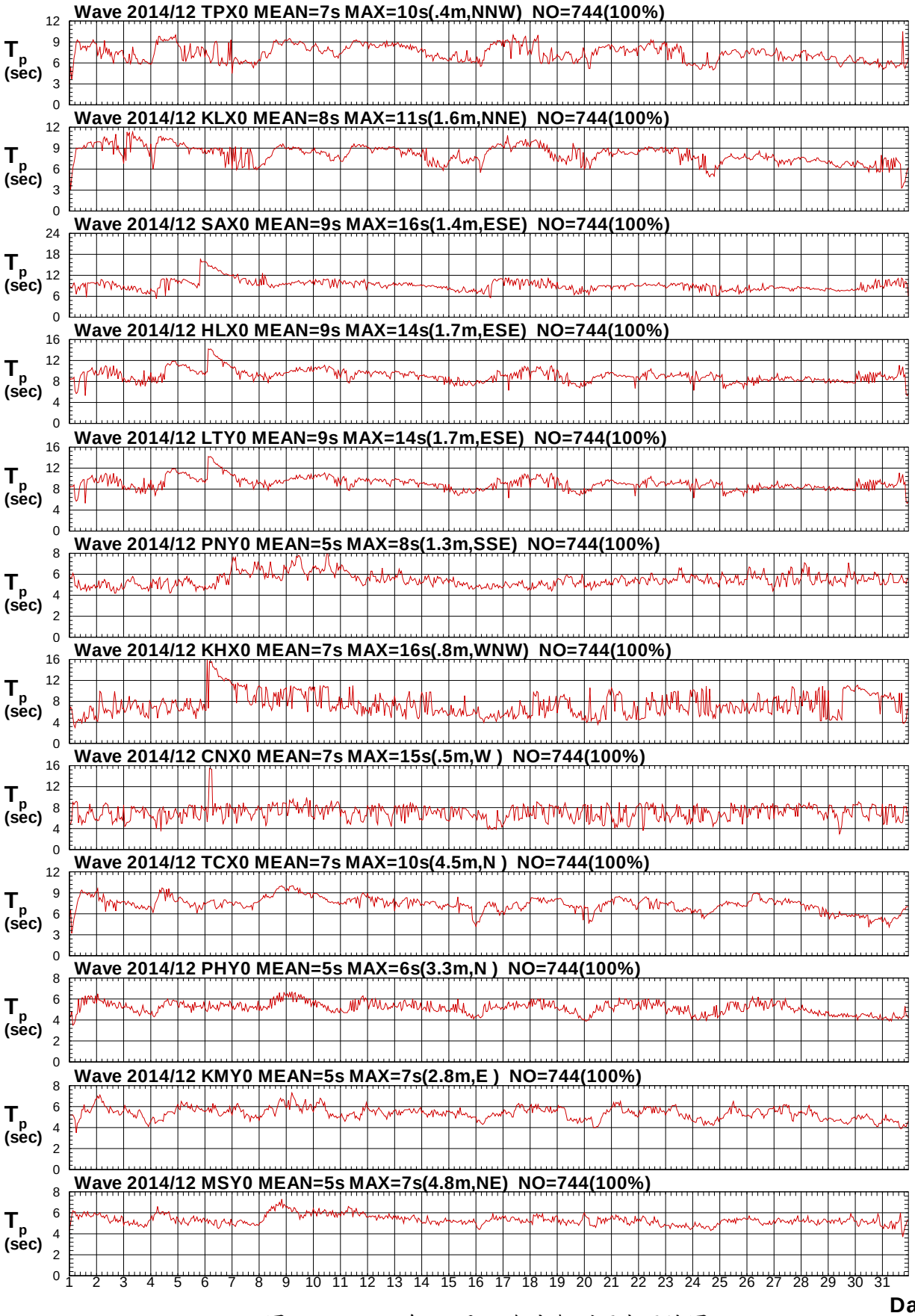


圖 13.2　2014年12月12海域觀測週期歷線圖

V14CTPX0.1HA V14CKLX0.1HA V14CSAX0.1HA V14CHLX0.1HA V14CLTY0.1HA V14CPNY0.1HA
V14CKHX0.1HA V14CCNX0.1HA V14CTCX0.1HA V14CPHY0.1HA V14CKMY0.1HA V14CMSY0.1HA

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Twelve Harbors Wave Direction at 2014/12

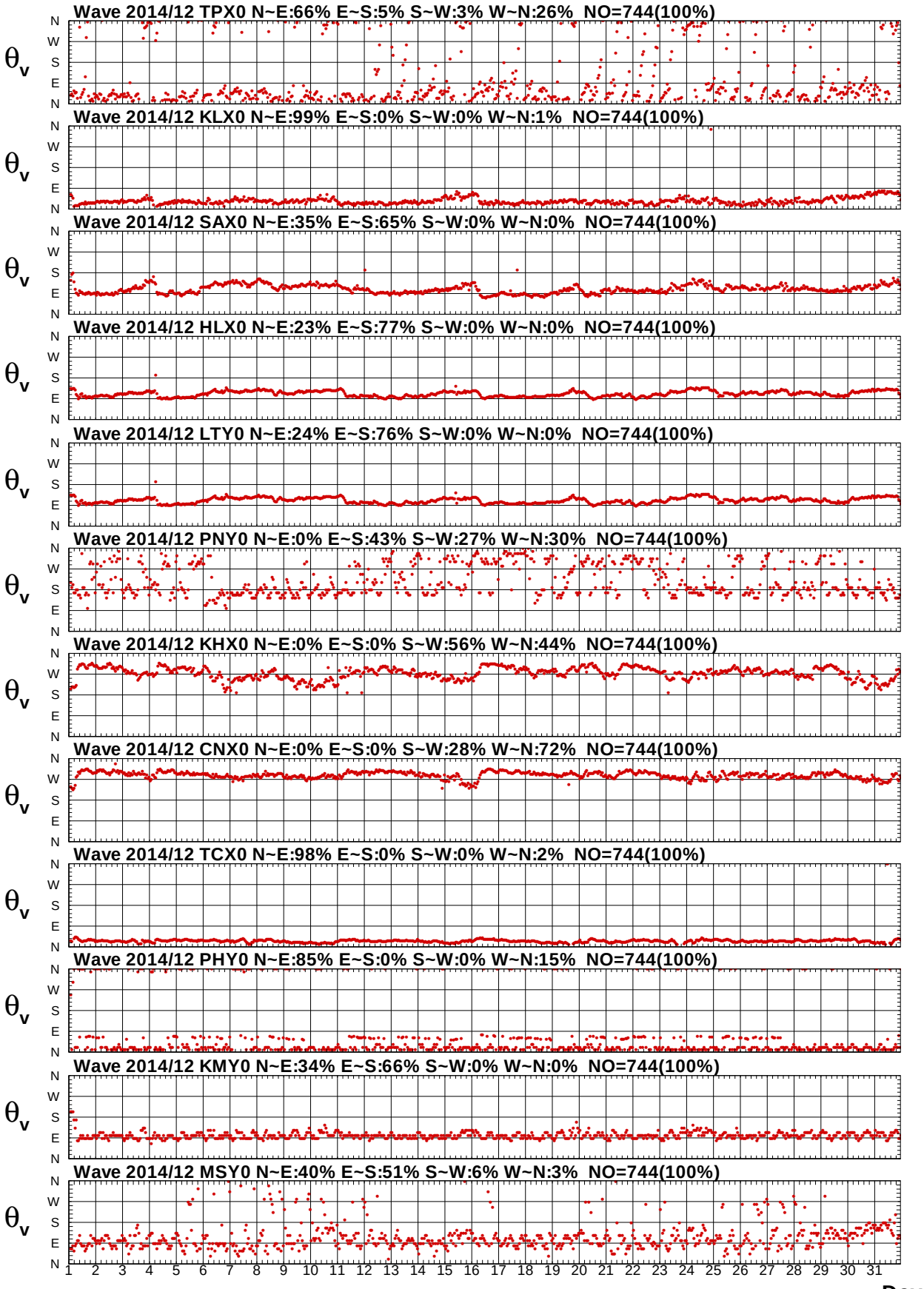


圖 13.3　2014年12月12海域觀測波向歷線圖

V14CTPX0.1HA V14CKLX0.1HA V14CSAX0.1HA V14CHLX0.1HA V14CLTY0.1HA V14CPNY0.1HA
V14CKHX0.1HA V14CCNX0.1HA V14CTCX0.1HA V14CPHY0.1HA V14CKMY0.1HA V14CMSY0.1HA

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Twelve Harbors Wave H_s at 2015/01

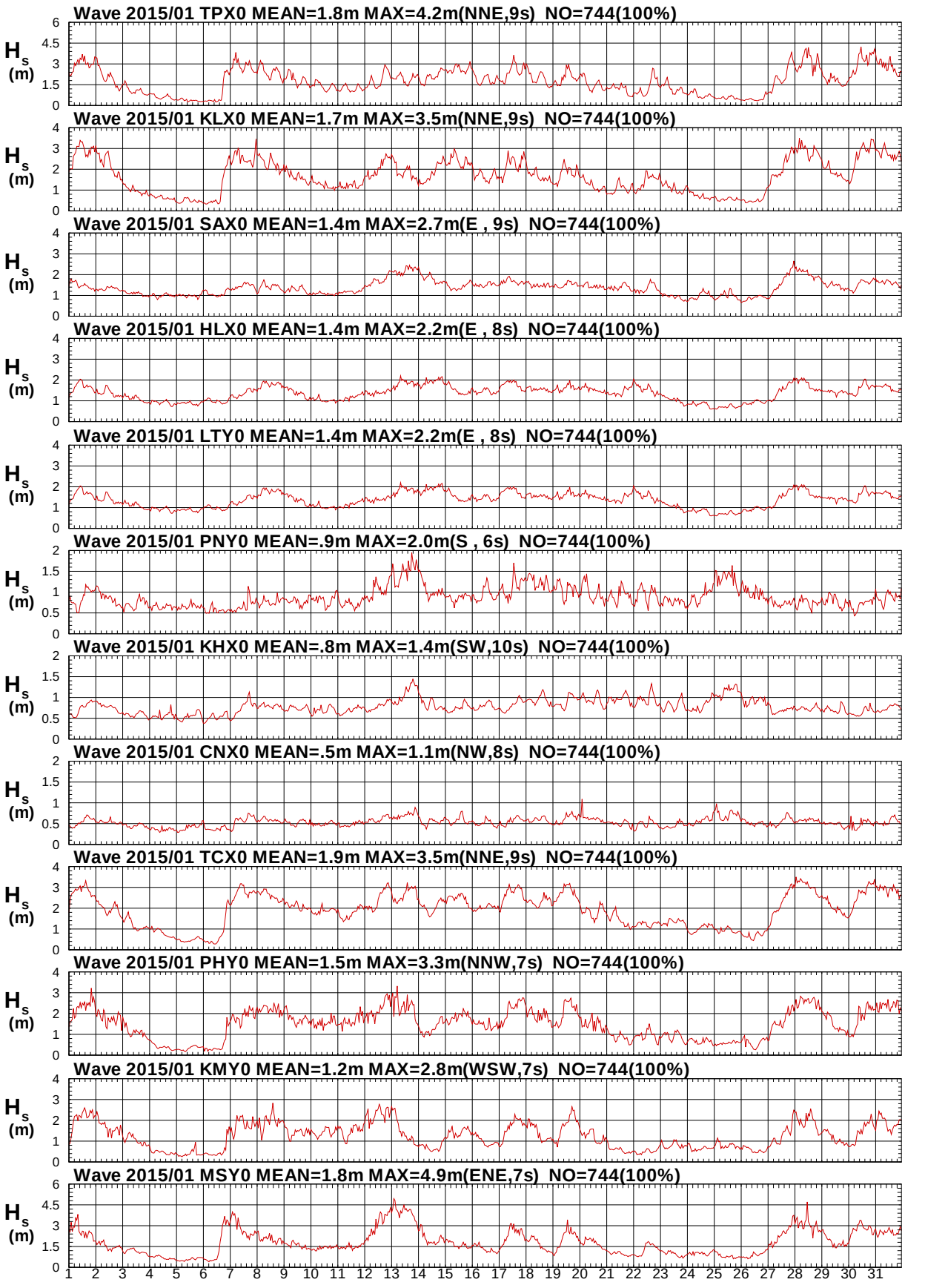


圖13.4　2015年 1月12海域觀測波高歷線圖

V151TPX0.1HA V151KLX0.1HA V151SAX0.1HA V151HLX0.1HA V151LTY0.1HA V151PNY0.1HA
V151KHX0.1HA V151CNX0.1HA V151TCX0.1HA V151PHY0.1HA V151KMY0.1HA V151MSY0.1HA

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Twelve Harbors Wave T_p at 2015/01

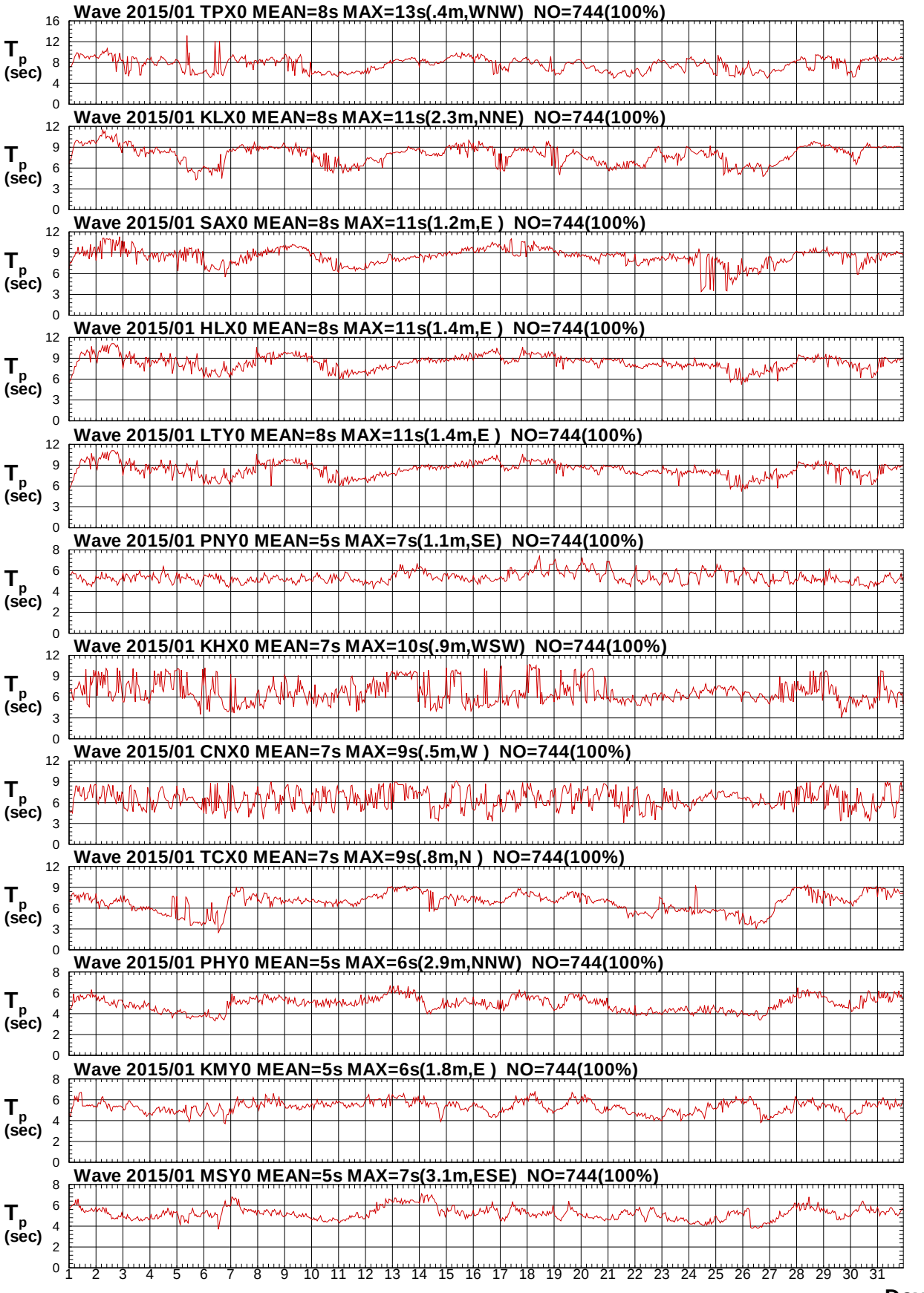


圖 13.5　2015年 1 月12海域觀測週期歷線圖

V151TPX0.1HA V151KLX0.1HA V151SAX0.1HA V151HLX0.1HA V151LTY0.1HA V151PNY0.1HA
V151KHX0.1HA V151CNX0.1HA V151TCX0.1HA V151PHY0.1HA V151KMY0.1HA V151MSY0.1HA

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Twelve Harbors Wave Direction at 2015/01

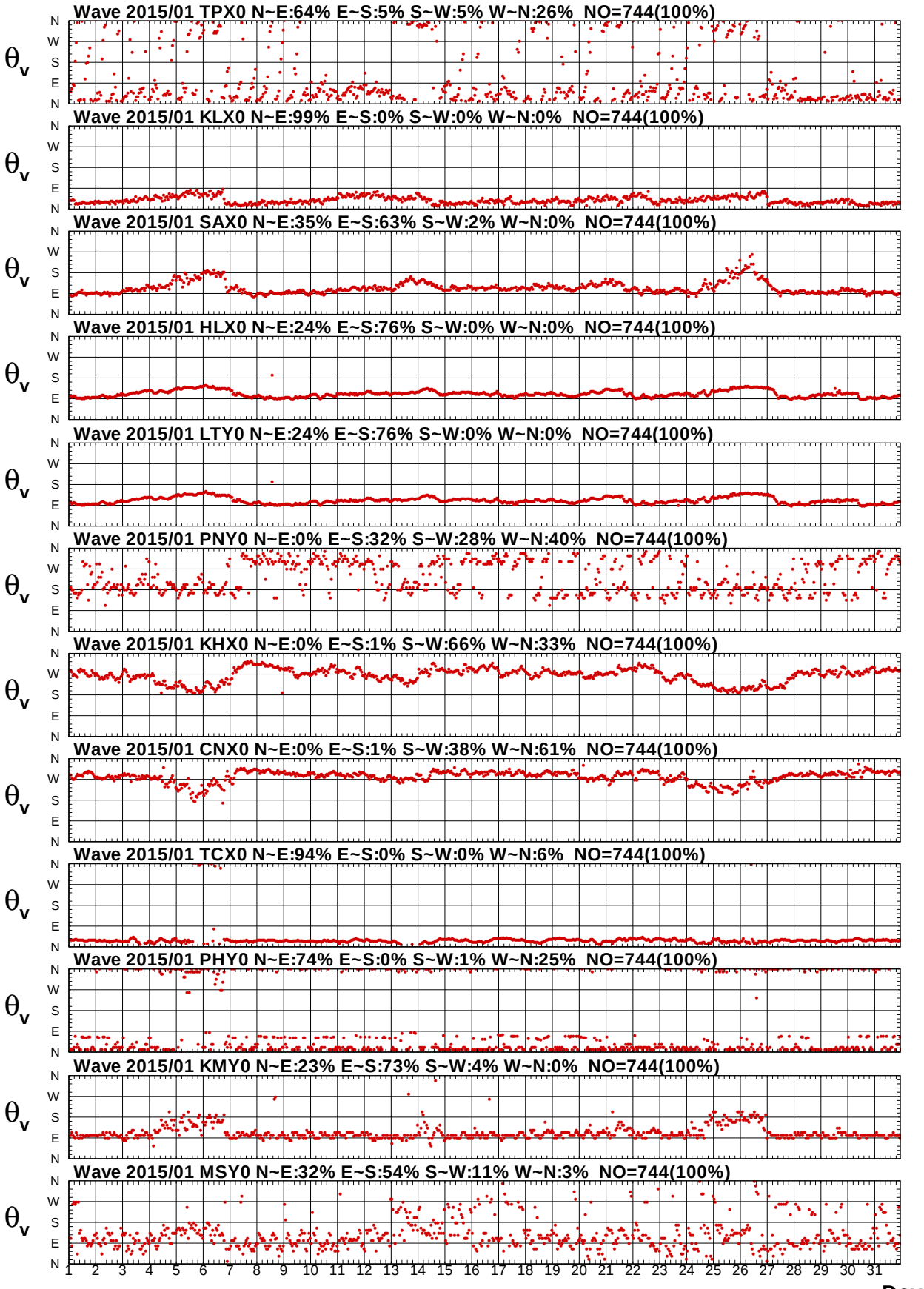


圖13.6　2015年 1月12海域觀測波向歷線圖

V151TPX0.1HA V151KLX0.1HA V151SAX0.1HA V151HLX0.1HA V151LTY0.1HA V151PNY0.1HA
V151KHX0.1HA V151CNX0.1HA V151TCX0.1HA V151PHY0.1HA V151KMY0.1HA V151MSY0.1HA

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Twelve Harbors Wave H_s at 2015/02

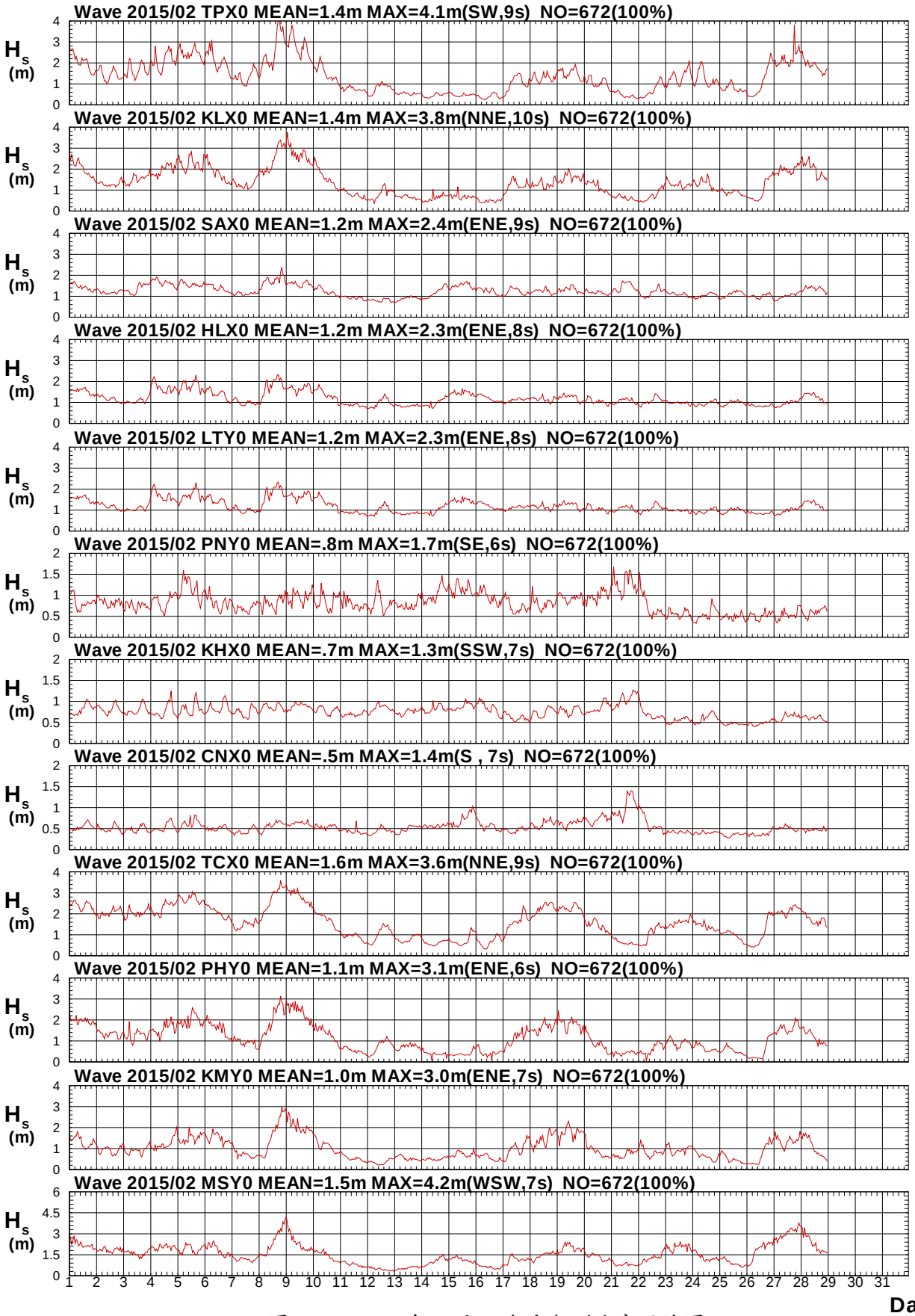


圖 13.7　2015年 2 月 12 海域觀測波高歷線圖

V152TPX0.1HA V152KLX0.1HA V152SAX0.1HA V152HLX0.1HA V152LTY0.1HA V152PNY0.1HA
V152KHX0.1HA V152CNX0.1HA V152TCX0.1HA V152PHY0.1HA V152KMY0.1HA V152MSY0.1HA

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Twelve Harbors Wave T_p at 2015/02

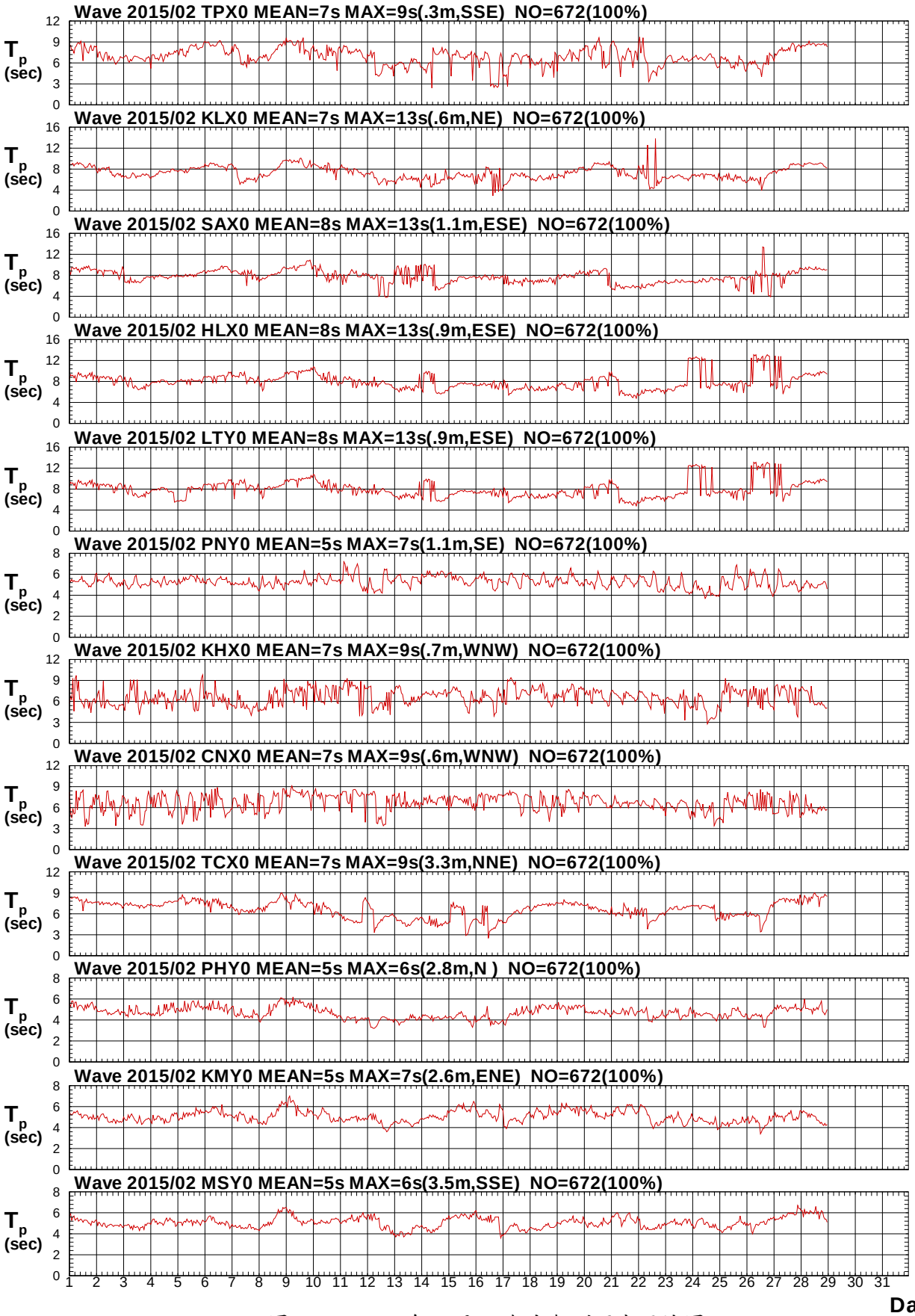


圖 13.8　2015年 2 月 12海域觀測週期歷線圖

V152TPX0.1HA V152KLX0.1HA V152SAX0.1HA V152HLX0.1HA V152LTY0.1HA V152PNY0.1HA
V152KHX0.1HA V152CNX0.1HA V152TCX0.1HA V152PHY0.1HA V152KMY0.1HA V152MSY0.1HA

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Twelve Harbors Wave Direction at 2015/02

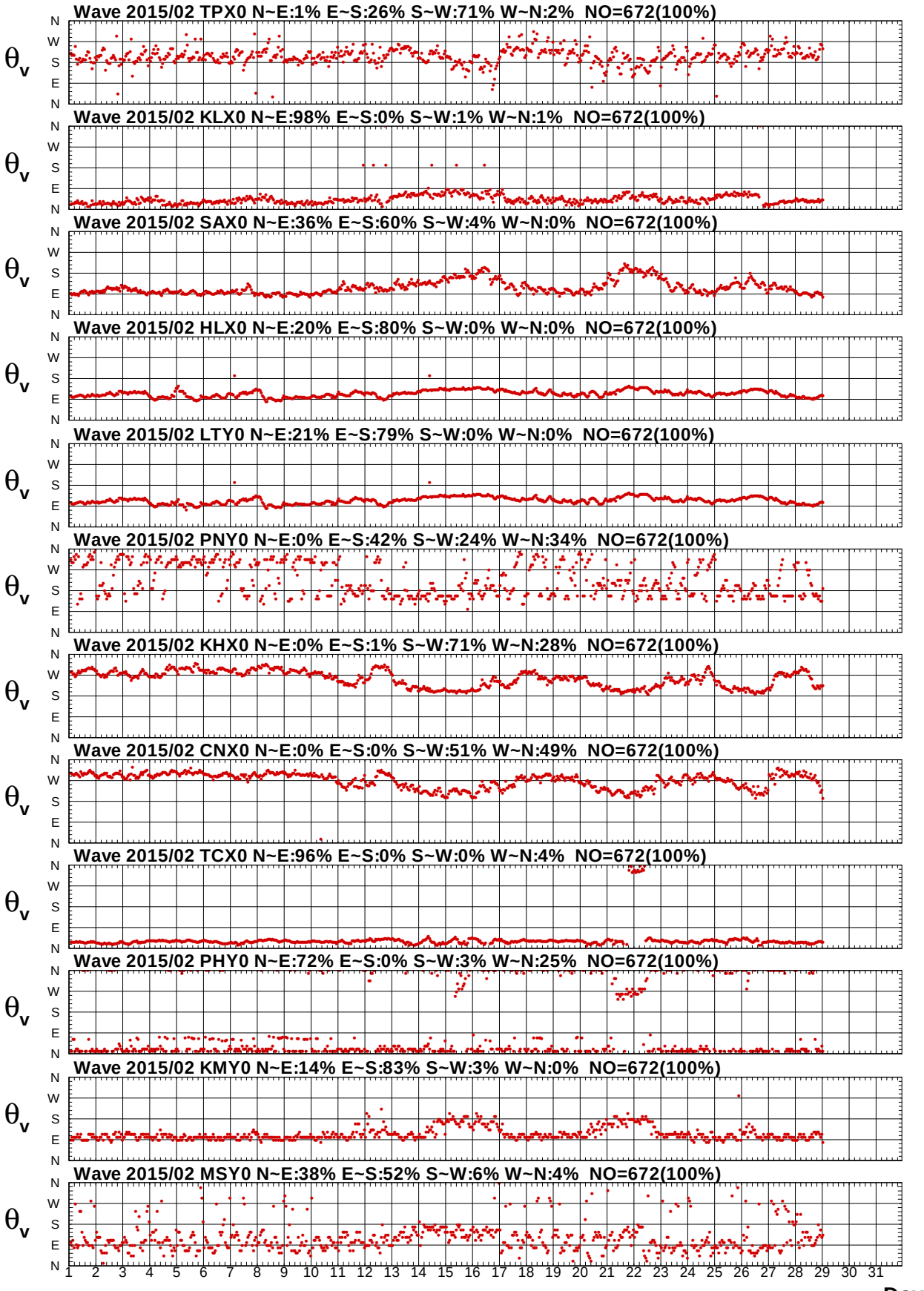


圖13.9　2015年 2月12海域觀測波向歷線圖

V152TPX0.1HA V152KLX0.1HA V152SAX0.1HA V152HLX0.1HA V152LTY0.1HA V152PNY0.1HA
V152KHX0.1HA V152CNX0.1HA V152TCX0.1HA V152PHY0.1HA V152KMY0.1HA V152MSY0.1HA

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Twelve Harbors Wave H_s at 2015/03

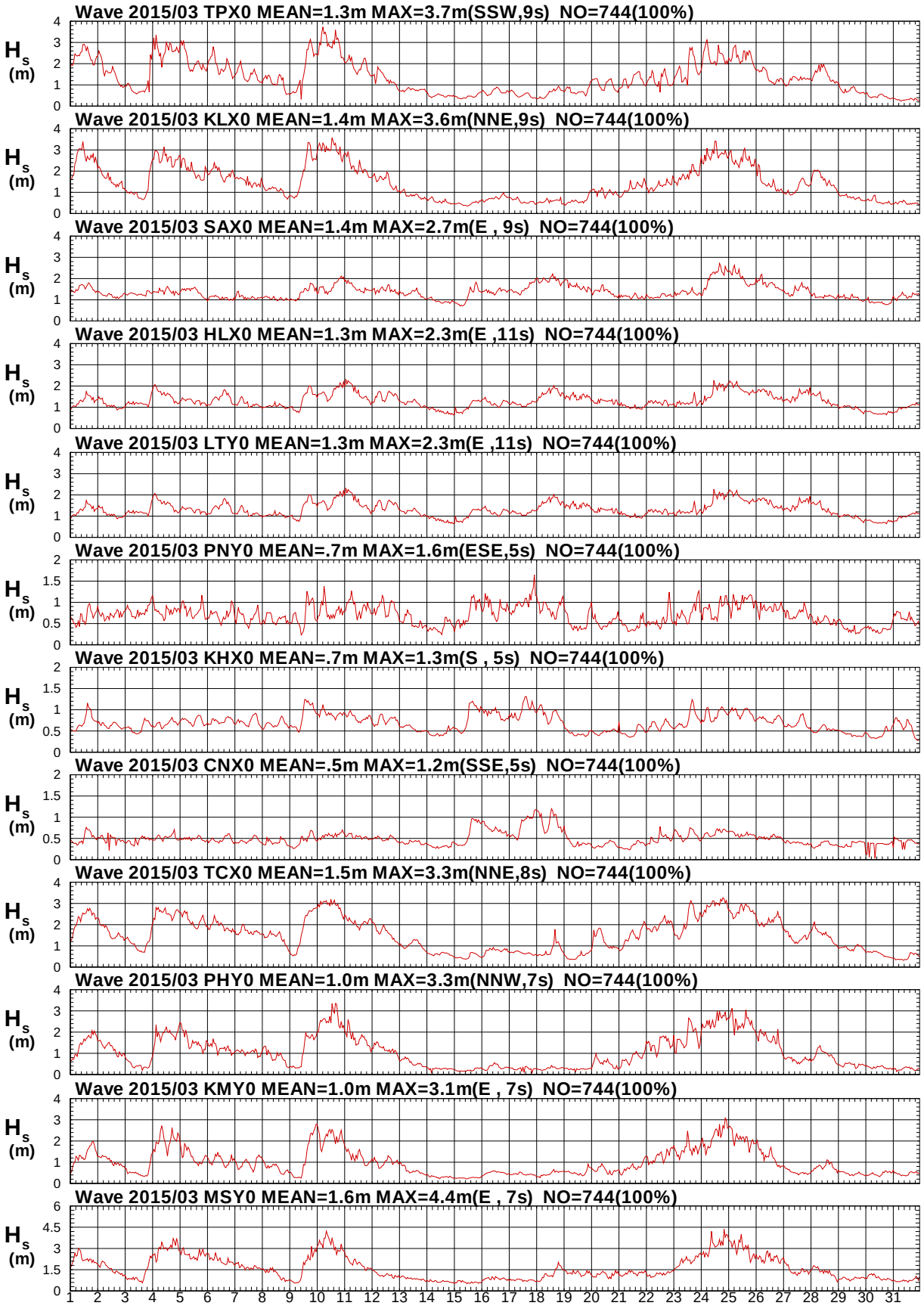


圖 13.10　2015年 3 月12海域觀測波高歷線圖

V153TPX0.1HA V153KLX0.1HA V153SAX0.1HA V153HLX0.1HA V153LTY0.1HA V153PNY0.1HA
V153KHX0.1HA V153CNX0.1HA V153TCX0.1HA V153PHY0.1HA V153KMY0.1HA V153MSY0.1HA

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Twelve Harbors Wave T_p at 2015/03

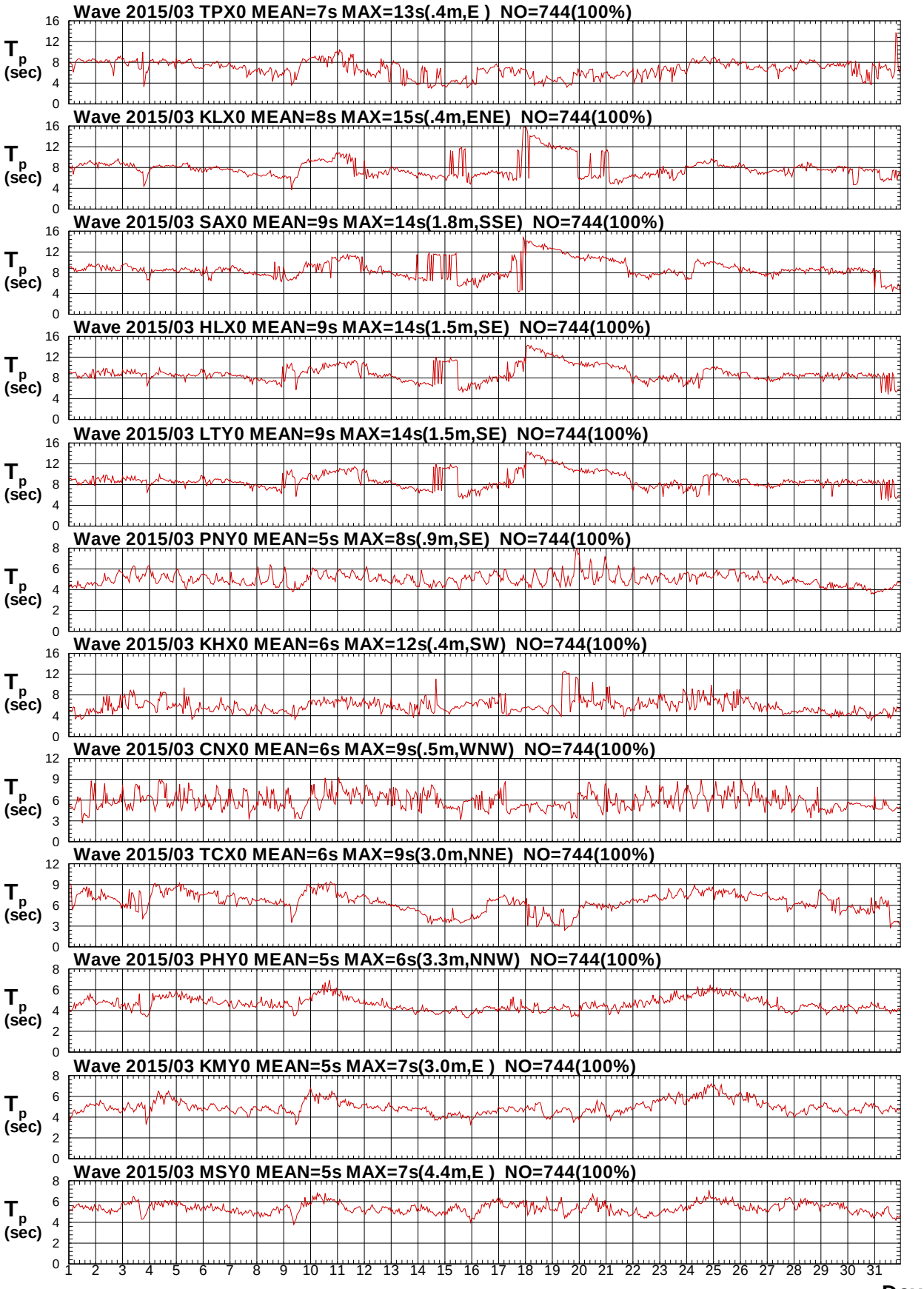


圖 13.11　2015年 3月12海域觀測週期歷線圖

V153TPX0.1HA V153KLX0.1HA V153SAX0.1HA V153HLX0.1HA V153LTY0.1HA V153PNY0.1HA
V153KHX0.1HA V153CNX0.1HA V153TCX0.1HA V153PHY0.1HA V153KMY0.1HA V153MSY0.1HA

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Twelve Harbors Wave Direction at 2015/03

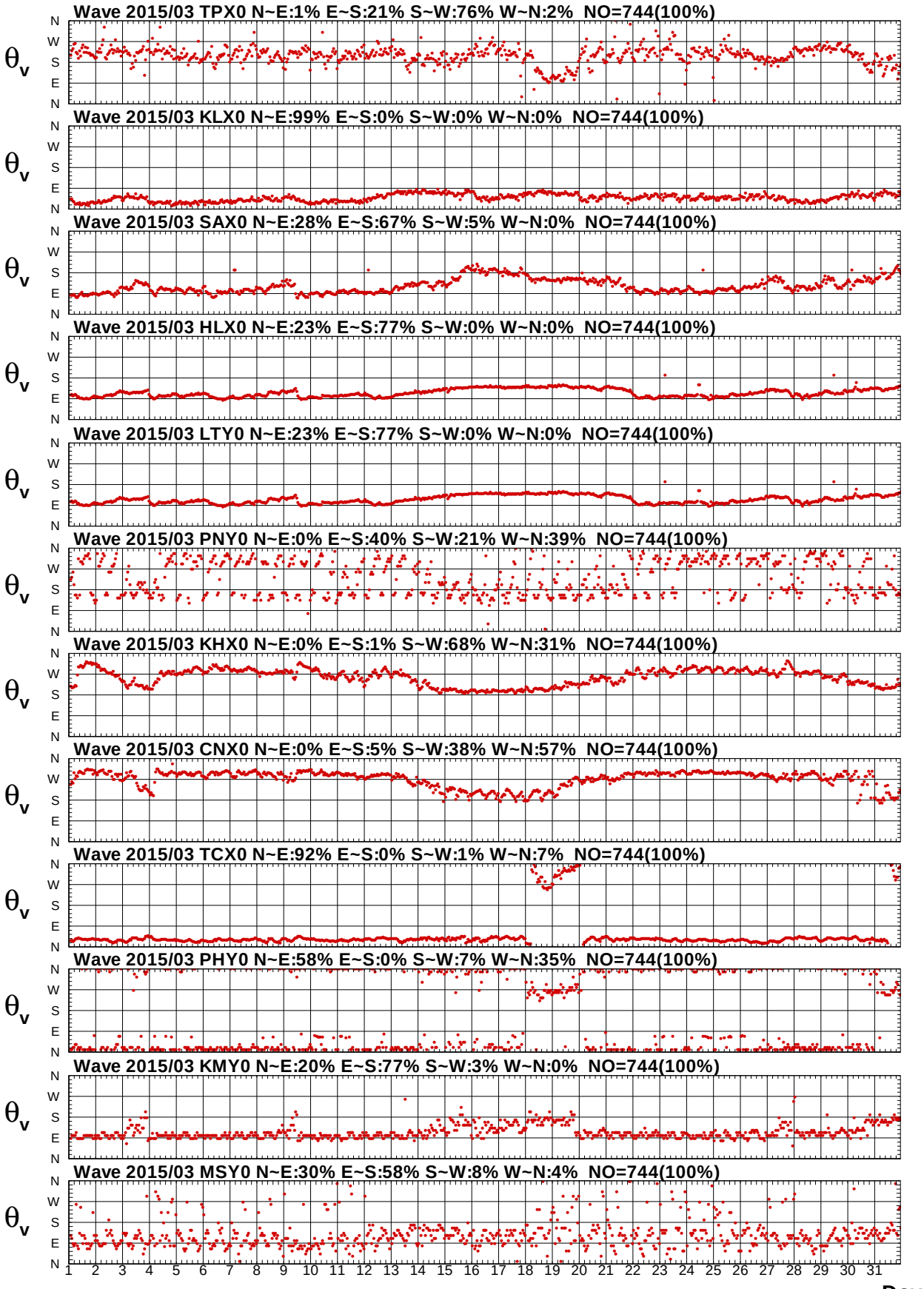


圖13.12　2015年 3月12海域觀測波向歷線圖

V153TPX0.1HA V153KLX0.1HA V153SAX0.1HA V153HLX0.1HA V153LTY0.1HA V153PNY0.1HA
V153KHX0.1HA V153CNX0.1HA V153TCX0.1HA V153PHY0.1HA V153KMY0.1HA V153MSY0.1HA

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Twelve Harbors Wave H_s at 2015/04

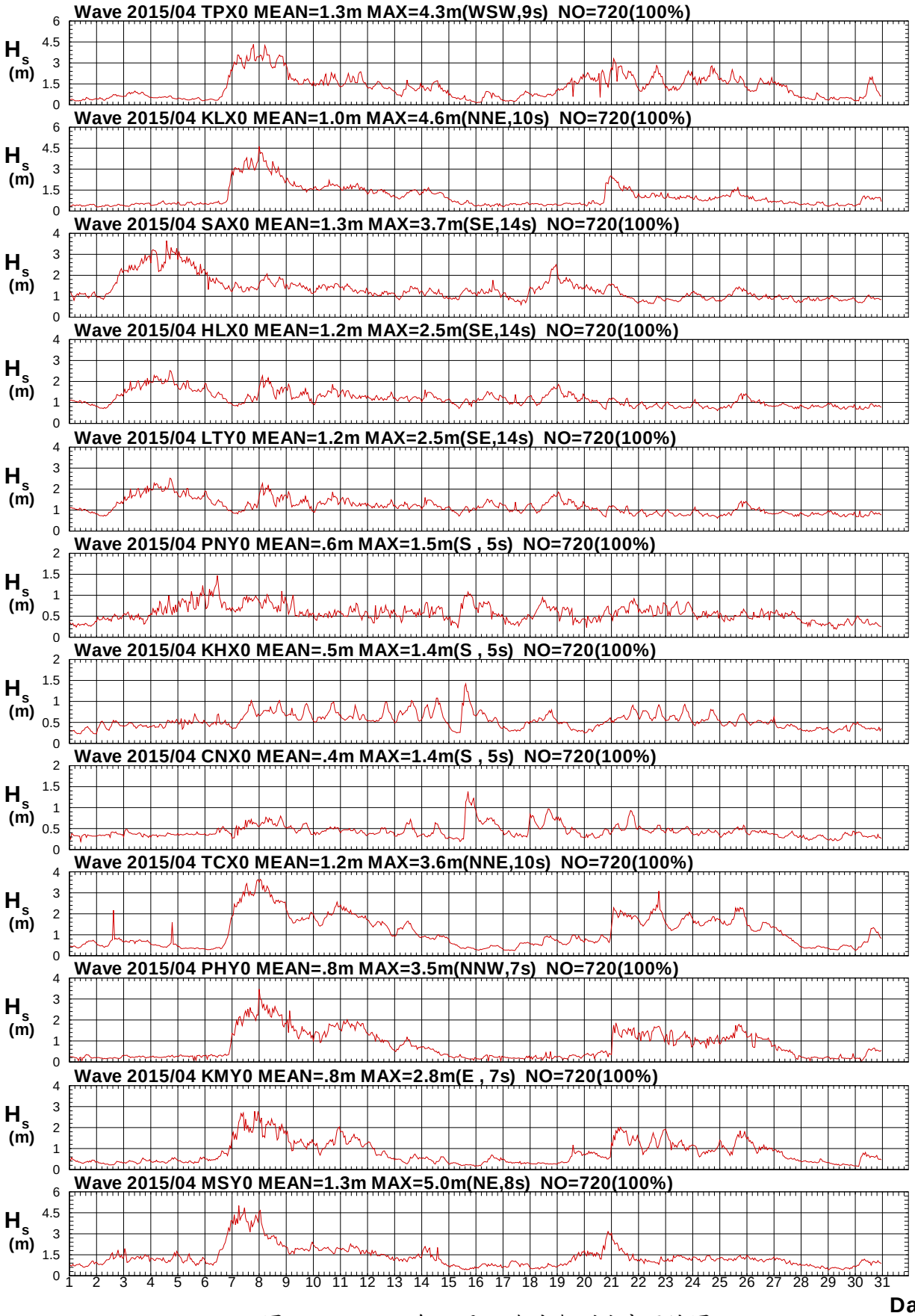


圖 13.13　2015年 4 月12海域觀測波高歷線圖

V154TPX0.1HA V154KLX0.1HA V154SAX0.1HA V154HLX0.1HA V154LTY0.1HA V154PNY0.1HA
V154KHX0.1HA V154CNX0.1HA V154TCX0.1HA V154PHY0.1HA V154KMY0.1HA V154MSY0.1HA

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Twelve Harbors Wave T_p at 2015/04

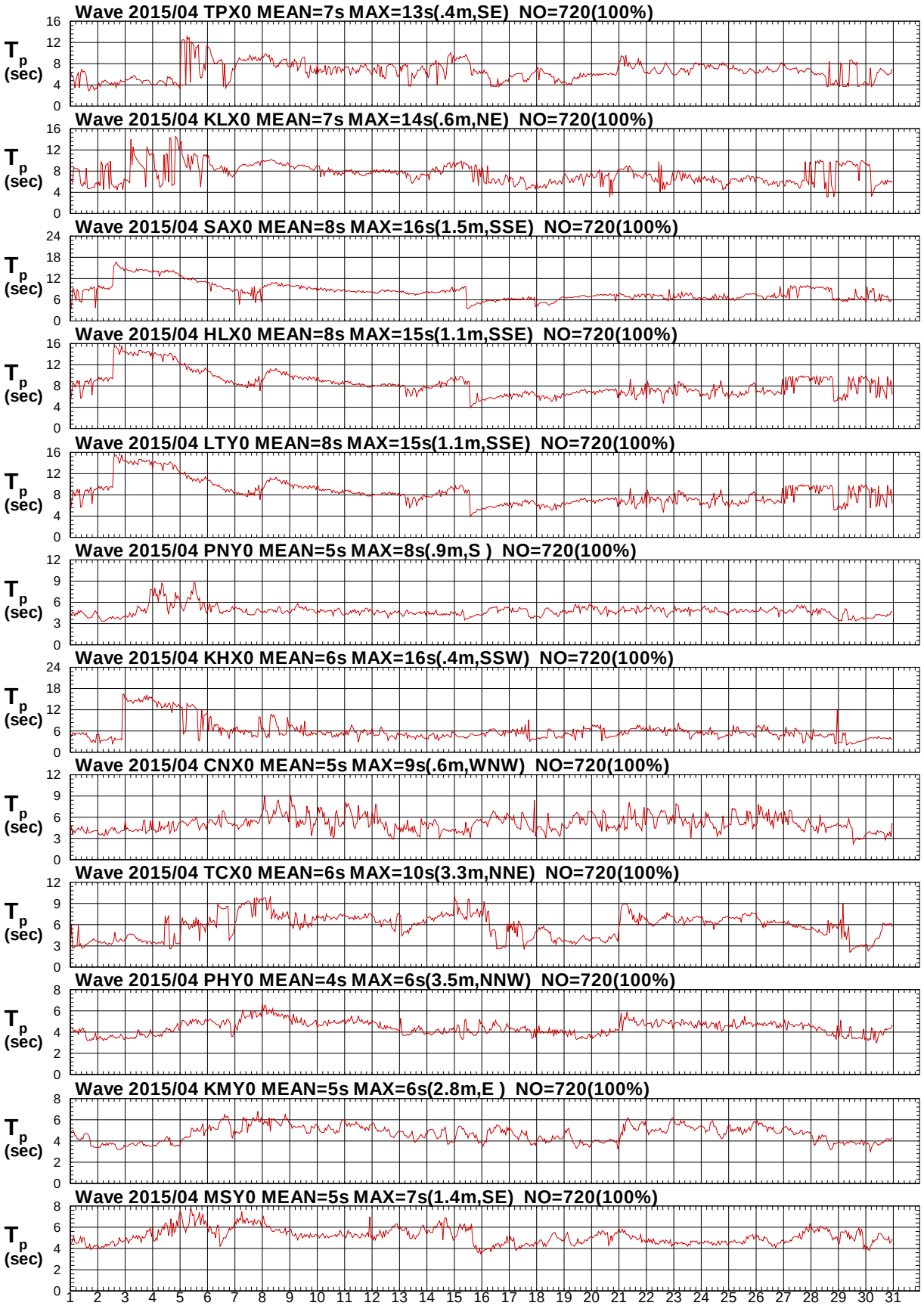


圖 13.14　2015年 4 月 12 海域觀測週期歷線圖

V154TPX0.1HA V154KLX0.1HA V154SAX0.1HA V154HLX0.1HA V154LTY0.1HA V154PNY0.1HA
V154KHX0.1HA V154CNX0.1HA V154TCX0.1HA V154PHY0.1HA V154KMY0.1HA V154MSY0.1HA

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Twelve Harbors Wave Direction at 2015/04

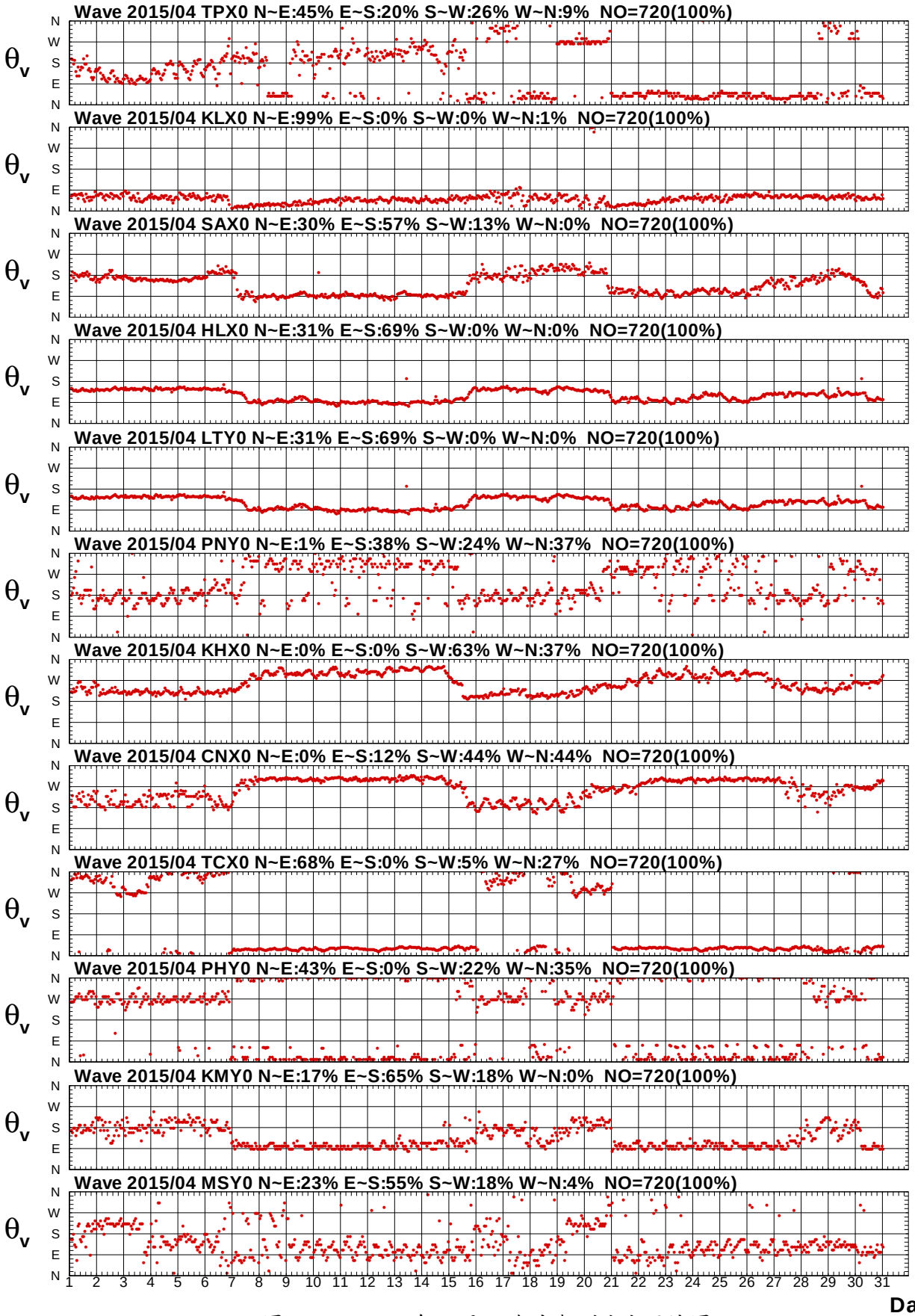


圖13.15　2015年 4月12海域觀測波向歷線圖

V154TPX0.1HA V154KLX0.1HA V154SAX0.1HA V154HLX0.1HA V154LTY0.1HA V154PNY0.1HA
V154KHX0.1HA V154CNX0.1HA V154TCX0.1HA V154PHY0.1HA V154KMY0.1HA V154MSY0.1HA

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Twelve Harbors Wave H_s at 2015/05

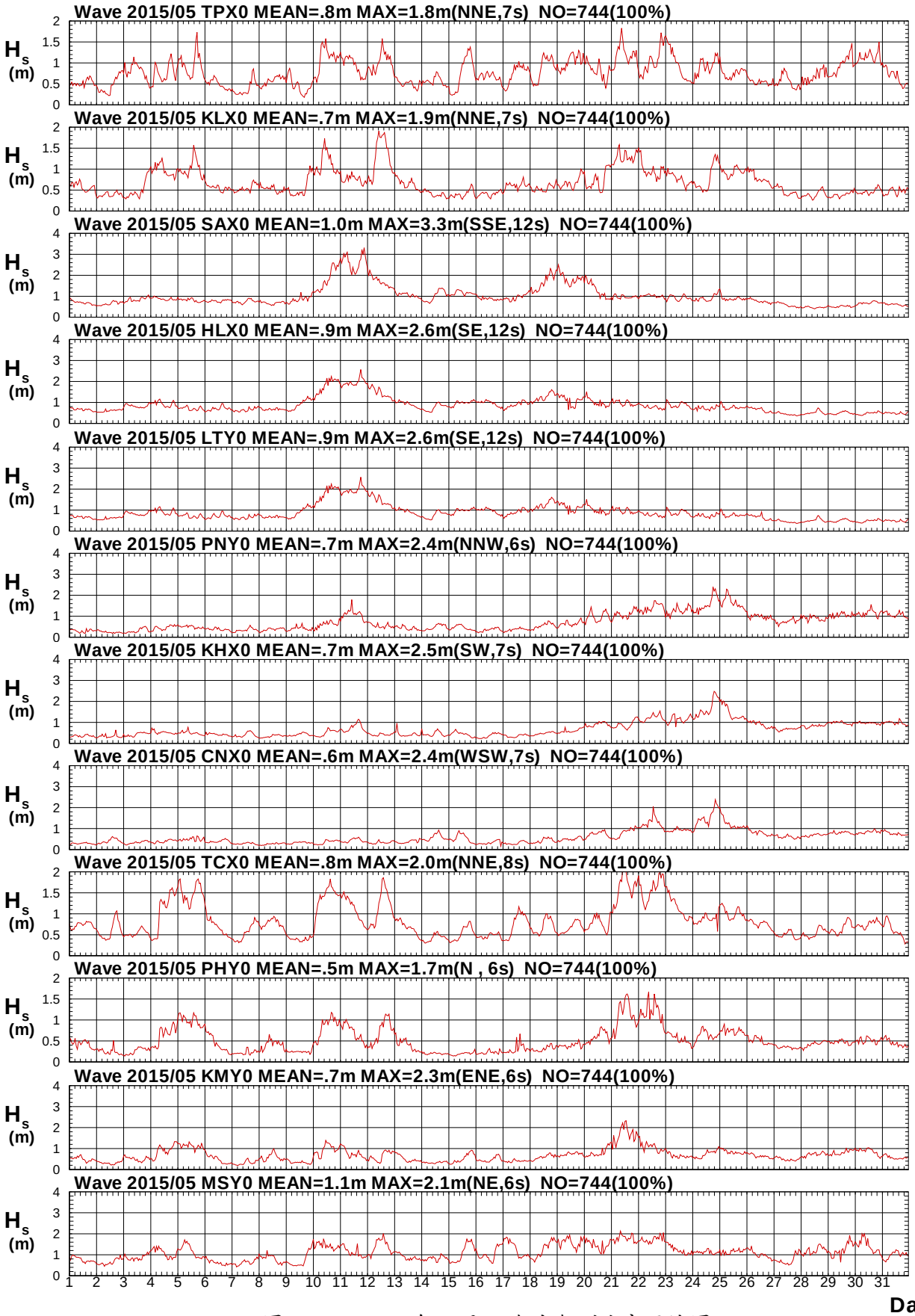


圖 13.16　2015年 5 月 12 海域觀測波高歷線圖

V155TPX0.1HA V155KLX0.1HA V155SAX0.1HA V155HLX0.1HA V155LTY0.1HA V155PNY0.1HA
V155KHX0.1HA V155CNX0.1HA V155TCX0.1HA V155PHY0.1HA V155KMY0.1HA V155MSY0.1HA

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Twelve Harbors Wave T_p at 2015/05

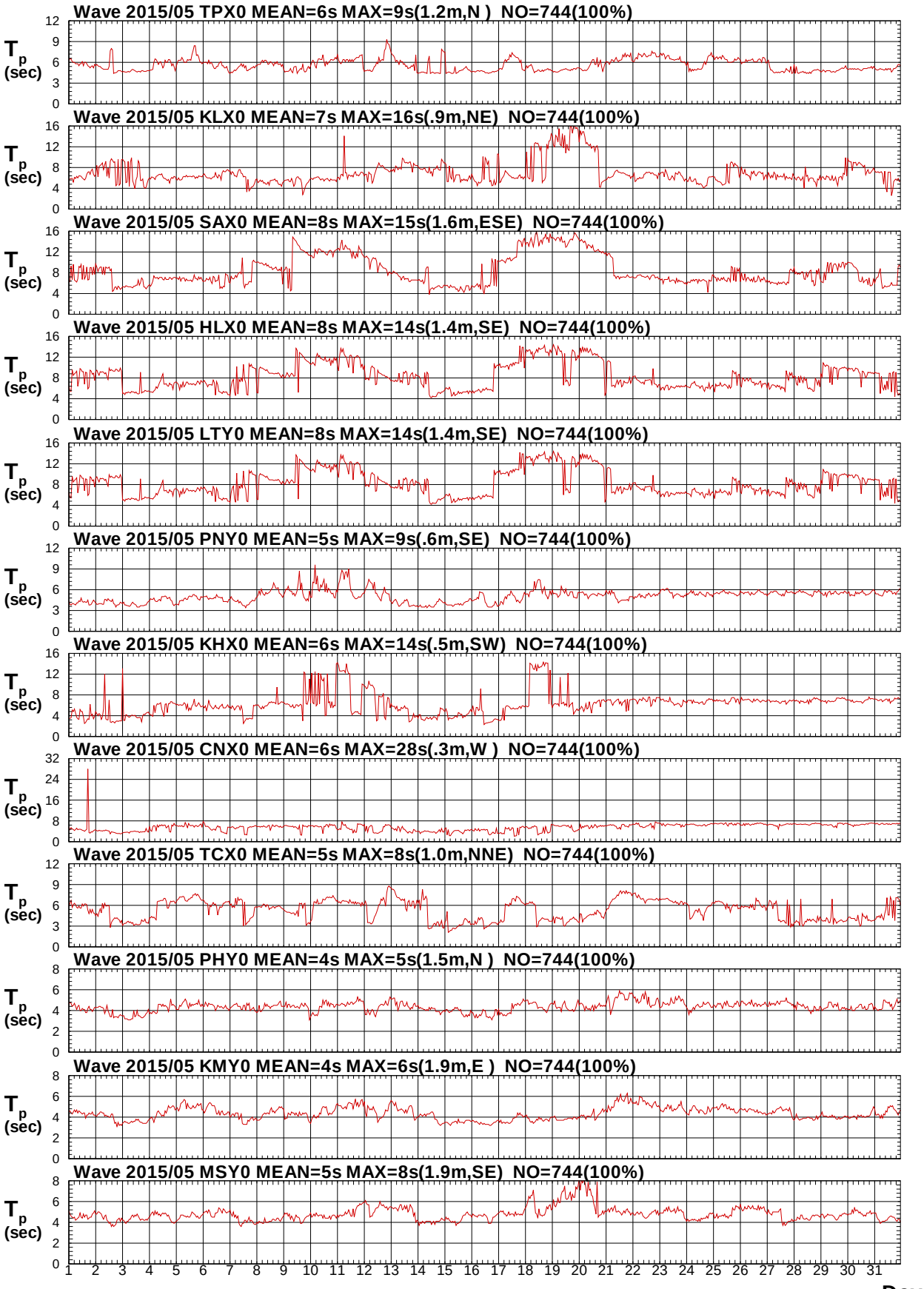


圖 13.17　2015年 5月12海域觀測週期歷線圖

V155TPX0.1HA V155KLX0.1HA V155SAX0.1HA V155HLX0.1HA V155LTY0.1HA V155PNY0.1HA
V155KHX0.1HA V155CNX0.1HA V155TCX0.1HA V155PHY0.1HA V155KMY0.1HA V155MSY0.1HA

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Twelve Harbors Wave Direction at 2015/05

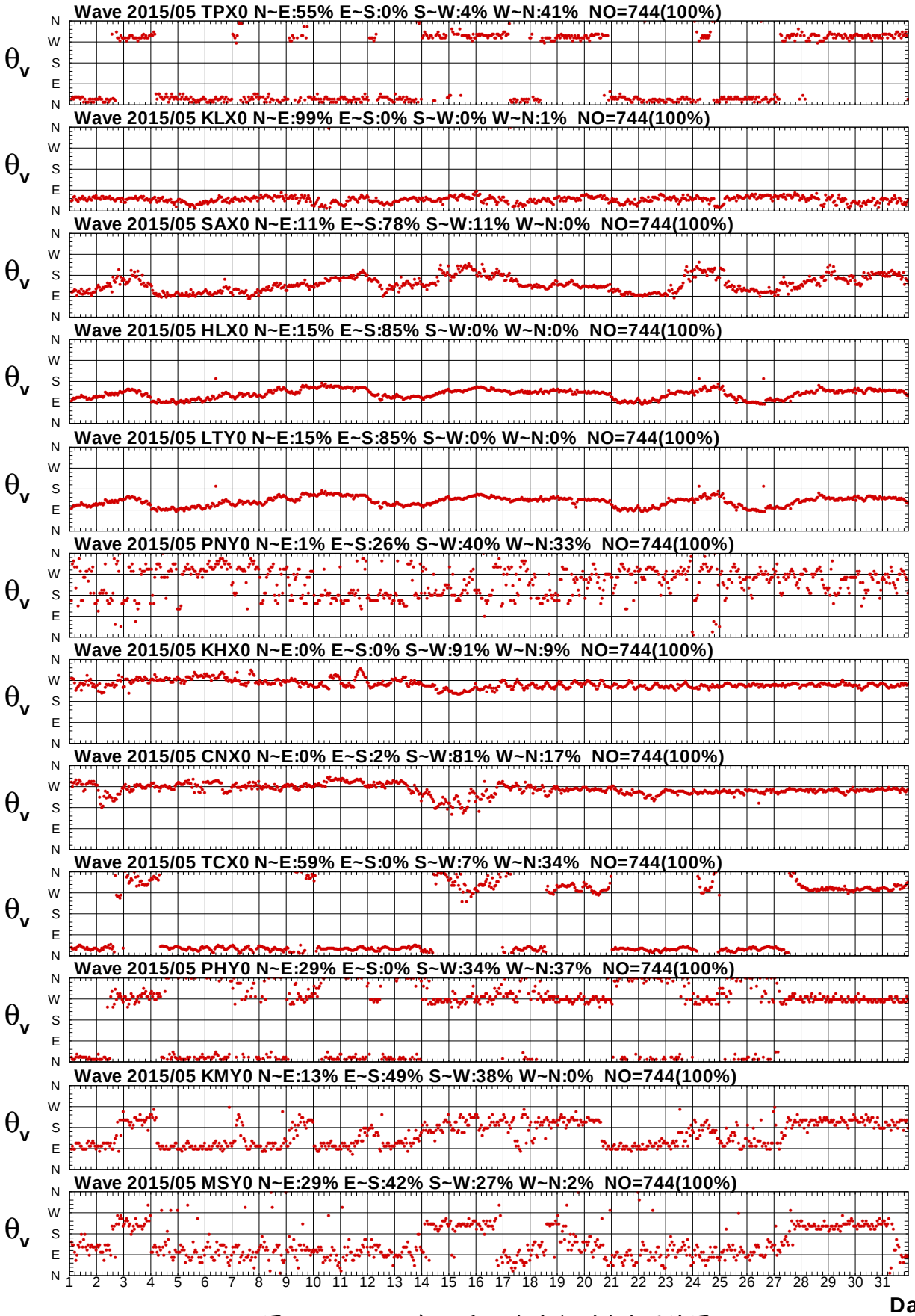


圖 13.18　2015年 5月12海域觀測波向歷線圖

V155TPX0.1HA V155KLX0.1HA V155SAX0.1HA V155HLX0.1HA V155LTY0.1HA V155PNY0.1HA
V155KHX0.1HA V155CNX0.1HA V155TCX0.1HA V155PHY0.1HA V155KMY0.1HA V155MSY0.1HA

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Twelve Harbors Wave H_s at 2015/06

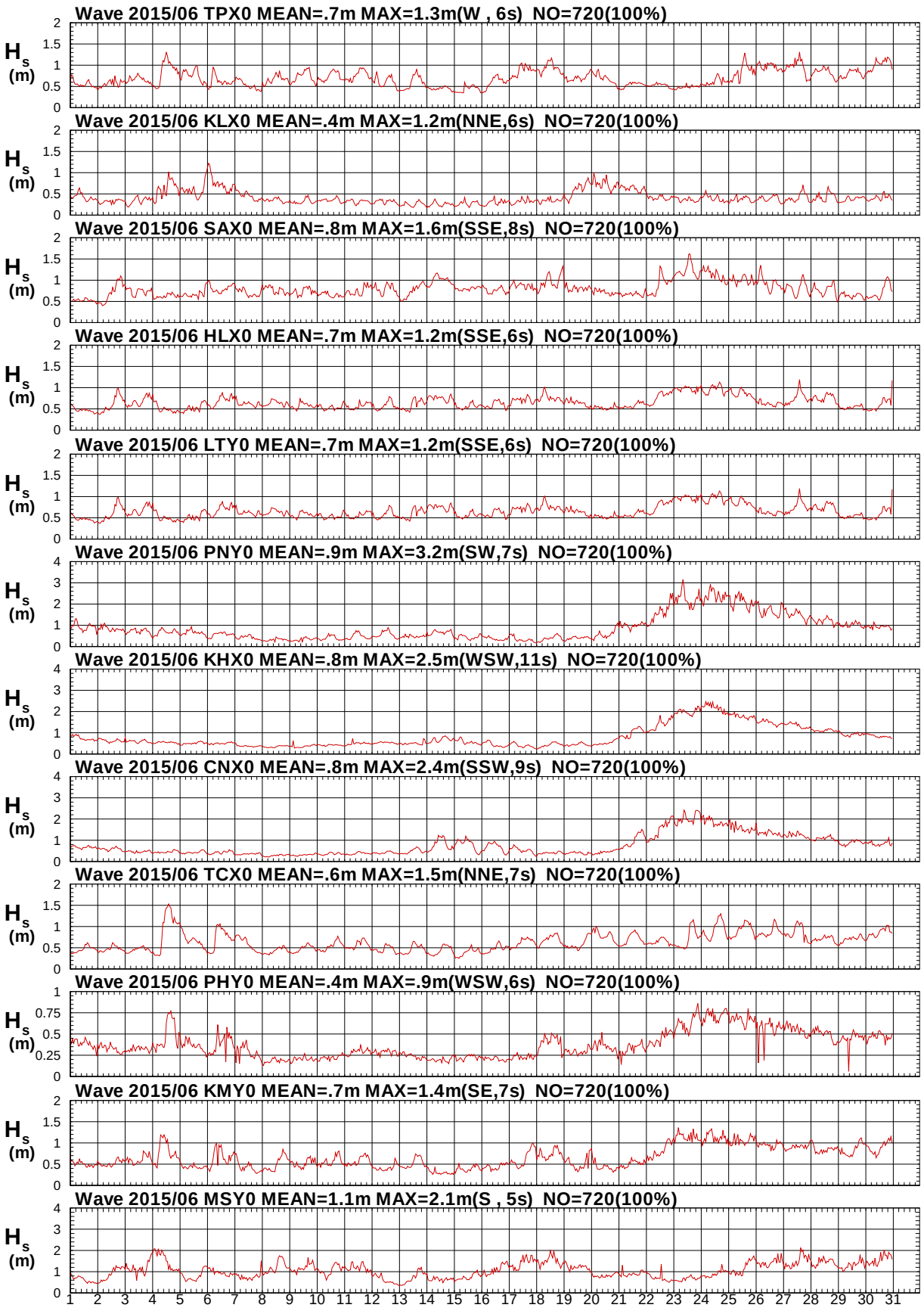


圖 13.19　2015年 6 月 12 海域觀測波高歷線圖

V156TPX0.1HA V156KLX0.1HA V156SAX0.1HA V156HLX0.1HA V156LTY0.1HA V156PNY0.1HA
V156KHX0.1HA V156CNX0.1HA V156TCX0.1HA V156PHY0.1HA V156KMY0.1HA V156MSY0.1HA

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Twelve Harbors Wave T_p at 2015/06

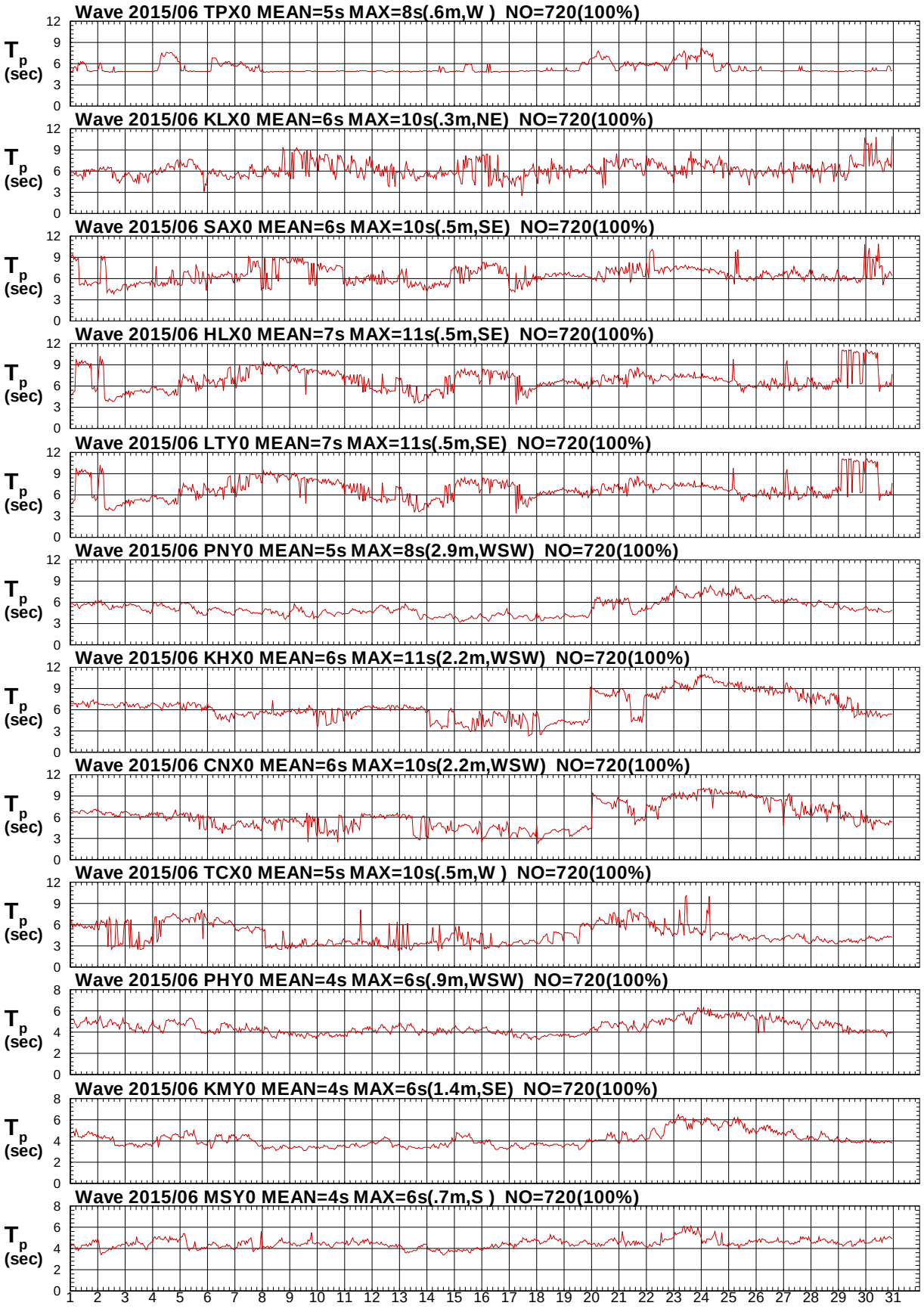


圖 13.20　2015年 6月12海域觀測週期歷線圖

V156TPX0.1HA V156KLX0.1HA V156SAX0.1HA V156HLX0.1HA V156LTY0.1HA V156PNY0.1HA
V156KHX0.1HA V156CNX0.1HA V156TCX0.1HA V156PHY0.1HA V156KMY0.1HA V156MSY0.1HA

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Twelve Harbors Wave Direction at 2015/06

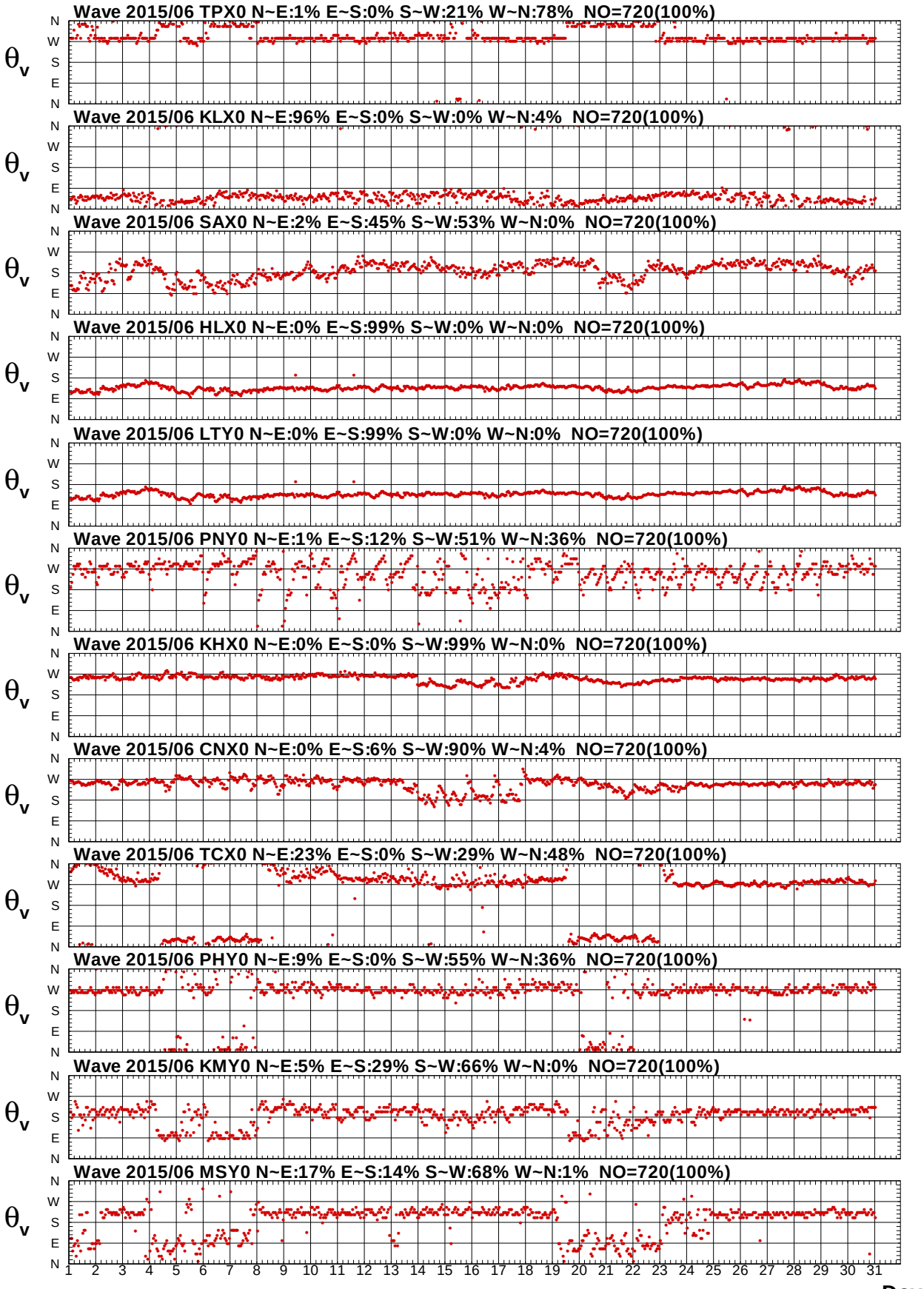


圖13.21　2015年 6月12海域觀測波向歷線圖

V156TPX0.1HA V156KLX0.1HA V156SAX0.1HA V156HLX0.1HA V156LTY0.1HA V156PNY0.1HA
V156KHX0.1HA V156CNX0.1HA V156TCX0.1HA V156PHY0.1HA V156KMY0.1HA V156MSY0.1HA

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Twelve Harbors Wave H_s at 2015/07

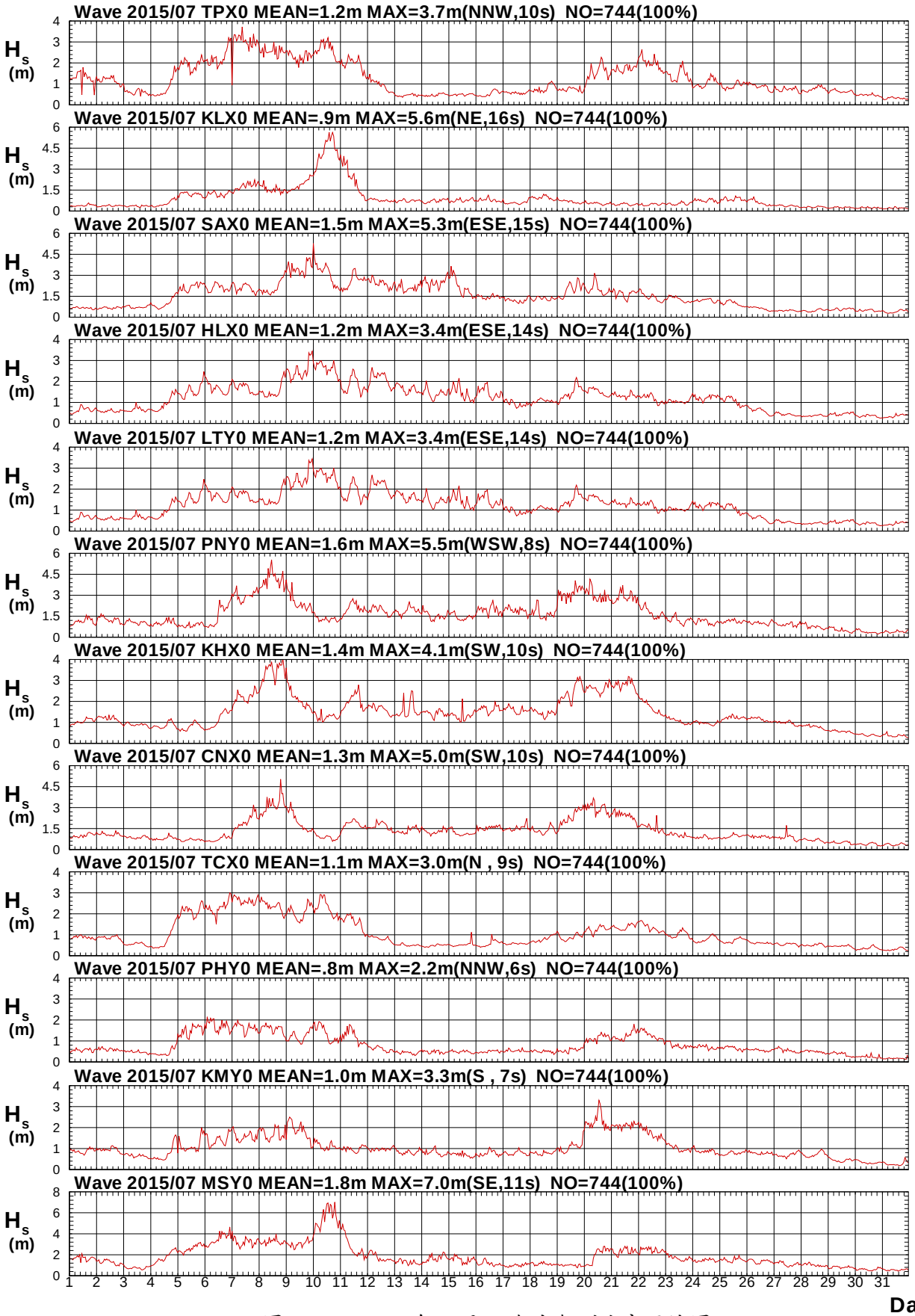


圖 13.22　2015年 7月12海域觀測波高歷線圖

V157TPX0.1HA V157KLX0.1HA V157SAX0.1HA V157HLX0.1HA V157LTY0.1HA V157PNY0.1HA
V157KHX0.1HA V157CNX0.1HA V157TCX0.1HA V157PHY0.1HA V157KMY0.1HA V157MSY0.1HA

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Twelve Harbors Wave T_p at 2015/07

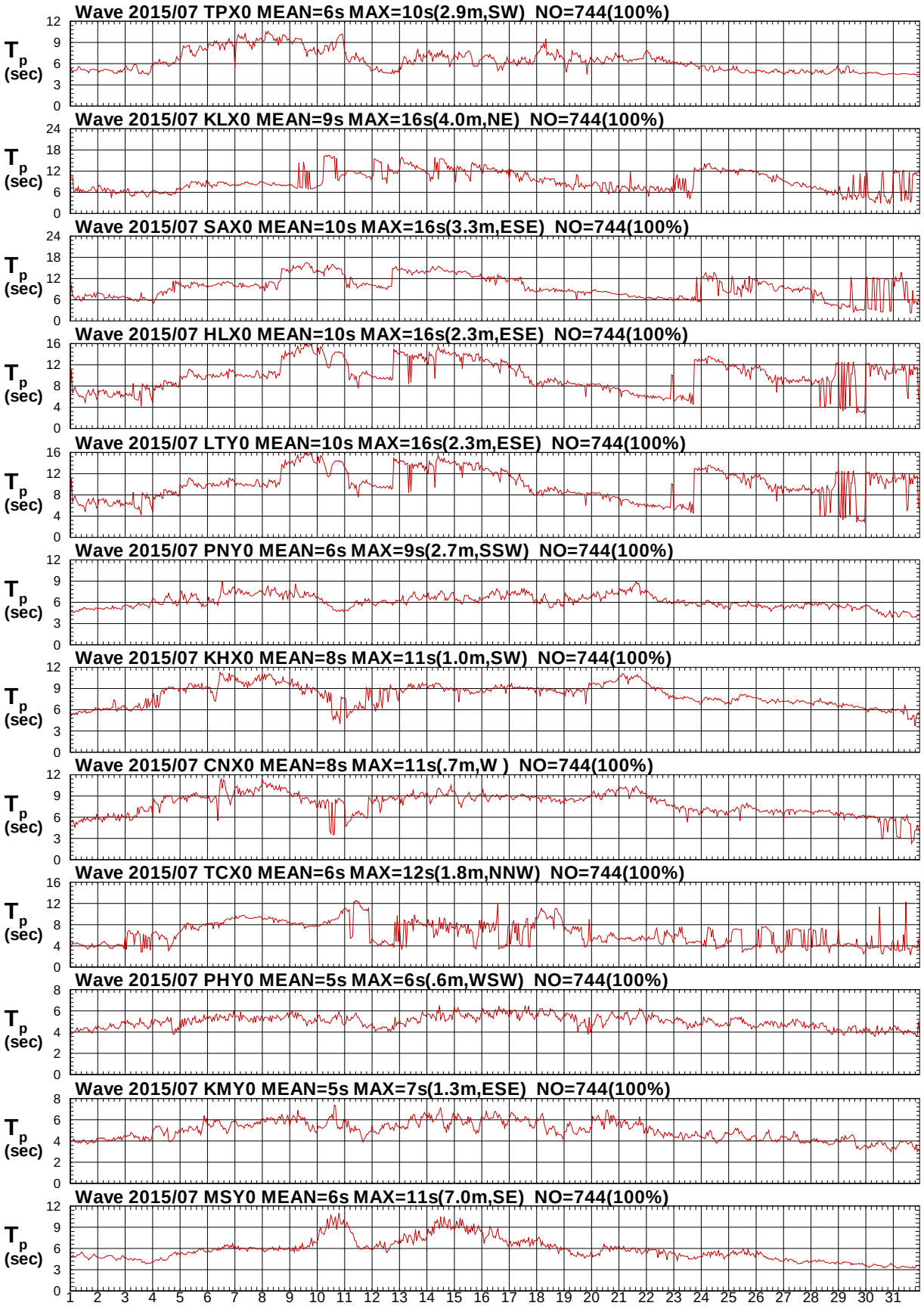


圖 13.23　2015年 7月12海域觀測週期歷線圖

V157TPX0.1HA V157KLX0.1HA V157SAX0.1HA V157HLX0.1HA V157LTY0.1HA V157PNY0.1HA
V157KHX0.1HA V157CNX0.1HA V157TCX0.1HA V157PHY0.1HA V157KMY0.1HA V157MSY0.1HA

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Twelve Harbors Wave Direction at 2015/07

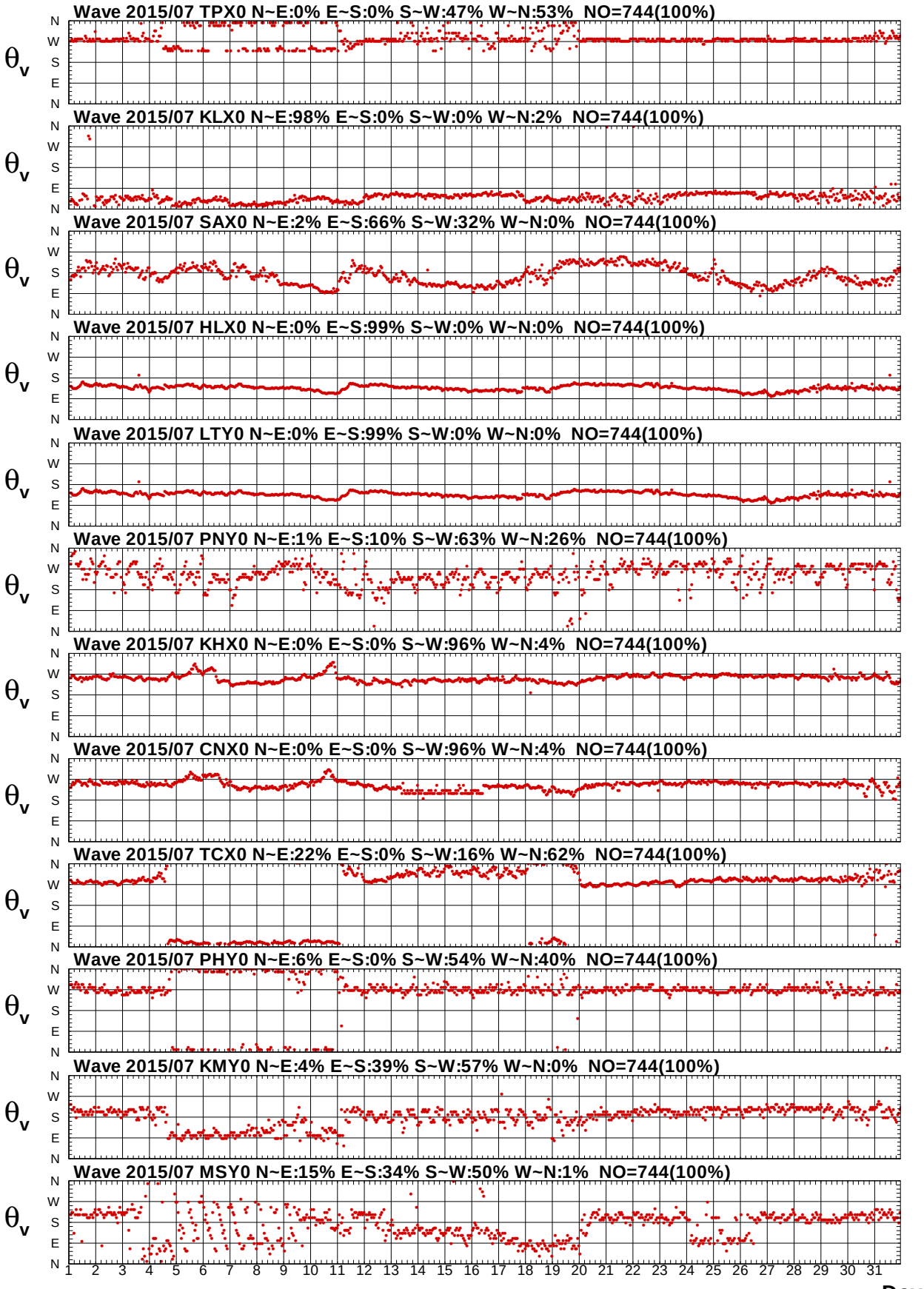


圖 13.24　2015年 7月12海域觀測波向歷線圖

V157TPX0.1HA V157KLX0.1HA V157SAX0.1HA V157HLX0.1HA V157LTY0.1HA V157PNY0.1HA
V157KHX0.1HA V157CNX0.1HA V157TCX0.1HA V157PHY0.1HA V157KMY0.1HA V157MSY0.1HA

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Twelve Harbors Wave H_s at 2015/08

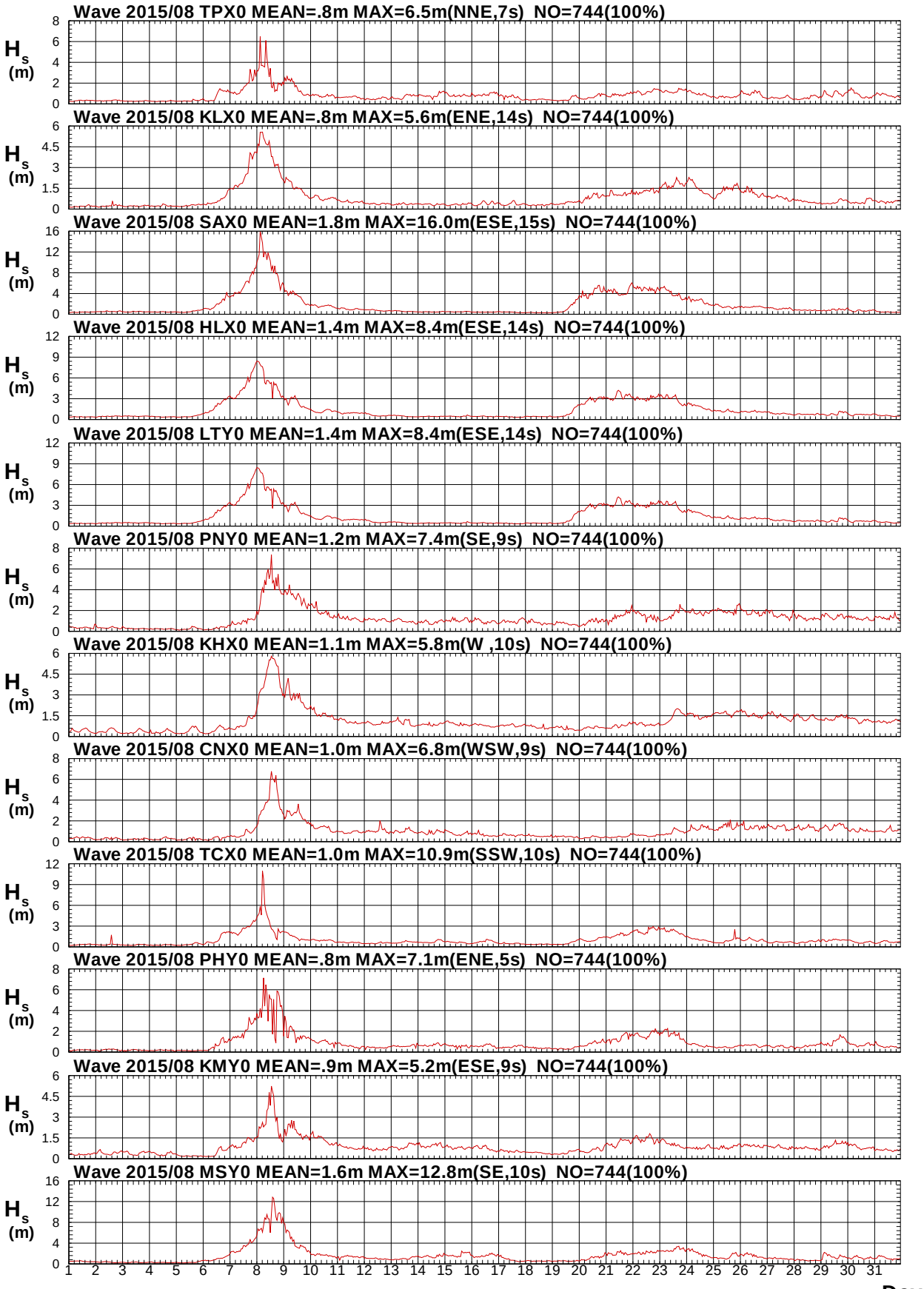


圖 13.25　2015年 8 月 12 海域觀測波高歷線圖

V158TPX0.1HA V158KLX0.1HA V158SAX0.1HA V158HLX0.1HA V158LTY0.1HA V158PNY0.1HA
V158KHX0.1HA V158CNX0.1HA V158TCX0.1HA V158PHY0.1HA V158KMY0.1HA V158MSY0.1HA

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Twelve Harbors Wave T_p at 2015/08

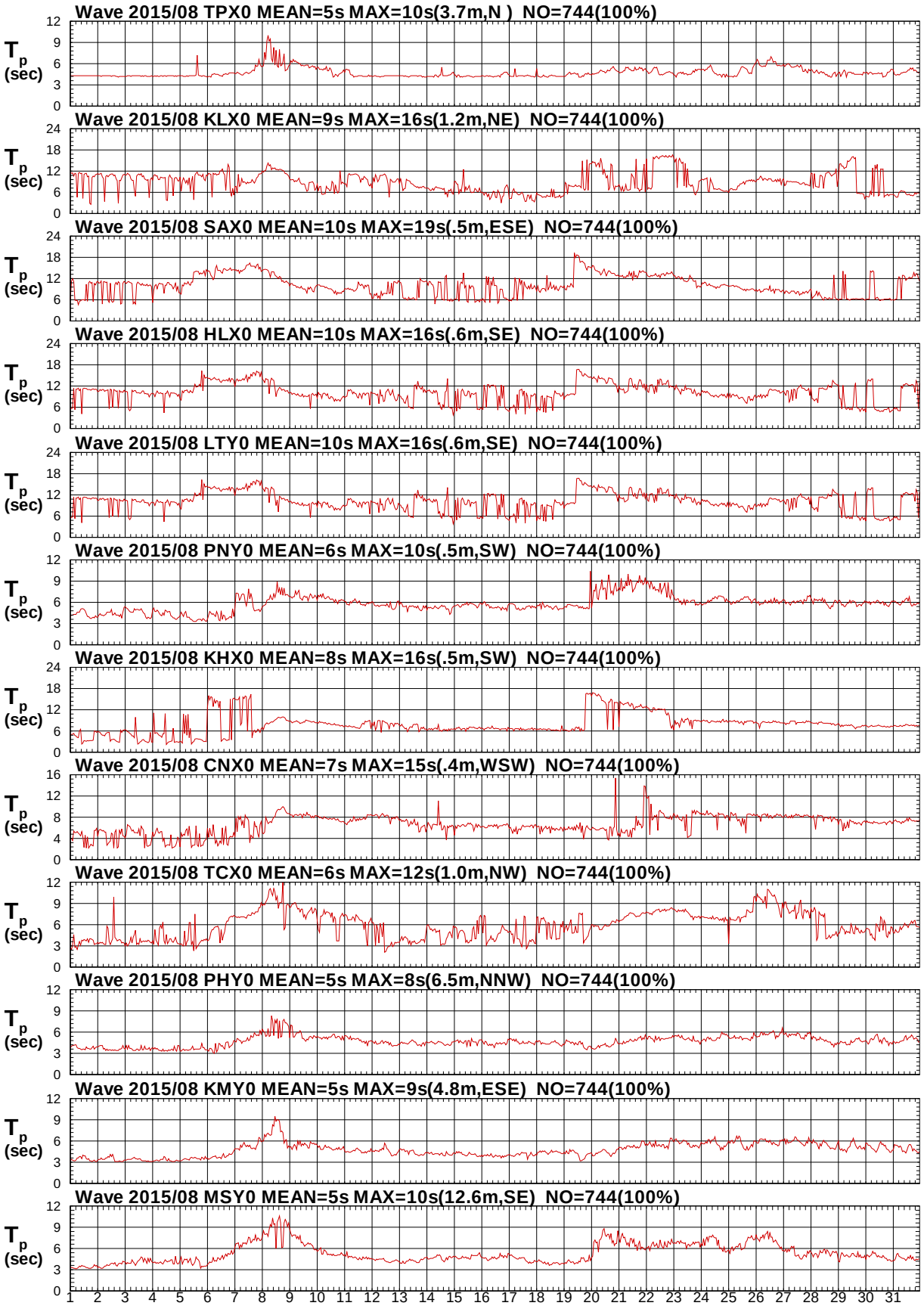


圖 13.26　2015年 8月12海域觀測週期歷線圖

V158TPX0.1HA V158KLX0.1HA V158SAX0.1HA V158HLX0.1HA V158LTY0.1HA V158PNY0.1HA
V158KHX0.1HA V158CNX0.1HA V158TCX0.1HA V158PHY0.1HA V158KMY0.1HA V158MSY0.1HA

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Twelve Harbors Wave Direction at 2015/08

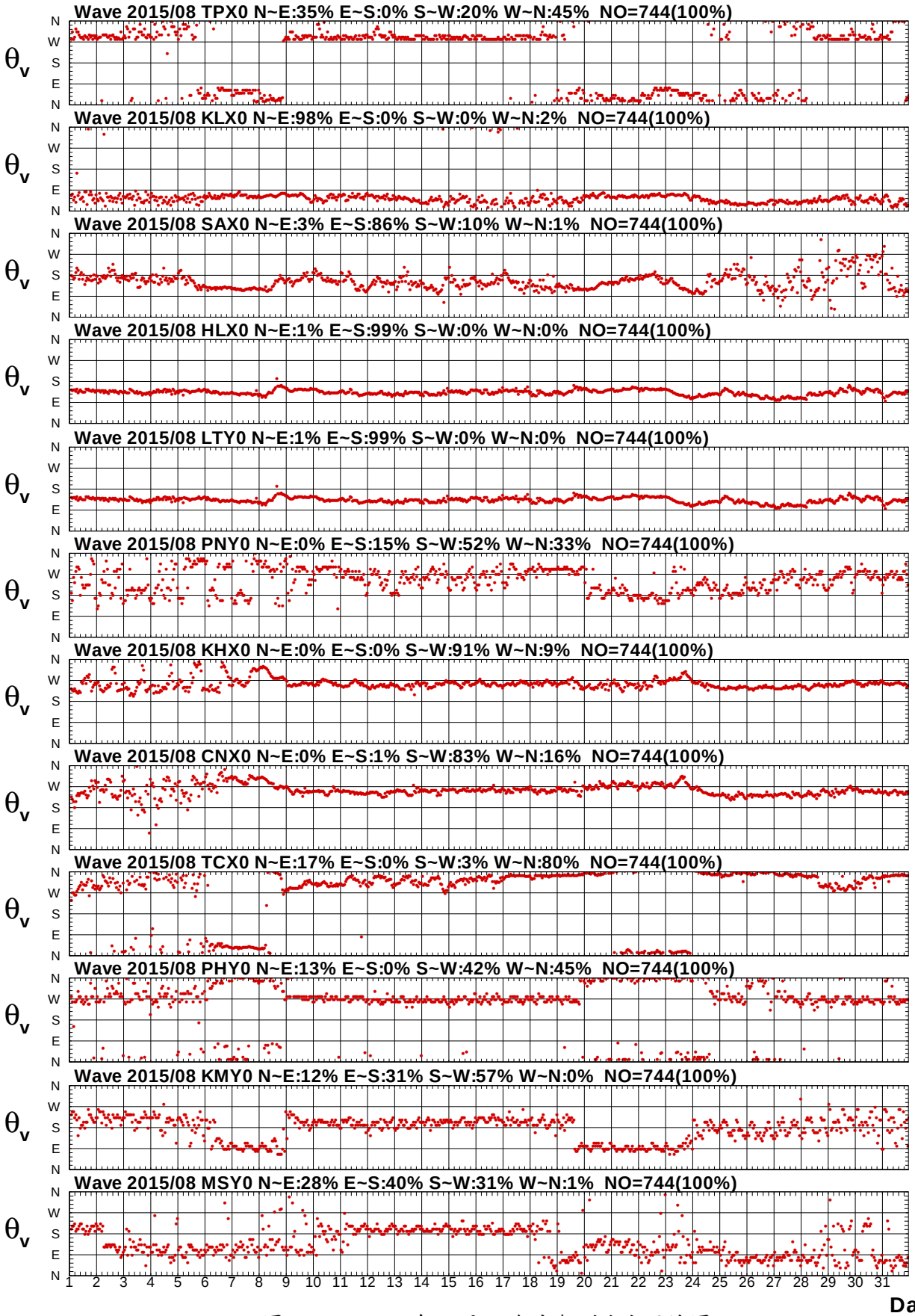


圖 13.27　2015年 8 月 12 海域觀測波向歷線圖

V158TPX0.1HA V158KLX0.1HA V158SAX0.1HA V158HLX0.1HA V158LTY0.1HA V158PNY0.1HA
V158KHX0.1HA V158CNX0.1HA V158TCX0.1HA V158PHY0.1HA V158KMY0.1HA V158MSY0.1HA

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Twelve Harbors Wave H_s at 2015/09

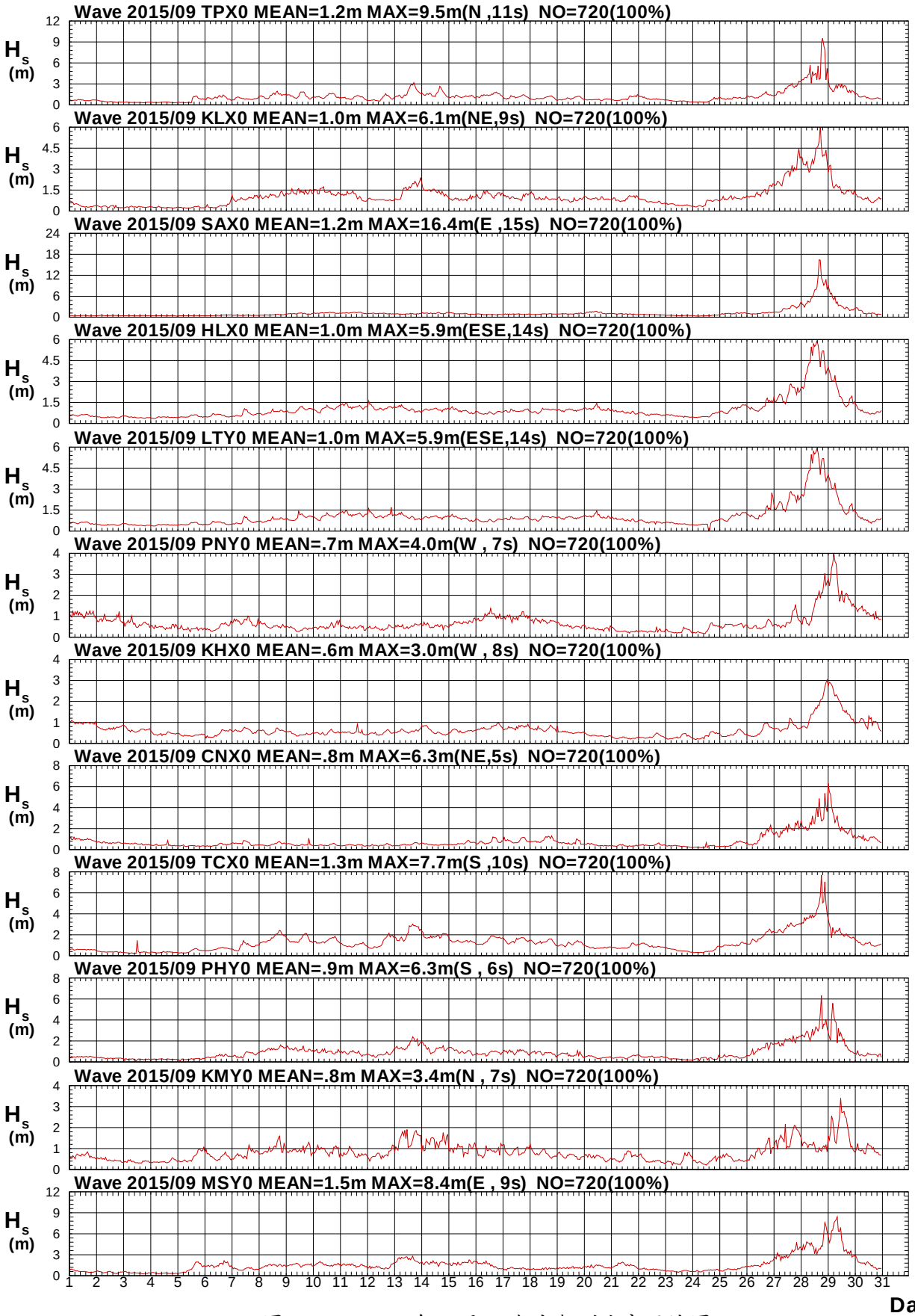


圖 13.28　2015年 9 月12海域觀測波高歷線圖

V159TPX0.1HA V159KLX0.1HA V159SAX0.1HA V159HLX0.1HA V159LTY0.1HA V159PNY0.1HA
V159KHX0.1HA V159CNX0.1HA V159TCX0.1HA V159PHY0.1HA V159KMY0.1HA V159MSY0.1HA

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Twelve Harbors Wave T_p at 2015/09

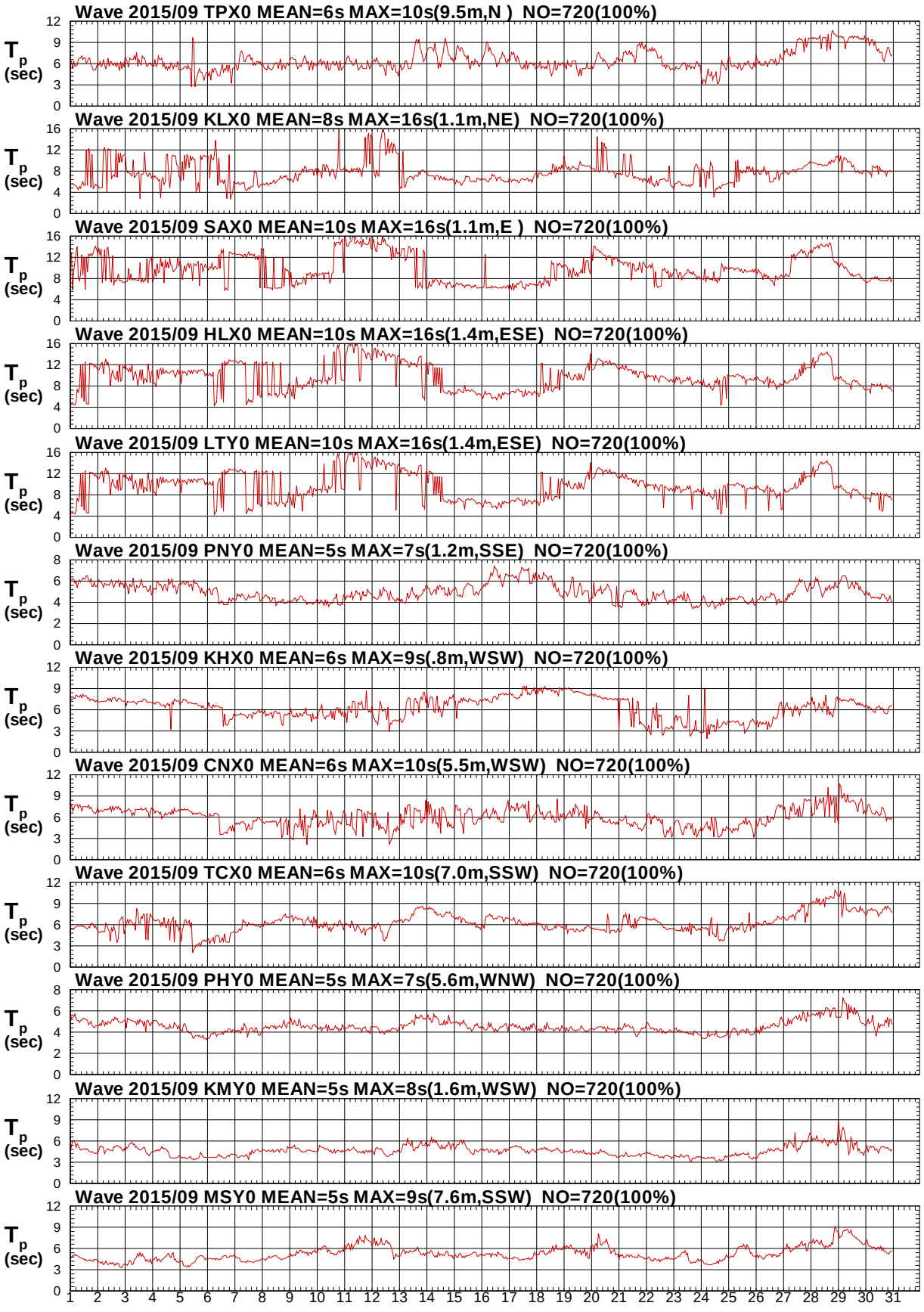


圖 13.29　2015年 9 月 12 海域觀測週期歷線圖

V159TPX0.1HA V159KLX0.1HA V159SAX0.1HA V159HLX0.1HA V159LTY0.1HA V159PNY0.1HA
V159KHX0.1HA V159CNX0.1HA V159TCX0.1HA V159PHY0.1HA V159KMY0.1HA V159MSY0.1HA

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Twelve Harbors Wave Direction at 2015/09

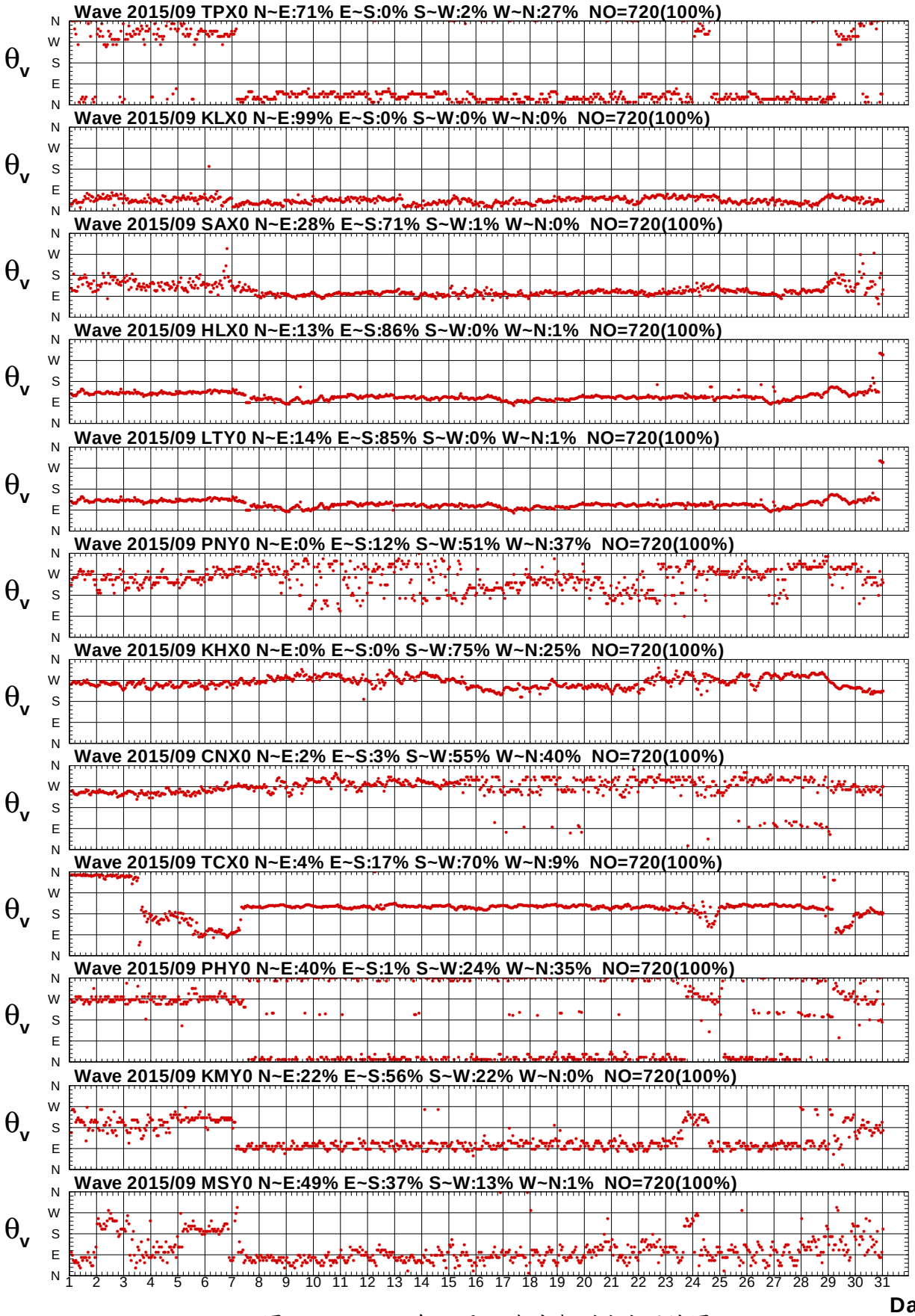


圖13.30　2015年 9月12海域觀測波向歷線圖

V159TPX0.1HA V159KLX0.1HA V159SAX0.1HA V159HLX0.1HA V159LTY0.1HA V159PNY0.1HA
V159KHX0.1HA V159CNX0.1HA V159TCX0.1HA V159PHY0.1HA V159KMY0.1HA V159MSY0.1HA

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Twelve Harbors Wave H_s at 2015/10

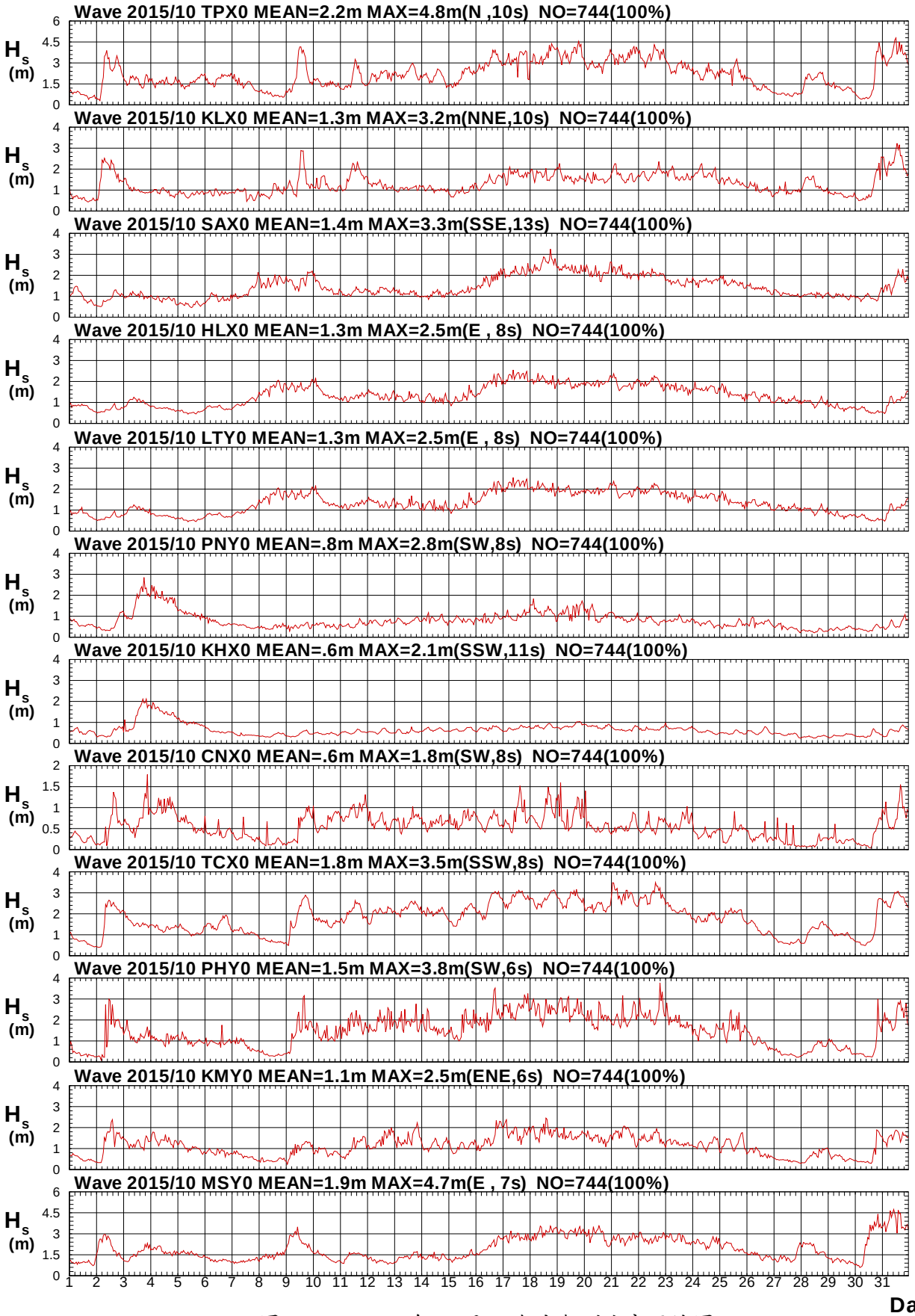


圖 13.31　2015年10月12海域觀測波高歷線圖

V15ATPX0.1HA V15AKLX0.1HA V15ASAX0.1HA V15AHLX0.1HA V15ALTY0.1HA V15APNY0.1HA
V15AKHX0.1HA V15ACNX0.1HA V15ATCX0.1HA V15APHY0.1HA V15AKMY0.1HA V15AMSY0.1HA

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Twelve Harbors Wave T_p at 2015/10

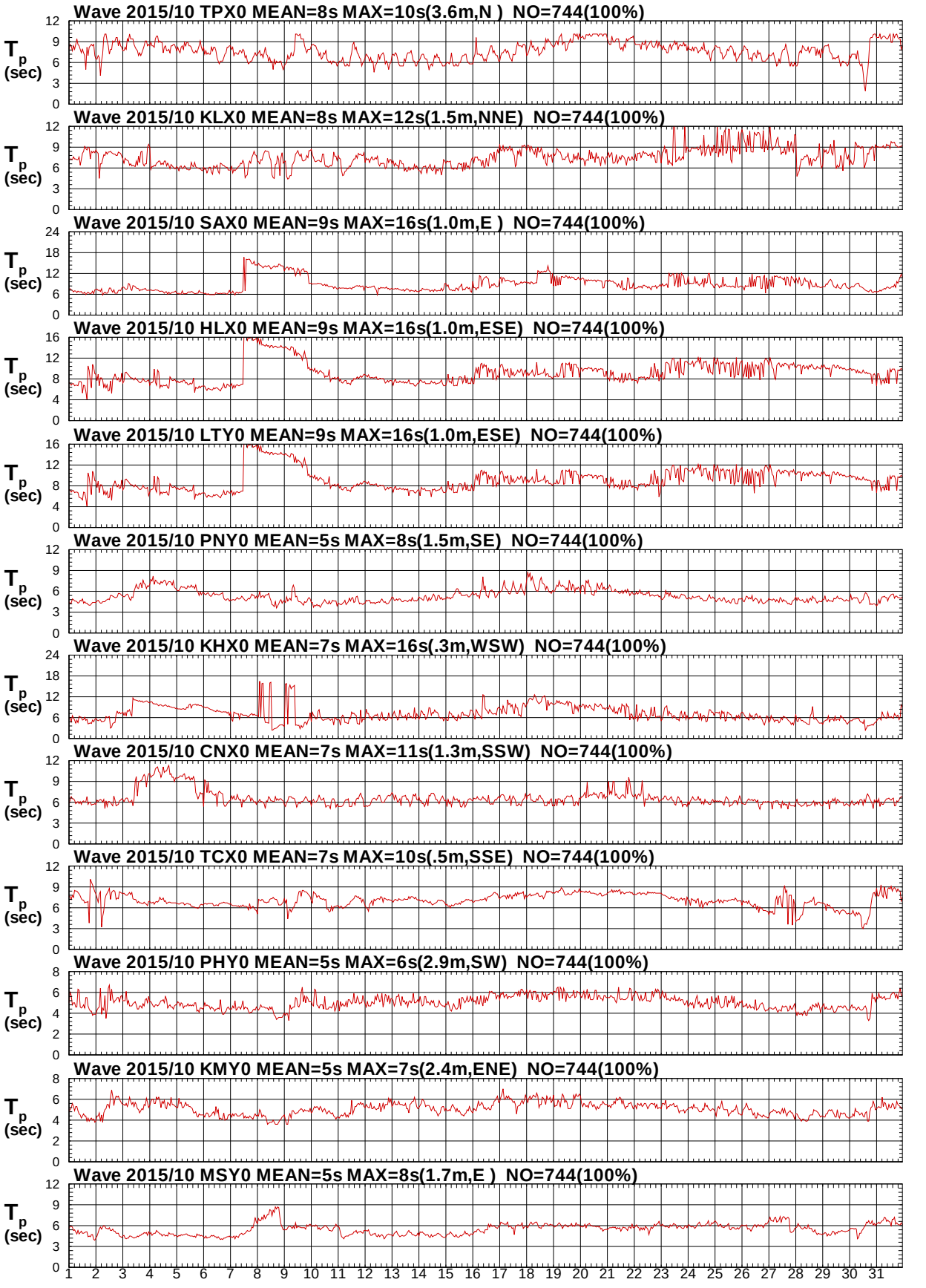


圖 13.32　2015年10月12海域觀測週期歷線圖

V15ATPX0.1HA V15AKLX0.1HA V15ASAX0.1HA V15AHLX0.1HA V15ALTY0.1HA V15APNY0.1HA
V15AKHX0.1HA V15ACNX0.1HA V15ATCX0.1HA V15APHY0.1HA V15AKMY0.1HA V15AMSY0.1HA

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Twelve Harbors Wave Direction at 2015/10

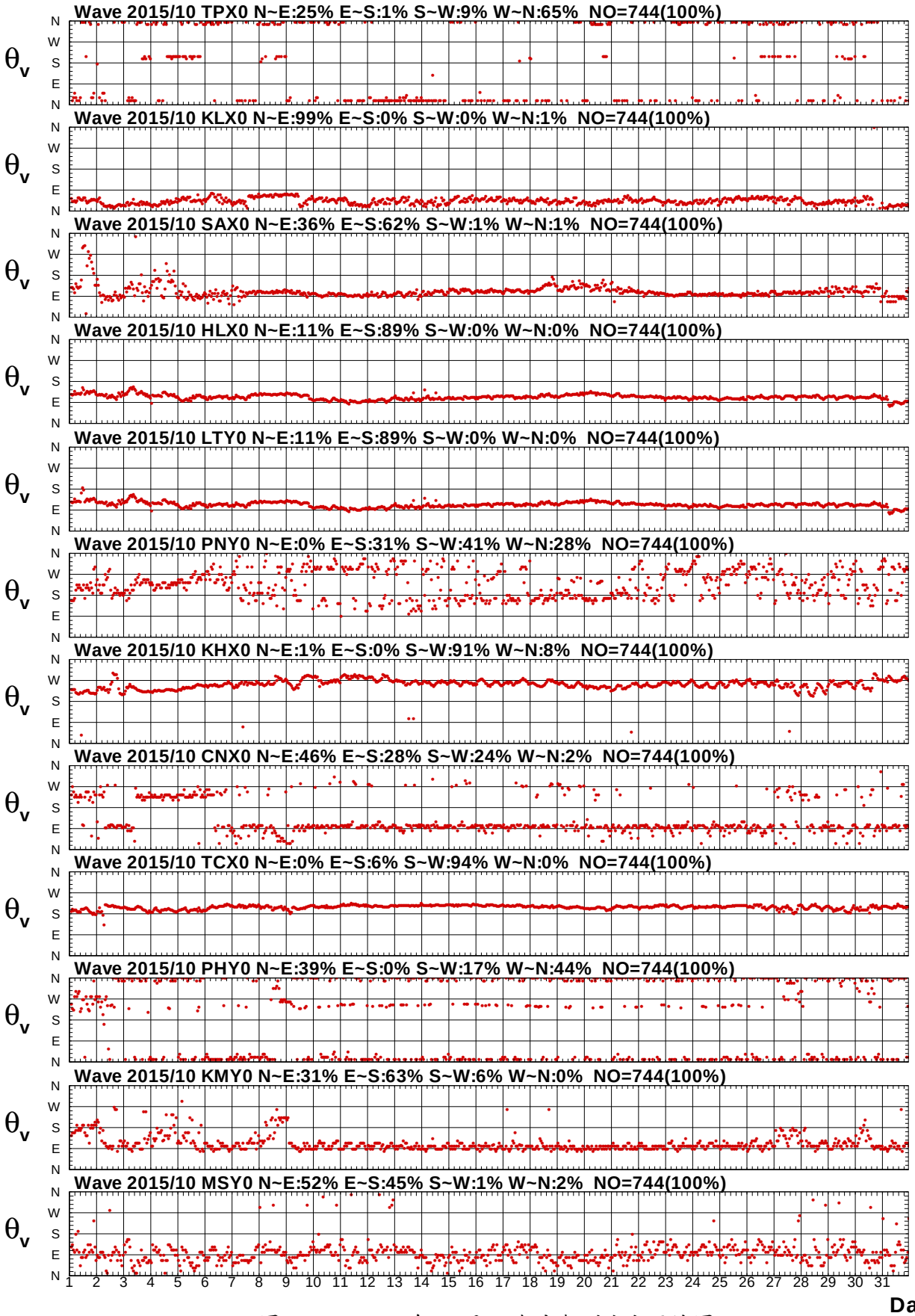


圖13.33　2015年10月12海域觀測波向歷線圖

V15ATPX0.1HA V15AKLX0.1HA V15ASAX0.1HA V15AHLX0.1HA V15ALTY0.1HA V15APNY0.1HA
V15AKHX0.1HA V15ACNX0.1HA V15ATCX0.1HA V15APHY0.1HA V15AKMY0.1HA V15AMSY0.1HA

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Twelve Harbors Wave H_s at 2015/11

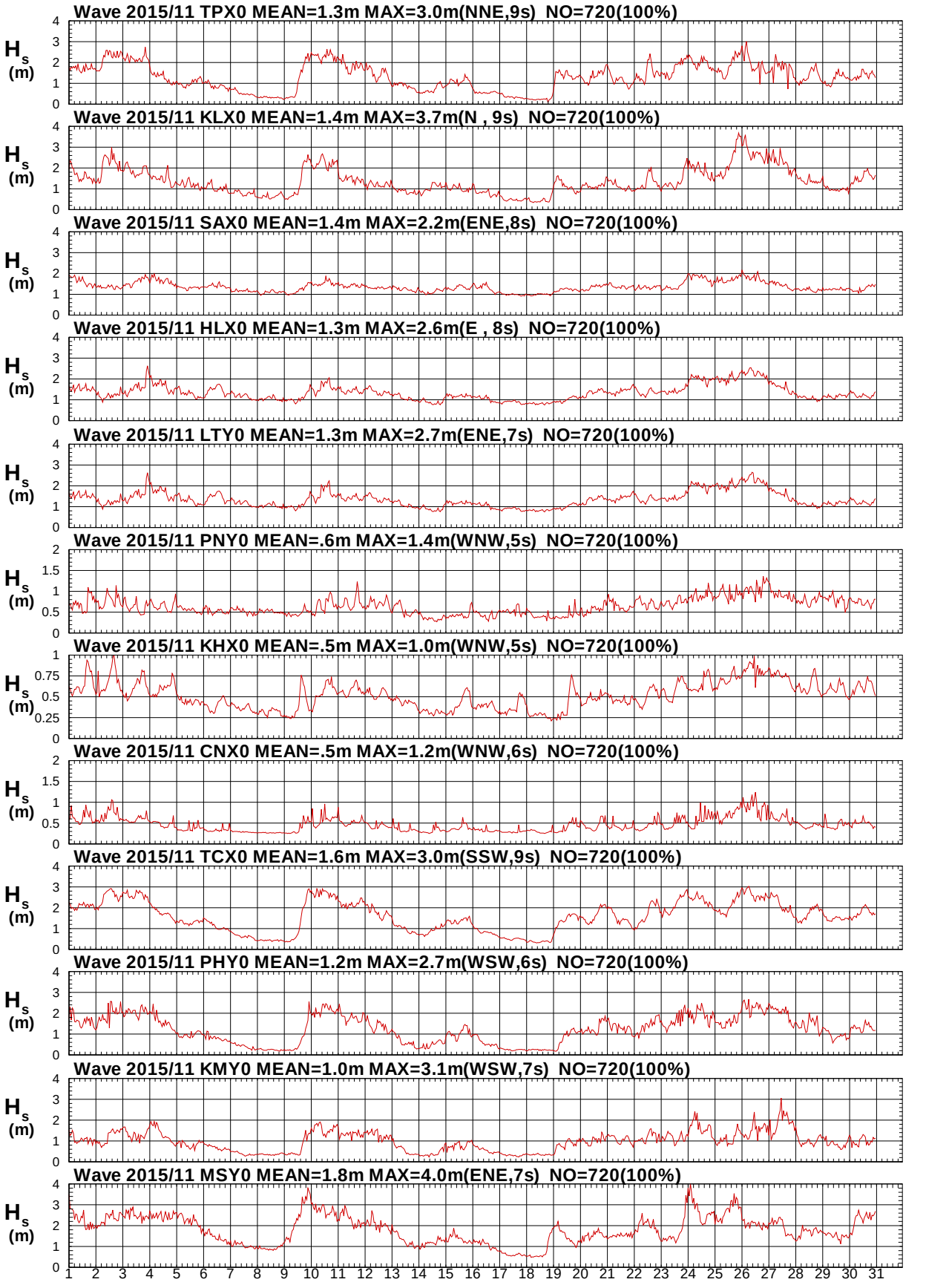


圖 13.34　2015年11月12海域觀測波高歷線圖

V15BTPX0.1HA V15BKLX0.1HA V15BSAX0.1HA V15BHLX0.1HA V15BLTY0.1HA V15BPNY0.1HA
V15BKHX0.1HA V15BCNX0.1HA V15BTCX0.1HA V15BPHY0.1HA V15BKMY0.1HA V15BMSY0.1HA

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Twelve Harbors Wave T_p at 2015/11

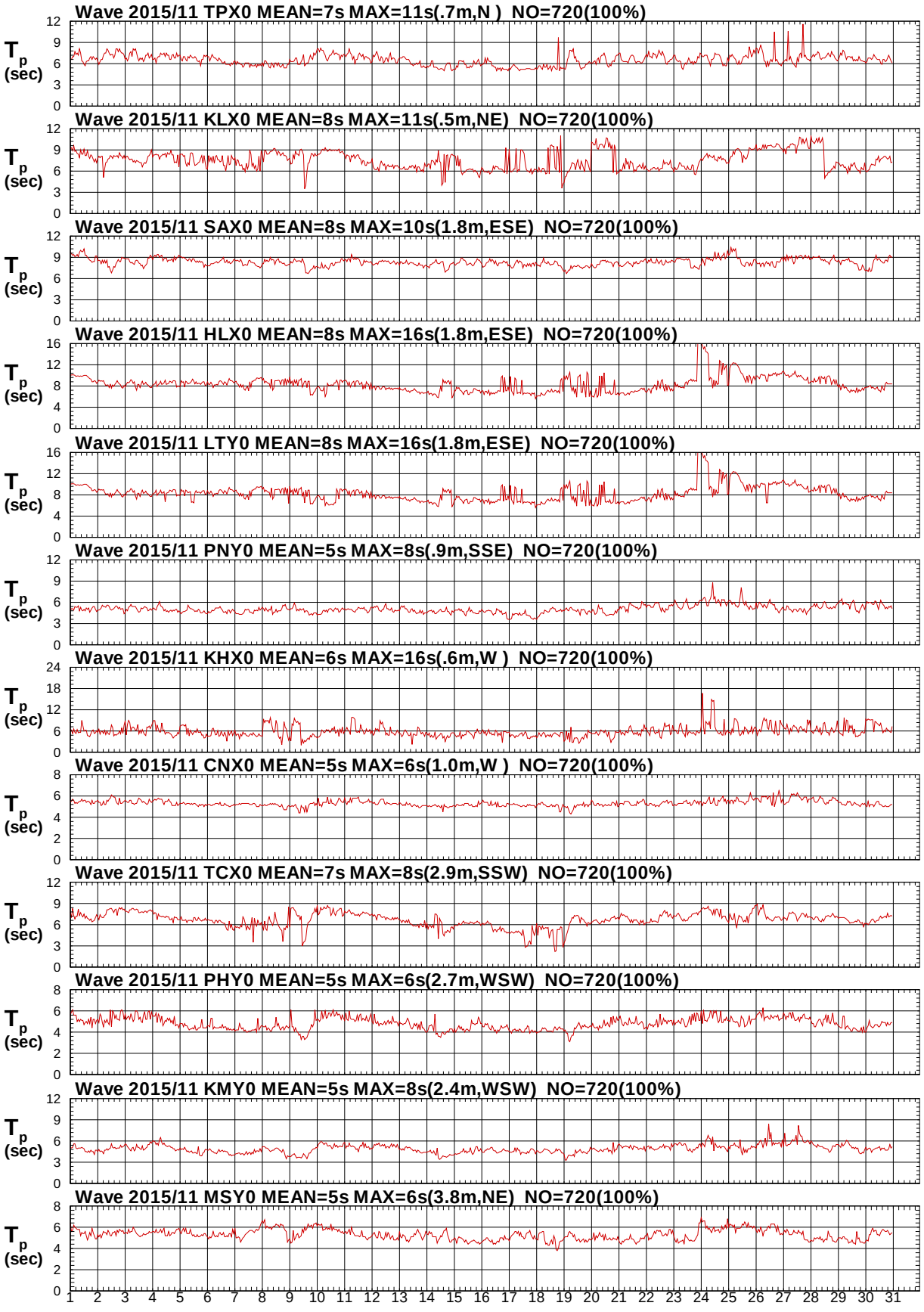


圖 13.35　2015年11月12海域觀測週期歷線圖

V15BTPX0.1HA V15BKLX0.1HA V15BSAX0.1HA V15BHLX0.1HA V15BLTY0.1HA V15BPNY0.1HA
V15BKHX0.1HA V15BCNX0.1HA V15BTCX0.1HA V15BPHY0.1HA V15BKMY0.1HA V15BMSY0.1HA

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Twelve Harbors Wave Direction at 2015/11

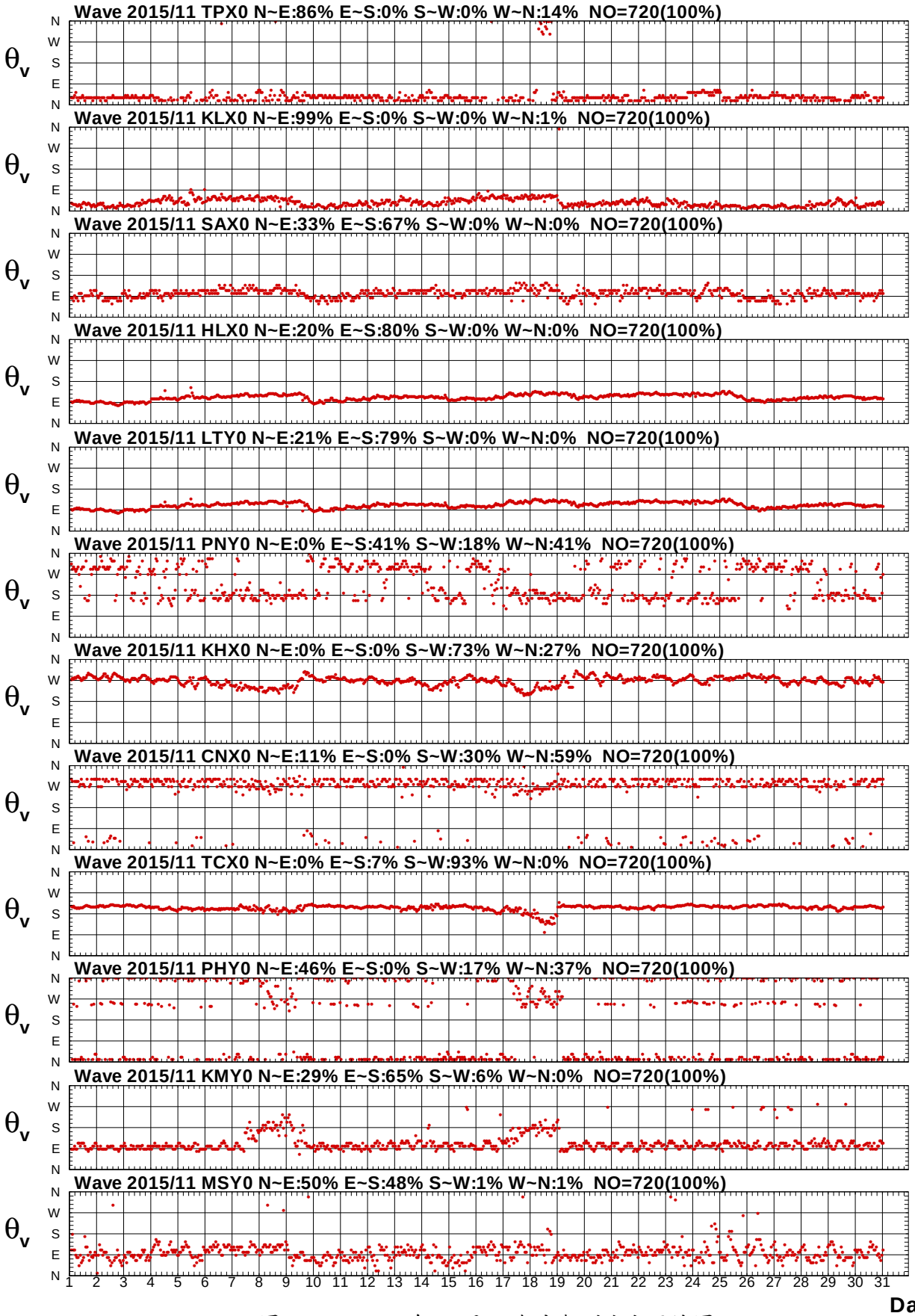


圖13.36　2015年11月12海域觀測波向歷線圖

V15BTPX0.1HA V15BKLX0.1HA V15BSAX0.1HA V15BHLX0.1HA V15BLTY0.1HA V15BPNY0.1HA
V15BKHX0.1HA V15BCNX0.1HA V15BTCX0.1HA V15BPHY0.1HA V15BKMY0.1HA V15BMSY0.1HA

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