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2015 年港灣環境資訊網觀測資料年報
(北端海域觀測海氣象資料)

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海氣象資料年報，包括北端海域2015年觀測風力、波浪、潮汐及海流等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 winds, waves, tides and currents near North offshoe region 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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第三章 2015 年北端海域觀測潮汐資料 **3-1**

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誌　　謝

2015 年港灣環境資訊網觀測風力資料，蒐集之北端海域風力資料，除本中心自行觀測之外，在基隆港氣象站(**測站 E**、**F** 及 **M**) 、龍洞氣象站(**測站 J**)、龍洞海上浮標(**測站 Y**)、富貴角海上浮標(**測站 R**) 、彭佳嶼氣象站(**測站 I**)等觀測風力資料，係交通部**中央氣象局(CWB)**提供;基隆海域附近海上浮標(**測站 Z**)觀測風力資料，係**國立臺灣海洋大學(NTOC)**裝設，謹致謝忱。

2015 年港灣環境資訊網觀測波浪資料，蒐集之北端海域波浪資料，除本中心自行觀測之外，在龍洞海上浮標(**測站 Y**)、富貴角海上浮標(**測站 R**) 等觀測波浪資料，係交通部**中央氣象局(CWB)**提供;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，謹致謝忱。

2015 年港灣海氣象觀測潮汐資料，蒐集之北端海域潮汐觀測資料，除本中心自行觀測之外，在基隆港(**測站 F** 及**測站 M**)、龍洞(**測站 J**)、**麟山鼻**(**測站 K**)、**澎佳嶼**(**測站 P**)等觀測潮汐資料，係交通部**中央氣象局**提供，謹致謝忱。

第一章　2015 年北端海域觀測風力資料

北端海域(富貴角~龍洞)風之觀測係 2002 年 6 月本中心**(IHMT)**安裝 Young Brand 風速計於基隆港(稱**測站 W**) ，其位置如附圖 1，2010 年 10 月後更新安裝 Gill 二維超音波式風速計。**測站 E**(基隆) 、**測站 F**(基隆)、**測站 J**(龍洞)及**測站 I**(彭佳嶼)之風速儀屬中央氣象局**(CWB)**所有，**測站 Y**(龍洞外海浮標站) 及**測站 R(**富貴角外海浮標站)之風速儀也屬中央氣象局所有，**測站 Z**(基隆外海浮標站)之風速儀則為國立臺灣海洋大學**(NOTC)**所裝設。

本中心測站風資料之蒐集係採取每小時測定十分鐘之風速、風向數據加以平均，而得出該小時之平均風速、平均風向、最大陣風風速、最大陣風風向、最大陣風之發生時間。本中心之風力資料以取平均風速及平均風向為主。其他測站觀測風速、風向資料也是平均風速(m/s)及風向(度)。各測站歷年觀測風資料蒐集概況如表 1。

本風力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)每月觀測之風資料記錄期間統計表，如表 1.1a，2015 年風力**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**每月風力歷線比較圖，如圖 1.1，**主要觀測站**與**次要觀測站**(或**其他觀測站**)每月風力歷線比較圖，如圖 1.2 以後。

表 1 北端海域觀測風力資料蒐集概況表(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
W	25°09'19"N	121°45'09"E	2002/06-2015/11(觀測中)	港研中心	基隆港區
E	25°07'58"N	121°44'26"E	1999/01-2015/11(觀測中)	中央氣象局	基隆
F			2015/01-2015/11(觀測中)	中央氣象局	基隆
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	2014/12-2015/11(觀測中)	中央氣象局	富貴角浮標
I	25°37'46"N	122°04'17"E	2014/08-2015/11(觀測中)	中央氣象局	彭佳嶼
J			2015/01-2015/11(觀測中)	中央氣象局	龍洞

北端海域

圖 1 北端海域風力觀測站位置示意圖

表1.1a 2015年每月北端海域修補前各測站觀測風力資料紀錄統計表

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	W	Y	Z	R	E	I	J	F
2014/12月	744 (100%)	741 (99.6%)	742 (99.7%)	*	744 (100%)	744 (100%)	*	*
2015/ 1月	744 (100%)	735 (98.8%)	737 (99.1%)	*	743 (99.9%)	743 (99.9%)	518 (69.6%)	495 (66.5%)
2015/ 2月	672 (100%)	670 (99.7%)	667 (99.3%)	*	672 (100%)	672 (100%)	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	*	744 (100%)	744 (100%)	130 (17.5%)	94 (12.6%)
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	*	720 (100%)	720 (100%)	415 (57.6%)	379 (52.6%)
2015/ 5月	744 (100%)	744 (100%)	743 (99.9%)	*	744 (100%)	744 (100%)	240 (32.3%)	243 (32.7%)
2015/ 6月	720 (100%)	718 (99.7%)	719 (99.9%)	*	720 (100%)	720 (100%)	494 (68.6%)	402 (55.8%)
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	55 (7.4%)	744 (100%)	744 (100%)	403 (54.2%)	307 (41.3%)
2015/ 8月	744 (100%)	175 (23.5%)	617 (82.9%)	741 (99.6%)	744 (100%)	744 (100%)	549 (73.8%)	557 (74.9%)
2015/ 9月	720 (100%)	*	*	715 (99.3%)	720 (100%)	720 (100%)	623 (86.5%)	588 (81.7%)
2015/10月	744 (100%)	108 (14.5%)	591 (79.4%)	743 (99.9%)	744 (100%)	744 (100%)	381 (51.2%)	377 (50.7%)
2015/11月	719 (99.9%)	720 (100%)	711 (98.8%)	626 (86.9%)	720 (100%)	720 (100%)	643 (89.3%)	558 (77.5%)
2015/冬季	2160 (100%)	2146 (99.4%)	2146 (99.4%)	*	2159 (100.0%)	2159 (100.0%)	518 (24.0%)	495 (22.9%)
2015/春季	2208 (100%)	2208 (100%)	2207 (100.0%)	*	2208 (100%)	2208 (100%)	785 (35.6%)	716 (32.4%)
2015/夏季	2208 (100%)	1637 (74.1%)	2080 (94.2%)	796 (36.1%)	2208 (100%)	2208 (100%)	1446 (65.5%)	1266 (57.3%)
2015/秋季	2183 (100.0%)	828 (37.9%)	1302 (59.6%)	2084 (95.4%)	2184 (100%)	2184 (100%)	1647 (75.4%)	1523 (69.7%)
2015/整年	8759 (100.0%)	6819 (77.8%)	7735 (88.3%)	2880 (32.9%)	8759 (100.0%)	8759 (100.0%)	4396 (50.2%)	4000 (45.7%)
起始年月	2014/12	2014/12	2014/12	2015/07	2014/12	2014/12	2015/01	2015/01
結束年月	2015/11	2015/11	2015/11	2015/11	2015/11	2015/11	2015/11	2015/11

表1.1b 2015年每月北端海域修補後各測站風力資料統計表

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	W	Y	Z	R	E	I	J	F
2014/12月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 2月	672 (100%)	672 (100%)	672 (100%)	672 (100%)	672 (100%)	672 (100%)	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/ 5月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 6月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 8月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 9月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/11月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/冬季	2160 (100%)	2160 (100%)	2160 (100%)	2160 (100%)	2160 (100%)	2160 (100%)	*	*
2015/春季	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	*	*
2015/夏季	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	*	*
2015/秋季	2184 (100%)	2184 (100%)	2184 (100%)	2184 (100%)	2184 (100%)	2184 (100%)	*	*
2015/整年	8760 (100%)	8760 (100%)	8760 (100%)	8760 (100%)	8760 (100%)	8760 (100%)	*	*
起始年月	2014/12	2014/12	2014/12	2014/12	2014/12	2014/12	*	*
結束年月	2015/11	2015/11	2015/11	2015/11	2015/11	2015/11	*	*

Wind Speed in North Seas of KLW0 at 2015

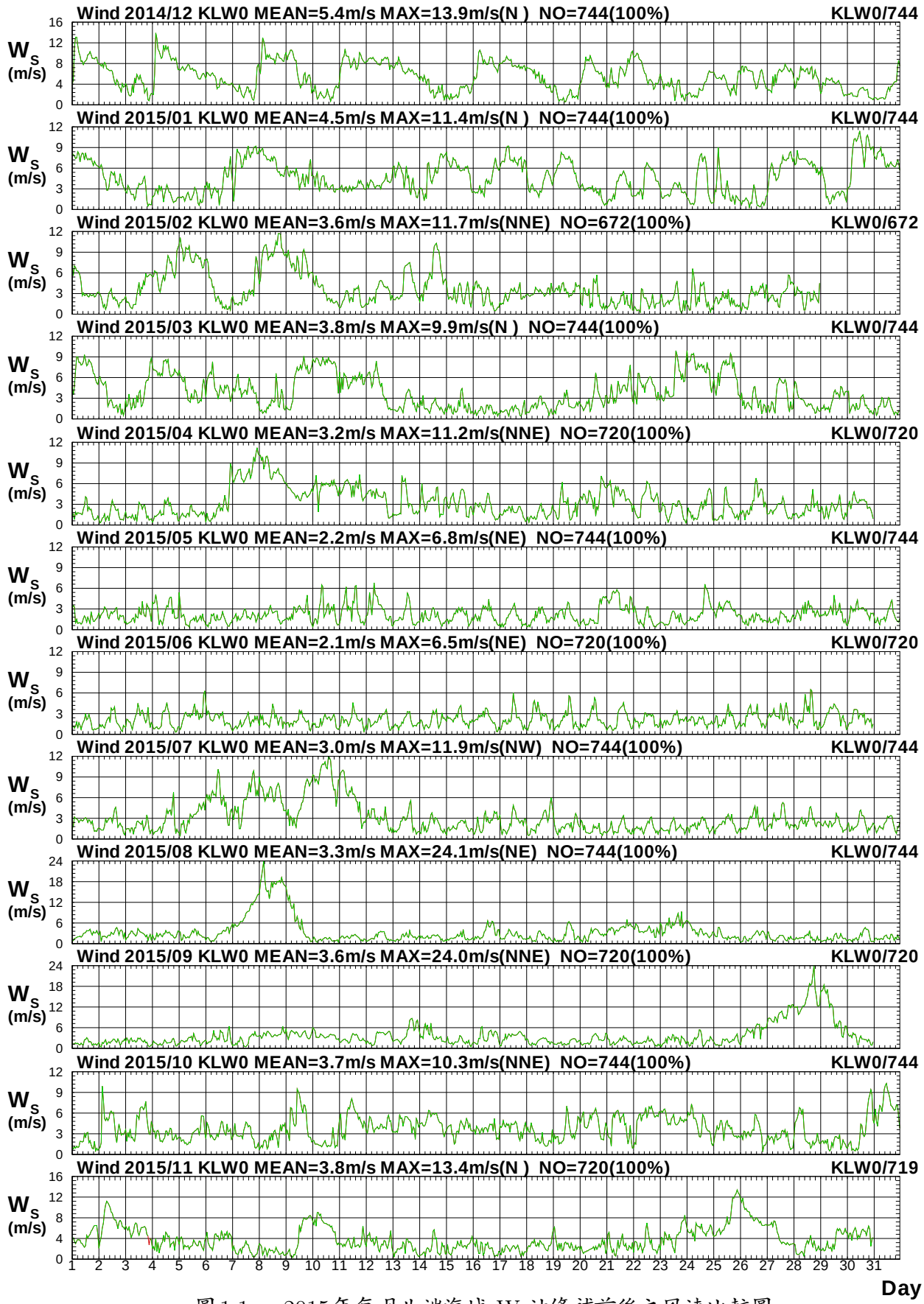

圖1.1a　2015年每月北端海域 W 站修補前後之風速比較圖

W14CKLW0.1HA W14CKLW0.1H0 W151KLW0.1HA W151KLW0.1H0 W152KLW0.1HA W152KLW0.1H0
W153KLW0.1HA W153KLW0.1H0 W154KLW0.1HA W154KLW0.1H0 W155KLW0.1HA W155KLW0.1H0

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Wind Direction in North Seas of KLW0 at 2015

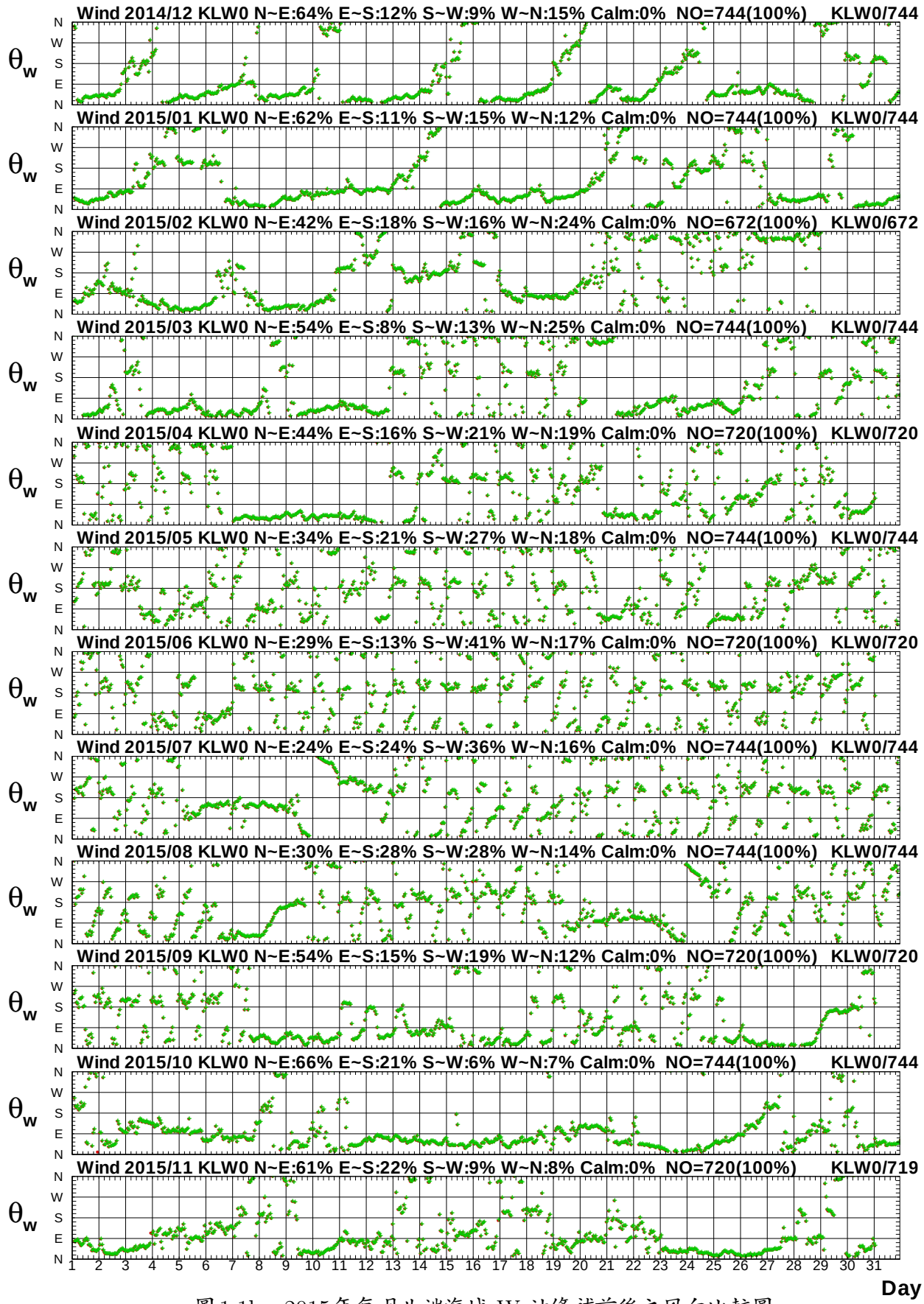

圖1.1b　2015年每月北端海域 W 站修補前後之風向比較圖

W14CKLW0.1HA W14CKLW0.1H0 W151KLW0.1HA W151KLW0.1H0 W152KLW0.1HA W152KLW0.1H0
W153KLW0.1HA W153KLW0.1H0 W154KLW0.1HA W154KLW0.1H0 W155KLW0.1HA W155KLW0.1H0

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Wind Speed in North Seas of KLW0 at 2015

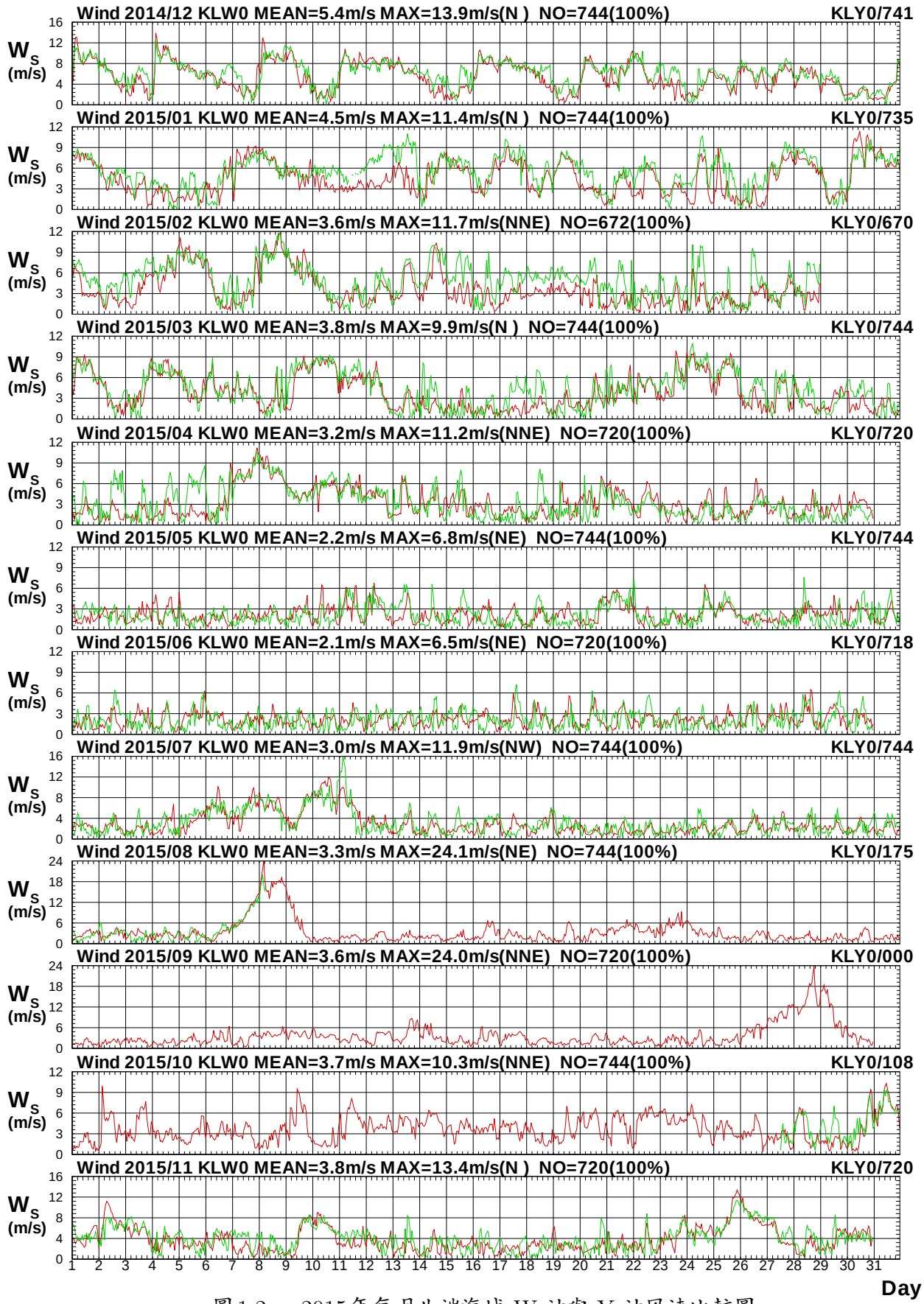

圖1.2a　2015年每月北端海域 W 站與 Y 站風速比較圖

W14CKLW0.1HA W14CKLY0.1H0 W151KLW0.1HA W151KLY0.1H0 W152KLW0.1HA W152KLY0.1H0
W153KLW0.1HA W153KLY0.1H0 W154KLW0.1HA W154KLY0.1H0 W155KLW0.1HA W155KLY0.1H0

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Wind Direction in North Seas of KLW0 at 2015

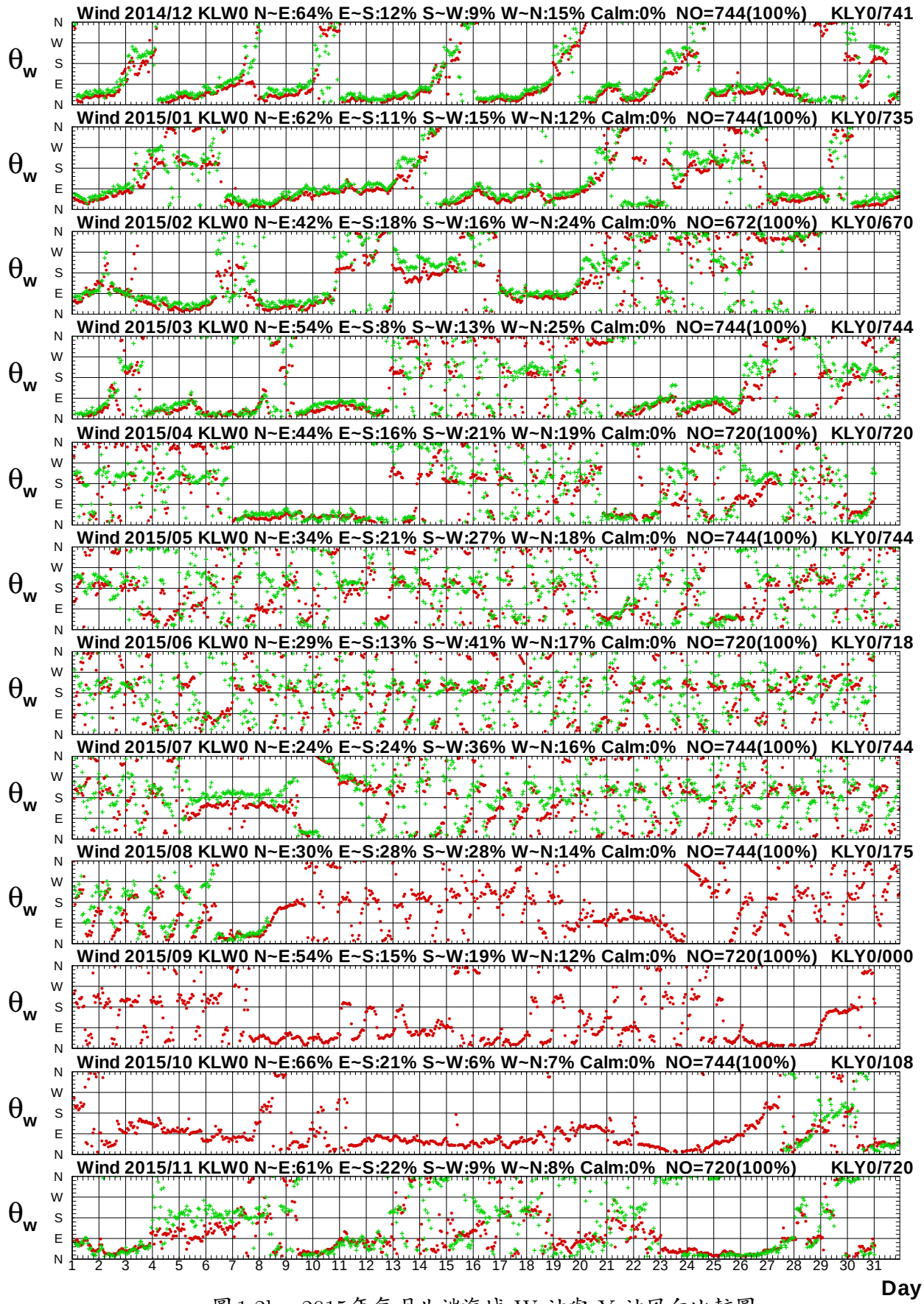

圖 1.2b　2015年每月北端海域 W 站與 Y 站風向比較圖

W14CKLW0.1HA W14CKLY0.1H0 W151KLW0.1HA W151KLY0.1H0 W152KLW0.1HA W152KLY0.1H0
W153KLW0.1HA W153KLY0.1H0 W154KLW0.1HA W154KLY0.1H0 W155KLW0.1HA W155KLY0.1H0

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Wind Speed in North Seas of KLW0 at 2015

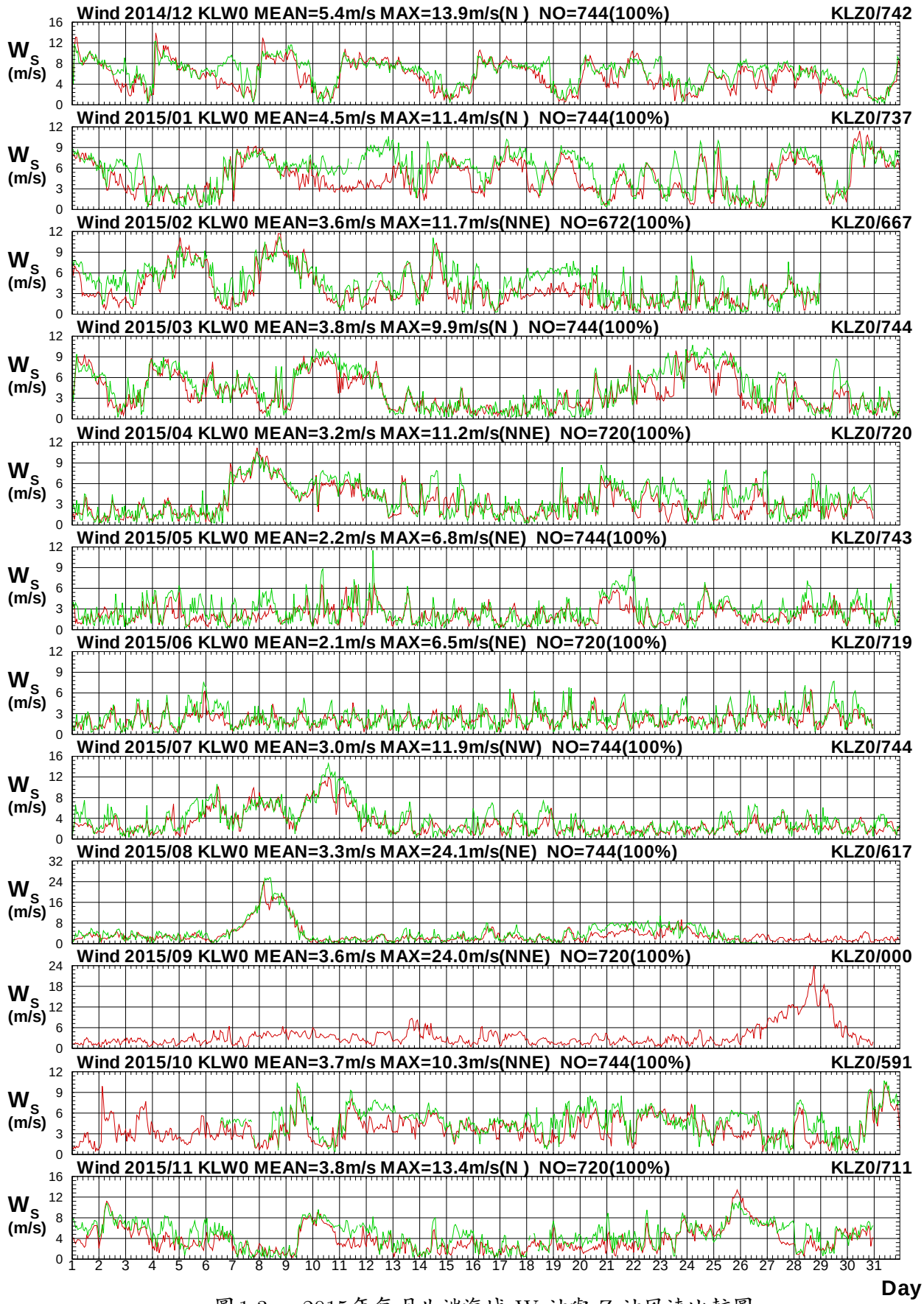

圖1.3a　2015年每月北端海域 W 站與 Z 站風速比較圖

W14CKLW0.1HA W14CKLZ0.1H0 W151KLW0.1HA W151KLZ0.1H0 W152KLW0.1HA W152KLZ0.1H0
W153KLW0.1HA W153KLZ0.1H0 W154KLW0.1HA W154KLZ0.1H0 W155KLW0.1HA W155KLZ0.1H0

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Wind Direction in North Seas of KLW0 at 2015

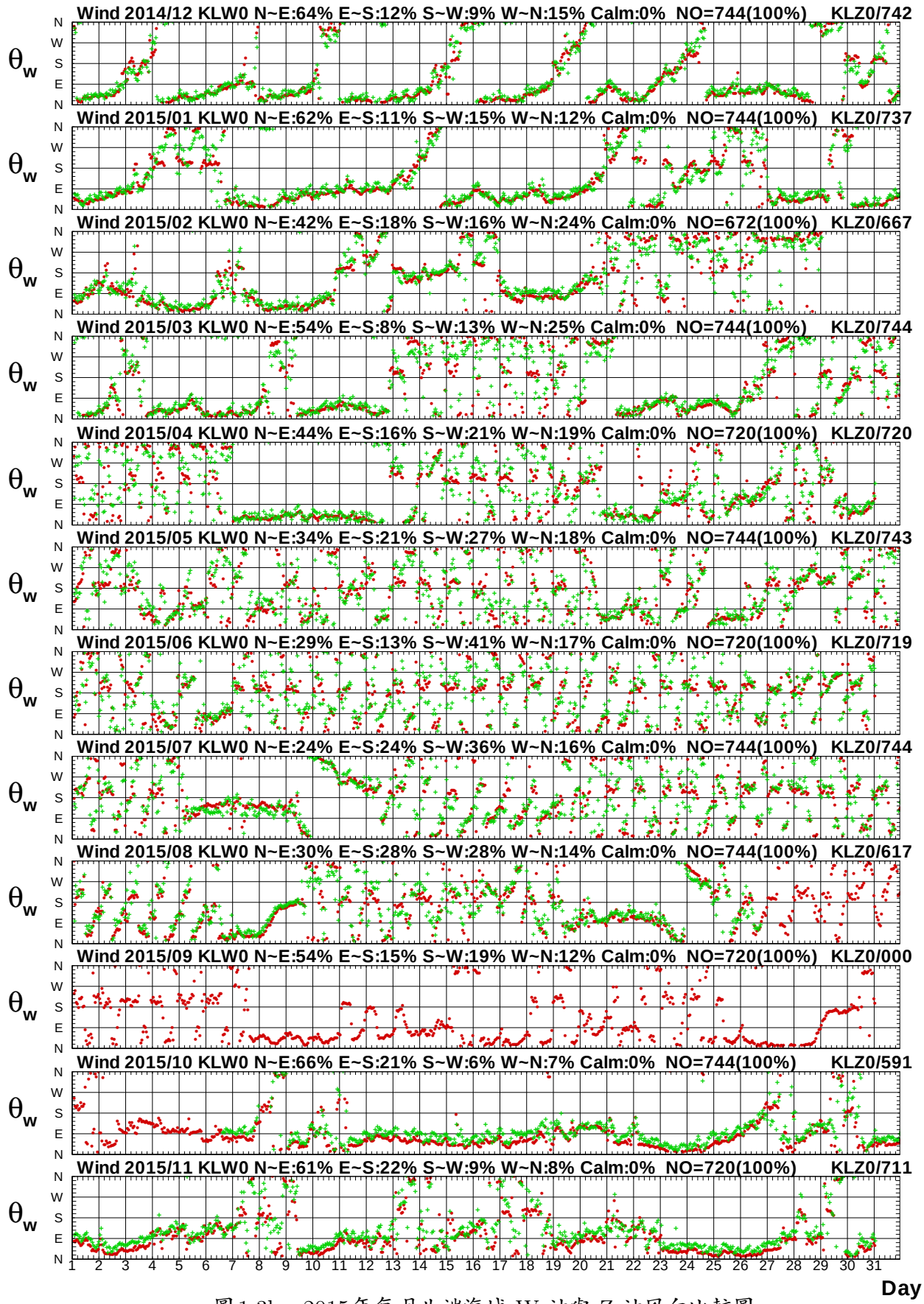

圖1.3b　2015年每月北端海域 W 站與 Z 站風向比較圖

W14CKLW0.1HA W14CKLZ0.1H0 W151KLW0.1HA W151KLZ0.1H0 W152KLW0.1HA W152KLZ0.1H0
W153KLW0.1HA W153KLZ0.1H0 W154KLW0.1HA W154KLZ0.1H0 W155KLW0.1HA W155KLZ0.1H0

Institute of Harbor & Marine Technology

Wind Speed in North Seas of KLW0 at 2015

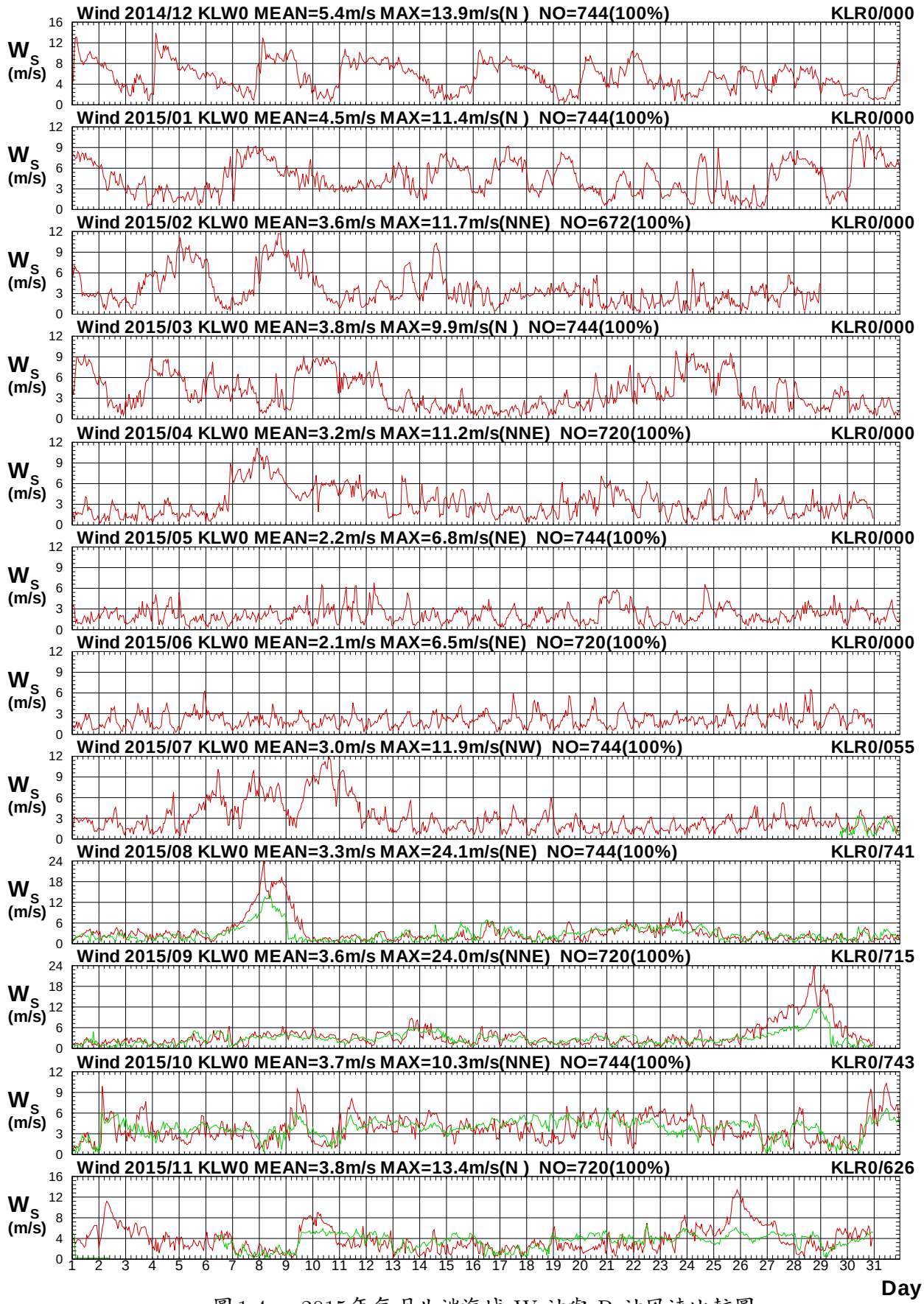

圖1.4a　2015年每月北端海域 W 站與 R 站風速比較圖

W14CKLW0.1HA W14CKLR0.1H0 W151KLW0.1HA W151KLR0.1H0 W152KLW0.1HA W152KLR0.1H0
W153KLW0.1HA W153KLR0.1H0 W154KLW0.1HA W154KLR0.1H0 W155KLW0.1HA W155KLR0.1H0

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Wind Direction in North Seas of KLW0 at 2015

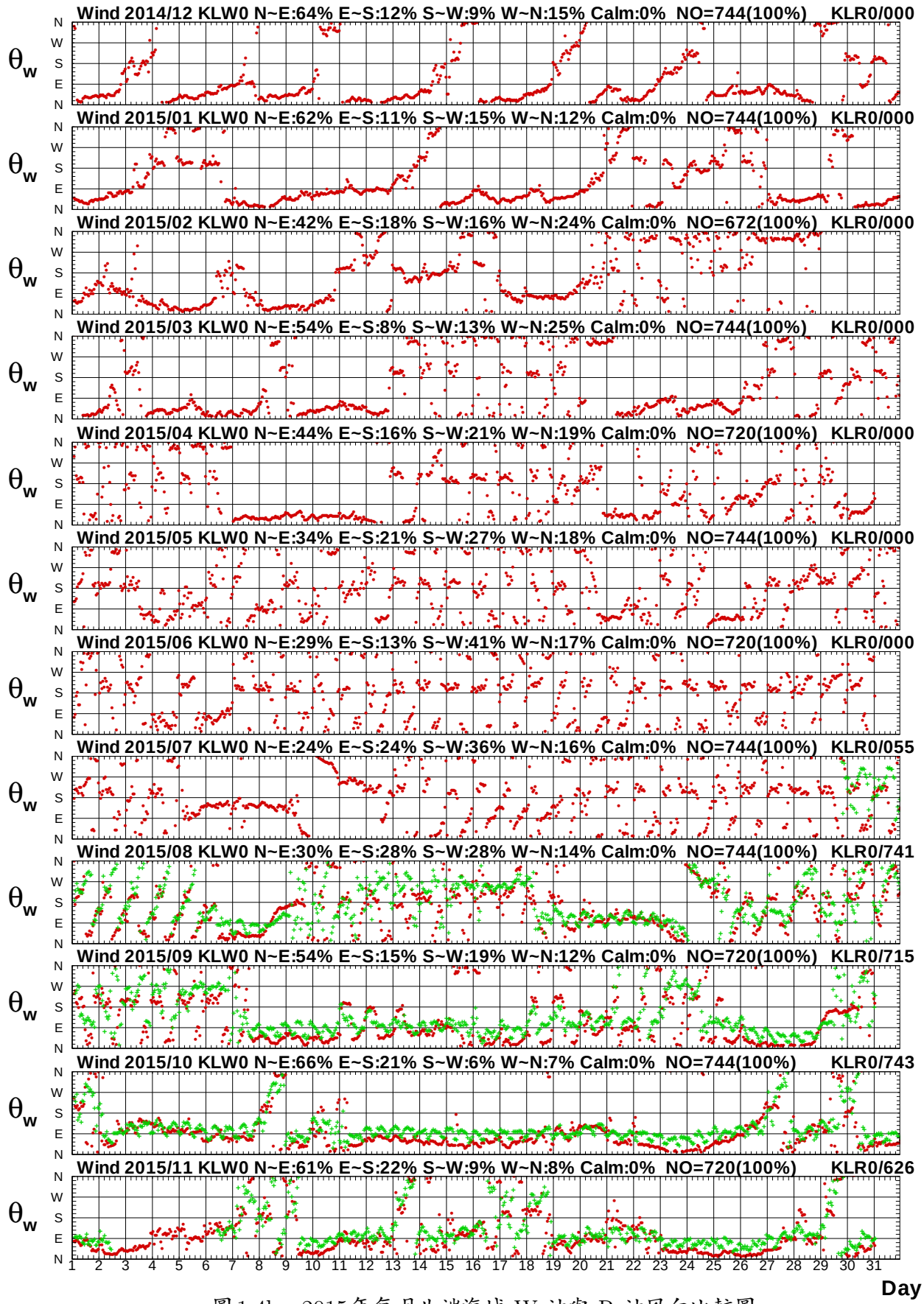

圖1.4b　2015年每月北端海域 W 站與 R 站風向比較圖

W14CKLW0.1HA W14CKLR0.1H0 W151KLW0.1HA W151KLR0.1H0 W152KLW0.1HA W152KLR0.1H0
W153KLW0.1HA W153KLR0.1H0 W154KLW0.1HA W154KLR0.1H0 W155KLW0.1HA W155KLR0.1H0

Institute of Harbor & Marine Technology

Wind Speed in North Seas of KLW0 at 2015

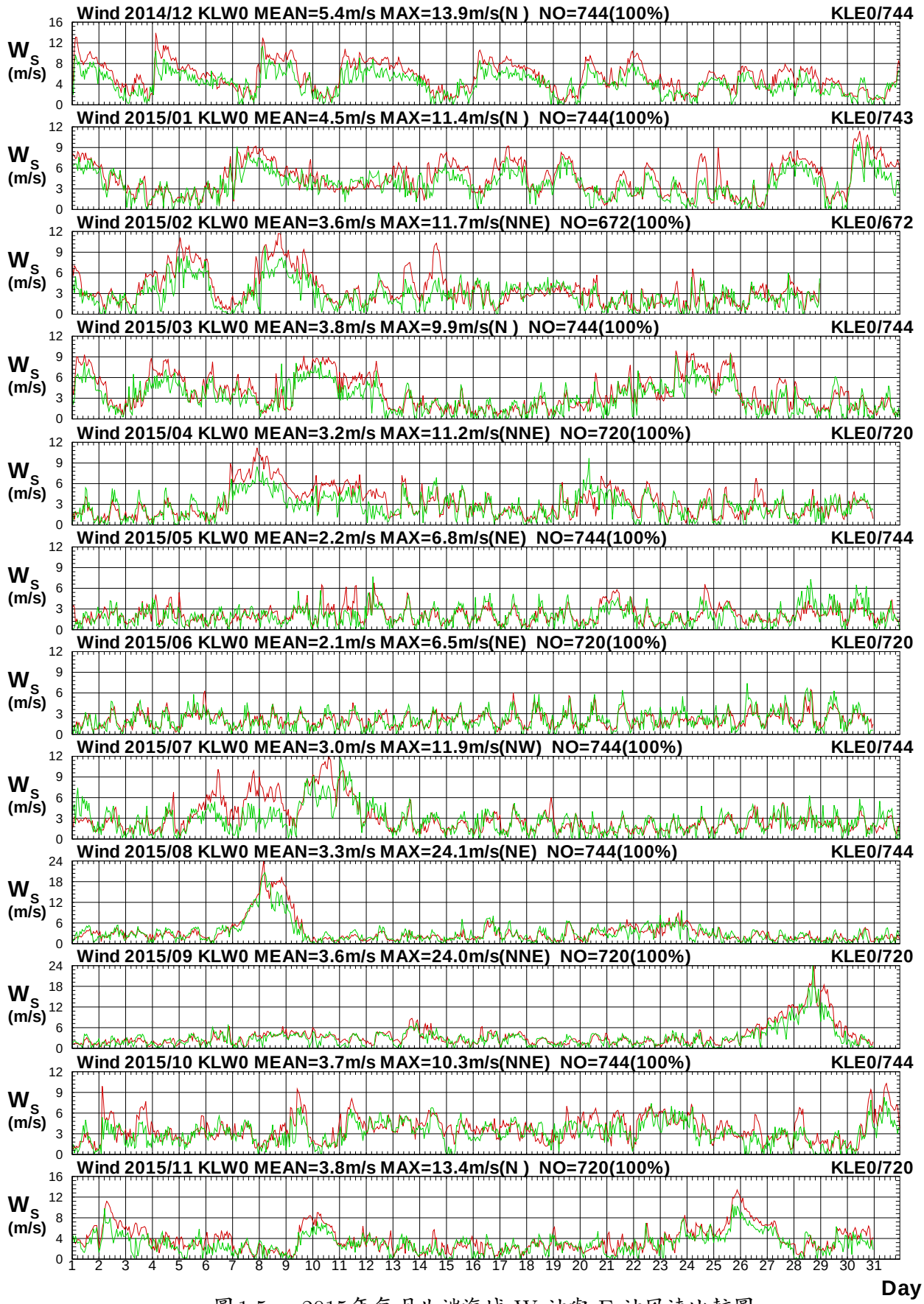

圖1.5a　2015年每月北端海域 W 站與 E 站風速比較圖

W14CKLW0.1HA W14CKLE0.1H0 W151KLW0.1HA W151KLE0.1H0 W152KLW0.1HA W152KLE0.1H0
W153KLW0.1HA W153KLE0.1H0 W154KLW0.1HA W154KLE0.1H0 W155KLW0.1HA W155KLE0.1H0

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Wind Direction in North Seas of KLW0 at 2015

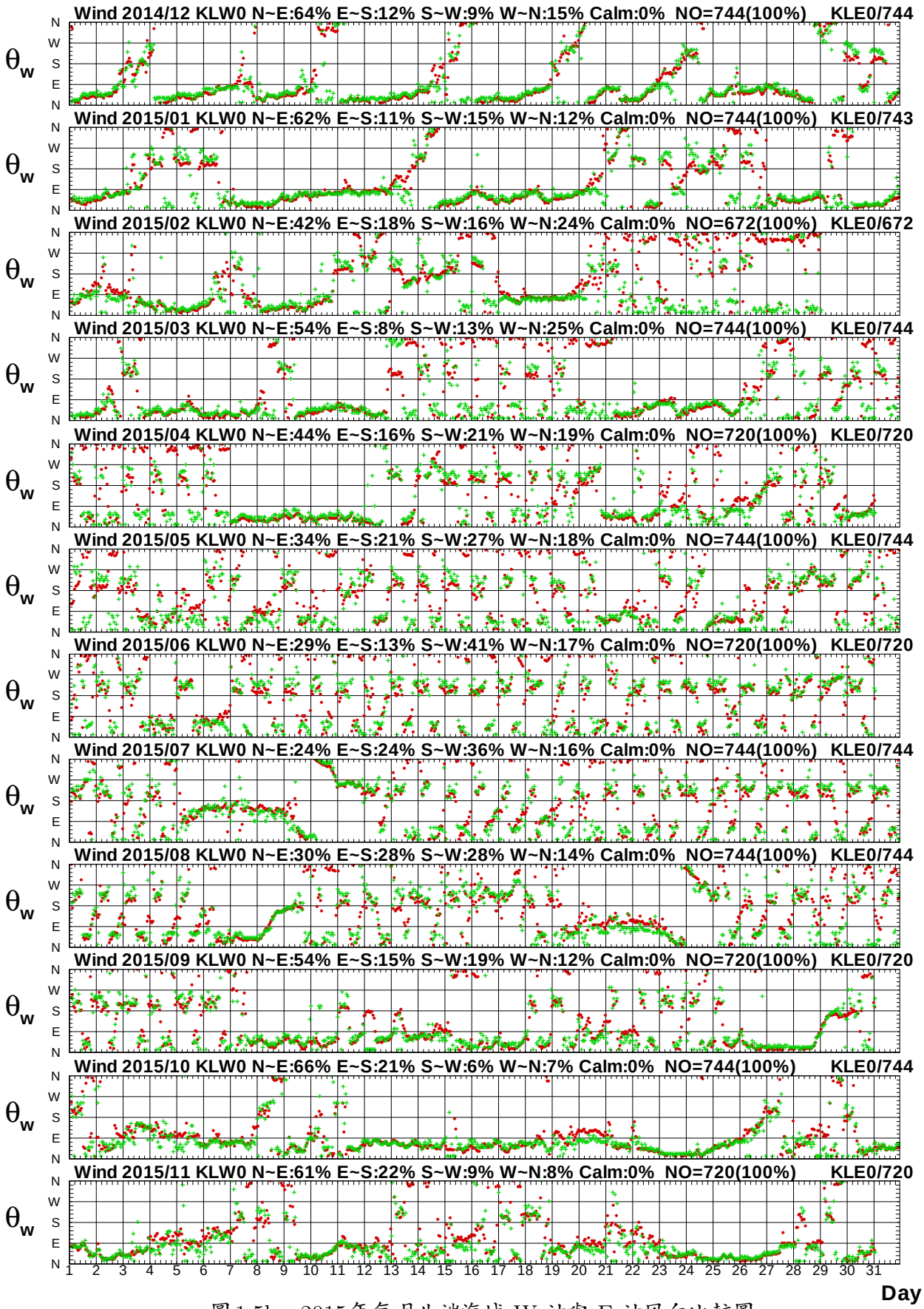

圖1.5b　2015年每月北端海域 W 站與 E 站風向比較圖

W14CKLW0.1HA W14CKLE0.1H0 W151KLW0.1HA W151KLE0.1H0 W152KLW0.1HA W152KLE0.1H0
W153KLW0.1HA W153KLE0.1H0 W154KLW0.1HA W154KLE0.1H0 W155KLW0.1HA W155KLE0.1H0

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Wind Speed in North Seas of KLW0 at 2015

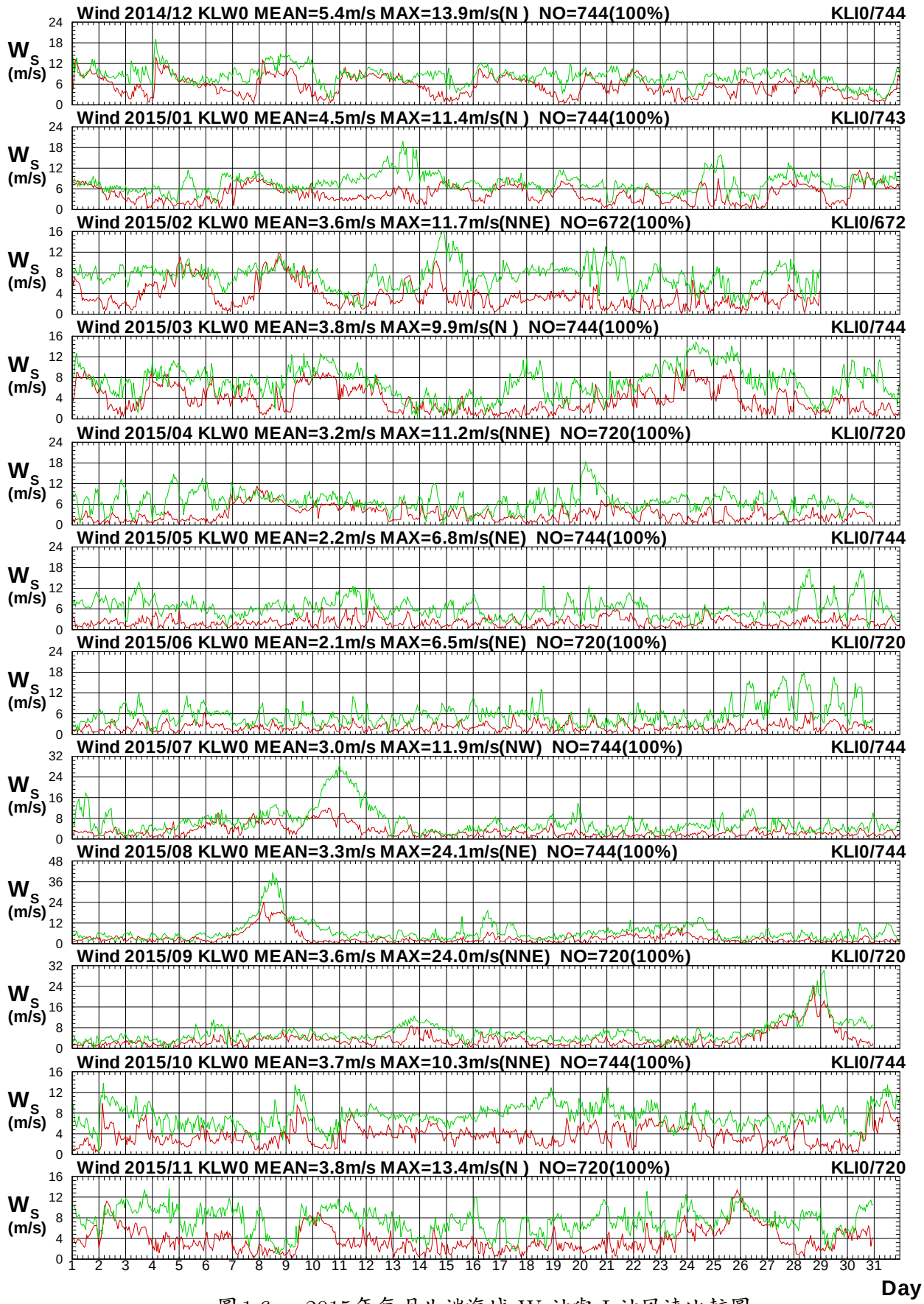

圖1.6a　2015年每月北端海域 W 站與 I 站風速比較圖

W14CKLW0.1HA W14CKLI0.1H0 W151KLW0.1HA W151KLI0.1H0 W152KLW0.1HA W152KLI0.1H0
W153KLW0.1HA W153KLI0.1H0 W154KLW0.1HA W154KLI0.1H0 W155KLW0.1HA W155KLI0.1H0

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Wind Direction in North Seas of KLW0 at 2015

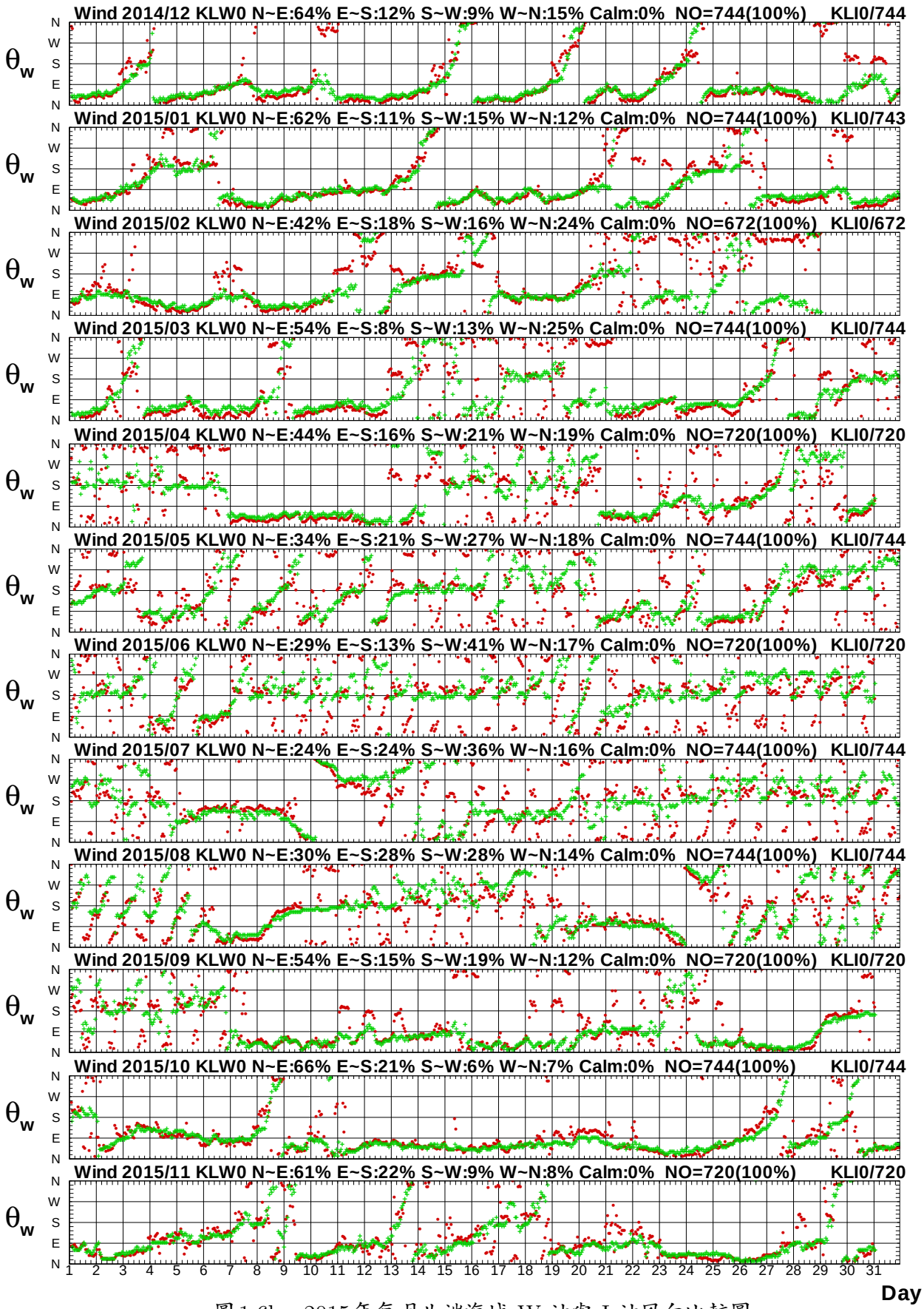

圖1.6b　2015年每月北端海域 W 站與 I 站風向比較圖

W14CKLW0.1HA W14CKLI0.1H0 W151KLW0.1HA W151KLI0.1H0 W152KLW0.1HA W152KLI0.1H0
W153KLW0.1HA W153KLI0.1H0 W154KLW0.1HA W154KLI0.1H0 W155KLW0.1HA W155KLI0.1H0

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Wind Speed in North Seas of KLW0 at 2015

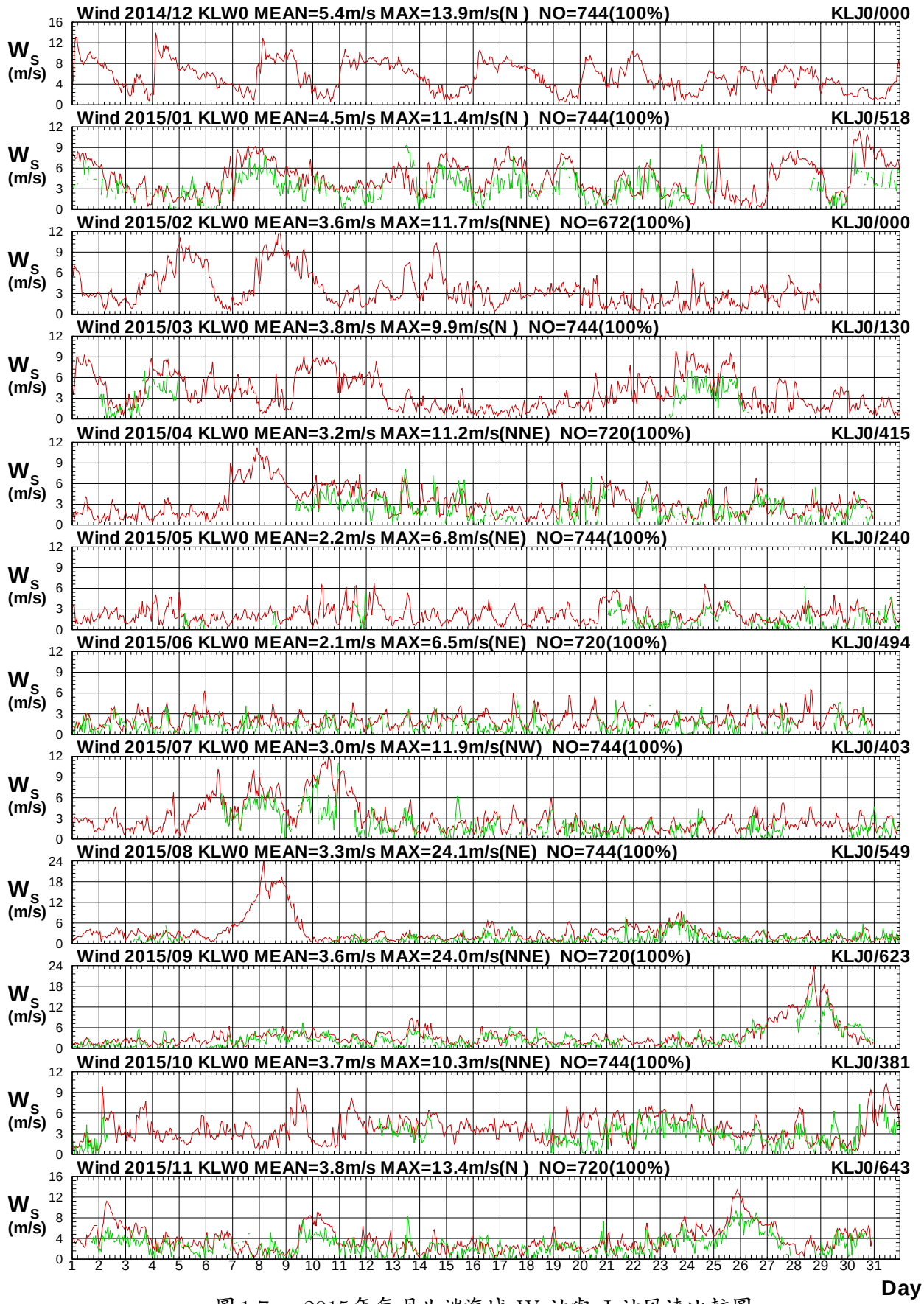

圖1.7a　2015年每月北端海域 W 站與 J 站風速比較圖

W14CKLW0.1HA W14CKLJ0.1H0 W151KLW0.1HA W151KLJ0.1H0 W152KLW0.1HA W152KLJ0.1H0
W153KLW0.1HA W153KLJ0.1H0 W154KLW0.1HA W154KLJ0.1H0 W155KLW0.1HA W155KLJ0.1H0

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Wind Direction in North Seas of KLW0 at 2015

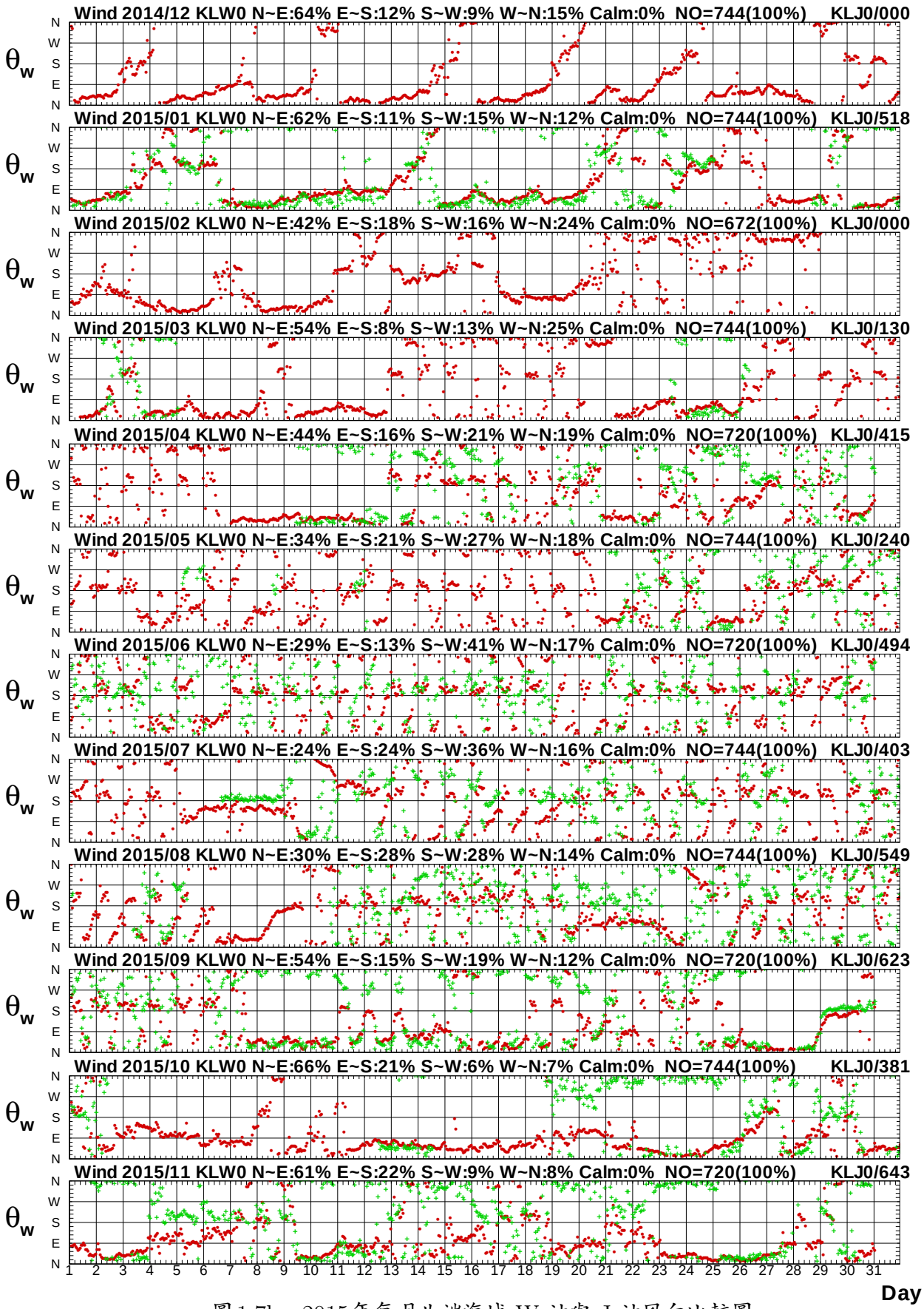

圖1.7b　2015年每月北端海域 W 站與 J 站風向比較圖

W14CKLW0.1HA W14CKLJ0.1H0 W151KLW0.1HA W151KLJ0.1H0 W152KLW0.1HA W152KLJ0.1H0
W153KLW0.1HA W153KLJ0.1H0 W154KLW0.1HA W154KLJ0.1H0 W155KLW0.1HA W155KLJ0.1H0

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Wind Speed in North Seas of KLW0 at 2015

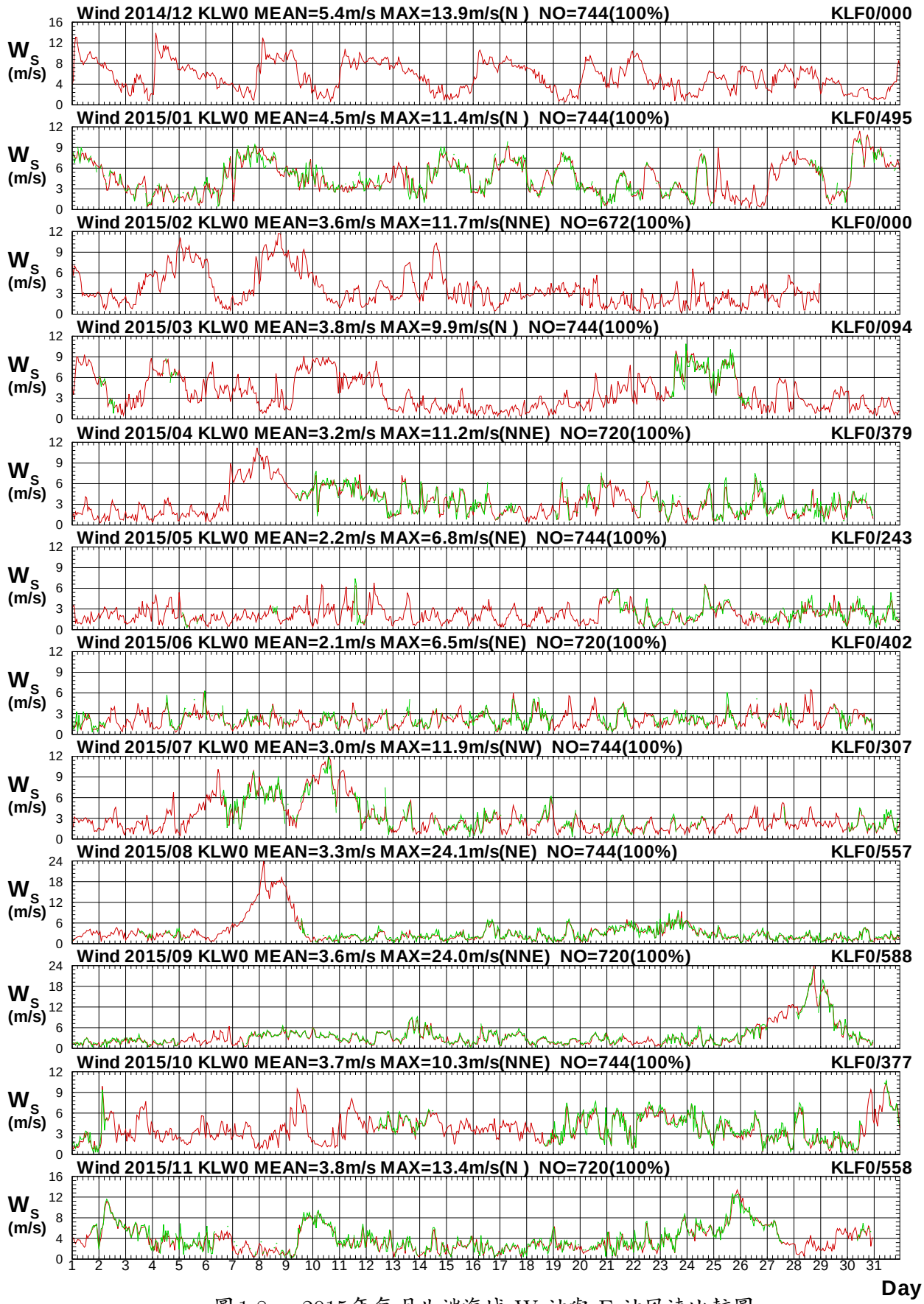

圖1.8a　2015年每月北端海域 W 站與 F 站風速比較圖

W14CKLW0.1HA W14CKLF0.1H0 W151KLW0.1HA W151KLF0.1H0 W152KLW0.1HA W152KLF0.1H0
W153KLW0.1HA W153KLF0.1H0 W154KLW0.1HA W154KLF0.1H0 W155KLW0.1HA W155KLF0.1H0

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Wind Direction in North Seas of KLW0 at 2015

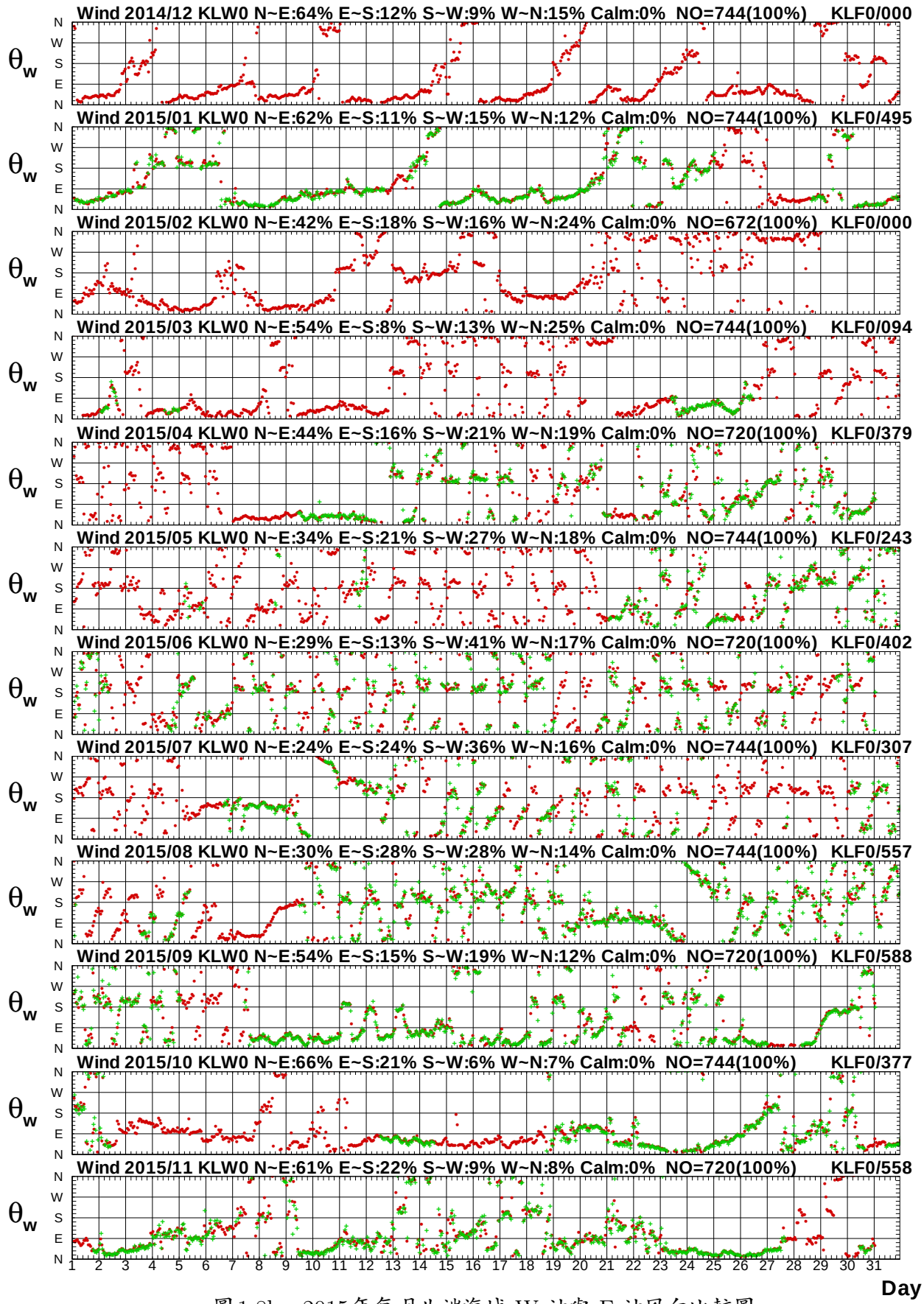

圖1.8b　2015年每月北端海域 W 站與 F 站風向比較圖

W14CKLW0.1HA W14CKLF0.1H0 W151KLW0.1HA W151KLF0.1H0 W152KLW0.1HA W152KLF0.1H0
W153KLW0.1HA W153KLF0.1H0 W154KLW0.1HA W154KLF0.1H0 W155KLW0.1HA W155KLF0.1H0

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Wind Speed in North Seas of KLW0 at 2015

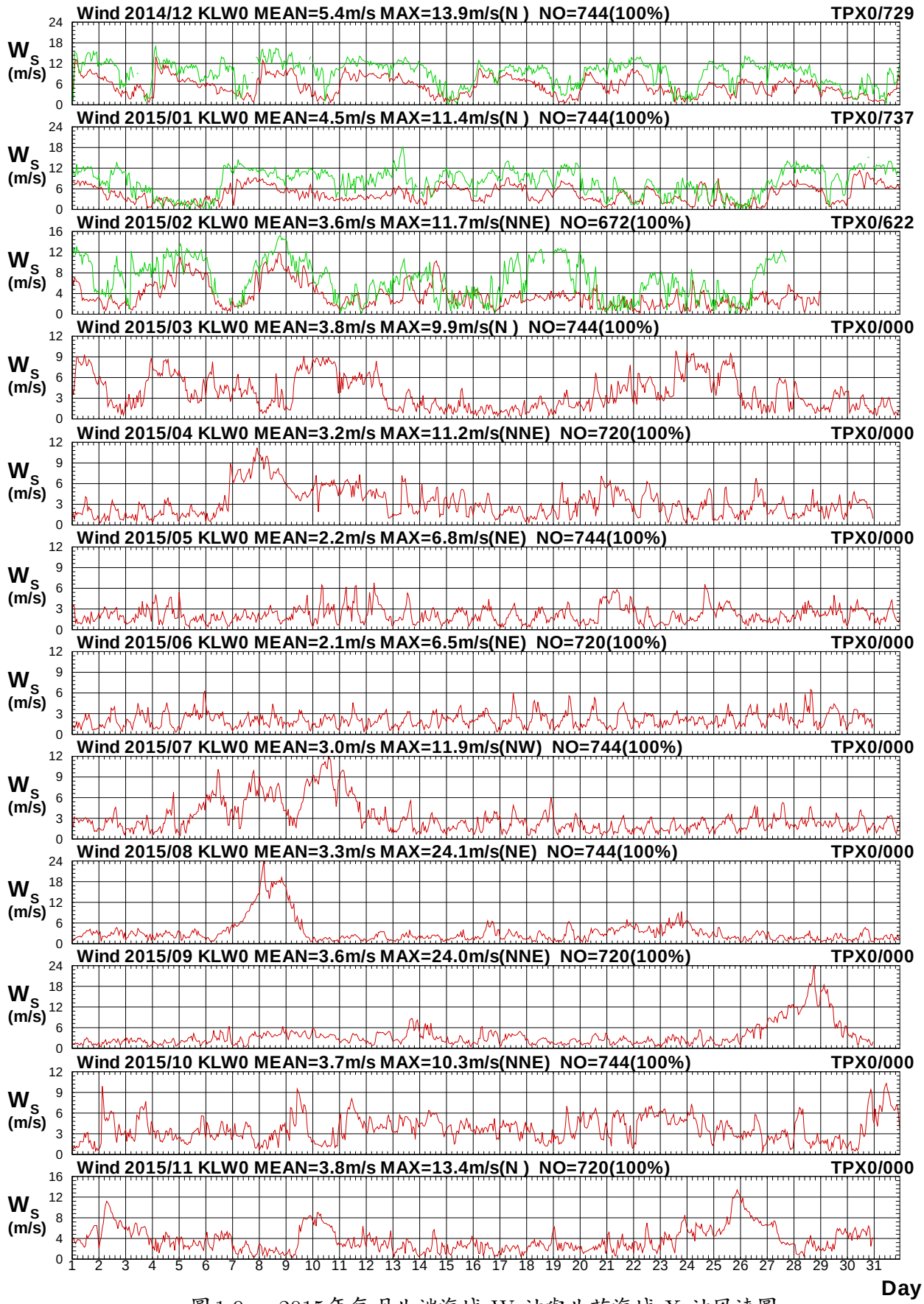

圖1.9a　2015年每月北端海域 W 站與北苗海域 X 站風速圖

W14CKLW0.1HA W14CTPX0.1H0 W151KLW0.1HA W151TPX0.1H0 W152KLW0.1HA W152TPX0.1H0
W153KLW0.1HA W153TPX0.1H0 W154KLW0.1HA W154TPX0.1H0 W155KLW0.1HA W155TPX0.1H0

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Wind Direction in North Seas of KLW0 at 2015

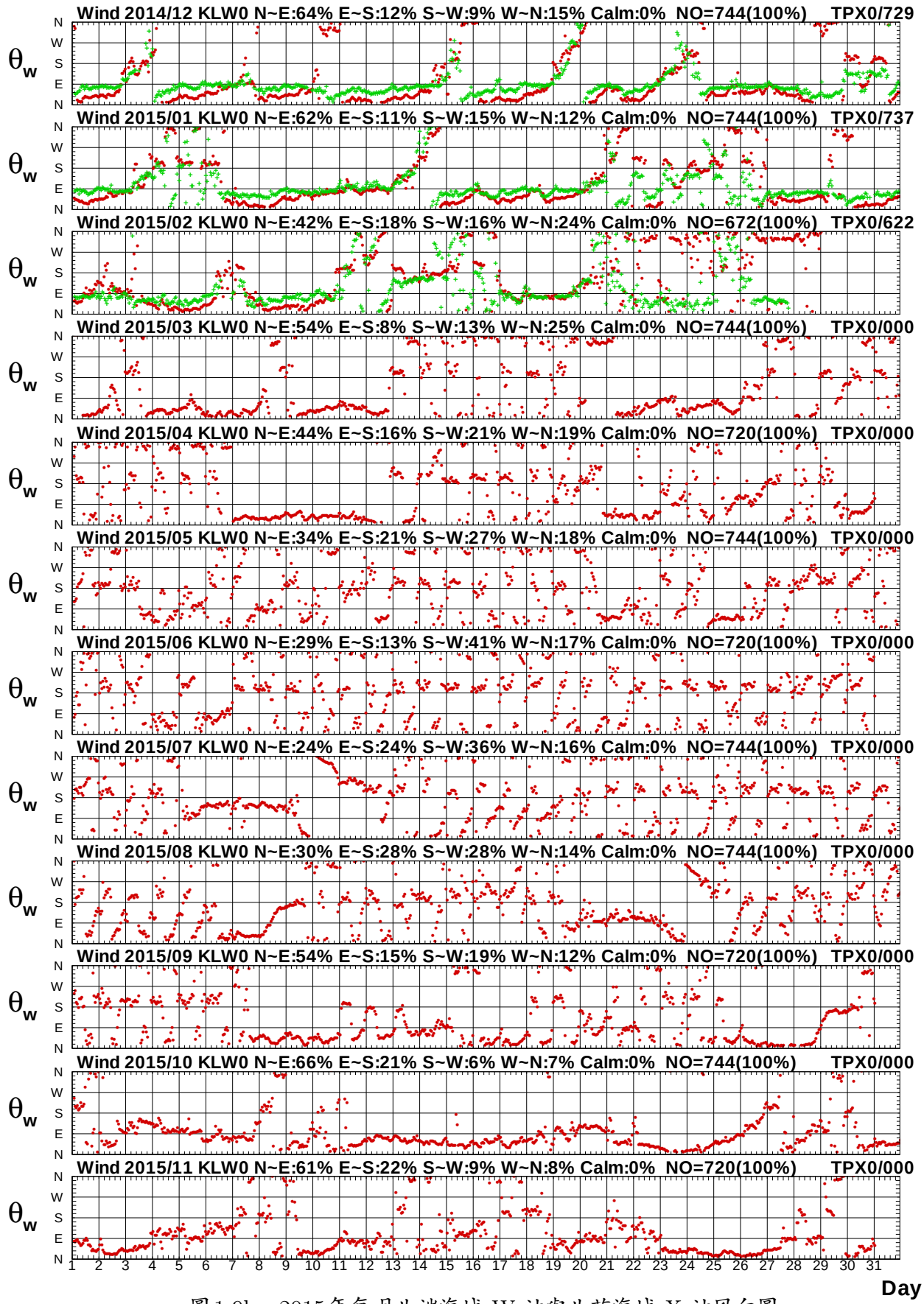

圖1.9b　2015年每月北端海域 W 站與北苗海域 X 站風向圖

W14CKLW0.1HA W14CTPX0.1H0 W151KLW0.1HA W151TPX0.1H0 W152KLW0.1HA W152TPX0.1H0
W153KLW0.1HA W153TPX0.1H0 W154KLW0.1HA W154TPX0.1H0 W155KLW0.1HA W155TPX0.1H0

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Wind Speed in North Seas of KLW0 at 2015

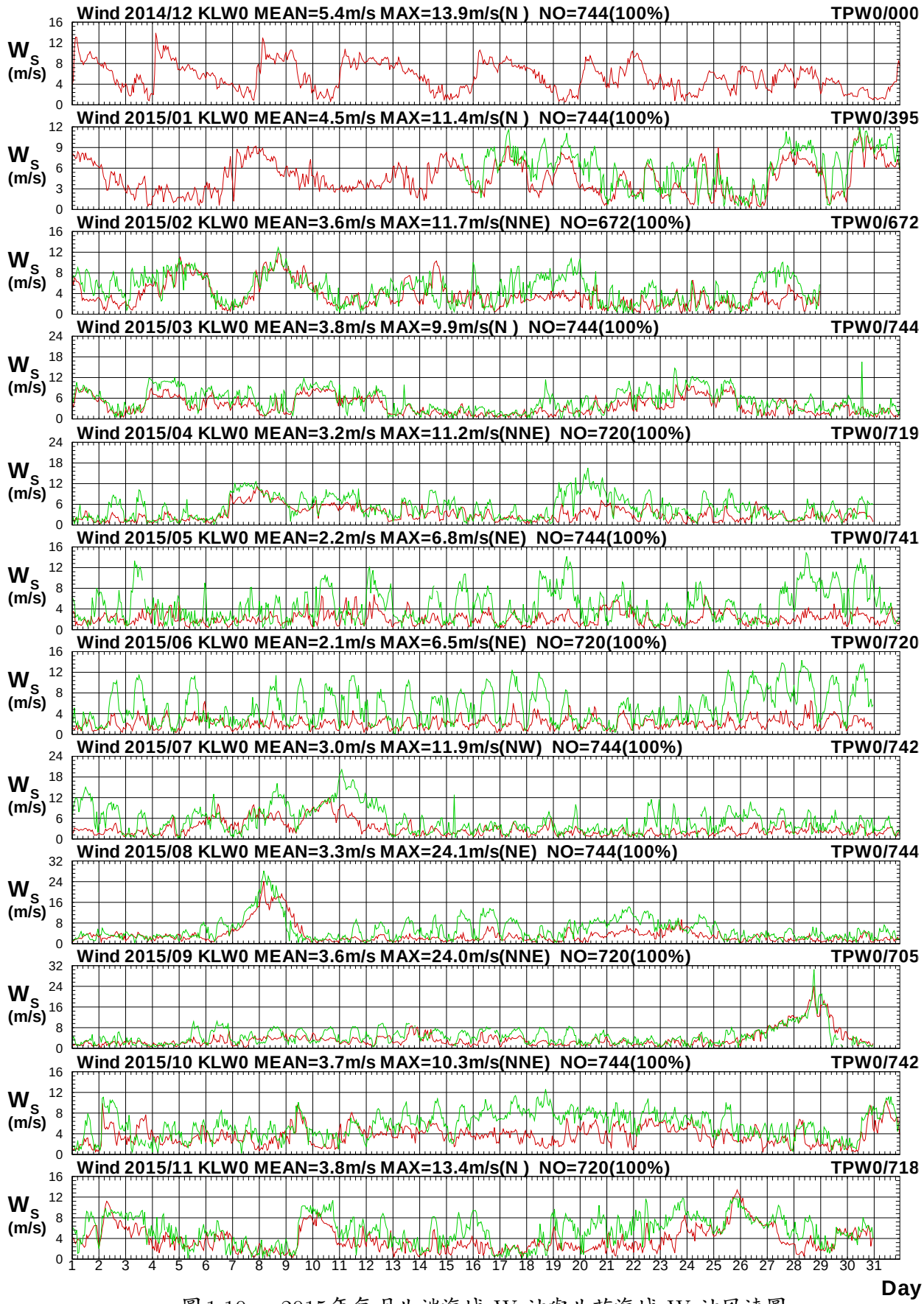

圖 1.10a　2015年每月北端海域 W 站與北苗海域 W 站風速圖

W14CKLW0.1HA W14CTPW0.1H0 W151KLW0.1HA W151TPW0.1H0 W152KLW0.1HA W152TPW0.1H0
W153KLW0.1HA W153TPW0.1H0 W154KLW0.1HA W154TPW0.1H0 W155KLW0.1HA W155TPW0.1H0

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Wind Direction in North Seas of KLW0 at 2015

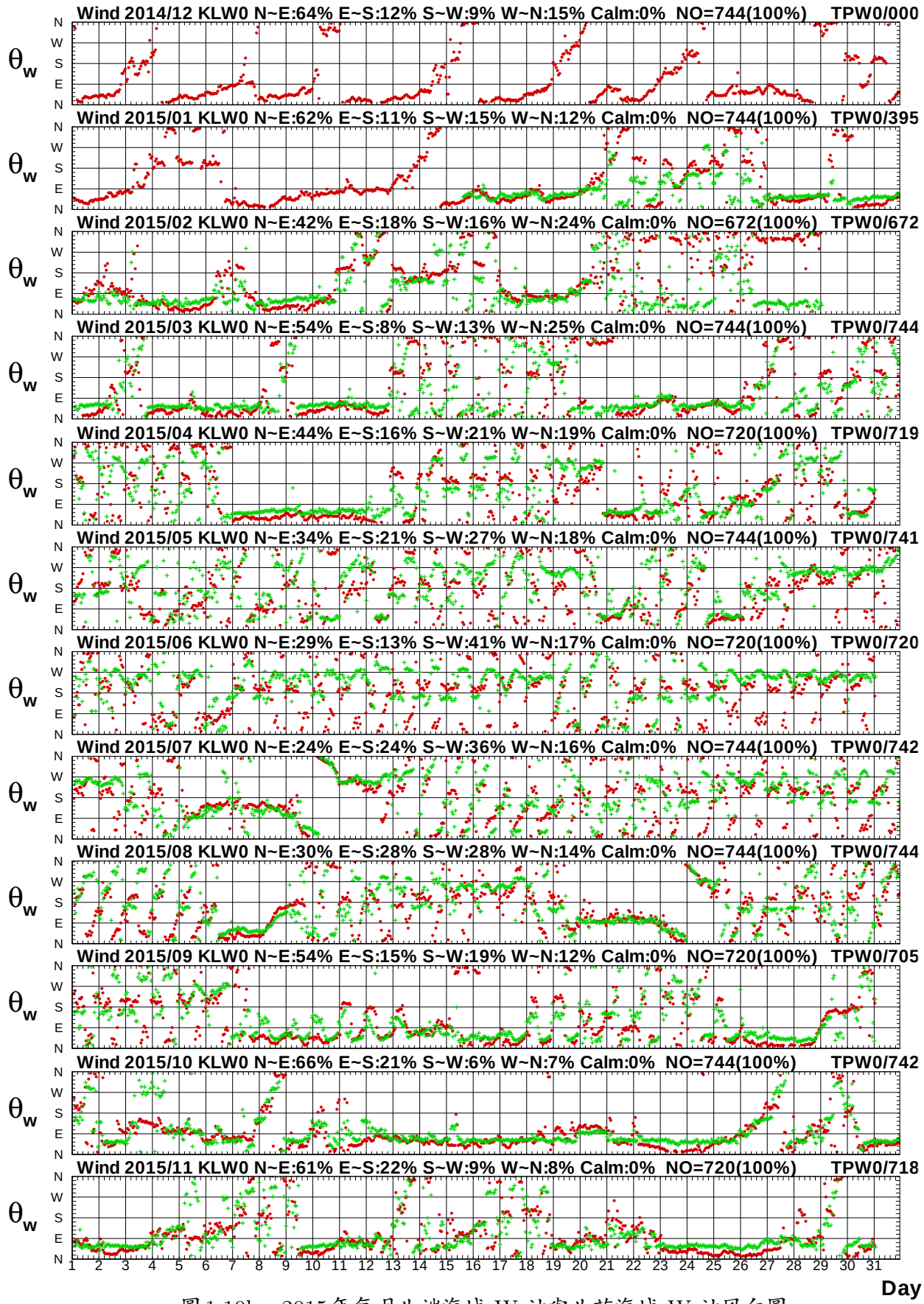

圖 1.10b　2015年每月北端海域 W 站與北苗海域 W 站風向圖

W14CKLW0.1HA W14CTPW0.1H0 W151KLW0.1HA W151TPW0.1H0 W152KLW0.1HA W152TPW0.1H0
W153KLW0.1HA W153TPW0.1H0 W154KLW0.1HA W154TPW0.1H0 W155KLW0.1HA W155TPW0.1H0

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Wind Speed in North Seas of KLW0 at 2015

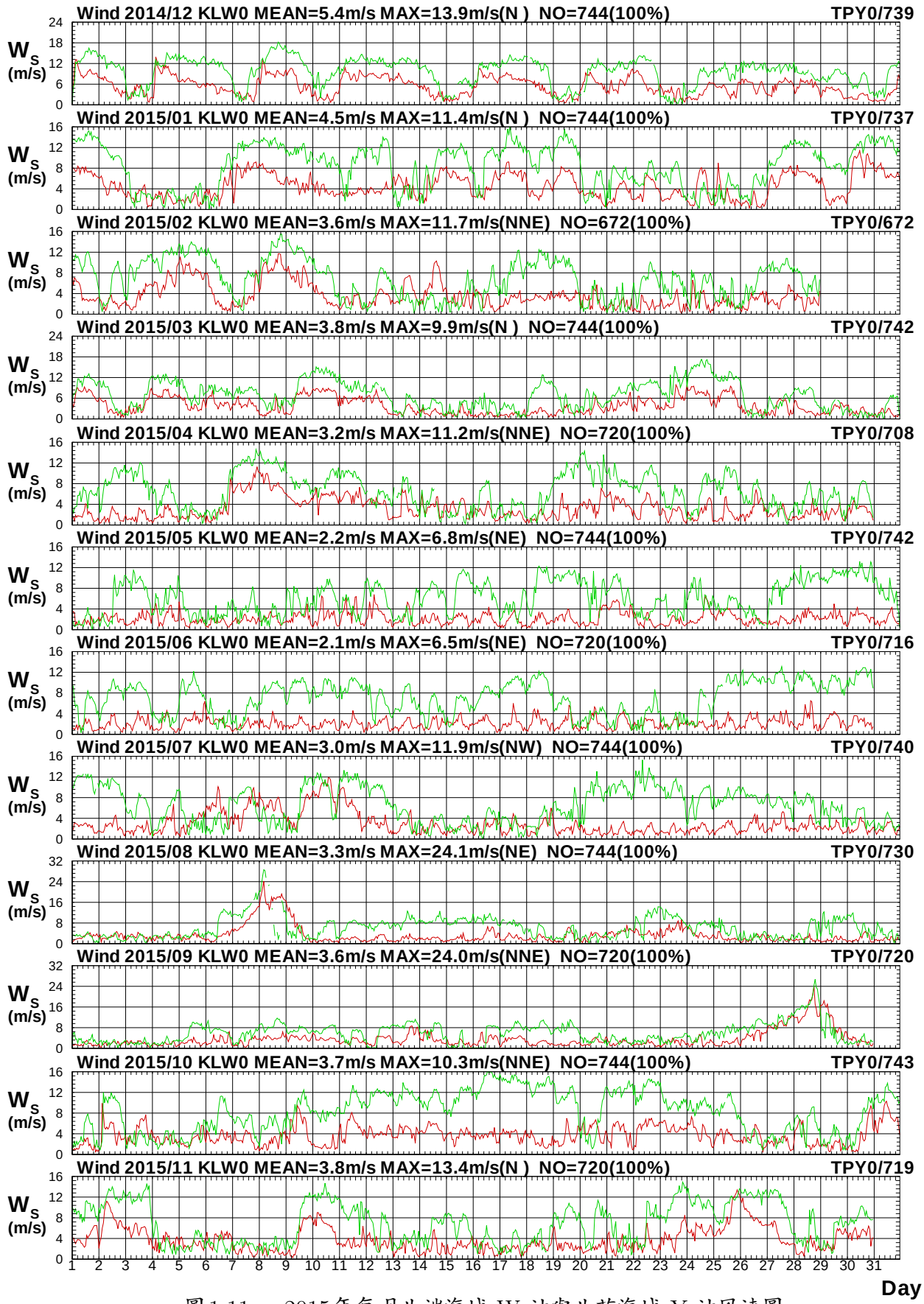

圖1.11a　2015年每月北端海域 W 站與北苗海域 Y 站風速圖

W14CKLW0.1HA W14CTPY0.1H0 W151KLW0.1HA W151TPY0.1H0 W152KLW0.1HA W152TPY0.1H0
W153KLW0.1HA W153TPY0.1H0 W154KLW0.1HA W154TPY0.1H0 W155KLW0.1HA W155TPY0.1H0

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Wind Direction in North Seas of KLW0 at 2015

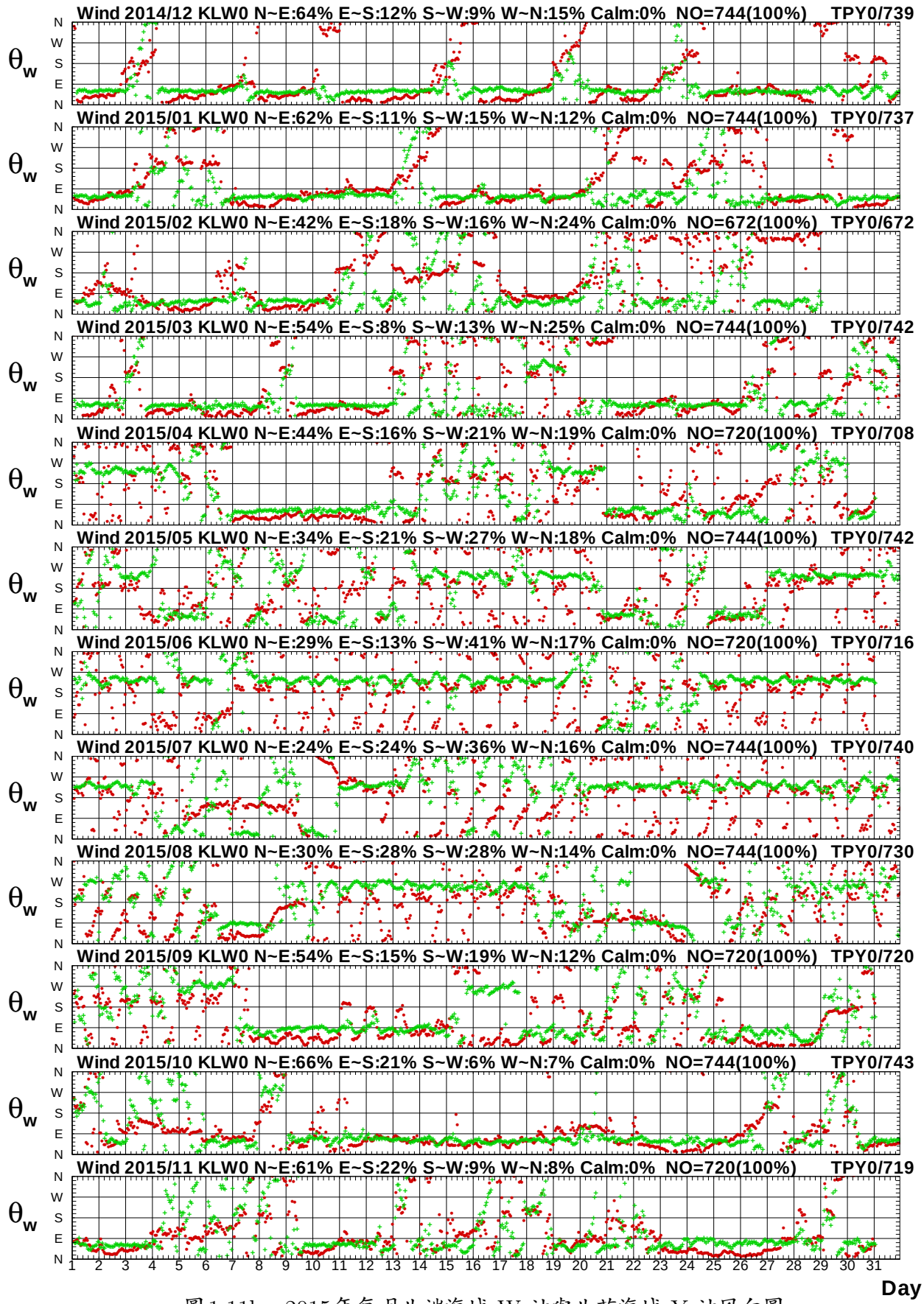

圖1.11b　2015年每月北端海域 W 站與北苗海域 Y 站風向圖

W14CKLW0.1HA W14CTPY0.1H0 W151KLW0.1HA W151TPY0.1H0 W152KLW0.1HA W152TPY0.1H0
W153KLW0.1HA W153TPY0.1H0 W154KLW0.1HA W154TPY0.1H0 W155KLW0.1HA W155TPY0.1H0

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Wind Speed in North Seas of KLW0 at 2015

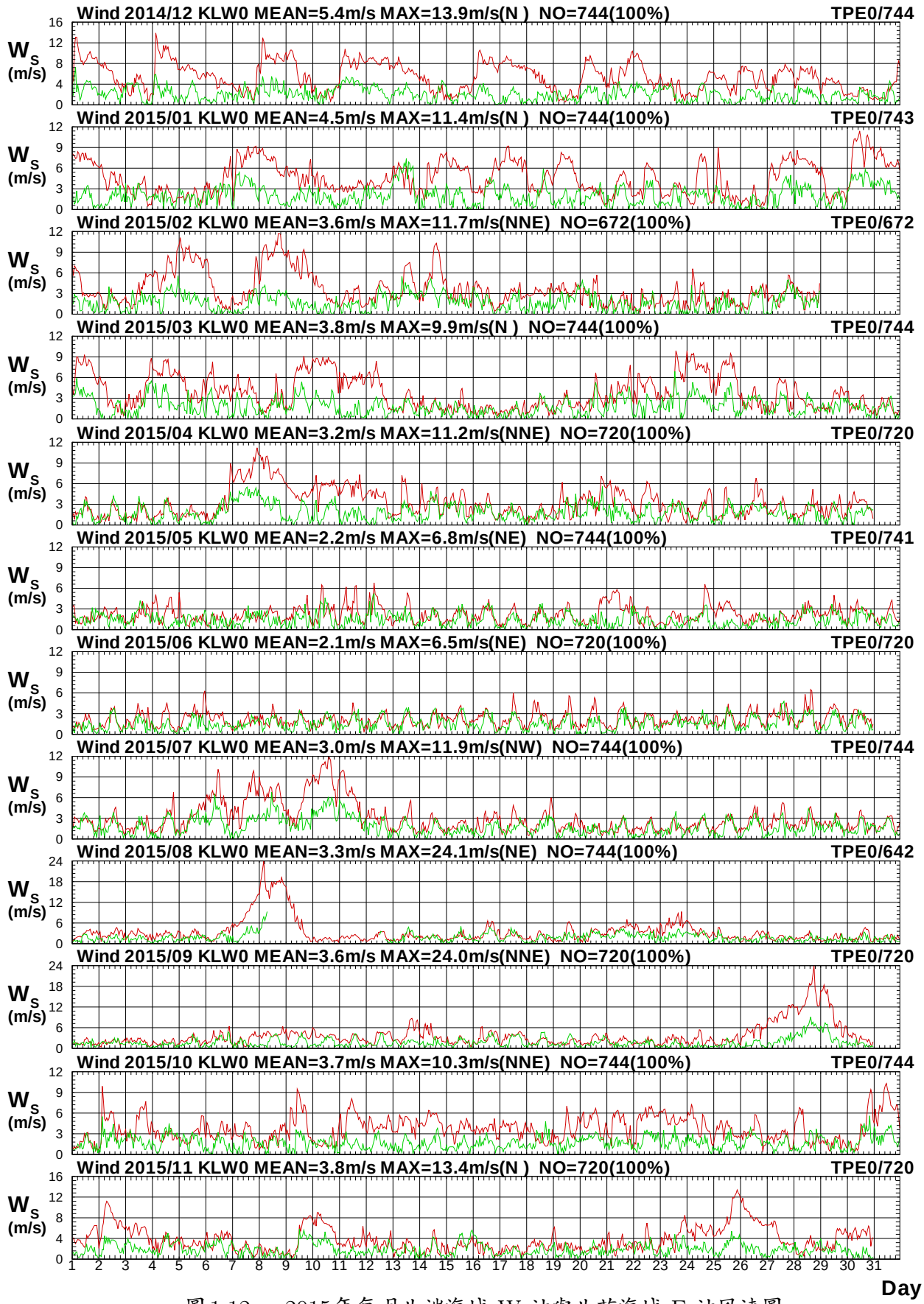

圖1.12a　2015年每月北端海域 W 站與北苗海域 E 站風速圖

W14CKLW0.1HA W14CTPE0.1H0 W151KLW0.1HA W151TPE0.1H0 W152KLW0.1HA W152TPE0.1H0
W153KLW0.1HA W153TPE0.1H0 W154KLW0.1HA W154TPE0.1H0 W155KLW0.1HA W155TPE0.1H0

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Wind Direction in North Seas of KLW0 at 2015

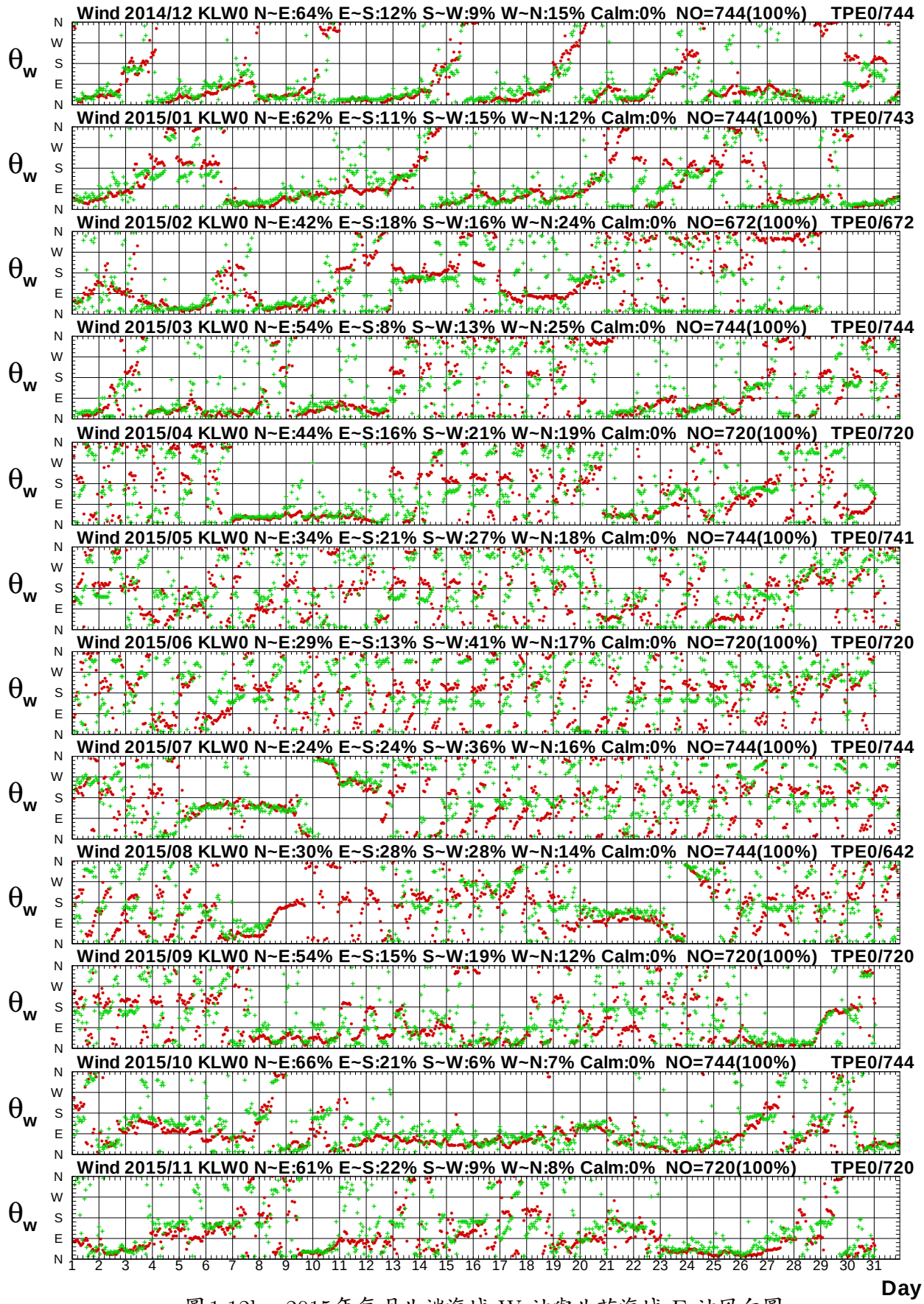

圖1.12b　2015年每月北端海域 W 站與北苗海域 E 站風向圖

W14CKLW0.1HA W14CTPE0.1H0 W151KLW0.1HA W151TPE0.1H0 W152KLW0.1HA W152TPE0.1H0
W153KLW0.1HA W153TPE0.1H0 W154KLW0.1HA W154TPE0.1H0 W155KLW0.1HA W155TPE0.1H0

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Wind Speed in North Seas of KLW0 at 2015

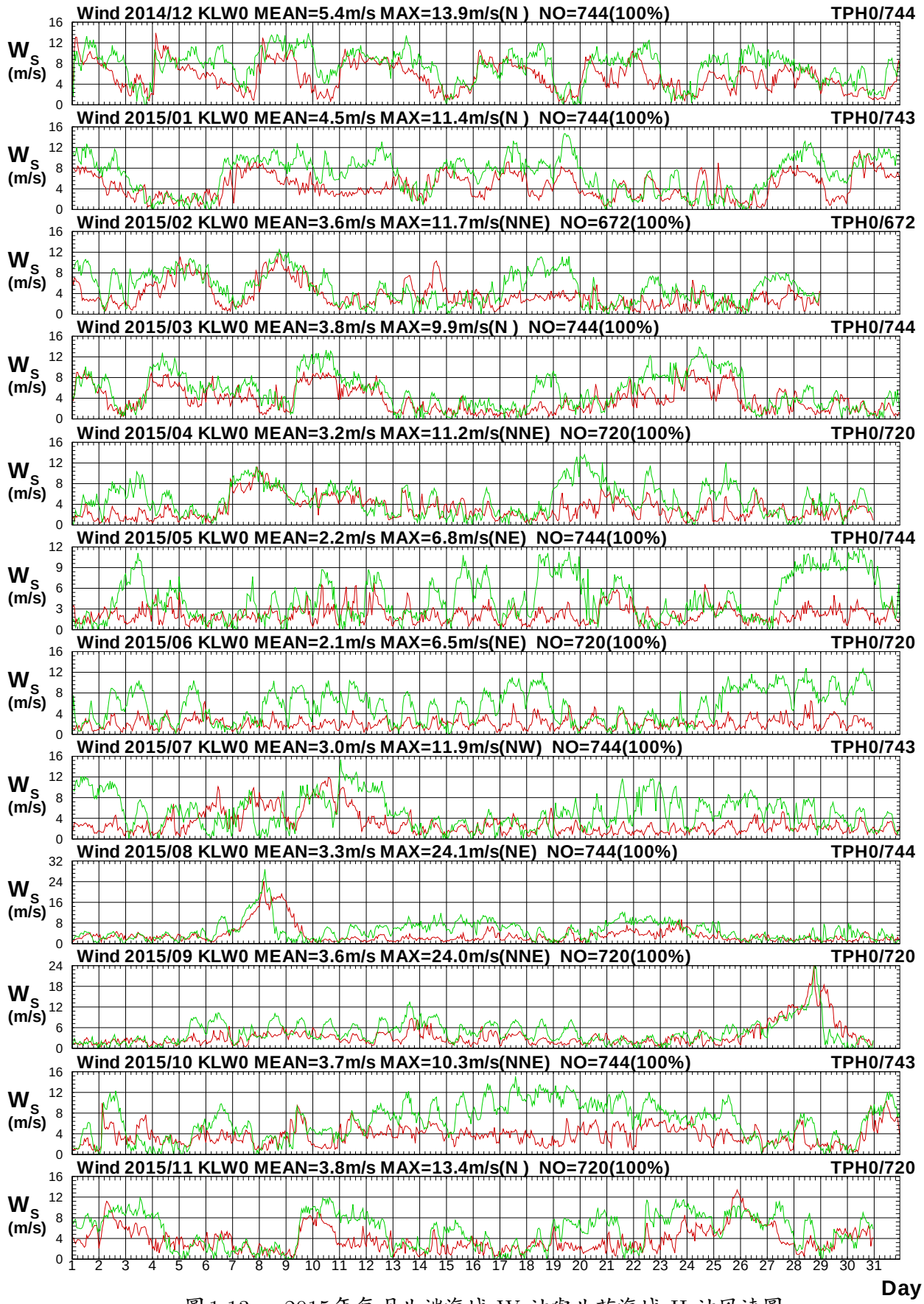

圖1.13a　2015年每月北端海域 W 站與北苗海域 H 站風速圖

W14CKLW0.1HA W14CTPH0.1H0 W151KLW0.1HA W151TPH0.1H0 W152KLW0.1HA W152TPH0.1H0
W153KLW0.1HA W153TPH0.1H0 W154KLW0.1HA W154TPH0.1H0 W155KLW0.1HA W155TPH0.1H0

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Wind Direction in North Seas of KLW0 at 2015

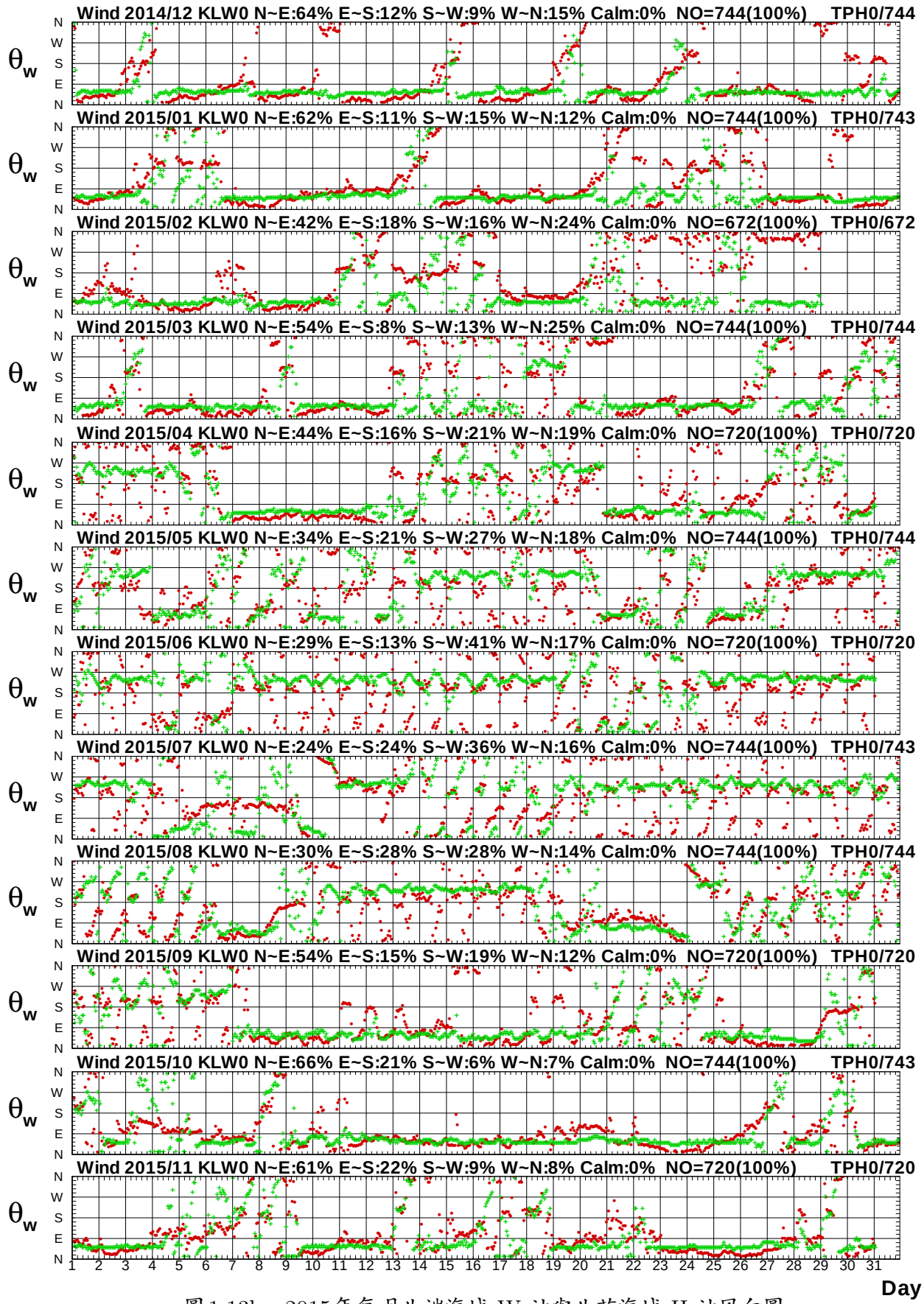

圖1.13b　2015年每月北端海域 W 站與北苗海域 H 站風向圖

W14CKLW0.1HA W14CTPH0.1H0 W151KLW0.1HA W151TPH0.1H0 W152KLW0.1HA W152TPH0.1H0
W153KLW0.1HA W153TPH0.1H0 W154KLW0.1HA W154TPH0.1H0 W155KLW0.1HA W155TPH0.1H0

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Wind Speed in North Seas of KLW0 at 2015

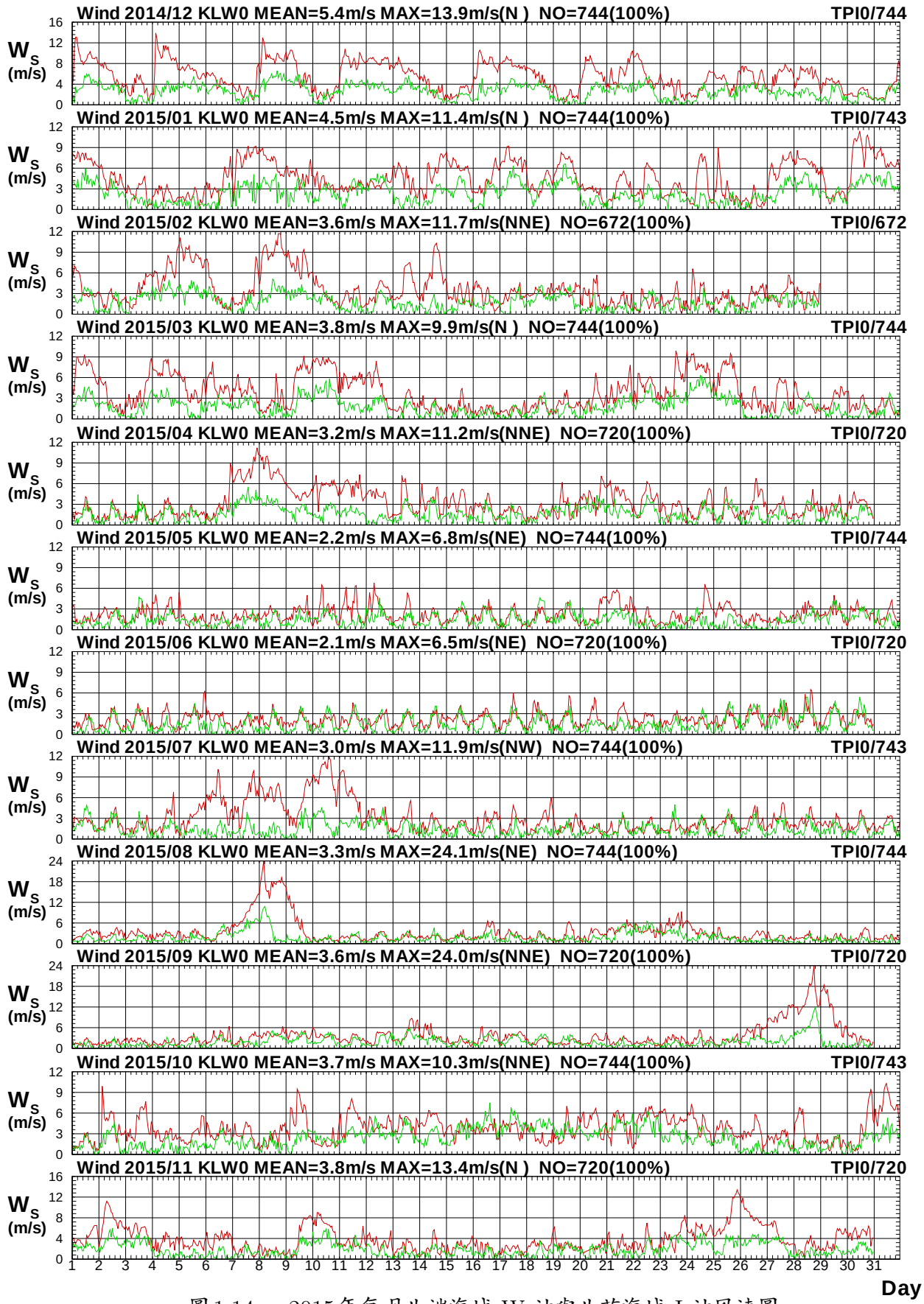

圖1.14a　2015年每月北端海域 W 站與北苗海域 I 站風速圖

W14CKLW0.1HA W14CTPI0.1H0 W151KLW0.1HA W151TPI0.1H0 W152KLW0.1HA W152TPI0.1H0
W153KLW0.1HA W153TPI0.1H0 W154KLW0.1HA W154TPI0.1H0 W155KLW0.1HA W155TPI0.1H0

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Wind Direction in North Seas of KLW0 at 2015

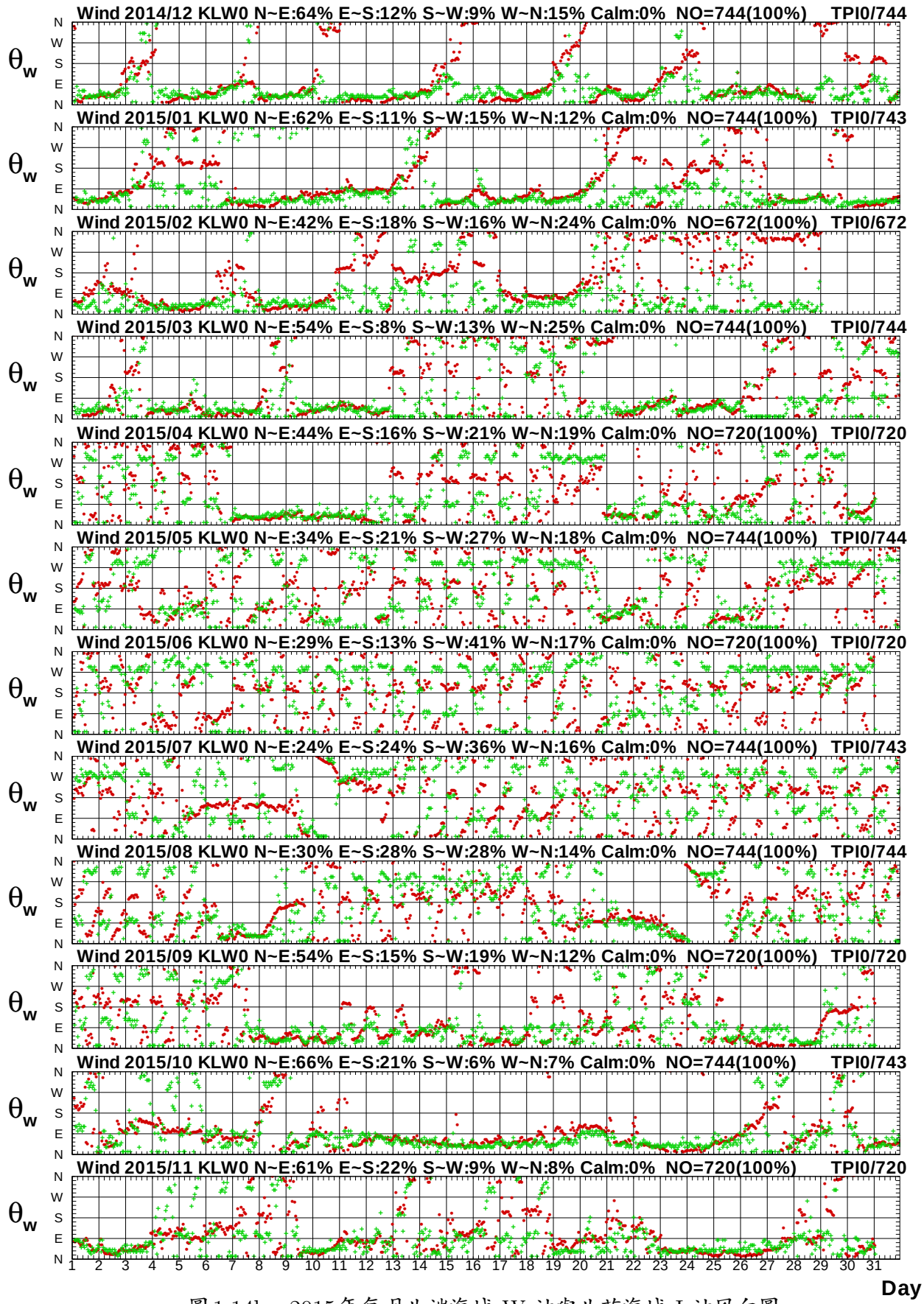

圖1.14b　2015年每月北端海域 W 站與北苗海域 I 站風向圖

W14CKLW0.1HA W14CTPI0.1H0 W151KLW0.1HA W151TPI0.1H0 W152KLW0.1HA W152TPI0.1H0
W153KLW0.1HA W153TPI0.1H0 W154KLW0.1HA W154TPI0.1H0 W155KLW0.1HA W155TPI0.1H0

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Wind Speed in North Seas of KLW0 at 2015

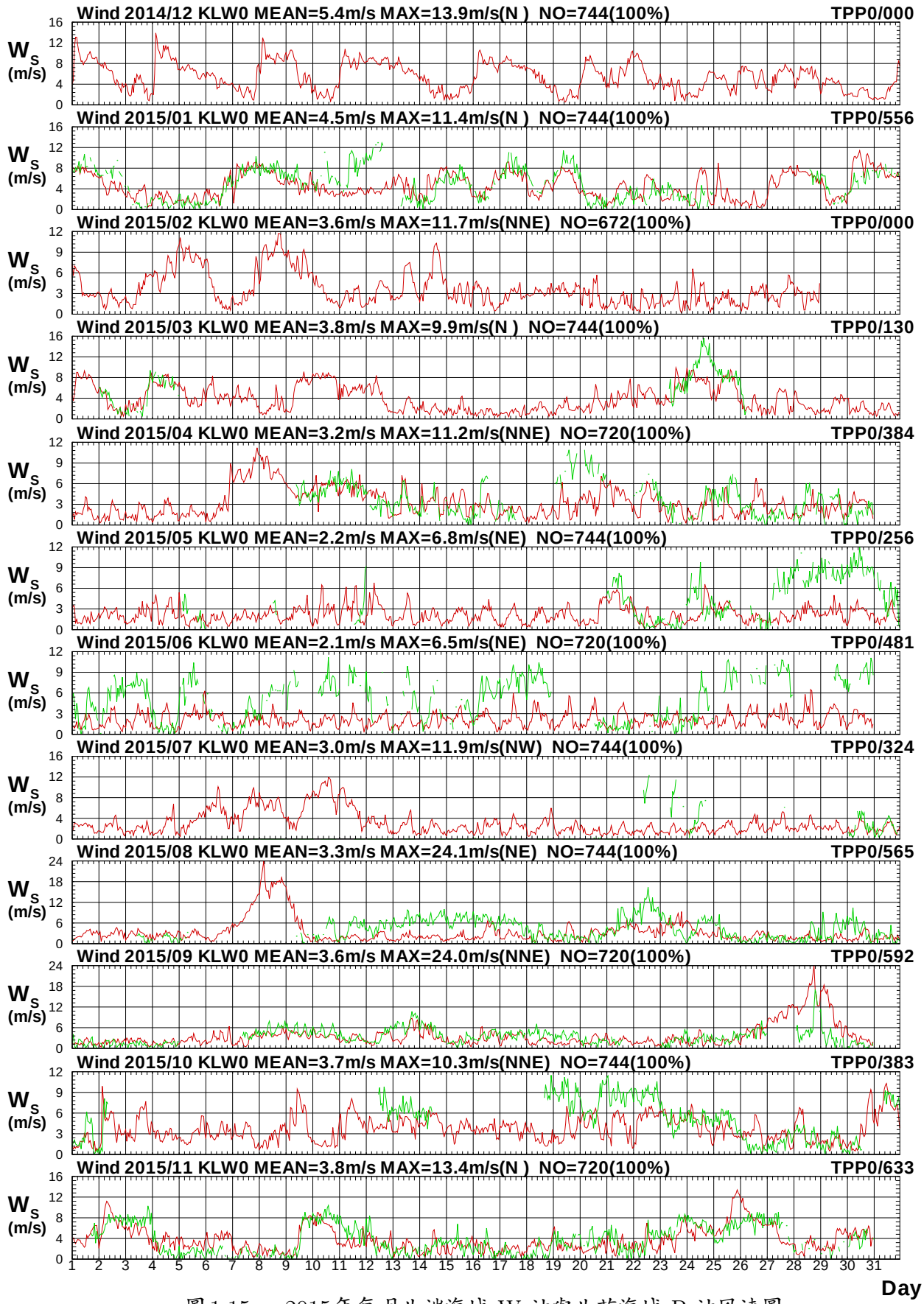

圖1.15a　2015年每月北端海域 W 站與北苗海域 P 站風速圖

W14CKLW0.1HA W14CTPP0.1H0 W151KLW0.1HA W151TPP0.1H0 W152KLW0.1HA W152TPP0.1H0
W153KLW0.1HA W153TPP0.1H0 W154KLW0.1HA W154TPP0.1H0 W155KLW0.1HA W155TPP0.1H0

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Wind Direction in North Seas of KLW0 at 2015

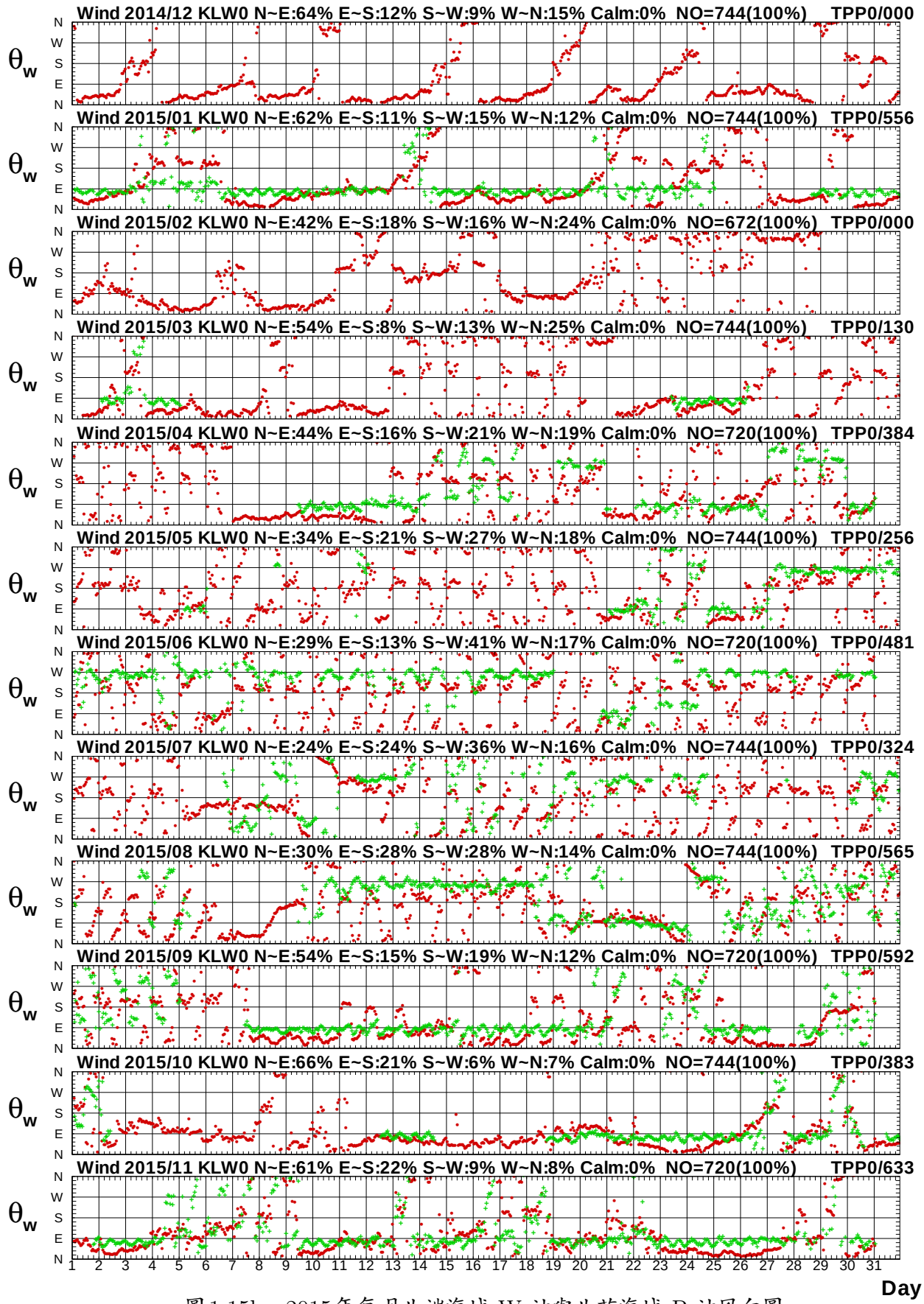

圖1.15b　2015年每月北端海域 W 站與北苗海域 P 站風向圖

W14CKLW0.1HA W14CTPP0.1H0 W151KLW0.1HA W151TPP0.1H0 W152KLW0.1HA W152TPP0.1H0
W153KLW0.1HA W153TPP0.1H0 W154KLW0.1HA W154TPP0.1H0 W155KLW0.1HA W155TPP0.1H0

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Wind Speed in North Seas of KLW0 at 2015

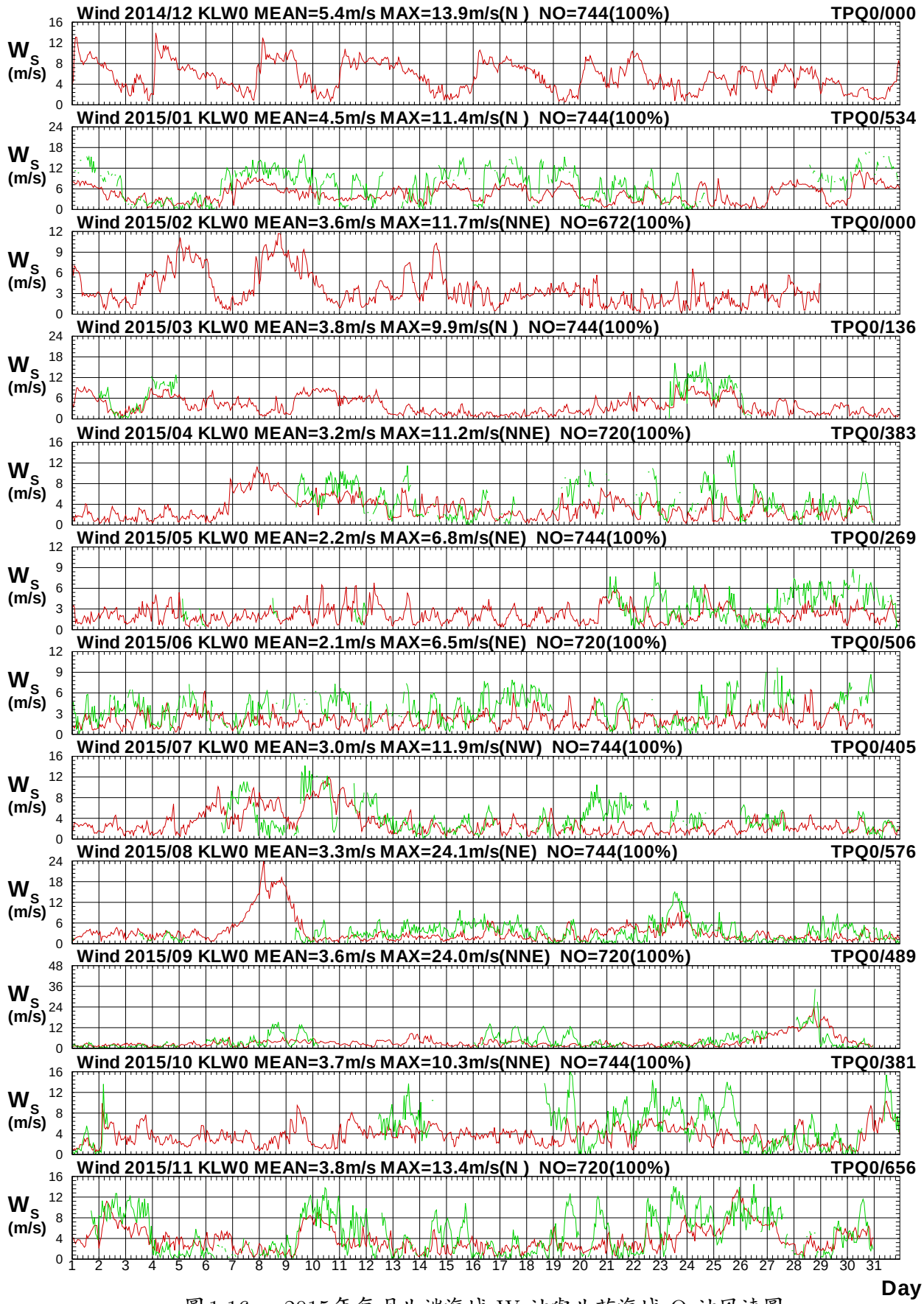

圖1.16a　2015年每月北端海域 W 站與北苗海域 Q 站風速圖

W14CKLW0.1HA W14CTPQ0.1H0 W151KLW0.1HA W151TPQ0.1H0 W152KLW0.1HA W152TPQ0.1H0
W153KLW0.1HA W153TPQ0.1H0 W154KLW0.1HA W154TPQ0.1H0 W155KLW0.1HA W155TPQ0.1H0

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Wind Direction in North Seas of KLW0 at 2015

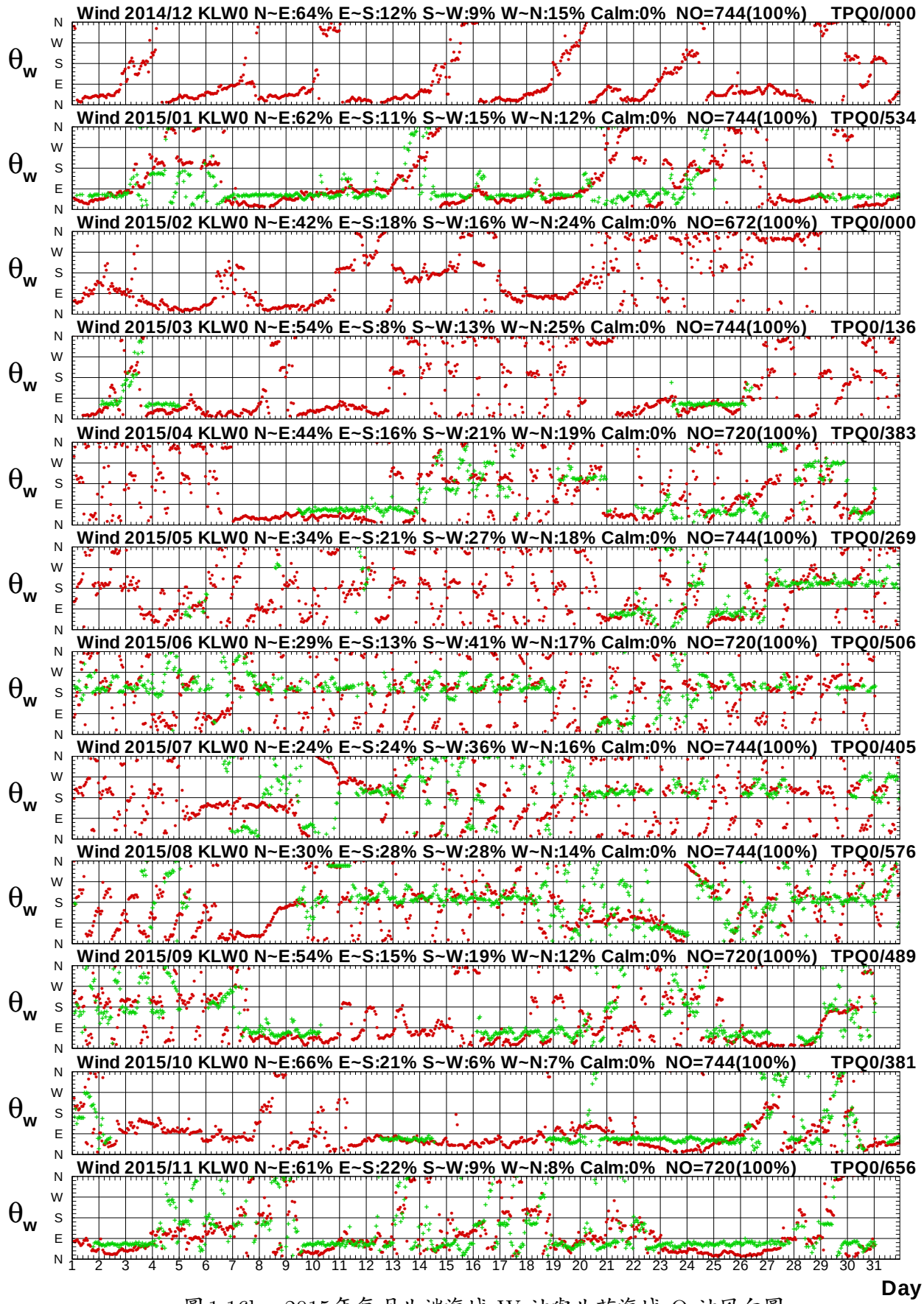

圖1.16b　2015年每月北端海域 W 站與北苗海域 Q 站風向圖

W14CKLW0.1HA W14CTPQ0.1H0 W151KLW0.1HA W151TPQ0.1H0 W152KLW0.1HA W152TPQ0.1H0
W153KLW0.1HA W153TPQ0.1H0 W154KLW0.1HA W154TPQ0.1H0 W155KLW0.1HA W155TPQ0.1H0

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Wind Speed in North Seas of KLW0 at 2015

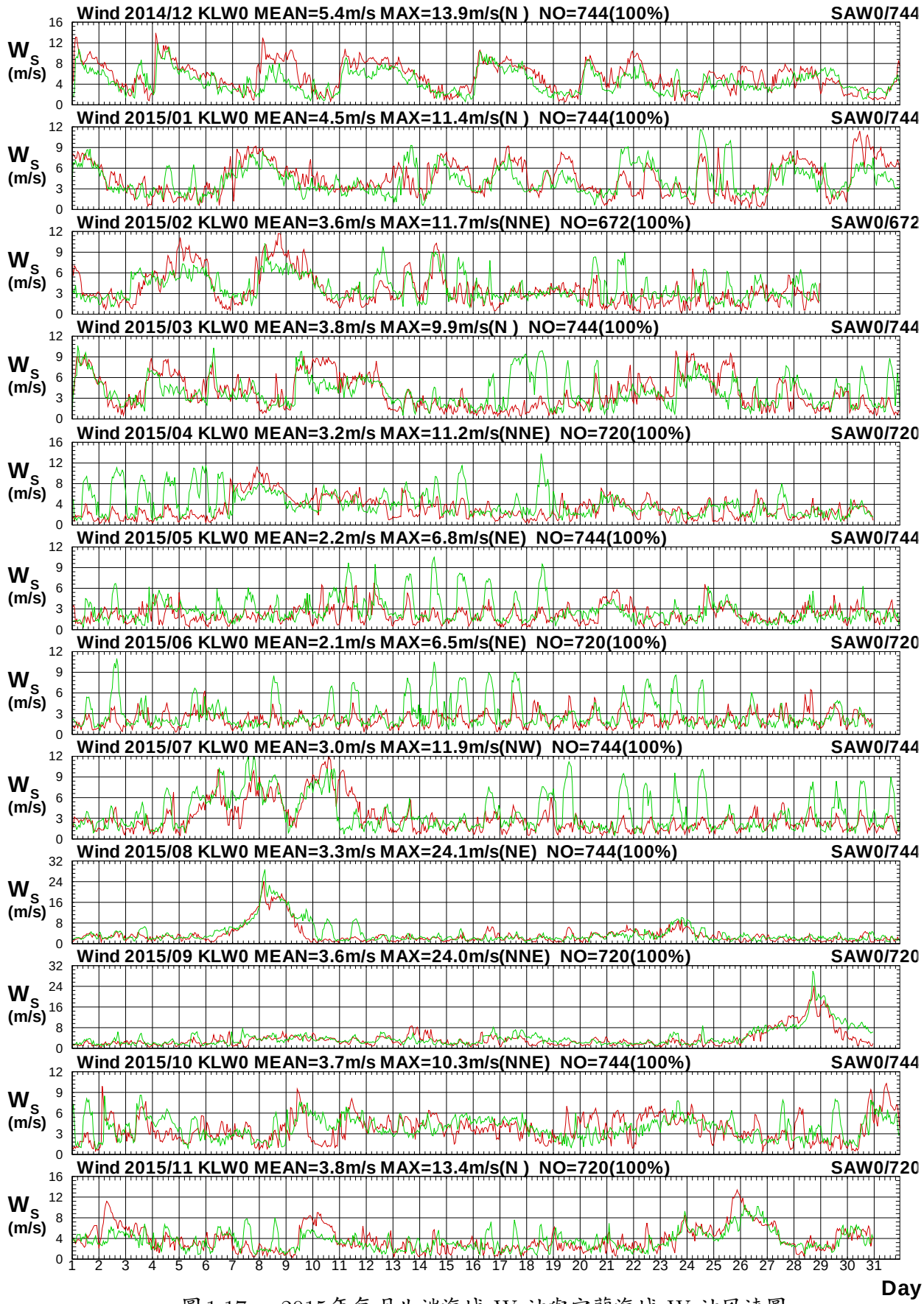

圖 1.17a　2015年每月北端海域 W 站與宜蘭海域 W 站風速圖

W14CKLW0.1HA W14CSAW0.1H0 W151KLW0.1HA W151SAW0.1H0 W152KLW0.1HA W152SAW0.1H0
W153KLW0.1HA W153SAW0.1H0 W154KLW0.1HA W154SAW0.1H0 W155KLW0.1HA W155SAW0.1H0

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Wind Direction in North Seas of KLW0 at 2015

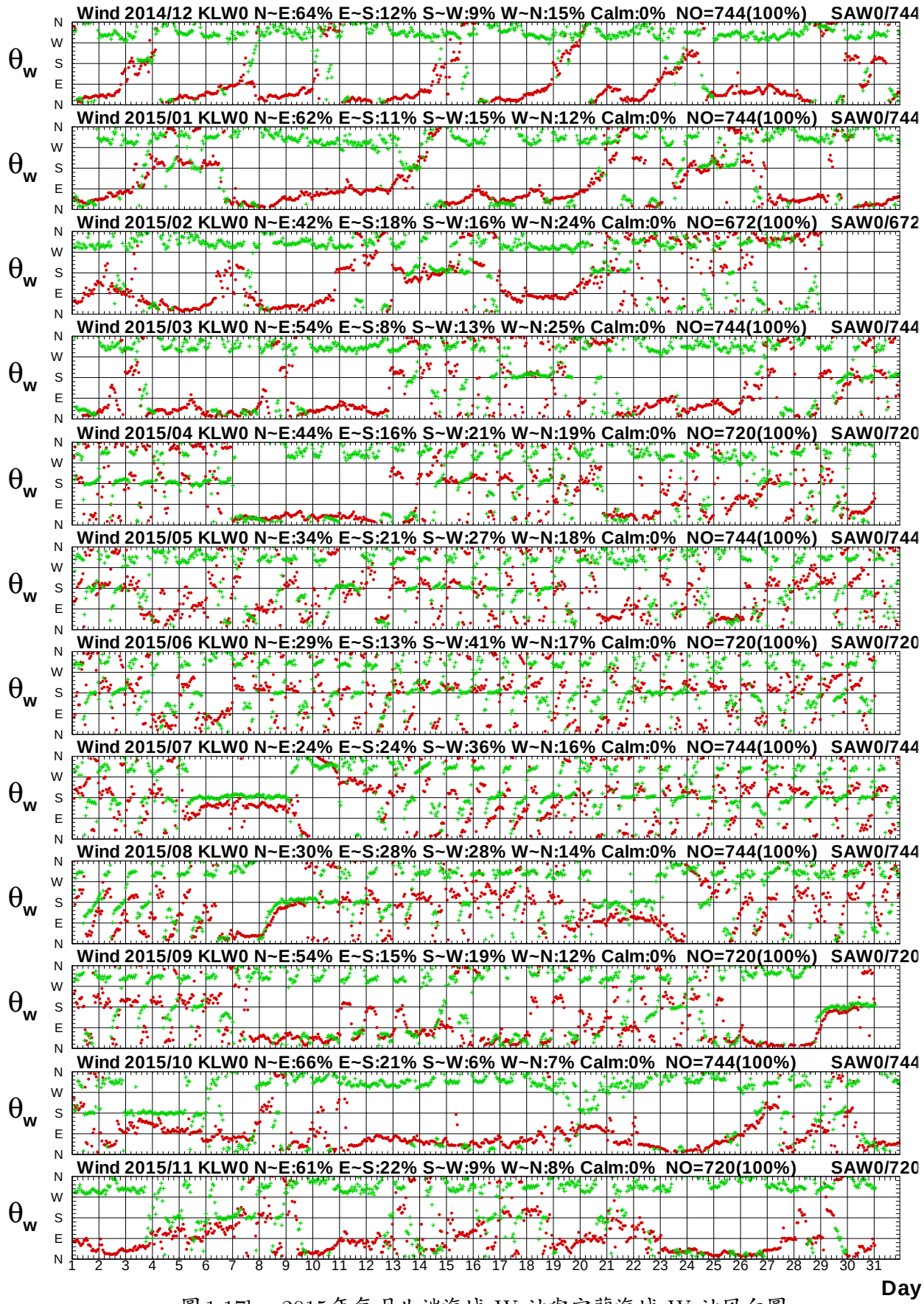

圖 1.17b　2015年每月北端海域 W 站與宜蘭海域 W 站風向圖

W14CKLW0.1HA W14CSAW0.1H0 W151KLW0.1HA W151SAW0.1H0 W152KLW0.1HA W152SAW0.1H0
W153KLW0.1HA W153SAW0.1H0 W154KLW0.1HA W154SAW0.1H0 W155KLW0.1HA W155SAW0.1H0

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Wind Speed in North Seas of KLW0 at 2015

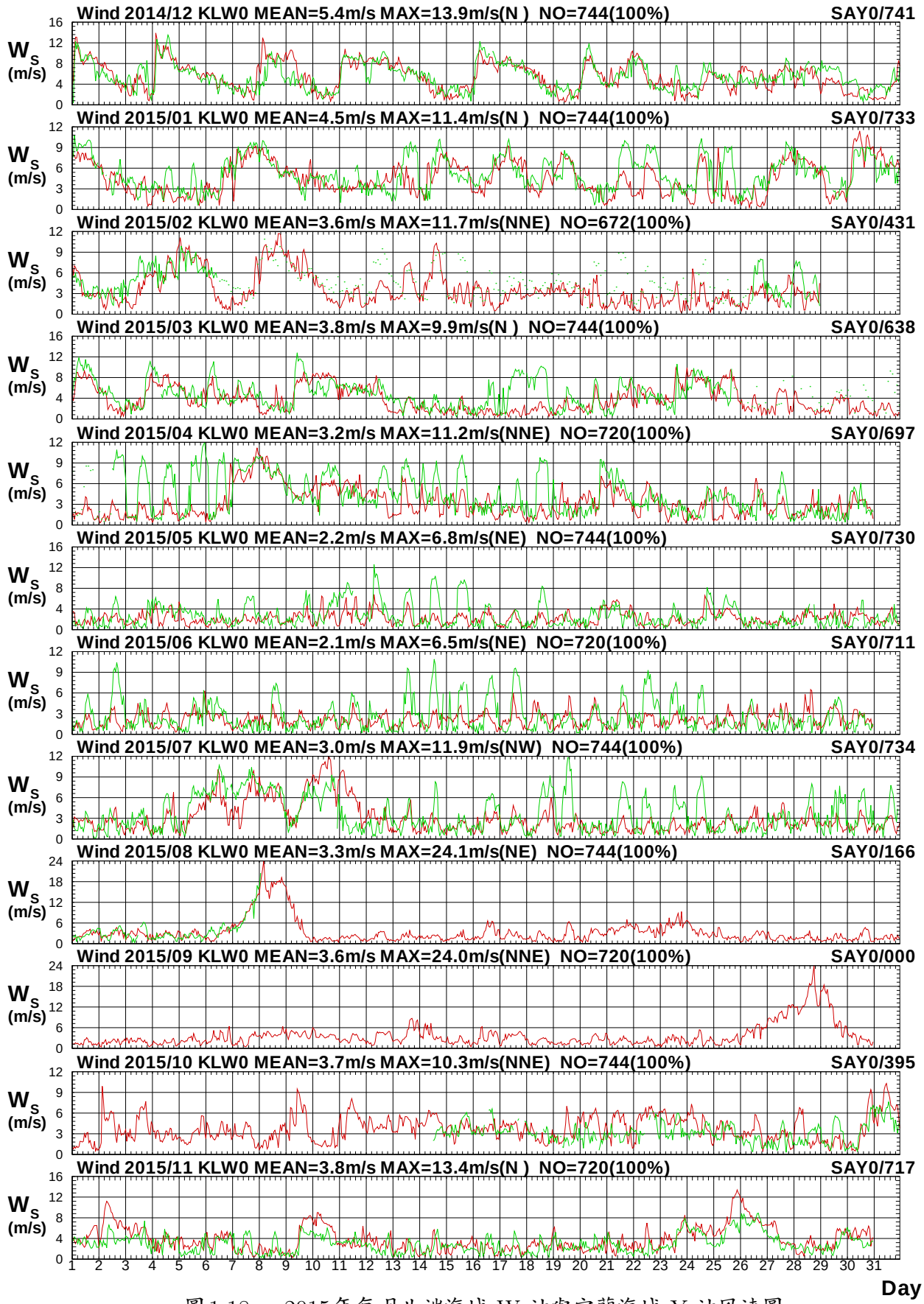

圖1.18a　2015年每月北端海域 W 站與宜蘭海域 Y 站風速圖

W14CKLW0.1HA W14CSAY0.1H0 W151KLW0.1HA W151SAY0.1H0 W152KLW0.1HA W152SAY0.1H0
W153KLW0.1HA W153SAY0.1H0 W154KLW0.1HA W154SAY0.1H0 W155KLW0.1HA W155SAY0.1H0

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Wind Direction in North Seas of KLW0 at 2015

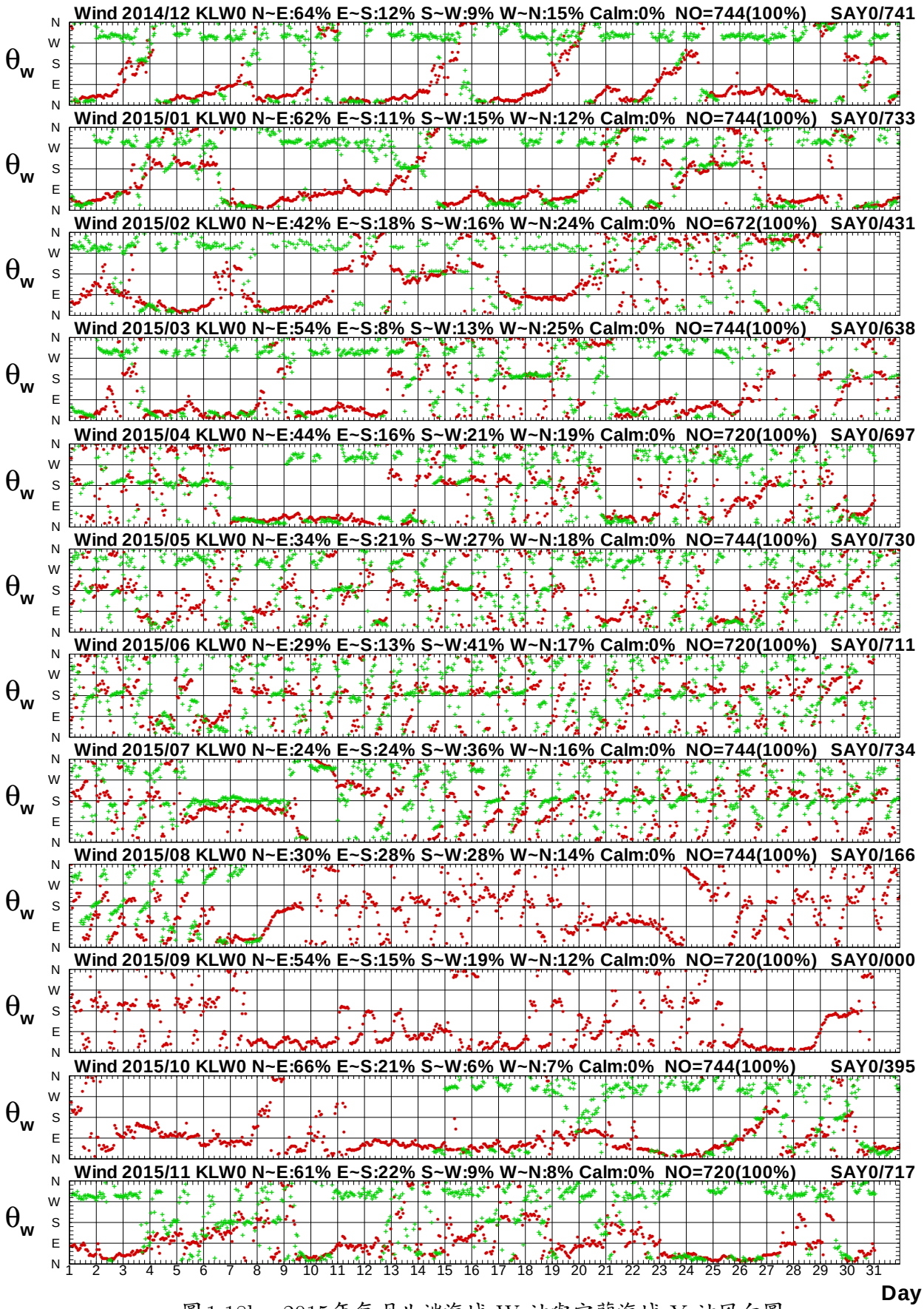

圖1.18b　2015年每月北端海域 W 站與宜蘭海域 Y 站風向圖

W14CKLW0.1HA W14CSAY0.1H0 W151KLW0.1HA W151SAY0.1H0 W152KLW0.1HA W152SAY0.1H0
W153KLW0.1HA W153SAY0.1H0 W154KLW0.1HA W154SAY0.1H0 W155KLW0.1HA W155SAY0.1H0

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Wind Speed in North Seas of KLW0 at 2015

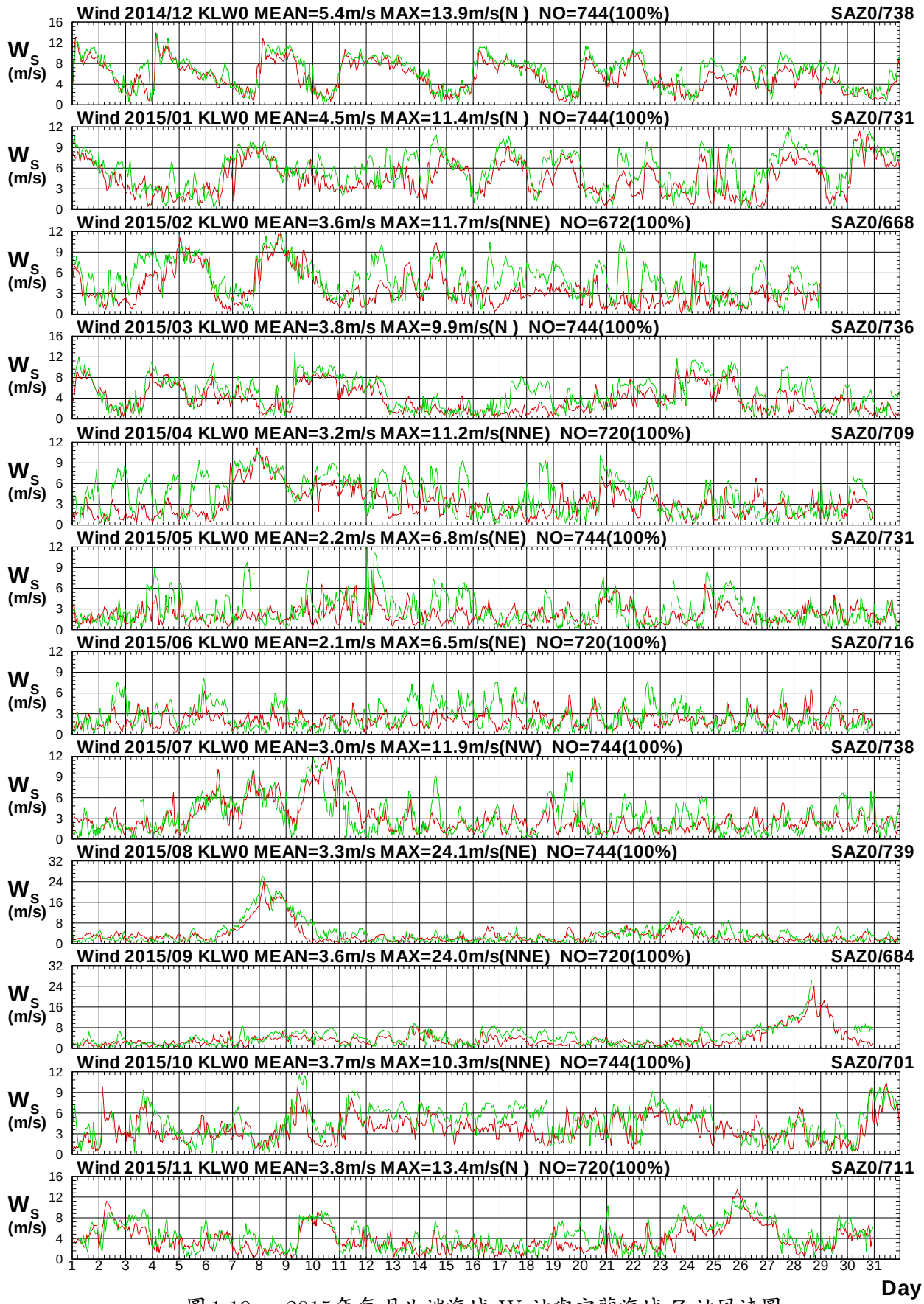

圖1.19a　2015年每月北端海域 W 站與宜蘭海域 Z 站風速圖

W14CKLW0.1HA W14CSAZ0.1H0 W151KLW0.1HA W151SAZ0.1H0 W152KLW0.1HA W152SAZ0.1H0
W153KLW0.1HA W153SAZ0.1H0 W154KLW0.1HA W154SAZ0.1H0 W155KLW0.1HA W155SAZ0.1H0

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Wind Direction in North Seas of KLW0 at 2015

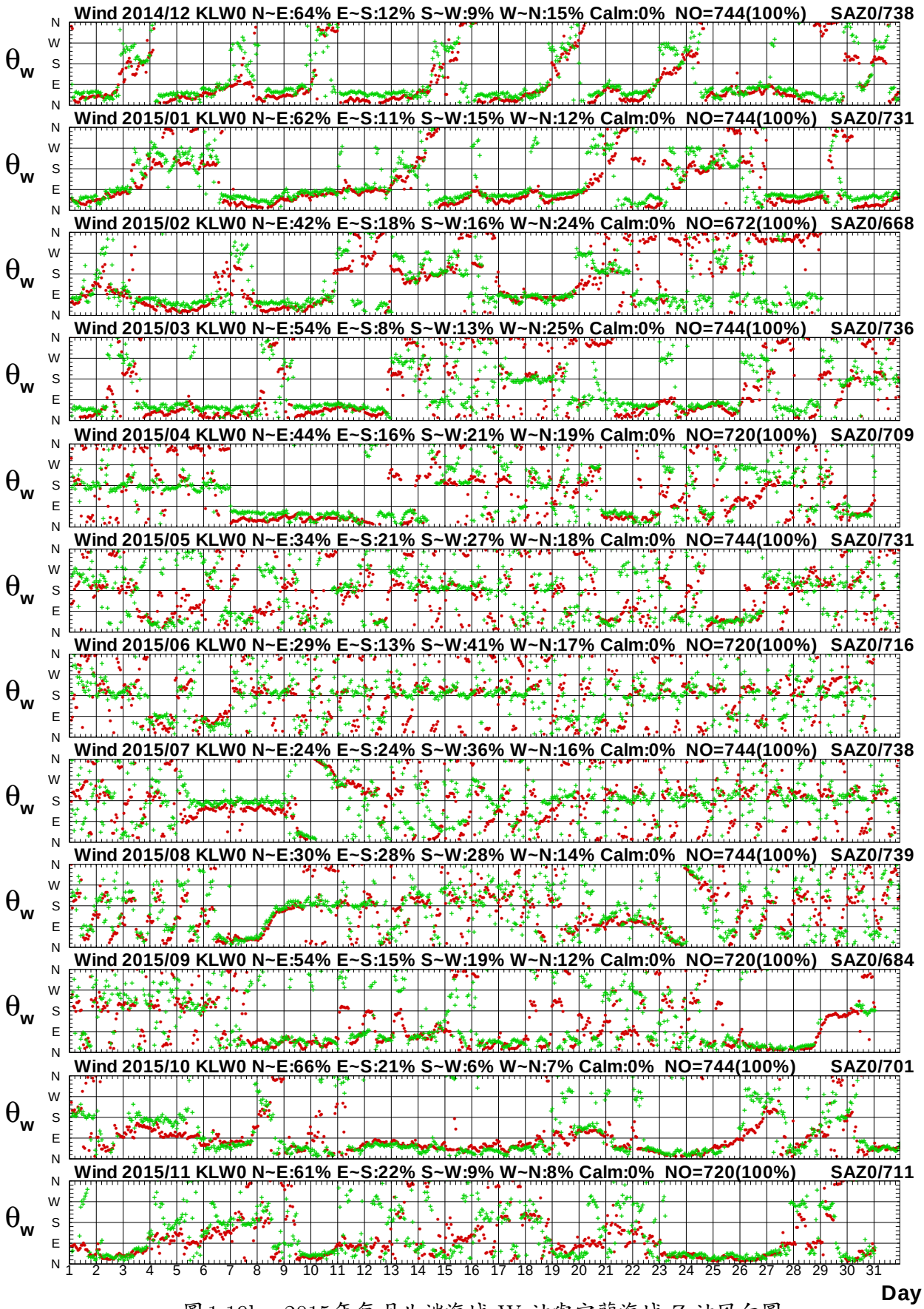

圖1.19b　2015年每月北端海域 W 站與宜蘭海域 Z 站風向圖

W14CKLW0.1HA W14CSAZ0.1H0 W151KLW0.1HA W151SAZ0.1H0 W152KLW0.1HA W152SAZ0.1H0
W153KLW0.1HA W153SAZ0.1H0 W154KLW0.1HA W154SAZ0.1H0 W155KLW0.1HA W155SAZ0.1H0

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Wind Speed in North Seas of KLW0 at 2015

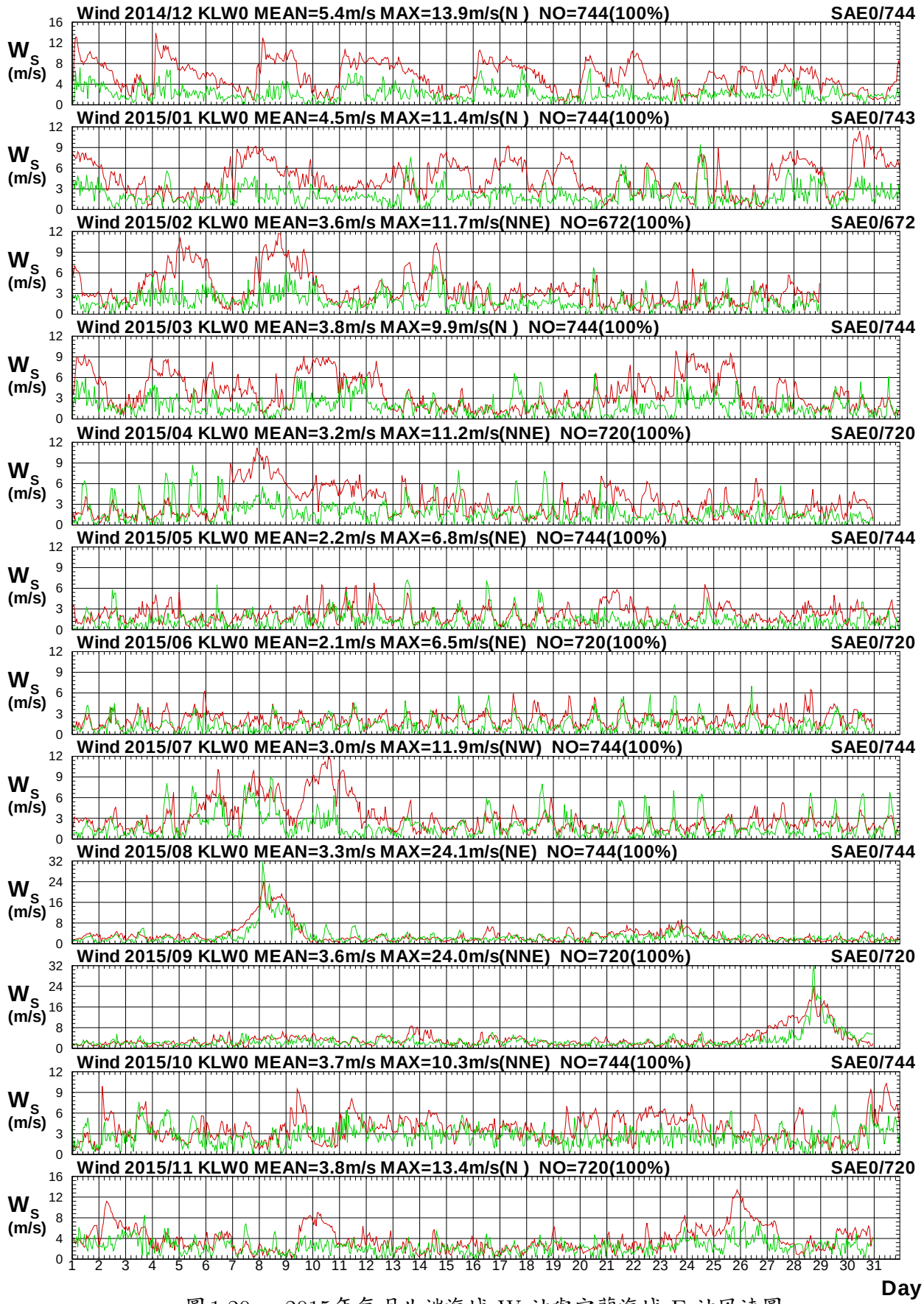

圖1.20a　2015年每月北端海域 W 站與宜蘭海域 E 站風速圖

W14CKLW0.1HA W14CSAE0.1H0 W151KLW0.1HA W151SAE0.1H0 W152KLW0.1HA W152SAE0.1H0
W153KLW0.1HA W153SAE0.1H0 W154KLW0.1HA W154SAE0.1H0 W155KLW0.1HA W155SAE0.1H0

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Wind Direction in North Seas of KLW0 at 2015

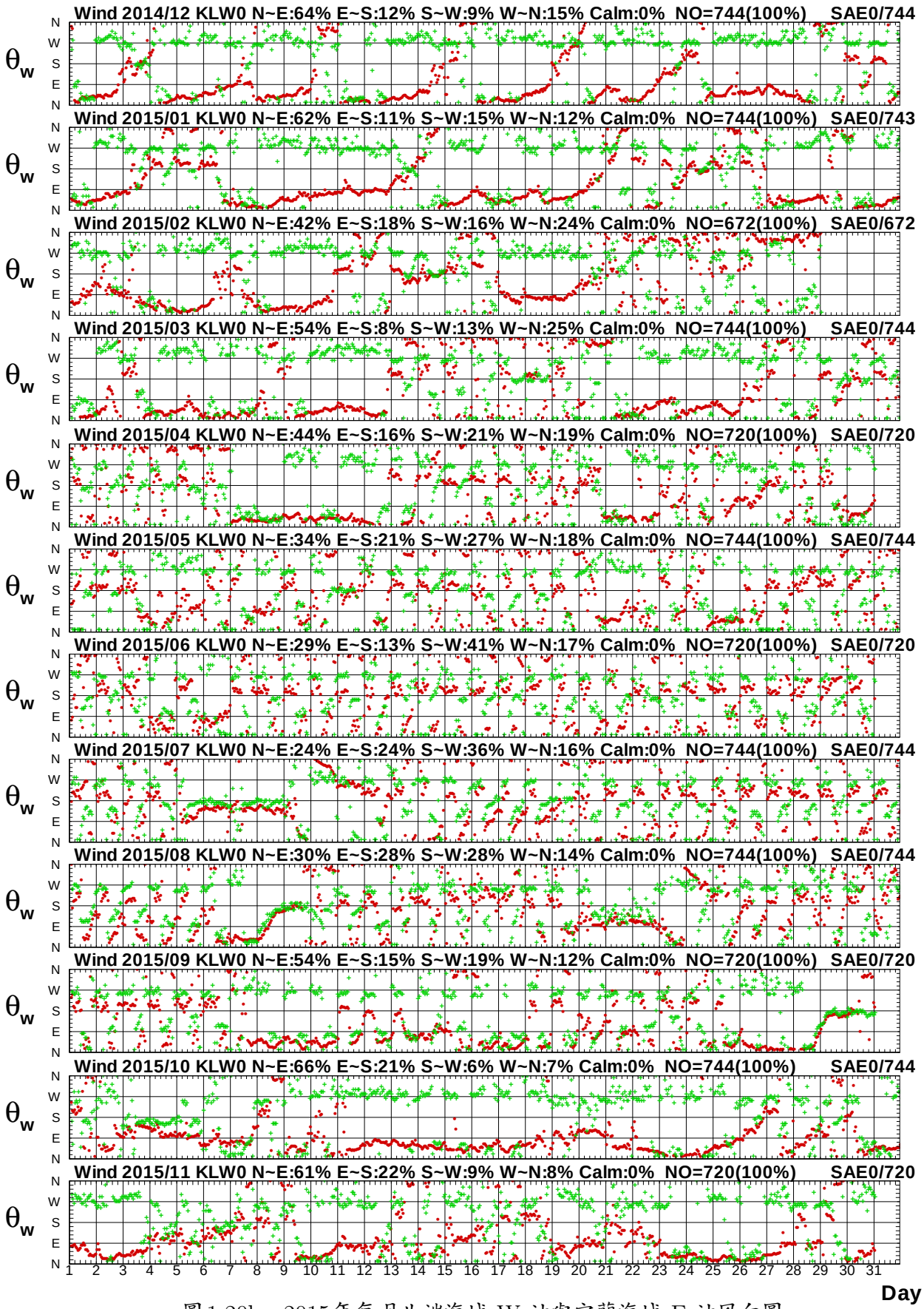

圖1.20b　2015年每月北端海域 W 站與宜蘭海域 E 站風向圖

W14CKLW0.1HA W14CSAE0.1H0 W151KLW0.1HA W151SAE0.1H0 W152KLW0.1HA W152SAE0.1H0
W153KLW0.1HA W153SAE0.1H0 W154KLW0.1HA W154SAE0.1H0 W155KLW0.1HA W155SAE0.1H0

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Wind Speed in North Seas of KLW0 at 2015

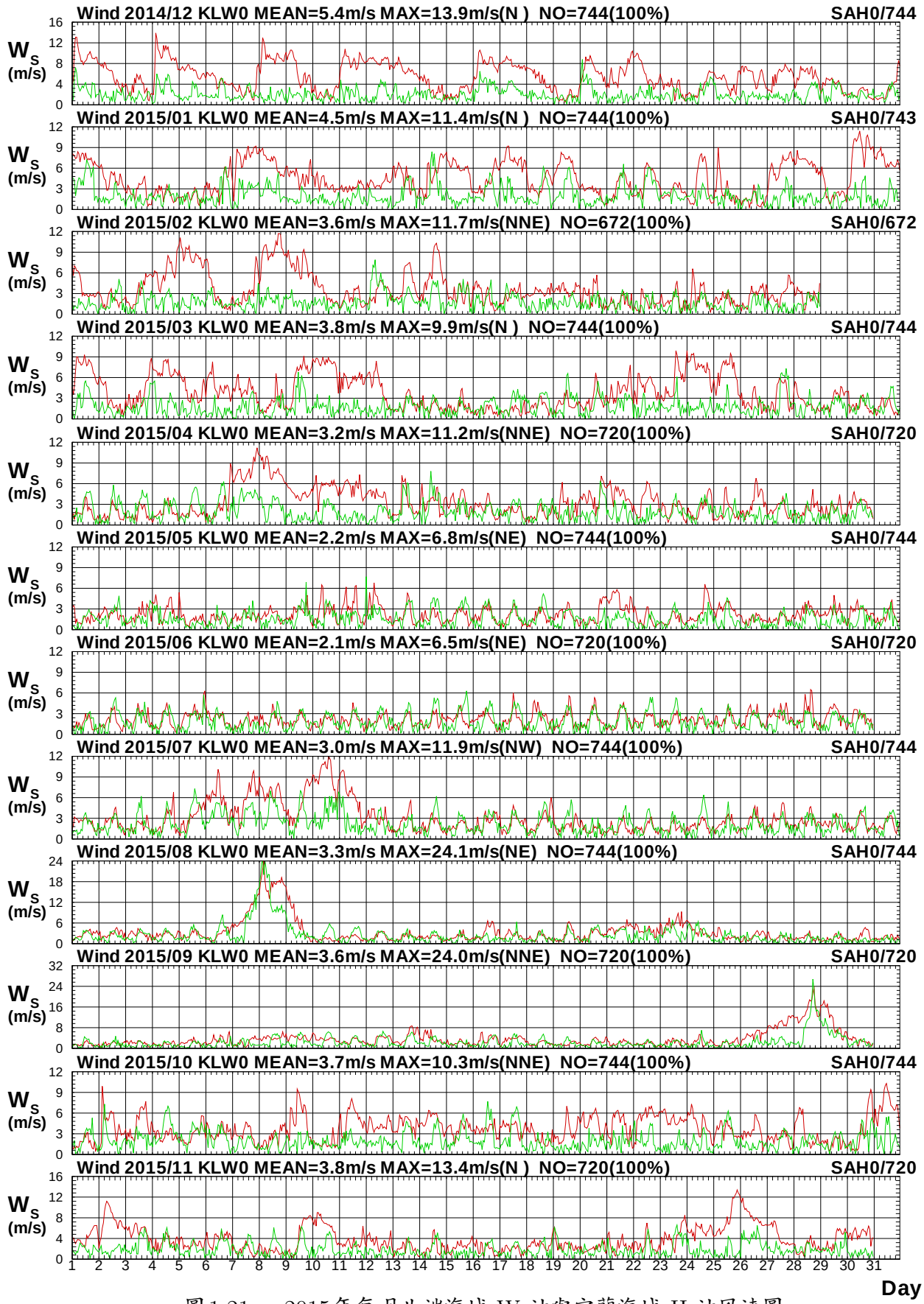

圖1.21a　2015年每月北端海域 W 站與宜蘭海域 H 站風速圖

W14CKLW0.1HA W14CSAH0.1H0 W151KLW0.1HA W151SAH0.1H0 W152KLW0.1HA W152SAH0.1H0
W153KLW0.1HA W153SAH0.1H0 W154KLW0.1HA W154SAH0.1H0 W155KLW0.1HA W155SAH0.1H0

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Wind Direction in North Seas of KLW0 at 2015

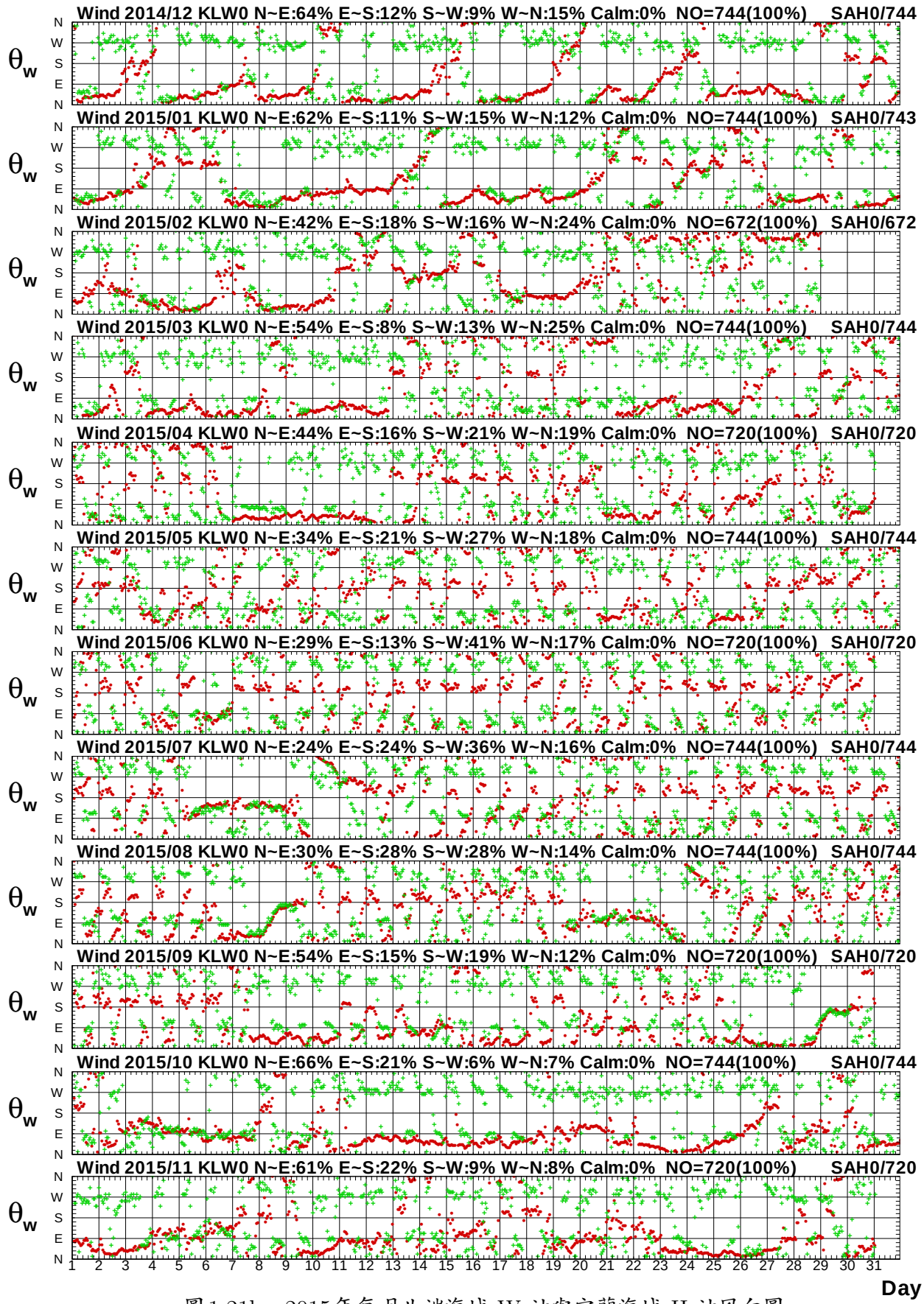

圖1.21b　2015年每月北端海域 W 站與宜蘭海域 H 站風向圖

W14CKLW0.1HA W14CSAH0.1H0 W151KLW0.1HA W151SAH0.1H0 W152KLW0.1HA W152SAH0.1H0
W153KLW0.1HA W153SAH0.1H0 W154KLW0.1HA W154SAH0.1H0 W155KLW0.1HA W155SAH0.1H0

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Wind Speed in North Seas of KLW0 at 2015

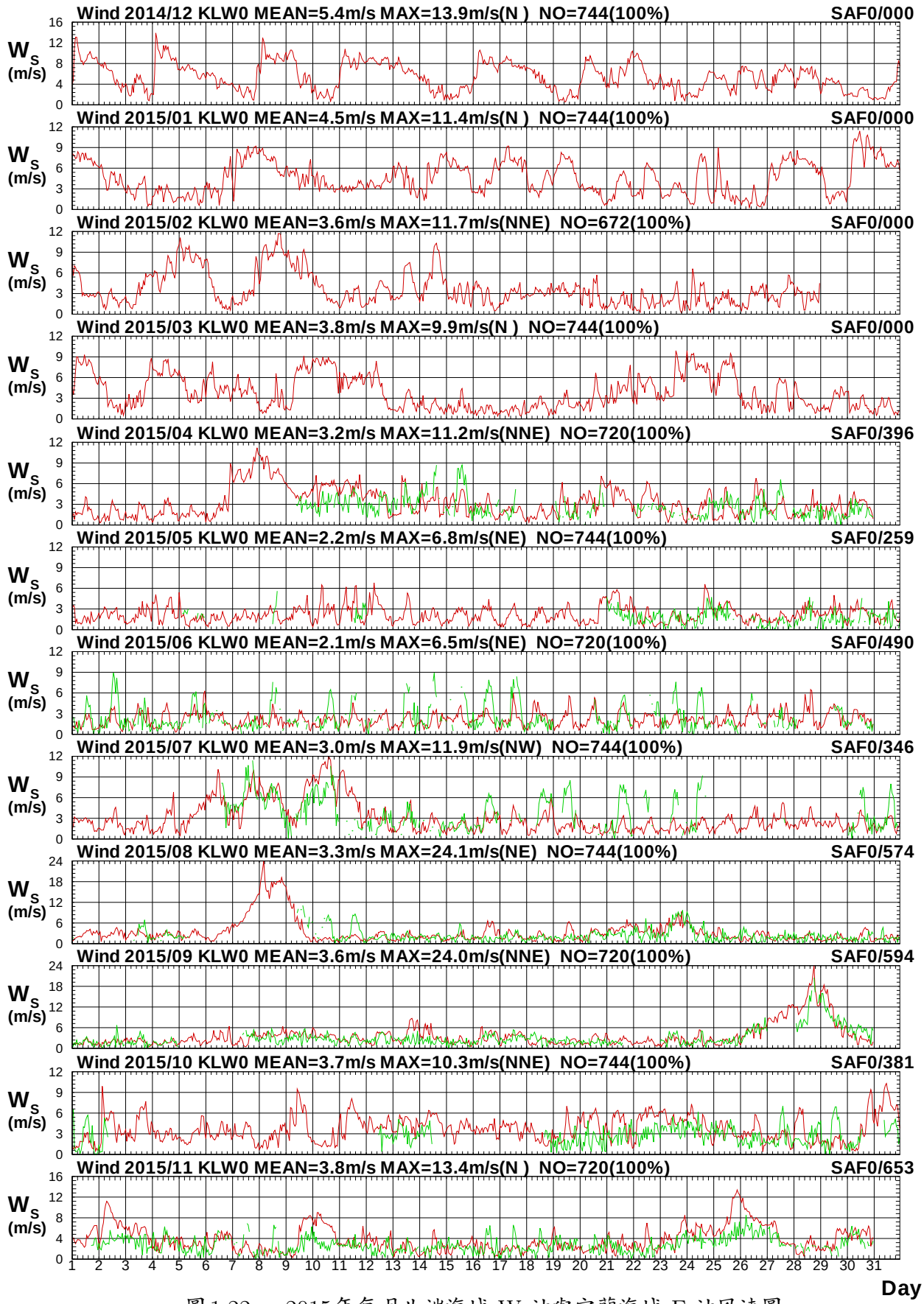

圖1.22a　2015年每月北端海域 W 站與宜蘭海域 F 站風速圖

W14CKLW0.1HA W14CSAF0.1H0 W151KLW0.1HA W151SAF0.1H0 W152KLW0.1HA W152SAF0.1H0
W153KLW0.1HA W153SAF0.1H0 W154KLW0.1HA W154SAF0.1H0 W155KLW0.1HA W155SAF0.1H0

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Wind Direction in North Seas of KLW0 at 2015

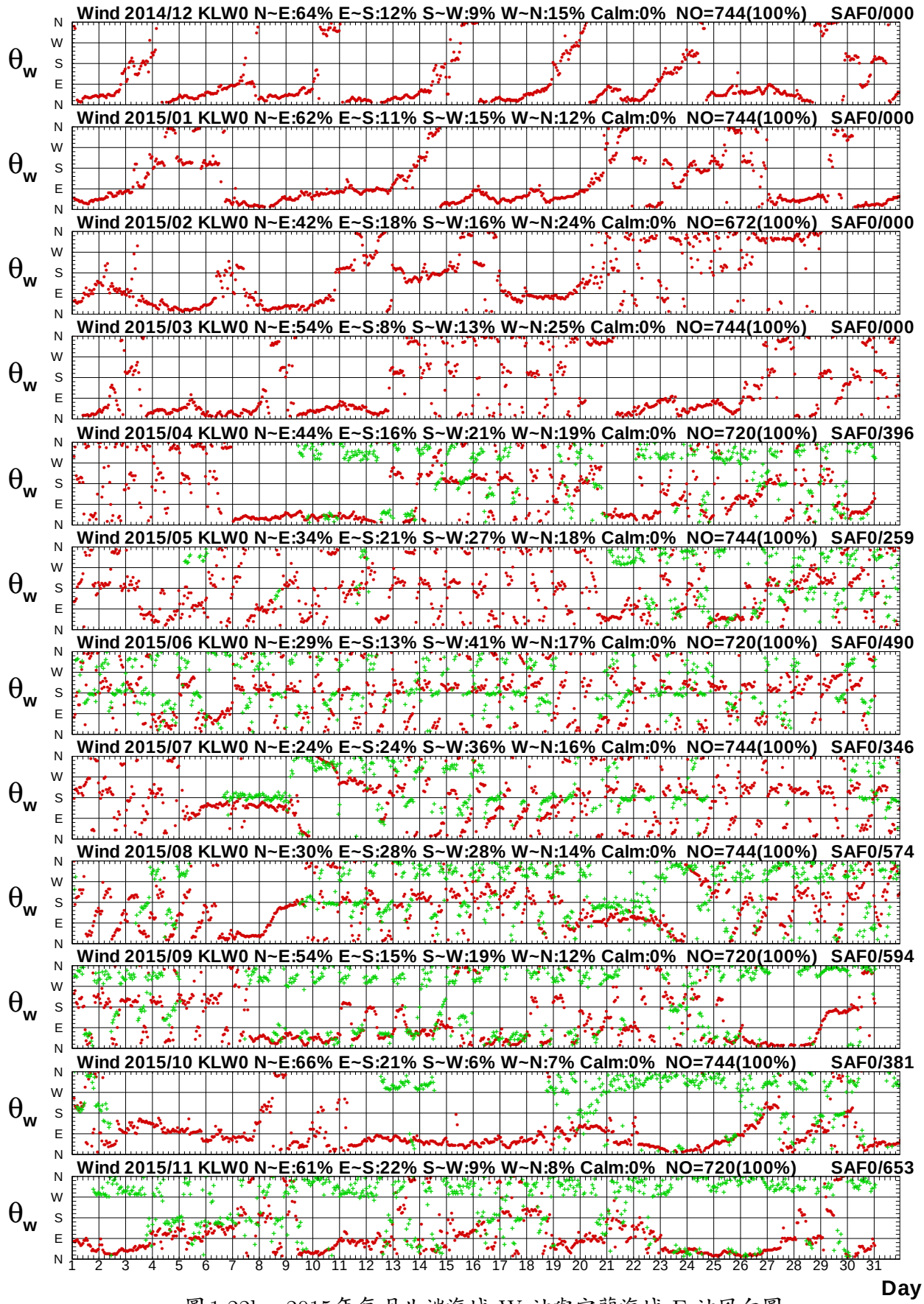

圖1.22b　2015年每月北端海域 W 站與宜蘭海域 F 站風向圖

W14CKLW0.1HA W14CSAF0.1H0 W151KLW0.1HA W151SAF0.1H0 W152KLW0.1HA W152SAF0.1H0
W153KLW0.1HA W153SAF0.1H0 W154KLW0.1HA W154SAF0.1H0 W155KLW0.1HA W155SAF0.1H0

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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

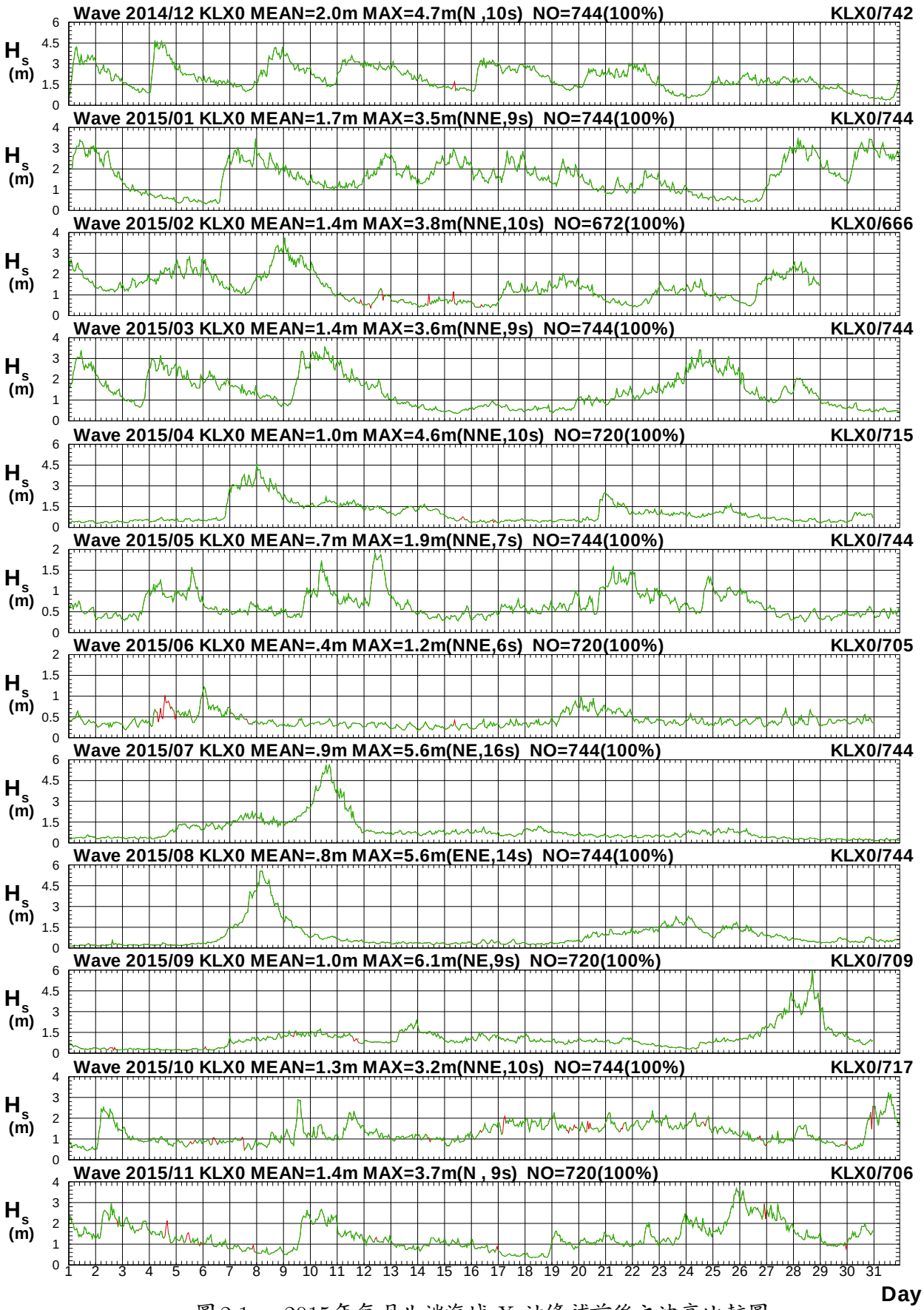

圖2.1a　2015年每月北端海域 X 站修補前後之波高比較圖

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 T_p in North Seas of KLX0 at 2015

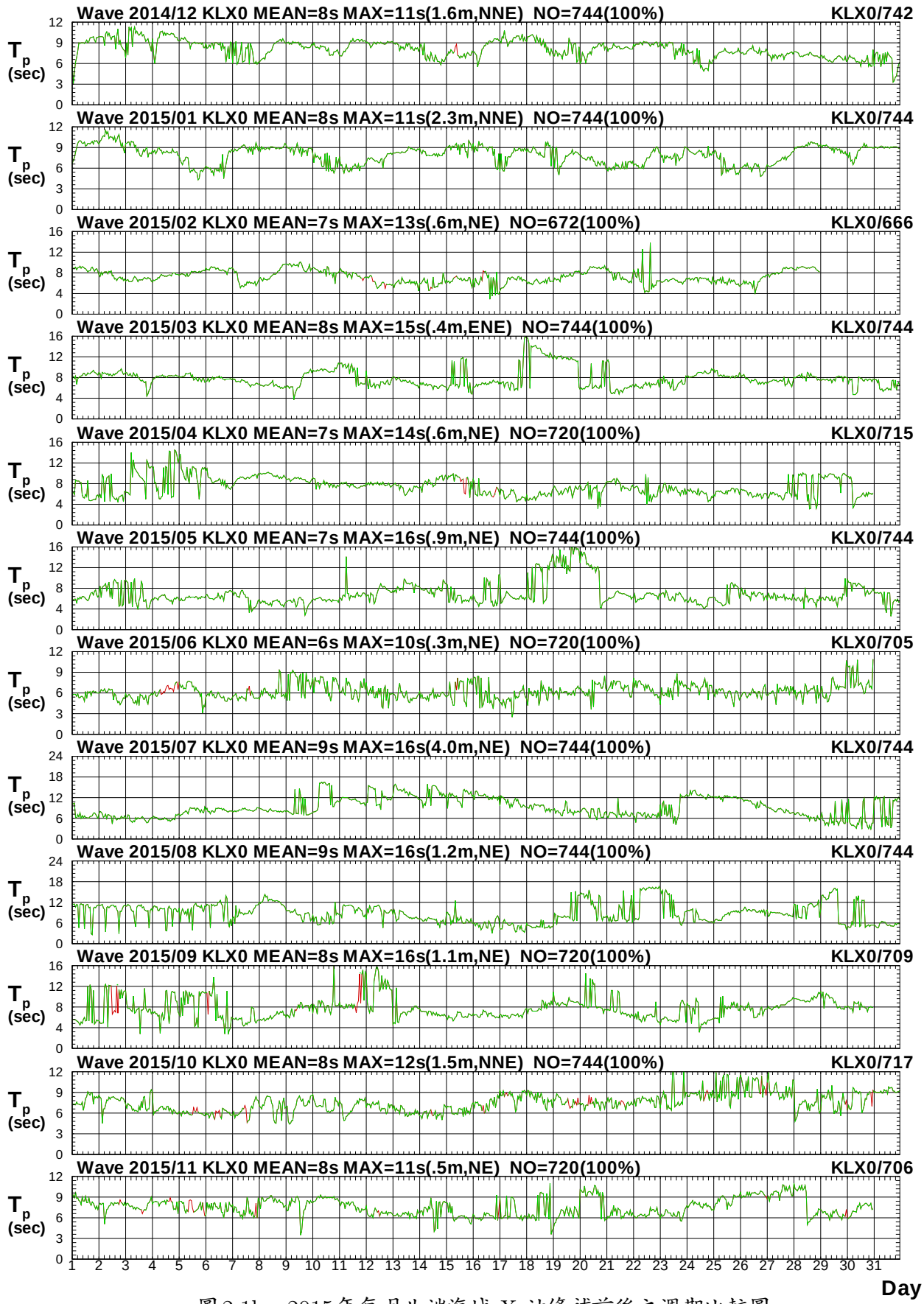

圖2.1b　2015年每月北端海域 X 站修補前後之週期比較圖

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

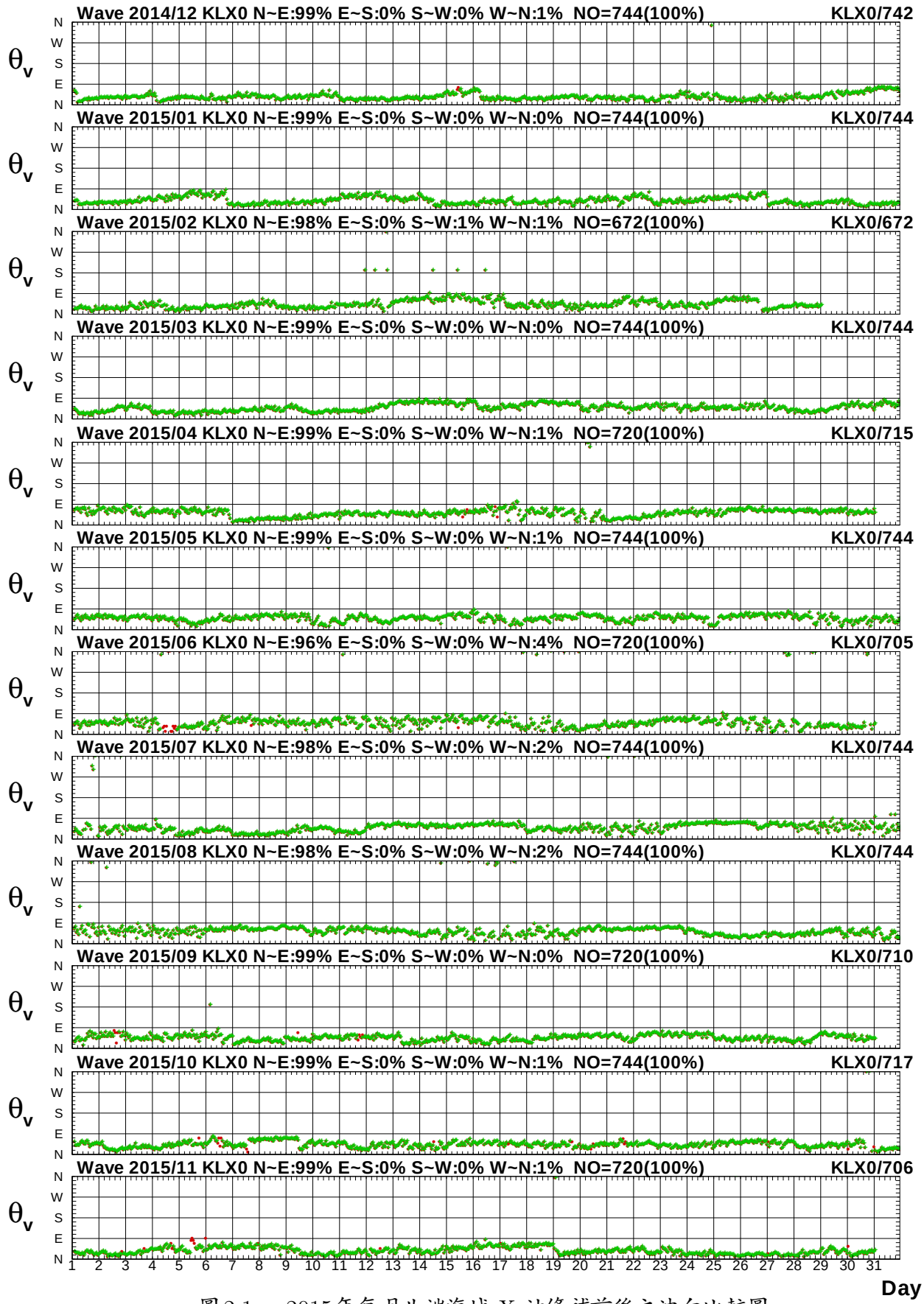

圖2.1c　2015年每月北端海域 X 站修補前後之波向比較圖

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 H_s in North Seas of KLX0 at 2015

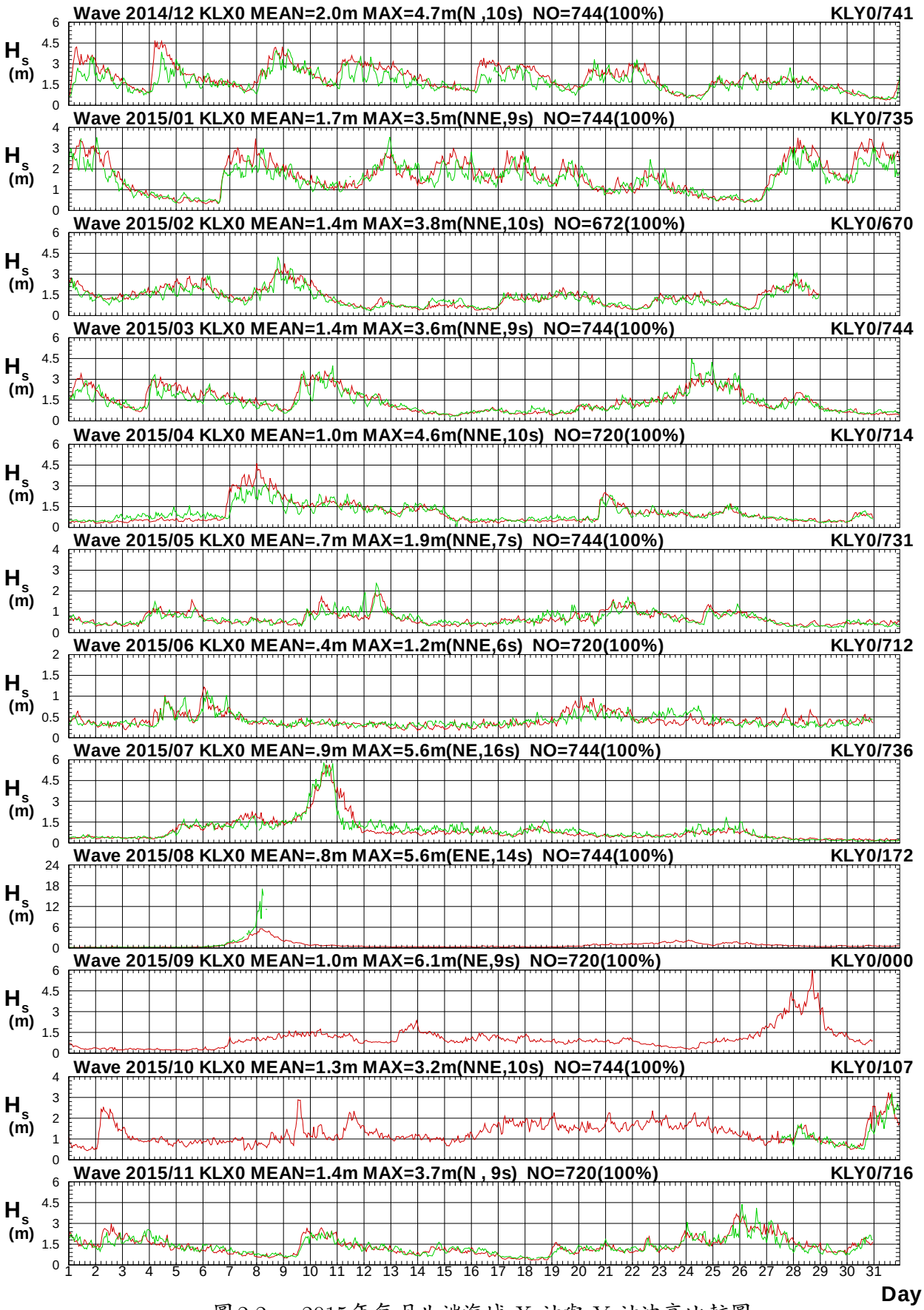

圖2.2a　2015年每月北端海域 X 站與 Y 站波高比較圖

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

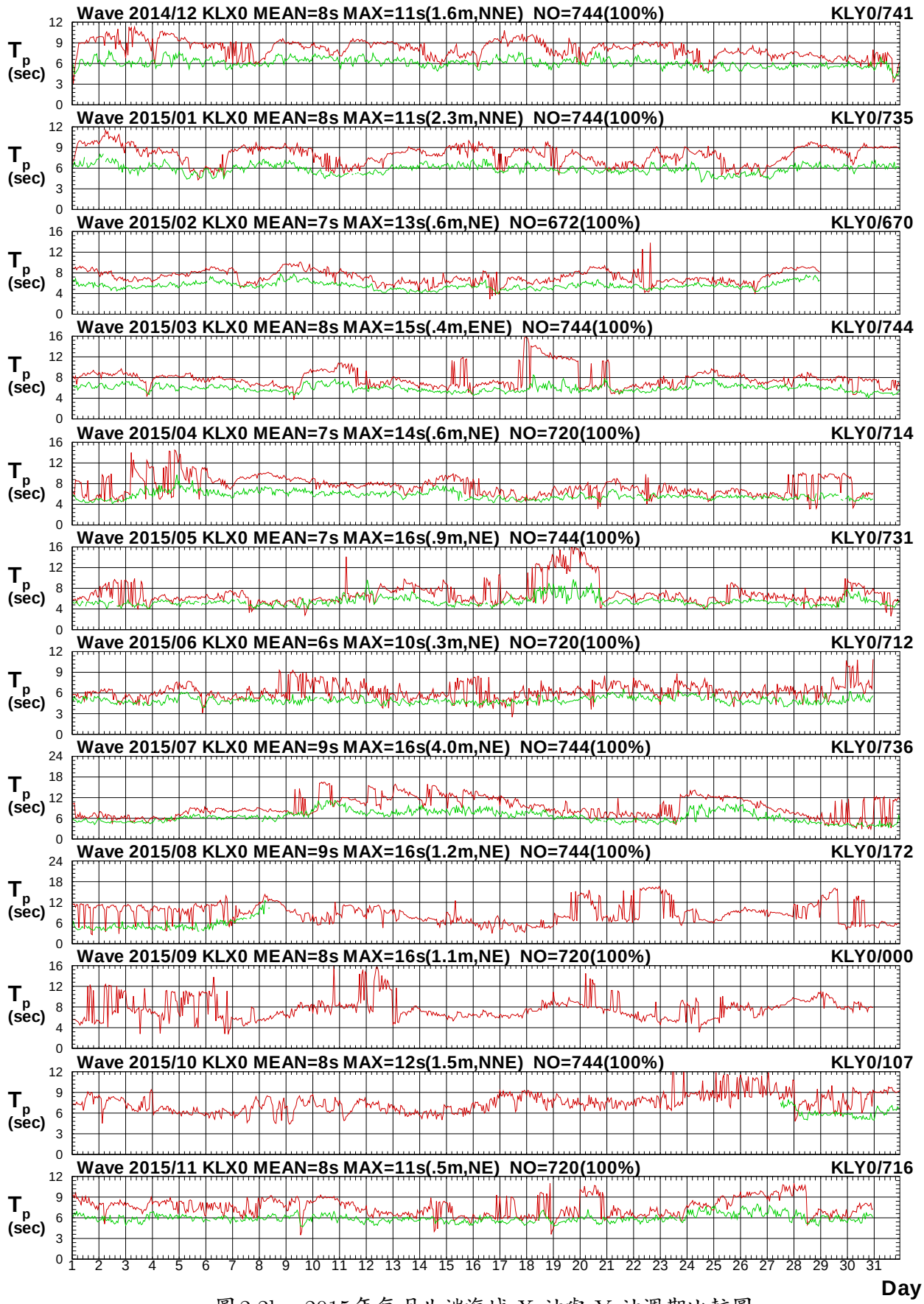

圖2.2b　2015年每月北端海域 X 站與 Y 站週期比較圖

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

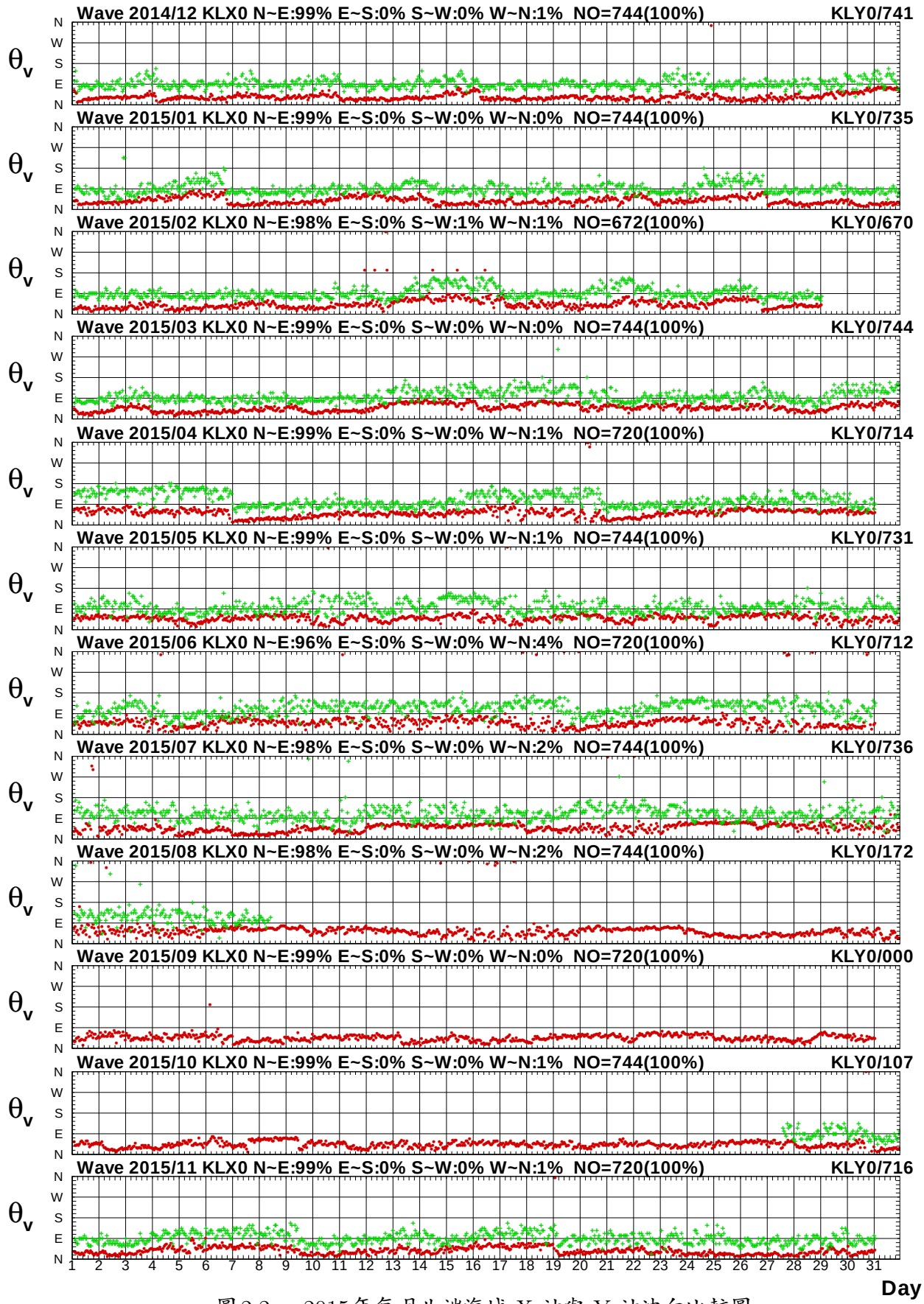

圖2.2c　2015年每月北端海域 X 站與 Y 站波向比較圖

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 H_s in North Seas of KLX0 at 2015

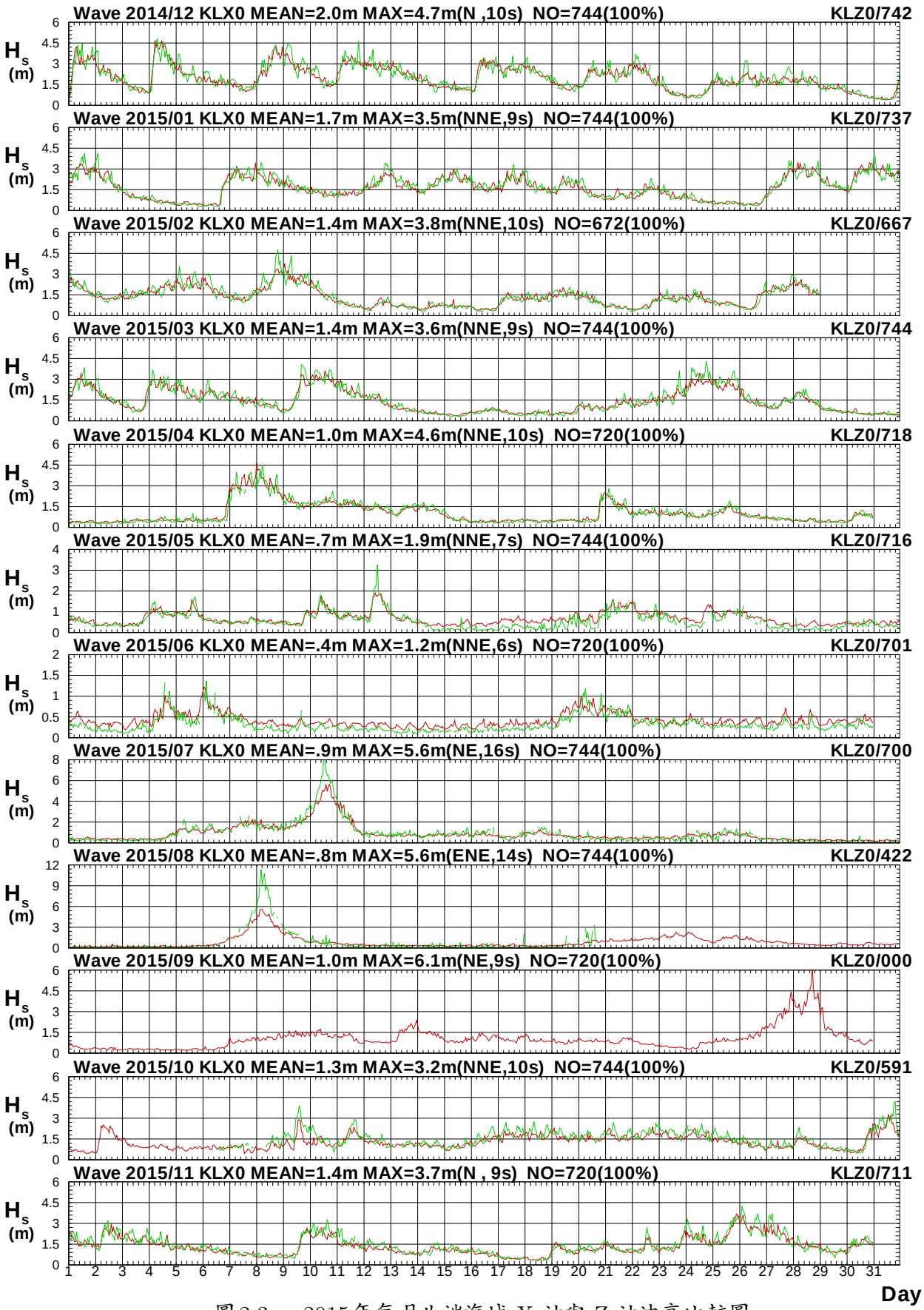

圖 2.3a　2015年每月北端海域 X 站與 Z 站波高比較圖

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

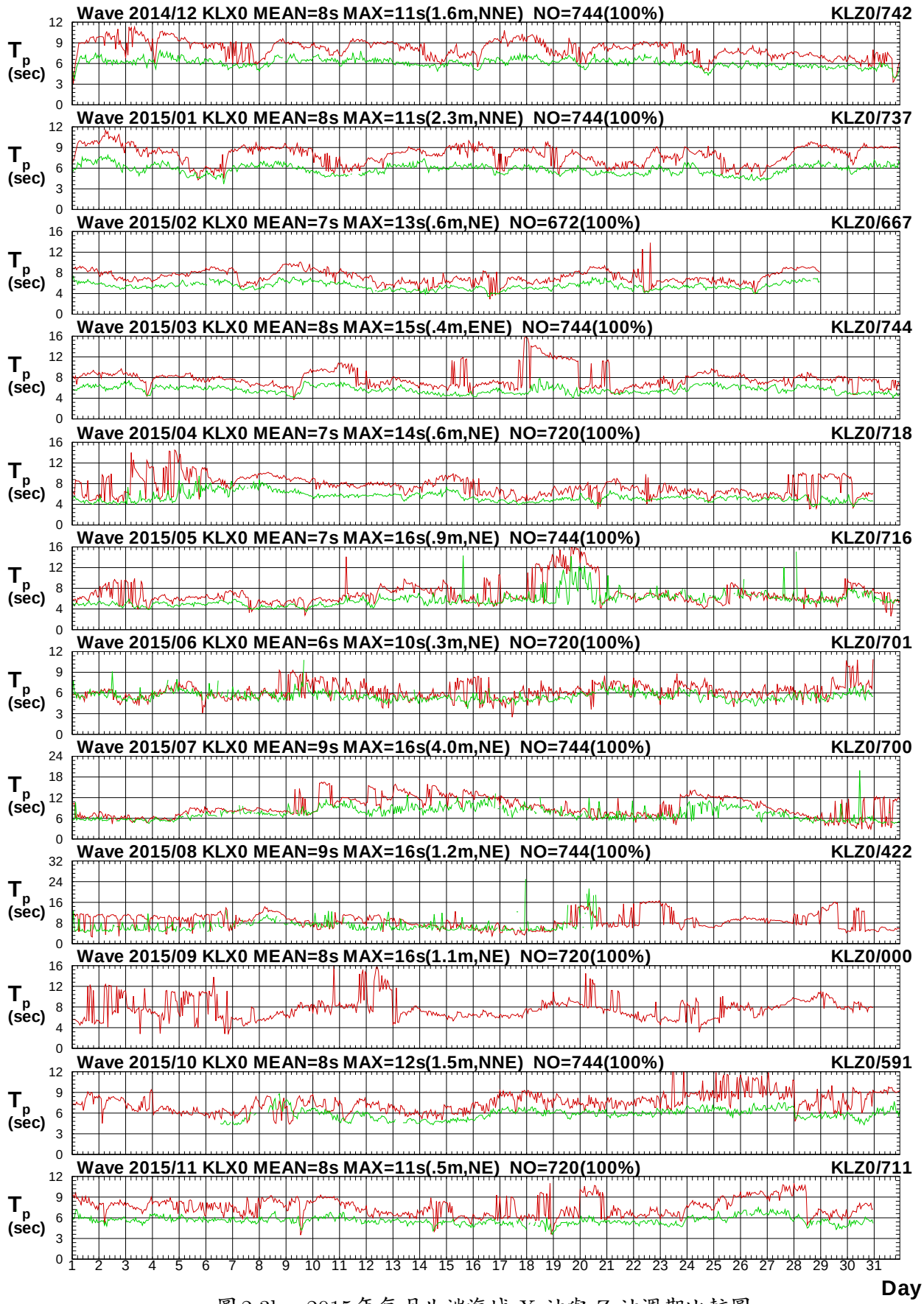

圖2.3b　2015年每月北端海域 X 站與 Z 站週期比較圖

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

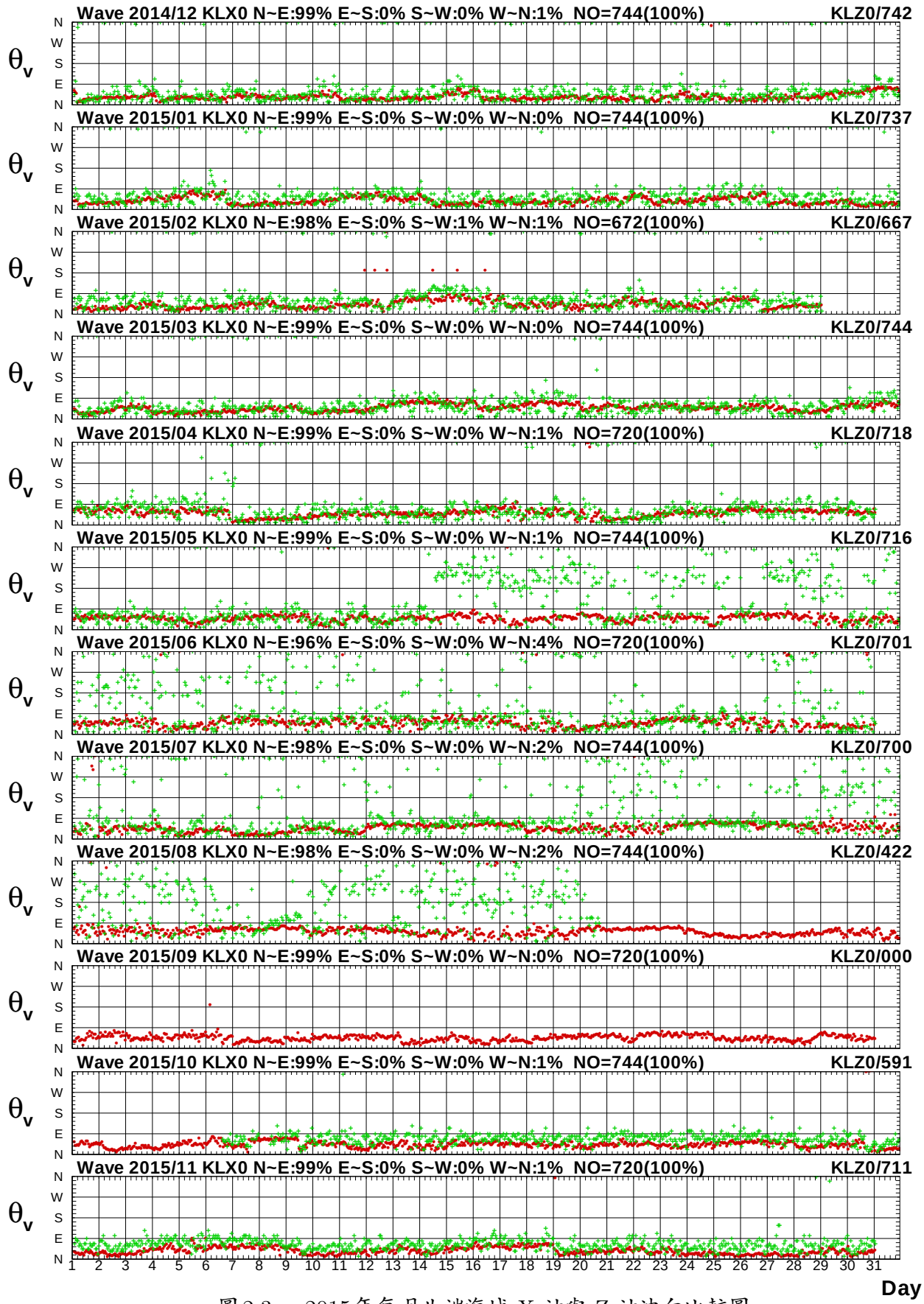

圖 2.3c　2015年每月北端海域 X 站與 Z 站波向比較圖

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

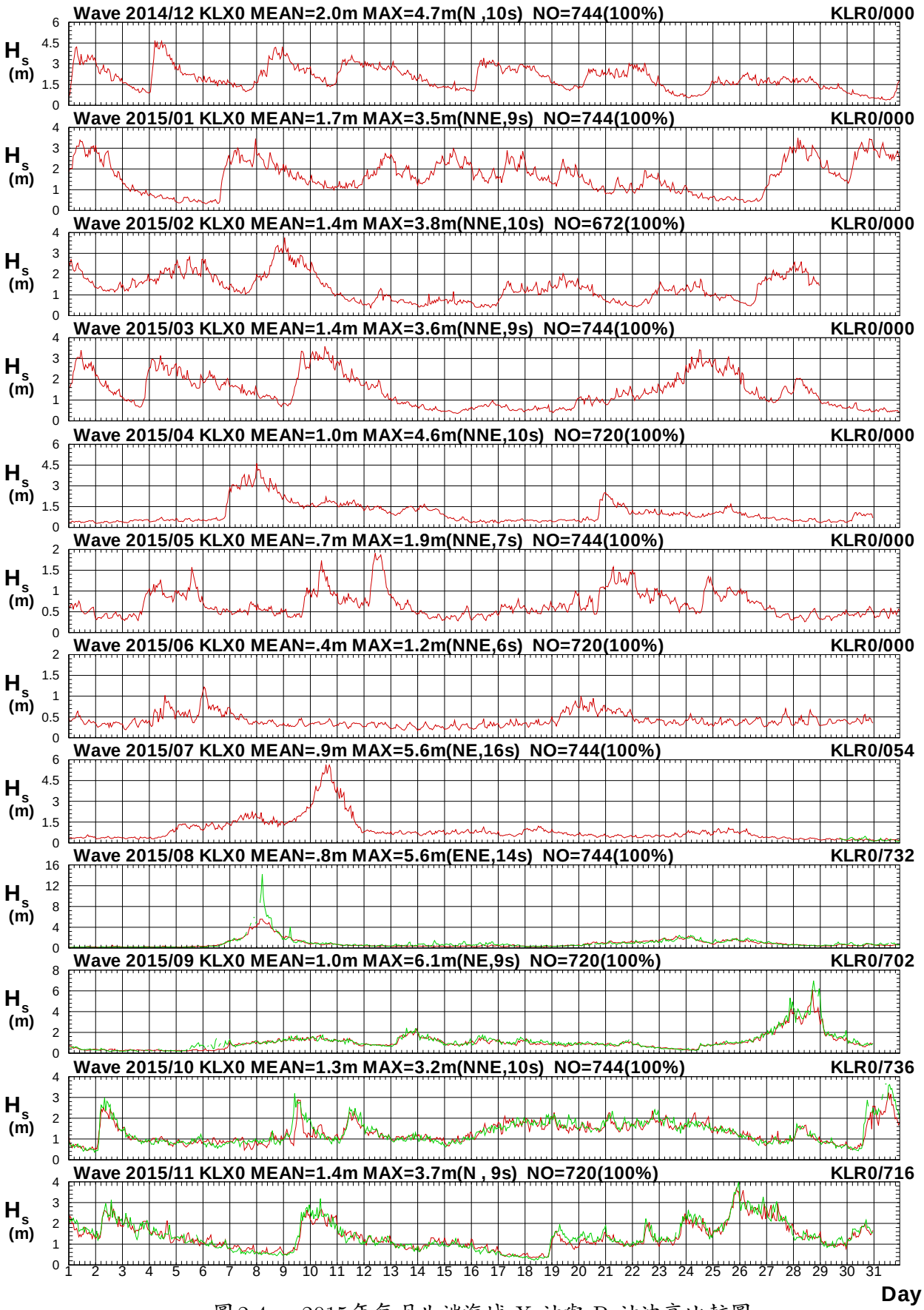

圖2.4a　2015年每月北端海域 X 站與 R 站波高比較圖

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

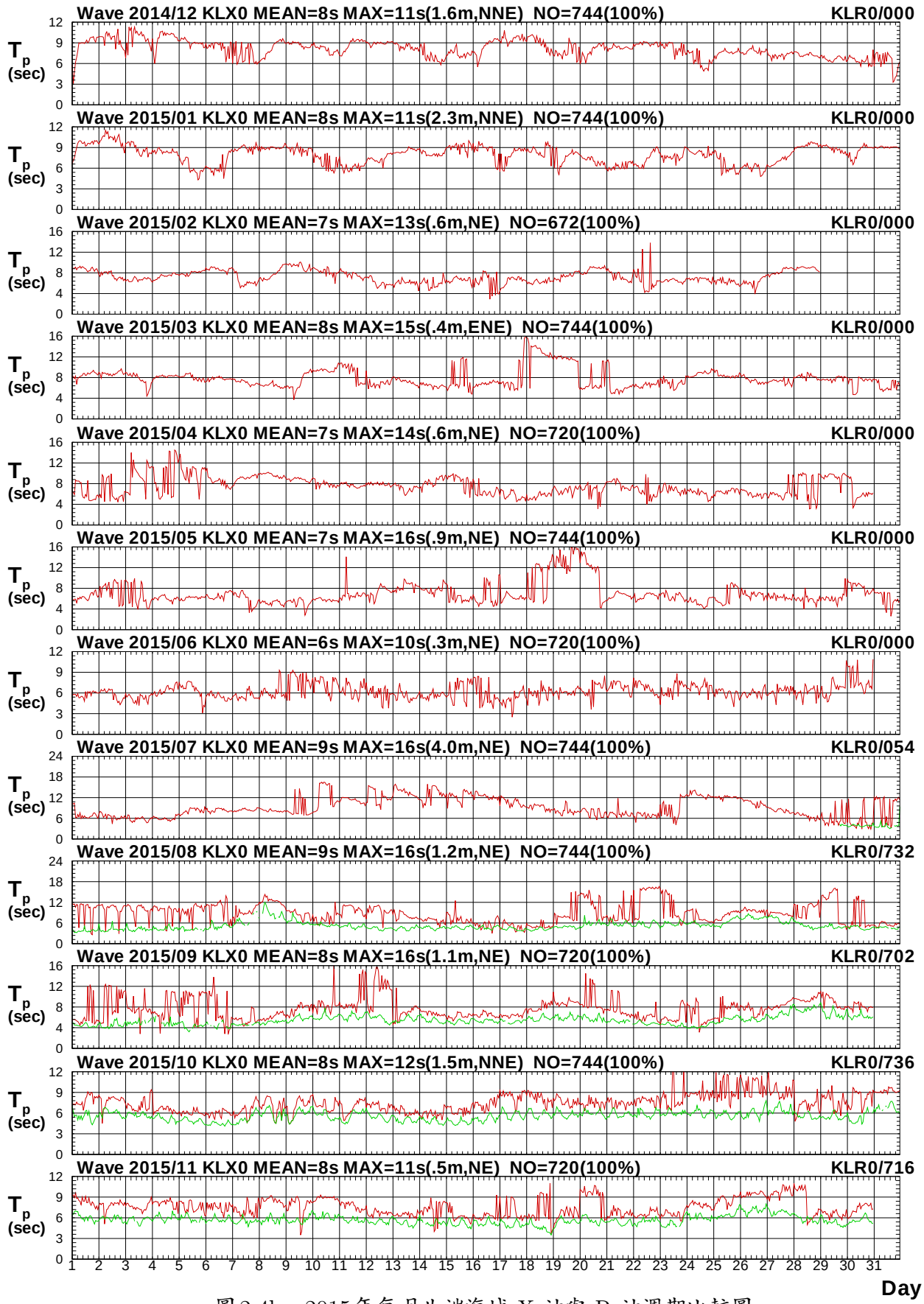

圖2.4b　2015年每月北端海域 X 站與 R 站週期比較圖

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

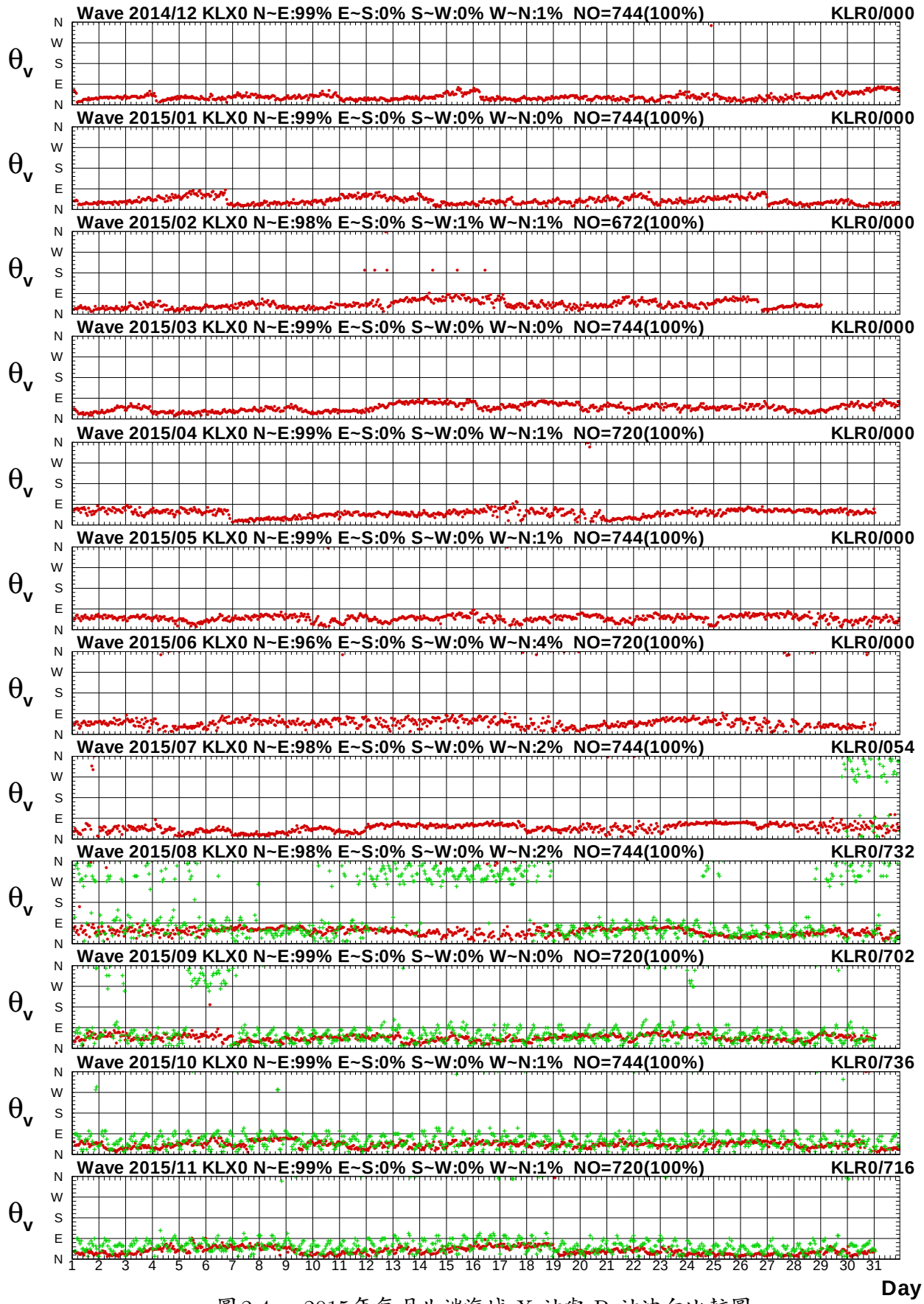

圖2.4c　2015年每月北端海域 X 站與 R 站波向比較圖

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

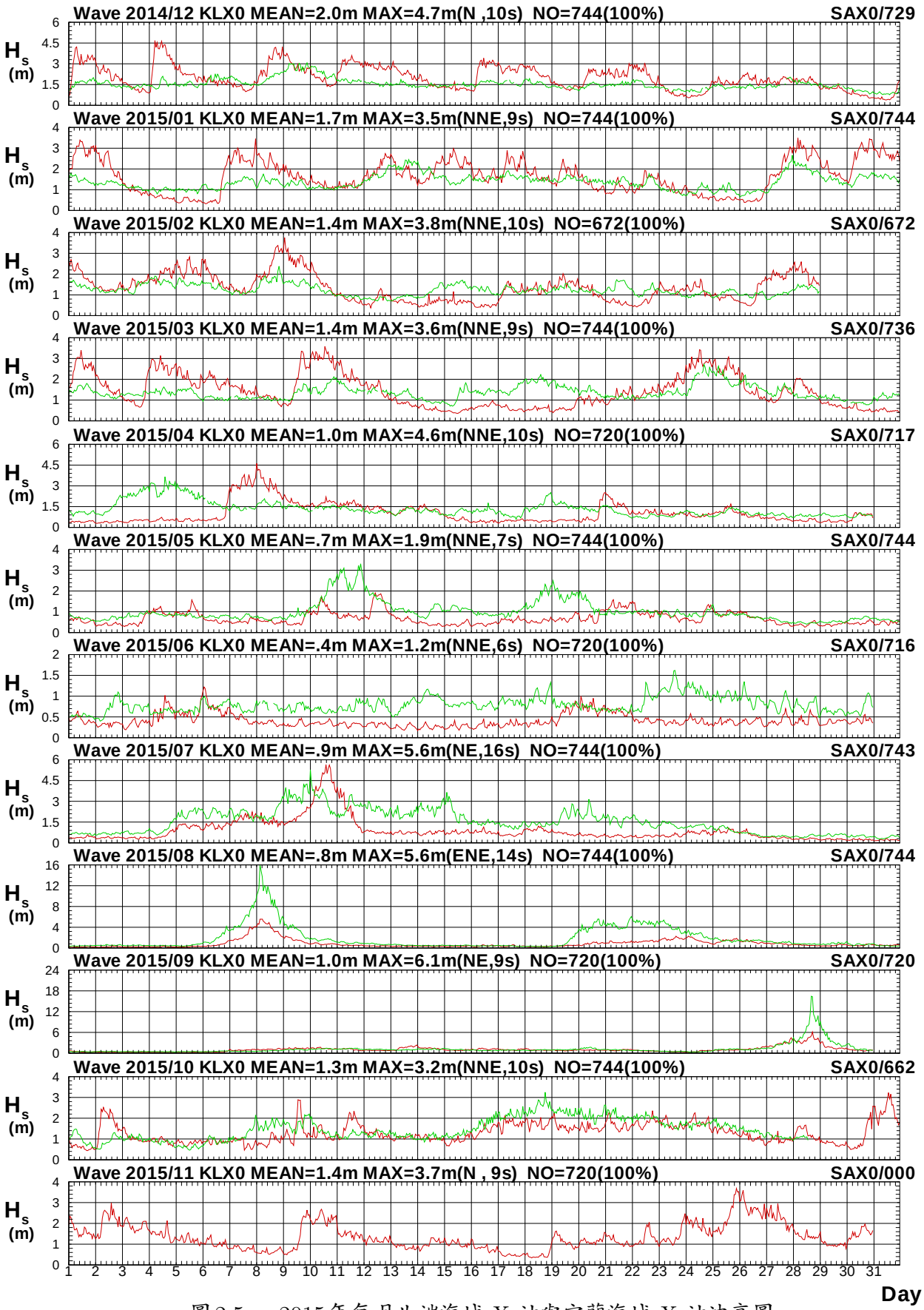

圖 2.5a　2015年每月北端海域 X 站與宜蘭海域 X 站波高圖

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

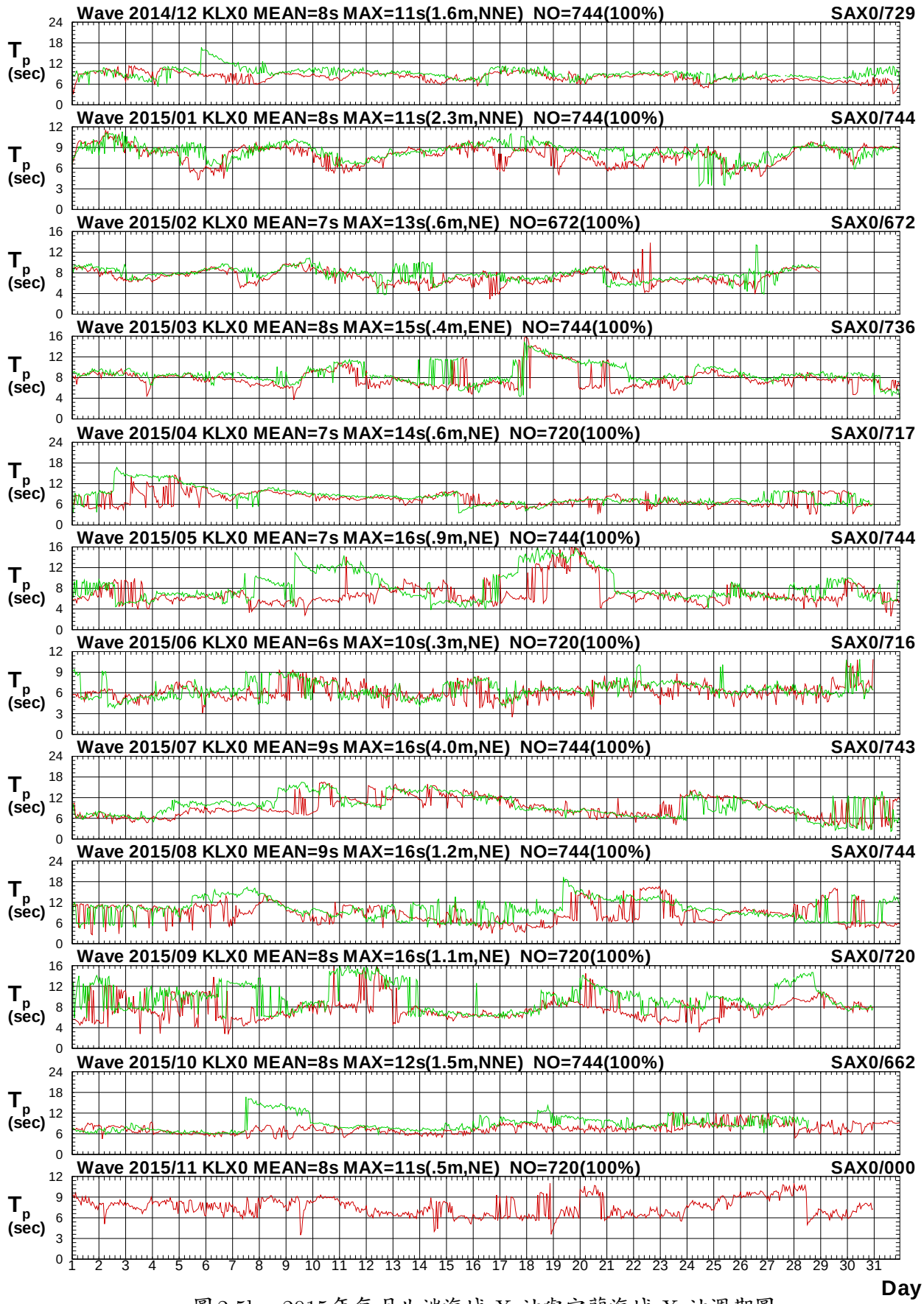

圖 2.5b　2015年每月北端海域 X 站與宜蘭海域 X 站週期圖

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

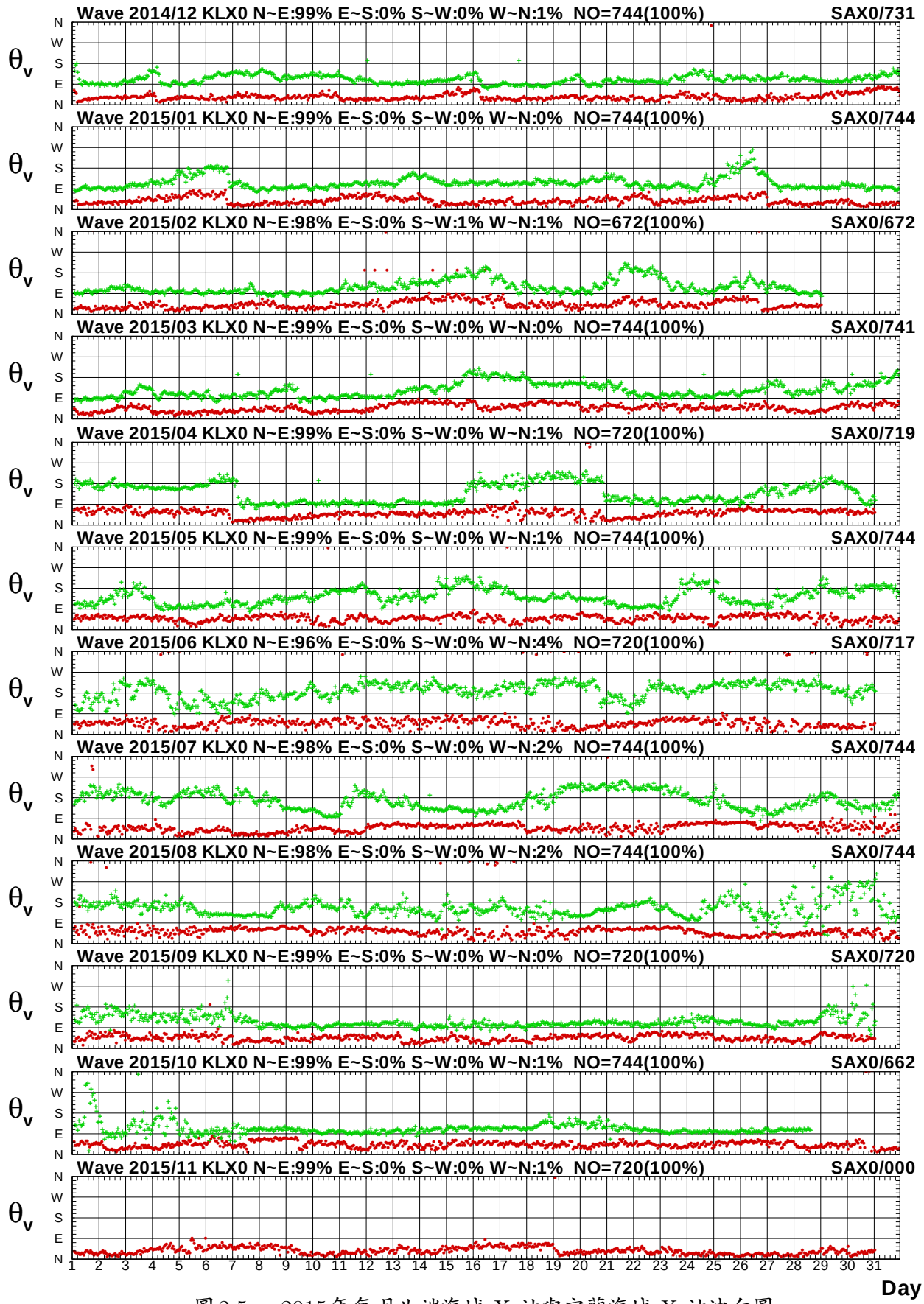

圖 2.5c　2015年每月北端海域 X 站與宜蘭海域 X 站波向圖

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

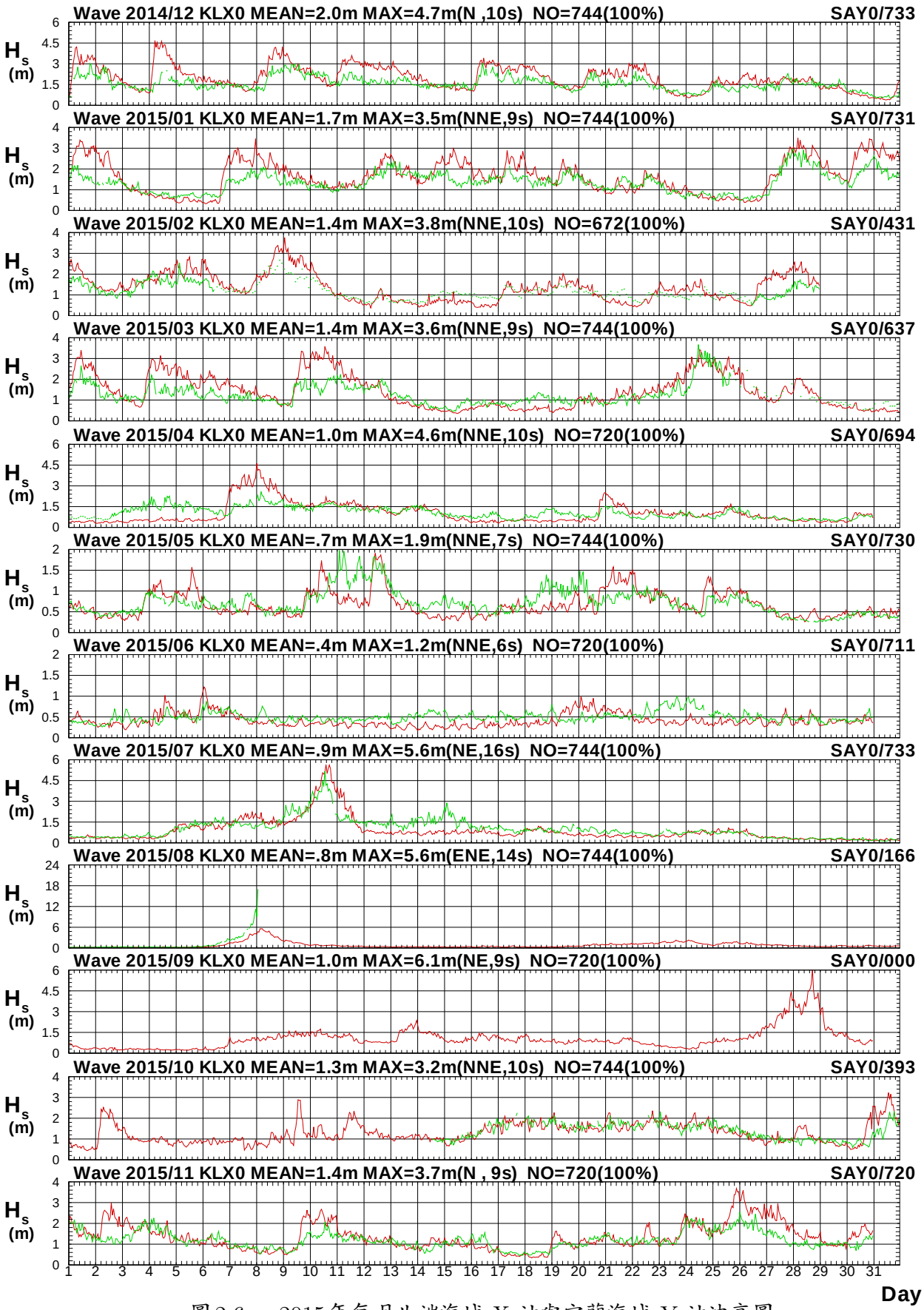

圖 2.6a　2015年每月北端海域 X 站與宜蘭海域 Y 站波高圖

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

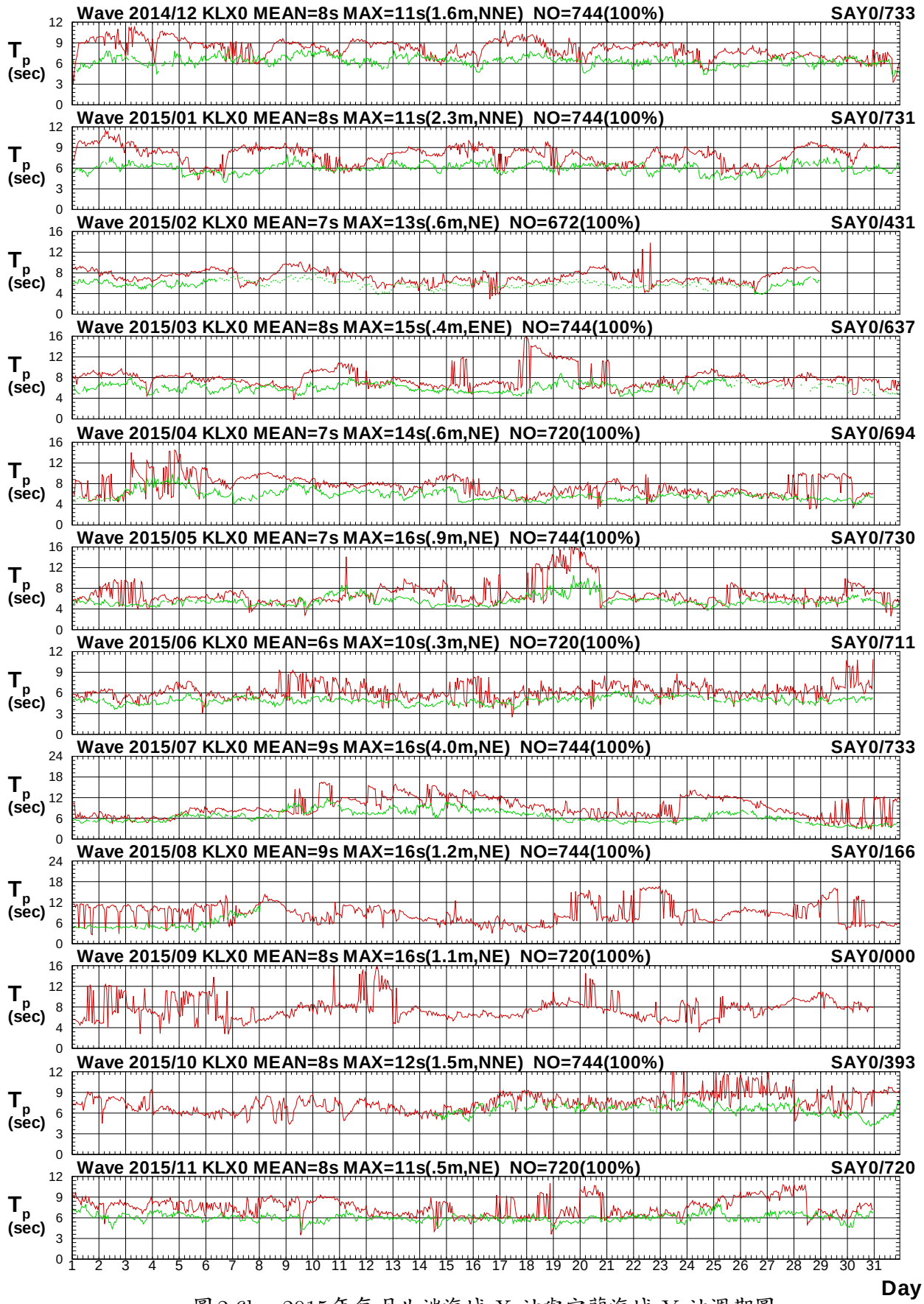

圖 2.6b　2015年每月北端海域 X 站與宜蘭海域 Y 站週期圖

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

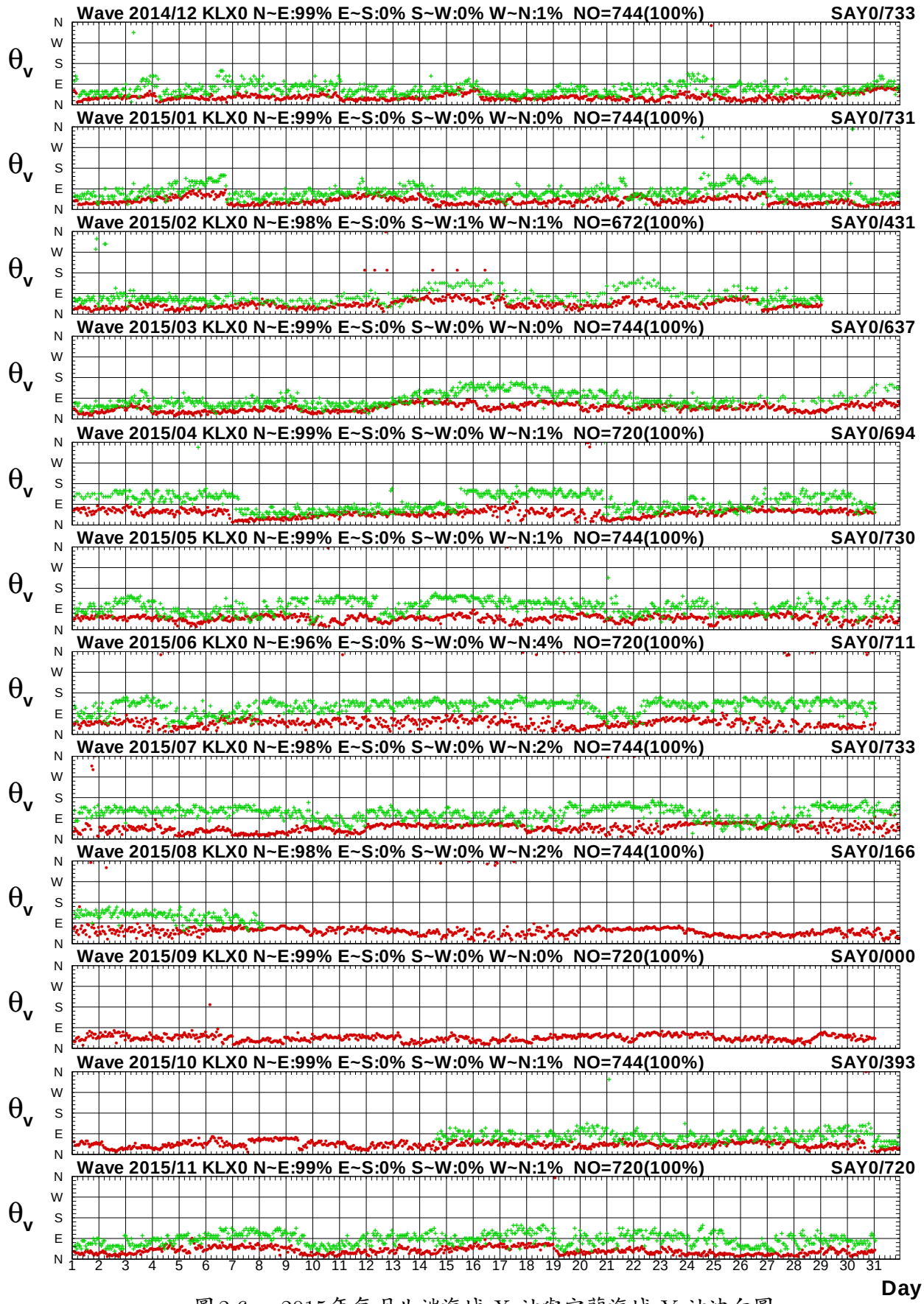

圖 2.6c　2015年每月北端海域 X 站與宜蘭海域 Y 站波向圖

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

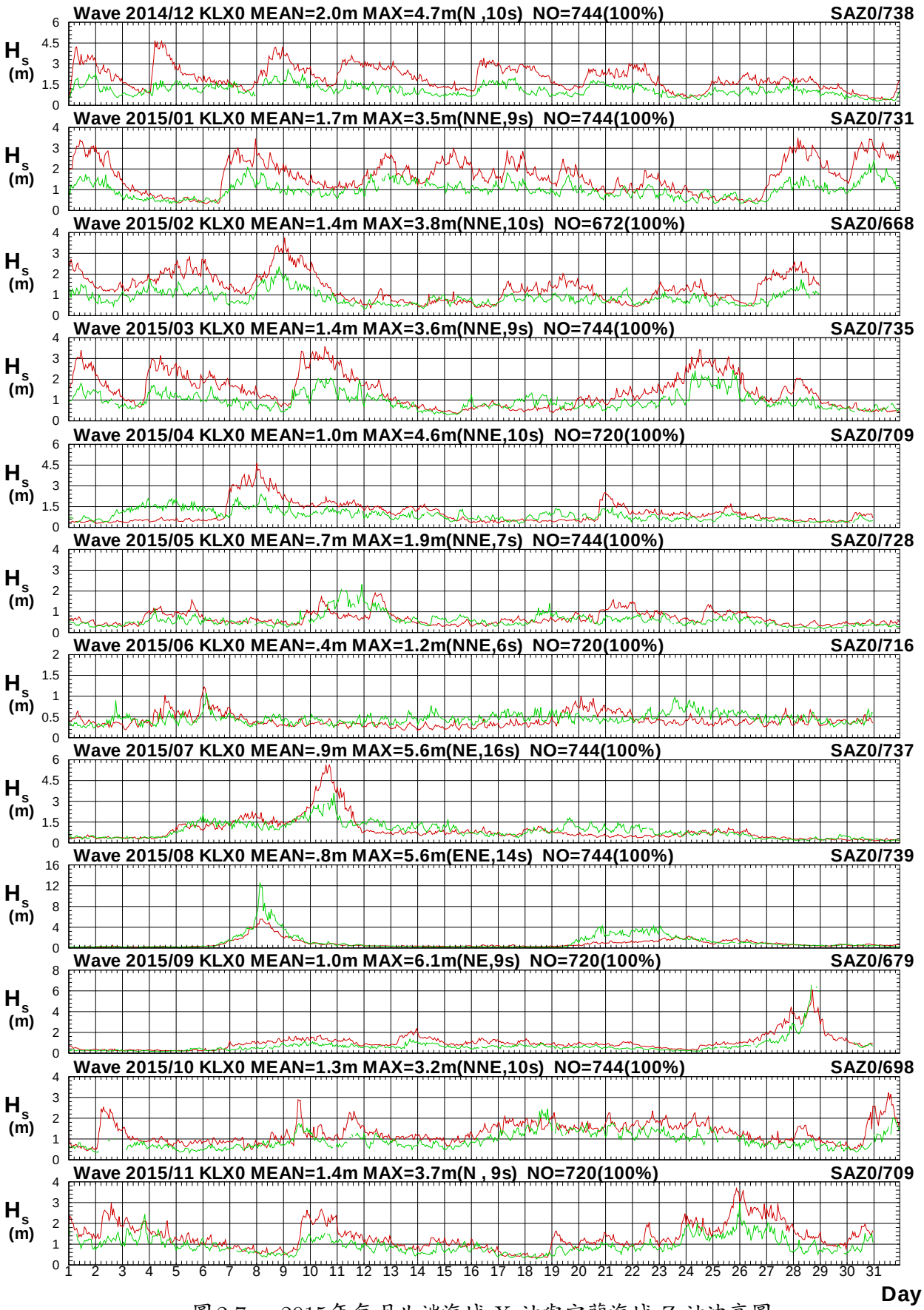

圖2.7a　2015年每月北端海域 X 站與宜蘭海域 Z 站波高圖

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

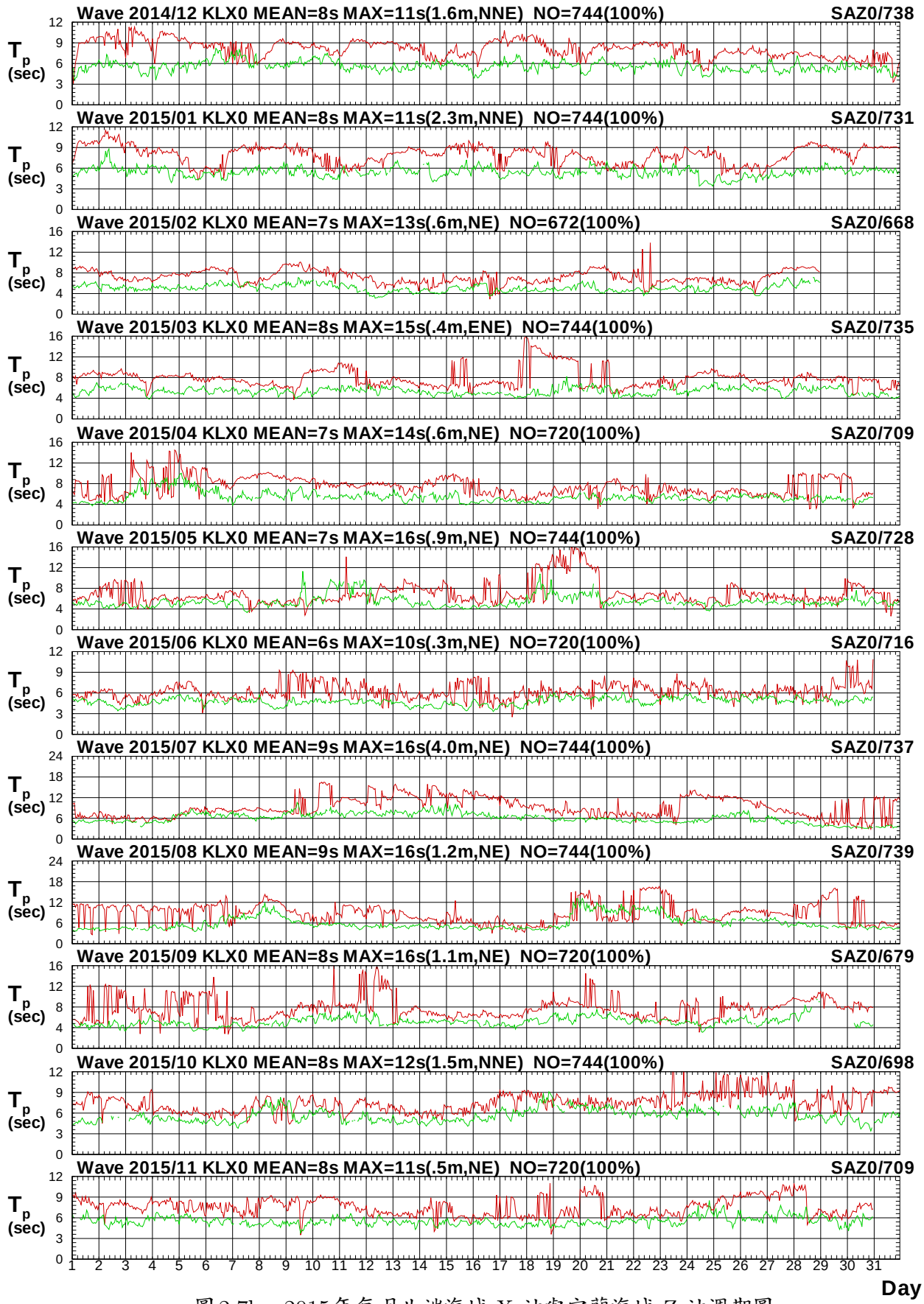

圖2.7b　2015年每月北端海域 X 站與宜蘭海域 Z 站週期圖

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

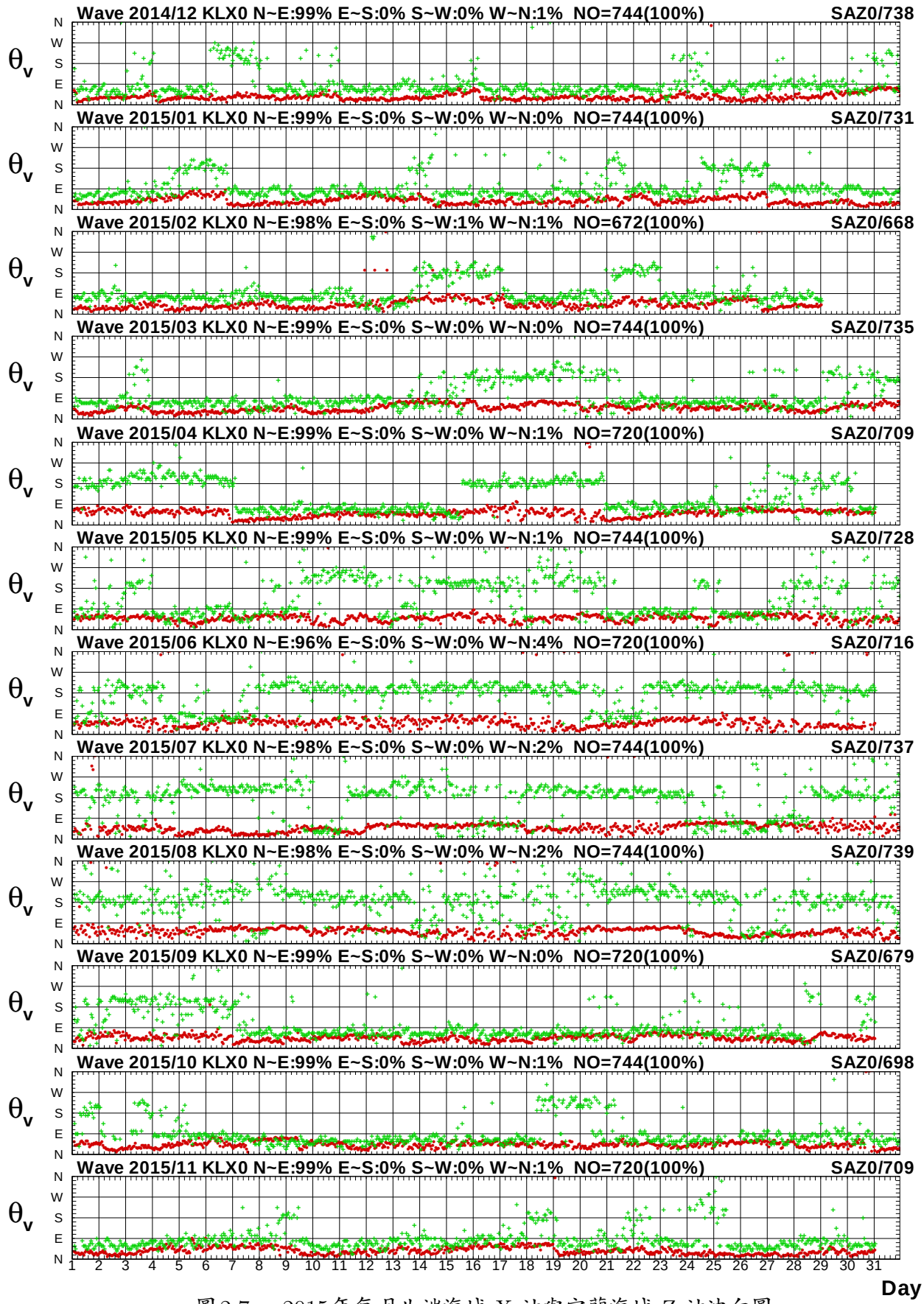

圖2.7c　2015年每月北端海域 X 站與宜蘭海域 Z 站波向圖

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

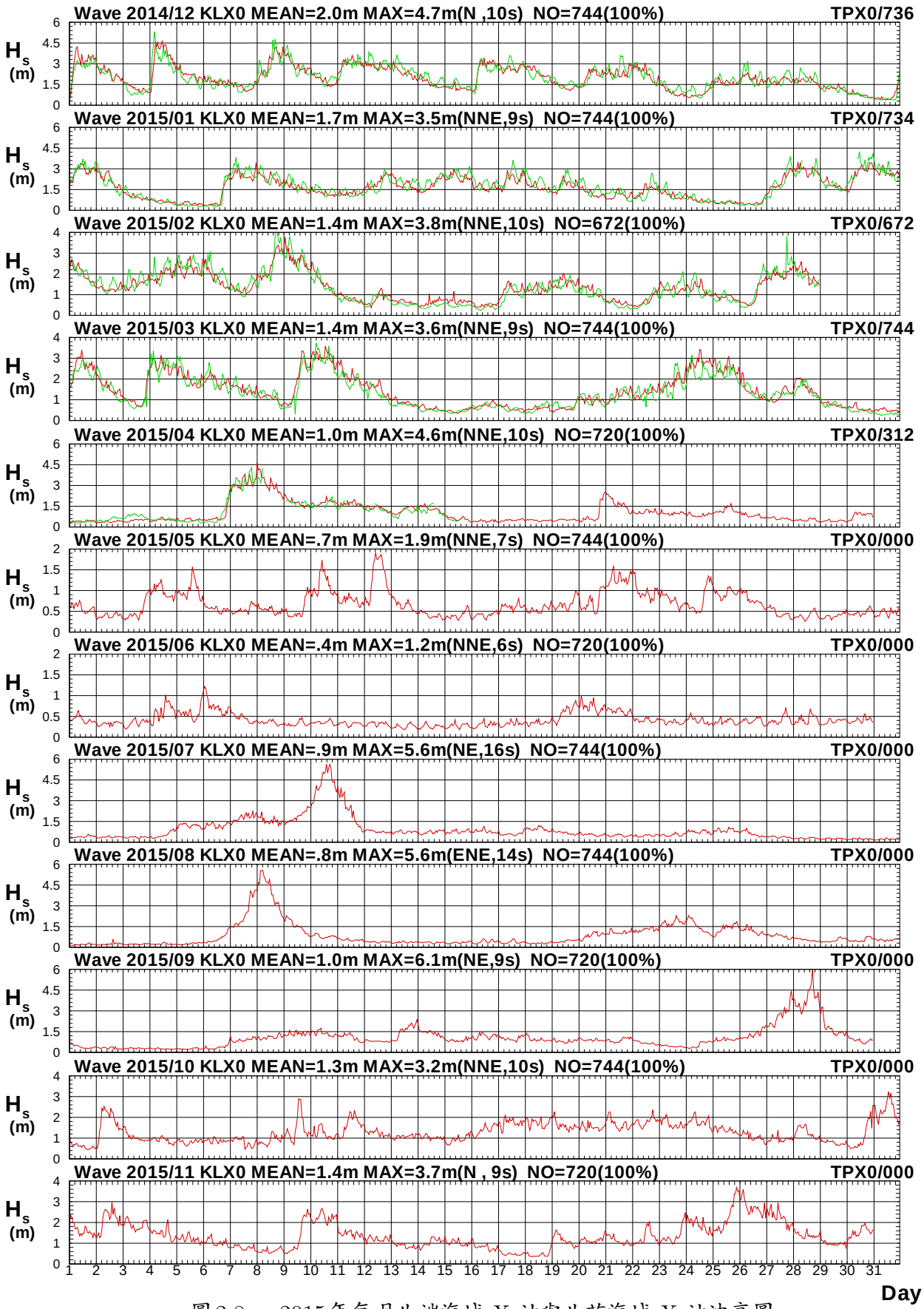

圖 2.8a　2015年每月北端海域 X 站與北苗海域 X 站波高圖

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

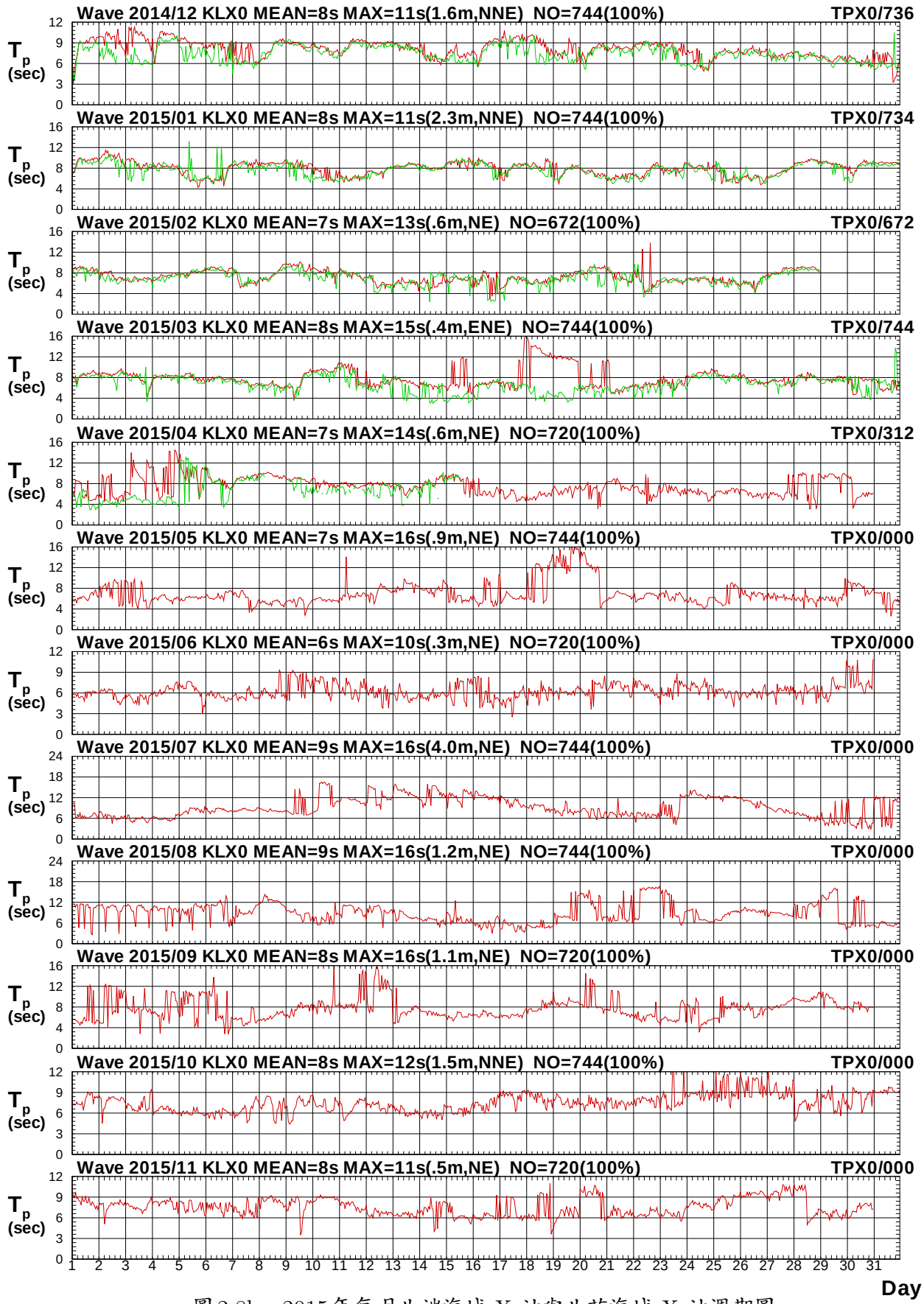

圖 2.8b　2015年每月北端海域 X 站與北苗海域 X 站週期圖

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

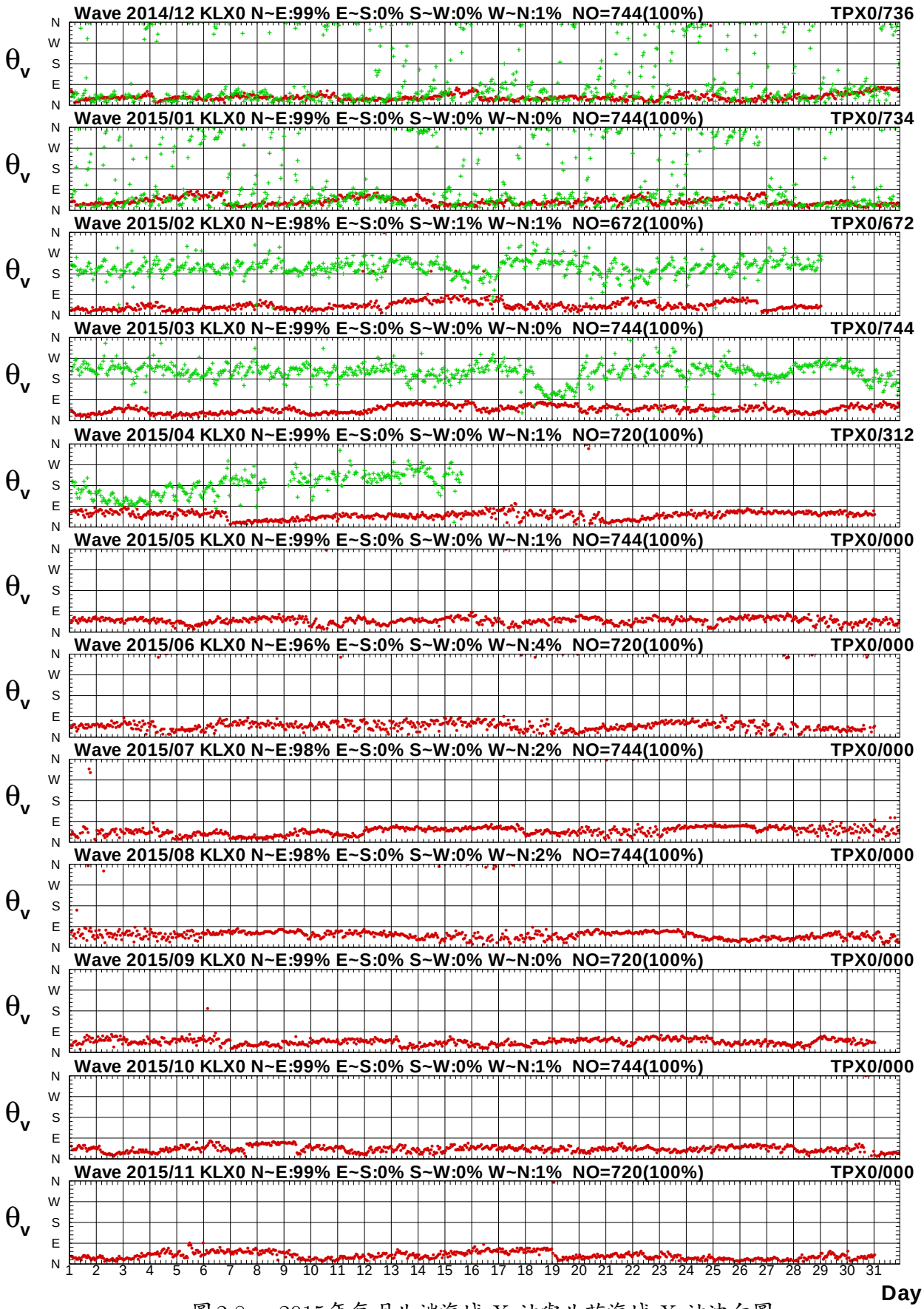

圖2.8c　2015年每月北端海域 X 站與北苗海域 X 站波向圖

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 H_s in North Seas of KLX0 at 2015

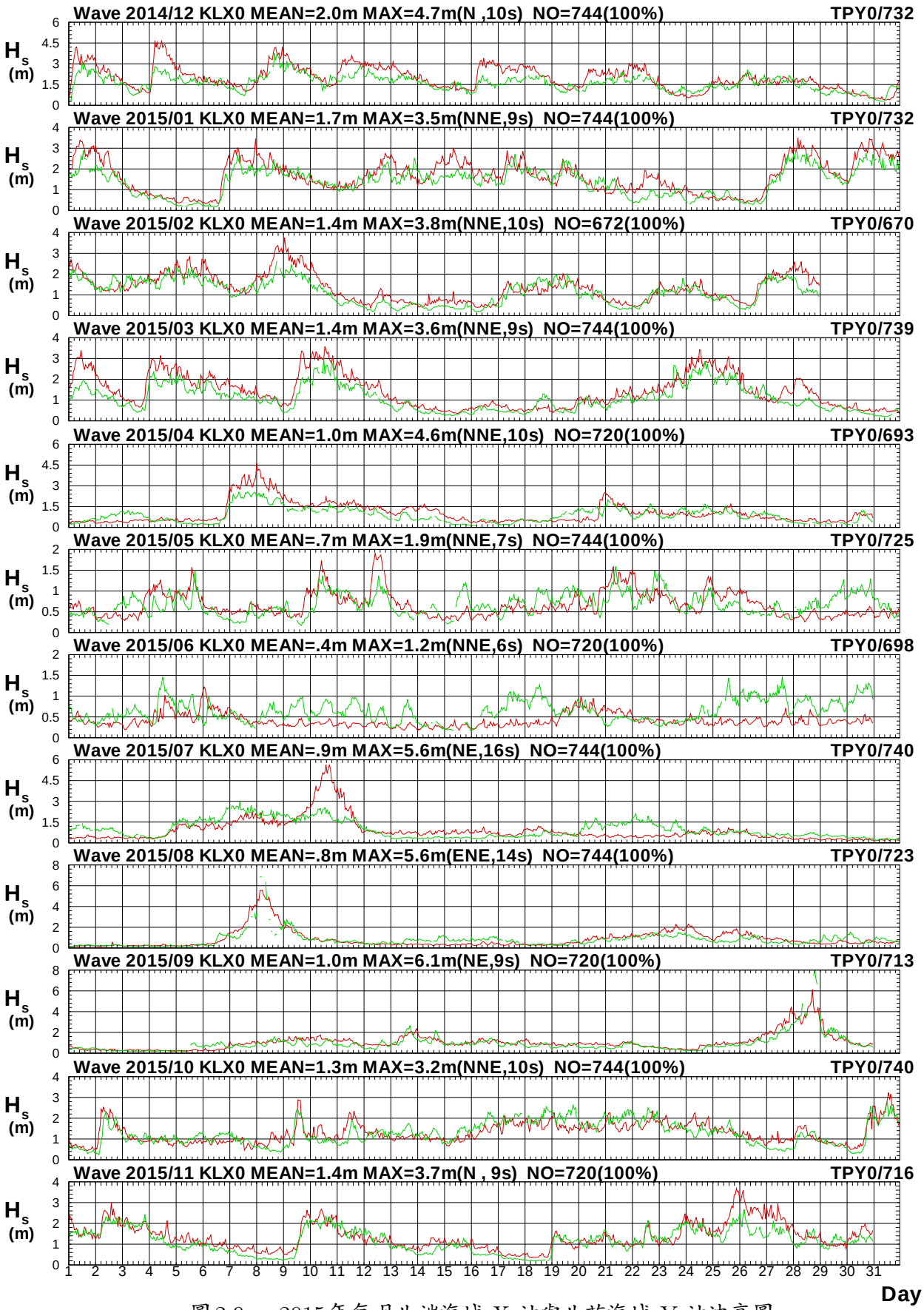

圖 2.9a　2015年每月北端海域 X 站與北苗海域 Y 站波高圖

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

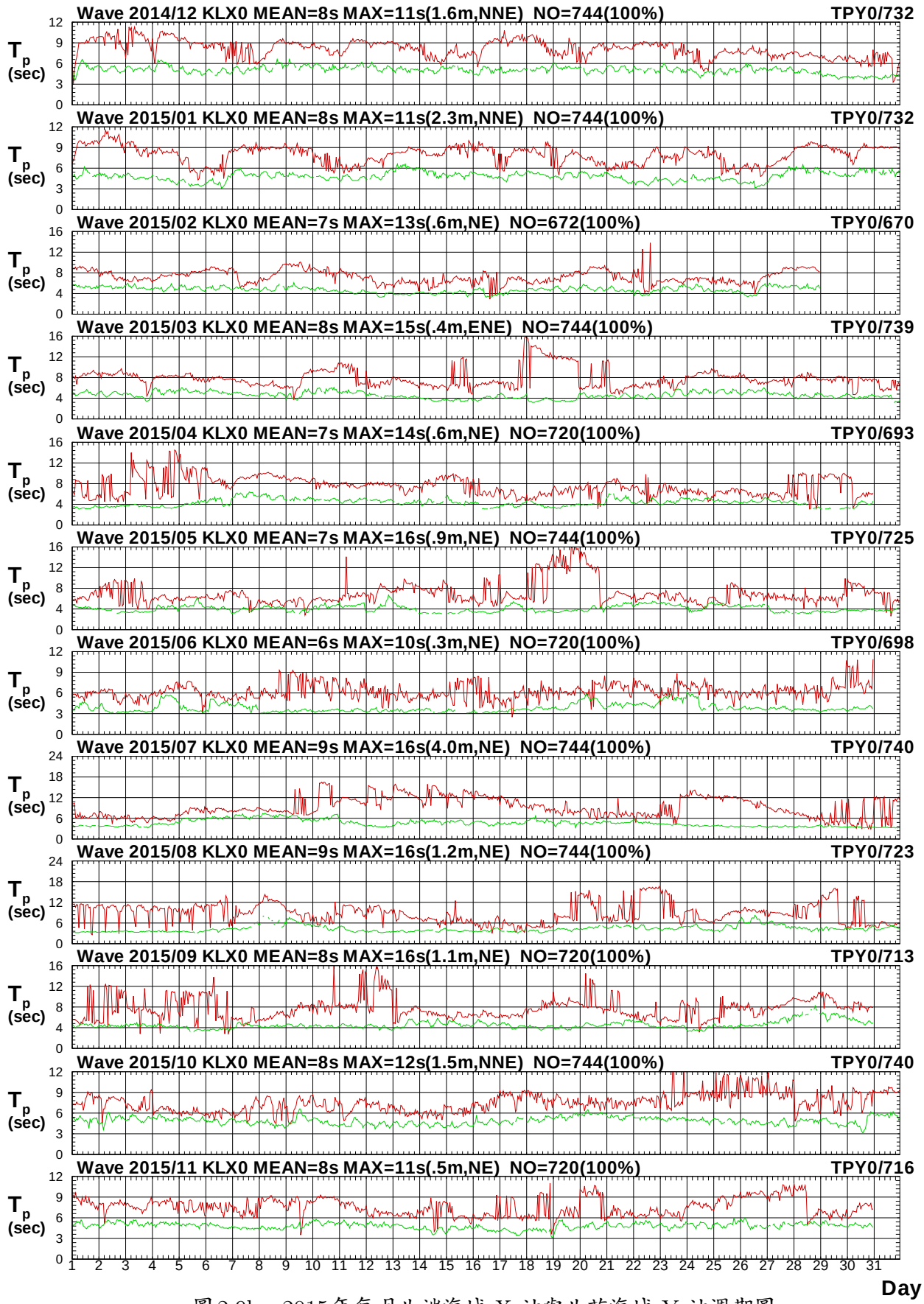

圖 2.9b　2015年每月北端海域 X 站與北苗海域 Y 站週期圖

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

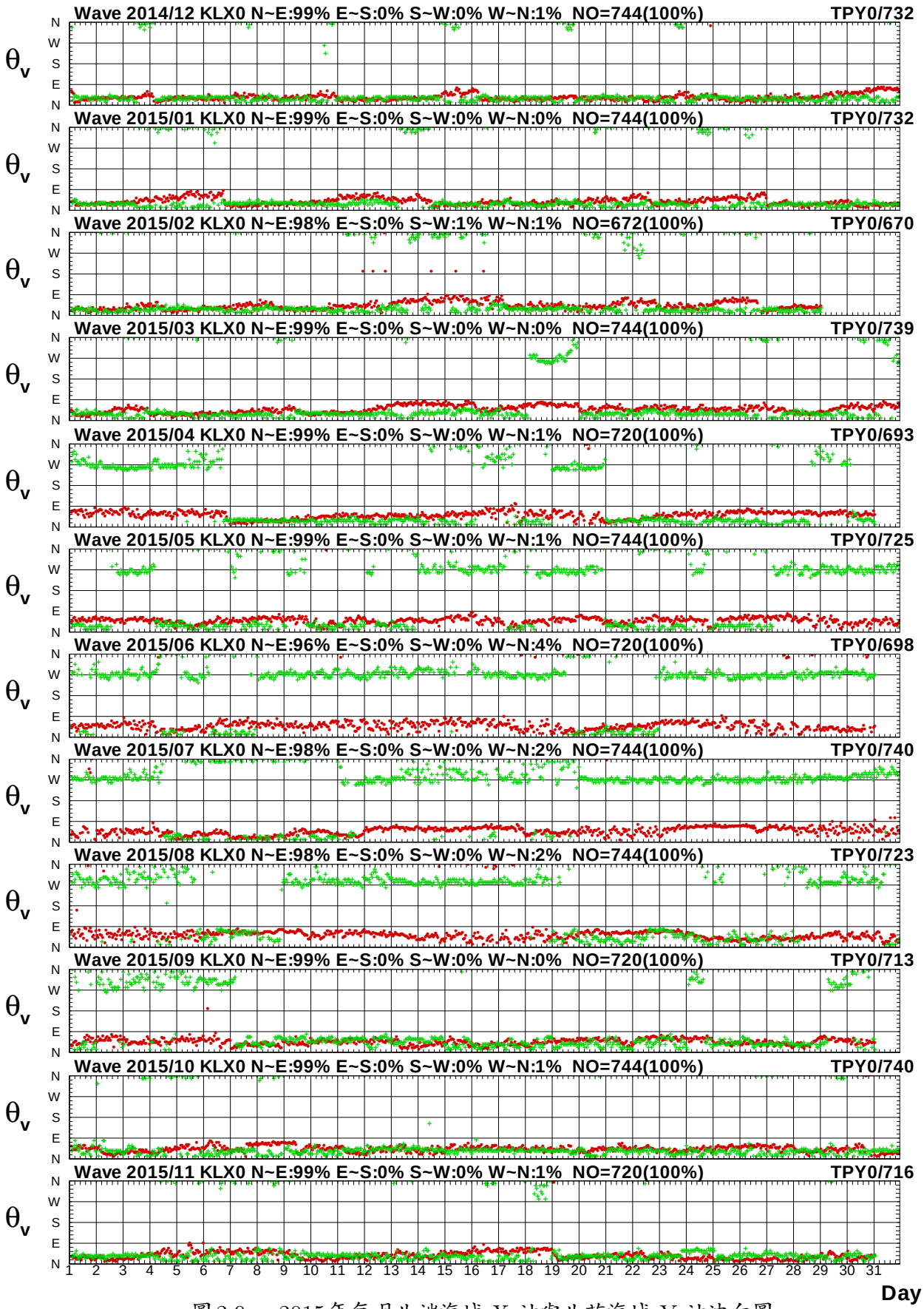

圖 2.9c　2015年每月北端海域 X 站與北苗海域 Y 站波向圖

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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第三章　2015 年北端海域觀測潮汐資料

北端海域(富貴角~龍洞) 潮汐之觀測係本中心於 2001 年 6 月安置 AWCP，在基隆港東防波堤堤頭外水深 44 公尺處(**測站 X0**) ，位置如附圖 3，2006 年 8 月因防波堤延伸工程，移至西防波堤堤外水深 36 公尺位置(**測站 X1**)。2011 年 8 月安裝在東防波堤堤頭北方約 200 公尺，水深 48 公尺位置(**測站 X2**)。另 2002 年 6 月本中心於港區安裝 Water Log 公司潮位計(稱**測站 T**)。潮汐基隆港觀測站(**測站 F**)、龍洞(**測站 J**)、麟山鼻(**測站 K**)、澎佳嶼(**測站 P**)是由中央氣象局設置。各測站歷年各站觀測潮汐資料蒐集概況如表 3。

潮位**測站 X** 潮波流儀，以壓力感測器測得水壓變化時間序列，取樣方式為每一小時取前 10 分鐘之水位變化，取樣頻率為 2Hz，然後加以平均得出該小時之平均水位值。潮位資料之平均水位以觀測水位資料之平均值為基準，未經高程量測，與一般固定式潮位計不同。**測站 T** 潮位資料取樣方式為每 6 分鐘量測一次水位變化。

本潮汐年報以取經檢核或修補後之 **T 站**、**J 站**、**K 站**及 **P 站**資料作為**主要觀測站**，2015 年各觀測站修補前每月觀測潮汐資料記錄期間統計表，如表 3.1a，2015 年各觀測站修補後每月觀測潮汐資料記錄期間統計表，如表 3.1b，**主要觀測站修補前後**每月潮汐歷線比較圖，如圖 3.?.1，**主要觀測站**與**調和分析計算潮位**每月潮汐歷線比較圖，如圖 3.?.2，**主要觀測站**與**次要觀測站**每月潮汐歷線比較圖，如圖 3.?.3 以後。

表 3 北端海域觀測潮汐資料蒐集概況表(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
T	25°09'19"N	121°45'09"E	2002/07-2015/11(觀測中)	港研中心	基港潮位計
X0	25°09'50"N	121°45'14"E	2001/06-2006/05	港研中心	基港東堤外海
X1	25°44'58"N	121°44'58"E	2006/08-2011/07	港研中心	基港西堤外海
X2	25°09'57"N	121°45'17"E	2011/08-2015/11(觀測中)	港研中心	基港東堤外海
F	25°09'18"N	121°45'08"E	1966/01-2015/11(觀測中)	中央氣象局	
J	25°05'51"N	121°55'05"E	2013/12-2015/11(觀測中)	中央氣象局	龍洞潮位站
K			2013/12-2015/11(觀測中)	中央氣象局	麟山鼻潮位站
P			2014/06-2015/11(觀測中)	中央氣象局	澎佳嶼潮位站

北端海域

圖 3 北端海域潮汐觀測站位置示意圖

表3.1a 2015年每月北端海域修補前各測站觀測潮汐資料紀錄統計表

年/月 港區	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域
測站	T	X	F	J	K	P	M	
2014/12月	744 (100%)	742 (99.7%)	744 (100%)	740 (99.5%)	456 (61.3%)	619 (83.2%)	*	*
2015/ 1月	744 (100%)	744 (100%)	495 (66.5%)	516 (69.4%)	573 (77.0%)	470 (63.2%)	*	*
2015/ 2月	672 (100%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	94 (12.6%)	130 (17.5%)	70 (9.4%)	105 (14.1%)	*	*
2015/ 4月	720 (100%)	714 (99.2%)	379 (52.6%)	416 (57.8%)	385 (53.5%)	315 (43.8%)	*	*
2015/ 5月	744 (100%)	744 (100%)	243 (32.7%)	240 (32.3%)	262 (35.2%)	177 (23.8%)	*	*
2015/ 6月	720 (100%)	705 (97.9%)	402 (55.8%)	499 (69.3%)	479 (66.5%)	378 (52.5%)	*	*
2015/ 7月	744 (100%)	744 (100%)	307 (41.3%)	402 (54.0%)	299 (40.2%)	264 (35.5%)	*	*
2015/ 8月	744 (100%)	744 (100%)	557 (74.9%)	549 (73.8%)	566 (76.1%)	*	*	*
2015/ 9月	720 (100%)	710 (98.6%)	588 (81.7%)	622 (86.4%)	596 (82.8%)	333 (46.3%)	*	*
2015/10月	744 (100%)	719 (96.6%)	377 (50.7%)	381 (51.2%)	382 (51.3%)	*	*	*
2015/11月	719 (99.9%)	706 (98.1%)	558 (77.5%)	642 (89.2%)	652 (90.6%)	*	*	*
2015/冬季	2160 (100%)	2158 (99.9%)	1239 (57.4%)	1256 (58.1%)	1029 (47.6%)	1089 (50.4%)	*	*
2015/春季	2208 (100%)	2202 (99.7%)	716 (32.4%)	786 (35.6%)	717 (32.5%)	597 (27.0%)	*	*
2015/夏季	2208 (100%)	2193 (99.3%)	1266 (57.3%)	1450 (65.7%)	1344 (60.9%)	642 (29.1%)	*	*
2015/秋季	2183 (100.0%)	2135 (97.8%)	1523 (69.7%)	1645 (75.3%)	1630 (74.6%)	333 (15.2%)	*	*
2015/整年	8759 (100.0%)	8688 (99.2%)	4744 (54.2%)	5137 (58.6%)	4720 (53.9%)	2661 (30.4%)	*	*
起始年月	2014/12	2014/12	2014/12	2014/12	2014/12	2014/12	*	*
結束年月	2015/11	2015/11	2015/11	2015/11	2015/11	2015/09	*	*

表3.1b 2015年每月北端海域修補後各測站潮汐資料統計表

年/月 港區	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域
測站	T	X	F	J	K	P	M	
2014/12月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 1月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 2月	672 (100%)	672 (100%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 4月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/ 5月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 6月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/ 7月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 8月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*
2015/ 9月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*	*
2015/11月	720 (100%)	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*	*
2015/冬季	2160 (100%)	2160 (100%)	1488 (68.9%)	1488 (68.9%)	1488 (68.9%)	1488 (68.9%)	*	*
2015/春季	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	*	*
2015/夏季	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	2208 (100%)	1464 (66.3%)	*	*
2015/秋季	2184 (100%)	2184 (100%)	2184 (100%)	2184 (100%)	2184 (100%)	720 (33.0%)	*	*
2015/整年	8760 (100%)	8760 (100%)	8088 (92.3%)	8088 (92.3%)	8088 (92.3%)	5880 (67.1%)	*	*
起始年月	2014/12	2014/12	2014/12	2014/12	2014/12	2014/12	*	*
結束年月	2015/11	2015/11	2015/11	2015/11	2015/11	2015/09	*	*

Tidal Level in North Seas of KLT0 at 2015

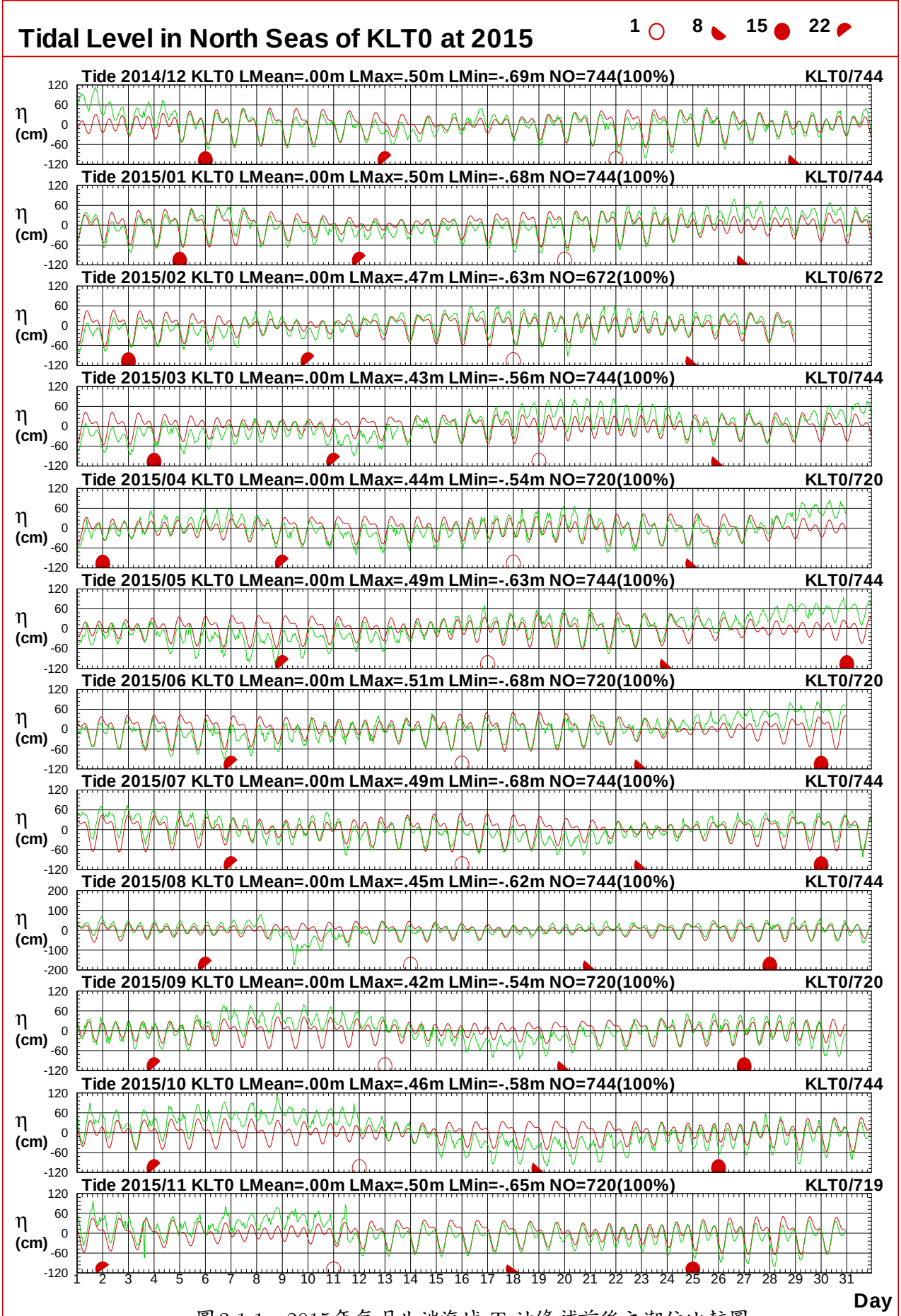

圖3.1.1　2015年每月北端海域 T 站修補前後之潮位比較圖

T14CKLT0.1HA T14CKLT0.1H0 T151KLT0.1HA T151KLT0.1H0 T152KLT0.1HA T152KLT0.1H0
T153KLT0.1HA T153KLT0.1H0 T154KLT0.1HA T154KLT0.1H0 T155KLT0.1HA T155KLT0.1H0

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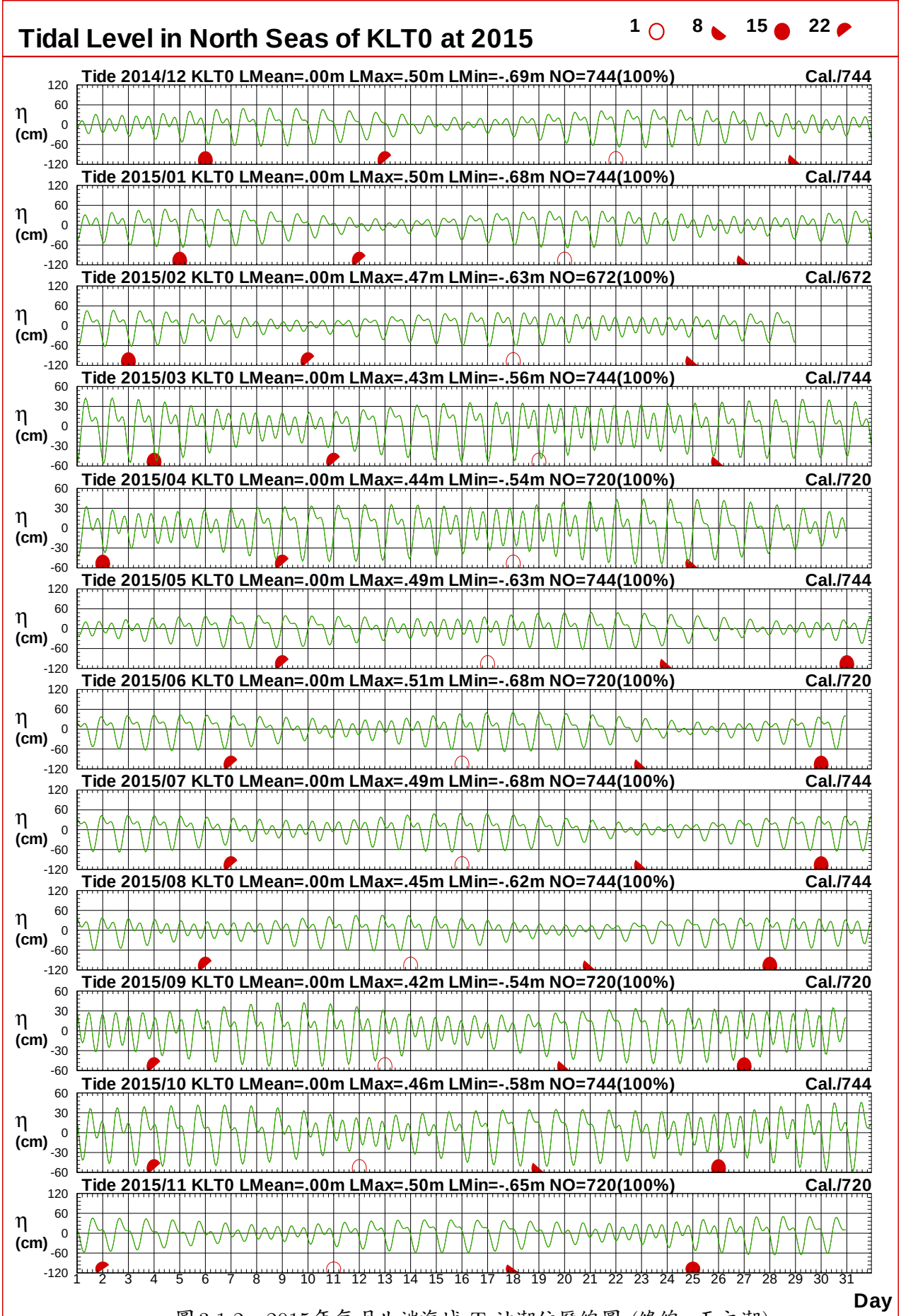

圖 3.1.2　2015年每月北端海域 T 站潮位歷線圖 (綠線: 天文潮)

T14CKLT0.1HA T14CKLT0.1HC T151KLT0.1HA T151KLT0.1HC T152KLT0.1HA T152KLT0.1HC
T153KLT0.1HA T153KLT0.1HC T154KLT0.1HA T154KLT0.1HC T155KLT0.1HA T155KLT0.1HC

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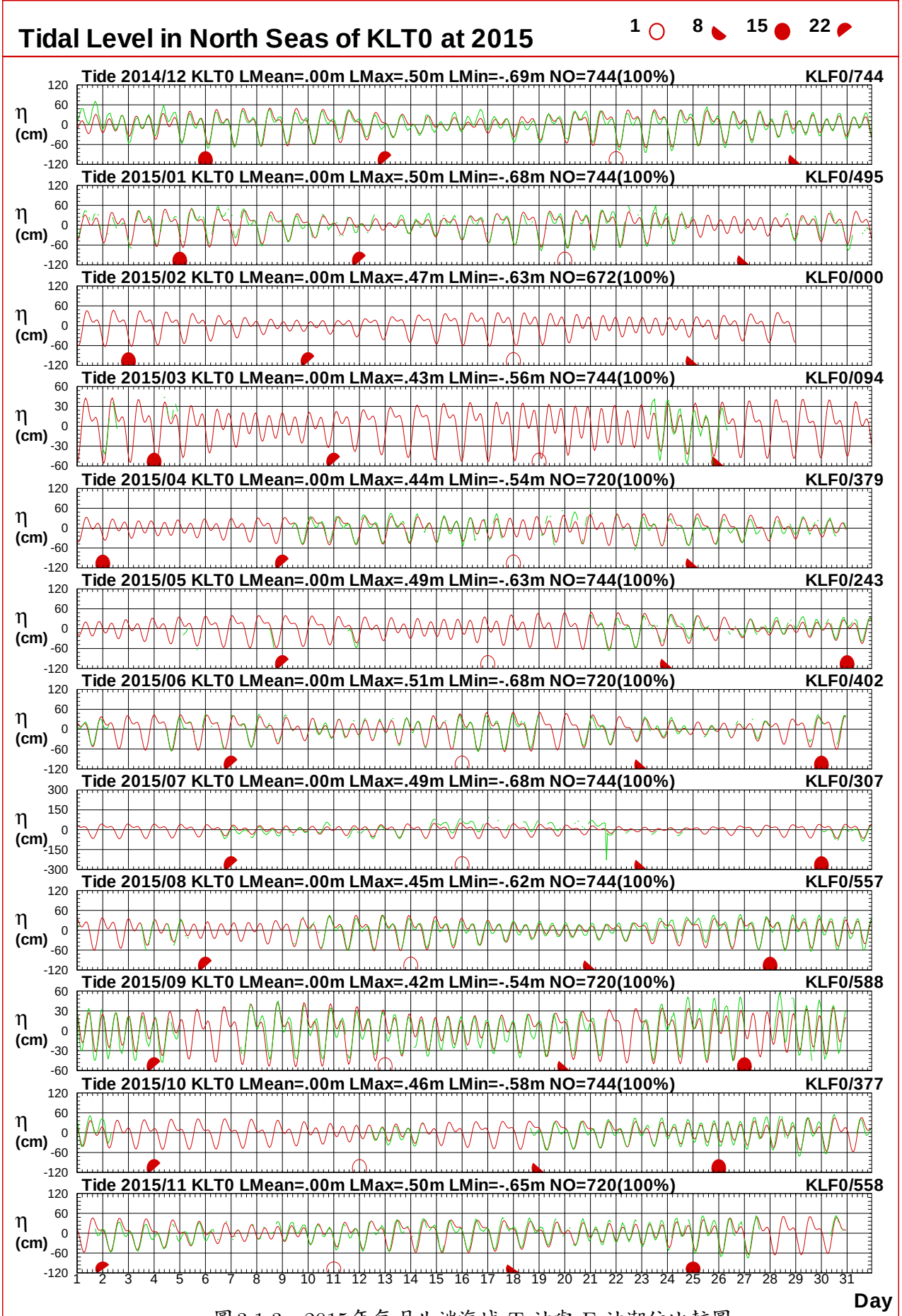

圖3.1.3　2015年每月北端海域 T 站與 F 站潮位比較圖

T14CKLT0.1HA T14CKLF0.1H0 T151KLT0.1HA T151KLF0.1H0 T152KLT0.1HA T152KLF0.1H0
T153KLT0.1HA T153KLF0.1H0 T154KLT0.1HA T154KLF0.1H0 T155KLT0.1HA T155KLF0.1H0

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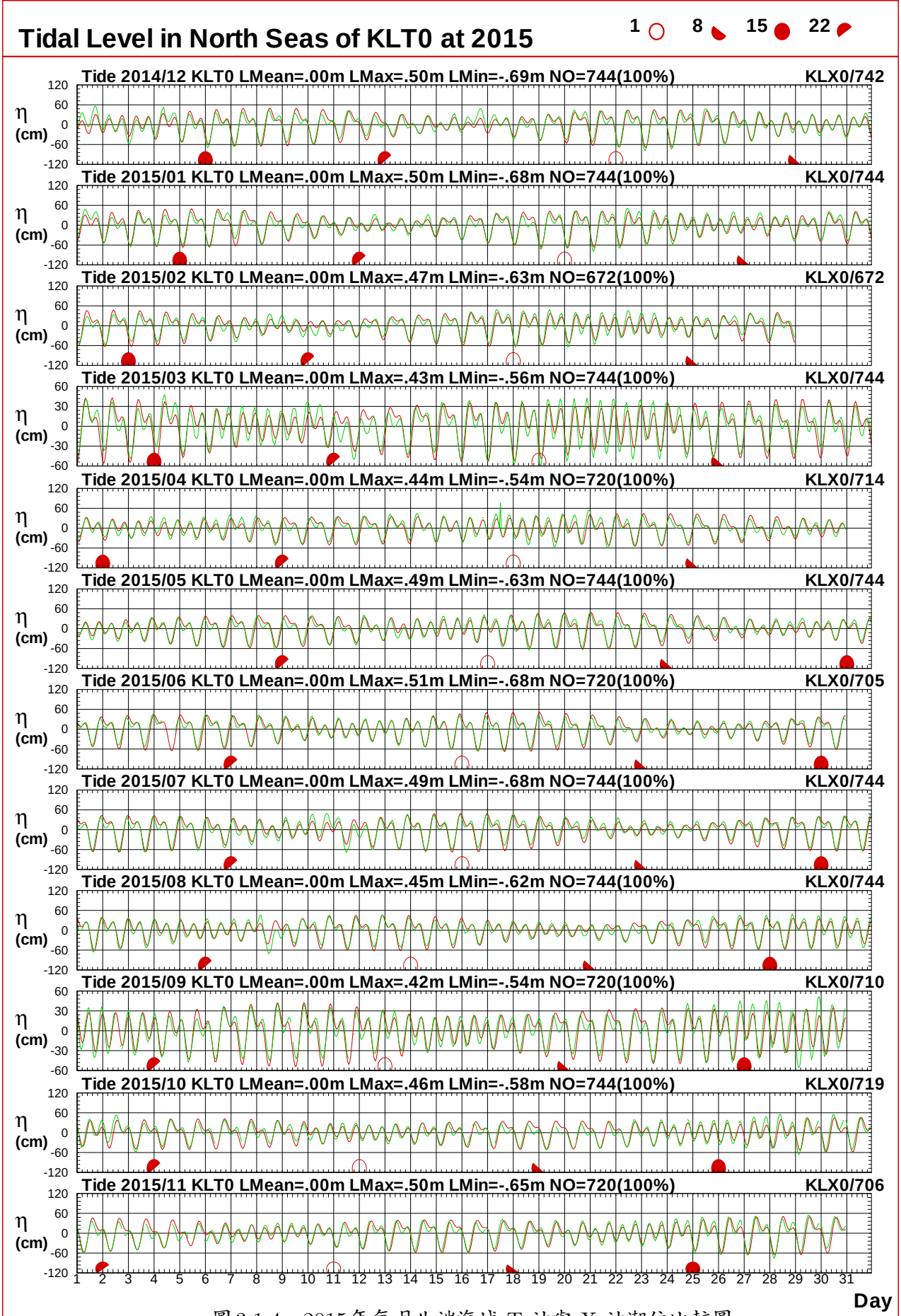

圖3.1.4　2015年每月北端海域 T 站與 X 站潮位比較圖

T14CKLT0.1HA T14CKLX0.1H0 T151KLT0.1HA T151KLX0.1H0 T152KLT0.1HA T152KLX0.1H0
T153KLT0.1HA T153KLX0.1H0 T154KLT0.1HA T154KLX0.1H0 T155KLT0.1HA T155KLX0.1H0

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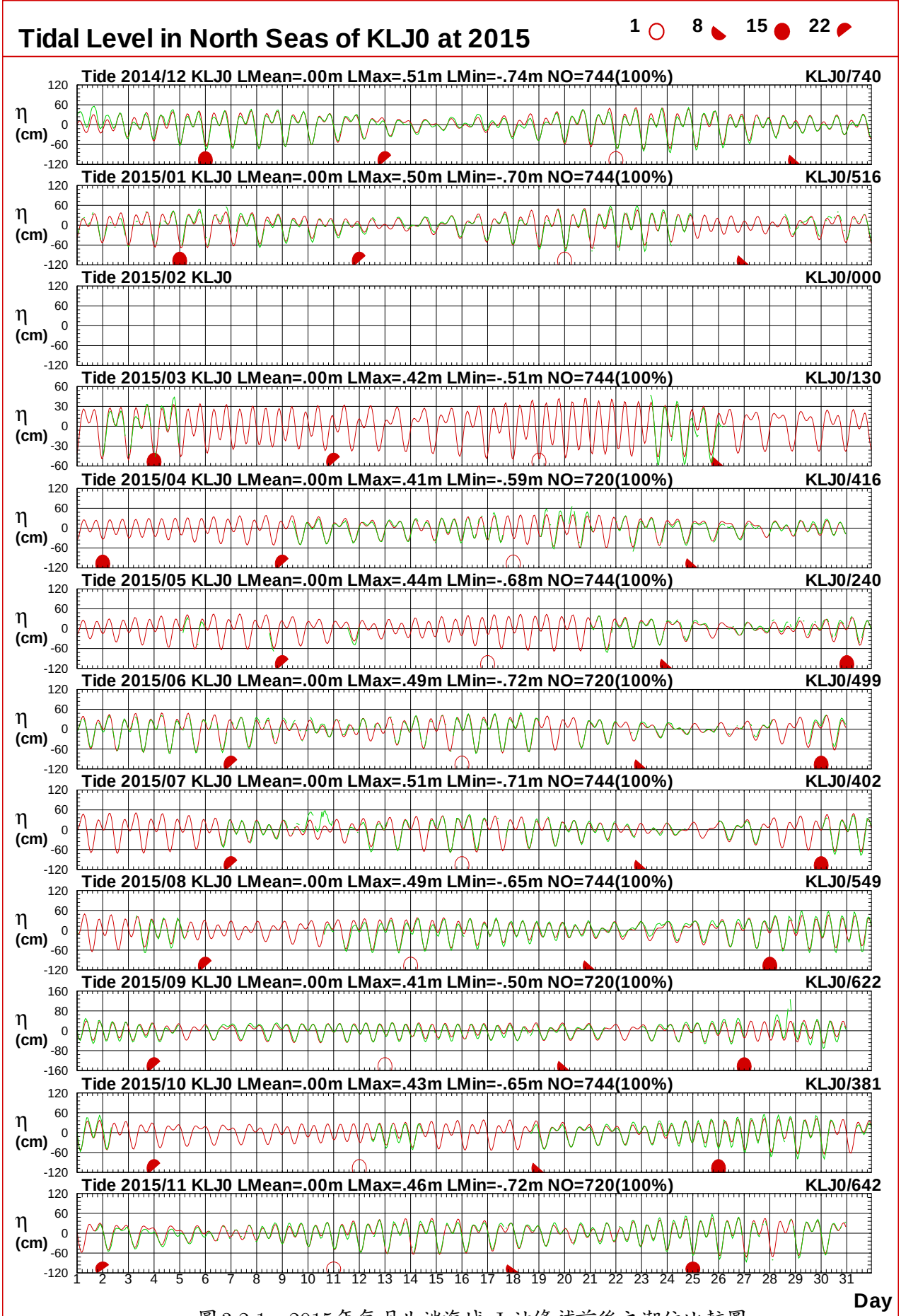

圖3.2.1　2015年每月北端海域 J 站修補前後之潮位比較圖

T14CKLJ0.1HA T14CKLJ0.1H0 T151KLJ0.1HA T151KLJ0.1H0 T152KLJ0.1HA T152KLJ0.1H0
T153KLJ0.1HA T153KLJ0.1H0 T154KLJ0.1HA T154KLJ0.1H0 T155KLJ0.1HA T155KLJ0.1H0

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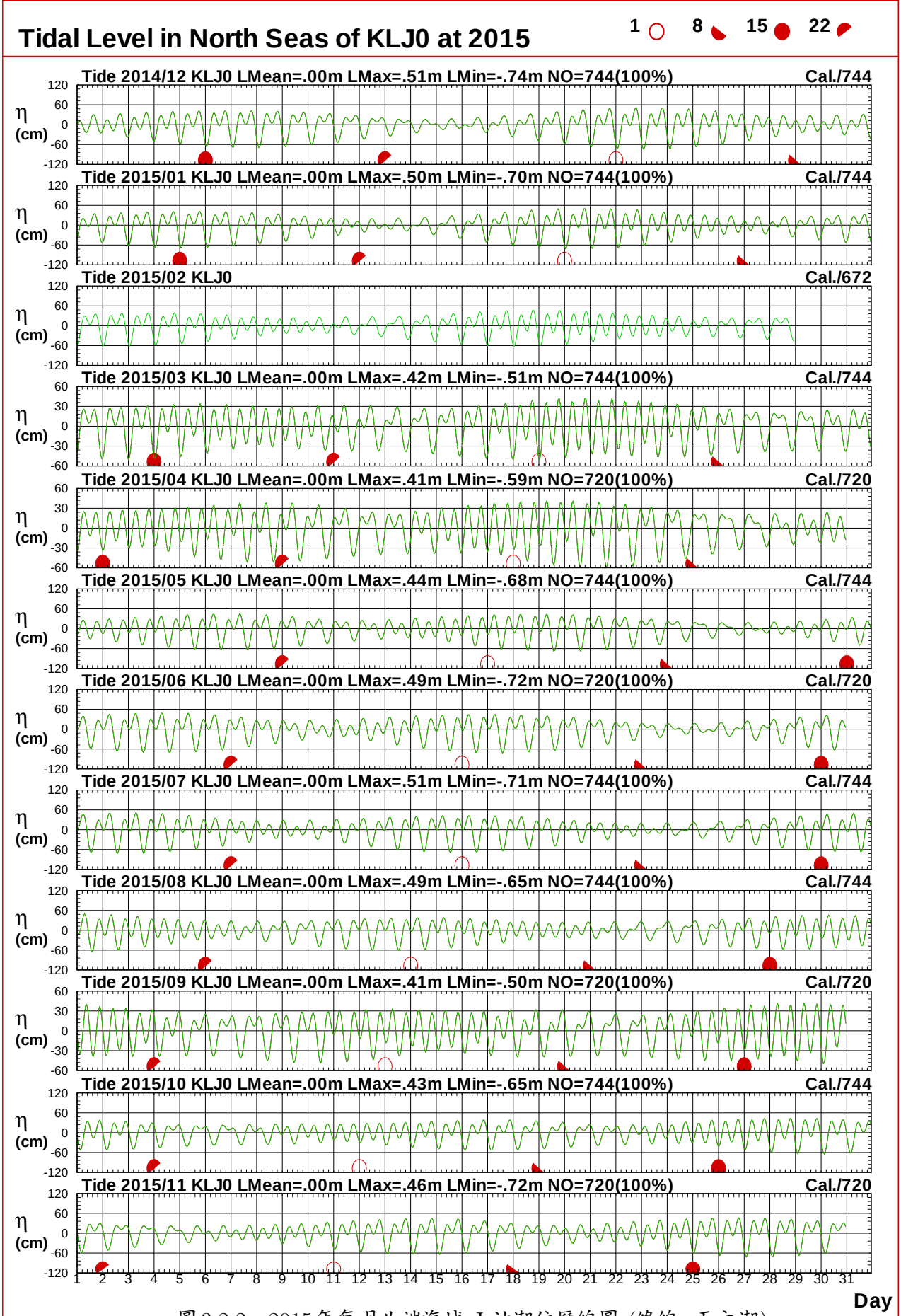

圖3.2.2　2015年每月北端海域 J 站潮位歷線圖 (綠線: 天文潮)

T14CKLJ0.1HA T14CKLJ0.1HC T151KLJ0.1HA T151KLJ0.1HC T152KLJ0.1HA T152KLJ0.1HC
T153KLJ0.1HA T153KLJ0.1HC T154KLJ0.1HA T154KLJ0.1HC T155KLJ0.1HA T155KLJ0.1HC

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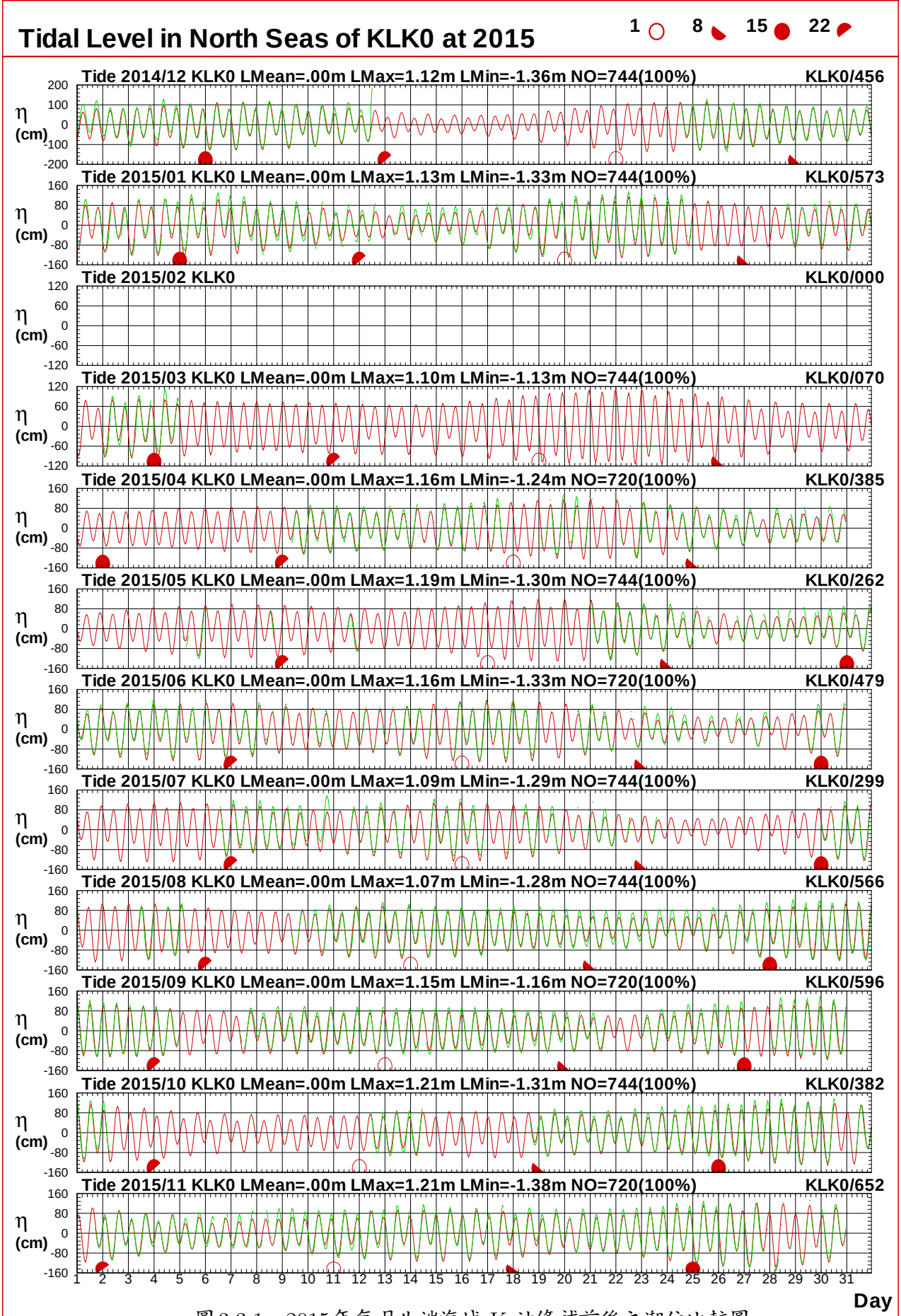

圖 3.3.1　2015年每月北端海域 K 站修補前後之潮位比較圖

T14CKLK0.1HA T14CKLK0.1H0 T151KLK0.1HA T151KLK0.1H0 T152KLK0.1HA T152KLK0.1H0
T153KLK0.1HA T153KLK0.1H0 T154KLK0.1HA T154KLK0.1H0 T155KLK0.1HA T155KLK0.1H0

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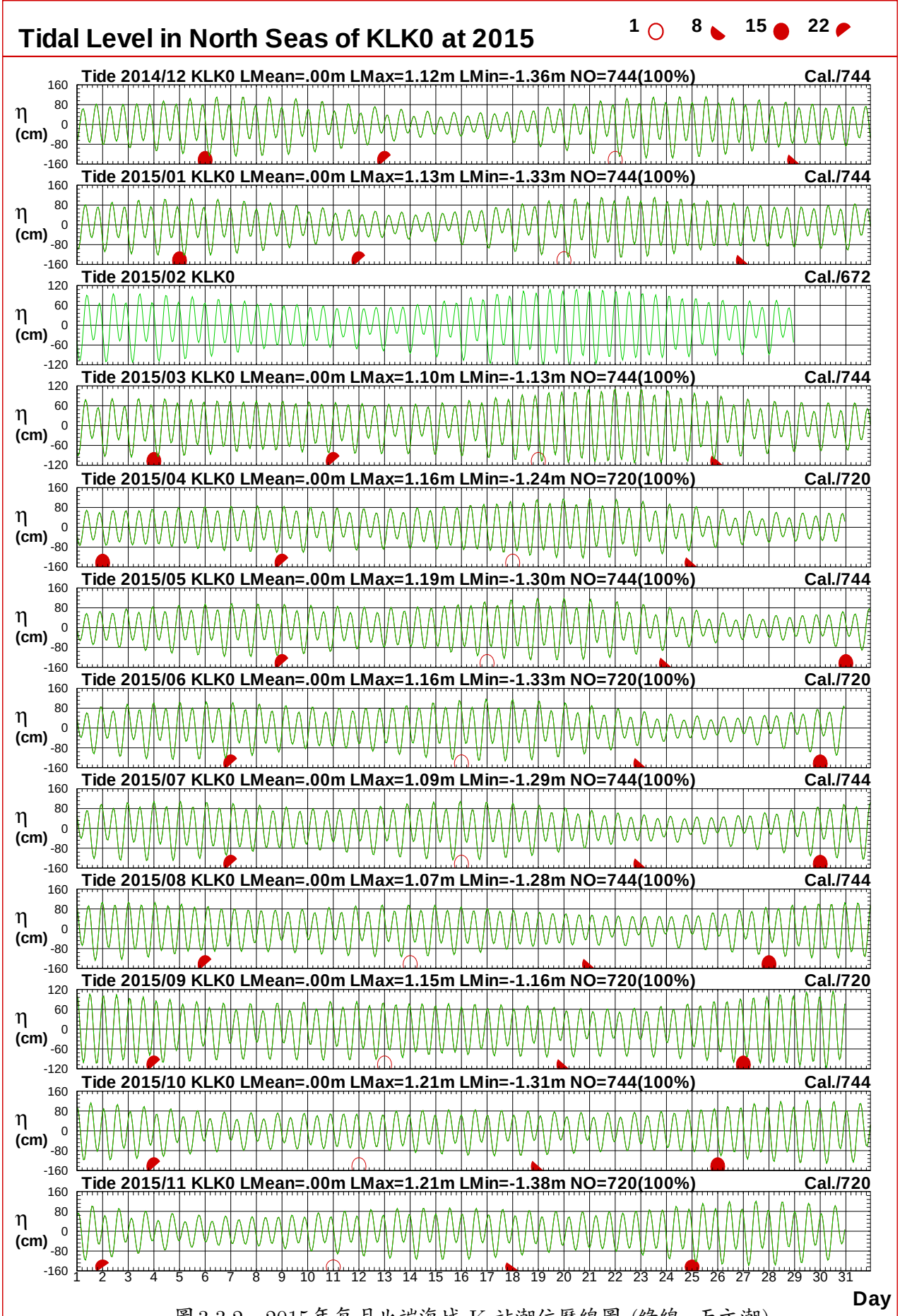

圖 3.3.2　2015年每月北端海域 K 站潮位歷線圖 (綠線: 天文潮)

T14CKLK0.1HA T14CKLK0.1HC T151KLK0.1HA T151KLK0.1HC T152KLK0.1HA T152KLK0.1HC
T153KLK0.1HA T153KLK0.1HC T154KLK0.1HA T154KLK0.1HC T155KLK0.1HA T155KLK0.1HC

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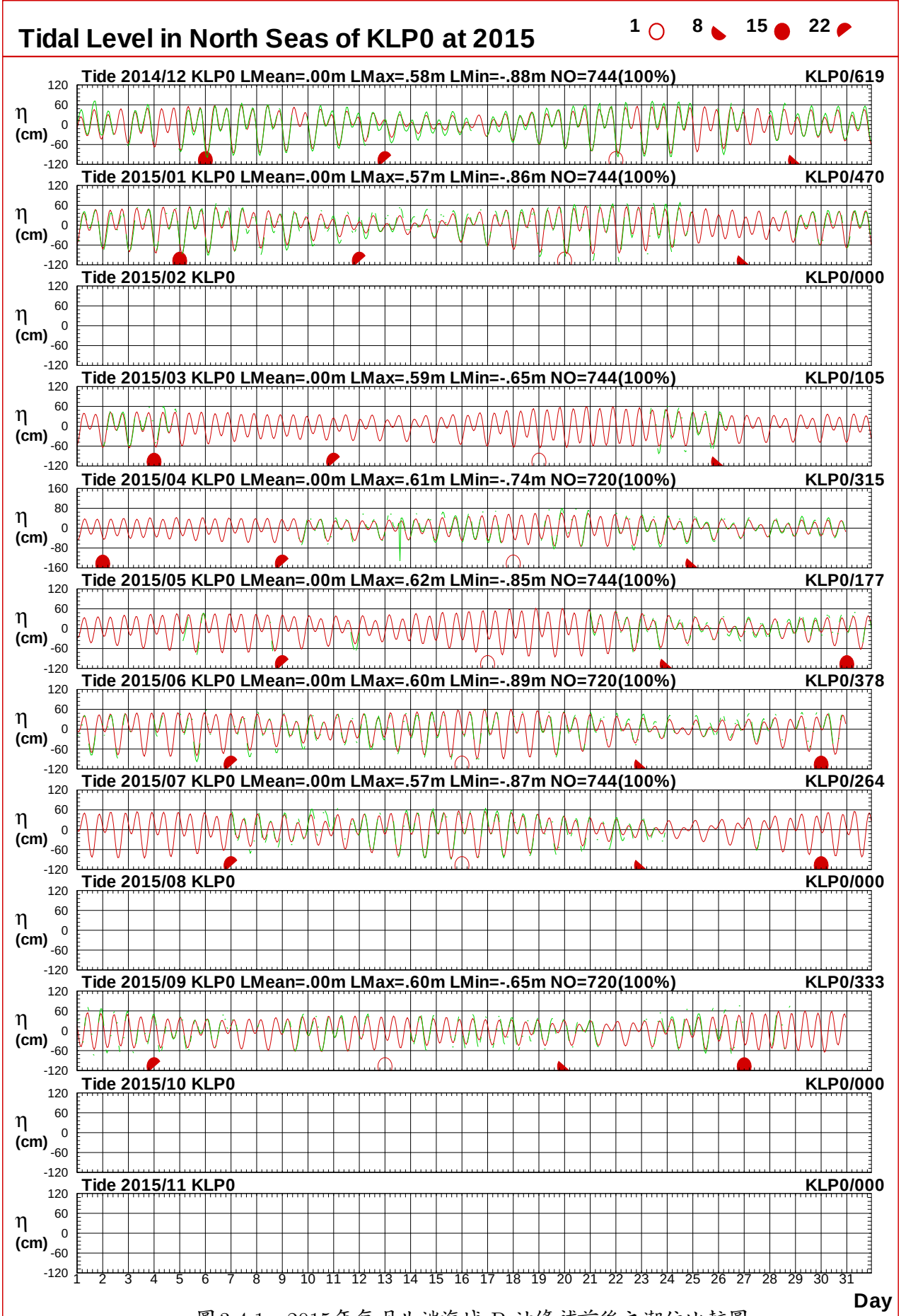

圖3.4.1　2015年每月北端海域 P 站修補前後之潮位比較圖

T14CKLP0.1HA T14CKLP0.1H0 T151KLP0.1HA T151KLP0.1H0 T152KLP0.1HA T152KLP0.1H0
T153KLP0.1HA T153KLP0.1H0 T154KLP0.1HA T154KLP0.1H0 T155KLP0.1HA T155KLP0.1H0

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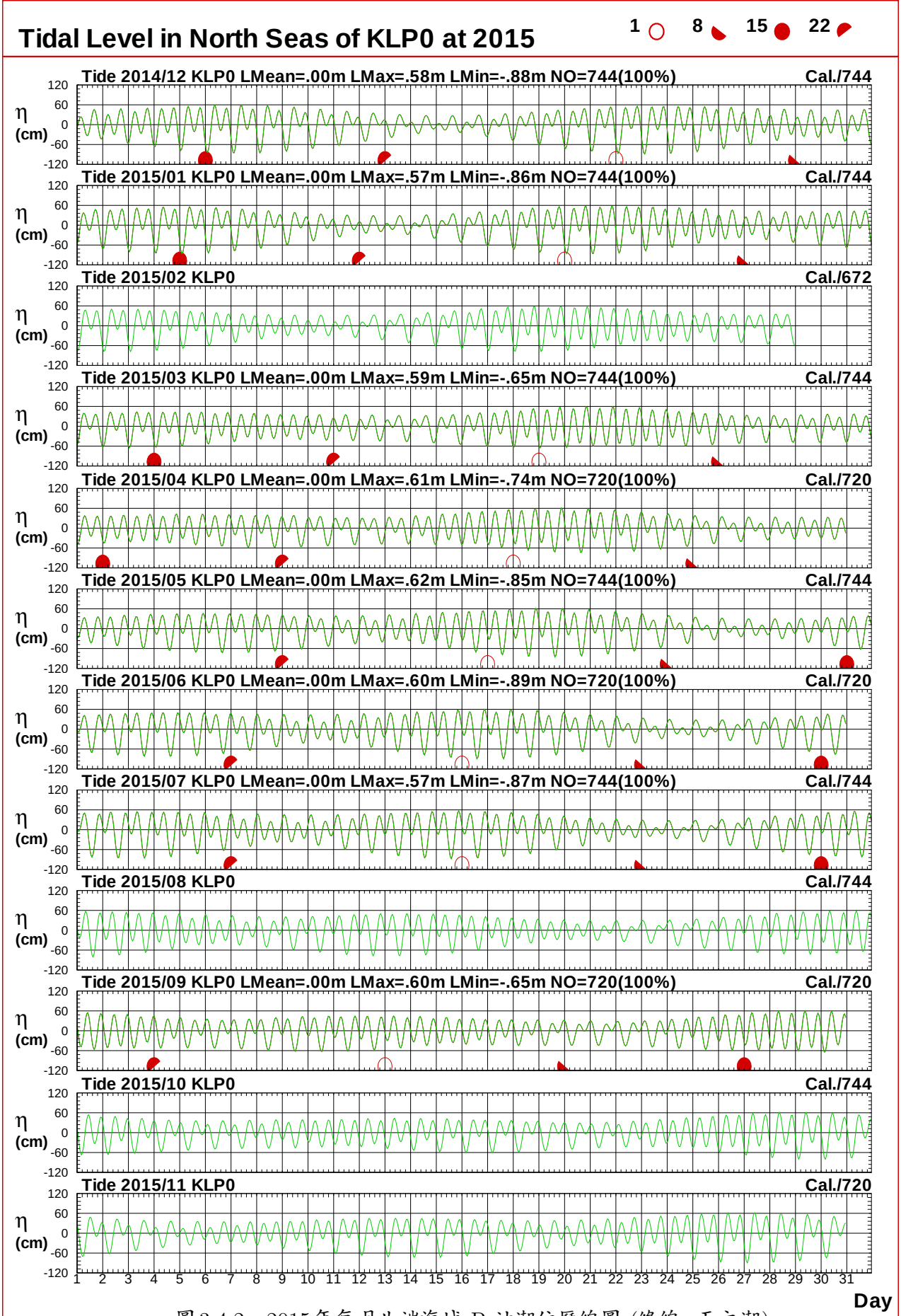

圖3.4.2　2015年每月北端海域 P 站潮位歷線圖 (綠線: 天文潮)

T14CKLP0.1HA T14CKLP0.1HC T151KLP0.1HA T151KLP0.1HC T152KLP0.1HA T152KLP0.1HC
T153KLP0.1HA T153KLP0.1HC T154KLP0.1HA T154KLP0.1HC T155KLP0.1HA T155KLP0.1HC

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第四章　2015 年北端海域觀測海流資料

海流之觀測，本中心於 2001 年 6 月中旬安置挪威 NORTEK 公司之剖面海流表面波浪與潮汐之監測系統(簡稱 AWCP)，安裝在基隆港東防波堤堤頭外水深 44 公尺處(**測站 X0**)，如附圖 4，2006 年 8 月因防波堤延伸工程，移至西防波堤堤外水深 36 公尺位置(**測站 X1**)。2011 年 8 月，安裝在東防波堤堤頭北方約 200 公尺，水深 48 公尺(**測站 X2**)，歷年觀測海流資料蒐集概況如表 4。

剖面海流流速的量測可以依照使用在不同水深即自固定在海床上之儀器位置到水表面來設定量測不同的間距，基隆港觀測站水深間距設定為 2 公尺；每小時連續量測 600 秒，再將總和平均代表其數樣每一間距層之海流流速、流向等資料，記錄在感應器內，並每隔 1 小時經由海底電纜傳訊回接收站之電腦中儲存。

本海流年報 2015 年各觀測站每月**觀測海流**資料記錄期間統計表，如表 4.1a，2015 年各觀測站每月**計算潮流**資料統計表，如表 4.1b。2015 年**各觀測站觀測海流**與**計算潮流(殘餘流)**歷線比較圖，**各觀測站觀測海流**與其他測站觀測海流歷線比較圖，如圖 4.1 以後。

表 4 北端海域觀測海流資料蒐集概況表(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

北端海域

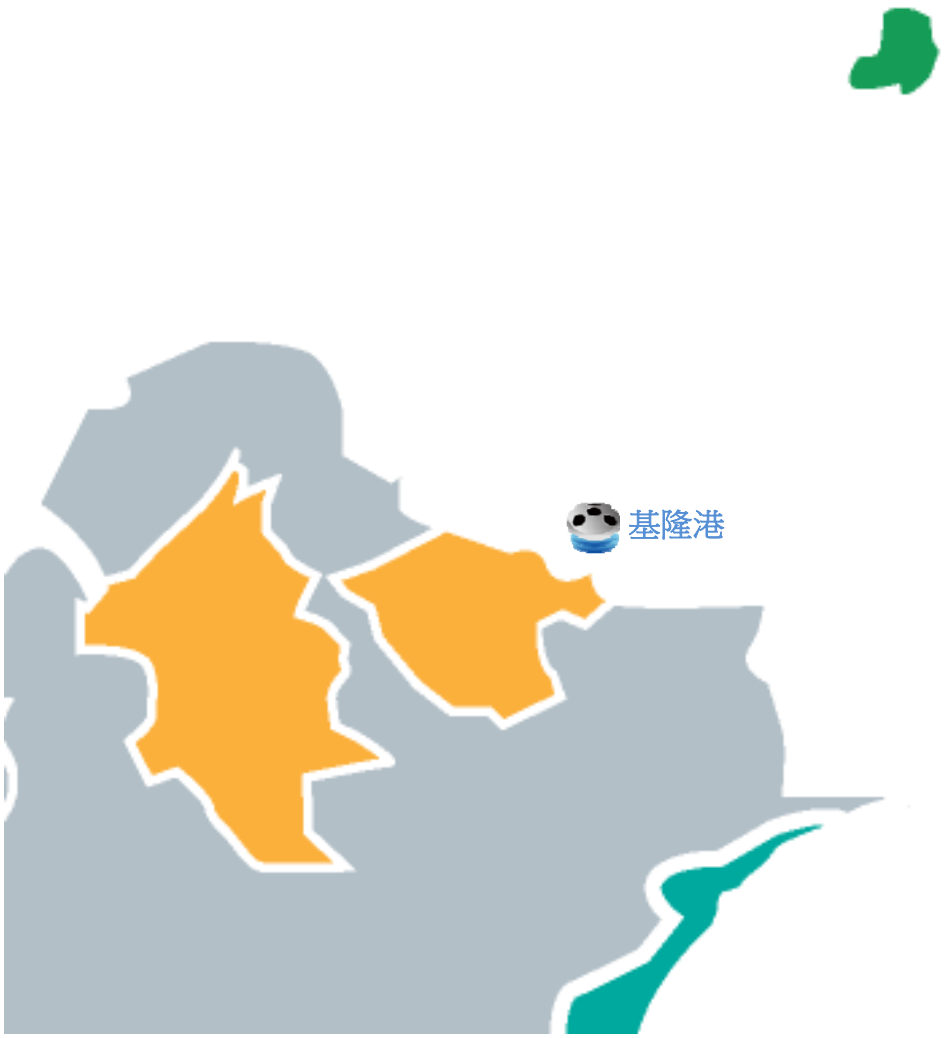

圖 4 北端海域海流觀測站位置示意圖

表4.1a 2015年每月北端海域各測站觀測海流資料紀錄統計表

年/月 港區	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域
測站	X							
2014/12月	742 (99.7%)	*	*	*	*	*	*	*
2015/ 1月	744 (100%)	*	*	*	*	*	*	*
2015/ 2月	672 (100%)	*	*	*	*	*	*	*
2015/ 3月	744 (100%)	*	*	*	*	*	*	*
2015/ 4月	713 (99.0%)	*	*	*	*	*	*	*
2015/ 5月	744 (100%)	*	*	*	*	*	*	*
2015/ 6月	705 (97.9%)	*	*	*	*	*	*	*
2015/ 7月	744 (100%)	*	*	*	*	*	*	*
2015/ 8月	744 (100%)	*	*	*	*	*	*	*
2015/ 9月	710 (98.6%)	*	*	*	*	*	*	*
2015/10月	719 (96.6%)	*	*	*	*	*	*	*
2015/11月	706 (98.1%)	*	*	*	*	*	*	*
2015/冬季	2158 (99.9%)	*	*	*	*	*	*	*
2015/春季	2201 (99.7%)	*	*	*	*	*	*	*
2015/夏季	2193 (99.3%)	*	*	*	*	*	*	*
2015/秋季	2135 (97.8%)	*	*	*	*	*	*	*
2015/整年	8687 (99.2%)	*	*	*	*	*	*	*
起始年月	2014/12	*	*	*	*	*	*	*
結束年月	2015/11	*	*	*	*	*	*	*

ST-X: 港灣技術研究中心觀測 X 站流速資料

表4.1b 2015年每月北端海域計算潮流各測站資料統計表

年/月 港區	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域	基隆海域
測站	X							
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	*	*	*	*	*	*	*	*
2015/春季	*	*	*	*	*	*	*	*
2015/夏季	*	*	*	*	*	*	*	*
2015/秋季	*	*	*	*	*	*	*	*
2015/整年	*	*	*	*	*	*	*	*
起始年月	*	*	*	*	*	*	*	*
結束年月	*	*	*	*	*	*	*	*

Cal.X: 港灣技術研究中心潮流 X 站計算資料

Current Speed in North Seas of KLX0 at 2015

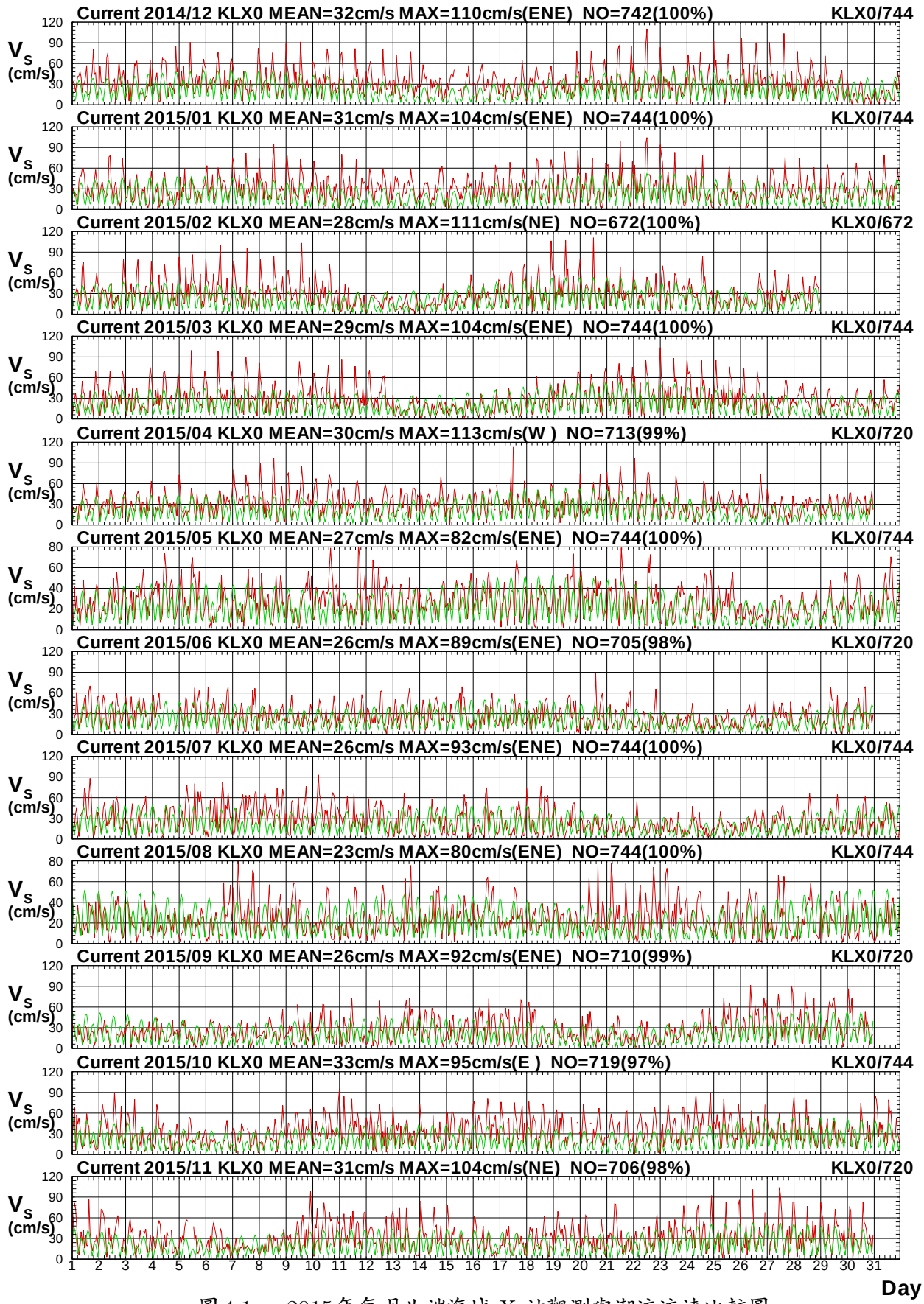

圖4.1a　2015年每月北端海域 X 站觀測與潮流流速比較圖

C14CKLX0.1H0 C14CKLX0.1HD C151KLX0.1H0 C151KLX0.1HD C152KLX0.1H0 C152KLX0.1HD
C153KLX0.1H0 C153KLX0.1HD C154KLX0.1H0 C154KLX0.1HD C155KLX0.1H0 C155KLX0.1HD

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Current Direction in North Seas of KLX0 at 2015

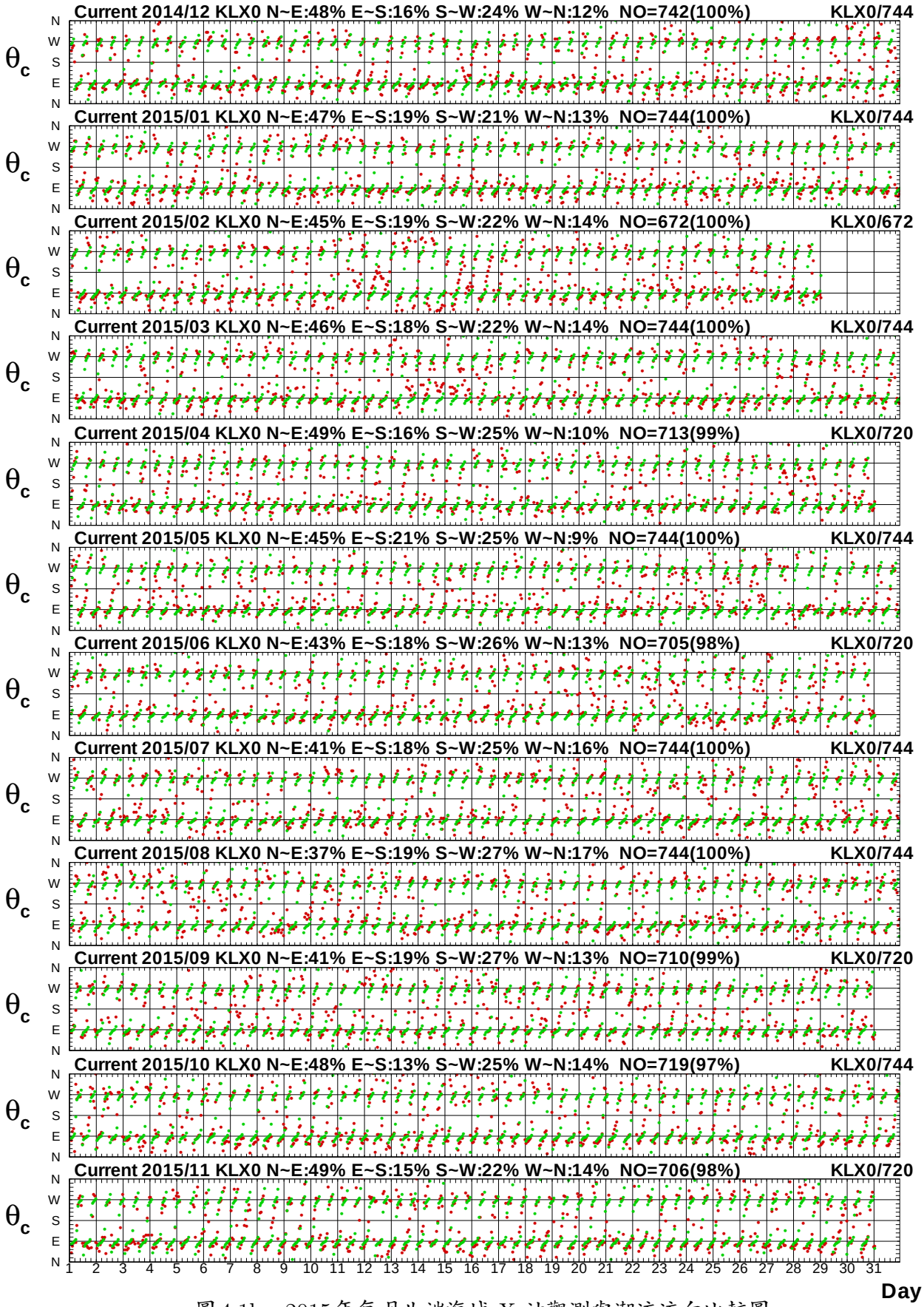

圖4.1b　2015年每月北端海域 X 站觀測與潮流流向比較圖

C14CKLX0.1H0 C14CKLX0.1HD C151KLX0.1H0 C151KLX0.1HD C152KLX0.1H0 C152KLX0.1HD
C153KLX0.1H0 C153KLX0.1HD C154KLX0.1H0 C154KLX0.1HD C155KLX0.1H0 C155KLX0.1HD

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Current Speed in North Seas of KLX0 at 2015

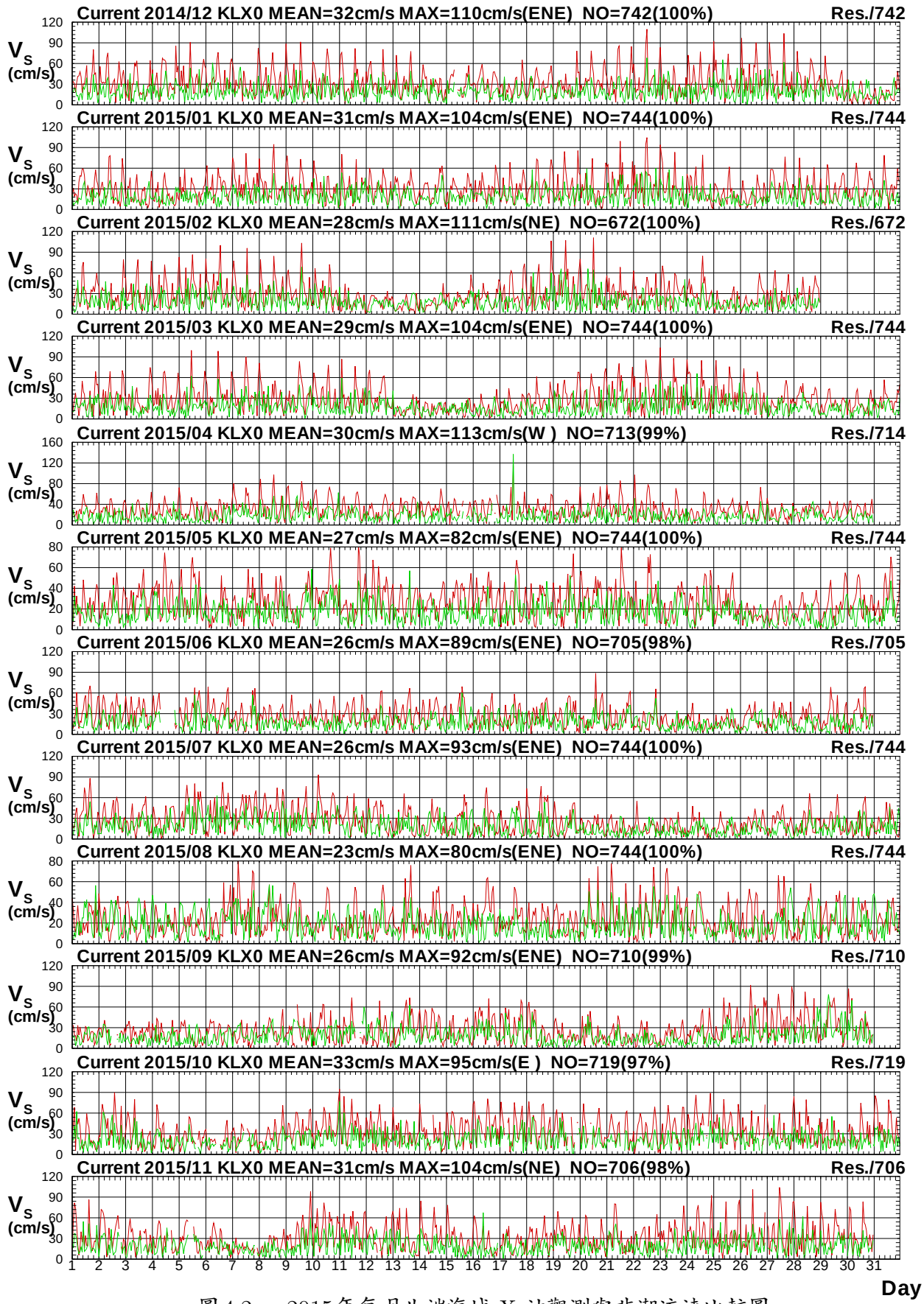

圖 4.2a　2015年每月北端海域 X 站觀測與非潮流速比較圖

C14CKLX0.1H0 C14CKLX0.1HR C151KLX0.1H0 C151KLX0.1HR C152KLX0.1H0 C152KLX0.1HR
C153KLX0.1H0 C153KLX0.1HR C154KLX0.1H0 C154KLX0.1HR C155KLX0.1H0 C155KLX0.1HR

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Current Direction in North Seas of KLX0 at 2015

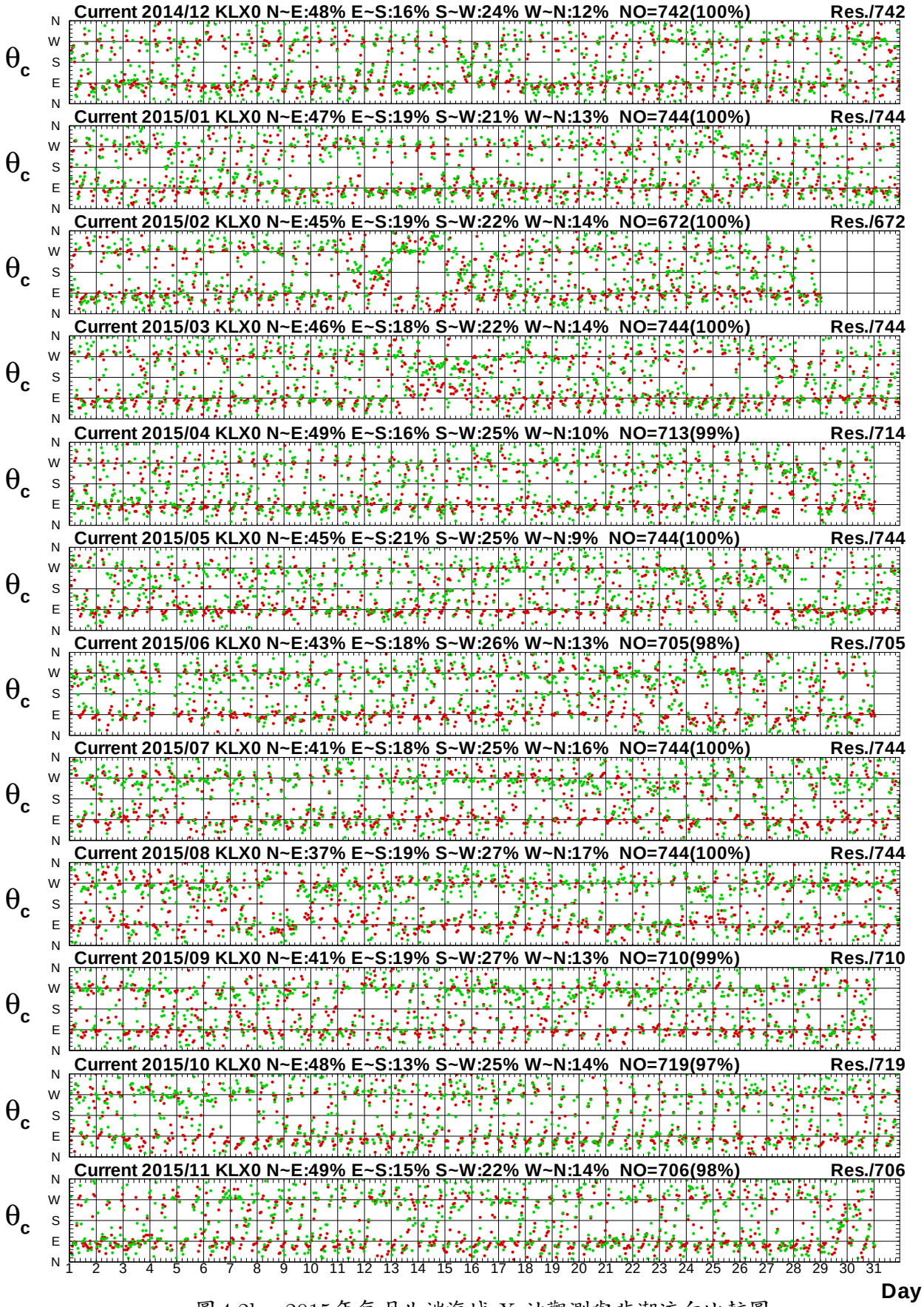

圖4.2b　2015年每月北端海域 X 站觀測與非潮流向比較圖

C14CKLX0.1H0 C14CKLX0.1HR C151KLX0.1H0 C151KLX0.1HR C152KLX0.1H0 C152KLX0.1HR
C153KLX0.1H0 C153KLX0.1HR C154KLX0.1H0 C154KLX0.1HR C155KLX0.1H0 C155KLX0.1HR

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Current Speed in North Seas of KLX0 at 2015

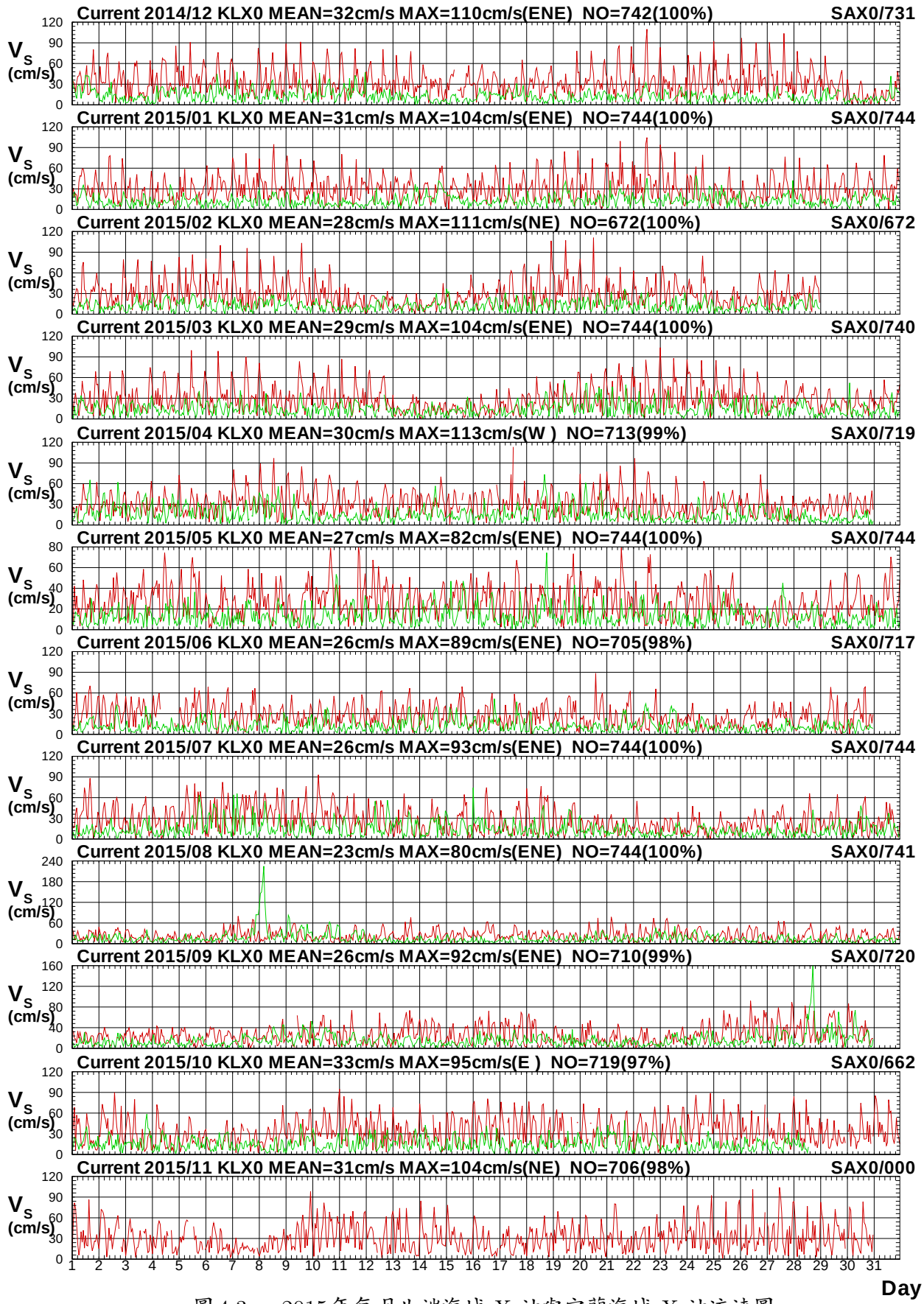

圖4.3a　2015年每月北端海域 X 站與宜蘭海域 X 站流速圖

C14CKLX0.1H0 C14CSAX0.1H0 C151KLX0.1H0 C151SAX0.1H0 C152KLX0.1H0 C152SAX0.1H0
C153KLX0.1H0 C153SAX0.1H0 C154KLX0.1H0 C154SAX0.1H0 C155KLX0.1H0 C155SAX0.1H0

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Current Direction in North Seas of KLX0 at 2015

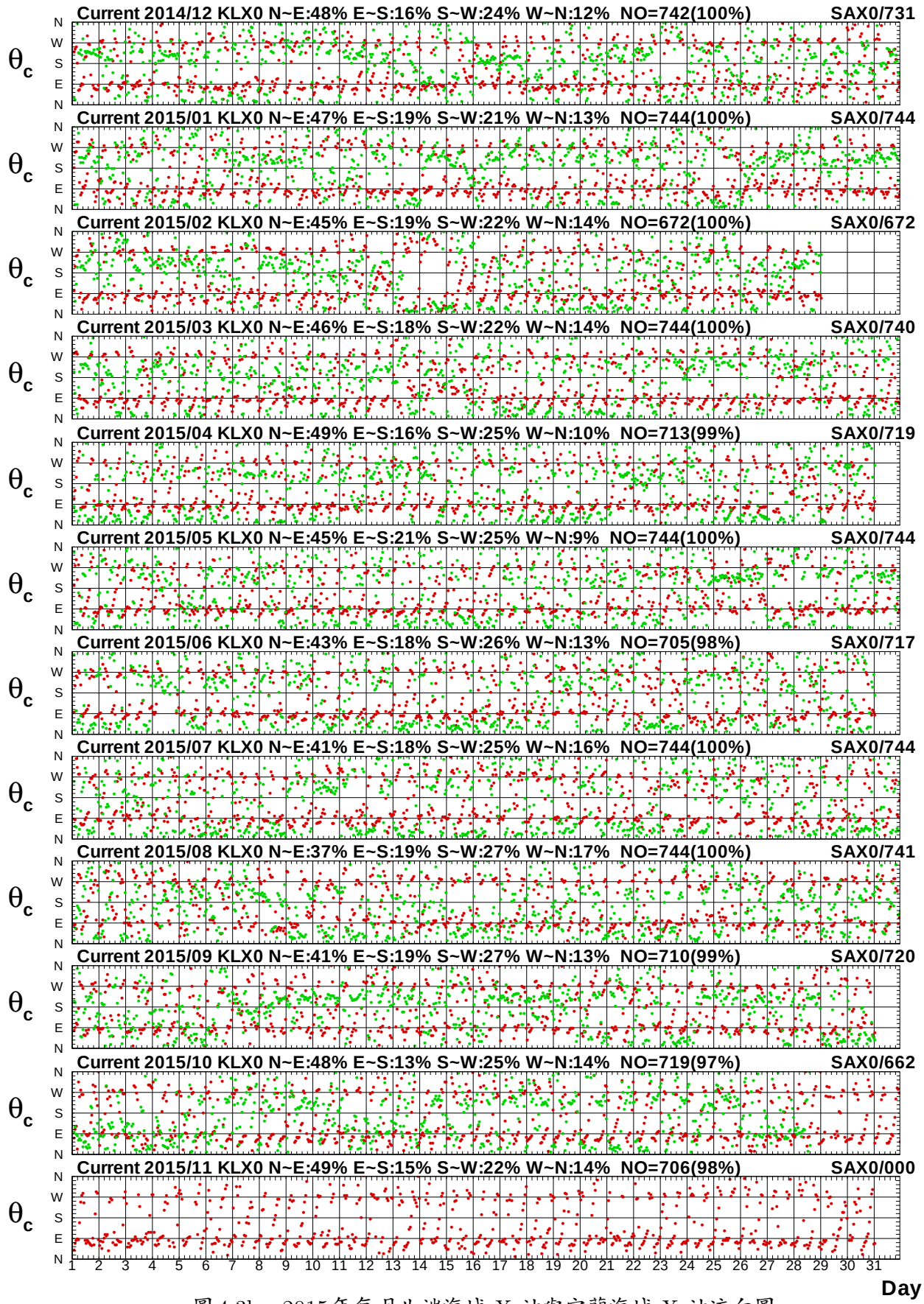

圖4.3b　2015年每月北端海域 X 站與宜蘭海域 X 站流向圖

C14CKLX0.1H0 C14CSAX0.1H0 C151KLX0.1H0 C151SAX0.1H0 C152KLX0.1H0 C152SAX0.1H0
C153KLX0.1H0 C153SAX0.1H0 C154KLX0.1H0 C154SAX0.1H0 C155KLX0.1H0 C155SAX0.1H0

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Current Speed in North Seas of KLX0 at 2015

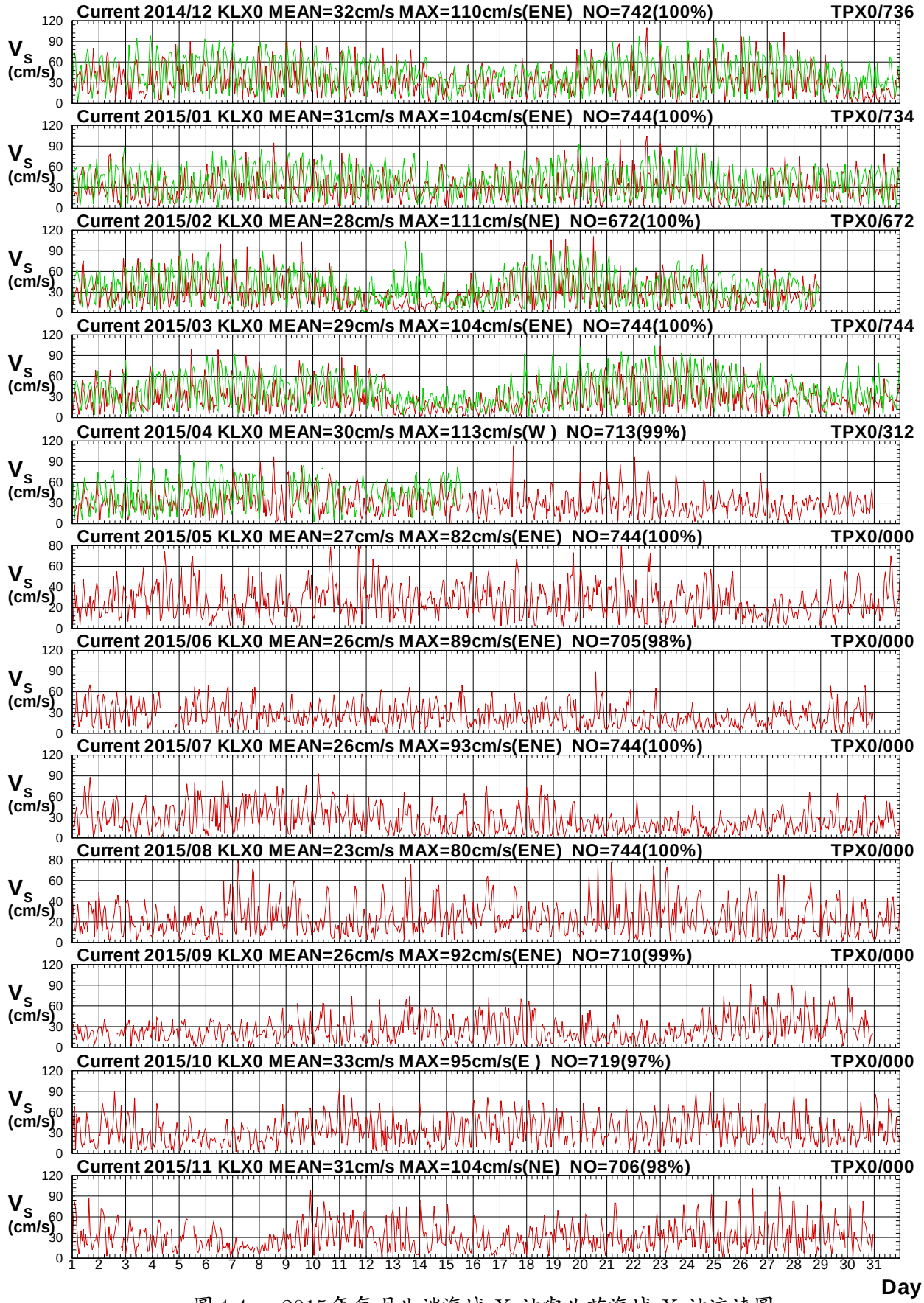

圖4.4a　2015年每月北端海域 X 站與北苗海域 X 站流速圖

C14CKLX0.1H0 C14CTPX0.1H0 C151KLX0.1H0 C151TPX0.1H0 C152KLX0.1H0 C152TPX0.1H0
C153KLX0.1H0 C153TPX0.1H0 C154KLX0.1H0 C154TPX0.1H0 C155KLX0.1H0 C155TPX0.1H0

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Current Direction in North Seas of KLX0 at 2015

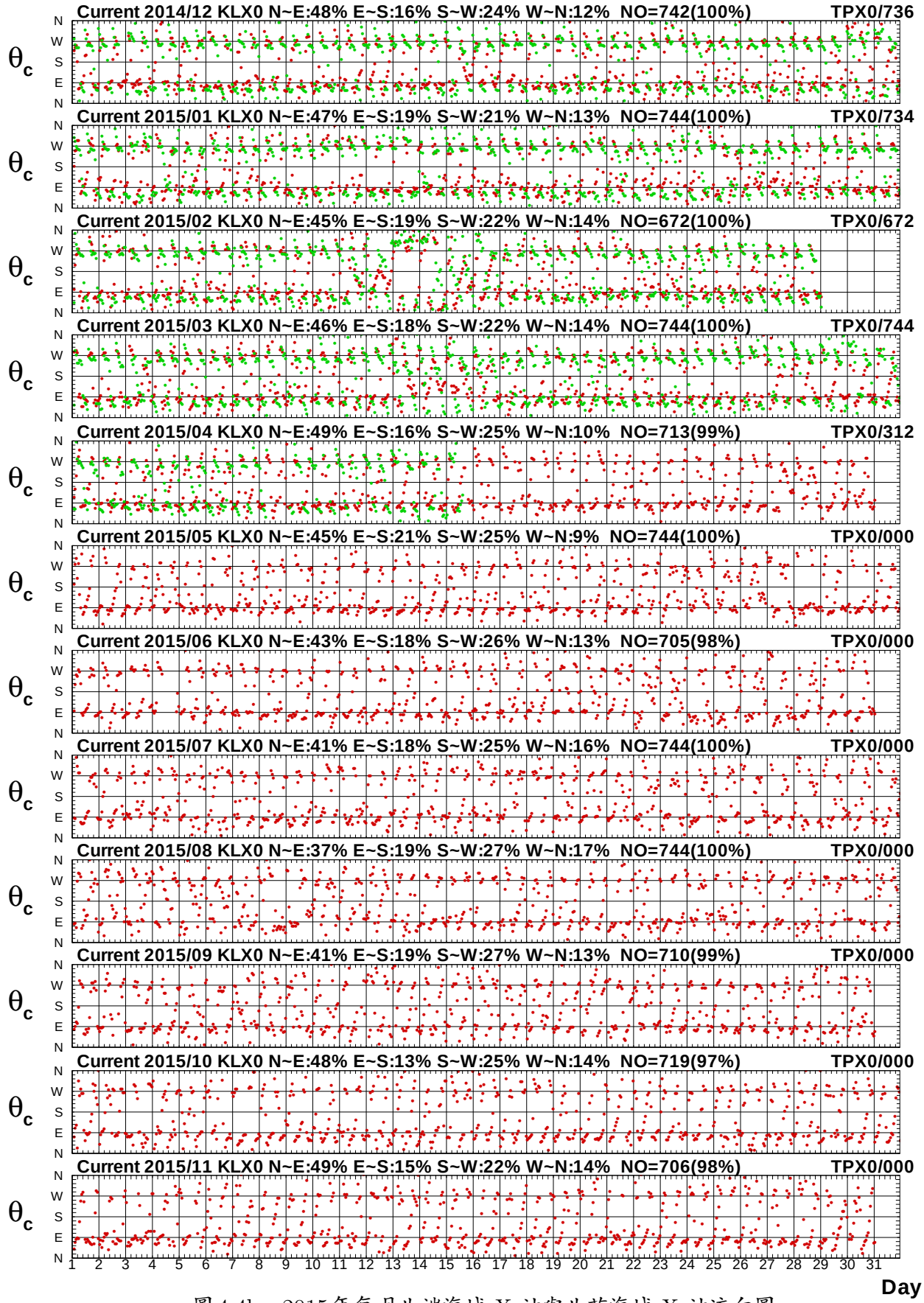

圖4.4b　2015年每月北端海域 X 站與北苗海域 X 站流向圖

C14CKLX0.1H0 C14CTPX0.1H0 C151KLX0.1H0 C151TPX0.1H0 C152KLX0.1H0 C152TPX0.1H0
C153KLX0.1H0 C153TPX0.1H0 C154KLX0.1H0 C154TPX0.1H0 C155KLX0.1H0 C155TPX0.1H0

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