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2015 年港灣環境資訊網觀測資料年報 (馬祖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
傅怡釗、陳鈞彥、林珂如、謝佳紘

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關鍵詞港灣環境資訊網、2015 年、馬祖海域、觀測海氣象資料、年報			
摘要： <p style="text-align: center;">本港灣環境資訊網觀測海氣象資料年報，包括馬祖海域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。</p>			
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ABSTRACT: <p style="text-align: center;">This Annual report 2015 of Harbor Environment Information Website(HEIV) covers the observation data of winds, waves, tides and currents near Ma-Tsu offshoe region in Taiwan. The contents in this Annual report include the records of observation and the time series of data.</p>			
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2015 年港灣環境資訊網觀測資料年報 (馬祖海域觀測海氣象資料)

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誌 謝

2015 年港灣環境資訊網觀測風力資料，蒐集之馬祖海域風力資料，除本中心自行觀測之外，在馬祖氣象站(測站 E)、馬祖海上浮標(測站 Y)等觀測風力資料，係交通部中央氣象局(CWB)提供，謹致謝忱。

2015 年港灣環境資訊網觀測波浪資料，蒐集之馬祖海域波浪資料，除本中心自行觀測之外，在馬祖海上浮標(測站 Y)觀測波浪資料，係交通部中央氣象局(CWB)提供，謹致謝忱。

2015 年港灣海氣象觀測潮汐資料，蒐集之馬祖海域潮汐觀測資料，除本中心自行觀測之外，在馬祖(測站 F)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 年馬祖海域觀測風力資料

馬祖海域風之觀測係 2012 年 10 月本中心(IHMT)安裝 Young Brand 風速計於馬祖福澳港辦事處頂樓(稱測站 W)，其位置如附圖 1。2015 年 9 月本中心於北竿、西莒、東引及東莒等 4 處增設風速站(稱測站 B、測站 C、測站 D 及測站 I)。

測站 E 之風速儀屬中央氣象局(CWB)所有，測站 Y(海域資料浮標)之風速儀也屬中央氣象局所有。馬祖海域各測站歷年觀測風資料蒐集概況如表 1。

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)。

本風力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 馬祖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	26°9'36"N	119°56'37"E	2012/10-2015/11(觀測中)	港研中心	福澳港
E	26°10'10"N	119°55'23"E	2004/01-2015/11(觀測中)	中央氣象局	福澳港區
Y	26°22'36"N	120°31'53"E	2010/07-2015/11(觀測中)	中央氣象局	馬祖資料浮標
B	26°12'25"N	119°58'3.5"E	2015/09-2015/11(觀測中)	港研中心	北竿港
C	25°58'11"N	119°55'55"E	2015/09-2015/11(觀測中)	港研中心	西莒港
D	26°9'36"N	119°56'37"E	2015/09-2015/11(觀測中)	港研中心	東引港
I	26°21'49"N	120°29'2.5"E	2015/09-2015/11(觀測中)	港研中心	東莒港

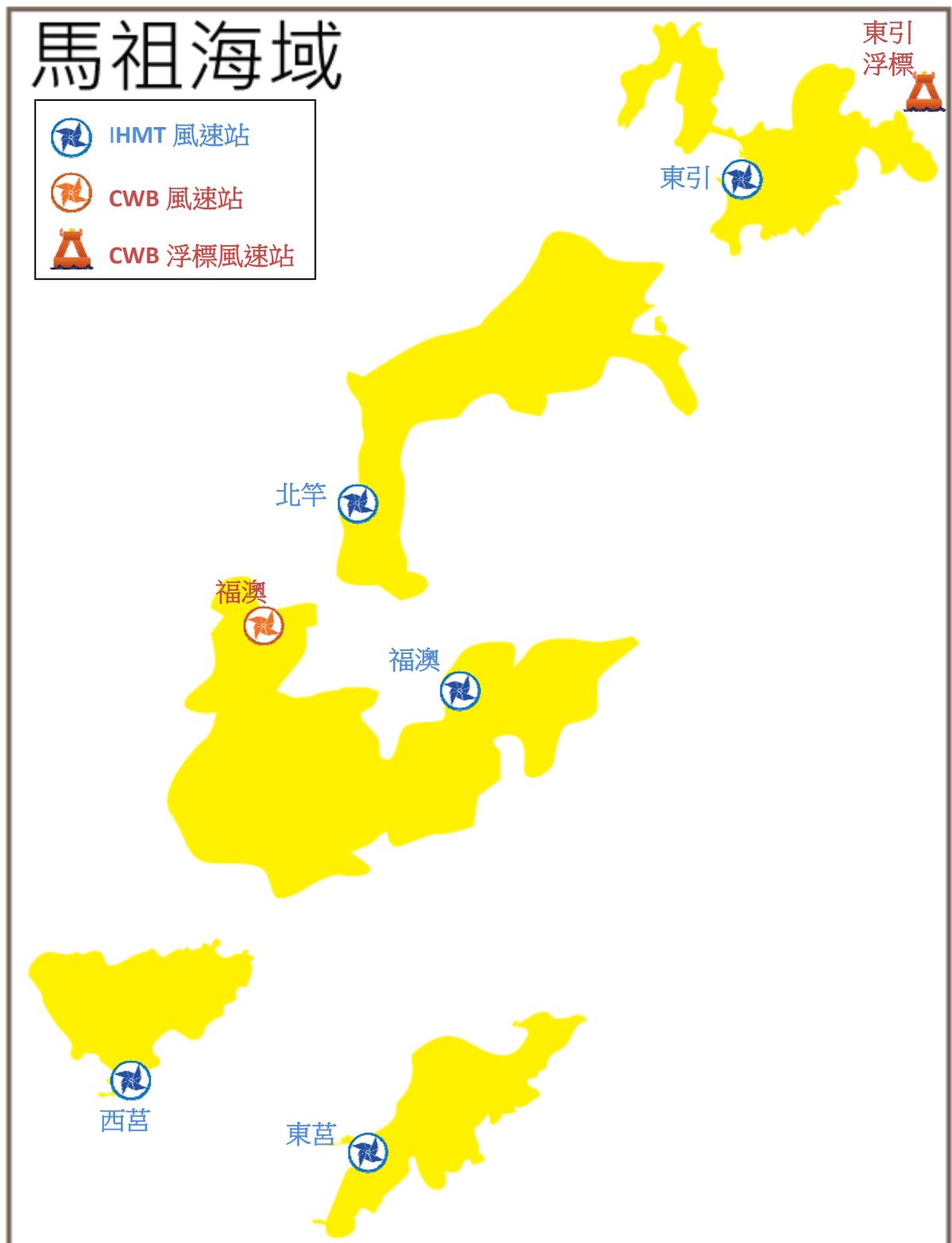


圖 1 馬祖海域風力觀測站位置示意圖

表 1.1a 2015年每月馬祖海域修補前各測站觀測風力資料紀錄統計表

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	W	Y	E	B	C	D	I	
2014/12月	744 (100%)	740 (99.5%)	744 (100%)	*	*	*	*	*
2015/ 1月	744 (100%)	729 (98.0%)	743 (99.9%)	*	*	*	*	*
2015/ 2月	672 (100%)	669 (99.6%)	672 (100%)	*	*	*	*	*
2015/ 3月	743 (99.9%)	744 (100%)	744 (100%)	*	*	*	*	*
2015/ 4月	720 (100%)	719 (99.9%)	720 (100%)	*	*	*	*	*
2015/ 5月	744 (100%)	741 (99.6%)	744 (100%)	*	*	*	*	*
2015/ 6月	720 (100%)	714 (99.2%)	720 (100%)	*	*	*	*	*
2015/ 7月	744 (100%)	743 (99.9%)	744 (100%)	*	*	*	*	*
2015/ 8月	744 (100%)	743 (99.9%)	744 (100%)	*	*	*	*	*
2015/ 9月	709 (98.5%)	720 (100%)	720 (100%)	447 (62.1%)	346 (48.1%)	200 (27.8%)	382 (53.1%)	*
2015/10月	744 (100%)	744 (100%)	744 (100%)	506 (68.0%)	*	692 (93.0%)	*	*
2015/11月	720 (100%)	719 (99.9%)	720 (100%)	287 (39.9%)	*	76 (10.6%)	*	*
2015/冬季	2160 (100%)	2138 (99.0%)	2159 (100.0%)	*	*	*	*	*
2015/春季	2207 (100.0%)	2204 (99.8%)	2208 (100%)	*	*	*	*	*
2015/夏季	2208 (100%)	2200 (99.6%)	2208 (100%)	*	*	*	*	*
2015/秋季	2173 (99.5%)	2183 (100.0%)	2184 (100%)	1240 (56.8%)	346 (15.8%)	968 (44.3%)	382 (17.5%)	*
2015/整年	8748 (99.9%)	8725 (99.6%)	8759 (100.0%)	1240 (14.2%)	346 (3.9%)	968 (11.1%)	382 (4.4%)	*
起始年月	2014/12	2014/12	2014/12	2015/09	2015/09	2015/09	2015/09	*
結束年月	2015/11	2015/11	2015/11	2015/11	2015/09	2015/11	2015/09	*

表 1.1b 2015年每月馬祖海域修補後各測站風力資料統計表

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	W	Y	E	B	C	D	I	
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	*	*	*	*	*

Wind Speed in Ma-Tsu Seas of MSY0 at 2015

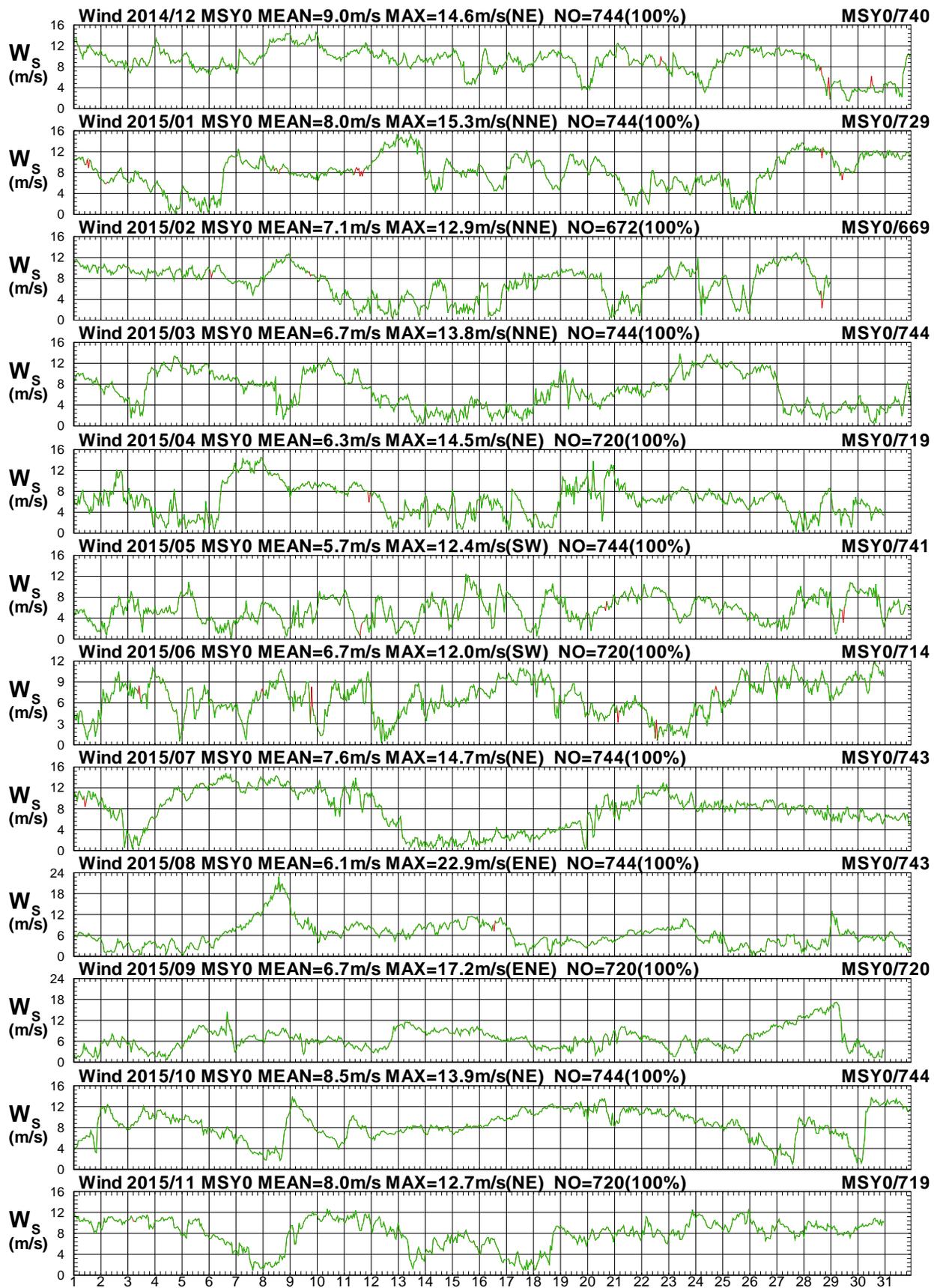


圖 1.1a 2015年每月馬祖海域 Y 站修補前後之風速比較圖

W14CMSY0.1HA W14CMSY0.1H0 W151MSY0.1HA W151MSY0.1H0 W152MSY0.1HA W152MSY0.1H0
 W153MSY0.1HA W153MSY0.1H0 W154MSY0.1HA W154MSY0.1H0 W155MSY0.1HA W155MSY0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

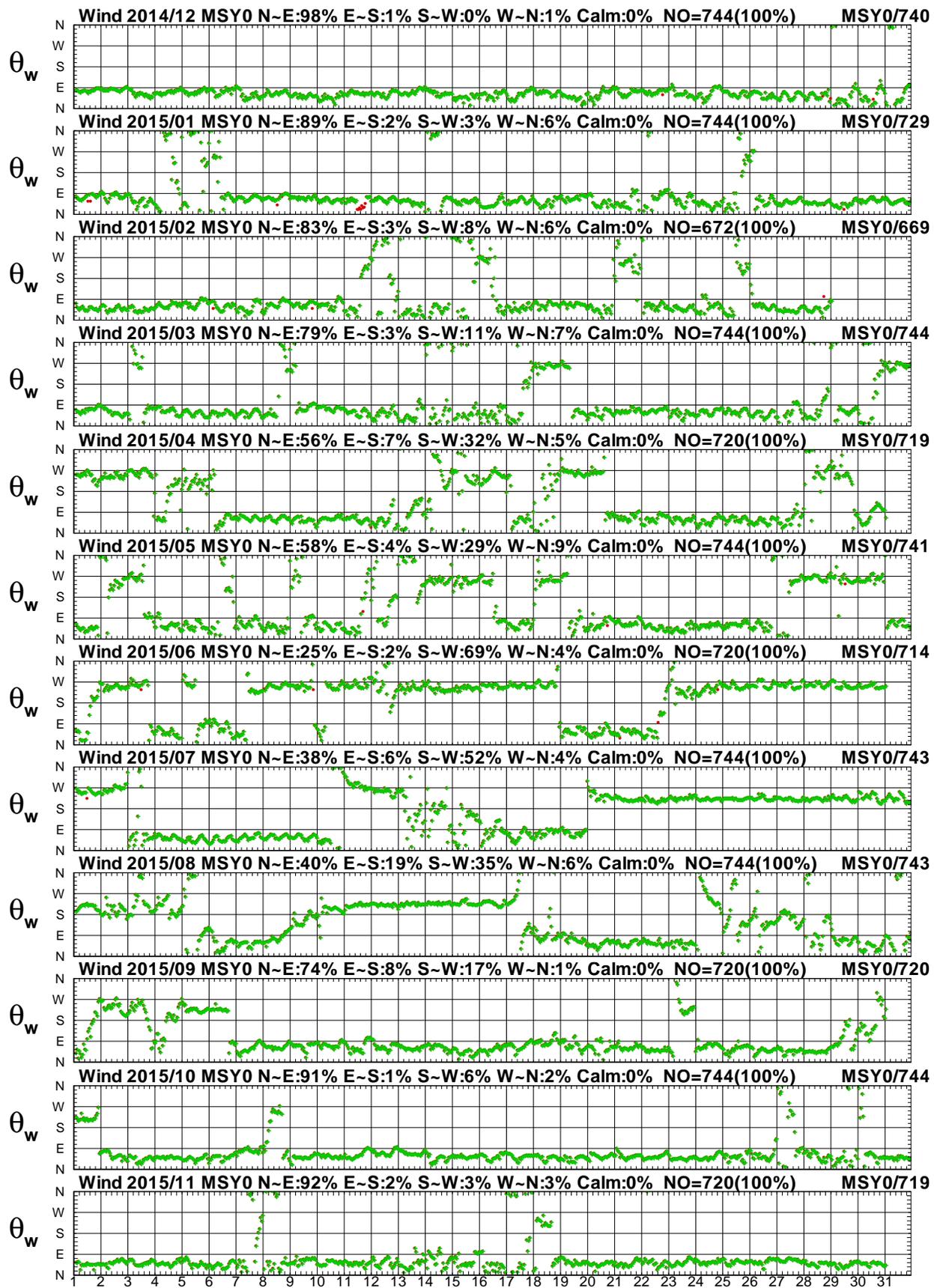


圖 1.1b 2015年每月馬祖海域 Y 站修補前後之風向比較圖

W14CMSY0.1HA W14CMSY0.1H0 W151MSY0.1HA W151MSY0.1H0 W152MSY0.1HA W152MSY0.1H0
 W153MSY0.1HA W153MSY0.1H0 W154MSY0.1HA W154MSY0.1H0 W155MSY0.1HA W155MSY0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

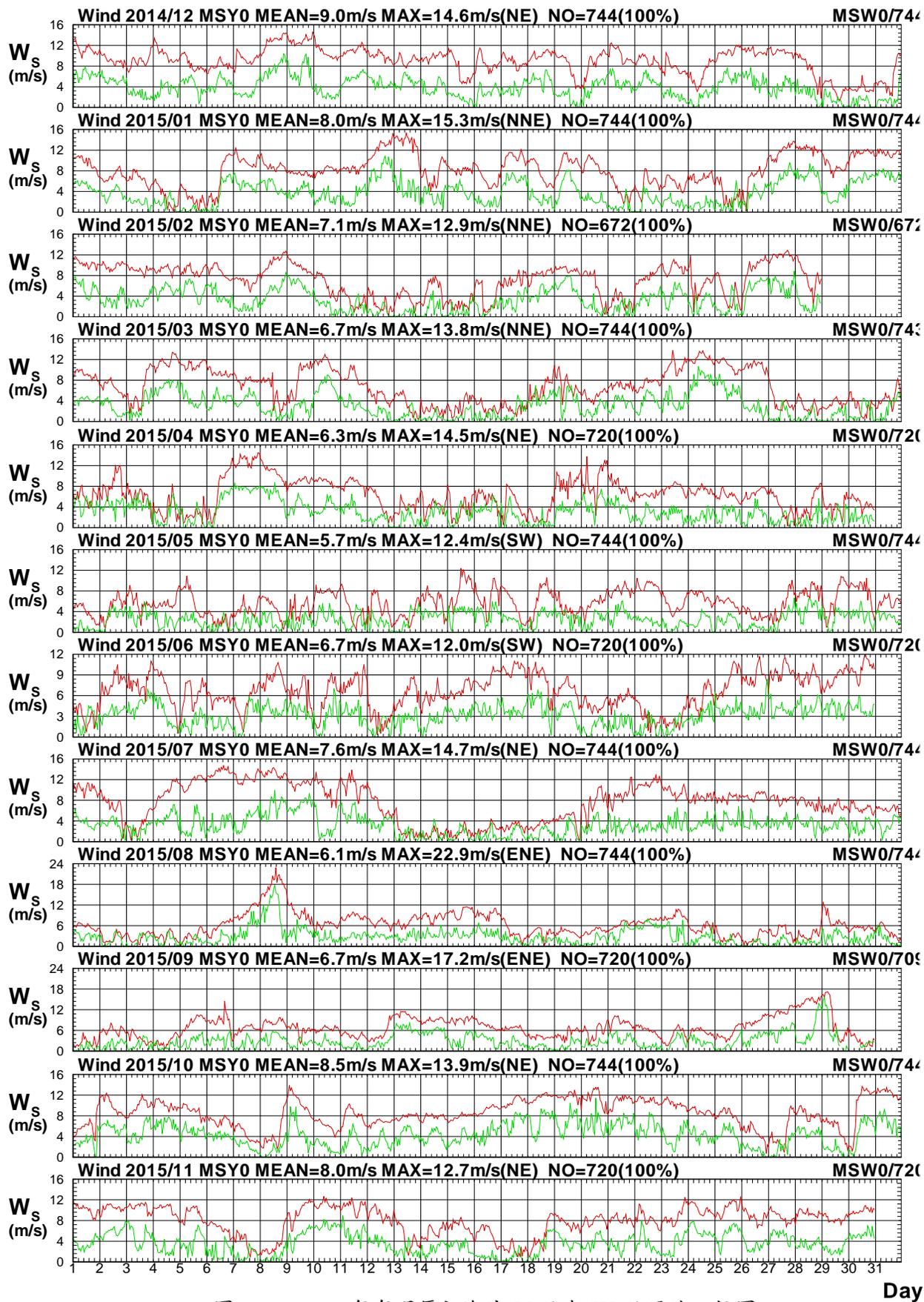


圖 1.2a 2015年每月馬祖海域 Y 站與 W 站風速比較圖

W14CMSY0.1HA W14CMSW0.1H0 W151MSY0.1HA W151MSW0.1H0 W152MSY0.1HA W152MSW0.1H0
 W153MSY0.1HA W153MSW0.1H0 W154MSY0.1HA W154MSW0.1H0 W155MSY0.1HA W155MSW0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

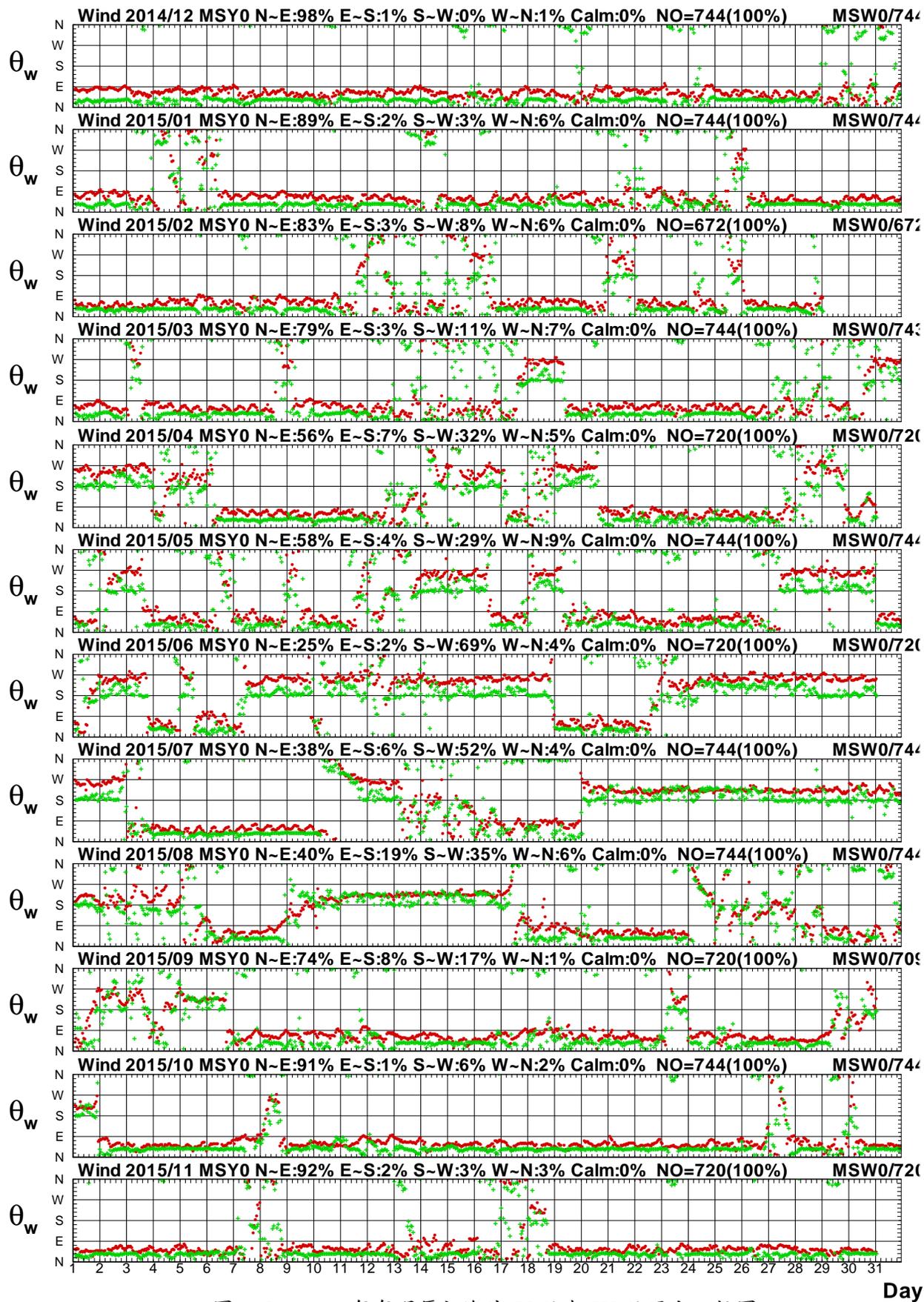


圖 1.2b 2015年每月馬祖海域 Y 站與 W 站風向比較圖

W14CMSY0.1HA W14CMSW0.1H0 W151MSY0.1HA W151MSW0.1H0 W152MSY0.1HA W152MSW0.1H0
 W153MSY0.1HA W153MSW0.1H0 W154MSY0.1HA W154MSW0.1H0 W155MSY0.1HA W155MSW0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

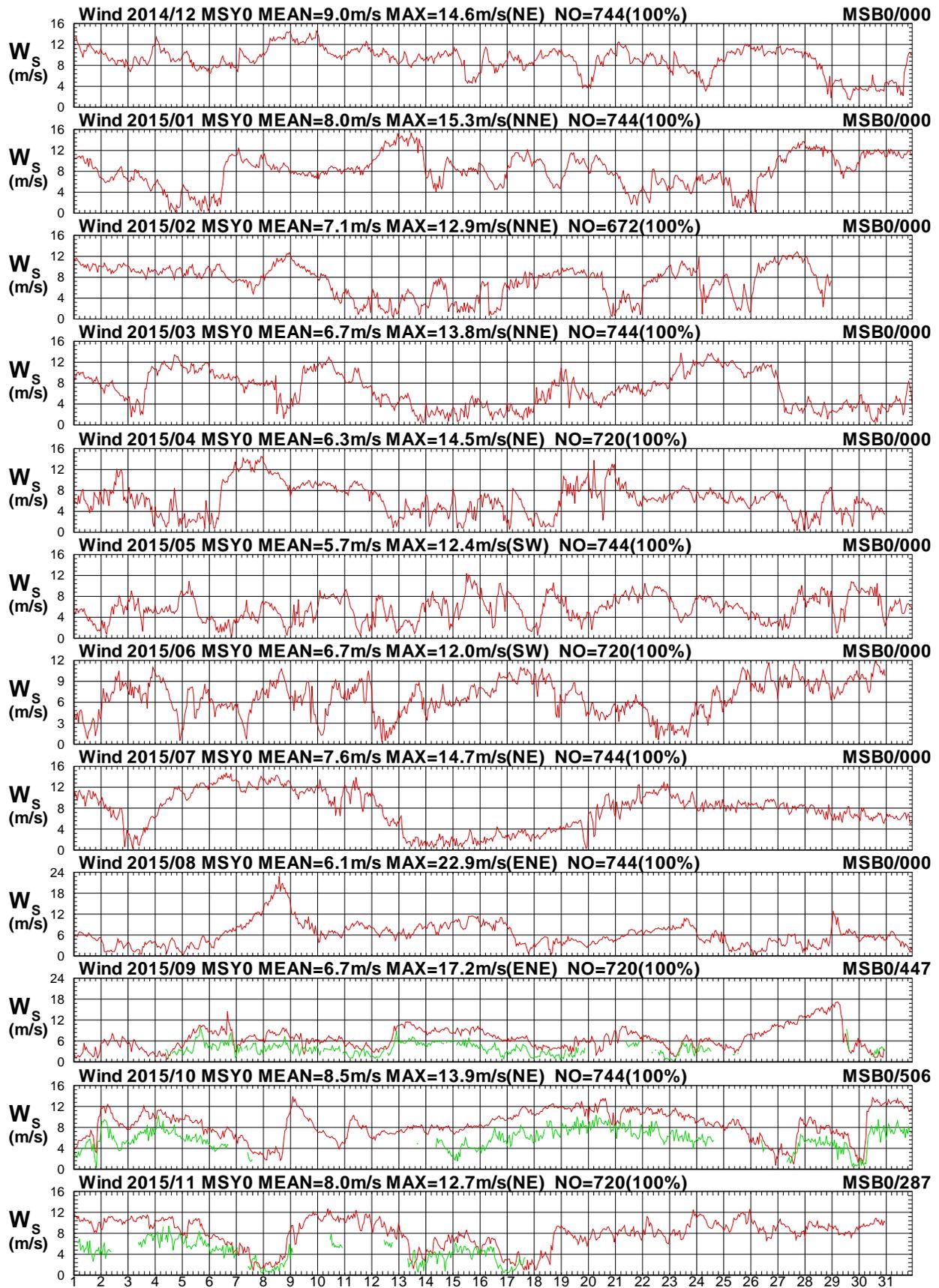


圖 1.3a 2015年每月馬祖海域 Y 站與 B 站風速比較圖

W14CMSY0.1HA W14CMSB0.1HO W151MSY0.1HA W151MSB0.1HO W152MSY0.1HA W152MSB0.1HO
 W153MSY0.1HA W153MSB0.1HO W154MSY0.1HA W154MSB0.1HO W155MSY0.1HA W155MSB0.1HO

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

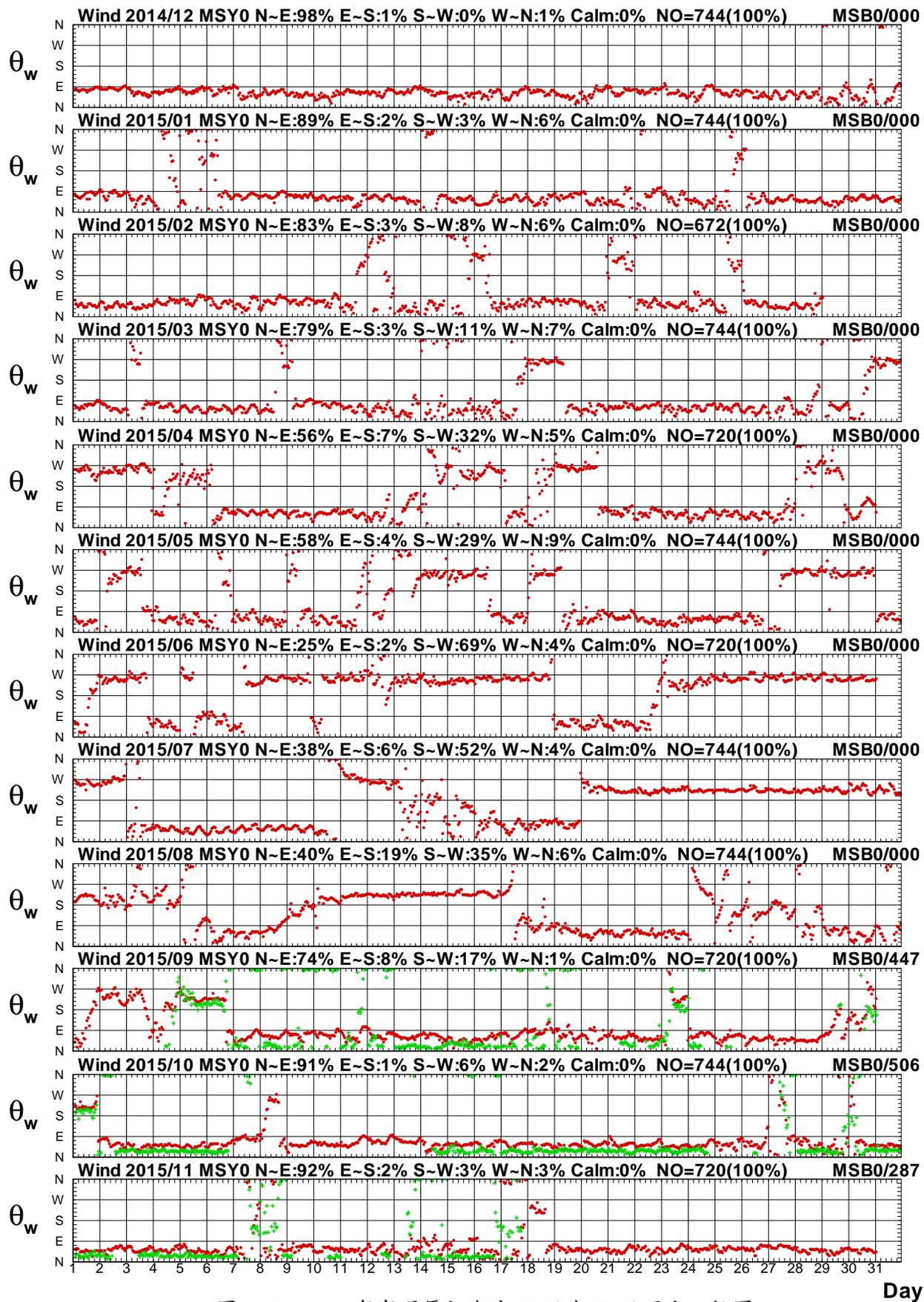


圖 1.3b 2015年每月馬祖海域 Y 站與 B 站風向比較圖

W14CMSY0.1HA W14CMSB0.1HO W151MSY0.1HA W151MSB0.1HO W152MSY0.1HA W152MSB0.1HO
 W153MSY0.1HA W153MSB0.1HO W154MSY0.1HA W154MSB0.1HO W155MSY0.1HA W155MSB0.1HO

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

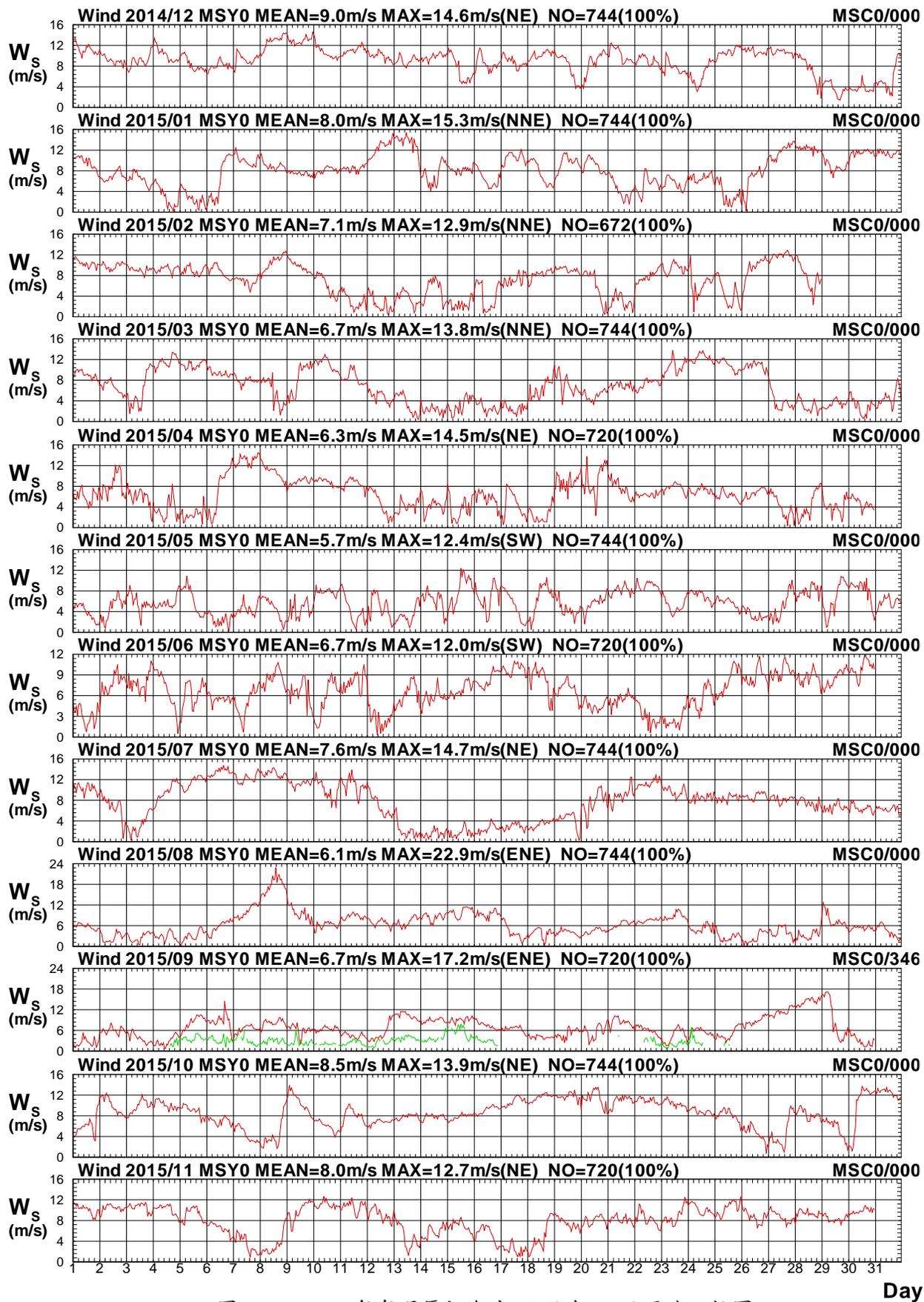


圖 1.4a 2015年每月馬祖海域 Y 站與 C 站風速比較圖

W14CMSY0.1HA W14CMSC0.1H0 W151MSY0.1HA W151MSC0.1H0 W152MSY0.1HA W152MSC0.1H0
 W153MSY0.1HA W153MSC0.1H0 W154MSY0.1HA W154MSC0.1H0 W155MSY0.1HA W155MSC0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

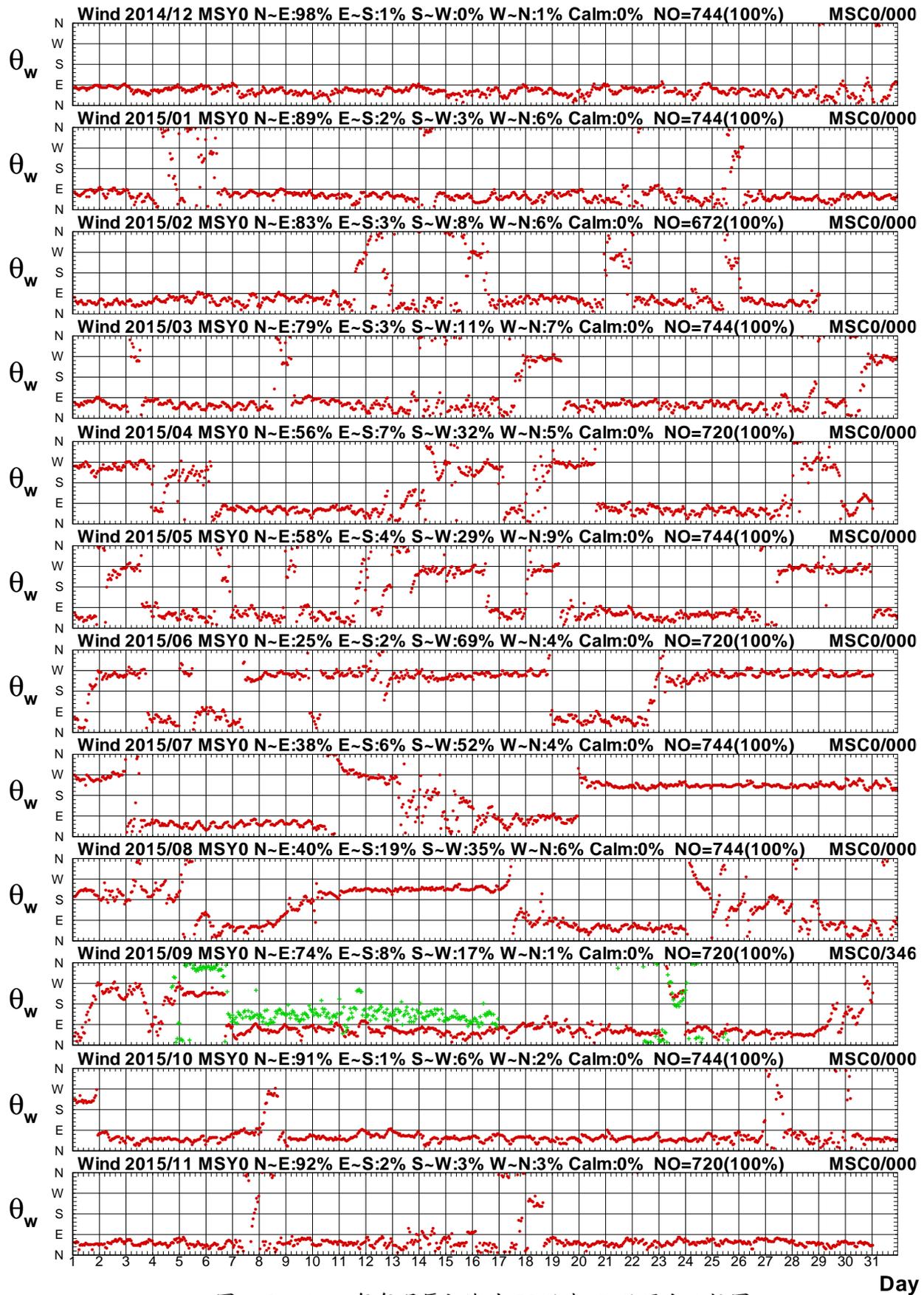


圖 1.4b 2015年每月馬祖海域 Y 站與 C 站風向比較圖

W14CMSY0.1HA W14CMSC0.1H0 W151MSY0.1HA W151MSC0.1H0 W152MSY0.1HA W152MSC0.1H0
 W153MSY0.1HA W153MSC0.1H0 W154MSY0.1HA W154MSC0.1H0 W155MSY0.1HA W155MSC0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

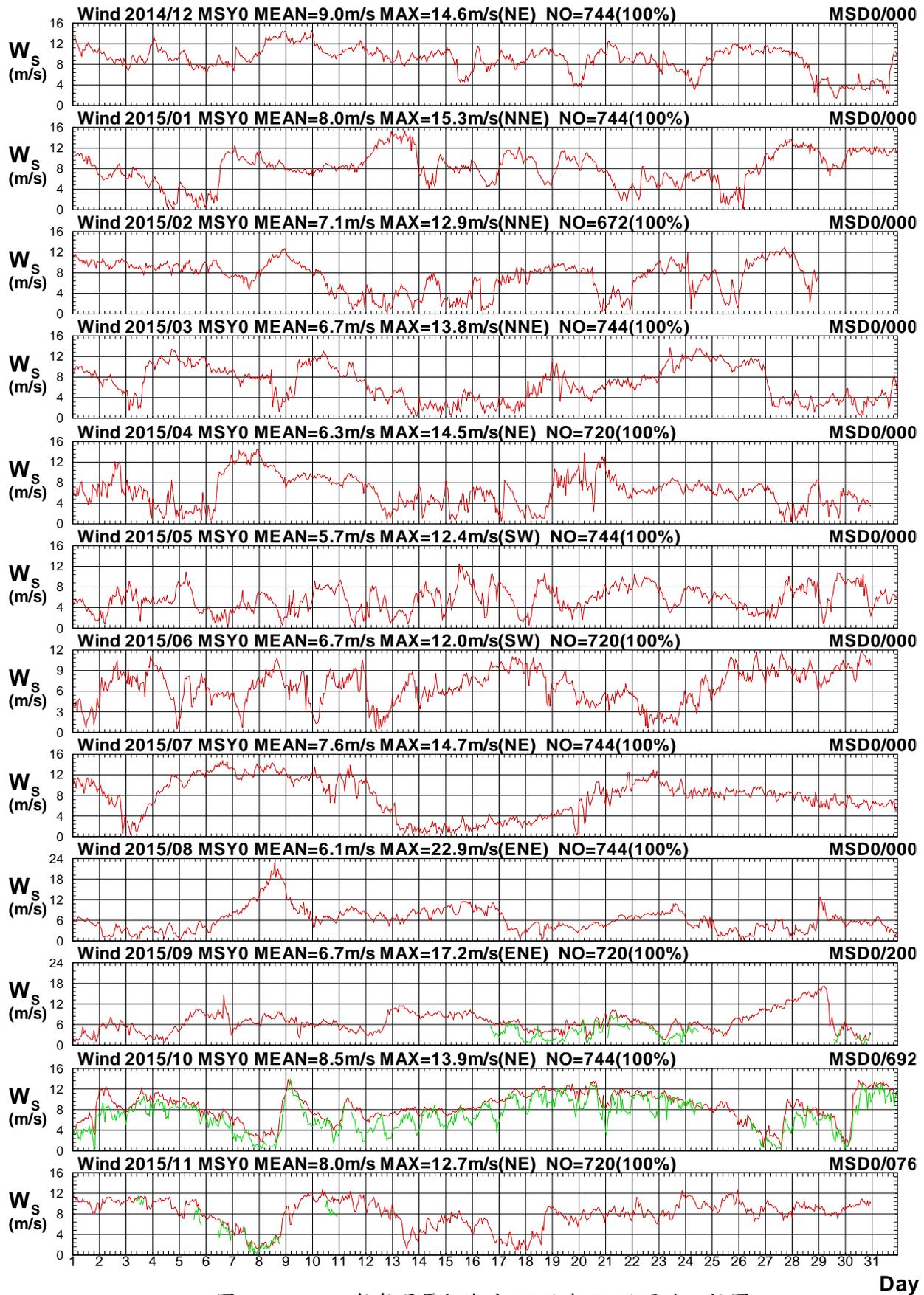


圖 1.5a 2015年每月馬祖海域 Y 站與 D 站風速比較圖

W14CMSY0.1HA W14CMSD0.1H0 W151MSY0.1HA W151MSD0.1H0 W152MSY0.1HA W152MSD0.1H0
 W153MSY0.1HA W153MSD0.1H0 W154MSY0.1HA W154MSD0.1H0 W155MSY0.1HA W155MSD0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

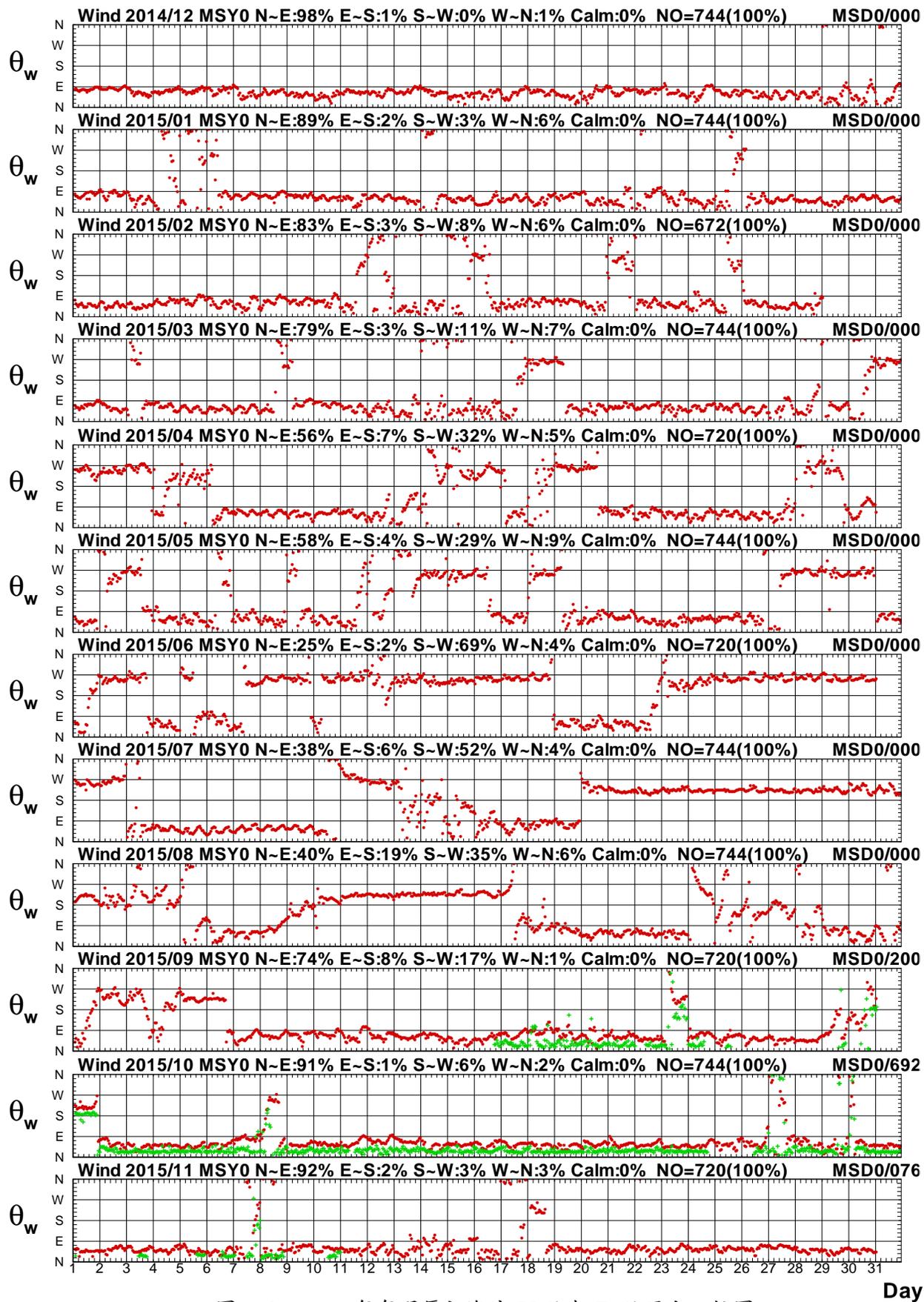


圖 1.5b 2015年每月馬祖海域 Y 站與 D 站風向比較圖

W14CMSY0.1HA W14CMSD0.1H0 W151MSY0.1HA W151MSD0.1H0 W152MSY0.1HA W152MSD0.1H0
 W153MSY0.1HA W153MSD0.1H0 W154MSY0.1HA W154MSD0.1H0 W155MSY0.1HA W155MSD0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

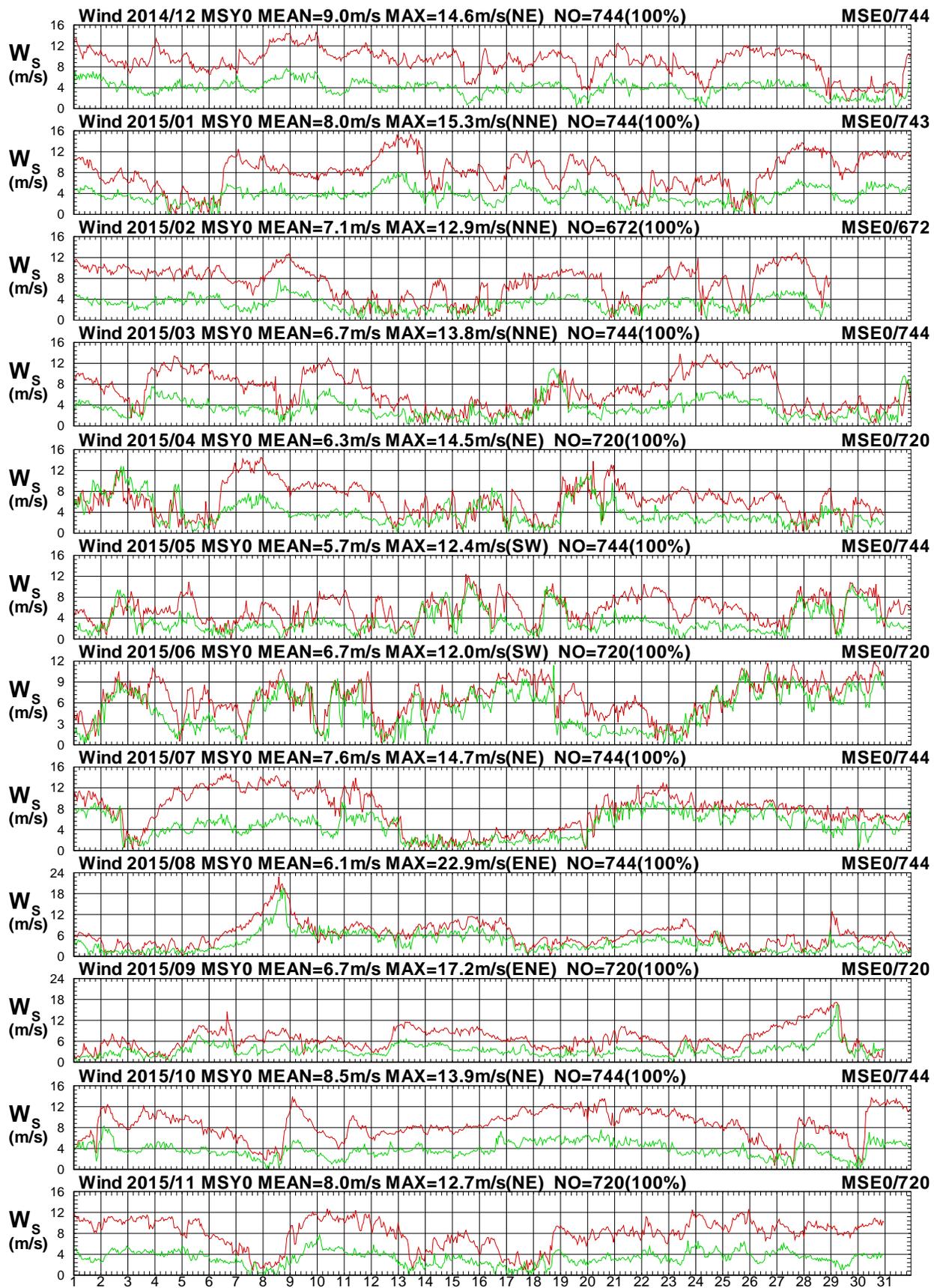


圖 1.6a 2015年每月馬祖海域 Y 站與 E 站風速比較圖

W14CMSY0.1HA W14CMSE0.1H0 W151MSY0.1HA W151MSE0.1H0 W152MSY0.1HA W152MSE0.1H0
 W153MSY0.1HA W153MSE0.1H0 W154MSY0.1HA W154MSE0.1H0 W155MSY0.1HA W155MSE0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

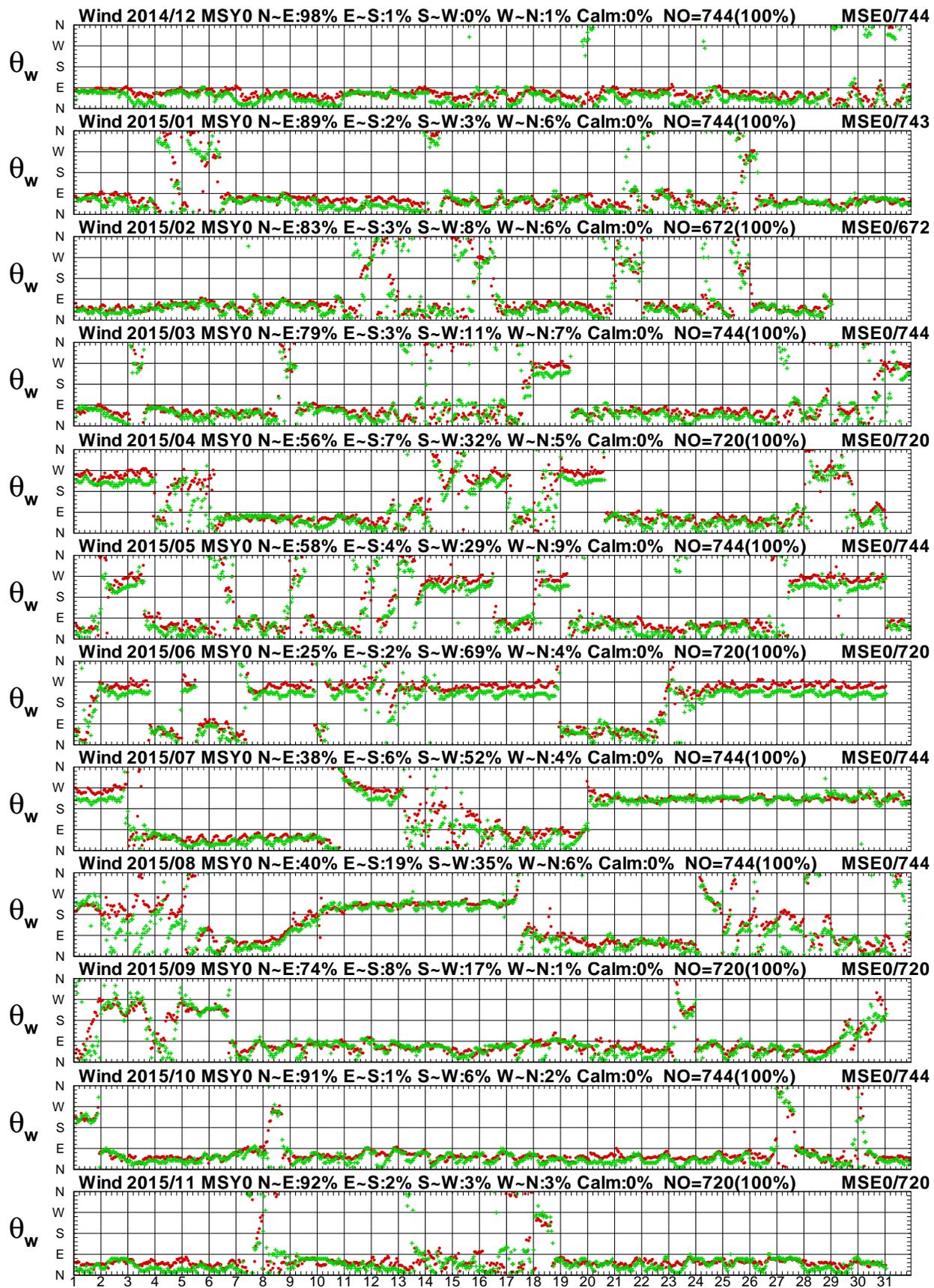


圖 1.6b 2015年每月馬祖海域 Y 站與 E 站風向比較圖

W14CMSY0.1HA W14CMSE0.1H0 W151MSY0.1HA W151MSE0.1H0 W152MSY0.1HA W152MSE0.1H0
 W153MSY0.1HA W153MSE0.1H0 W154MSY0.1HA W154MSE0.1H0 W155MSY0.1HA W155MSE0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

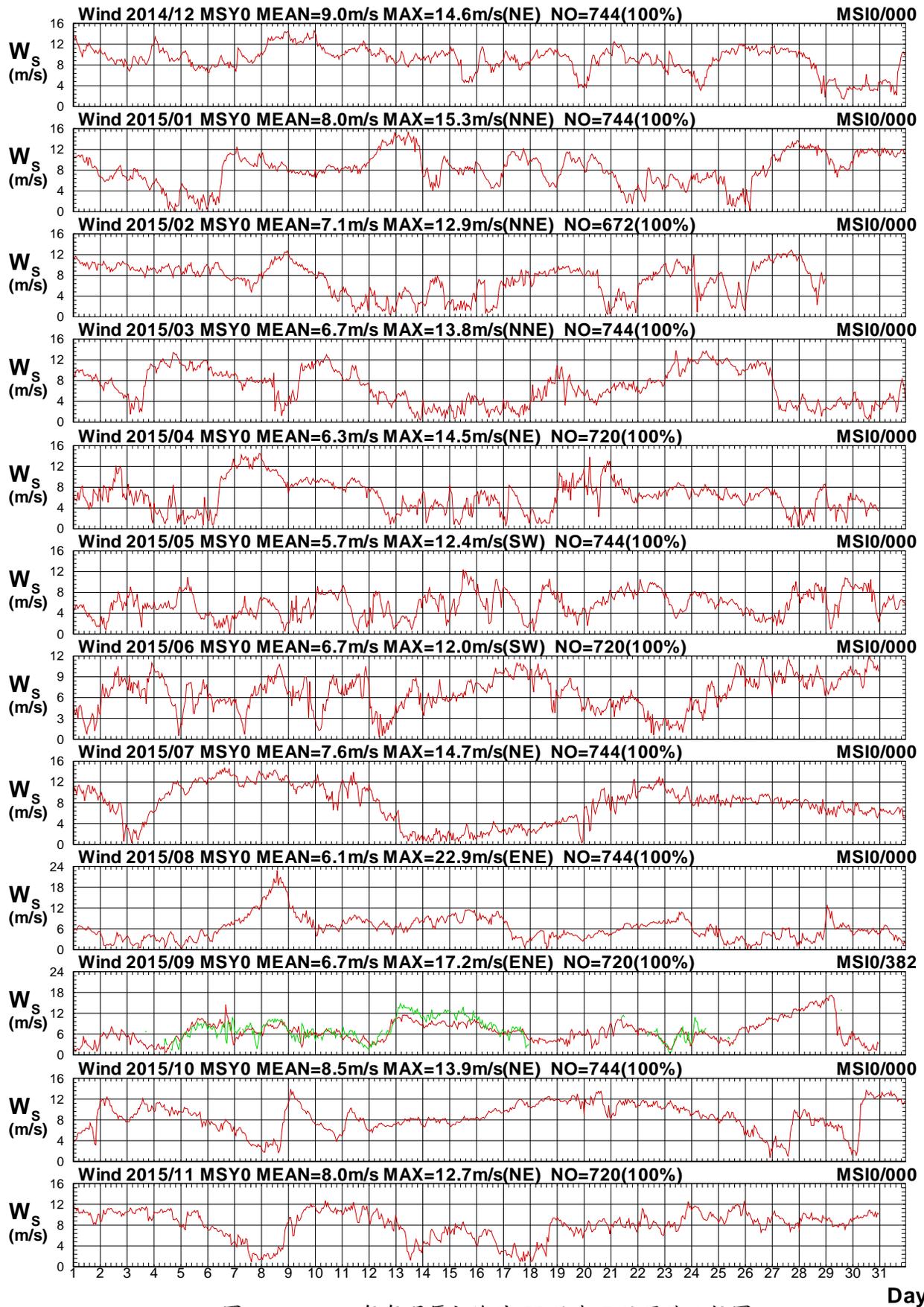


圖 1.7a 2015年每月馬祖海域 Y 站與 I 站風速比較圖

W14CMSY0.1HA W14CMSIO.1H0 W151MSY0.1HA W151MSIO.1H0 W152MSY0.1HA W152MSIO.1H0
 W153MSY0.1HA W153MSIO.1H0 W154MSY0.1HA W154MSIO.1H0 W155MSY0.1HA W155MSIO.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

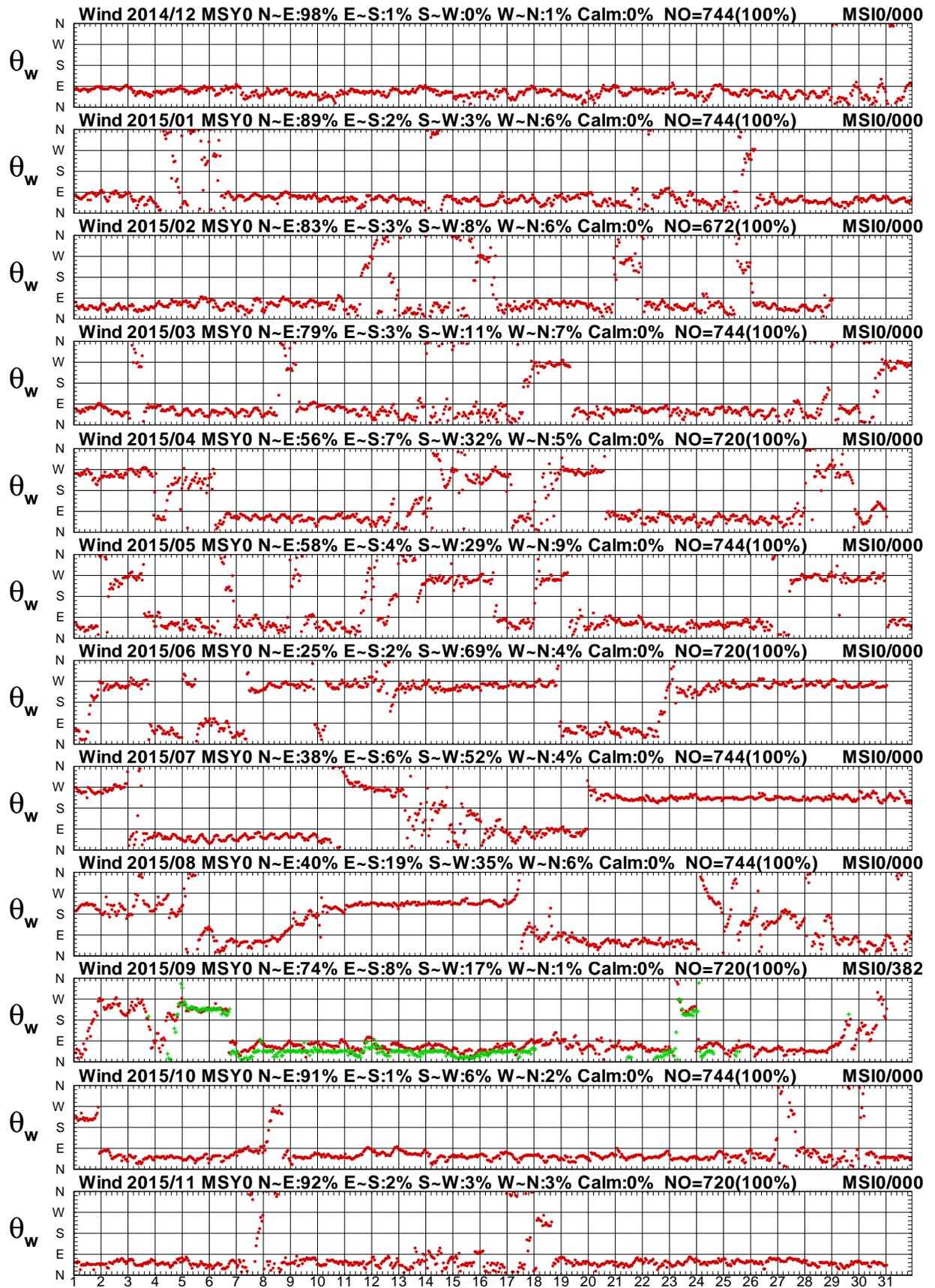


圖 1.7b 2015年每月馬祖海域 Y 站與 I 站風向比較圖

W14CMSY0.1HA W14CMSIO.1H0 W151MSY0.1HA W151MSIO.1H0 W152MSY0.1HA W152MSIO.1H0
 W153MSY0.1HA W153MSIO.1H0 W154MSY0.1HA W154MSIO.1H0 W155MSY0.1HA W155MSIO.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

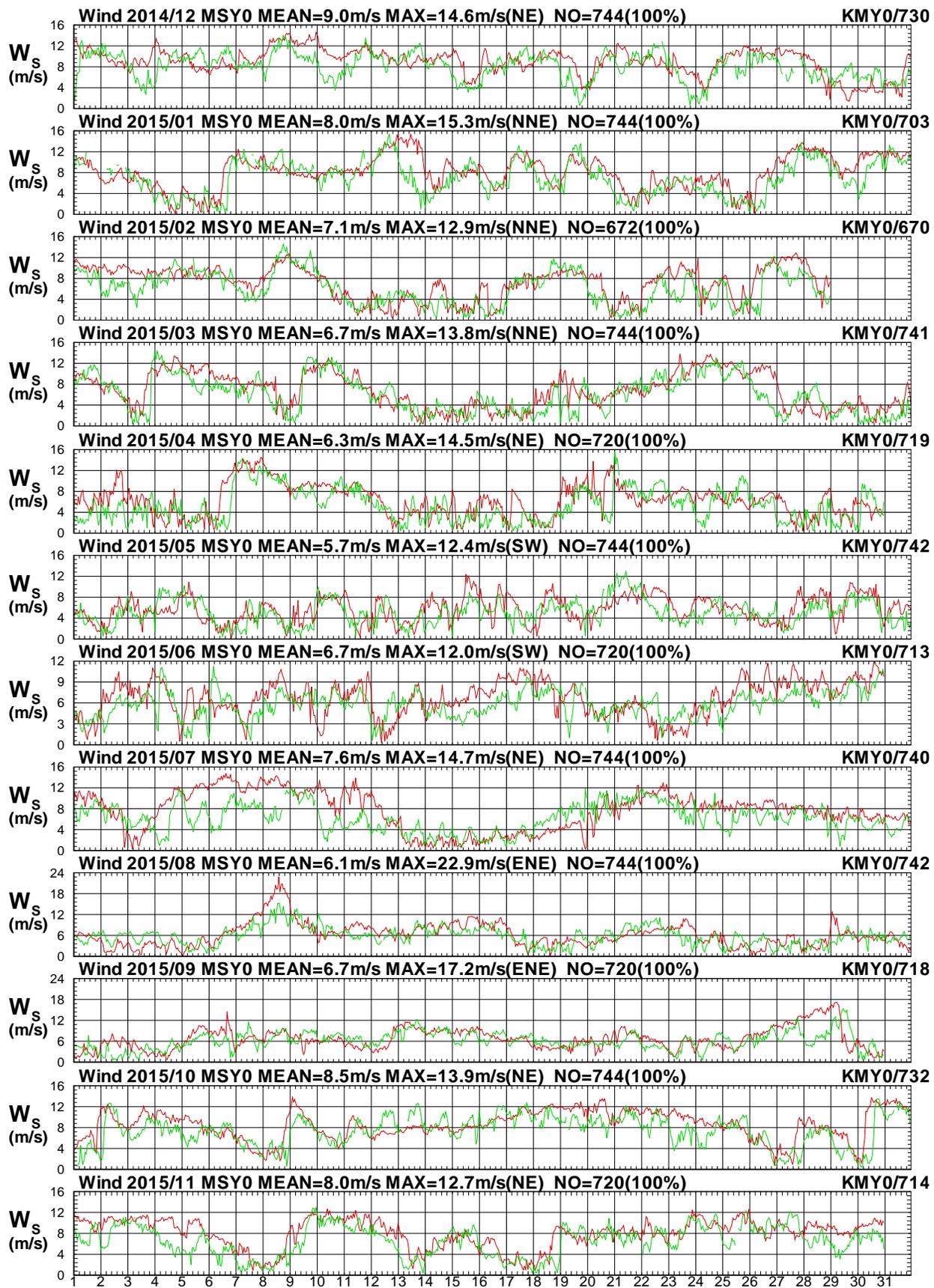


圖 1.8a 2015年每月馬祖海域 Y 站與金門海域 Y 站風速圖

W14CMSY0.1HA W14CKMY0.1H0 W151MSY0.1HA W151KMY0.1H0 W152MSY0.1HA W152KMY0.1H0
 W153MSY0.1HA W153KMY0.1H0 W154MSY0.1HA W154KMY0.1H0 W155MSY0.1HA W155KMY0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

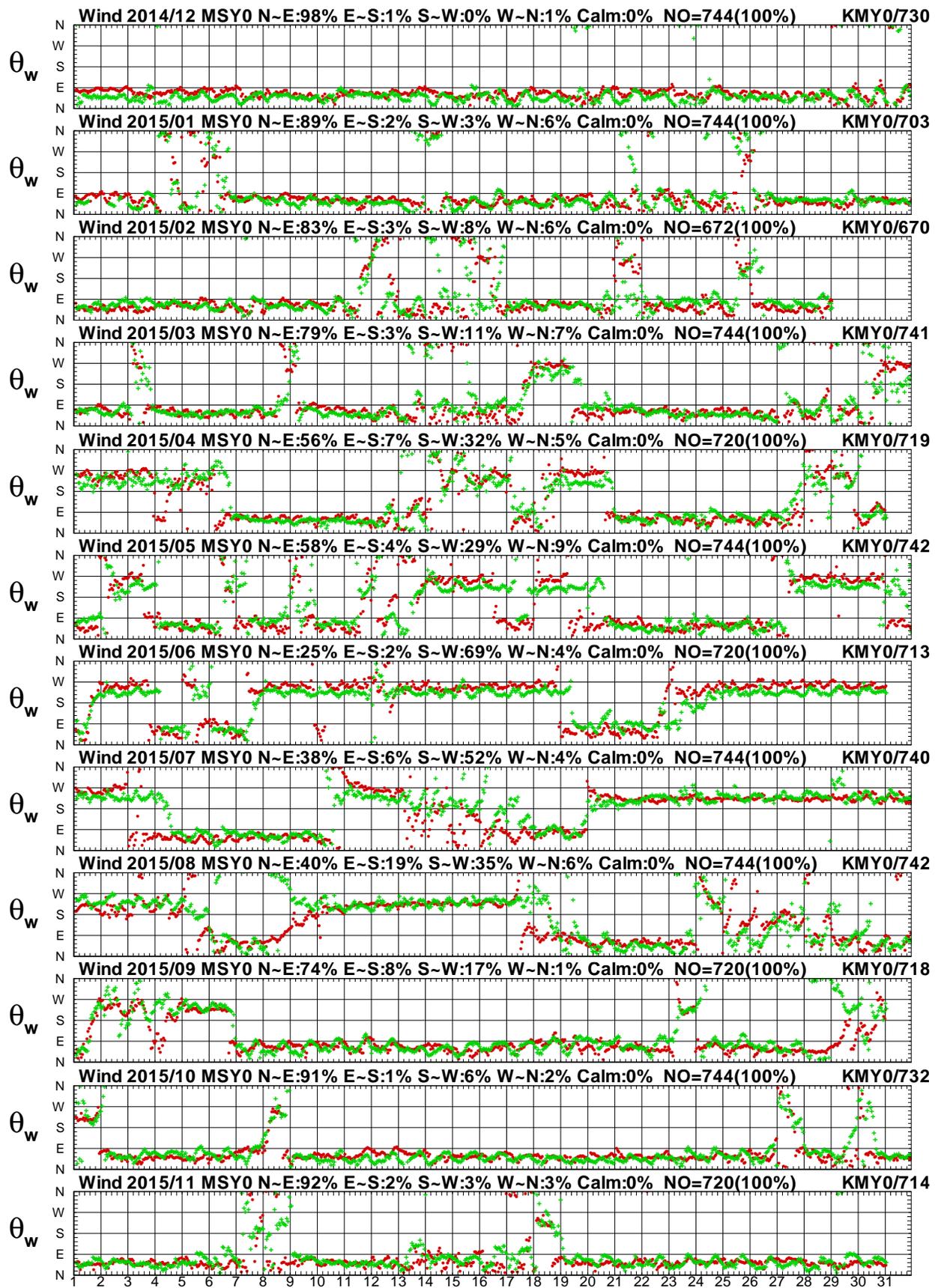


圖 1.8b 2015年每月馬祖海域 Y 站與金門海域 Y 站風向圖

W14CMSY0.1HA W14CKMY0.1H0 W151MSY0.1HA W151KMY0.1H0 W152MSY0.1HA W152KMY0.1H0
 W153MSY0.1HA W153KMY0.1H0 W154MSY0.1HA W154KMY0.1H0 W155MSY0.1HA W155KMY0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

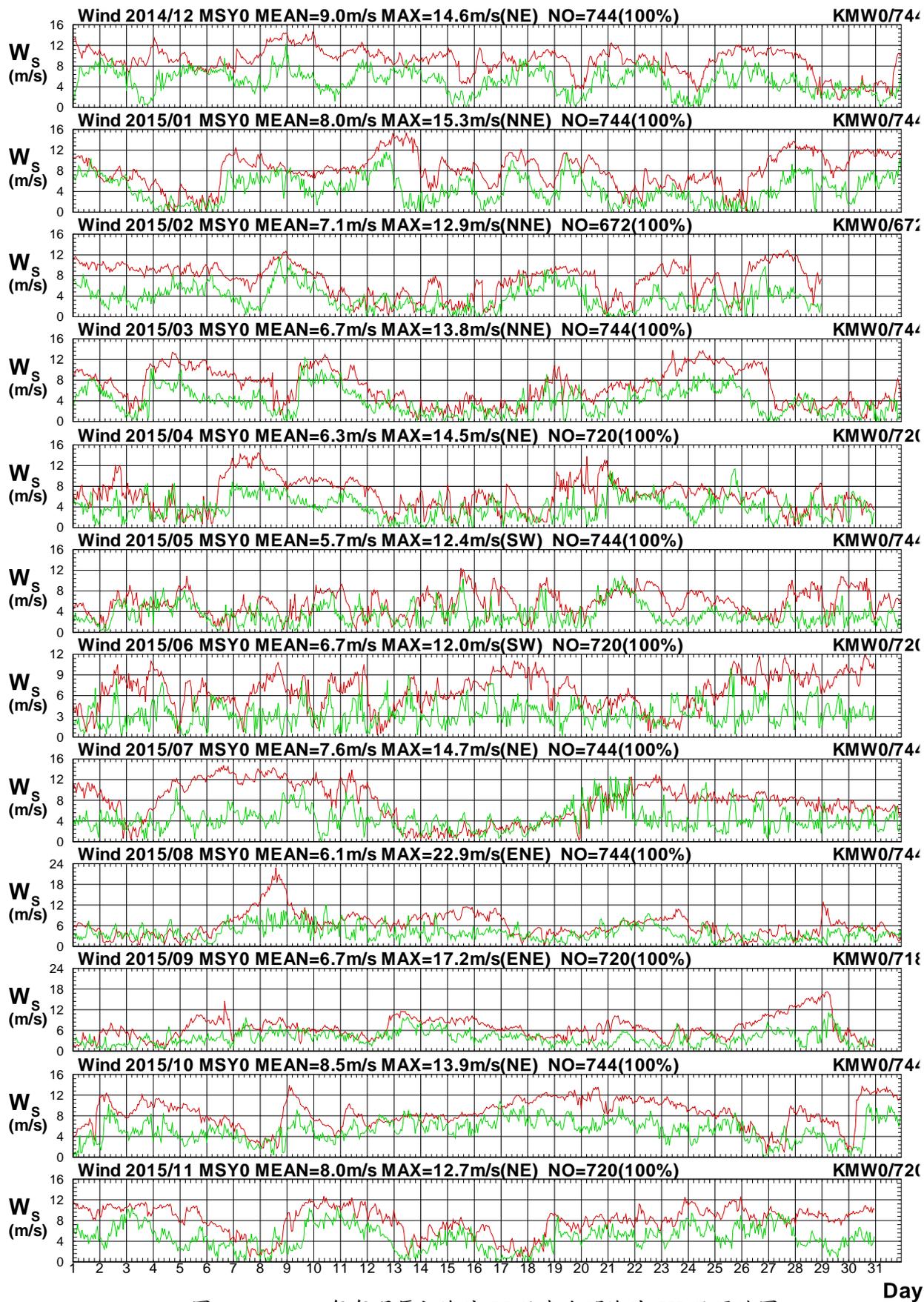


圖 1.9a 2015年每月馬祖海域 Y 站與金門海域 W 站風速圖

W14CMSY0.1HA W14CKMW0.1H0 W151MSY0.1HA W151KMW0.1H0 W152MSY0.1HA W152KMW0.1H0
 W153MSY0.1HA W153KMW0.1H0 W154MSY0.1HA W154KMW0.1H0 W155MSY0.1HA W155KMW0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

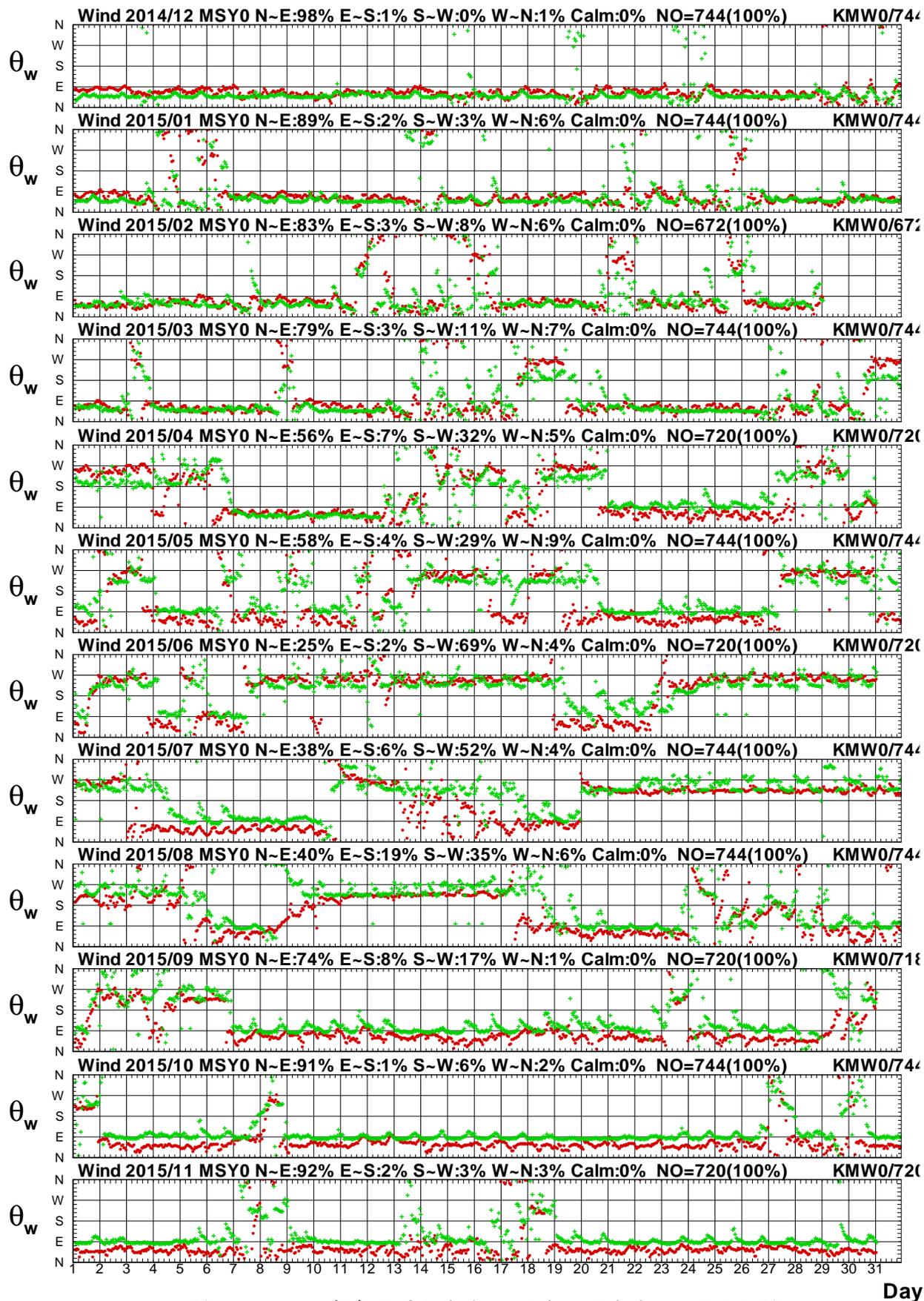


圖 1.9b 2015年每月馬祖海域 Y 站與金門海域 W 站風向圖

W14CMSY0.1HA W14CKMW0.1H0 W151MSY0.1HA W151KMW0.1H0 W152MSY0.1HA W152KMW0.1H0
 W153MSY0.1HA W153KMW0.1H0 W154MSY0.1HA W154KMW0.1H0 W155MSY0.1HA W155KMW0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

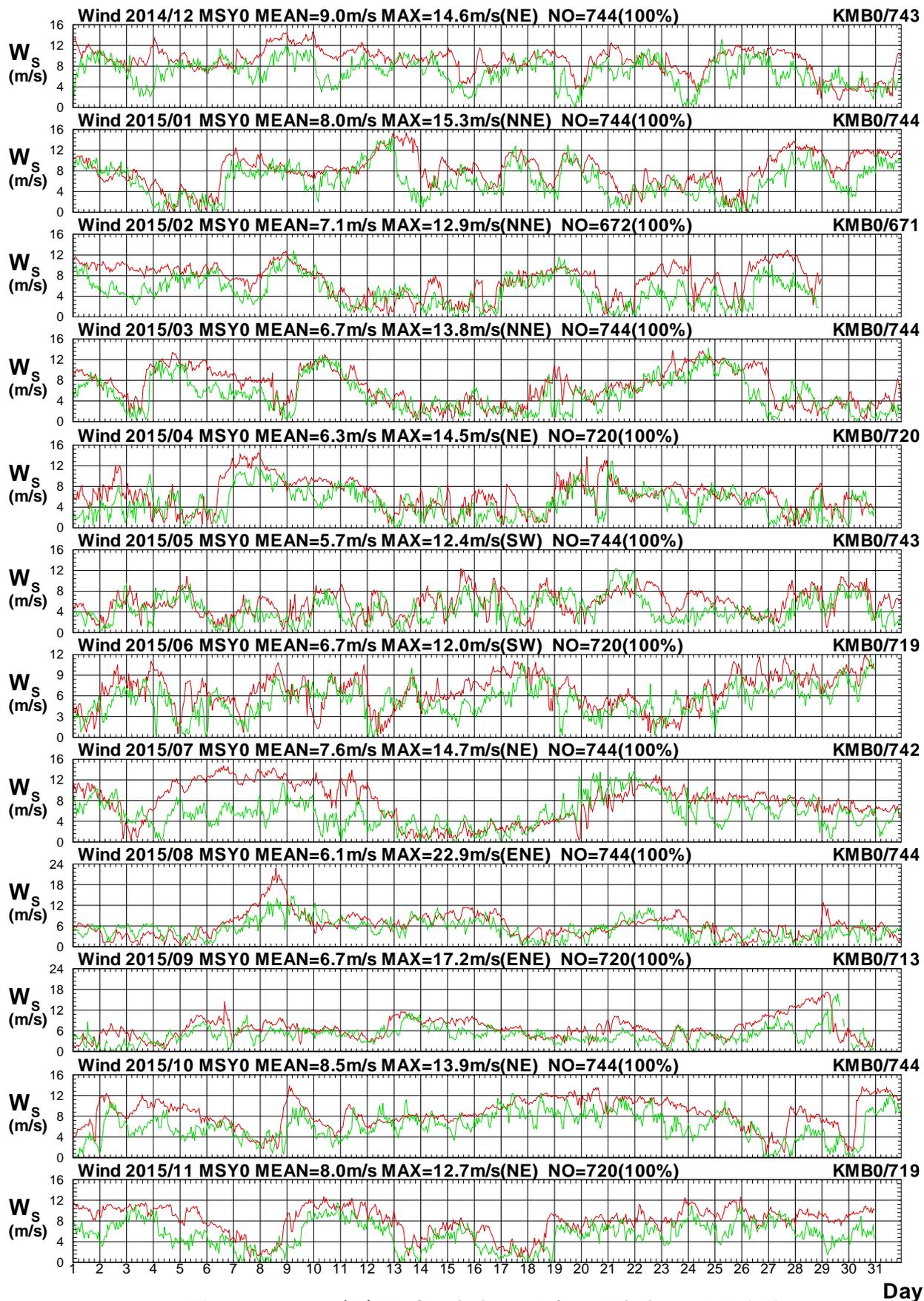


圖 1.10a 2015年每月馬祖海域 Y 站與金門海域 B 站風速圖

W14CMSY0.1HA W14CKMB0.1H0 W151MSY0.1HA W151KMB0.1H0 W152MSY0.1HA W152KMB0.1H0
 W153MSY0.1HA W153KMB0.1H0 W154MSY0.1HA W154KMB0.1H0 W155MSY0.1HA W155KMB0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

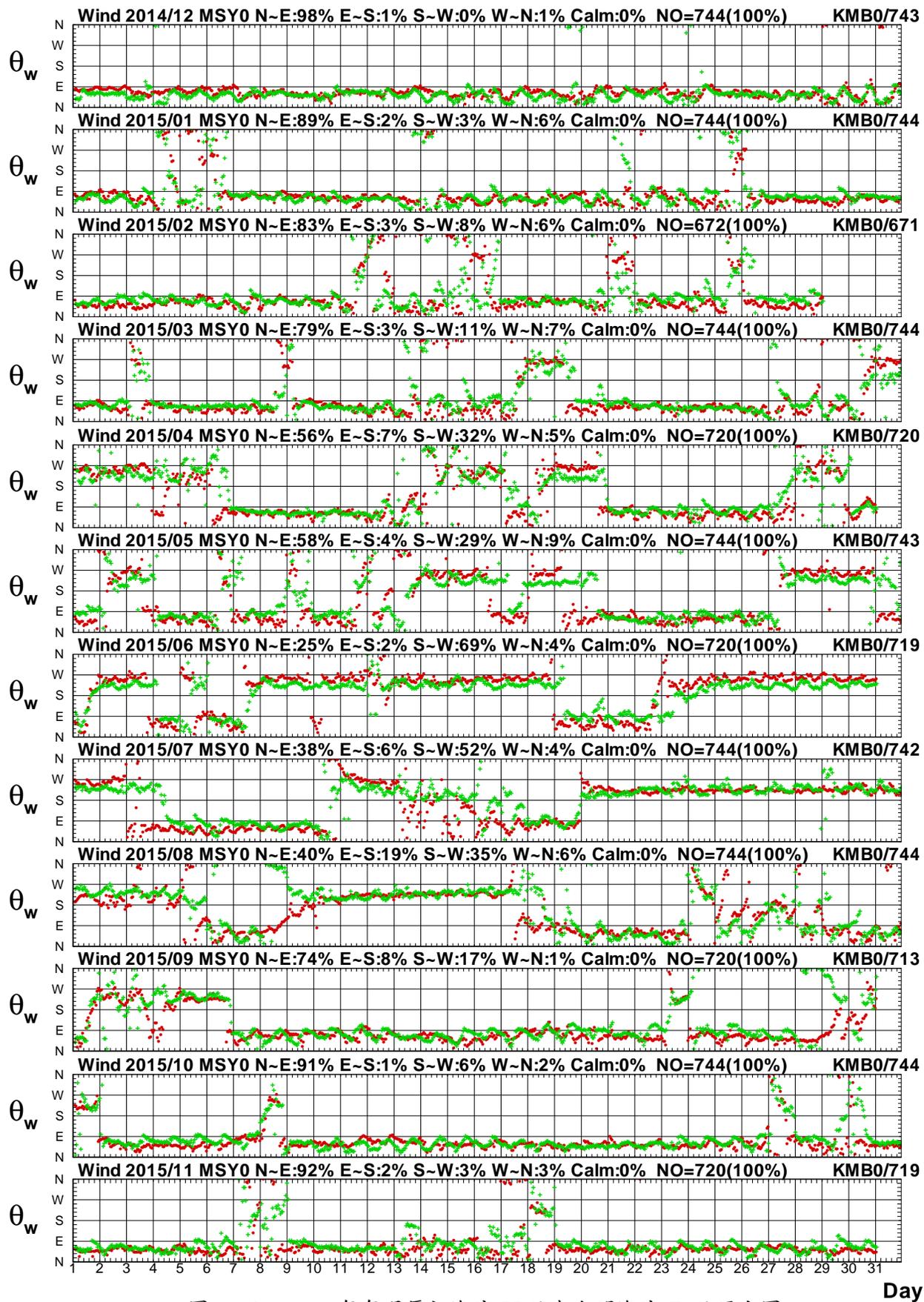


圖 1.10b 2015年每月馬祖海域 Y 站與金門海域 B 站風向圖

W14CMSY0.1HA W14CKMB0.1HO W151MSY0.1HA W151KMB0.1HO W152MSY0.1HA W152KMB0.1HO
 W153MSY0.1HA W153KMB0.1HO W154MSY0.1HA W154KMB0.1HO W155MSY0.1HA W155KMB0.1HO

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

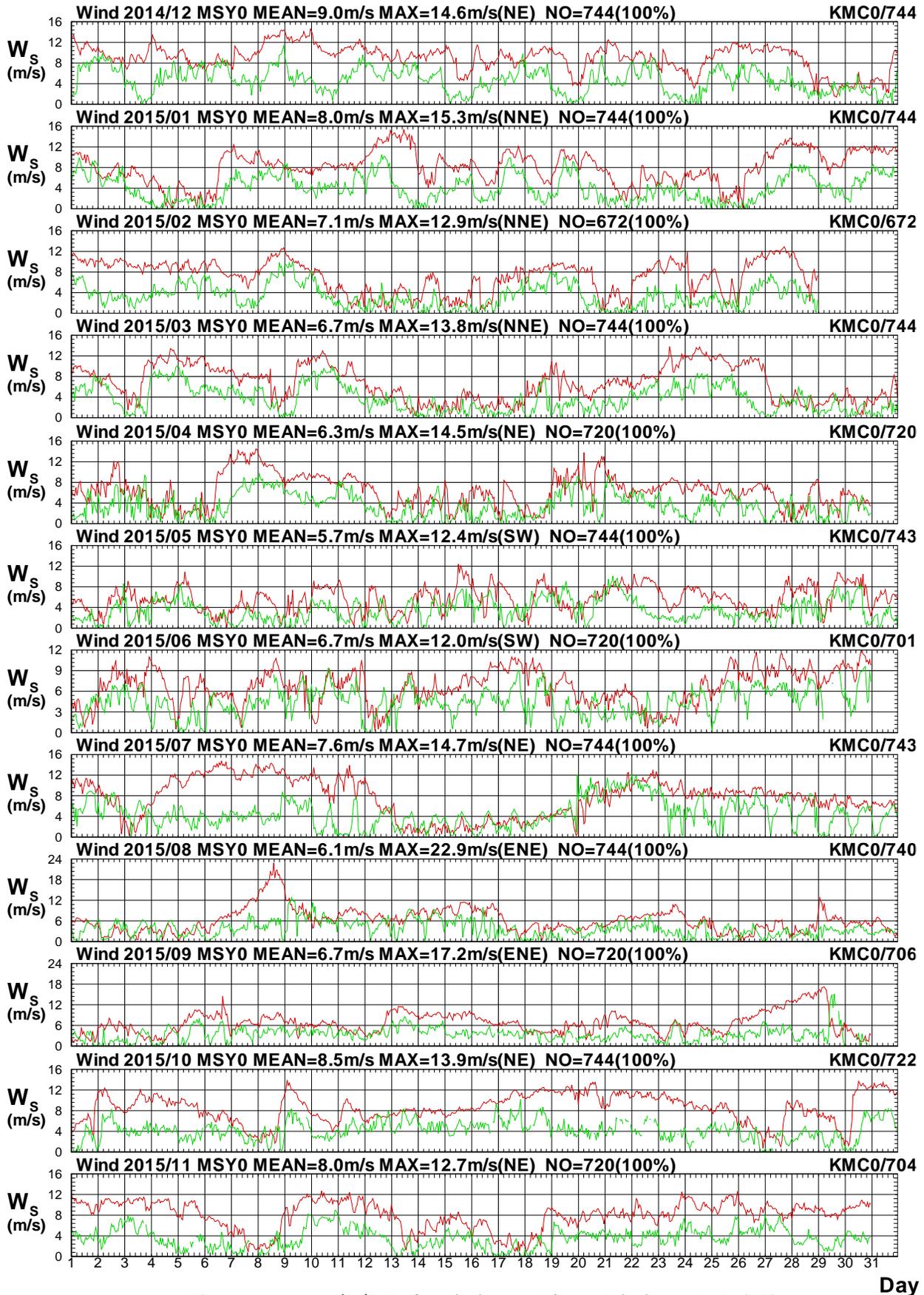


圖 1.11a 2015年每月馬祖海域 Y 站與金門海域 C 站風速圖

W14CMSY0.1HA W14CKMC0.1H0 W151MSY0.1HA W151KMC0.1H0 W152MSY0.1HA W152KMC0.1H0
 W153MSY0.1HA W153KMC0.1H0 W154MSY0.1HA W154KMC0.1H0 W155MSY0.1HA W155KMC0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

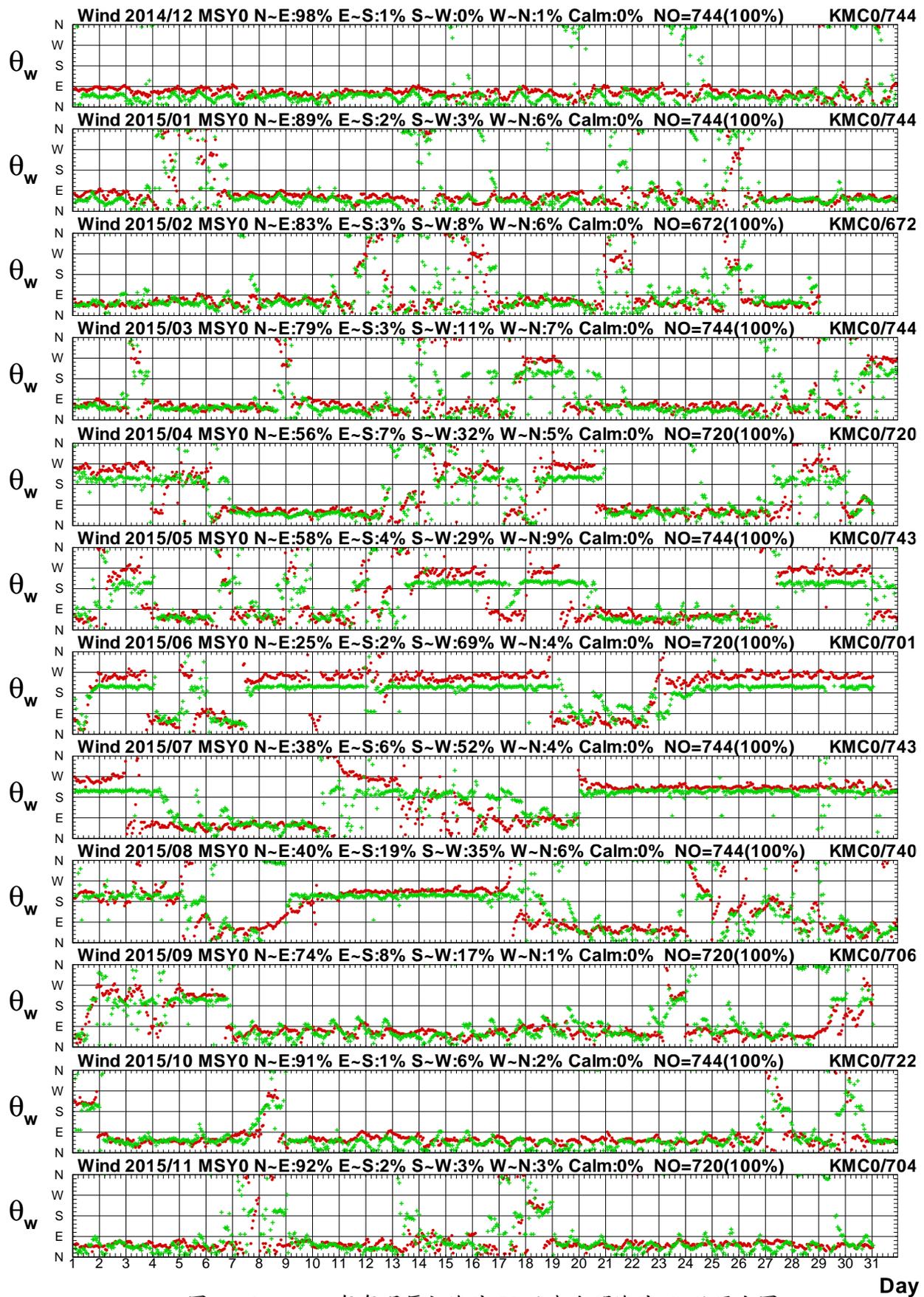


圖 1.11b 2015年每月馬祖海域 Y 站與金門海域 C 站風向圖

W14CMSY0.1HA W14CKMC0.1H0 W151MSY0.1HA W151KMC0.1H0 W152MSY0.1HA W152KMC0.1H0
 W153MSY0.1HA W153KMC0.1H0 W154MSY0.1HA W154KMC0.1H0 W155MSY0.1HA W155KMC0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

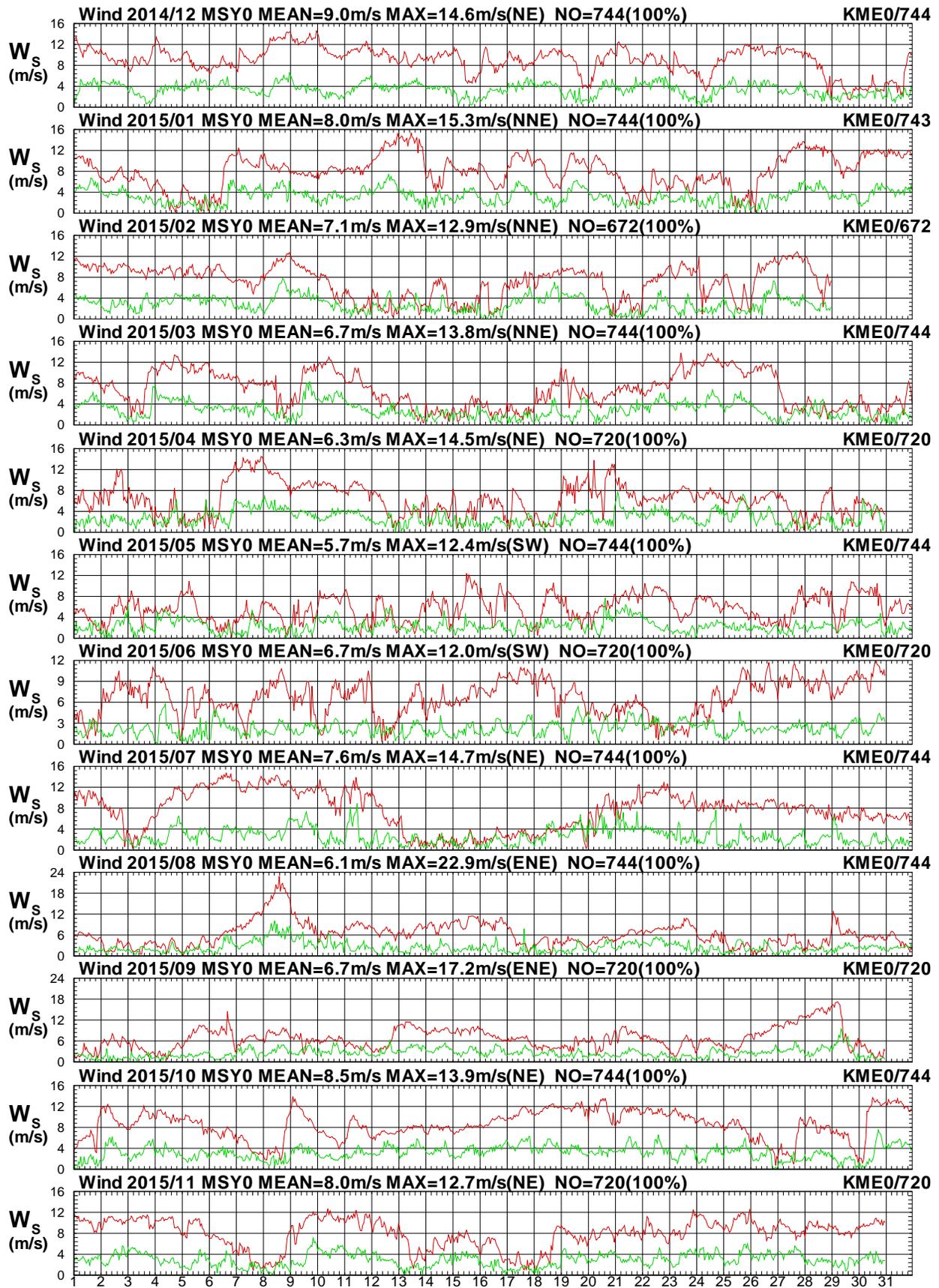


圖 1.12a 2015年每月馬祖海域 Y 站與金門海域 E 站風速圖

W14CMSY0.1HA W14CKME0.1H0 W151MSY0.1HA W151KME0.1H0 W152MSY0.1HA W152KME0.1H0
 W153MSY0.1HA W153KME0.1H0 W154MSY0.1HA W154KME0.1H0 W155MSY0.1HA W155KME0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

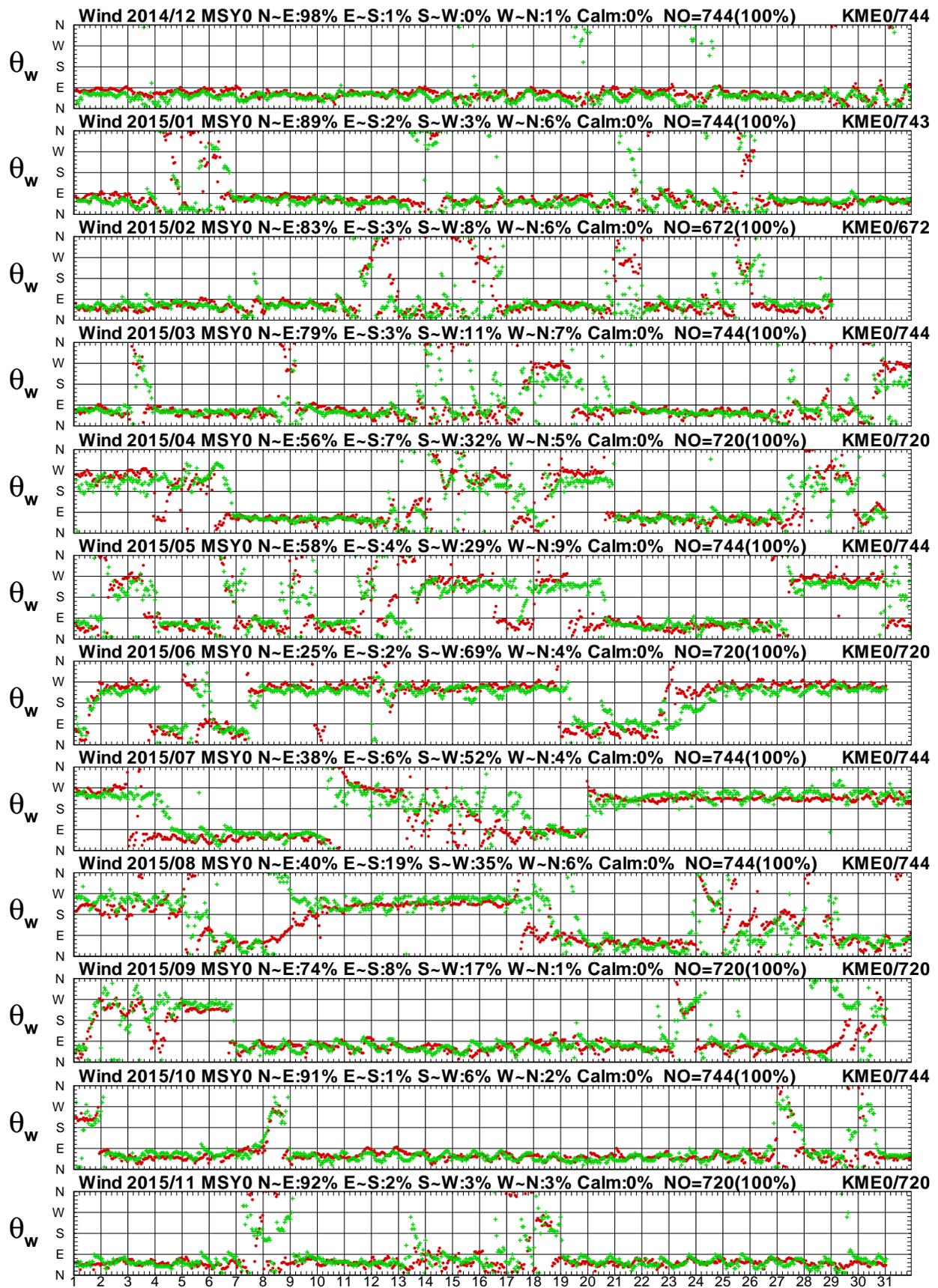


圖 1.12b 2015年每月馬祖海域 Y 站與金門海域 E 站風向圖

W14CMSY0.1HA W14CKME0.1HO W151MSY0.1HA W151KME0.1HO W152MSY0.1HA W152KME0.1HO
 W153MSY0.1HA W153KME0.1HO W154MSY0.1HA W154KME0.1HO W155MSY0.1HA W155KME0.1HO

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

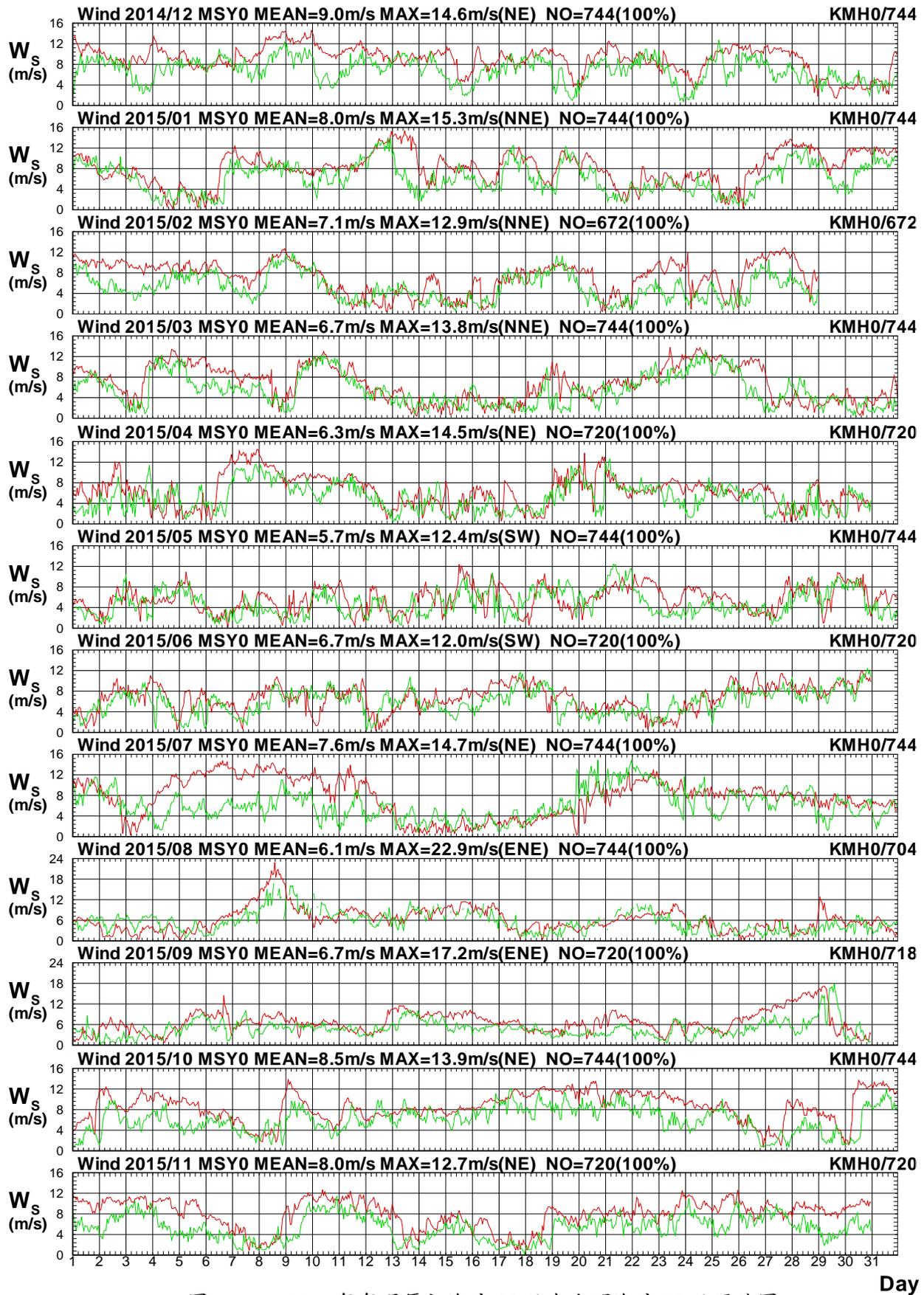


圖 1.13a 2015年每月馬祖海域 Y 站與金門海域 H 站風速圖

W14CMSY0.1HA W14CKMH0.1H0 W151MSY0.1HA W151KMH0.1H0 W152MSY0.1HA W152KMH0.1H0
 W153MSY0.1HA W153KMH0.1H0 W154MSY0.1HA W154KMH0.1H0 W155MSY0.1HA W155KMH0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

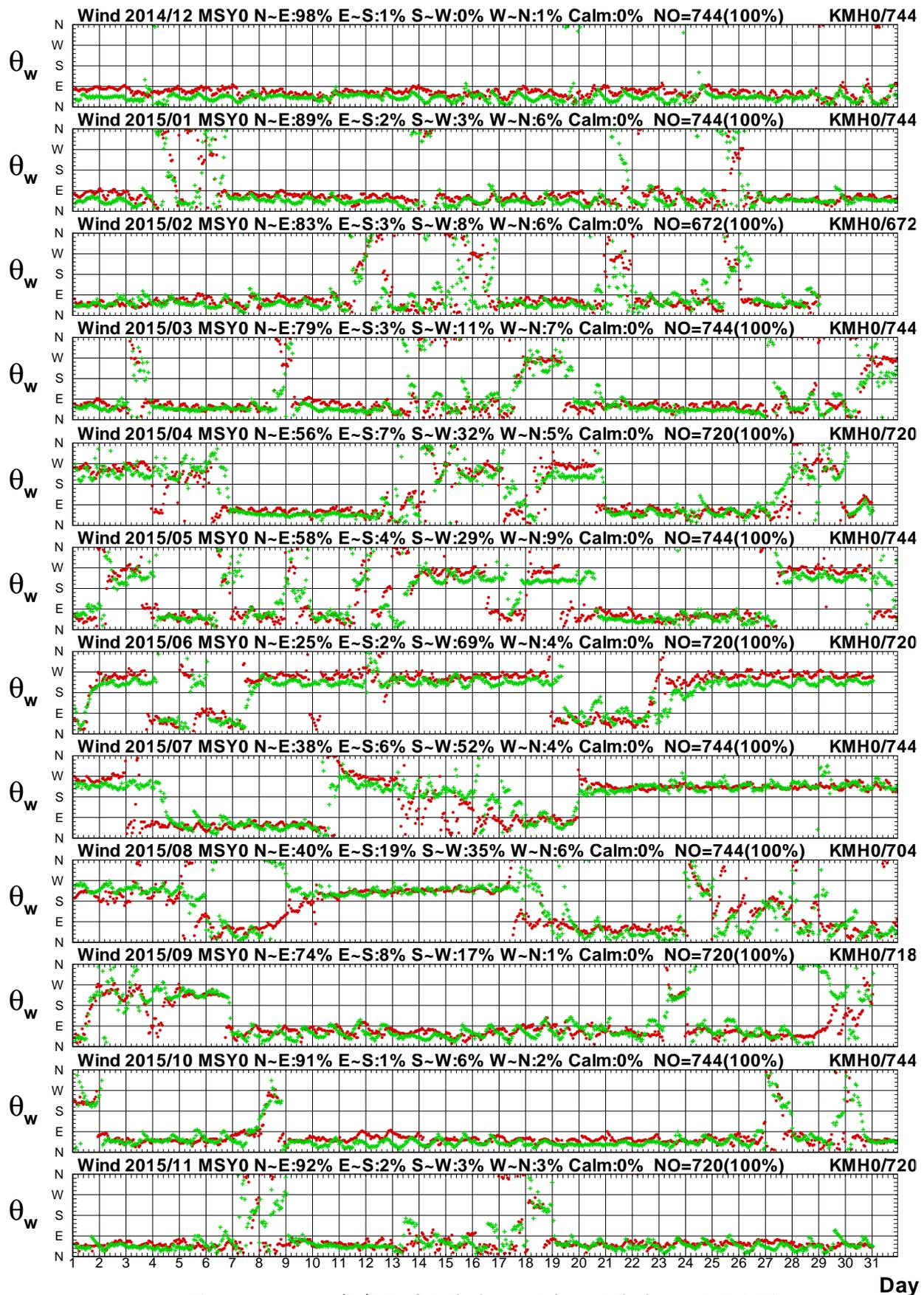


圖 1.13b 2015年每月馬祖海域 Y 站與金門海域 H 站風向圖

W14CMSY0.1HA W14CKMH0.1H0 W151MSY0.1HA W151KMH0.1H0 W152MSY0.1HA W152KMH0.1H0
 W153MSY0.1HA W153KMH0.1H0 W154MSY0.1HA W154KMH0.1H0 W155MSY0.1HA W155KMH0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

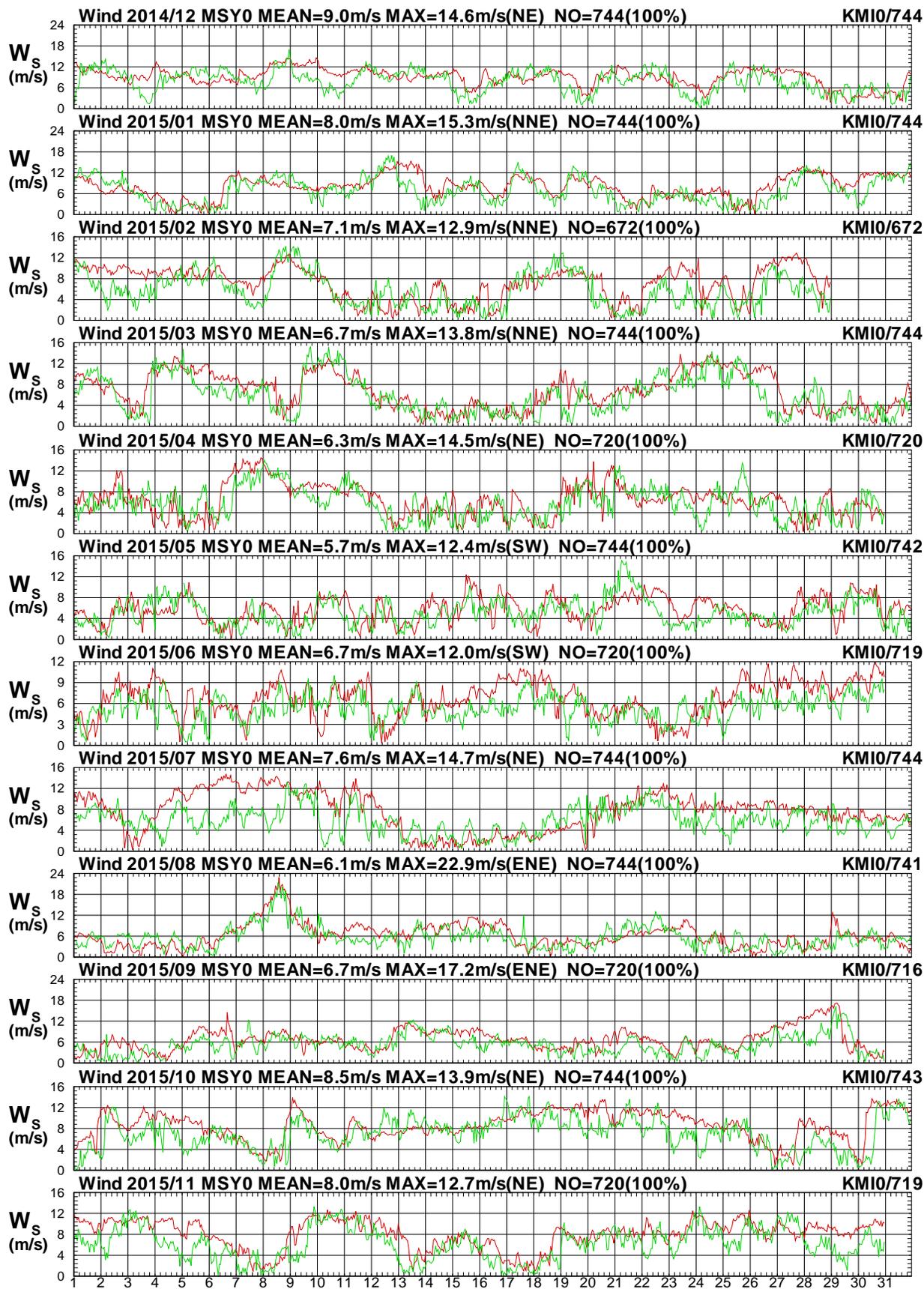


圖 1.14a 2015年每月馬祖海域 Y 站與金門海域 I 站風速圖

Day

W14CMSY0.1HA W14CKMIO.1HO W151MSY0.1HA W151KMIO.1HO W152MSY0.1HA W152KMIO.1HO
 W153MSY0.1HA W153KMIO.1HO W154MSY0.1HA W154KMIO.1HO W155MSY0.1HA W155KMIO.1HO

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

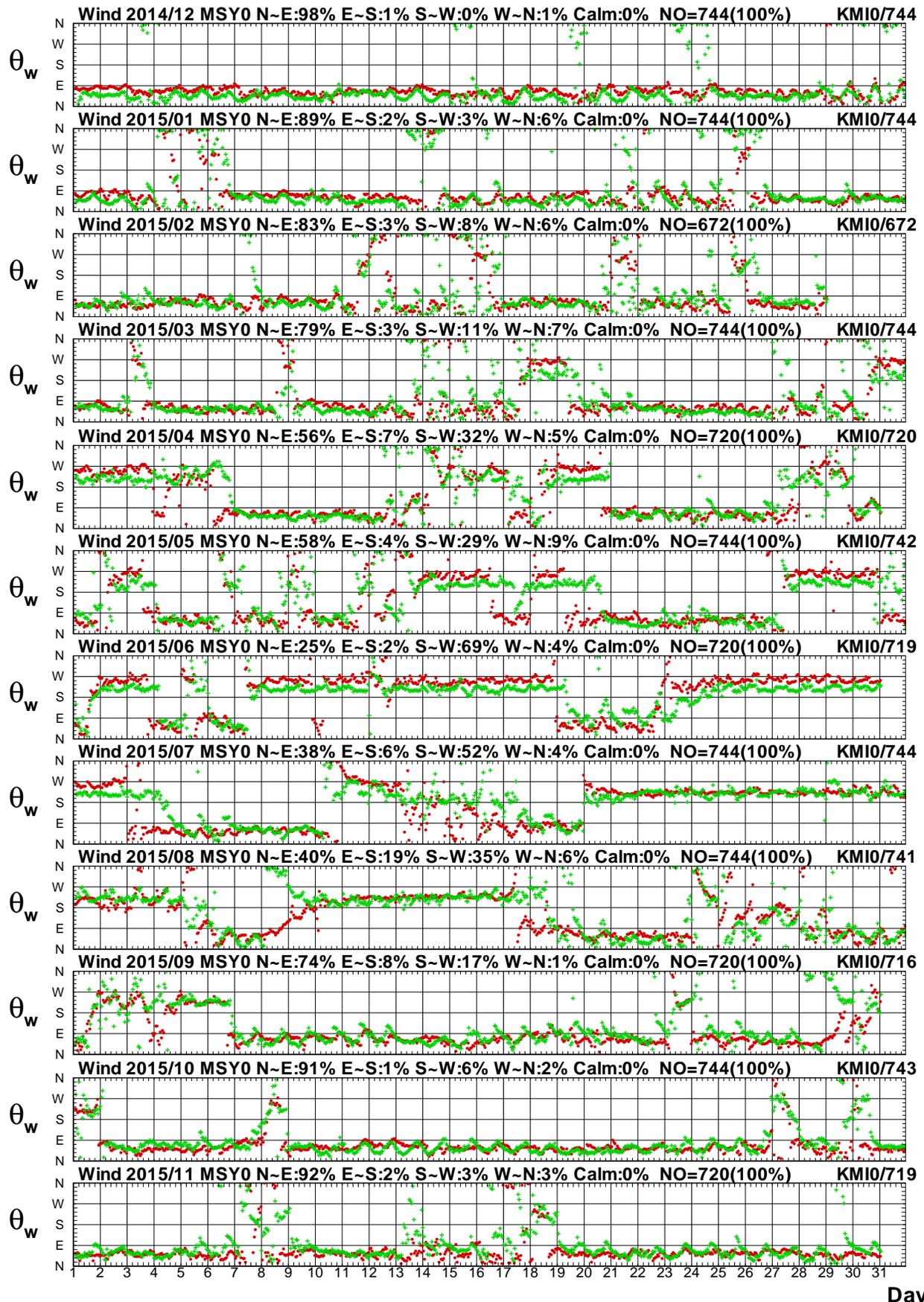


圖 1.14b 2015年每月馬祖海域 Y 站與金門海域 I 站風向圖

W14CMSY0.1HA W14CKMIO.1HO W151MSY0.1HA W151KMIO.1HO W152MSY0.1HA W152KMIO.1HO
 W153MSY0.1HA W153KMIO.1HO W154MSY0.1HA W154KMIO.1HO W155MSY0.1HA W155KMIO.1HO

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

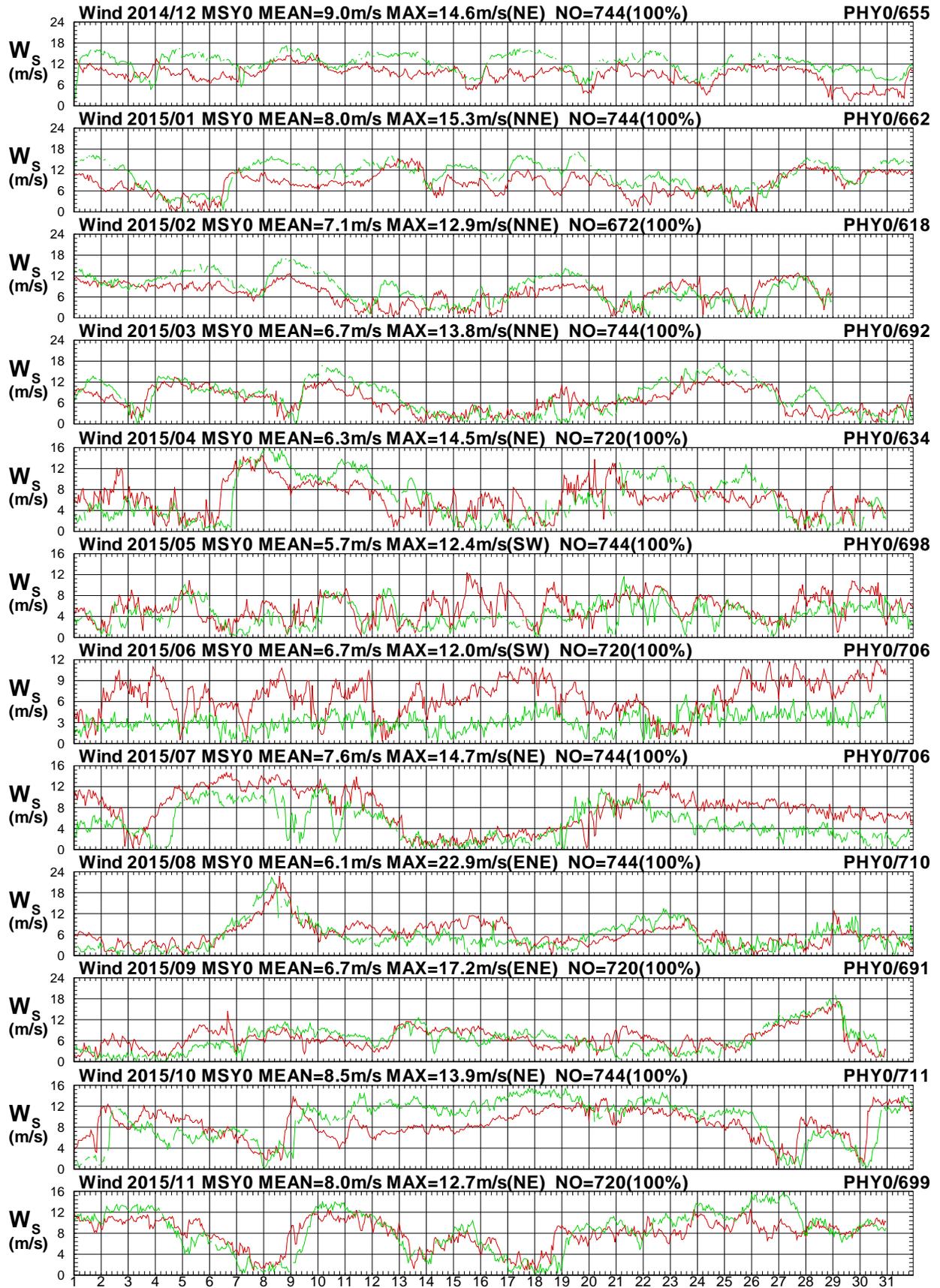


圖 1.15a 2015年每月馬祖海域 Y 站與澎湖海域 Y 站風速圖

W14CMSY0.1HA W14CPHY0.1H0 W151MSY0.1HA W151PHY0.1H0 W152MSY0.1HA W152PHY0.1H0
 W153MSY0.1HA W153PHY0.1H0 W154MSY0.1HA W154PHY0.1H0 W155MSY0.1HA W155PHY0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

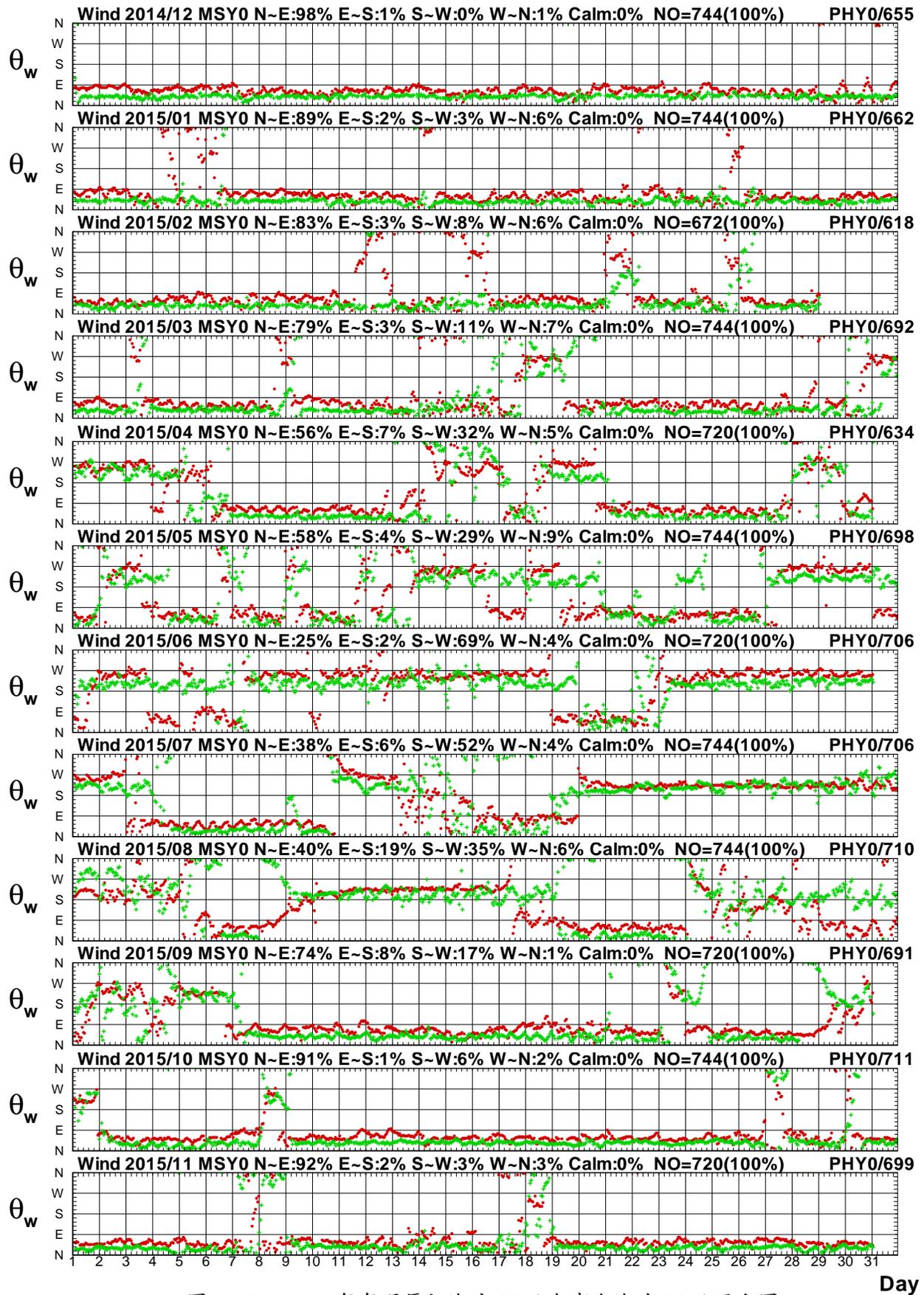


圖 1.15b 2015年每月馬祖海域 Y 站與澎湖海域 Y 站風向圖

W14CMSY0.1HA W14CPHY0.1H0 W151MSY0.1HA W151PHY0.1H0 W152MSY0.1HA W152PHY0.1H0
 W153MSY0.1HA W153PHY0.1H0 W154MSY0.1HA W154PHY0.1H0 W155MSY0.1HA W155PHY0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

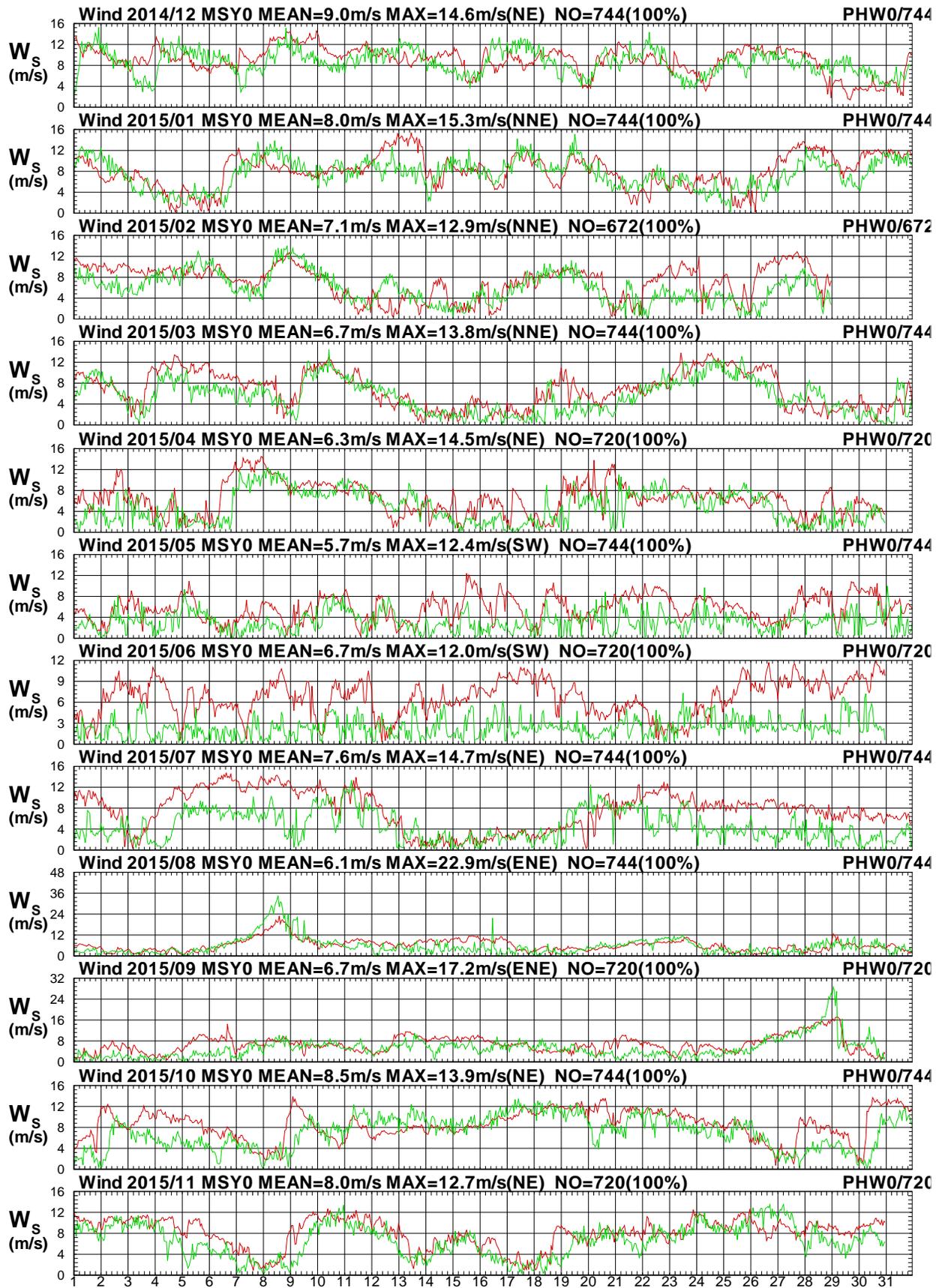


圖 1.16a 2015年每月馬祖海域 Y 站與澎湖海域 W 站風速圖

W14CMSY0.1HA W14CPHW0.1H0 W151MSY0.1HA W151PHW0.1H0 W152MSY0.1HA W152PHW0.1HD
 W153MSY0.1HA W153PHW0.1H0 W154MSY0.1HA W154PHW0.1H0 W155MSY0.1HA W155PHW0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

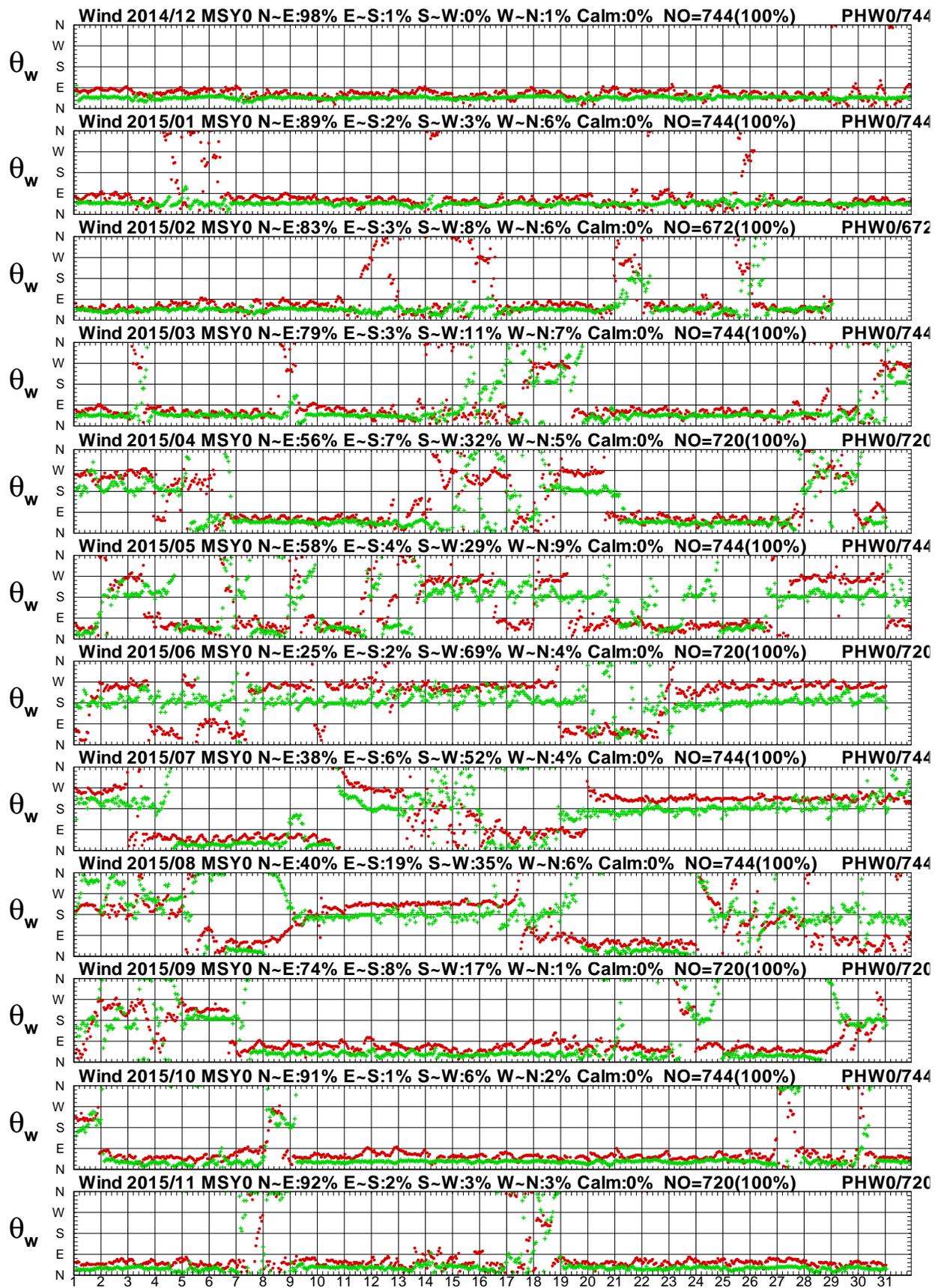


圖 1.16b 2015年每月馬祖海域 Y 站與澎湖海域 W 站風向圖

W14CMSY0.1HA W14CPHW0.1H0 W151MSY0.1HA W151PHW0.1H0 W152MSY0.1HA W152PHW0.1HD
 W153MSY0.1HA W153PHW0.1H0 W154MSY0.1HA W154PHW0.1H0 W155MSY0.1HA W155PHW0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

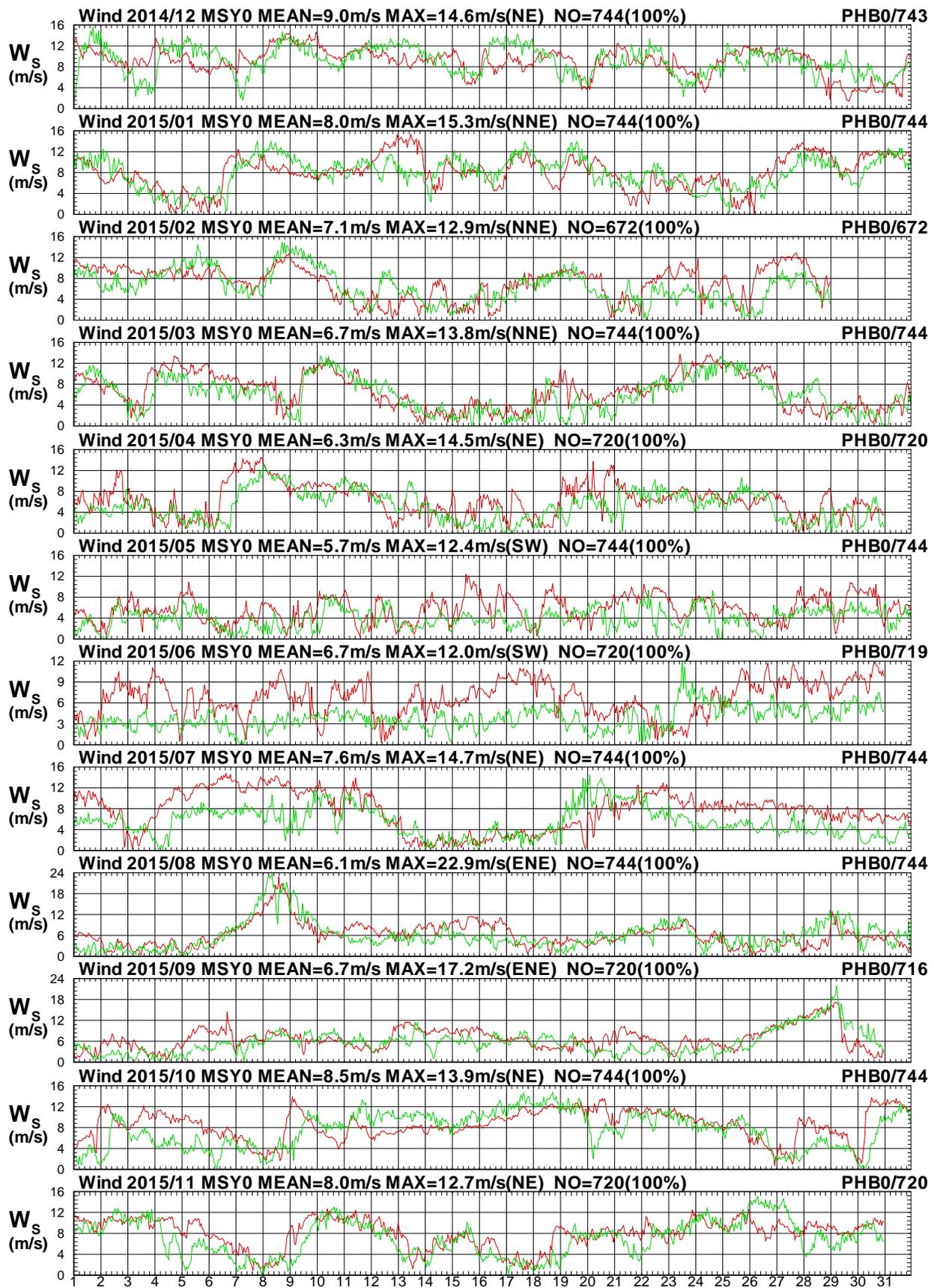


圖 1.17a 2015 年每月馬祖海域 Y 站與澎湖海域 B 站風速圖

W14CMSY0.1HA W14CPHB0.1H0 W151MSY0.1HA W151PHB0.1H0 W152MSY0.1HA W152PHB0.1H0
 W153MSY0.1HA W153PHB0.1H0 W154MSY0.1HA W154PHB0.1H0 W155MSY0.1HA W155PHB0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

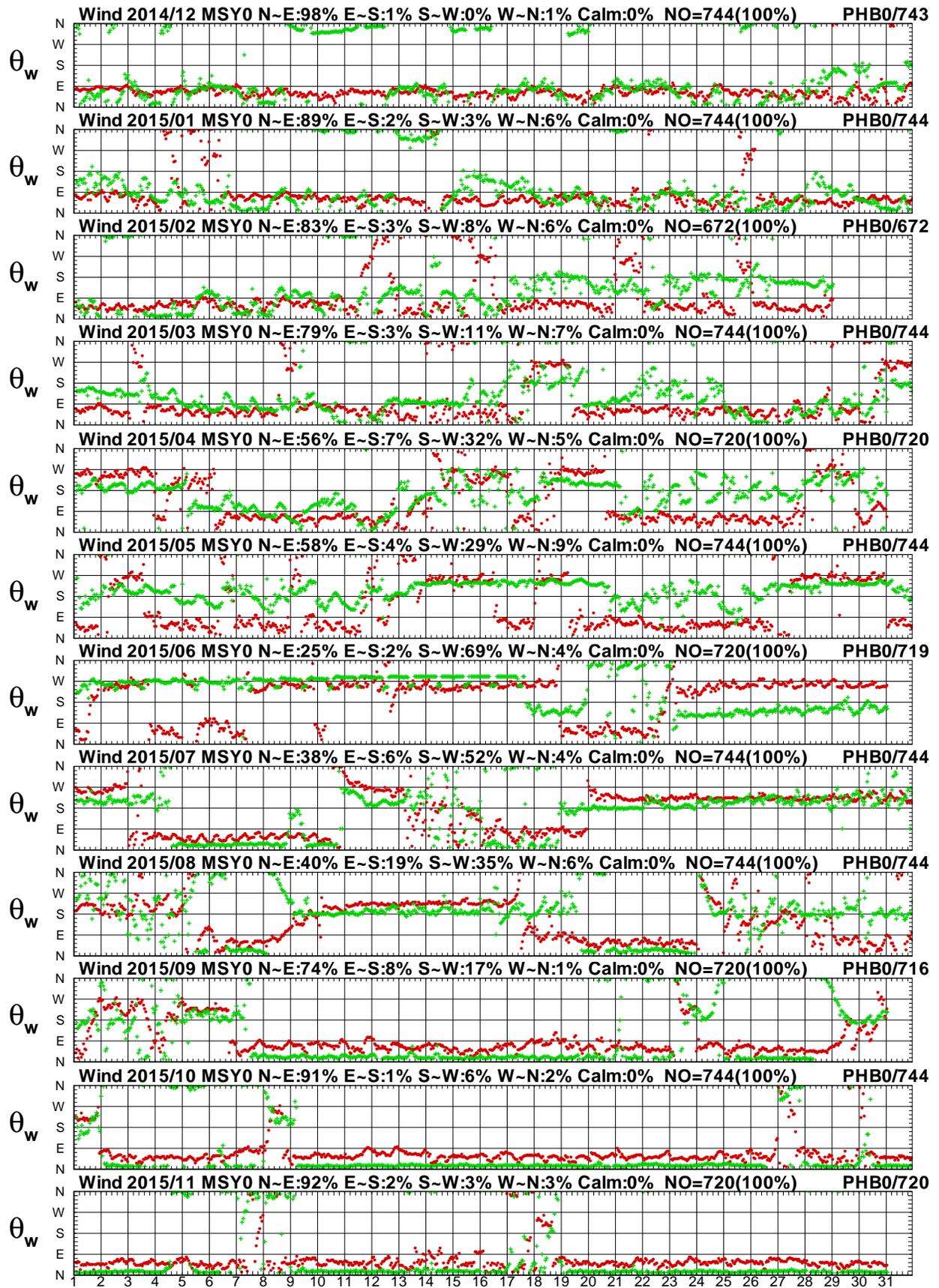


圖 1.17b 2015 年每月馬祖海域 Y 站與澎湖海域 B 站風向圖

W14CMSY0.1HA W14CPHB0.1H0 W151MSY0.1HA W151PHB0.1H0 W152MSY0.1HA W152PHB0.1H0
 W153MSY0.1HA W153PHB0.1H0 W154MSY0.1HA W154PHB0.1H0 W155MSY0.1HA W155PHB0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

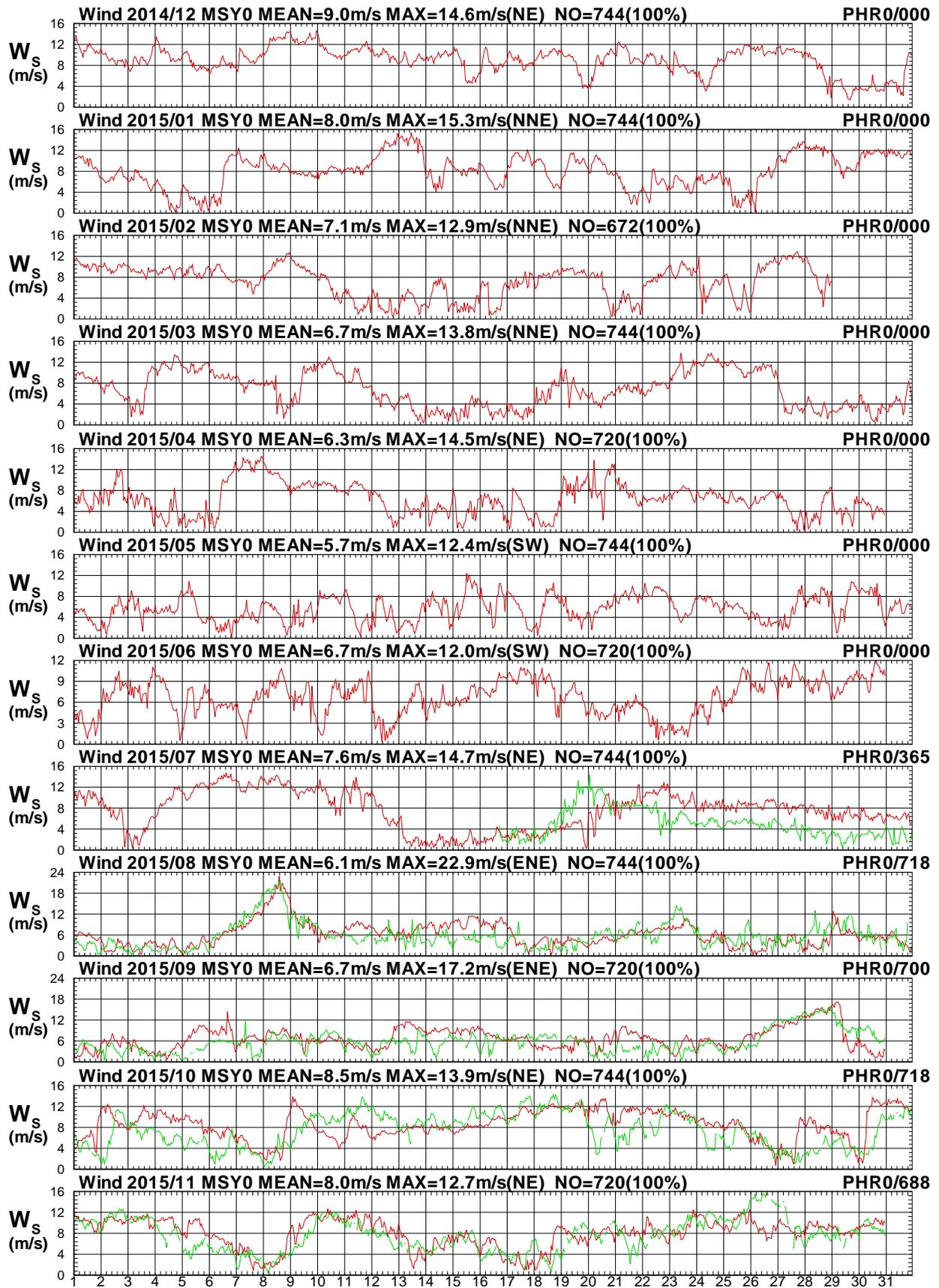


圖 1.18a 2015年每月馬祖海域 Y 站與澎湖海域 R 站風速圖

W14CMSY0.1HA W14CPHR0.1H0 W151MSY0.1HA W151PHR0.1H0 W152MSY0.1HA W152PHR0.1H0
 W153MSY0.1HA W153PHR0.1H0 W154MSY0.1HA W154PHR0.1H0 W155MSY0.1HA W155PHR0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

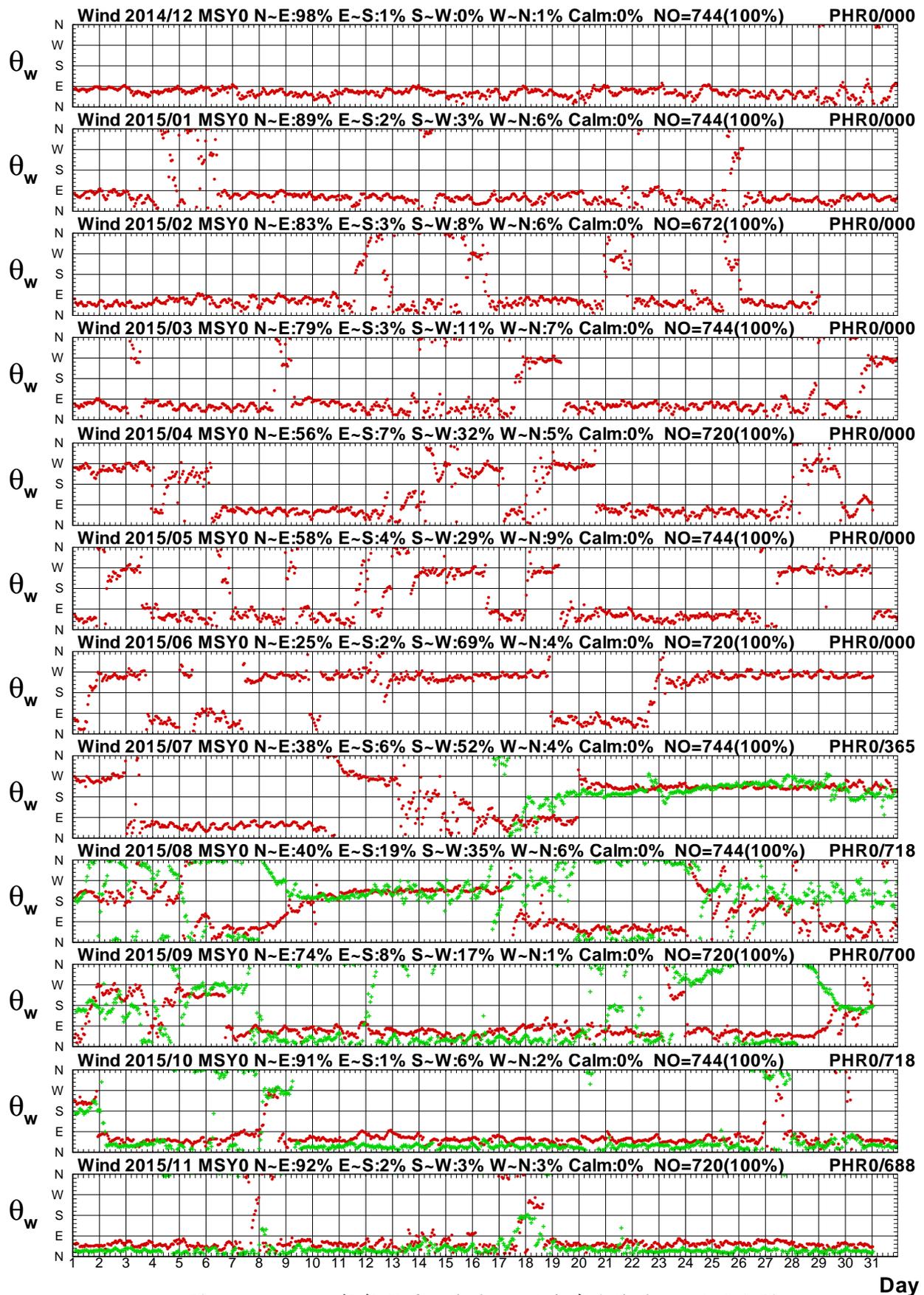


圖 1.18b 2015年每月馬祖海域 Y 站與澎湖海域 R 站風向圖

W14CMSY0.1HA W14CPR0.1H0 W151MSY0.1HA W151PHR0.1H0 W152MSY0.1HA W152PHR0.1H0
 W153MSY0.1HA W153PHR0.1H0 W154MSY0.1HA W154PHR0.1H0 W155MSY0.1HA W155PHR0.1H0

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

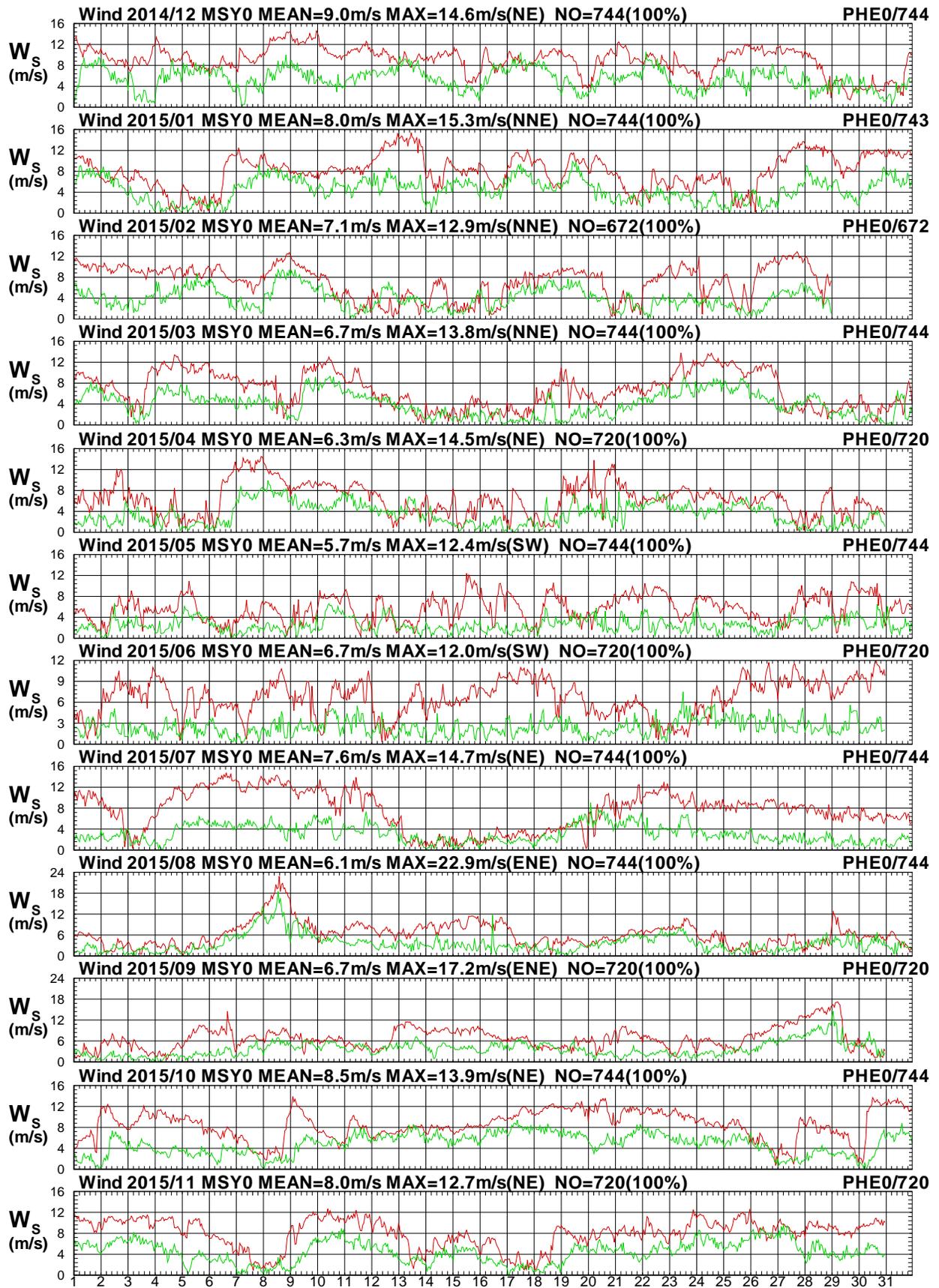


圖 1.19a 2015年每月馬祖海域 Y 站與澎湖海域 E 站風速圖

W14CMSY0.1HA W14CPHE0.1H0 W151MSY0.1HA W151PHE0.1H0 W152MSY0.1HA W152PHE0.1H0
 W153MSY0.1HA W153PHE0.1H0 W154MSY0.1HA W154PHE0.1H0 W155MSY0.1HA W155PHE0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

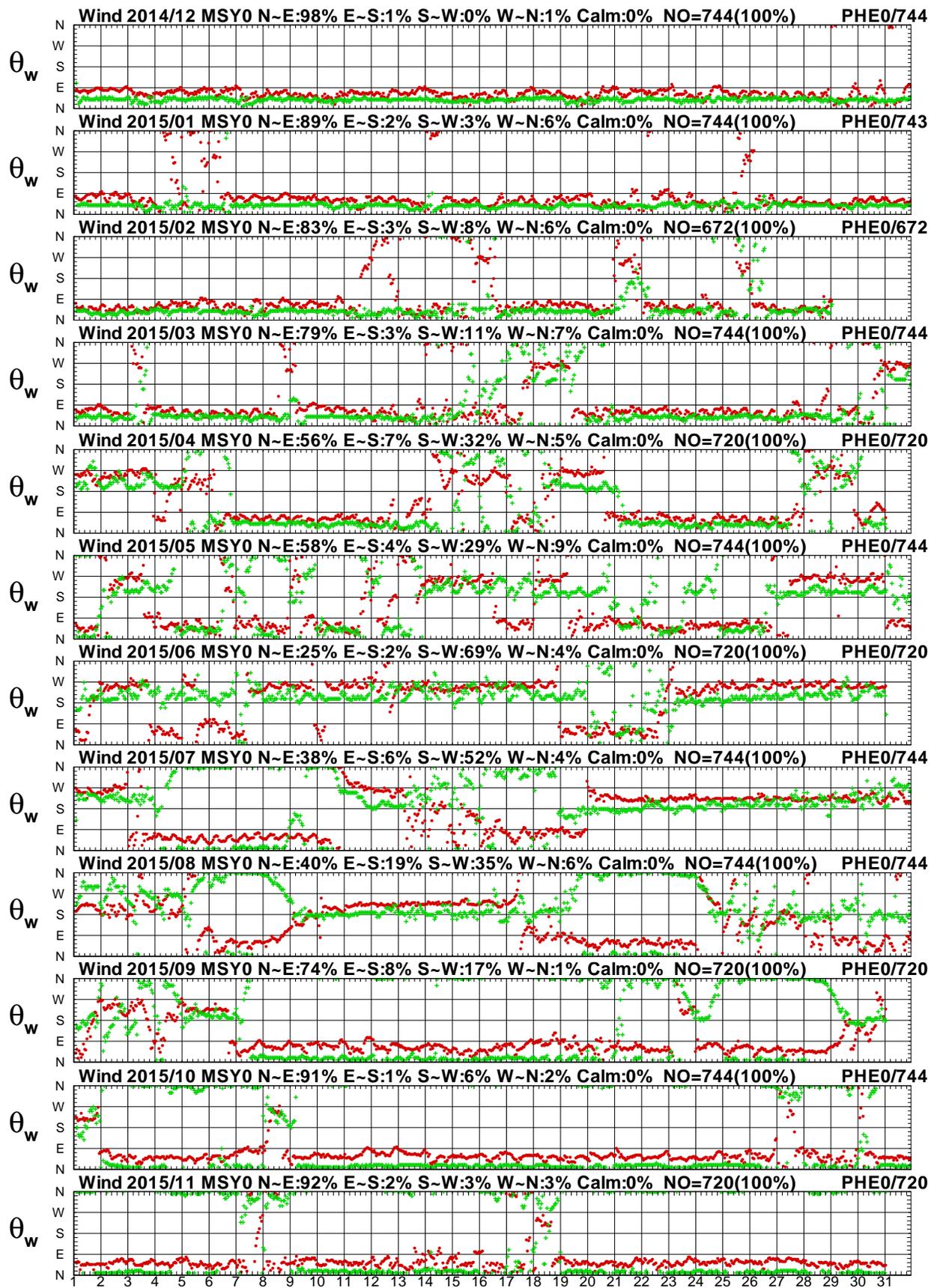


圖 1.19b 2015年每月馬祖海域 Y 站與澎湖海域 E 站風向圖

W14CMSY0.1HA W14CPHE0.1HO W151MSY0.1HA W151PHE0.1HO W152MSY0.1HA W152PHE0.1HO
 W153MSY0.1HA W153PHE0.1HO W154MSY0.1HA W154PHE0.1HO W155MSY0.1HA W155PHE0.1HO

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Wind Speed in Ma-Tsu Seas of MSY0 at 2015

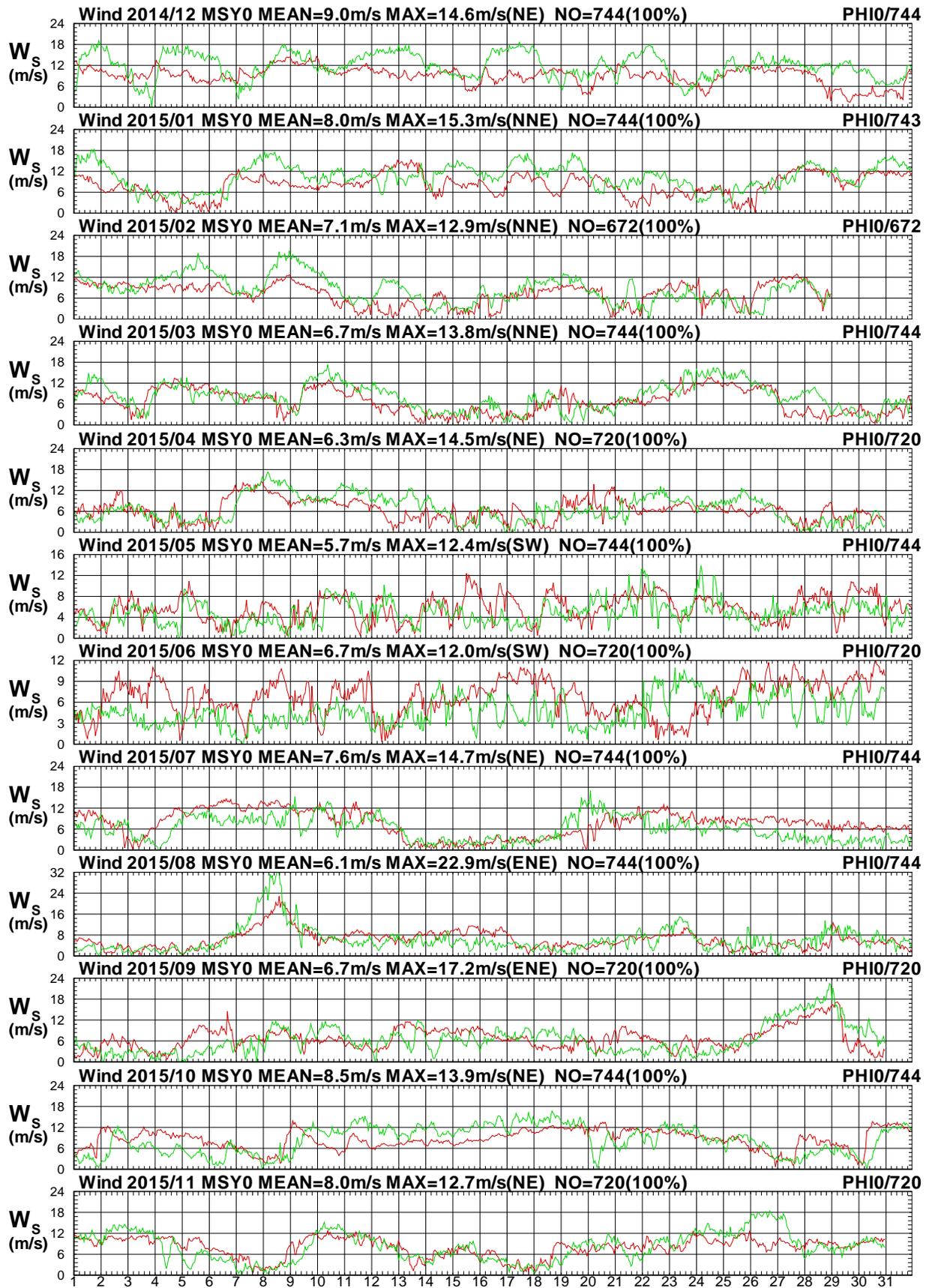


圖 1.20a 2015年每月馬祖海域 Y 站與澎湖海域 I 站風速圖

W14CMSY0.1HA W14CPHI0.1H0 W151MSY0.1HA W151PHI0.1H0 W152MSY0.1HA W152PHI0.1H0
 W153MSY0.1HA W153PHI0.1H0 W154MSY0.1HA W154PHI0.1H0 W155MSY0.1HA W155PHI0.1H0

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Wind Direction in Ma-Tsu Seas of MSY0 at 2015

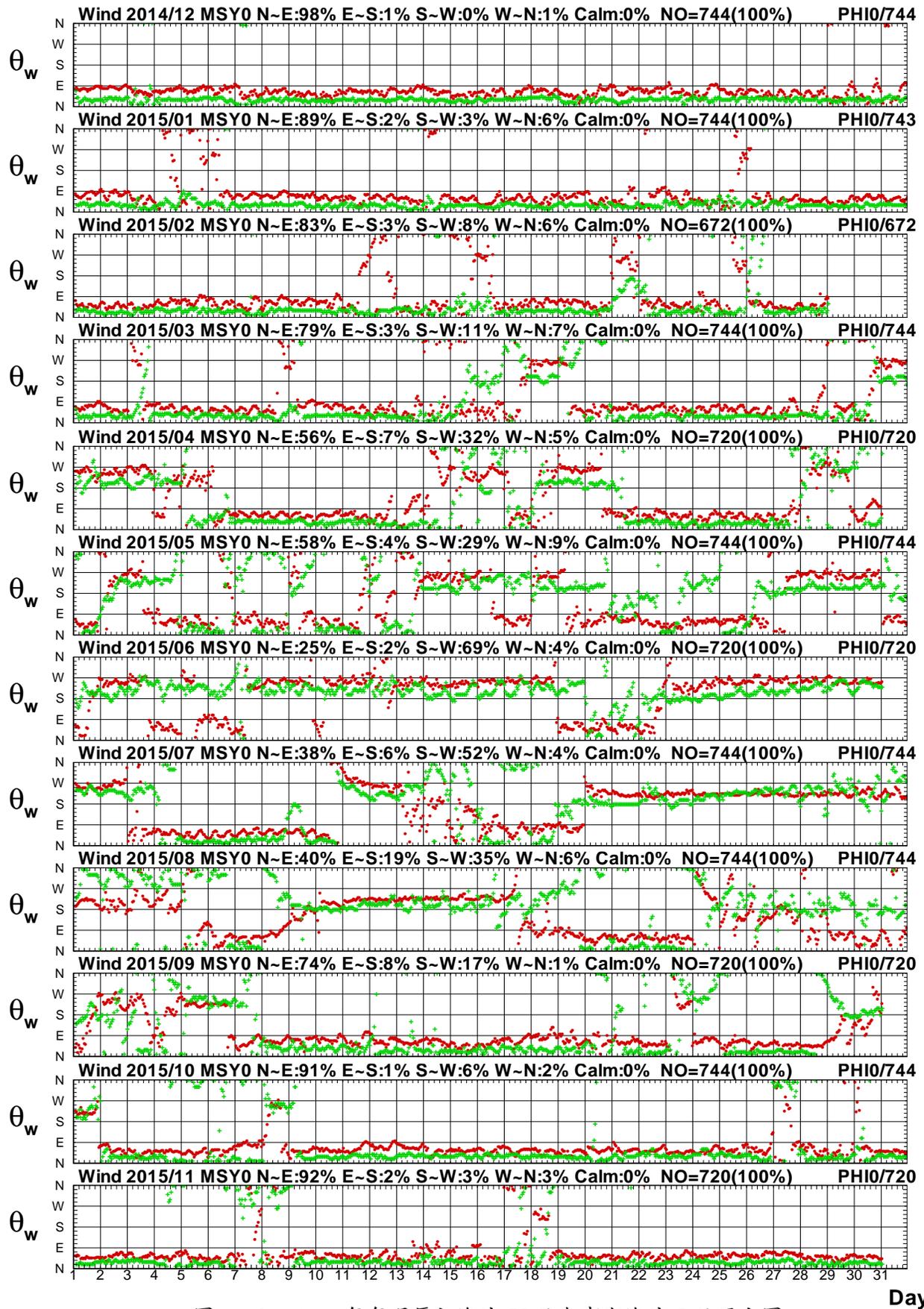


圖 1.20b 2015年每月馬祖海域 Y 站與澎湖海域 I 站風向圖

W14CMSY0.1HA W14CPHI0.1H0 W151MSY0.1HA W151PHI0.1H0 W152MSY0.1HA W152PHI0.1H0
 W153MSY0.1HA W153PHI0.1H0 W154MSY0.1HA W154PHI0.1H0 W155MSY0.1HA W155PHI0.1H0

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第二章 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 2。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 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 **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 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 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	馬祖資料淨標

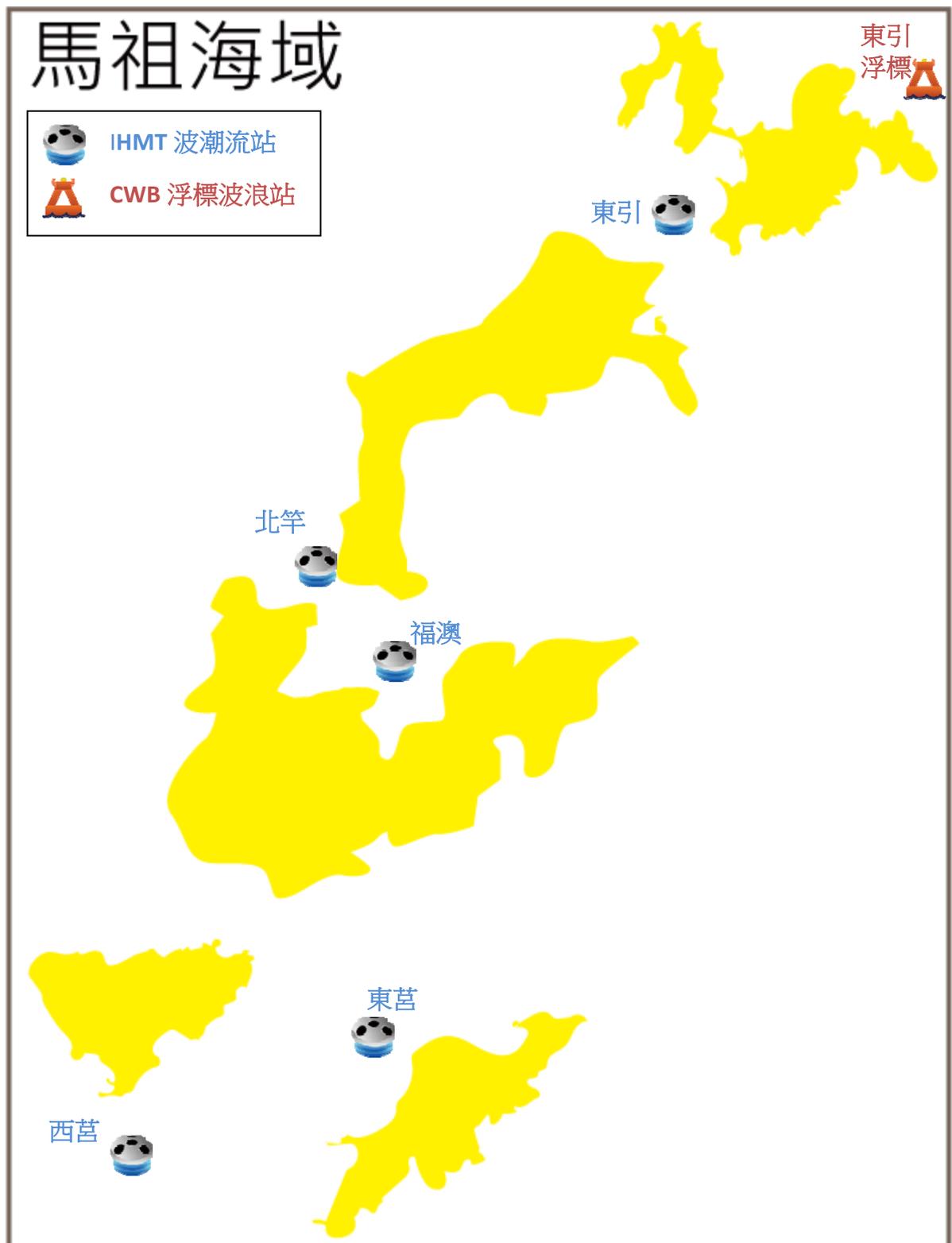


圖 2 馬祖海域波浪觀測站位置示意圖

表 2.1a 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 2.1b 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

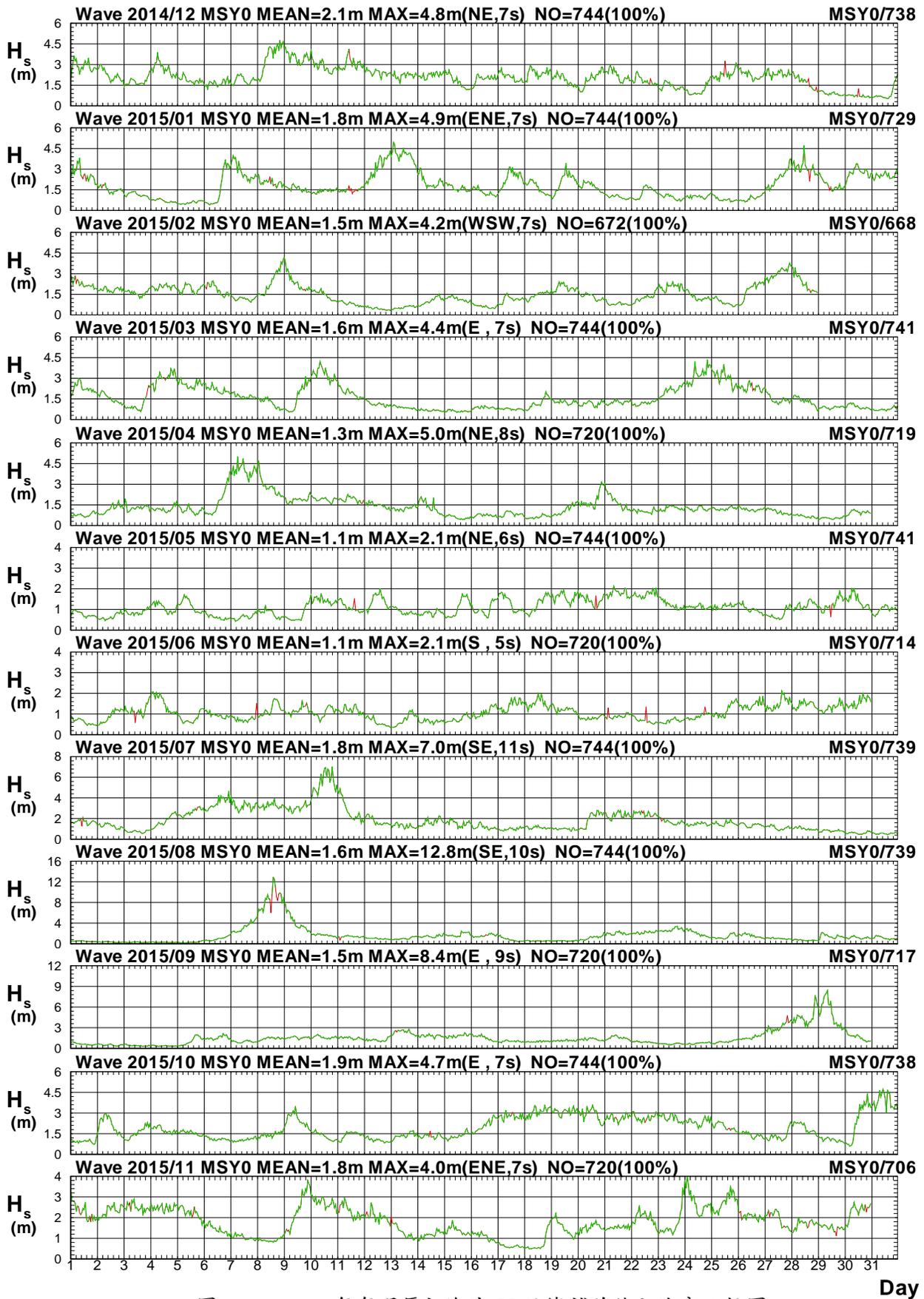


圖 2.1a 2015年每月馬祖海域 Y 站修補前後之波高比較圖

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

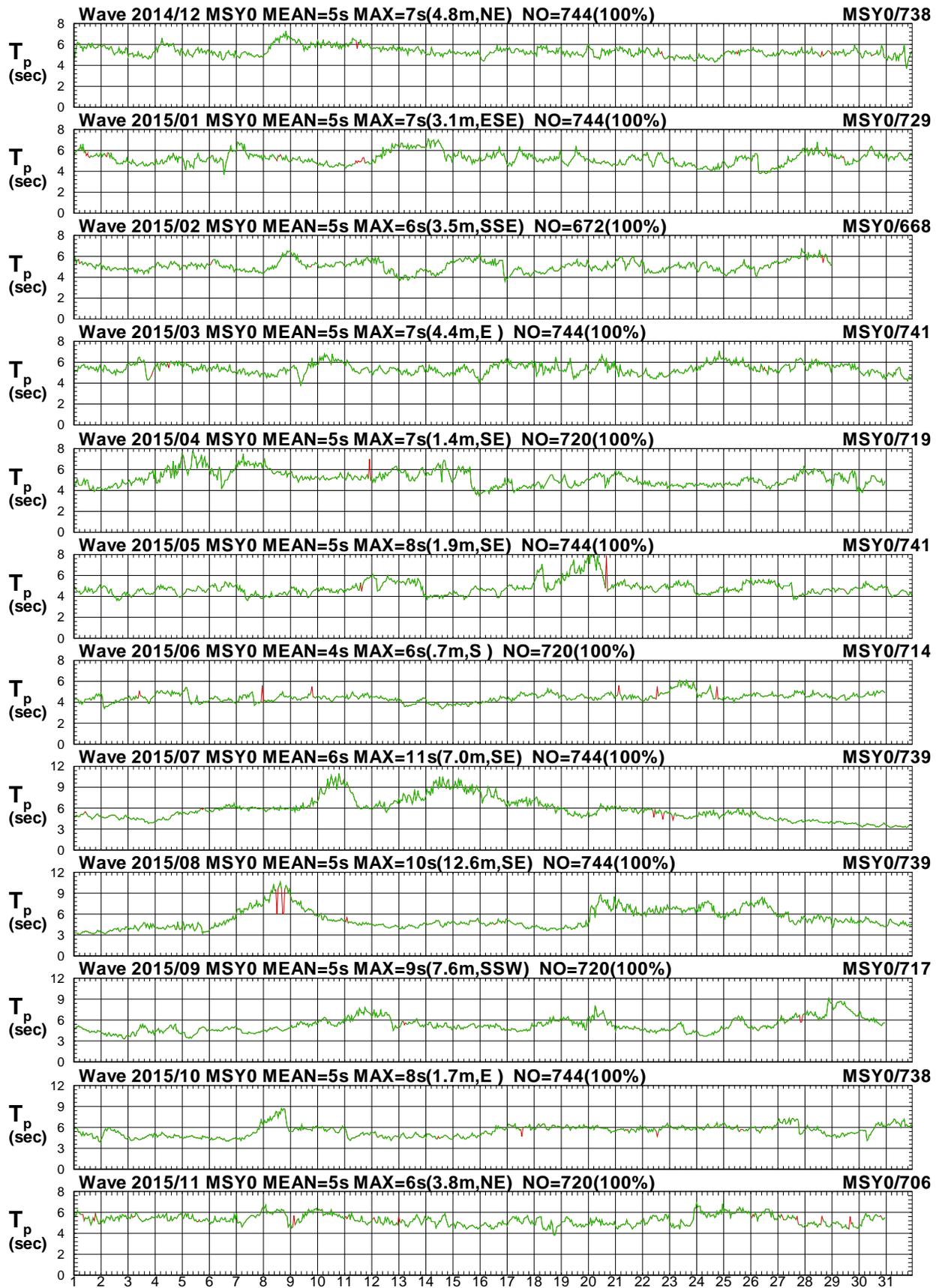


圖 2.1b 2015年每月馬祖海域 Y 站修補前後之週期比較圖

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

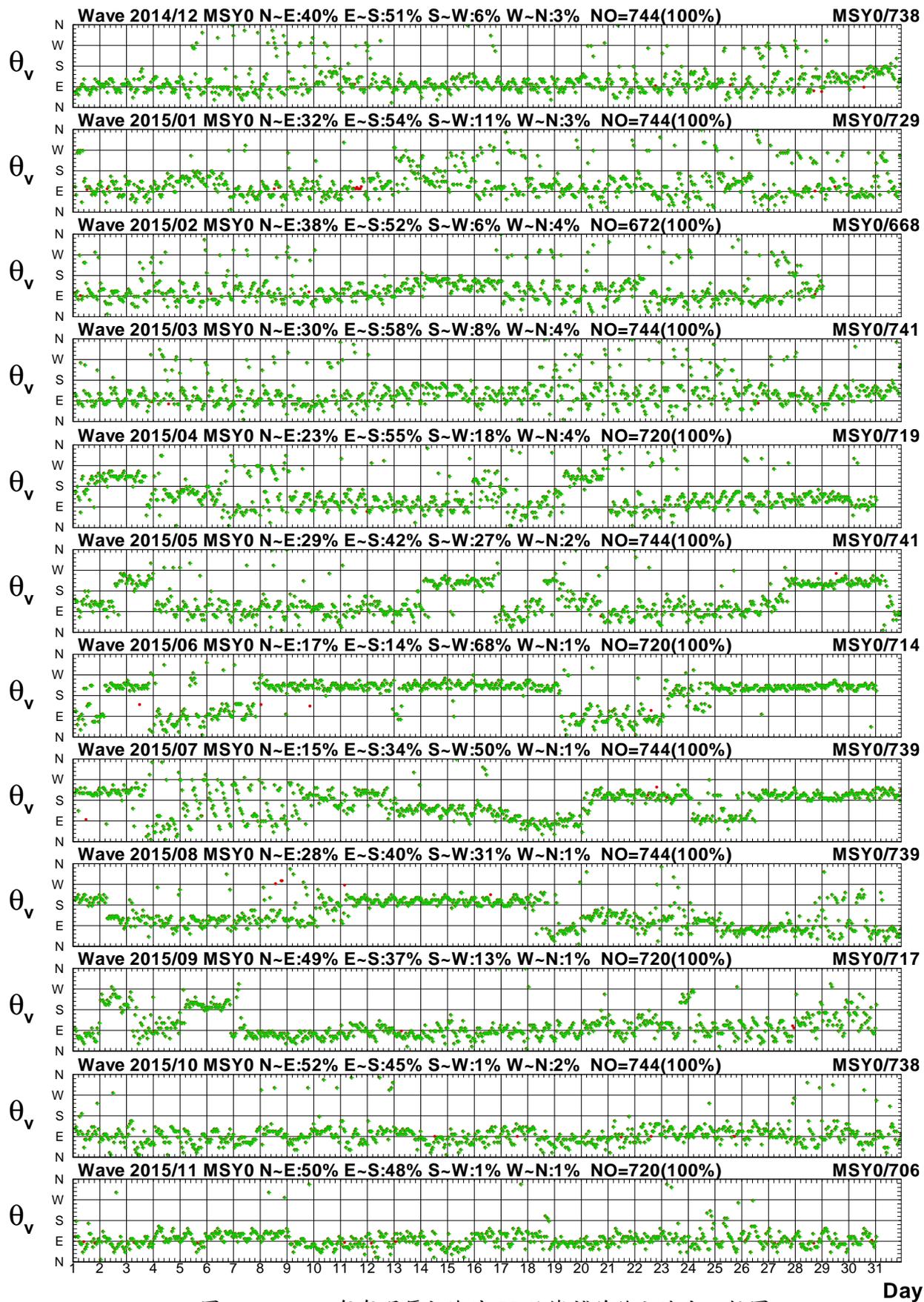


圖 2.1c 2015年每月馬祖海域 Y 站修補前後之波向比較圖

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

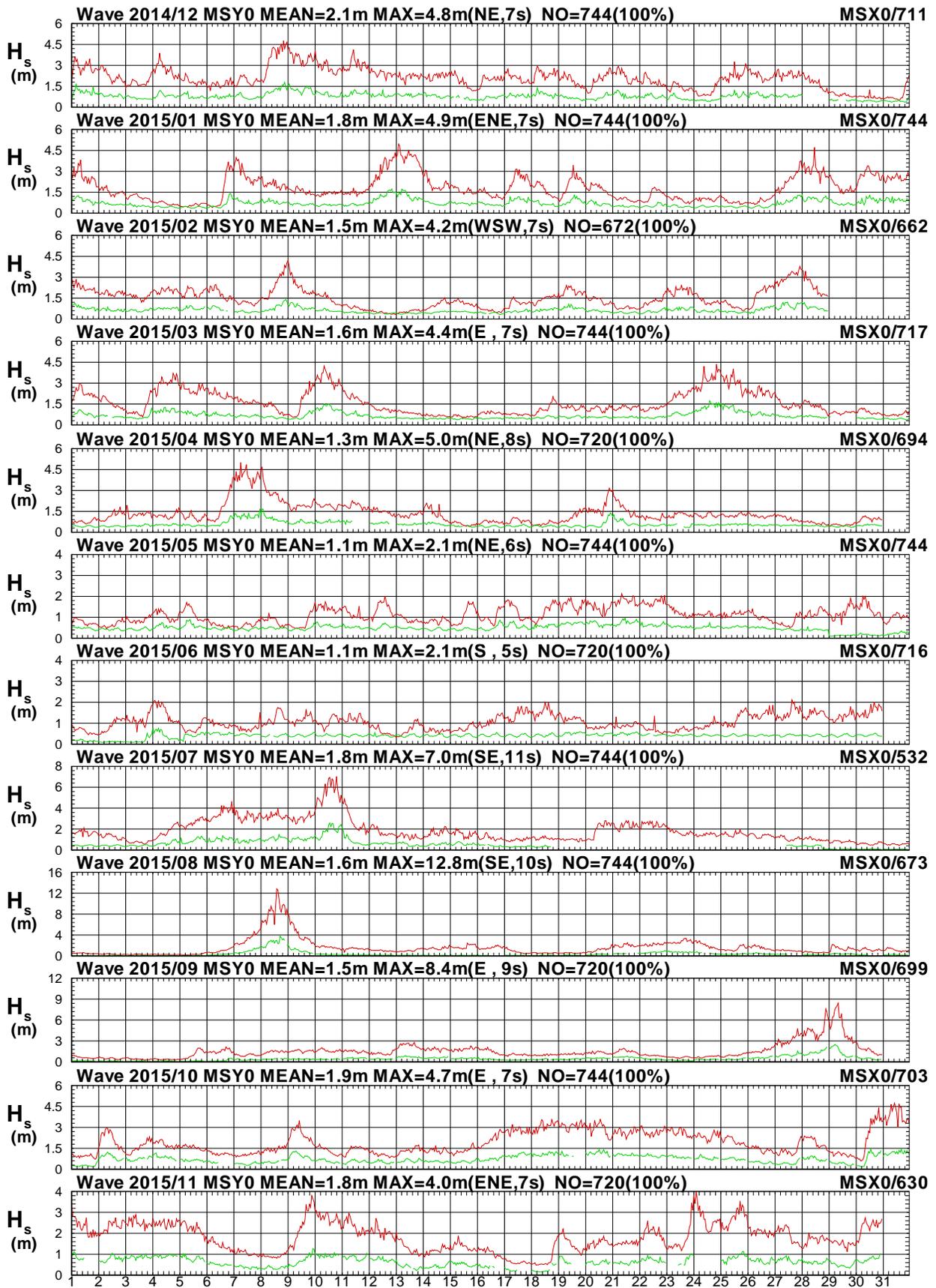


圖 2.2a 2015年每月馬祖海域 Y 站與 X 站波高比較圖

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

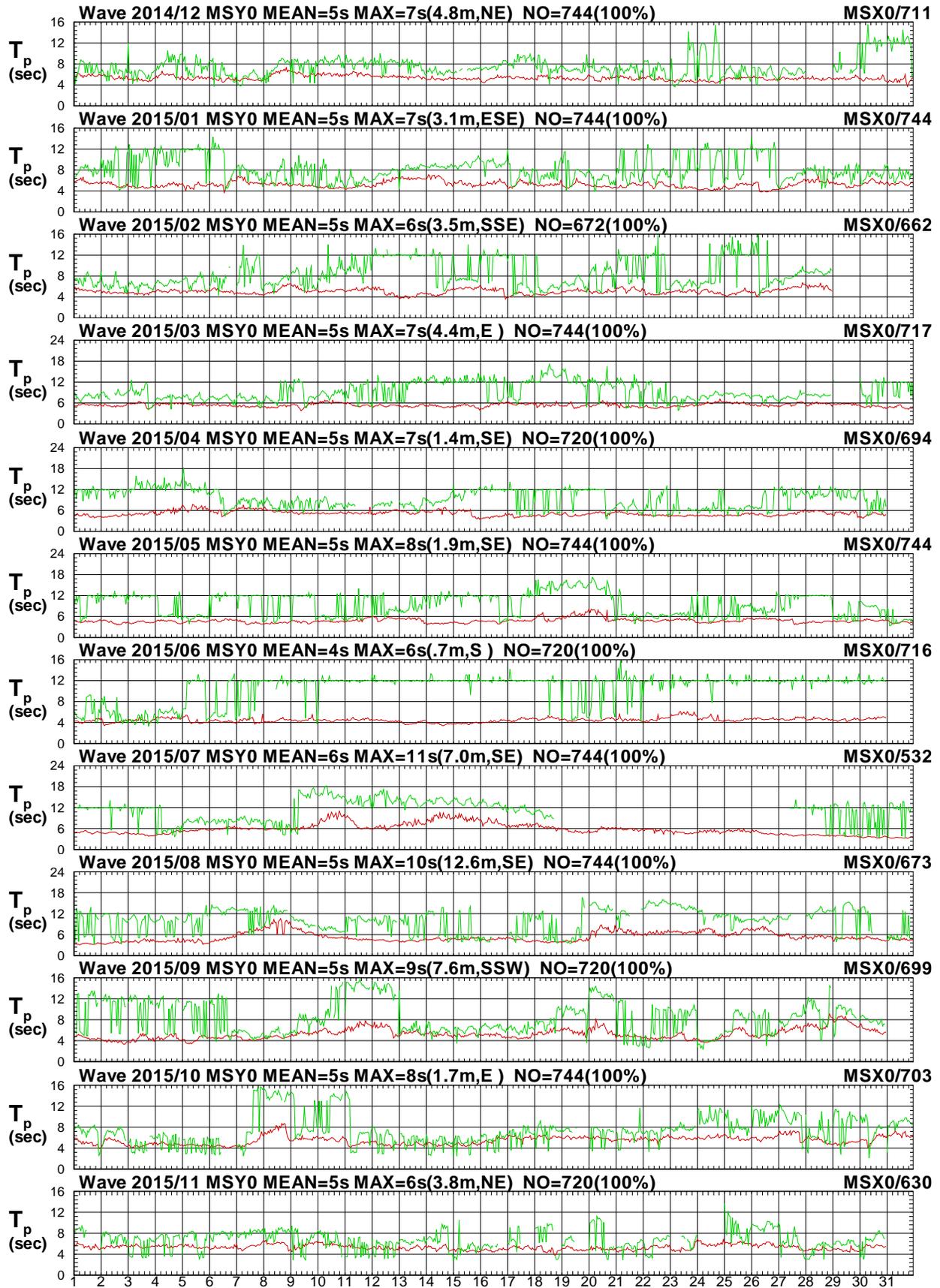


圖 2.2b 2015年每月馬祖海域 Y 站與 X 站週期比較圖

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

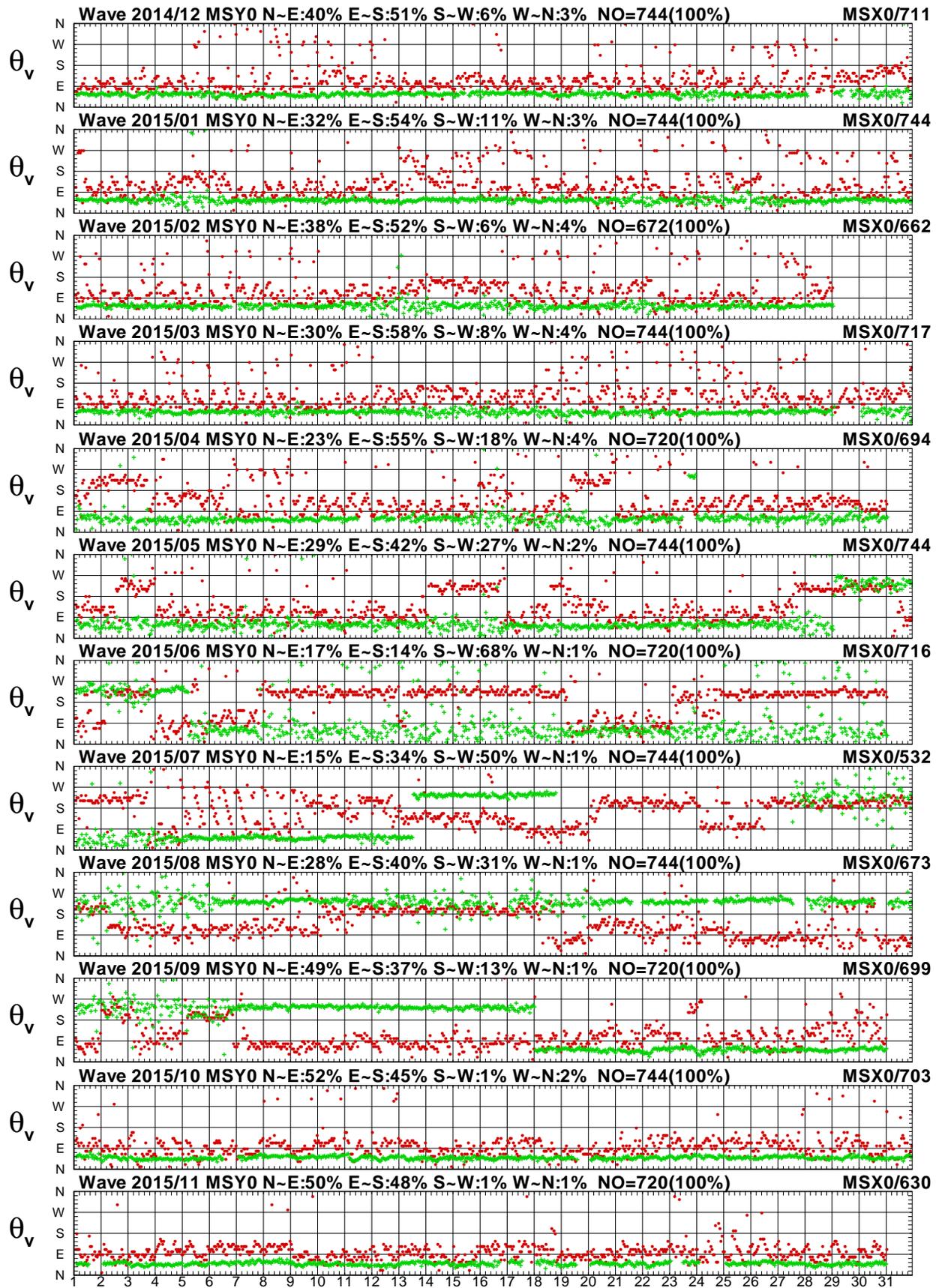


圖 2.2c 2015年每月馬祖海域 Y 站與 X 站波向比較圖

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 H_s in Ma-Tsu Seas of MSY0 at 2015

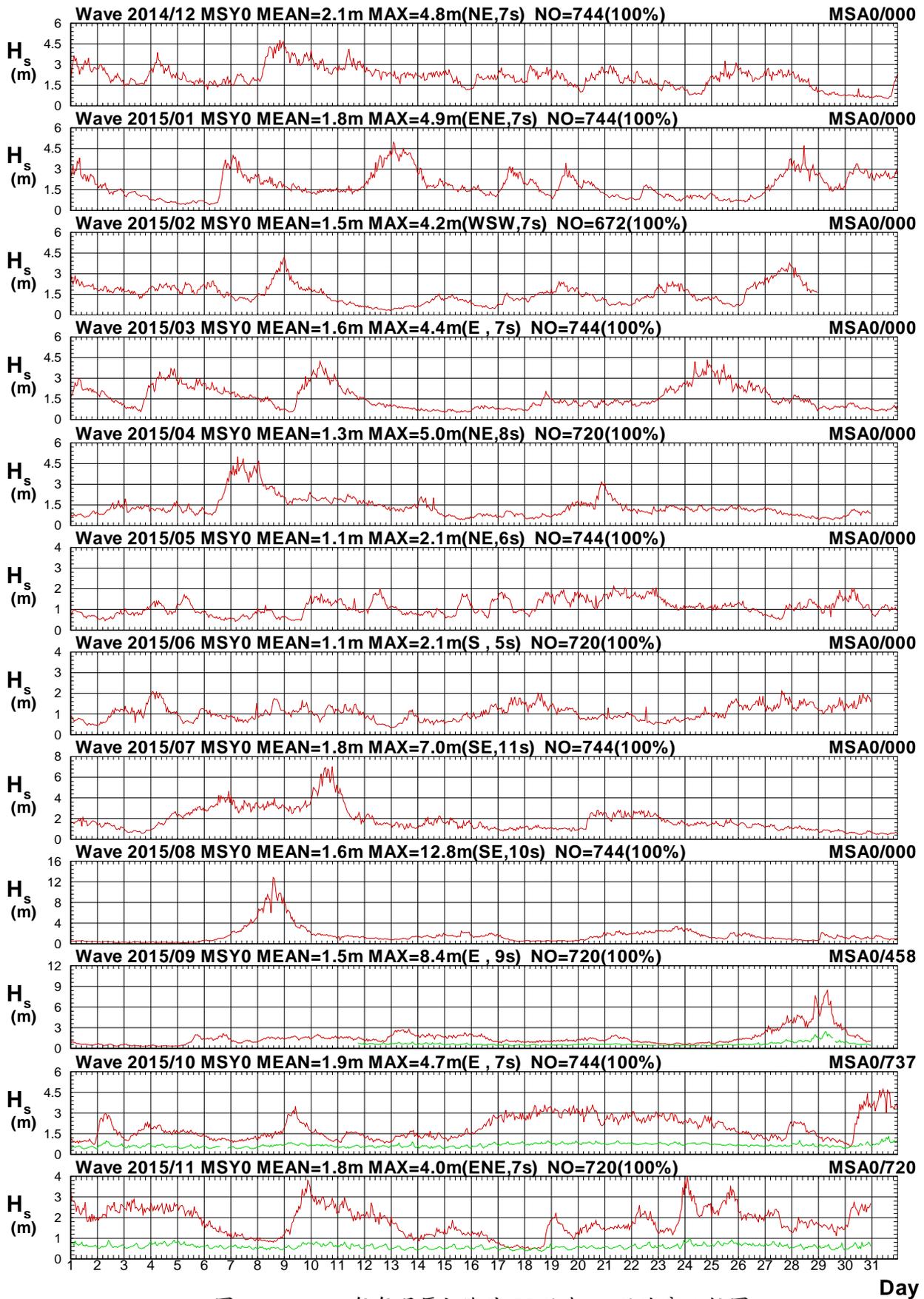


圖 2.3a 2015年每月馬祖海域 Y 站與 A 站波高比較圖

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

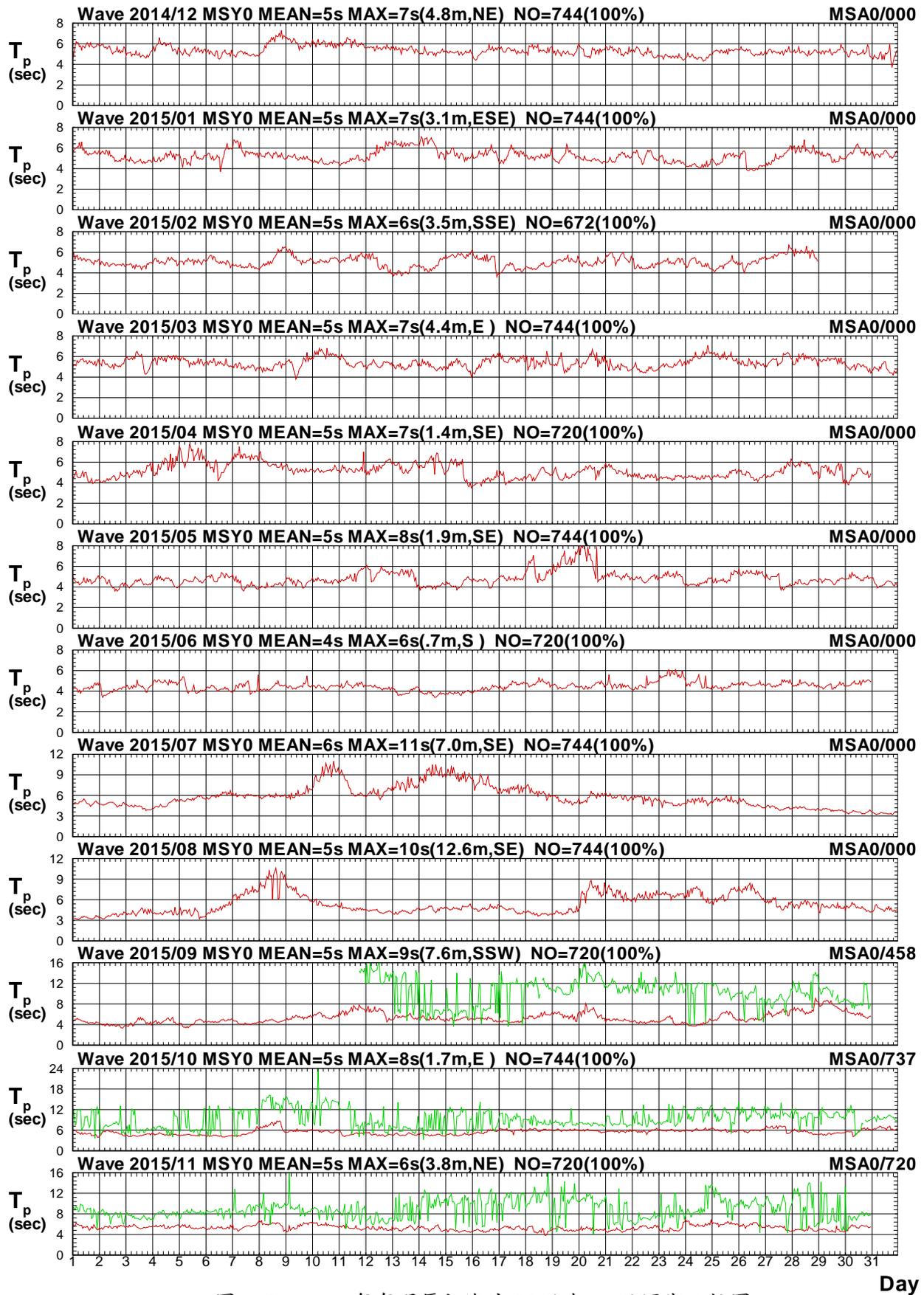


圖 2.3b 2015年每月馬祖海域 Y 站與 A 站週期比較圖

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

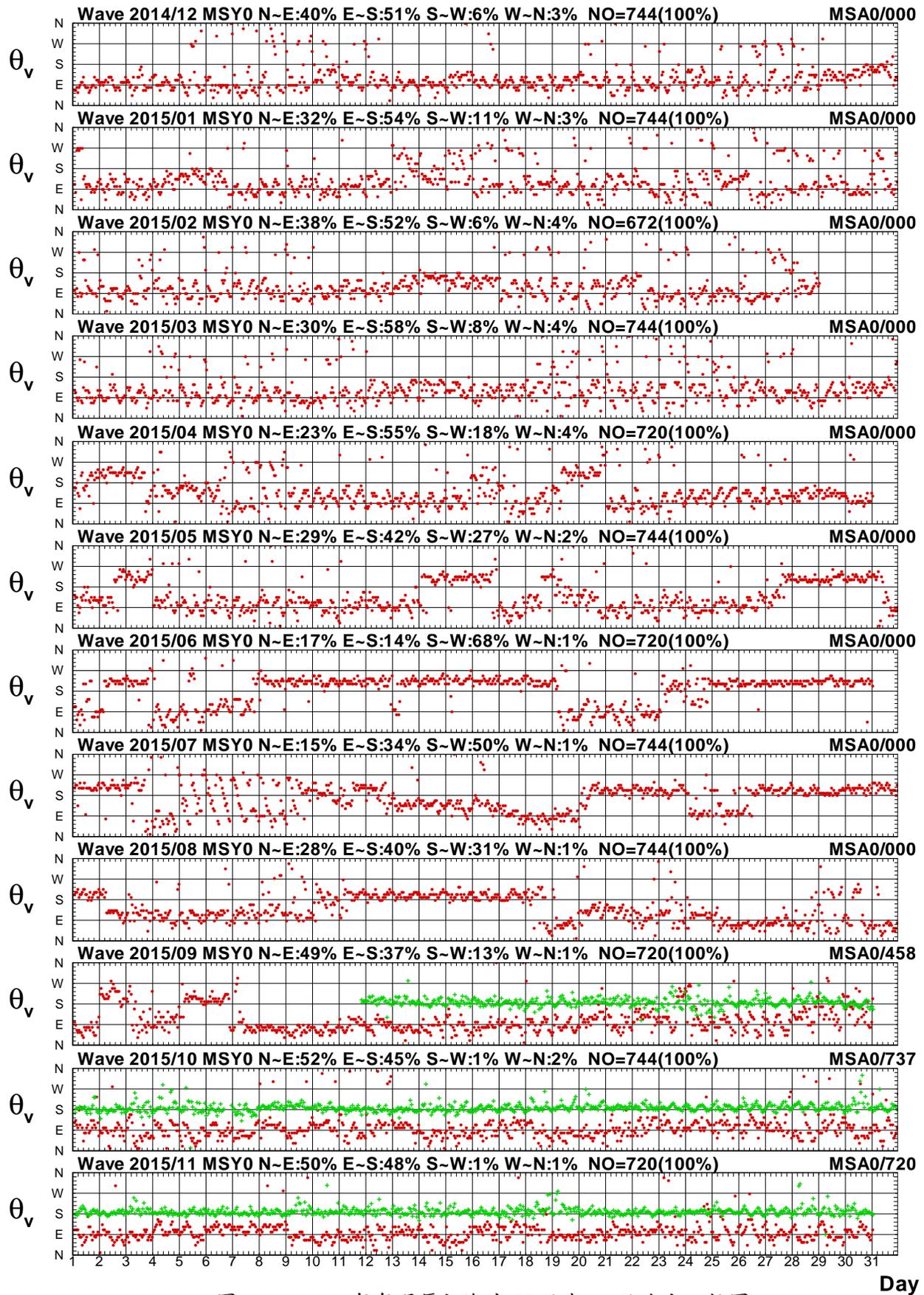


圖 2.3c 2015年每月馬祖海域 Y 站與 A 站波向比較圖

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

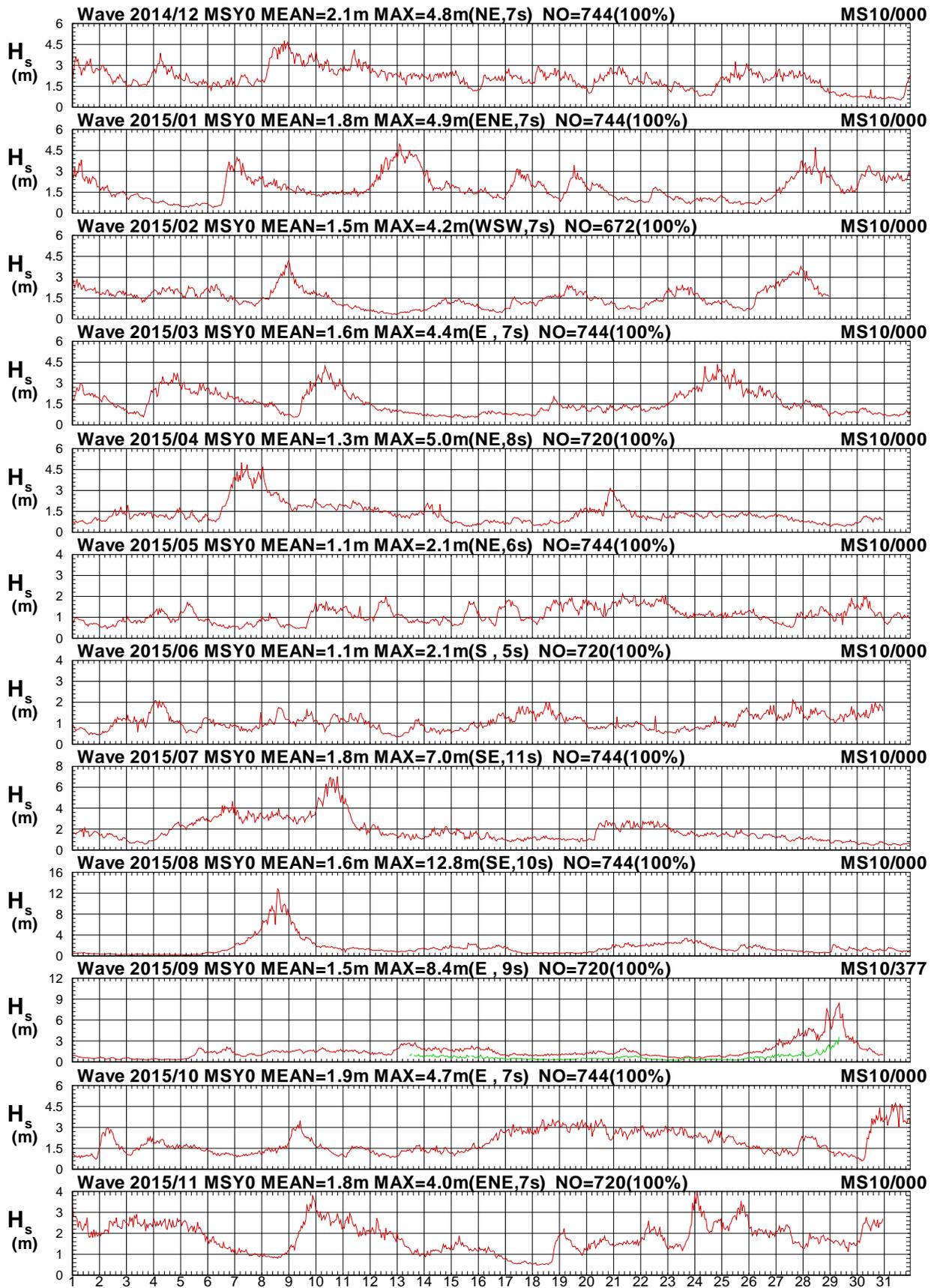


圖 2.4a 2015年每月馬祖海域 Y 站與 1 站波高比較圖

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

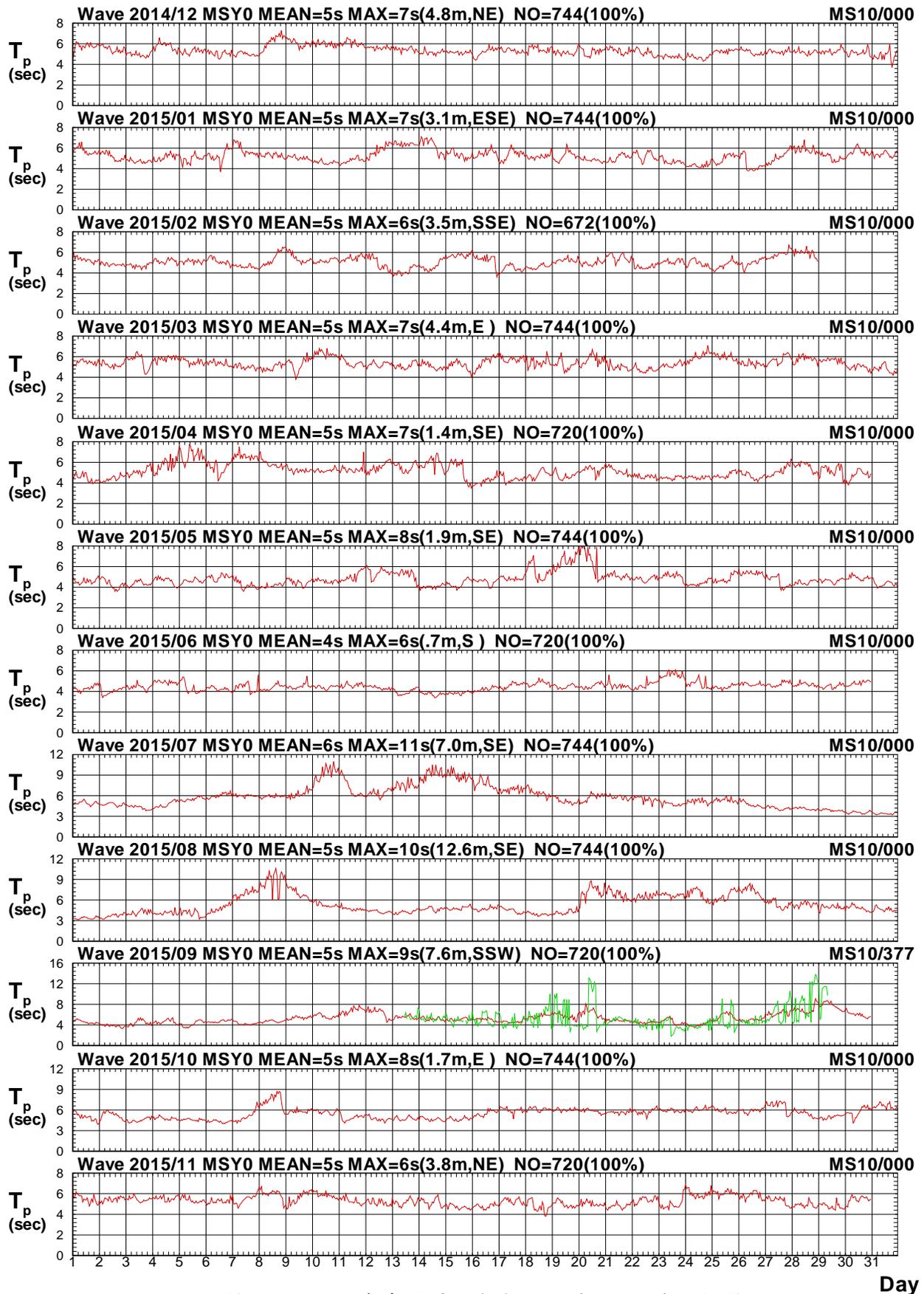


圖 2.4b 2015年每月馬祖海域 Y 站與 1 站週期比較圖

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

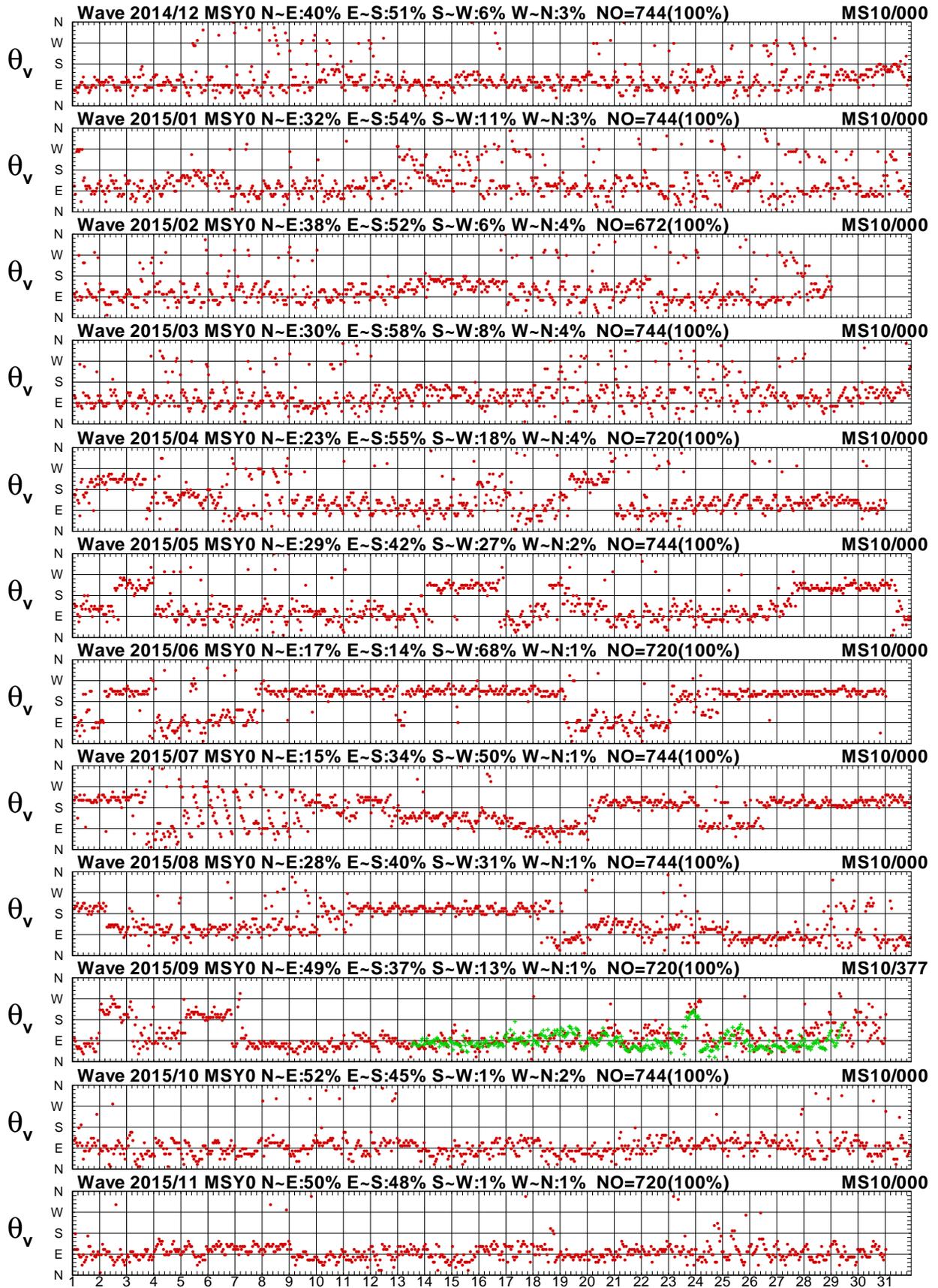


圖 2.4c 2015 年每月馬祖海域 Y 站與 1 站波向比較圖

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

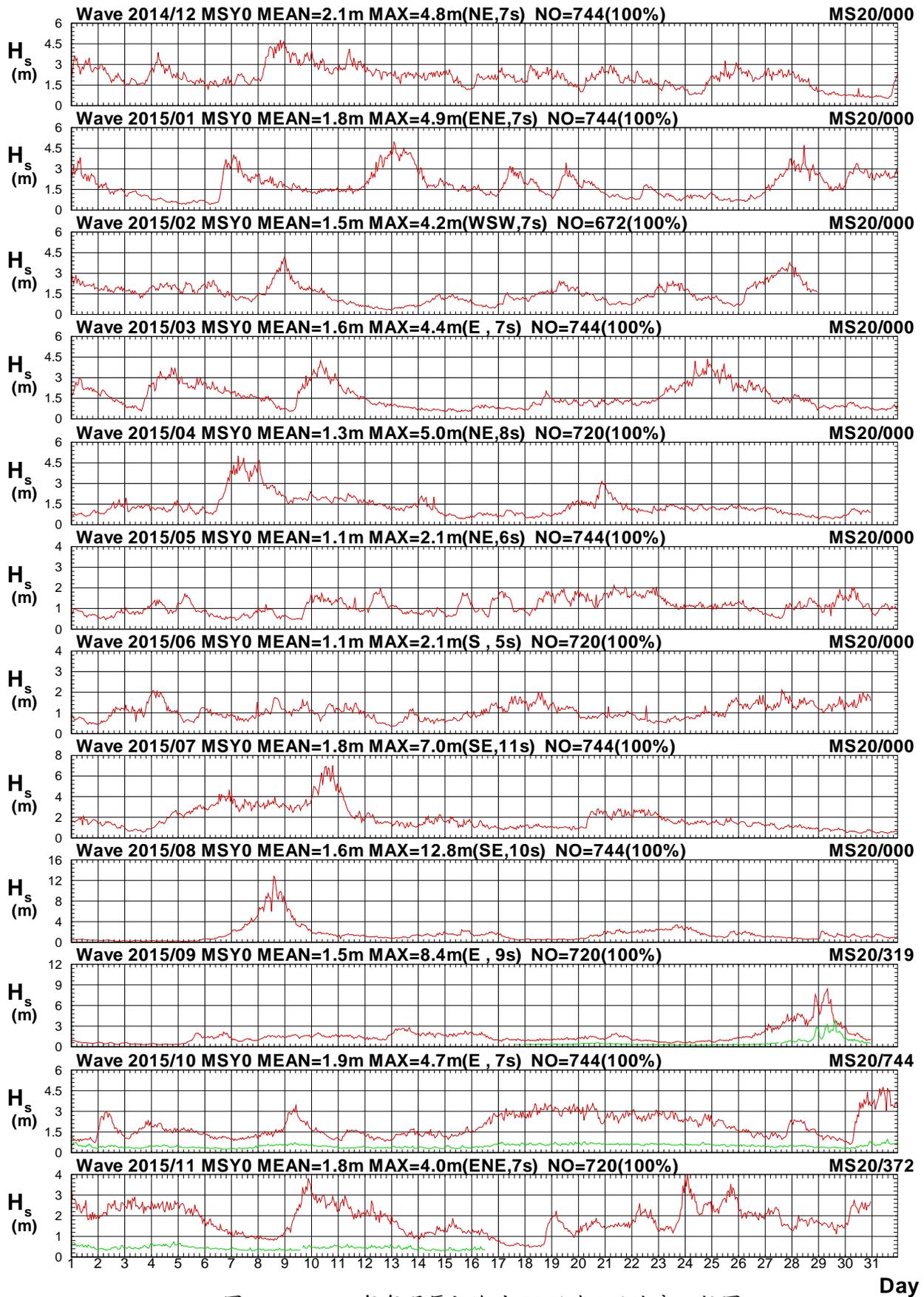


圖 2.5a 2015年每月馬祖海域 Y 站與2站波高比較圖

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

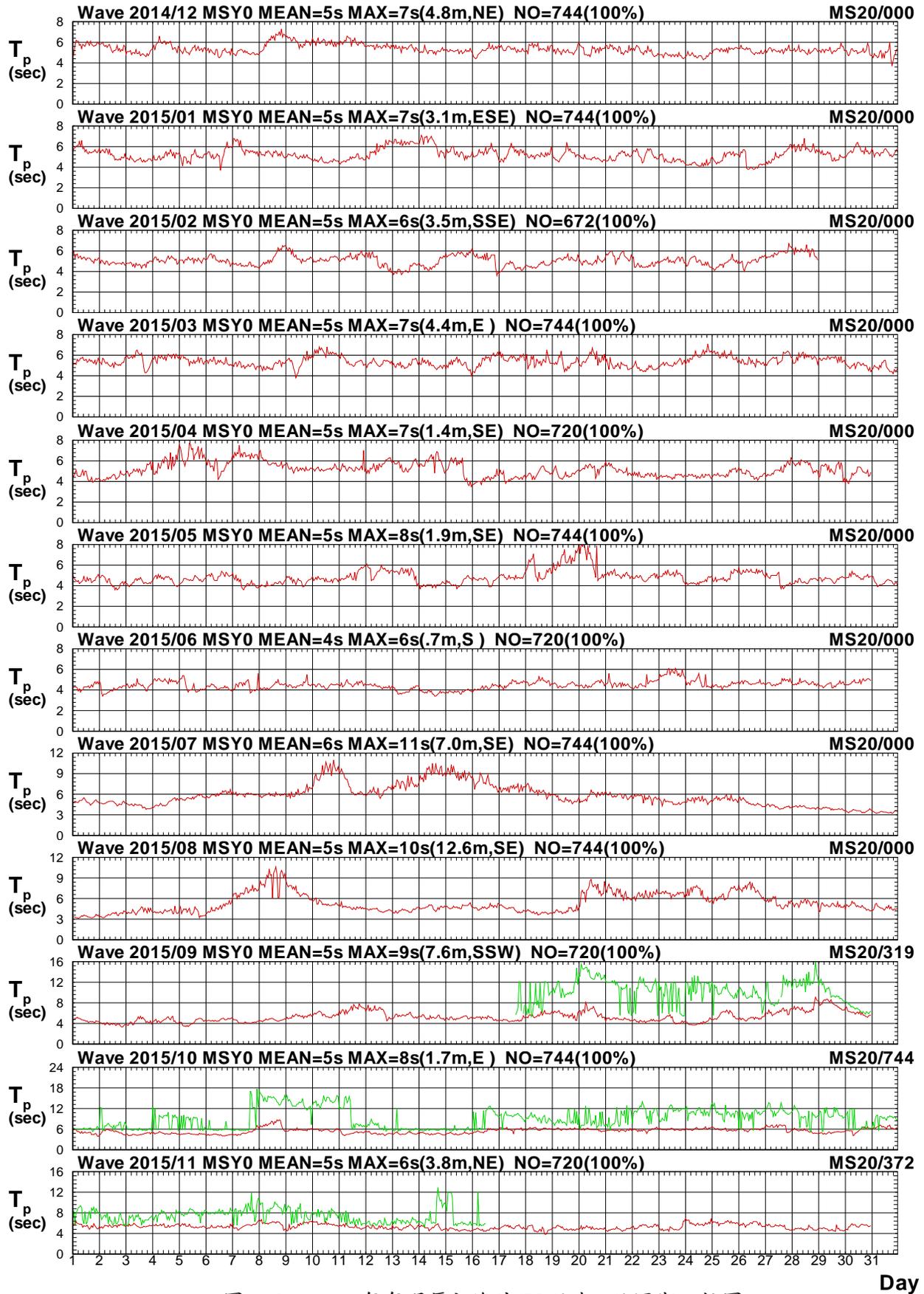


圖 2.5b 2015年每月馬祖海域 Y 站與 2 站週期比較圖

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

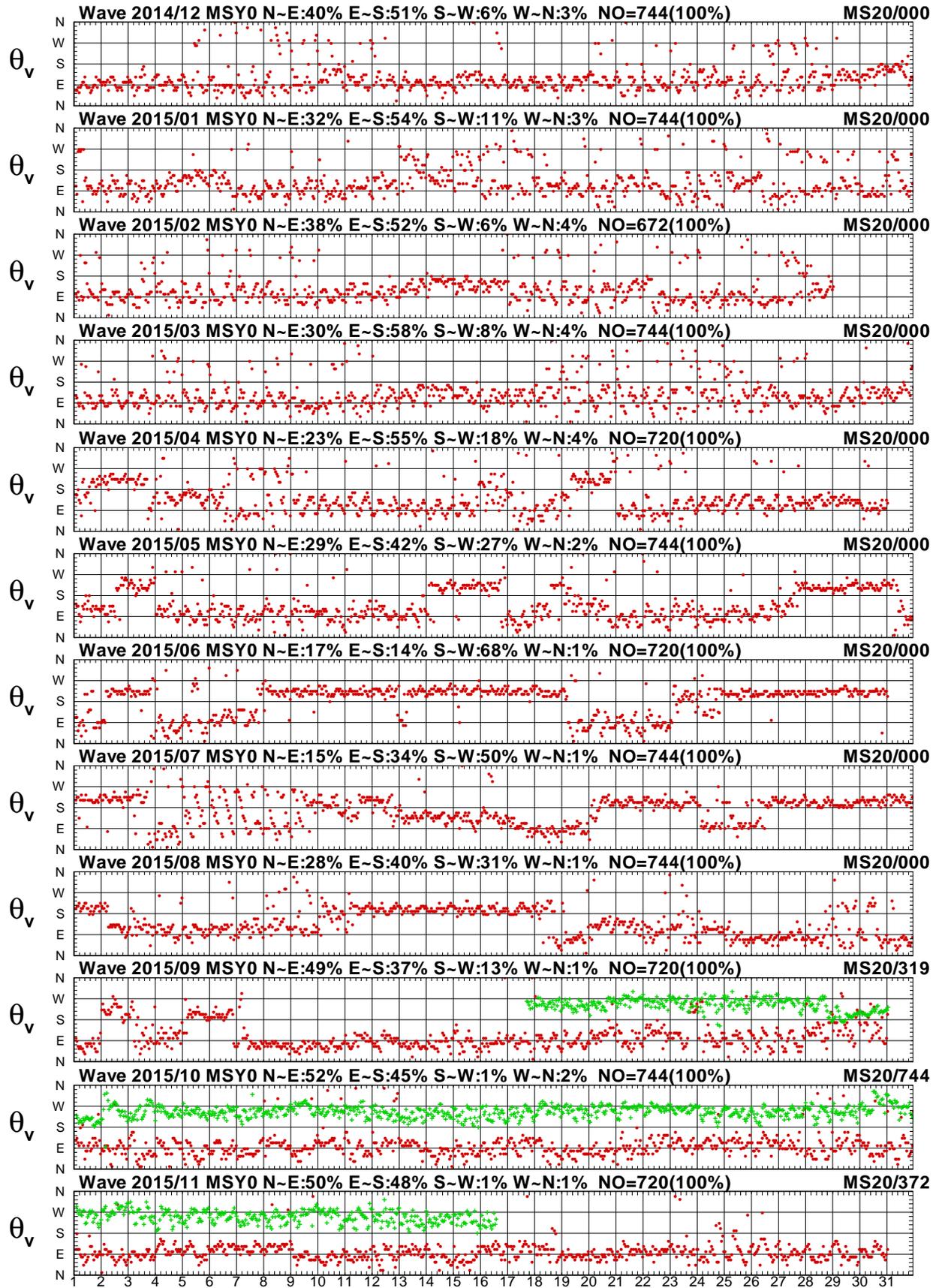


圖 2.5c 2015 年每月馬祖海域 Y 站與 2 站波向比較圖

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

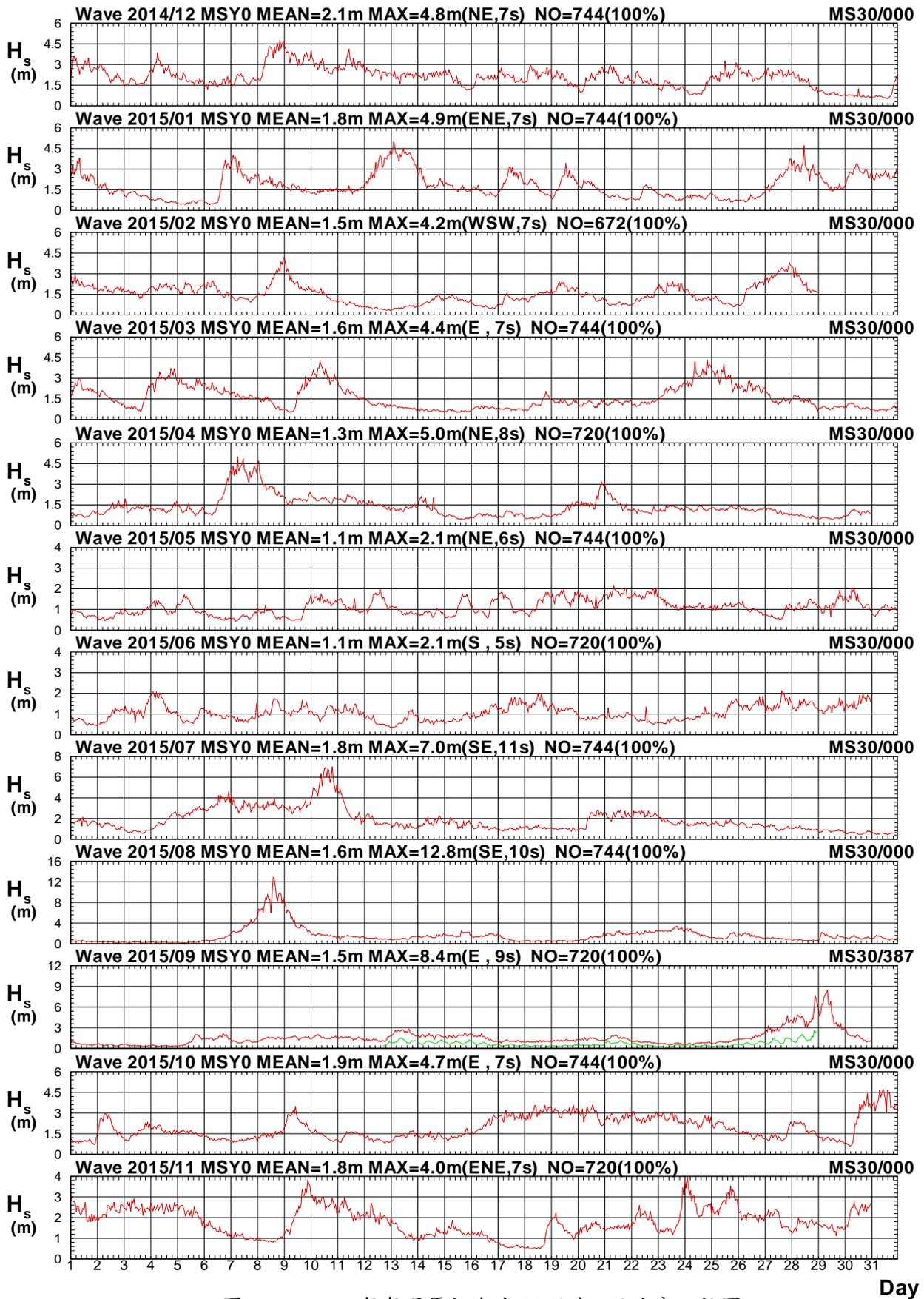


圖 2.6a 2015年每月馬祖海域 Y 站與3站波高比較圖

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

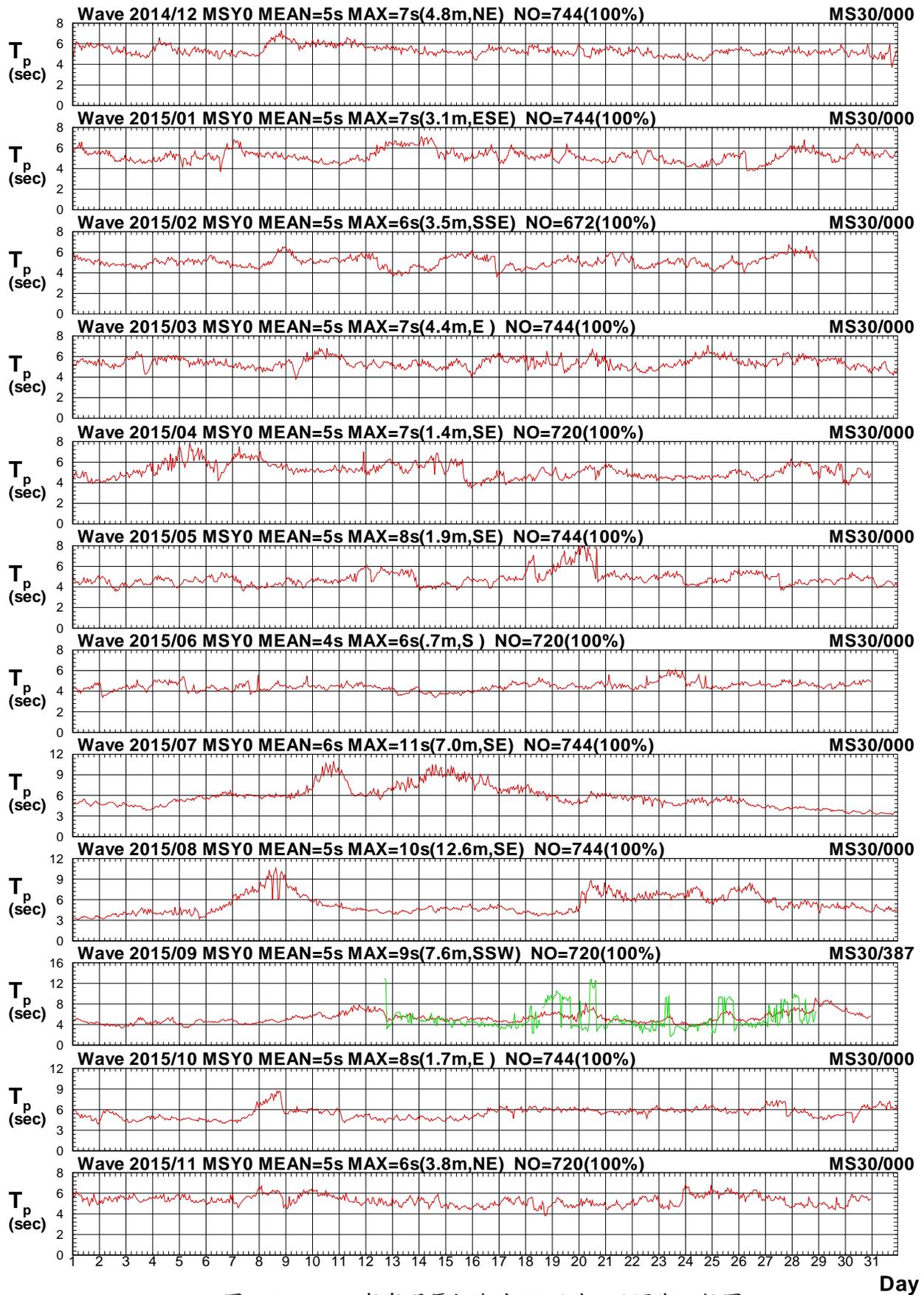


圖 2.6b 2015年每月馬祖海域 Y 站與3站週期比較圖

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

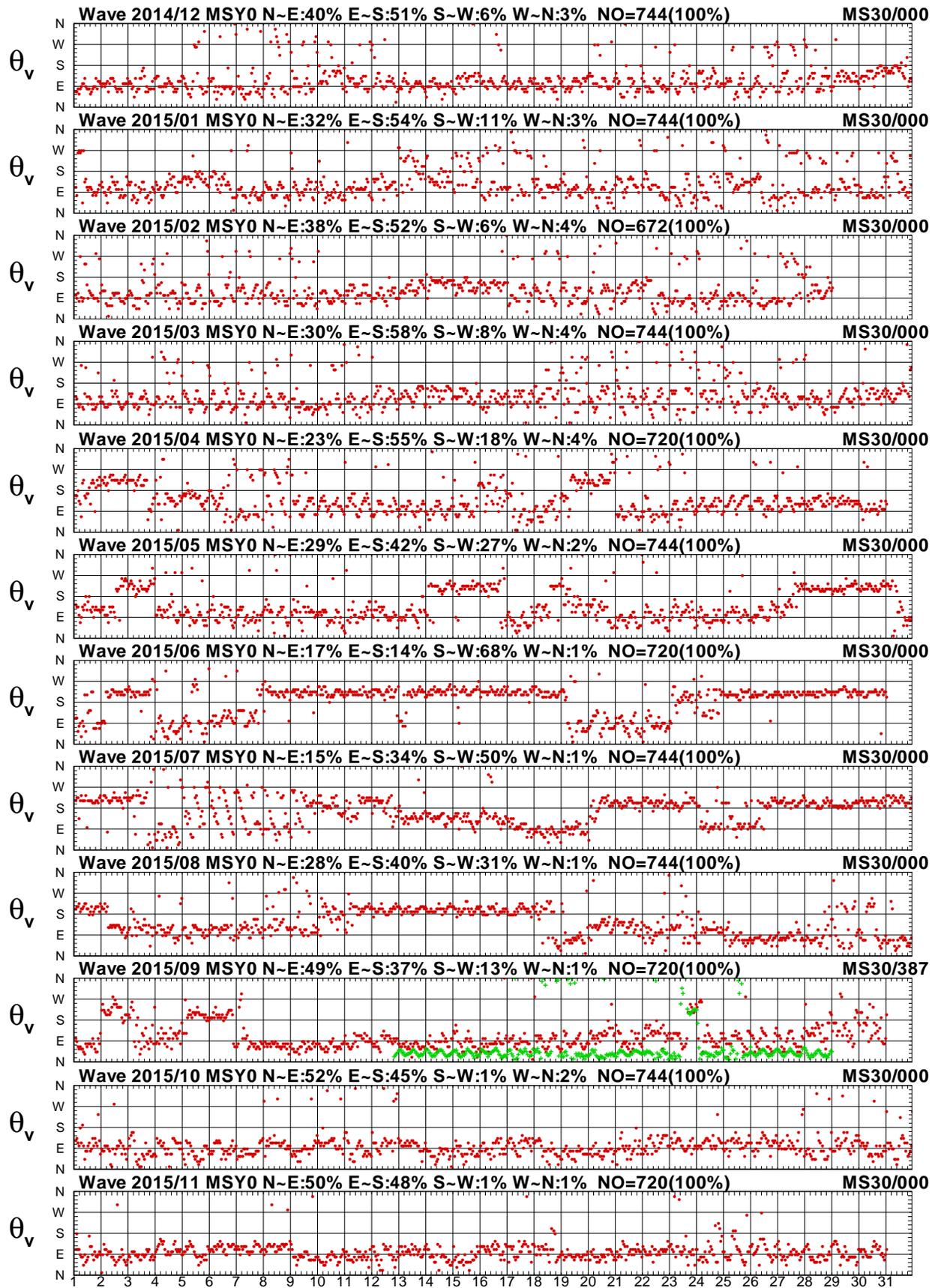


圖 2.6c 2015 年每月馬祖海域 Y 站與 3 站波向比較圖

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

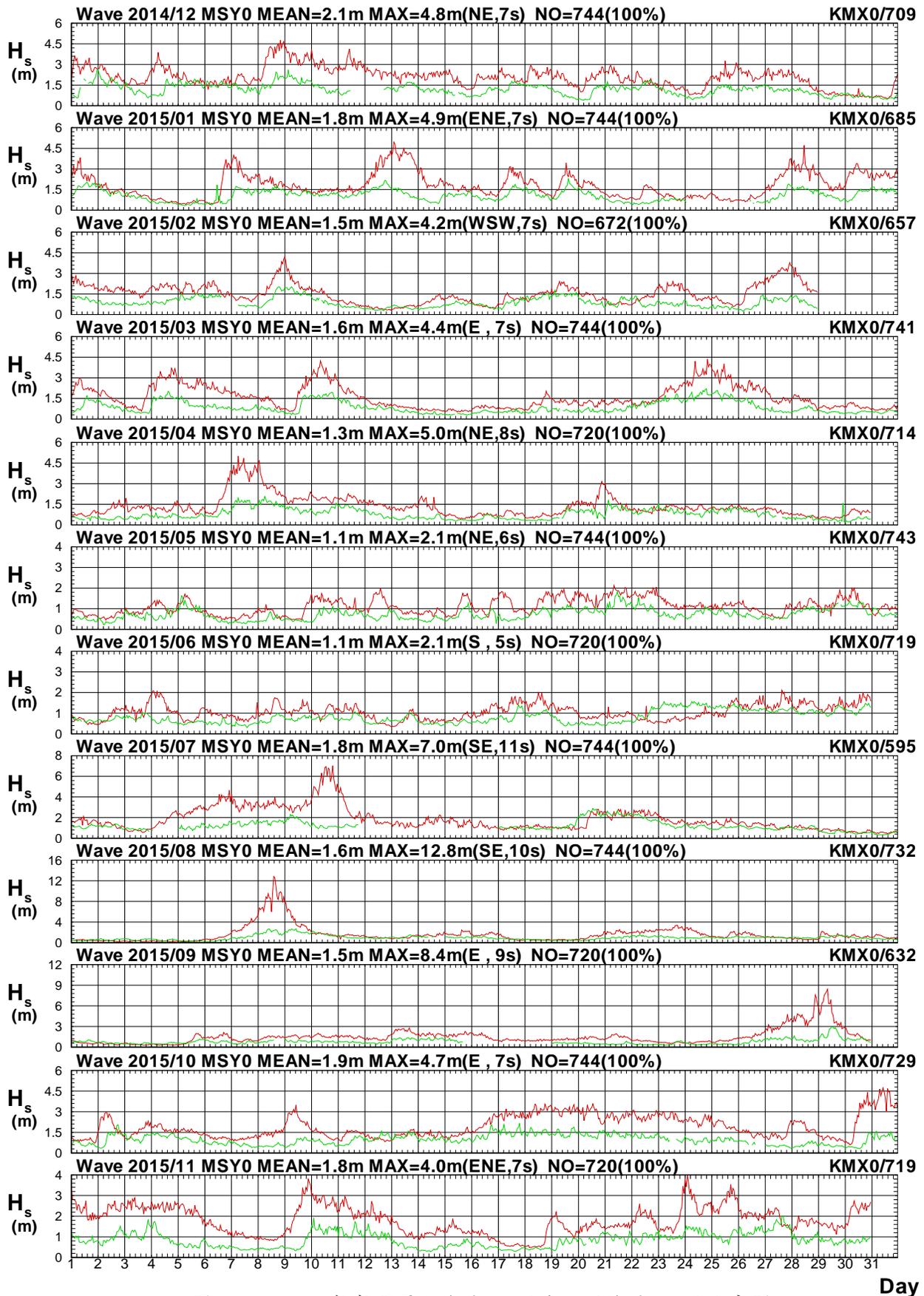


圖 2.7a 2015年每月馬祖海域 Y 站與金門海域 X 站波高圖

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

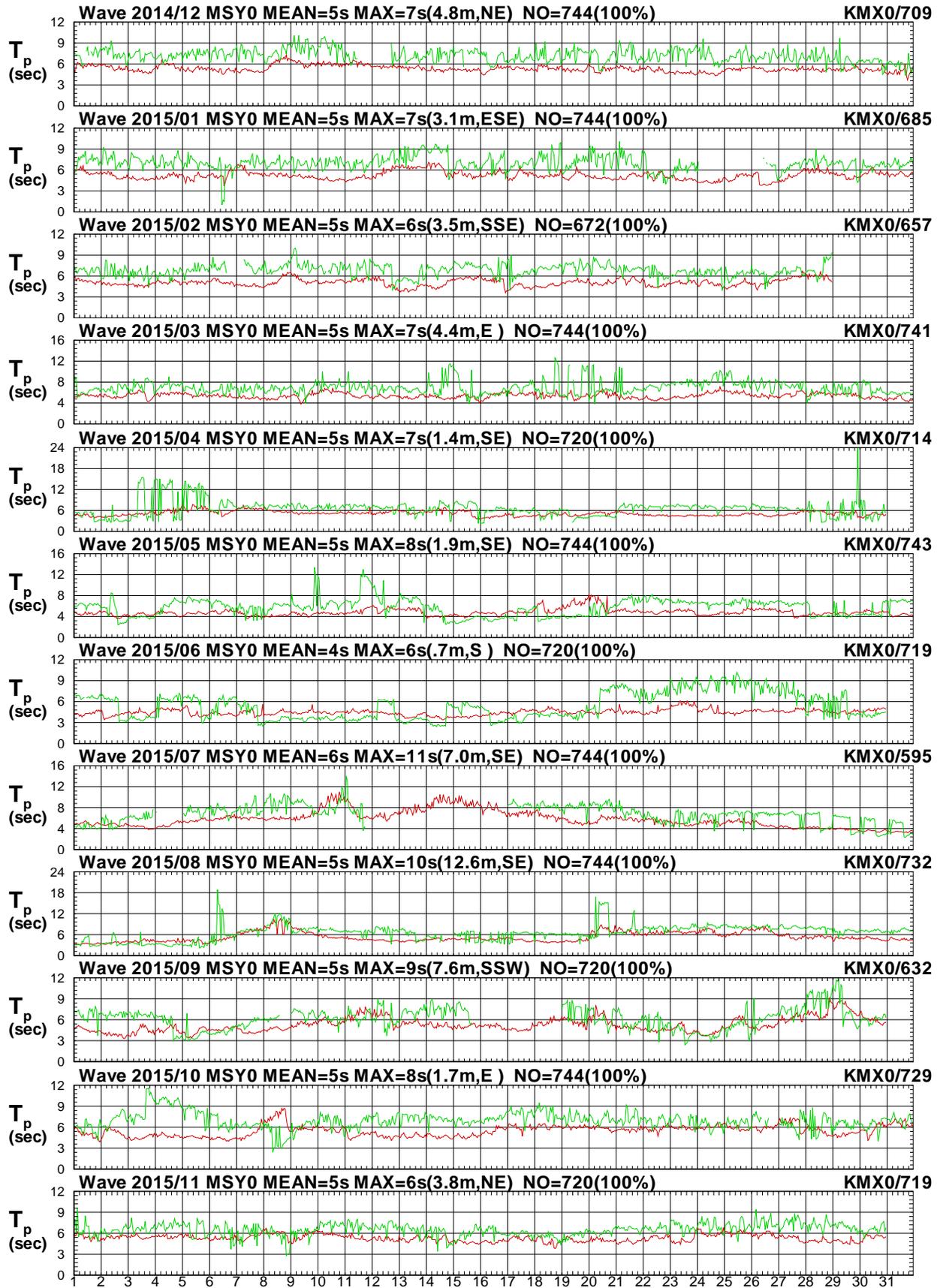


圖 2.7b 2015年每月馬祖海域 Y 站與金門海域 X 站週期圖

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

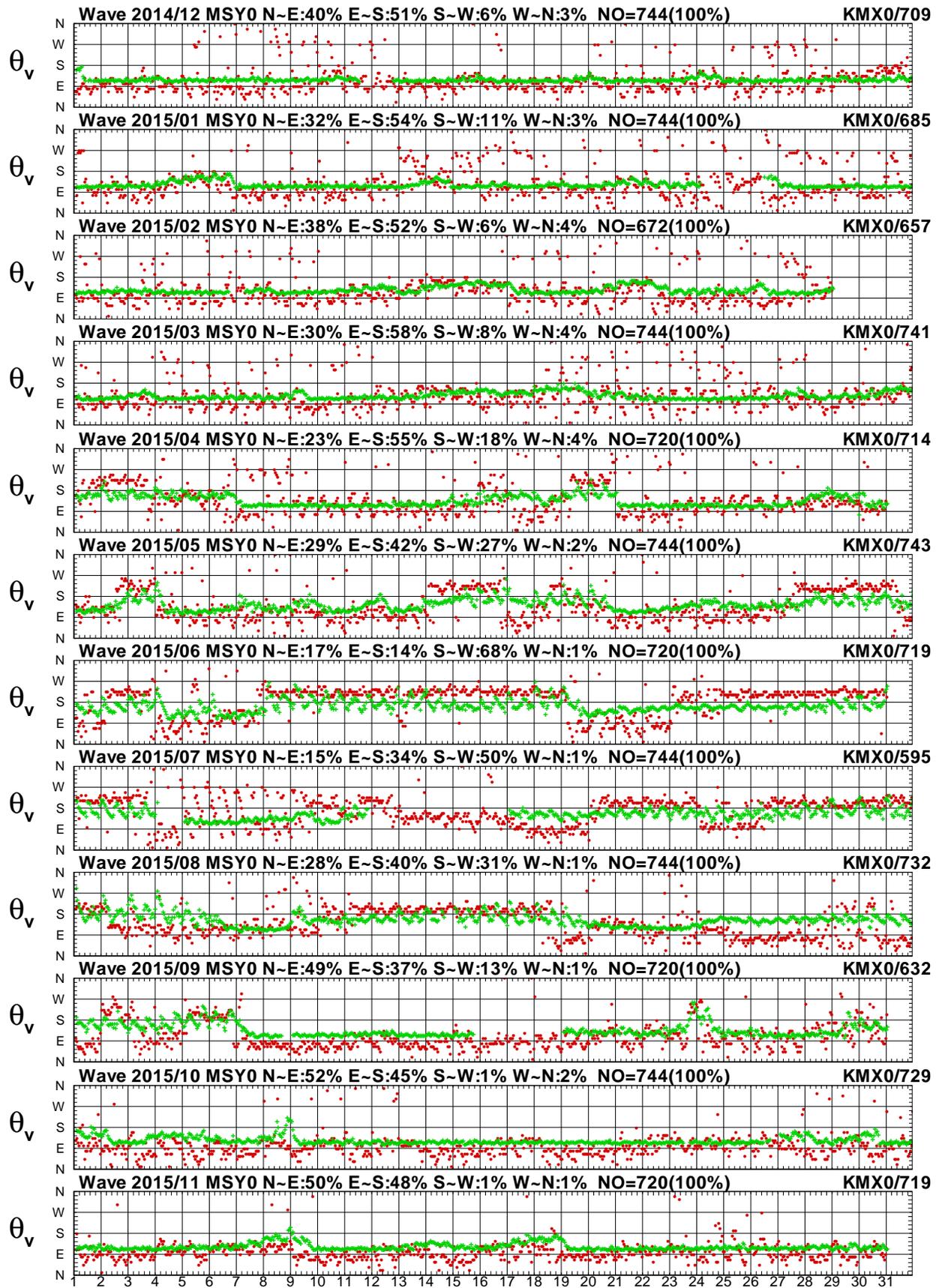


圖 2.7c 2015年每月馬祖海域 Y 站與金門海域 X 站波向圖

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

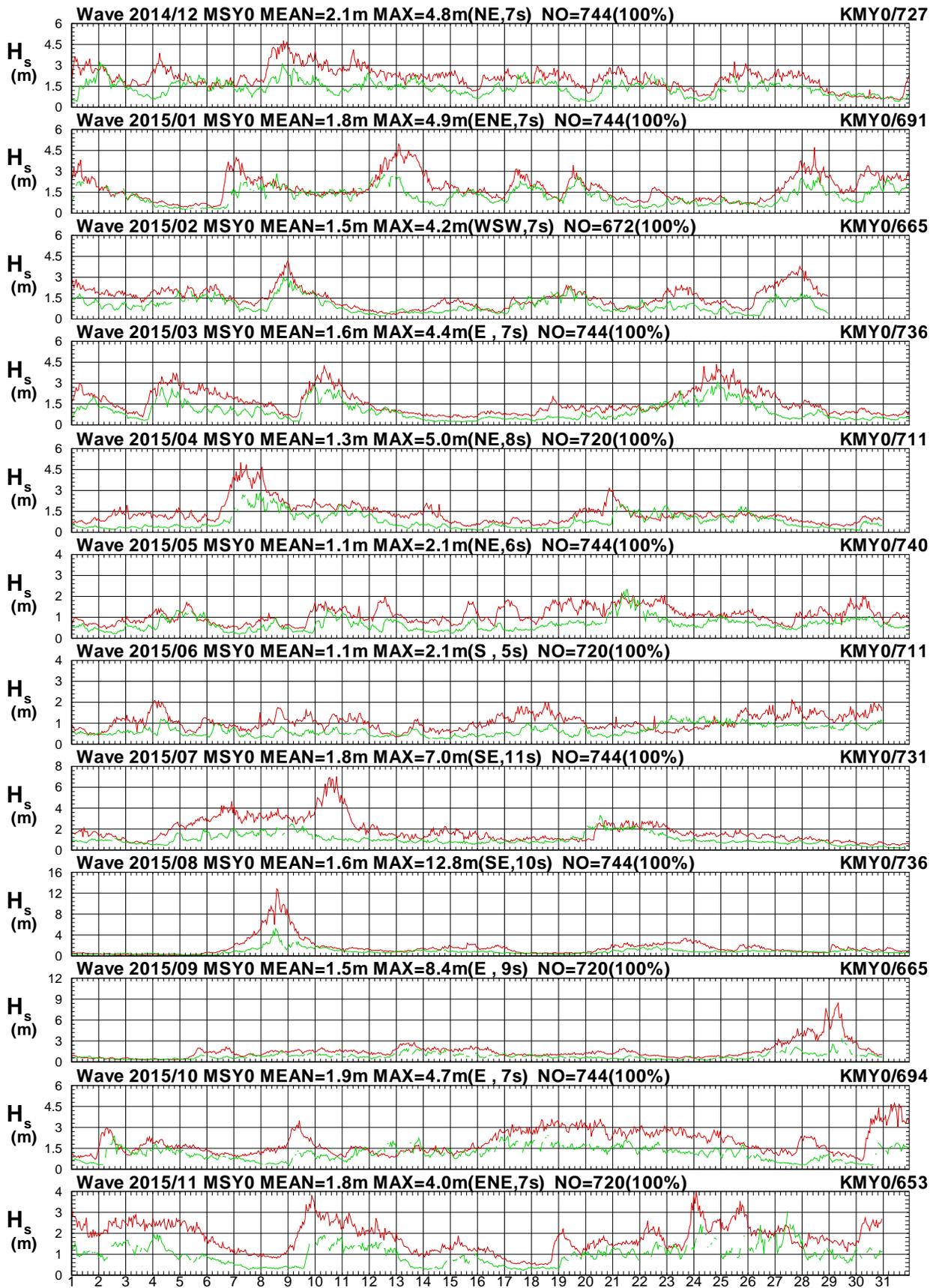


圖 2.8a 2015年每月馬祖海域 Y 站與金門海域 Y 站波高圖

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

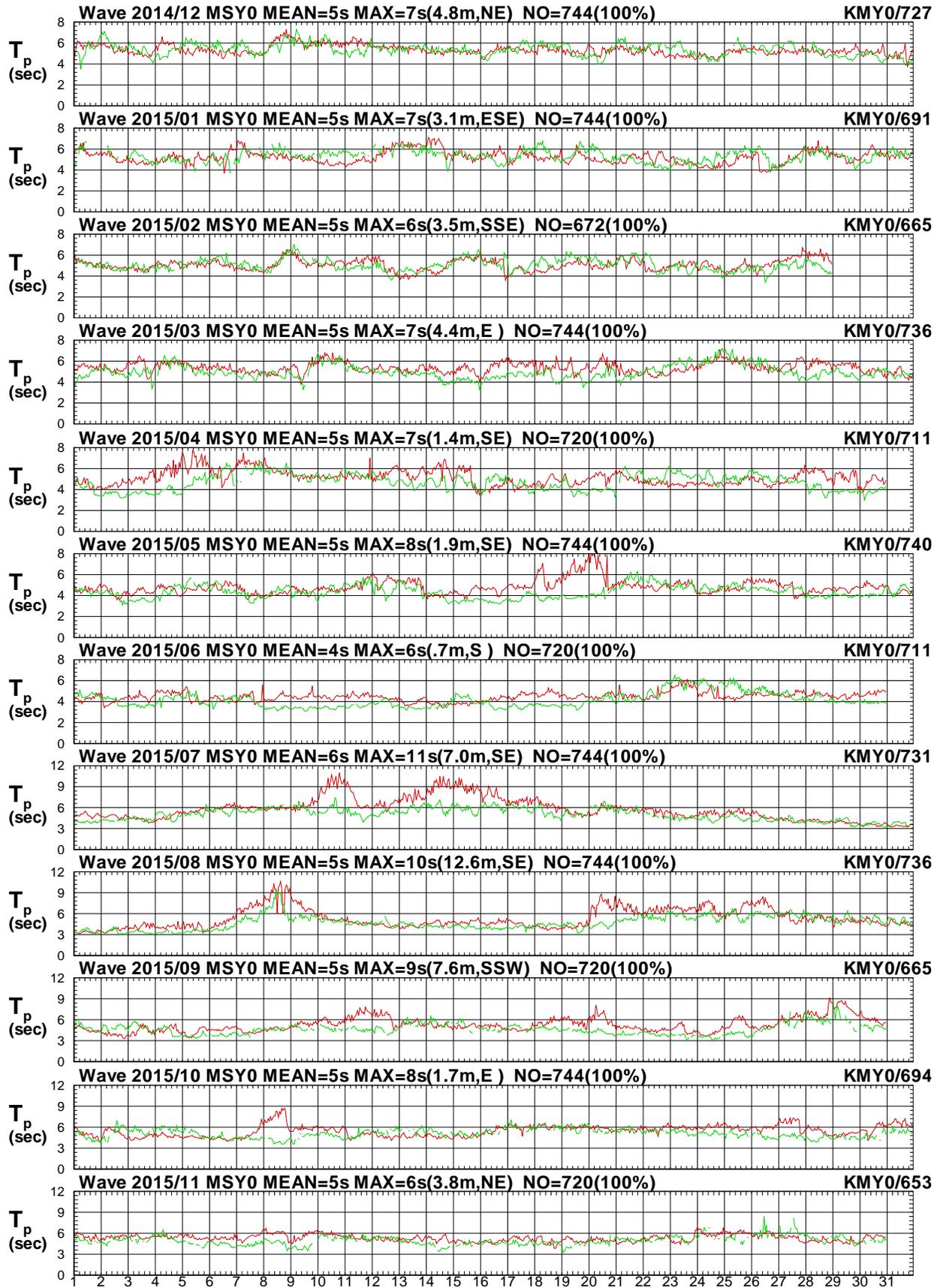


圖 2.8b 2015年每月馬祖海域 Y 站與金門海域 Y 站週期圖

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

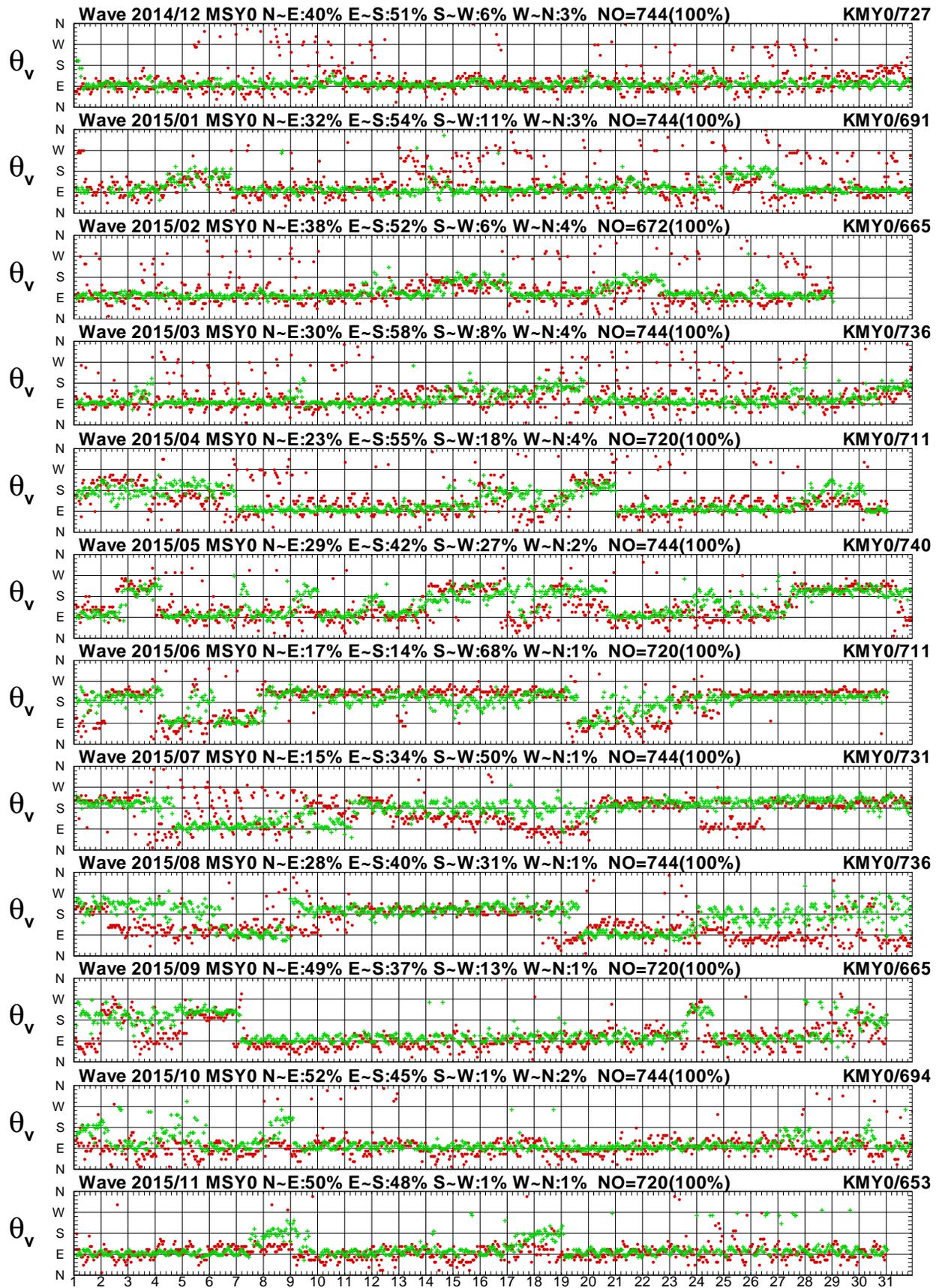


圖 2.8c 2015年每月馬祖海域 Y 站與金門海域 Y 站波向圖

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

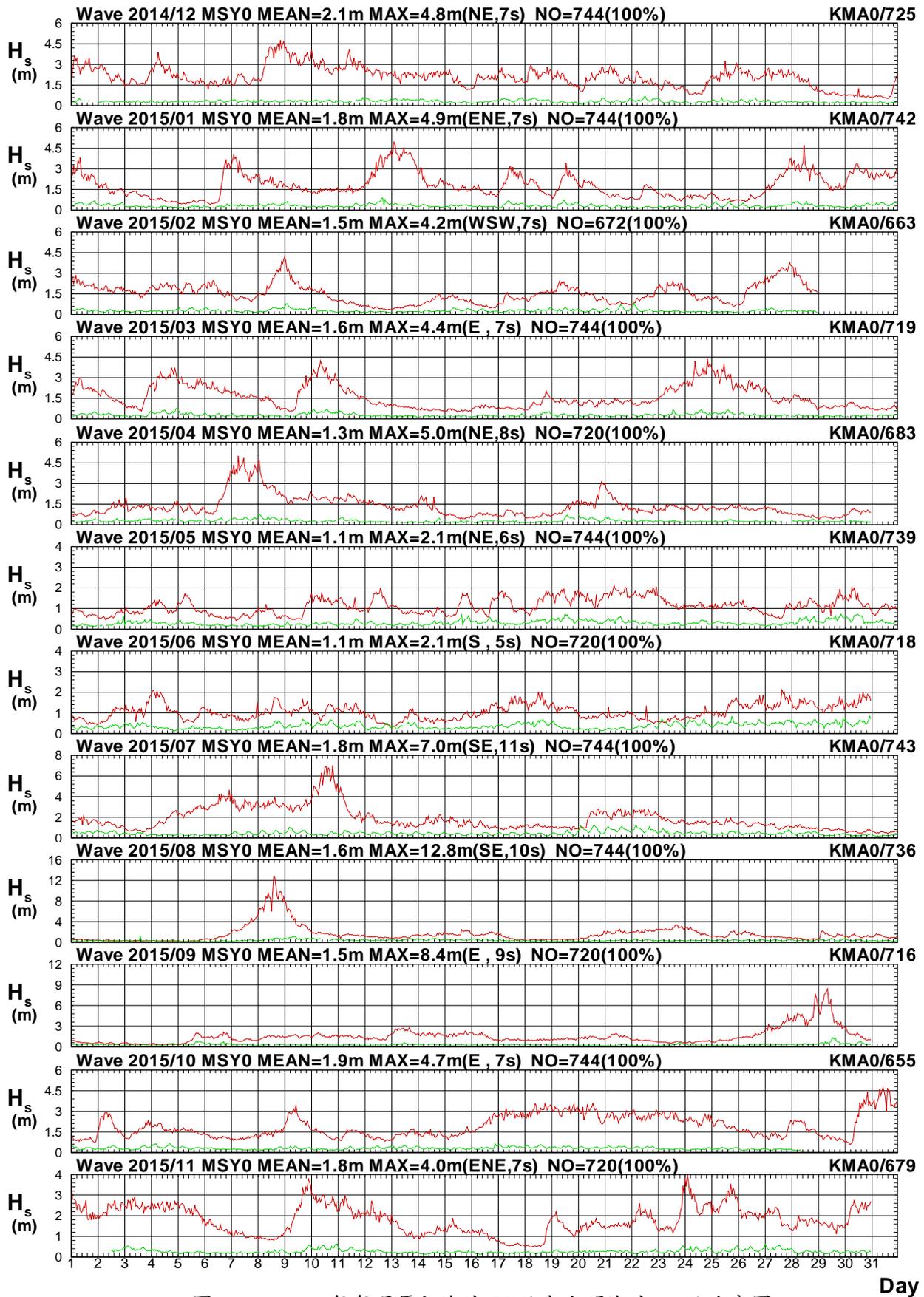


圖 2.9a 2015年每月馬祖海域 Y 站與金門海域 A 站波高圖

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

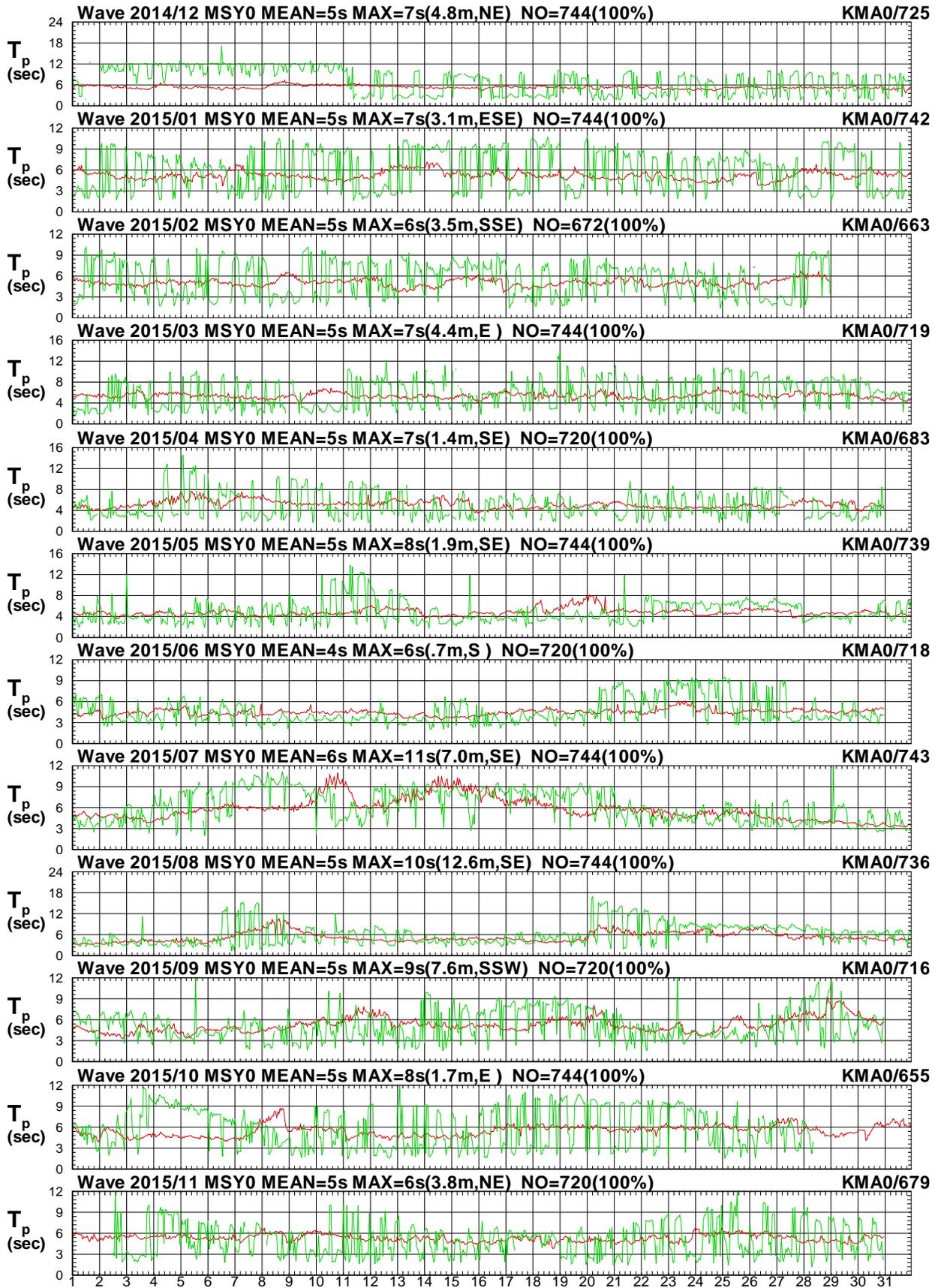


圖 2.9b 2015年每月馬祖海域 Y 站與金門海域 A 站週期圖

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

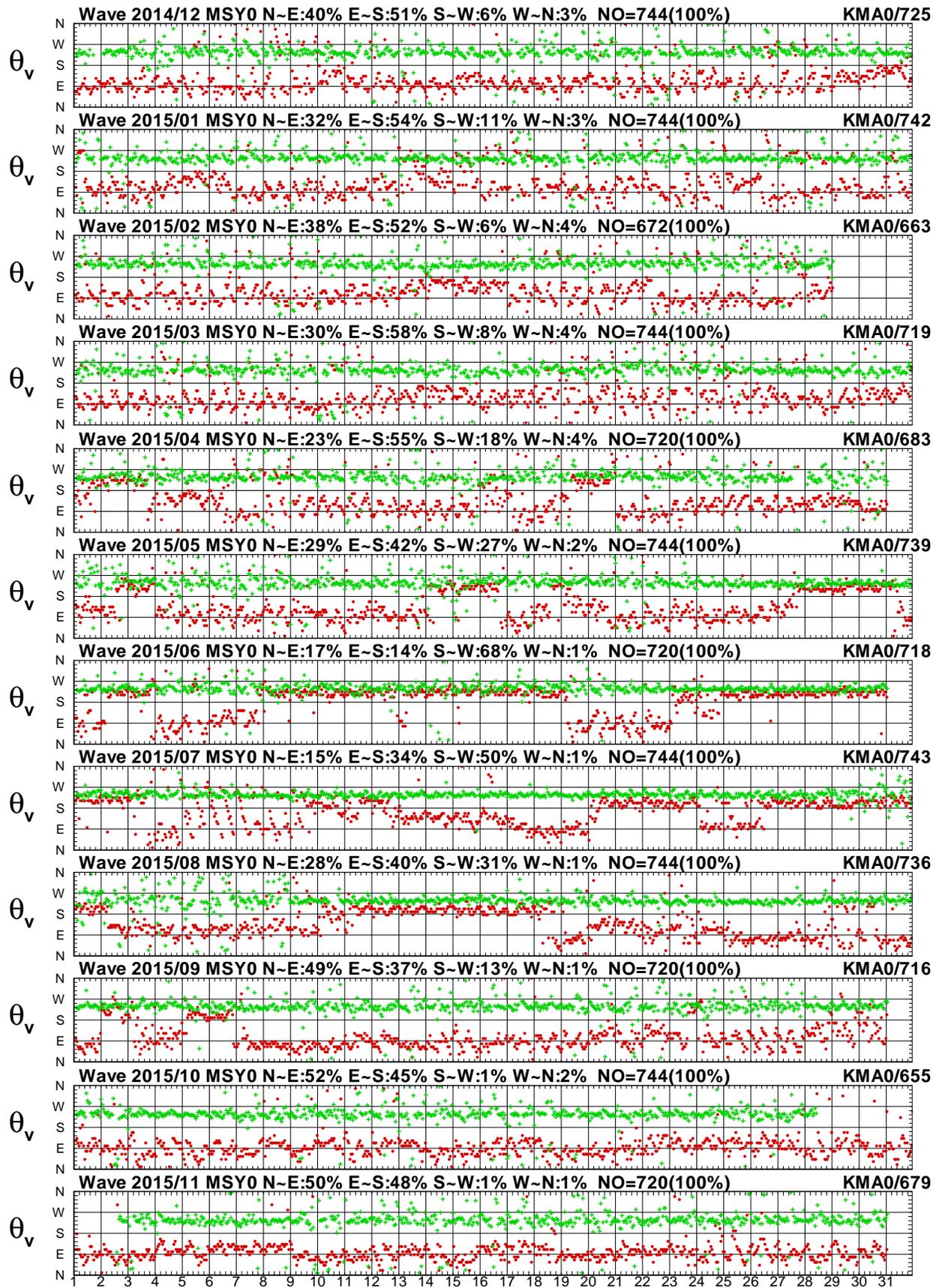


圖 2.9c 2015年每月馬祖海域 Y 站與金門海域 A 站波向圖

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

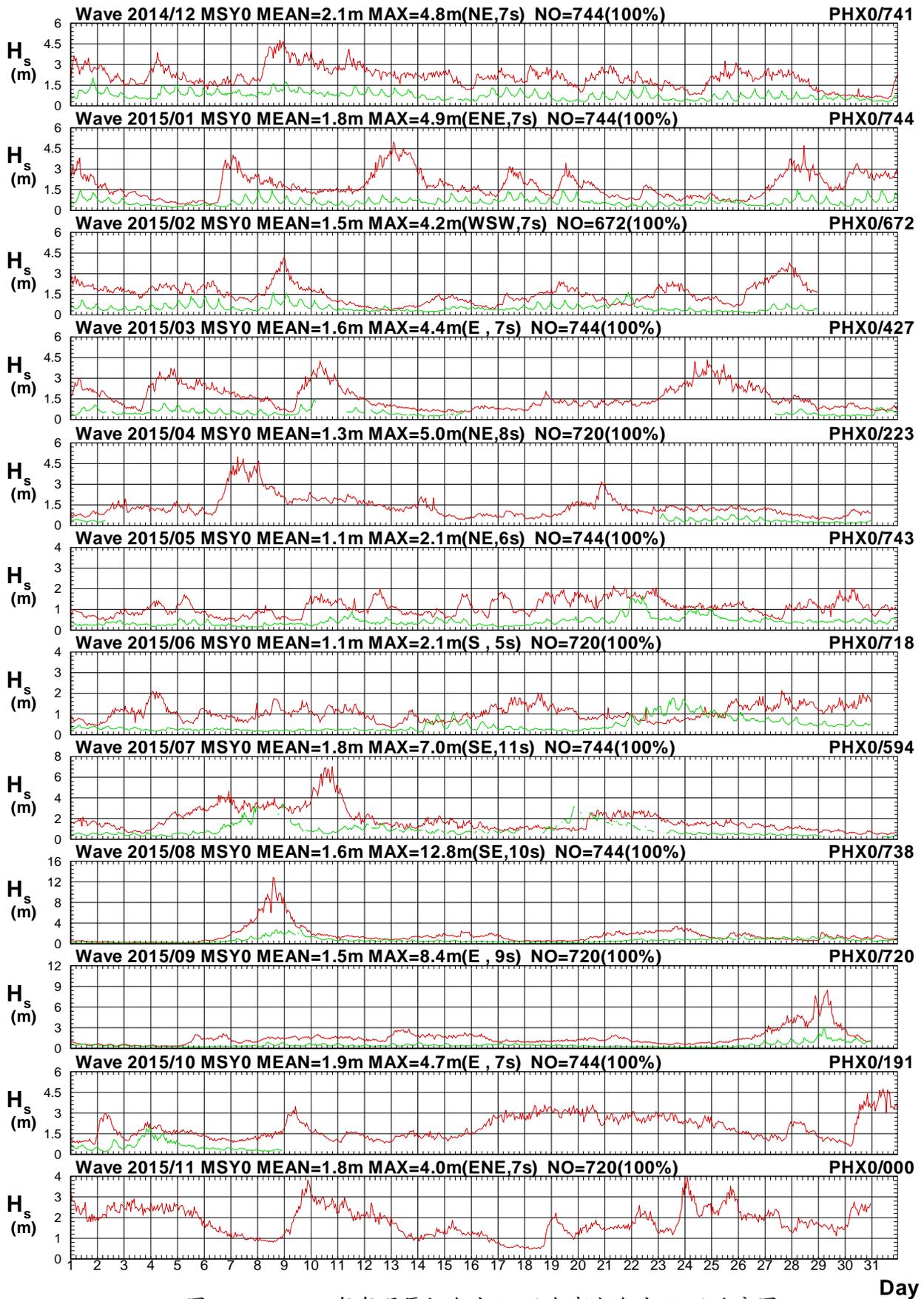


圖 2.10a 2015年每月馬祖海域 Y 站與澎湖海域 X 站波高圖

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

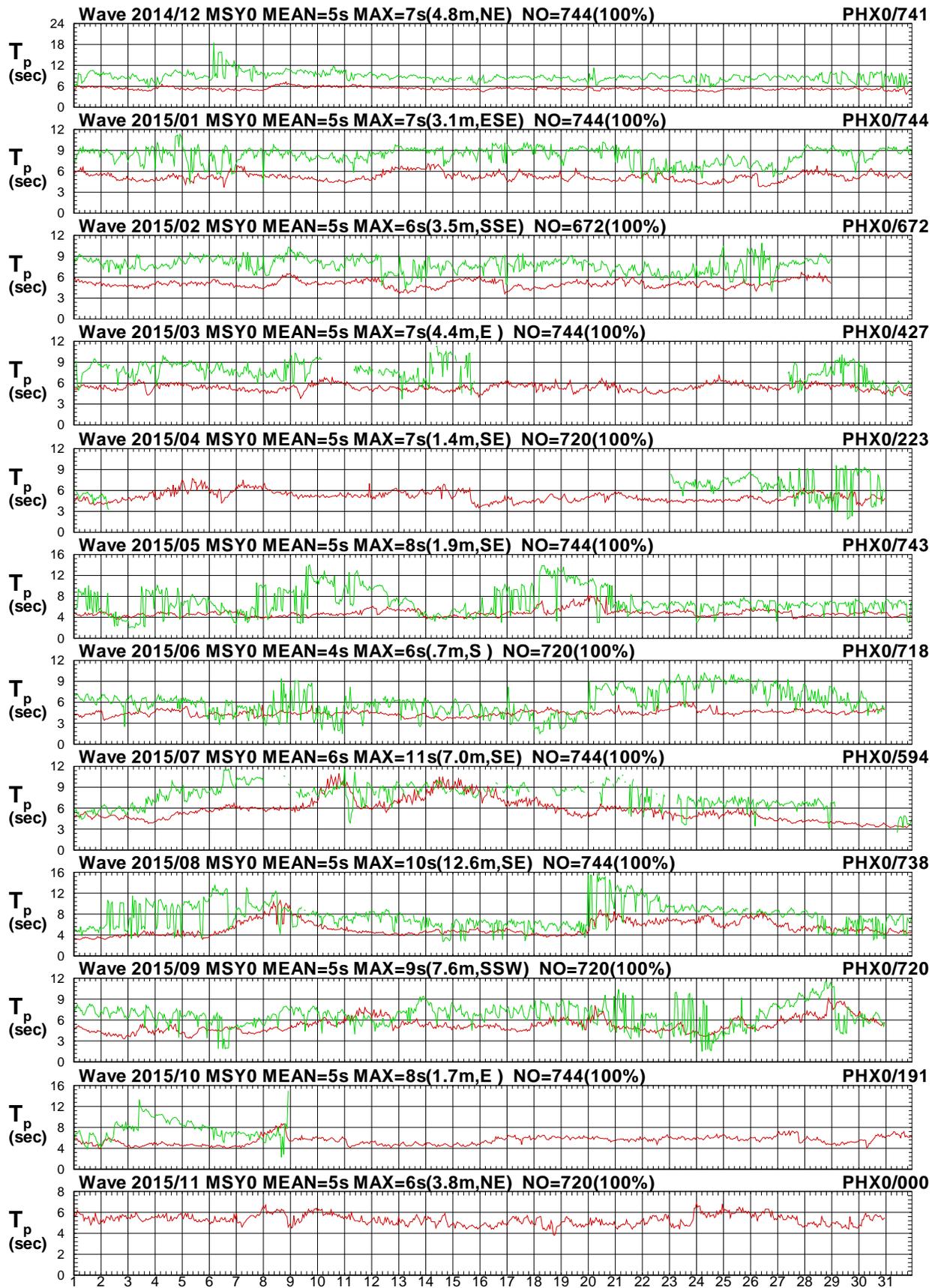


圖 2.10b 2015年每月馬祖海域 Y 站與澎湖海域 X 站週期圖

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

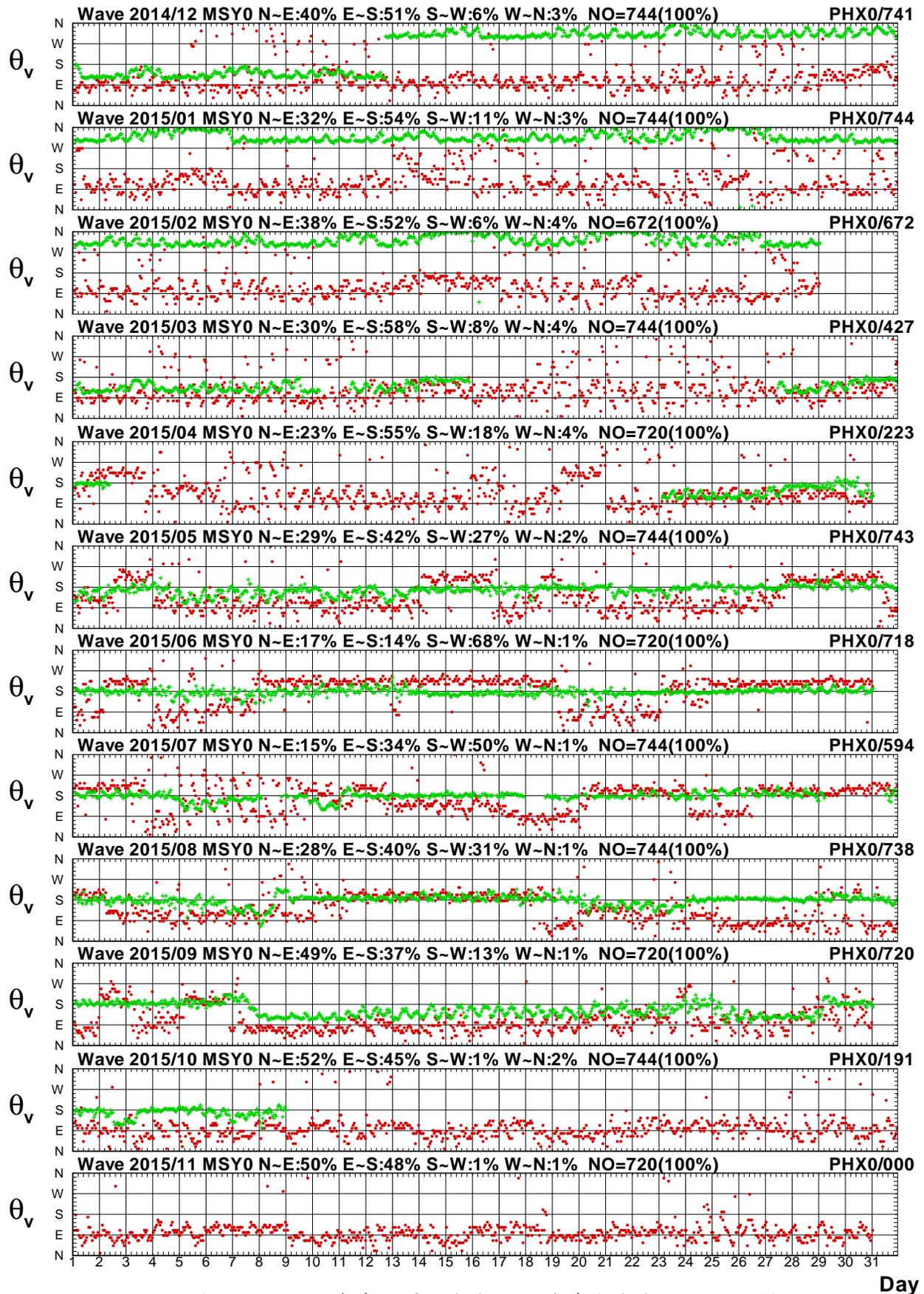


圖 2.10c 2015年每月馬祖海域 Y 站與澎湖海域 X 站波向圖

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 H_s in Ma-Tsu Seas of MSY0 at 2015

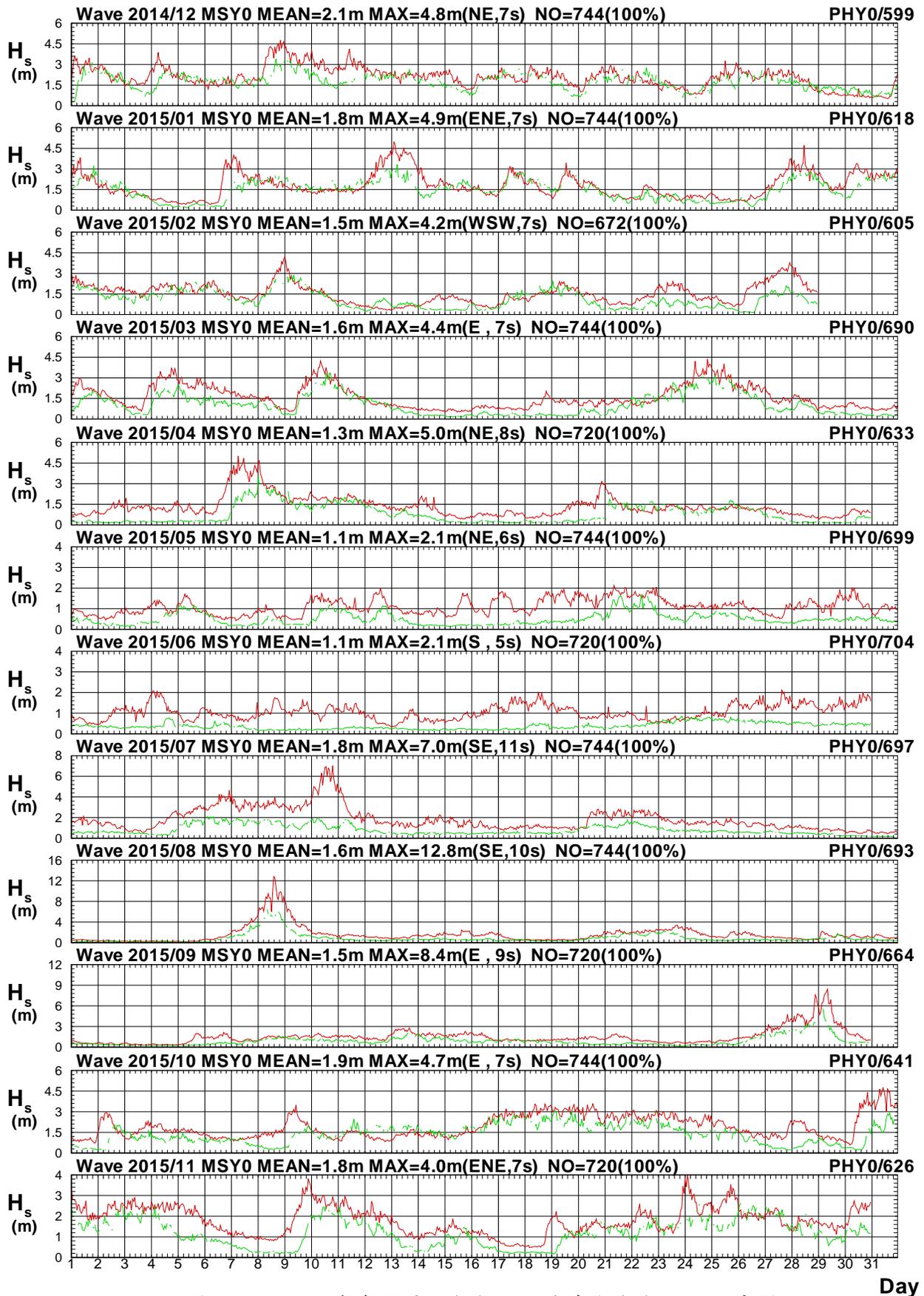


圖 2.11a 2015年每月馬祖海域 Y 站與澎湖海域 Y 站波高圖

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

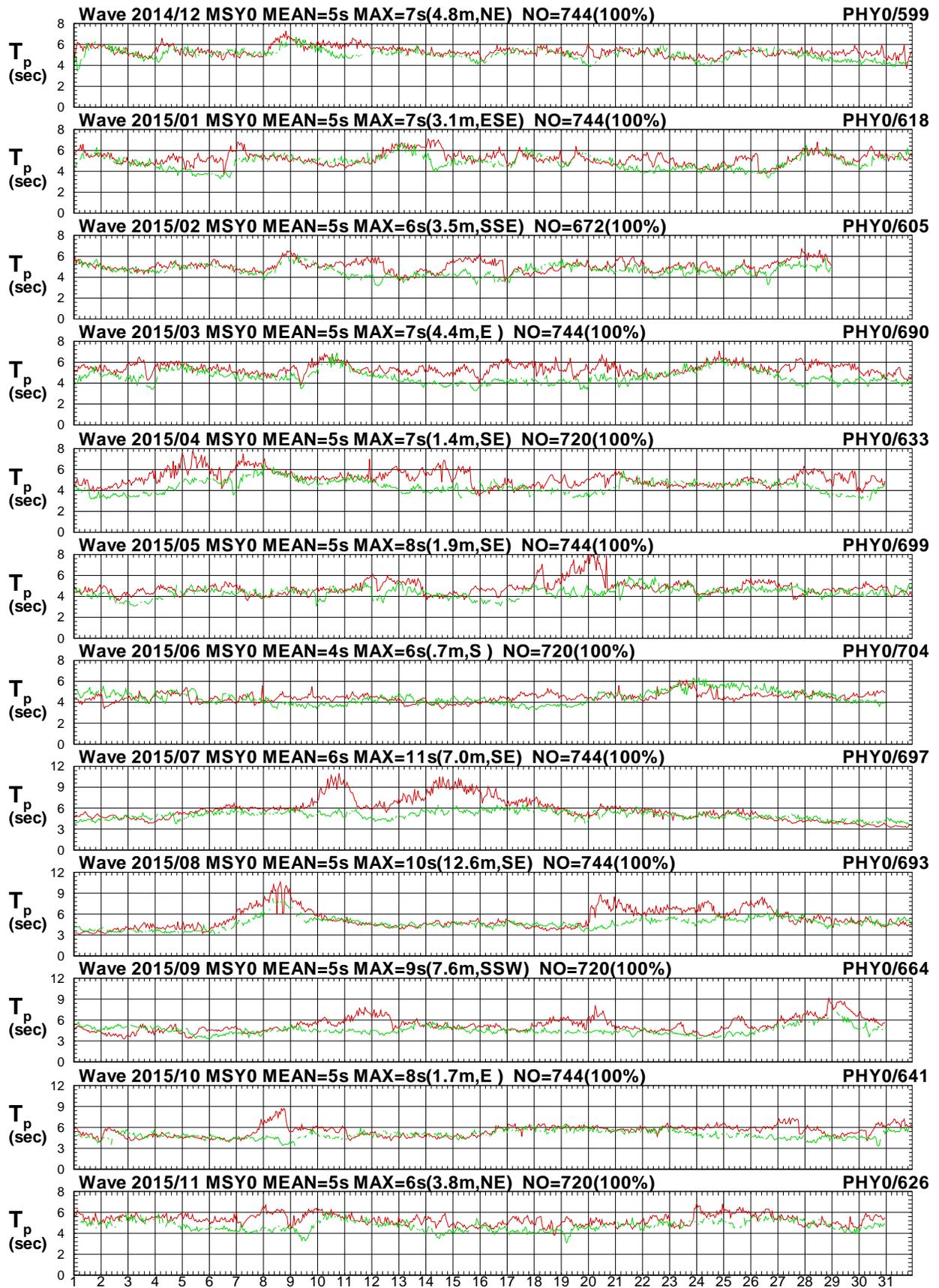


圖 2.11b 2015年每月馬祖海域 Y 站與澎湖海域 Y 站週期圖

Day

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

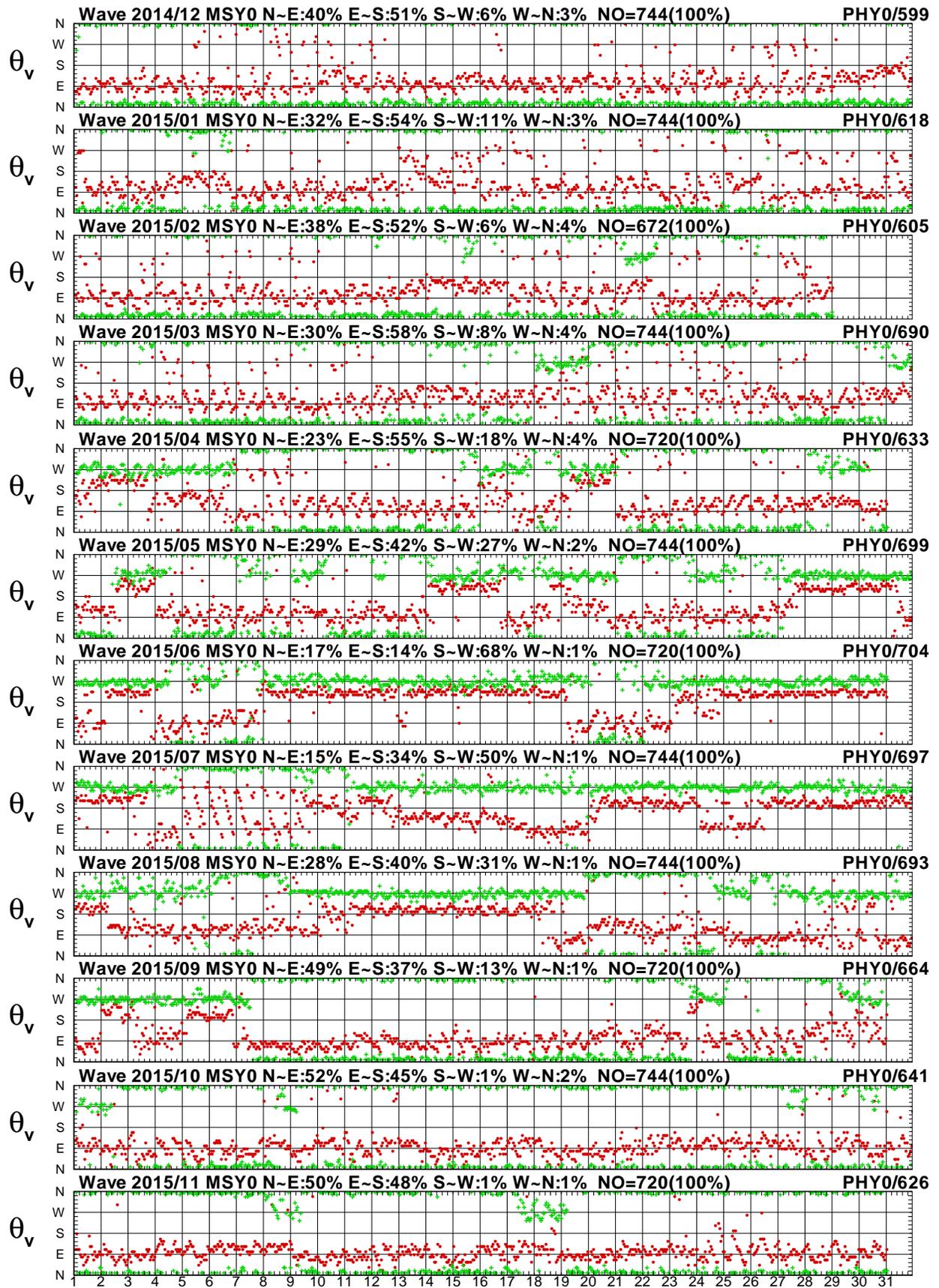


圖 2.11c 2015年每月馬祖海域 Y 站與澎湖海域 Y 站波向圖

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

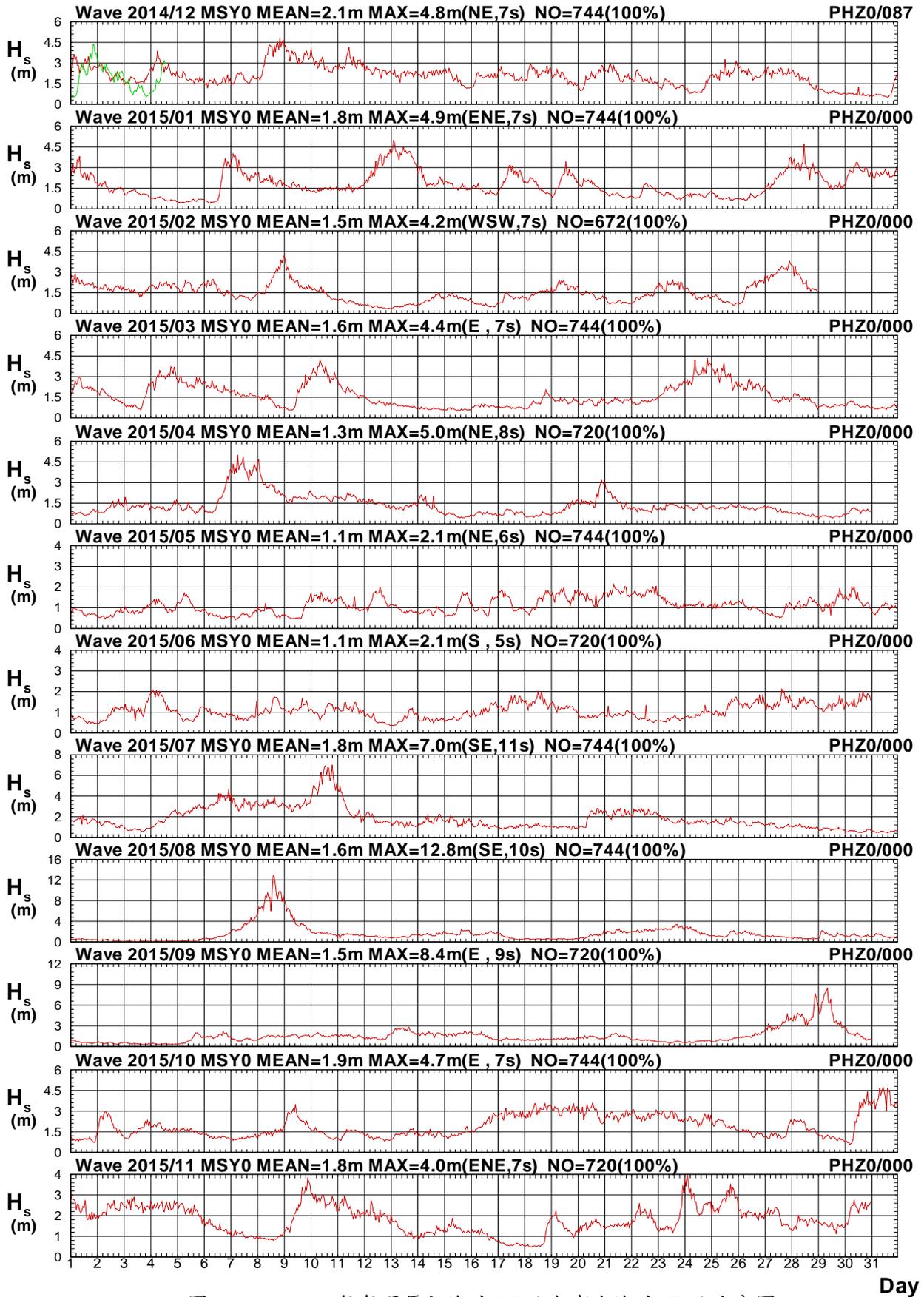


圖 2.12a 2015年每月馬祖海域 Y 站與澎湖海域 Z 站波高圖

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

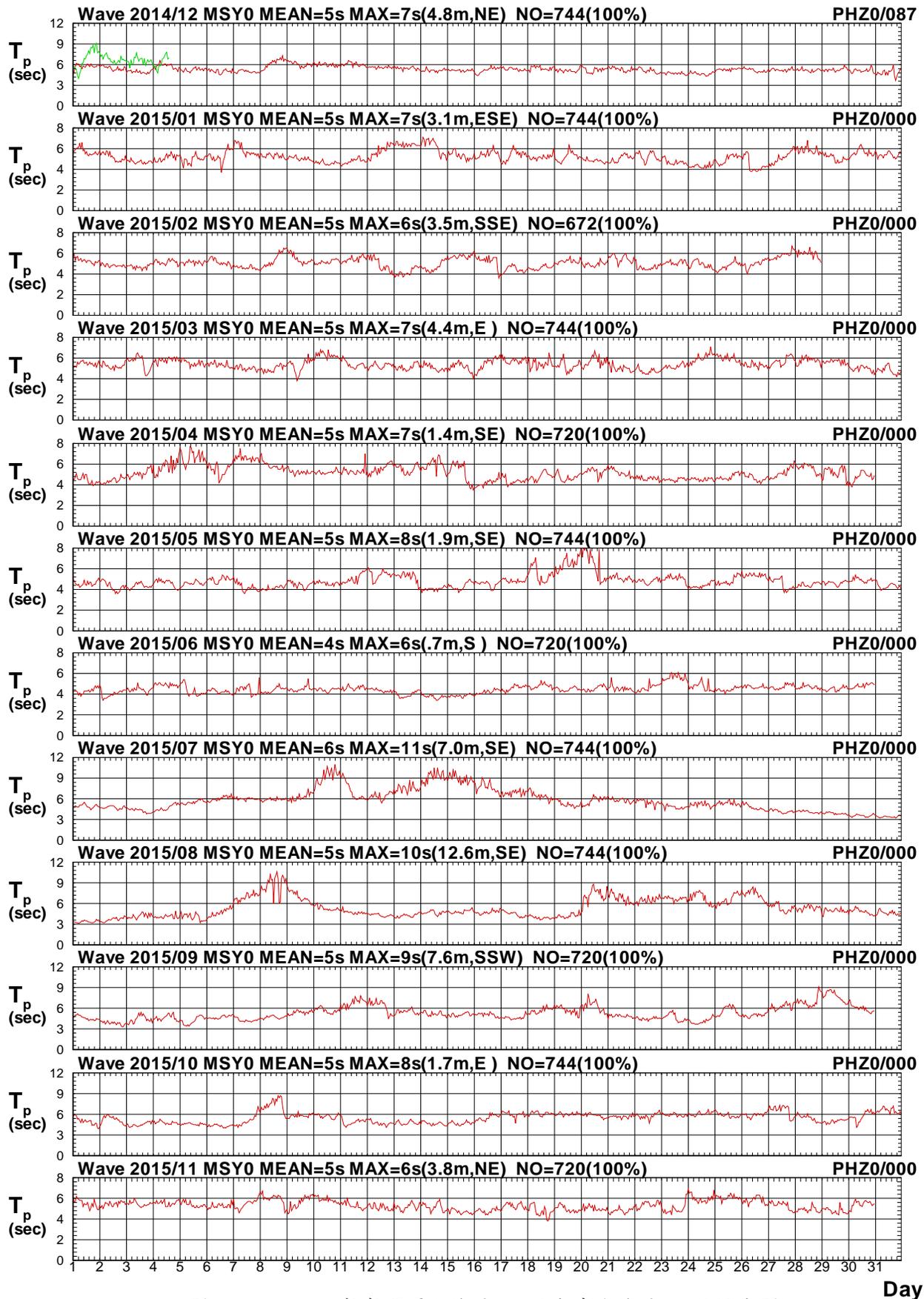


圖 2.12b 2015年每月馬祖海域 Y 站與澎湖海域 Z 站週期圖

Day

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

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Wave Direction in Ma-Tsu Seas of MSY0 at 2015

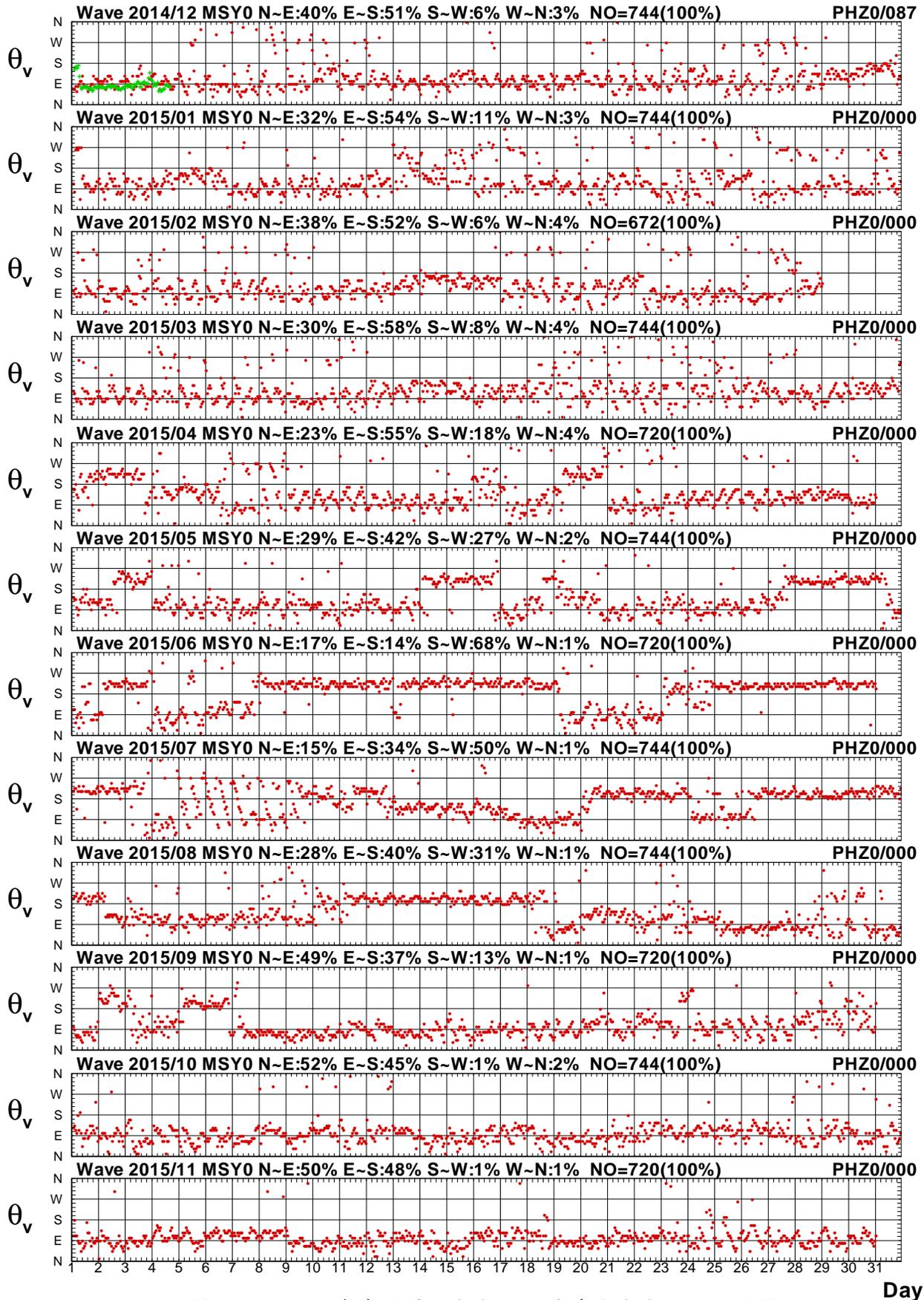


圖 2.12c 2015 年每月馬祖海域 Y 站與澎湖海域 Z 站波向圖

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

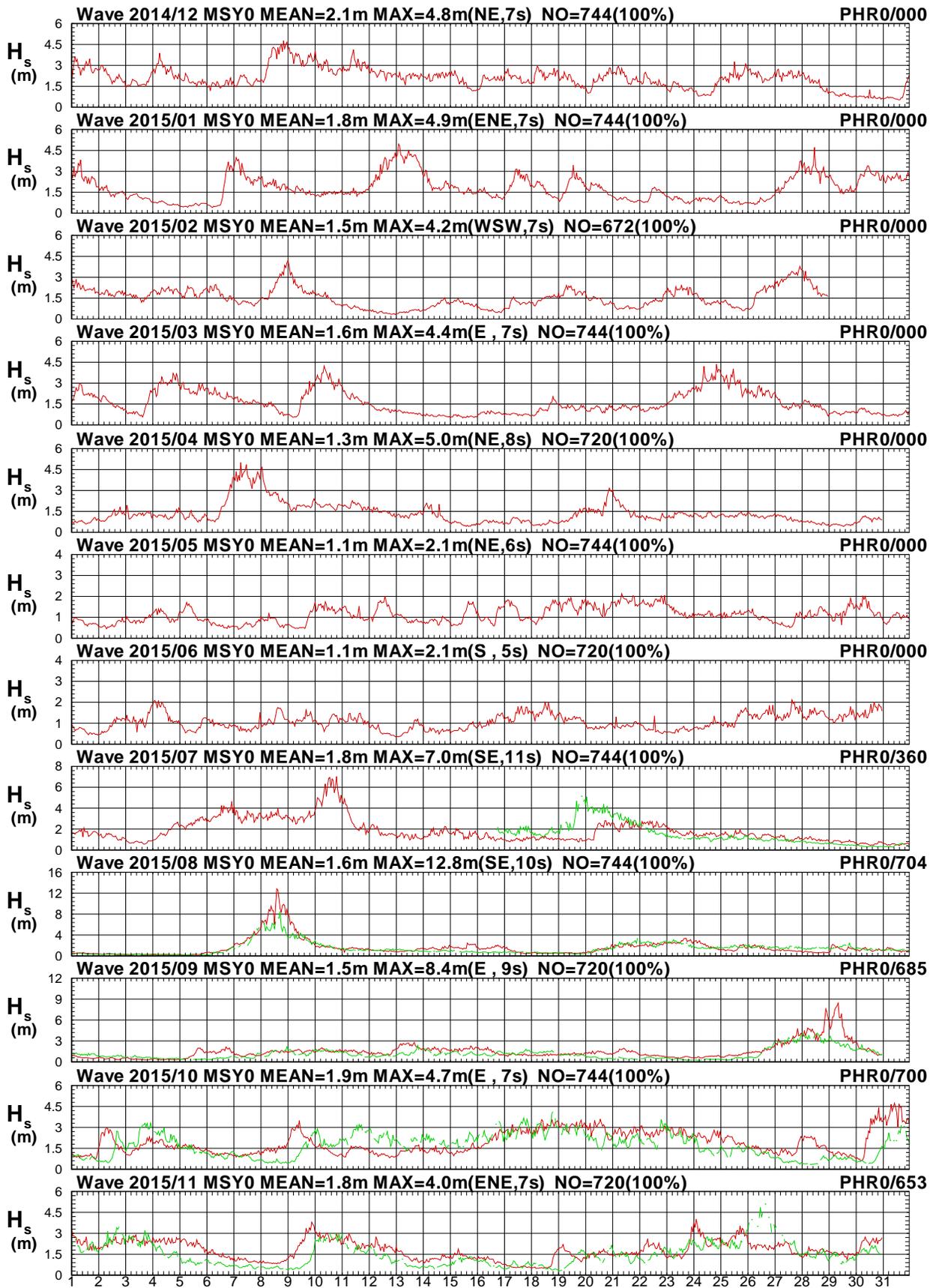


圖 2.13a 2015年每月馬祖海域 Y 站與澎湖海域 R 站波高圖

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

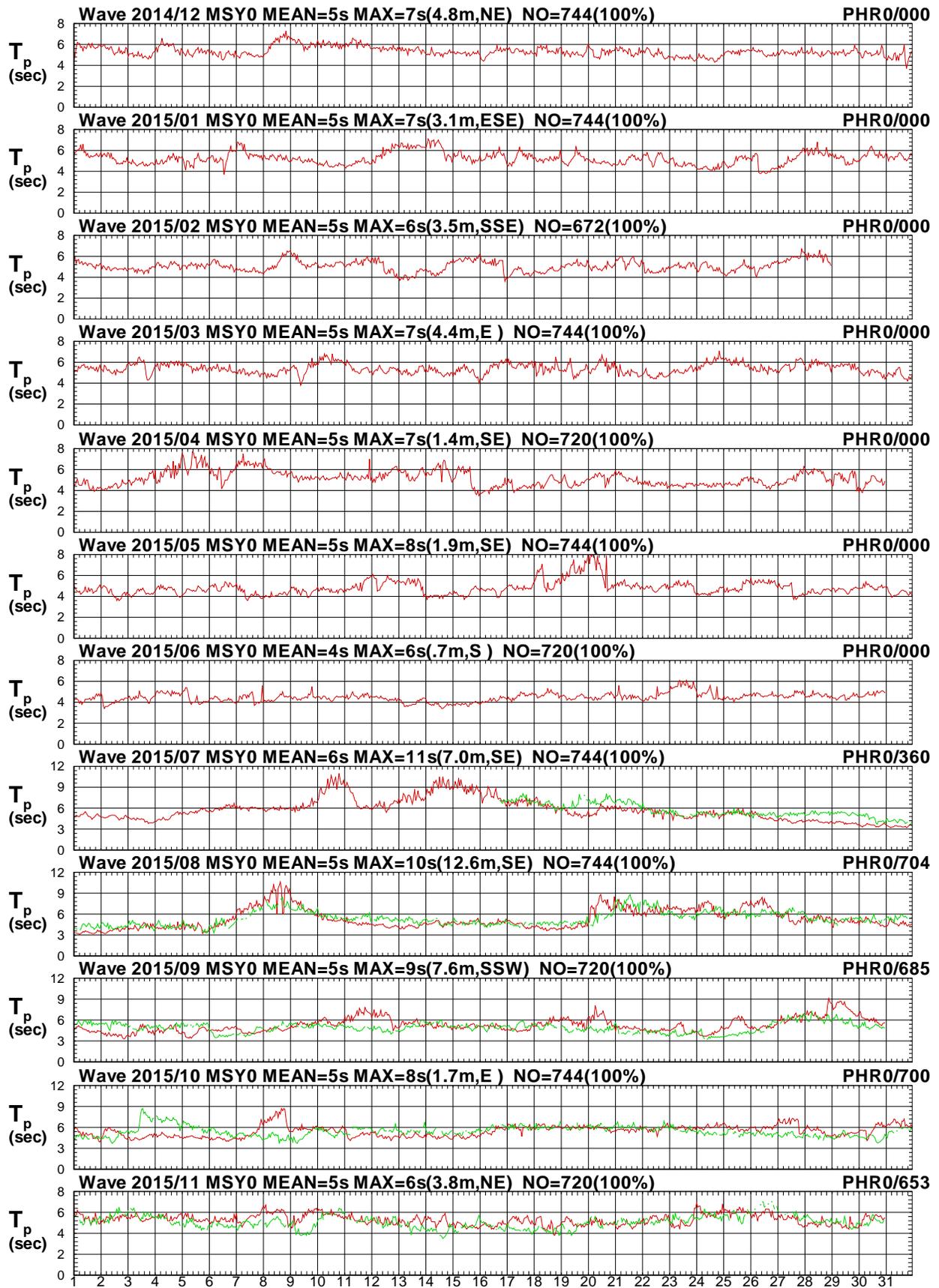


圖 2.13b 2015年每月馬祖海域 Y 站與澎湖海域 R 站週期圖

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

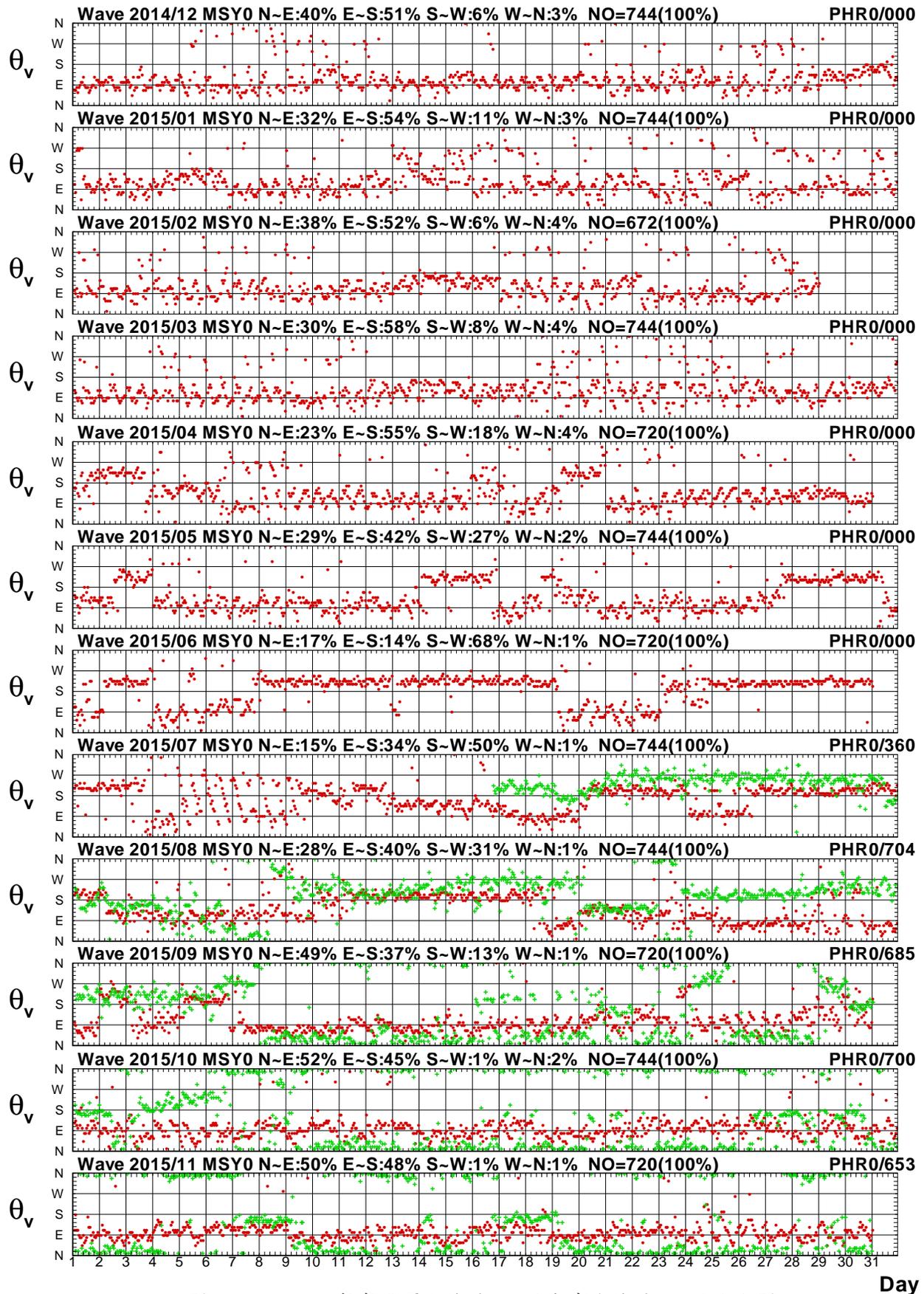


圖 2.13c 2015年每月馬祖海域 Y 站與澎湖海域 R 站波向圖

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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第三章 2015 年馬祖海域觀測潮汐資料

馬祖海域潮位之觀測 2013 年 10 月本中心安裝潮位計於馬祖福澳港區(稱**測站 T**)，其位置如附圖 3。2014 年 10 月本中心安裝 AWAC 系統於福澳港附近海域(稱**測站 X**)。2015 年 9 月於北竿、西莒、東引及東莒等港區安裝潮位計(稱**測站 S**、**測站 G**、**測站 L**及**測站 M**)，同時於北竿、西莒、東引及東莒等港區附近海域安裝 AWAC 系統(稱**測站 A**、**測站 1**、**測站 2**及**測站 3**)。**測站 F**之潮位儀屬中央氣象局所有。馬祖海域各測站歷年觀測潮汐資料蒐集概況如表 3。

潮位**測站 X**等潮波流儀，每一小時取前 10 分鐘之水位變化，然後加以平均得出該小時之平均水位值。**測站 T**等潮位資料取樣方式為每 6 分鐘量測一次水位變化。**測站 F**資料由中央氣象局提供。

本潮汐年報以取經檢核或修補後之**T 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 3.1.1，**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 3.1.2，**主要觀測站與次要觀測站**每月潮汐歷線比較圖，如圖 3.1.3 以後。

表 3 馬祖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	26°09'36"N	119°56'37"E	2013/10-2015/11(觀測中)	港研中心	福澳港區潮位站
S	26°12'15"N	119°58'1"E	2015/09-2015/11(觀測中)	港研中心	北竿港區潮位站
G	25°58'9"N	119°55'57"E	2015/09-2015/11(觀測中)	港研中心	西莒港區潮位站
L	26°21'50"N	120°29'2"E	2015/09-2015/11(觀測中)	港研中心	東引港區潮位站
M	25°57'31"N	119°57'49"E	2015/09-2015/11(觀測中)	港研中心	東莒港區潮位站
F	26° 9'42"N	119°56'36E	2004/01-2015/11(觀測中)	中央氣象局	馬祖潮位站
X	26°09'87"N	119°56'11"E	2014/10-2015/11(觀測中)	港研中心	福澳港區外海
A	26°12'18"N	119°58'1 "E	2015/09-2015/11(觀測中)	港研中心	北竿港區外海
1	25°58'8 "N	119°55'54 "E	2015/09-2015/11(觀測中)	港研中心	西莒港區外海
2	26°21'55 "N	120°29'2 "E	2015/09-2015/11(觀測中)	港研中心	東引港區外海
3	25°57'31 "N	119°57'47 "E	2015/09-2015/11(觀測中)	港研中心	東莒港區外海

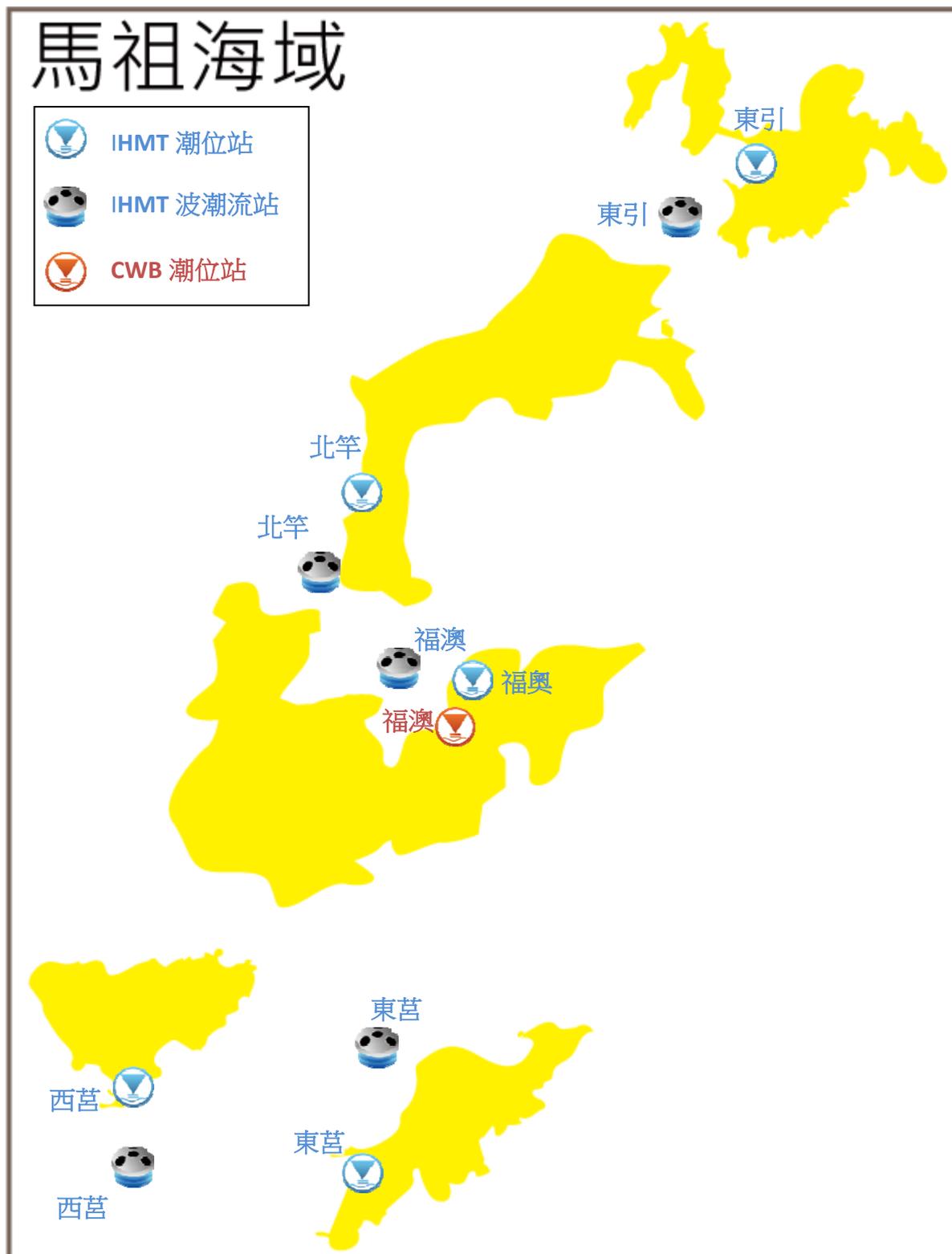


圖 3 馬祖海域潮汐觀測站位置示意圖

表 3.1a 2015年每月馬祖海域修補前各測站觀測潮汐資料紀錄統計表

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	T	X	F	S	G	L	M	A
2014/12月	744 (100%)	711 (95.6%)	*	*	*	*	*	*
2015/ 1月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 2月	672 (100%)	662 (98.5%)	*	*	*	*	*	*
2015/ 3月	744 (100%)	717 (96.4%)	*	*	*	*	*	*
2015/ 4月	720 (100%)	694 (96.4%)	*	*	*	*	*	*
2015/ 5月	744 (100%)	744 (100%)	*	*	*	*	*	*
2015/ 6月	719 (99.9%)	716 (99.4%)	*	*	*	*	*	*
2015/ 7月	744 (100%)	532 (71.5%)	*	*	*	*	*	*
2015/ 8月	744 (100%)	673 (90.5%)	*	*	*	*	*	*
2015/ 9月	720 (100%)	699 (97.1%)	*	682 (94.7%)	630 (87.5%)	340 (47.2%)	155 (21.5%)	458 (63.6%)
2015/10月	744 (100%)	704 (94.6%)	*	697 (93.7%)	742 (99.7%)	743 (99.9%)	*	737 (99.1%)
2015/11月	720 (100%)	630 (87.5%)	*	720 (100%)	720 (100%)	718 (99.7%)	*	720 (100%)
2015/冬季	2160 (100%)	2117 (98.0%)	*	*	*	*	*	*
2015/春季	2208 (100%)	2155 (97.6%)	*	*	*	*	*	*
2015/夏季	2207 (100.0%)	1921 (87.0%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2033 (93.1%)	*	2099 (96.1%)	2092 (95.8%)	1801 (82.5%)	155 (7.1%)	1915 (87.7%)
2015/整年	8759 (100.0%)	8226 (93.9%)	*	2099 (24.0%)	2092 (23.9%)	1801 (20.6%)	155 (1.8%)	1915 (21.9%)
起始年月	2014/12	2014/12	*	2015/09	2015/09	2015/09	2015/09	2015/09
結束年月	2015/11	2015/11	*	2015/11	2015/11	2015/11	2015/09	2015/11

表3.1b 2015年每月馬祖海域修補後各測站潮汐資料統計表

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	T	X	F	S	G	L	M	A
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%)	*	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%)	*	*	*	*	*	*
2015/春季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/夏季	2208 (100%)	2208 (100%)	*	*	*	*	*	*
2015/秋季	2184 (100%)	2184 (100%)	*	2184 (100%)	2184 (100%)	2184 (100%)	720 (33.0%)	2184 (100%)
2015/整年	8760 (100%)	8760 (100%)	*	2184 (24.9%)	2184 (24.9%)	2184 (24.9%)	720 (8.2%)	2184 (24.9%)
起始年月	2014/12	2014/12	*	2015/09	2015/09	2015/09	2015/09	2015/09
結束年月	2015/11	2015/11	*	2015/11	2015/11	2015/11	2015/09	2015/11

Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

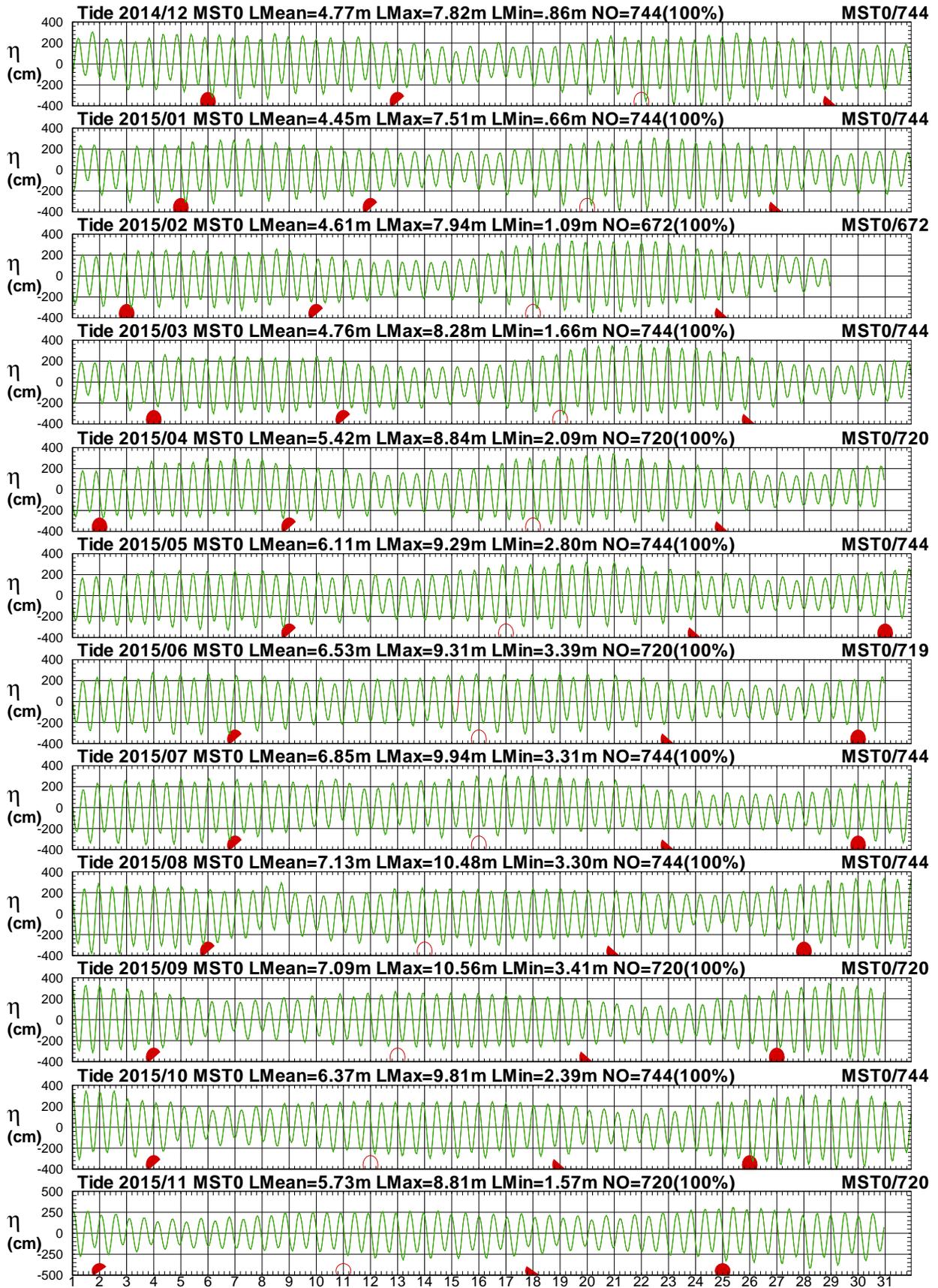


圖 3.1.1 2015年每月馬祖海域 T 站修補前後之潮位比較圖

T14CMST0.1HA T14CMST0.1HO T151MST0.1HA T151MST0.1HO T152MST0.1HA T152MST0.1HO
 T153MST0.1HA T153MST0.1HO T154MST0.1HA T154MST0.1HO T155MST0.1HA T155MST0.1HO

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

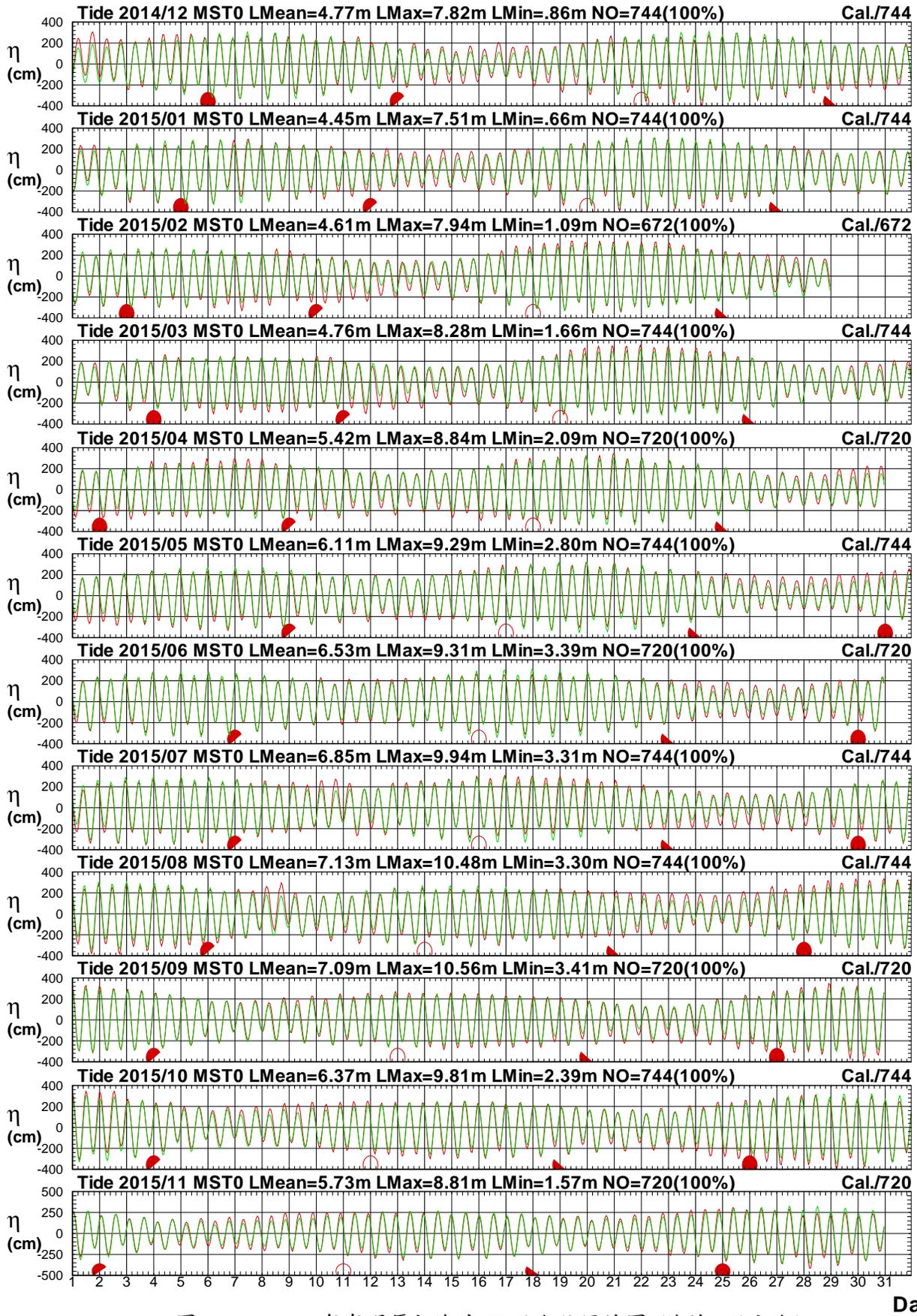


圖 3.1.2 2015年每月馬祖海域 T 站潮位歷線圖 (綠線: 天文潮)

T14CMST0.1HA T14CMST0.1HC T151MST0.1HA T151MST0.1HC T152MST0.1HA T152MST0.1HC
 T153MST0.1HA T153MST0.1HC T154MST0.1HA T154MST0.1HC T155MST0.1HA T155MST0.1HC

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

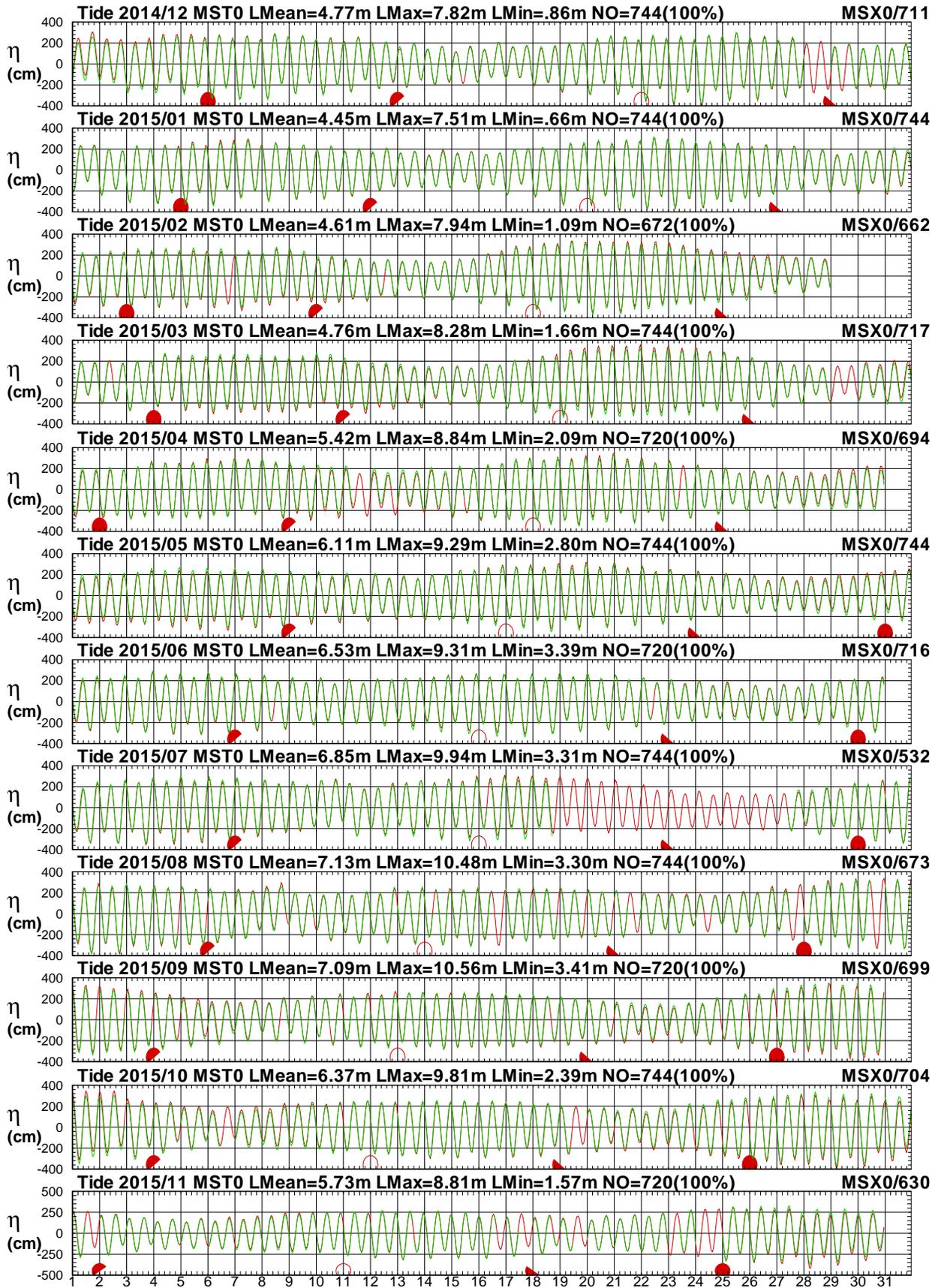


圖 3.1.3 2015年每月馬祖海域 T 站與 X 站潮位比較圖

T14CMST0.1HA T14CMSX0.1H0 T151MST0.1HA T151MSX0.1H0 T152MST0.1HA T152MSX0.1H0
 T153MST0.1HA T153MSX0.1H0 T154MST0.1HA T154MSX0.1H0 T155MST0.1HA T155MSX0.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

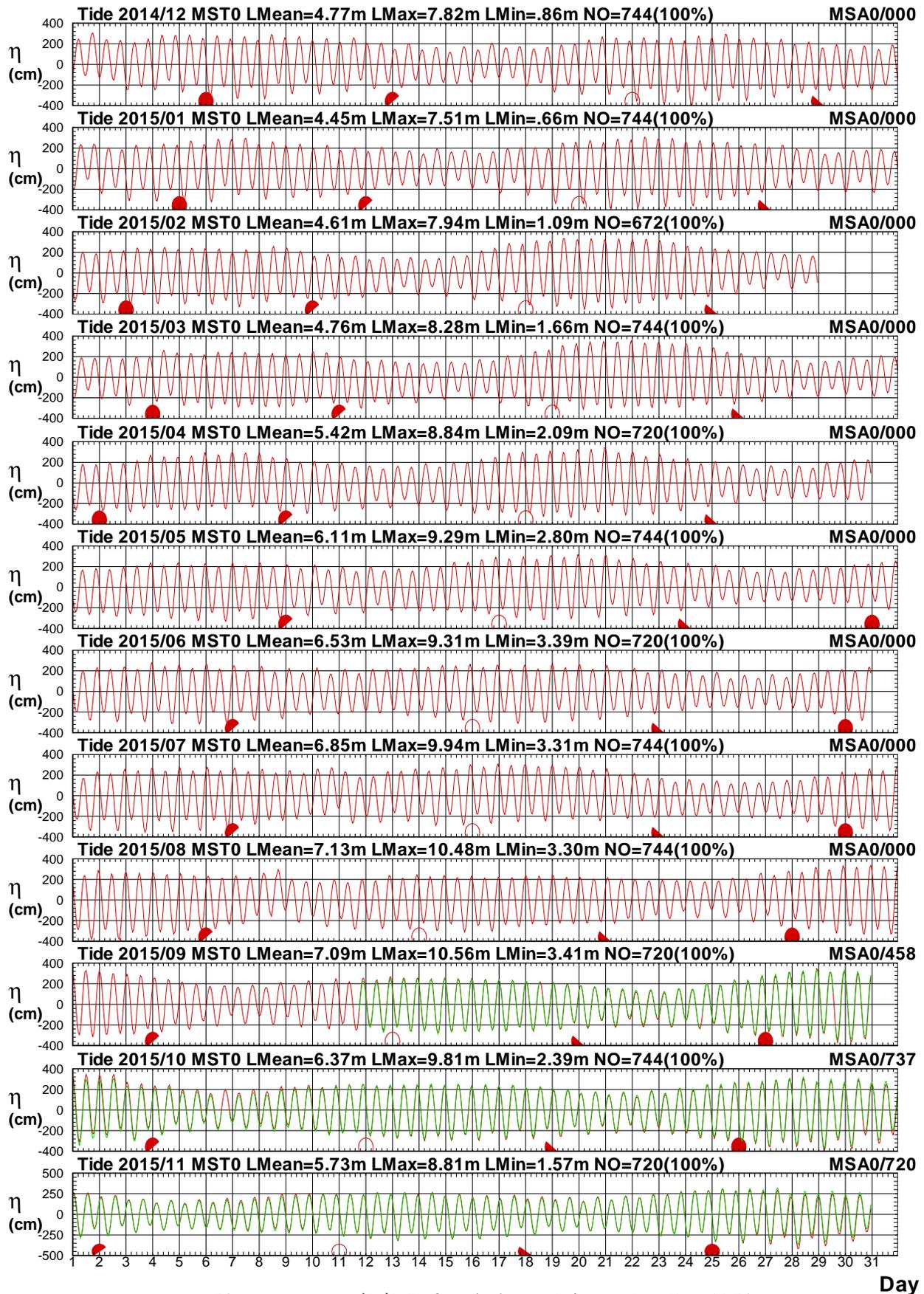


圖 3.1.4 2015 年每月馬祖海域 T 站與 A 站潮位比較圖

T14CMST0.1HA T14CMSA0.1H0 T151MST0.1HA T151MSA0.1H0 T152MST0.1HA T152MSA0.1H0
 T153MST0.1HA T153MSA0.1H0 T154MST0.1HA T154MSA0.1H0 T155MST0.1HA T155MSA0.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

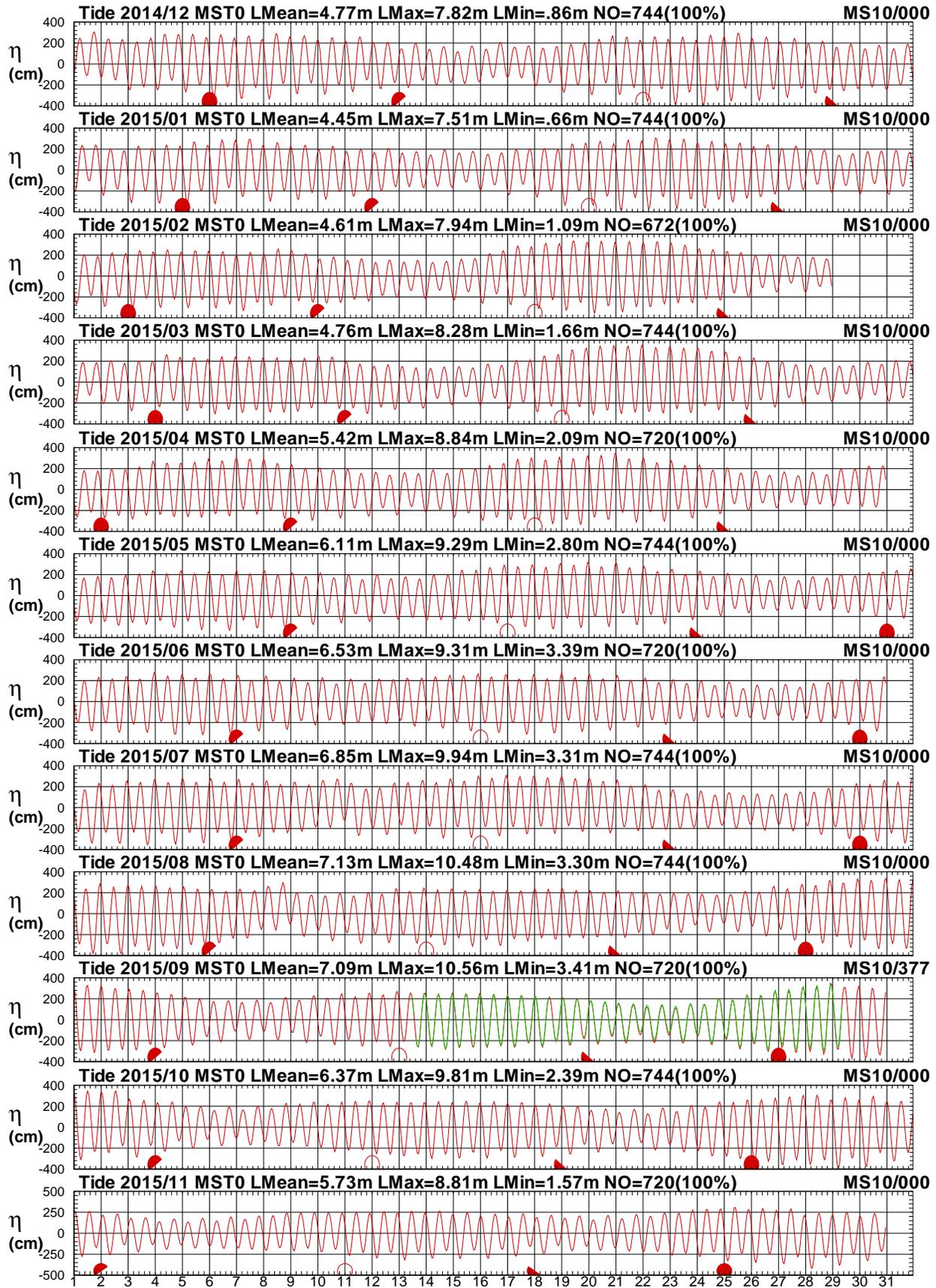


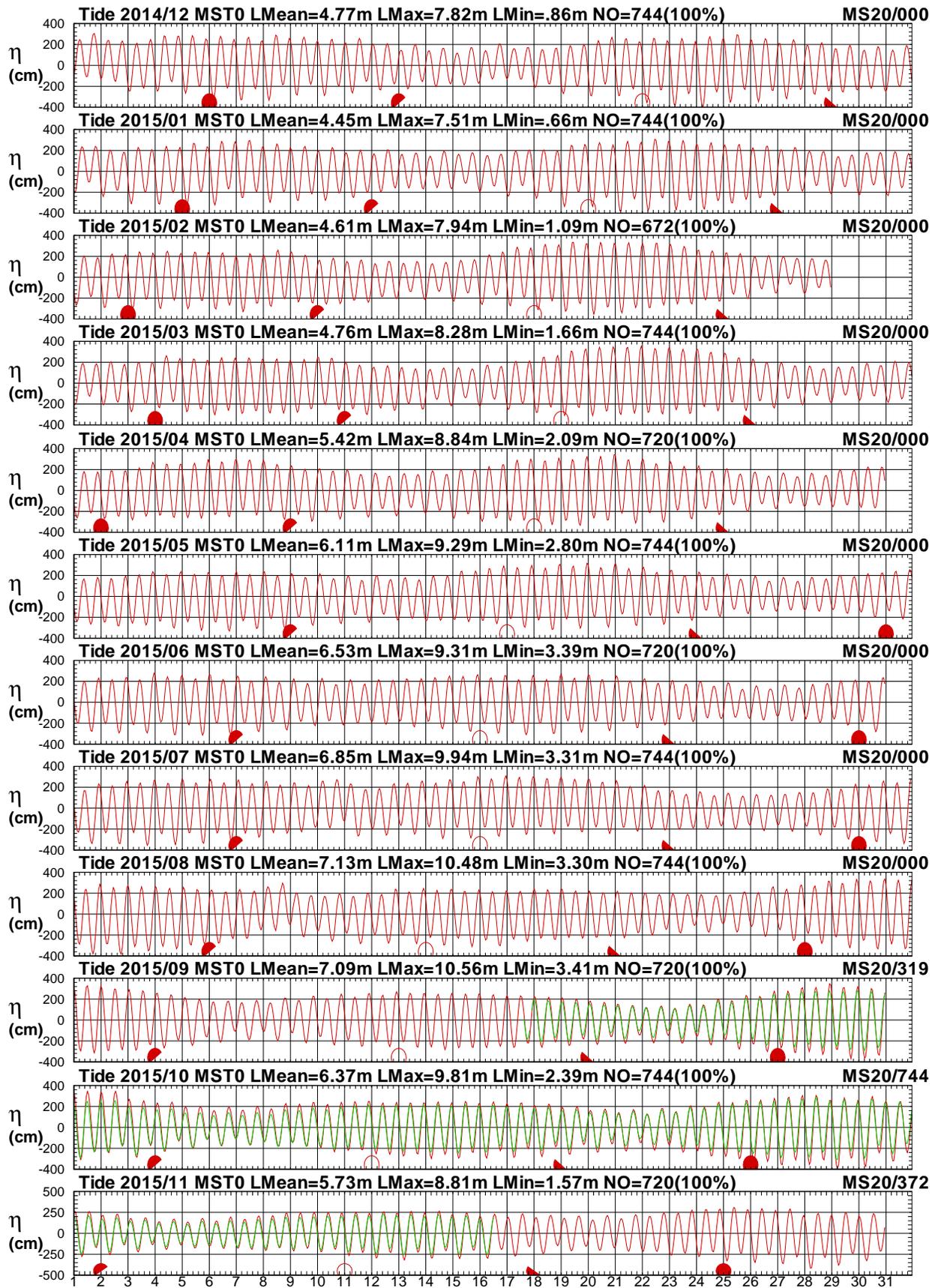
圖 3.1.5 2015年每月馬祖海域 T 站與 1 站潮位比較圖

T14CMST0.1HA T14CMS10.1H0 T151MST0.1HA T151MS10.1H0 T152MST0.1HA T152MS10.1H0
T153MST0.1HA T153MS10.1H0 T154MST0.1HA T154MS10.1H0 T155MST0.1HA T155MS10.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●



Day

圖 3.1.6 2015 年每月馬祖海域 T 站與 2 站潮位比較圖

T14CMST0.1HA T14CMS20.1H0 T151MST0.1HA T151MS20.1H0 T152MST0.1HA T152MS20.1H0
 T153MST0.1HA T153MS20.1H0 T154MST0.1HA T154MS20.1H0 T155MST0.1HA T155MS20.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

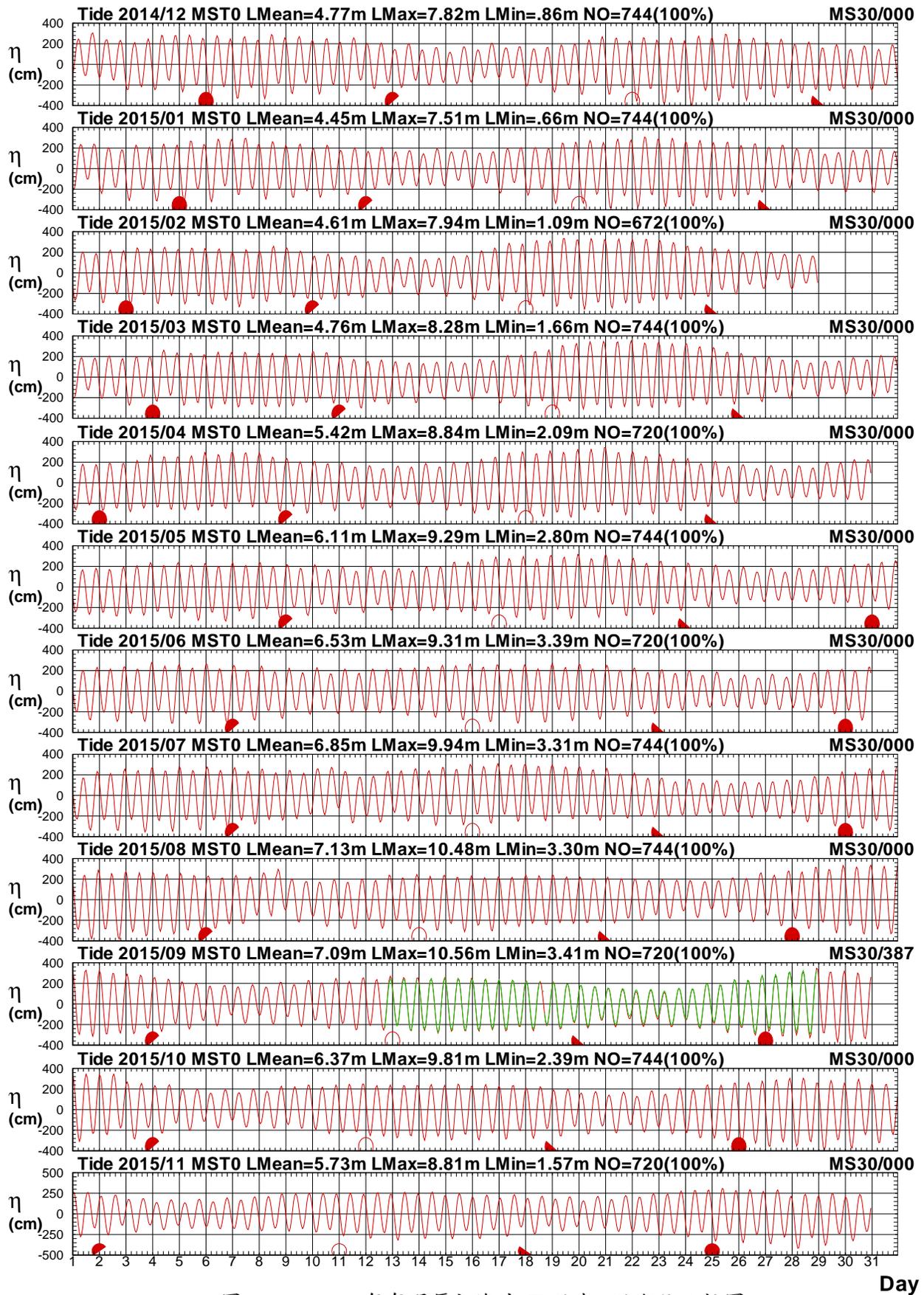


圖 3.1.7 2015年每月馬祖海域 T 站與 3 站潮位比較圖

T14CMST0.1HA T14CMS30.1H0 T151MST0.1HA T151MS30.1H0 T152MST0.1HA T152MS30.1H0
 T153MST0.1HA T153MS30.1H0 T154MST0.1HA T154MS30.1H0 T155MST0.1HA T155MS30.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

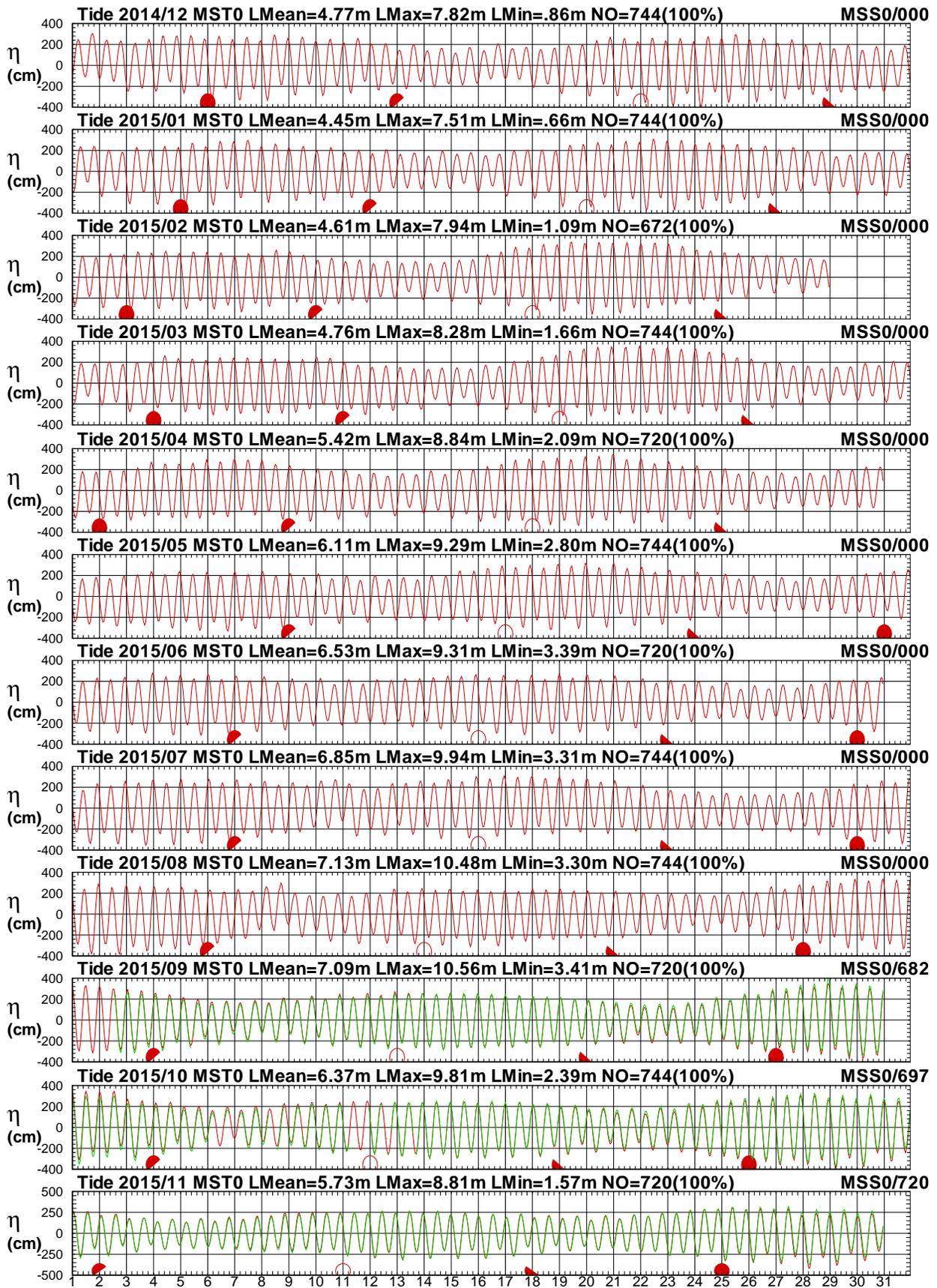


圖 3.1.8 2015年每月馬祖海域 T 站與 S 站潮位比較圖

T14CMST0.1HA T14CMSS0.1H0 T151MST0.1HA T151MSS0.1H0 T152MST0.1HA T152MSS0.1H0
T153MST0.1HA T153MSS0.1H0 T154MST0.1HA T154MSS0.1H0 T155MST0.1HA T155MSS0.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

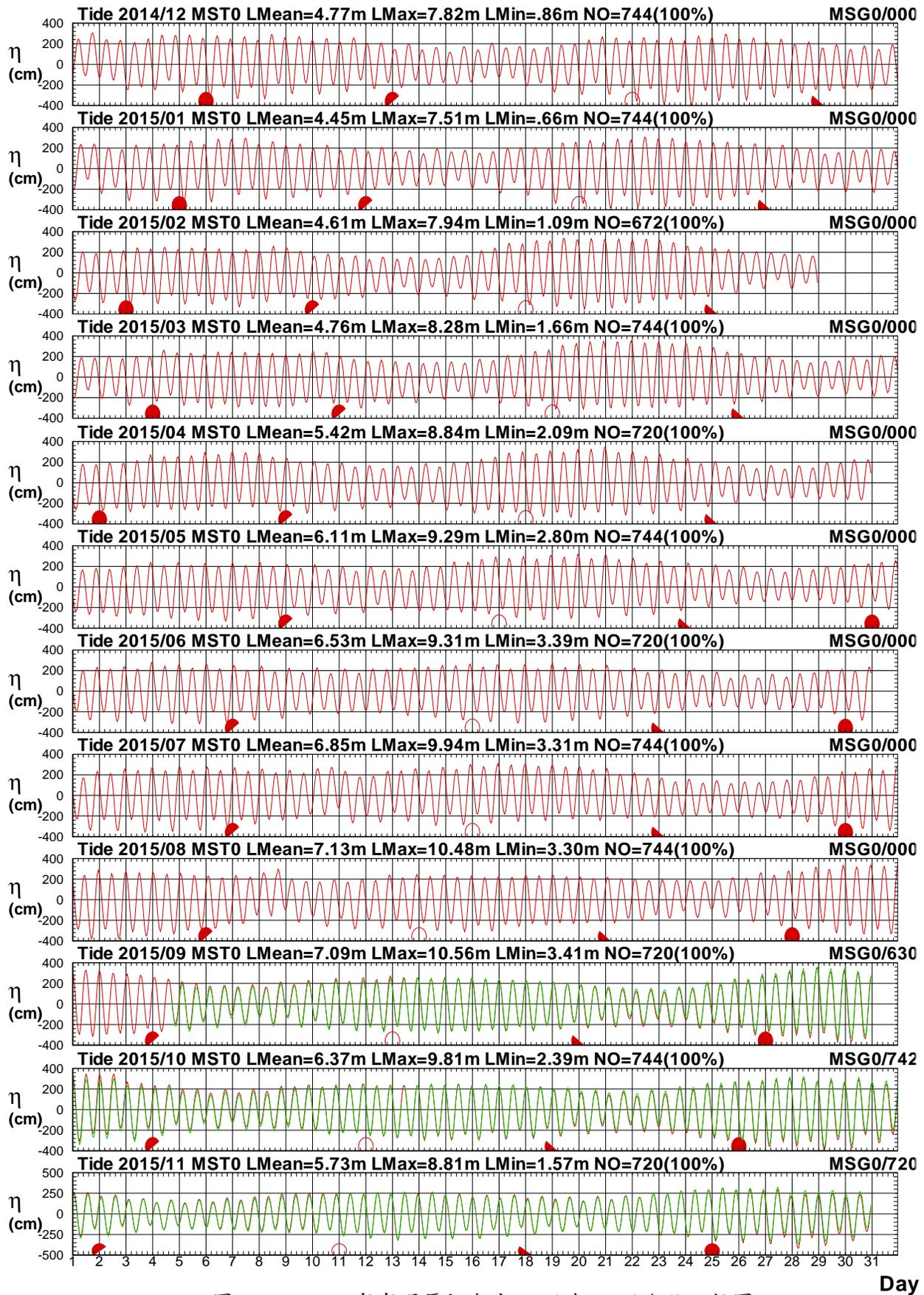


圖 3.1.9 2015年每月馬祖海域 T 站與 G 站潮位比較圖

T14CMST0.1HA T14CMSG0.1HO T151MST0.1HA T151MSG0.1HO T152MST0.1HA T152MSG0.1HO
T153MST0.1HA T153MSG0.1HO T154MST0.1HA T154MSG0.1HO T155MST0.1HA T155MSG0.1HO

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

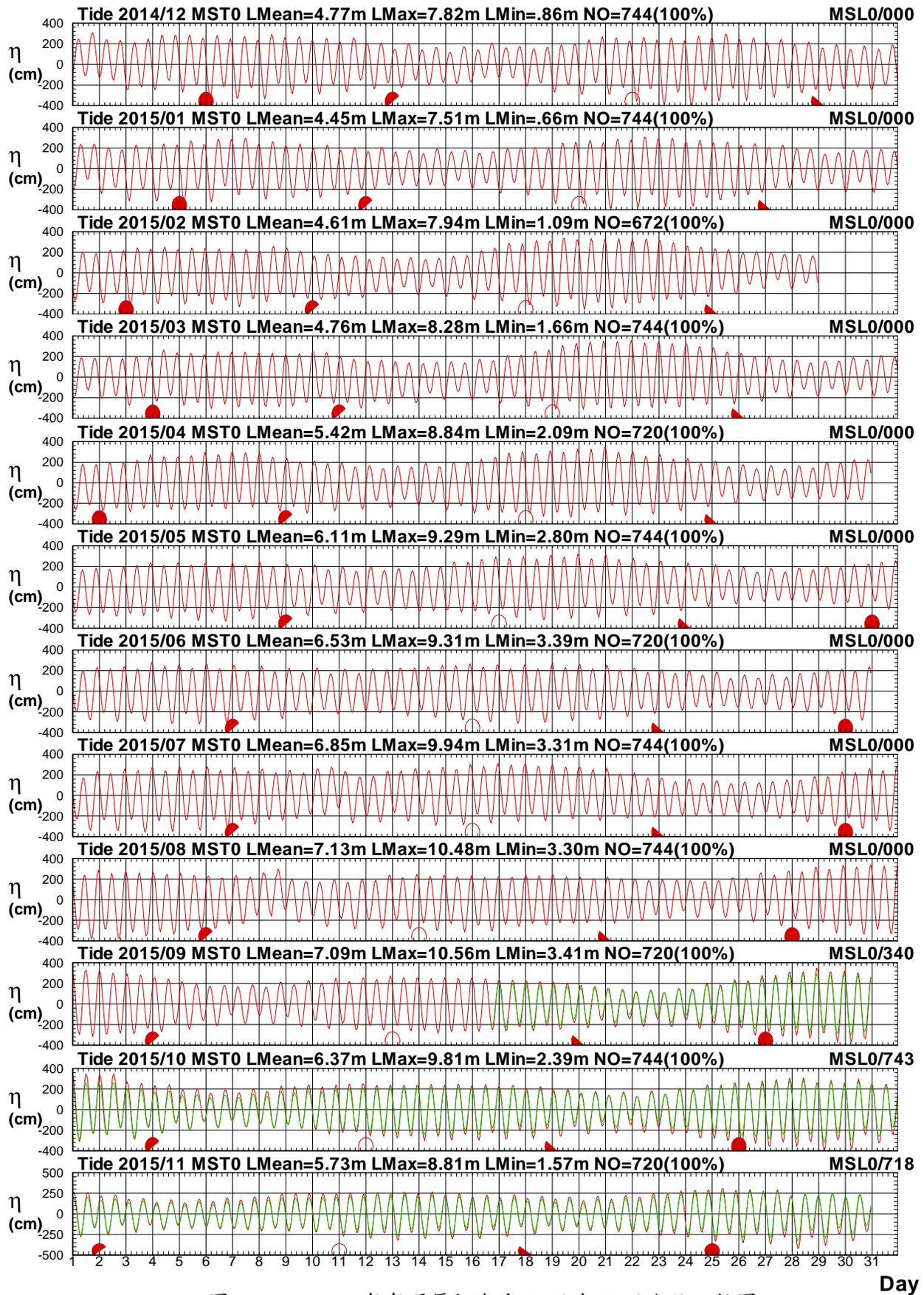


圖 3.1.10 2015年每月馬祖海域 T 站與 L 站潮位比較圖

T14CMST0.1HA T14CMSL0.1H0 T151MST0.1HA T151MSL0.1H0 T152MST0.1HA T152MSL0.1H0
 T153MST0.1HA T153MSL0.1H0 T154MST0.1HA T154MSL0.1H0 T155MST0.1HA T155MSL0.1H0

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Tidal Level in Ma-Tsu Seas of MST0 at 2015

1 ○ 8 ● 15 ● 22 ●

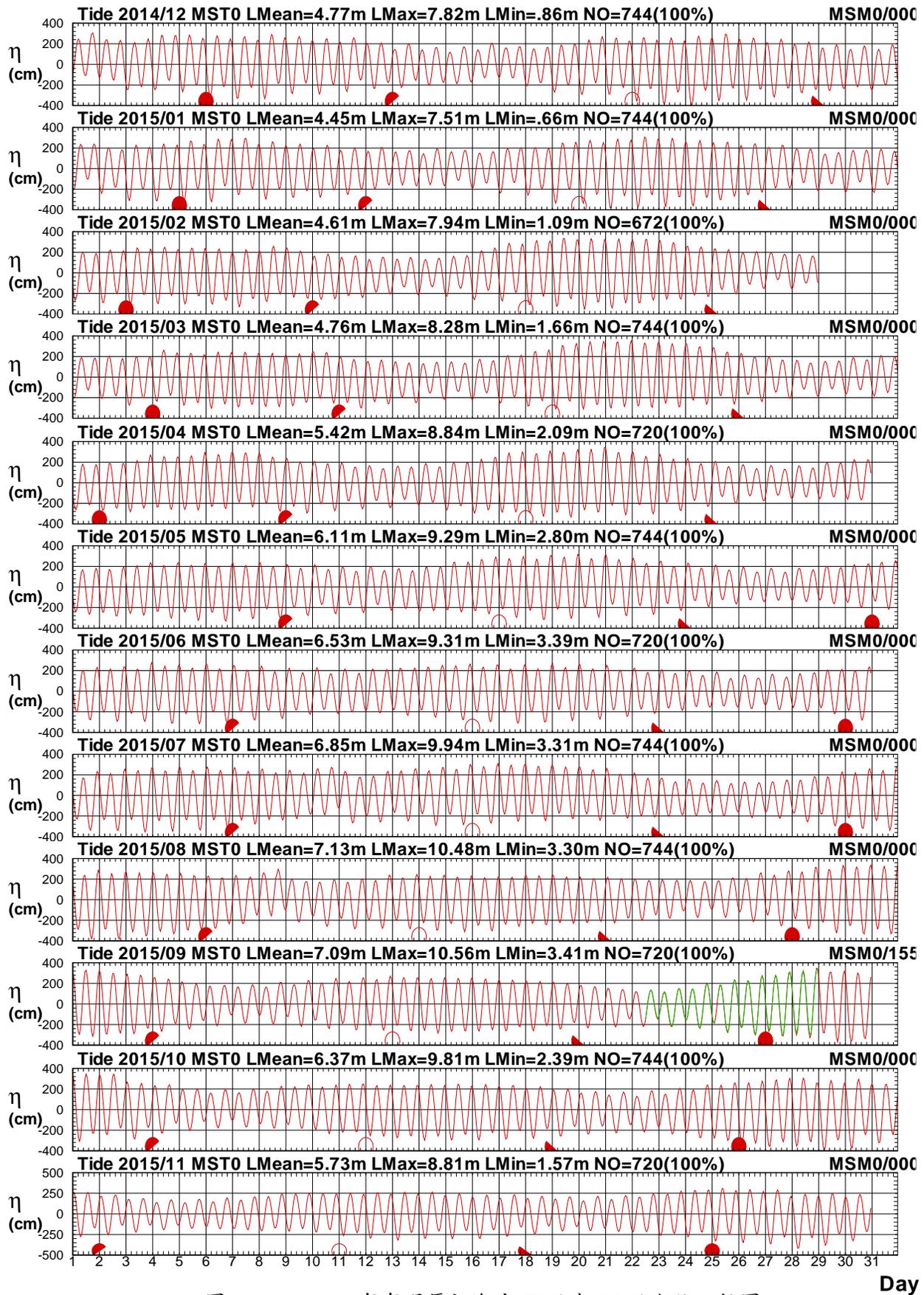


圖 3.1.11 2015年每月馬祖海域 T 站與 M 站潮位比較圖

T14CMST0.1HA T14CMSM0.1H0 T151MST0.1HA T151MSM0.1H0 T152MST0.1HA T152MSM0.1H0
 T153MST0.1HA T153MSM0.1H0 T154MST0.1HA T154MSM0.1H0 T155MST0.1HA T155MSM0.1H0

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第四章 2015 年馬祖海域觀測海流資料

馬祖海域海流之觀測係 2014 年 10 月本中心(IHMT)安裝挪威 NORTEK 公司表面波浪監測系統於馬祖港福澳港區(稱**測站 X**)，其位置如附圖 4。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**)。馬祖海域各測站歷年觀測海流資料蒐集概況如表 4。

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 馬祖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
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

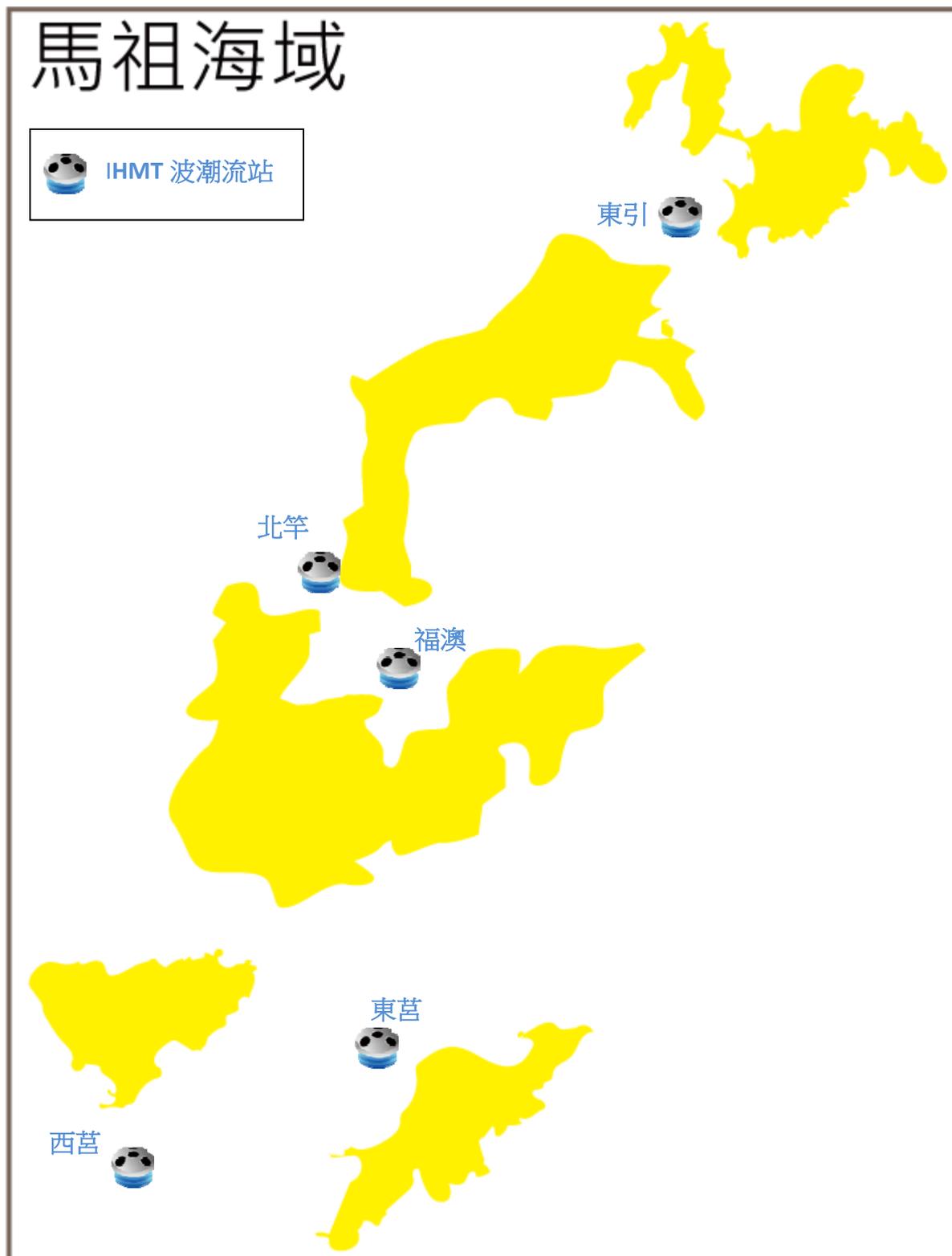


圖 4 馬祖海域海流觀測站位置示意圖

表 4.1a 2015年每月馬祖海域各測站觀測海流資料紀錄統計表

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	X	Y	A	1	2	3		
2014/12月	711 (95.6%)	*	*	*	*	*	*	*
2015/ 1月	744 (100%)	*	*	*	*	*	*	*
2015/ 2月	662 (98.5%)	*	*	*	*	*	*	*
2015/ 3月	717 (96.4%)	*	*	*	*	*	*	*
2015/ 4月	694 (96.4%)	*	*	*	*	*	*	*
2015/ 5月	744 (100%)	*	*	*	*	*	*	*
2015/ 6月	716 (99.4%)	*	*	*	*	*	*	*
2015/ 7月	532 (71.5%)	*	*	*	*	*	*	*
2015/ 8月	673 (90.5%)	*	*	*	*	*	*	*
2015/ 9月	698 (96.9%)	*	458 (63.6%)	377 (52.4%)	319 (44.3%)	387 (53.8%)	*	*
2015/10月	704 (94.6%)	*	737 (99.1%)	*	744 (100%)	*	*	*
2015/11月	630 (87.5%)	*	720 (100%)	*	372 (51.7%)	*	*	*
2015/冬季	2117 (98.0%)	*	*	*	*	*	*	*
2015/春季	2155 (97.6%)	*	*	*	*	*	*	*
2015/夏季	1921 (87.0%)	*	*	*	*	*	*	*
2015/秋季	2032 (93.0%)	*	1915 (87.7%)	377 (17.3%)	1435 (65.7%)	387 (17.7%)	*	*
2015/整年	8225 (93.9%)	*	1915 (21.9%)	377 (4.3%)	1435 (16.4%)	387 (4.4%)	*	*
起始年月	2014/12	*	2015/09	2015/09	2015/09	2015/09	*	*
結束年月	2015/11	*	2015/11	2015/09	2015/11	2015/09	*	*

ST-X: 港灣技術研究中心觀測 X 站流速資料

表 4.1b 2015年每月馬祖海域計算潮流各測站資料統計表

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	X	Y	A	1	2	3		
2014/12月	744 (100%)	*	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 1月	744 (100%)	*	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 2月	672 (100%)	*	672 (100%)	672 (100%)	672 (100%)	672 (100%)	*	*
2015/ 3月	744 (100%)	*	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 4月	720 (100%)	*	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/ 5月	744 (100%)	*	744 (100%)	744 (100%)	744 (100%)	744 (100%)	*	*
2015/ 6月	720 (100%)	*	720 (100%)	720 (100%)	720 (100%)	720 (100%)	*	*
2015/ 7月	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%)	*	*
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	*	*	*	*	*	*	*	*
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 Ma-Tsu Seas of MSX0 at 2015

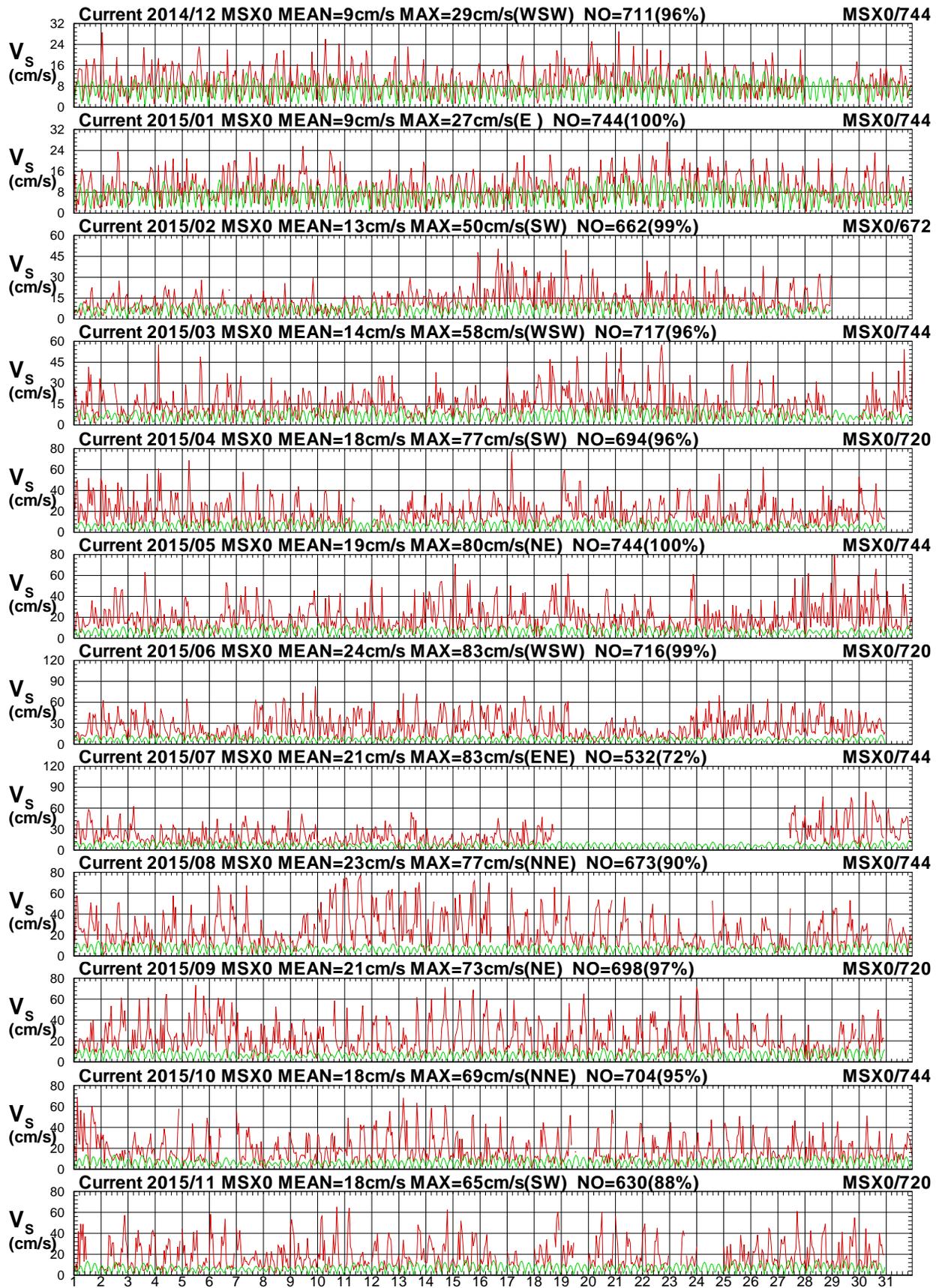


圖 4.1a 2015年每月馬祖海域 X 站觀測與潮流流速比較圖

C14CMSX0.1H0 C14CMSX0.1HD C151MSX0.1H0 C151MSX0.1HD C152MSX0.1H0 C152MSX0.1HD
 C153MSX0.1H0 C153MSX0.1HD C154MSX0.1H0 C154MSX0.1HD C155MSX0.1H0 C155MSX0.1HD

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Current Direction in Ma-Tsu Seas of MSX0 at 2015

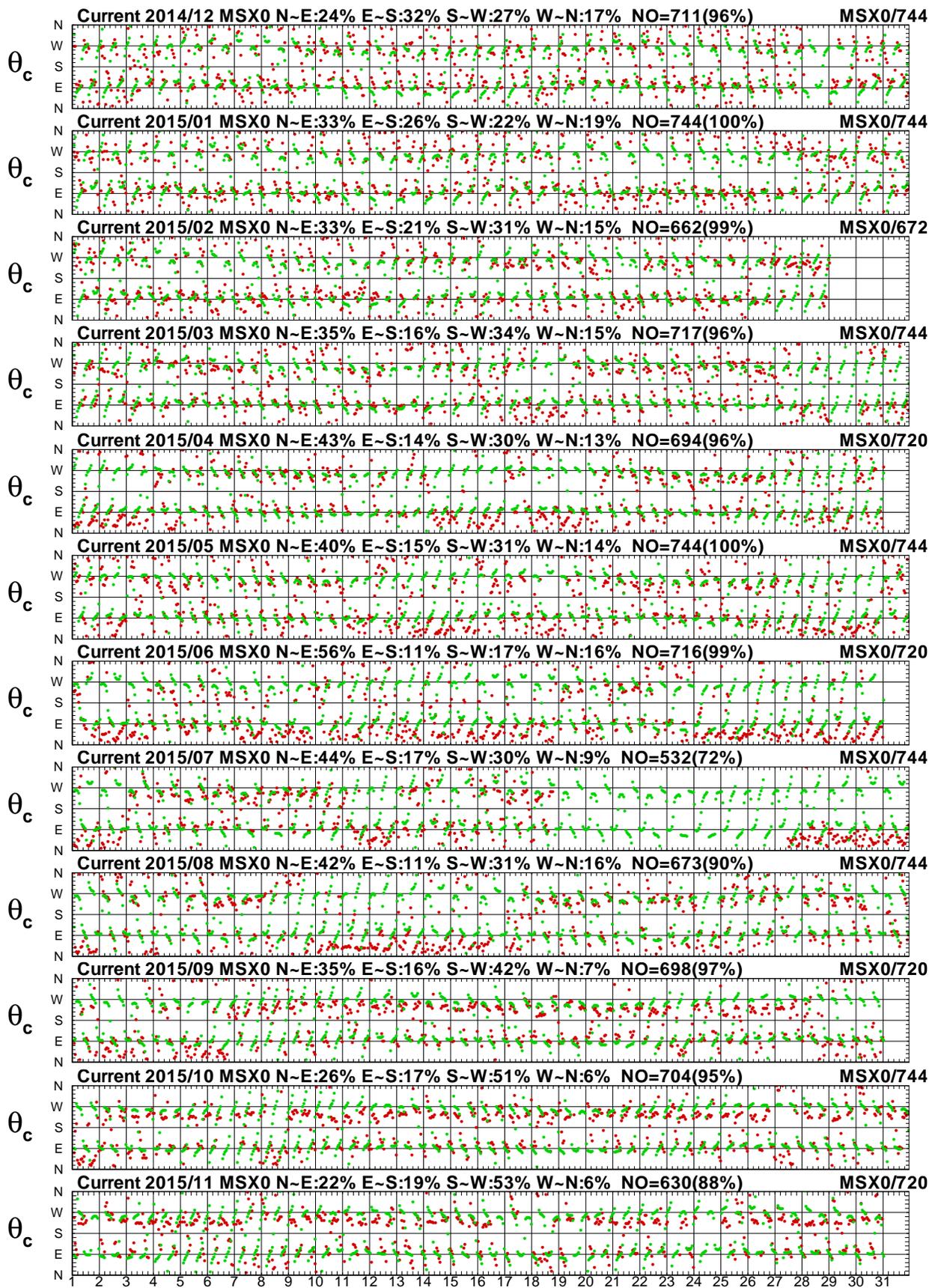


圖 4.1b 2015 年每月馬祖海域 X 站觀測與潮流流向比較圖

C14CMSX0.1H0 C14CMSX0.1HD C151MSX0.1H0 C151MSX0.1HD C152MSX0.1H0 C152MSX0.1HD
 C153MSX0.1H0 C153MSX0.1HD C154MSX0.1H0 C154MSX0.1HD C155MSX0.1H0 C155MSX0.1HD

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Current Speed in Ma-Tsu Seas of MSX0 at 2015

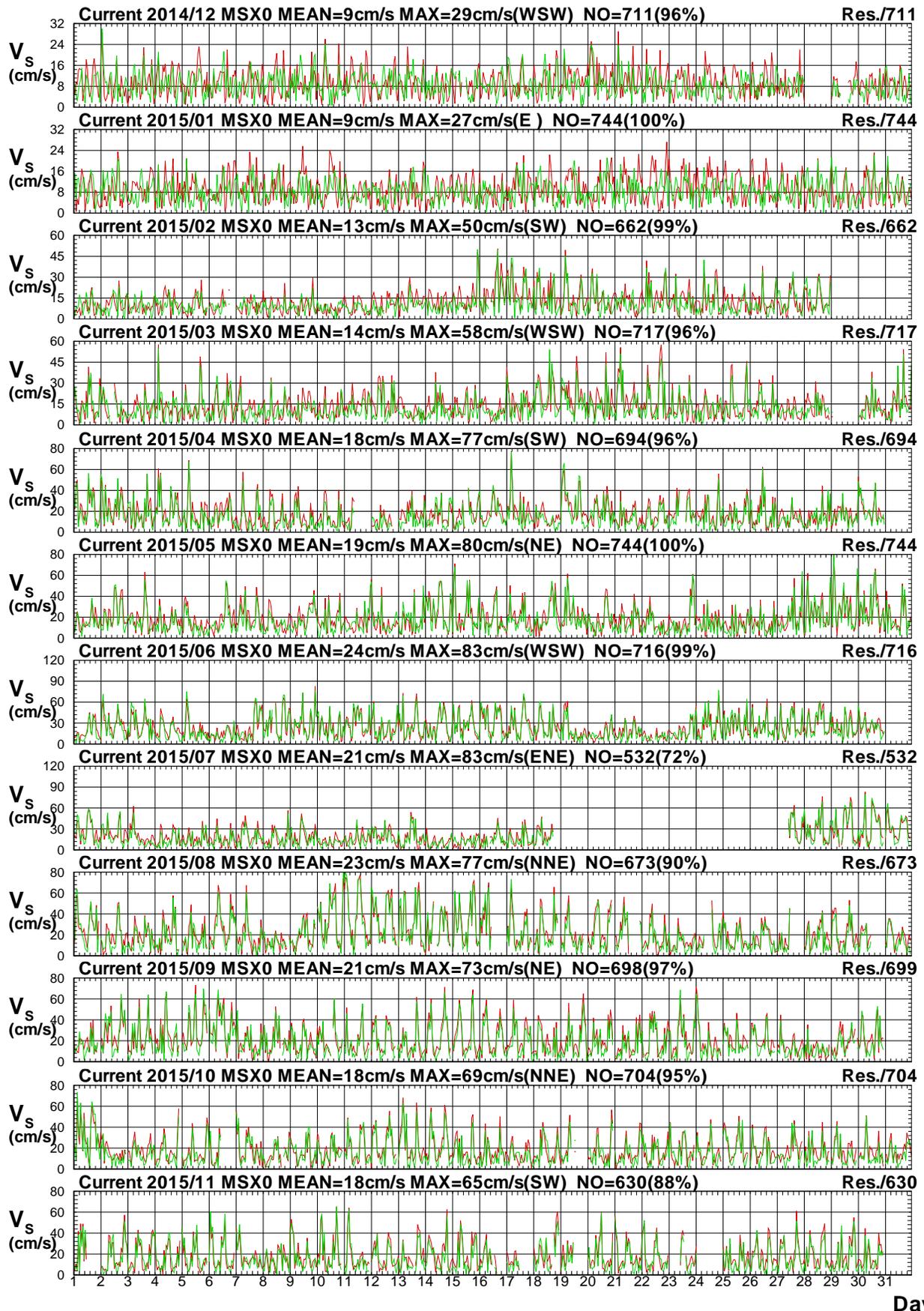


圖 4.2a 2015年每月馬祖海域 X 站觀測與非潮流速比較圖

Day

C14CMSX0.1H0 C14CMSX0.1HR C151MSX0.1H0 C151MSX0.1HR C152MSX0.1H0 C152MSX0.1HR
 C153MSX0.1H0 C153MSX0.1HR C154MSX0.1H0 C154MSX0.1HR C155MSX0.1H0 C155MSX0.1HR

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Current Direction in Ma-Tsu Seas of MSX0 at 2015

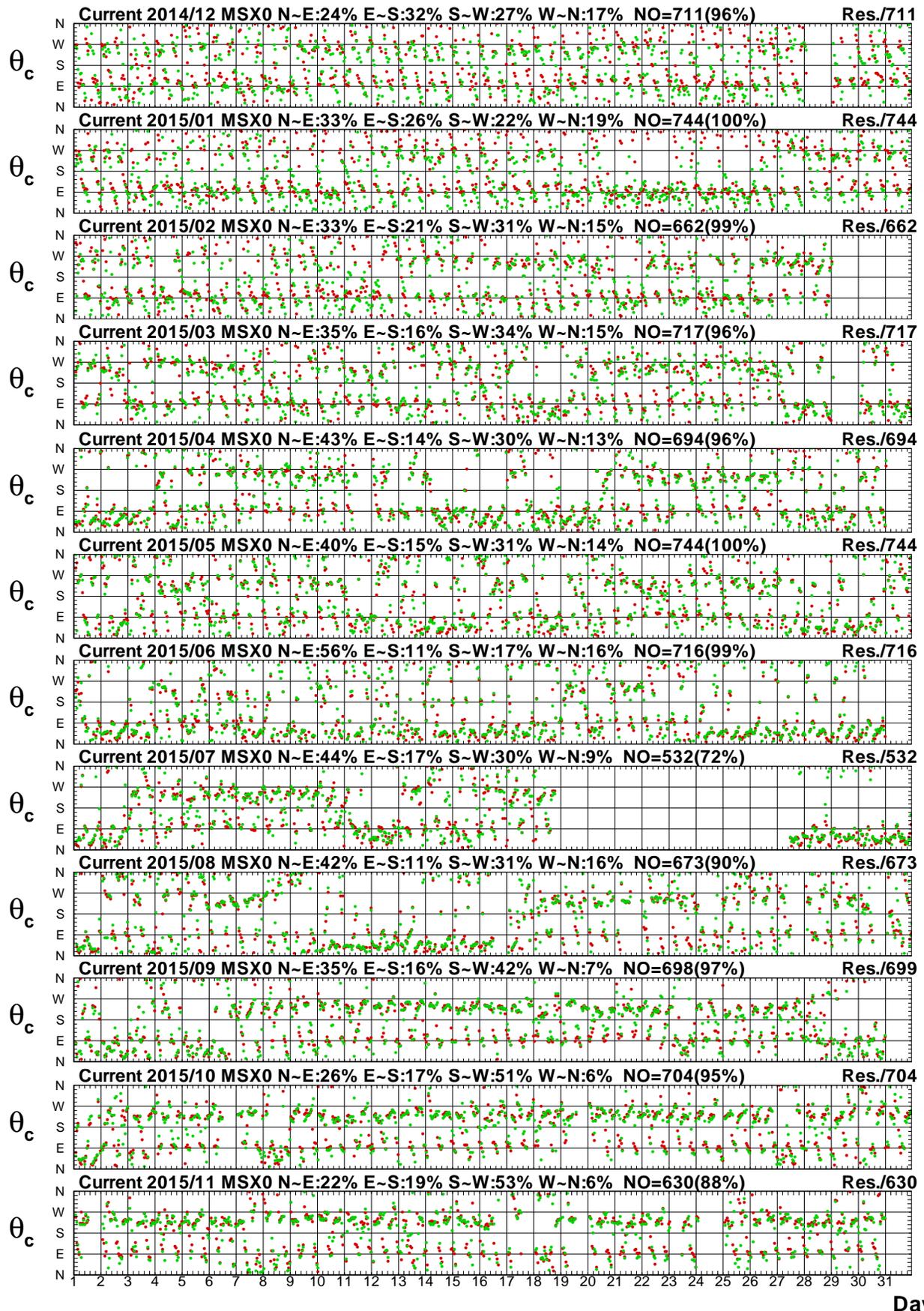


圖 4.2b 2015 年每月馬祖海域 X 站觀測與非潮流向比較圖

C14CMSX0.1H0 C14CMSX0.1HR C151MSX0.1H0 C151MSX0.1HR C152MSX0.1H0 C152MSX0.1HR
 C153MSX0.1H0 C153MSX0.1HR C154MSX0.1H0 C154MSX0.1HR C155MSX0.1H0 C155MSX0.1HR

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Current Speed in Ma-Tsu Seas of MSA0 at 2015

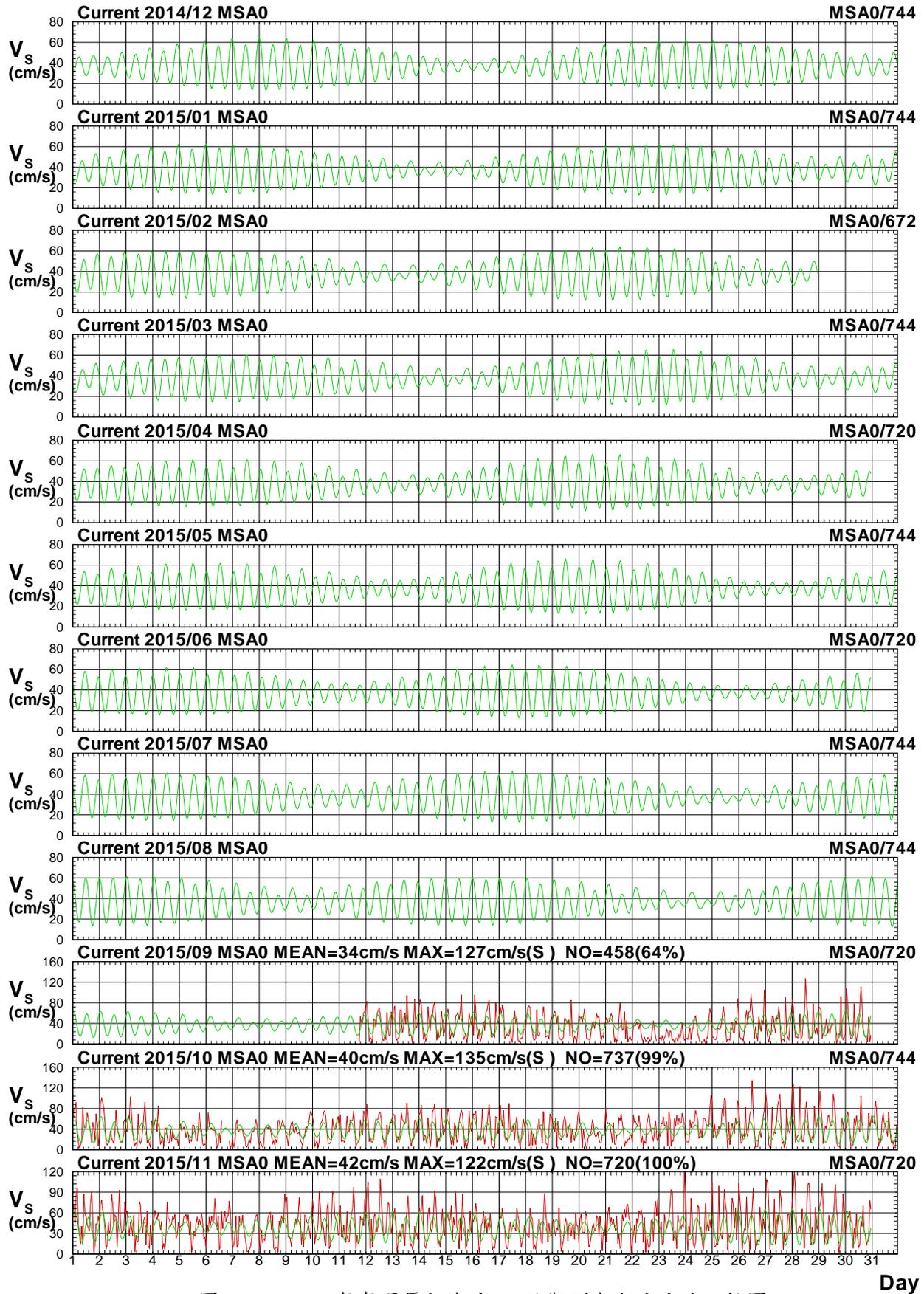


圖 4.3a 2015年每月馬祖海域 A 站觀測與潮流流速比較圖

C14CMSA0.1H0 C14CMSA0.1HD C151MSA0.1H0 C151MSA0.1HD C152MSA0.1H0 C152MSA0.1HD
 C153MSA0.1H0 C153MSA0.1HD C154MSA0.1H0 C154MSA0.1HD C155MSA0.1H0 C155MSA0.1HD

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Current Direction in Ma-Tsu Seas of MSA0 at 2015

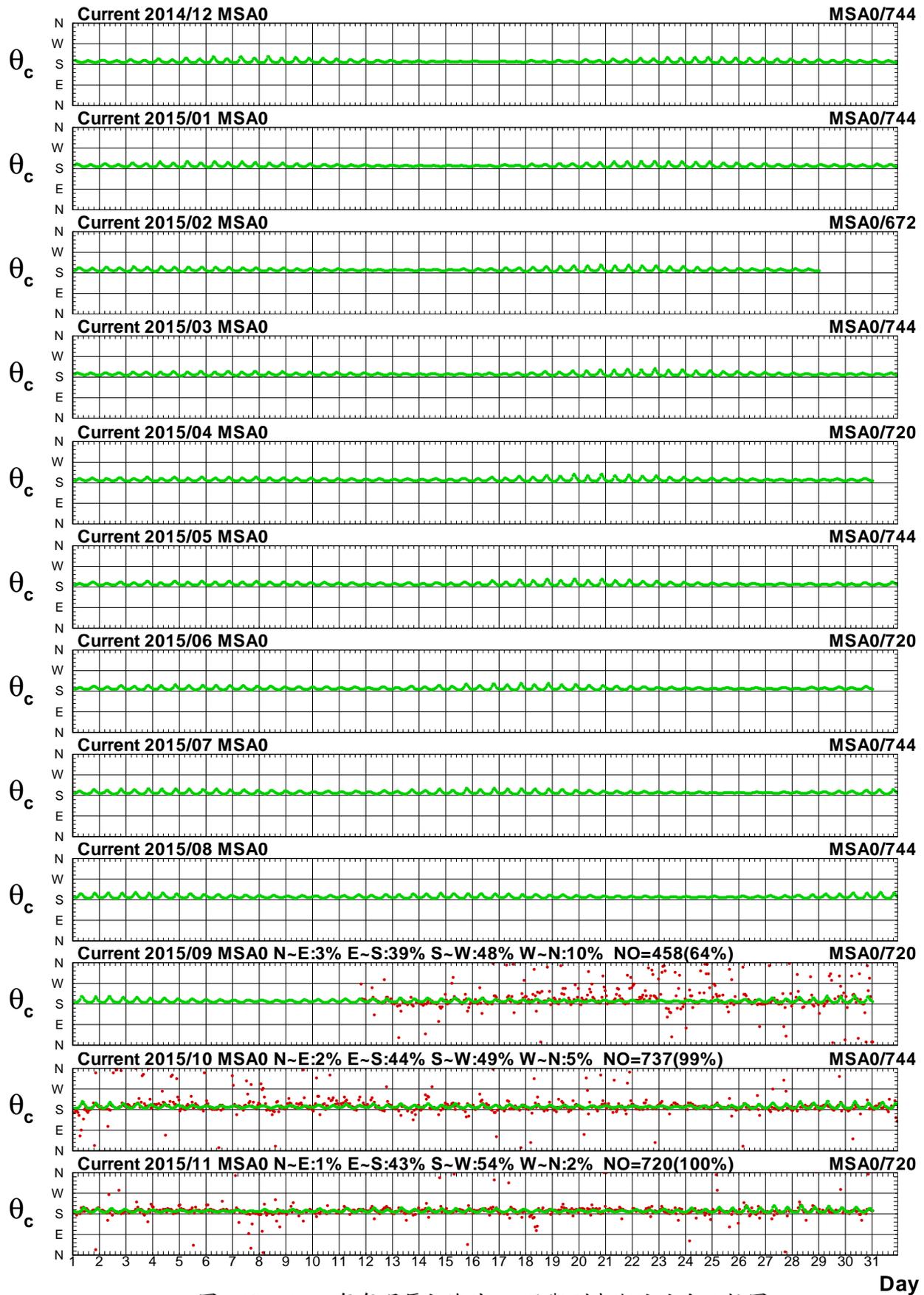


圖 4.3b 2015 年每月馬祖海域 A 站觀測與潮流流向比較圖

C14CMSA0.1H0 C14CMSA0.1HD C151MSA0.1H0 C151MSA0.1HD C152MSA0.1H0 C152MSA0.1HD
 C153MSA0.1H0 C153MSA0.1HD C154MSA0.1H0 C154MSA0.1HD C155MSA0.1H0 C155MSA0.1HD

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Current Speed in Ma-Tsu Seas of MSA0 at 2015

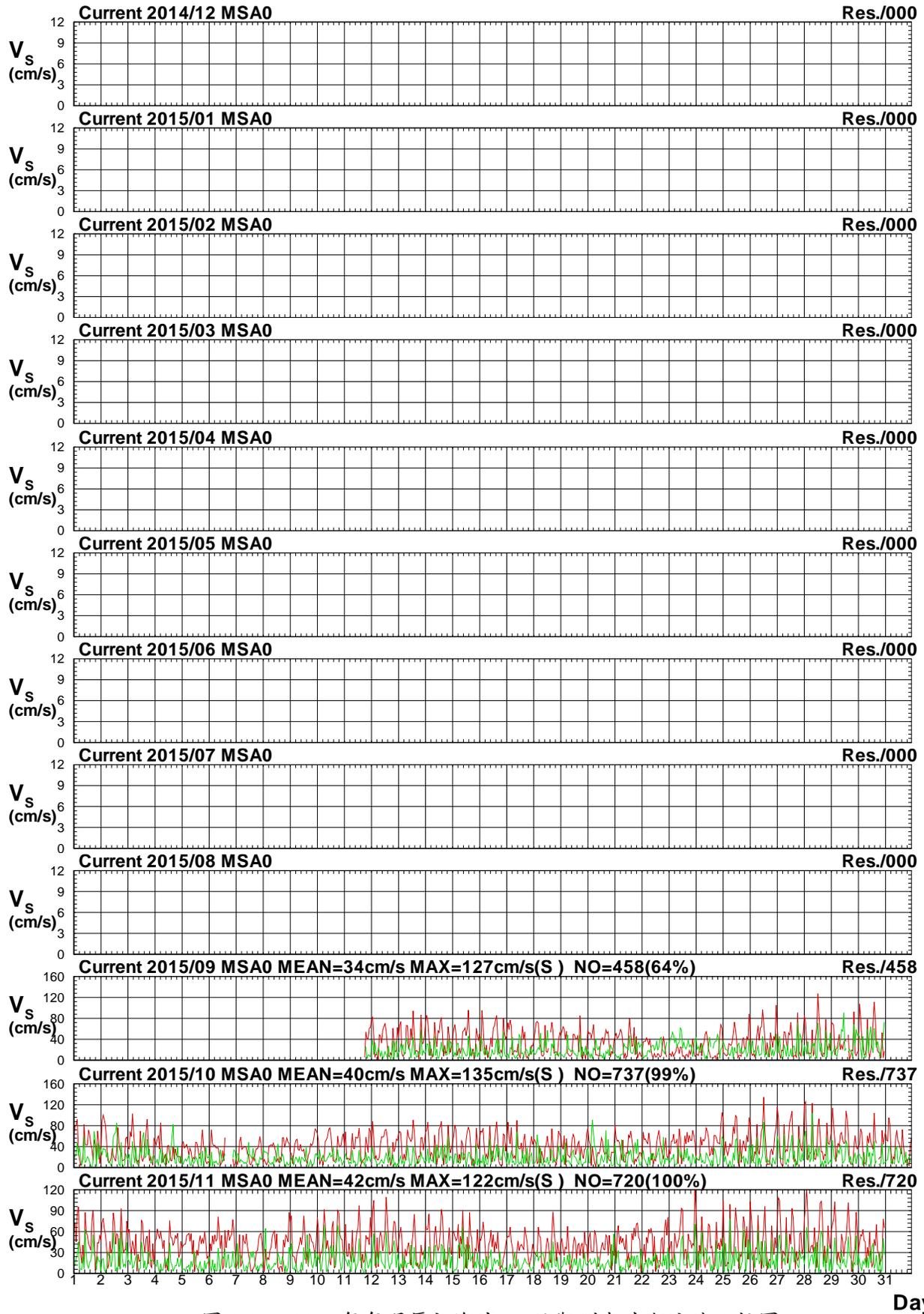


圖 4.4a 2015年每月馬祖海域 A 站觀測與非潮流速比較圖

C14CMSA0.1H0 C14CMSA0.1HR C151MSA0.1H0 C151MSA0.1HR C152MSA0.1H0 C152MSA0.1HR
 C153MSA0.1H0 C153MSA0.1HR C154MSA0.1H0 C154MSA0.1HR C155MSA0.1H0 C155MSA0.1HR

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Current Direction in Ma-Tsu Seas of MSA0 at 2015

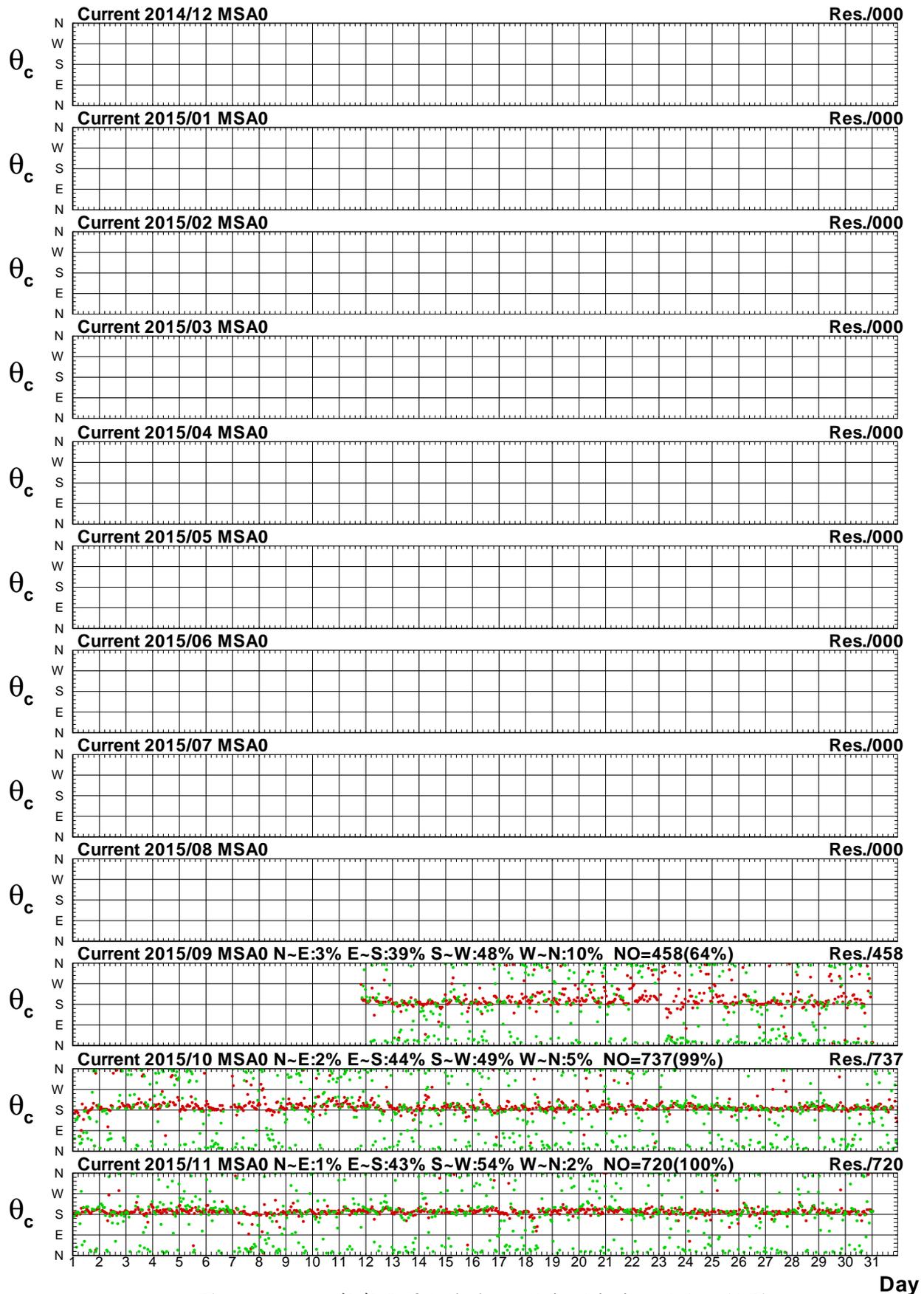


圖 4.4b 2015 年每月馬祖海域 A 站觀測與非潮流向比較圖

C14CMSA0.1H0 C14CMSA0.1HR C151MSA0.1H0 C151MSA0.1HR C152MSA0.1H0 C152MSA0.1HR
 C153MSA0.1H0 C153MSA0.1HR C154MSA0.1H0 C154MSA0.1HR C155MSA0.1H0 C155MSA0.1HR

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Current Speed in Ma-Tsu Seas of MS10 at 2015

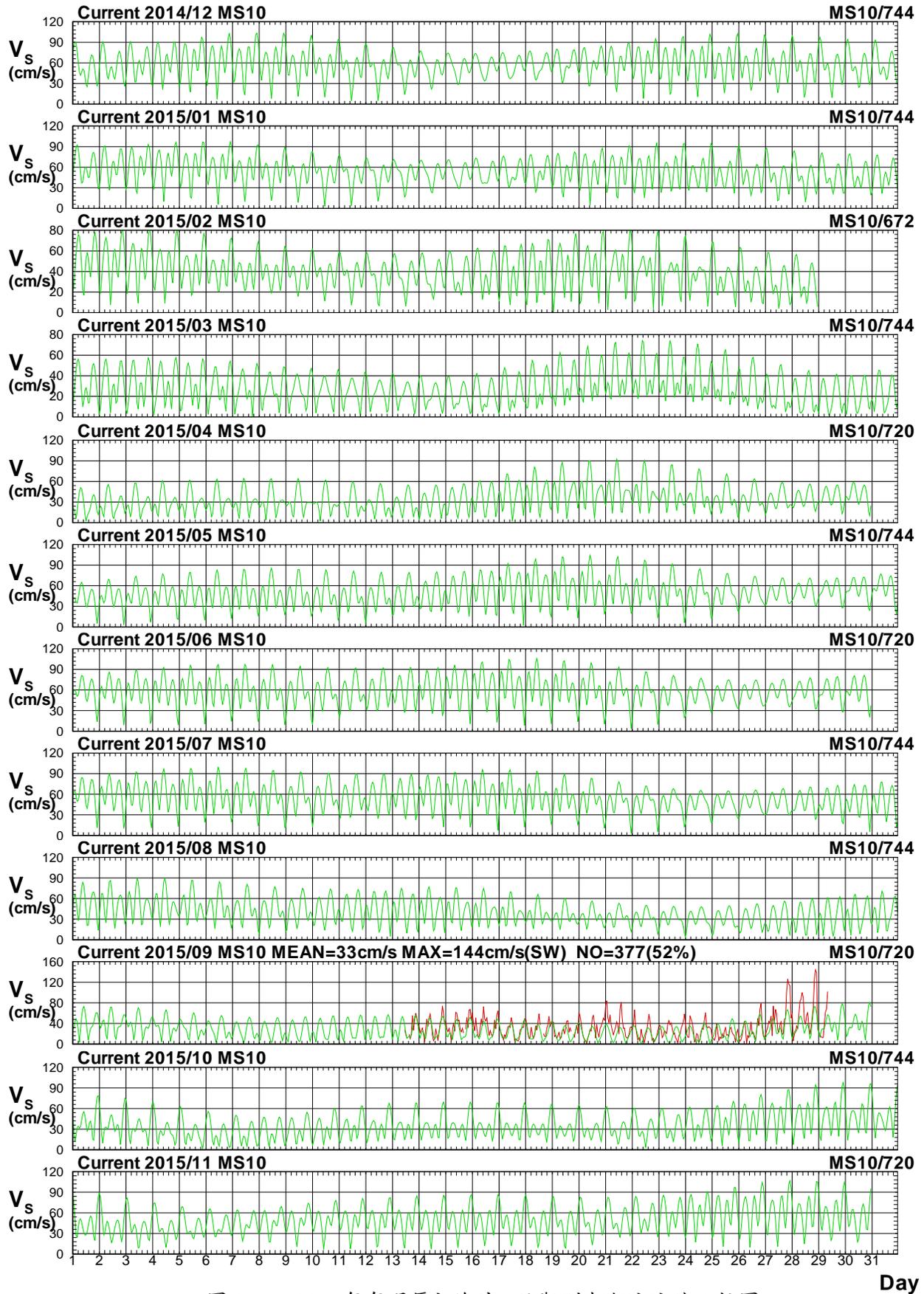


圖 4.5a 2015年每月馬祖海域1站觀測與潮流流速比較圖

C14CMS10.1H0 C14CMS10.1HD C151MS10.1H0 C151MS10.1HD C152MS10.1H0 C152MS10.1HD
 C153MS10.1H0 C153MS10.1HD C154MS10.1H0 C154MS10.1HD C155MS10.1H0 C155MS10.1HD

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Current Direction in Ma-Tsu Seas of MS10 at 2015

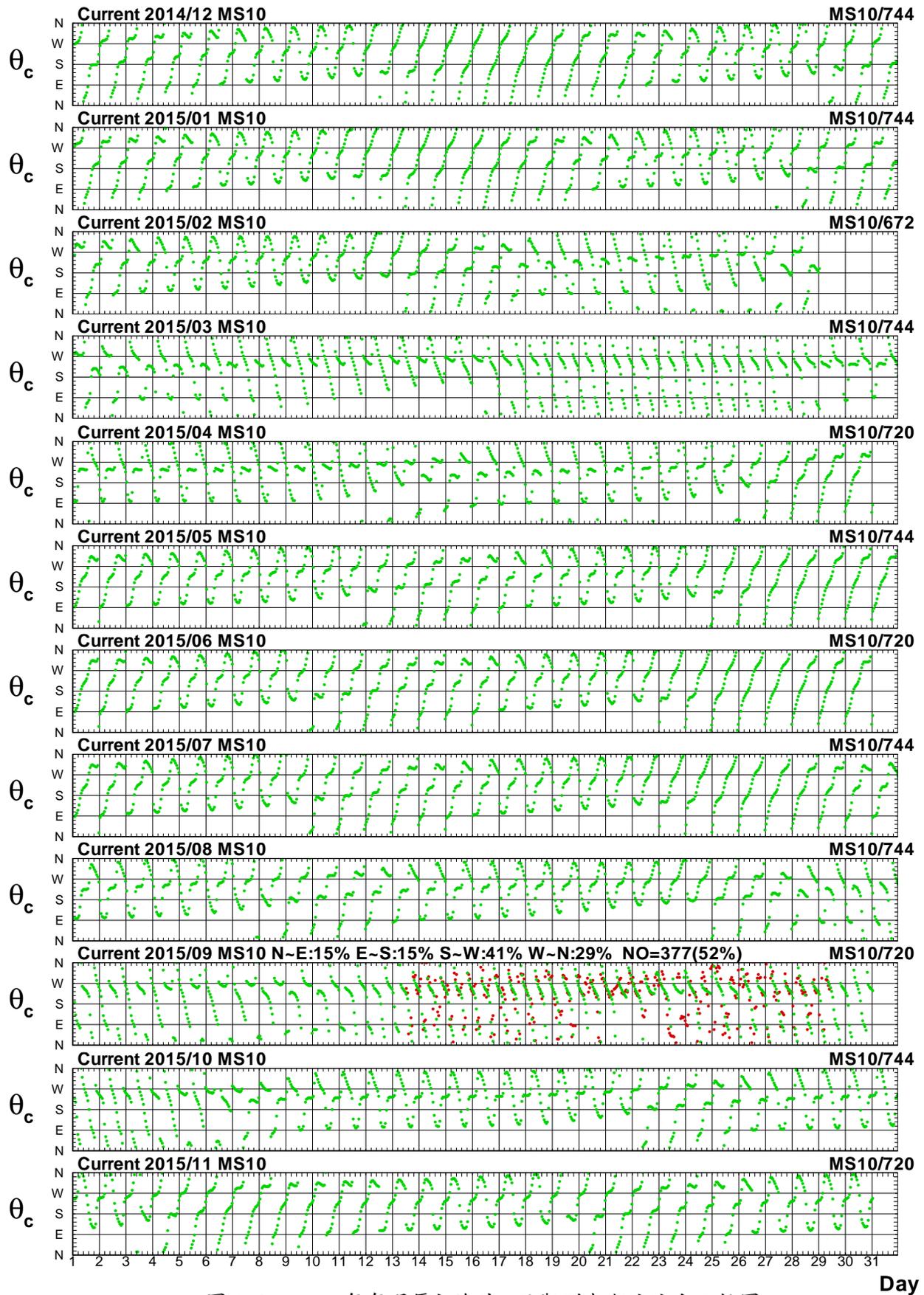


圖 4.5b 2015年每月馬祖海域1站觀測與潮流流向比較圖

C14CMS10.1H0 C14CMS10.1HD C151MS10.1H0 C151MS10.1HD C152MS10.1H0 C152MS10.1HD
 C153MS10.1H0 C153MS10.1HD C154MS10.1H0 C154MS10.1HD C155MS10.1H0 C155MS10.1HD

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Current Speed in Ma-Tsu Seas of MS10 at 2015

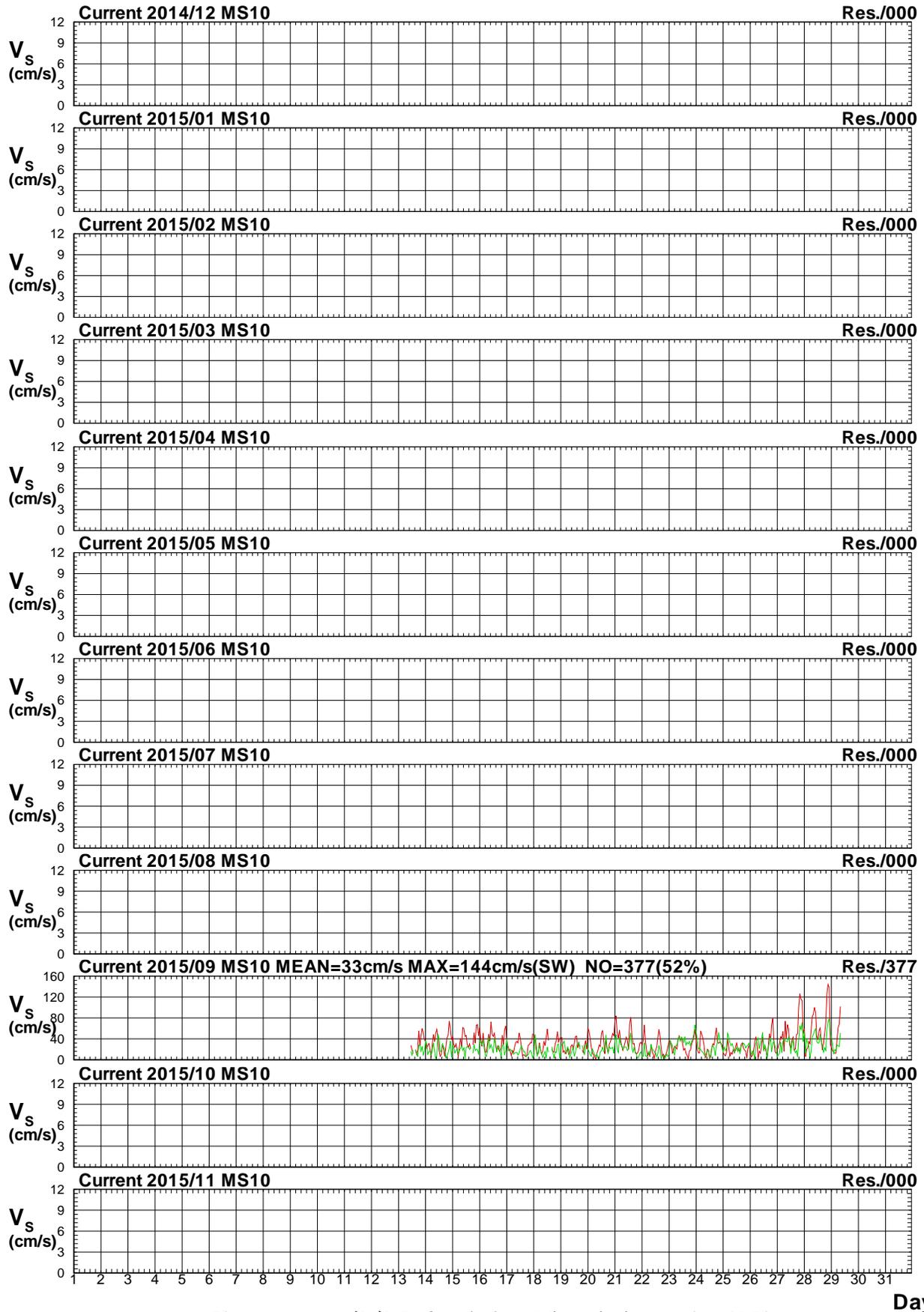


圖 4.6a 2015年每月馬祖海域1站觀測與非潮流速比較圖

C14CMS10.1H0 C14CMS10.1HR C151MS10.1H0 C151MS10.1HR C152MS10.1H0 C152MS10.1HR
 C153MS10.1H0 C153MS10.1HR C154MS10.1H0 C154MS10.1HR C155MS10.1H0 C155MS10.1HR

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Current Direction in Ma-Tsu Seas of MS10 at 2015

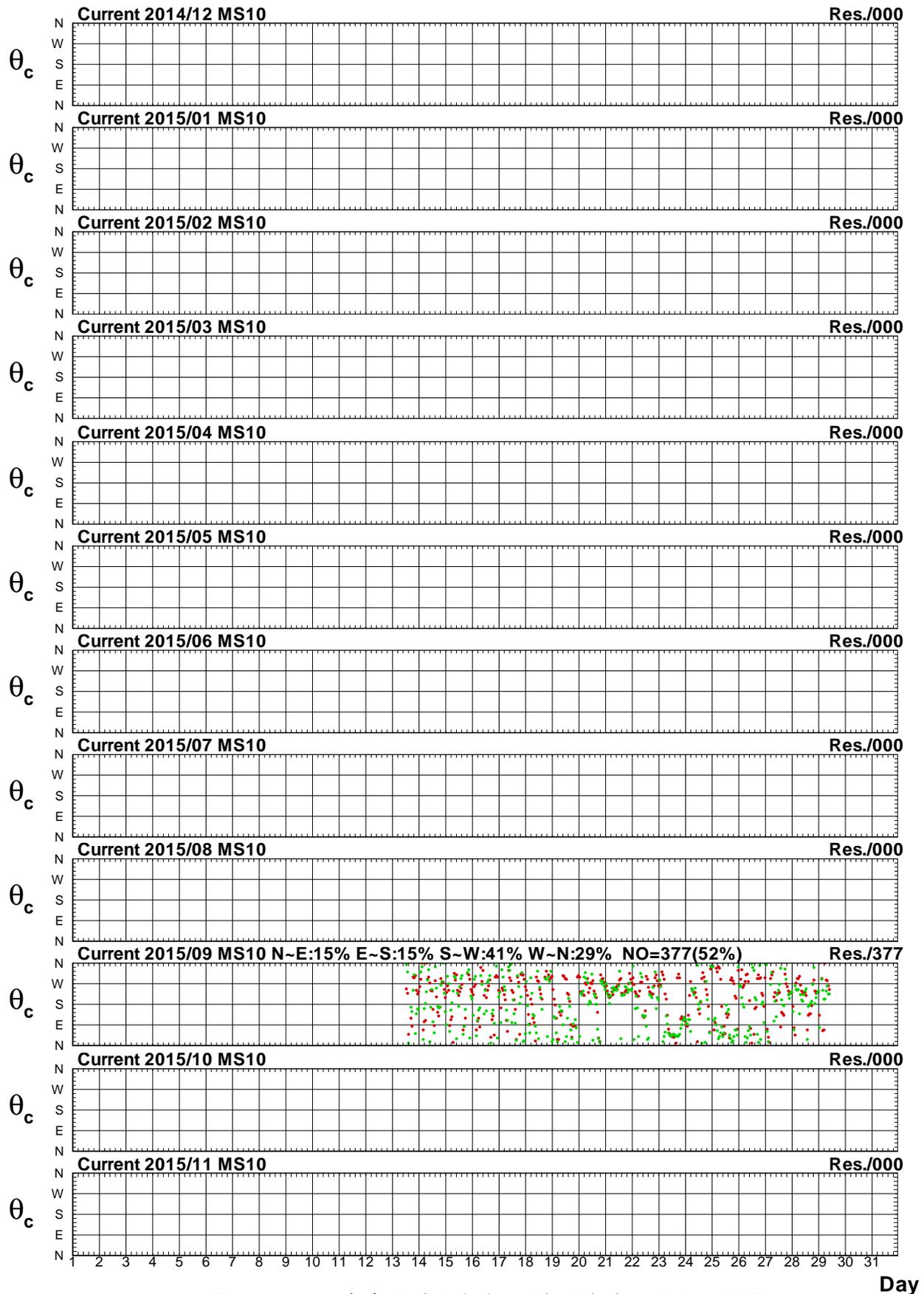


圖 4.6b 2015年每月馬祖海域1站觀測與非潮流向比較圖

C14CMS10.1H0 C14CMS10.1HR C151MS10.1H0 C151MS10.1HR C152MS10.1H0 C152MS10.1HR
 C153MS10.1H0 C153MS10.1HR C154MS10.1H0 C154MS10.1HR C155MS10.1H0 C155MS10.1HR

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Current Speed in Ma-Tsu Seas of MS20 at 2015

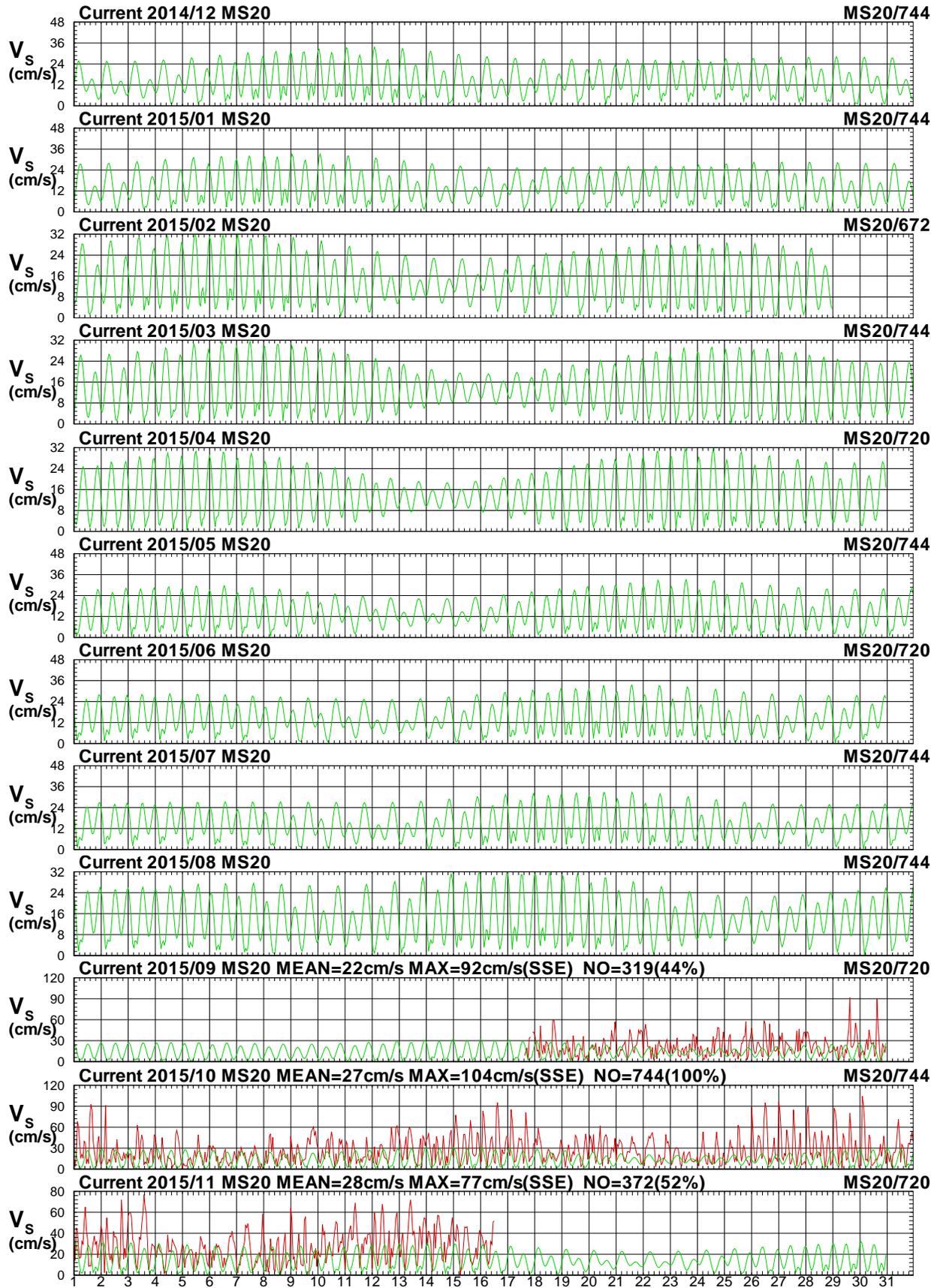


圖 4.7a 2015年每月馬祖海域2站觀測與潮流流速比較圖

C14CMS20.1H0 C14CMS20.1HD C151MS20.1H0 C151MS20.1HD C152MS20.1H0 C152MS20.1HD
 C153MS20.1H0 C153MS20.1HD C154MS20.1H0 C154MS20.1HD C155MS20.1H0 C155MS20.1HD

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Current Direction in Ma-Tsu Seas of MS20 at 2015

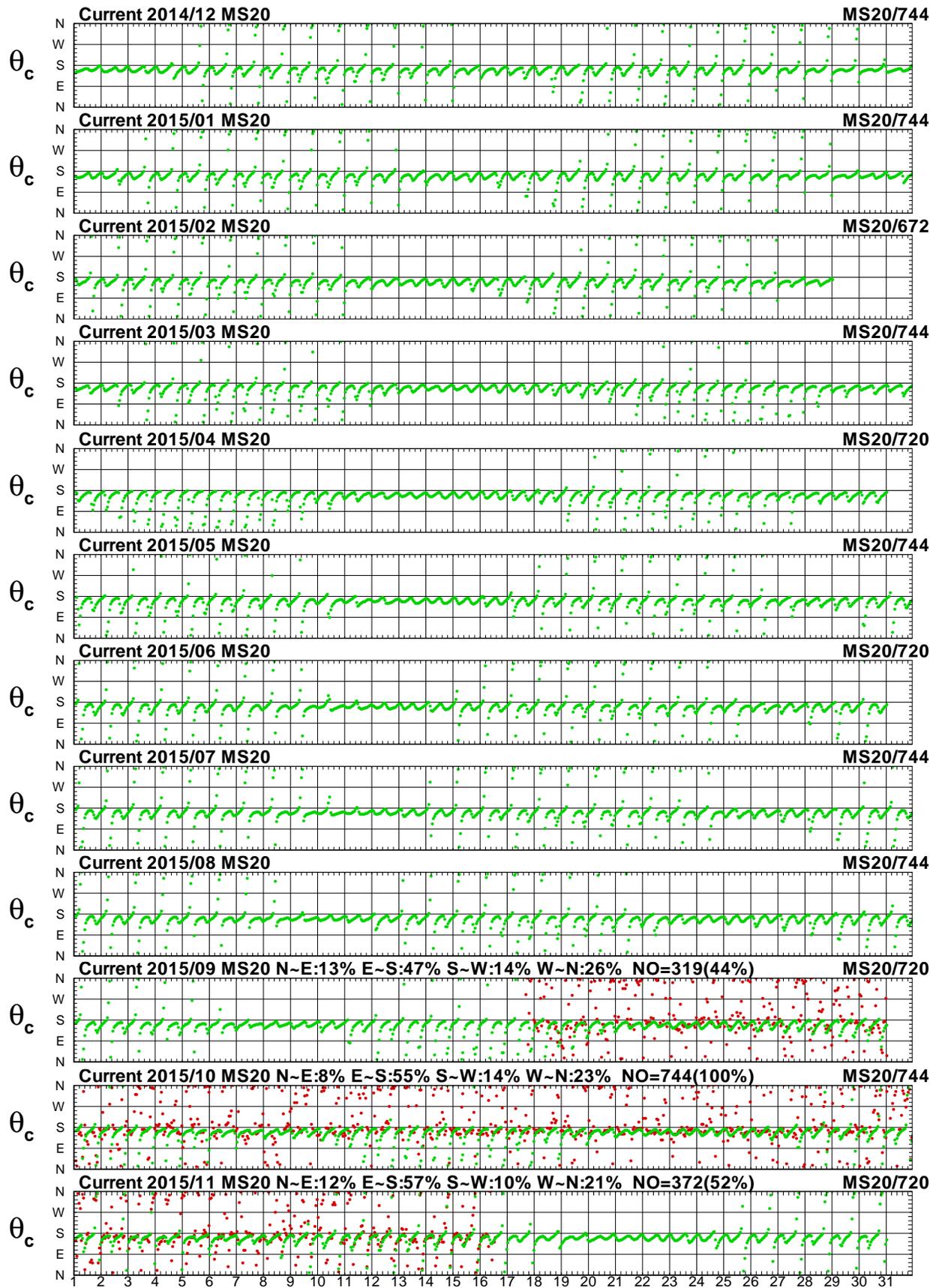


圖 4.7b 2015年每月馬祖海域2站觀測與潮流流向比較圖

C14CMS20.1H0 C14CMS20.1HD C151MS20.1H0 C151MS20.1HD C152MS20.1H0 C152MS20.1HD
 C153MS20.1H0 C153MS20.1HD C154MS20.1H0 C154MS20.1HD C155MS20.1H0 C155MS20.1HD

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Current Speed in Ma-Tsu Seas of MS20 at 2015

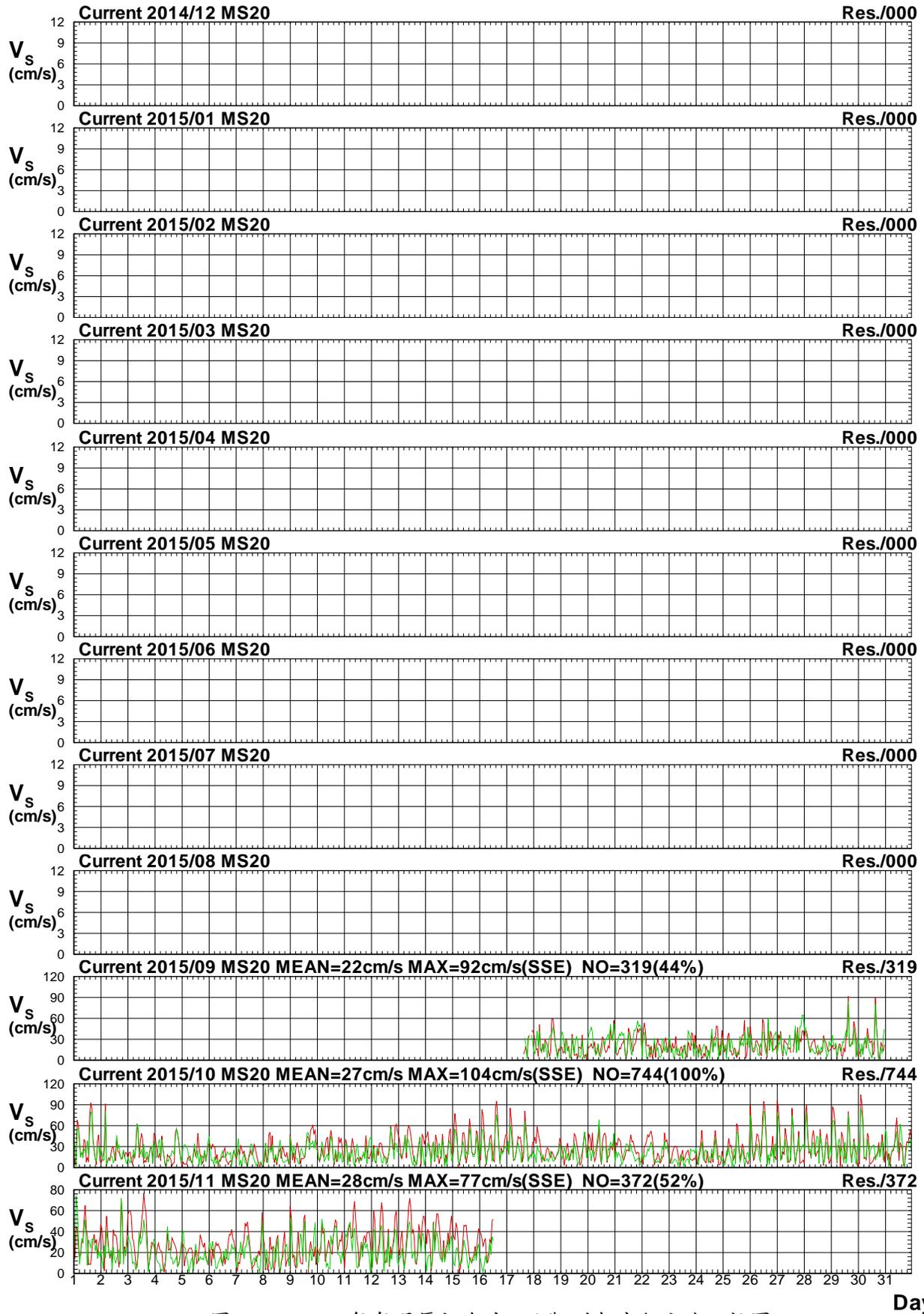


圖 4.8a 2015年每月馬祖海域2站觀測與非潮流速比較圖

C14CMS20.1H0 C14CMS20.1HR C151MS20.1H0 C151MS20.1HR C152MS20.1H0 C152MS20.1HR
 C153MS20.1H0 C153MS20.1HR C154MS20.1H0 C154MS20.1HR C155MS20.1H0 C155MS20.1HR

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Current Direction in Ma-Tsu Seas of MS20 at 2015

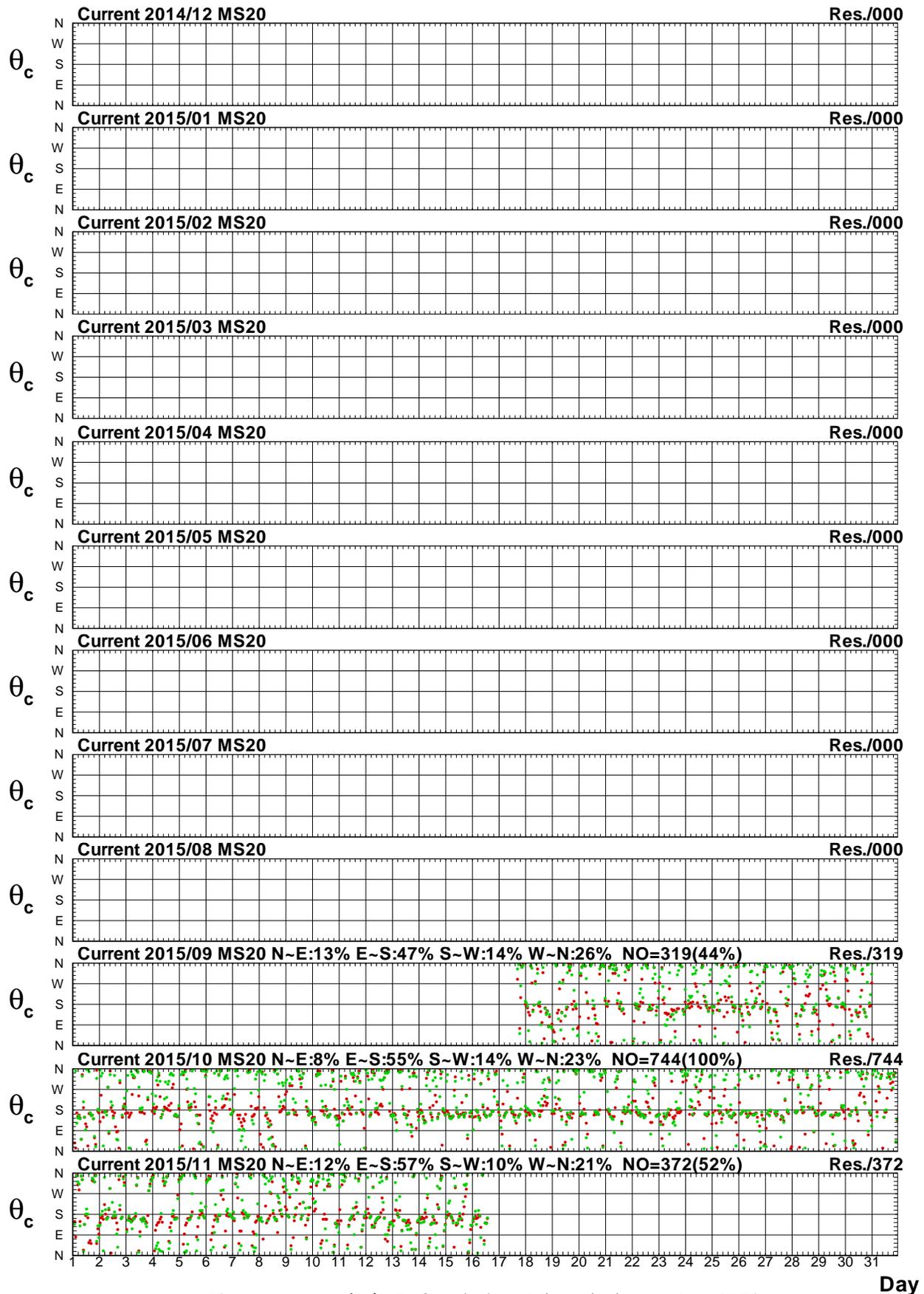


圖 4.8b 2015年每月馬祖海域2站觀測與非潮流向比較圖

C14CMS20.1H0 C14CMS20.1HR C151MS20.1H0 C151MS20.1HR C152MS20.1H0 C152MS20.1HR
 C153MS20.1H0 C153MS20.1HR C154MS20.1H0 C154MS20.1HR C155MS20.1H0 C155MS20.1HR

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Current Speed in Ma-Tsu Seas of MS30 at 2015

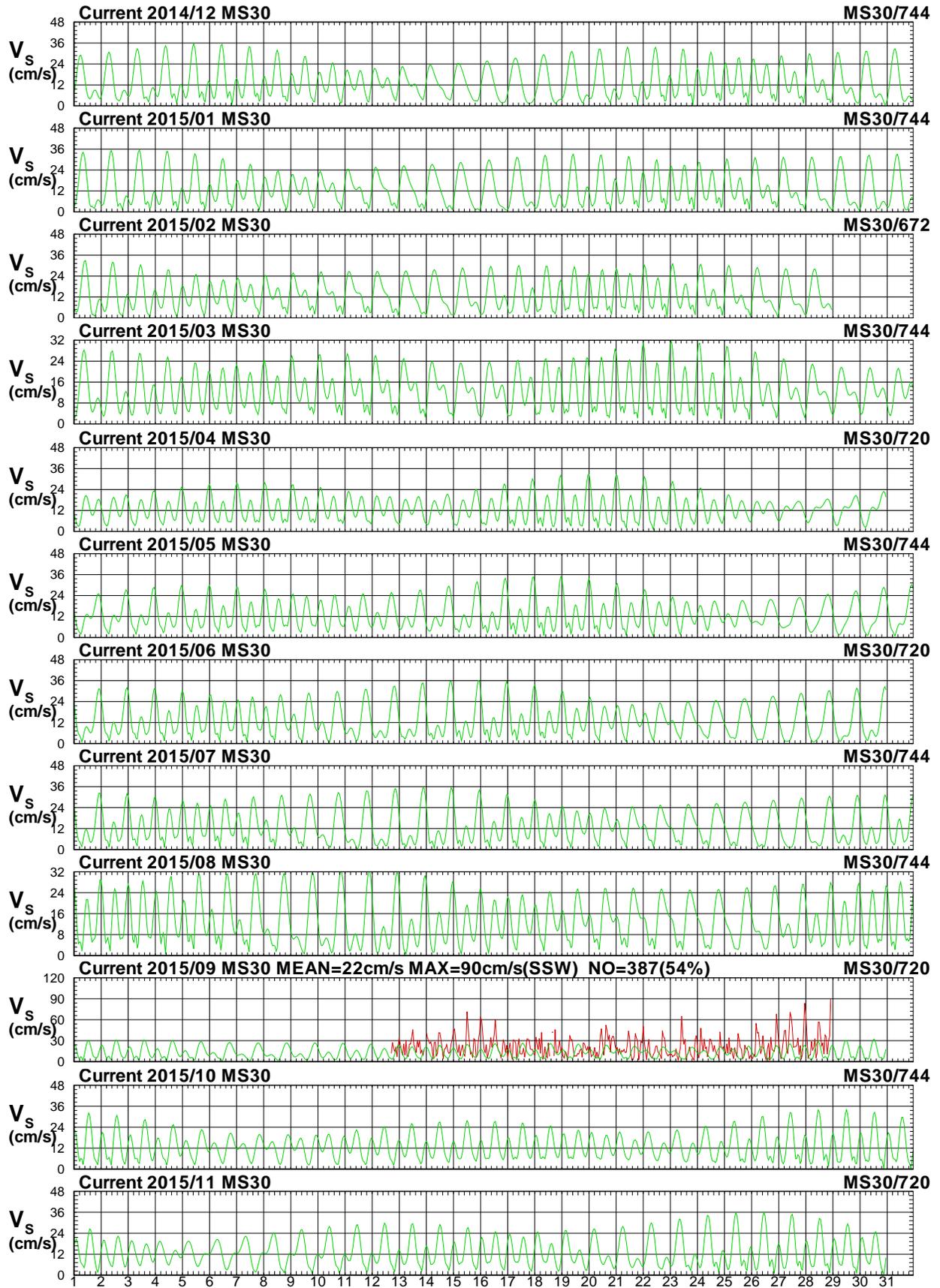


圖 4.9a 2015年每月馬祖海域3站觀測與潮流流速比較圖

C14CMS30.1H0 C14CMS30.1HD C151MS30.1H0 C151MS30.1HD C152MS30.1H0 C152MS30.1HD
 C153MS30.1H0 C153MS30.1HD C154MS30.1H0 C154MS30.1HD C155MS30.1H0 C155MS30.1HD

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Current Direction in Ma-Tsu Seas of MS30 at 2015

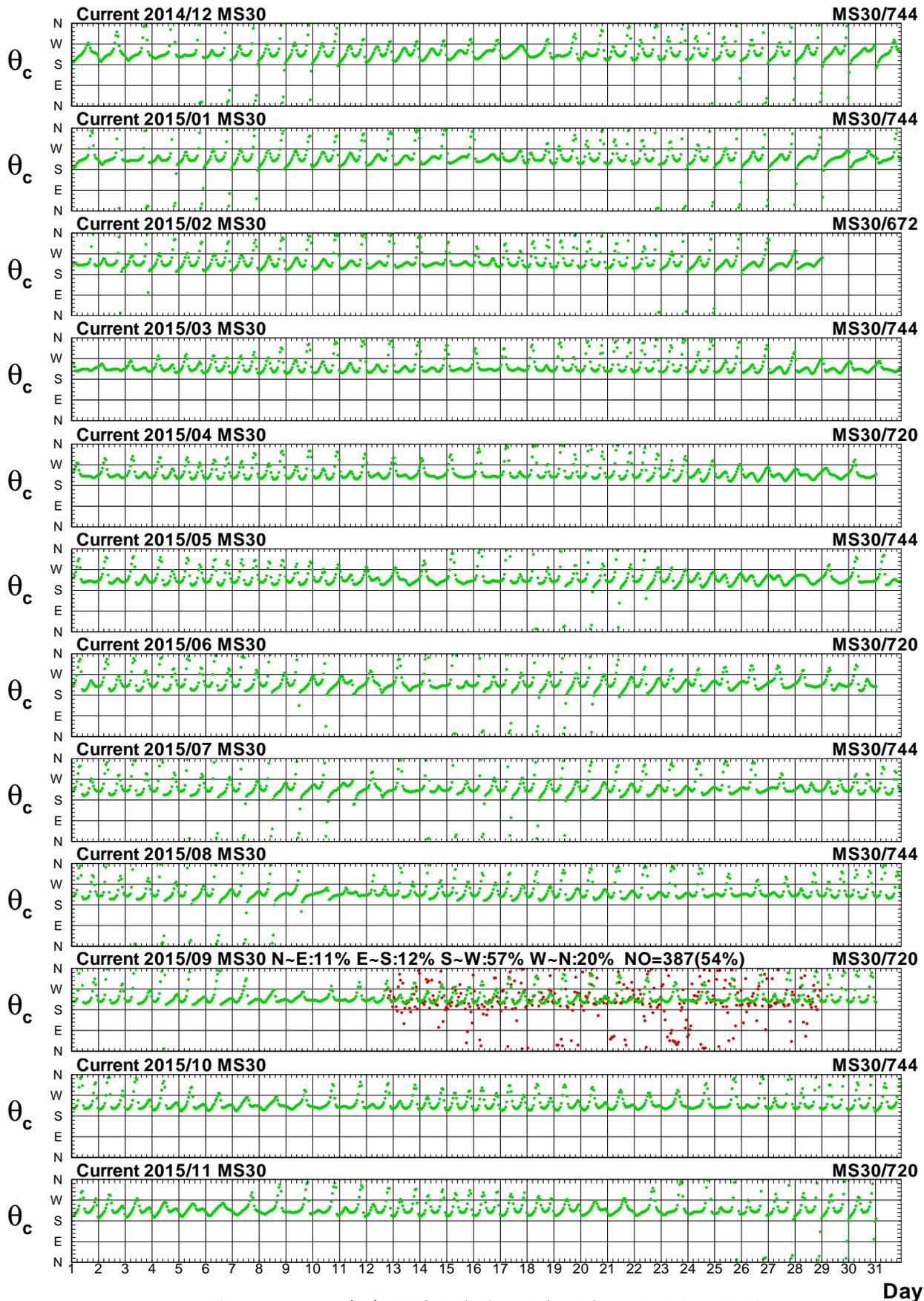


圖 4.9b 2015年每月馬祖海域3站觀測與潮流流向比較圖

C14CMS30.1H0 C14CMS30.1HD C151MS30.1H0 C151MS30.1HD C152MS30.1H0 C152MS30.1HD
 C153MS30.1H0 C153MS30.1HD C154MS30.1H0 C154MS30.1HD C155MS30.1H0 C155MS30.1HD

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Current Speed in Ma-Tsu Seas of MS30 at 2015

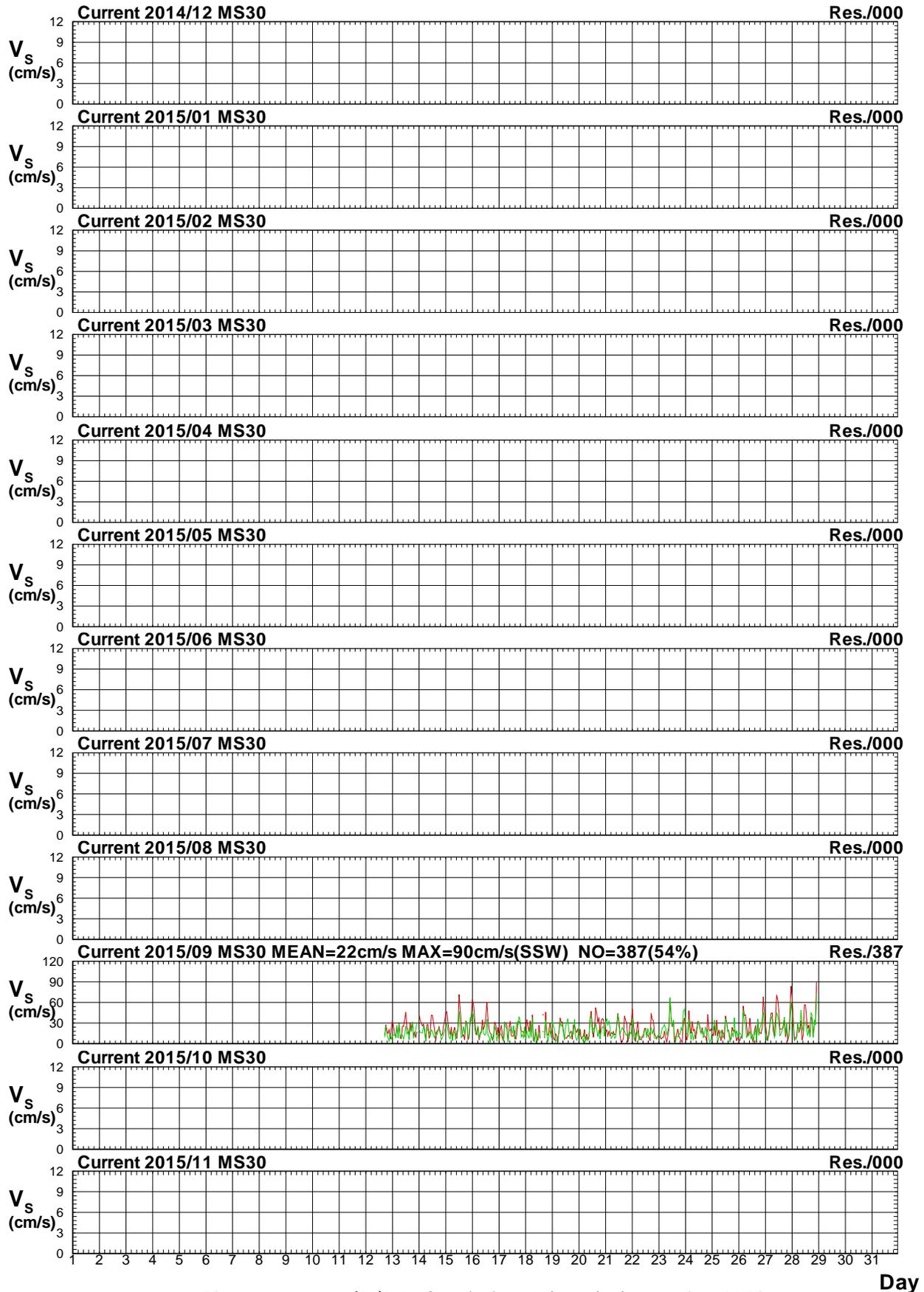


圖 4.10a 2015年每月馬祖海域3站觀測與非潮流速比較圖

C14CMS30.1H0 C14CMS30.1HR C151MS30.1H0 C151MS30.1HR C152MS30.1H0 C152MS30.1HR
 C153MS30.1H0 C153MS30.1HR C154MS30.1H0 C154MS30.1HR C155MS30.1H0 C155MS30.1HR

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Current Direction in Ma-Tsu Seas of MS30 at 2015

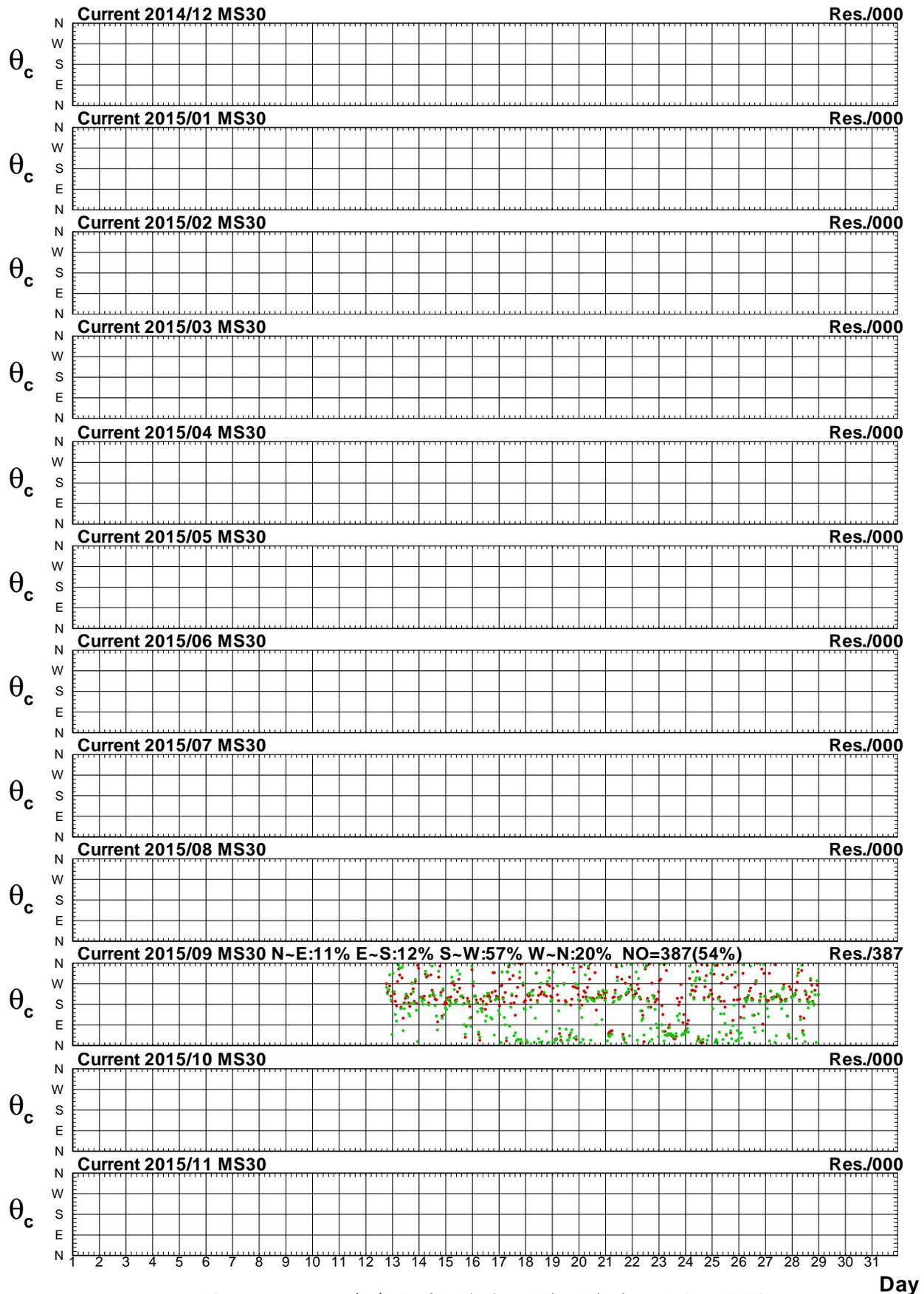


圖 4.10b 2015年每月馬祖海域3站觀測與非潮流向比較圖

C14CMS30.1H0 C14CMS30.1HR C151MS30.1H0 C151MS30.1HR C152MS30.1H0 C152MS30.1HR
 C153MS30.1H0 C153MS30.1HR C154MS30.1H0 C154MS30.1HR C155MS30.1H0 C155MS30.1HR

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Current Speed in Ma-Tsu Seas of MSX0 at 2015

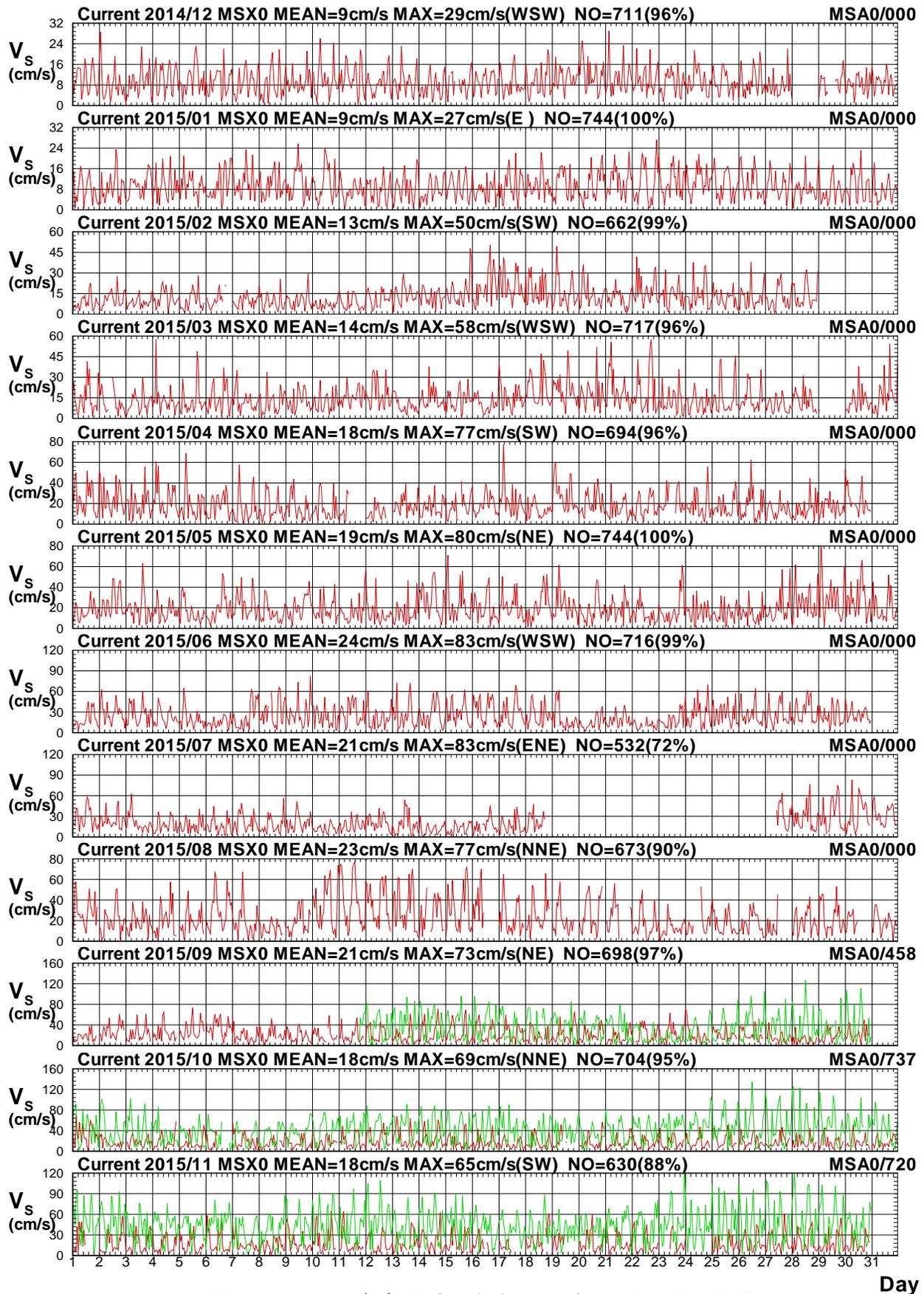


圖 4.11a 2015年每月馬祖海域 X 站與 A 站流速比較圖

C14CMSX0.1H0 C14CMSA0.1H0 C151MSX0.1H0 C151MSA0.1H0 C152MSX0.1H0 C152MSA0.1H0
 C153MSX0.1H0 C153MSA0.1H0 C154MSX0.1H0 C154MSA0.1H0 C155MSX0.1H0 C155MSA0.1H0

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Current Direction in Ma-Tsu Seas of MSX0 at 2015

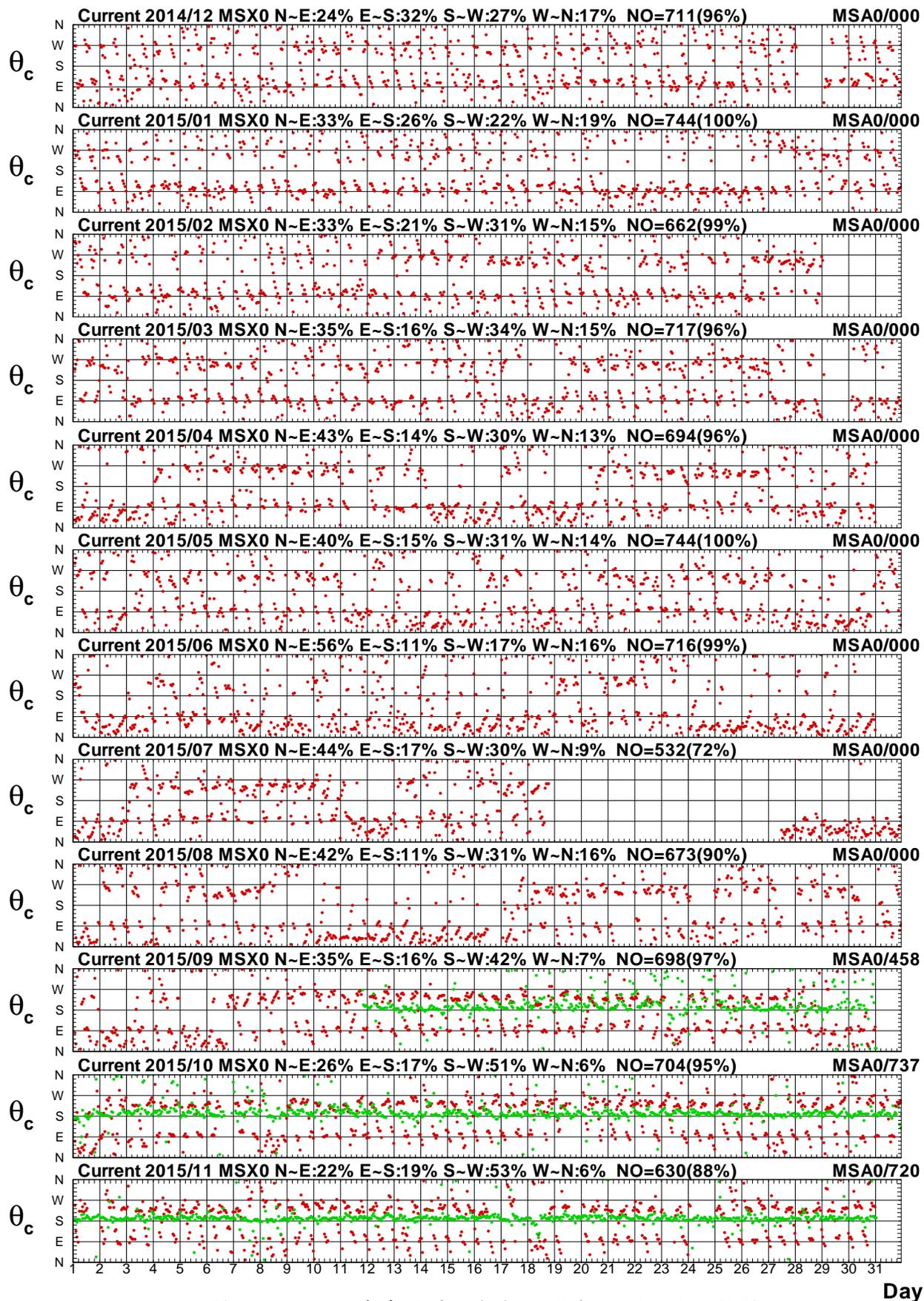


圖 4.11b 2015年每月馬祖海域 X 站與 A 站流向比較圖

C14CMSX0.1H0 C14CMSA0.1H0 C151MSX0.1H0 C151MSA0.1H0 C152MSX0.1H0 C152MSA0.1H0
 C153MSX0.1H0 C153MSA0.1H0 C154MSX0.1H0 C154MSA0.1H0 C155MSX0.1H0 C155MSA0.1H0

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Current Speed in Ma-Tsu Seas of MSX0 at 2015

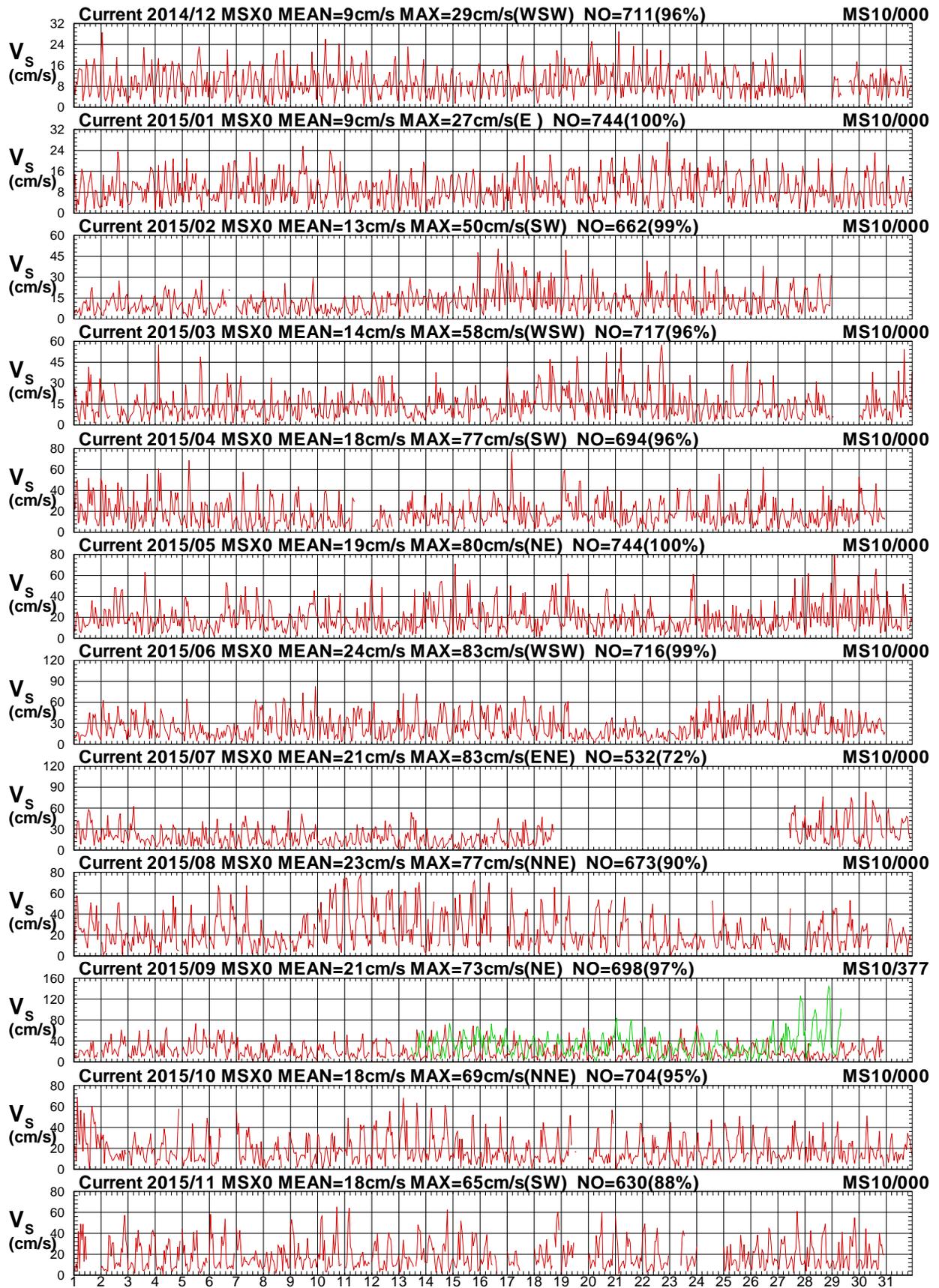


圖 4.12a 2015 年每月馬祖海域 X 站與 1 站流速比較圖

C14CMSX0.1H0 C14CMS10.1H0 C151MSX0.1H0 C151MS10.1H0 C152MSX0.1H0 C152MS10.1H0
 C153MSX0.1H0 C153MS10.1H0 C154MSX0.1H0 C154MS10.1H0 C155MSX0.1H0 C155MS10.1H0

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Current Direction in Ma-Tsu Seas of MSX0 at 2015

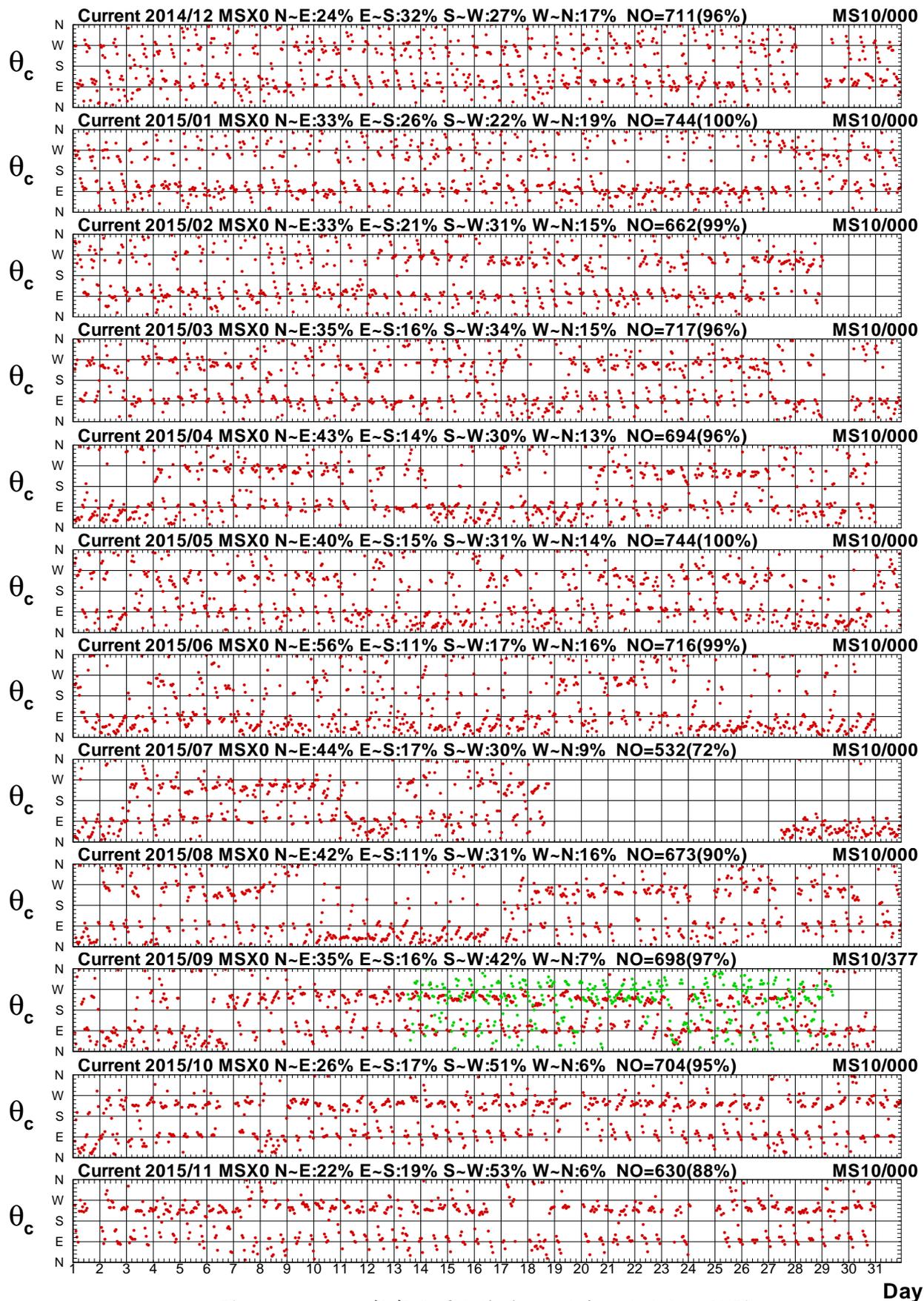


圖 4.12b 2015 年每月馬祖海域 X 站與 1 站流向比較圖

C14CMSX0.1H0 C14CMS10.1H0 C151MSX0.1H0 C151MS10.1H0 C152MSX0.1H0 C152MS10.1H0
 C153MSX0.1H0 C153MS10.1H0 C154MSX0.1H0 C154MS10.1H0 C155MSX0.1H0 C155MS10.1H0

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