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2019 年港灣環境資訊網

海氣象觀測資料年報

(宜蘭海域風浪潮流觀測資料)



交通部運輸研究所

中華民國 110 年 2 月

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著者：蔣敏玲、蘇青和、李俊穎、傅怡釗、
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摘要： 本港灣環境資訊網觀測海氣象資料年報，包括宜蘭海域2019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。			
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2019 年港灣環境資訊網觀測風力資料，蒐集之宜蘭海域風力資料，除本中心自行觀測之外，在蘇澳氣象站(測站 E 及 F)、宜蘭氣象站(測站 H)等，係交通部 中央氣象局(CWB)提供;蘇澳海上浮標(測站 Y)觀測風力資料，係經濟部 水利署(WRA)提供;福隆海上浮標(測站 R)觀測風力資料，係 國立成功大學水文中心(COMC)裝設；龜山島外海浮標站(測站 Z)之風速儀屬 觀光局東北角管理處(TBRC)所設置，謹致謝忱。

2019 年港灣環境資訊網觀測波浪資料，蒐集之宜蘭海域波浪資料，除本中心自行觀測之外，在蘇澳海上浮標(測站 Y)觀測波浪資料，係經濟部 水利署(WRA)提供;福隆海上浮標(測站 R)觀測波浪儀，係 國立成功大學水文中心(COMC)裝設；龜山島外海浮標站(測站 Z)之波浪儀屬 觀光局東北角管理處(TBRC)所設置，謹致謝忱。

2019 年港灣海氣象觀測潮汐資料，蒐集之宜蘭海域潮汐觀測資料，除本中心自行觀測之外，在蘇澳港(測站 F 及測站 P)、烏石(測站 J)、福隆(測站 K)等觀測潮汐資料，係交通部 中央氣象局 提供，謹致謝忱。

2019 年港灣環境資訊網觀測海流資料，蒐集之宜蘭海域海流資料，除本中心自行觀測之外，在蘇澳海上浮標(測站 Y)觀測海流資料，係經濟部 水利署(WRA)提供，謹致謝忱。

第 0 章 宜蘭海域觀測風浪潮流資料蒐集

本年報將彙整包括本所港研中心(IHMT)、氣象局(CWB)、水利署(WRA)、成功大學水文中心(COMC)、國立臺灣海洋大學(NTOC)、海科中心(TORI)、觀光局東北角管理處(TBRC)、台灣中油(CPC)等單位，於臺灣北苗海域、北端海域、宜蘭海域、花蓮海域、臺東海域、屏東海域、高雄海域、嘉南海域、中雲海域、澎湖海域、金門海域及馬祖海域等 12 個海域，海域區分如附圖 A1。

宜蘭海域觀測風力資料測站統計表如表 WS1，觀測波浪資料測站統計表如表 VS1，觀測潮汐資料測站統計表如表 TS1，觀測海流資料測站統計表如表 CS1。

表 WS1 宜蘭海域觀測風力資料測站統計表

海域名稱	測站總數	IHMT 測站	CWB 測站	WRA 測站	其他 測站	備註
宜蘭海域	7	1	3	1	2	

表 VS1 宜蘭海域觀測波浪資料測站統計表

海域名稱	測站總數	IHMT 測站	CWB 測站	WRA 測站	其他 測站	備註
宜蘭海域	4	1	0	1	2	

表 TS1 宜蘭海域觀測潮汐資料測站統計表

海域名稱	測站總數	IHMT 測站	CWB 測站	WRA 測站	其他 測站	備註
宜蘭海域	8	3	5	0	0	

表 CS1 宜蘭海域觀測海流資料測站統計表

海域名稱	測站總數	IHMT 測站	CWB 測站	WRA 測站	其他 測站	備註
宜蘭海域	2	1	0	1	0	

註：資料更新時間為 2019 年。

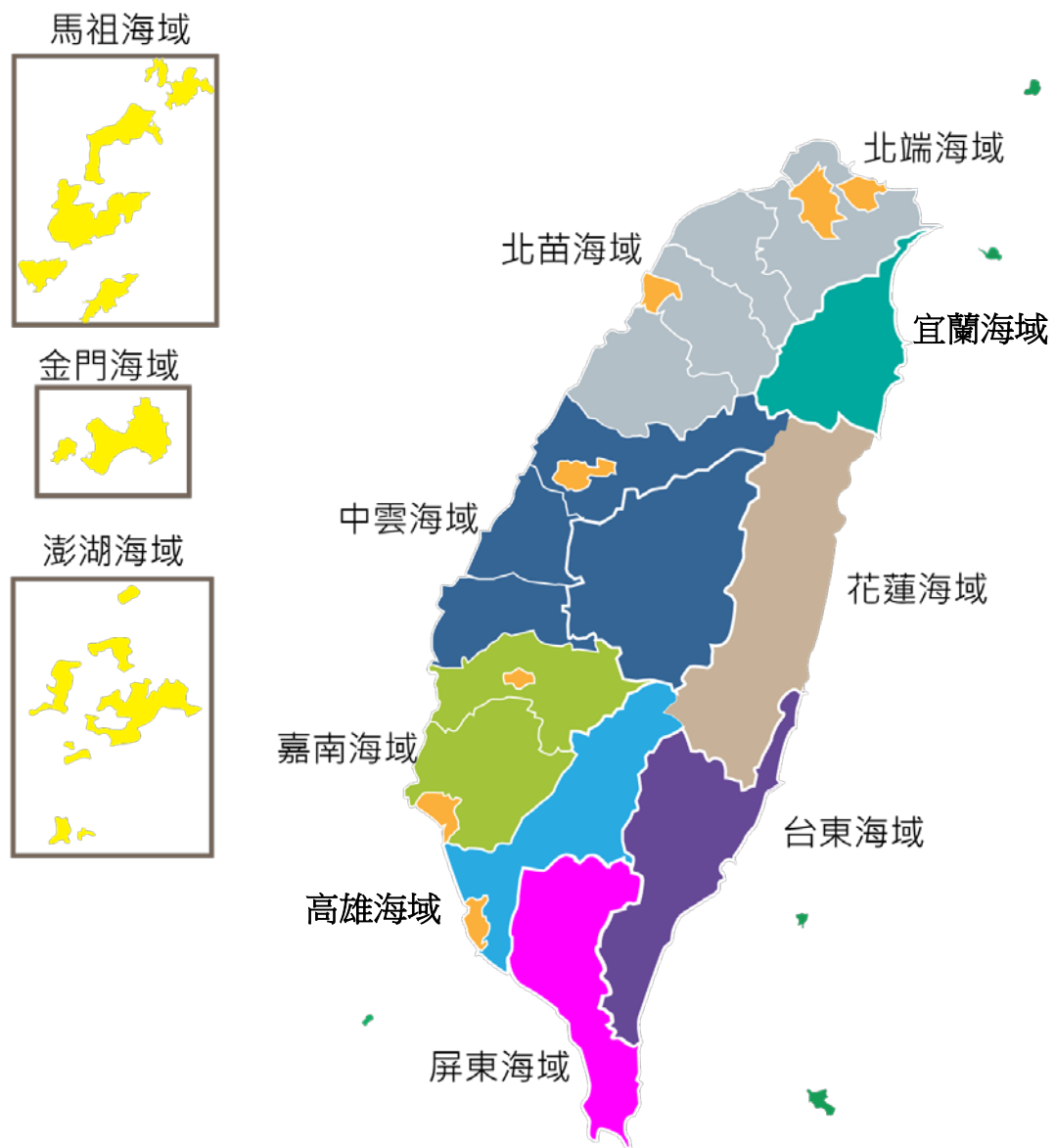


圖 A1 臺灣 12 海域區分示意圖

2019 年宜蘭海域觀測風力資料

宜蘭海域風之觀測係 2003 年 6 月本所港研中心(IHMT)於蘇澳港安裝一具風速風向即時傳送監測系統(稱測站 W)，其位置如附圖 WS1，2012 年 10 月更新為 Gill 二維超音波式風速計。測站 E、測站 F 及測站 H 之風速儀屬中央氣象局所有，測站 Y(蘇澳外海浮標站)之風速儀屬水利署(WRA)所有，測站 Z(龜山島外海浮標站)之風速儀屬觀光局東北角管理處(TBRC)所設置。福隆海上浮標(測站 R)觀測風力，係國立成功大學水文中心(COMC)所裝設。

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 WS1。

表 WS1 宜蘭海域觀測風力資料蒐集概況表(統計時間至 2019 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
W	24°35'33"N	121°51'01"E	2003/06-2019/11(觀測中)	港研中心	蘇澳港區
E	24°35'48"N	121°51'26"E	1999/01-2019/11(觀測中)	中央氣象局	蘇澳
Y	24°37'38"N	121°52'36"E	1999/09-2019/11(觀測中)	水利署	蘇澳浮標站
Z	24°50'52"N	121°55'39"E	2002/05-2019/11(觀測中)	觀光局	龜山島浮標站
H	24°45'56"N	121°44'53"E	2013/11-2019/11(觀測中)	中央氣象局	宜蘭
R	22°18'50"N	120°21'50"E	2006/04-2008/02	水文中心	福隆浮標站
F	24°35'33"N	121°51'56"E	2015/04-2019/11(觀測中)	中央氣象局	蘇澳

宜蘭海域

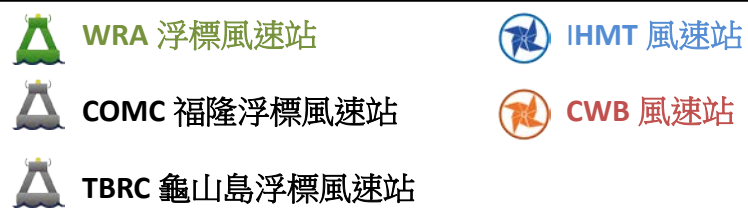


圖 WS1 宜蘭海域風力觀測站位置示意圖

2019 年宜蘭海域觀測波浪資料

宜蘭海域波浪之觀測本中心(IHMT)於 2002 年 7 月 19 日於蘇澳港外約 700m 附近(稱測站 X)，水深約 25 公尺處設置挪威 NORTEK 公司之剖面海流與表面波浪(波高、週期及波向)即時傳送監測系統(簡稱 AWAC)波浪觀測站，其位置如附圖 VS1。

測站 Y(蘇澳外海浮標站)之波浪儀屬水利署(WRA)所有，測站 Z(龜山島外海浮標站)之波浪儀屬觀光局東北角管理處(TBRC)所設置。福隆海上浮標(測站 R)觀測風力，係國立成功大學水文中心(COMC)所裝設。蘇澳海域各測站歷年觀測波浪資料蒐集概況如表 VS1。

波浪觀測 AWAC 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。AWAC 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。

表 VS1 宜蘭海域觀測波浪資料蒐集概況表(統計時間至 2019 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	24°35'23"N	121°53'07"E	2002/08-2019/11(觀測中)	港研中心	AWAC 蘇澳港
Y	24°37'38"N	121°52'36"E	1999/09-2019/11(觀測中)	水利署	蘇澳浮標站
Z	24°50'52"N	121°55'39"E	2002/05-2019/11(觀測中)	觀光局	龜山島浮標站
R	22°18'50"N	120°21'50"E	2006/04-2008/08	水文中心	福隆浮標站

宜蘭海域



IHMT 波潮流站



WRA 浮標波浪站



COMC 福隆浮標波浪站



TBRC 龜山島浮標波浪站



圖 VS1 宜蘭海域波浪觀測站位置示意圖

2019 年宜蘭海域觀測潮汐資料

宜蘭海域潮汐之觀測係本中心於 2003 年 6 月本中心在蘇澳港(稱**測站 T**)安裝一具壓力式潮位儀監測系統，如附圖 TS1。另於 2002 年 7 月，在蘇澳港港口外 700 公尺水深約 25 公尺處(**測站 X**) 安置 AWAC 即時傳送監測系統，也具量測水位功能。2018 年於蘇澳港內增設即時水深潮位站(稱**測站 G**)。蘇澳港潮位站(**測站 F** 及 **測站 P**)、烏石潮位站(**測站 J**)及福隆潮位站(**測站 K** 及 **測站 Q**)由中央氣象局設置。各測站歷年觀測潮汐資料蒐集概況如表 TS1。

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。其他潮位資料由中央氣象局提供。

表 TS1 宜蘭海域觀測潮汐資料蒐集概況表(統計時間至 2019 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
T	24°35'33"N	121°51'56"E	2003/06-2019/11(觀測中)	港研中心	蘇澳港潮位計
X	24°35'23"N	121°53'07"E	2002/08-2019/11(觀測中)	港研中心	AWAC
F	24°35'33"N	121°51'56"E	1981/01-2019/11(觀測中)	中央氣象局	蘇澳港潮位站
J	24°52'07"N	121°50'17"E	2013/12-2019/11(觀測中)	中央氣象局	烏石潮位站
K	24°01'18"N	121°57'00"E	2013/12-2019/11(觀測中)	中央氣象局	福隆潮位站
P	24°35'24"N	121°52'12"E	2017/07-2019/11(觀測中)	中央氣象局	蘇澳潮位站
G	24°35'43" N	121°51'37" E	2018/10-2019/11(觀測中)	港研中心	蘇澳港潮位站
Q	25°01'18" N	121°57'00" E	2019/10-2019/11(觀測中)	中央氣象局	福隆潮位站

宜蘭海域



圖 TS1 宜蘭海域潮汐觀測站位置示意圖

2019 年宜蘭海域觀測海流資料

宜蘭海域海流之觀測本中心於 2002 年 7 月 19 日於蘇澳港外約 700m 附近(稱**測站 X**)，水深約 25 公尺處設置挪威 NORTEK 公司之剖面海流與表面波浪(波高、週期及波向)即時傳送監測系統(簡稱 AWAC)海流觀測站，其位置如附圖 CS1。

測站 Y(蘇澳外海浮標站)之海流儀屬水利署所有，各測站歷年觀測海流資料蒐集概況如表 CS1。

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，蘇澳港觀測站水深間距設定為 1 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。

表 CS1 宜蘭海域觀測海流資料蒐集概況表(統計時間至 2019 年 11 月)

測站	緯度	經度	觀測期間	觀測單位	備註
X	24°35'23"N	121°53'07"E	2002/08-2019/11(觀測中)	港研中心	AWAC 蘇澳港
Y	24°37'38"N	121°52'36"E	1999/09-2019/11(觀測中)	水利署	蘇澳浮標站

宜蘭海域



圖 CS1 宜蘭海域海流觀測站位置示意圖

第一章 2018 年宜蘭海域觀測風力資料

宜蘭海域歷年風之觀測包括測站 **W**、測站 **Y**、測站 **E**、測站 **F**、測站 **Z** 及測站 **H** 等 6 個測站(測站位置如第 0 章圖 WS1，各測站歷年觀測風資料蒐集概況如表 WS1)。本年報取經檢核及補遺之 **W** 站資料作為主要測站 1，**Y** 站資料作為主要測站 2。

1.1 2018 年宜蘭海域觀測風力資料年報圖表

本章第 1 節**風力**年報資料處理之圖表包括：

1. 表 1.1.1a 2018 年**各觀測站**每月**觀測風力**資料**修補前**記錄表。
2. 表 1.1.1b 2018 年**主要測站**每月**觀測風力**資料**修補後**記錄表。
3. 表 1.1.2 2018 年**主要測站 1****修補後**每月(季)及整年風速及風向重要統計量統計表。
4. 表 1.1.3 2018 年**主要測站 2****修補後**每月(季)及整年風速及風向重要統計量統計表。
5. 圖 1.1.1a 2018 年**主要測站 1****修補前後**每月風速歷線比較圖。
6. 圖 1.1.1b 2018 年**主要測站 1****修補前後**每月風向歷線比較圖。
7. 圖 1.1.2a 2018 年**主要測站 2****修補前後**每月風速歷線比較圖。
8. 圖 1.1.2b 2018 年**主要測站 2****修補前後**每月風向歷線比較圖。
9. 圖 1.1.3 2018 年**主要測站 1****修補後**每月風力向量分佈圖。
10. 圖 1.1.4 2018 年**主要測站 2****修補後**每月風力向量分佈圖。
11. 圖 1.1.5 2018 年**主要測站 1****修補後**每月風力向量行進圖。
12. 圖 1.1.6 2018 年**主要測站 2****修補後**每月風力向量行進圖。

第 2 節風力年報資料處理之統計表包括：2018 年宜蘭海域**各測站****修補前**每月(季)及整年風速及風向重要統計量統計表。

第 3 節風力年報資料處理之統計圖包括：2018 年宜蘭海域**主要測站 1****修補後**與**其他測站(修補前)**每月風速及風向歷線比較圖。

第 4 節風力年報資料處理之統計圖包括：2018 年宜蘭海域**主要測站 2****修補後**與**其他測站(修補前)**每月風速及風向歷線比較圖。

第 5 節風力年報資料處理之統計圖包括：2018 年宜蘭海域**各測站****修補前**每月風力向量分佈圖。

第 6 節風力年報資料處理之統計圖包括：2018 年宜蘭海域**各測站****修補前**每月風力向量行進圖。

表 1.1.1a 2019 年每月宜蘭海域修補前各測站觀測風力資料紀錄表

海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
年月/測站	W	Y	Z	F	E	H						
2018/12 月	744(100%)	664(89.2%)	654(87.9%)	645(86.7%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/ 1 月	67(9.0%)	715(96.1%)	736(98.9%)	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/ 2 月	40(6.0%)	651(96.9%)	664(98.8%)	655(97.5%)	672(100%)	672(100%)	*	*	*	*	*	*
2019/ 3 月	483(64.9%)	734(98.7%)	744(100%)	705(94.8%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/ 4 月	720(100%)	715(99.3%)	720(100%)	720(100%)	720(100%)	720(100%)	*	*	*	*	*	*
2019/ 5 月	744(100%)	730(98.1%)	738(99.2%)	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/ 6 月	720(100%)	653(90.7%)	658(91.4%)	604(83.9%)	720(100%)	720(100%)	*	*	*	*	*	*
2019/ 7 月	744(100%)	630(84.7%)	641(86.2%)	155(20.8%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/ 8 月	744(100%)	684(91.9%)	702(94.4%)	651(87.5%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/ 9 月	545(75.7%)	497(69.0%)	569(79.0%)	720(100%)	720(100%)	720(100%)	*	*	*	*	*	*
2019/10 月	744(100%)	664(89.2%)	700(94.1%)	716(96.2%)	744(100%)	744(100%)	*	*	*	*	*	*
2019/11 月	720(100%)	713(99.0%)	720(100%)	682(94.7%)	720(100%)	720(100%)	*	*	*	*	*	*
2019/冬季	851(39.4%)	2030(94.0%)	2054(95.1%)	2044(94.6%)	2160(100%)	2160(100%)	*	*	*	*	*	*
2019/春季	1947(88.2%)	2179(98.7%)	2202(99.7%)	2169(98.2%)	2208(100%)	2208(100%)	*	*	*	*	*	*
2019/夏季	2208(100%)	1967(89.1%)	2001(90.6%)	1410(63.9%)	2208(100%)	2208(100%)	*	*	*	*	*	*
2019/秋季	2009(92.0%)	1874(85.8%)	1989(91.1%)	2118(97.0%)	2184(100%)	2184(100%)	*	*	*	*	*	*
2019/整年	7015(80.1%)	8050(91.9%)	8246(94.1%)	7741(88.4%)	8760(100%)	8760(100%)	*	*	*	*	*	*
起始年月	2018/12	2018/12	2018/12	2018/12	2018/12	2018/12	*	*	*	*	*	*
結束年月	2019/11	2019/11	2019/11	2019/11	2019/11	2019/11	*	*	*	*	*	*

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表 1.1.1b 2019 年每月宜蘭海域修補後各測站風力資料紀錄表

海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
年月/測站	W	Y										
2018/12 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 1 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 2 月	672(100%)	672(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 3 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 4 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 5 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 6 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 7 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 8 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 9 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/10 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/11 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/冬季	2160(100%)	2160(100%)	*	*	*	*	*	*	*	*	*	*
2019/春季	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*	*
2019/夏季	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*	*
2019/秋季	2184(100%)	2184(100%)	*	*	*	*	*	*	*	*	*	*
2019/整年	8760(100%)	8760(100%)	*	*	*	*	*	*	*	*	*	*
起始年月	2018/12	2018/12	*	*	*	*	*	*	*	*	*	*
結束年月	2019/11	2019/11	*	*	*	*	*	*	*	*	*	*

表1.1.2 2019年宜蘭海域 W 站修補後風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	744(100%)	3.9	2.2/NW	11.7/NNE	43.1	54.0	2.8	.0	13.3	8.7	14.1	63.8	W /22.0%
2	2019/01	744(100%)	4.0	1.7/NW	13.8/E	41.8	53.9	4.2	.1	22.0	4.8	25.9	47.2	W /22.4%
3	2019/02	672(100%)	3.2	1.1/NNW	10.4/SSE	59.8	38.5	1.6	.0	32.3	7.7	21.4	38.5	W /20.5%
4	2019/03	744(100%)	3.6	.9/WNW	11.3/E	52.7	42.6	4.7	.0	20.6	12.9	24.9	41.7	W /18.7%
5	2019/04	720(100%)	3.3	.4/W	11.2/S	60.3	35.3	4.4	.0	17.9	22.5	19.0	40.6	W /20.3%
6	2019/05	744(100%)	3.2	.9/WNW	11.6/NNE	62.4	35.1	2.6	.0	14.2	16.7	21.9	47.2	W /21.2%
7	2019/06	720(100%)	3.2	.4/S	11.2/SSE	64.3	29.4	6.3	.0	18.2	28.2	12.6	41.0	W /16.5%
8	2019/07	744(100%)	4.1	1.7/S	13.1/SSE	50.0	36.7	13.3	.0	12.1	42.1	8.7	37.1	SSE/20.0%
9	2019/08	744(100%)	4.6	1.7/S	18.9/SSE	42.6	41.4	14.4	1.6	9.7	42.2	7.9	40.2	SSE/23.3%
10	2019/09	720(100%)	4.7	1.8/WNW	18.5/WNW	32.2	55.7	11.5	.6	10.0	19.0	20.0	51.0	NW /20.3%
11	2019/10	744(100%)	3.8	1.8/NW	11.3/S	42.3	55.0	2.7	.0	14.8	11.6	14.2	59.4	W /24.5%
12	2019/11	720(100%)	3.7	2.4/NW	10.3/E	44.6	53.3	2.1	.0	12.8	5.7	19.2	62.4	WNW/25.0%
13	2019/冬	2160(100%)	3.7	1.7/NW	13.8/E	47.9	49.2	2.9	.0	22.2	7.1	20.5	50.2	W /21.7%
14	2019/春	2208(100%)	3.4	.7/WNW	11.6/NNE	58.4	37.7	3.9	.0	17.6	17.3	22.0	43.2	W /20.1%
15	2019/夏	2208(100%)	4.0	1.3/S	18.9/SSE	52.2	35.9	11.4	.5	13.3	37.6	9.7	39.4	SSE/18.2%
16	2019/秋	2184(100%)	4.1	2.0/WNW	18.5/WNW	39.7	54.7	5.4	.2	12.5	12.1	17.8	57.6	W /22.0%
17	2019/年	8760(100%)	3.8	.9/WNW	18.9/SSE	49.6	44.3	5.9	.2	16.4	18.6	17.5	47.6	W /19.4%

表1.1.3 2019年宜蘭海域 Y 站修補後風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	744(100%)	4.8	2.9/NNW	12.0/NNE	37.4	44.8	17.9	.0	29.8	8.9	6.2	55.1	WNW/22.4%
2	2019/01	744(100%)	4.6	2.7/NNW	11.8/ENE	33.6	52.8	13.6	.0	33.1	6.0	4.6	56.3	WNW/32.1%
3	2019/02	672(100%)	4.3	2.6/N	11.2/NE	39.6	51.9	8.5	.0	42.7	6.7	5.2	45.4	NNE/22.5%
4	2019/03	744(100%)	4.3	2.0/N	12.3/NE	41.0	48.1	10.9	.0	29.6	11.7	7.5	51.2	WNW/21.8%
5	2019/04	720(100%)	3.3	.8/N	11.6/N	58.8	36.7	4.6	.0	29.7	17.6	9.2	43.5	WNW/17.8%
6	2019/05	744(100%)	3.3	1.2/NNW	12.9/NNE	57.8	37.8	4.4	.0	26.6	13.8	10.6	48.9	WNW/21.4%
7	2019/06	720(100%)	2.7	.2/E	9.3/NNE	72.1	25.6	2.4	.0	24.4	26.5	11.4	37.6	WNW/15.7%
8	2019/07	744(100%)	3.3	1.6/SSE	11.5/SSE	61.7	31.9	6.5	.0	13.6	43.3	16.5	26.6	SSE/21.6%
9	2019/08	744(100%)	3.8	1.5/S	14.9/SE	55.2	35.8	8.5	.5	12.9	41.4	12.2	33.5	SSE/21.9%
10	2019/09	720(100%)	4.8	1.9/NW	16.1/N	30.7	56.0	12.6	.7	13.2	18.5	6.8	61.5	NW /19.9%
11	2019/10	744(100%)	4.5	2.4/NNW	10.4/NNE	30.5	61.8	7.7	.0	27.2	10.8	6.3	55.8	WNW/25.5%
12	2019/11	720(100%)	5.0	3.2/NNW	11.4/NNE	23.2	64.4	12.4	.0	27.8	4.2	4.6	63.5	WNW/32.1%
13	2019/冬	2160(100%)	4.6	2.7/N	12.0/NNE	36.8	49.8	13.5	.0	35.0	7.2	5.3	52.5	WNW/24.9%
14	2019/春	2208(100%)	3.7	1.3/NNW	12.9/NNE	52.4	40.9	6.7	.0	28.6	14.4	9.1	47.9	WNW/20.3%
15	2019/夏	2208(100%)	3.3	1.0/SSE	14.9/SE	62.9	31.1	5.8	.2	16.9	37.2	13.4	32.5	SSE/17.7%
16	2019/秋	2184(100%)	4.8	2.5/NNW	16.1/N	28.2	60.8	10.9	.2	22.8	11.1	5.9	60.2	WNW/25.4%
17	2019/年	8760(100%)	4.1	1.3/NNW	16.1/N	45.2	45.6	9.2	.1	25.8	17.5	8.5	48.2	WNW/21.0%

Wind Speed in Yi-Lan Seas of SAW0 at 2019

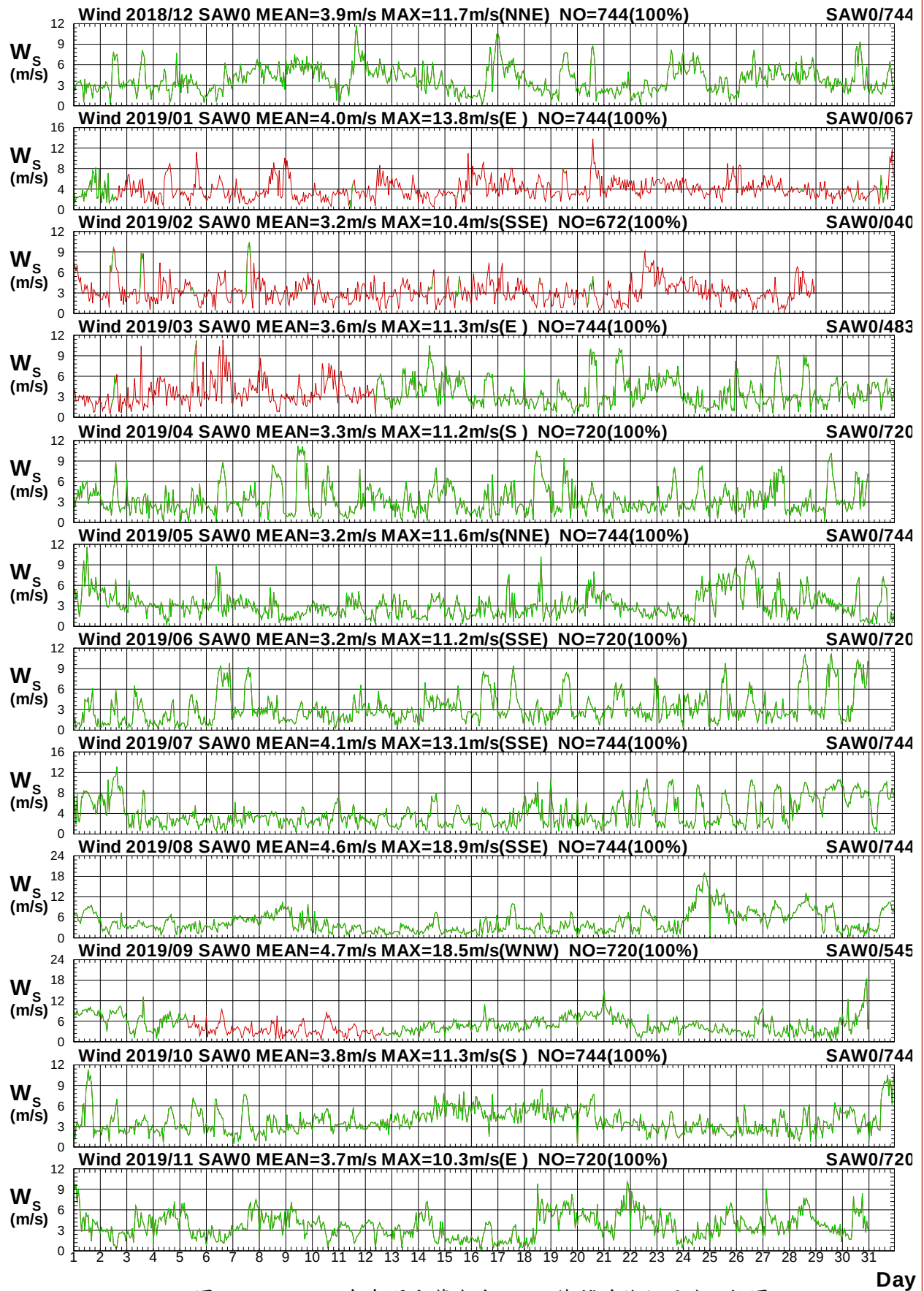


圖1.1.1a 2019年每月宜蘭海域 W 站修補前後之風速比較圖

W18CSAW0.1HA W18CSAW0.1H0 W191SAW0.1HA W191SAW0.1H0 W192SAW0.1HA W192SAW0.1H0

W193SAW0.1HA W193SAW0.1H0 W194SAW0.1HA W194SAW0.1H0 W195SAW0.1HA W195SAW0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

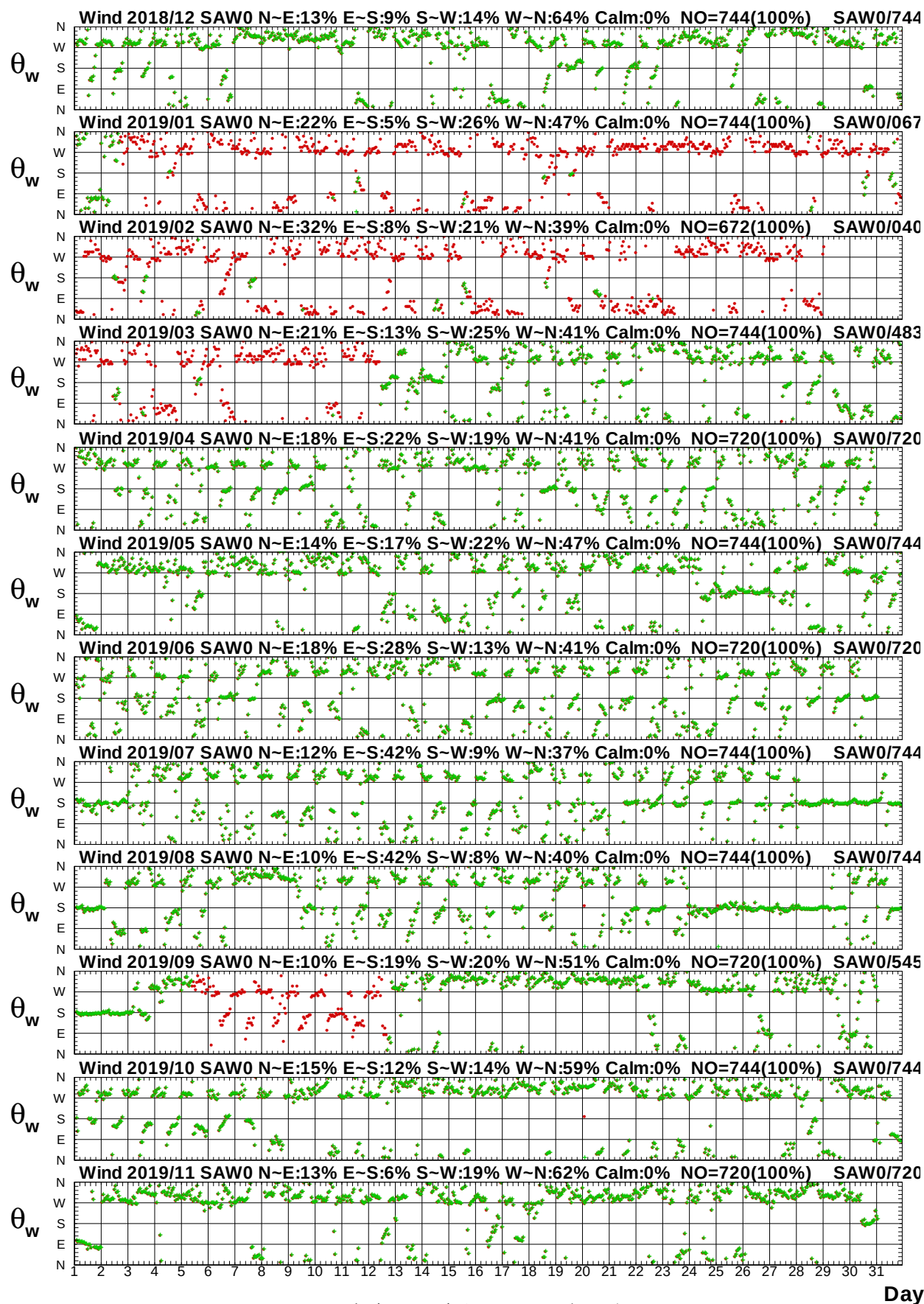


圖1.1.1b 2019年每月宜蘭海域 W 站修補前後之風向比較圖

W18CSAW0.1HA W18CSAW0.1H0 W191SAW0.1HA W191SAW0.1H0 W192SAW0.1HA W192SAW0.1H0

W193SAW0.1HA W193SAW0.1H0 W194SAW0.1HA W194SAW0.1H0 W195SAW0.1HA W195SAW0.1H0

Institute of Harbor & Marine Technology

Wind Speed in Yi-Lan Seas of SAY0 at 2019

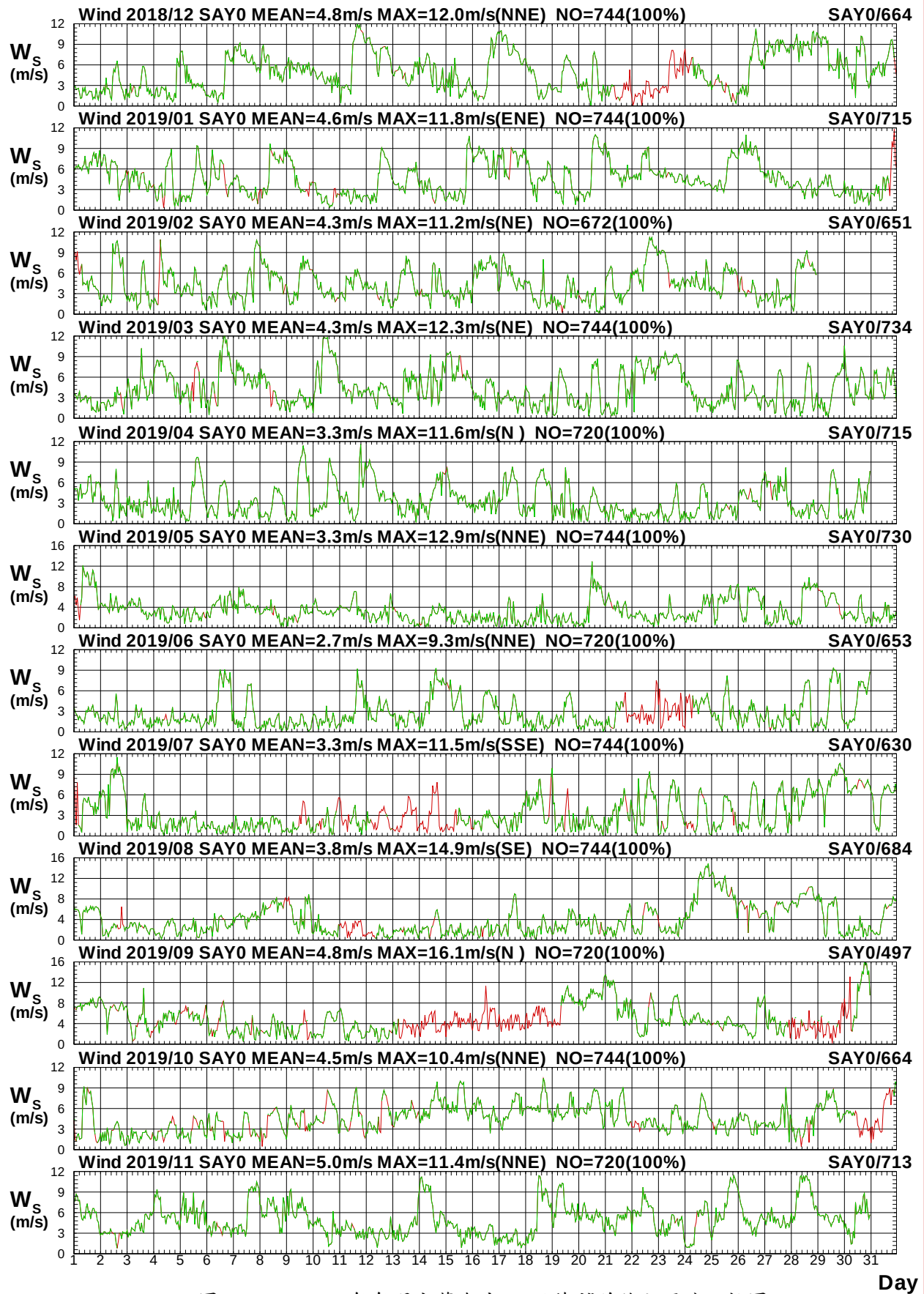


圖1.1.2a 2019年每月宜蘭海域 Y 站修補前後之風速比較圖

W18CSAY0.1HA W18CSAY0.1H0 W191SAY0.1HA W191SAY0.1H0 W192SAY0.1HA W192SAY0.1H0
W193SAY0.1HA W193SAY0.1H0 W194SAY0.1HA W194SAY0.1H0 W195SAY0.1HA W195SAY0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

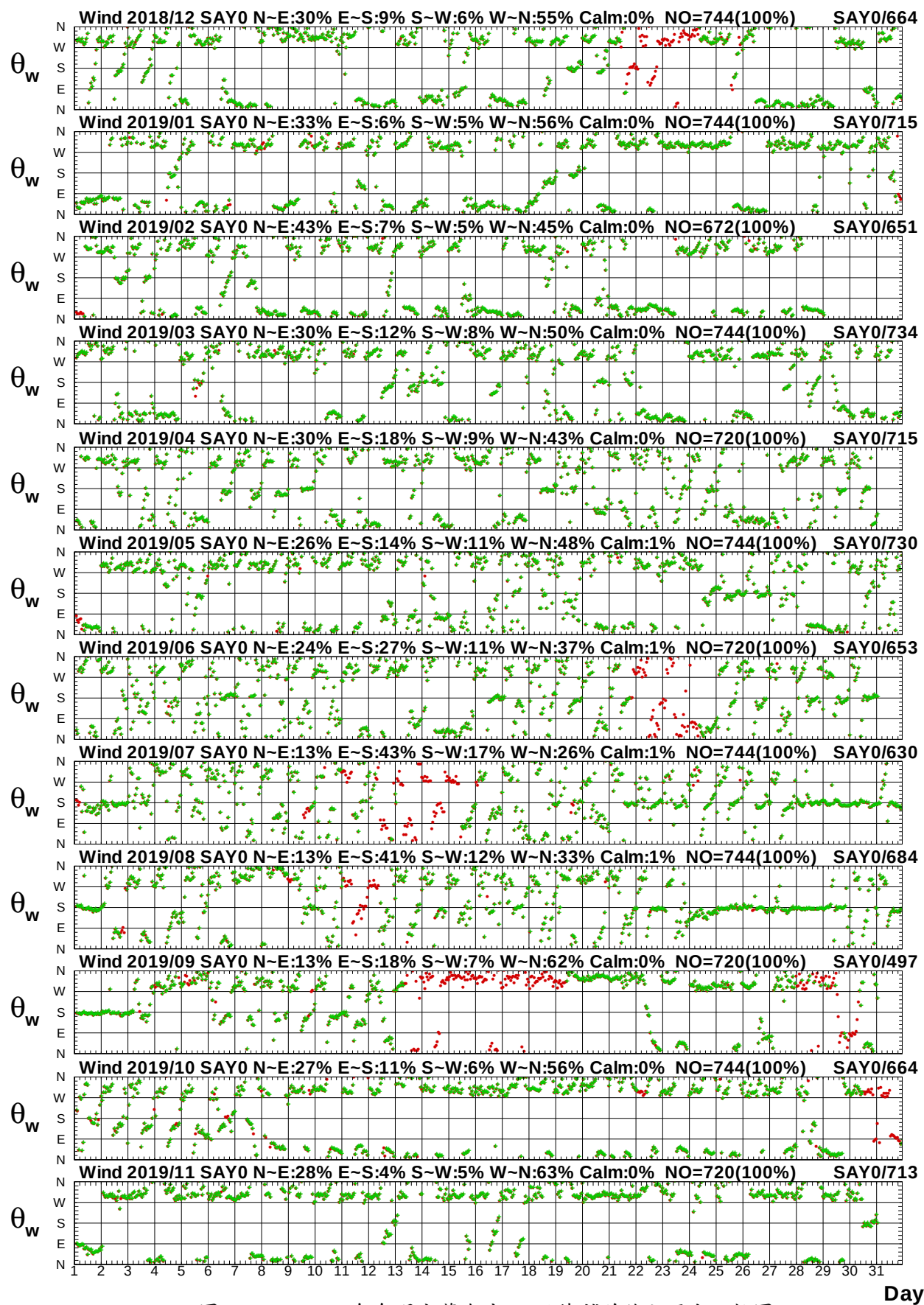


圖1.1.2b 2019年每月宜蘭海域 Y 站修補前後之風向比較圖

W18CSAY0.1HA W18CSAY0.1H0 W191SAY0.1HA W191SAY0.1H0 W192SAY0.1HA W192SAY0.1H0
W193SAY0.1HA W193SAY0.1H0 W194SAY0.1HA W194SAY0.1H0 W195SAY0.1HA W195SAY0.1H0

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Distribution of Wind Vectors

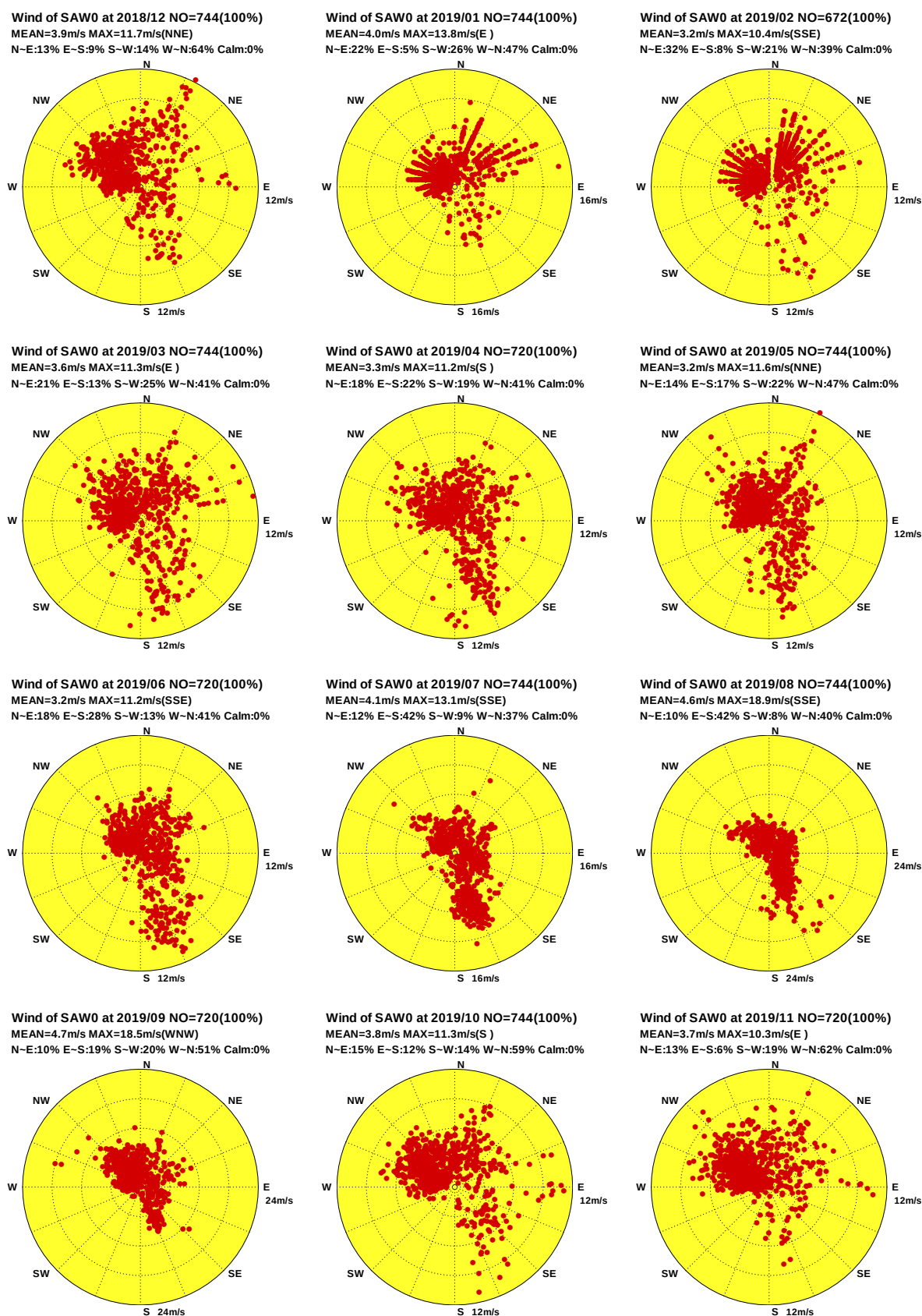


圖1.1.3 2019年宜蘭海域每月 W 站修補後觀測風力向量分佈圖

W18CSAW0.1HA W191SAW0.1HA W192SAW0.1HA W193SAW0.1HA W194SAW0.1HA W195SAW0.1HA
W196SAW0.1HA W197SAW0.1HA W198SAW0.1HA W199SAW0.1HA W19ASAW0.1HA W19BSAW0.1HA

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Distribution of Wind Vectors

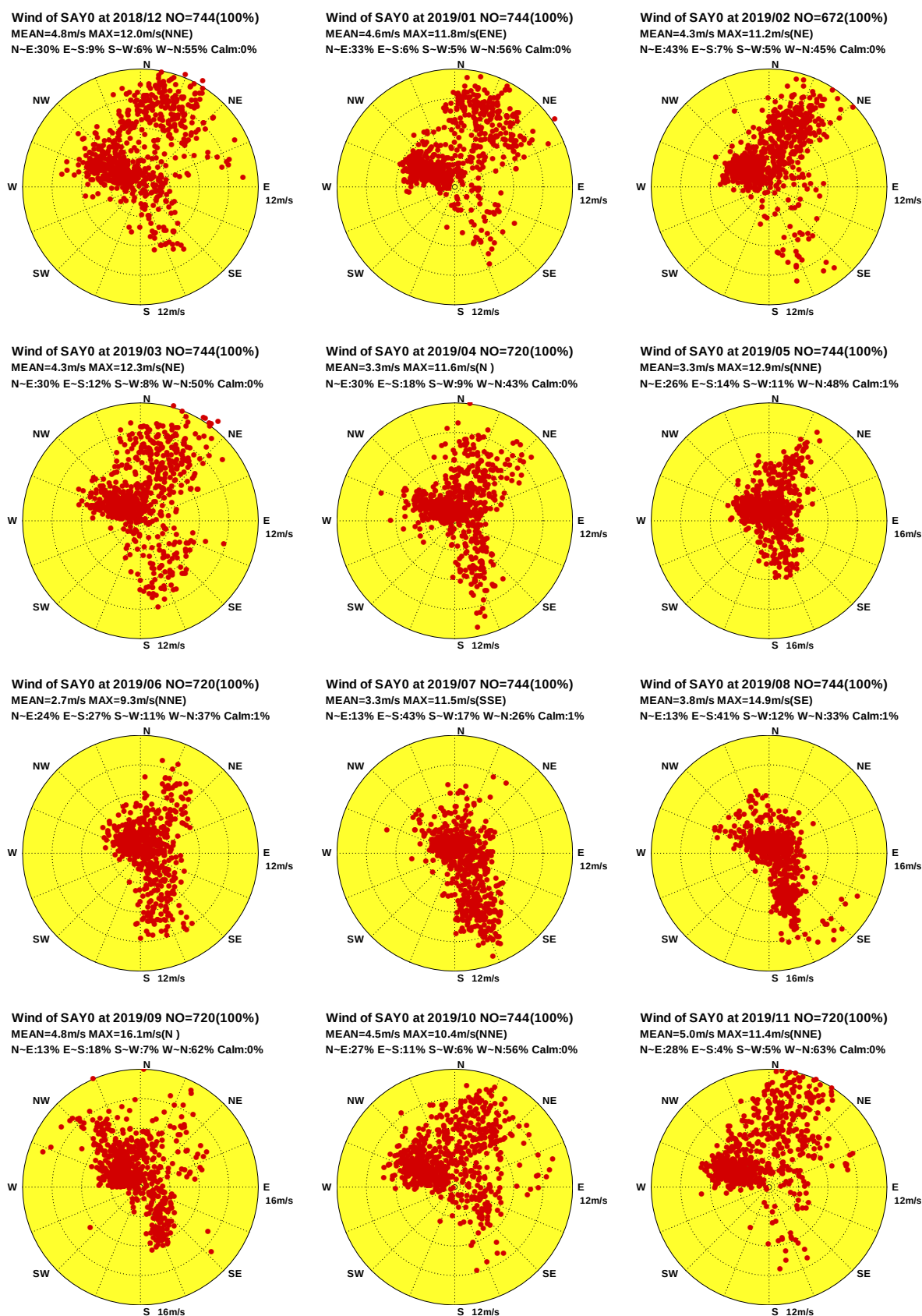


圖1.1.4 2019年宜蘭海域每月 Y 站修補後觀測風力向量分佈圖

W18CSAY0.1HA W191SAY0.1HA W192SAY0.1HA W193SAY0.1HA W194SAY0.1HA W195SAY0.1HA
W196SAY0.1HA W197SAY0.1HA W198SAY0.1HA W199SAY0.1HA W19ASAY0.1HA W19BSAY0.1HA

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Progressive Vector Diagram of Wind

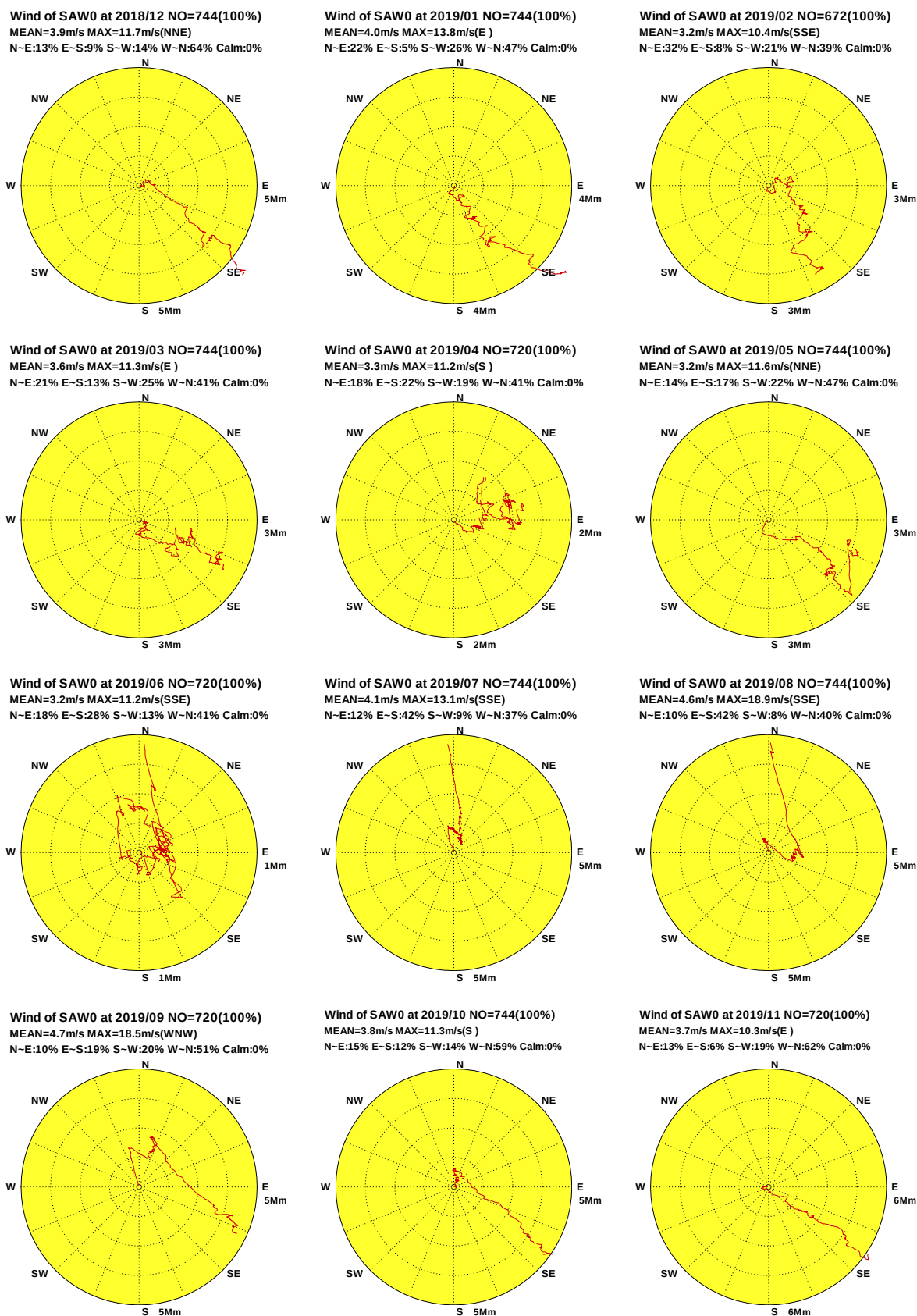


圖1.1.5 2019年宜蘭海域每月 W 站修補後觀測風力向量行進圖

Progressive Vector Diagram of Wind

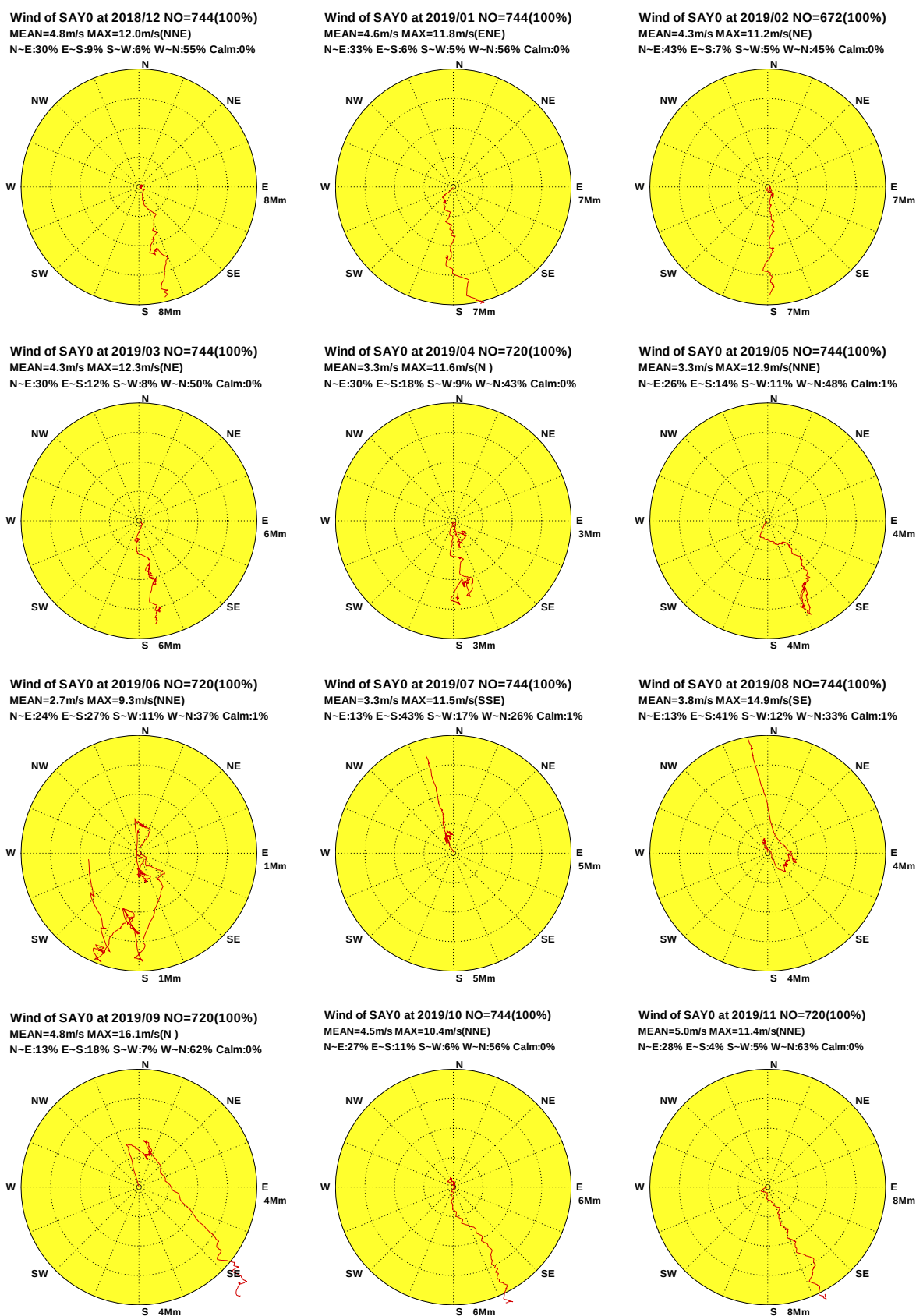


圖1.1.6 2019年宜蘭海域每月 Y 站修補後觀測風力向量行進圖

W18CSAY0.1HA W191SAY0.1HA W192SAY0.1HA W193SAY0.1HA W194SAY0.1HA W195SAY0.1HA
 W196SAY0.1HA W197SAY0.1HA W198SAY0.1HA W199SAY0.1HA W19ASAY0.1HA W19BSAY0.1HA

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1.2 2019 年宜蘭海域各測站修補前 風力統計量統計表

表1.2.1 2019年宜蘭海域 W 站修補前風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	744(100%)	3.9	2.2/NW	11.7/NNE	43.1	54.0	2.8	.0	13.3	8.9	14.0	63.8	W /22.0%
2	2019/01	67(9%)	3.7	1.2/ENE	8.2/ENE	47.8	47.8	4.5	.0	38.8	26.9	4.5	29.9	NE /13.4%
3	2019/02	40(6%)	5.0	3.2/SE	10.4/SSE	25.0	50.0	25.0	.0	27.5	67.5	.0	5.0	SSE/22.5%
4	2019/03	483(65%)	3.7	.6/WNW	11.2/S	51.6	43.5	5.0	.0	19.0	18.4	18.8	43.7	W /17.8%
5	2019/04	720(100%)	3.3	.4/W	11.2/S	60.3	35.3	4.4	.0	17.9	22.5	19.4	40.1	W /20.3%
6	2019/05	744(100%)	3.2	.9/WNW	11.6/NNE	62.2	35.2	2.6	.0	14.2	16.7	21.9	47.2	W /21.4%
7	2019/06	720(100%)	3.2	.4/S	11.2/SSE	64.3	29.4	6.3	.0	18.2	28.2	12.8	40.8	W /16.5%
8	2019/07	744(100%)	4.1	1.7/S	13.1/SSE	50.0	36.7	13.3	.0	12.1	42.1	8.9	37.0	SSE/20.0%
9	2019/08	744(100%)	4.6	1.7/S	18.9/SSE	42.6	41.4	14.4	1.6	9.9	42.2	7.8	40.1	SSE/23.3%
10	2019/09	545(76%)	5.1	2.4/NW	18.5/WNW	25.3	59.3	14.7	.7	12.1	13.6	11.2	63.1	NW /25.9%
11	2019/10	744(100%)	3.8	1.8/NW	11.3/S	41.9	55.4	2.7	.0	14.9	11.6	14.5	59.0	W /24.5%
12	2019/11	720(100%)	3.7	2.4/NW	10.3/E	44.4	53.5	2.1	.0	12.8	5.7	19.4	62.1	WNW/25.1%
13	2019/冬	851(39%)	3.9	1.7/NW	11.7/NNE	42.7	53.3	4.0	.0	16.0	13.0	12.6	58.4	WNW/19.4%
14	2019/春	1947(88%)	3.4	.6/W	11.6/NNE	58.9	37.3	3.9	.0	16.8	19.3	20.2	43.7	W /20.1%
15	2019/夏	2208(100%)	4.0	1.3/S	18.9/SSE	52.2	35.9	11.4	.5	13.4	37.6	9.8	39.3	SSE/18.2%
16	2019/秋	2009(92%)	4.1	2.1/NW	18.5/WNW	38.3	55.7	5.7	.2	13.4	10.0	15.4	61.2	W /22.2%
17	2019/年	7015(80%)	3.9	.8/W	18.9/SSE	48.9	44.1	6.8	.2	14.6	21.6	14.6	49.1	W /18.6%

DISW3B.BAT 測站編號:SAW

港灣技術研究中心

表1.2.2 2019年宜蘭海域 Y 站修補前風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	664(89%)	5.0	3.0/N	12.0/NNE	35.1	45.6	19.3	.0	32.4	7.1	6.0	54.5	WNW/22.6%
2	2019/01	715(96%)	4.6	2.7/NNW	11.0/NNE	32.7	53.7	13.6	.0	32.7	6.3	4.6	56.4	WNW/32.0%
3	2019/02	651(97%)	4.3	2.6/N	11.2/NE	39.9	51.9	8.1	.0	42.5	6.9	5.4	45.2	NNE/21.8%
4	2019/03	734(99%)	4.3	2.0/N	12.3/NE	40.9	48.1	11.0	.0	30.0	11.3	7.6	51.1	WNW/21.8%
5	2019/04	715(99%)	3.3	.7/N	11.6/N	59.0	36.4	4.6	.0	29.2	17.8	9.2	43.8	WNW/17.9%
6	2019/05	730(98%)	3.3	1.2/NNW	12.9/NNE	57.9	37.5	4.5	.0	26.0	14.1	10.5	49.3	WNW/21.6%
7	2019/06	653(91%)	2.7	.1/ESE	9.3/NNE	72.7	24.7	2.6	.0	23.0	27.1	12.1	37.8	WNW/16.1%
8	2019/07	630(85%)	3.4	1.8/SSE	11.5/SSE	61.6	31.1	7.3	.0	13.0	45.9	15.4	25.7	SSE/23.5%
9	2019/08	684(92%)	3.9	1.5/SSE	14.9/SE	55.0	35.8	8.6	.6	12.9	41.7	11.4	34.1	SSE/22.2%
10	2019/09	497(69%)	5.1	1.6/NW	16.1/N	30.2	51.7	17.1	1.0	12.1	24.7	8.2	54.9	WNW/18.5%
11	2019/10	664(89%)	4.6	2.6/NNW	10.4/NNE	28.3	64.0	7.7	.0	27.4	9.6	6.0	56.9	WNW/25.5%
12	2019/11	713(99%)	5.0	3.2/NNW	11.4/NNE	22.7	64.8	12.5	.0	27.6	4.2	4.6	63.5	WNW/32.4%
13	2019/冬	2030(94%)	4.7	2.7/N	12.0/NNE	35.8	50.5	13.7	.0	35.8	6.7	5.3	52.2	WNW/24.9%
14	2019/春	2179(99%)	3.7	1.3/NNW	12.9/NNE	52.5	40.7	6.7	.0	28.4	14.4	9.1	48.1	WNW/20.5%
15	2019/夏	1967(89%)	3.3	1.1/SSE	14.9/SE	63.0	30.6	6.2	.2	16.3	38.2	12.9	32.6	SSE/18.4%
16	2019/秋	1874(86%)	4.9	2.5/NNW	16.1/N	26.7	61.0	12.0	.3	23.4	11.6	6.1	58.9	WNW/26.3%
17	2019/年	8050(92%)	4.1	1.3/NNW	16.1/N	44.9	45.4	9.6	.1	26.1	17.6	8.4	47.9	WNW/21.3%

表1.2.3 2019年宜蘭海域 E 站修補前風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	744(100%)	3.0	1.1/WNW	8.4/ENE	64.8	34.9	.3	.0	21.8	10.1	30.8	37.4	W /29.0%
2	2019/01	744(100%)	2.7	1.1/WNW	7.5/E	69.2	30.8	.0	.0	24.7	5.8	25.9	43.5	W /32.4%
3	2019/02	672(100%)	2.5	.8/NNW	7.3/SSE	75.0	25.0	.0	.0	35.3	8.2	22.2	34.4	W /23.8%
4	2019/03	744(100%)	2.6	.6/WNW	7.5/E	74.3	25.7	.0	.0	26.7	10.8	32.1	30.4	W /26.6%
5	2019/04	720(100%)	2.4	.2/SW	8.2/SSE	79.2	20.7	.1	.0	22.2	20.4	34.0	23.3	W /21.4%
6	2019/05	744(100%)	2.2	.6/W	7.2/NNW	82.5	17.5	.0	.0	21.6	14.8	36.6	27.0	W /23.0%
7	2019/06	720(100%)	2.0	.4/S	8.1/SSE	85.1	14.7	.1	.0	23.1	25.4	35.1	16.4	WSW/20.1%
8	2019/07	744(100%)	2.5	1.1/SSE	8.1/SSE	76.5	23.4	.1	.0	16.5	35.6	35.2	12.6	WSW/16.7%
9	2019/08	744(100%)	2.8	1.1/S	12.7/ESE	69.9	28.5	1.6	.0	14.5	34.8	35.8	14.9	W /19.4%
10	2019/09	720(100%)	3.1	.8/W	15.4/WNW	61.5	36.8	1.4	.3	15.1	20.4	26.5	37.9	W /26.1%
11	2019/10	744(100%)	2.8	.8/WNW	9.5/E	70.6	28.8	.7	.0	23.0	11.6	27.2	38.3	W /35.3%
12	2019/11	720(100%)	2.9	1.4/WNW	8.6/E	66.0	33.5	.6	.0	23.2	5.4	29.2	42.2	W /40.4%
13	2019/冬	2160(100%)	2.8	1.0/NW	8.4/ENE	69.5	30.4	.1	.0	27.0	8.0	26.4	38.6	W /28.6%
14	2019/春	2208(100%)	2.4	.4/W	8.2/SSE	78.7	21.3	.0	.0	23.6	15.3	34.2	26.9	W /23.7%
15	2019/夏	2208(100%)	2.4	.9/S	12.7/ESE	77.1	22.3	.6	.0	18.0	32.0	35.4	14.6	WSW/17.3%
16	2019/秋	2184(100%)	2.9	.9/WNW	15.4/WNW	66.1	33.0	.9	.1	20.5	12.5	27.6	39.5	W /34.0%
17	2019/年	8760(100%)	2.6	.5/W	15.4/WNW	72.9	26.7	.4	.0	22.2	17.0	30.9	29.8	W /25.8%

表1.2.4 2019年宜蘭海域 Z 站修補前風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	654(88%)	5.8	4.1/NNE	12.3/NE	34.3	26.6	39.1	.0	59.3	6.7	23.1	10.9	NNE/30.1%
2	2019/01	736(99%)	5.8	4.2/NE	12.4/NE	28.7	41.0	30.3	.0	65.5	9.4	16.4	8.7	NNE/26.2%
3	2019/02	664(99%)	4.9	3.5/NNE	11.1/NNE	32.2	54.8	13.0	.0	69.3	5.7	12.5	12.5	NNE/31.3%
4	2019/03	744(100%)	4.8	2.6/NNE	12.9/NNE	37.4	44.6	18.0	.0	51.9	12.8	21.6	13.7	NNE/23.1%
5	2019/04	720(100%)	3.5	1.4/NE	10.6/NNW	56.3	37.1	6.7	.0	45.7	18.2	23.3	12.8	NE /17.2%
6	2019/05	738(99%)	3.4	1.2/NNE	10.8/NNE	53.8	40.5	5.7	.0	43.4	13.8	25.7	17.1	NNE/16.9%
7	2019/06	658(91%)	2.4	.5/E	8.7/NE	72.9	26.3	.8	.0	34.3	21.1	30.2	14.3	S /13.4%
8	2019/07	641(86%)	3.5	1.9/SSE	11.4/SSE	55.1	39.6	5.3	.0	22.2	44.0	23.7	10.1	SSE/21.7%
9	2019/08	702(94%)	3.8	1.2/SE	13.1/SE	50.9	39.5	9.7	.0	26.8	39.7	21.7	11.8	SSE/15.8%
10	2019/09	569(79%)	5.0	1.9/NNE	20.0/N	34.4	46.7	17.9	.9	32.2	21.1	18.3	28.5	N /12.5%
11	2019/10	700(94%)	5.7	3.9/NNE	11.1/NNE	15.4	65.1	19.4	.0	57.1	6.1	12.4	24.3	N /22.1%
12	2019/11	720(100%)	6.5	5.2/NNE	12.0/NNE	16.3	42.6	41.1	.0	74.2	4.2	11.1	10.6	NNE/32.6%
13	2019/冬	2054(95%)	5.5	3.9/NNE	12.4/NE	31.6	40.9	27.5	.0	64.8	7.4	17.3	10.6	NNE/29.1%
14	2019/春	2202(100%)	3.9	1.7/NNE	12.9/NNE	49.0	40.8	10.2	.0	47.0	14.9	23.6	14.5	NNE/17.0%
15	2019/夏	2001(91%)	3.3	1.1/SE	13.1/SE	59.5	35.2	5.3	.0	27.8	35.0	25.1	12.1	SSE/15.1%
16	2019/秋	1989(91%)	5.8	3.8/NNE	20.0/N	21.2	51.7	26.8	.3	56.2	9.7	13.6	20.5	NNE/22.4%
17	2019/年	8246(94%)	4.6	2.3/NNE	20.0/N	40.5	42.1	17.3	.1	49.0	16.6	20.0	14.4	NNE/18.9%

表1.2.5 2019年宜蘭海域 H 站修補前風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	744(100%)	1.8	.0/NNW	6.0/ESE	88.3	11.7	.0	.0	24.6	17.5	36.6	21.4	W /24.2%
2	2019/01	744(100%)	1.8	.2/ENE	7.5/E	87.1	12.9	.0	.0	22.3	19.0	28.2	30.5	W /22.8%
3	2019/02	672(100%)	1.6	.3/SE	6.0/E	90.9	9.1	.0	.0	16.7	29.2	24.1	30.1	W /24.7%
4	2019/03	744(100%)	2.0	.3/NE	9.1/NNW	82.5	17.3	.1	.0	23.9	21.4	20.0	34.7	W /20.7%
5	2019/04	720(100%)	1.8	.5/E	6.8/ESE	87.4	12.6	.0	.0	25.6	30.0	16.1	28.3	W /19.6%
6	2019/05	744(100%)	1.6	.1/ESE	5.3/ESE	93.3	6.7	.0	.0	20.4	24.5	22.0	33.1	W /21.2%
7	2019/06	720(100%)	1.6	.4/E	6.0/ESE	90.6	9.4	.0	.0	22.1	31.9	11.7	34.3	W /17.5%
8	2019/07	744(100%)	2.0	.7/ESE	7.3/SE	80.8	19.2	.0	.0	15.9	40.1	5.9	38.2	W /15.5%
9	2019/08	744(100%)	2.2	.8/SE	8.9/SE	75.9	23.7	.4	.0	16.9	40.2	12.1	30.8	W /18.4%
10	2019/09	720(100%)	2.4	.1/ENE	11.2/NE	75.7	23.1	1.3	.0	18.2	26.3	19.0	36.5	W /20.4%
11	2019/10	744(100%)	2.0	.2/ESE	7.7/WSW	83.2	16.8	.0	.0	17.1	25.3	19.5	38.2	W /27.3%
12	2019/11	720(100%)	1.9	.2/SSW	6.9/E	87.5	12.5	.0	.0	17.9	17.8	32.5	31.8	W /26.3%
13	2019/冬	2160(100%)	1.8	.1/E	7.5/E	88.7	11.3	.0	.0	21.3	21.6	29.8	27.2	W /23.9%
14	2019/春	2208(100%)	1.8	.3/E	9.1/NNW	87.7	12.2	.0	.0	23.3	25.2	19.4	32.1	W /20.5%
15	2019/夏	2208(100%)	2.0	.6/ESE	8.9/SE	82.3	17.5	.1	.0	18.3	37.5	9.9	34.4	W /17.1%
16	2019/秋	2184(100%)	2.1	.1/SE	11.2/NE	82.1	17.4	.4	.0	17.7	23.1	23.6	35.5	W /24.7%
17	2019/年	8760(100%)	1.9	.3/ESE	11.2/NE	85.2	14.6	.1	.0	20.1	26.9	20.6	32.3	W /21.5%

表1.2.6 2019年宜蘭海域 F 站修補前風速及風向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	風速 平均值 (m/s)	平均風 風速/風向 (m/s)/(來向)	最大風 風速/風向 (m/s)/(來向)	輕風 <3.3 (%)	和風 ~7.9 (%)	強風 ~13.8 (%)	疾風 >13.8 (%)	風向 N~E (%)	風向 E~S (%)	風向 S~W (%)	風向 W~N (%)	主要風向 方向/百分比
1	2018/12	645(87%)	3.8	2.3/NW	10.9/NE	48.1	46.5	5.4	.0	17.4	8.7	11.6	62.3	WNW/26.4%
2	2019/01	744(100%)	3.1	2.0/NW	11.3/NNE	59.9	39.1	.9	.0	15.1	6.6	8.3	70.0	WNW/29.8%
3	2019/02	655(98%)	2.5	1.4/NW	8.9/SSE	71.8	27.8	.5	.0	10.8	11.8	5.6	71.8	WNW/22.7%
4	2019/03	705(95%)	2.6	1.1/NW	12.0/NNW	71.1	28.4	.6	.0	10.9	14.8	9.5	64.8	WNW/22.4%
5	2019/04	720(100%)	2.3	.5/W	10.9/SSE	77.6	21.9	.4	.0	11.5	25.1	11.4	51.9	WNW/18.9%
6	2019/05	744(100%)	2.2	.8/WNW	7.8/SSE	80.5	19.5	.0	.0	10.1	20.3	11.2	58.5	WNW/21.5%
7	2019/06	604(84%)	2.0	.3/SW	9.7/SSE	85.4	14.1	.5	.0	10.1	32.5	6.6	50.8	WNW/18.9%
8	2019/07	155(21%)	2.6	.8/S	8.6/NW	71.6	25.8	2.6	.0	11.6	39.4	13.5	35.5	WNW/17.4%
9	2019/08	651(88%)	2.9	1.2/S	12.5/S	69.0	27.3	3.7	.0	9.4	45.9	9.8	34.9	SSE/19.4%
10	2019/09	720(100%)	3.5	1.8/NW	16.4/W	55.0	40.4	4.2	.4	8.2	21.1	6.5	64.2	NW /25.0%
11	2019/10	716(96%)	2.6	1.7/NW	8.5/NW	67.0	32.7	.3	.0	9.2	14.4	5.3	71.1	NW /27.2%
12	2019/11	682(95%)	2.7	2.2/NW	9.8/NNW	66.6	33.1	.3	.0	7.0	8.4	5.4	79.2	NW /33.4%
13	2019/冬	2044(95%)	3.1	1.9/NW	11.3/NNE	60.0	37.8	2.2	.0	14.4	8.9	8.5	68.2	WNW/26.5%
14	2019/春	2169(98%)	2.4	.8/WNW	12.0/NNW	76.5	23.2	.3	.0	10.8	20.1	10.7	58.4	WNW/20.9%
15	2019/夏	1410(64%)	2.5	.8/S	12.5/S	76.3	21.5	2.2	.0	9.9	39.4	8.9	41.8	WNW/17.7%
16	2019/秋	2118(97%)	2.9	1.9/NW	16.4/W	62.8	35.5	1.6	.1	8.2	14.7	5.8	71.3	NW /28.5%
17	2019/年	7741(88%)	2.7	1.2/NW	16.4/W	68.4	30.1	1.5	.0	10.9	19.2	8.4	61.5	WNW/22.3%

1.3 2019 年宜蘭海域**主要測站 1**(修補後)與 **其他測站**(修補前)風力歷線比較圖

Wind Speed in Yi-Lan Seas of SAW0 at 2019

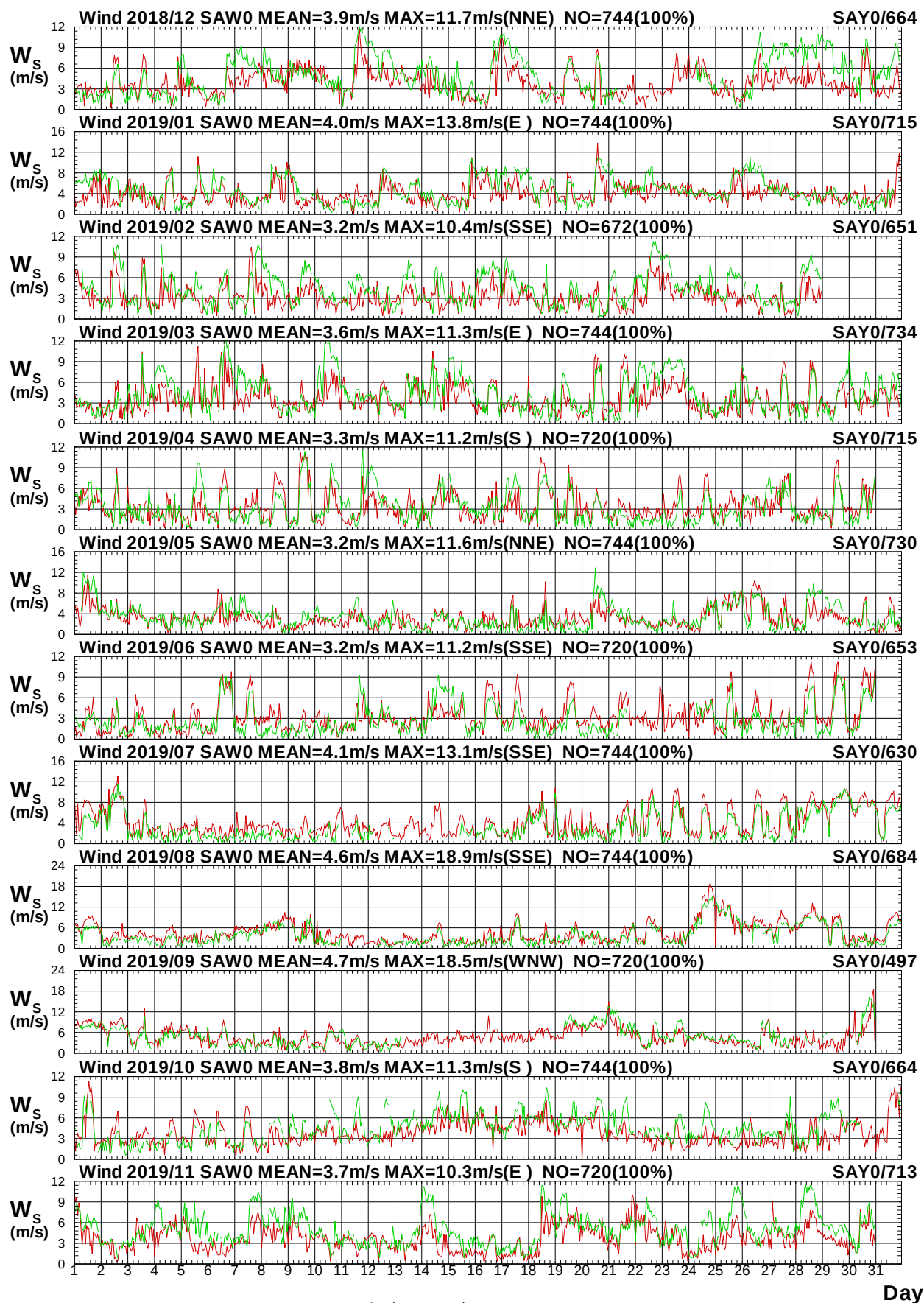


圖1.3.1a 2019年每月宜蘭海域 W 站與 Y 站風速比較圖

W18CSAW0.1HA W18CSAY0.1H0 W191SAW0.1HA W191SAY0.1H0 W192SAW0.1HA W192SAY0.1H0
W193SAW0.1HA W193SAY0.1H0 W194SAW0.1HA W194SAY0.1H0 W195SAW0.1HA W195SAY0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

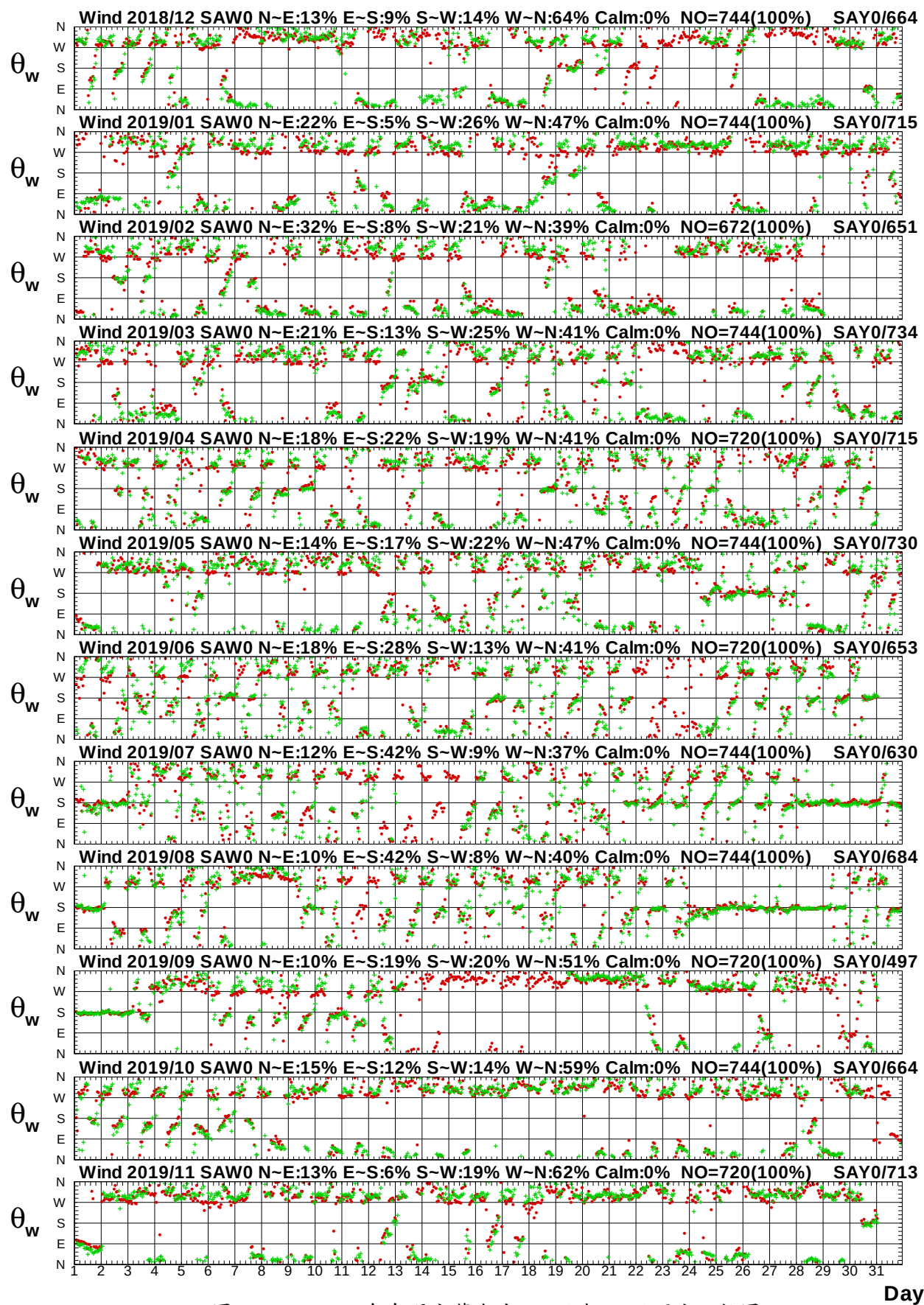


圖1.3.1b 2019年每月宜蘭海域 W 站與 Y 站風向比較圖

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W193SAW0.1HA W193SAY0.1H0 W194SAW0.1HA W194SAY0.1H0 W195SAW0.1HA W195SAY0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

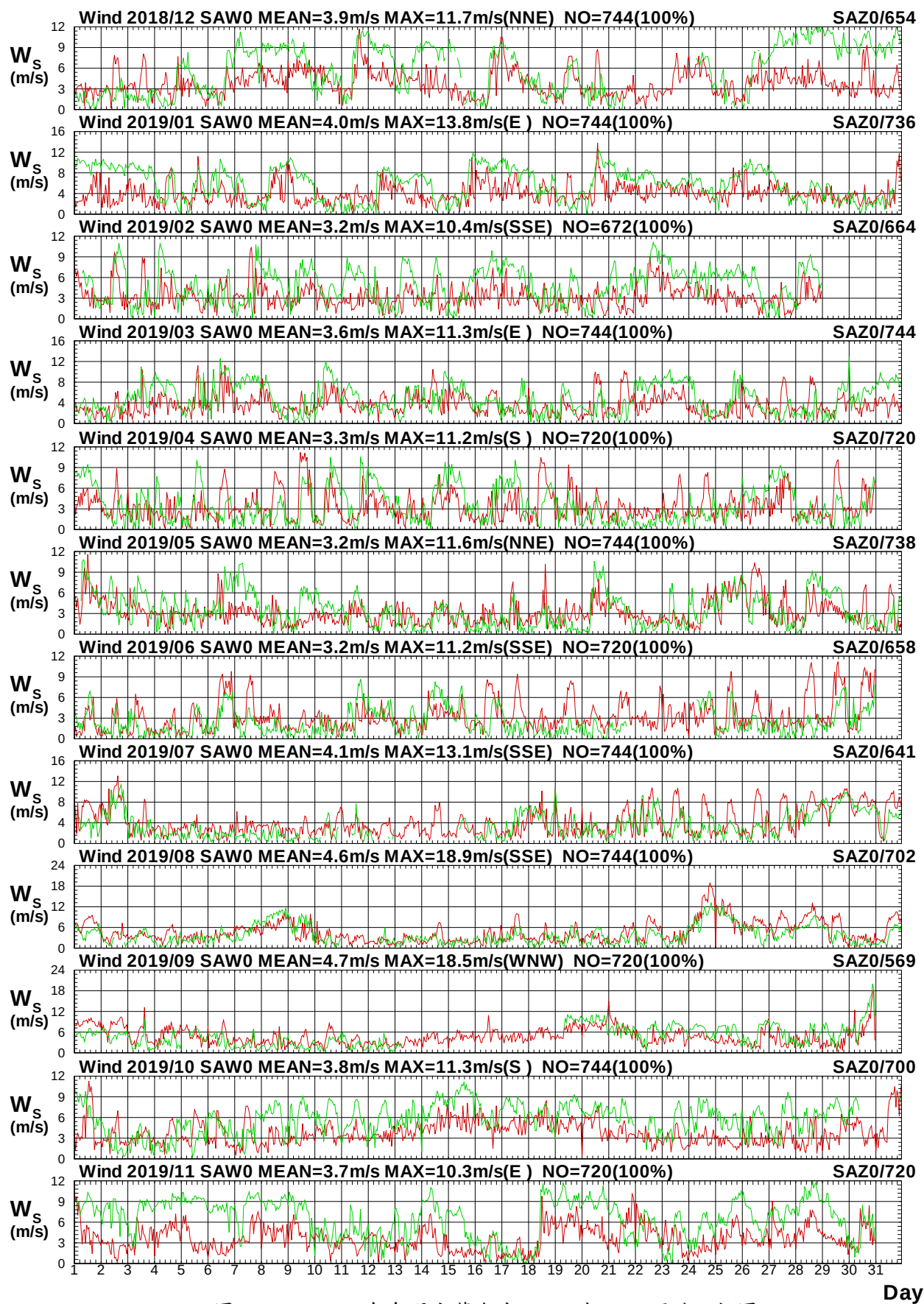


圖1.3.2a 2019年每月宜蘭海域 W 站與 Z 站風速比較圖

W18CSAW0.1HA W18CSAZ0.1H0 W191SAW0.1HA W191SAZ0.1H0 W192SAW0.1HA W192SAZ0.1H0
W193SAW0.1HA W193SAZ0.1H0 W194SAW0.1HA W194SAZ0.1H0 W195SAW0.1HA W195SAZ0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

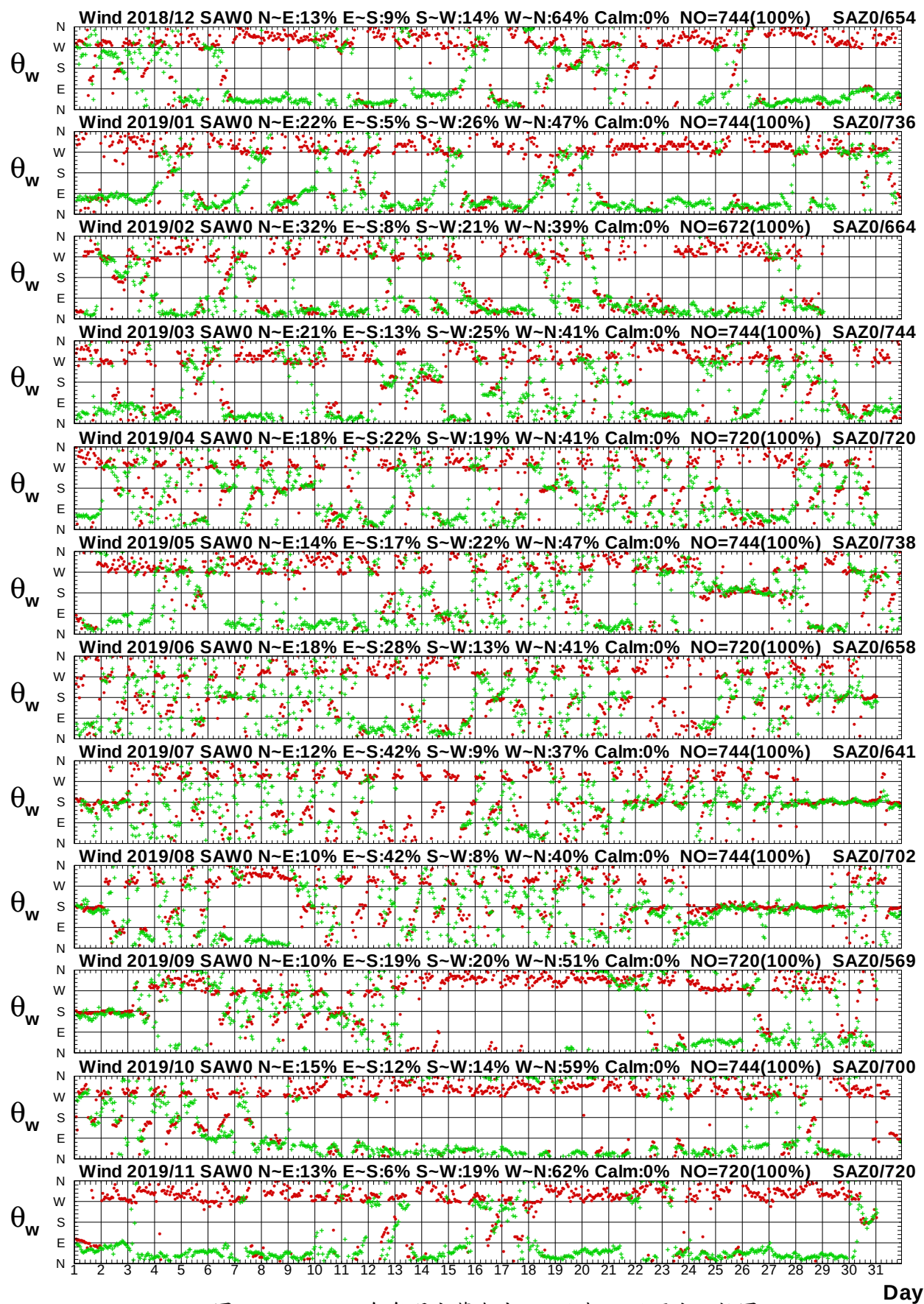


圖1.3.2b 2019年每月宜蘭海域 W 站與 Z 站風向比較圖

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W193SAW0.1HA W193SAZ0.1H0 W194SAW0.1HA W194SAZ0.1H0 W195SAW0.1HA W195SAZ0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

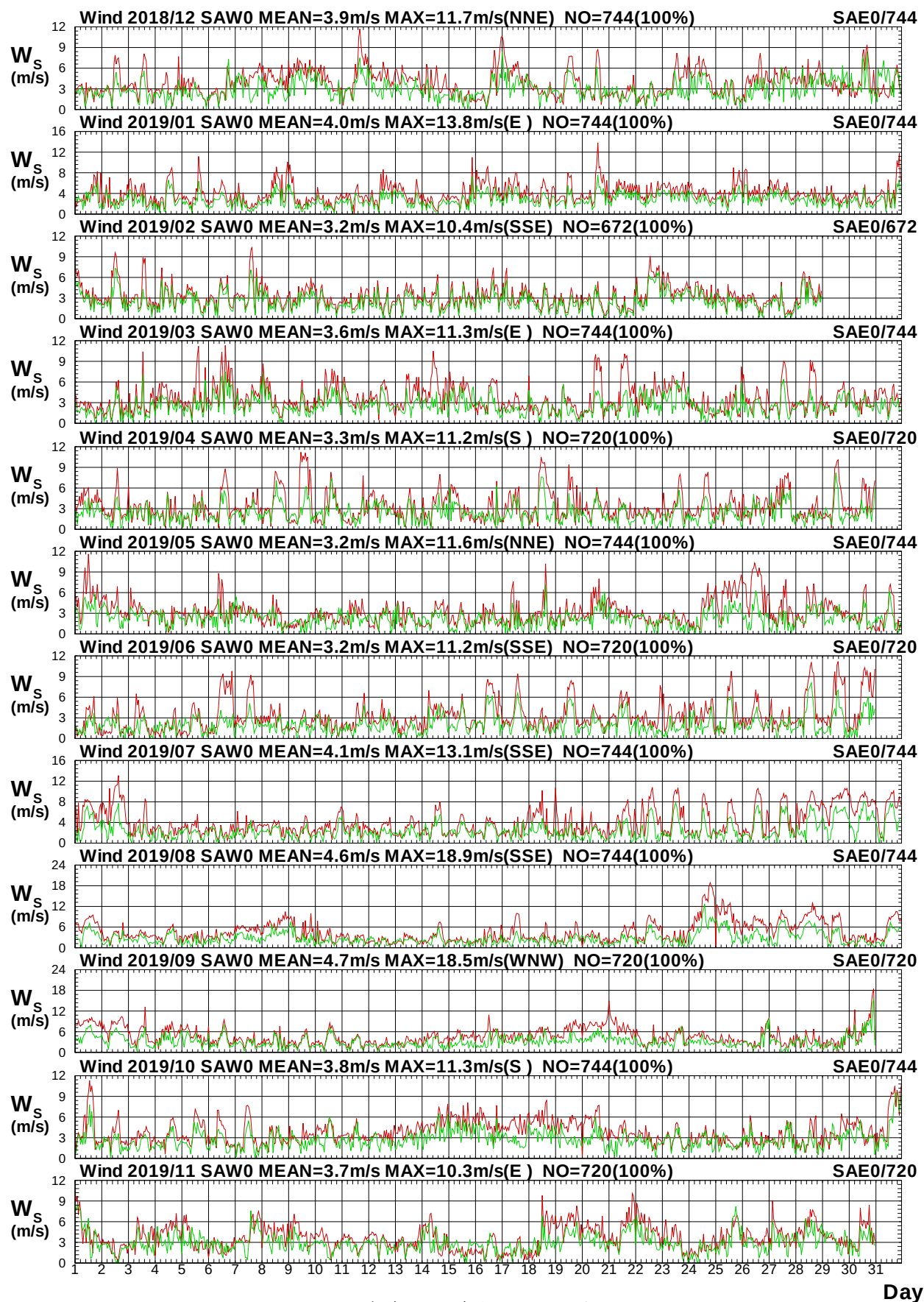


圖1.3.3a 2019年每月宜蘭海域 W 站與 E 站風速比較圖

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W193SAW0.1HA W193SAE0.1H0 W194SAW0.1HA W194SAE0.1H0 W195SAW0.1HA W195SAE0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

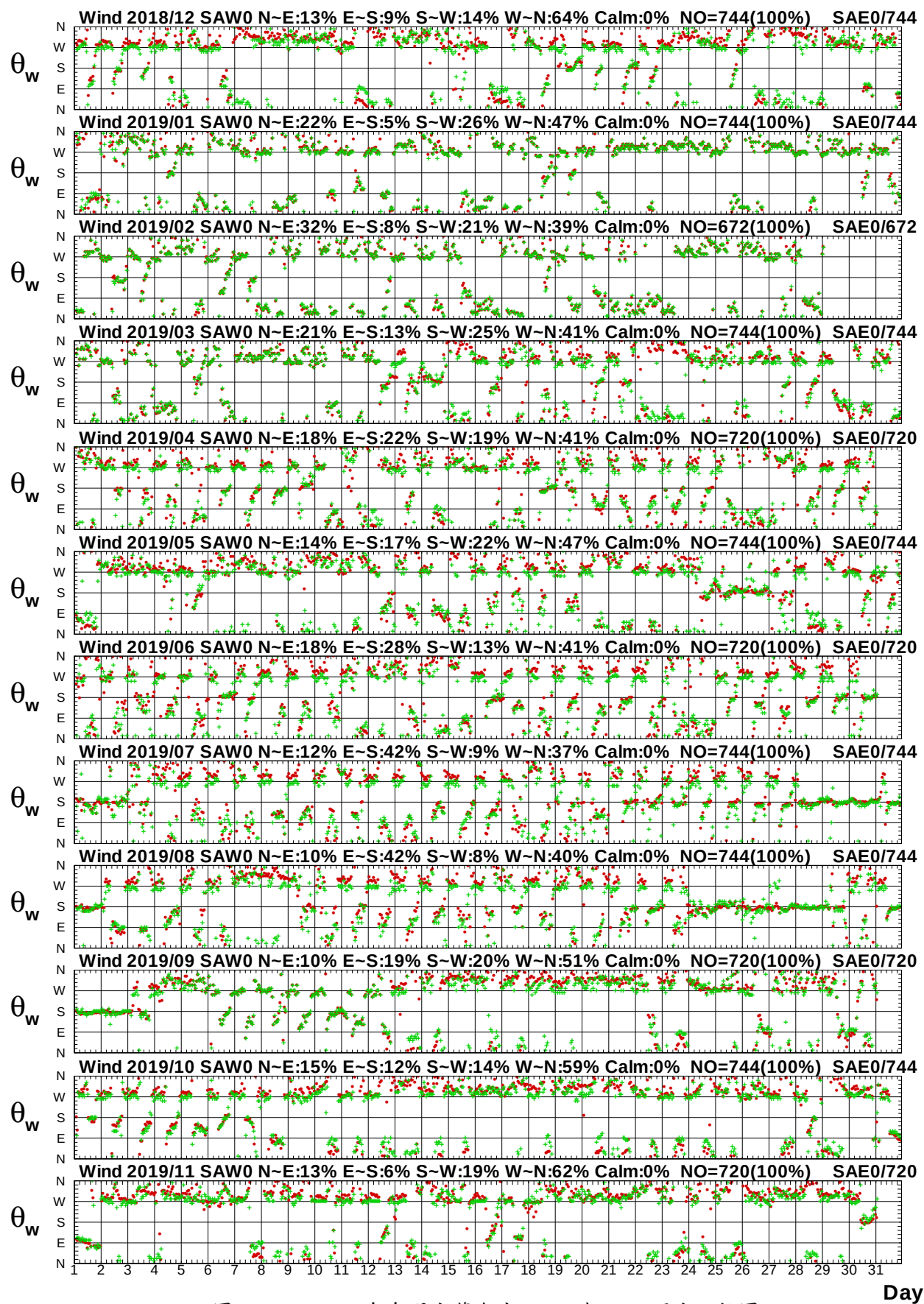


圖1.3.3b 2019年每月宜蘭海域 W 站與 E 站風向比較圖

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W193SAW0.1HA W193SAE0.1H0 W194SAW0.1HA W194SAE0.1H0 W195SAW0.1HA W195SAE0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

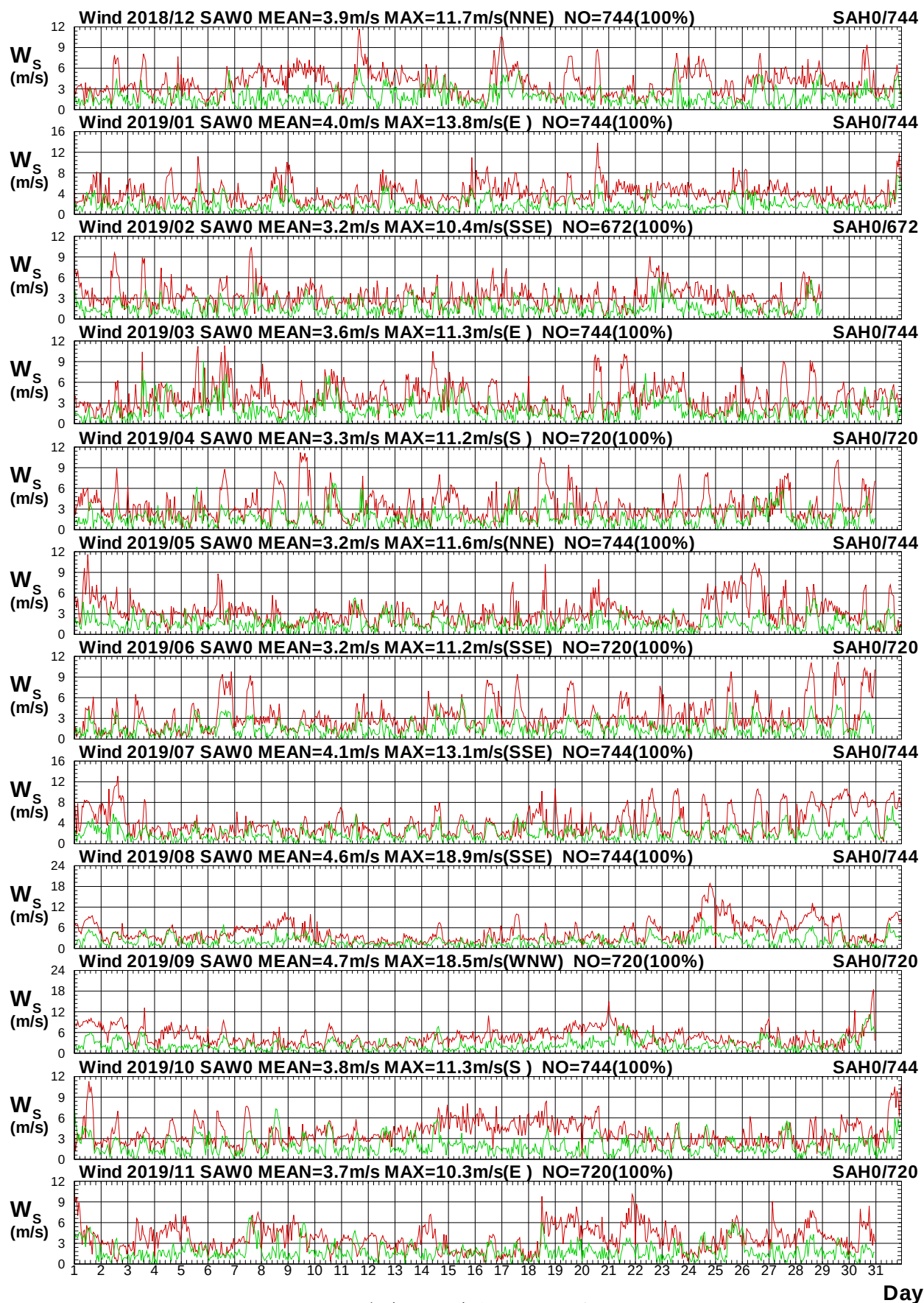


圖1.3.4a 2019年每月宜蘭海域 W 站與 H 站風速比較圖

W18CSAW0.1HA W18CSAH0.1H0 W191SAW0.1HA W191SAH0.1H0 W192SAW0.1HA W192SAH0.1H0
W193SAW0.1HA W193SAH0.1H0 W194SAW0.1HA W194SAH0.1H0 W195SAW0.1HA W195SAH0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

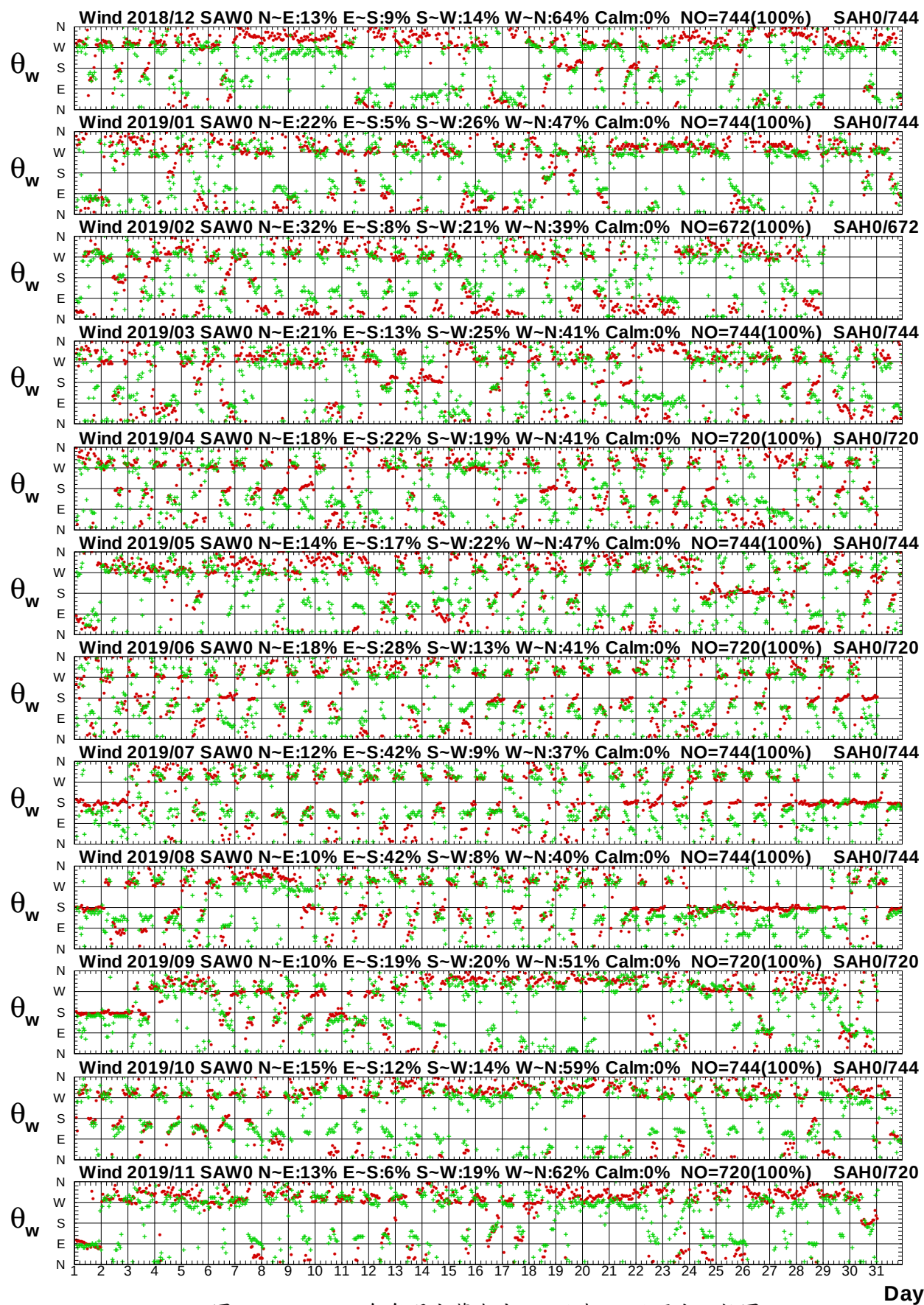


圖1.3.4b 2019年每月宜蘭海域 W 站與 H 站風向比較圖

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W193SAW0.1HA W193SAH0.1H0 W194SAW0.1HA W194SAH0.1H0 W195SAW0.1HA W195SAH0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

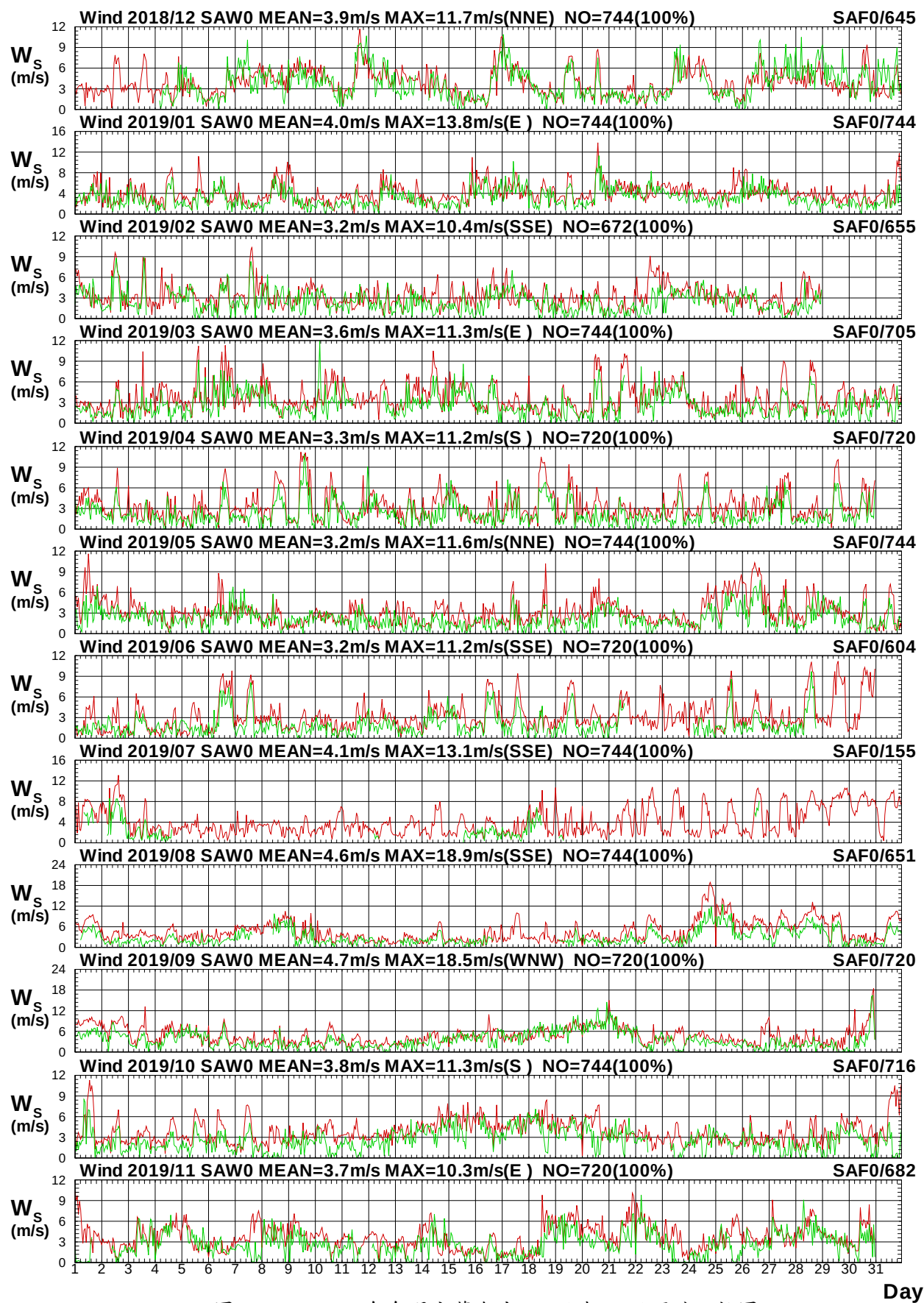


圖1.3.5a 2019年每月宜蘭海域 W 站與 F 站風速比較圖

W18CSAW0.1HA W18CSAF0.1H0 W191SAW0.1HA W191SAF0.1H0 W192SAW0.1HA W192SAF0.1H0
W193SAW0.1HA W193SAF0.1H0 W194SAW0.1HA W194SAF0.1H0 W195SAW0.1HA W195SAF0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

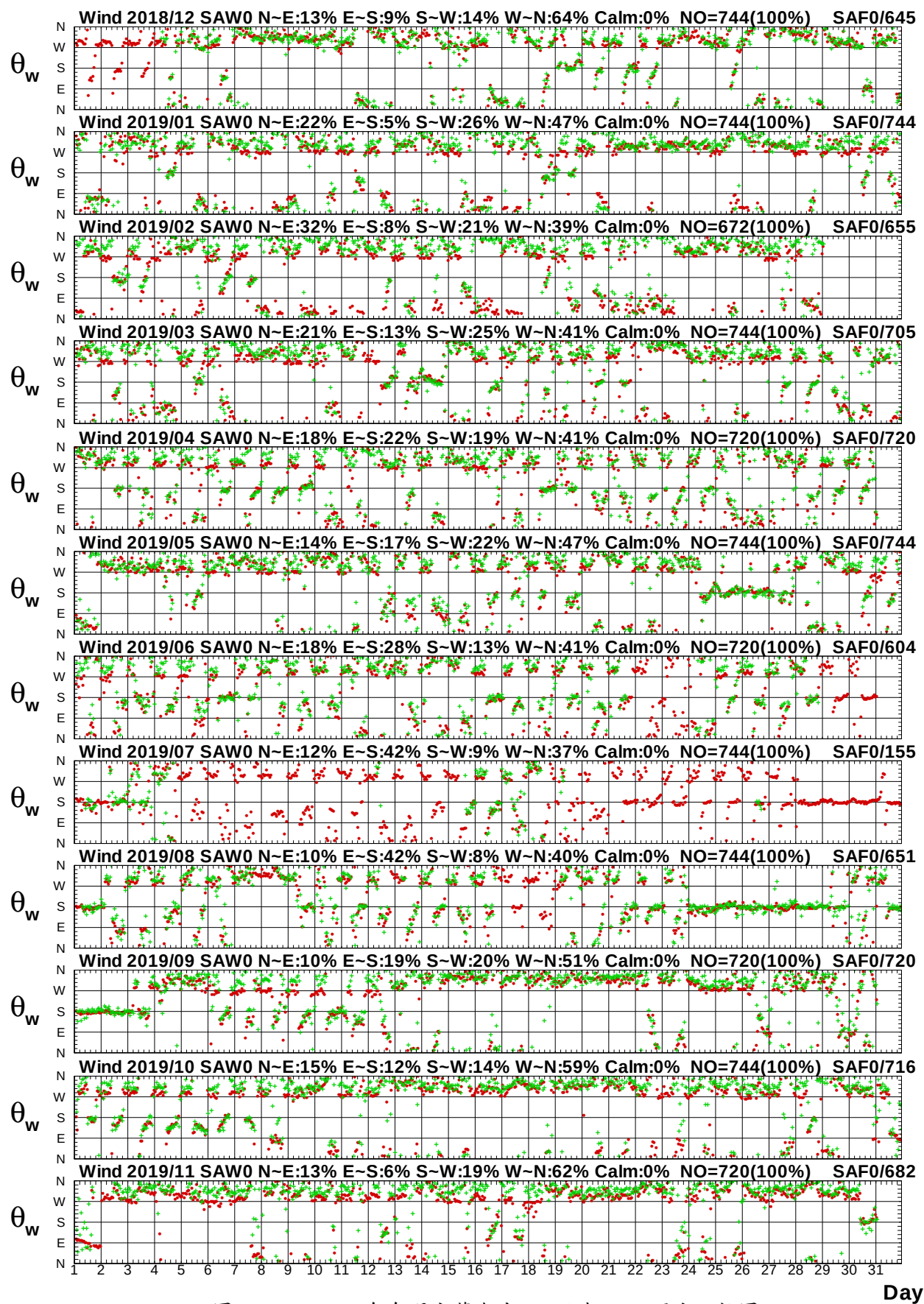


圖1.3.5b 2019年每月宜蘭海域 W 站與 F 站風向比較圖

W18CSAW0.1HA W18CSAF0.1H0 W191SAW0.1HA W191SAF0.1H0 W192SAW0.1HA W192SAF0.1H0
W193SAW0.1HA W193SAF0.1H0 W194SAW0.1HA W194SAF0.1H0 W195SAW0.1HA W195SAF0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

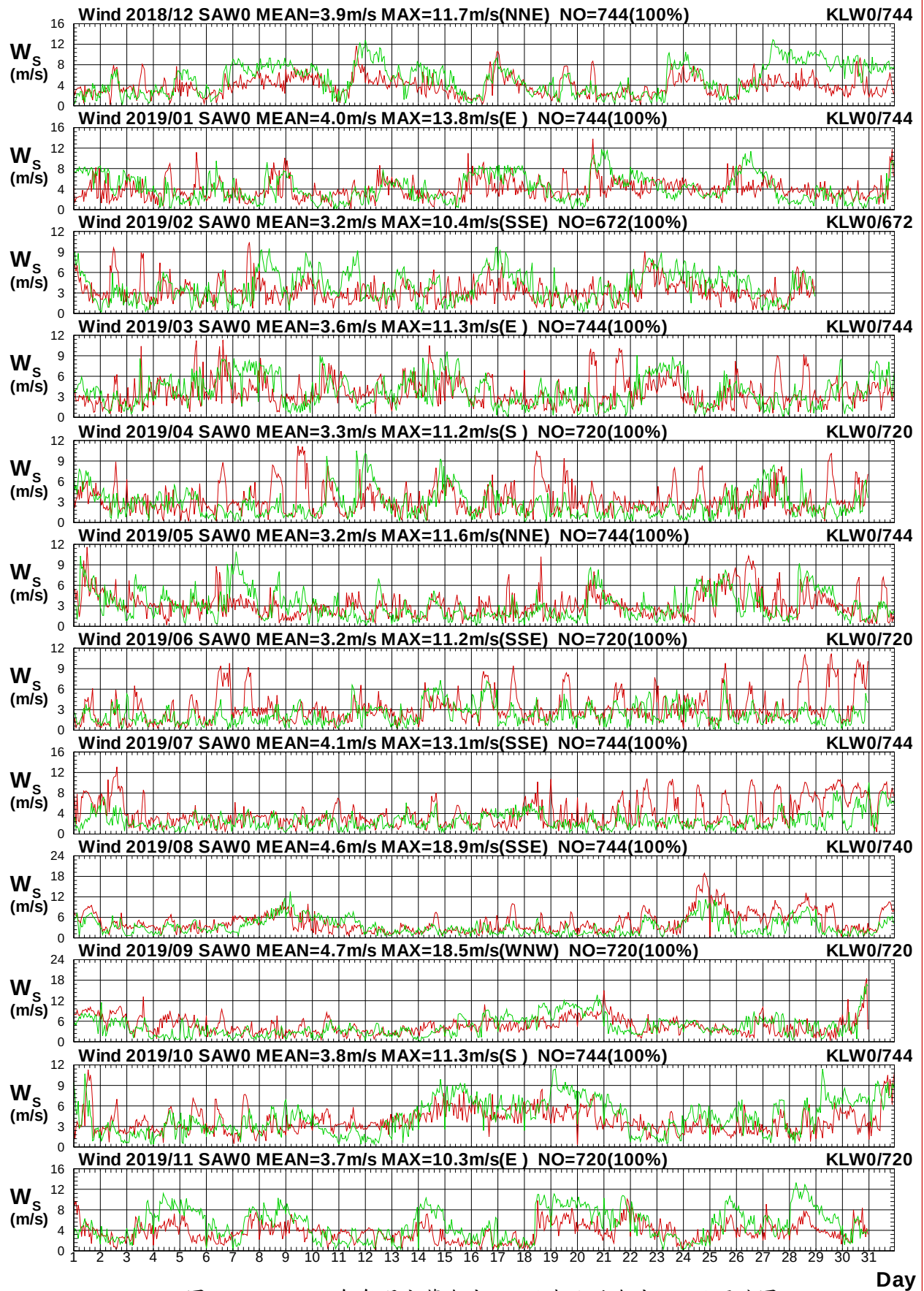


圖1.3.6a 2019年每月宜蘭海域 W 站與北端海域 W 站風速圖

W18CSAW0.1HA W18CKLRW0.1H0 W191SAW0.1HA W191KLRW0.1H0 W192SAW0.1HA W192KLRW0.1H0
W193SAW0.1HA W193KLRW0.1H0 W194SAW0.1HA W194KLRW0.1H0 W195SAW0.1HA W195KLRW0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

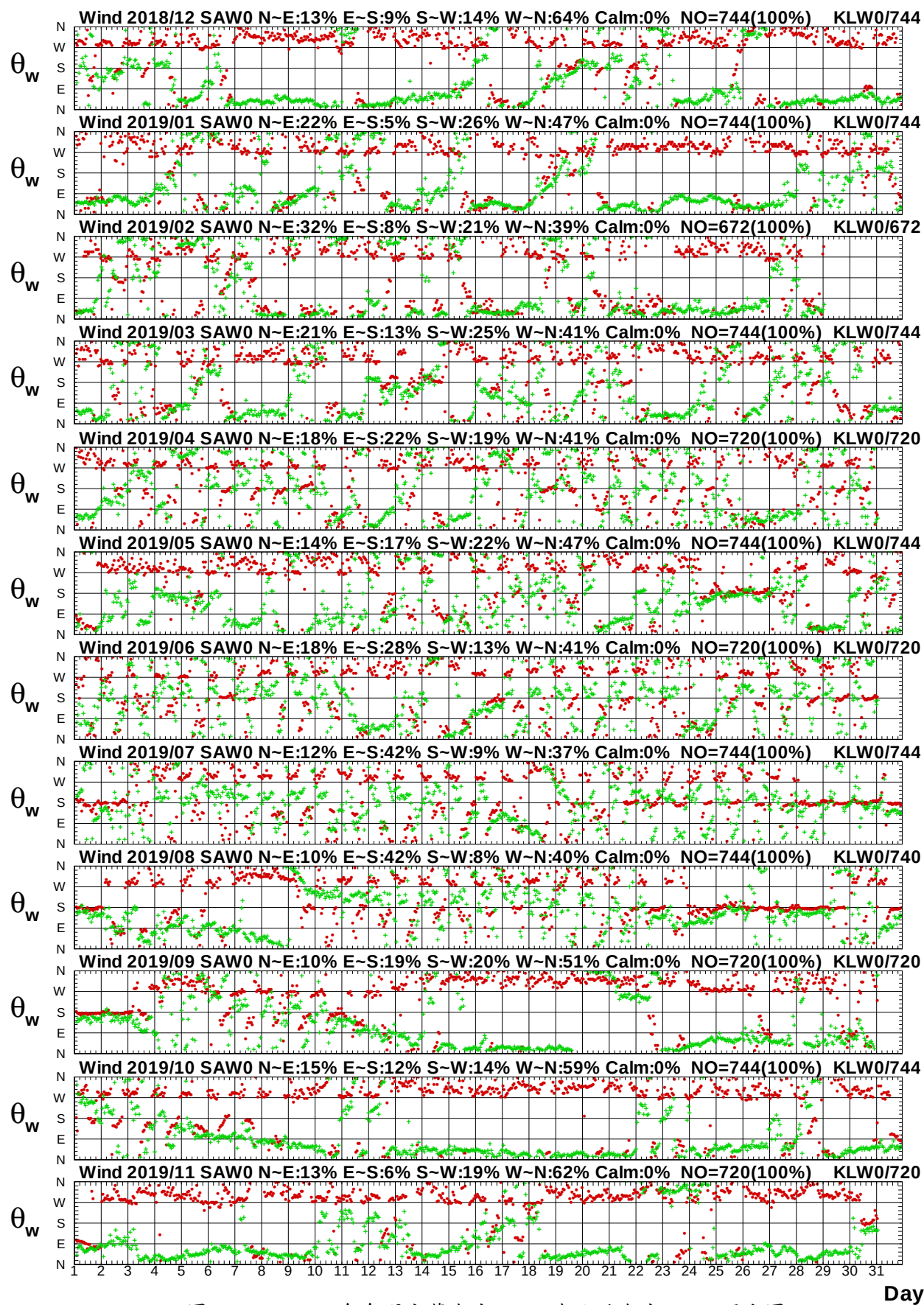


圖1.3.6b 2019年每月宜蘭海域 W 站與北端海域 W 站風向圖

W18CSAW0.1HA W18CKLW0.1H0 W191SAW0.1HA W191KLW0.1H0 W192SAW0.1HA W192KLW0.1H0
W193SAW0.1HA W193KLW0.1H0 W194SAW0.1HA W194KLW0.1H0 W195SAW0.1HA W195KLW0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

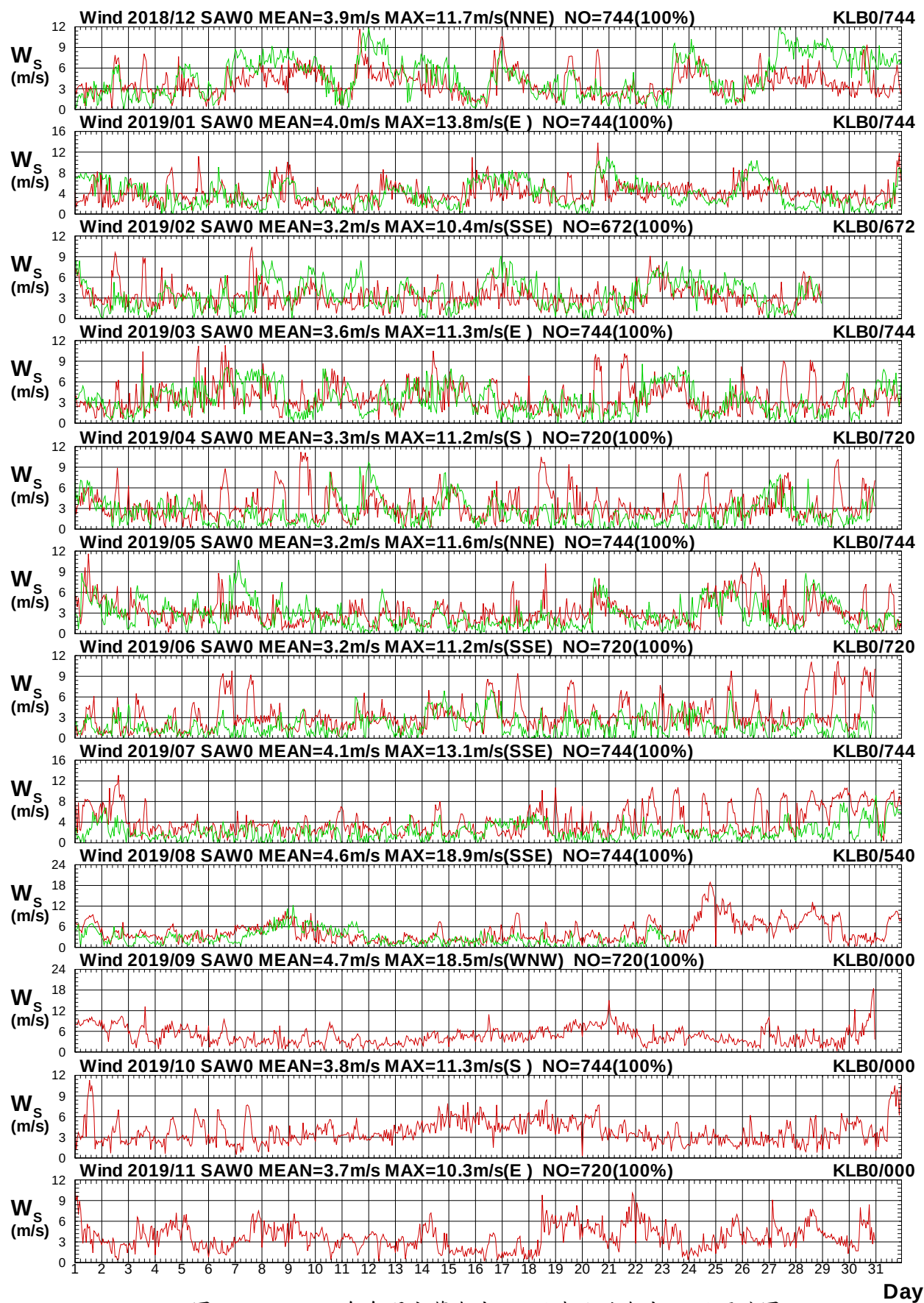


圖1.3.7a 2019年每月宜蘭海域 W 站與北端海域 B 站風速圖

W18CSAW0.1HA W18CKLB0.1H0 W191SAW0.1HA W191KLB0.1H0 W192SAW0.1HA W192KLB0.1H0
W193SAW0.1HA W193KLB0.1H0 W194SAW0.1HA W194KLB0.1H0 W195SAW0.1HA W195KLB0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

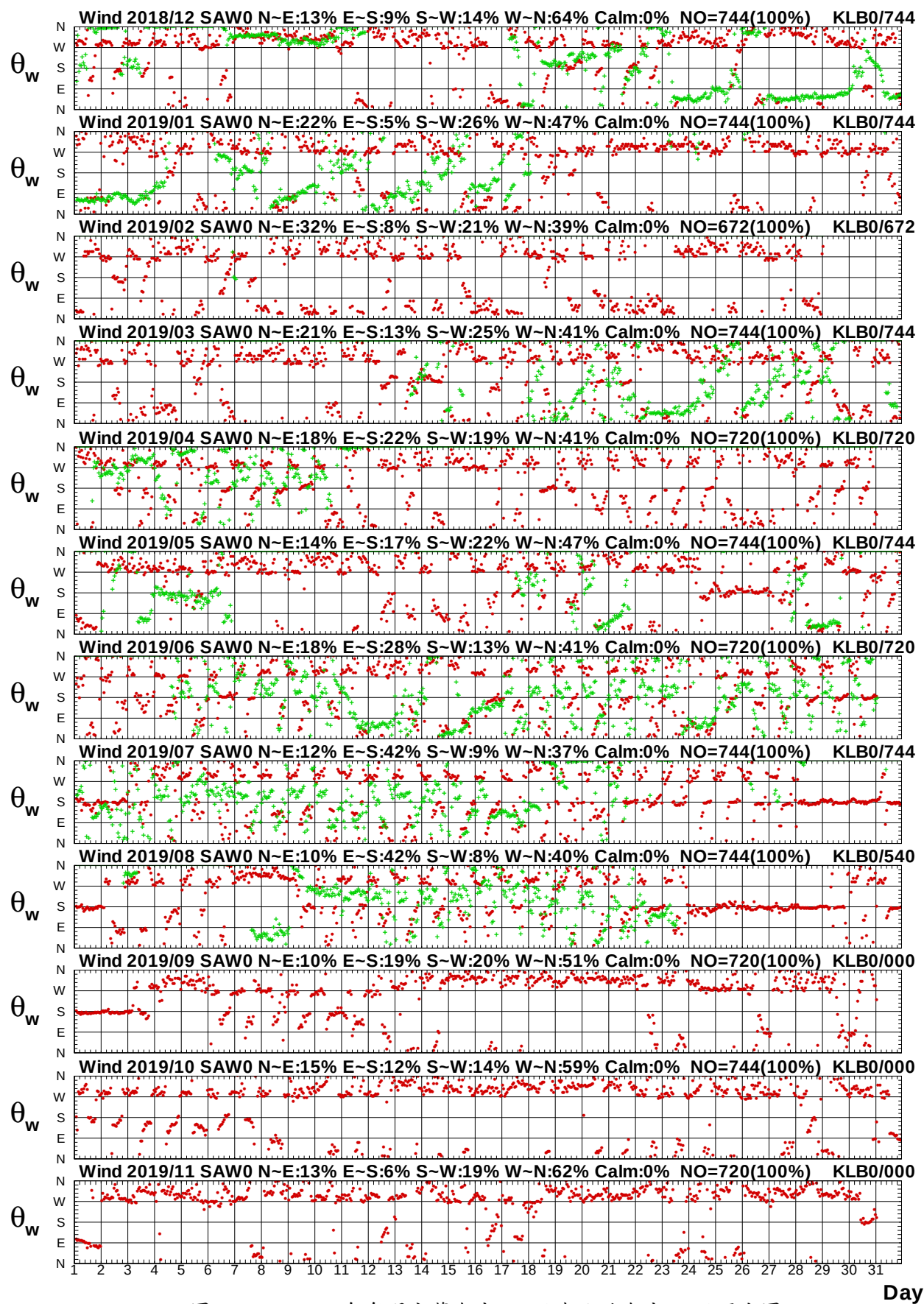


圖1.3.7b 2019年每月宜蘭海域 W 站與北端海域 B 站風向圖

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W193SAW0.1HA W193KLB0.1H0 W194SAW0.1HA W194KLB0.1H0 W195SAW0.1HA W195KLB0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

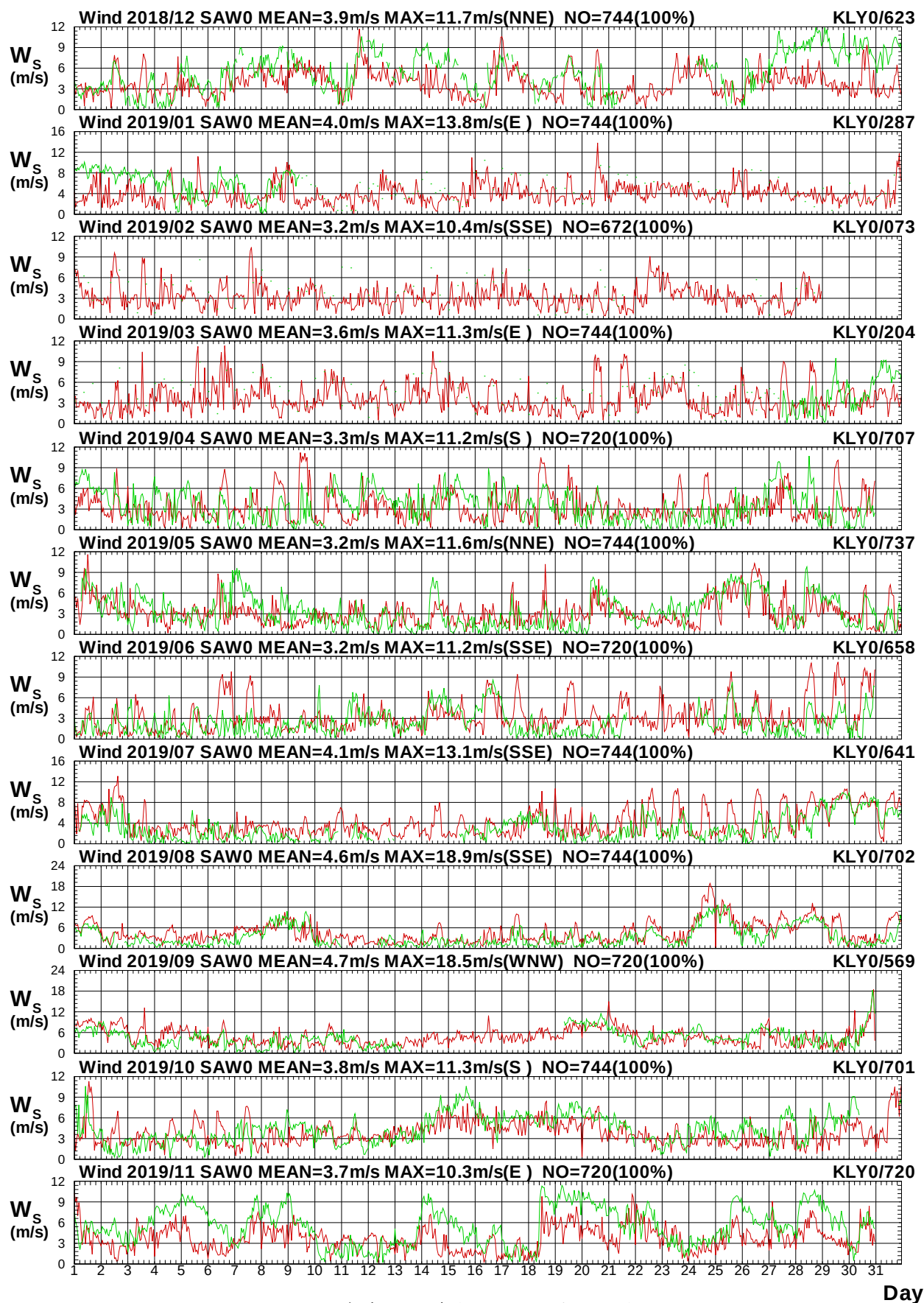


圖1.3.8a 2019年每月宜蘭海域 W 站與北端海域 Y 站風速圖

W18CSAW0.1HA W18CKLY0.1H0 W191SAW0.1HA W191KLY0.1H0 W192SAW0.1HA W192KLY0.1H0
W193SAW0.1HA W193KLY0.1H0 W194SAW0.1HA W194KLY0.1H0 W195SAW0.1HA W195KLY0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

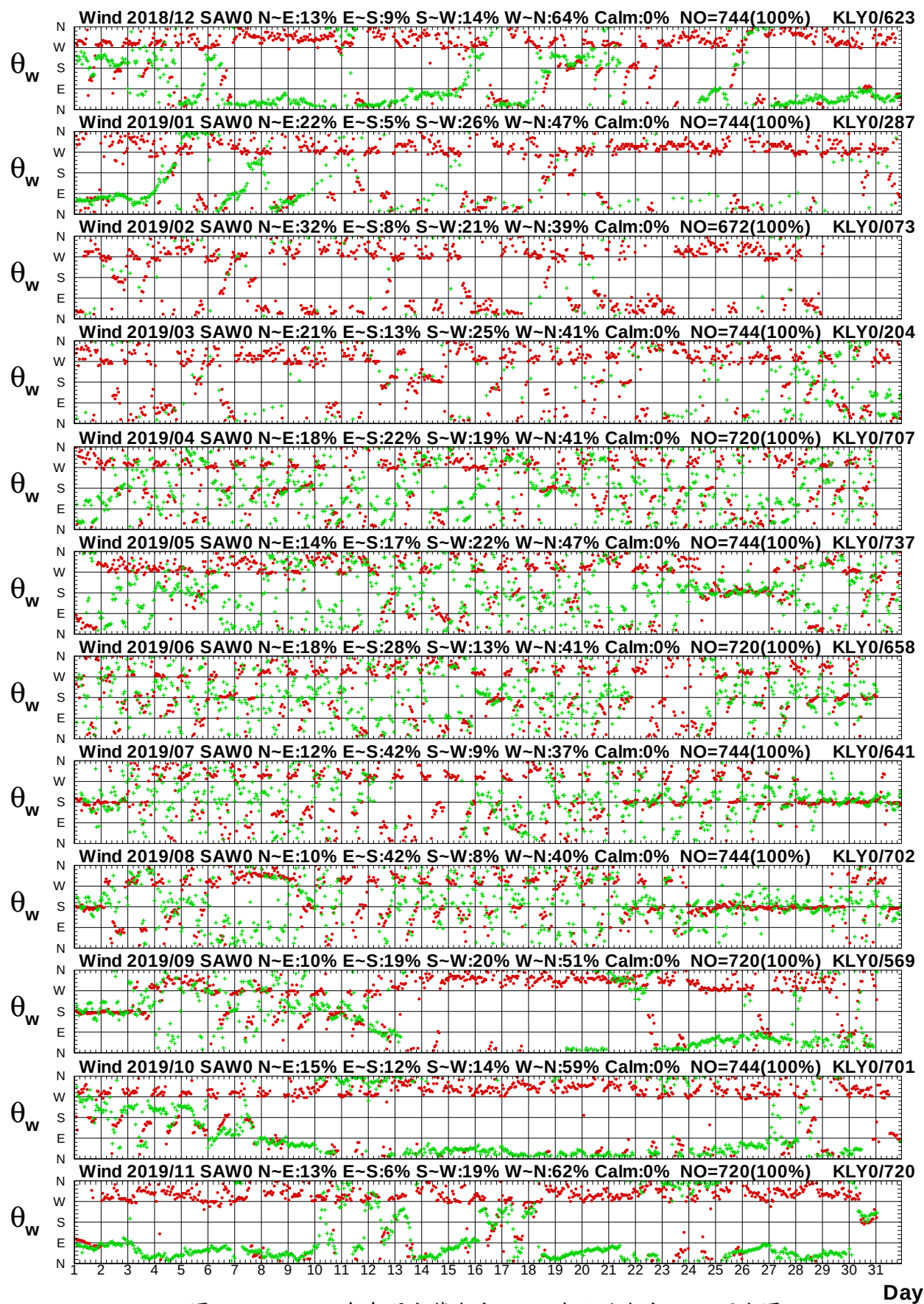


圖1.3.8b 2019年每月宜蘭海域 W 站與北端海域 Y 站風向圖

W18CSAW0.1HA W18CKLY0.1H0 W191SAW0.1HA W191KLY0.1H0 W192SAW0.1HA W192KLY0.1H0
W193SAW0.1HA W193KLY0.1H0 W194SAW0.1HA W194KLY0.1H0 W195SAW0.1HA W195KLY0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

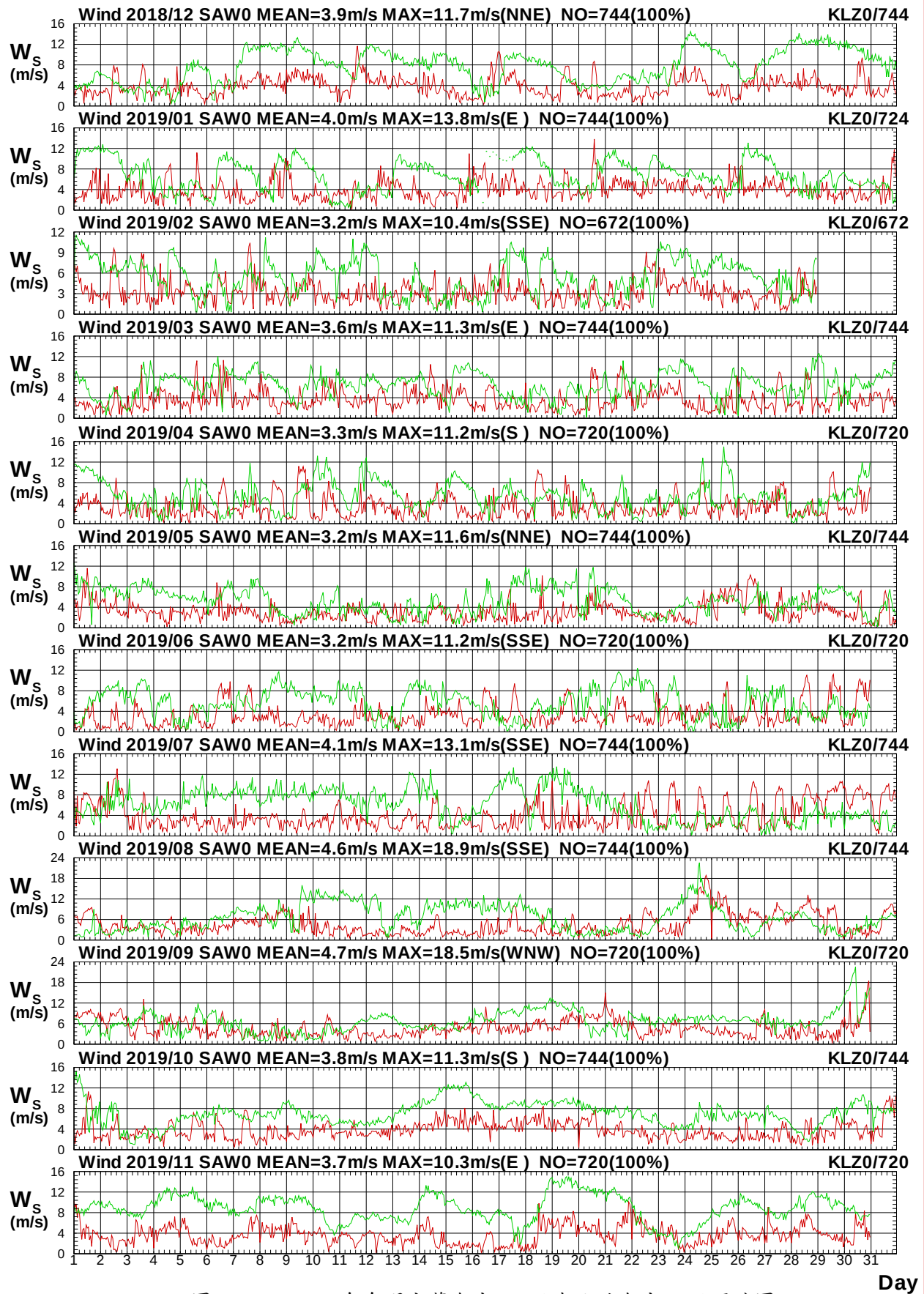


圖1.3.9a 2019年每月宜蘭海域 W 站與北端海域 Z 站風速圖

W18CSAW0.1HA W18CKLZ0.1H0 W191SAW0.1HA W191KLZ0.1H0 W192SAW0.1HA W192KLZ0.1H0
W193SAW0.1HA W193KLZ0.1H0 W194SAW0.1HA W194KLZ0.1H0 W195SAW0.1HA W195KLZ0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

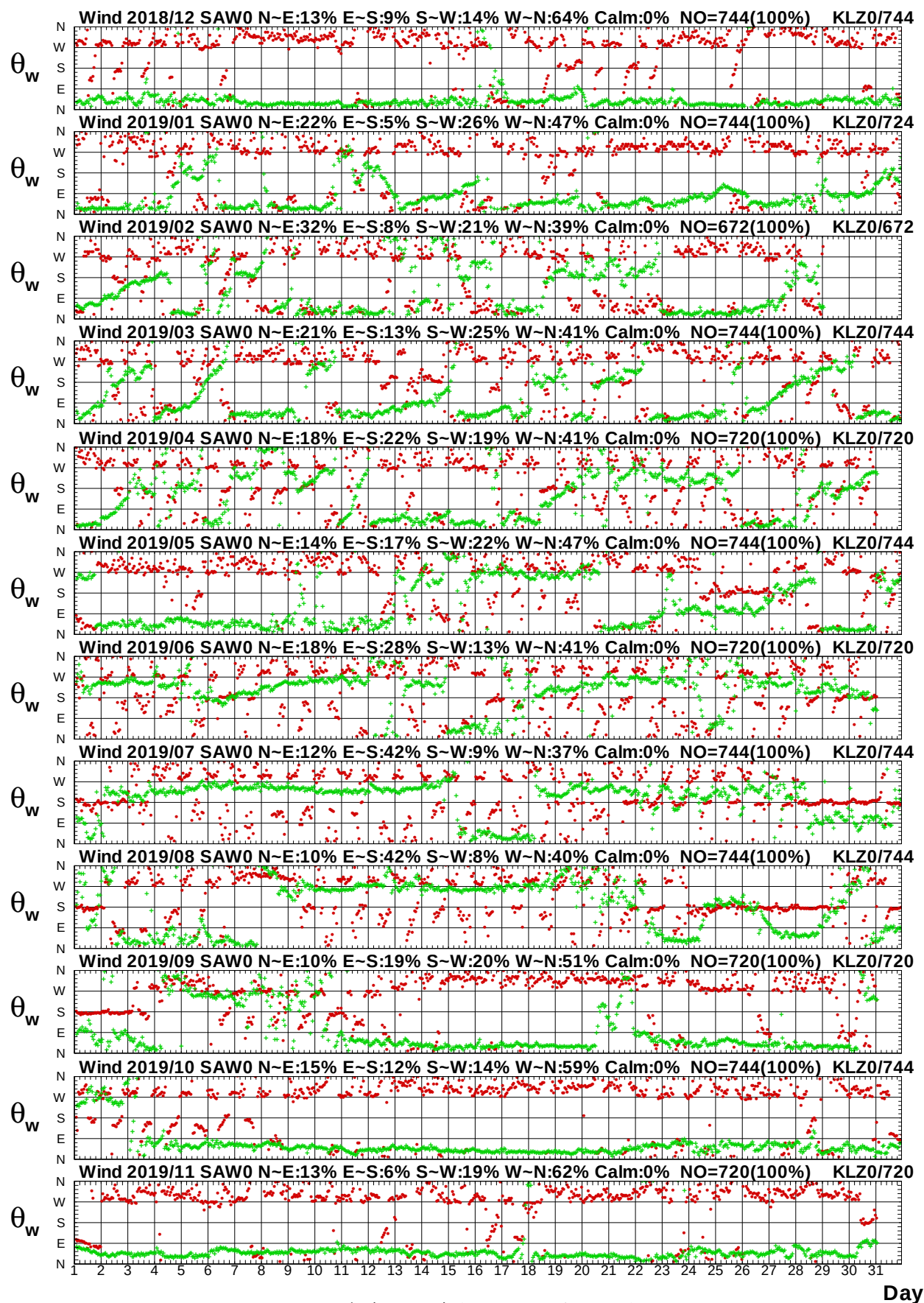


圖1.3.9b 2019年每月宜蘭海域 W 站與北端海域 Z 站風向圖

W18CSAW0.1HA W18CKLZ0.1H0 W191SAW0.1HA W191KLZ0.1H0 W192SAW0.1HA W192KLZ0.1H0
W193SAW0.1HA W193KLZ0.1H0 W194SAW0.1HA W194KLZ0.1H0 W195SAW0.1HA W195KLZ0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

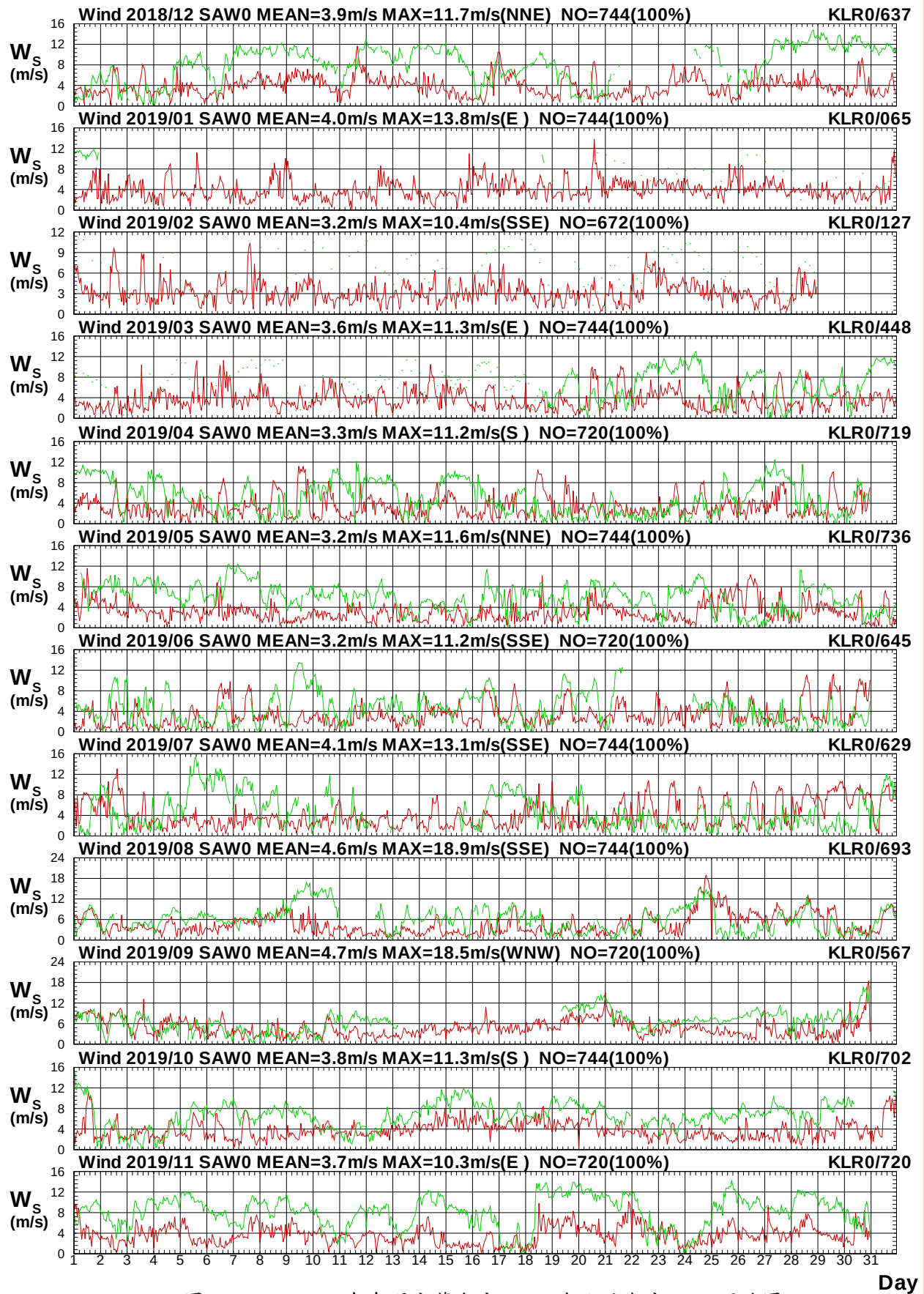


圖 1.3.10a 2019 年每月宜蘭海域 W 站與北端海域 R 站風速圖

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W193SAW0.1HA W193KLR0.1H0 W194SAW0.1HA W194KLR0.1H0 W195SAW0.1HA W195KLR0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

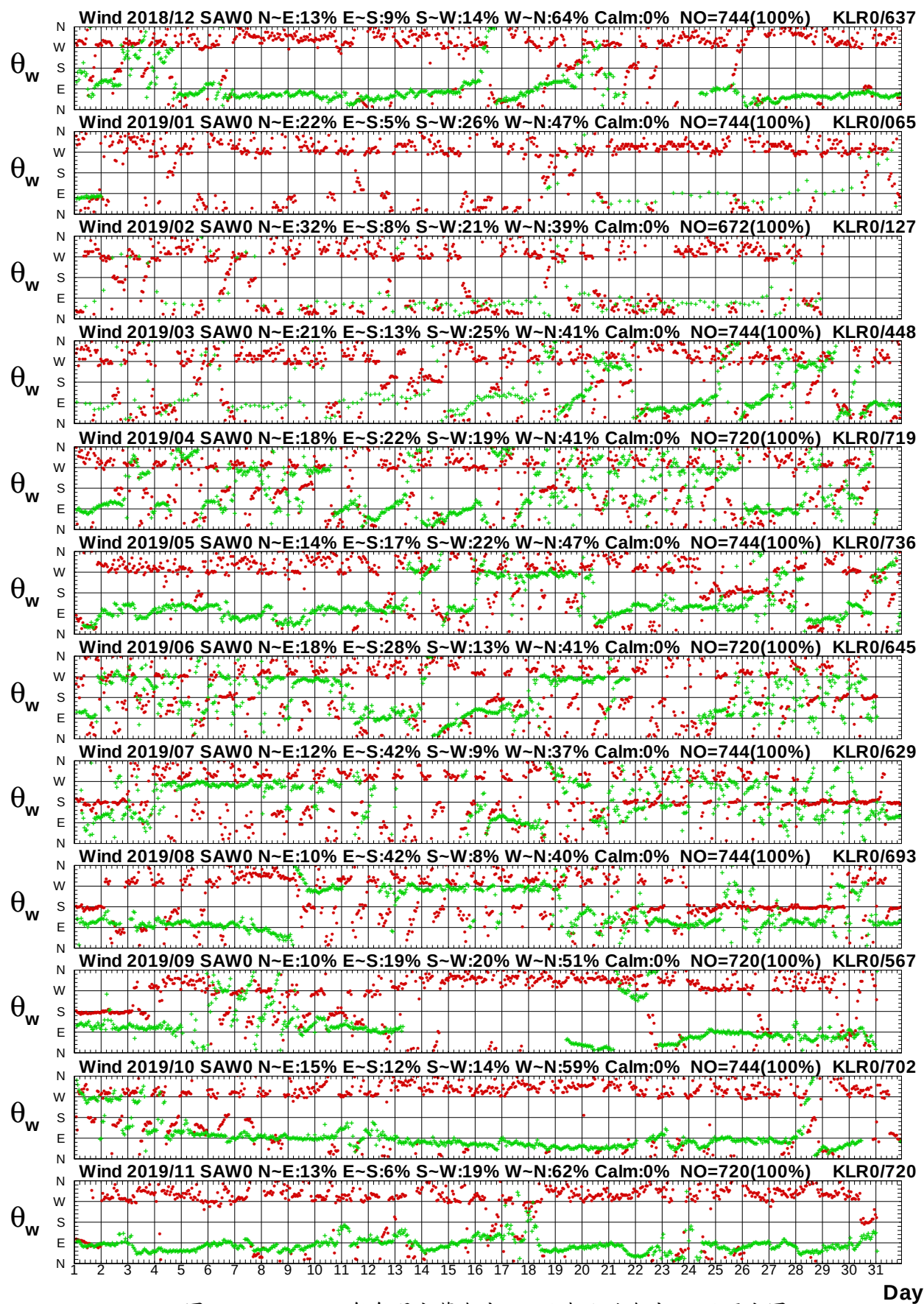


圖1.3.10b 2019年每月宜蘭海域 W 站與北端海域 R 站風向圖

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W193SAW0.1HA W193KLR0.1H0 W194SAW0.1HA W194KLR0.1H0 W195SAW0.1HA W195KLR0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

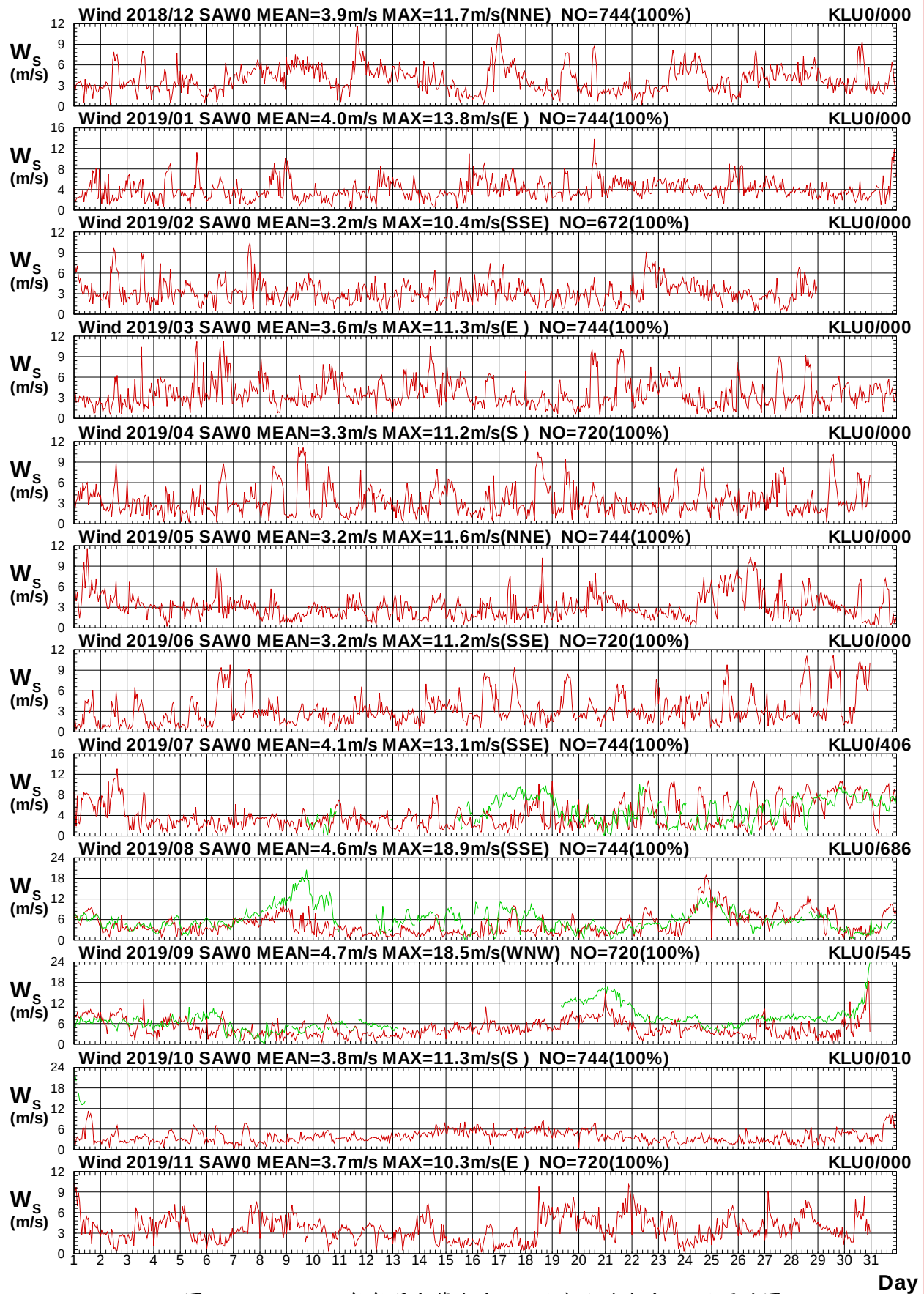


圖1.3.11a 2019年每月宜蘭海域 W 站與北端海域 U 站風速圖

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W193SAW0.1HA W193KLU0.1H0 W194SAW0.1HA W194KLU0.1H0 W195SAW0.1HA W195KLU0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

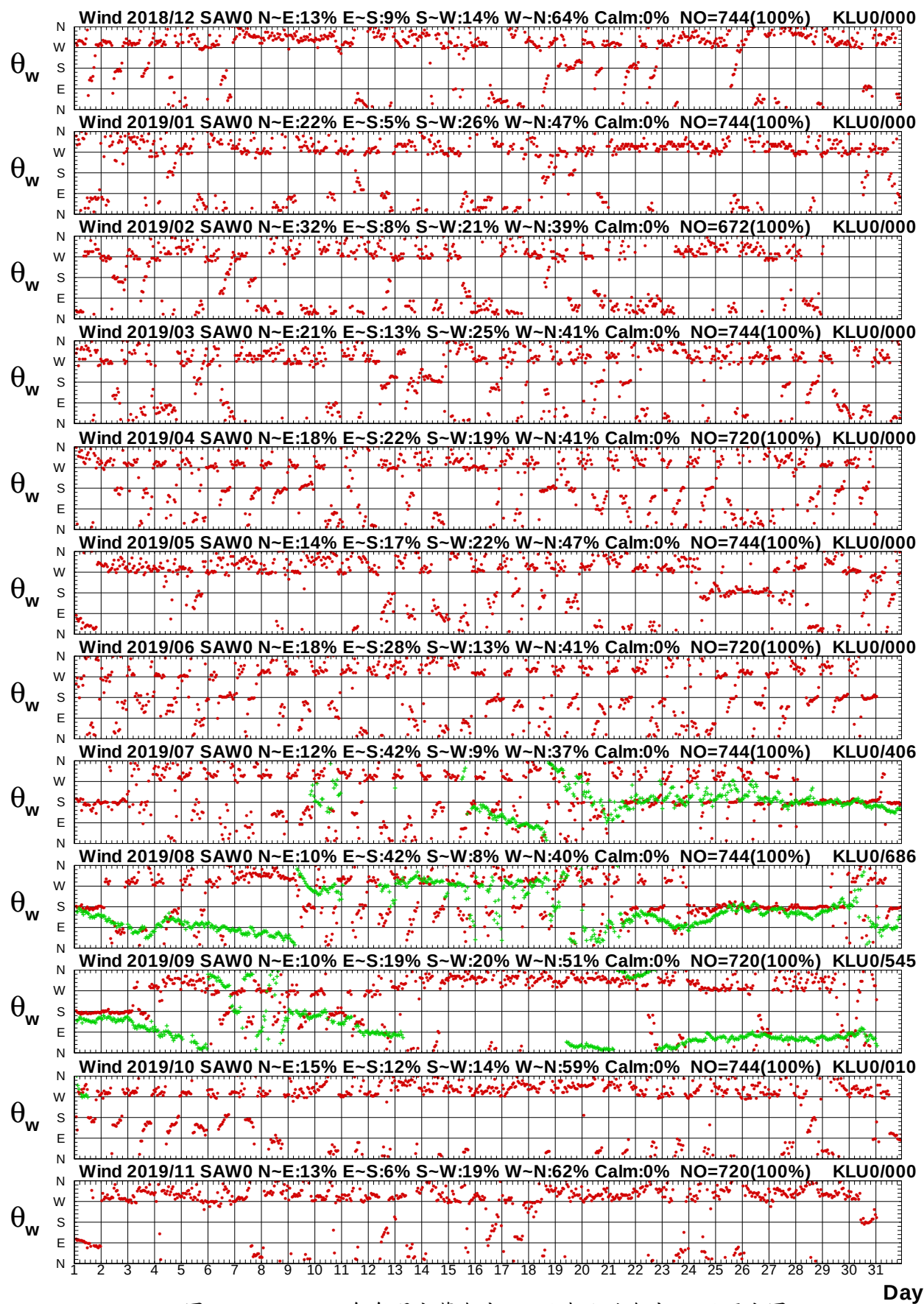


圖1.3.11b 2019年每月宜蘭海域 W 站與北端海域 U 站風向圖

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W193SAW0.1HA W193KLU0.1H0 W194SAW0.1HA W194KLU0.1H0 W195SAW0.1HA W195KLU0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

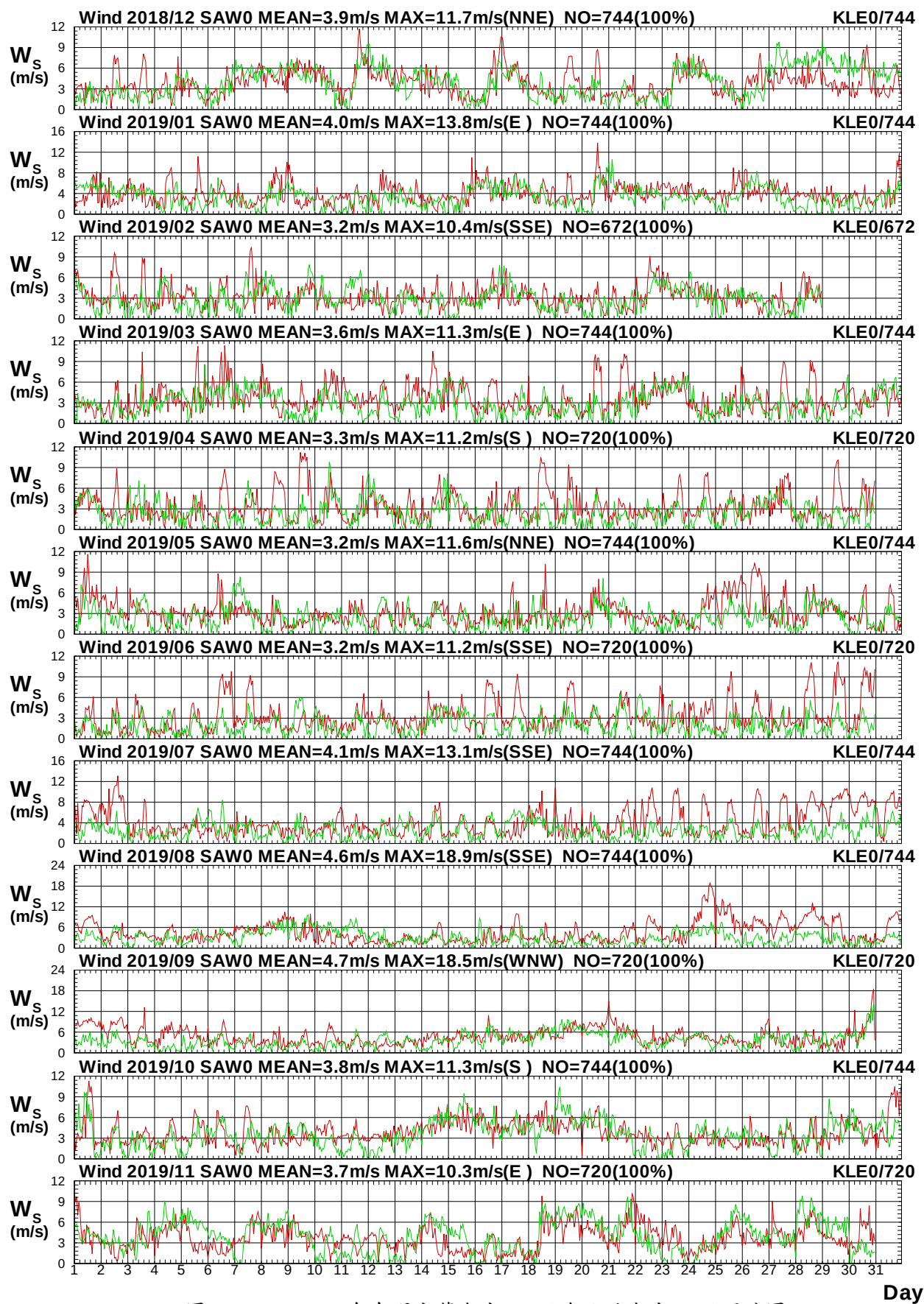


圖1.3.12a 2019年每月宜蘭海域 W 站與北端海域 E 站風速圖

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W193SAW0.1HA W193KLE0.1H0 W194SAW0.1HA W194KLE0.1H0 W195SAW0.1HA W195KLE0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

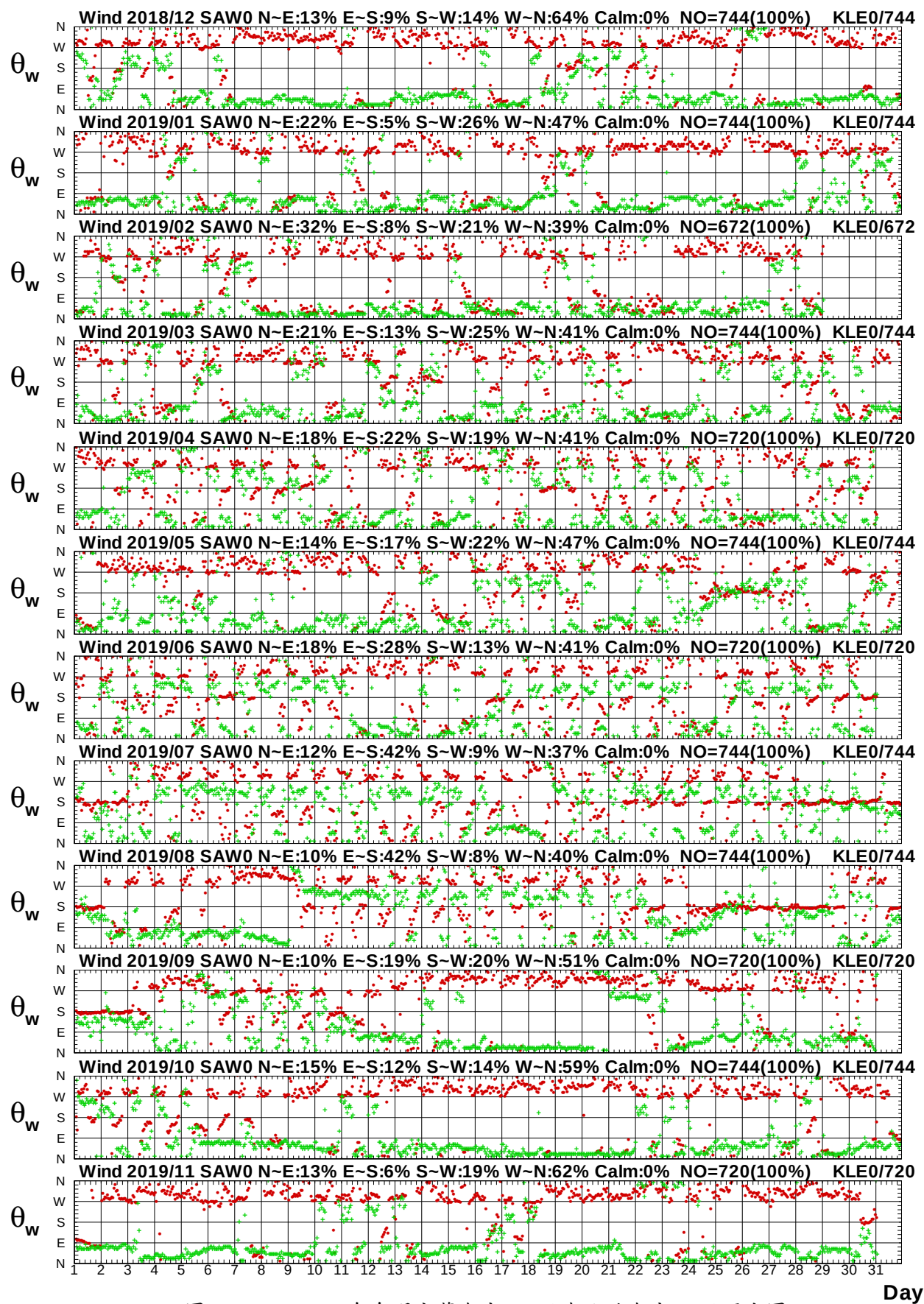


圖1.3.12b 2019年每月宜蘭海域 W 站與北端海域 E 站風向圖

W18CSAW0.1HA W18CKLE0.1H0 W191SAW0.1HA W191KLE0.1H0 W192SAW0.1HA W192KLE0.1H0
W193SAW0.1HA W193KLE0.1H0 W194SAW0.1HA W194KLE0.1H0 W195SAW0.1HA W195KLE0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

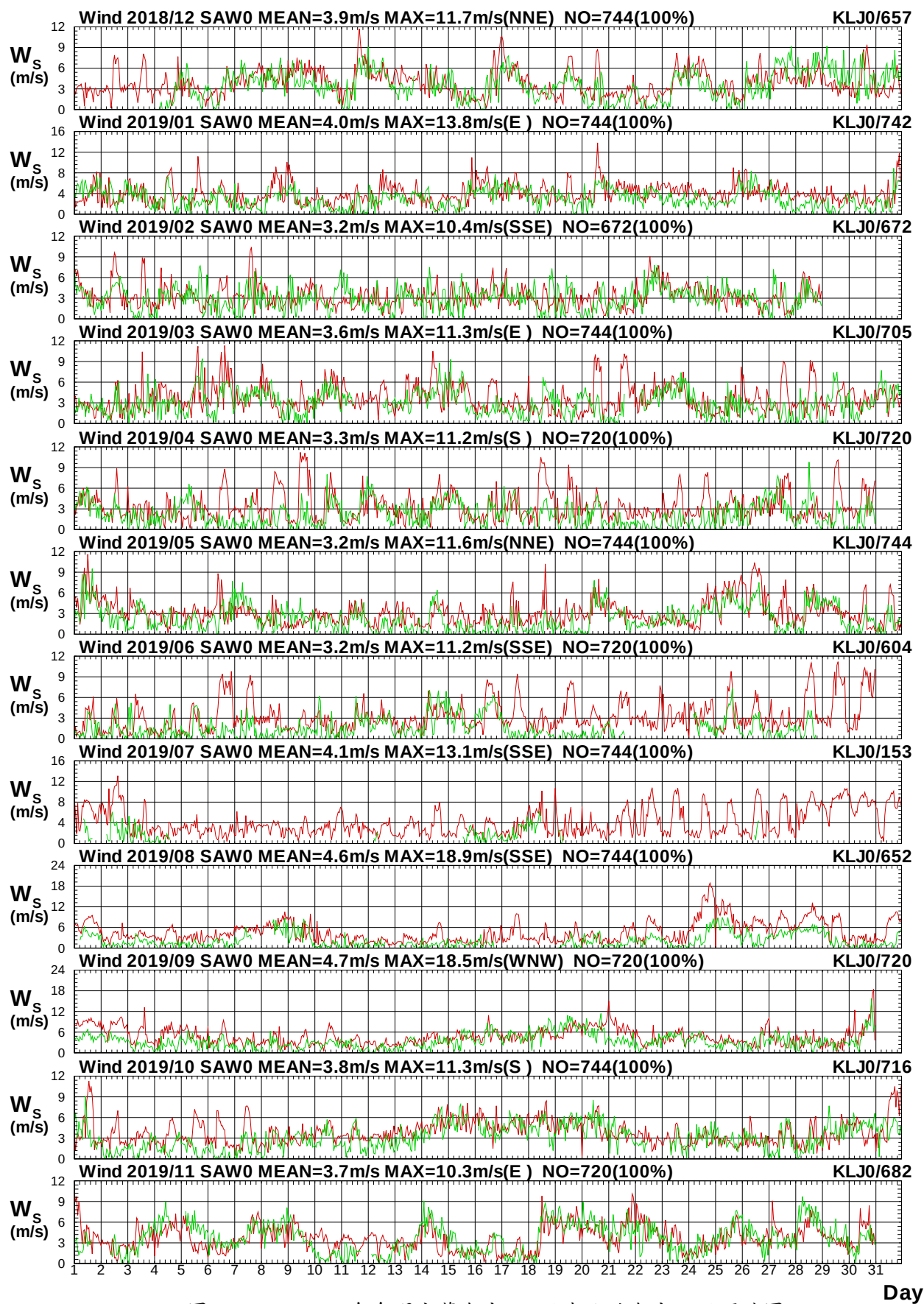


圖1.3.13a 2019年每月宜蘭海域 W 站與北端海域 J 站風速圖

W18CSAW0.1HA W18CKLJ0.1H0 W191SAW0.1HA W191KLJ0.1H0 W192SAW0.1HA W192KLJ0.1H0
W193SAW0.1HA W193KLJ0.1H0 W194SAW0.1HA W194KLJ0.1H0 W195SAW0.1HA W195KLJ0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

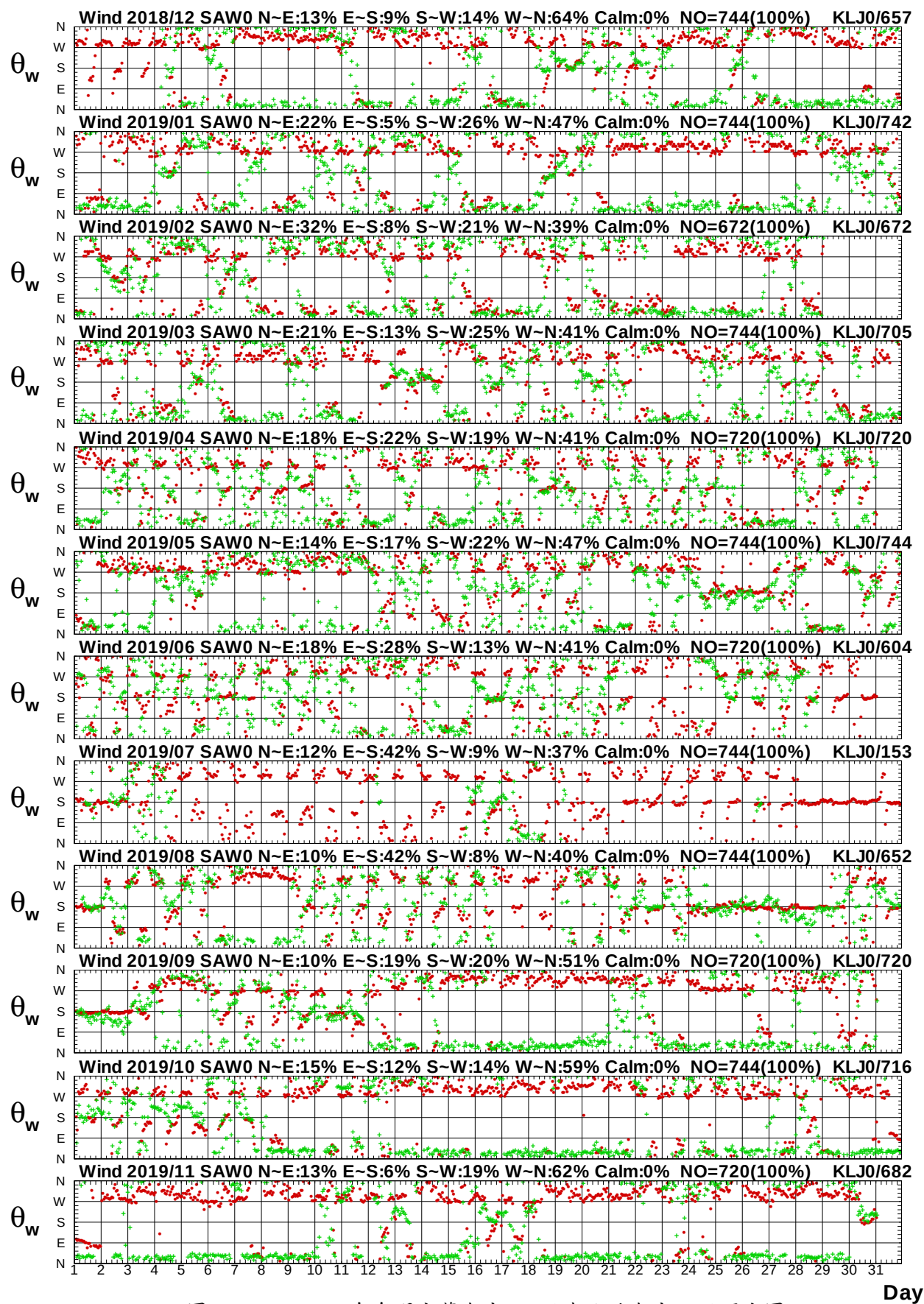


圖1.3.13b 2019年每月宜蘭海域 W 站與北端海域 J 站風向圖

W18CSAW0.1HA W18CKLJ0.1H0 W191SAW0.1HA W191KLJ0.1H0 W192SAW0.1HA W192KLJ0.1H0
W193SAW0.1HA W193KLJ0.1H0 W194SAW0.1HA W194KLJ0.1H0 W195SAW0.1HA W195KLJ0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

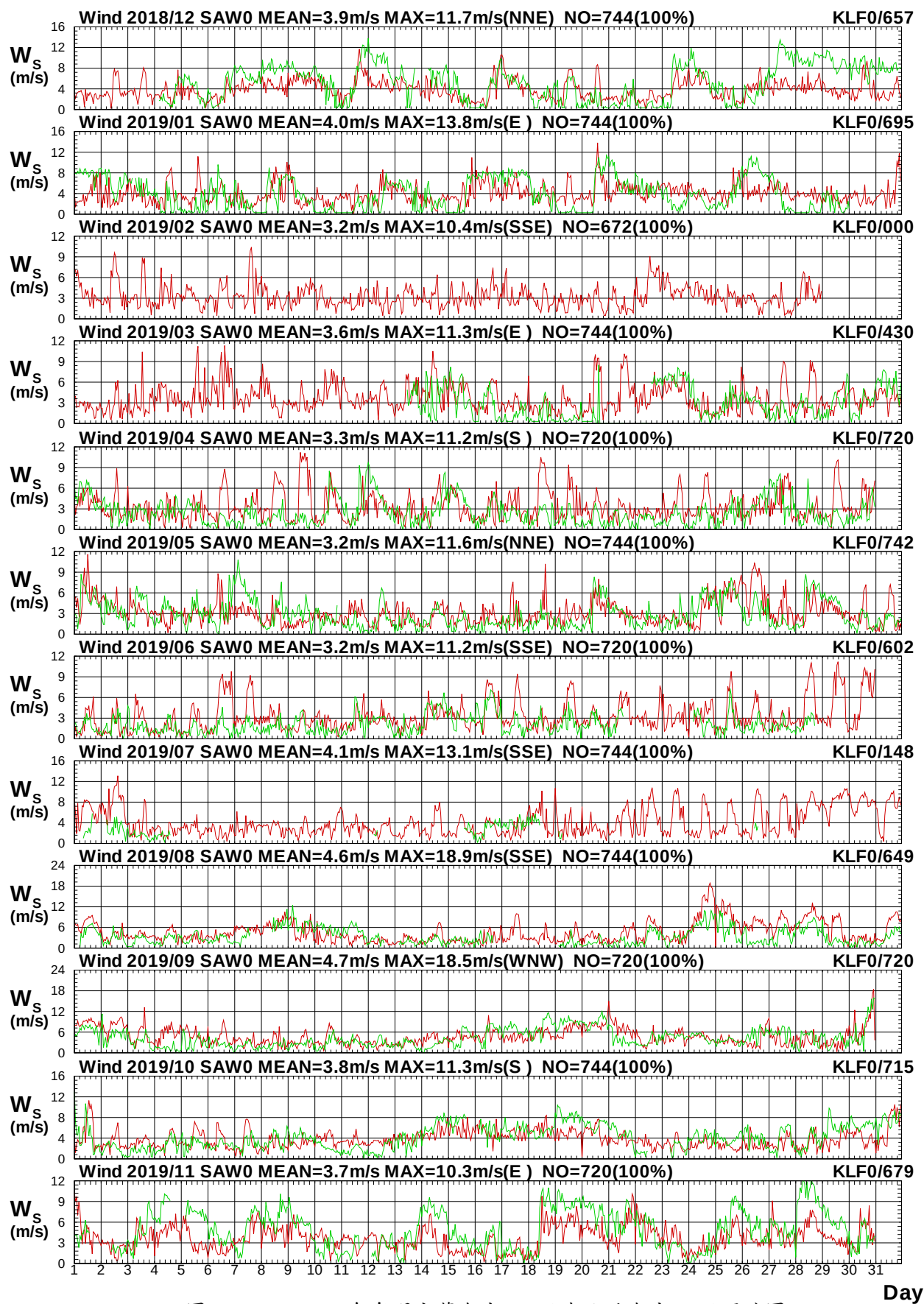


圖1.3.14a 2019年每月宜蘭海域 W 站與北端海域 F 站風速圖

W18CSAW0.1HA W18CKLF0.1H0 W191SAW0.1HA W191KLF0.1H0 W192SAW0.1HA W192KLF0.1H0
W193SAW0.1HA W193KLF0.1H0 W194SAW0.1HA W194KLF0.1H0 W195SAW0.1HA W195KLF0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

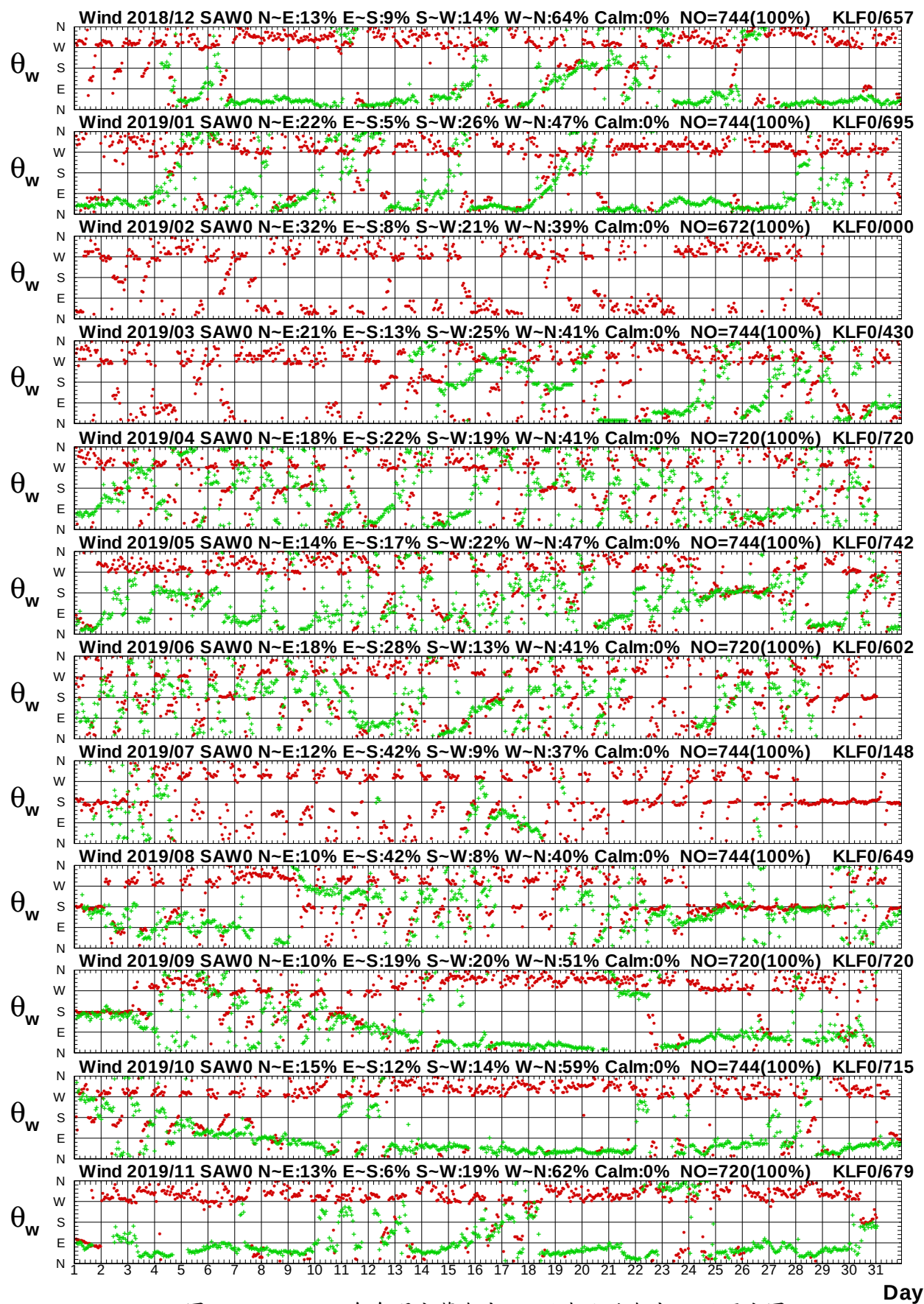


圖1.3.14b 2019年每月宜蘭海域 W 站與北端海域 F 站風向圖

W18CSAW0.1HA W18CKLF0.1H0 W191SAW0.1HA W191KLF0.1H0 W192SAW0.1HA W192KLF0.1H0
W193SAW0.1HA W193KLF0.1H0 W194SAW0.1HA W194KLF0.1H0 W195SAW0.1HA W195KLF0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

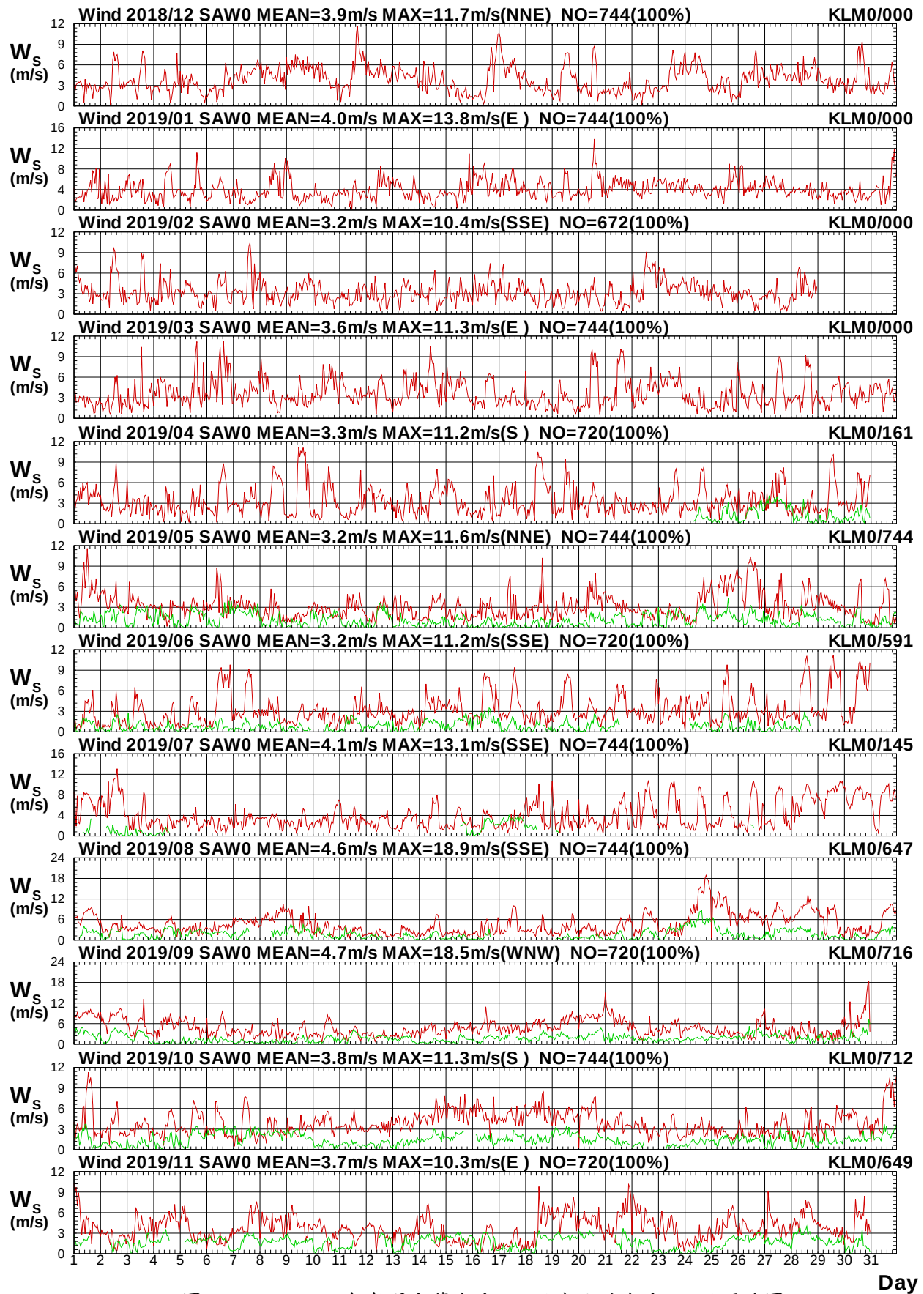


圖1.3.15a 2019年每月宜蘭海域 W 站與北端海域 M 站風速圖

W18CSAW0.1HA W18CKLM0.1H0 W191SAW0.1HA W191KLM0.1H0 W192SAW0.1HA W192KLM0.1H0
W193SAW0.1HA W193KLM0.1H0 W194SAW0.1HA W194KLM0.1H0 W195SAW0.1HA W195KLM0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

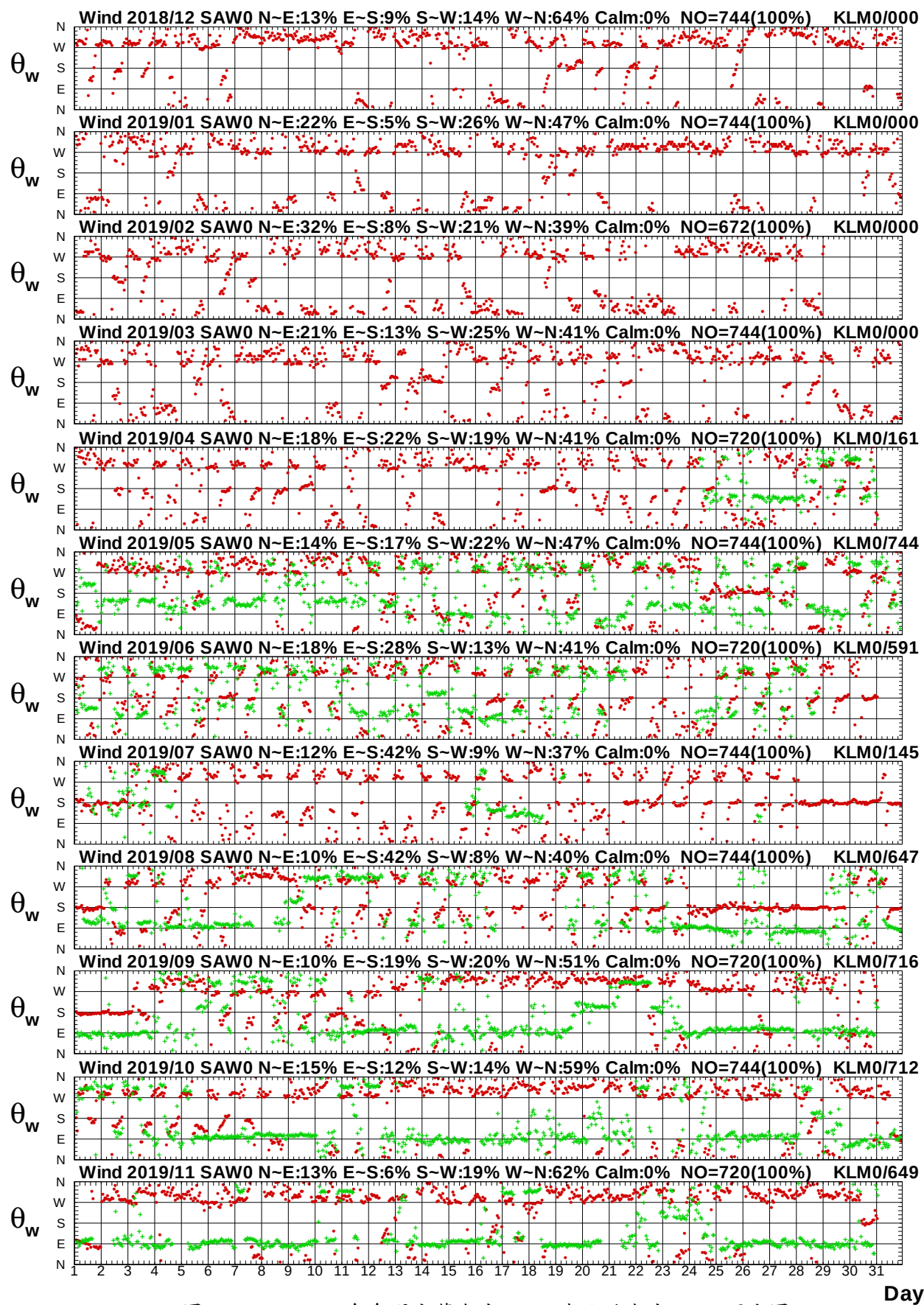


圖1.3.15b 2019年每月宜蘭海域 W 站與北端海域 M 站風向圖

W18CSAW0.1HA W18CKLM0.1H0 W191SAW0.1HA W191KLM0.1H0 W192SAW0.1HA W192KLM0.1H0
W193SAW0.1HA W193KLM0.1H0 W194SAW0.1HA W194KLM0.1H0 W195SAW0.1HA W195KLM0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

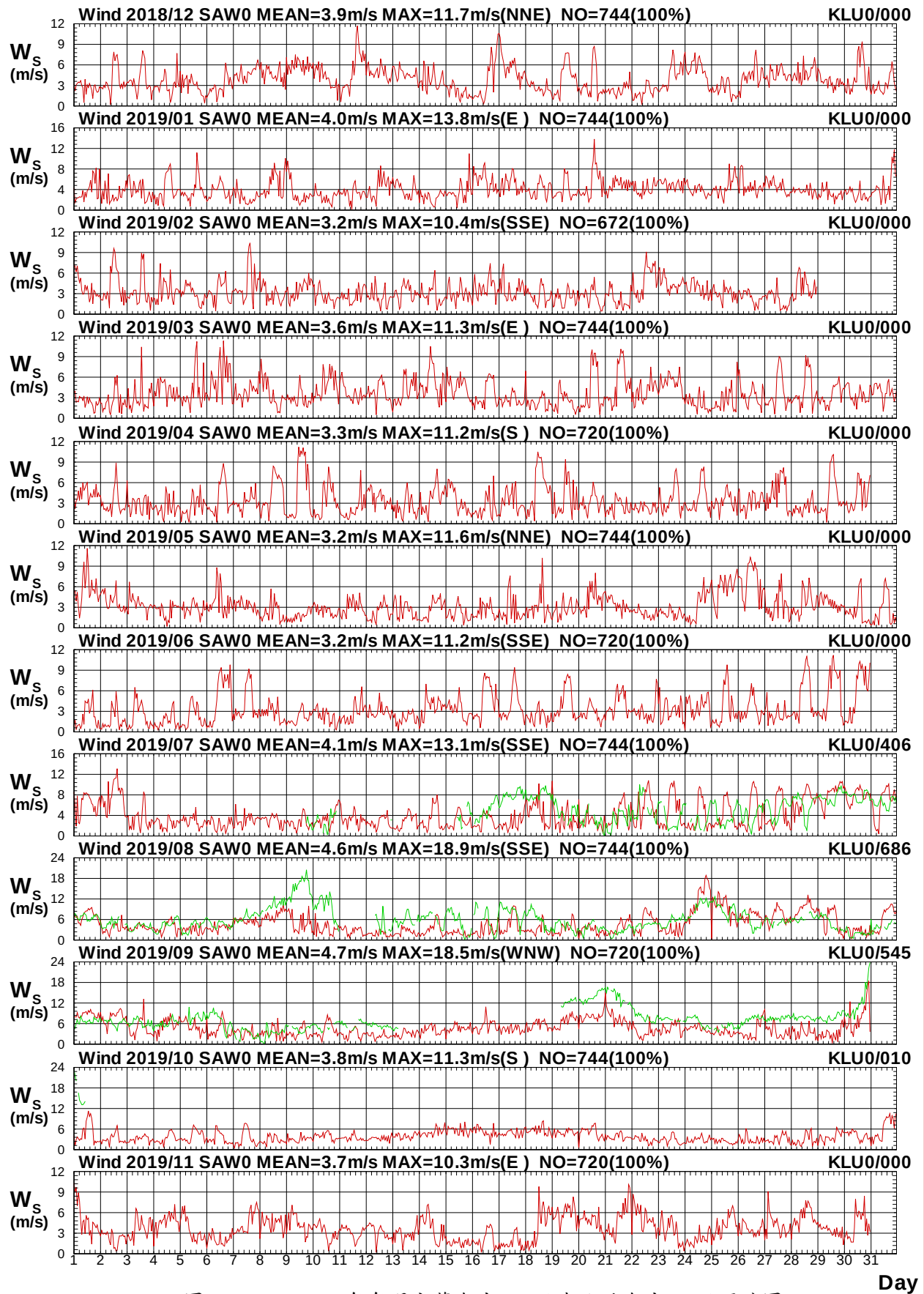


圖1.3.16a 2019年每月宜蘭海域 W 站與北端海域 U 站風速圖

W18CSAW0.1HA W18CKLU0.1H0 W191SAW0.1HA W191KLU0.1H0 W192SAW0.1HA W192KLU0.1H0
W193SAW0.1HA W193KLU0.1H0 W194SAW0.1HA W194KLU0.1H0 W195SAW0.1HA W195KLU0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

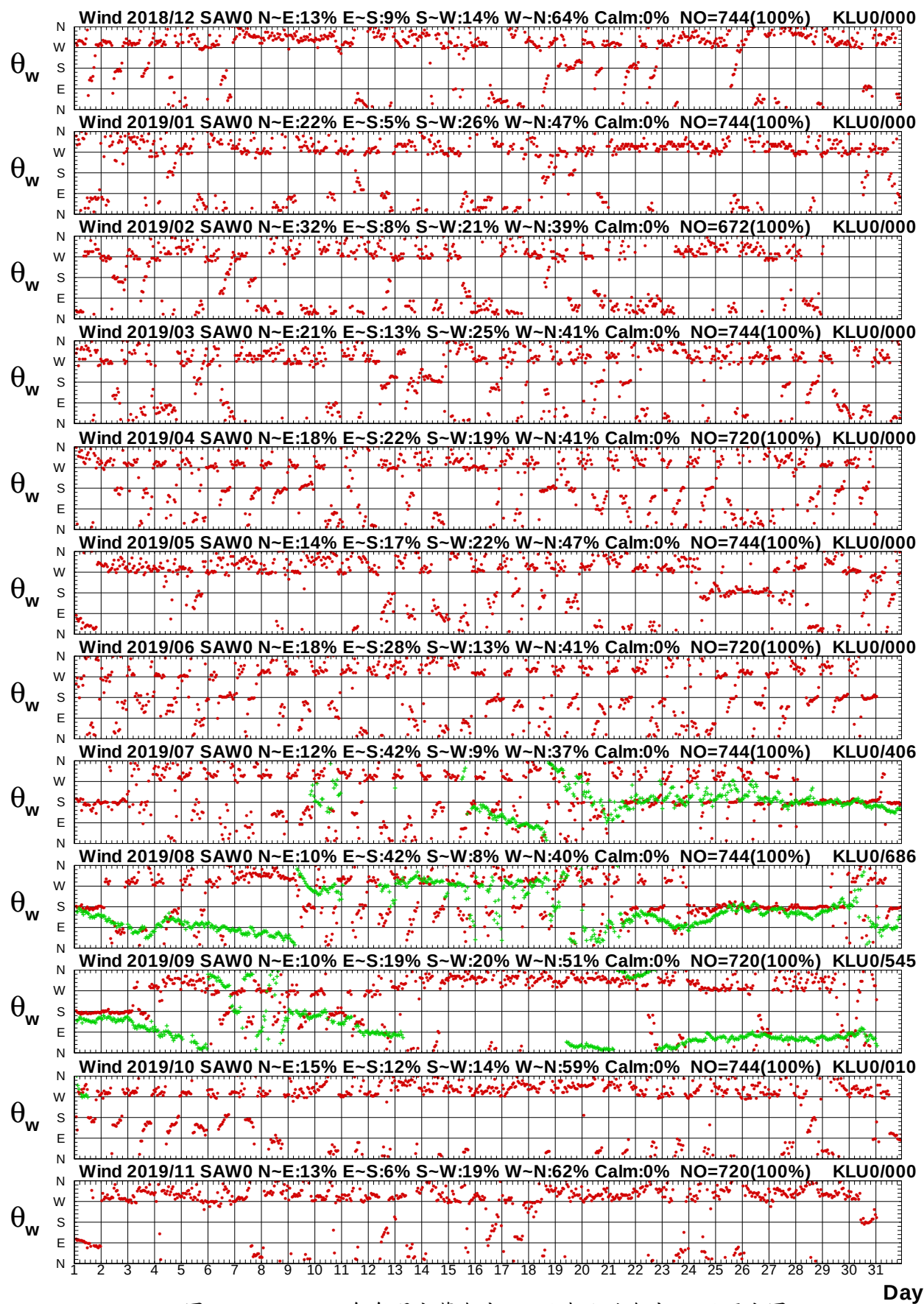


圖1.3.16b 2019年每月宜蘭海域 W 站與北端海域 U 站風向圖

W18CSAW0.1HA W18CKLU0.1H0 W191SAW0.1HA W191KLU0.1H0 W192SAW0.1HA W192KLU0.1H0
W193SAW0.1HA W193KLU0.1H0 W194SAW0.1HA W194KLU0.1H0 W195SAW0.1HA W195KLU0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

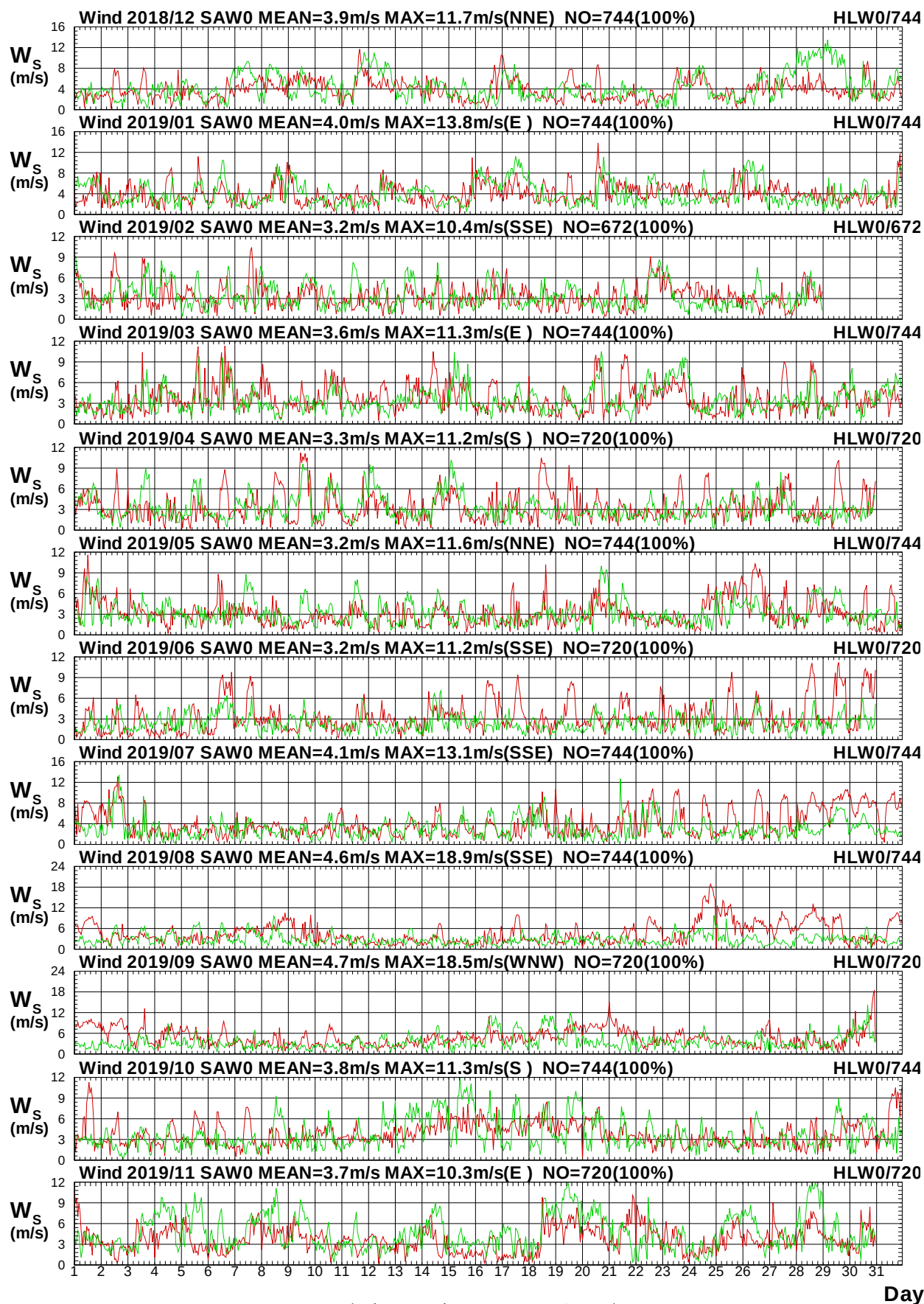


圖1.3.17a 2019年每月宜蘭海域 W 站與花蓮海域 W 站風速圖

W18CSAW0.1HA W18CHLW0.1H0 W191SAW0.1HA W191HLW0.1H0 W192SAW0.1HA W192HLW0.1H0
W193SAW0.1HA W193HLW0.1H0 W194SAW0.1HA W194HLW0.1H0 W195SAW0.1HA W195HLW0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

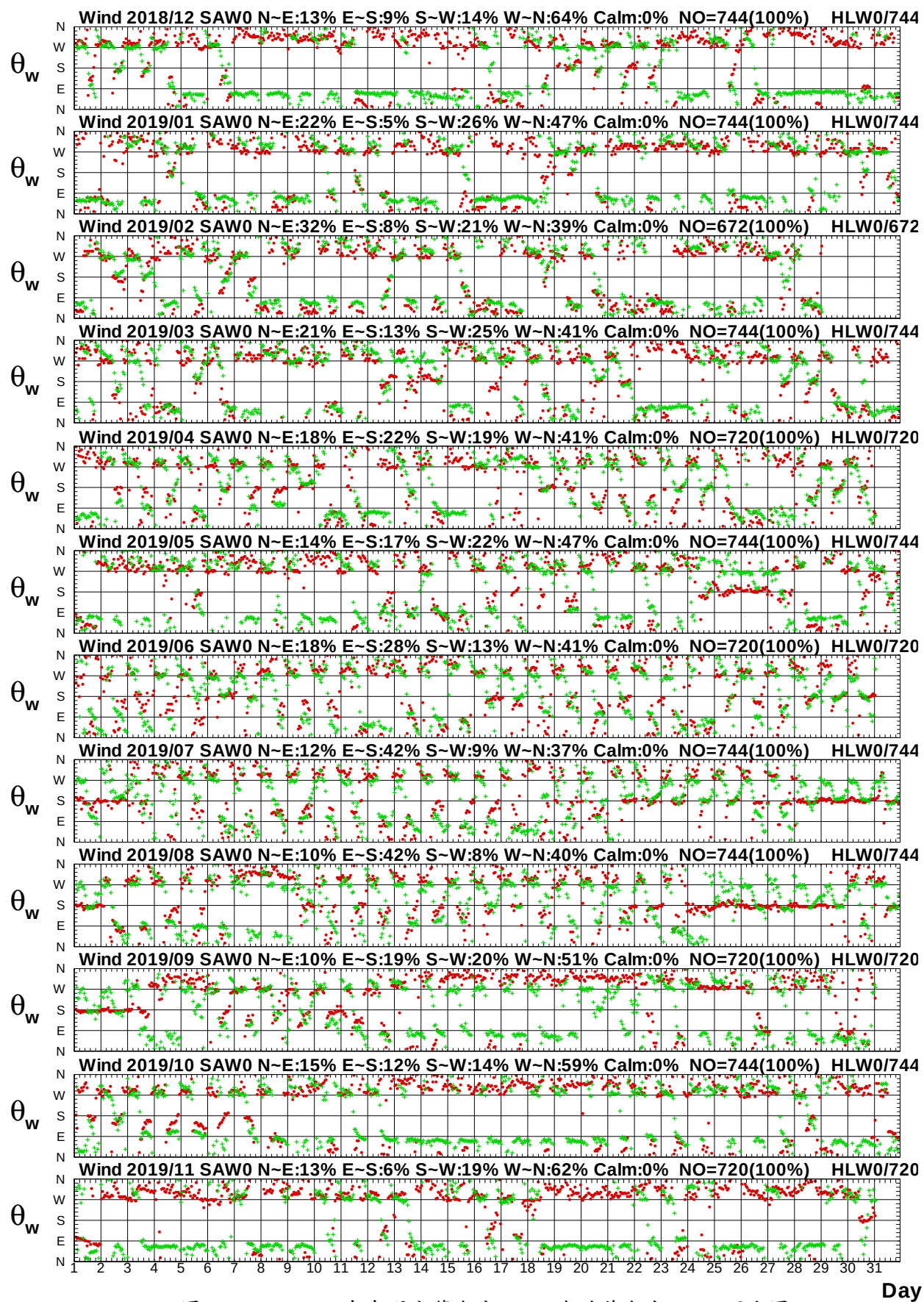


圖1.3.17b 2019年每月宜蘭海域 W 站與花蓮海域 W 站風向圖

W18CSAW0.1HA W18CHLW0.1H0 W191SAW0.1HA W191HLW0.1H0 W192SAW0.1HA W192HLW0.1H0
W193SAW0.1HA W193HLW0.1H0 W194SAW0.1HA W194HLW0.1H0 W195SAW0.1HA W195HLW0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

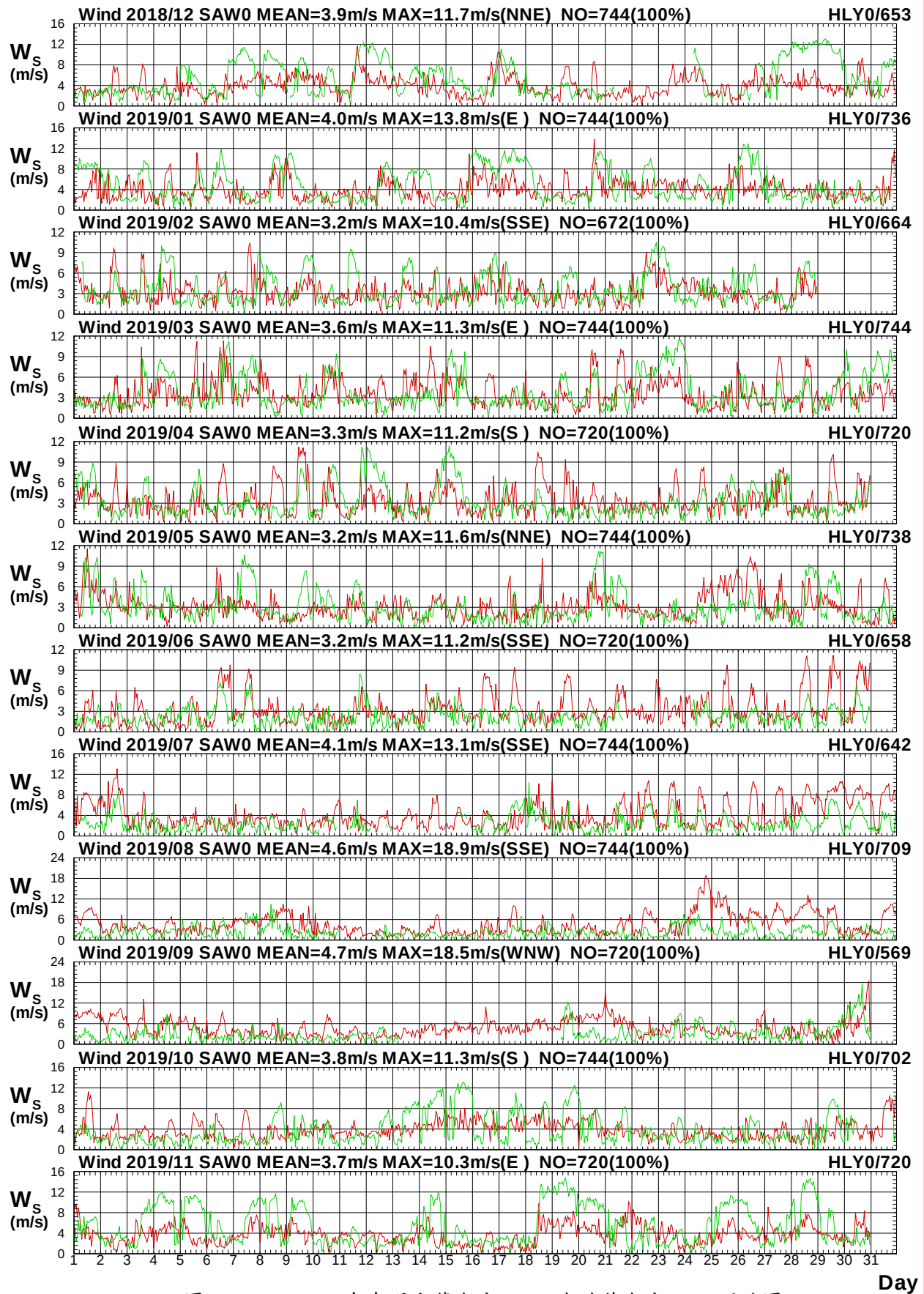


圖1.3.18a 2019年每月宜蘭海域 W 站與花蓮海域 Y 站風速圖

W18CSAW0.1HA W18CHLY0.1H0 W191SAW0.1HA W191HLY0.1H0 W192SAW0.1HA W192HLY0.1H0
W193SAW0.1HA W193HLY0.1H0 W194SAW0.1HA W194HLY0.1H0 W195SAW0.1HA W195HLY0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

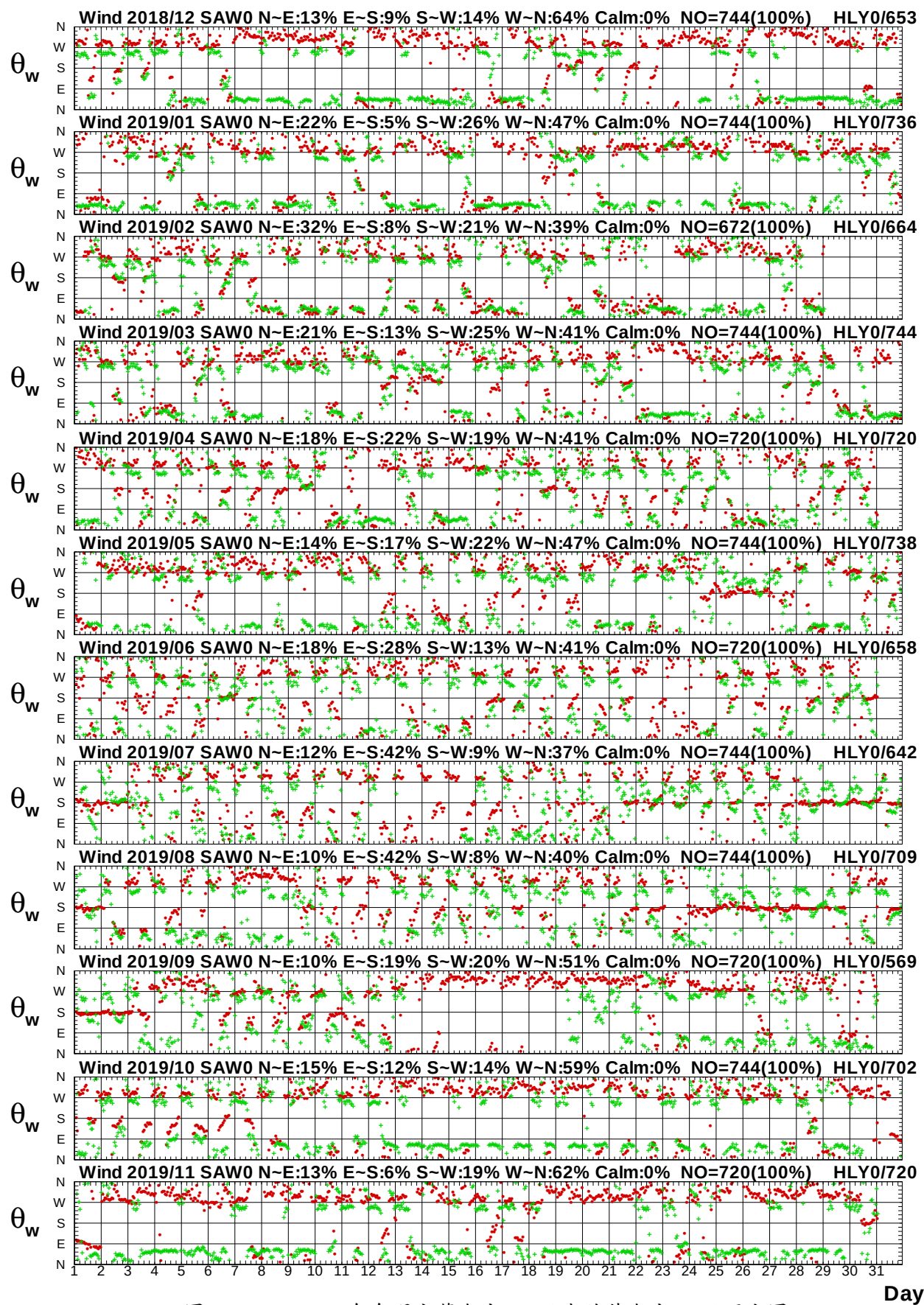


圖1.3.18b 2019年每月宜蘭海域 W 站與花蓮海域 Y 站風向圖

W18CSAW0.1HA W18CHLY0.1H0 W191SAW0.1HA W191HLY0.1H0 W192SAW0.1HA W192HLY0.1H0
W193SAW0.1HA W193HLY0.1H0 W194SAW0.1HA W194HLY0.1H0 W195SAW0.1HA W195HLY0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

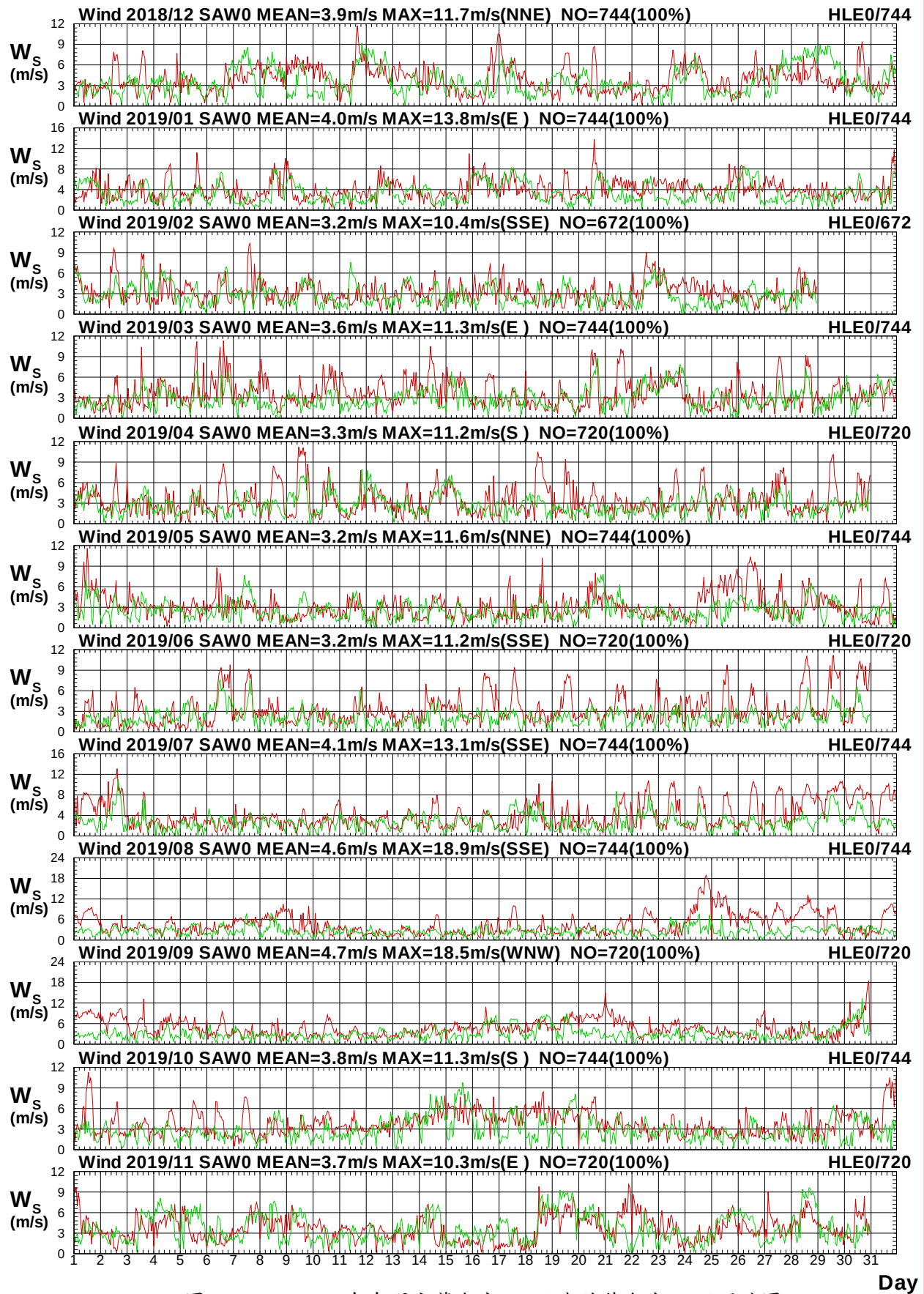


圖1.3.19a 2019年每月宜蘭海域 W 站與花蓮海域 E 站風速圖

W18CSAW0.1HA W18CHLE0.1H0 W191SAW0.1HA W191HLE0.1H0 W192SAW0.1HA W192HLE0.1H0
W193SAW0.1HA W193HLE0.1H0 W194SAW0.1HA W194HLE0.1H0 W195SAW0.1HA W195HLE0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

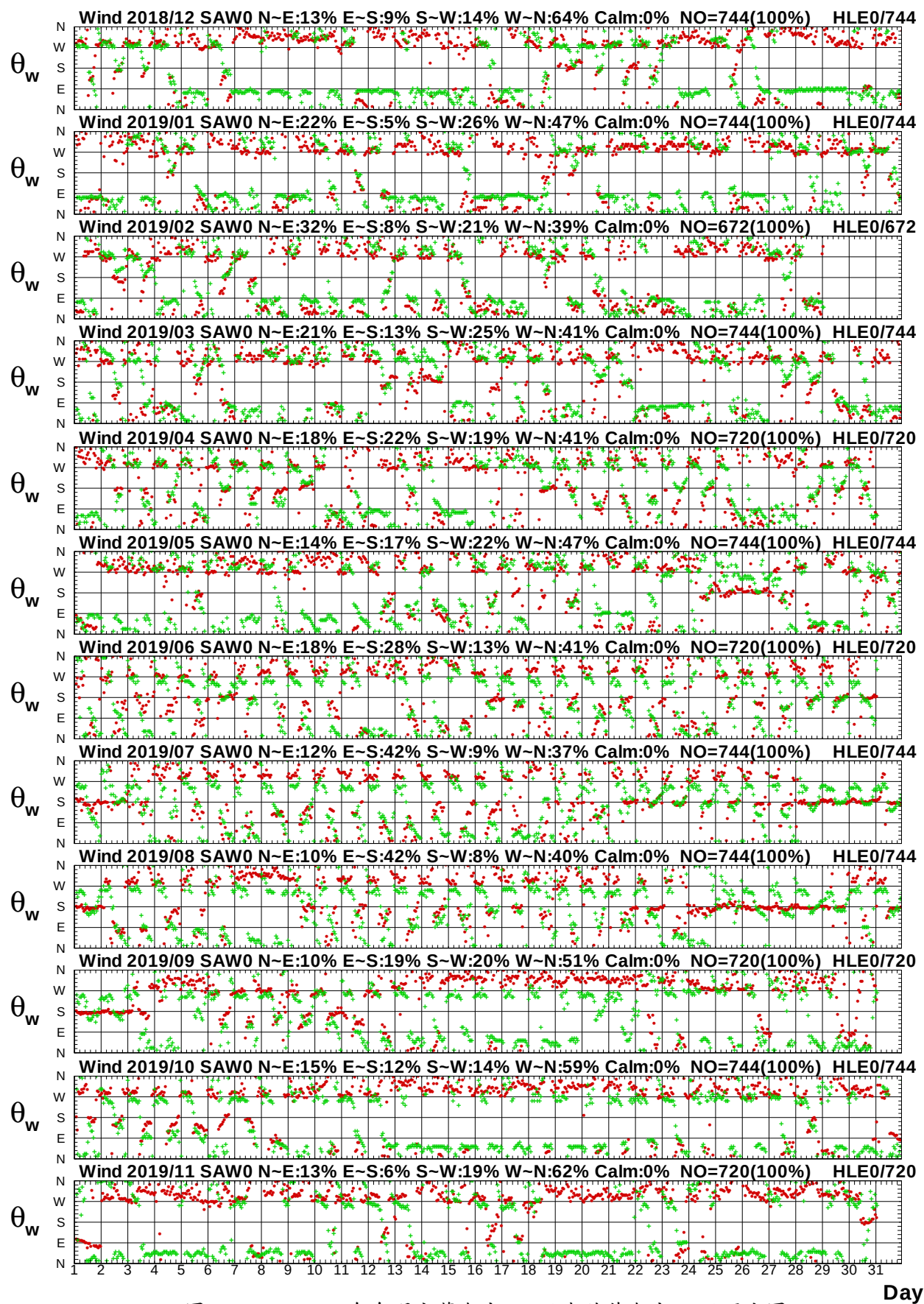


圖1.3.19b 2019年每月宜蘭海域 W 站與花蓮海域 E 站風向圖

W18CSAW0.1HA W18CHLE0.1H0 W191SAW0.1HA W191HLE0.1H0 W192SAW0.1HA W192HLE0.1H0
W193SAW0.1HA W193HLE0.1H0 W194SAW0.1HA W194HLE0.1H0 W195SAW0.1HA W195HLE0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

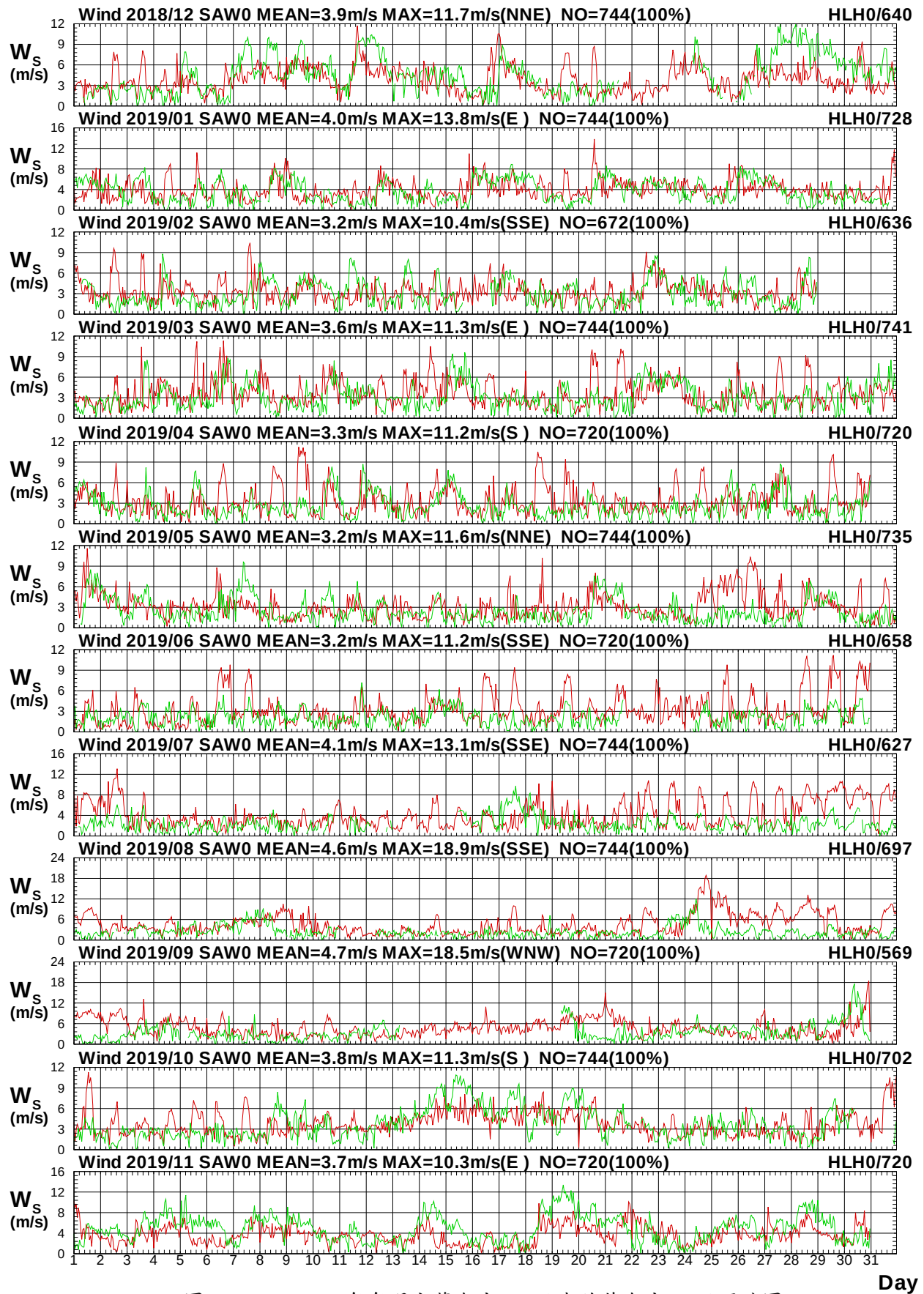


圖1.3.20a 2019年每月宜蘭海域 W 站與花蓮海域 H 站風速圖

W18CSAW0.1HA W18CHLH0.1H0 W191SAW0.1HA W191HLH0.1H0 W192SAW0.1HA W192HLH0.1H0
W193SAW0.1HA W193HLH0.1H0 W194SAW0.1HA W194HLH0.1H0 W195SAW0.1HA W195HLH0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

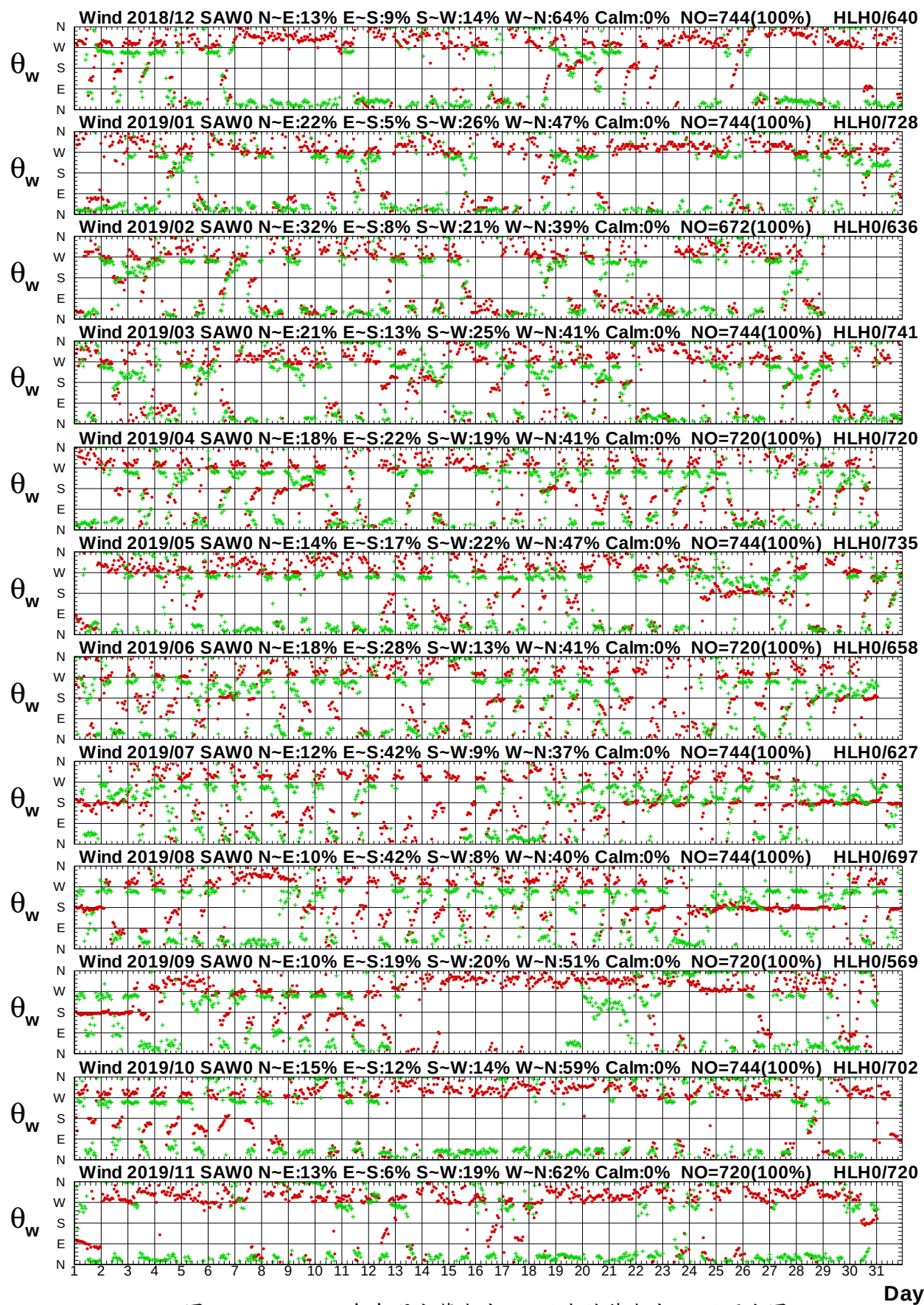


圖 1.3.20b 2019 年每月宜蘭海域 W 站與花蓮海域 H 站風向圖

W18CSAW0.1HA W18CHLH0.1H0 W191SAW0.1HA W191HLH0.1H0 W192SAW0.1HA W192HLH0.1H0
W193SAW0.1HA W193HLH0.1H0 W194SAW0.1HA W194HLH0.1H0 W195SAW0.1HA W195HLH0.1H0

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Wind Speed in Yi-Lan Seas of SAW0 at 2019

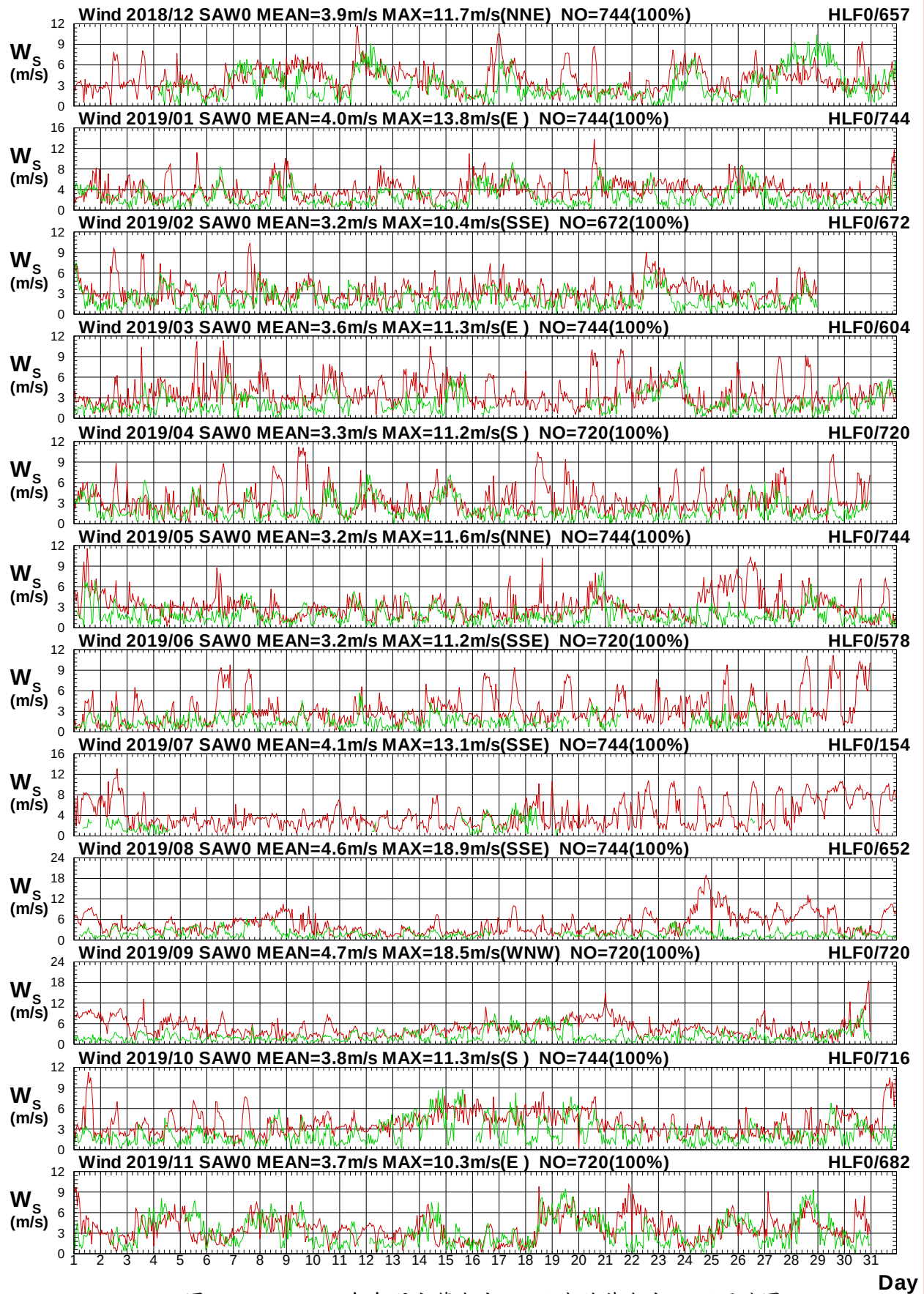


圖1.3.21a 2019年每月宜蘭海域 W 站與花蓮海域 F 站風速圖

W18CSAW0.1HA W18CHLF0.1H0 W191SAW0.1HA W191HLF0.1H0 W192SAW0.1HA W192HLF0.1H0
W193SAW0.1HA W193HLF0.1H0 W194SAW0.1HA W194HLF0.1H0 W195SAW0.1HA W195HLF0.1H0

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Wind Direction in Yi-Lan Seas of SAW0 at 2019

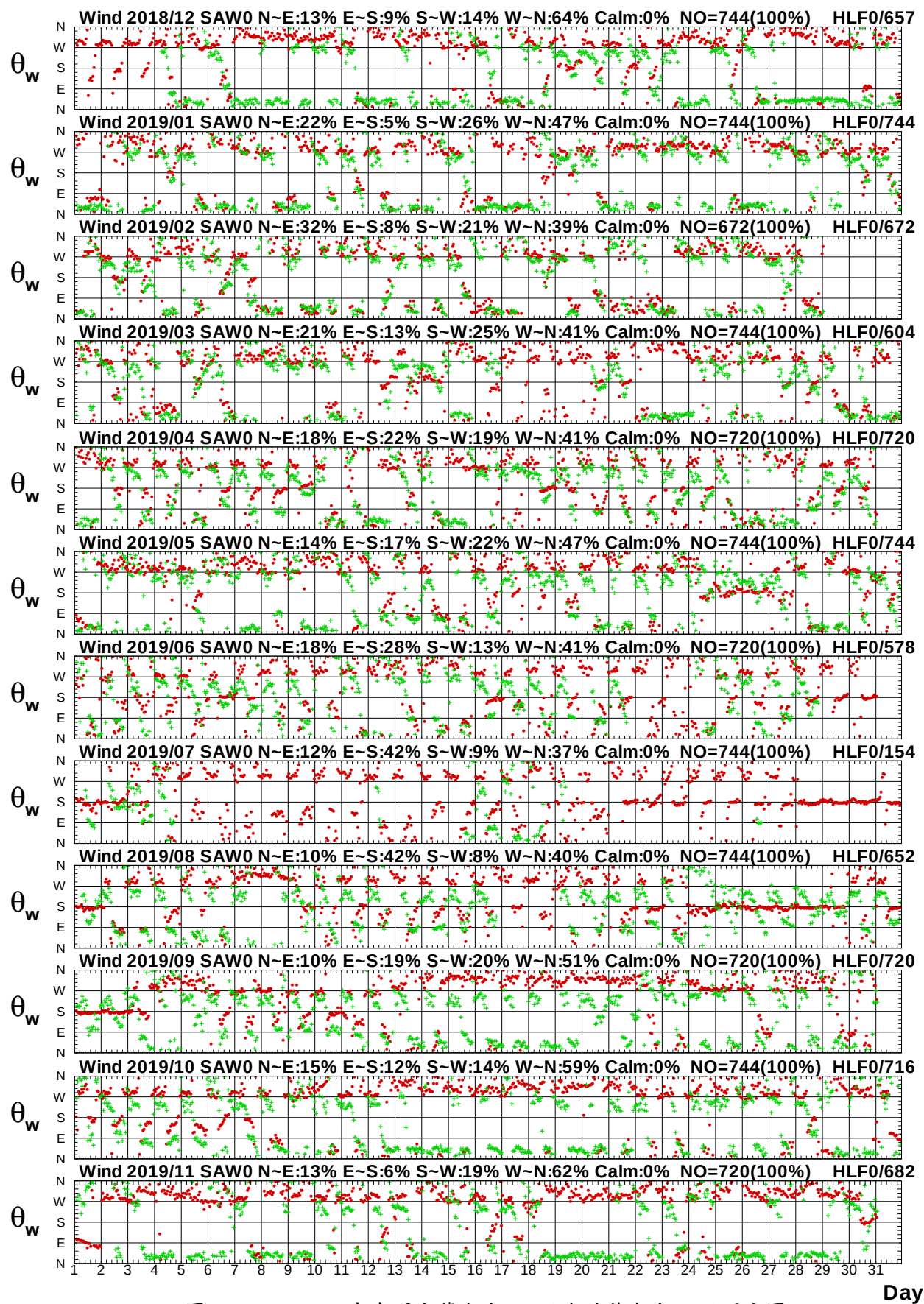


圖1.3.21b 2019年每月宜蘭海域 W 站與花蓮海域 F 站風向圖

W18CSAW0.1HA W18CHLF0.1H0 W191SAW0.1HA W191HLF0.1H0 W192SAW0.1HA W192HLF0.1H0
W193SAW0.1HA W193HLF0.1H0 W194SAW0.1HA W194HLF0.1H0 W195SAW0.1HA W195HLF0.1H0

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1.4 2019 年宜蘭海域風力主要測站 2(修補後) 與其他測站(修補前)每月風力歷線比較圖

Wind Speed in Yi-Lan Seas of SAY0 at 2019

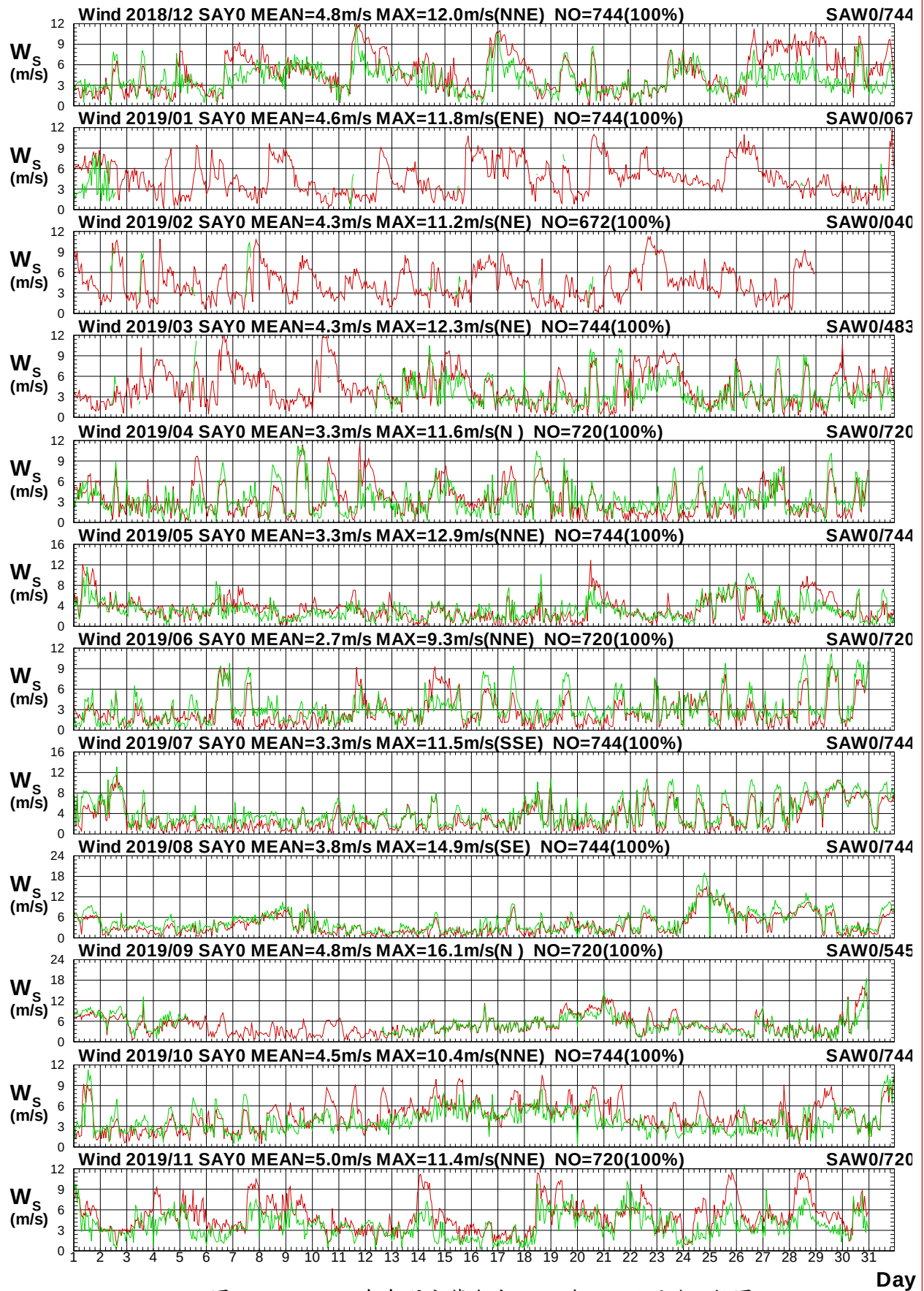


圖1.4.1a 2019年每月宜蘭海域 Y 站與 W 站風速比較圖

W18CSAY0.1HA W18CSAW0.1H0 W191SAY0.1HA W191SAW0.1H0 W192SAY0.1HA W192SAW0.1H0
W193SAY0.1HA W193SAW0.1H0 W194SAY0.1HA W194SAW0.1H0 W195SAY0.1HA W195SAW0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

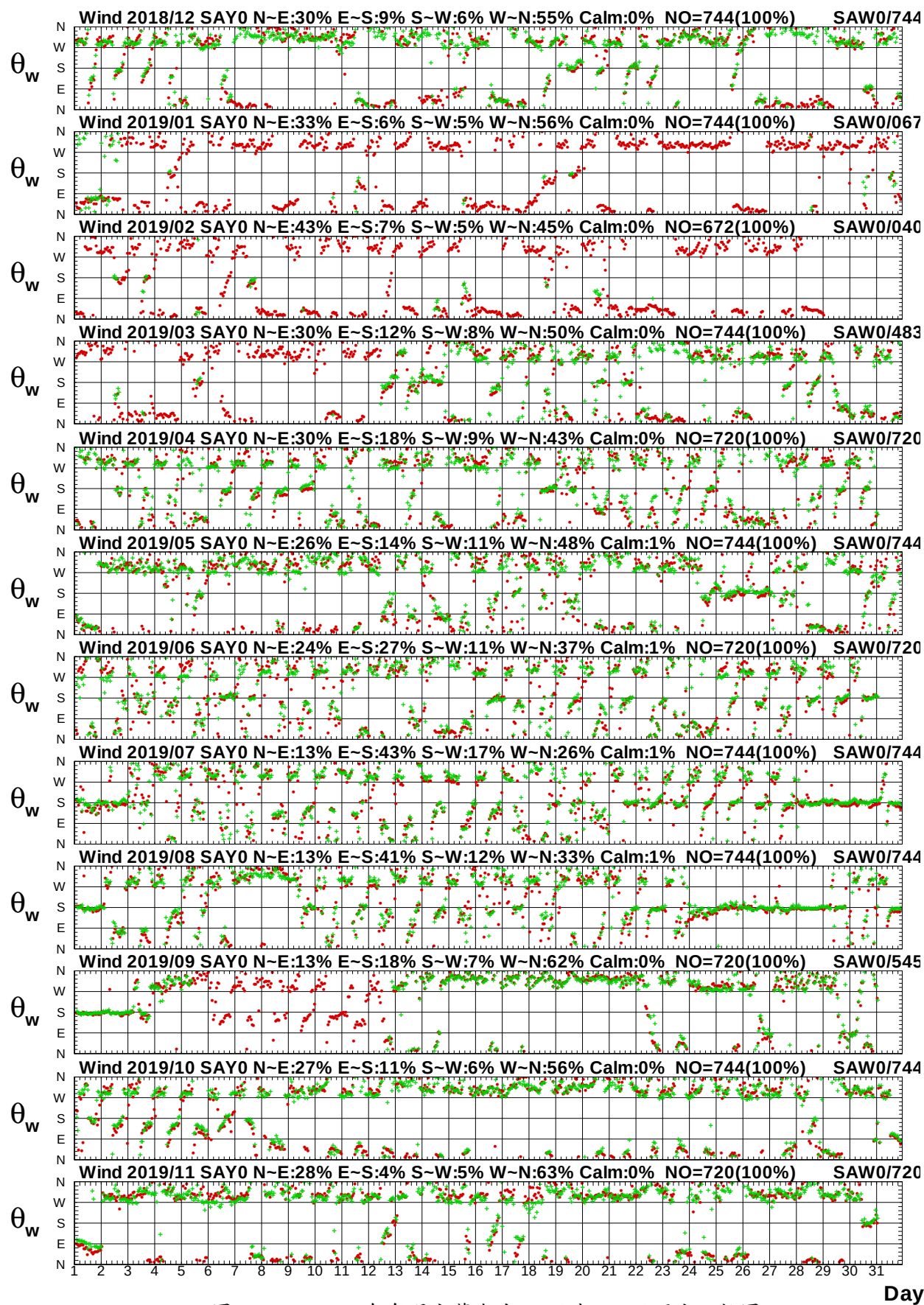


圖1.4.1b 2019年每月宜蘭海域 Y 站與 W 站風向比較圖

W18CSAY0.1HA W18CSAW0.1H0 W191SAY0.1HA W191SAW0.1H0 W192SAY0.1HA W192SAW0.1H0
W193SAY0.1HA W193SAW0.1H0 W194SAY0.1HA W194SAW0.1H0 W195SAY0.1HA W195SAW0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

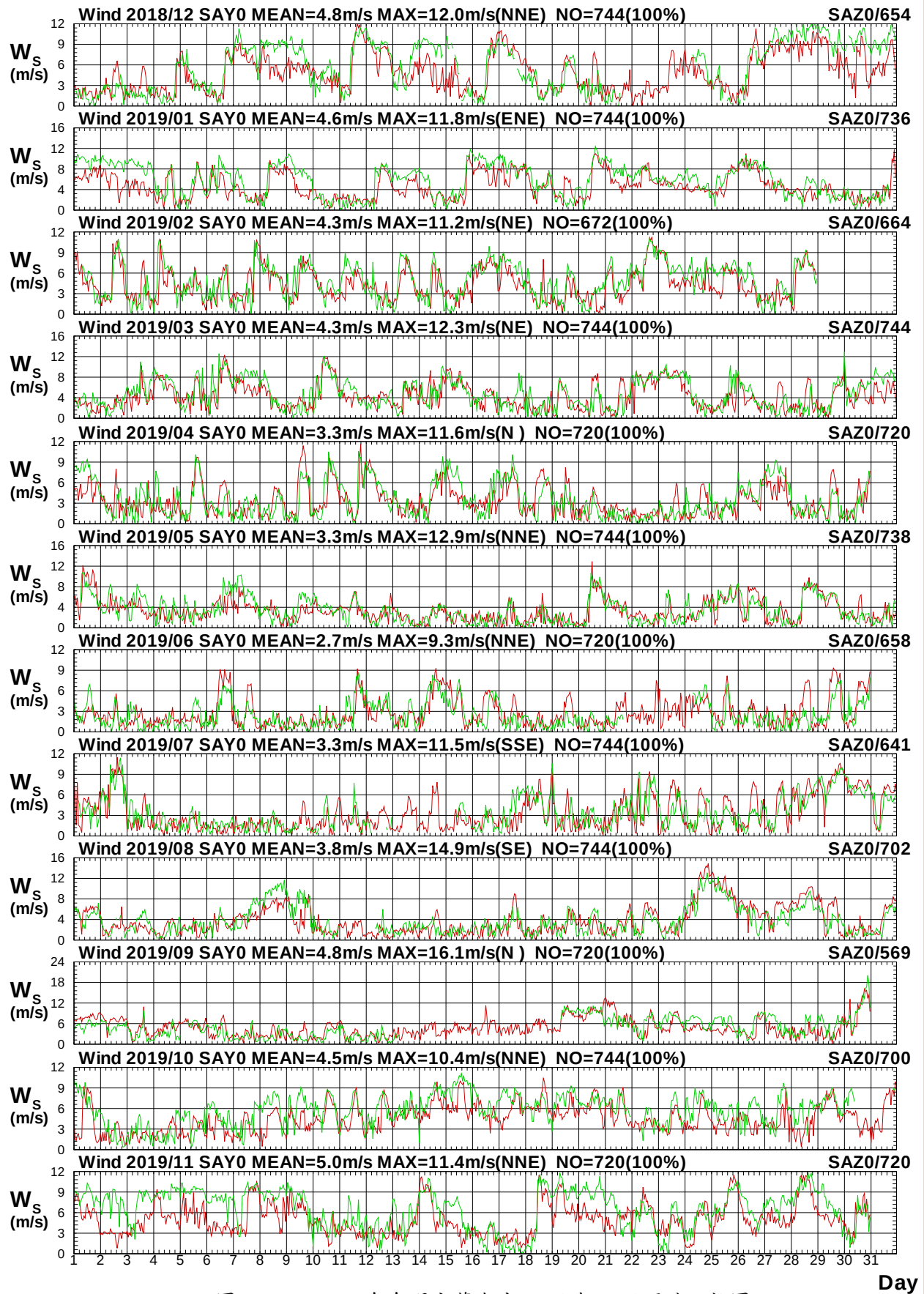


圖1.4.2a 2019年每月宜蘭海域 Y 站與 Z 站風速比較圖

W18CSAY0.1HA W18CSAZ0.1H0 W191SAY0.1HA W191SAZ0.1H0 W192SAY0.1HA W192SAZ0.1H0
W193SAY0.1HA W193SAZ0.1H0 W194SAY0.1HA W194SAZ0.1H0 W195SAY0.1HA W195SAZ0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

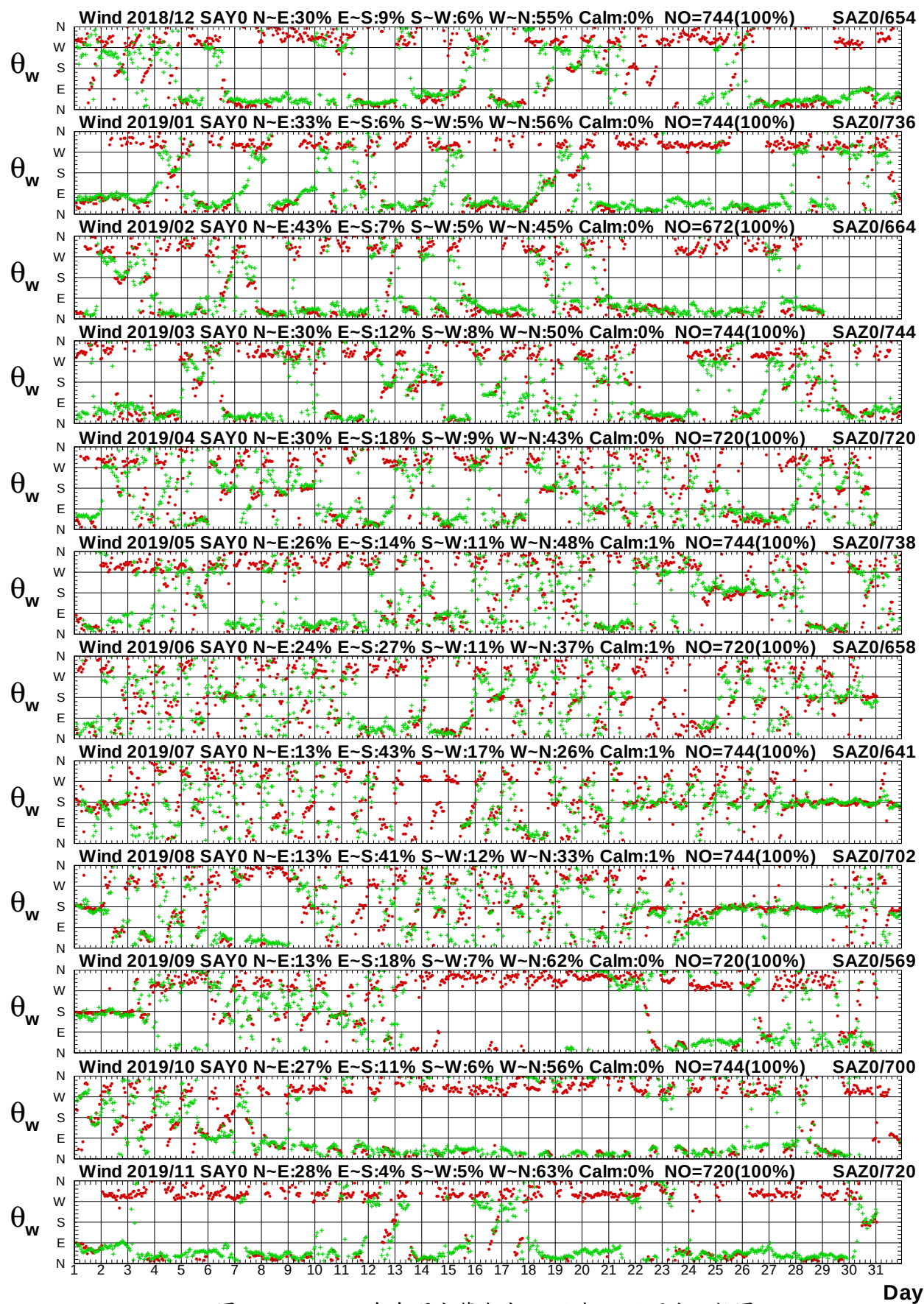


圖1.4.2b 2019年每月宜蘭海域 Y 站與 Z 站風向比較圖

W18CSAY0.1HA W18CSAZ0.1H0 W191SAY0.1HA W191SAZ0.1H0 W192SAY0.1HA W192SAZ0.1H0
W193SAY0.1HA W193SAZ0.1H0 W194SAY0.1HA W194SAZ0.1H0 W195SAY0.1HA W195SAZ0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

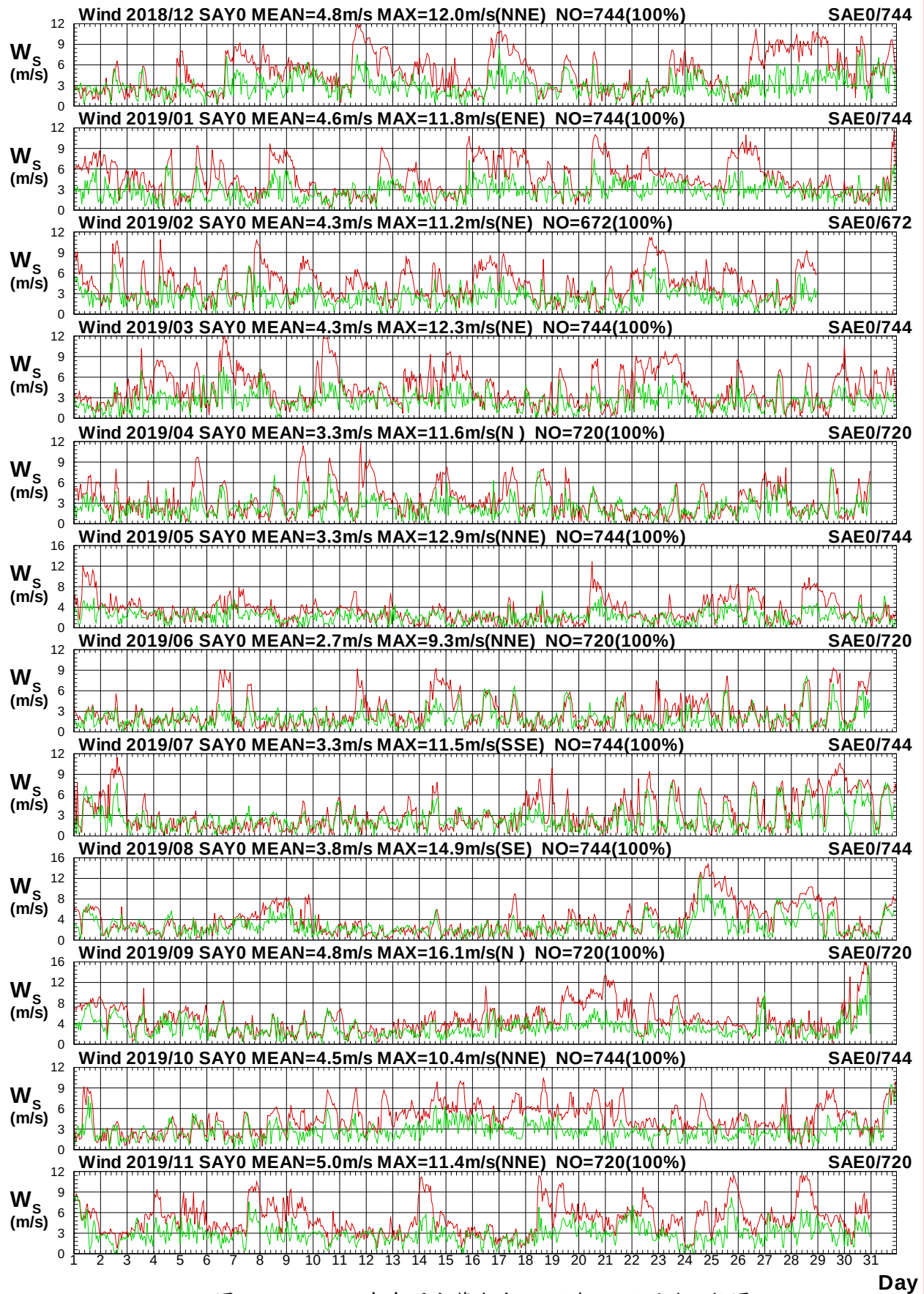


圖1.4.3a 2019年每月宜蘭海域 Y 站與 E 站風速比較圖

W18CSAY0.1HA W18CSAE0.1H0 W191SAY0.1HA W191SAE0.1H0 W192SAY0.1HA W192SAE0.1H0
W193SAY0.1HA W193SAE0.1H0 W194SAY0.1HA W194SAE0.1H0 W195SAY0.1HA W195SAE0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

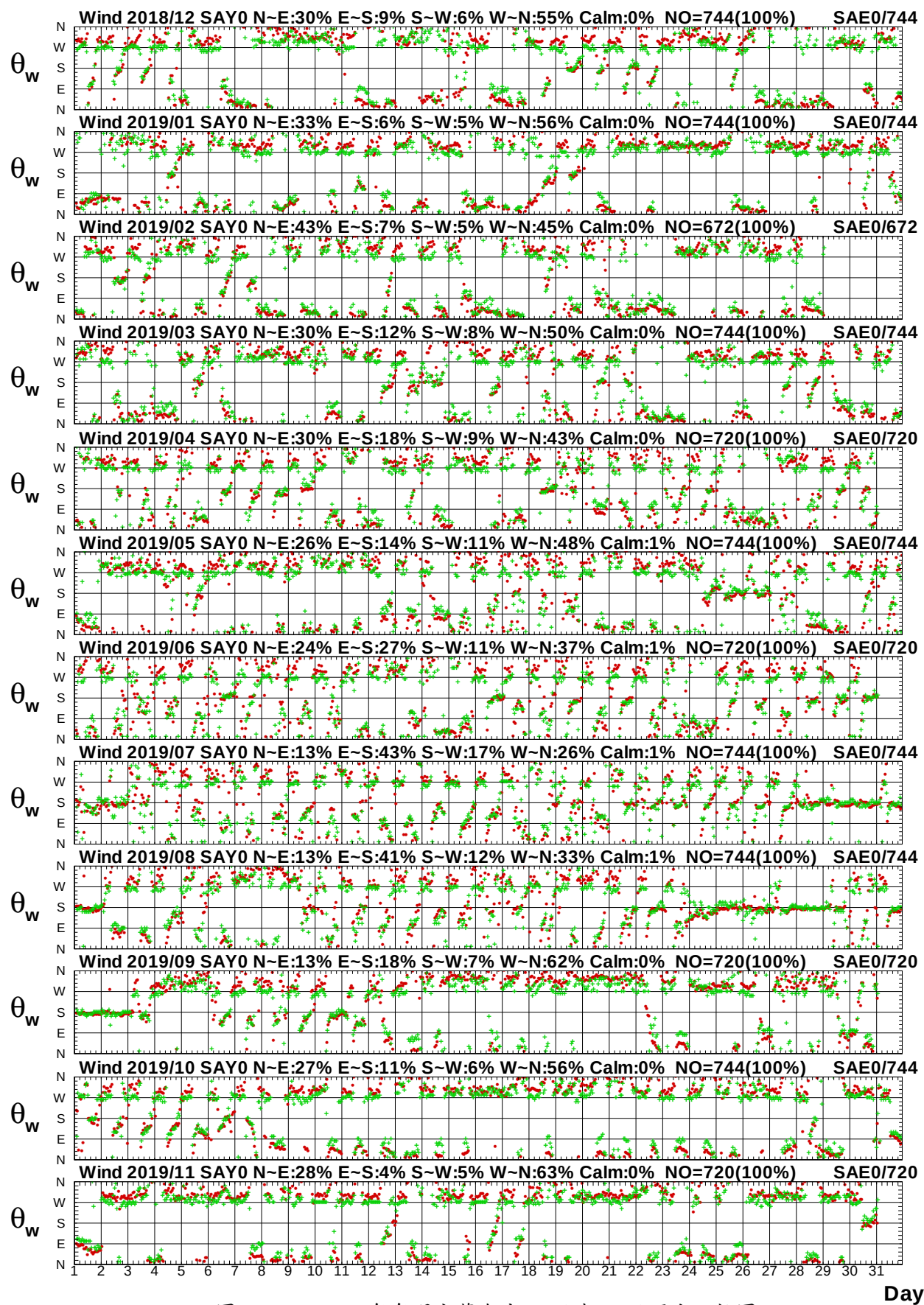


圖1.4.3b 2019年每月宜蘭海域 Y 站與 E 站風向比較圖

W18CSAY0.1HA W18CSAE0.1H0 W191SAY0.1HA W191SAE0.1H0 W192SAY0.1HA W192SAE0.1H0
W193SAY0.1HA W193SAE0.1H0 W194SAY0.1HA W194SAE0.1H0 W195SAY0.1HA W195SAE0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

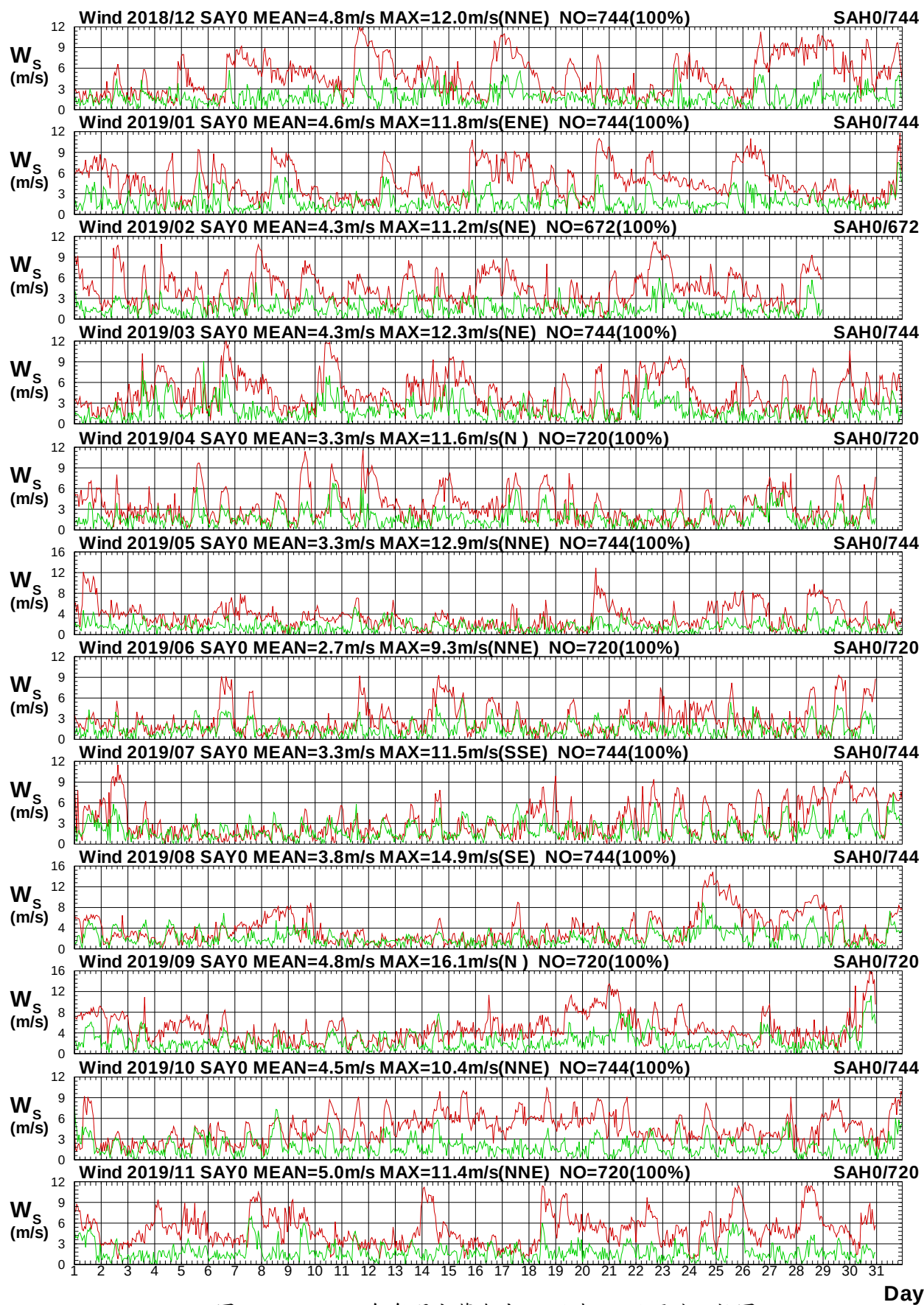


圖1.4.4a 2019年每月宜蘭海域 Y 站與 H 站風速比較圖

W18CSAY0.1HA W18CSAH0.1H0 W191SAY0.1HA W191SAH0.1H0 W192SAY0.1HA W192SAH0.1H0
W193SAY0.1HA W193SAH0.1H0 W194SAY0.1HA W194SAH0.1H0 W195SAY0.1HA W195SAH0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

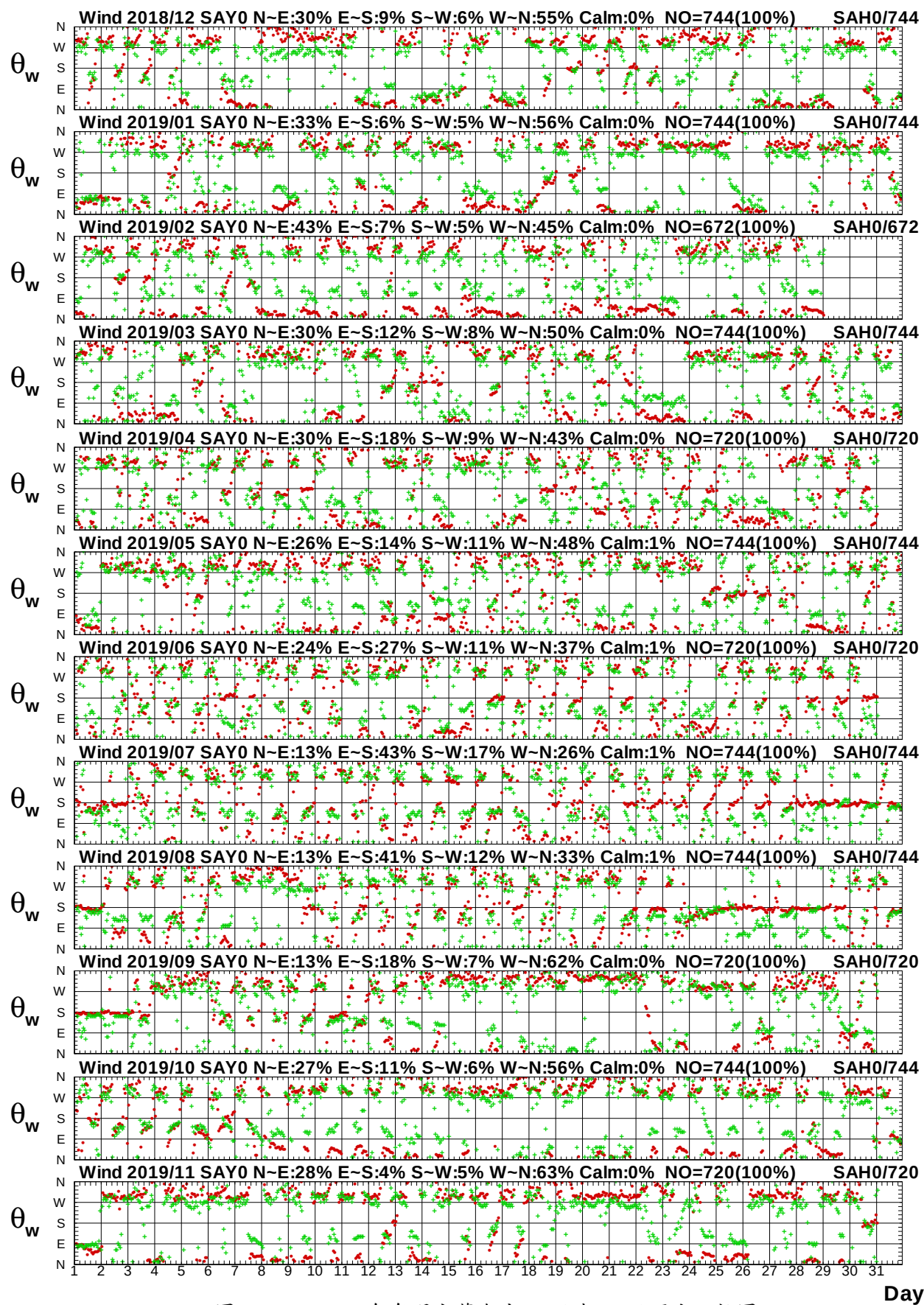


圖1.4.4b 2019年每月宜蘭海域 Y 站與 H 站風向比較圖

W18CSAY0.1HA W18CSAH0.1H0 W191SAY0.1HA W191SAH0.1H0 W192SAY0.1HA W192SAH0.1H0
W193SAY0.1HA W193SAH0.1H0 W194SAY0.1HA W194SAH0.1H0 W195SAY0.1HA W195SAH0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

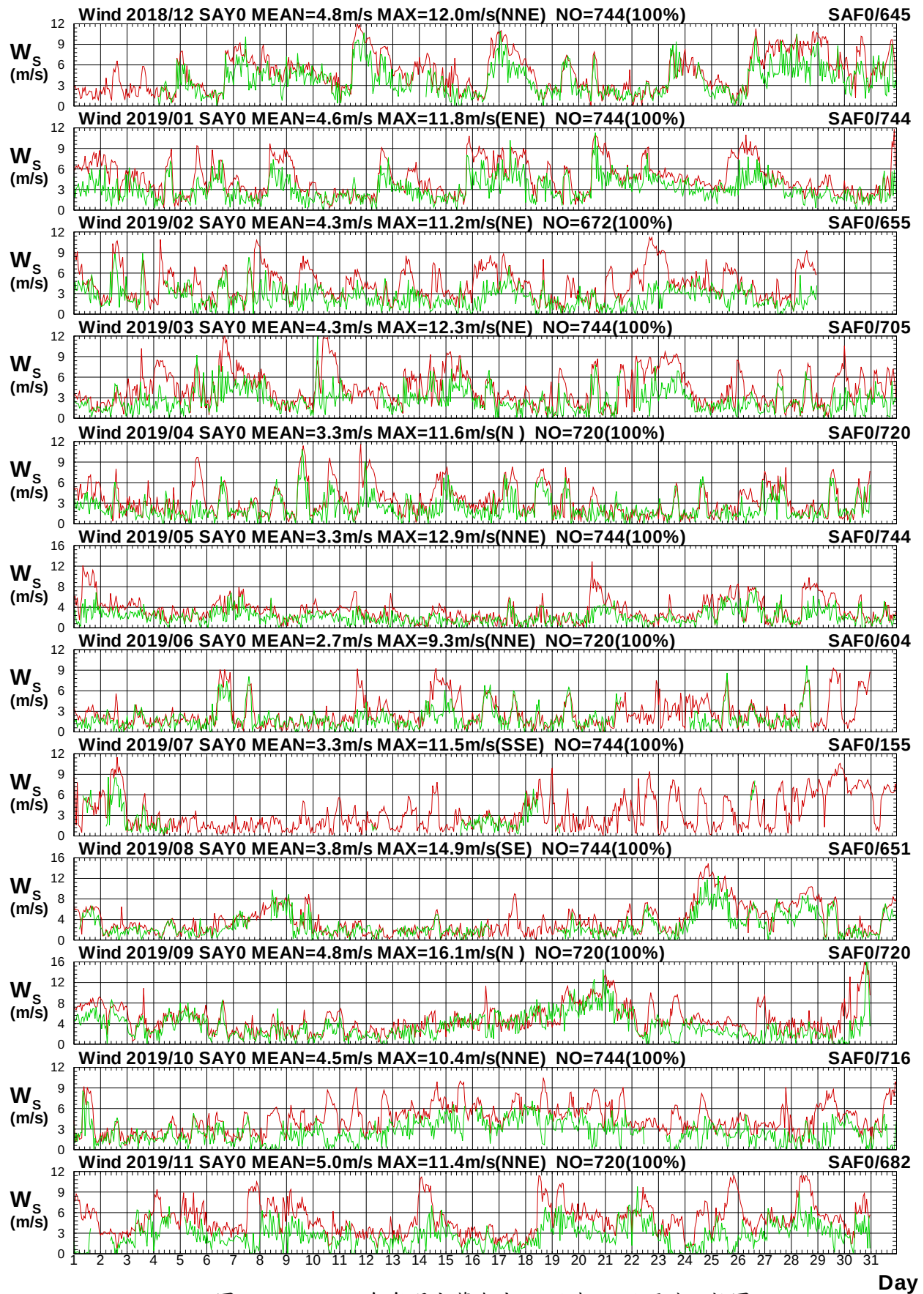


圖1.4.5a 2019年每月宜蘭海域 Y 站與 F 站風速比較圖

W18CSAY0.1HA W18CSAF0.1H0 W191SAY0.1HA W191SAF0.1H0 W192SAY0.1HA W192SAF0.1H0
W193SAY0.1HA W193SAF0.1H0 W194SAY0.1HA W194SAF0.1H0 W195SAY0.1HA W195SAF0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

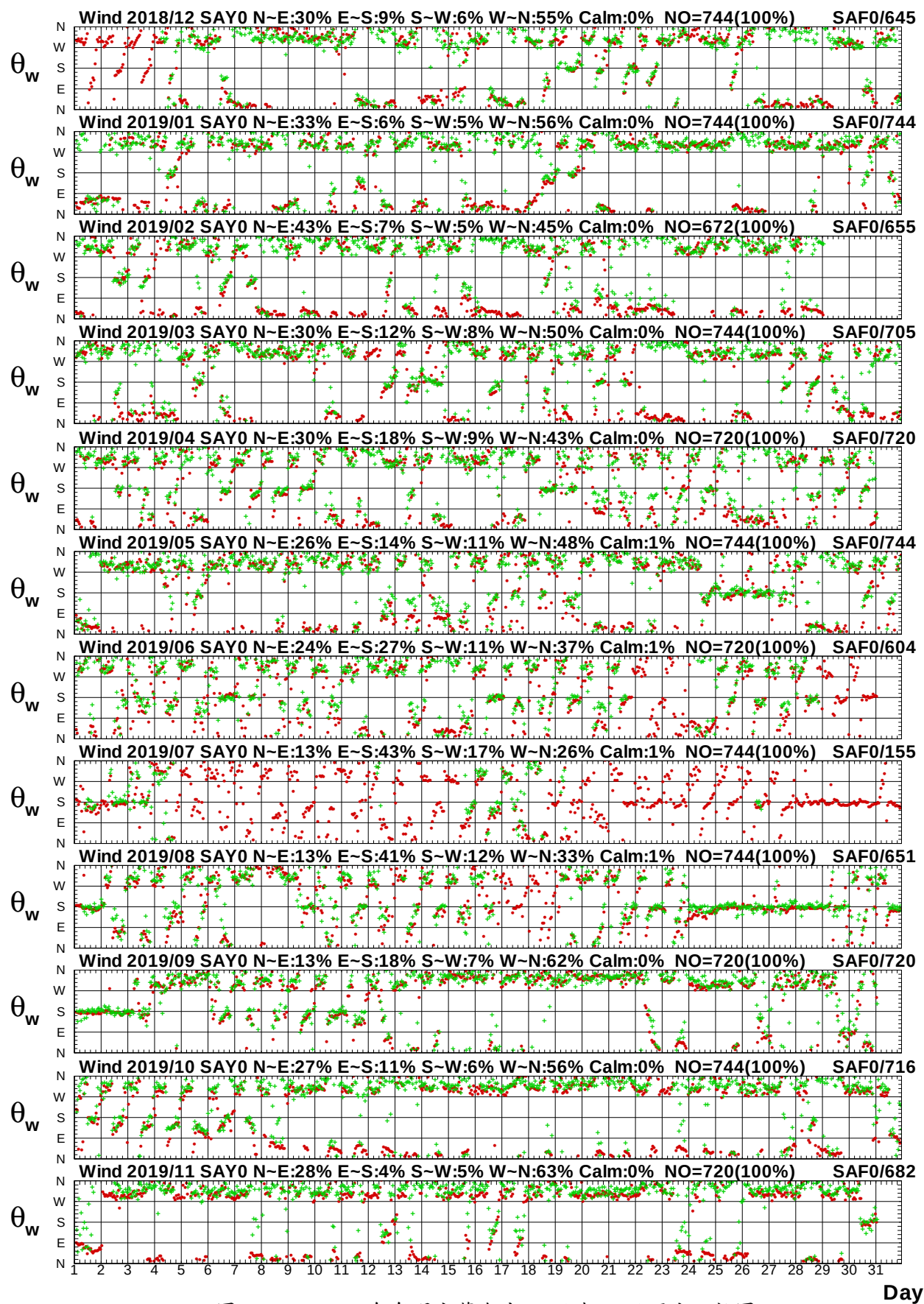


圖1.4.5b 2019年每月宜蘭海域 Y 站與 F 站風向比較圖

W18CSAY0.1HA W18CSAF0.1H0 W191SAY0.1HA W191SAF0.1H0 W192SAY0.1HA W192SAF0.1H0
W193SAY0.1HA W193SAF0.1H0 W194SAY0.1HA W194SAF0.1H0 W195SAY0.1HA W195SAF0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

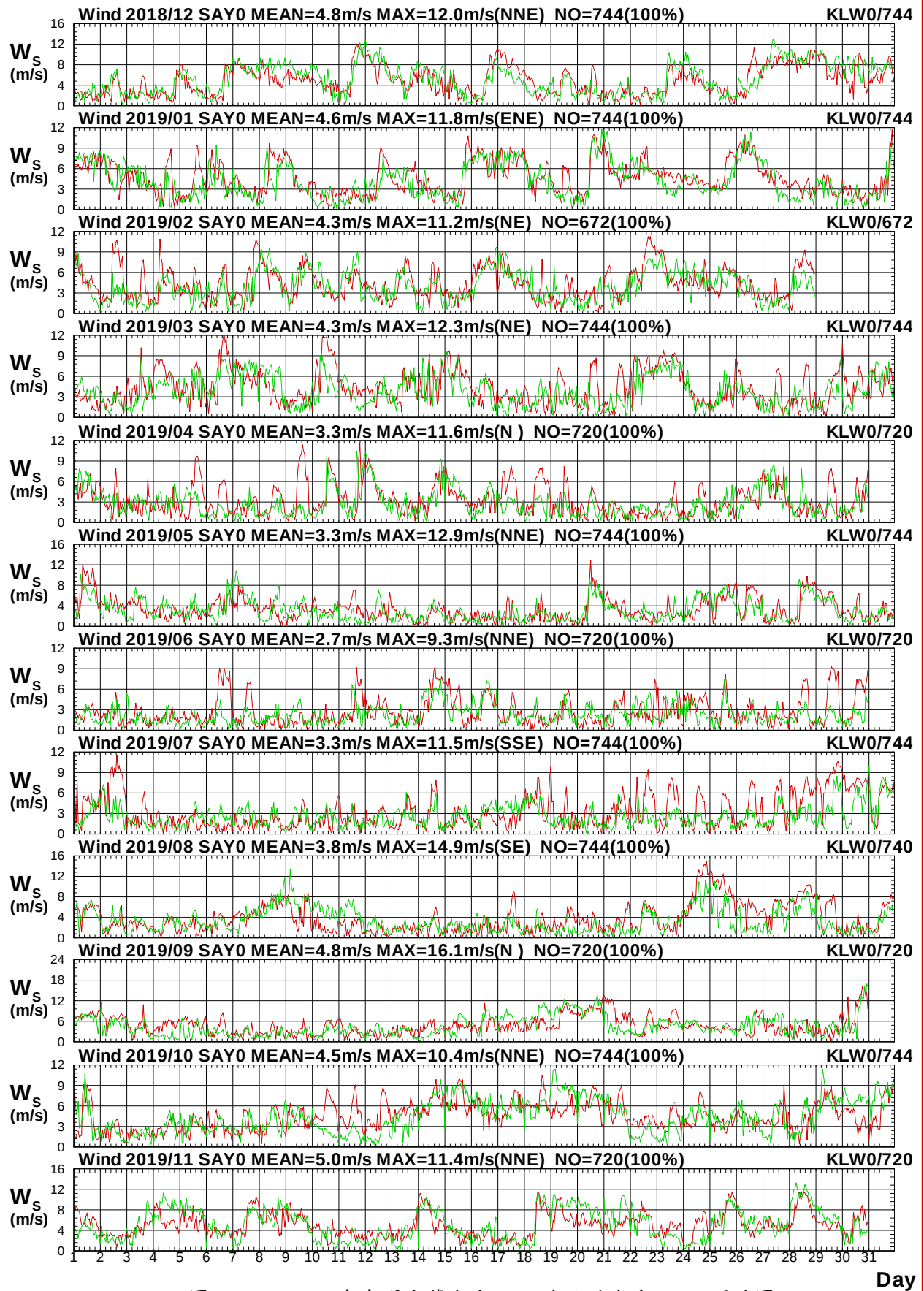


圖1.4.6a 2019年每月宜蘭海域 Y 站與北端海域 W 站風速圖

W18CSAY0.1HA W18CKLW0.1H0 W191SAY0.1HA W191KLW0.1H0 W192SAY0.1HA W192KLW0.1H0
W193SAY0.1HA W193KLW0.1H0 W194SAY0.1HA W194KLW0.1H0 W195SAY0.1HA W195KLW0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

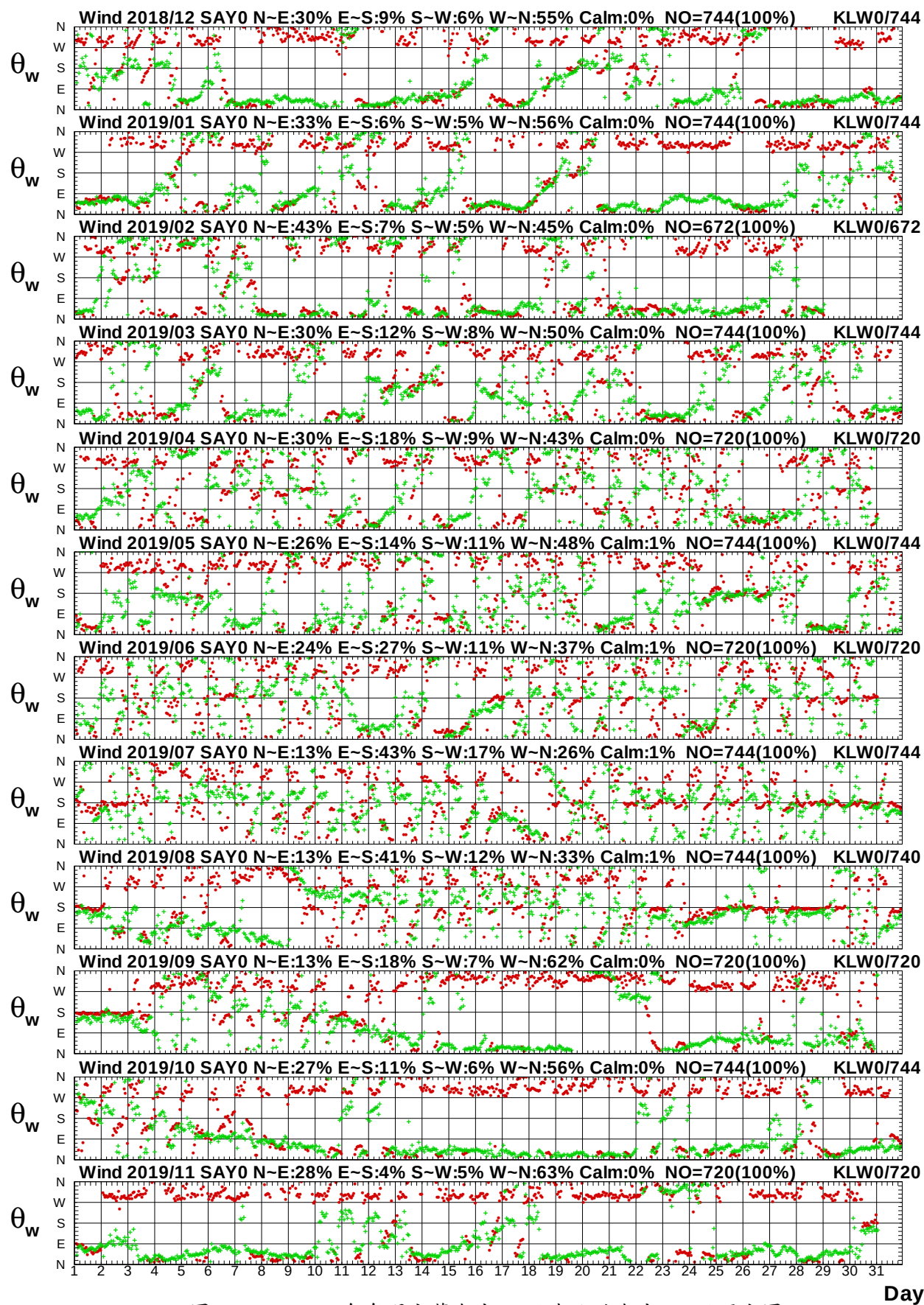


圖1.4.6b 2019年每月宜蘭海域 Y 站與北端海域 W 站風向圖

W18CSAY0.1HA W18CKLW0.1H0 W191SAY0.1HA W191KLW0.1H0 W192SAY0.1HA W192KLW0.1H0
W193SAY0.1HA W193KLW0.1H0 W194SAY0.1HA W194KLW0.1H0 W195SAY0.1HA W195KLW0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

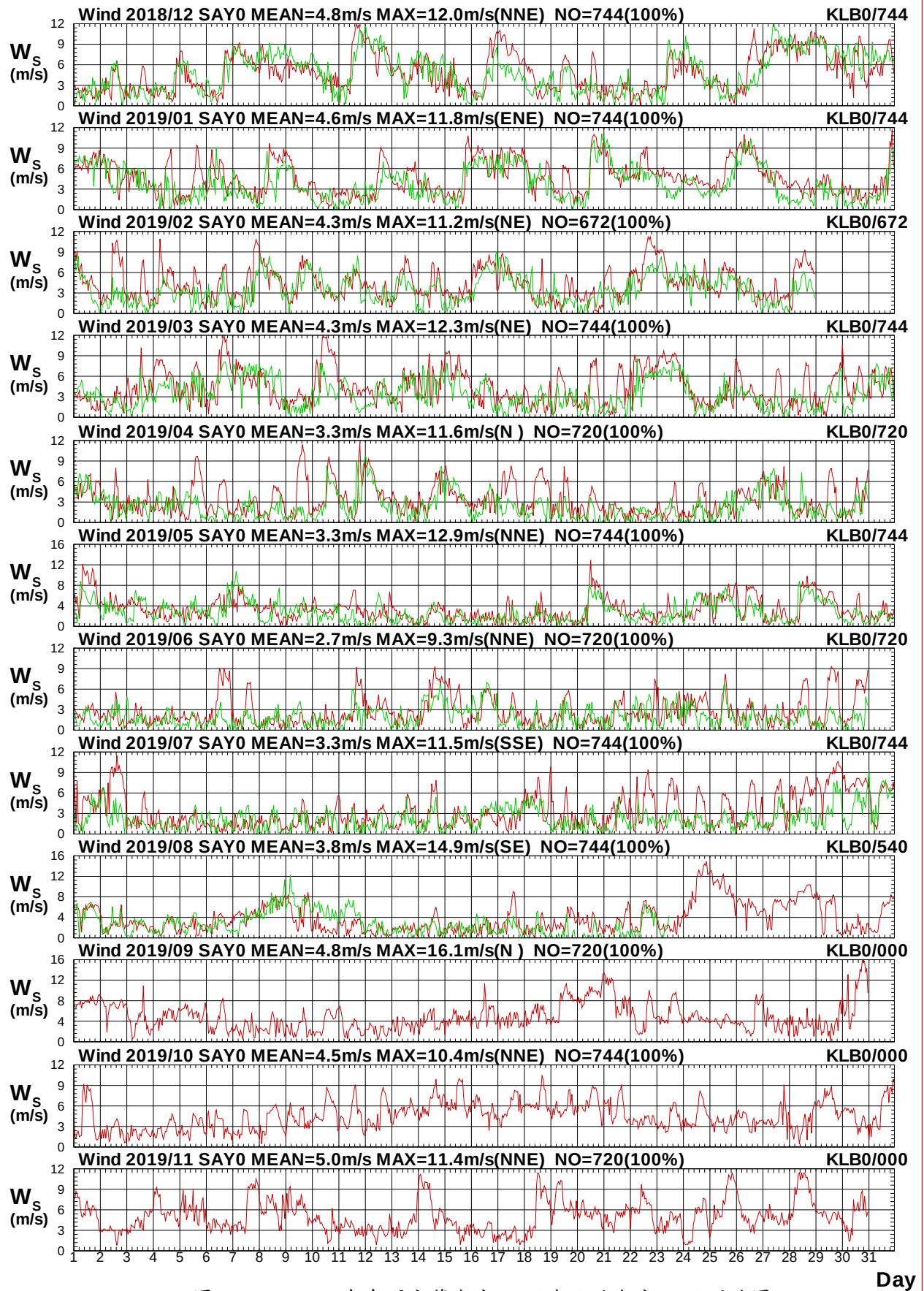


圖1.4.7a 2019年每月宜蘭海域 Y 站與北端海域 B 站風速圖

W18CSAY0.1HA W18CKLB0.1H0 W191SAY0.1HA W191KLB0.1H0 W192SAY0.1HA W192KLB0.1H0
W193SAY0.1HA W193KLB0.1H0 W194SAY0.1HA W194KLB0.1H0 W195SAY0.1HA W195KLB0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

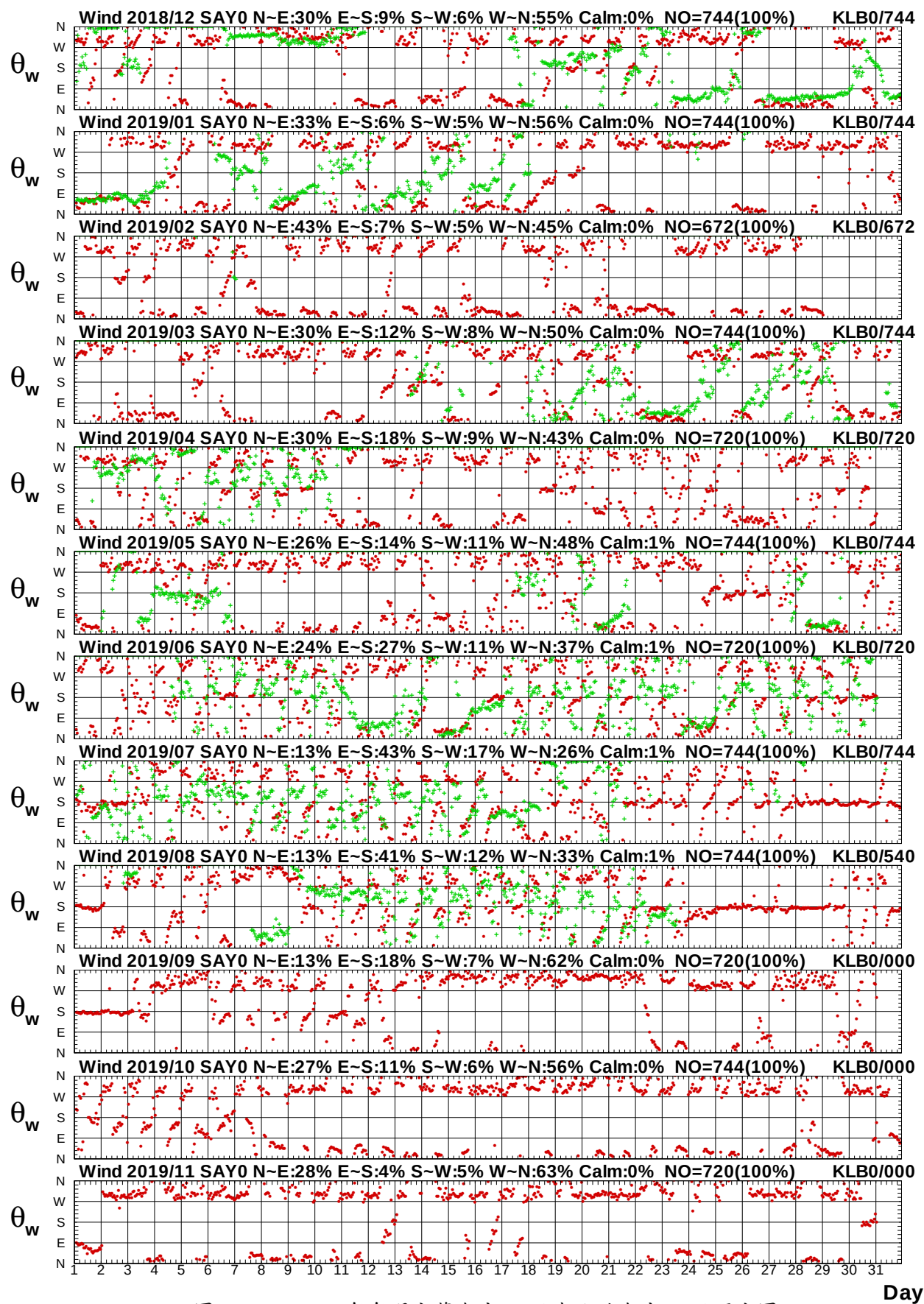


圖1.4.7b 2019年每月宜蘭海域 Y 站與北端海域 B 站風向圖

W18CSAY0.1HA W18CKLB0.1H0 W191SAY0.1HA W191KLB0.1H0 W192SAY0.1HA W192KLB0.1H0
W193SAY0.1HA W193KLB0.1H0 W194SAY0.1HA W194KLB0.1H0 W195SAY0.1HA W195KLB0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

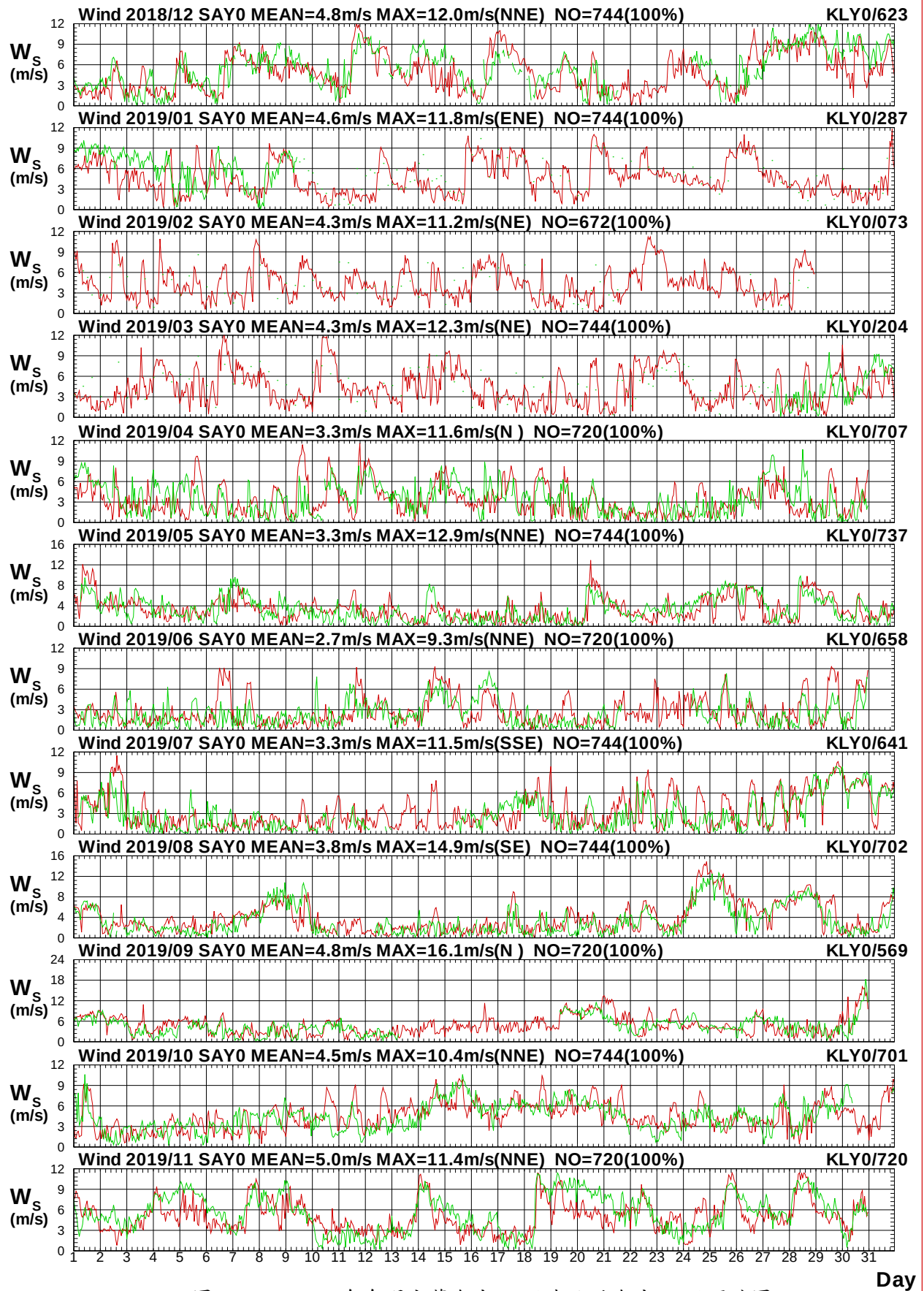


圖1.4.8a 2019年每月宜蘭海域 Y 站與北端海域 Y 站風速圖

W18CSAY0.1HA W18CKLY0.1H0 W191SAY0.1HA W191KLY0.1H0 W192SAY0.1HA W192KLY0.1H0
W193SAY0.1HA W193KLY0.1H0 W194SAY0.1HA W194KLY0.1H0 W195SAY0.1HA W195KLY0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

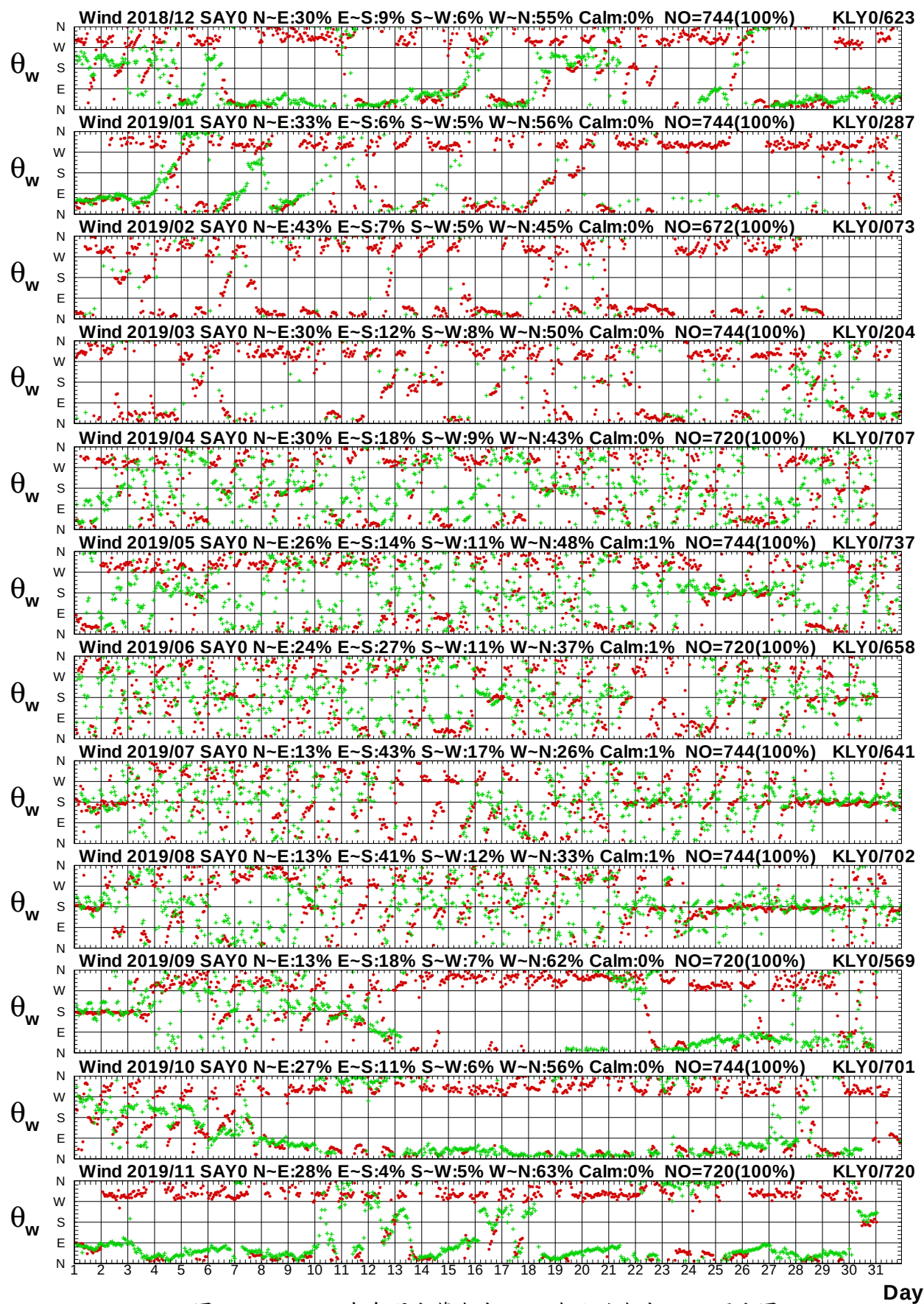


圖1.4.8b 2019年每月宜蘭海域 Y 站與北端海域 Y 站風向圖

W18CSAY0.1HA W18CKLY0.1H0 W191SAY0.1HA W191KLY0.1H0 W192SAY0.1HA W192KLY0.1H0
W193SAY0.1HA W193KLY0.1H0 W194SAY0.1HA W194KLY0.1H0 W195SAY0.1HA W195KLY0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

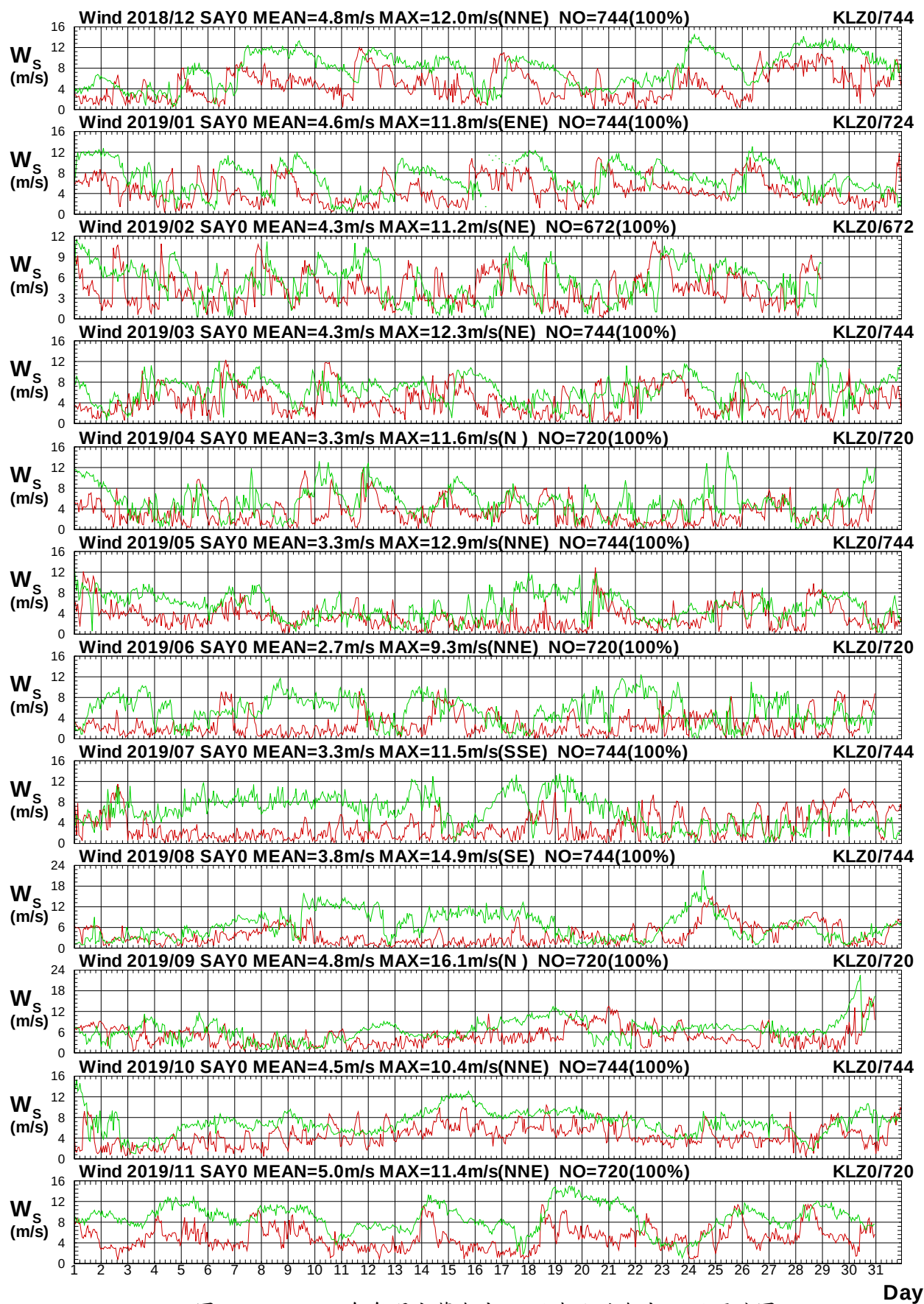


圖1.4.9a 2019年每月宜蘭海域 Y 站與北端海域 Z 站風速圖

W18CSAY0.1HA W18CKLZ0.1H0 W191SAY0.1HA W191KLZ0.1H0 W192SAY0.1HA W192KLZ0.1H0
W193SAY0.1HA W193KLZ0.1H0 W194SAY0.1HA W194KLZ0.1H0 W195SAY0.1HA W195KLZ0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

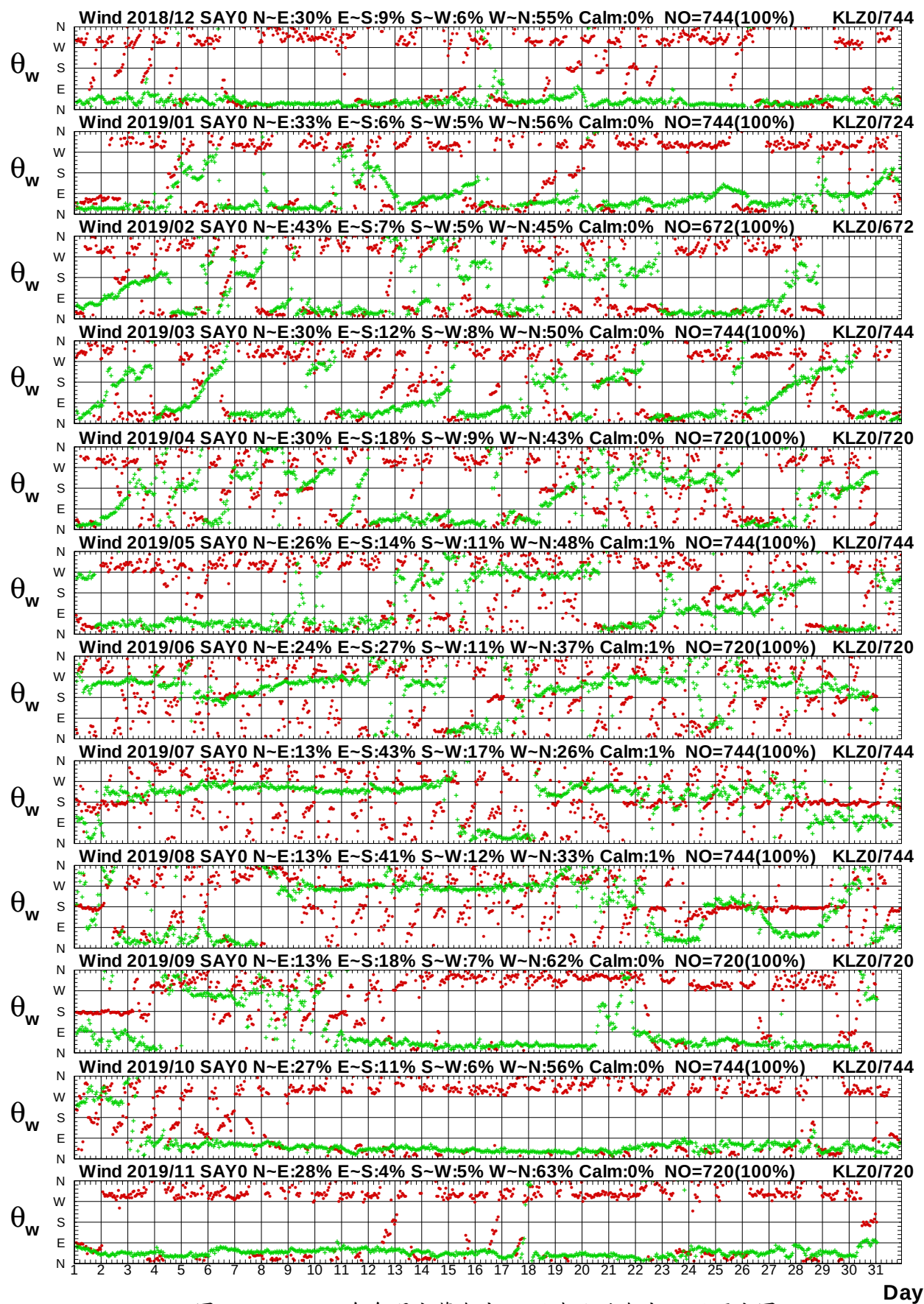


圖1.4.9b 2019年每月宜蘭海域 Y 站與北端海域 Z 站風向圖

W18CSAY0.1HA W18CKLZ0.1H0 W191SAY0.1HA W191KLZ0.1H0 W192SAY0.1HA W192KLZ0.1H0
W193SAY0.1HA W193KLZ0.1H0 W194SAY0.1HA W194KLZ0.1H0 W195SAY0.1HA W195KLZ0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

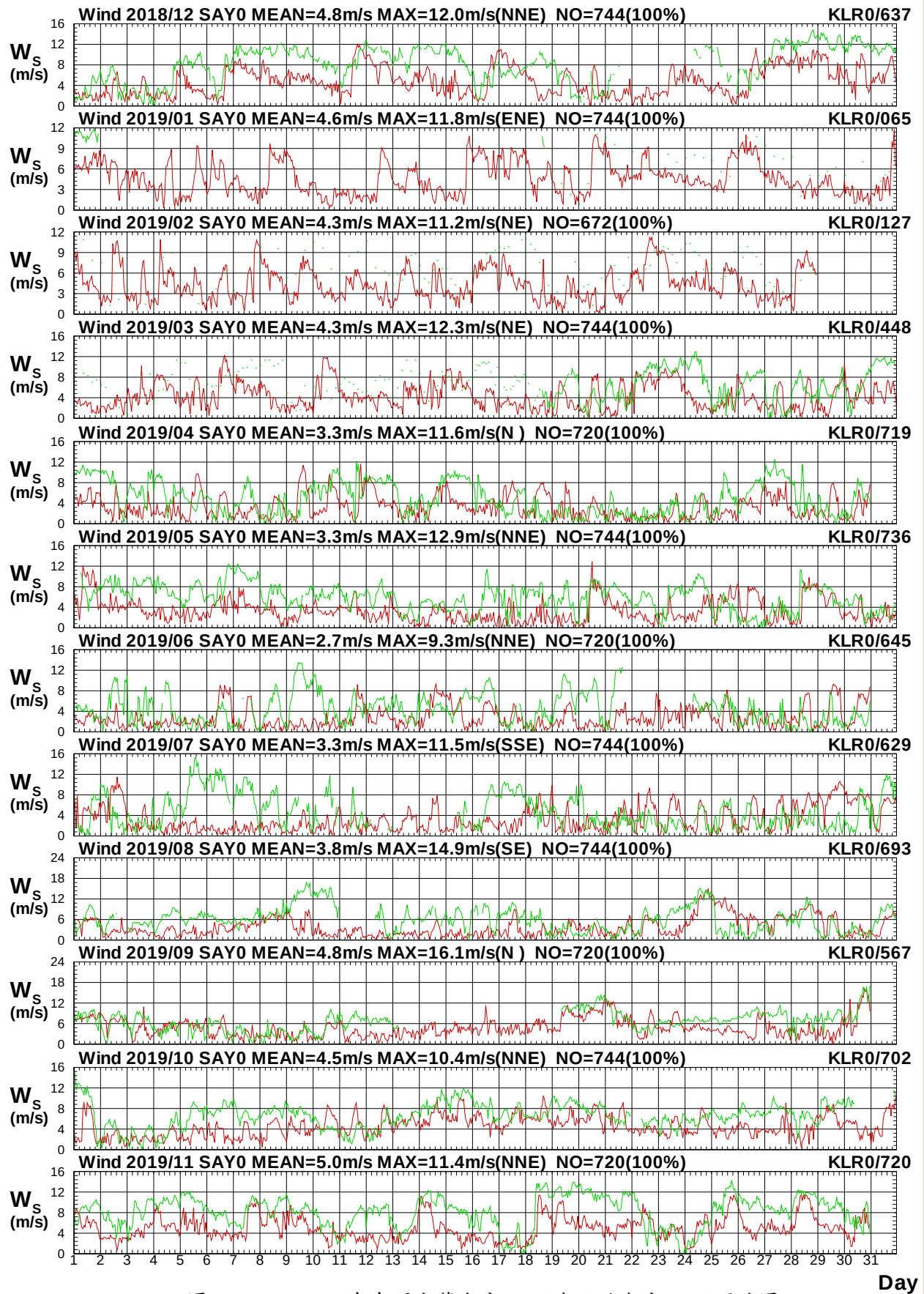


圖1.4.10a 2019年每月宜蘭海域 Y 站與北端海域 R 站風速圖

W18CSAY0.1HA W18CKLR0.1H0 W191SAY0.1HA W191KLR0.1H0 W192SAY0.1HA W192KLR0.1H0
W193SAY0.1HA W193KLR0.1H0 W194SAY0.1HA W194KLR0.1H0 W195SAY0.1HA W195KLR0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

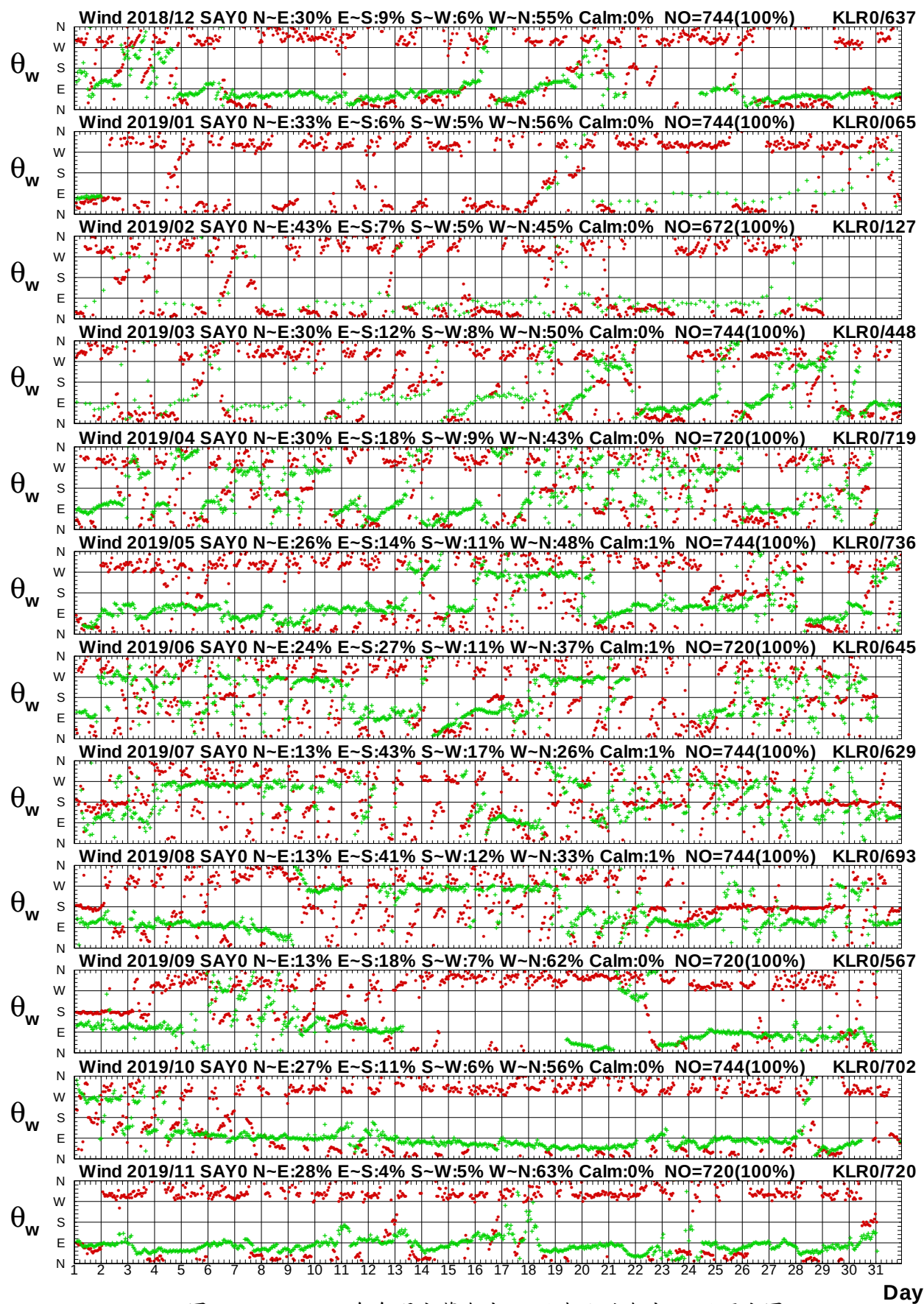


圖1.4.10b 2019年每月宜蘭海域 Y 站與北端海域 R 站風向圖

W18CSAY0.1HA W18CKLR0.1H0 W191SAY0.1HA W191KLR0.1H0 W192SAY0.1HA W192KLR0.1H0
W193SAY0.1HA W193KLR0.1H0 W194SAY0.1HA W194KLR0.1H0 W195SAY0.1HA W195KLR0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

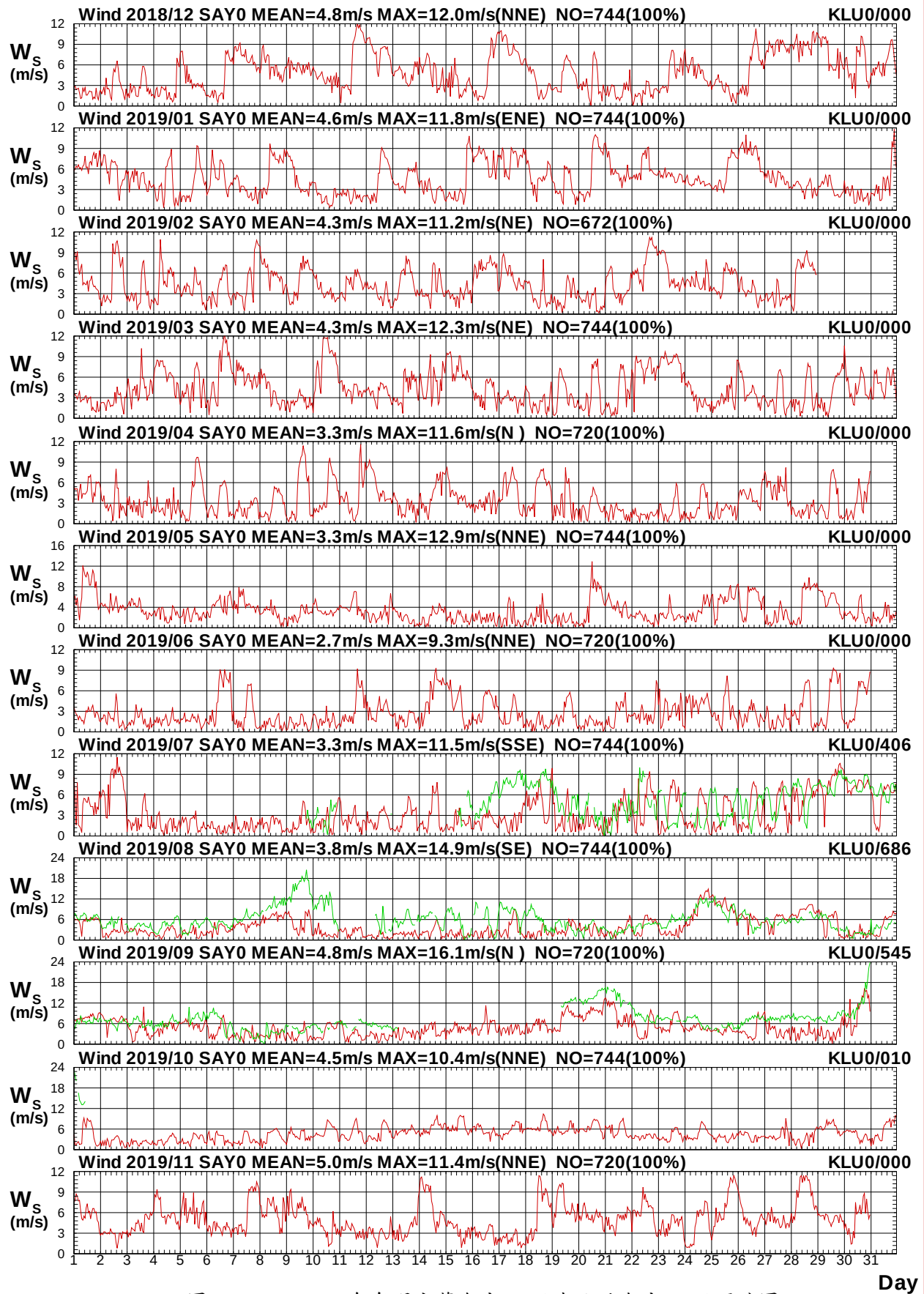


圖1.4.11a 2019年每月宜蘭海域 Y 站與北端海域 U 站風速圖

W18CSAY0.1HA W18CKLU0.1H0 W191SAY0.1HA W191KLU0.1H0 W192SAY0.1HA W192KLU0.1H0
W193SAY0.1HA W193KLU0.1H0 W194SAY0.1HA W194KLU0.1H0 W195SAY0.1HA W195KLU0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

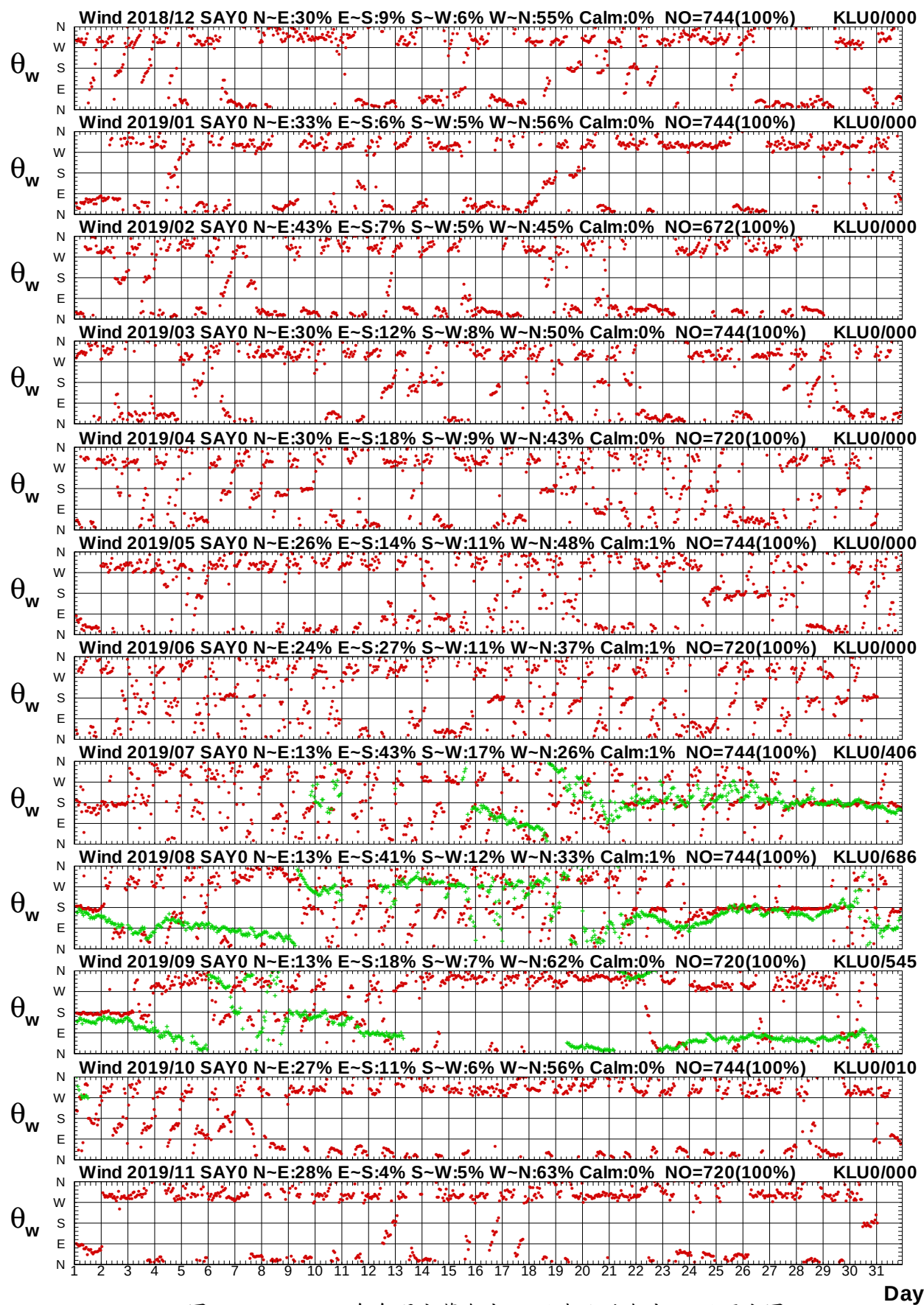


圖1.4.11b 2019年每月宜蘭海域 Y 站與北端海域 U 站風向圖

W18CSAY0.1HA W18CKLU0.1H0 W191SAY0.1HA W191KLU0.1H0 W192SAY0.1HA W192KLU0.1H0
W193SAY0.1HA W193KLU0.1H0 W194SAY0.1HA W194KLU0.1H0 W195SAY0.1HA W195KLU0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

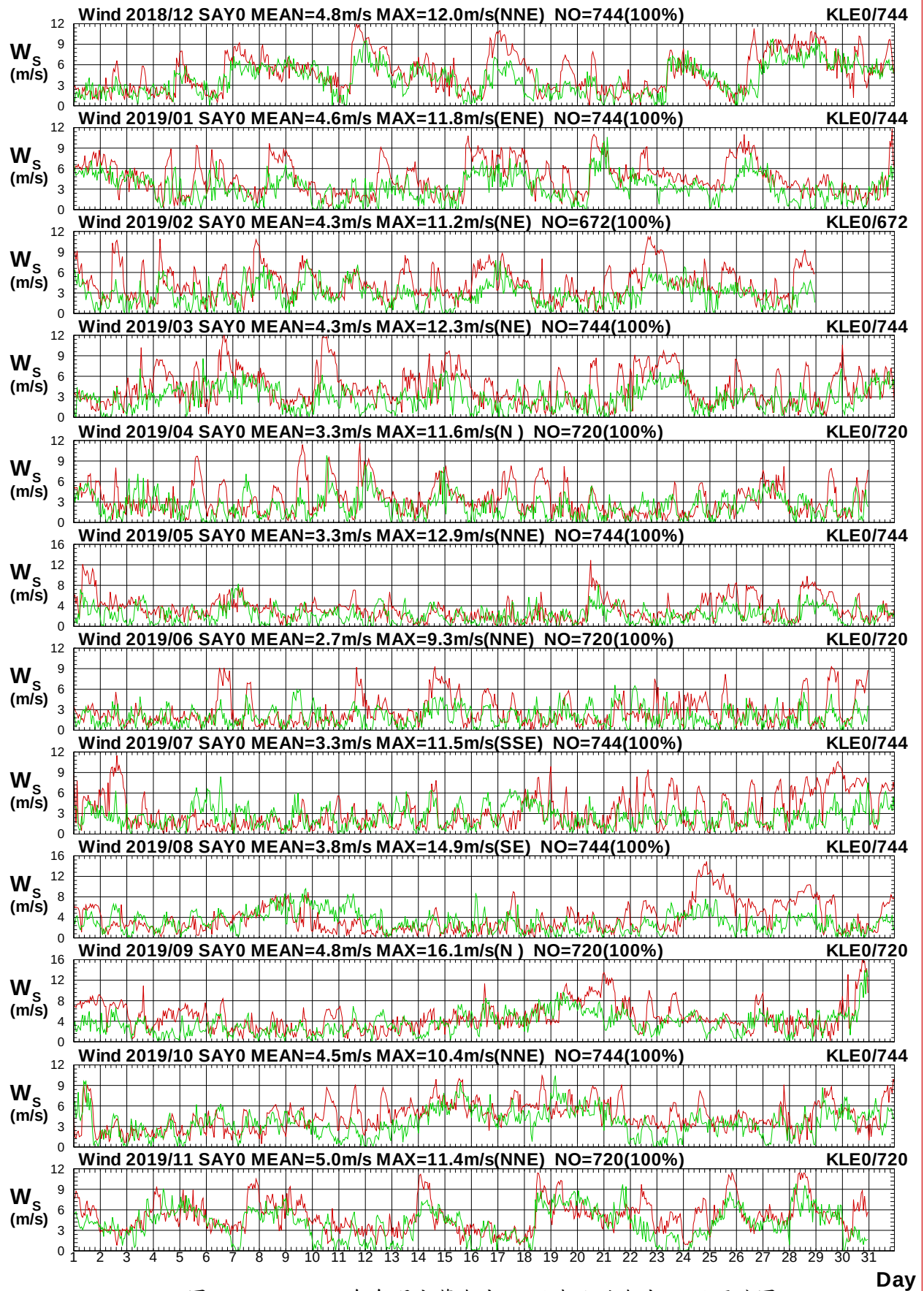


圖1.4.12a 2019年每月宜蘭海域 Y 站與北端海域 E 站風速圖

W18CSAY0.1HA W18CKLE0.1H0 W191SAY0.1HA W191KLE0.1H0 W192SAY0.1HA W192KLE0.1H0
W193SAY0.1HA W193KLE0.1H0 W194SAY0.1HA W194KLE0.1H0 W195SAY0.1HA W195KLE0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

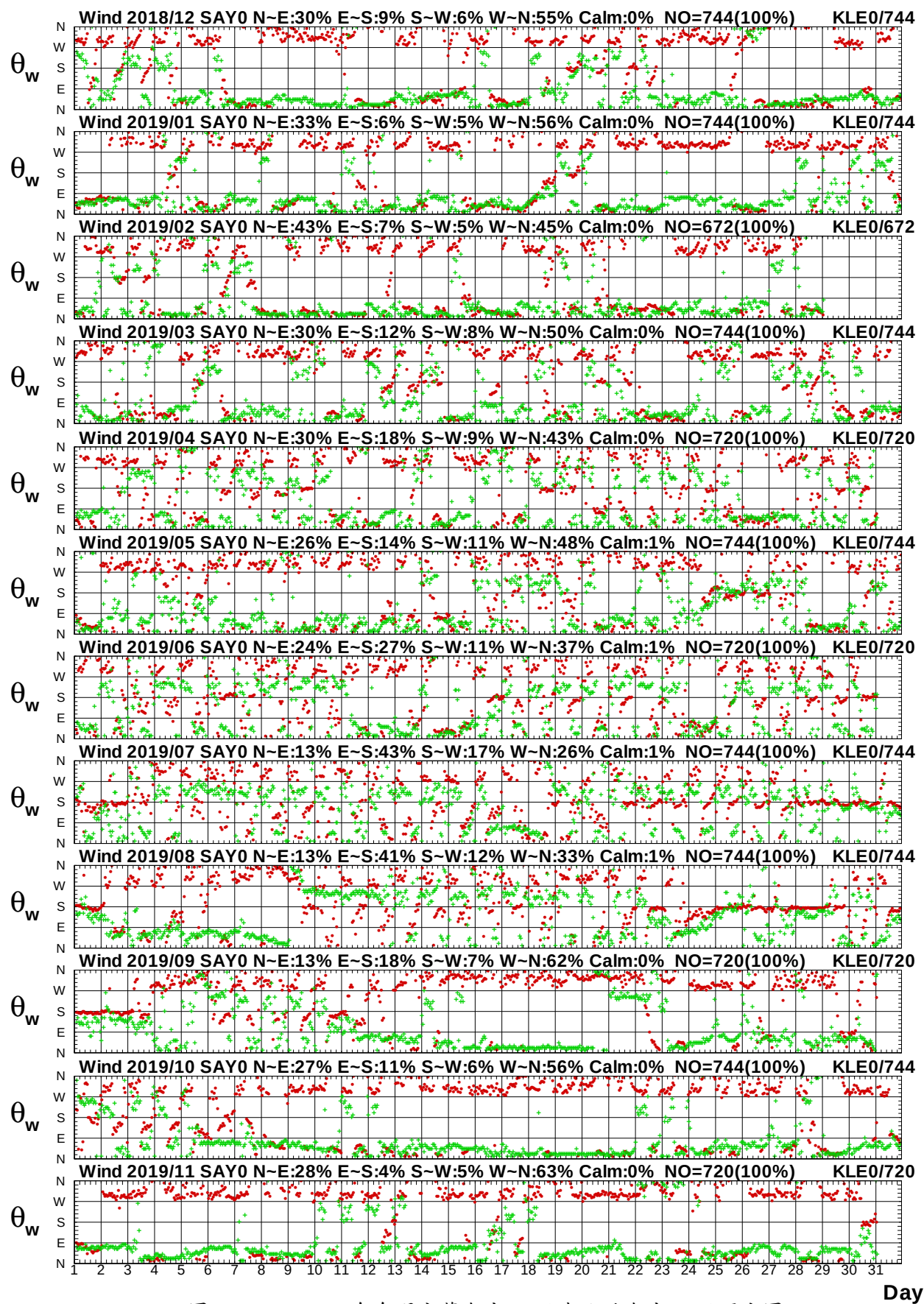


圖1.4.12b 2019年每月宜蘭海域 Y 站與北端海域 E 站風向圖

W18CSAY0.1HA W18CKLE0.1H0 W191SAY0.1HA W191KLE0.1H0 W192SAY0.1HA W192KLE0.1H0
W193SAY0.1HA W193KLE0.1H0 W194SAY0.1HA W194KLE0.1H0 W195SAY0.1HA W195KLE0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

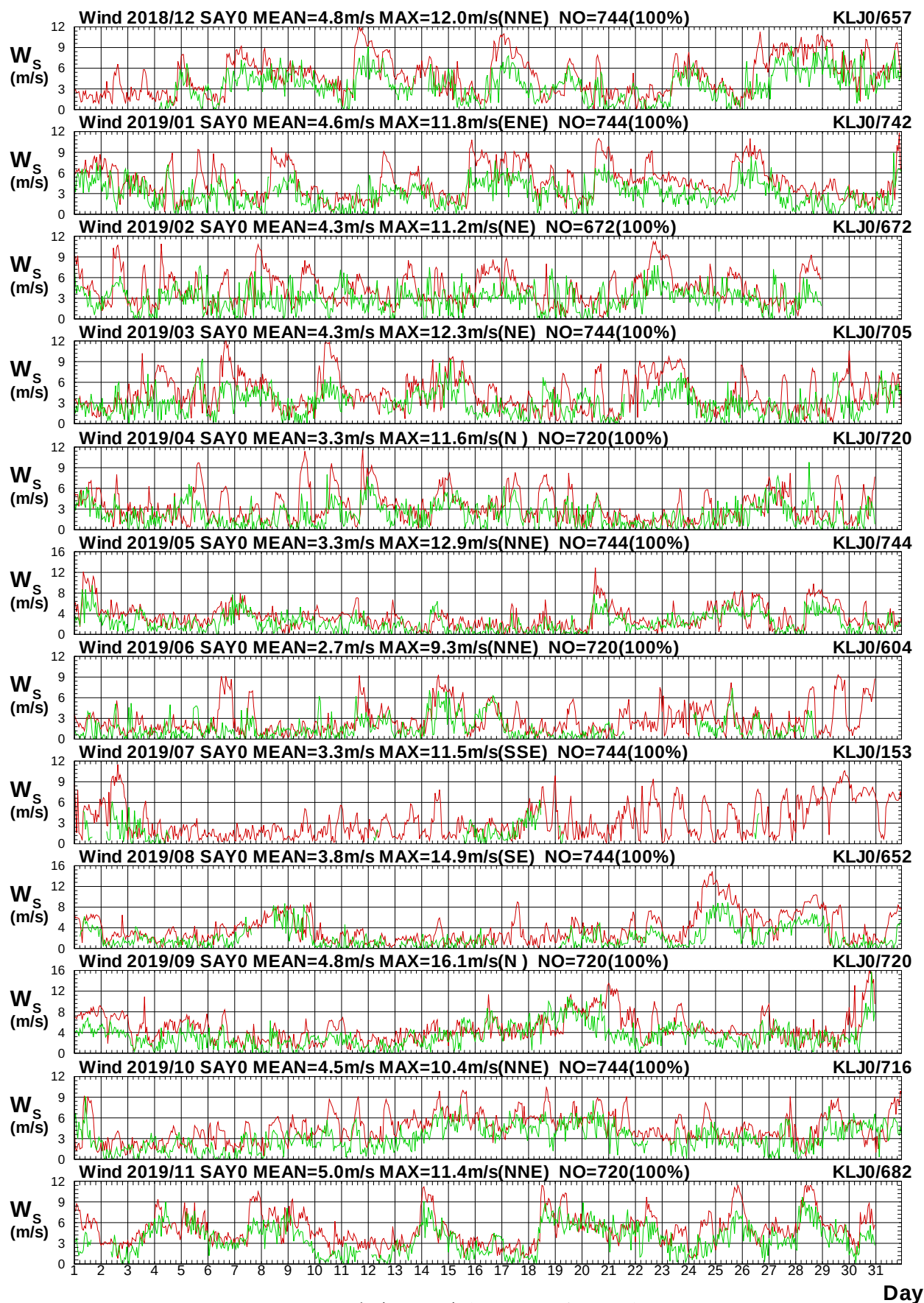


圖1.4.13a 2019年每月宜蘭海域 Y 站與北端海域 J 站風速圖

W18CSAY0.1HA W18CKLJ0.1H0 W191SAY0.1HA W191KLJ0.1H0 W192SAY0.1HA W192KLJ0.1H0
W193SAY0.1HA W193KLJ0.1H0 W194SAY0.1HA W194KLJ0.1H0 W195SAY0.1HA W195KLJ0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

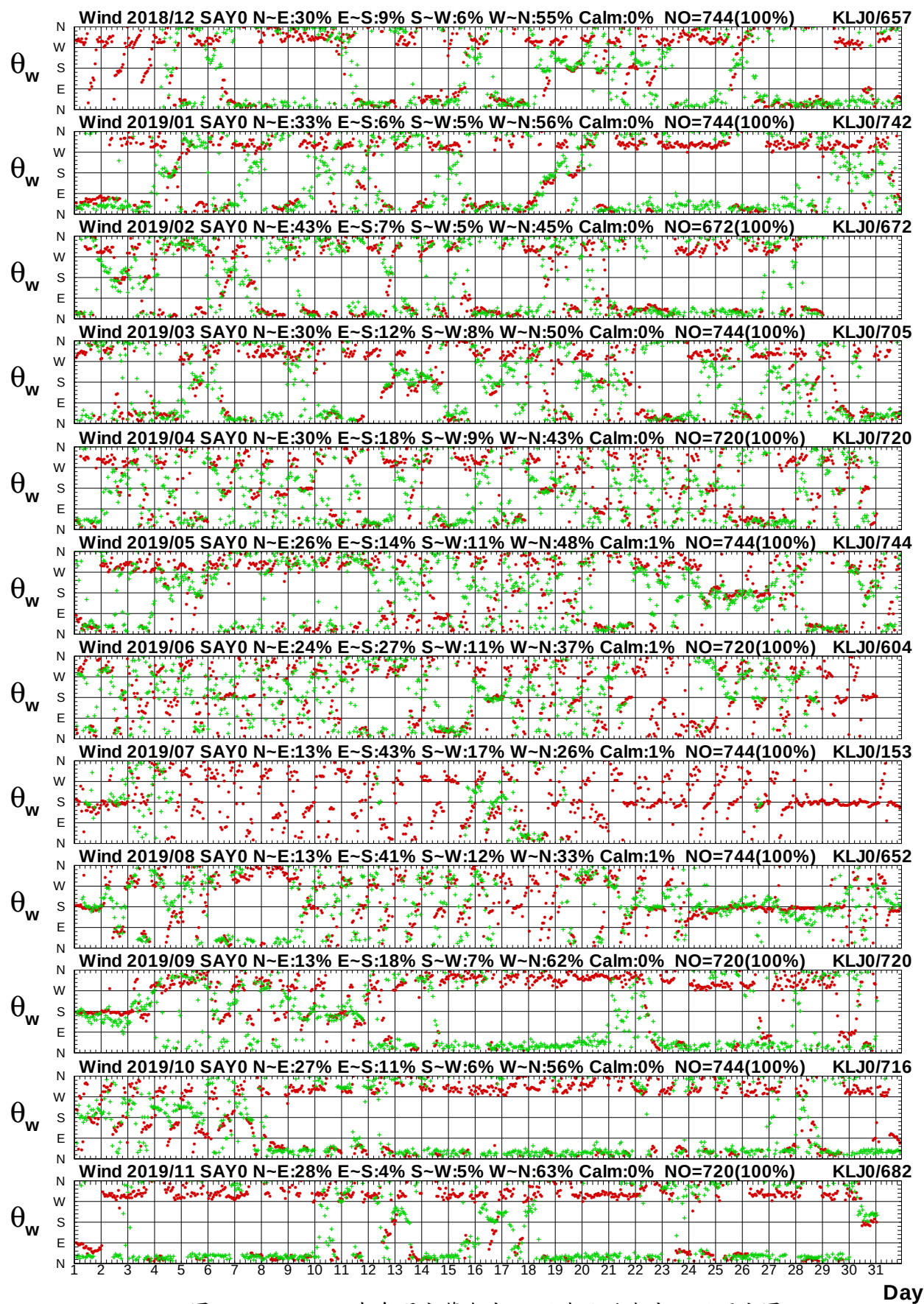


圖1.4.13b 2019年每月宜蘭海域 Y 站與北端海域 J 站風向圖

W18CSAY0.1HA W18CKLJ0.1H0 W191SAY0.1HA W191KLJ0.1H0 W192SAY0.1HA W192KLJ0.1H0
W193SAY0.1HA W193KLJ0.1H0 W194SAY0.1HA W194KLJ0.1H0 W195SAY0.1HA W195KLJ0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

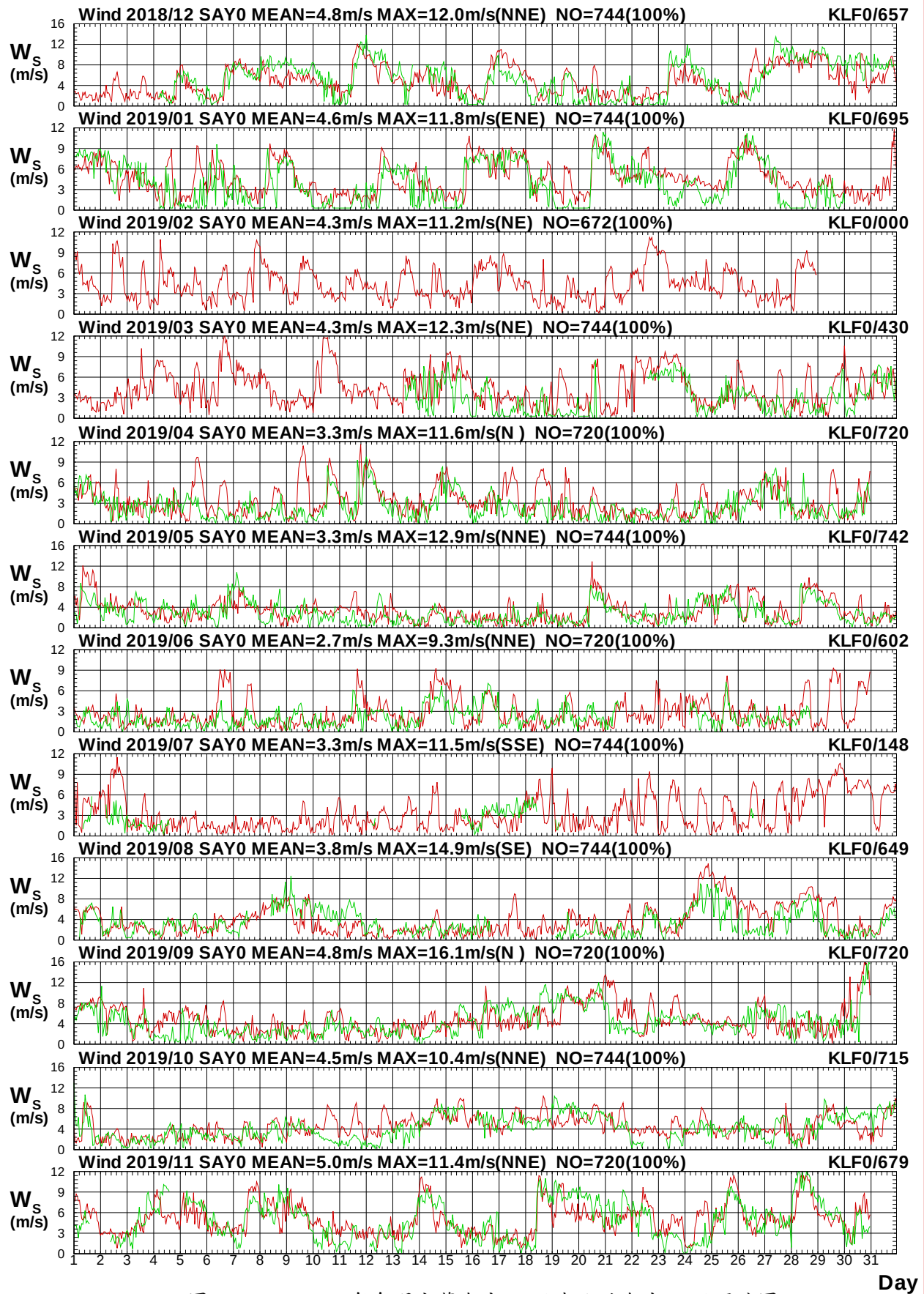


圖1.4.14a 2019年每月宜蘭海域 Y 站與北端海域 F 站風速圖

W18CSAY0.1HA W18CKLF0.1H0 W191SAY0.1HA W191KLF0.1H0 W192SAY0.1HA W192KLF0.1H0
W193SAY0.1HA W193KLF0.1H0 W194SAY0.1HA W194KLF0.1H0 W195SAY0.1HA W195KLF0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

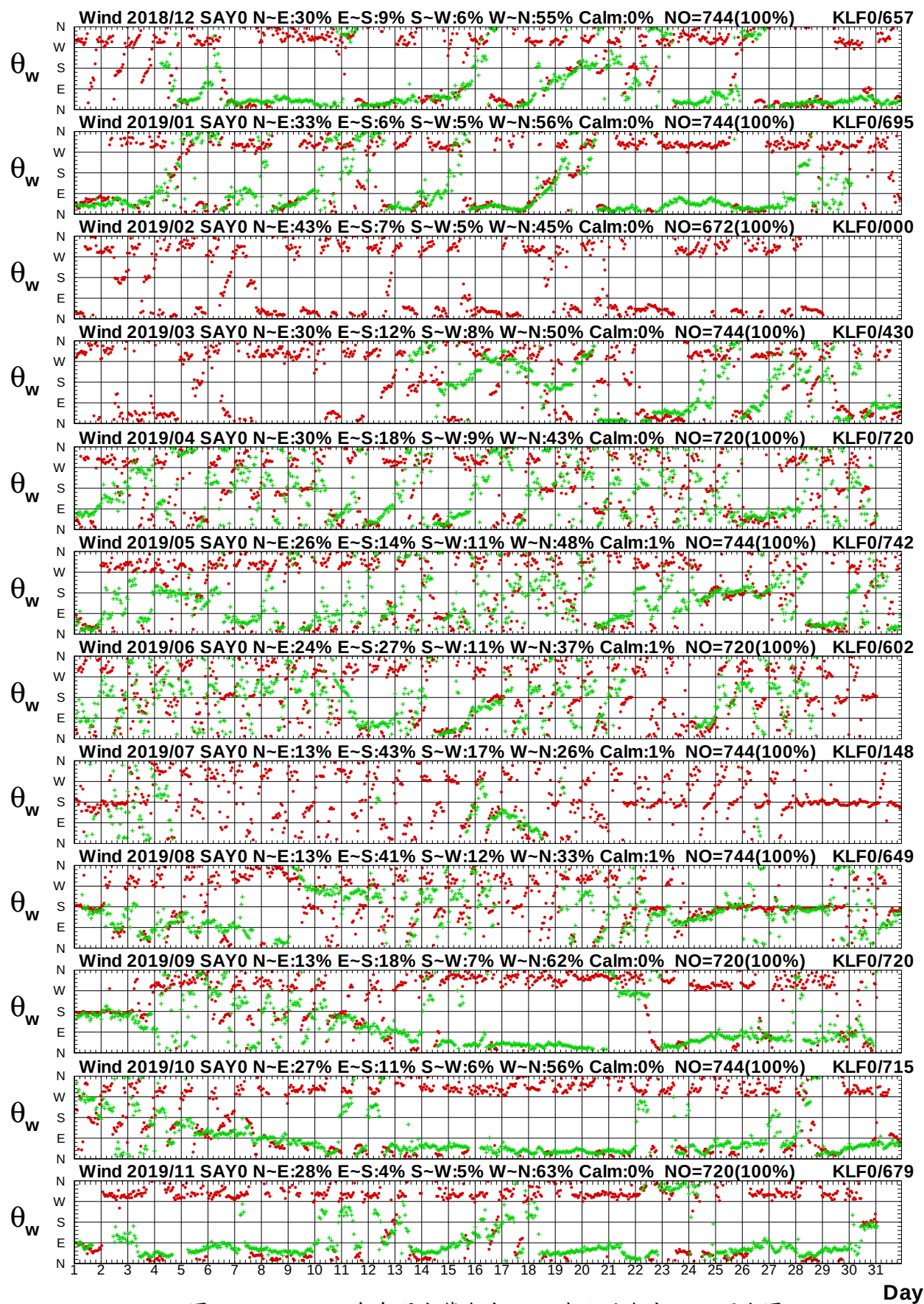


圖1.4.14b 2019年每月宜蘭海域 Y 站與北端海域 F 站風向圖

W18CSAY0.1HA W18CKLF0.1H0 W191SAY0.1HA W191KLF0.1H0 W192SAY0.1HA W192KLF0.1H0
W193SAY0.1HA W193KLF0.1H0 W194SAY0.1HA W194KLF0.1H0 W195SAY0.1HA W195KLF0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

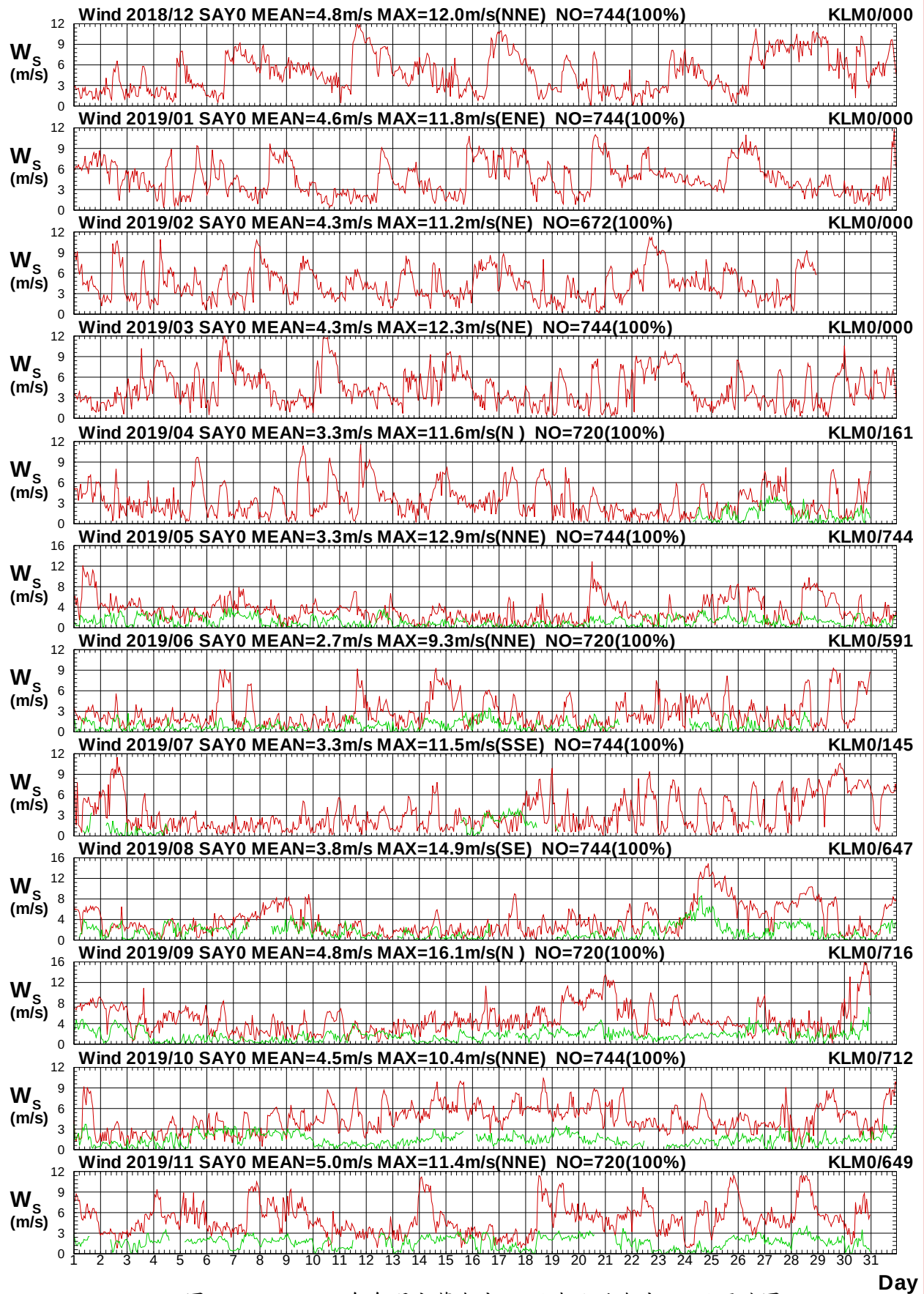


圖1.4.15a 2019年每月宜蘭海域 Y 站與北端海域 M 站風速圖

W18CSAY0.1HA W18CKLM0.1H0 W191SAY0.1HA W191KLM0.1H0 W192SAY0.1HA W192KLM0.1H0
W193SAY0.1HA W193KLM0.1H0 W194SAY0.1HA W194KLM0.1H0 W195SAY0.1HA W195KLM0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

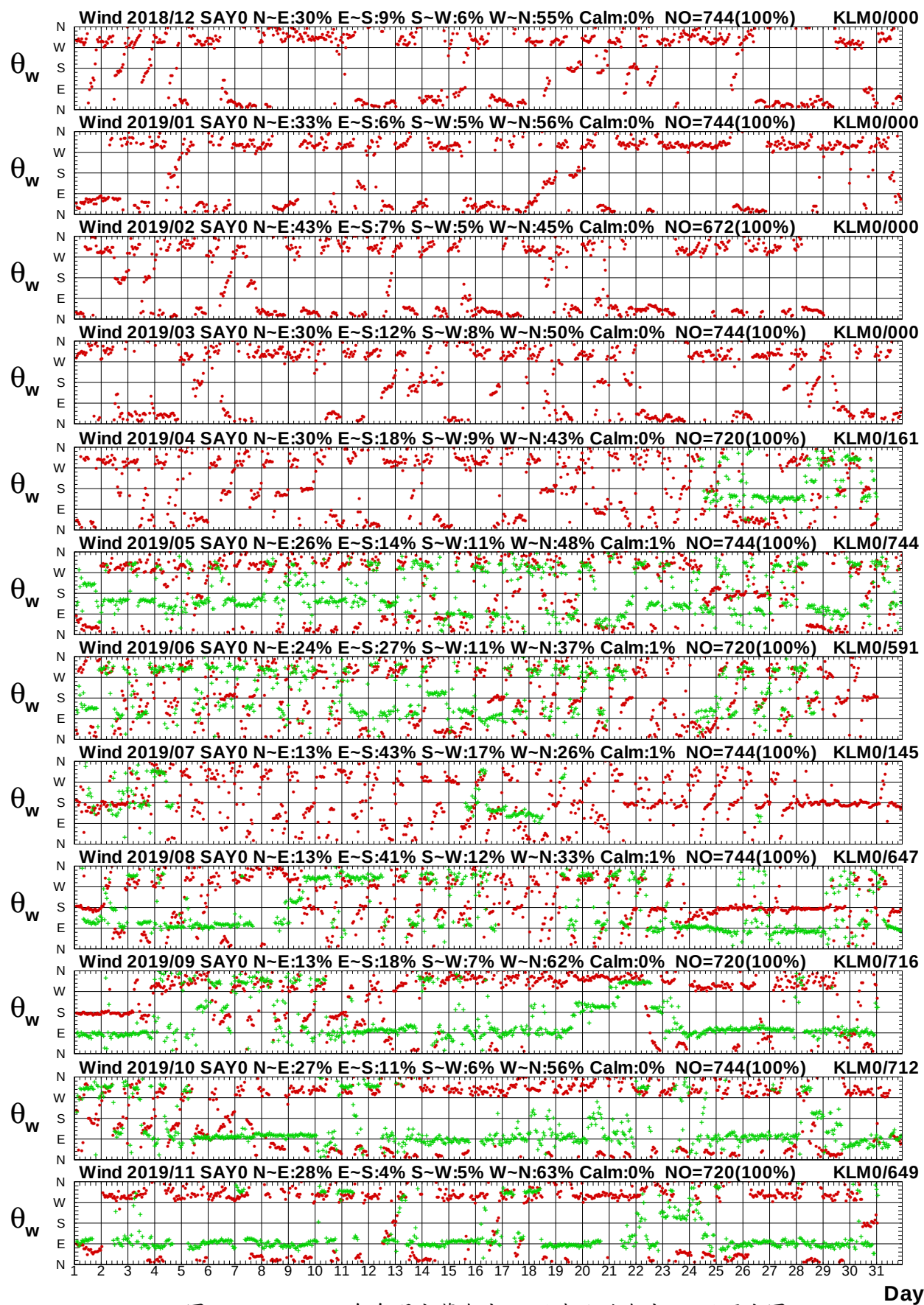


圖1.4.15b 2019年每月宜蘭海域 Y 站與北端海域 M 站風向圖

W18CSAY0.1HA W18CKLM0.1H0 W191SAY0.1HA W191KLM0.1H0 W192SAY0.1HA W192KLM0.1H0
W193SAY0.1HA W193KLM0.1H0 W194SAY0.1HA W194KLM0.1H0 W195SAY0.1HA W195KLM0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

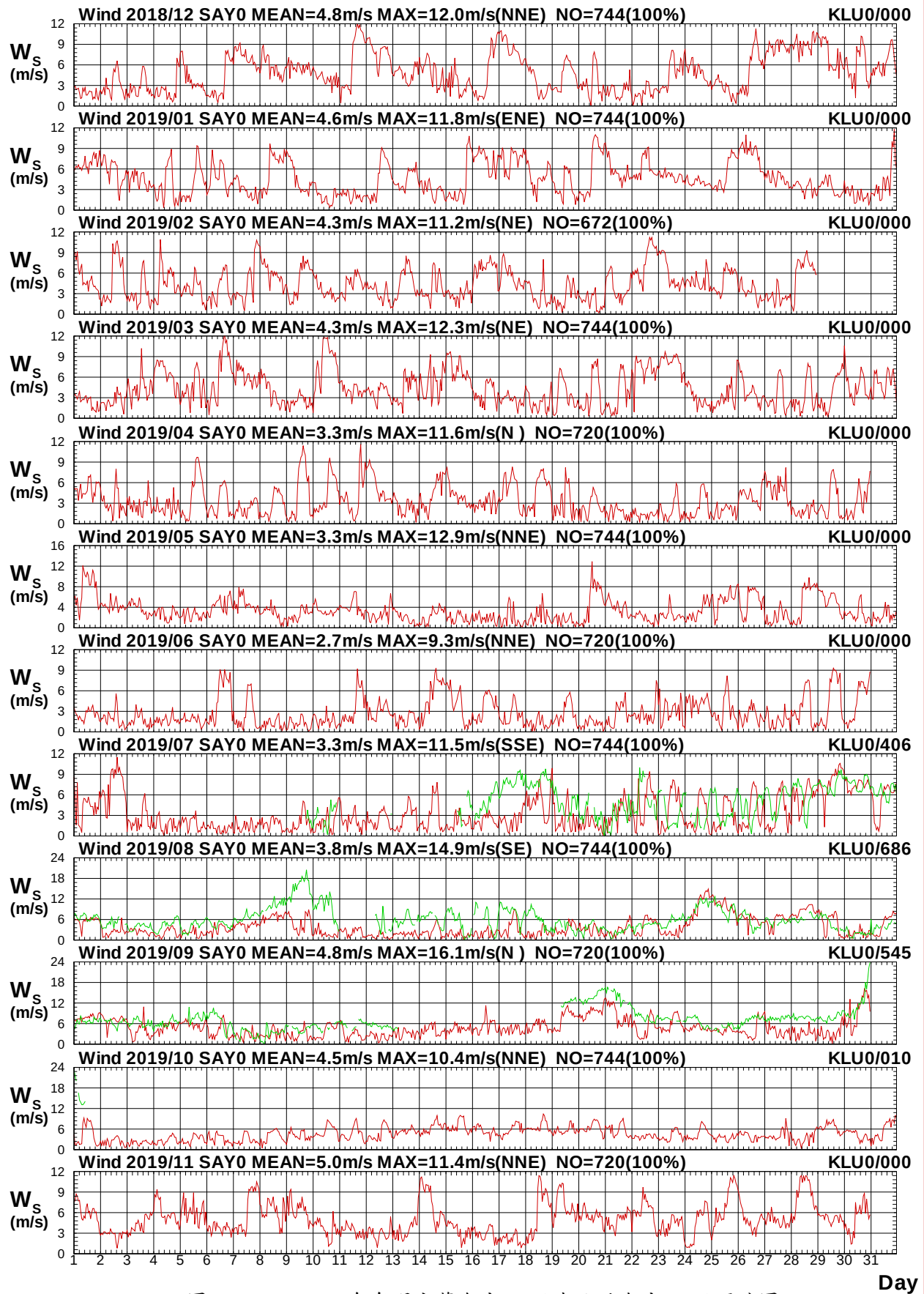


圖1.4.16a 2019年每月宜蘭海域 Y 站與北端海域 U 站風速圖

W18CSAY0.1HA W18CKLU0.1H0 W191SAY0.1HA W191KLU0.1H0 W192SAY0.1HA W192KLU0.1H0
W193SAY0.1HA W193KLU0.1H0 W194SAY0.1HA W194KLU0.1H0 W195SAY0.1HA W195KLU0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

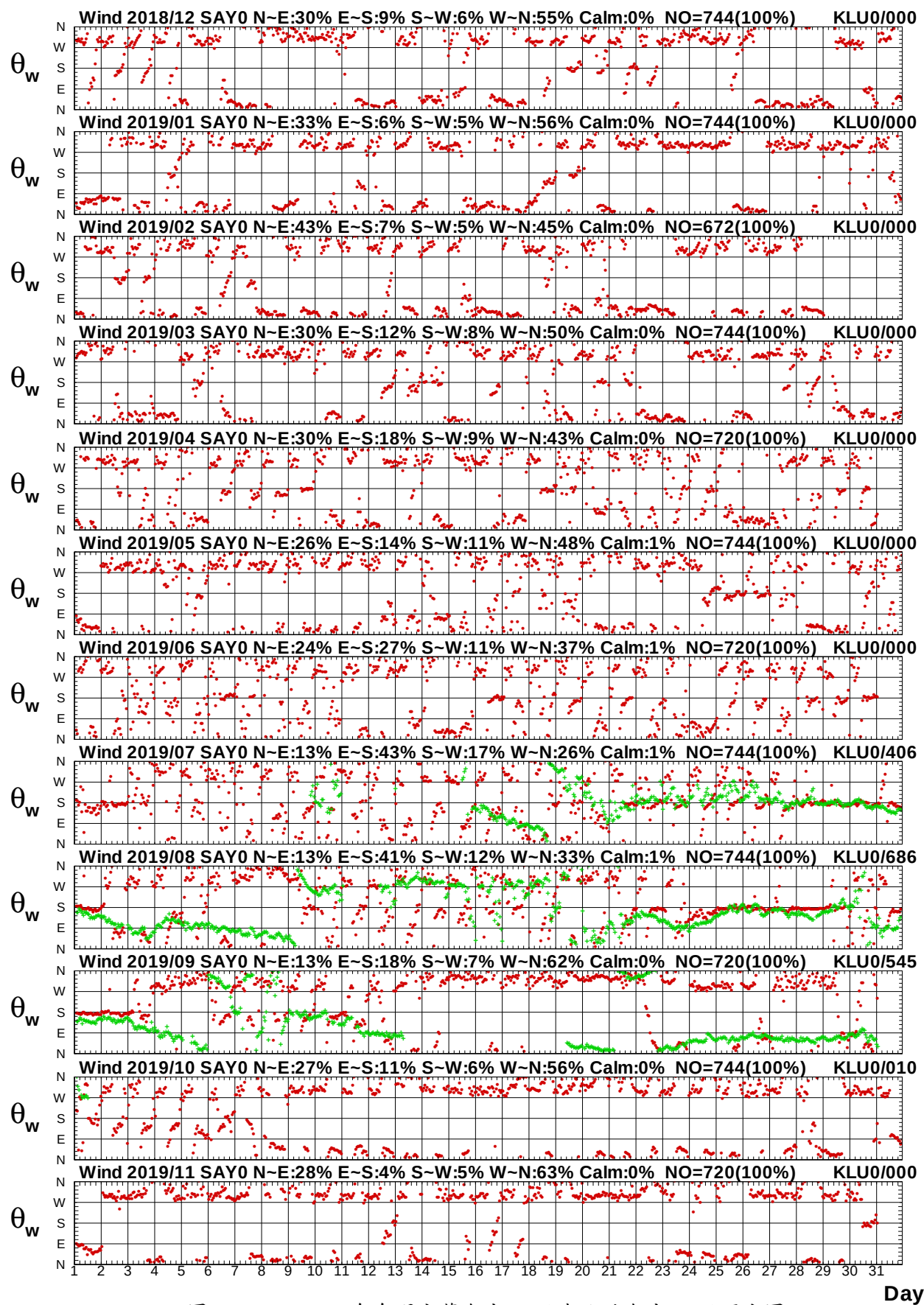


圖1.4.16b 2019年每月宜蘭海域 Y 站與北端海域 U 站風向圖

W18CSAY0.1HA W18CKLU0.1H0 W191SAY0.1HA W191KLU0.1H0 W192SAY0.1HA W192KLU0.1H0
W193SAY0.1HA W193KLU0.1H0 W194SAY0.1HA W194KLU0.1H0 W195SAY0.1HA W195KLU0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

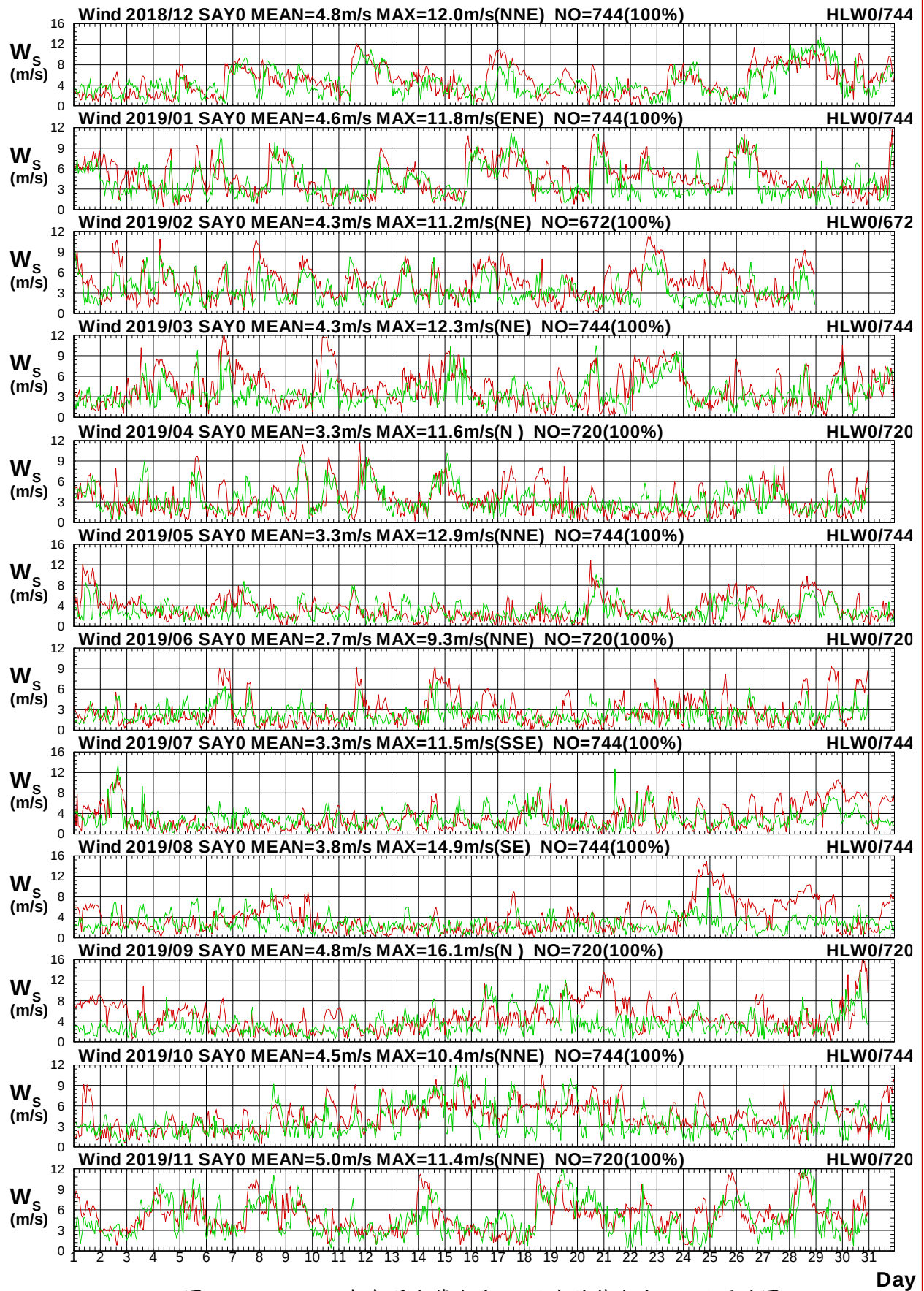


圖1.4.17a 2019年每月宜蘭海域 Y 站與花蓮海域 W 站風速圖

W18CSAY0.1HA W18CHLW0.1H0 W191SAY0.1HA W191HLW0.1H0 W192SAY0.1HA W192HLW0.1H0
W193SAY0.1HA W193HLW0.1H0 W194SAY0.1HA W194HLW0.1H0 W195SAY0.1HA W195HLW0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

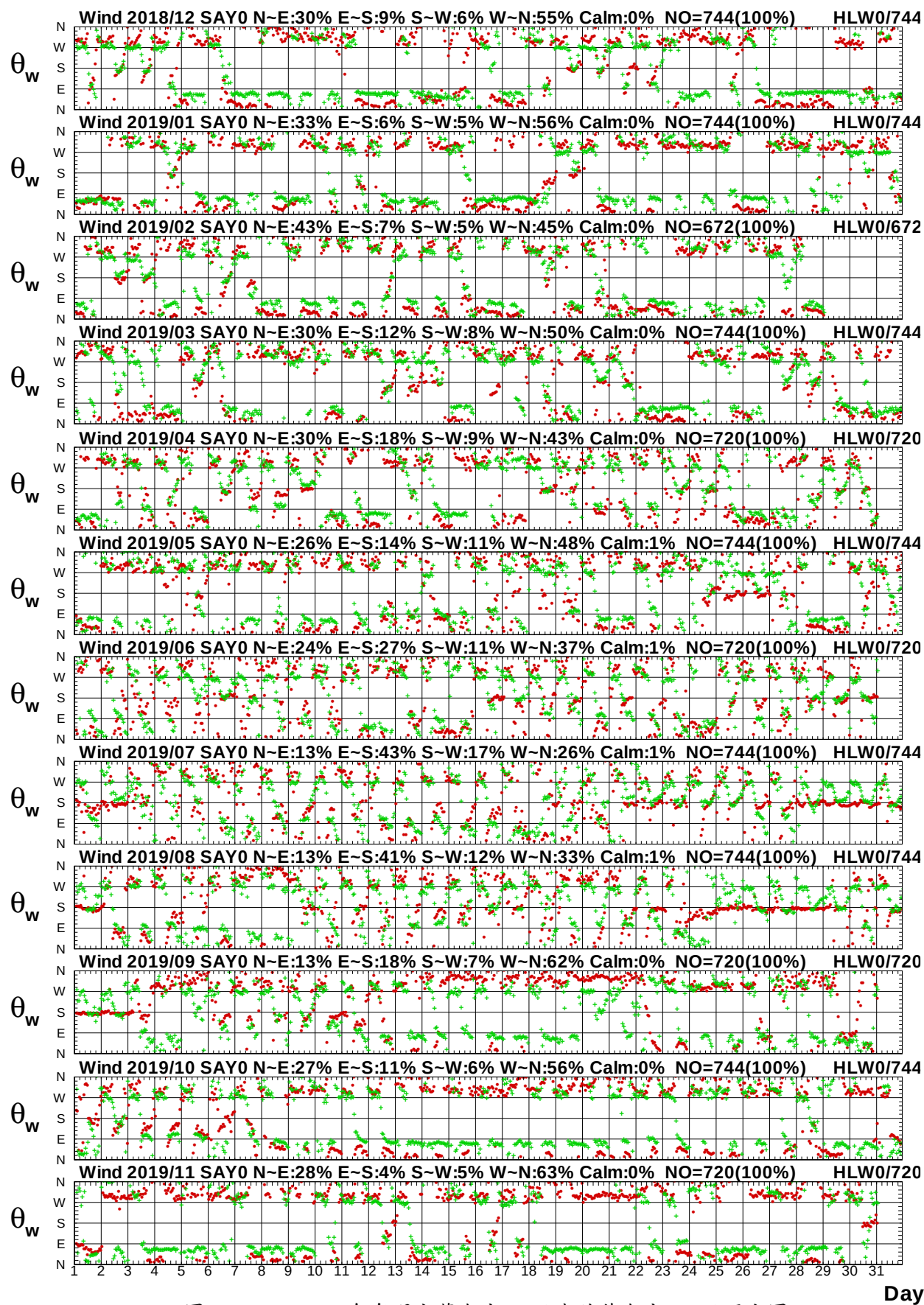


圖1.4.17b 2019年每月宜蘭海域 Y 站與花蓮海域 W 站風向圖

W18CSAY0.1HA W18CHLW0.1H0 W191SAY0.1HA W191HLW0.1H0 W192SAY0.1HA W192HLW0.1H0
W193SAY0.1HA W193HLW0.1H0 W194SAY0.1HA W194HLW0.1H0 W195SAY0.1HA W195HLW0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

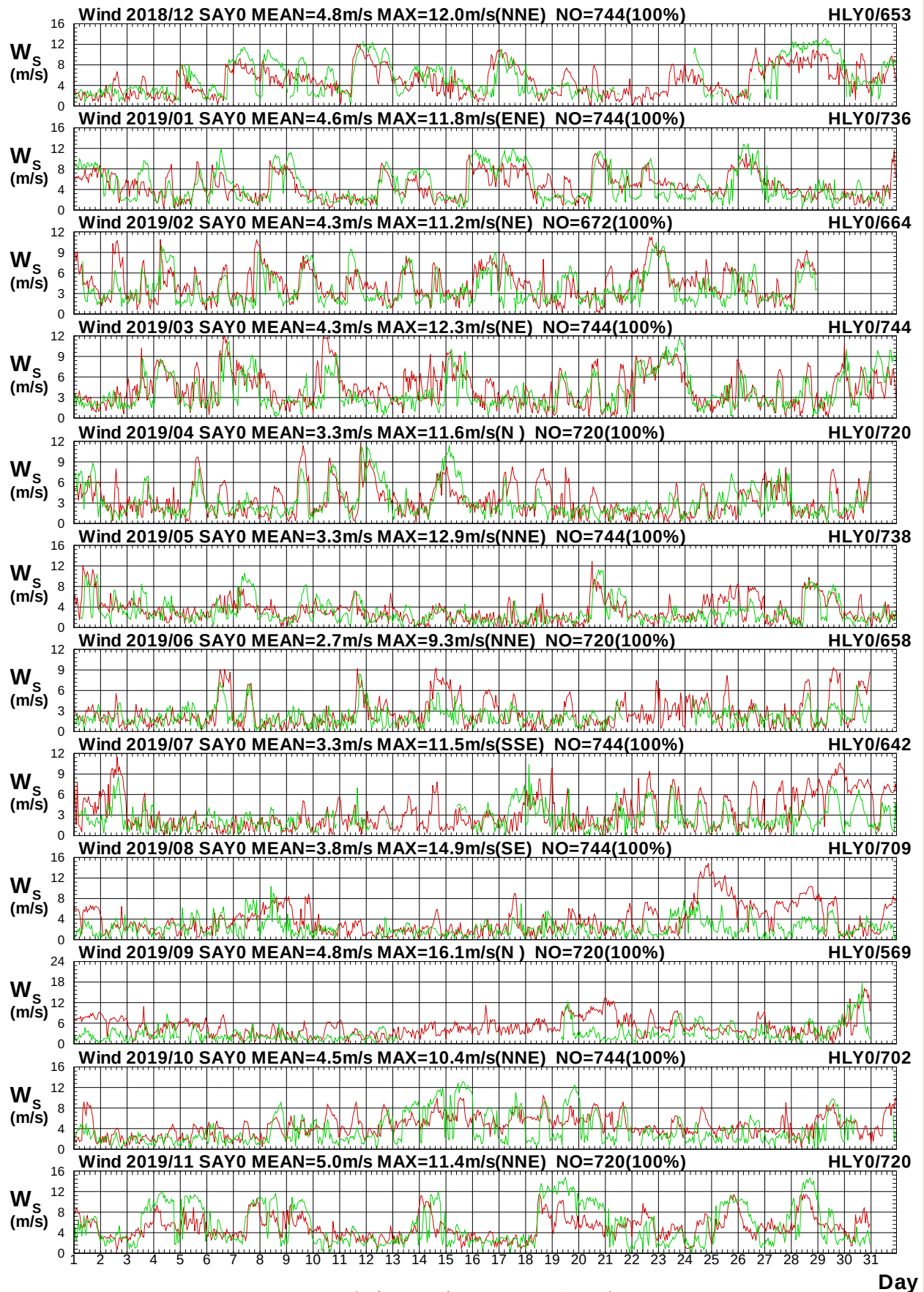


圖1.4.18a 2019年每月宜蘭海域 Y 站與花蓮海域 Y 站風速圖

W18CSAY0.1HA W18CHLY0.1H0 W191SAY0.1HA W191HLY0.1H0 W192SAY0.1HA W192HLY0.1H0
W193SAY0.1HA W193HLY0.1H0 W194SAY0.1HA W194HLY0.1H0 W195SAY0.1HA W195HLY0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

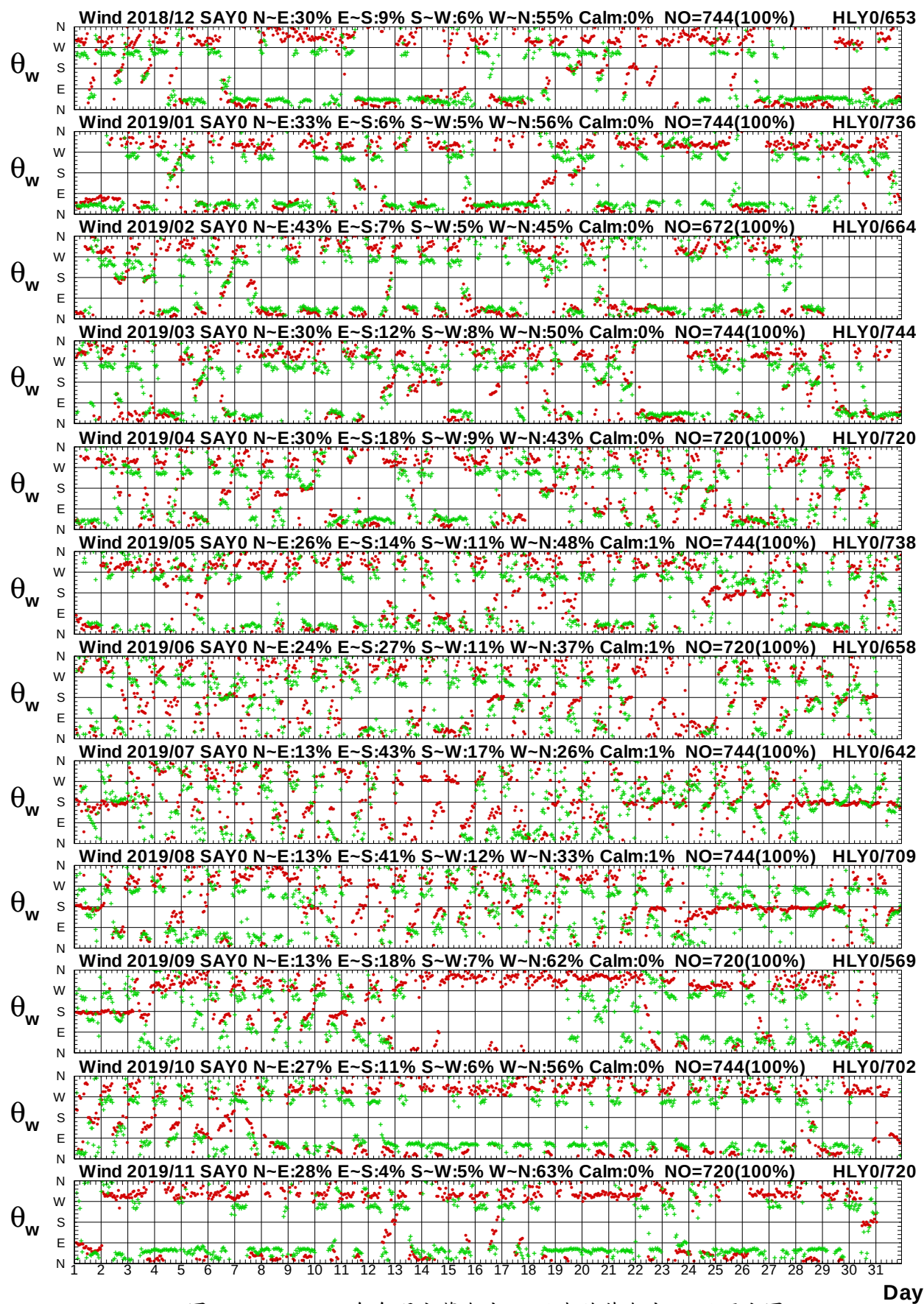


圖1.4.18b 2019年每月宜蘭海域 Y 站與花蓮海域 Y 站風向圖

W18CSAY0.1HA W18CHLY0.1H0 W191SAY0.1HA W191HLY0.1H0 W192SAY0.1HA W192HLY0.1H0
W193SAY0.1HA W193HLY0.1H0 W194SAY0.1HA W194HLY0.1H0 W195SAY0.1HA W195HLY0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

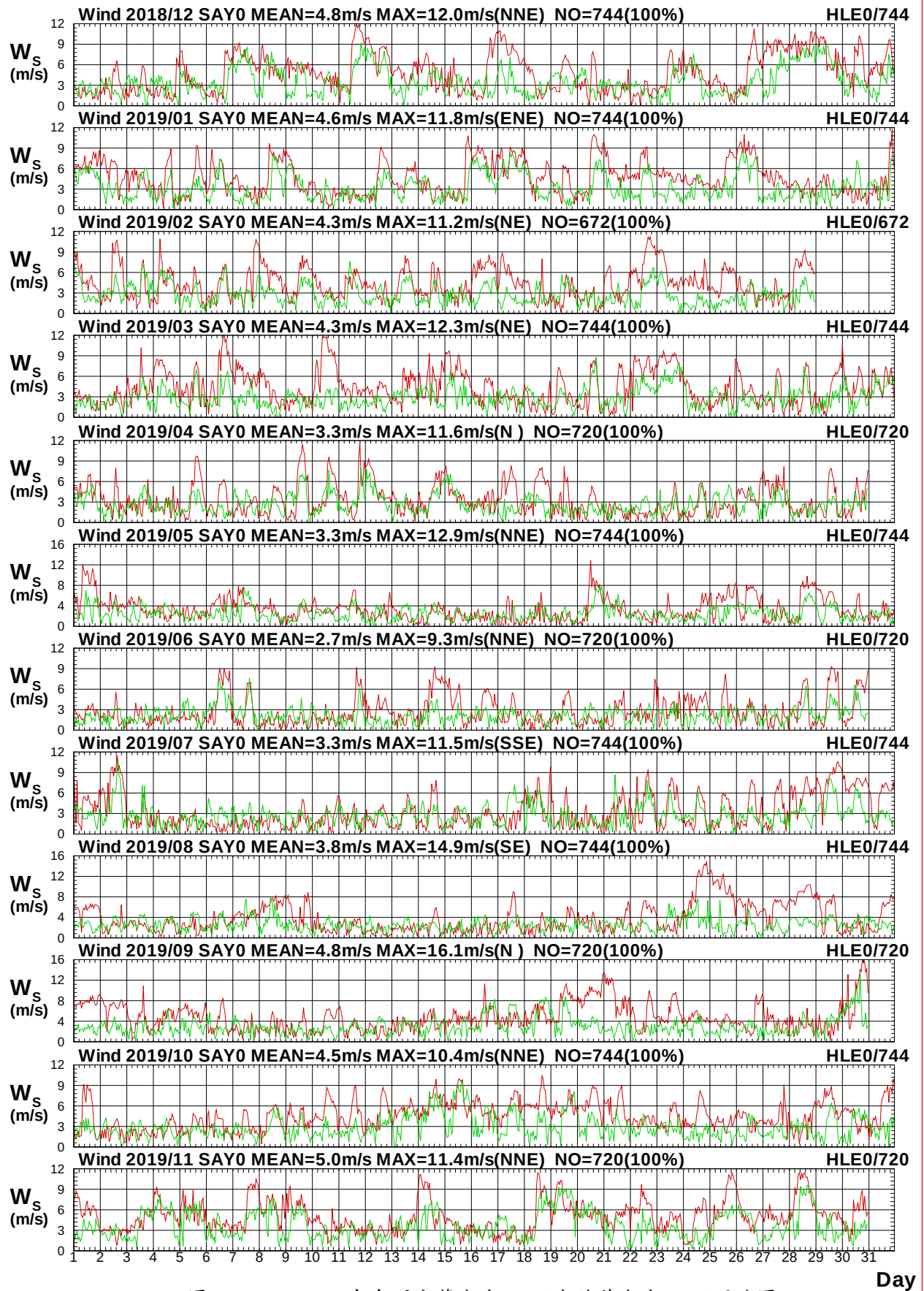


圖1.4.19a 2019年每月宜蘭海域 Y 站與花蓮海域 E 站風速圖

W18CSAY0.1HA W18CHLE0.1H0 W191SAY0.1HA W191HLE0.1H0 W192SAY0.1HA W192HLE0.1H0
W193SAY0.1HA W193HLE0.1H0 W194SAY0.1HA W194HLE0.1H0 W195SAY0.1HA W195HLE0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

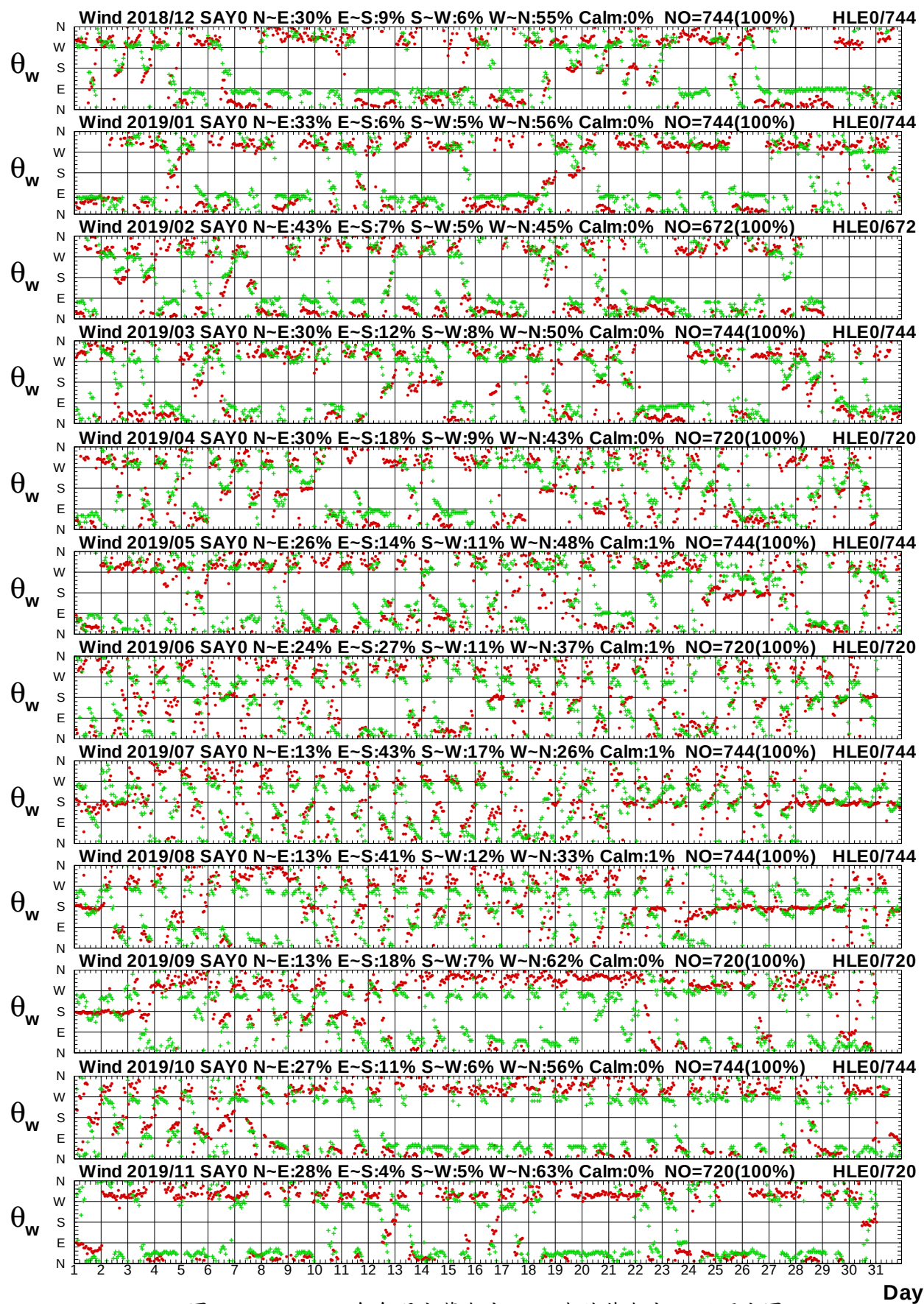


圖1.4.19b 2019年每月宜蘭海域 Y 站與花蓮海域 E 站風向圖

W18CSAY0.1HA W18CHLE0.1H0 W191SAY0.1HA W191HLE0.1H0 W192SAY0.1HA W192HLE0.1H0
W193SAY0.1HA W193HLE0.1H0 W194SAY0.1HA W194HLE0.1H0 W195SAY0.1HA W195HLE0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

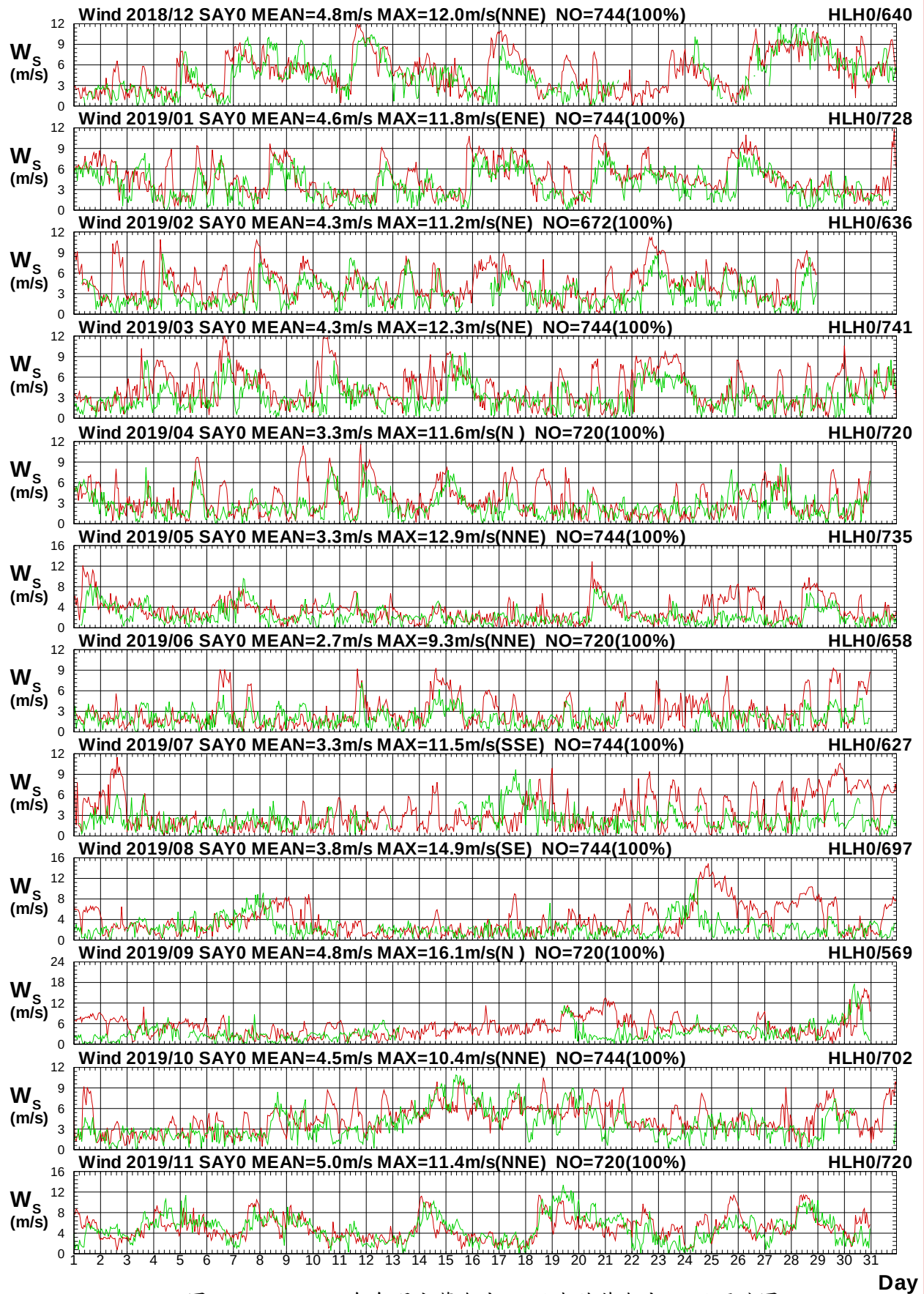


圖1.4.20a 2019年每月宜蘭海域 Y 站與花蓮海域 H 站風速圖

W18CSAY0.1HA W18CHLH0.1H0 W191SAY0.1HA W191HLH0.1H0 W192SAY0.1HA W192HLH0.1H0
W193SAY0.1HA W193HLH0.1H0 W194SAY0.1HA W194HLH0.1H0 W195SAY0.1HA W195HLH0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

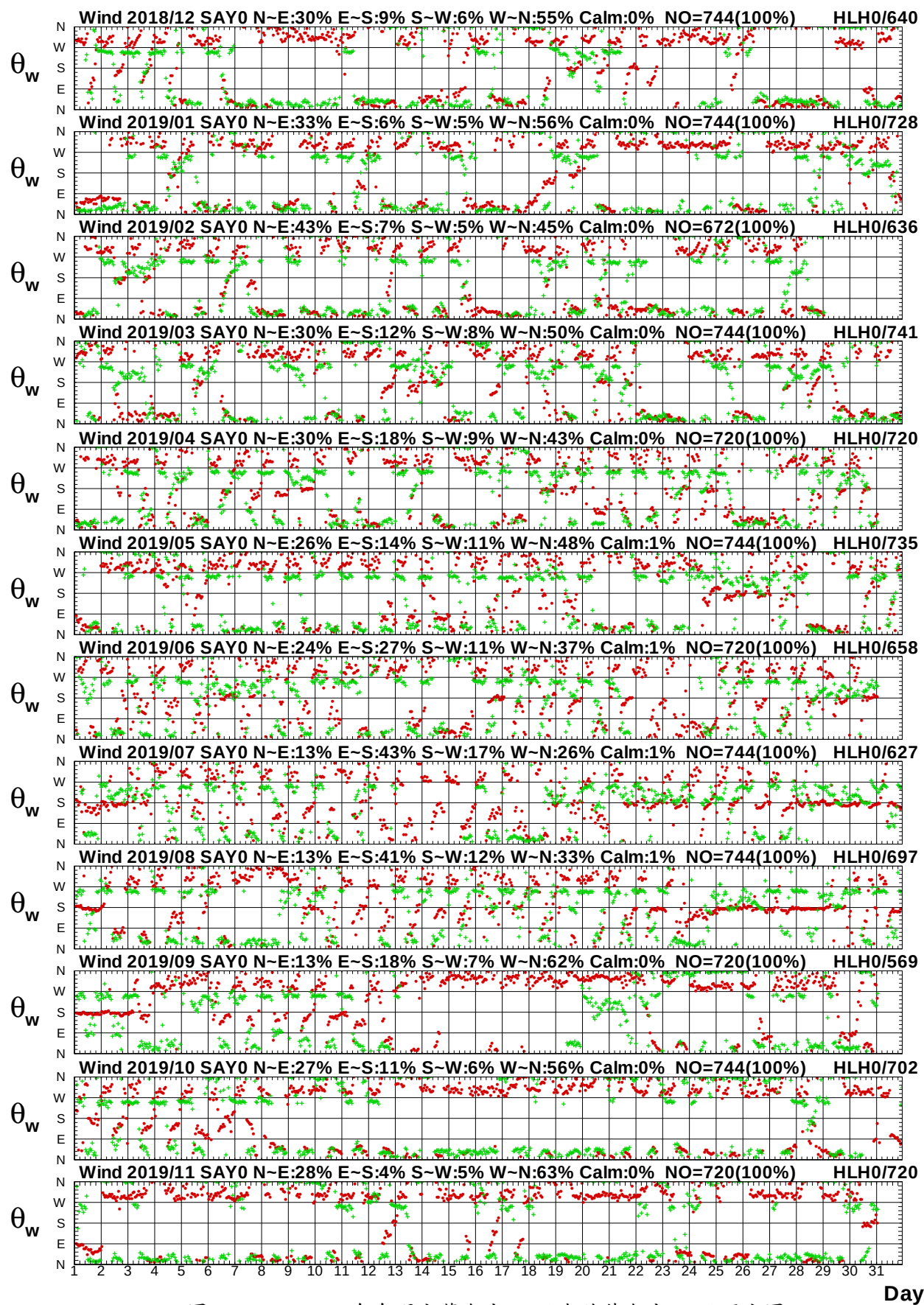


圖1.4.20b 2019年每月宜蘭海域 Y 站與花蓮海域 H 站風向圖

W18CSAY0.1HA W18CHLH0.1H0 W191SAY0.1HA W191HLH0.1H0 W192SAY0.1HA W192HLH0.1H0
W193SAY0.1HA W193HLH0.1H0 W194SAY0.1HA W194HLH0.1H0 W195SAY0.1HA W195HLH0.1H0

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Wind Speed in Yi-Lan Seas of SAY0 at 2019

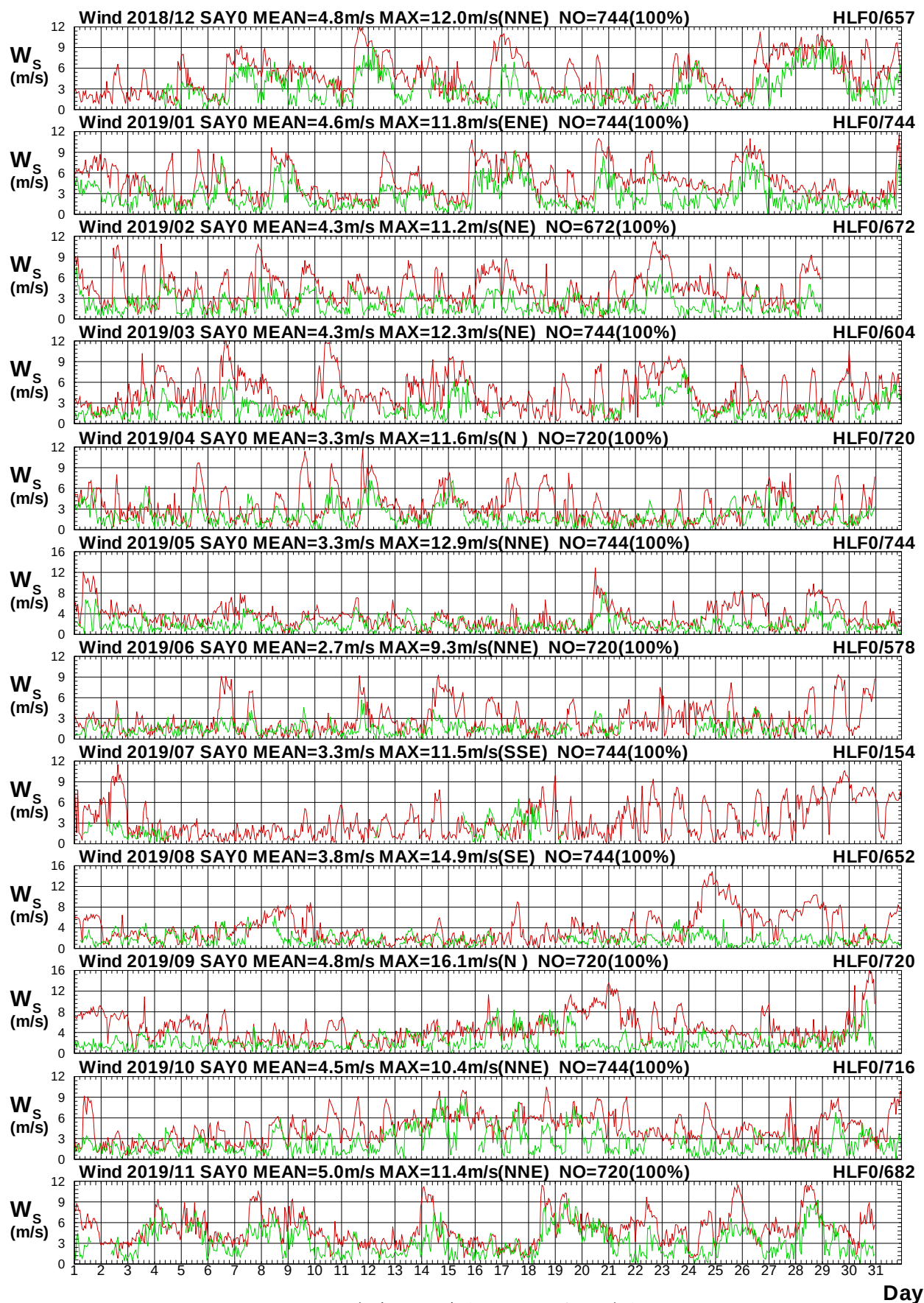


圖1.4.21a 2019年每月宜蘭海域 Y 站與花蓮海域 F 站風速圖

W18CSAY0.1HA W18CHLF0.1H0 W191SAY0.1HA W191HLF0.1H0 W192SAY0.1HA W192HLF0.1H0
W193SAY0.1HA W193HLF0.1H0 W194SAY0.1HA W194HLF0.1H0 W195SAY0.1HA W195HLF0.1H0

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Wind Direction in Yi-Lan Seas of SAY0 at 2019

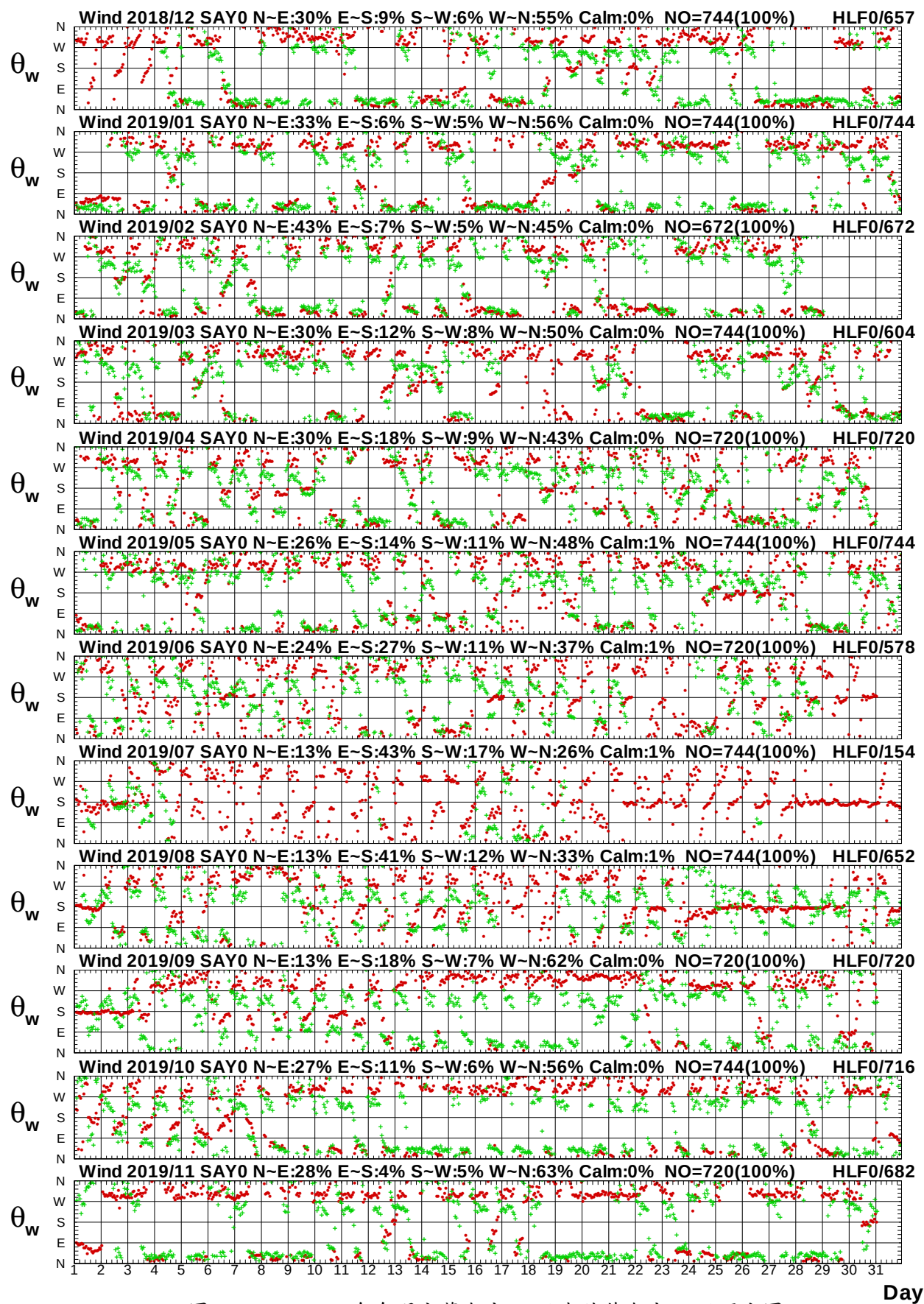


圖1.4.21b 2019年每月宜蘭海域 Y 站與花蓮海域 F 站風向圖

W18CSAY0.1HA W18CHLF0.1H0 W191SAY0.1HA W191HLF0.1H0 W192SAY0.1HA W192HLF0.1H0
W193SAY0.1HA W193HLF0.1H0 W194SAY0.1HA W194HLF0.1H0 W195SAY0.1HA W195HLF0.1H0

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1.5 2019 年宜蘭海域風力各測站修補前 風力向量分佈圖

Distribution of Wind Vectors

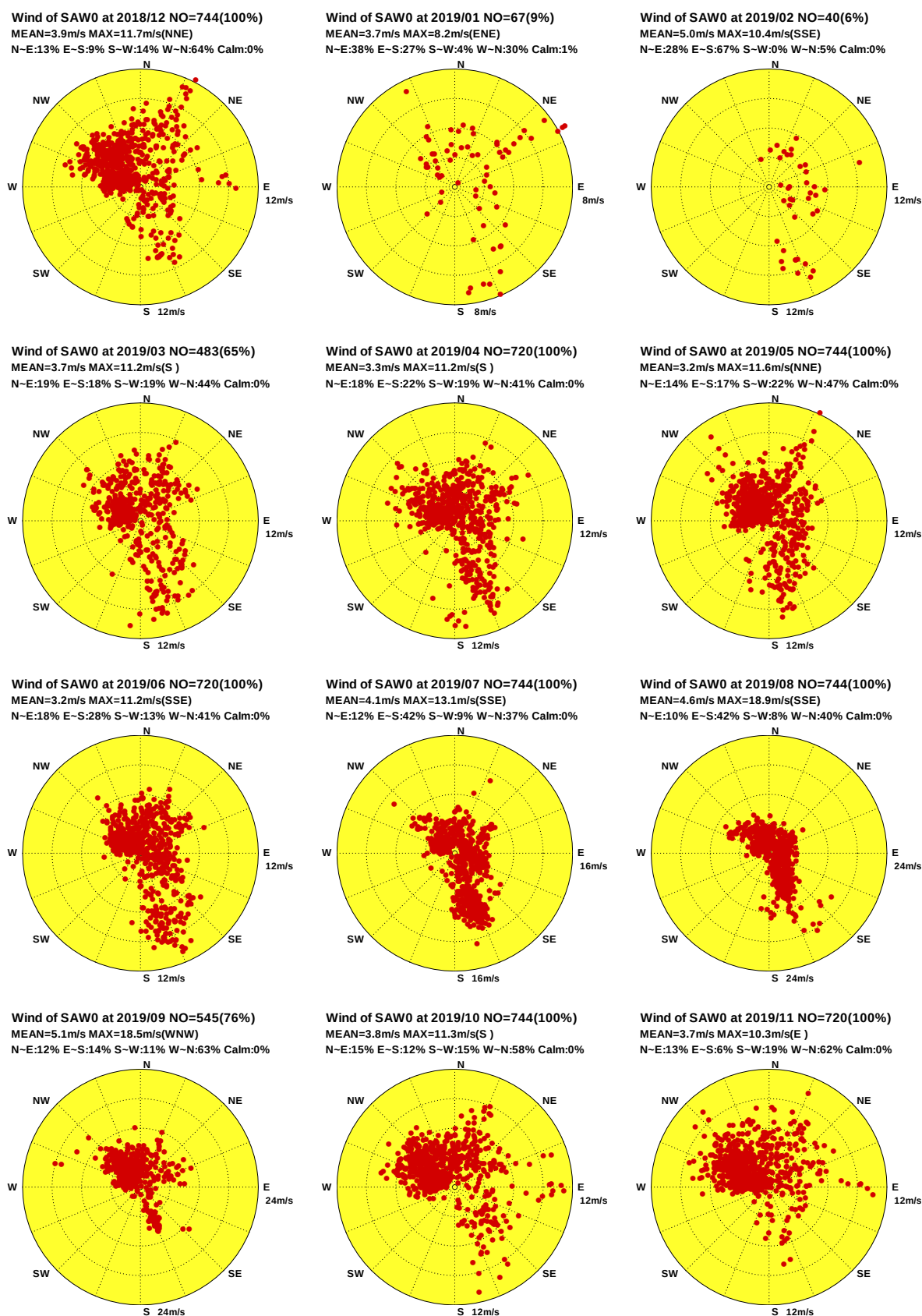


圖1.5.1 2019年宜蘭海域每月 W 站修補前觀測風力向量分佈圖

W18CSAW0.1H0 W191SAW0.1H0 W192SAW0.1H0 W193SAW0.1H0 W194SAW0.1H0 W195SAW0.1H0
 W196SAW0.1H0 W197SAW0.1H0 W198SAW0.1H0 W199SAW0.1H0 W19ASAW0.1H0 W19BSAW0.1H0

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Distribution of Wind Vectors

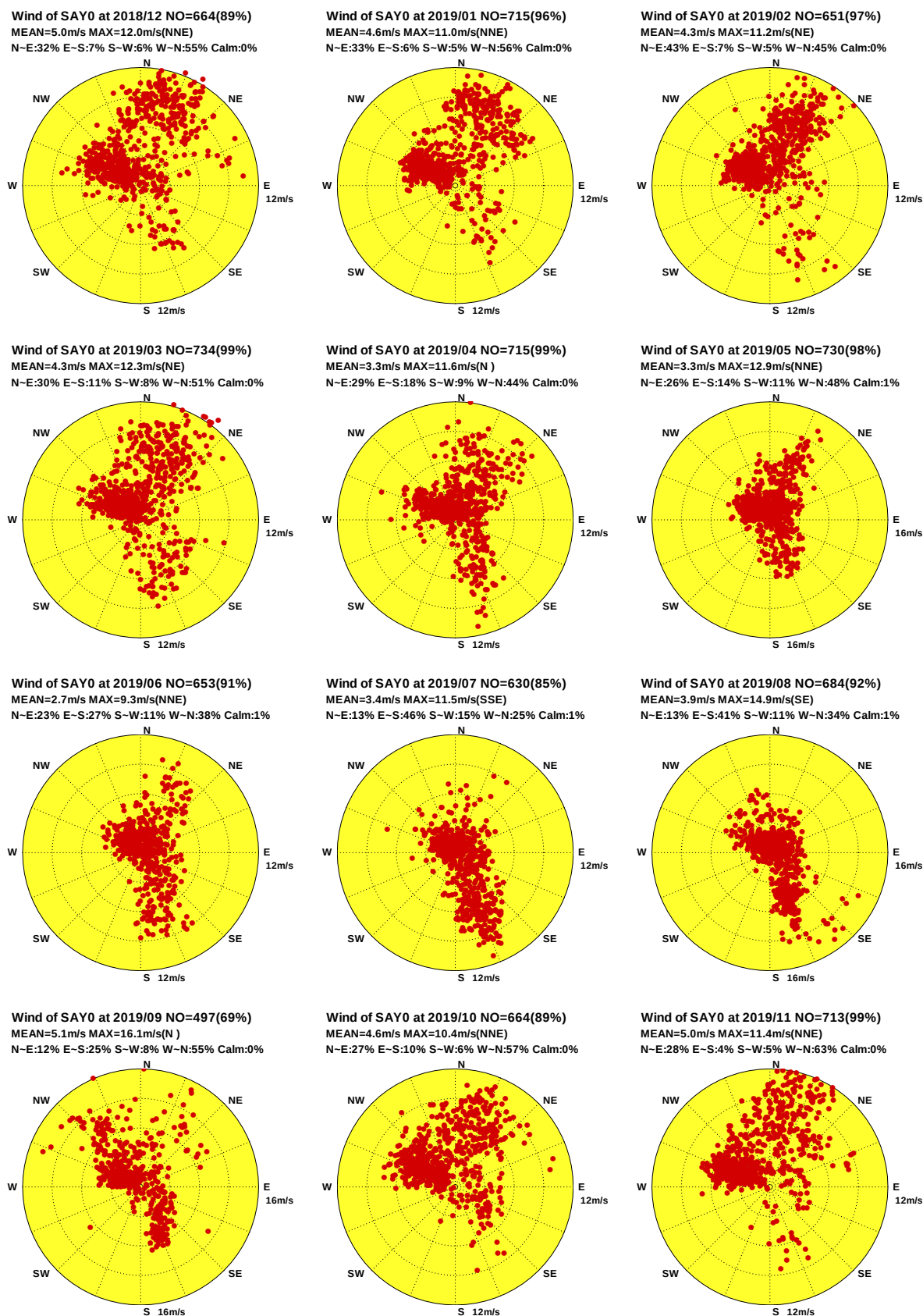


圖1.5.2 2019年宜蘭海域每月 Y 站修補前觀測風力向量分佈圖

W18CSAY0.1H0 W191SAY0.1H0 W192SAY0.1H0 W193SAY0.1H0 W194SAY0.1H0 W195SAY0.1H0
W196SAY0.1H0 W197SAY0.1H0 W198SAY0.1H0 W199SAY0.1H0 W19ASAY0.1H0 W19BSAY0.1H0

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Distribution of Wind Vectors

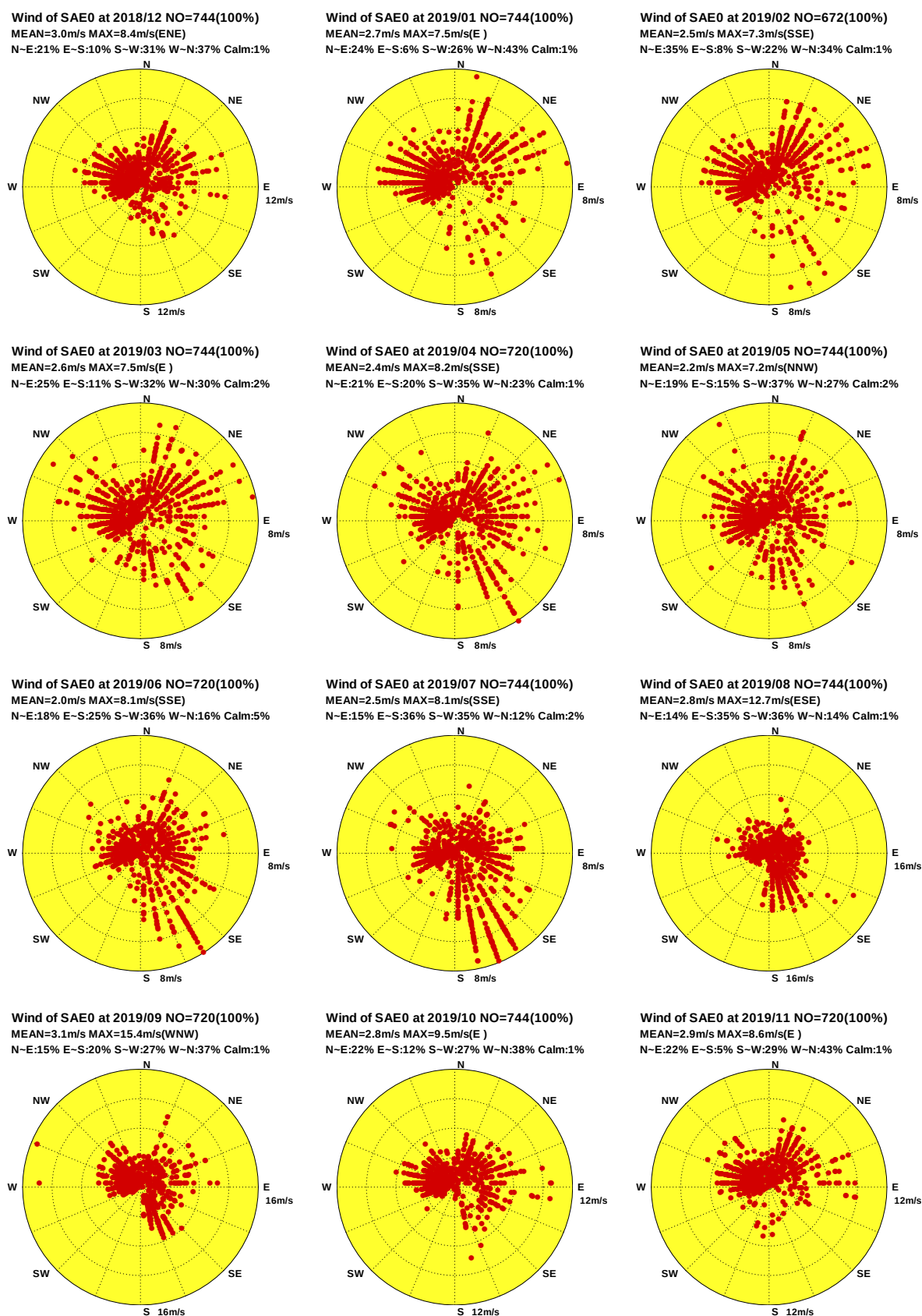


圖1.5.3 2019年宜蘭海域每月 E 站修補前觀測風力向量分佈圖

W18CSAE0.1H0 W191SAE0.1H0 W192SAE0.1H0 W193SAE0.1H0 W194SAE0.1H0 W195SAE0.1H0
 W196SAE0.1H0 W197SAE0.1H0 W198SAE0.1H0 W199SAE0.1H0 W19ASAE0.1H0 W19BSAE0.1H0

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Distribution of Wind Vectors

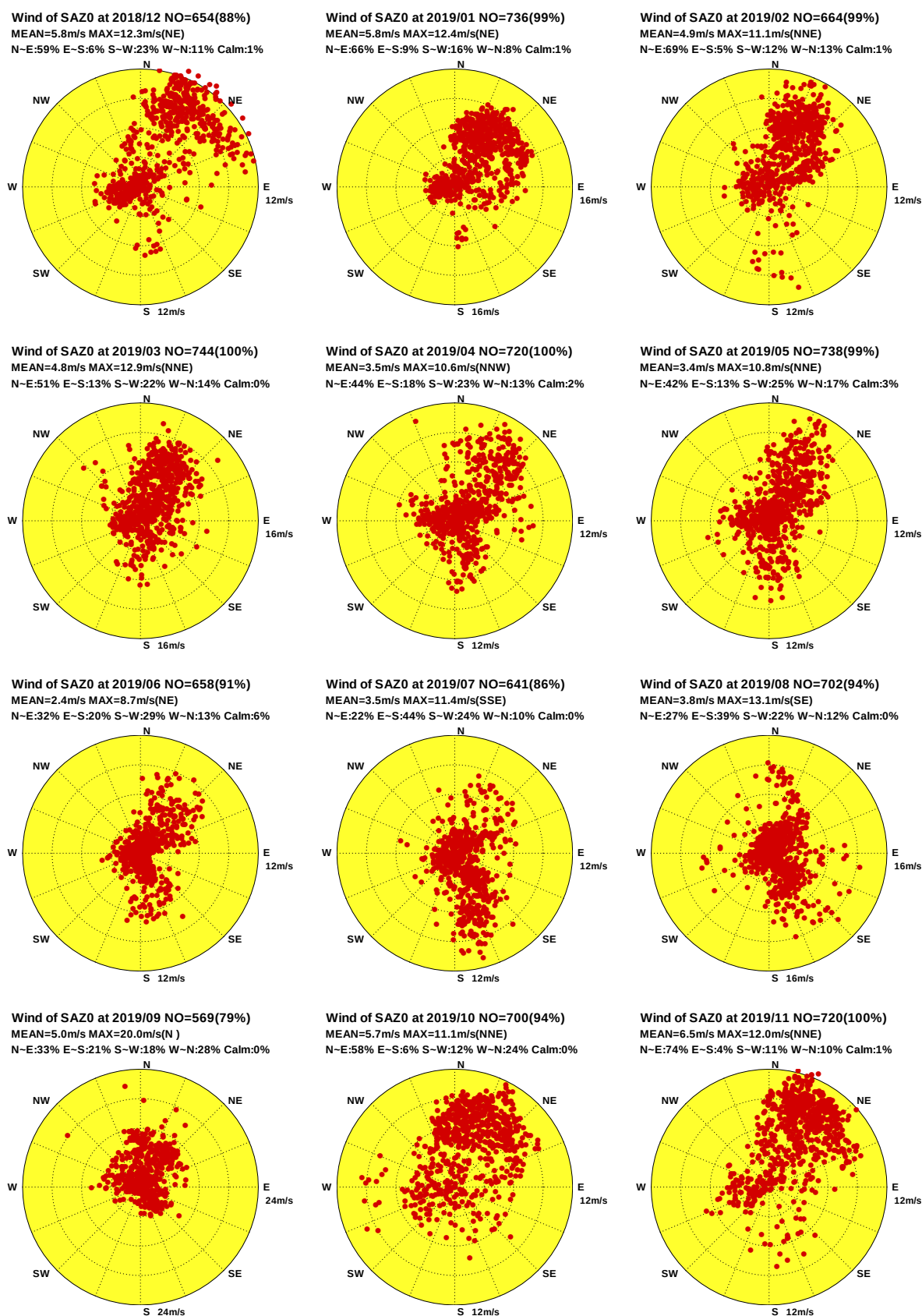


圖1.5.4 2019年宜蘭海域每月 Z 站修補前觀測風力向量分佈圖

W18CSAZ0.1H0 W191SAZ0.1H0 W192SAZ0.1H0 W193SAZ0.1H0 W194SAZ0.1H0 W195SAZ0.1H0
 W196SAZ0.1H0 W197SAZ0.1H0 W198SAZ0.1H0 W199SAZ0.1H0 W19ASAZ0.1H0 W19BSAZ0.1H0

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Distribution of Wind Vectors

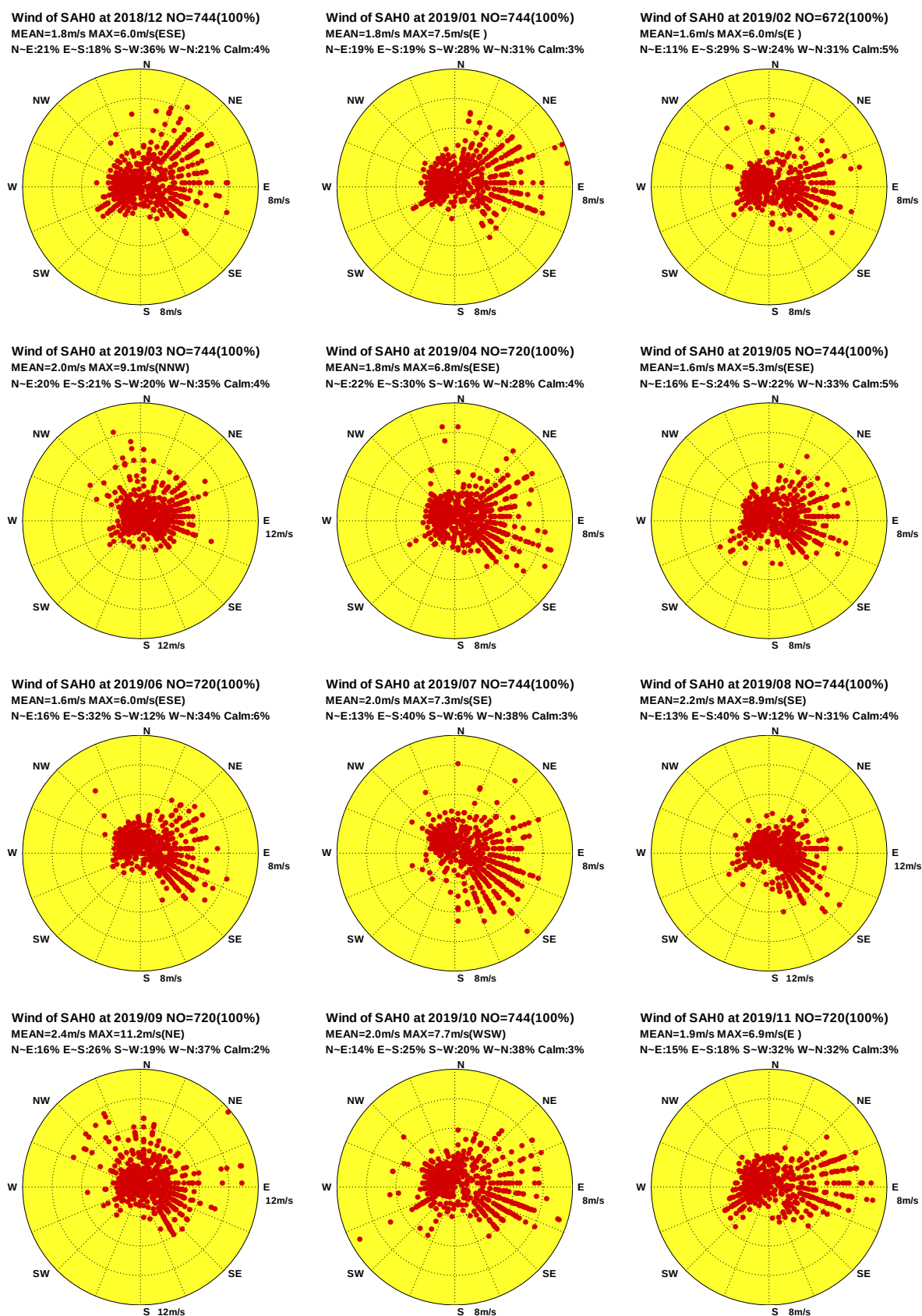


圖1.5.5 2019年宜蘭海域每月 H 站修補前觀測風力向量分佈圖

W18CSAH0.1H0 W191SAH0.1H0 W192SAH0.1H0 W193SAH0.1H0 W194SAH0.1H0 W195SAH0.1H0
 W196SAH0.1H0 W197SAH0.1H0 W198SAH0.1H0 W199SAH0.1H0 W19ASAH0.1H0 W19BSAH0.1H0

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Distribution of Wind Vectors

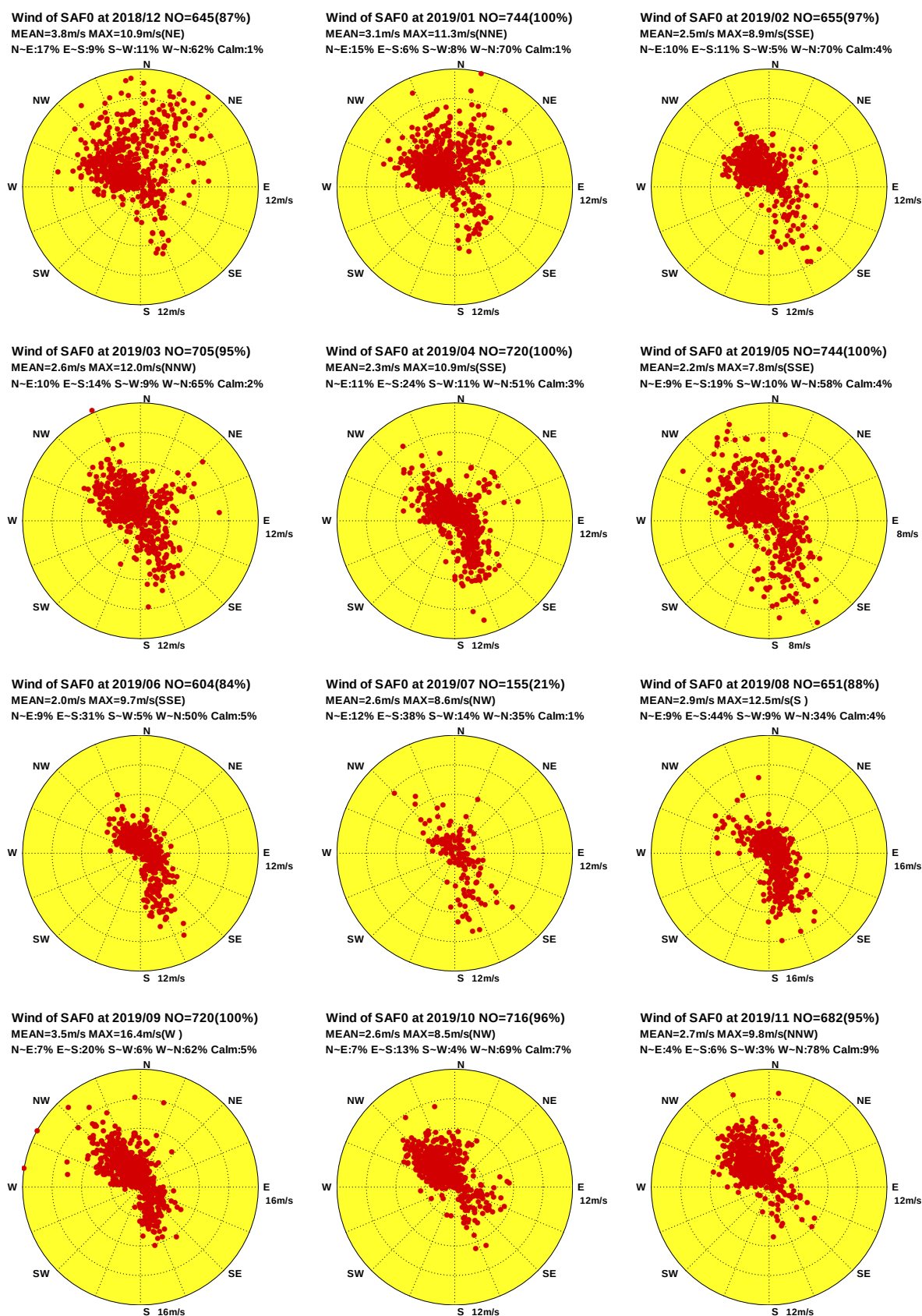


圖1.5.6 2019年宜蘭海域每月 F 站修補前觀測風力向量分佈圖

W18CSAF0.1H0 W191SAF0.1H0 W192SAF0.1H0 W193SAF0.1H0 W194SAF0.1H0 W195SAF0.1H0
 W196SAF0.1H0 W197SAF0.1H0 W198SAF0.1H0 W199SAF0.1H0 W19ASAF0.1H0 W19BSAF0.1H0

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1.6 2019 年宜蘭海域風力各測站修補前 風力向量行進圖

Progressive Vector Diagram of Wind

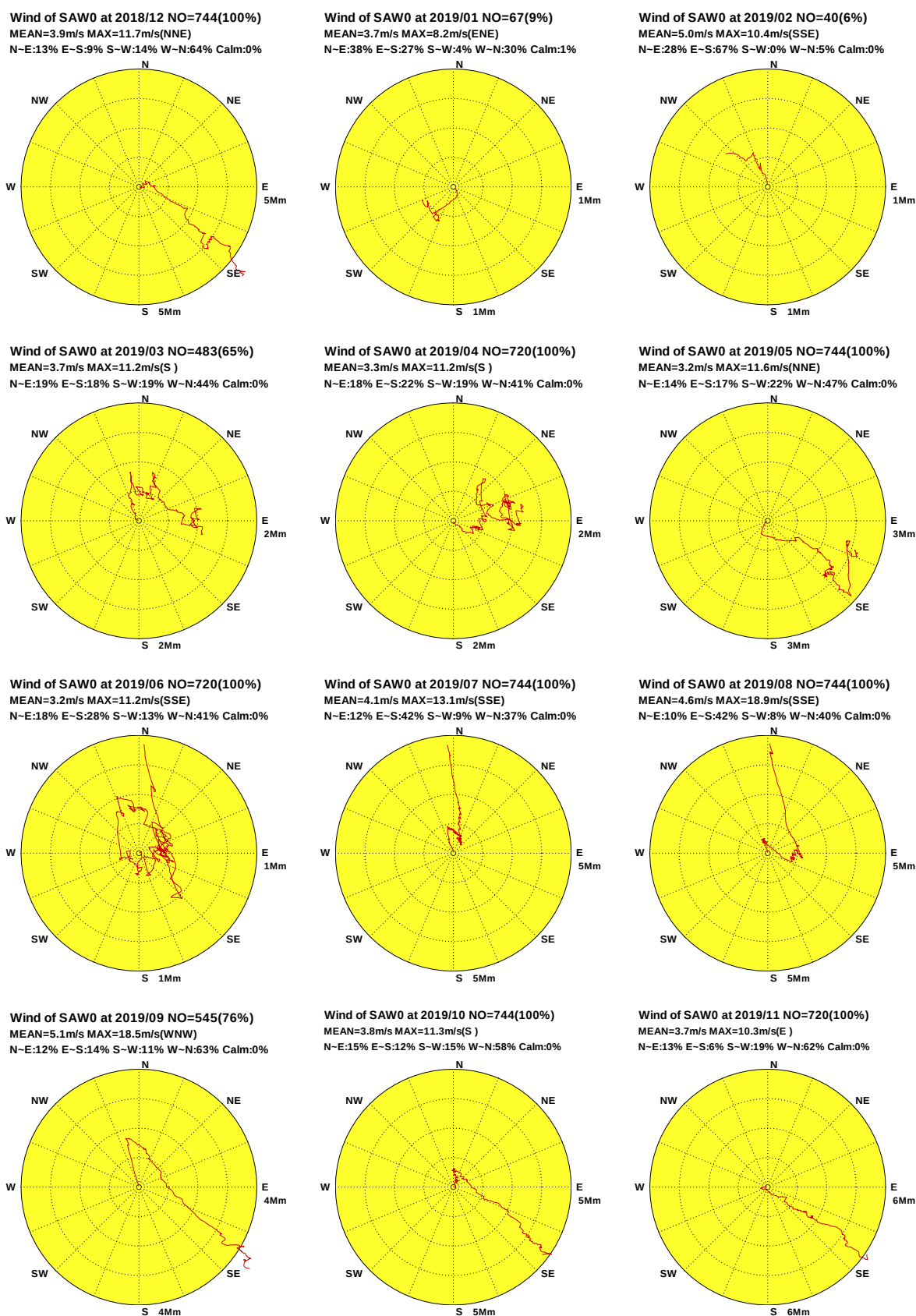


圖1.6.1 2019年宜蘭海域每月 W 站修補前觀測風力向量行進圖

W18CSAW0.1H0 W191SAW0.1H0 W192SAW0.1H0 W193SAW0.1H0 W194SAW0.1H0 W195SAW0.1H0
W196SAW0.1H0 W197SAW0.1H0 W198SAW0.1H0 W199SAW0.1H0 W19ASAW0.1H0 W19BSAW0.1H0

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Progressive Vector Diagram of Wind

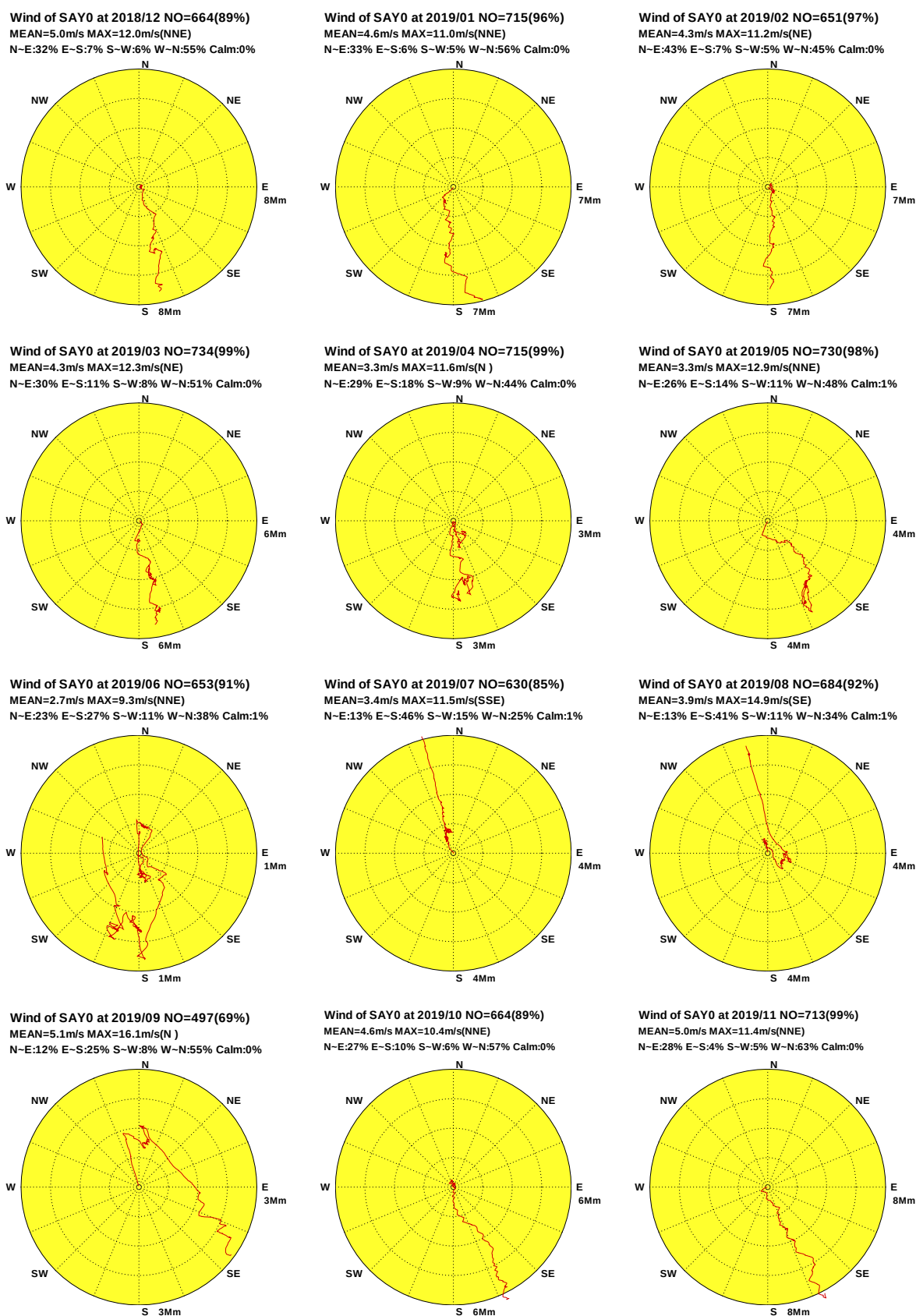


圖1.6.2 2019年宜蘭海域每月 Y 站修補前觀測風力向量行進圖

W18CSAY0.1H0 W191SAY0.1H0 W192SAY0.1H0 W193SAY0.1H0 W194SAY0.1H0 W195SAY0.1H0
 W196SAY0.1H0 W197SAY0.1H0 W198SAY0.1H0 W199SAY0.1H0 W19ASAY0.1H0 W19BSAY0.1H0

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Progressive Vector Diagram of Wind

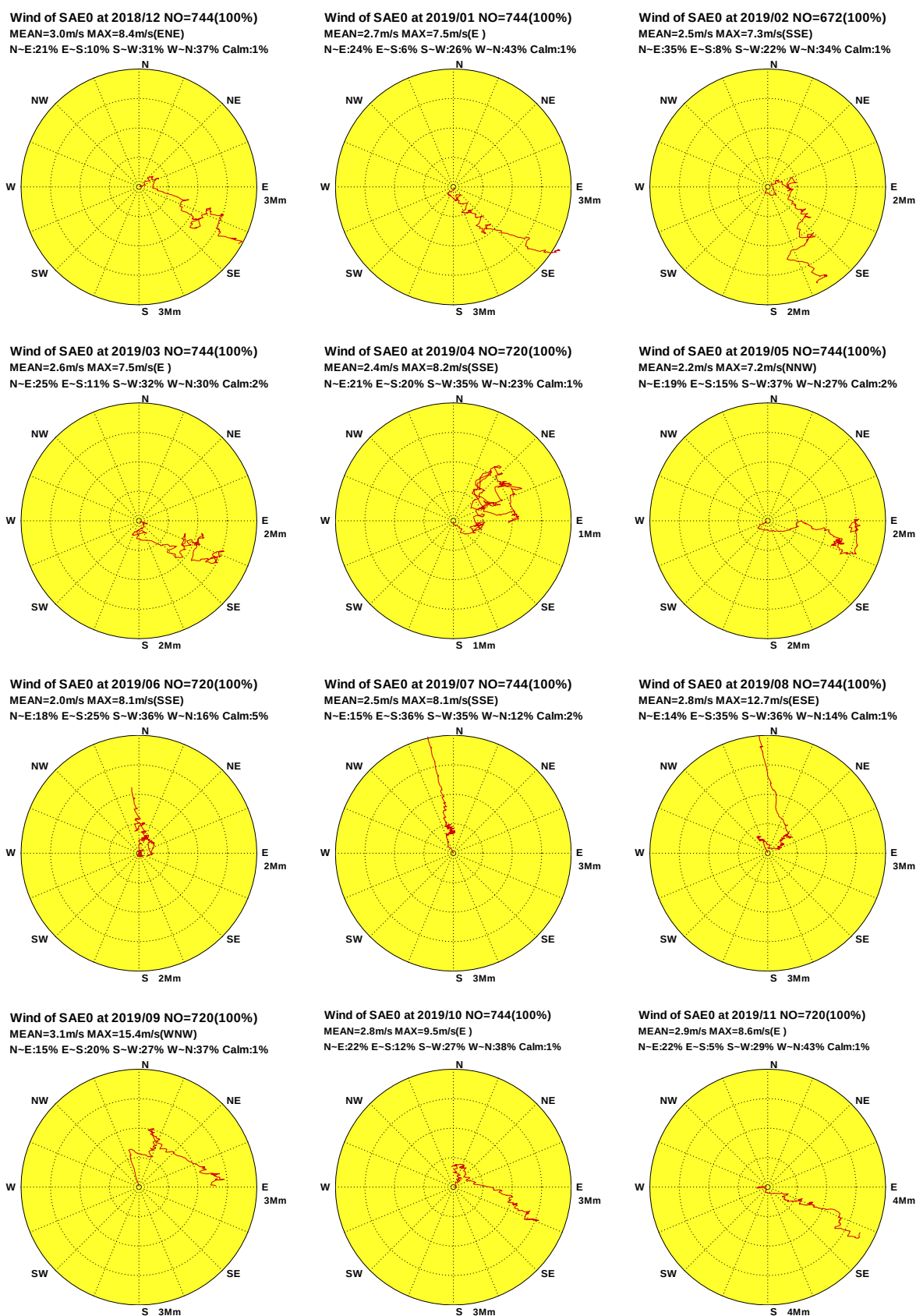


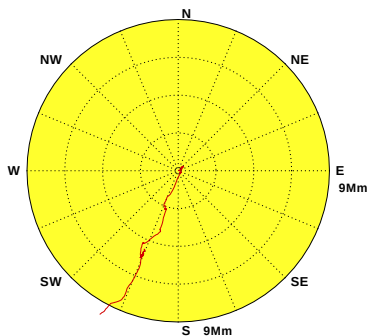
圖1.6.3 2019年宜蘭海域每月 E 站修補前觀測風力向量行進圖

W18CSAE0.1H0 W191SAE0.1H0 W192SAE0.1H0 W193SAE0.1H0 W194SAE0.1H0 W195SAE0.1H0
 W196SAE0.1H0 W197SAE0.1H0 W198SAE0.1H0 W199SAE0.1H0 W19ASAE0.1H0 W19BSAE0.1H0

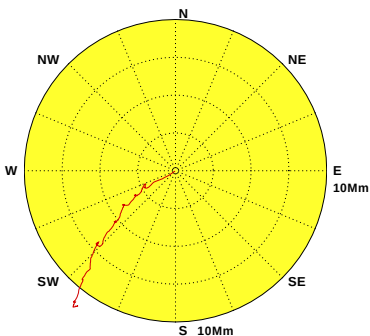
Institute of Harbor & Marine Technology

Progressive Vector Diagram of Wind

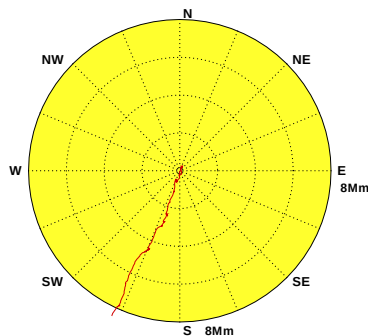
Wind of SAZ0 at 2018/12 NO=654(88%)
MEAN=5.8m/s MAX=12.3m/s(NE)
N-E:59% E-S:6% S-W:23% W-N:11% Calm:1%



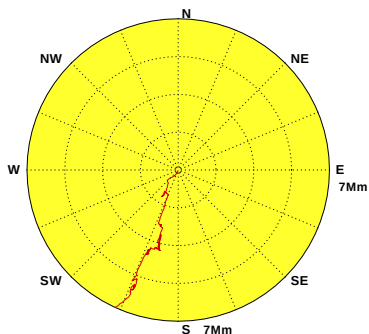
Wind of SAZ0 at 2019/01 NO=736(99%)
MEAN=5.8m/s MAX=12.4m/s(NE)
N-E:66% E-S:9% S-W:16% W-N:8% Calm:1%



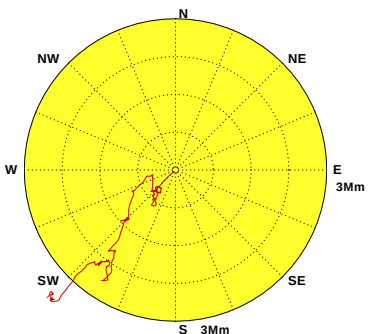
Wind of SAZ0 at 2019/02 NO=664(99%)
MEAN=4.9m/s MAX=11.1m/s(NNE)
N-E:69% E-S:5% S-W:12% W-N:13% Calm:1%



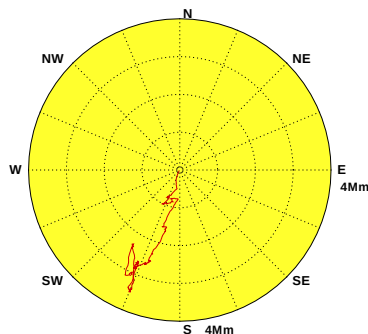
Wind of SAZ0 at 2019/03 NO=744(100%)
MEAN=4.8m/s MAX=12.9m/s(NNE)
N-E:51% E-S:13% S-W:22% W-N:14% Calm:0%



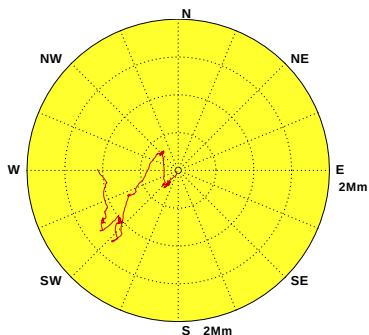
Wind of SAZ0 at 2019/04 NO=720(100%)
MEAN=3.5m/s MAX=10.6m/s(NNW)
N-E:44% E-S:18% S-W:23% W-N:13% Calm:2%



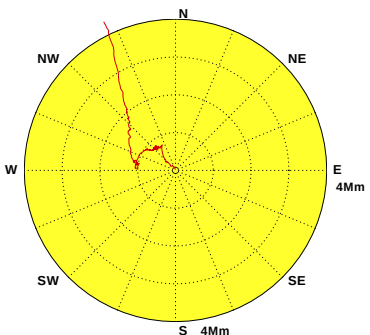
Wind of SAZ0 at 2019/05 NO=738(99%)
MEAN=3.4m/s MAX=10.8m/s(NNE)
N-E:42% E-S:13% S-W:25% W-N:17% Calm:3%



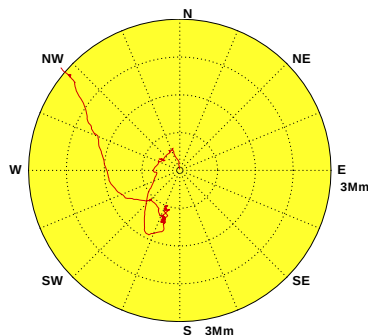
Wind of SAZ0 at 2019/06 NO=658(91%)
MEAN=2.4m/s MAX=8.7m/s(NE)
N-E:32% E-S:20% S-W:29% W-N:13% Calm:6%



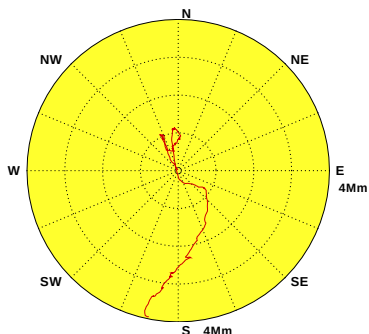
Wind of SAZ0 at 2019/07 NO=641(86%)
MEAN=3.5m/s MAX=11.4m/s(SSE)
N-E:22% E-S:44% S-W:24% W-N:10% Calm:0%



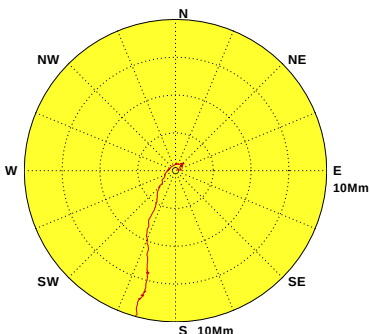
Wind of SAZ0 at 2019/08 NO=702(94%)
MEAN=3.8m/s MAX=13.1m/s(SE)
N-E:27% E-S:39% S-W:22% W-N:12% Calm:0%



Wind of SAZ0 at 2019/09 NO=569(79%)
MEAN=5.0m/s MAX=20.0m/s(N)
N-E:33% E-S:21% S-W:18% W-N:28% Calm:0%



Wind of SAZ0 at 2019/10 NO=700(94%)
MEAN=5.7m/s MAX=11.1m/s(NNE)
N-E:58% E-S:6% S-W:12% W-N:24% Calm:0%



Wind of SAZ0 at 2019/11 NO=720(100%)
MEAN=6.5m/s MAX=12.0m/s(NNE)
N-E:74% E-S:4% S-W:11% W-N:10% Calm:1%

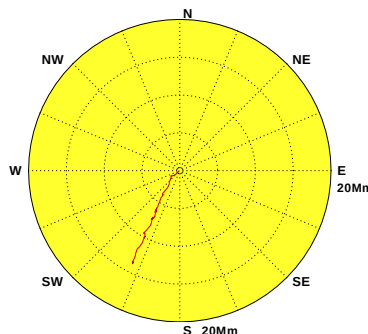


圖1.6.4 2019年宜蘭海域每月 Z 站修補前觀測風力向量行進圖

W18CSAZ0.1H0 W191SAZ0.1H0 W192SAZ0.1H0 W193SAZ0.1H0 W194SAZ0.1H0 W195SAZ0.1H0
W196SAZ0.1H0 W197SAZ0.1H0 W198SAZ0.1H0 W199SAZ0.1H0 W19ASAZ0.1H0 W19BSAZ0.1H0

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Progressive Vector Diagram of Wind

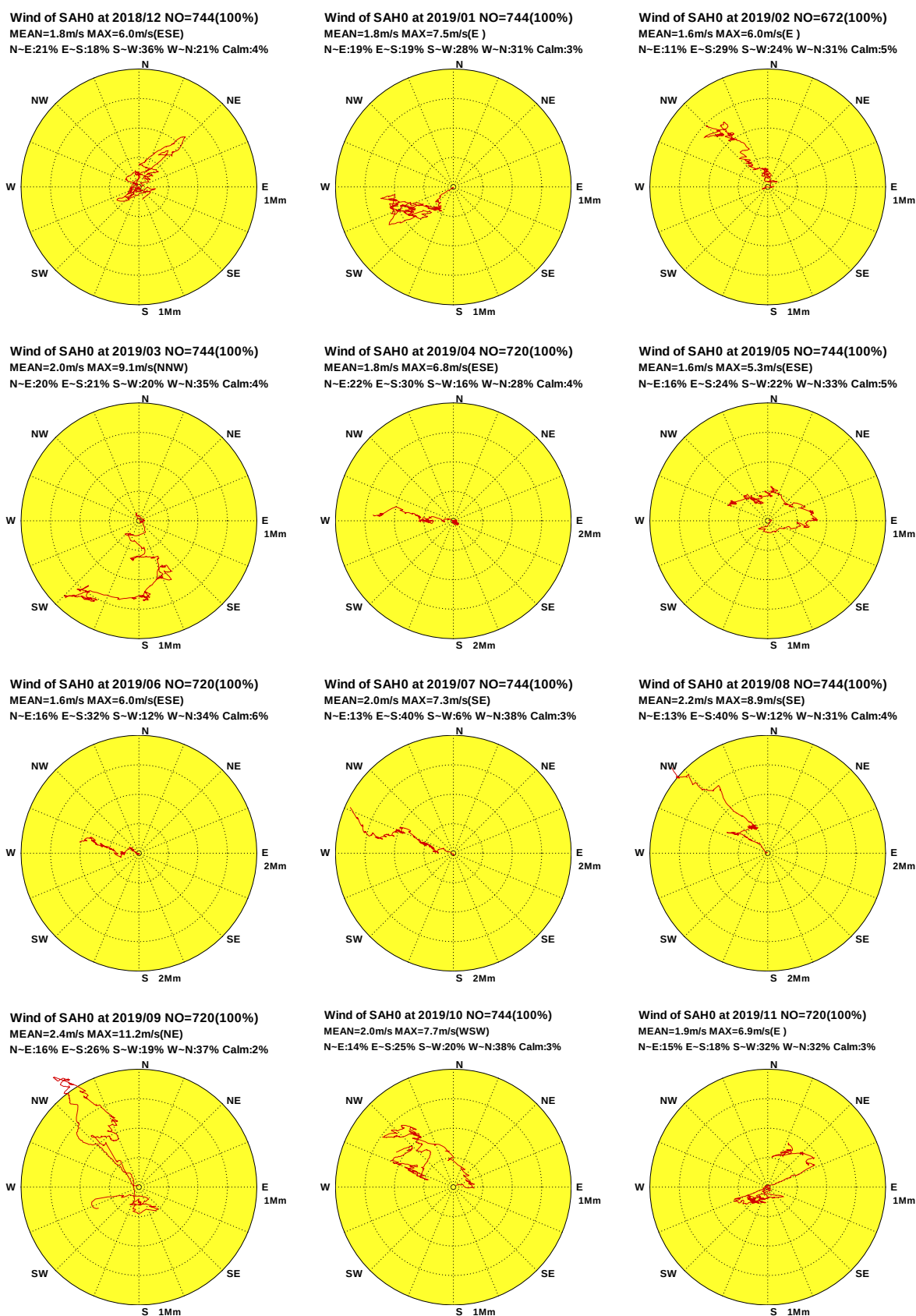


圖1.6.5 2019年宜蘭海域每月 H 站修補前觀測風力向量行進圖

W18CSAH0.1H0 W191SAH0.1H0 W192SAH0.1H0 W193SAH0.1H0 W194SAH0.1H0 W195SAH0.1H0
W196SAH0.1H0 W197SAH0.1H0 W198SAH0.1H0 W199SAH0.1H0 W19ASAH0.1H0 W19BSAH0.1H0

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Progressive Vector Diagram of Wind

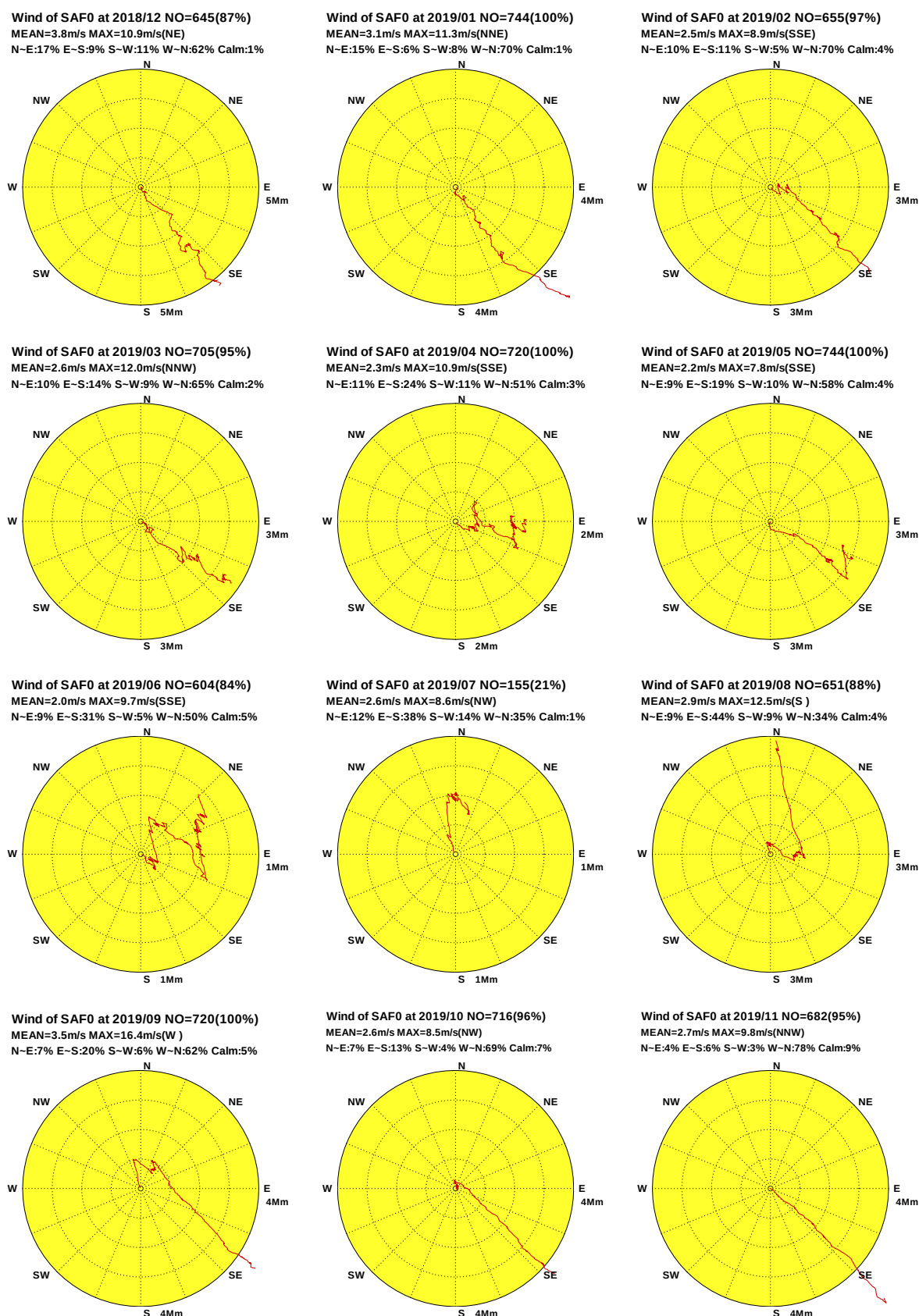


圖1.6.6 2019年宜蘭海域每月 F 站修補前觀測風力向量行進圖

W18CSAF0.1H0 W191SAF0.1H0 W192SAF0.1H0 W193SAF0.1H0 W194SAF0.1H0 W195SAF0.1H0
 W196SAF0.1H0 W197SAF0.1H0 W198SAF0.1H0 W199SAF0.1H0 W19ASAF0.1H0 W19BSAF0.1H0

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第二章 2019 年宜蘭海域觀測波浪資料年報

2019 年宜蘭海域波浪之觀測包括測站 **X**、測站 **Y** 及測站 **Z** 等 3 個測站(測站位置如第 0 章圖 VS1，各測站歷年觀測波浪資料蒐集概況如表 VS1)。本年報取經檢核及補遺之 **X 站** 資料作為主要測站 1，**Y 站** 資料作為主要測站 2。

2.1 2019 年宜蘭海域觀測波浪資料年報圖表

本章第 1 節 **波浪** 年報資料處理之圖表包括：

1. 表 2.1.1a 2019 年**各觀測站**每月**觀測波浪**資料**修補前**記錄表。
2. 表 2.1.1b 2019 年**主要測站**每月**觀測波浪**資料**修補後**記錄表。
3. 表 2.1.2 2019 年**主要測站 1** **修補後**每月(季)及整年示性波高、示性週期及波向重要統計量統計表。
4. 表 2.1.3 2019 年**主要測站 2** **修補後**每月(季)及整年示性波高、示性週期及波向重要統計量統計表。
5. 圖 2.1.1a 2019 年**主要測站 1** **修補前後**每月示性波高歷線比較圖。
6. 圖 2.1.1b 2019 年**主要測站 1** **修補前後**每月示性週期歷線比較圖。
7. 圖 2.1.1c 2019 年**主要測站 1** **修補前後**每月波向歷線比較圖。
8. 圖 2.1.2a 2019 年**主要測站 2** **修補前後**每月示性波高歷線比較圖。
9. 圖 2.1.2b 2019 年**主要測站 2** **修補前後**每月示性週期歷線比較圖。
10. 圖 2.1.2c 2019 年**主要測站 2** **修補前後**每月波向歷線比較圖。

11. 圖 2.1.3 2019 年**主要測站 1 修補後**每月波高向量分佈圖。

12. 圖 2.1.4 2019 年**主要測站 2 修補後**每月波高向量分佈圖。

第 2 節波浪年報資料處理之統計表包括：2019 年宜蘭海域**各測站修補前**每月(季)及整年示性波高、示性週期及波向重要統計量統計表。

第 3 節波浪年報資料處理之統計圖包括：2019 年宜蘭海域**主要測站 1 修補後**與**其他測站(修補前)**每月示性波高、示性週期及波向歷線比較圖。

第 4 節波浪年報資料處理之統計圖包括：2019 年宜蘭海域**主要測站 2 修補後**與**其他測站(修補前)**每月示性波高、示性週期及波向歷線比較圖。

第 5 節波浪年報資料處理之統計圖包括：2019 年宜蘭海域**各測站修補前**每月波高向量分佈圖。

表 2.1.1a 2019年每月宜蘭海域修補前各測站觀測波浪資料紀錄表

海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
年月/測站	X	Y	Z									
2018/12月	*	646(86.8%)	651(87.5%)	*	*	*	*	*	*	*	*	*
2019/ 1月	*	710(95.4%)	725(97.4%)	*	*	*	*	*	*	*	*	*
2019/ 2月	*	642(95.5%)	649(96.6%)	*	*	*	*	*	*	*	*	*
2019/ 3月	415(55.8%)	726(97.6%)	720(96.8%)	*	*	*	*	*	*	*	*	*
2019/ 4月	720(100%)	698(96.9%)	720(100%)	*	*	*	*	*	*	*	*	*
2019/ 5月	718(96.5%)	717(96.4%)	735(98.8%)	*	*	*	*	*	*	*	*	*
2019/ 6月	695(96.5%)	641(89.0%)	658(91.4%)	*	*	*	*	*	*	*	*	*
2019/ 7月	737(99.1%)	618(83.1%)	634(85.2%)	*	*	*	*	*	*	*	*	*
2019/ 8月	562(75.5%)	681(91.5%)	700(94.1%)	*	*	*	*	*	*	*	*	*
2019/ 9月	460(63.9%)	497(69.0%)	567(78.8%)	*	*	*	*	*	*	*	*	*
2019/10月	*	664(89.2%)	697(93.7%)	*	*	*	*	*	*	*	*	*
2019/11月	*	713(99.0%)	710(98.6%)	*	*	*	*	*	*	*	*	*
2019/冬季	*	1998(92.5%)	2025(93.8%)	*	*	*	*	*	*	*	*	*
2019/春季	1853(83.9%)	2141(97.0%)	2175(98.5%)	*	*	*	*	*	*	*	*	*
2019/夏季	1994(90.3%)	1940(87.9%)	1992(90.2%)	*	*	*	*	*	*	*	*	*
2019/秋季	460(21.1%)	1874(85.8%)	1974(90.4%)	*	*	*	*	*	*	*	*	*
2019/整年	4307(49.2%)	7953(90.8%)	8166(93.2%)	*	*	*	*	*	*	*	*	*
起始年月	2019/03	2018/12	2018/12	*	*	*	*	*	*	*	*	*
結束年月	2019/09	2019/11	2019/11	*	*	*	*	*	*	*	*	*

表 2.1.1b 2019 年每月宜蘭海域修補後各測站波浪資料紀錄表

海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
年月/測站	X	Y										
2018/12 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 1 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 2 月	672(100%)	672(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 3 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 4 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 5 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 6 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 7 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 8 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 9 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/10 月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/11 月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/冬季	2160(100%)	2160(100%)	*	*	*	*	*	*	*	*	*	*
2019/春季	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*	*
2019/夏季	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*	*
2019/秋季	2184(100%)	2184(100%)	*	*	*	*	*	*	*	*	*	*
2019/整年	8760(100%)	8760(100%)	*	*	*	*	*	*	*	*	*	*
起始年月	2018/12	2018/12	*	*	*	*	*	*	*	*	*	*
結束年月	2019/11	2019/11	*	*	*	*	*	*	*	*	*	*

表2.1.2 2019年宜蘭海域主要測站1修補後示性波高週期及波向重要統計量統計表

觀測 日期 年、月	波高 蒐集 率	H_s 平均 (m)	H_s 最大 (波高/週期/波向) (m/s/來向)	T_p 平均 (s)	T_p 最大 (s)	小波 <0.5m (%)	小浪 ~1.5m (%)	中浪 ~3m (%)	大浪 >3m (%)	T_p <6s (%)	T_p 6~8s (%)	T_p 8~10s (%)	T_p >10s (%)	波向 蒐集 率	波向 N~E (%)	波向 E~S (%)	波向 S~W (%)	波向 W~N (%)	主波向 (百分比) 來向/%
2018/12	100%	1.52	2.9/10.8/E	8.5	11.2	.0	50.4	49.6	.0	.0	30.0	64.7	5.4	100%	8.9	91.0	.0	.1	ESE/47%
2019/01	100%	1.44	2.6/ 9.3/ESE	8.5	10.3	.0	61.6	38.4	.0	.0	16.1	83.1	.8	100%	18.5	81.5	.0	.0	ESE/46%
2019/02	100%	1.38	1.8/ 8.4/ESE	8.8	11.1	.0	80.5	19.5	.0	.0	24.0	68.3	7.7	100%	22.5	76.8	.7	.0	ESE/43%
2019/03	100%	1.30	2.0/ 9.5/ENE	8.0	10.8	.0	82.3	17.7	.0	7.3	34.9	55.6	2.2	100%	28.2	68.7	3.1	.0	ESE/31%
2019/04	100%	1.09	2.1/ 8.8/E	7.3	10.2	.0	85.6	14.4	.0	14.0	55.7	29.9	.4	100%	25.7	70.4	3.9	.0	E /27%
2019/05	100%	.98	2.4/ 8.8/NE	7.8	12.1	1.7	94.5	3.8	.0	11.0	46.8	32.5	9.7	100%	41.3	58.1	.7	.0	E /40%
2019/06	100%	.77	1.6/ 8.2/SSW	6.6	10.0	7.9	91.8	.3	.0	31.9	56.4	11.5	.1	100%	29.4	47.1	23.1	.4	E /17%
2019/07	100%	.95	3.2/11.4/SSE	7.6	13.3	11.3	72.2	15.3	1.2	23.8	40.7	20.3	15.2	100%	13.6	64.9	20.8	.7	E /22%
2019/08	100%	1.33	6.7/12.6/ESE	8.9	14.3	8.3	68.1	14.9	8.6	5.9	28.8	39.8	25.5	100%	48.3	48.8	2.6	.4	E /26%
2019/09	100%	1.37	6.8/13.6/ESE	9.2	14.7	.4	69.4	26.7	3.5	3.2	27.4	35.1	34.3	100%	70.7	29.3	.0	.0	NE /32%
2019/10	100%	1.32	3.0/14.4/ESE	9.1	14.6	.4	65.9	33.7	.0	.0	22.2	50.7	27.2	100%	37.0	63.0	.0	.0	E /49%
2019/11	100%	1.56	2.4/ 8.9/ENE	8.8	11.0	.0	42.1	57.9	.0	.0	16.8	73.6	9.6	100%	51.1	48.9	.0	.0	E /48%
2019/冬	100%	1.45	2.9/10.8/E	8.6	11.2	.0	63.6	36.4	.0	.0	23.3	72.1	4.5	100%	16.4	83.3	.2	.0	ESE/46%
2019/春	100%	1.13	2.4/ 8.8/NE	7.7	12.1	.6	87.5	12.0	.0	10.7	45.7	39.4	4.1	100%	31.8	65.7	2.5	.0	E /32%
2019/夏	100%	1.02	6.7/12.6/ESE	7.7	14.3	9.2	77.2	10.3	3.3	20.4	41.8	24.0	13.8	100%	30.4	53.7	15.4	.5	E /22%
2019/秋	100%	1.42	6.8/13.6/ESE	9.0	14.7	.3	59.2	39.4	1.1	1.1	22.1	53.1	23.7	100%	52.7	47.3	.0	.0	E /38%
2019/年	100%	1.25	6.8/13.6/ESE	8.3	14.7	2.5	72.0	24.4	1.1	8.1	33.3	47.0	11.5	100%	32.9	62.4	4.6	.1	E /32%

表2.1.3 2019年宜蘭海域主要測站2修補後示性波高週期及波向重要統計量統計表

觀測 日期 年、月	波高 蒐集 率	H_s 平均 (m)	H_s 最大 (波高/週期/波向) (m/s/來向)	T_p 平均 (s)	T_p 最大 (s)	小波 <0.5m (%)	小浪 ~1.5m (%)	中浪 ~3m (%)	大浪 >3m (%)	T_p <6s (%)	T_p 6~8s (%)	T_p 8~10s (%)	T_p >10s (%)	波向 蒐集 率	波向 N~E (%)	波向 E~S (%)	波向 S~W (%)	波向 W~N (%)	主波向 (百分比) 來向/%
2018/12	100%	1.59	3.6/ 8.2/NE	6.4	8.5	.0	46.6	50.1	3.2	24.5	74.3	1.2	.0	100%	82.0	17.9	.0	.1	NE /39%
2019/01	100%	1.46	3.3/ 7.0/ENE	6.0	8.2	.0	58.1	41.0	.9	43.5	56.0	.4	.0	100%	76.9	23.1	.0	.0	ENE/36%
2019/02	100%	1.17	2.1/ 5.8/ENE	6.0	8.3	.0	87.5	12.5	.0	44.2	55.2	.6	.0	100%	78.0	21.6	.4	.0	NE /36%
2019/03	100%	1.17	2.3/ 7.7/NE	5.8	8.4	.0	80.5	19.5	.0	62.0	37.6	.4	.0	100%	69.0	30.8	.0	.3	NE /33%
2019/04	100%	.95	2.1/ 6.4/ENE	5.6	7.4	8.9	77.5	13.6	.0	70.6	29.4	.0	.0	100%	49.7	50.3	.0	.0	E /24%
2019/05	100%	.89	2.3/ 6.5/NE	5.7	7.9	9.8	84.4	5.8	.0	65.1	34.9	.0	.0	100%	65.9	34.0	.0	.1	ENE/38%
2019/06	100%	.58	1.4/ 5.2/E	5.1	7.6	36.3	63.8	.0	.0	88.6	11.4	.0	.0	100%	31.3	68.8	.0	.0	ESE/30%
2019/07	100%	.63	2.2/ 5.7/SSE	5.2	8.5	57.7	34.1	8.2	.0	81.0	18.8	.1	.0	100%	14.4	84.8	.5	.3	ESE/43%
2019/08	100%	1.00	4.4/11.0/NE	6.2	11.9	19.8	64.8	11.2	4.3	46.2	41.0	11.3	1.5	100%	41.5	57.9	.4	.1	ENE/29%
2019/09	100%	1.35	5.7/ 8.7/NNE	6.4	10.4	1.3	67.5	27.4	3.9	33.9	54.0	11.9	.1	100%	75.6	24.4	.0	.0	NE /35%
2019/10	100%	1.24	3.1/10.5/E	6.2	10.5	6.3	63.7	29.8	.1	38.4	58.5	2.8	.3	100%	83.2	16.8	.0	.0	NE /38%
2019/11	100%	1.55	3.0/ 6.6/NE	6.5	8.8	.1	46.8	53.1	.0	26.5	69.2	4.3	.0	100%	82.4	17.6	.0	.0	NE /40%
2019/冬	100%	1.42	3.6/ 8.2/NE	6.1	8.5	.0	63.3	35.3	1.4	37.2	62.1	.7	.0	100%	79.0	20.8	.1	.0	NE /37%
2019/春	100%	1.01	2.3/ 7.7/NE	5.7	8.4	6.2	80.8	13.0	.0	65.8	34.1	.1	.0	100%	61.6	38.2	.0	.1	ENE/31%
2019/夏	100%	.74	4.4/11.0/NE	5.5	11.9	37.9	54.1	6.5	1.4	71.8	23.9	3.8	.5	100%	29.0	70.5	.3	.1	ESE/33%
2019/秋	100%	1.38	5.7/ 8.7/NNE	6.4	10.5	2.6	59.4	36.7	1.3	33.0	60.5	6.3	.1	100%	80.4	19.6	.0	.0	NE /37%
2019/年	100%	1.13	5.7/ 8.7/NNE	5.9	11.9	11.8	64.4	22.8	1.1	52.1	45.0	2.8	.2	100%	62.4	37.4	.1	.1	ENE/28%

Wave H_s in Yi-Lan Seas of SAX0 at 2019

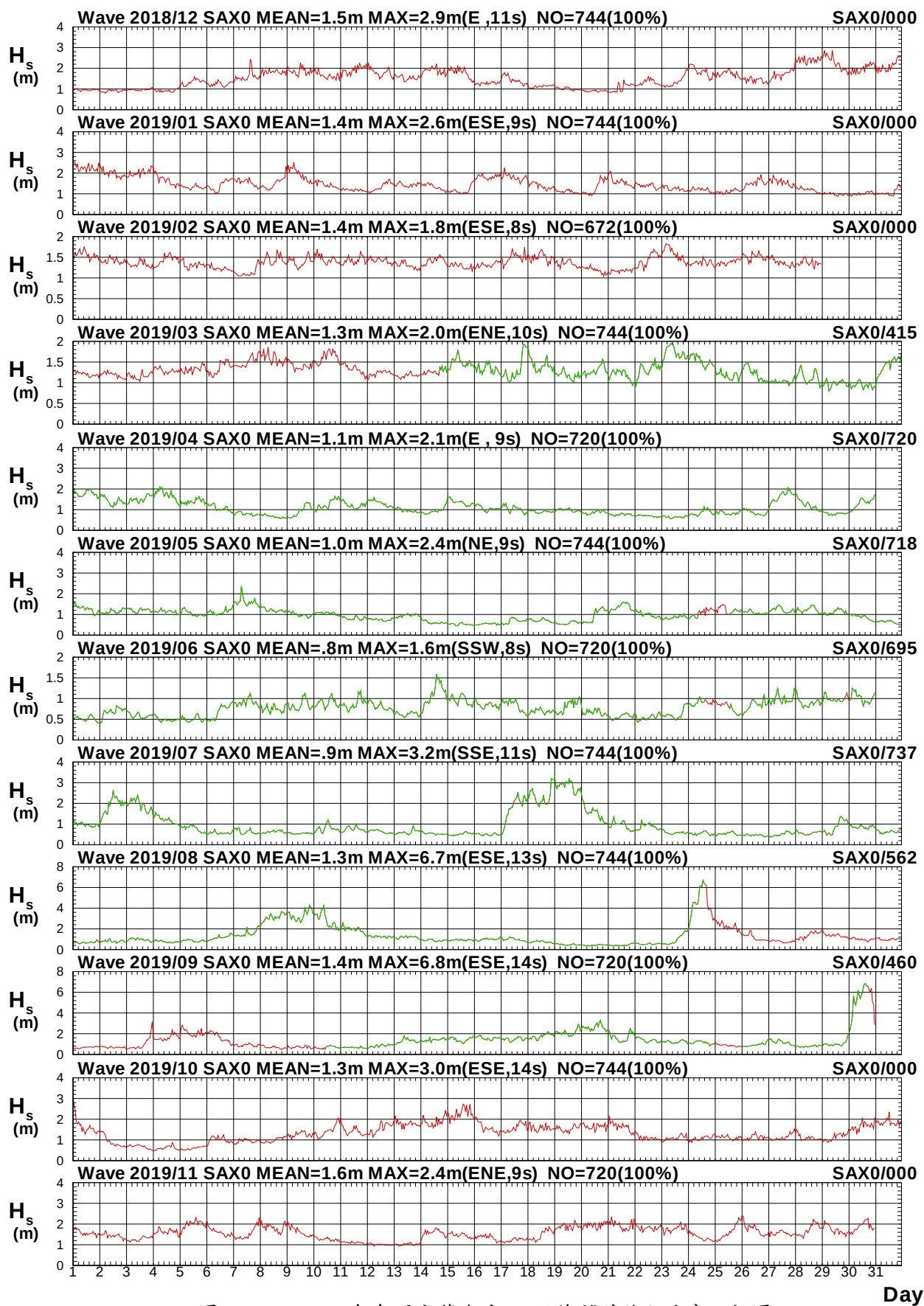


圖2.1.1a 2019年每月宜蘭海域 X 站修補前後之波高比較圖

V18CSAX0.1HA V18CSAX0.1H0 V191SAX0.1HA V191SAX0.1H0 V192SAX0.1HA V192SAX0.1H0
V193SAX0.1HA V193SAX0.1H0 V194SAX0.1HA V194SAX0.1H0 V195SAX0.1HA V195SAX0.1H0

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Wave T_p in Yi-Lan Seas of SAX0 at 2019

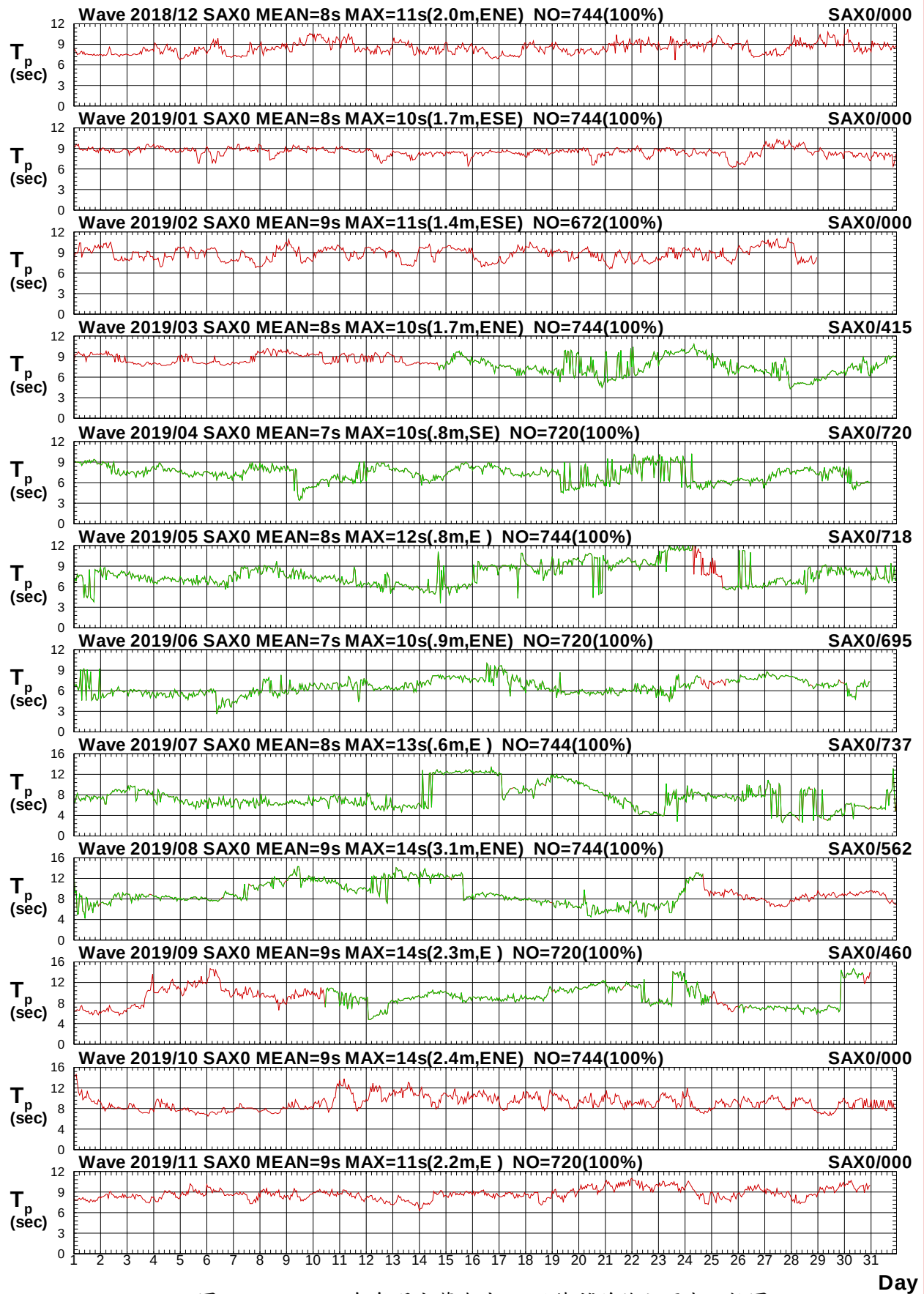


圖2.1.1b 2019年每月宜蘭海域 X 站修補前後之週期比較圖

V18CSAX0.1HA V18CSAX0.1H0 V191SAX0.1HA V191SAX0.1H0 V192SAX0.1HA V192SAX0.1H0
V193SAX0.1HA V193SAX0.1H0 V194SAX0.1HA V194SAX0.1H0 V195SAX0.1HA V195SAX0.1H0

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Wave Direction in Yi-Lan Seas of SAX0 at 2019

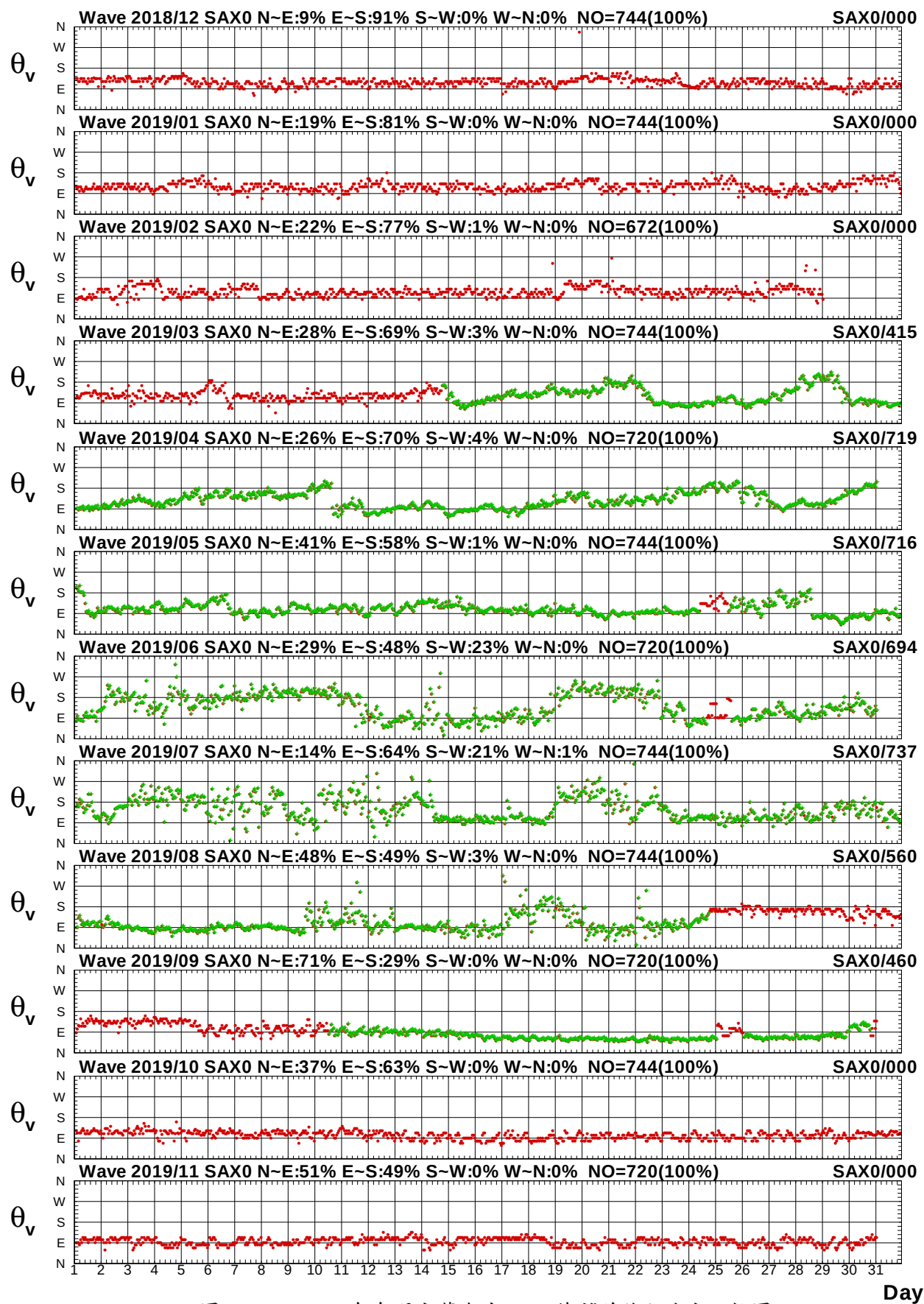


圖2.1.1c 2019年每月宜蘭海域 X 站修補前後之波向比較圖

V18CSAX0.1HA V18CSAX0.1H0 V191SAX0.1HA V191SAX0.1H0 V192SAX0.1HA V192SAX0.1H0
V193SAX0.1HA V193SAX0.1H0 V194SAX0.1HA V194SAX0.1H0 V195SAX0.1HA V195SAX0.1H0

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Wave H_s in Yi-Lan Seas of SAY0 at 2019

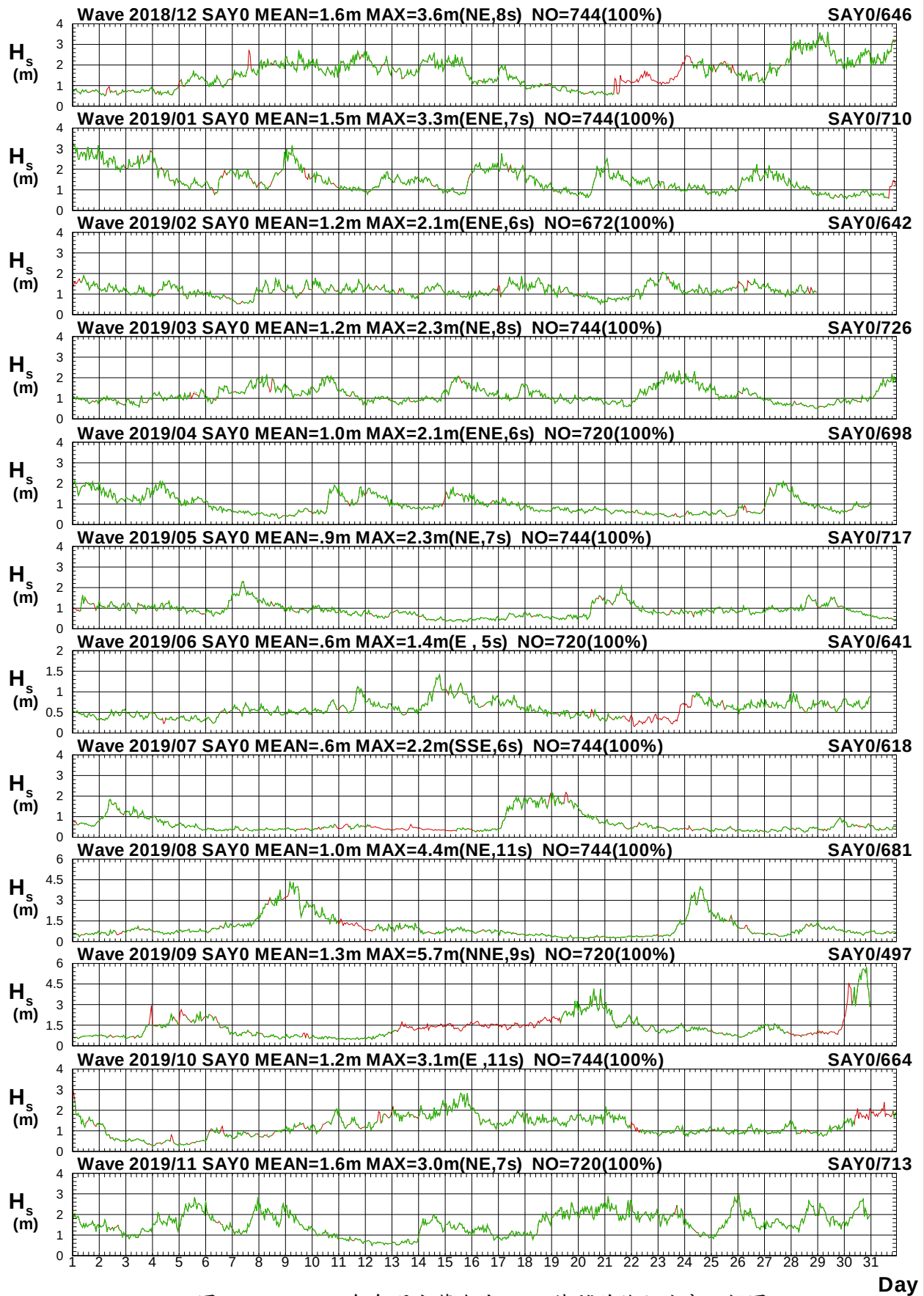


圖2.1.2a 2019年每月宜蘭海域 Y 站修補前後之波高比較圖

V18CSAY0.1HA V18CSAY0.1H0 V191SAY0.1HA V191SAY0.1H0 V192SAY0.1HA V192SAY0.1H0
V193SAY0.1HA V193SAY0.1H0 V194SAY0.1HA V194SAY0.1H0 V195SAY0.1HA V195SAY0.1H0

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Wave T_p in Yi-Lan Seas of SAY0 at 2019

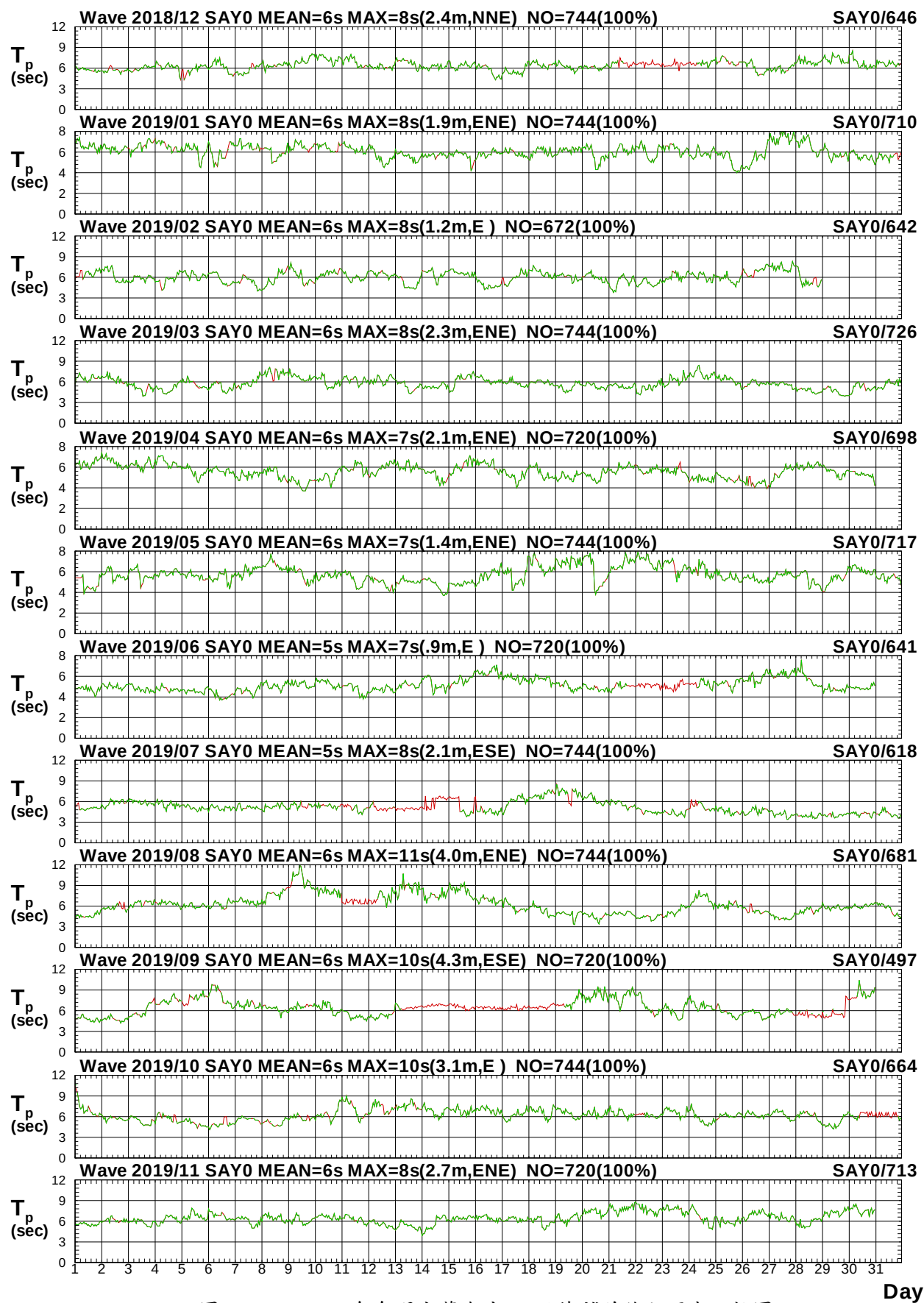


圖2.1.2b 2019年每月宜蘭海域 Y 站修補前後之週期比較圖

V18CSAY0.1HA V18CSAY0.1H0 V191SAY0.1HA V191SAY0.1H0 V192SAY0.1HA V192SAY0.1H0
V193SAY0.1HA V193SAY0.1H0 V194SAY0.1HA V194SAY0.1H0 V195SAY0.1HA V195SAY0.1H0

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Wave Direction in Yi-Lan Seas of SAY0 at 2019

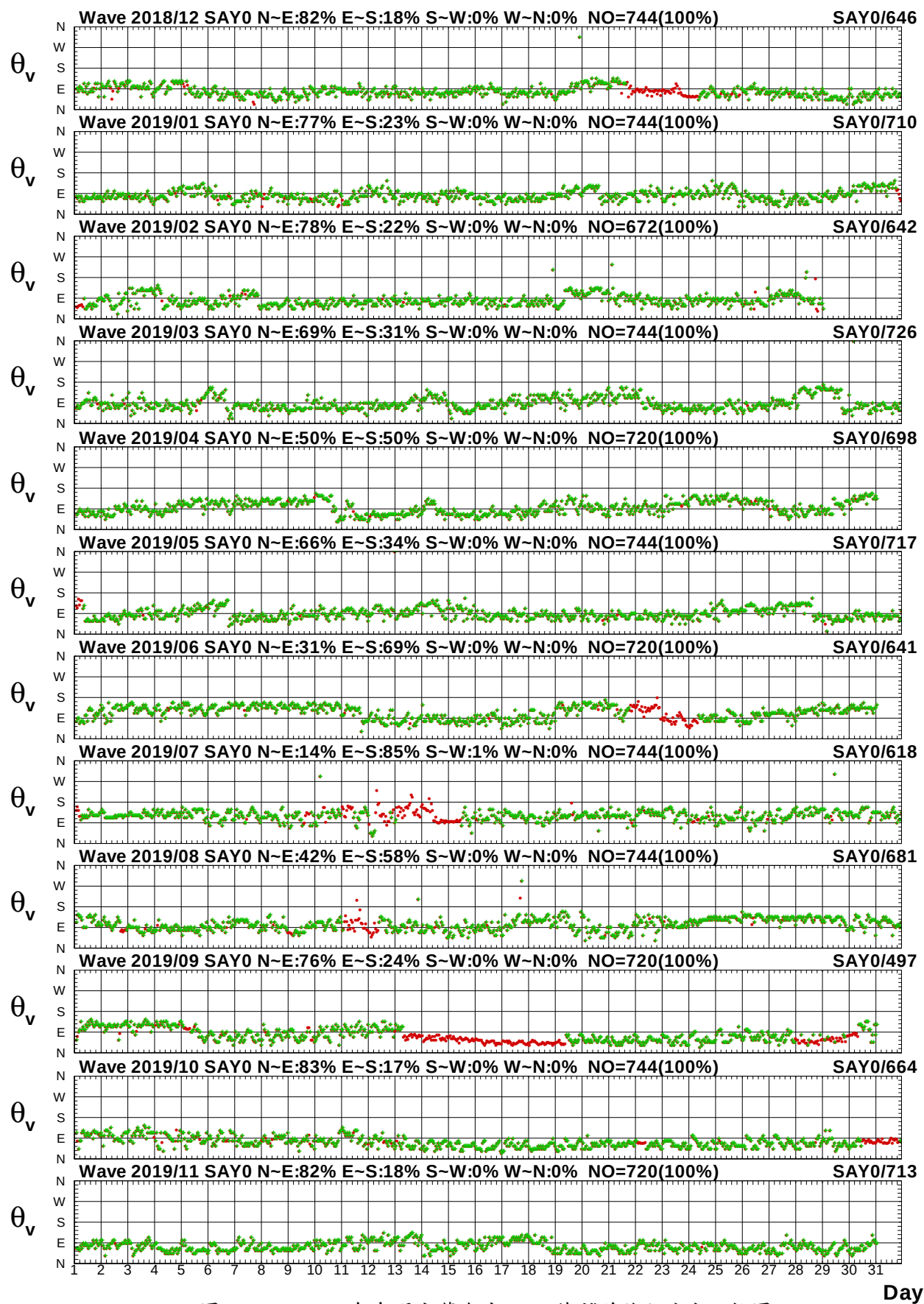


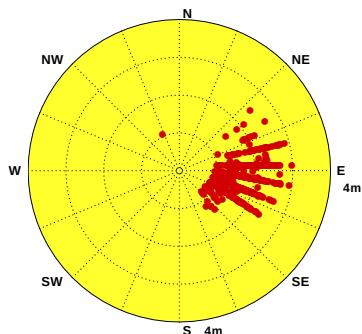
圖2.1.2c 2019年每月宜蘭海域 Y 站修補前後之波向比較圖

V18CSAY0.1HA V18CSAY0.1H0 V191SAY0.1HA V191SAY0.1H0 V192SAY0.1HA V192SAY0.1H0
V193SAY0.1HA V193SAY0.1H0 V194SAY0.1HA V194SAY0.1H0 V195SAY0.1HA V195SAY0.1H0

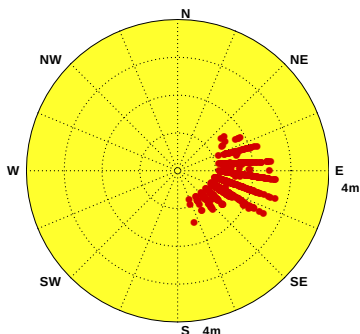
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Distribution of H_s Vectors

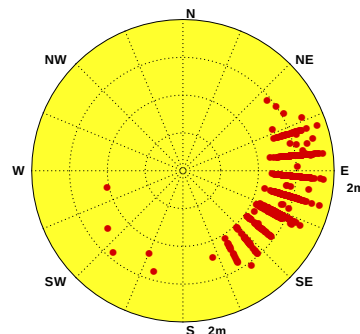
Wave of SAX0 at 2018/12 NO=744(100%)
Hs : MEAN=1.5m MAX=2.9m(E,11s)
N-E:9% E-S:91% S-W:0% W-N:0%



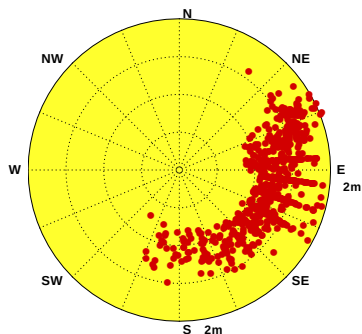
Wave of SAX0 at 2019/01 NO=744(100%)
Hs : MEAN=1.4m MAX=2.6m(ESE,9s)
N-E:19% E-S:81% S-W:0% W-N:0%



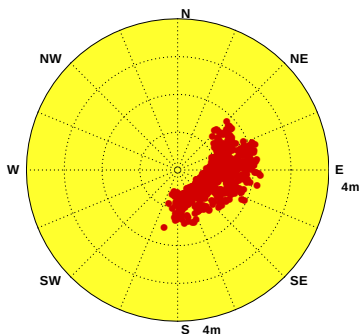
Wave of SAX0 at 2019/02 NO=672(100%)
Hs : MEAN=1.4m MAX=1.8m(ESE,8s)
N-E:22% E-S:77% S-W:1% W-N:0%



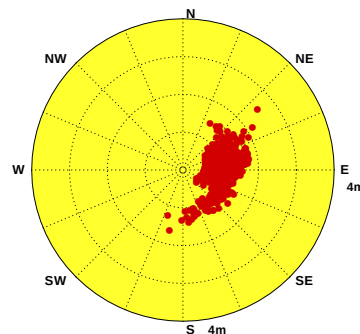
Wave of SAX0 at 2019/03 NO=744(100%)
Hs : MEAN=1.3m MAX=2.0m(ENE,10s)
N-E:28% E-S:69% S-W:3% W-N:0%



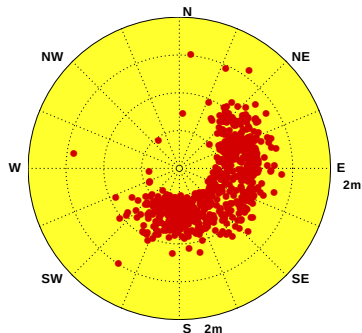
Wave of SAX0 at 2019/04 NO=720(100%)
Hs : MEAN=1.1m MAX=2.1m(E,9s)
N-E:26% E-S:70% S-W:4% W-N:0%



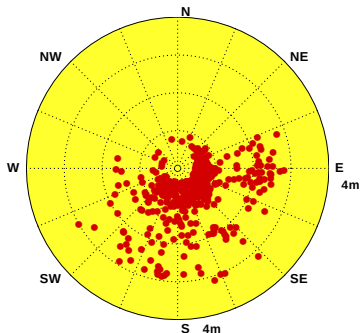
Wave of SAX0 at 2019/05 NO=744(100%)
Hs : MEAN=1.0m MAX=2.4m(NE,9s)
N-E:41% E-S:58% S-W:1% W-N:0%



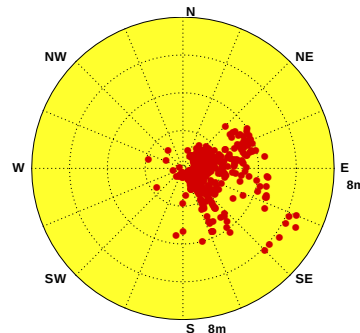
Wave of SAX0 at 2019/06 NO=720(100%)
Hs : MEAN=.8m MAX=1.6m(SSW,8s)
N-E:29% E-S:48% S-W:23% W-N:0%



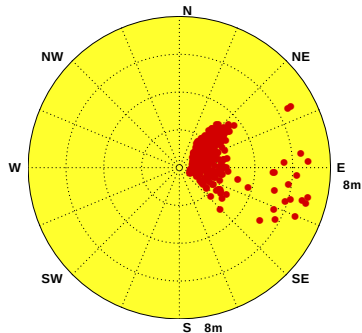
Wave of SAX0 at 2019/07 NO=744(100%)
Hs : MEAN=.9m MAX=3.2m(SSE,11s)
N-E:14% E-S:64% S-W:21% W-N:1%



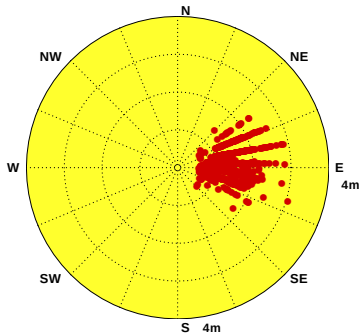
Wave of SAX0 at 2019/08 NO=744(100%)
Hs : MEAN=1.3m MAX=6.7m(ESE,13s)
N-E:48% E-S:49% S-W:3% W-N:0%



Wave of SAX0 at 2019/09 NO=720(100%)
Hs : MEAN=1.4m MAX=6.8m(ESE,14s)
N-E:71% E-S:29% S-W:0% W-N:0%



Wave of SAX0 at 2019/10 NO=744(100%)
Hs : MEAN=1.3m MAX=3.0m(ESE,14s)
N-E:37% E-S:63% S-W:0% W-N:0%



Wave of SAX0 at 2019/11 NO=720(100%)
Hs : MEAN=1.6m MAX=2.4m(ENE,9s)
N-E:51% E-S:49% S-W:0% W-N:0%

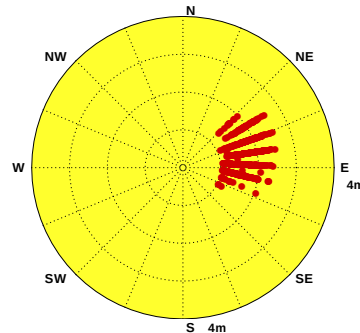


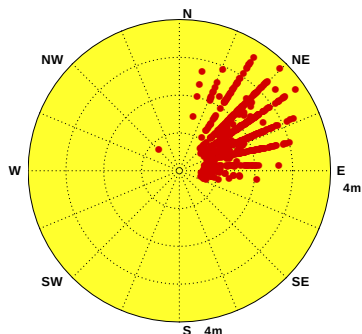
圖2.1.3 2019年宜蘭海域每月 X 站修補後觀測波高向量分佈圖

V18CSAX0.1HA V191SAX0.1HA V192SAX0.1HA V193SAX0.1HA V194SAX0.1HA V195SAX0.1HA
V196SAX0.1HA V197SAX0.1HA V198SAX0.1HA V199SAX0.1HA V19ASAX0.1HA V19BSAX0.1HA

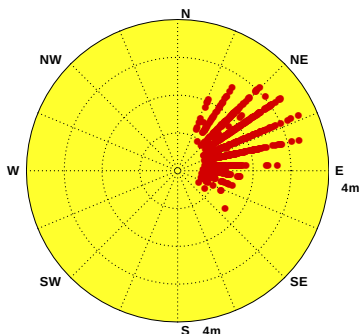
Institute of Harbor & Marine Technology

Distribution of H_s Vectors

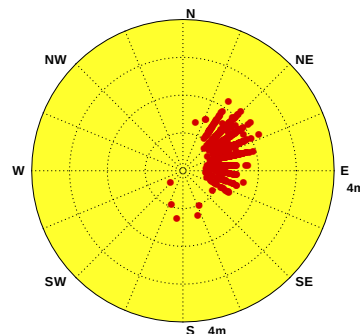
Wave of SAY0 at 2018/12 NO=744(100%)
Hs : MEAN=1.6m MAX=3.6m(NE,8s)
N-E:82% E-S:18% S-W:0% W-N:0%



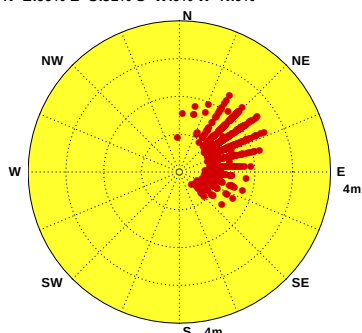
Wave of SAY0 at 2019/01 NO=744(100%)
Hs : MEAN=1.5m MAX=3.3m(ENE,7s)
N-E:77% E-S:23% S-W:0% W-N:0%



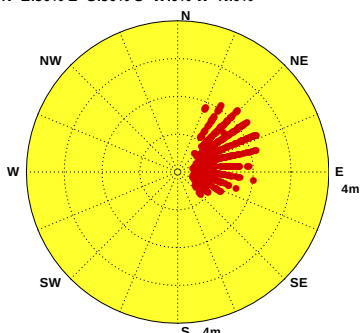
Wave of SAY0 at 2019/02 NO=672(100%)
Hs : MEAN=1.2m MAX=2.1m(ENE,6s)
N-E:78% E-S:22% S-W:0% W-N:0%



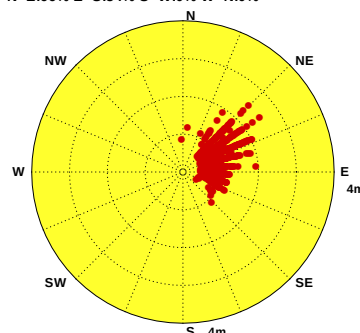
Wave of SAY0 at 2019/03 NO=744(100%)
Hs : MEAN=1.2m MAX=2.3m(NE,8s)
N-E:69% E-S:31% S-W:0% W-N:0%



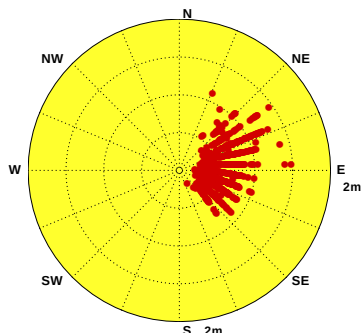
Wave of SAY0 at 2019/04 NO=720(100%)
Hs : MEAN=1.0m MAX=2.1m(ENE,6s)
N-E:50% E-S:50% S-W:0% W-N:0%



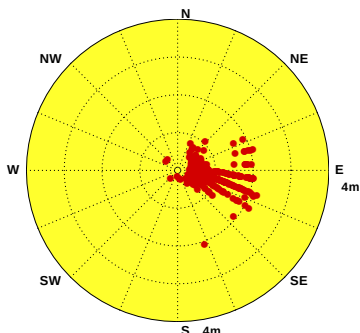
Wave of SAY0 at 2019/05 NO=744(100%)
Hs : MEAN=.9m MAX=2.3m(NE,7s)
N-E:66% E-S:34% S-W:0% W-N:0%



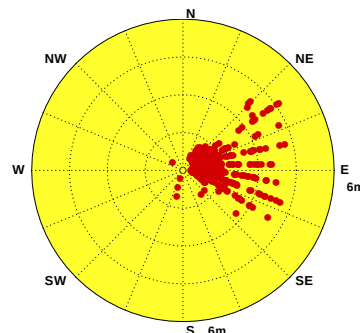
Wave of SAY0 at 2019/06 NO=720(100%)
Hs : MEAN=.6m MAX=1.4m(E, 5s)
N-E:31% E-S:69% S-W:0% W-N:0%



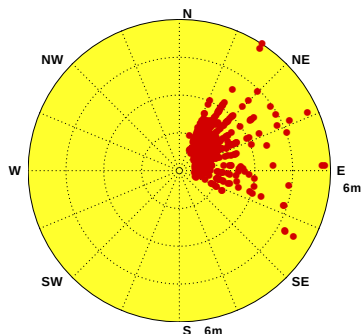
Wave of SAY0 at 2019/07 NO=744(100%)
Hs : MEAN=.6m MAX=2.2m(SSE,6s)
N-E:14% E-S:85% S-W:1% W-N:0%



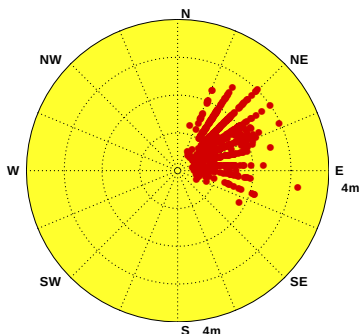
Wave of SAY0 at 2019/08 NO=744(100%)
Hs : MEAN=1.0m MAX=4.4m(NE,11s)
N-E:42% E-S:58% S-W:0% W-N:0%



Wave of SAY0 at 2019/09 NO=720(100%)
Hs : MEAN=1.3m MAX=5.7m(NNE,9s)
N-E:76% E-S:24% S-W:0% W-N:0%



Wave of SAY0 at 2019/10 NO=744(100%)
Hs : MEAN=1.2m MAX=3.1m(E, 11s)
N-E:83% E-S:17% S-W:0% W-N:0%



Wave of SAY0 at 2019/11 NO=720(100%)
Hs : MEAN=1.6m MAX=3.0m(NE,7s)
N-E:82% E-S:18% S-W:0% W-N:0%

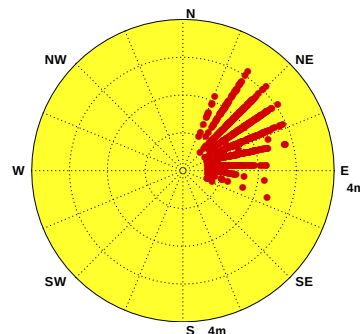


圖2.1.4 2019年宜蘭海域每月 Y 站修補後觀測波高向量分佈圖

V18CSAY0.1HA V191SAY0.1HA V192SAY0.1HA V193SAY0.1HA V194SAY0.1HA V195SAY0.1HA
V196SAY0.1HA V197SAY0.1HA V198SAY0.1HA V199SAY0.1HA V19ASAY0.1HA V19BSAY0.1HA

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2.2 2019 年宜蘭海域各測站修補前 波浪統計量統計表

表2.2.1 2019年宜蘭海域 X 站修補前示性波高週期及波向重要統計量統計表

觀測 日期 年、月	波高 蒐集 率	H_s 平均 (m)	H_s 最大 (波高/週期/波向) (m/s/來向)	T_p 平均 (s)	T_p 最大 (s)	小波 <0.5m (%)	小浪 ~1.5m (%)	中浪 ~3m (%)	大浪 >3m (%)	T_p <6s (%)	T_p 6~8s (%)	T_p 8~10s (%)	T_p >10s (%)	波向 蒐集 率	波向 N~E (%)	波向 E~S (%)	波向 S~W (%)	波向 W~N (%)	主波向 (百分比) 來向/%
2018/12	0																		
2019/01	0																		
2019/02	0																		
2019/03	56%	1.28	2.0/ 9.5/ENE	7.5	10.8	.0	81.4	18.6	.0	13.0	50.8	33.7	2.4	56%	38.3	56.1	5.5	.0	ENE/26%
2019/04	100%	1.09	2.1/ 8.8/E	7.3	10.2	.0	85.6	14.4	.0	14.0	55.7	29.9	.4	100%	25.7	70.4	3.9	.0	E /26%
2019/05	97%	.98	2.4/ 8.8/NE	7.8	12.1	1.8	94.3	3.9	.0	11.4	46.5	33.1	8.9	96%	42.9	56.4	.7	.0	E /41%
2019/06	97%	.77	1.6/ 8.2/SSW	6.6	10.0	8.2	91.5	.3	.0	33.1	54.8	11.9	.1	96%	29.1	46.5	23.9	.4	S /16%
2019/07	99%	.94	3.2/11.4/SSE	7.6	13.3	11.4	72.2	15.2	1.2	23.6	41.0	20.1	15.3	99%	13.7	64.6	21.0	.7	E /23%
2019/08	76%	1.32	6.7/12.6/ESE	9.1	14.3	11.0	66.5	12.3	10.1	7.8	29.2	29.9	33.1	75%	62.7	33.6	3.2	.5	E /34%
2019/09	64%	1.49	6.8/13.6/ESE	9.2	14.7	.0	66.3	29.6	4.1	3.5	25.4	38.5	32.6	64%	93.0	7.0	.0	.0	NE /49%
2019/10	0																		
2019/11	0																		
2019/冬	0																		
2019/春	84%	1.09	2.4/ 8.8/NE	7.5	12.1	.7	88.0	11.3	.0	12.8	51.1	32.0	4.2	84%	35.2	61.8	3.0	.0	E /31%
2019/夏	90%	.99	6.7/12.6/ESE	7.7	14.3	10.2	77.3	9.2	3.3	22.5	42.5	20.0	15.0	90%	32.8	49.6	17.0	.6	E /23%
2019/秋	21%	1.49	6.8/13.6/ESE	9.2	14.7	.0	66.3	29.6	4.1	3.5	25.4	38.5	32.6	21%	93.0	7.0	.0	.0	NE /49%
2019/年	49%	1.09	6.8/13.6/ESE	7.8	14.7	5.0	80.8	12.3	2.0	16.3	44.3	27.1	12.2	49%	40.3	50.3	9.2	.3	E /25%

表2.2.2 2019年宜蘭海域 Y 站修補前示性波高週期及波向重要統計量統計表

觀測 日期 年、月	波高 蒐集 率	H_s 平均 (m)	H_s 最大 (波高/週期/波向) (m/s/來向)	T_p 平均 (s)	T_p 最大 (s)	小波 <0.5m (%)	小浪 ~1.5m (%)	中浪 ~3m (%)	大浪 >3m (%)	T_p <6s (%)	T_p 6~8s (%)	T_p 8~10s (%)	T_p >10s (%)	波向 蒐集 率	波向 N~E (%)	波向 E~S (%)	波向 S~W (%)	波向 W~N (%)	主波向 (百分比) 來向/%
2018/12	87%	1.61	3.6/ 8.2/NE	6.3	8.5	.0	43.8	52.6	3.6	26.5	72.1	1.4	.0	87%	81.3	18.6	.0	.2	NE /40%
2019/01	95%	1.46	3.3/ 7.0/ENE	6.0	8.2	.0	57.9	41.1	1.0	43.8	55.8	.4	.0	95%	76.1	23.9	.0	.0	ENE/36%
2019/02	96%	1.17	2.1/ 5.8/ENE	6.0	8.3	.0	88.2	11.8	.0	44.5	54.8	.6	.0	96%	77.9	21.7	.5	.0	NE /36%
2019/03	98%	1.17	2.3/ 7.7/NE	5.8	8.4	.0	80.2	19.8	.0	61.7	37.9	.4	.0	98%	68.9	31.0	.0	.1	NE /33%
2019/04	97%	.96	2.1/ 6.4/ENE	5.6	7.4	8.7	77.4	13.9	.0	70.2	29.8	.0	.0	97%	50.0	50.0	.0	.0	E /24%
2019/05	96%	.89	2.3/ 6.5/NE	5.7	7.9	10.2	83.8	6.0	.0	64.6	35.4	.0	.0	96%	66.1	33.8	.0	.1	ENE/39%
2019/06	89%	.60	1.4/ 5.2/E	5.2	7.6	32.0	68.0	.0	.0	87.4	12.6	.0	.0	89%	29.8	70.2	.0	.0	ESE/30%
2019/07	83%	.66	2.1/ 7.1/ESE	5.1	8.5	53.1	37.7	9.2	.0	82.0	17.8	.2	.0	83%	12.0	87.7	.0	.3	ESE/46%
2019/08	92%	.99	4.4/11.0/NE	6.2	11.9	20.7	63.6	11.7	4.0	48.6	38.3	11.5	1.6	92%	39.6	60.1	.1	.1	ESE/28%
2019/09	69%	1.30	5.7/ 8.7/NNE	6.5	10.4	1.8	71.2	22.1	4.8	40.0	43.3	16.5	.2	69%	67.6	32.4	.0	.0	NE /28%
2019/10	89%	1.22	3.1/10.5/E	6.2	10.5	6.3	66.3	27.3	.2	40.5	56.2	3.2	.2	89%	82.1	17.9	.0	.0	NE /41%
2019/11	99%	1.55	3.0/ 6.6/NE	6.4	8.8	.1	46.7	53.2	.0	26.6	69.0	4.3	.0	99%	82.2	17.8	.0	.0	NE /40%
2019/冬	93%	1.41	3.6/ 8.2/NE	6.1	8.5	.0	63.1	35.4	1.5	38.4	60.8	.8	.0	93%	78.3	21.5	.2	.1	NE /37%
2019/春	97%	1.01	2.3/ 7.7/NE	5.7	8.4	6.3	80.5	13.3	.0	65.4	34.4	.1	.0	97%	61.8	38.1	.0	.1	ENE/31%
2019/夏	88%	.76	4.4/11.0/NE	5.5	11.9	34.7	56.8	7.1	1.4	72.1	23.3	4.1	.6	88%	27.6	72.2	.1	.2	ESE/35%
2019/秋	86%	1.37	5.7/ 8.7/NNE	6.4	10.5	2.8	60.1	35.8	1.3	35.1	57.6	7.2	.1	86%	78.3	21.7	.0	.0	NE /37%
2019/年	91%	1.13	5.7/ 8.7/NNE	5.9	11.9	10.8	65.5	22.6	1.0	53.1	43.8	2.9	.2	91%	61.5	38.4	.1	.1	ENE/28%

表2.2.3 2019年宜蘭海域 Z 站修補前示性波高週期及波向重要統計量統計表

觀測 日期 年、月	波高 蒐集 率	H_s 平均 (m)	H_s 最大 (波高/週期/波向) (m/s/來向)	T_p 平均 (s)	T_p 最大 (s)	小波 <0.5m (%)	小浪 ~1.5m (%)	中浪 ~3m (%)	大浪 >3m (%)	T_p <6s (%)	T_p 6~8s (%)	T_p 8~10s (%)	T_p >10s (%)	波向 蒐集 率	波向 N~E (%)	波向 E~S (%)	波向 S~W (%)	波向 W~N (%)	主波向 (百分比) 來向/%
2018/12	88%	1.32	2.9/ 7.1/NE	6.0	8.3	3.2	55.1	41.6	.0	45.9	53.5	.6	.0	88%	75.4	14.7	6.3	3.5	NNE/33%
2019/01	97%	1.21	2.5/ 7.3/NE	5.8	7.5	.1	73.0	26.9	.0	58.8	41.2	.0	.0	97%	73.5	18.3	6.8	1.4	NE /32%
2019/02	97%	1.06	2.8/ 7.1/NNE	5.8	8.5	1.7	90.4	7.9	.0	56.2	43.1	.6	.0	97%	70.1	16.2	12.3	1.4	NNE/30%
2019/03	97%	.96	2.3/ 6.6/NNE	5.5	8.3	1.1	91.3	7.6	.0	71.8	27.8	.4	.0	97%	66.0	26.7	6.3	1.1	NNE/25%
2019/04	100%	.79	2.2/ 6.3/NE	5.2	7.7	20.6	74.6	4.9	.0	84.2	15.8	.0	.0	100%	50.6	36.1	11.4	1.9	NE /20%
2019/05	99%	.72	2.1/ 5.7/NE	5.3	7.9	25.6	72.2	2.2	.0	82.4	17.6	.0	.0	99%	73.2	19.6	5.6	1.6	NE /28%
2019/06	91%	.55	1.4/ 5.5/N	4.9	7.1	42.2	57.8	.0	.0	94.8	5.2	.0	.0	91%	32.7	45.9	19.9	1.5	SSE/24%
2019/07	85%	.73	4.0/ 8.5/S	4.9	8.8	44.8	47.3	7.1	.8	83.6	14.5	1.9	.0	85%	5.0	66.7	25.4	2.8	SSE/47%
2019/08	94%	.94	5.0/ 9.0/S	5.9	10.3	25.1	58.7	12.6	3.6	59.9	31.4	8.6	.1	94%	31.0	50.9	16.6	1.6	SSE/28%
2019/09	79%	1.16	5.9/ 9.5/S	6.1	10.7	10.9	65.8	19.2	4.1	52.6	34.0	12.2	1.2	79%	60.3	27.5	11.6	.5	NNE/23%
2019/10	94%	.99	3.7/ 8.8/ENE	5.9	9.6	11.0	76.8	11.9	.3	58.0	37.7	4.3	.0	94%	80.2	13.2	4.6	2.0	NE /33%
2019/11	99%	1.27	3.1/ 7.2/NNE	5.9	9.1	2.8	65.9	30.8	.4	59.2	38.9	2.0	.0	99%	77.3	18.0	3.1	1.5	NNE/32%
2019/冬	94%	1.20	2.9/ 7.1/NE	5.9	8.5	1.6	72.8	25.5	.0	53.8	45.8	.4	.0	94%	73.0	16.5	8.4	2.1	NNE/30%
2019/春	99%	.82	2.3/ 6.6/NNE	5.3	8.3	15.8	79.3	4.9	.0	79.5	20.4	.1	.0	99%	63.3	27.4	7.7	1.6	NE /24%
2019/夏	90%	.74	5.0/ 9.0/S	5.3	10.3	37.0	54.8	6.7	1.5	79.0	17.4	3.6	.1	90%	23.3	54.3	20.5	2.0	SSE/33%
2019/秋	90%	1.14	5.9/ 9.5/S	6.0	10.7	8.1	69.7	20.8	1.4	56.8	37.1	5.7	.4	90%	73.5	19.0	6.1	1.4	NNE/29%
2019/年	93%	.97	5.9/ 9.5/S	5.6	10.7	15.6	69.4	14.3	.7	67.5	30.0	2.4	.1	93%	58.4	29.2	10.6	1.8	NNE/22%

2.3 2019 年宜蘭海域**主要測站 1**(修補後)與 **其他測站**(修補前)波浪歷線比較圖

Wave H_s in Su-Ao Harbor of SAX0 at 2019

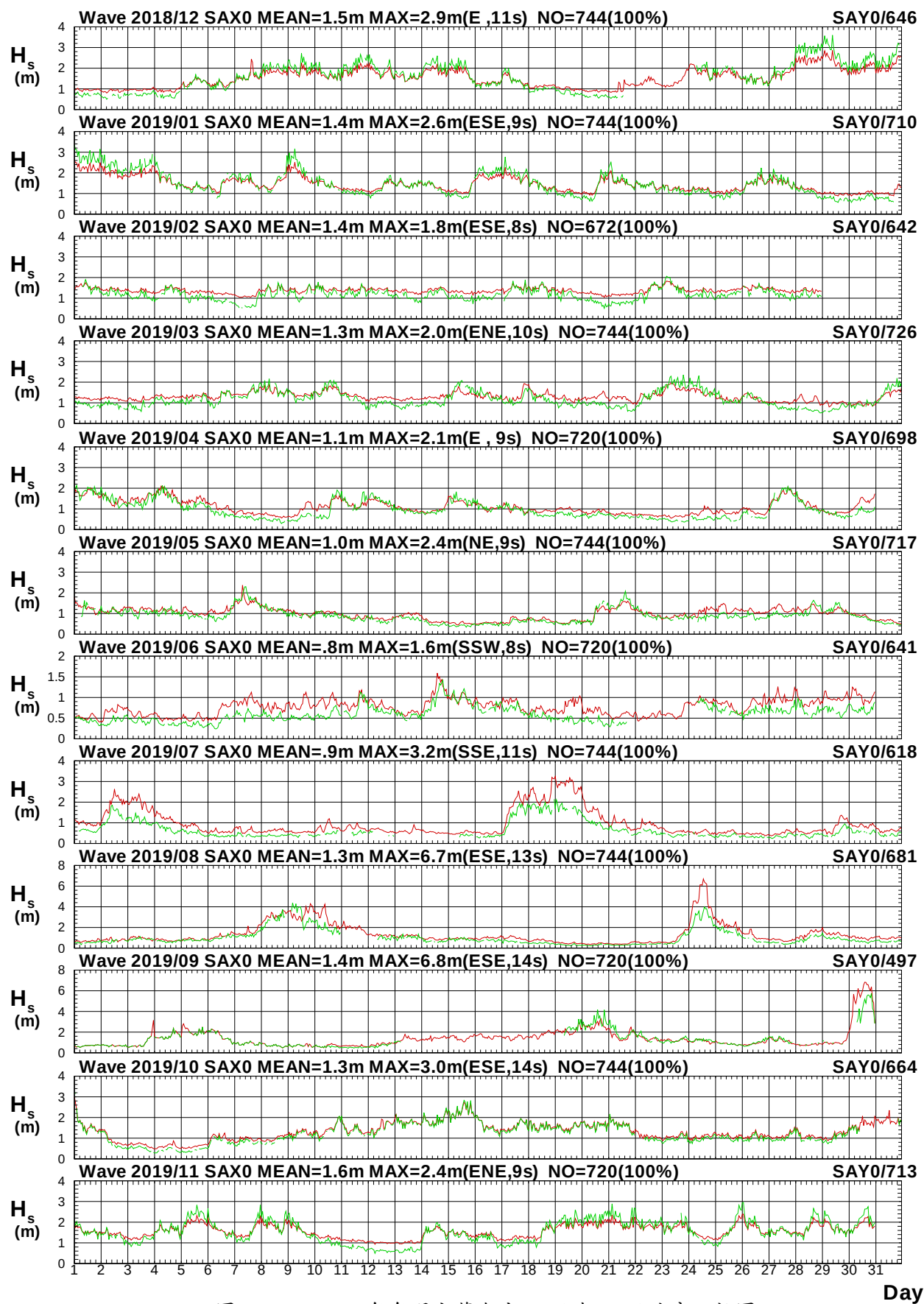


圖2.3.1a 2019年每月宜蘭海域 X 站與 Y 站波高比較圖

V18CSAX0.1HA V18CSAY0.1H0 V191SAX0.1HA V191SAY0.1H0 V192SAX0.1HA V192SAY0.1H0
V193SAX0.1HA V193SAY0.1H0 V194SAX0.1HA V194SAY0.1H0 V195SAX0.1HA V195SAY0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

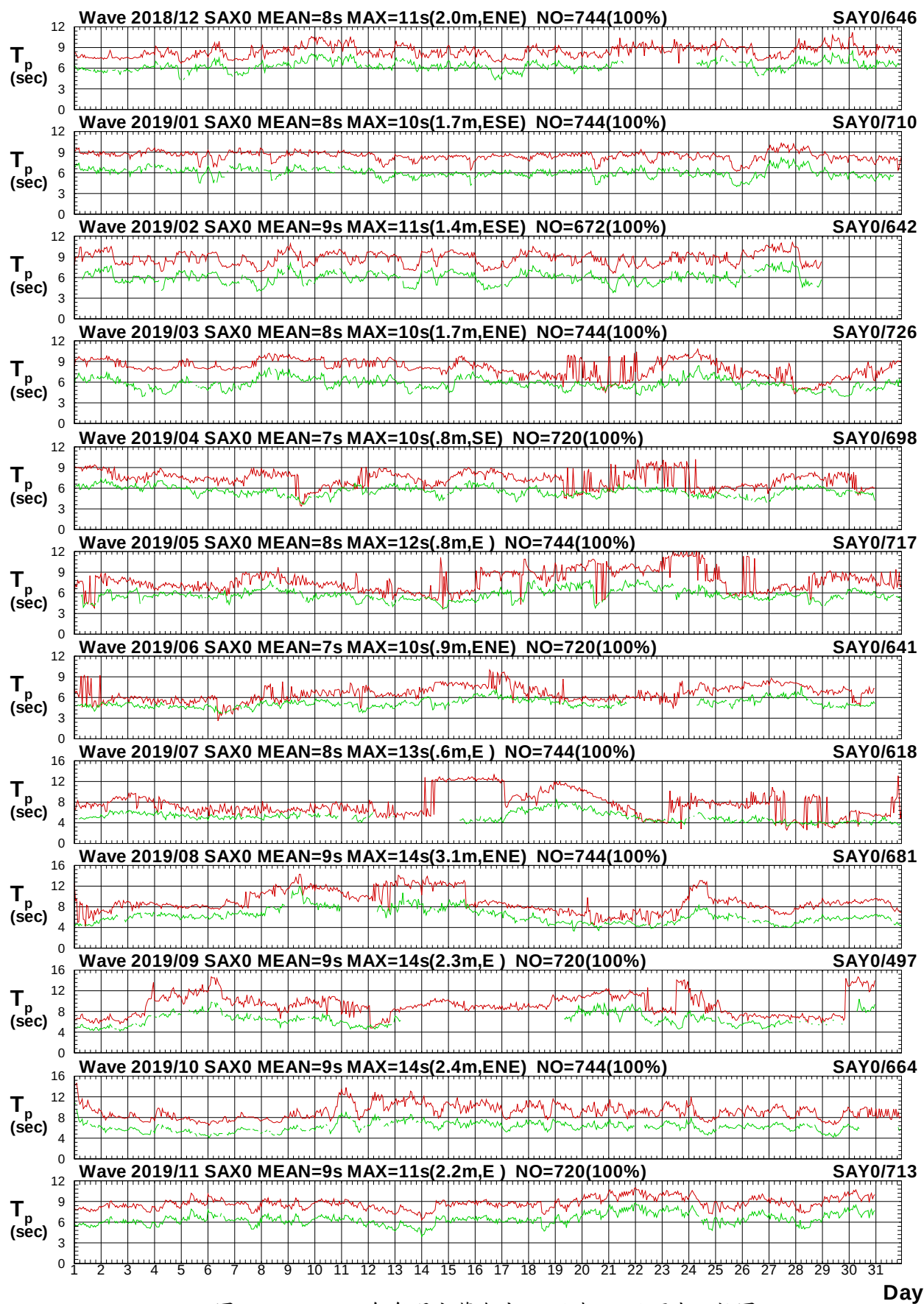


圖2.3.1b 2019年每月宜蘭海域 X 站與 Y 站週期比較圖

V18CSAX0.1HA V18CSAY0.1H0 V191SAX0.1HA V191SAY0.1H0 V192SAX0.1HA V192SAY0.1H0
V193SAX0.1HA V193SAY0.1H0 V194SAX0.1HA V194SAY0.1H0 V195SAX0.1HA V195SAY0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

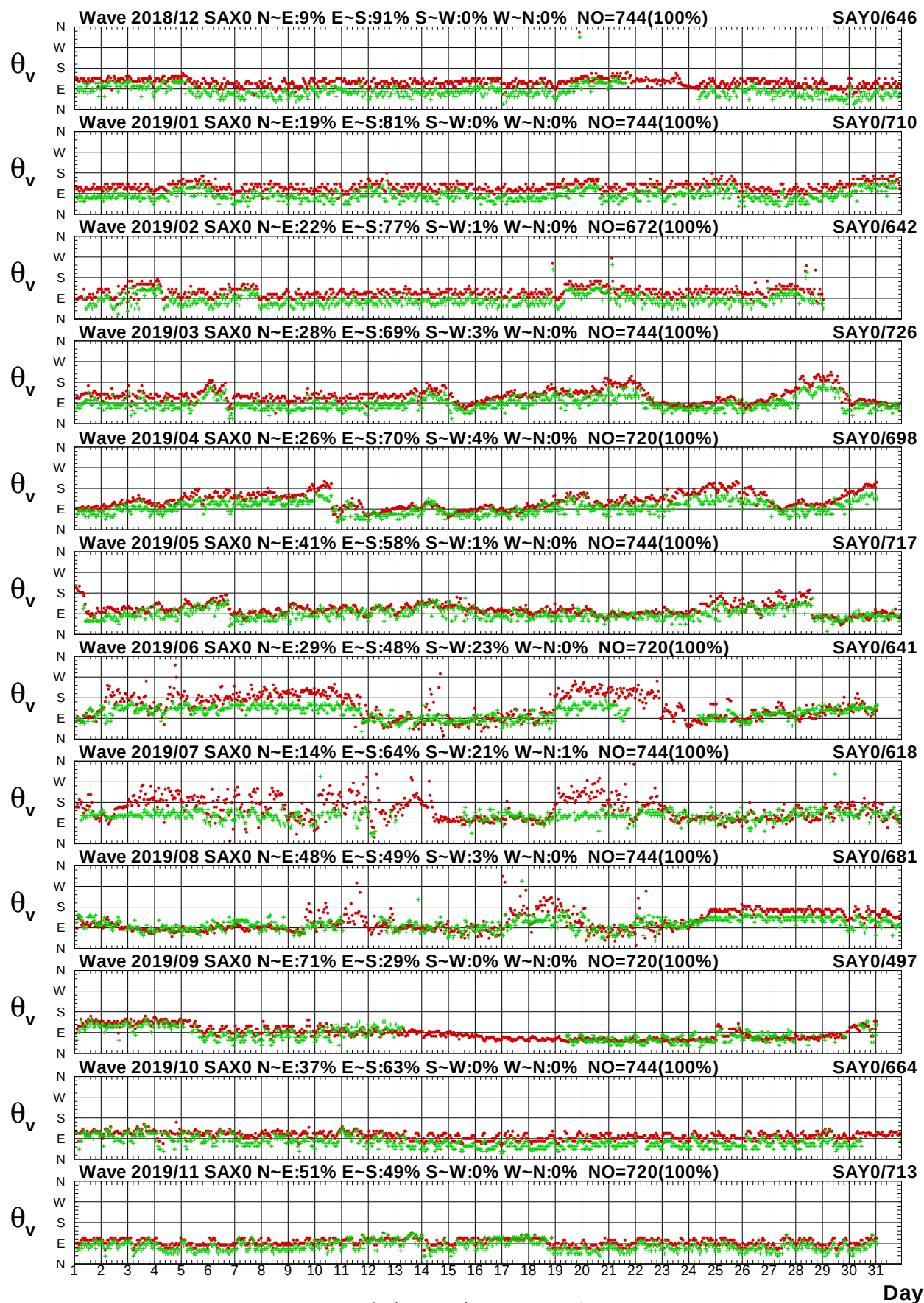


圖2.3.1c 2019年每月宜蘭海域 X 站與 Y 站波向比較圖

V18CSAX0.1HA V18CSAY0.1H0 V191SAX0.1HA V191SAY0.1H0 V192SAX0.1HA V192SAY0.1H0
V193SAX0.1HA V193SAY0.1H0 V194SAX0.1HA V194SAY0.1H0 V195SAX0.1HA V195SAY0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

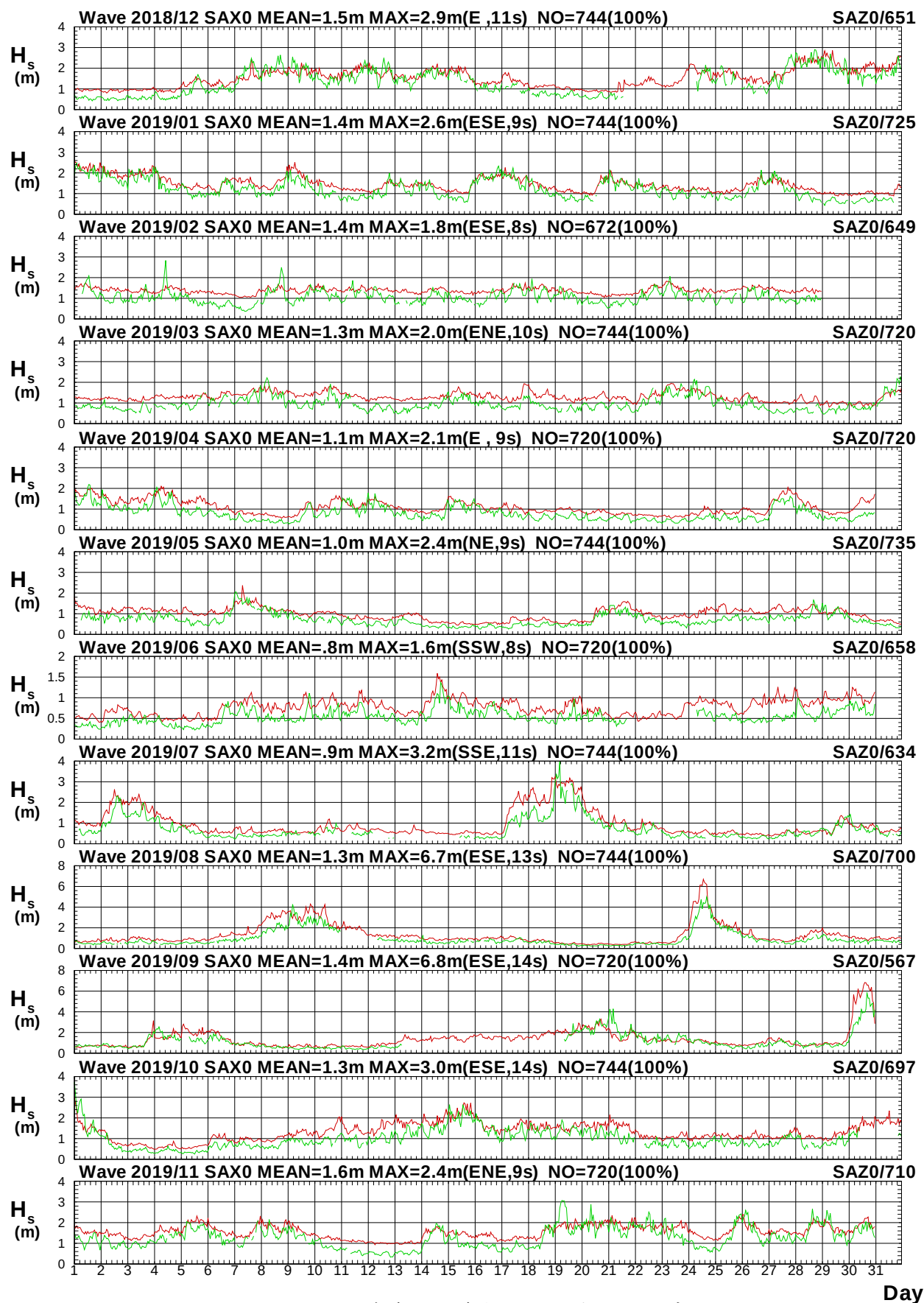


圖2.3.2a 2019年每月宜蘭海域 X 站與 Z 站波高比較圖

V18CSAX0.1HA V18CSAZ0.1H0 V191SAX0.1HA V191SAZ0.1H0 V192SAX0.1HA V192SAZ0.1H0
V193SAX0.1HA V193SAZ0.1H0 V194SAX0.1HA V194SAZ0.1H0 V195SAX0.1HA V195SAZ0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

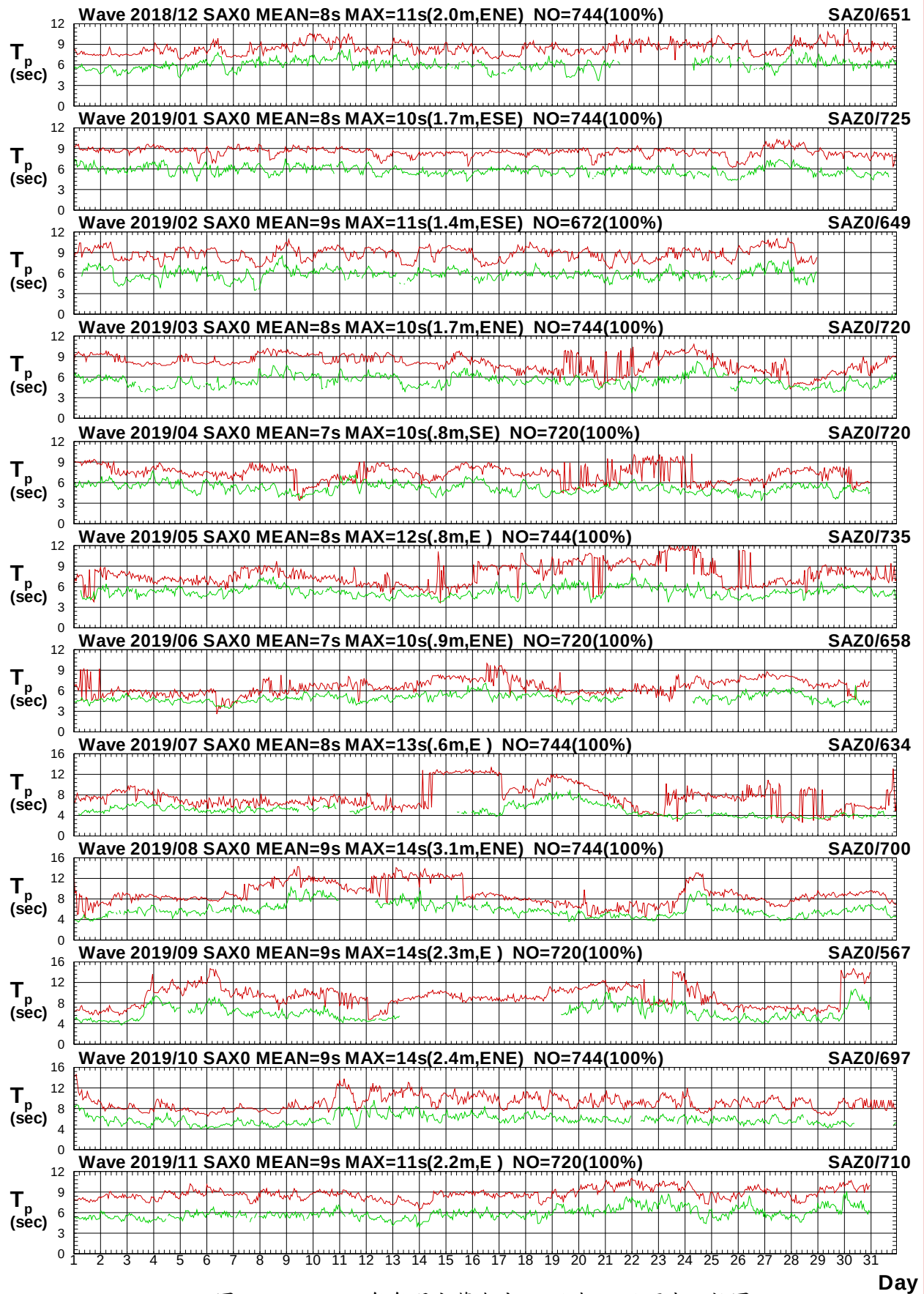


圖2.3.2b 2019年每月宜蘭海域 X 站與 Z 站週期比較圖

V18CSAX0.1HA V18CSAZ0.1H0 V191SAX0.1HA V191SAZ0.1H0 V192SAX0.1HA V192SAZ0.1H0
V193SAX0.1HA V193SAZ0.1H0 V194SAX0.1HA V194SAZ0.1H0 V195SAX0.1HA V195SAZ0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

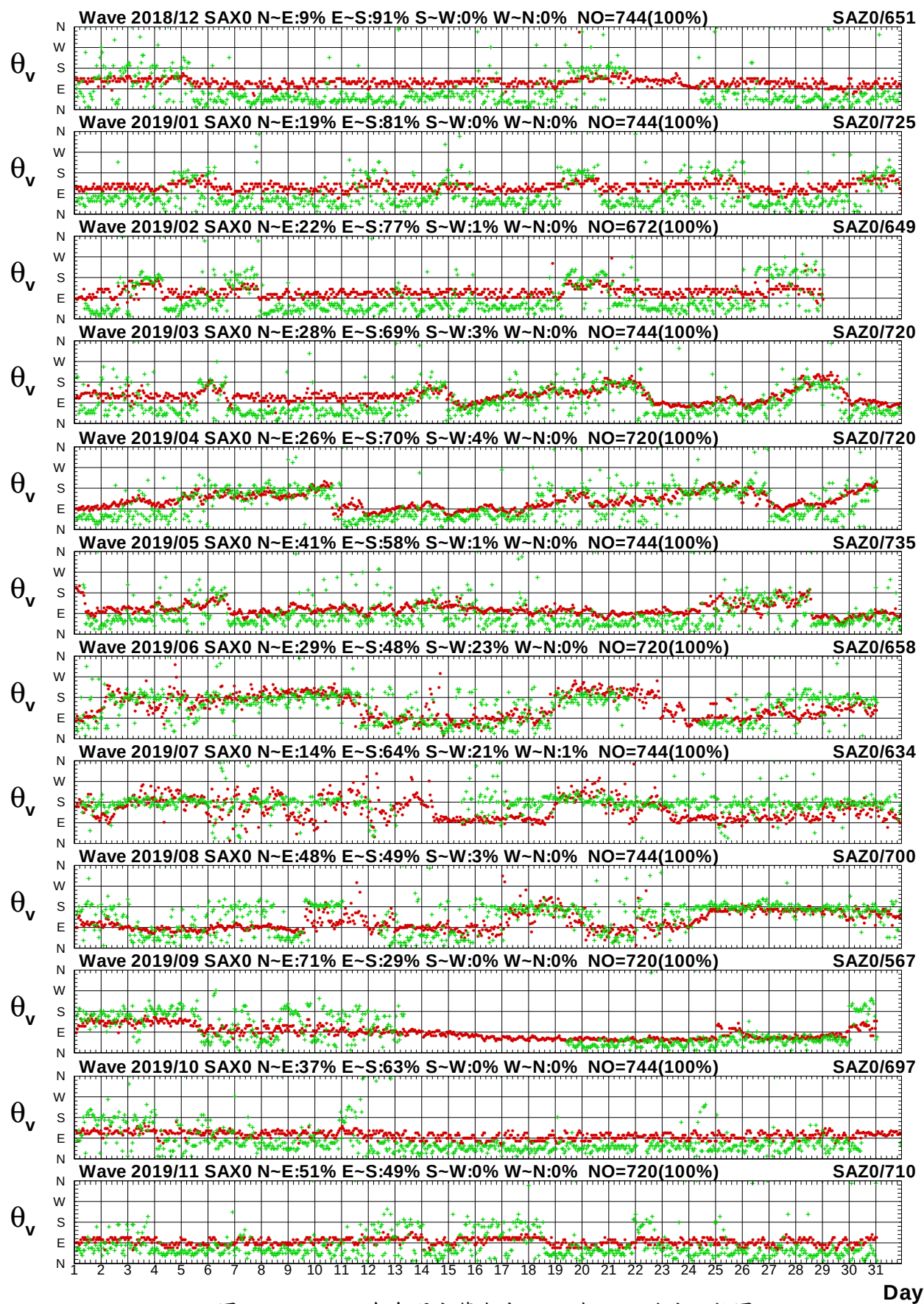


圖2.3.2c 2019年每月宜蘭海域 X 站與 Z 站波向比較圖

V18CSAX0.1HA V18CSAZ0.1H0 V191SAX0.1HA V191SAZ0.1H0 V192SAX0.1HA V192SAZ0.1H0
V193SAX0.1HA V193SAZ0.1H0 V194SAX0.1HA V194SAZ0.1H0 V195SAX0.1HA V195SAZ0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

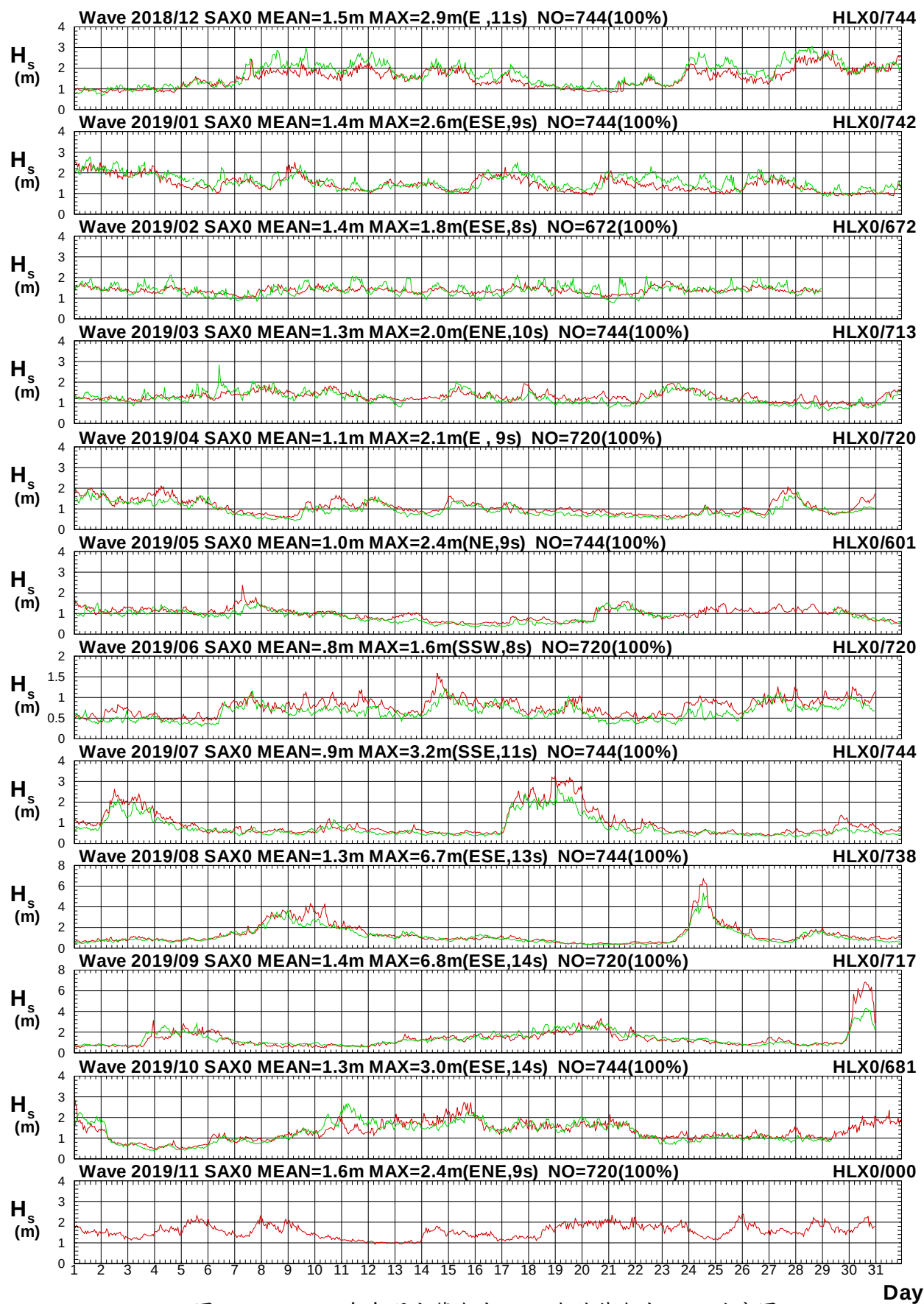


圖2.3.3a 2019年每月宜蘭海域 X 站與花蓮海域 X 站波高圖

V18CSAX0.1HA V18CHLX0.1H0 V191SAX0.1HA V191HLX0.1H0 V192SAX0.1HA V192HLX0.1H0
V193SAX0.1HA V193HLX0.1H0 V194SAX0.1HA V194HLX0.1H0 V195SAX0.1HA V195HLX0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

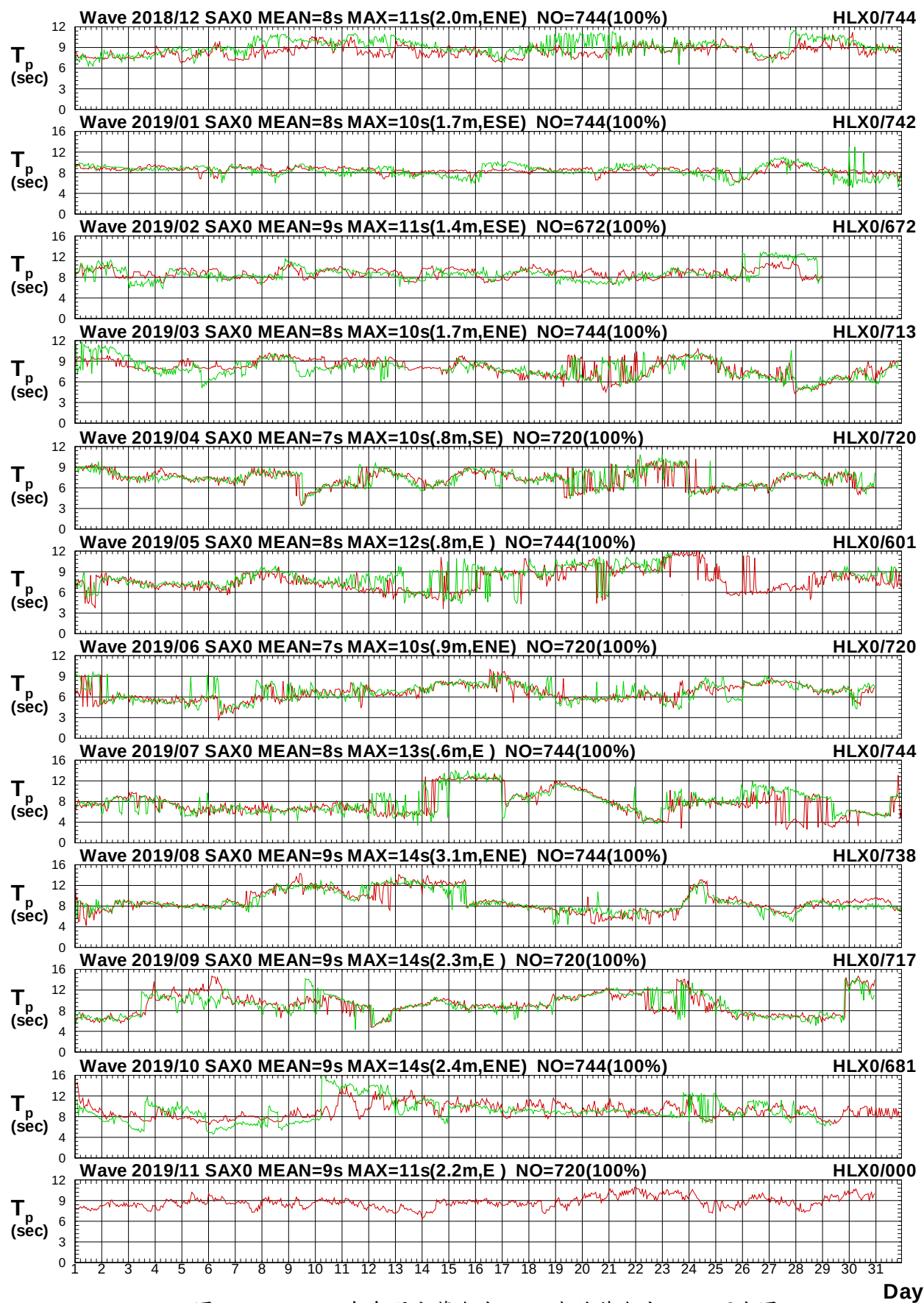


圖2.3.3b 2019年每月宜蘭海域 X 站與花蓮海域 X 站週期圖

V18CSAX0.1HA V18CHLX0.1H0 V191SAX0.1HA V191HLX0.1H0 V192SAX0.1HA V192HLX0.1H0
V193SAX0.1HA V193HLX0.1H0 V194SAX0.1HA V194HLX0.1H0 V195SAX0.1HA V195HLX0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

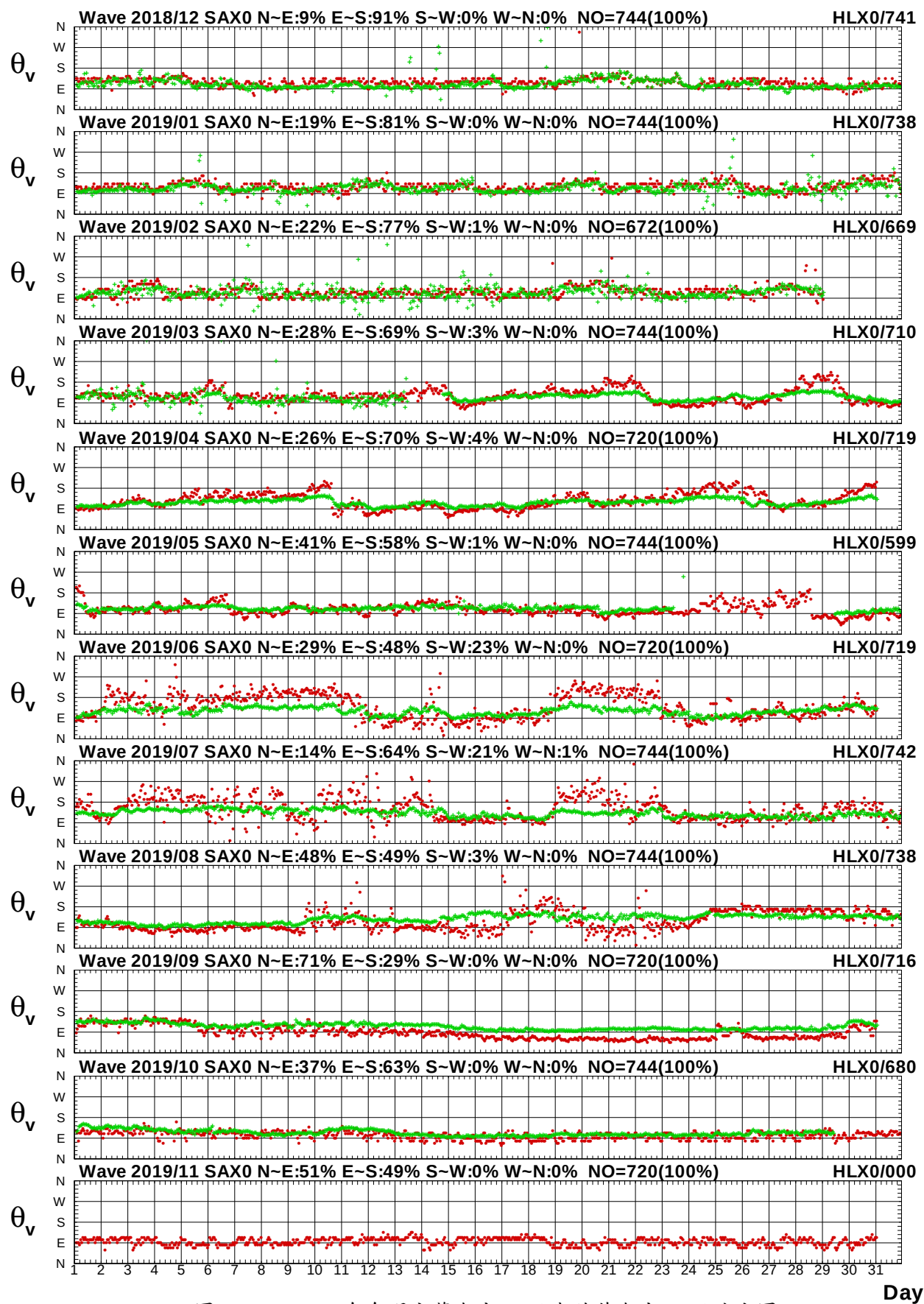


圖2.3.3c 2019年每月宜蘭海域 X 站與花蓮海域 X 站波向圖

V18CSAX0.1HA V18CHLX0.1H0 V191SAX0.1HA V191HLX0.1H0 V192SAX0.1HA V192HLX0.1H0
V193SAX0.1HA V193HLX0.1H0 V194SAX0.1HA V194HLX0.1H0 V195SAX0.1HA V195HLX0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

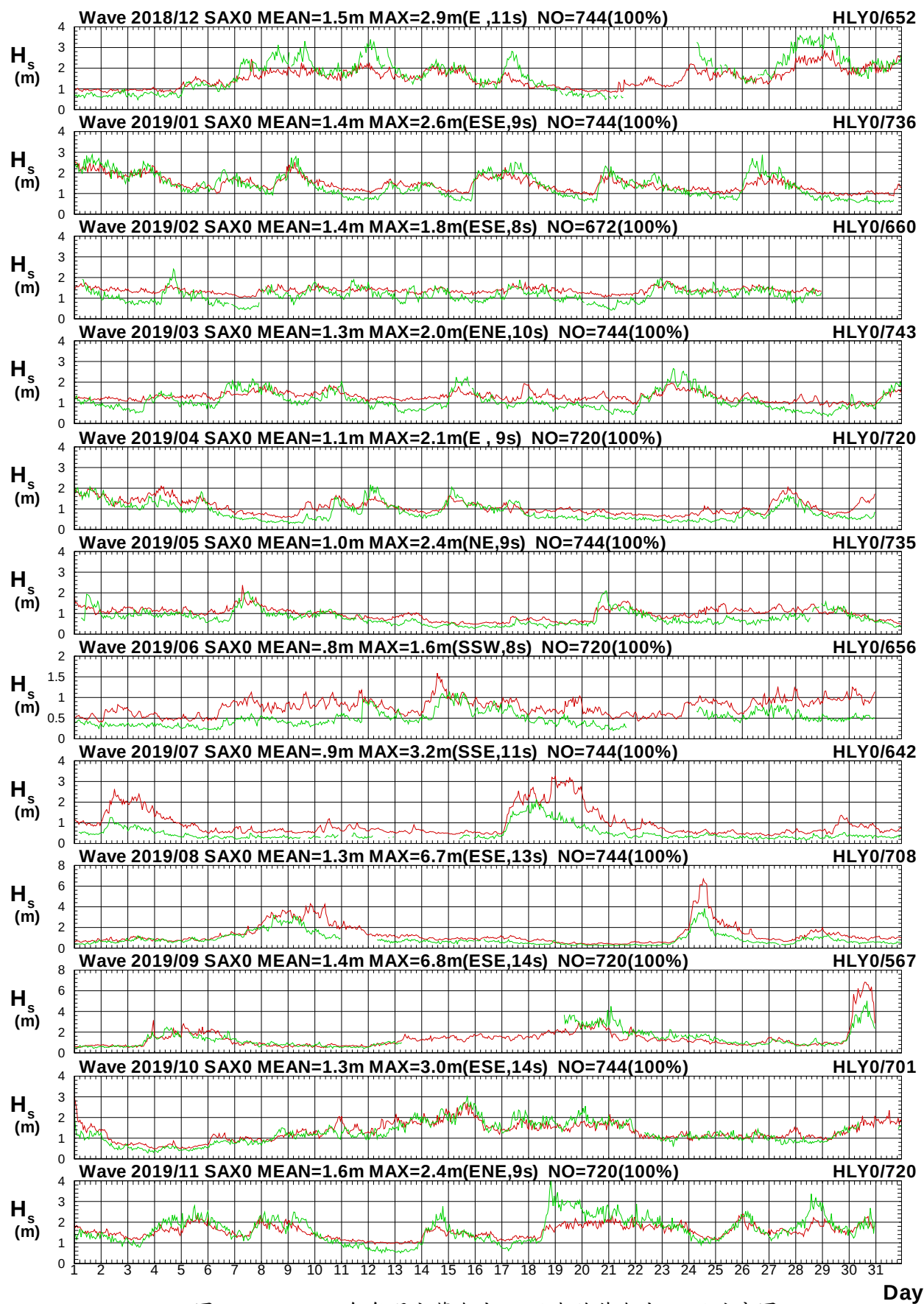


圖2.3.4a 2019年每月宜蘭海域 X 站與花蓮海域 Y 站波高圖

V18CSAX0.1HA V18CHLY0.1H0 V191SAX0.1HA V191HLY0.1H0 V192SAX0.1HA V192HLY0.1H0

V193SAX0.1HA V193HLY0.1H0 V194SAX0.1HA V194HLY0.1H0 V195SAX0.1HA V195HLY0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

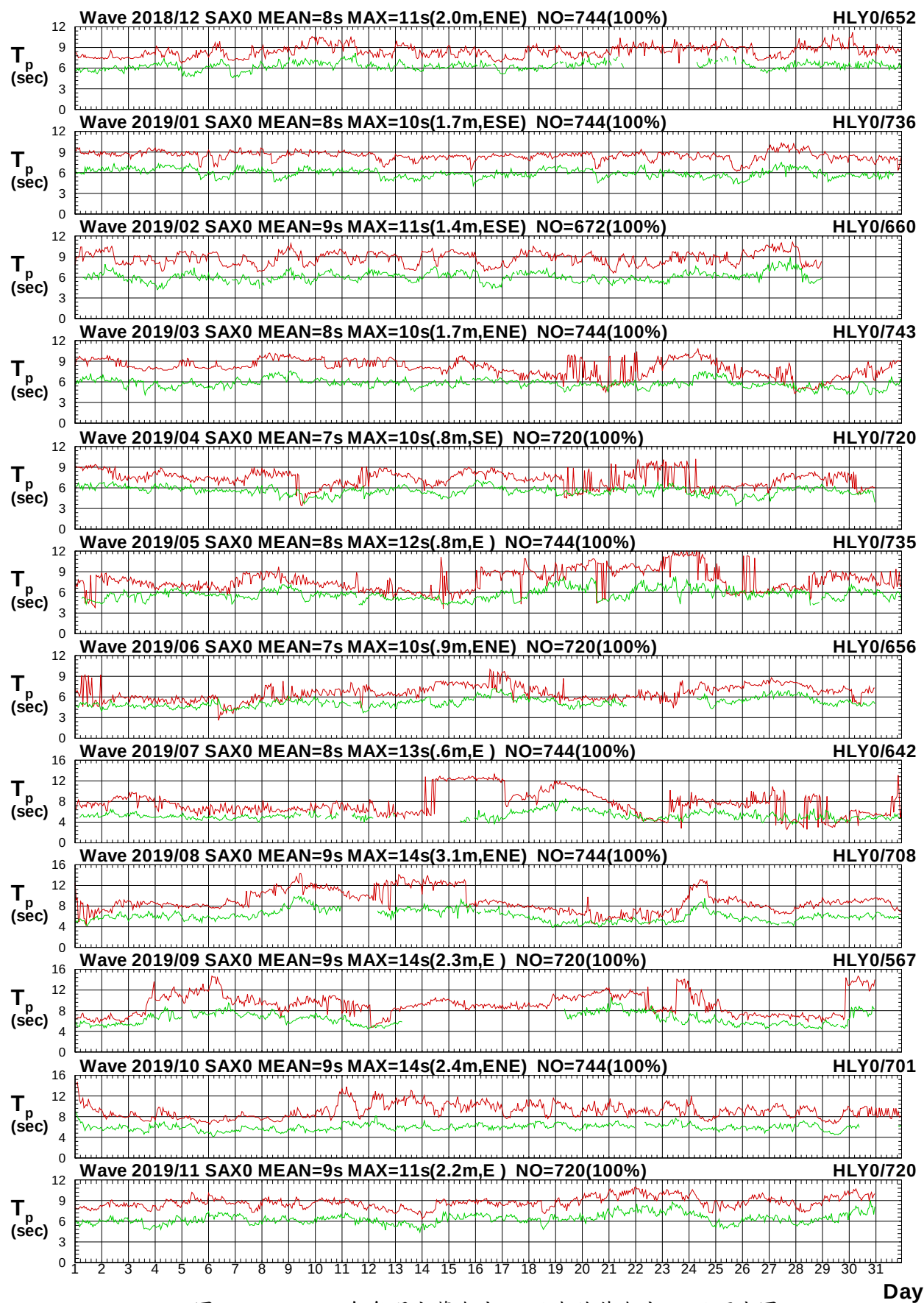


圖2.3.4b 2019年每月宜蘭海域 X 站與花蓮海域 Y 站週期圖

V18CSAX0.1HA V18CHLY0.1H0 V191SAX0.1HA V191HLY0.1H0 V192SAX0.1HA V192HLY0.1H0
V193SAX0.1HA V193HLY0.1H0 V194SAX0.1HA V194HLY0.1H0 V195SAX0.1HA V195HLY0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

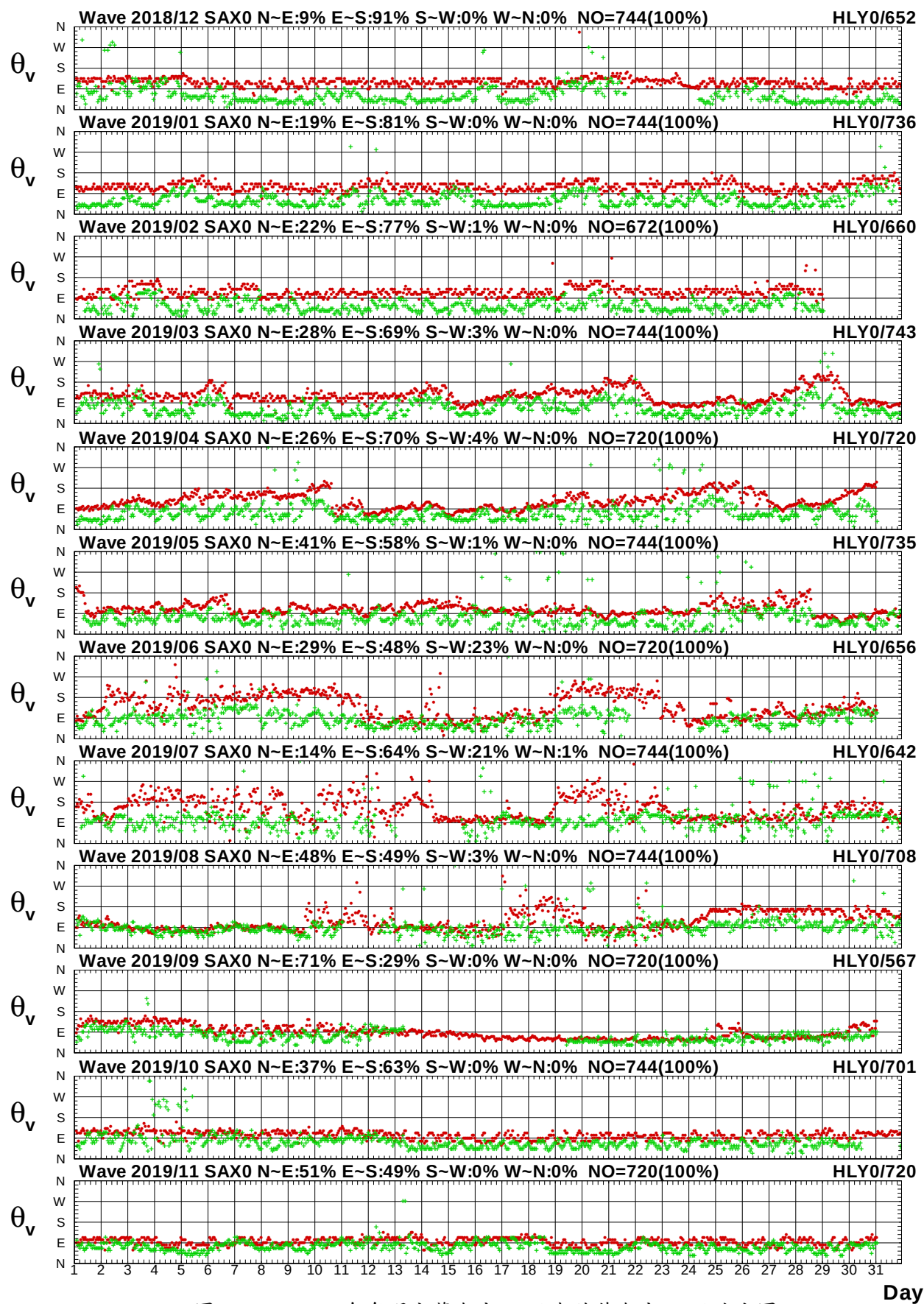


圖2.3.4c 2019年每月宜蘭海域 X 站與花蓮海域 Y 站波向圖

V18CSAX0.1HA V18CHLY0.1H0 V191SAX0.1HA V191HLY0.1H0 V192SAX0.1HA V192HLY0.1H0
V193SAX0.1HA V193HLY0.1H0 V194SAX0.1HA V194HLY0.1H0 V195SAX0.1HA V195HLY0.1H0

Institute of Harbor & Marine Technology

Wave H_s in Su-Ao Harbor of SAX0 at 2019

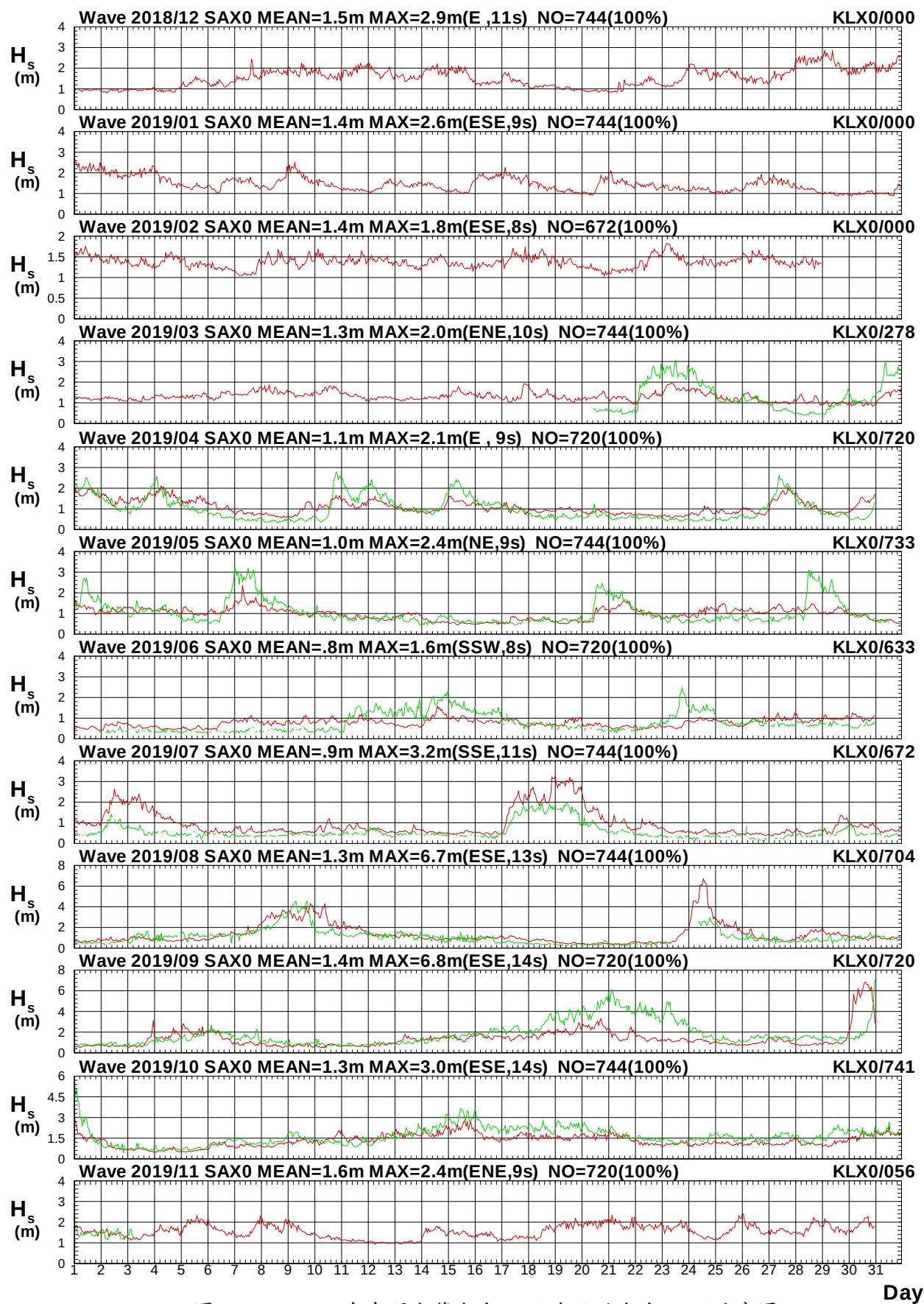


圖2.3.5a 2019年每月宜蘭海域 X 站與北端海域 X 站波高圖

V18CSAX0.1HA V18CKLX0.1H0 V191SAX0.1HA V191KLX0.1H0 V192SAX0.1HA V192KLX0.1H0
V193SAX0.1HA V193KLX0.1H0 V194SAX0.1HA V194KLX0.1H0 V195SAX0.1HA V195KLX0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

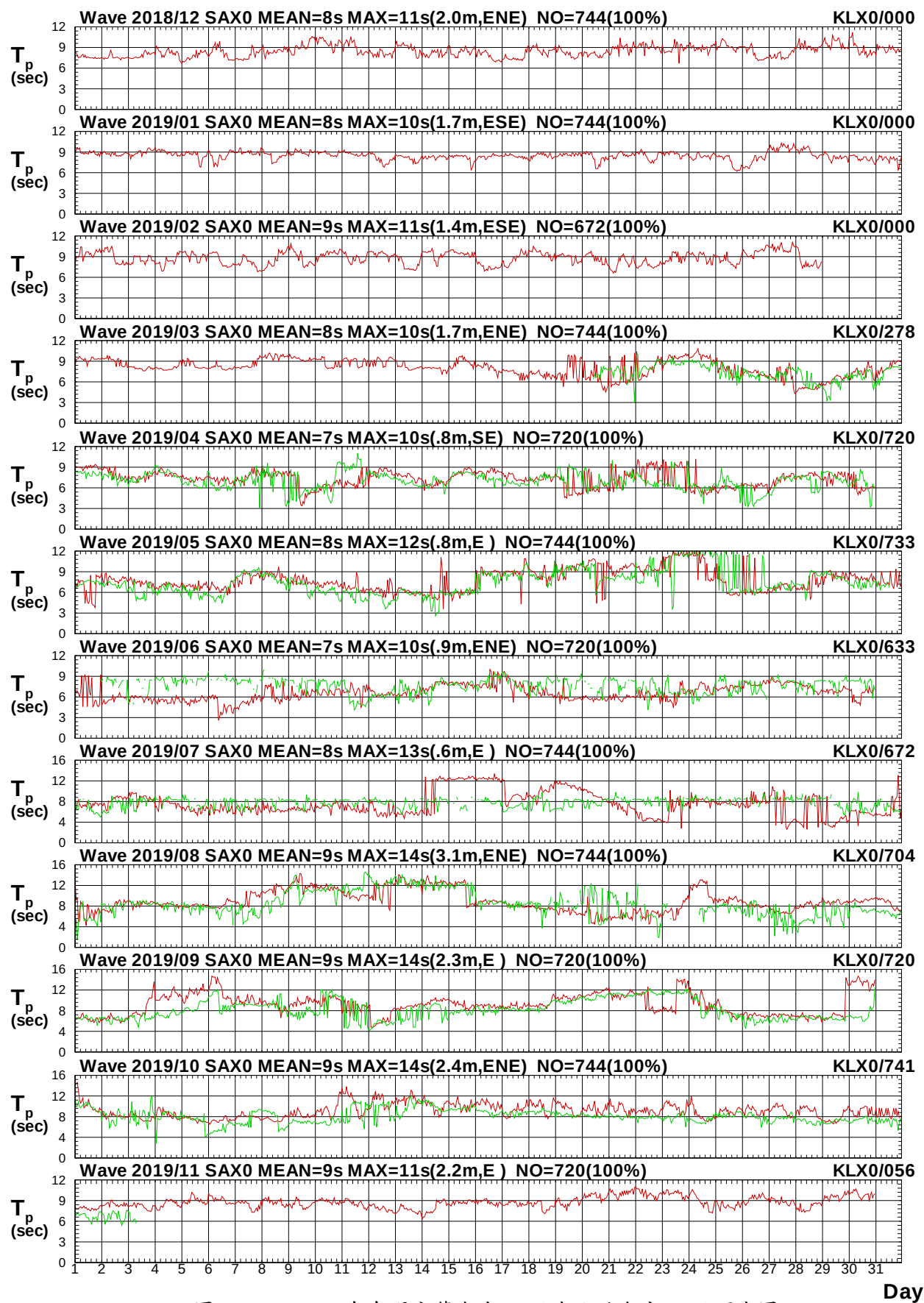


圖2.3.5b 2019年每月宜蘭海域 X 站與北端海域 X 站週期圖

V18CSAX0.1HA V18CKLX0.1H0 V191SAX0.1HA V191KLX0.1H0 V192SAX0.1HA V192KLX0.1H0
V193SAX0.1HA V193KLX0.1H0 V194SAX0.1HA V194KLX0.1H0 V195SAX0.1HA V195KLX0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

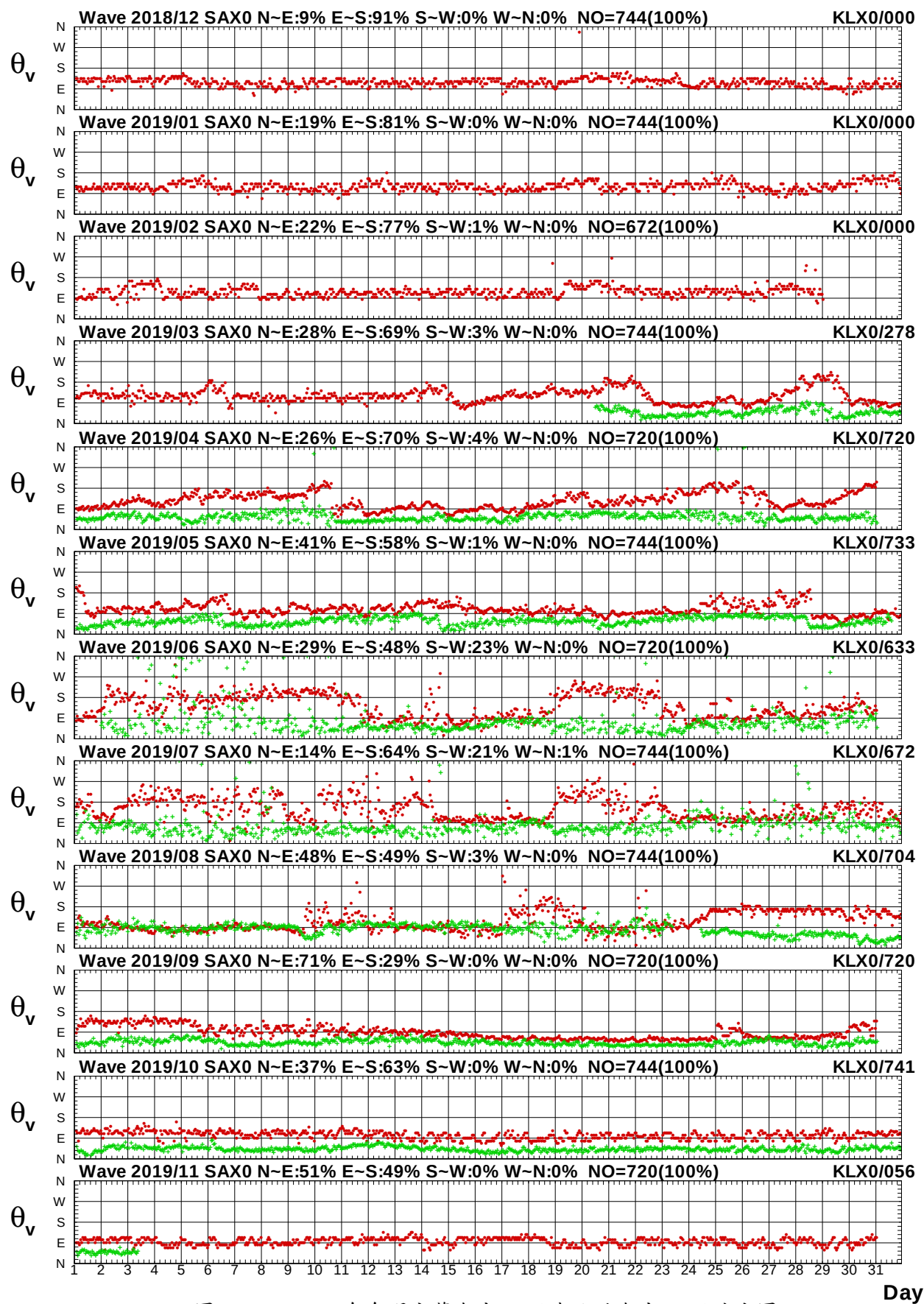


圖2.3.5c 2019年每月宜蘭海域 X 站與北端海域 X 站波向圖

V18CSAX0.1HA V18CKLX0.1H0 V191SAX0.1HA V191KLX0.1H0 V192SAX0.1HA V192KLX0.1H0
V193SAX0.1HA V193KLX0.1H0 V194SAX0.1HA V194KLX0.1H0 V195SAX0.1HA V195KLX0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

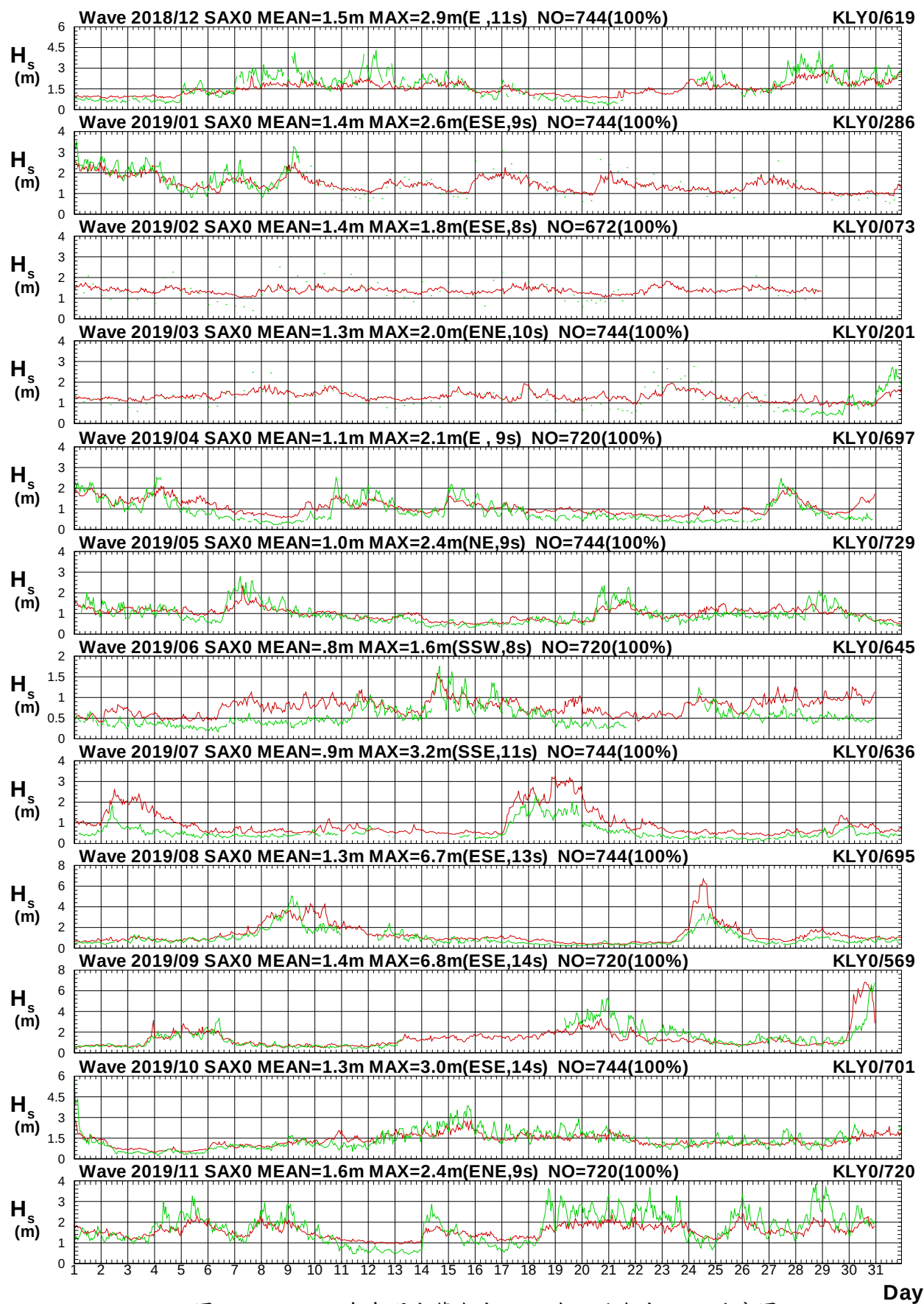


圖2.3.6a 2019年每月宜蘭海域 X 站與北端海域 Y 站波高圖

V18CSAX0.1HA V18CKLY0.1H0 V191SAX0.1HA V191KLY0.1H0 V192SAX0.1HA V192KLY0.1H0
V193SAX0.1HA V193KLY0.1H0 V194SAX0.1HA V194KLY0.1H0 V195SAX0.1HA V195KLY0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

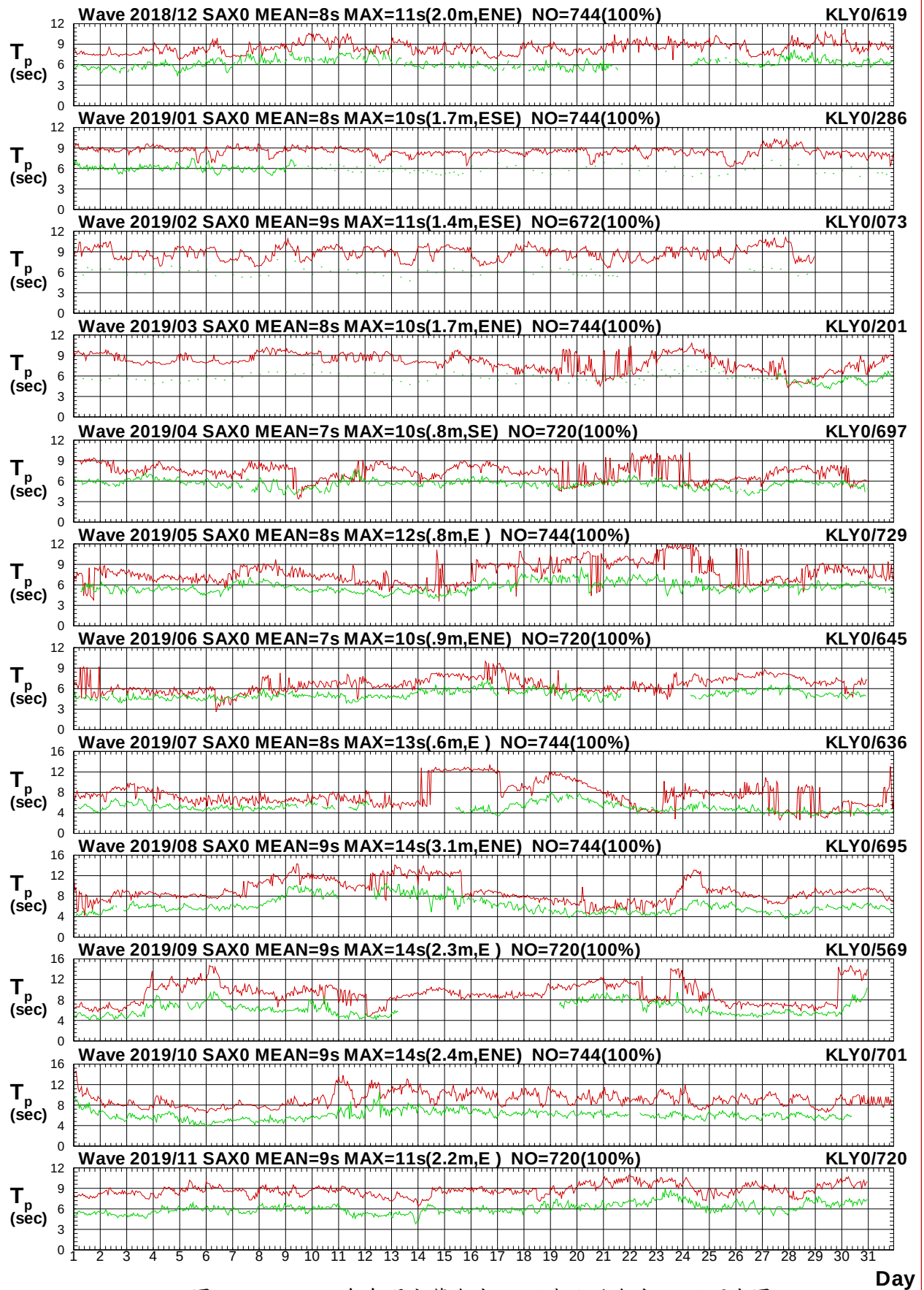


圖2.3.6b 2019年每月宜蘭海域 X 站與北端海域 Y 站週期圖

V18CSAX0.1HA V18CKLY0.1H0 V191SAX0.1HA V191KLY0.1H0 V192SAX0.1HA V192KLY0.1H0
V193SAX0.1HA V193KLY0.1H0 V194SAX0.1HA V194KLY0.1H0 V195SAX0.1HA V195KLY0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

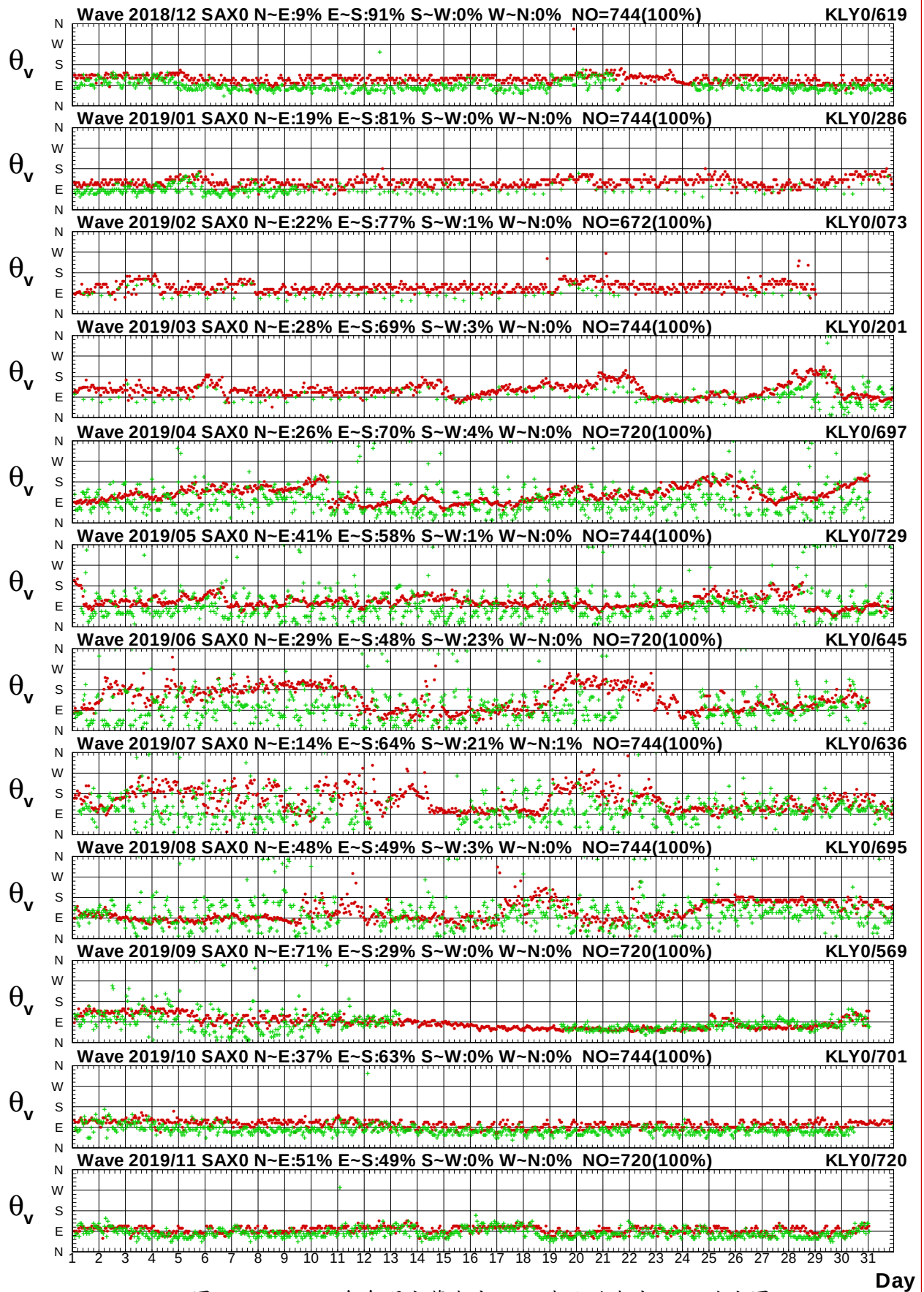


圖2.3.6c 2019年每月宜蘭海域 X 站與北端海域 Y 站波向圖

V18CSAX0.1HA V18CKLY0.1H0 V191SAX0.1HA V191KLY0.1H0 V192SAX0.1HA V192KLY0.1H0
V193SAX0.1HA V193KLY0.1H0 V194SAX0.1HA V194KLY0.1H0 V195SAX0.1HA V195KLY0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

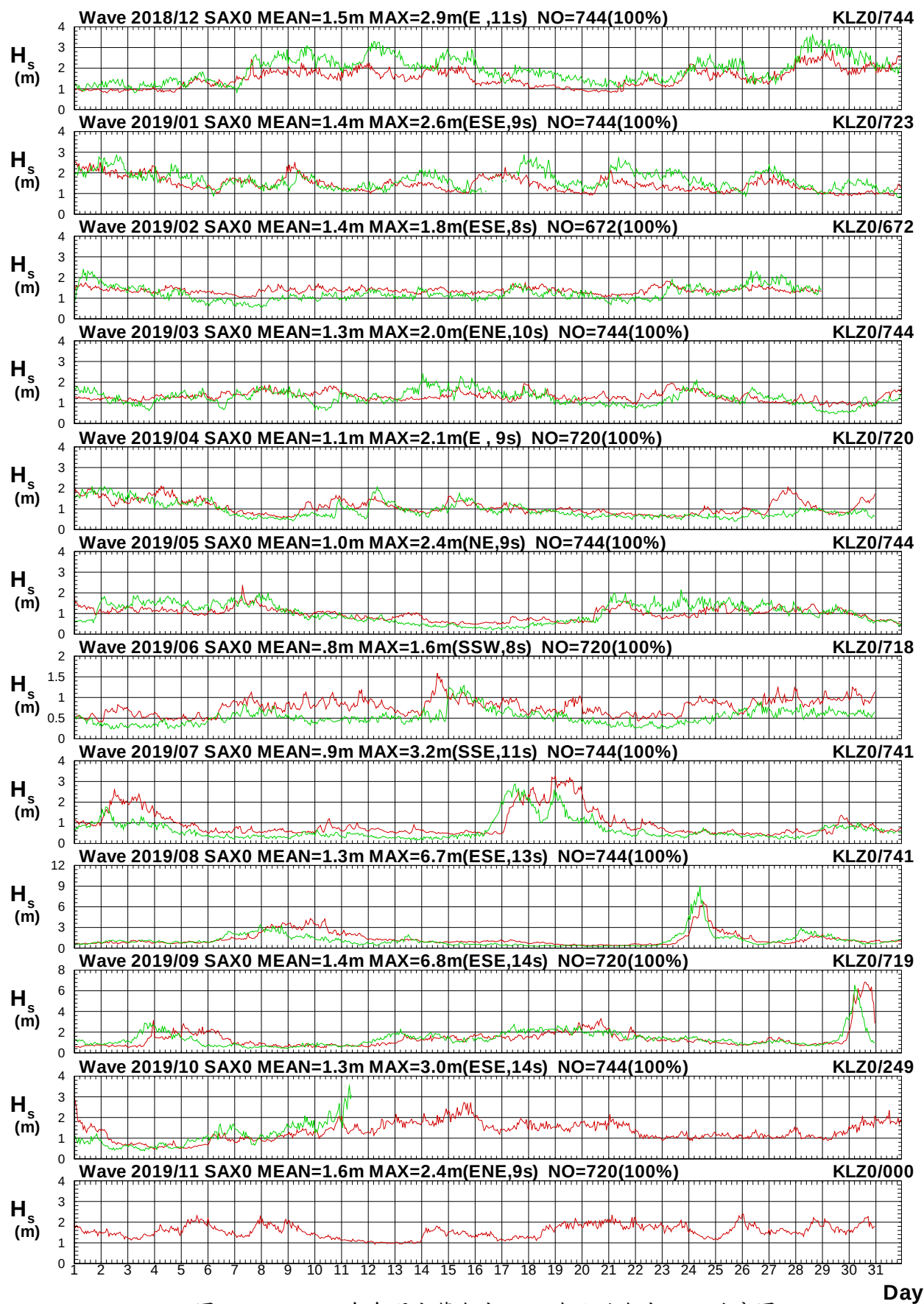


圖2.3.7a 2019年每月宜蘭海域 X 站與北端海域 Z 站波高圖

V18CSAX0.1HA V18CKLZ0.1H0 V191SAX0.1HA V191KLZ0.1H0 V192SAX0.1HA V192KLZ0.1H0
V193SAX0.1HA V193KLZ0.1H0 V194SAX0.1HA V194KLZ0.1H0 V195SAX0.1HA V195KLZ0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

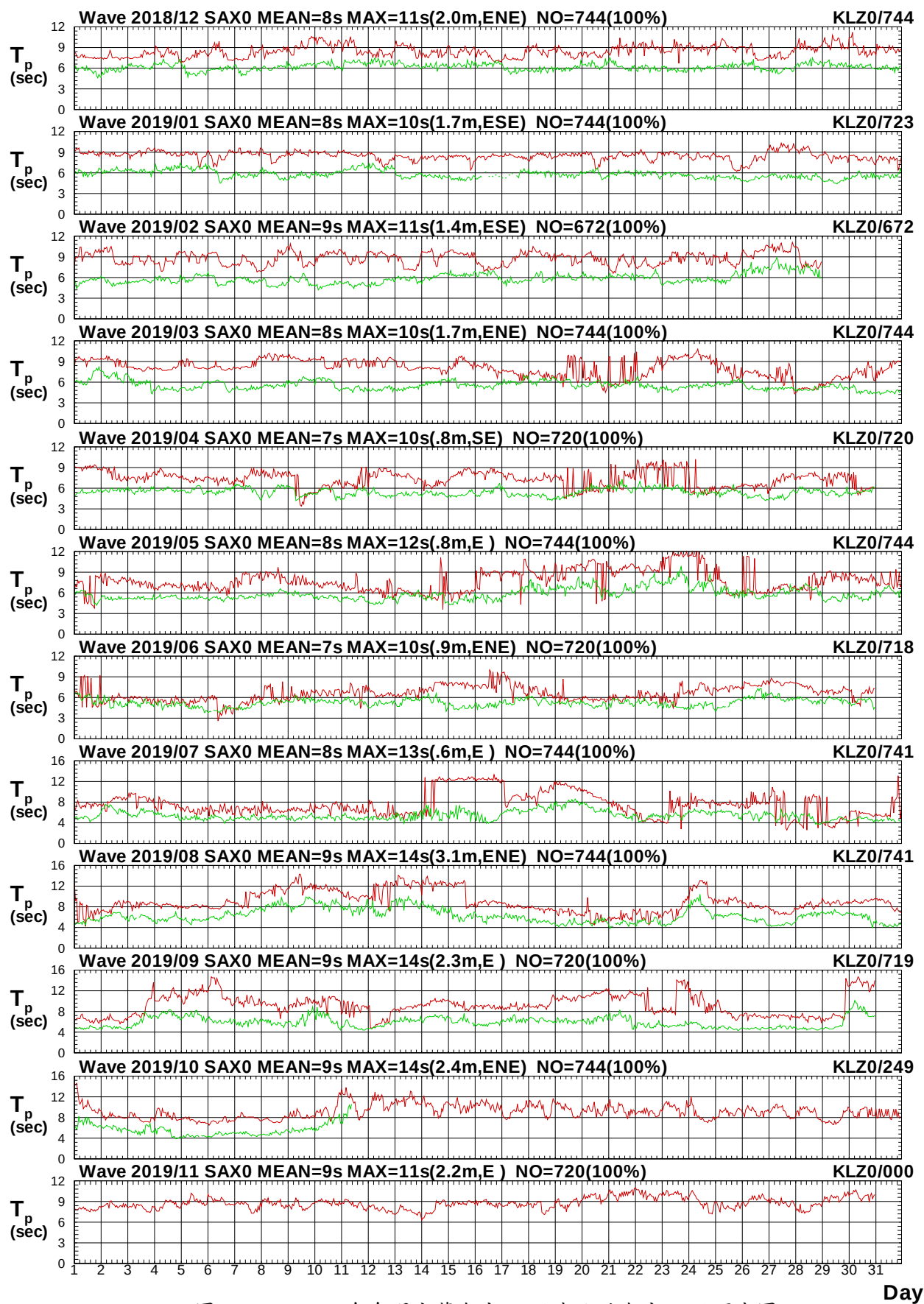


圖2.3.7b 2019年每月宜蘭海域 X 站與北端海域 Z 站週期圖

V18CSAX0.1HA V18CKLZ0.1H0 V191SAX0.1HA V191KLZ0.1H0 V192SAX0.1HA V192KLZ0.1H0
V193SAX0.1HA V193KLZ0.1H0 V194SAX0.1HA V194KLZ0.1H0 V195SAX0.1HA V195KLZ0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

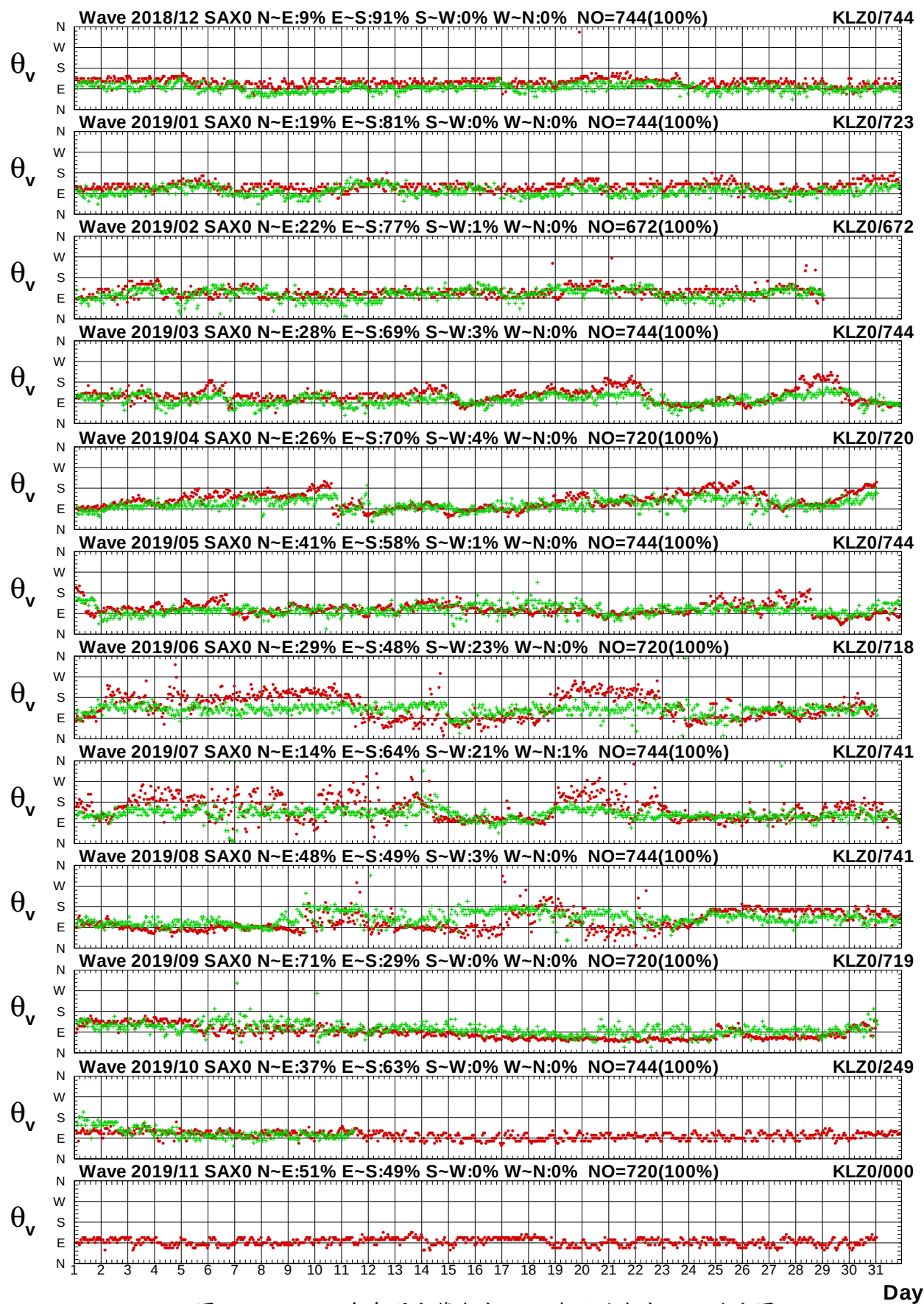


圖2.3.7c 2019年每月宜蘭海域 X 站與北端海域 Z 站波向圖

V18CSAX0.1HA V18CKLZ0.1H0 V191SAX0.1HA V191KLZ0.1H0 V192SAX0.1HA V192KLZ0.1H0
V193SAX0.1HA V193KLZ0.1H0 V194SAX0.1HA V194KLZ0.1H0 V195SAX0.1HA V195KLZ0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

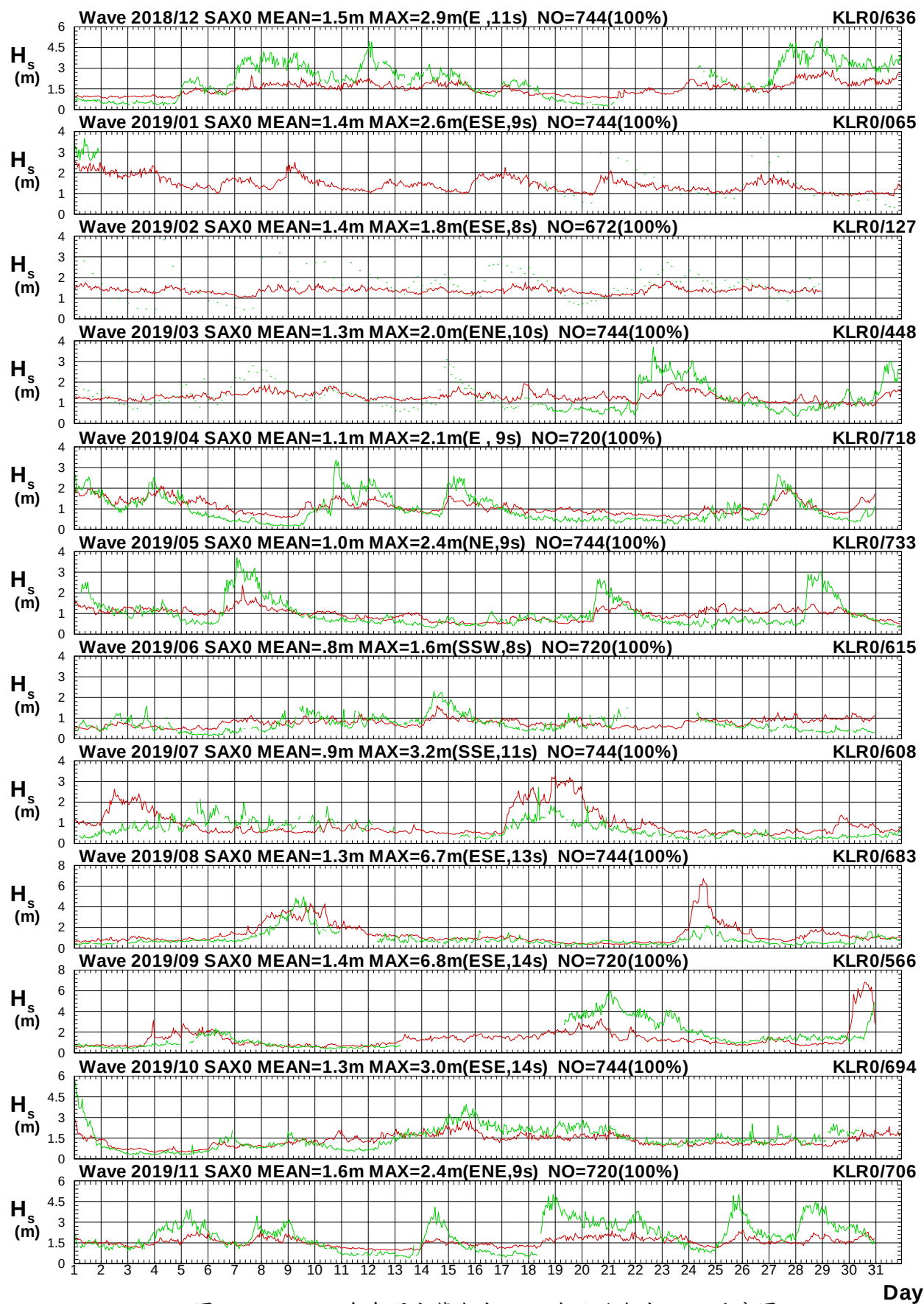


圖2.3.8a 2019年每月宜蘭海域 X 站與北端海域 R 站波高圖

V18CSAX0.1HA V18CKLR0.1H0 V191SAX0.1HA V191KLR0.1H0 V192SAX0.1HA V192KLR0.1H0
V193SAX0.1HA V193KLR0.1H0 V194SAX0.1HA V194KLR0.1H0 V195SAX0.1HA V195KLR0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

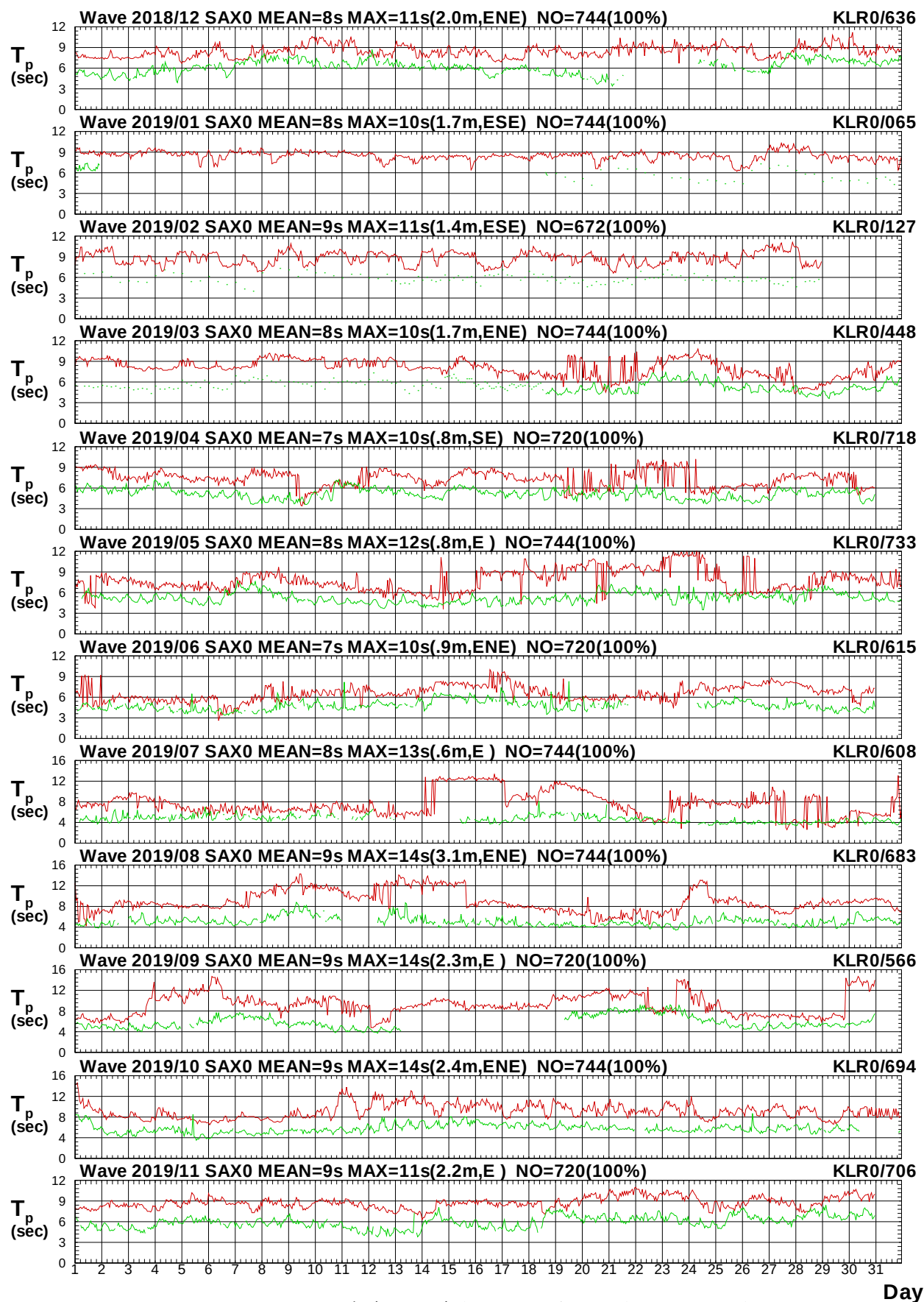


圖2.3.8b 2019年每月宜蘭海域 X 站與北端海域 R 站週期圖

V18CSAX0.1HA V18CKLR0.1H0 V191SAX0.1HA V191KLR0.1H0 V192SAX0.1HA V192KLR0.1H0
V193SAX0.1HA V193KLR0.1H0 V194SAX0.1HA V194KLR0.1H0 V195SAX0.1HA V195KLR0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

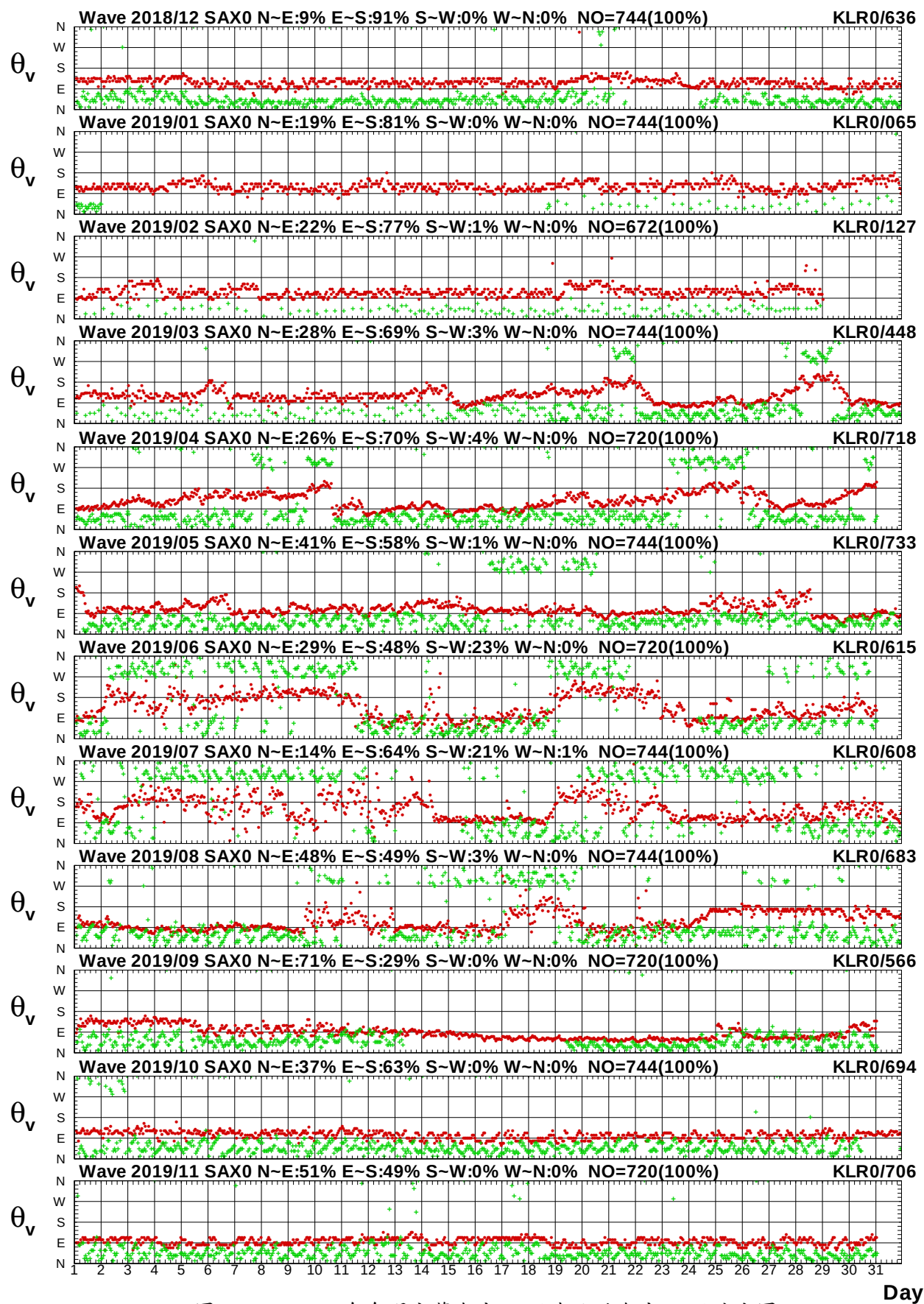


圖2.3.8c 2019年每月宜蘭海域 X 站與北端海域 R 站波向圖

V18CSAX0.1HA V18CKLR0.1H0 V191SAX0.1HA V191KLR0.1H0 V192SAX0.1HA V192KLR0.1H0
V193SAX0.1HA V193KLR0.1H0 V194SAX0.1HA V194KLR0.1H0 V195SAX0.1HA V195KLR0.1H0

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Wave H_s in Su-Ao Harbor of SAX0 at 2019

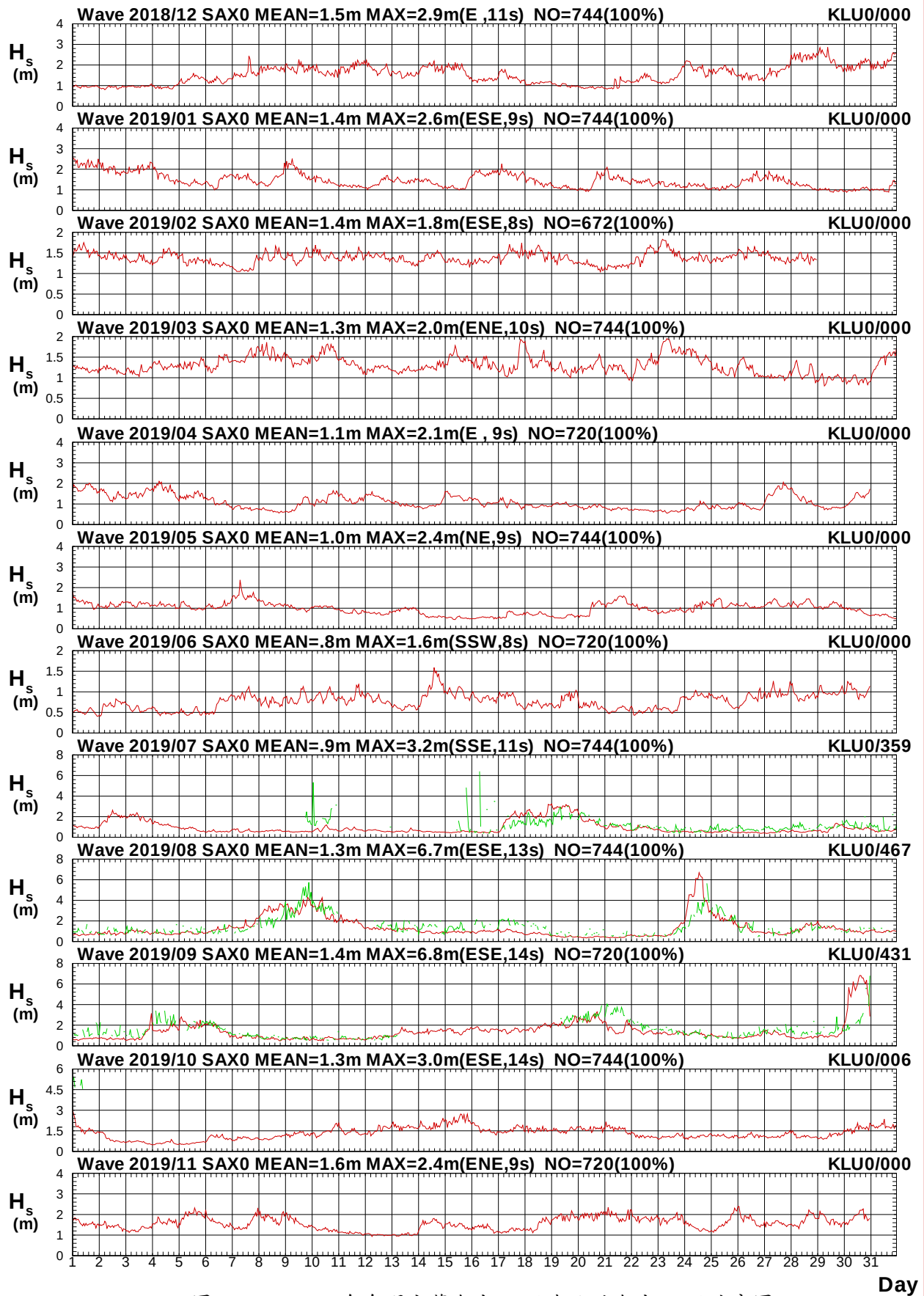


圖2.3.9a 2019年每月宜蘭海域 X 站與北端海域 U 站波高圖

V18CSAX0.1HA V18CKLU0.1H0 V191SAX0.1HA V191KLU0.1H0 V192SAX0.1HA V192KLU0.1H0
V193SAX0.1HA V193KLU0.1H0 V194SAX0.1HA V194KLU0.1H0 V195SAX0.1HA V195KLU0.1H0

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Wave T_p in Su-Ao Harbor of SAX0 at 2019

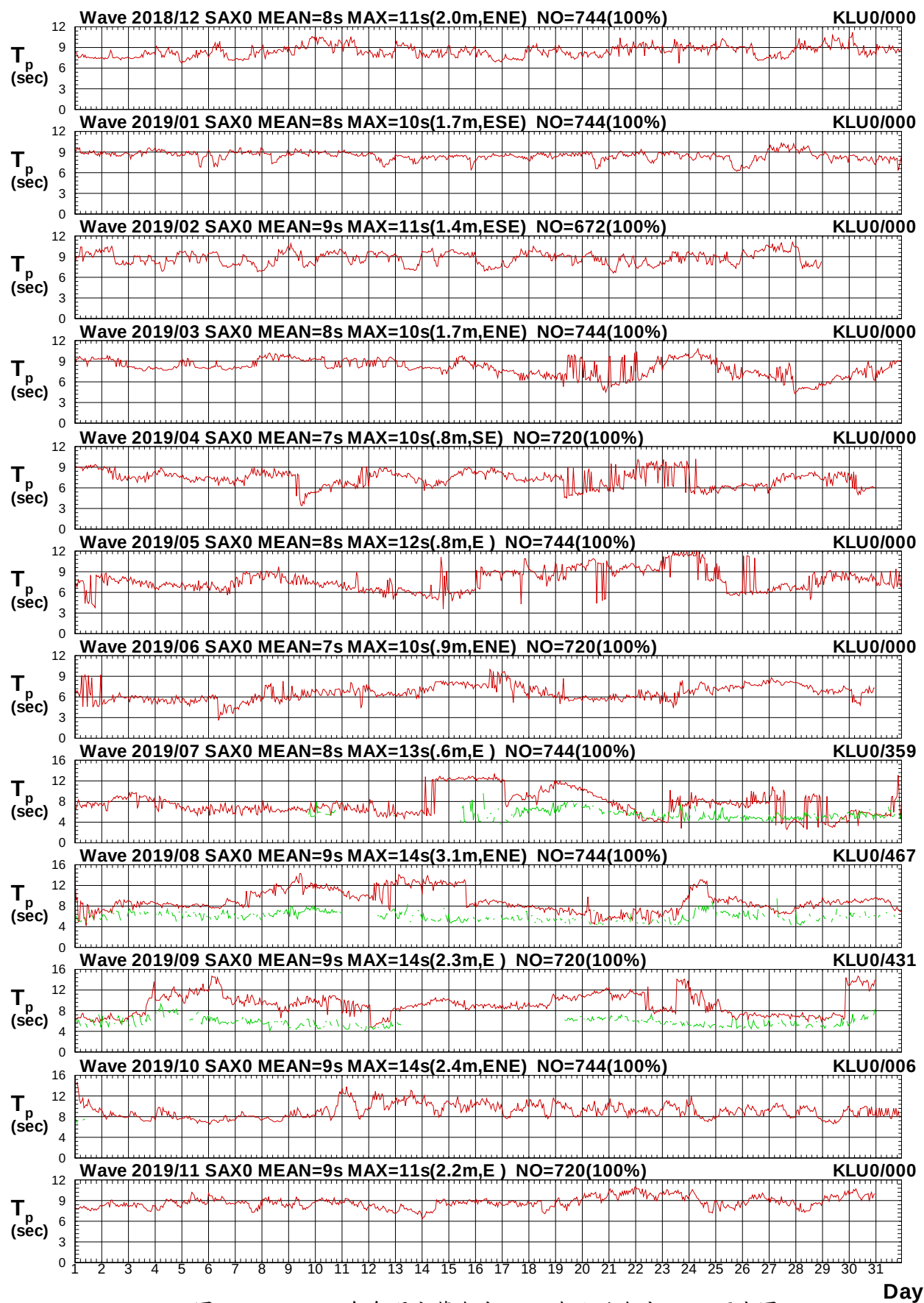


圖2.3.9b 2019年每月宜蘭海域 X 站與北端海域 U 站週期圖

V18CSAX0.1HA V18CKLU0.1H0 V191SAX0.1HA V191KLU0.1H0 V192SAX0.1HA V192KLU0.1H0
V193SAX0.1HA V193KLU0.1H0 V194SAX0.1HA V194KLU0.1H0 V195SAX0.1HA V195KLU0.1H0

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Wave Direction in Su-Ao Harbor of SAX0 at 2019

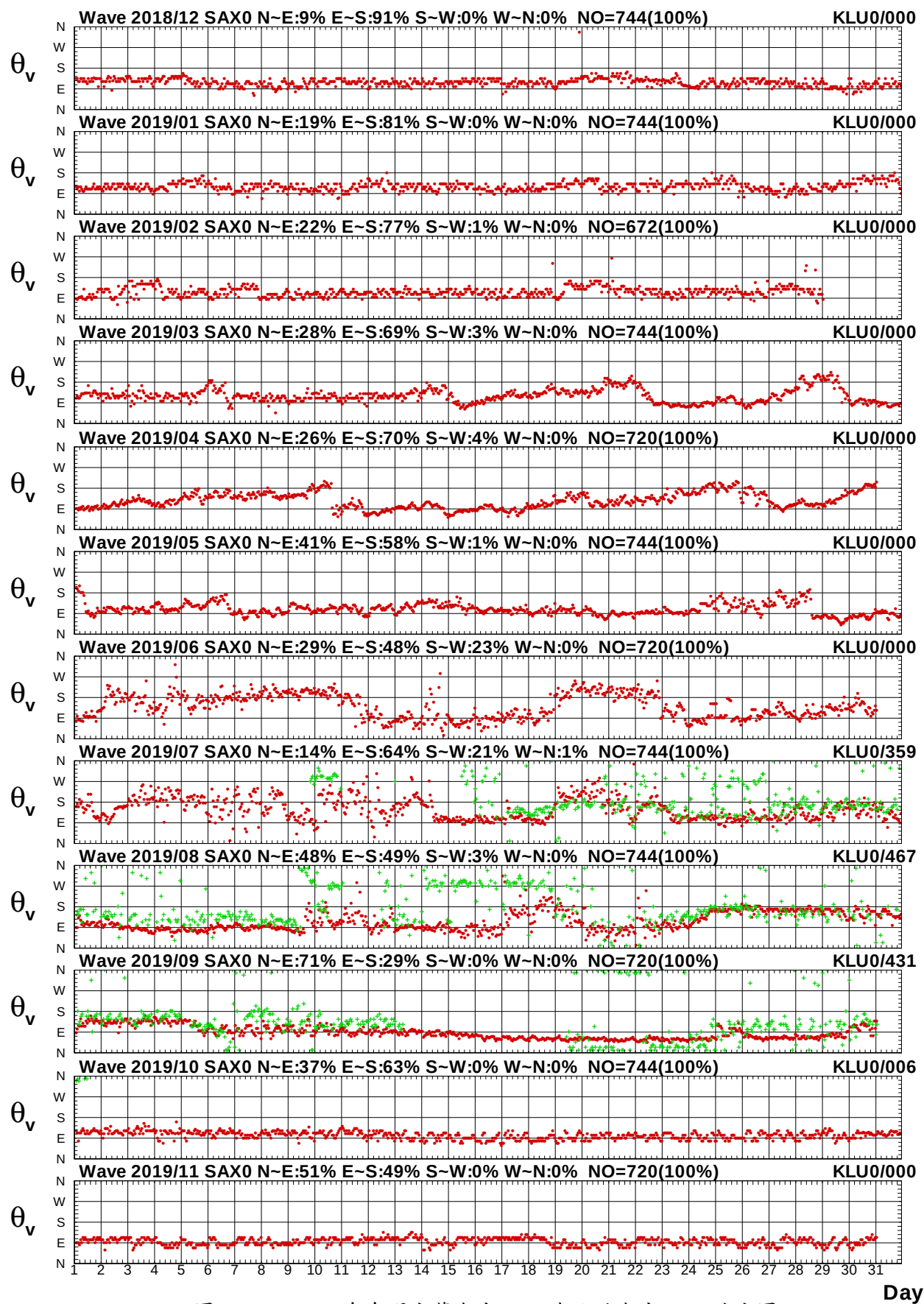


圖2.3.9c 2019年每月宜蘭海域 X 站與北端海域 U 站波向圖

V18CSAX0.1HA V18CKLU0.1H0 V191SAX0.1HA V191KLU0.1H0 V192SAX0.1HA V192KLU0.1H0
V193SAX0.1HA V193KLU0.1H0 V194SAX0.1HA V194KLU0.1H0 V195SAX0.1HA V195KLU0.1H0

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2.4 2019 年宜蘭海域波浪**主要測站 2**(修補後) 與**其他測站**(修補前)每月波浪歷線比較圖

Wave H_s in Su-Ao Harbor of SAY0 at 2019

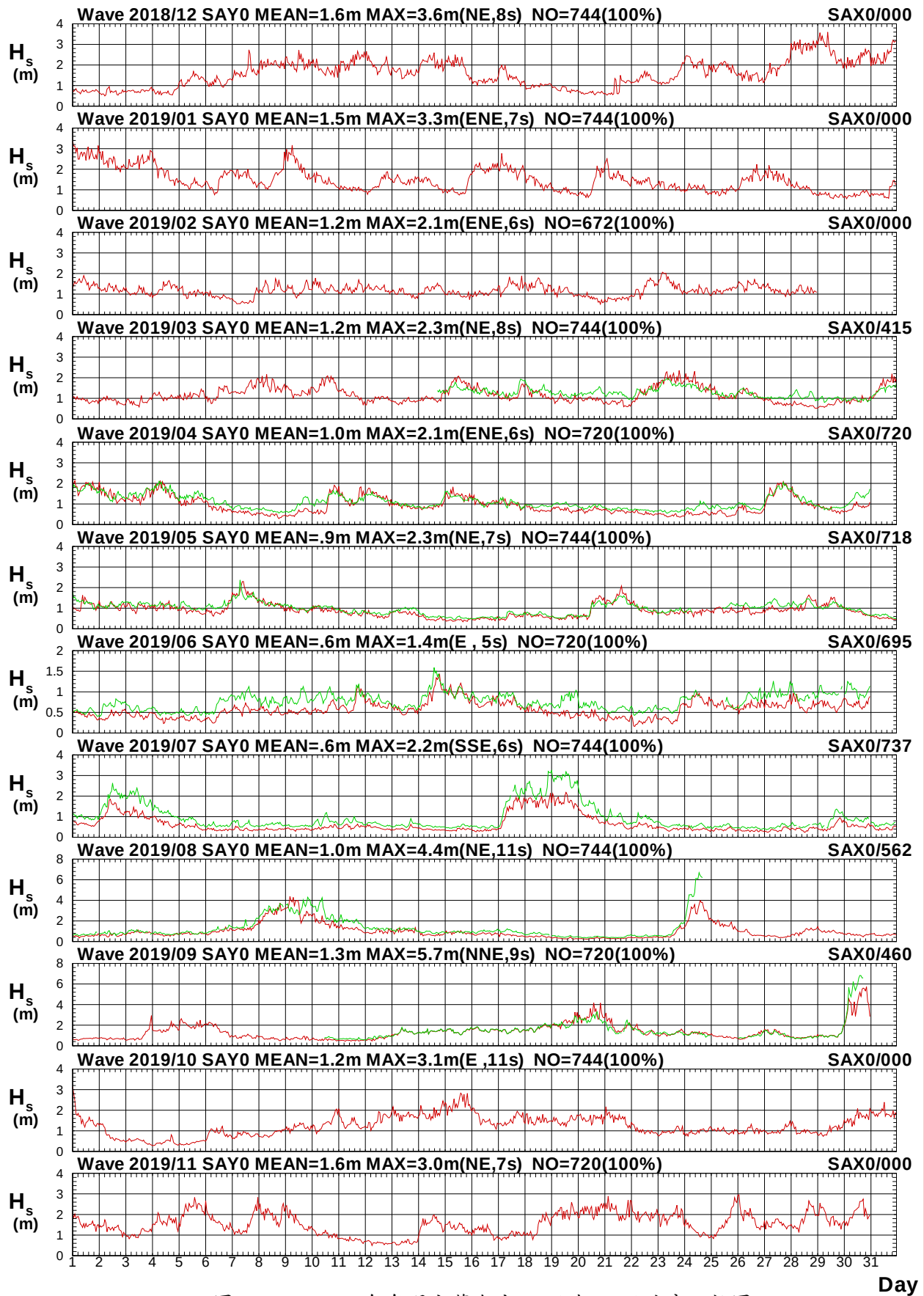


圖2.4.1a 2019年每月宜蘭海域 Y 站與 X 站波高比較圖

V18CSAY0.1HA V18CSAX0.1H0 V191SAY0.1HA V191SAX0.1H0 V192SAY0.1HA V192SAX0.1H0
V193SAY0.1HA V193SAX0.1H0 V194SAY0.1HA V194SAX0.1H0 V195SAY0.1HA V195SAX0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

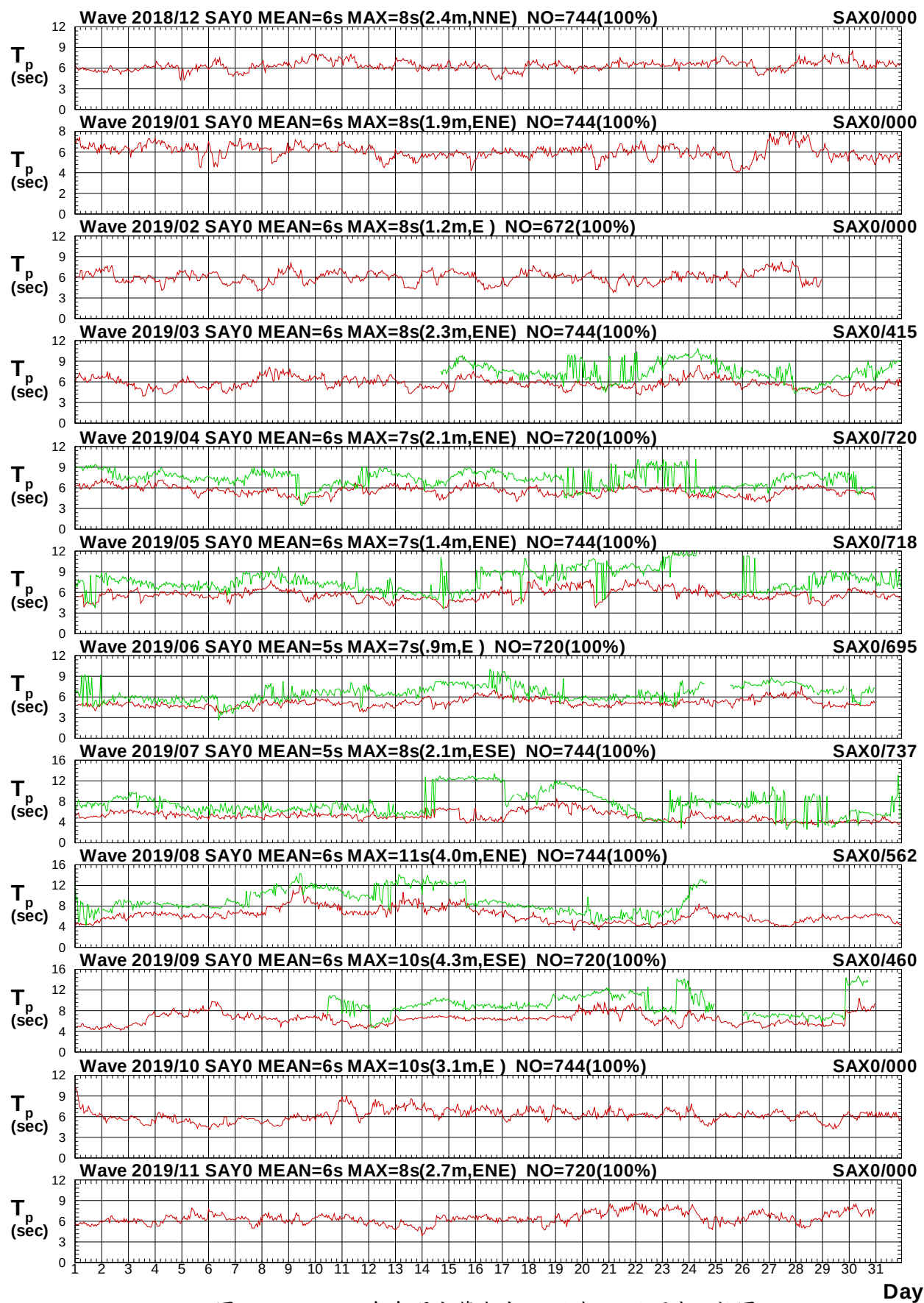


圖2.4.1b 2019年每月宜蘭海域 Y 站與 X 站週期比較圖

V18CSAY0.1HA V18CSAX0.1H0 V191SAY0.1HA V191SAX0.1H0 V192SAY0.1HA V192SAX0.1H0
V193SAY0.1HA V193SAX0.1H0 V194SAY0.1HA V194SAX0.1H0 V195SAY0.1HA V195SAX0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

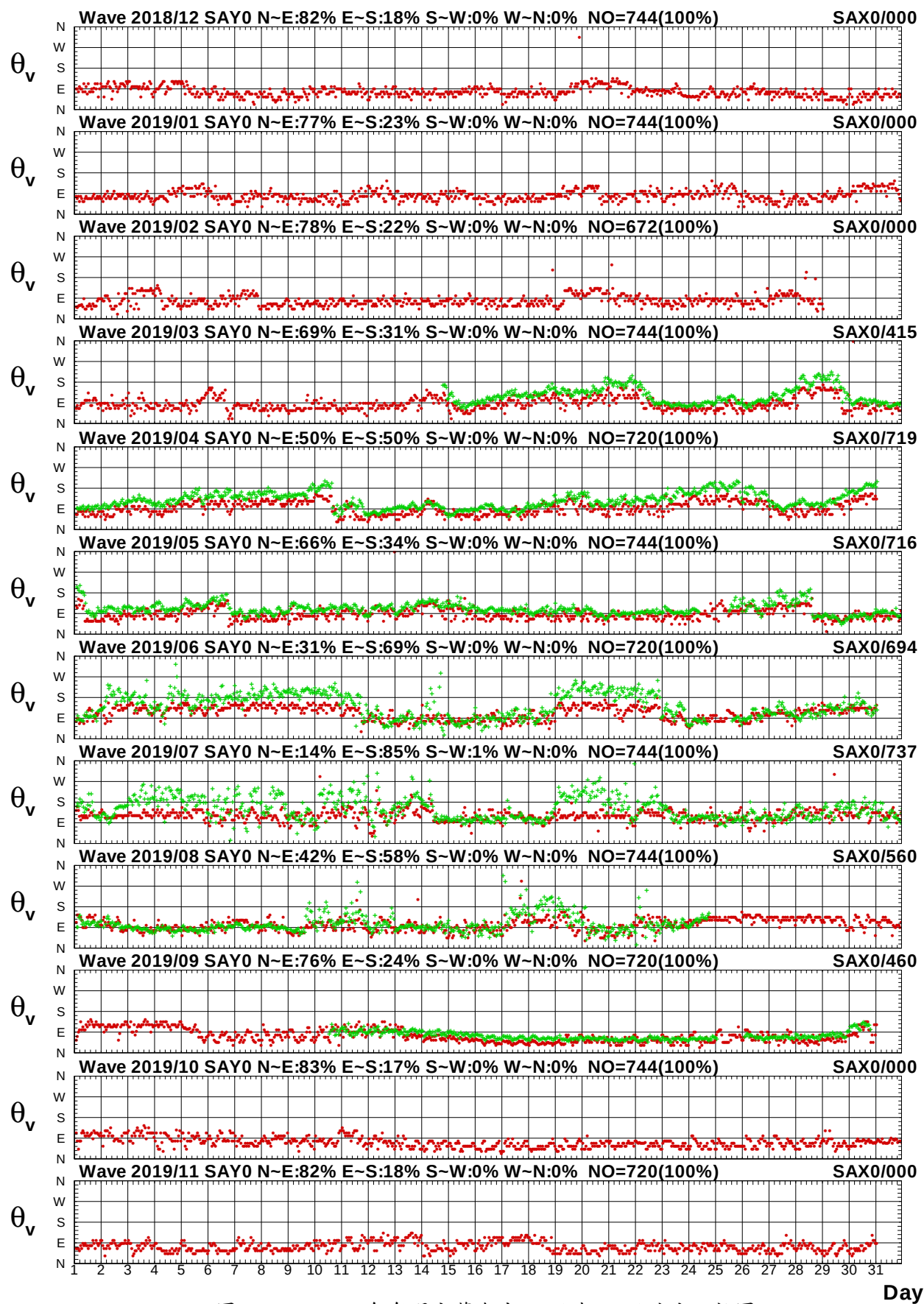


圖2.4.1c 2019年每月宜蘭海域 Y 站與 X 站波向比較圖

V18CSAY0.1HA V18CSAX0.1H0 V191SAY0.1HA V191SAX0.1H0 V192SAY0.1HA V192SAX0.1H0
V193SAY0.1HA V193SAX0.1H0 V194SAY0.1HA V194SAX0.1H0 V195SAY0.1HA V195SAX0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

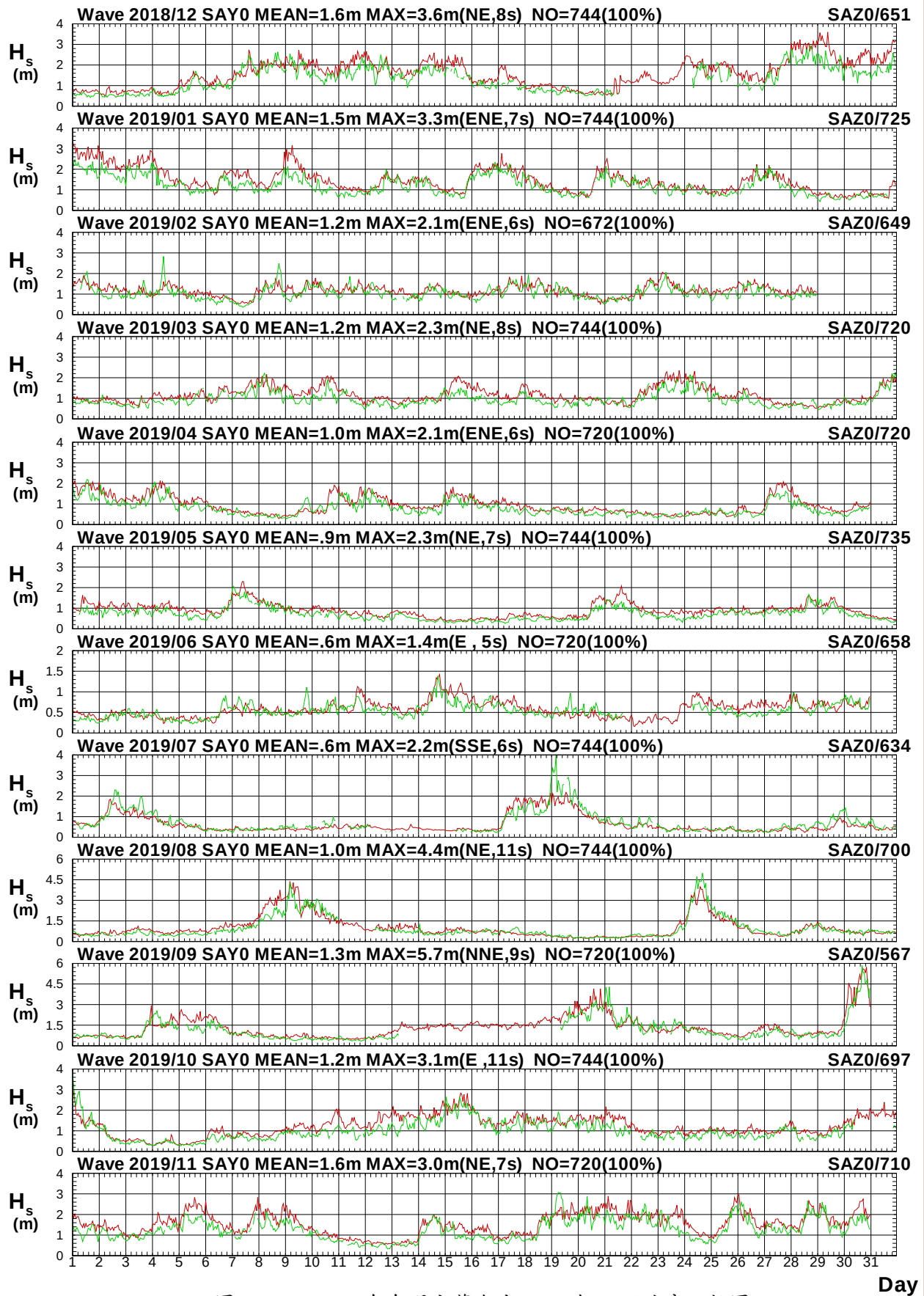


圖2.4.2a 2019年每月宜蘭海域 Y 站與 Z 站波高比較圖

V18CSAY0.1HA V18CSAZ0.1H0 V191SAY0.1HA V191SAZ0.1H0 V192SAY0.1HA V192SAZ0.1H0
V193SAY0.1HA V193SAZ0.1H0 V194SAY0.1HA V194SAZ0.1H0 V195SAY0.1HA V195SAZ0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

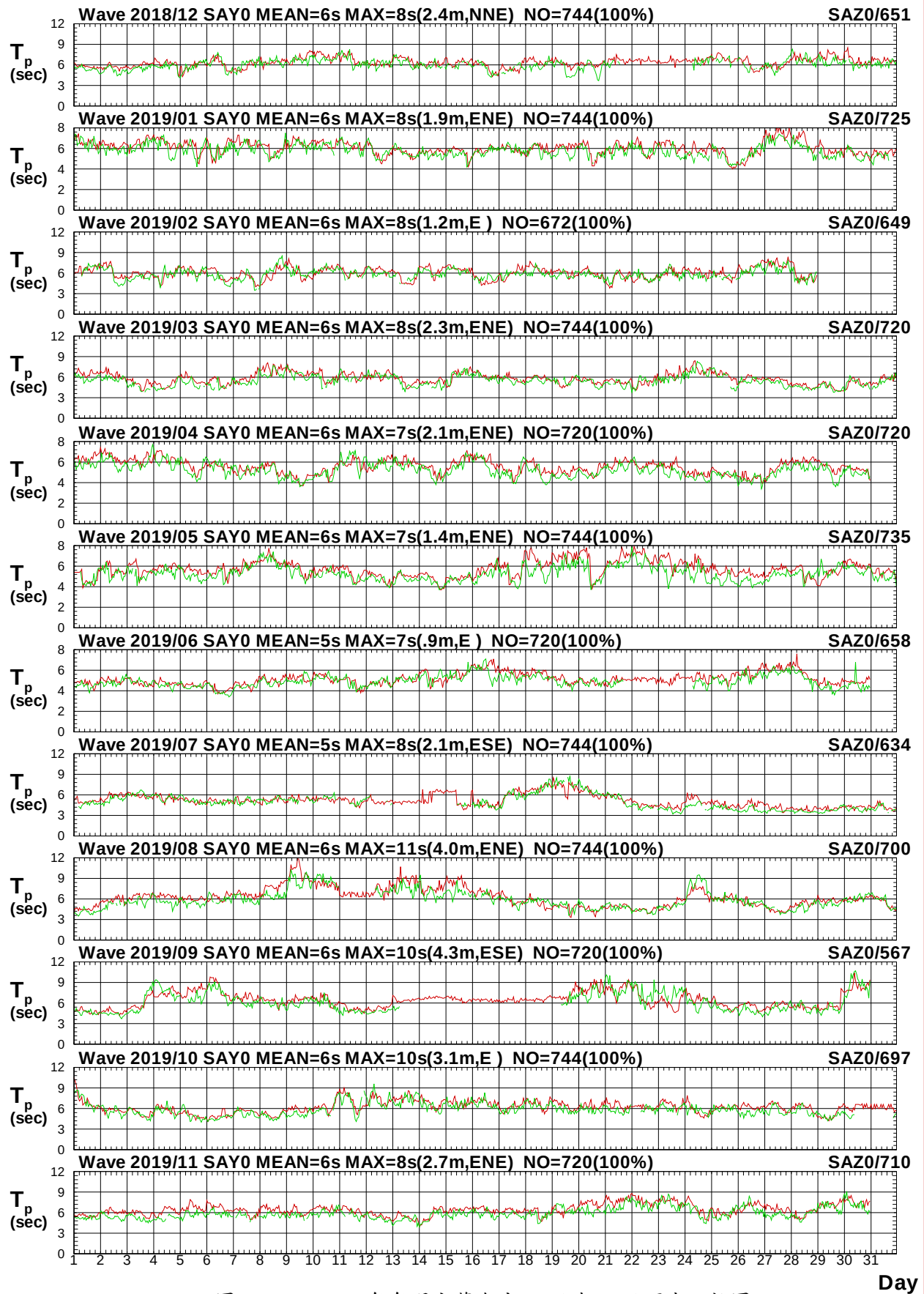


圖2.4.2b 2019年每月宜蘭海域 Y 站與 Z 站週期比較圖

V18CSAY0.1HA V18CSAZ0.1H0 V191SAY0.1HA V191SAZ0.1H0 V192SAY0.1HA V192SAZ0.1H0
V193SAY0.1HA V193SAZ0.1H0 V194SAY0.1HA V194SAZ0.1H0 V195SAY0.1HA V195SAZ0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

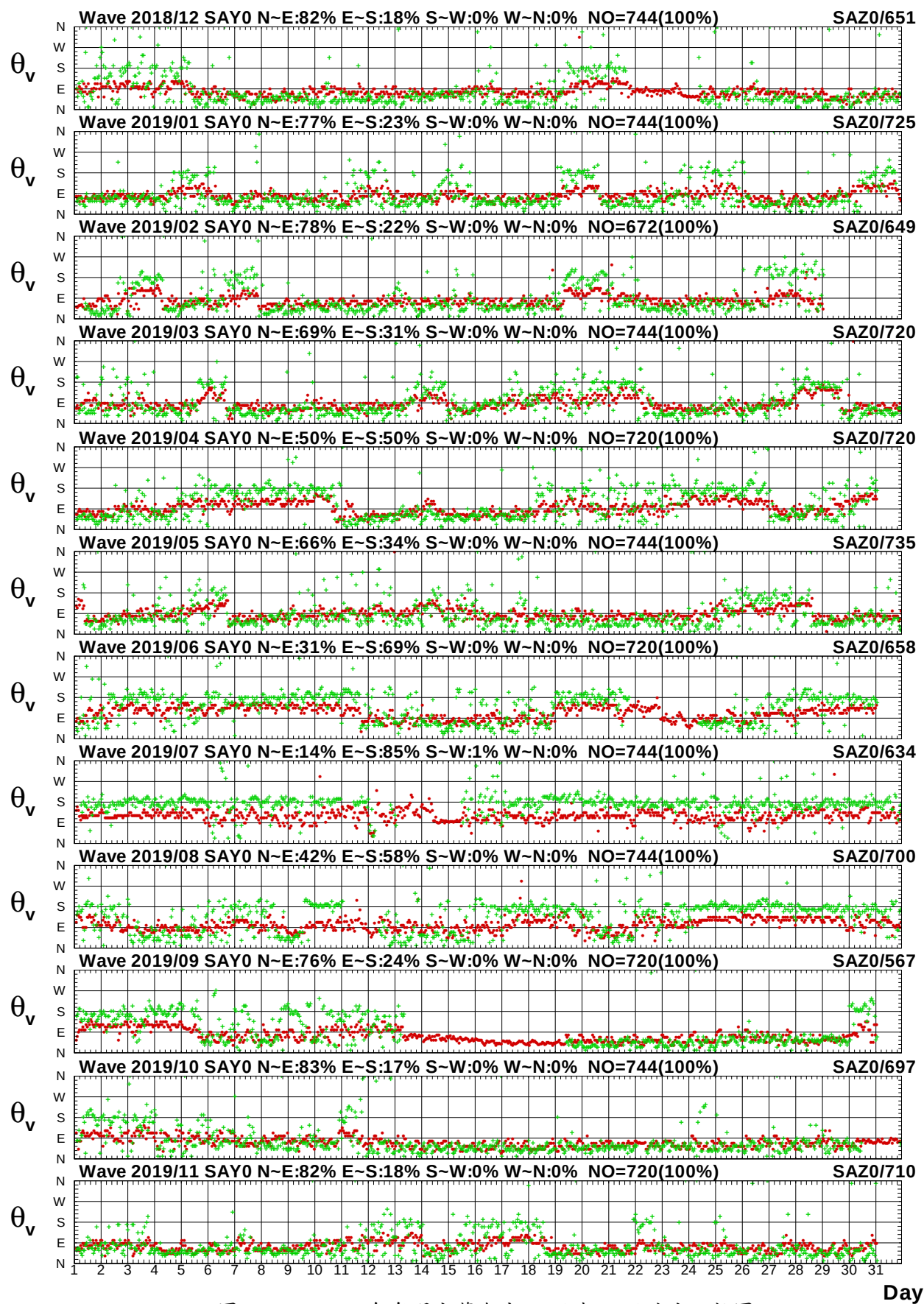


圖2.4.2c 2019年每月宜蘭海域 Y 站與 Z 站波向比較圖

V18CSAY0.1HA V18CSAZ0.1H0 V191SAY0.1HA V191SAZ0.1H0 V192SAY0.1HA V192SAZ0.1H0
V193SAY0.1HA V193SAZ0.1H0 V194SAY0.1HA V194SAZ0.1H0 V195SAY0.1HA V195SAZ0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

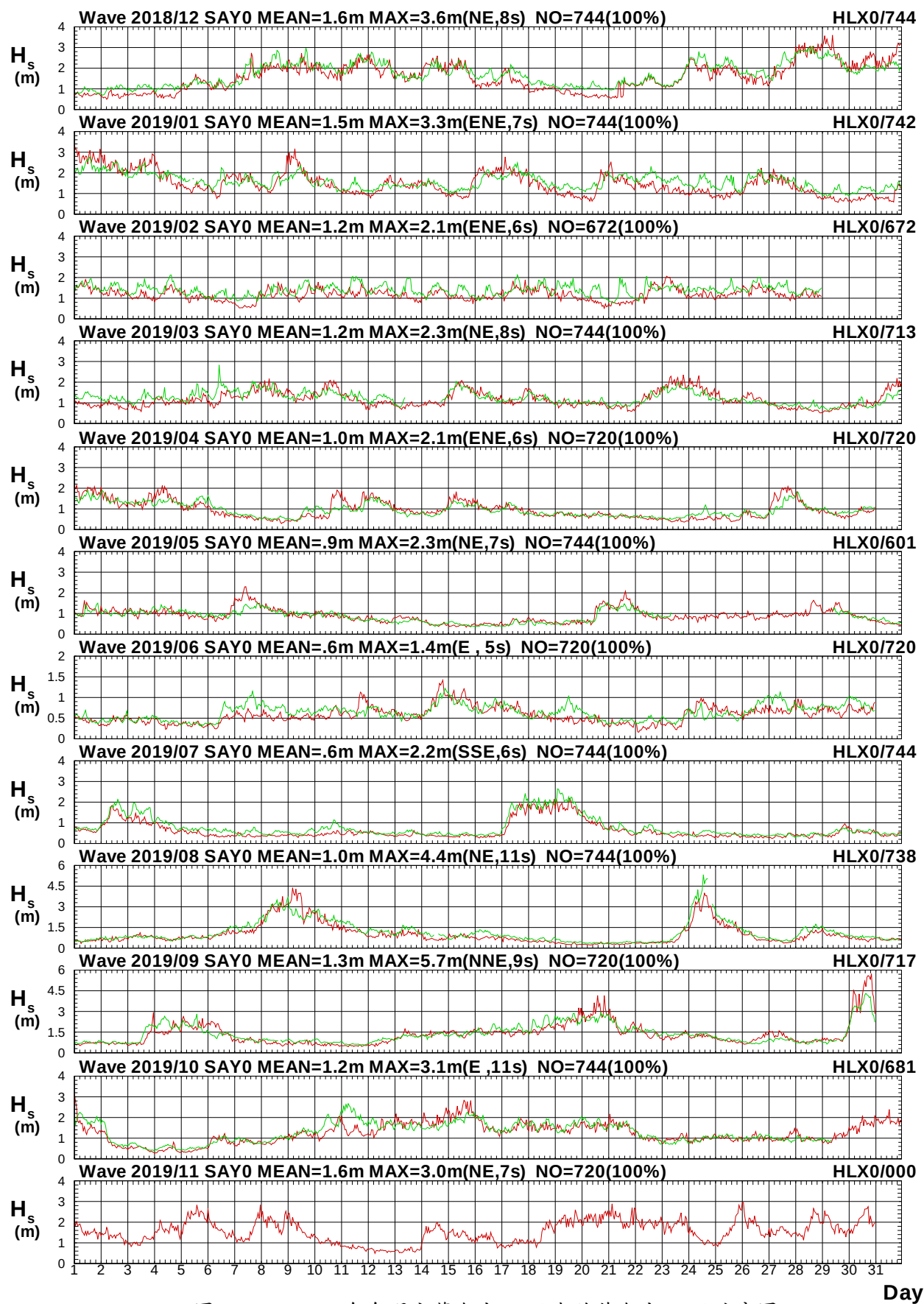


圖2.4.3a 2019年每月宜蘭海域 Y 站與花蓮海域 X 站波高圖

V18CSAY0.1HA V18CHLX0.1H0 V191SAY0.1HA V191HLX0.1H0 V192SAY0.1HA V192HLX0.1H0
V193SAY0.1HA V193HLX0.1H0 V194SAY0.1HA V194HLX0.1H0 V195SAY0.1HA V195HLX0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

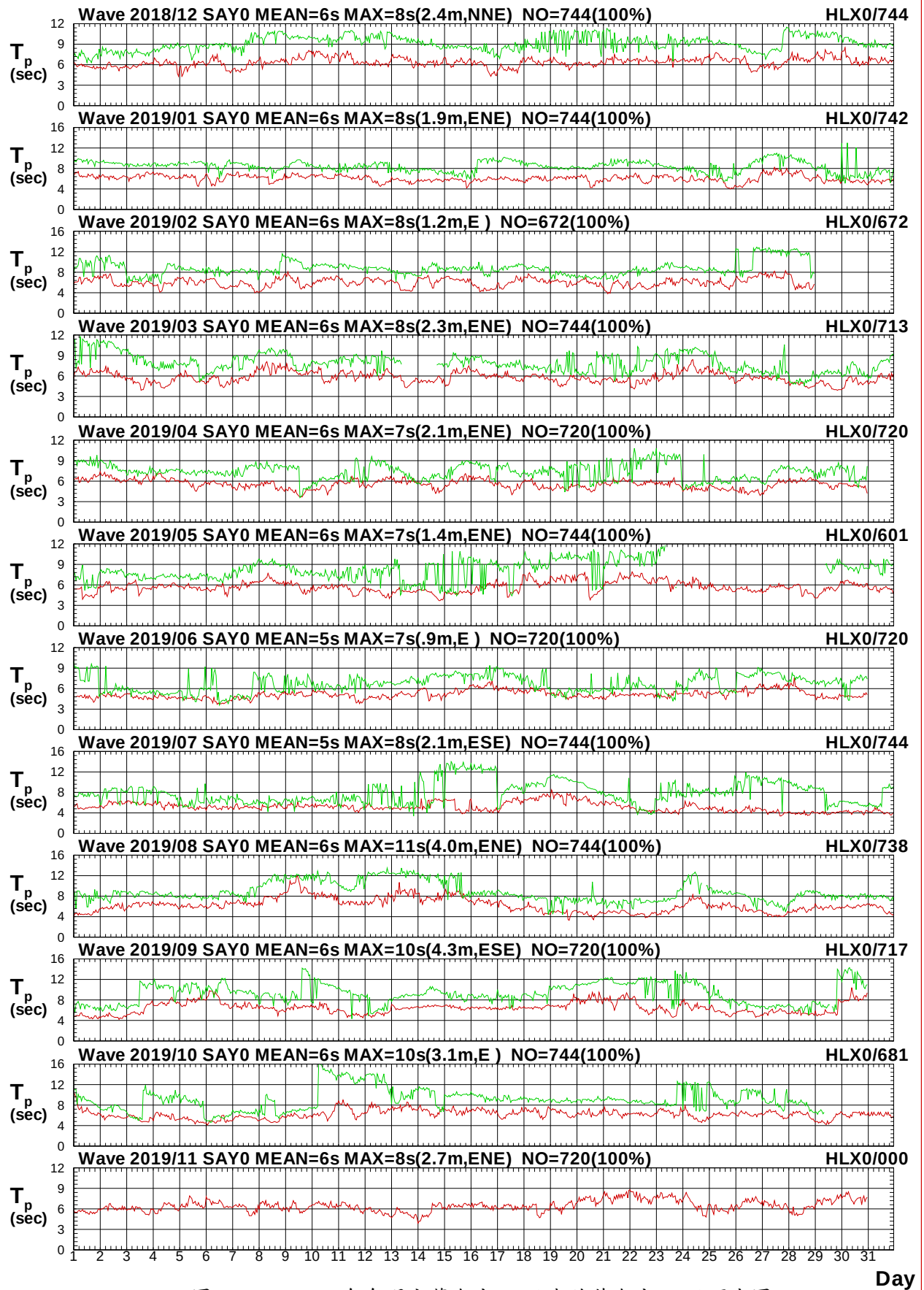


圖2.4.3b 2019年每月宜蘭海域 Y 站與花蓮海域 X 站週期圖

V18CSAY0.1HA V18CHLX0.1H0 V191SAY0.1HA V191HLX0.1H0 V192SAY0.1HA V192HLX0.1H0
V193SAY0.1HA V193HLX0.1H0 V194SAY0.1HA V194HLX0.1H0 V195SAY0.1HA V195HLX0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

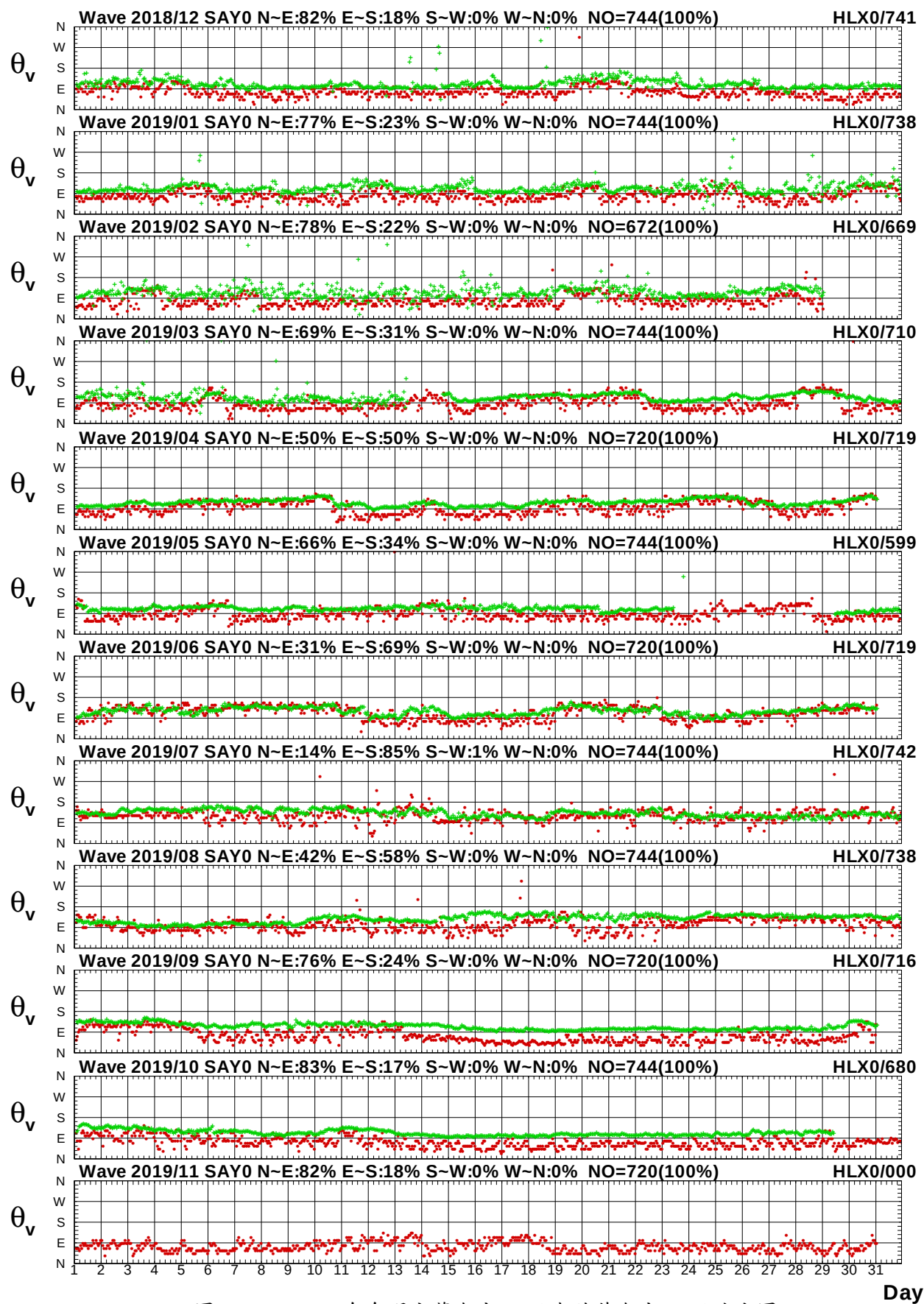


圖2.4.3c 2019年每月宜蘭海域 Y 站與花蓮海域 X 站波向圖

V18CSAY0.1HA V18CHLX0.1H0 V191SAY0.1HA V191HLX0.1H0 V192SAY0.1HA V192HLX0.1H0
V193SAY0.1HA V193HLX0.1H0 V194SAY0.1HA V194HLX0.1H0 V195SAY0.1HA V195HLX0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

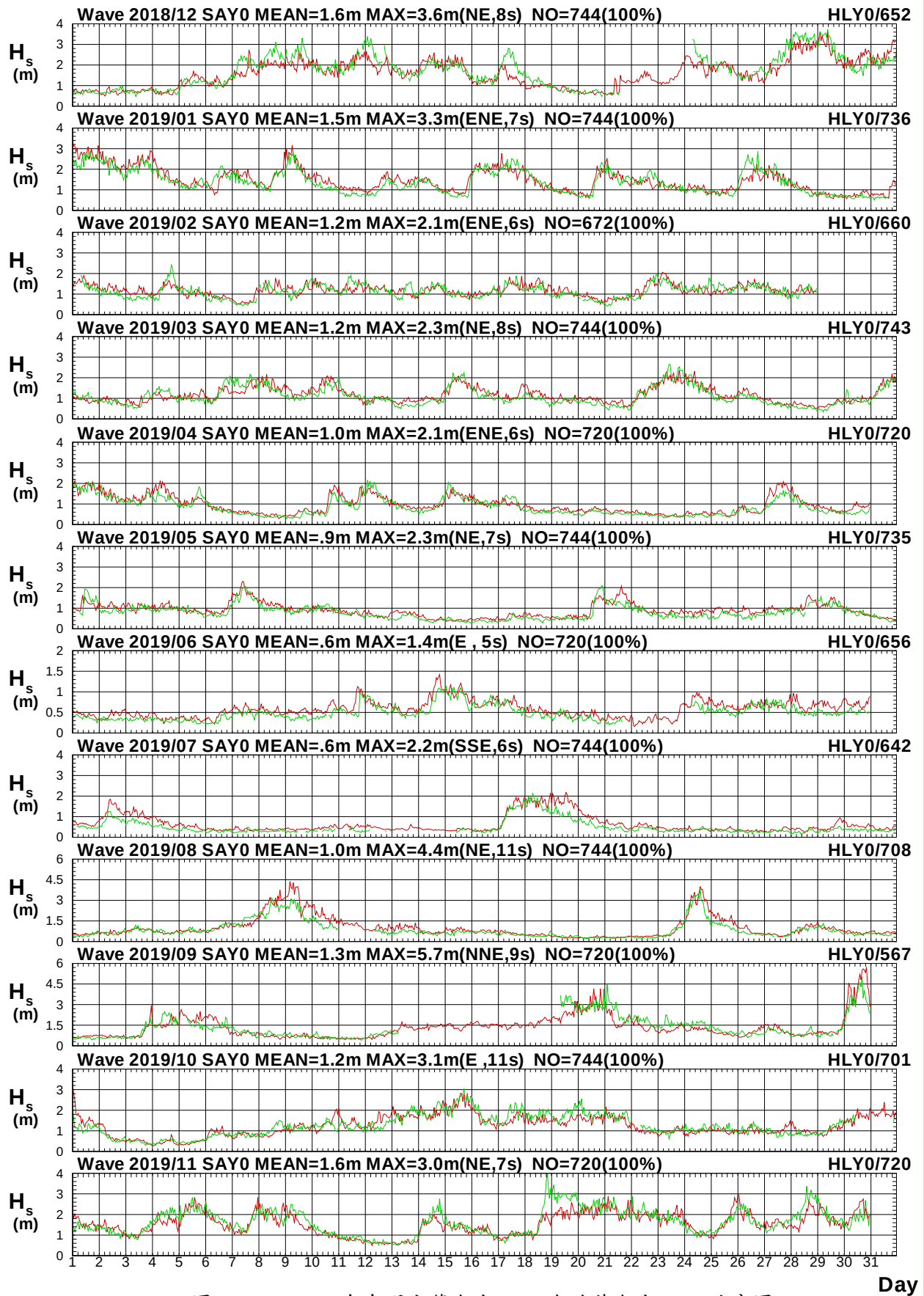


圖2.4.4a 2019年每月宜蘭海域 Y 站與花蓮海域 Y 站波高圖

V18CSAY0.1HA V18CHLY0.1H0 V191SAY0.1HA V191HLY0.1H0 V192SAY0.1HA V192HLY0.1H0
V193SAY0.1HA V193HLY0.1H0 V194SAY0.1HA V194HLY0.1H0 V195SAY0.1HA V195HLY0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

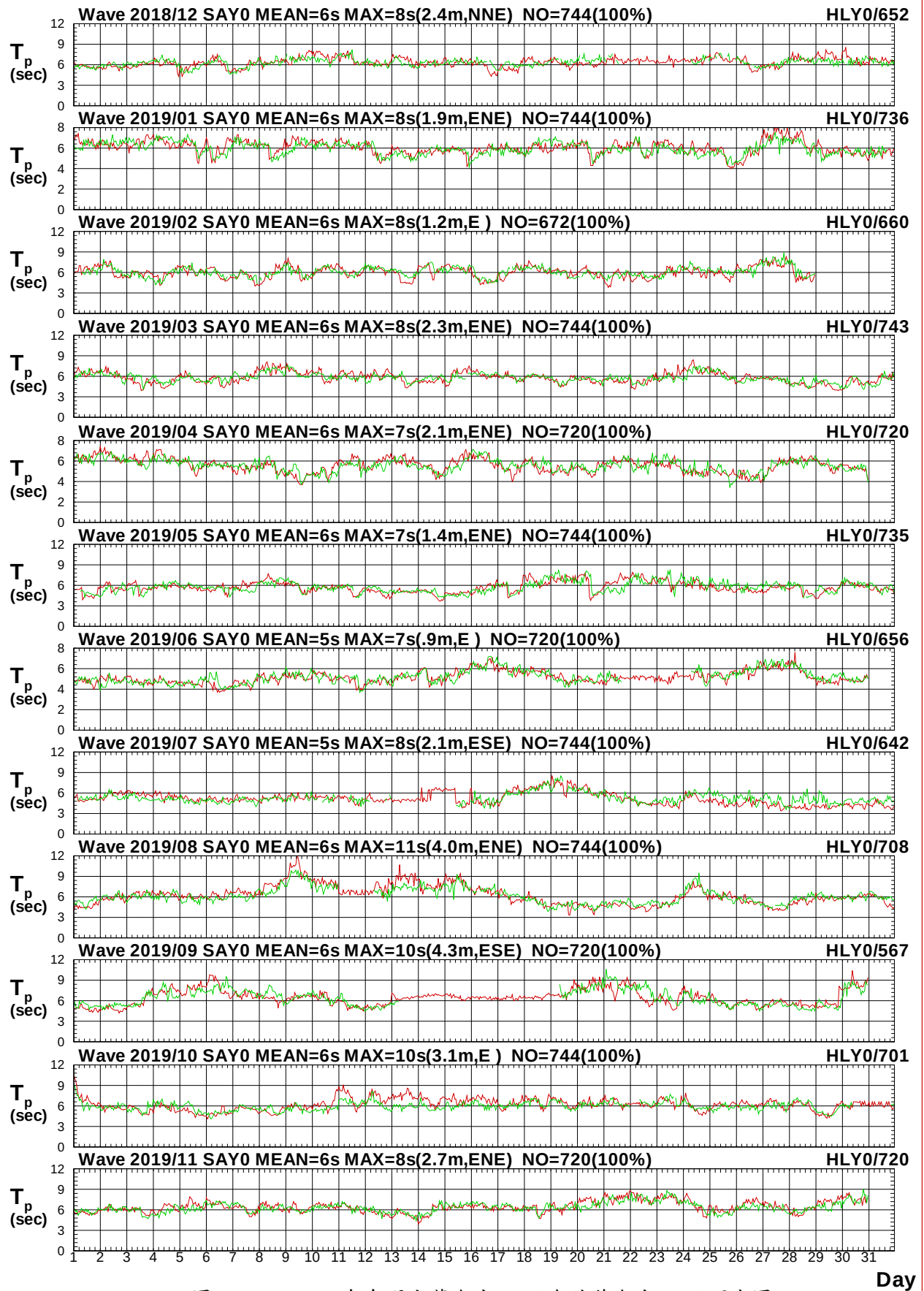


圖2.4.4b 2019年每月宜蘭海域 Y 站與花蓮海域 Y 站週期圖

V18CSAY0.1HA V18CHLY0.1H0 V191SAY0.1HA V191HLY0.1H0 V192SAY0.1HA V192HLY0.1H0
V193SAY0.1HA V193HLY0.1H0 V194SAY0.1HA V194HLY0.1H0 V195SAY0.1HA V195HLY0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

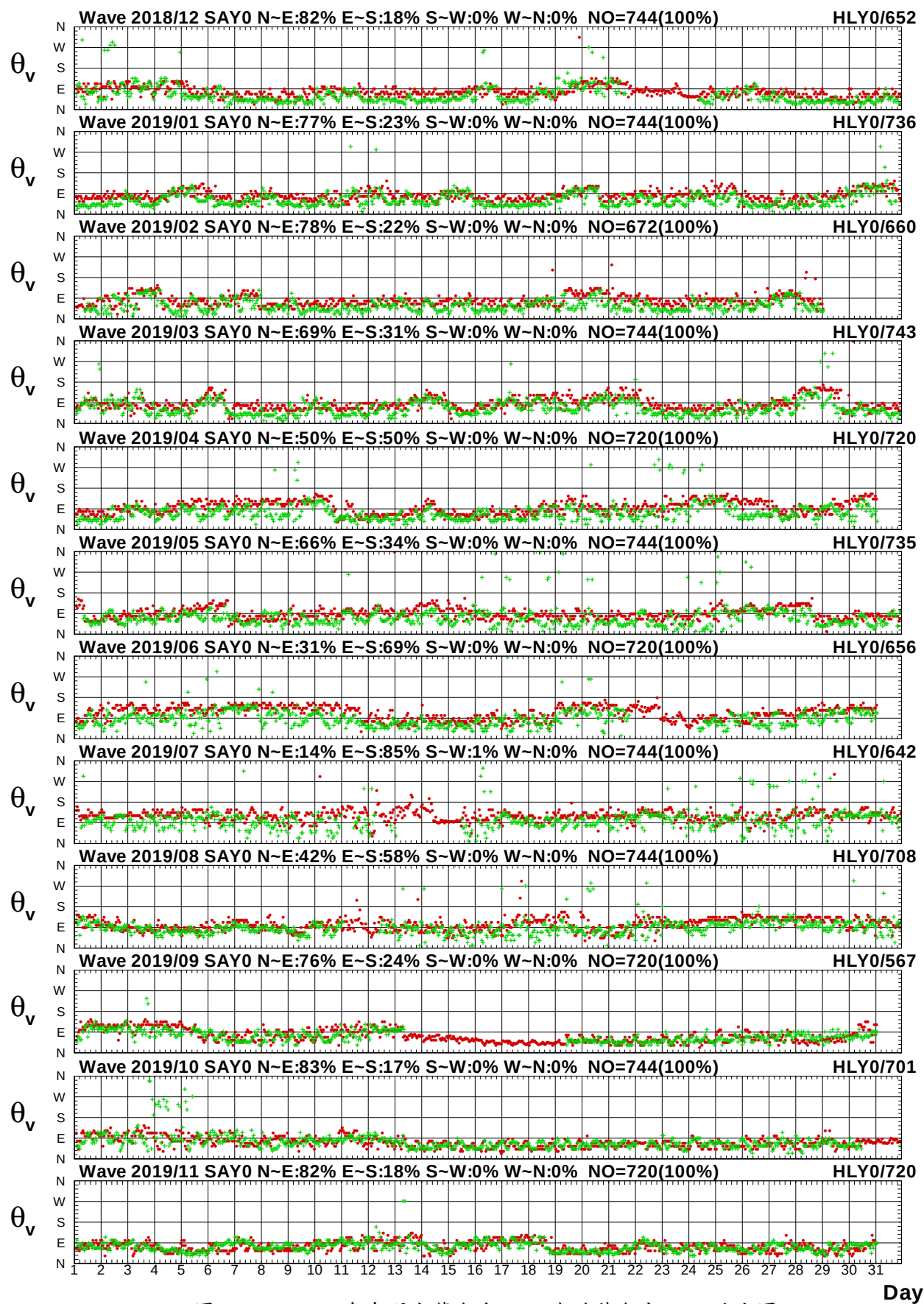


圖2.4.4c 2019年每月宜蘭海域 Y 站與花蓮海域 Y 站波向圖

V18CSAY0.1HA V18CHLY0.1H0 V191SAY0.1HA V191HLY0.1H0 V192SAY0.1HA V192HLY0.1H0
V193SAY0.1HA V193HLY0.1H0 V194SAY0.1HA V194HLY0.1H0 V195SAY0.1HA V195HLY0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

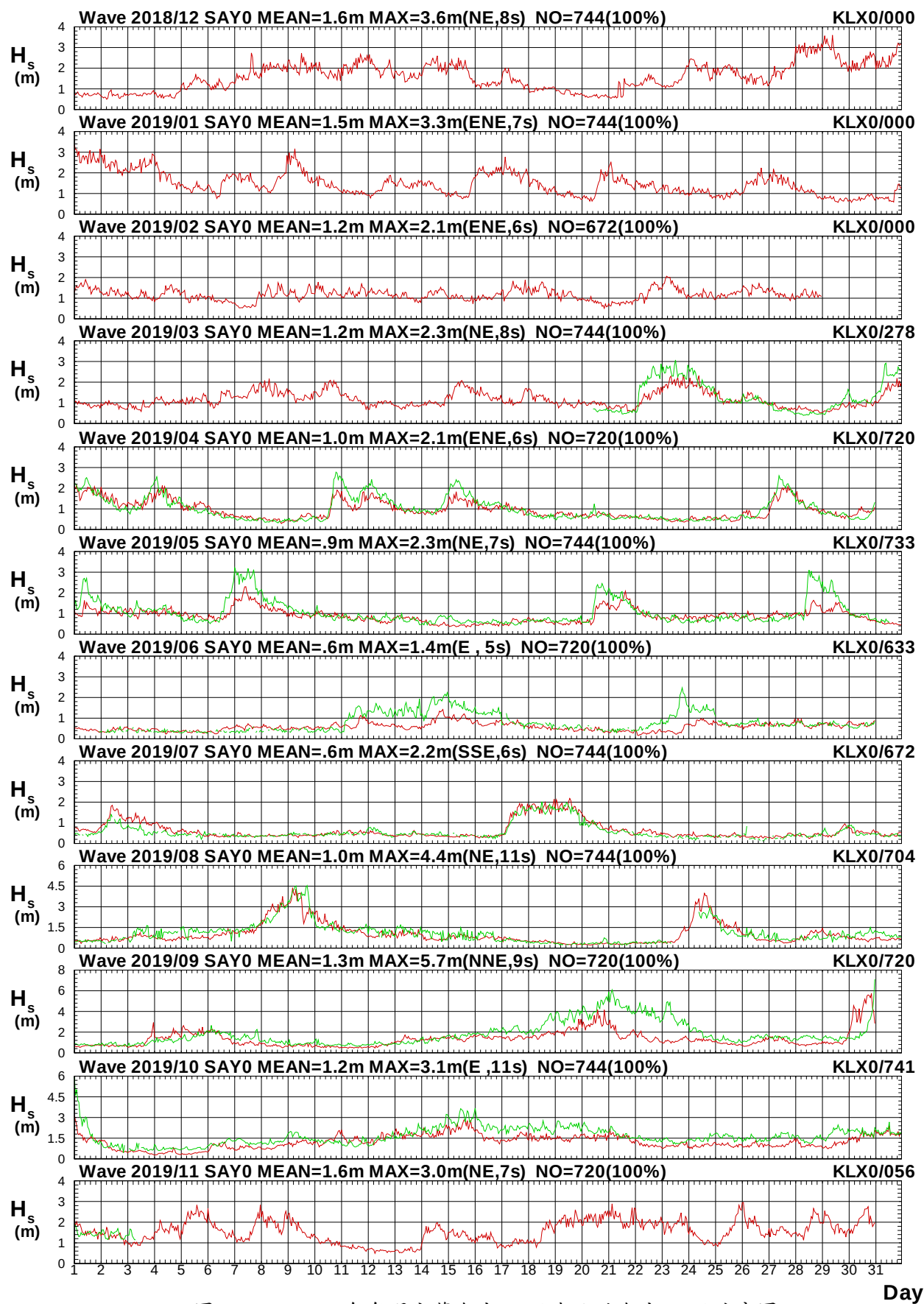


圖2.4.5a 2019年每月宜蘭海域 Y 站與北端海域 X 站波高圖

V18CSAY0.1HA V18CKLX0.1H0 V191SAY0.1HA V191KLX0.1H0 V192SAY0.1HA V192KLX0.1H0
V193SAY0.1HA V193KLX0.1H0 V194SAY0.1HA V194KLX0.1H0 V195SAY0.1HA V195KLX0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

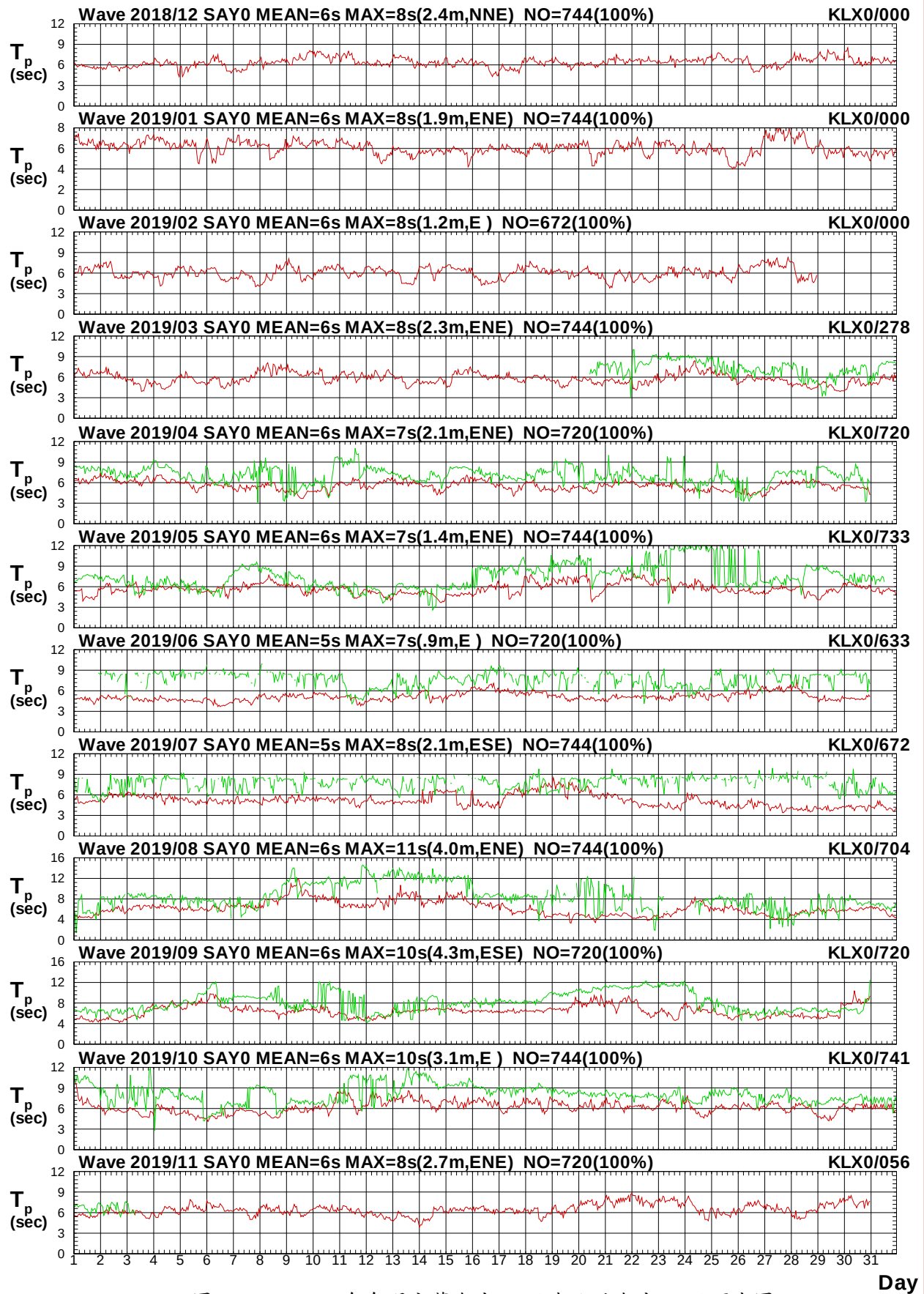


圖2.4.5b 2019年每月宜蘭海域 Y 站與北端海域 X 站週期圖

V18CSAY0.1HA V18CKLX0.1H0 V191SAY0.1HA V191KLX0.1H0 V192SAY0.1HA V192KLX0.1H0
V193SAY0.1HA V193KLX0.1H0 V194SAY0.1HA V194KLX0.1H0 V195SAY0.1HA V195KLX0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

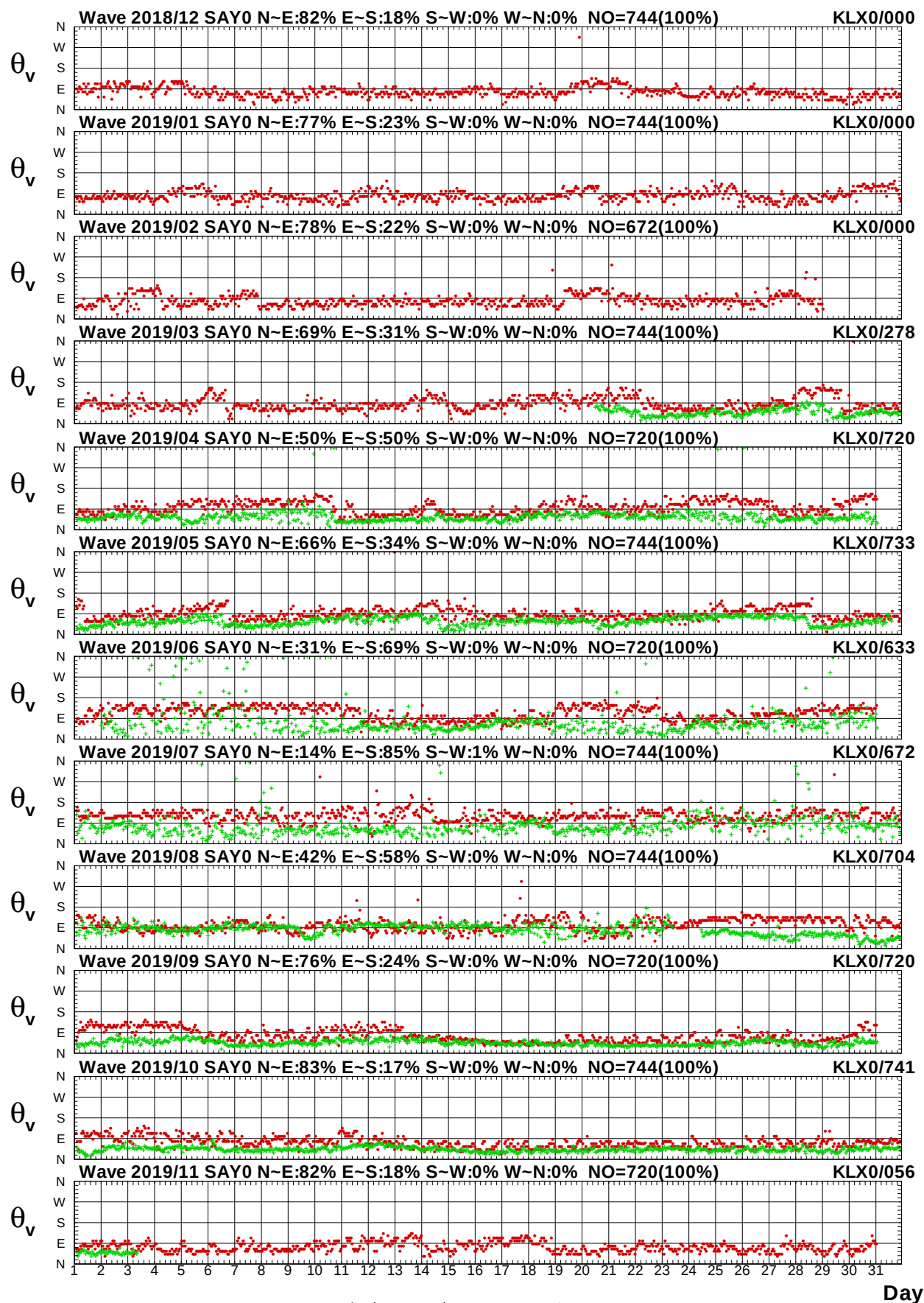


圖2.4.5c 2019年每月宜蘭海域 Y 站與北端海域 X 站波向圖

V18CSAY0.1HA V18CKLX0.1H0 V191SAY0.1HA V191KLX0.1H0 V192SAY0.1HA V192KLX0.1H0
V193SAY0.1HA V193KLX0.1H0 V194SAY0.1HA V194KLX0.1H0 V195SAY0.1HA V195KLX0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

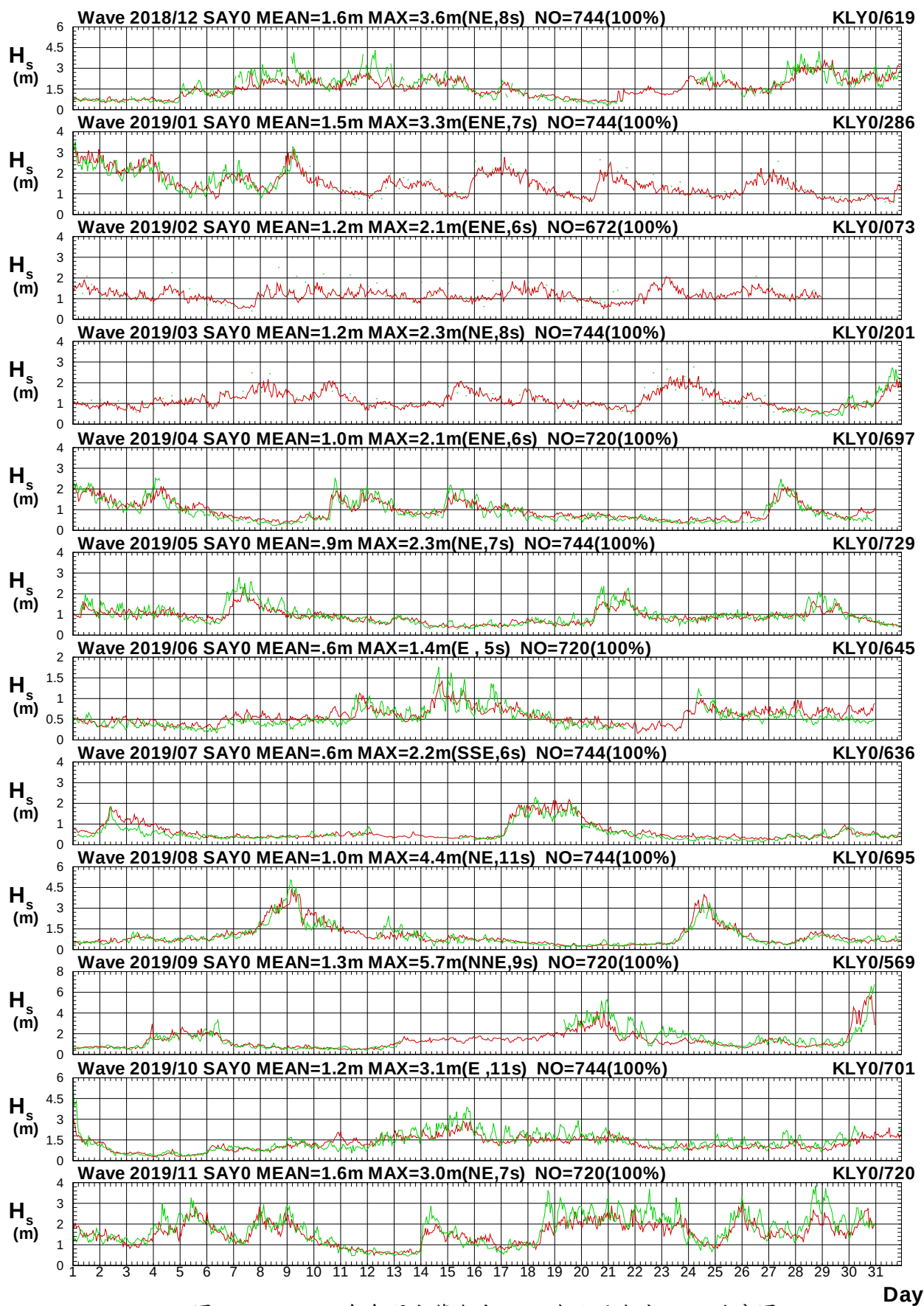


圖2.4.6a 2019年每月宜蘭海域 Y 站與北端海域 Y 站波高圖

V18CSAY0.1HA V18CKLY0.1H0 V191SAY0.1HA V191KLY0.1H0 V192SAY0.1HA V192KLY0.1H0
V193SAY0.1HA V193KLY0.1H0 V194SAY0.1HA V194KLY0.1H0 V195SAY0.1HA V195KLY0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

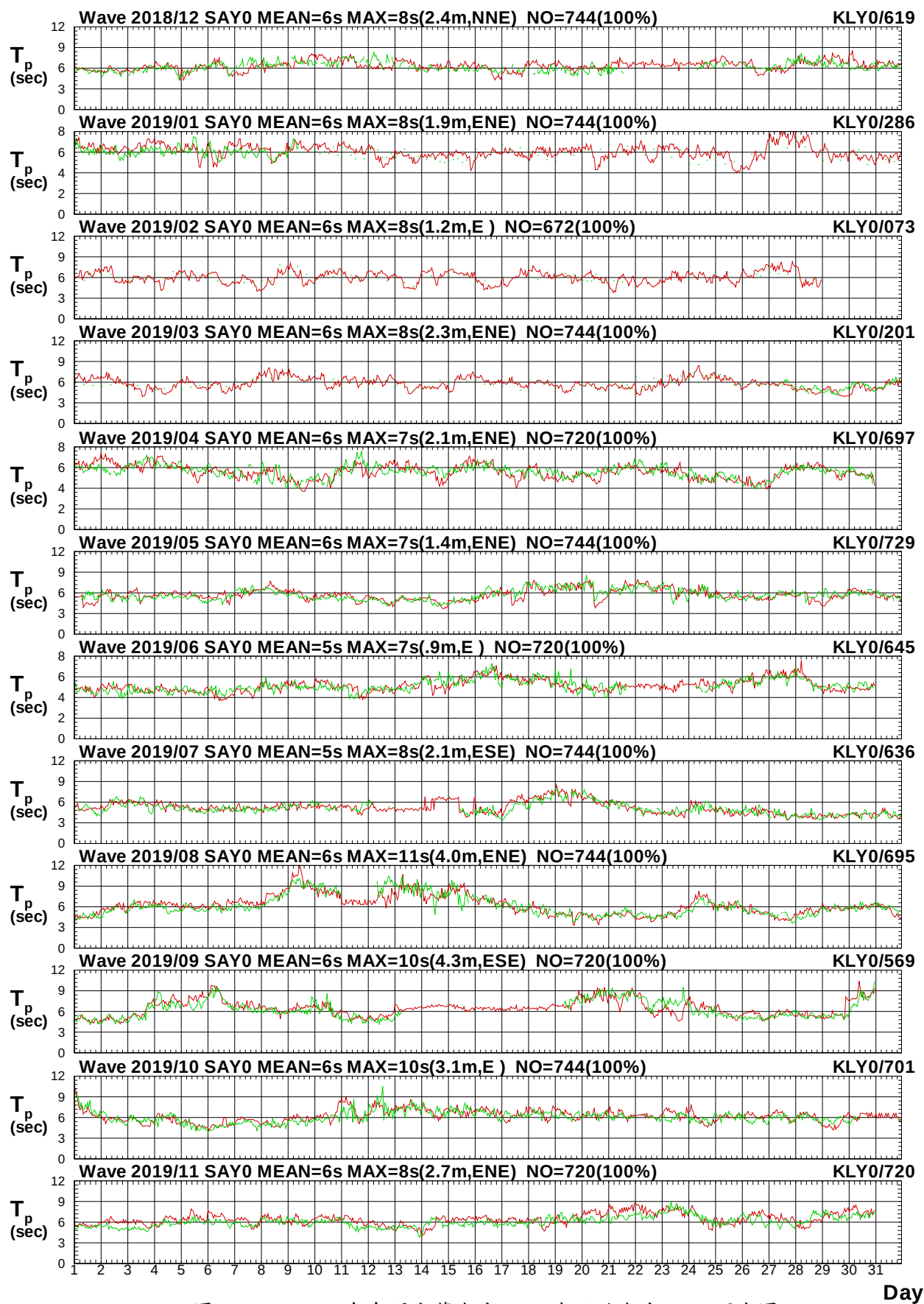


圖2.4.6b 2019年每月宜蘭海域 Y 站與北端海域 Y 站週期圖

V18CSAY0.1HA V18CKLY0.1H0 V191SAY0.1HA V191KLY0.1H0 V192SAY0.1HA V192KLY0.1H0
V193SAY0.1HA V193KLY0.1H0 V194SAY0.1HA V194KLY0.1H0 V195SAY0.1HA V195KLY0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

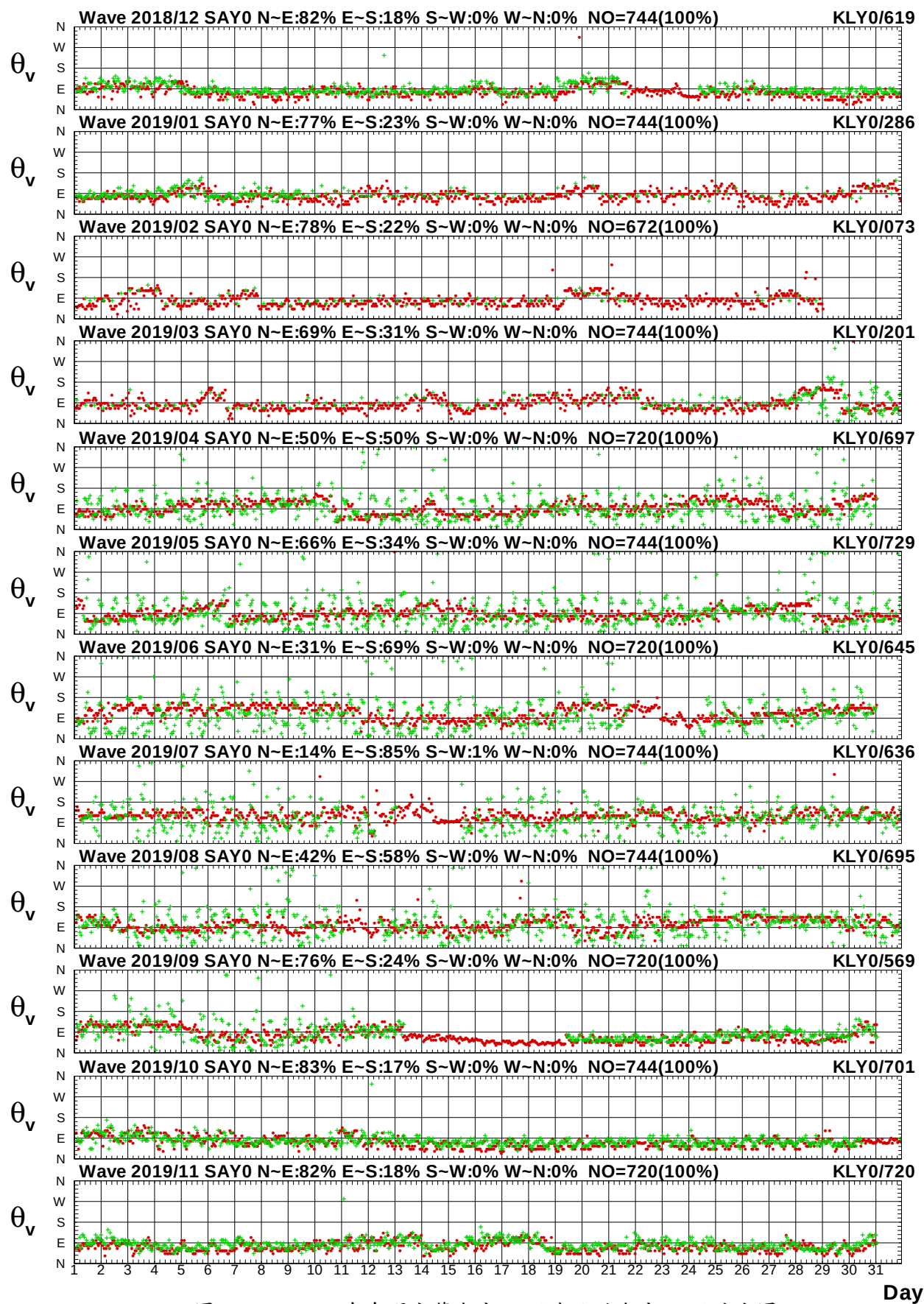


圖2.4.6c 2019年每月宜蘭海域 Y 站與北端海域 Y 站波向圖

V18CSAY0.1HA V18CKLY0.1H0 V191SAY0.1HA V191KLY0.1H0 V192SAY0.1HA V192KLY0.1H0
V193SAY0.1HA V193KLY0.1H0 V194SAY0.1HA V194KLY0.1H0 V195SAY0.1HA V195KLY0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

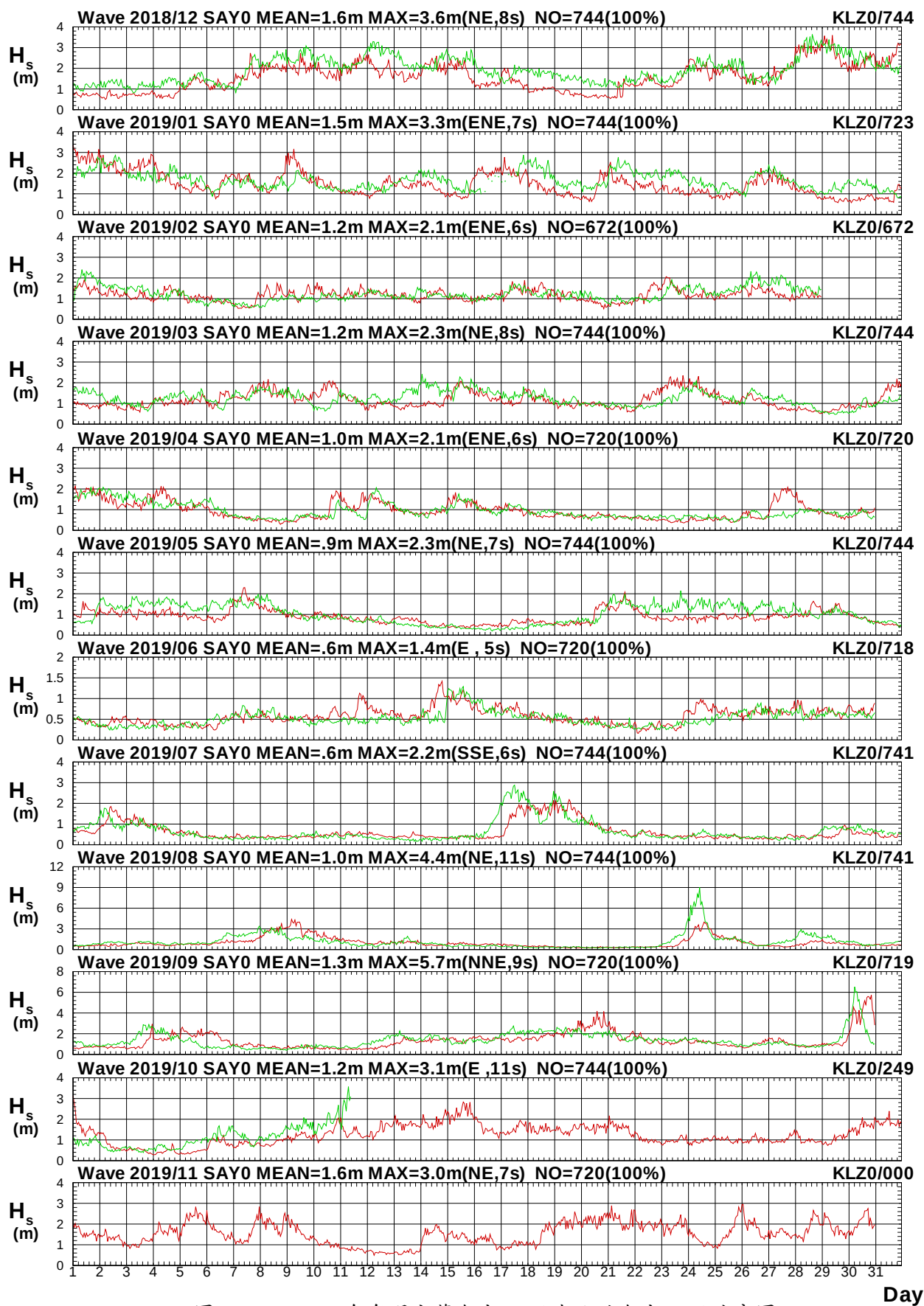


圖2.4.7a 2019年每月宜蘭海域 Y 站與北端海域 Z 站波高圖

V18CSAY0.1HA V18CKLZ0.1H0 V191SAY0.1HA V191KLZ0.1H0 V192SAY0.1HA V192KLZ0.1H0
V193SAY0.1HA V193KLZ0.1H0 V194SAY0.1HA V194KLZ0.1H0 V195SAY0.1HA V195KLZ0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

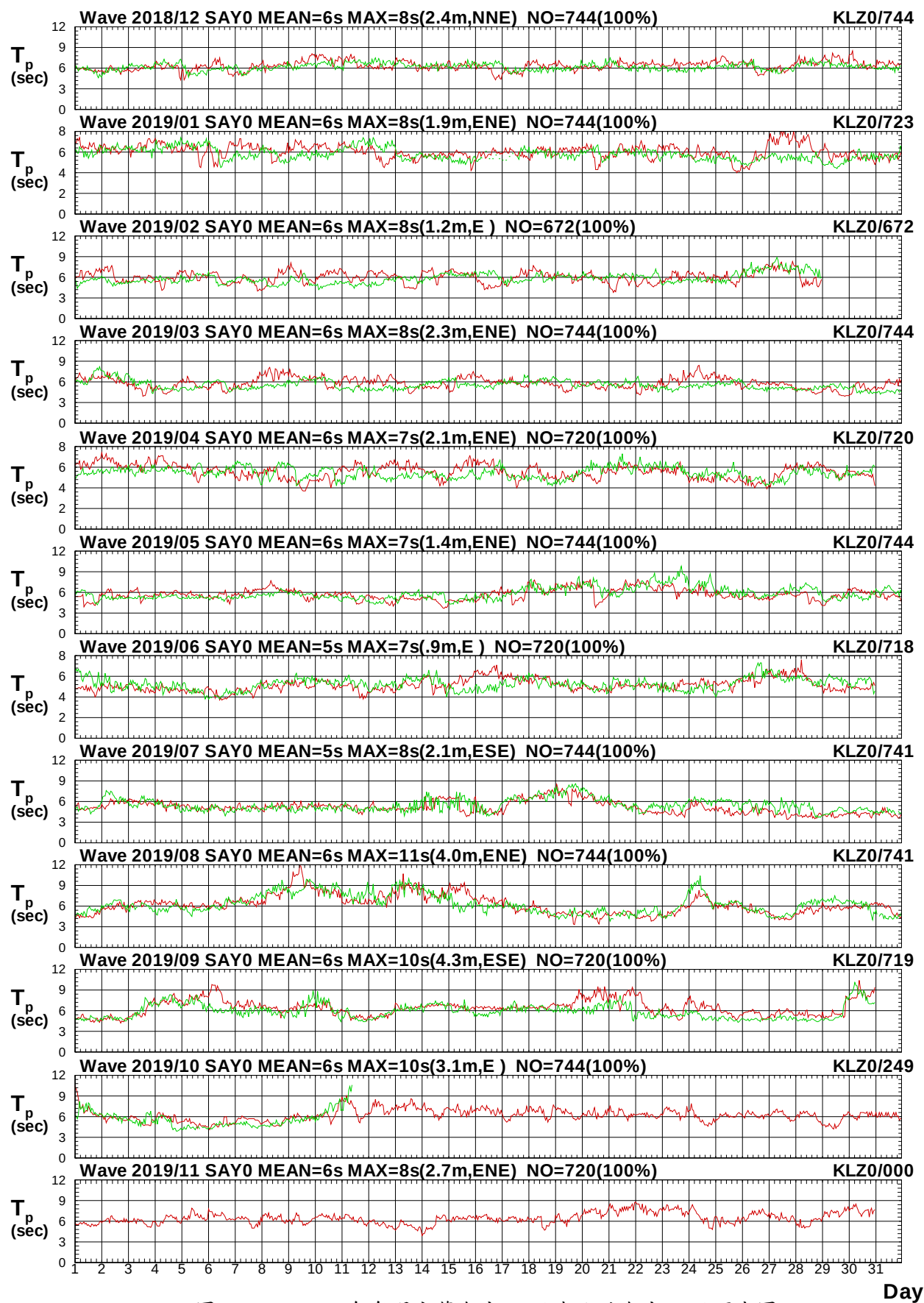


圖2.4.7b 2019年每月宜蘭海域 Y 站與北端海域 Z 站週期圖

V18CSAY0.1HA V18CKLZ0.1H0 V191SAY0.1HA V191KLZ0.1H0 V192SAY0.1HA V192KLZ0.1H0
V193SAY0.1HA V193KLZ0.1H0 V194SAY0.1HA V194KLZ0.1H0 V195SAY0.1HA V195KLZ0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

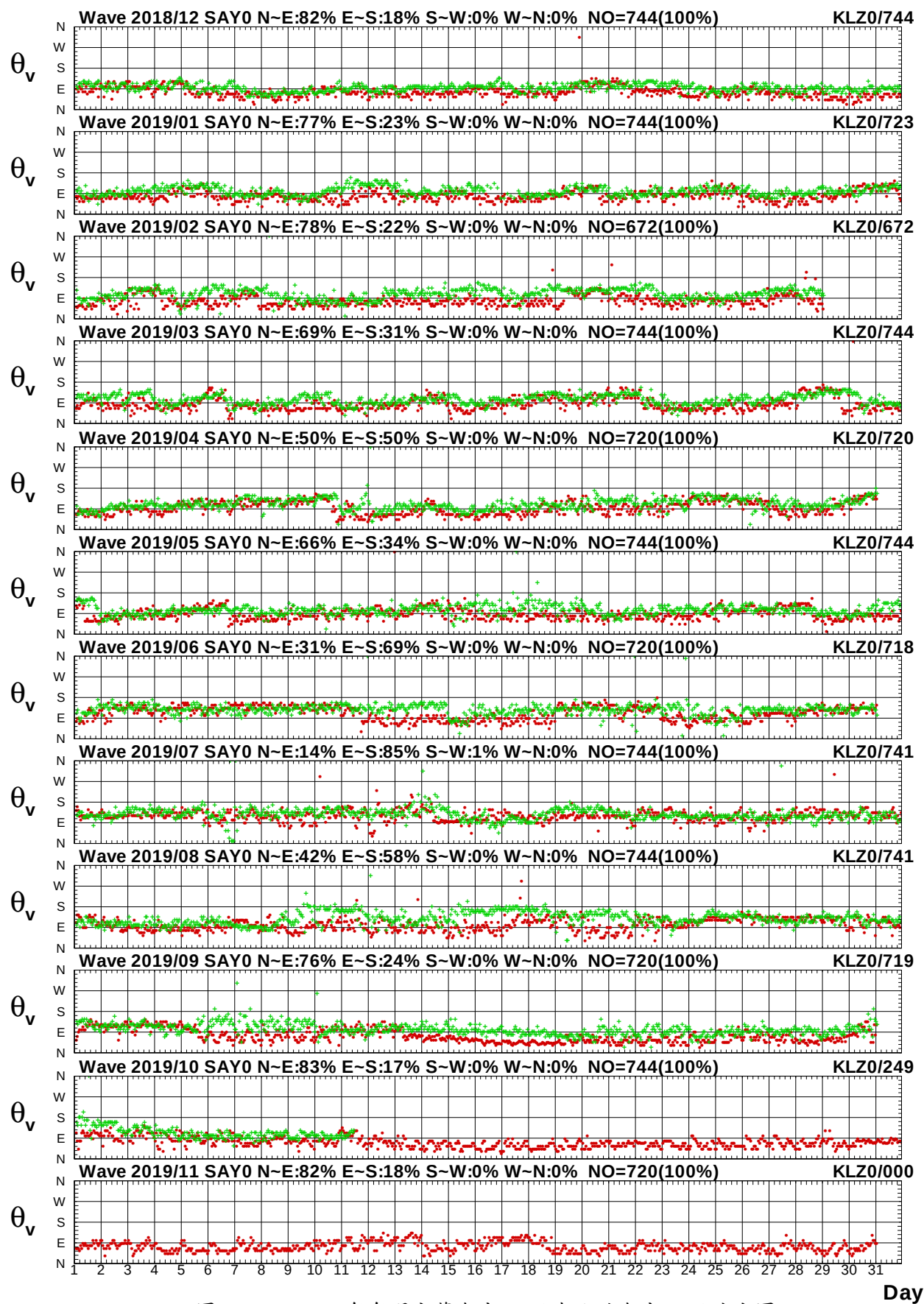


圖2.4.7c 2019年每月宜蘭海域 Y 站與北端海域 Z 站波向圖

V18CSAY0.1HA V18CKLZ0.1H0 V191SAY0.1HA V191KLZ0.1H0 V192SAY0.1HA V192KLZ0.1H0
V193SAY0.1HA V193KLZ0.1H0 V194SAY0.1HA V194KLZ0.1H0 V195SAY0.1HA V195KLZ0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

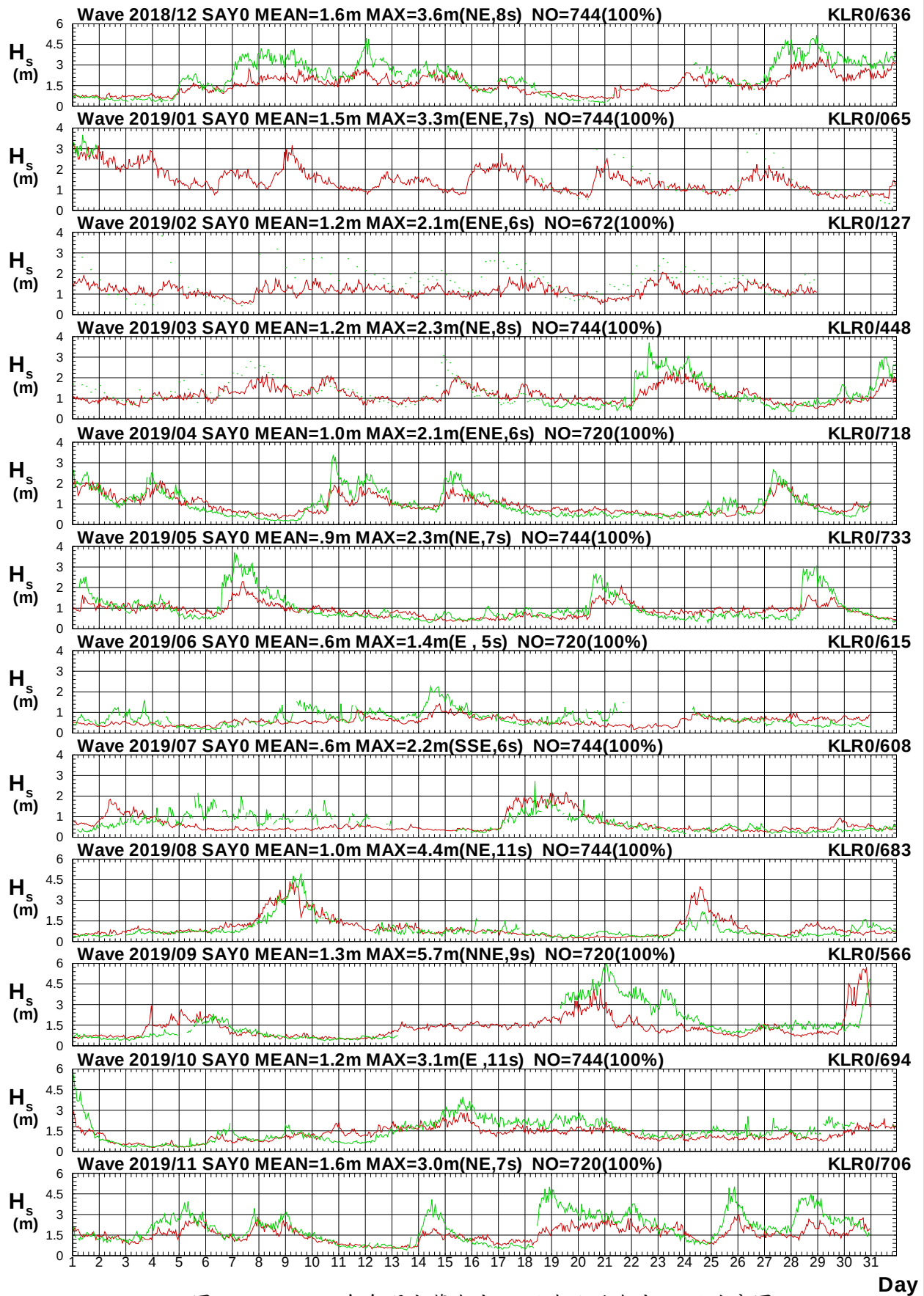


圖2.4.8a 2019年每月宜蘭海域 Y 站與北端海域 R 站波高圖

V18CSAY0.1HA V18CKLR0.1H0 V191SAY0.1HA V191KLR0.1H0 V192SAY0.1HA V192KLR0.1H0
V193SAY0.1HA V193KLR0.1H0 V194SAY0.1HA V194KLR0.1H0 V195SAY0.1HA V195KLR0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

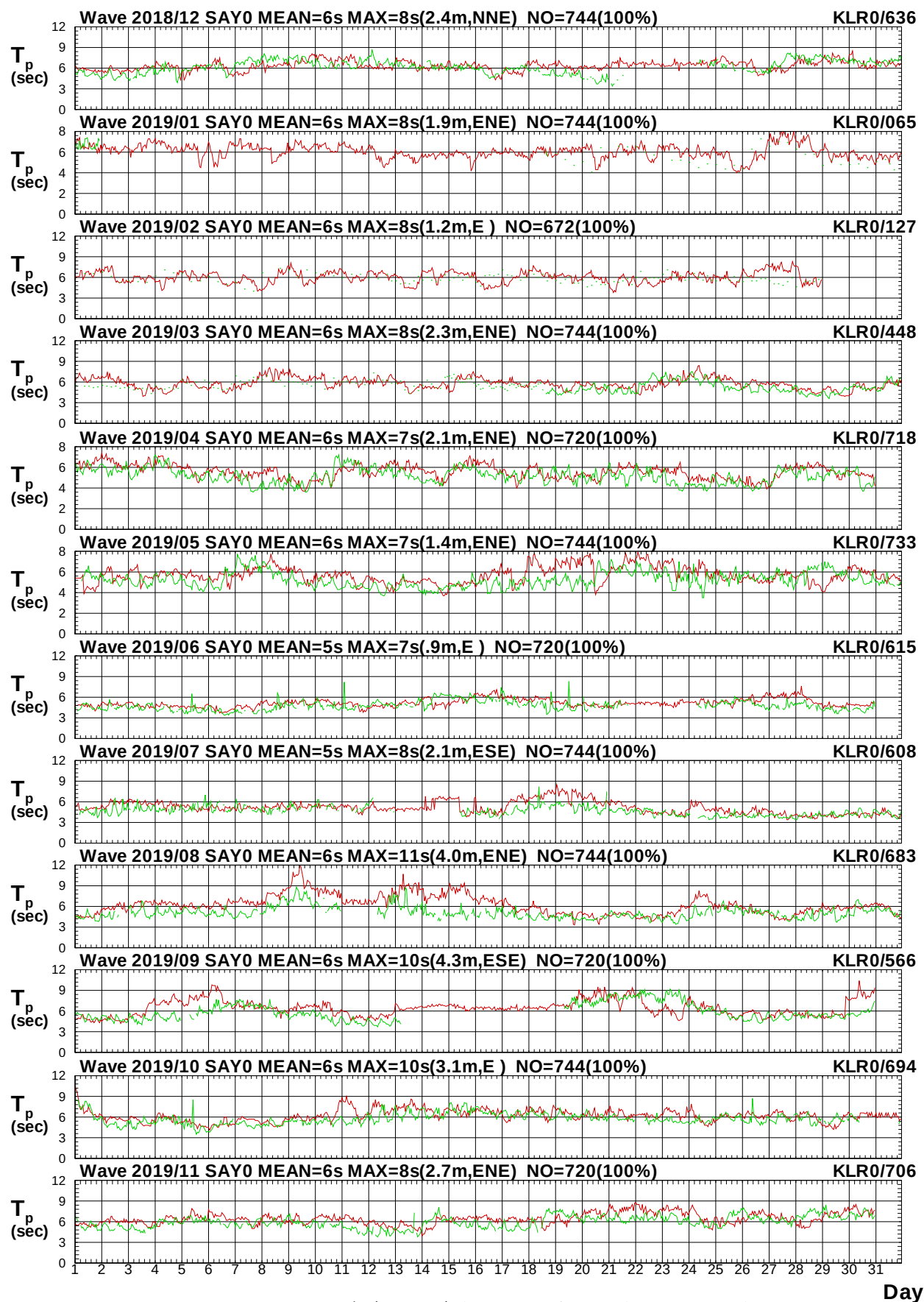


圖2.4.8b 2019年每月宜蘭海域 Y 站與北端海域 R 站週期圖

V18CSAY0.1HA V18CKLR0.1H0 V191SAY0.1HA V191KLR0.1H0 V192SAY0.1HA V192KLR0.1H0
V193SAY0.1HA V193KLR0.1H0 V194SAY0.1HA V194KLR0.1H0 V195SAY0.1HA V195KLR0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

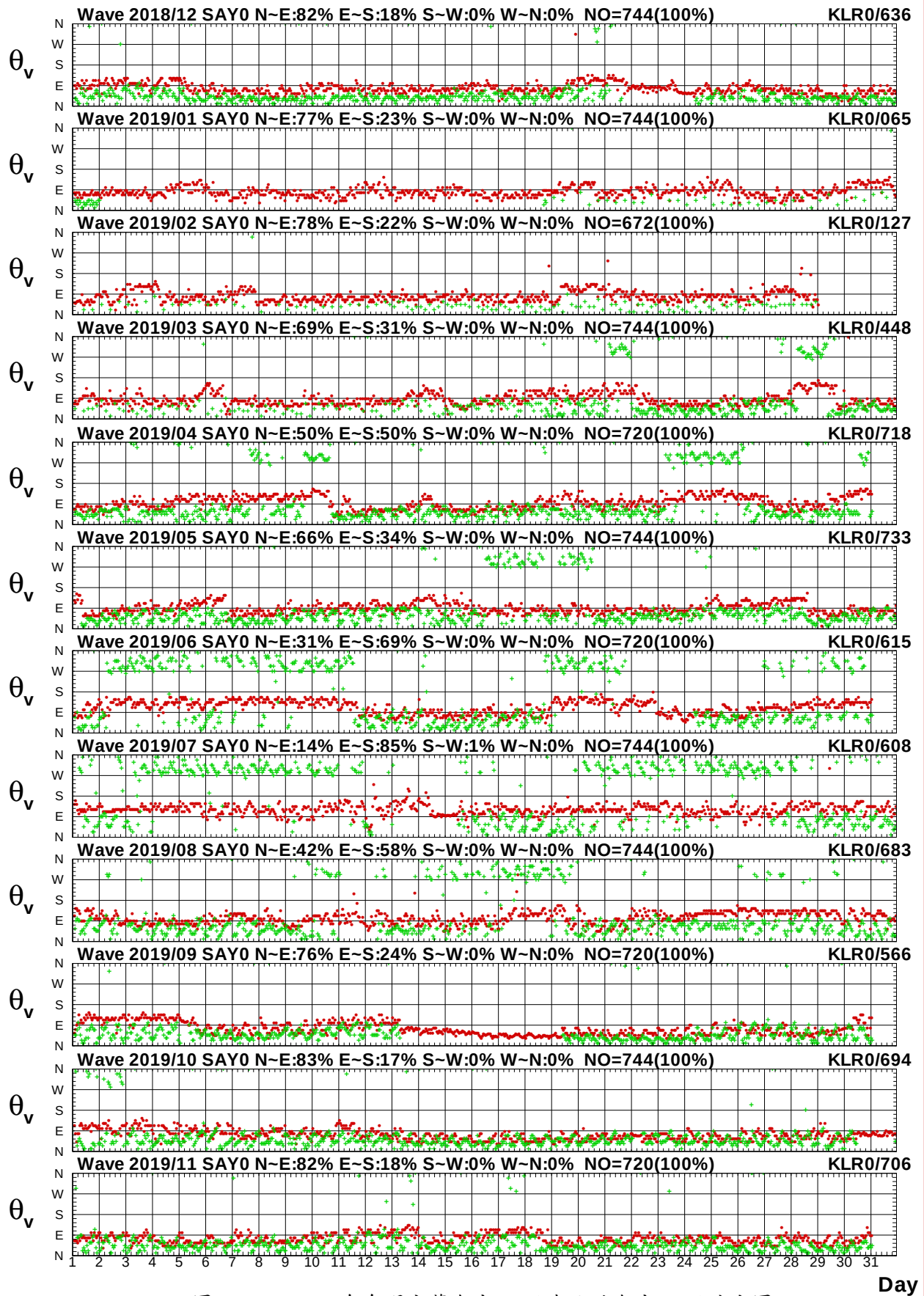


圖2.4.8c 2019年每月宜蘭海域 Y 站與北端海域 R 站波向圖

V18CSAY0.1HA V18CKLR0.1H0 V191SAY0.1HA V191KLR0.1H0 V192SAY0.1HA V192KLR0.1H0
V193SAY0.1HA V193KLR0.1H0 V194SAY0.1HA V194KLR0.1H0 V195SAY0.1HA V195KLR0.1H0

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Wave H_s in Su-Ao Harbor of SAY0 at 2019

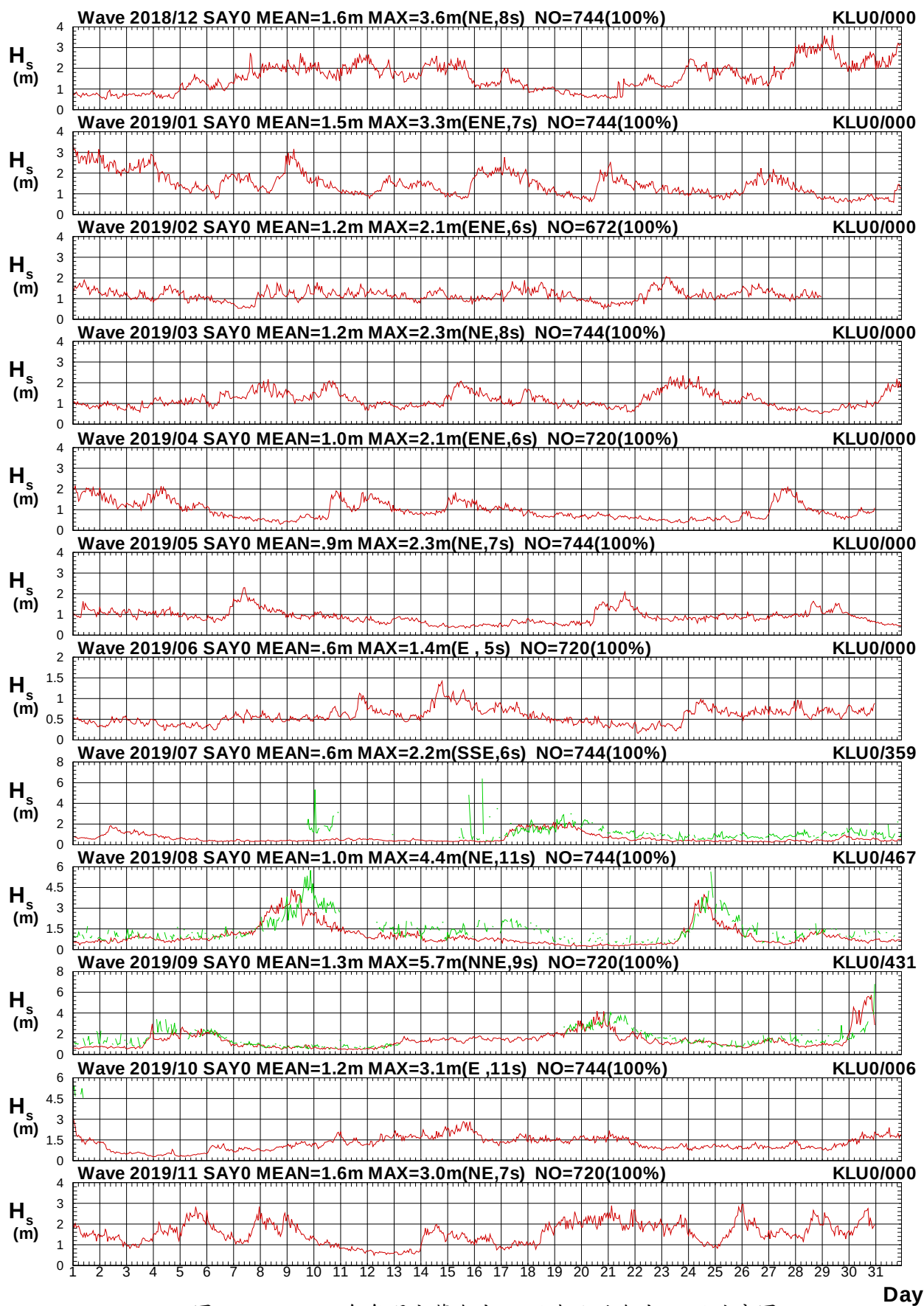


圖2.4.9a 2019年每月宜蘭海域 Y 站與北端海域 U 站波高圖

V18CSAY0.1HA V18CKLU0.1H0 V191SAY0.1HA V191KLU0.1H0 V192SAY0.1HA V192KLU0.1H0
V193SAY0.1HA V193KLU0.1H0 V194SAY0.1HA V194KLU0.1H0 V195SAY0.1HA V195KLU0.1H0

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Wave T_p in Su-Ao Harbor of SAY0 at 2019

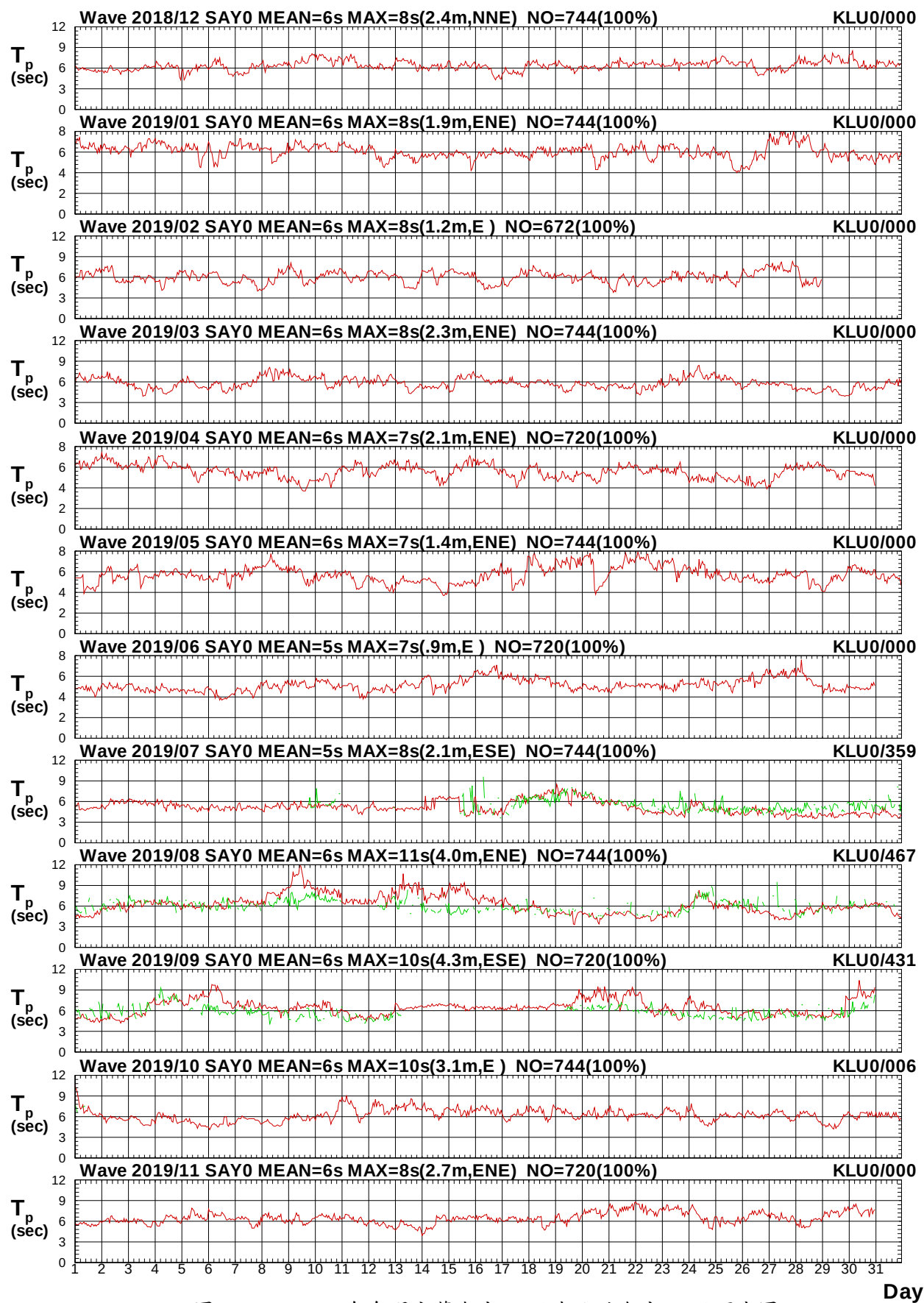


圖2.4.9b 2019年每月宜蘭海域 Y 站與北端海域 U 站週期圖

V18CSAY0.1HA V18CKLU0.1H0 V191SAY0.1HA V191KLU0.1H0 V192SAY0.1HA V192KLU0.1H0
V193SAY0.1HA V193KLU0.1H0 V194SAY0.1HA V194KLU0.1H0 V195SAY0.1HA V195KLU0.1H0

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Wave Direction in Su-Ao Harbor of SAY0 at 2019

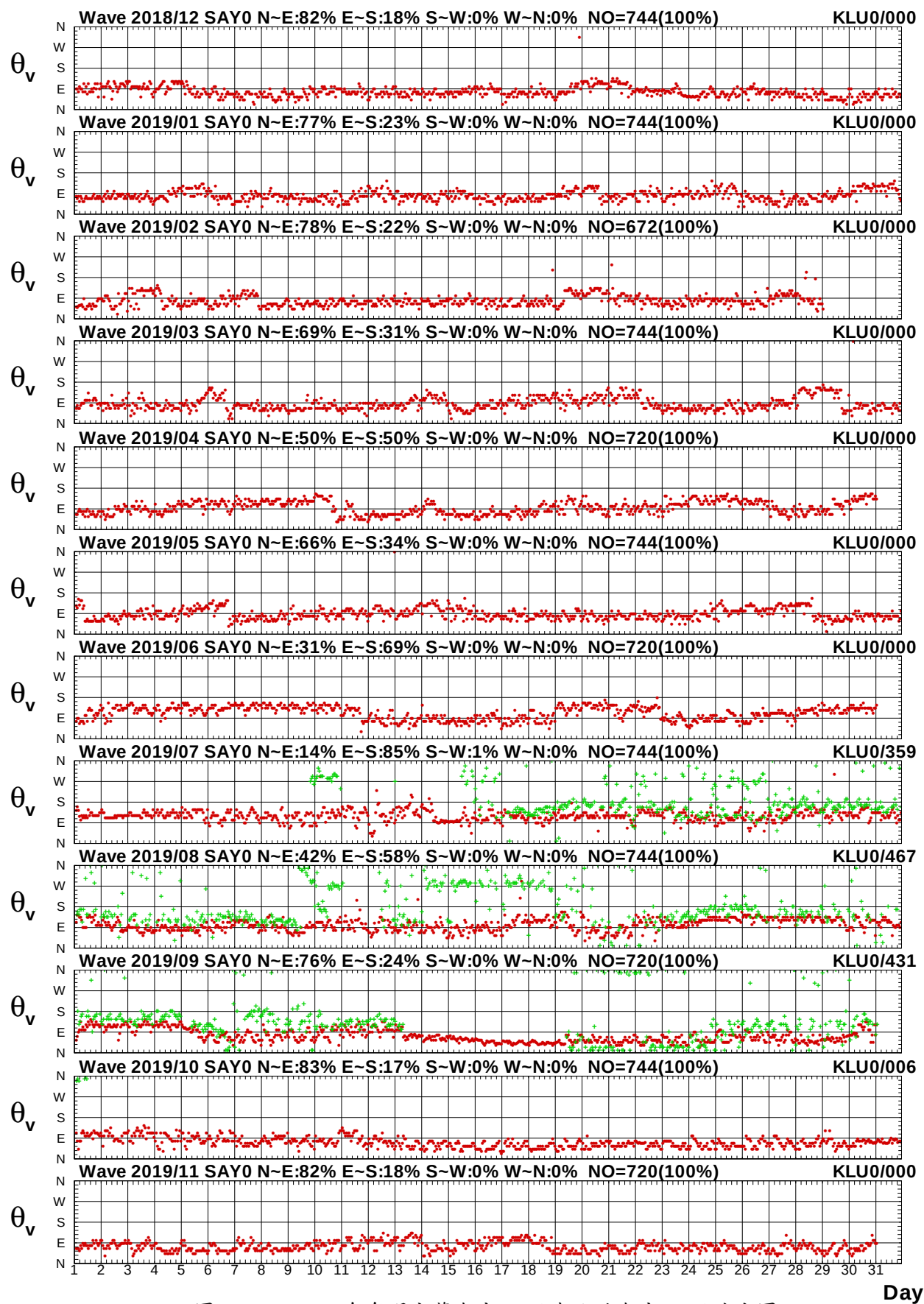


圖2.4.9c 2019年每月宜蘭海域 Y 站與北端海域 U 站波向圖

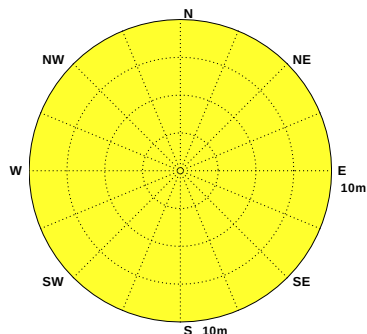
V18CSAY0.1HA V18CKLU0.1H0 V191SAY0.1HA V191KLU0.1H0 V192SAY0.1HA V192KLU0.1H0
V193SAY0.1HA V193KLU0.1H0 V194SAY0.1HA V194KLU0.1H0 V195SAY0.1HA V195KLU0.1H0

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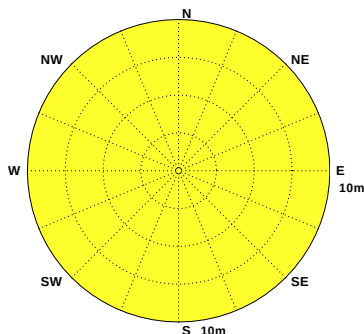
2.5 2019 年宜蘭海域波浪各測站修補前 波浪向量分佈圖

Distribution of H_s Vectors

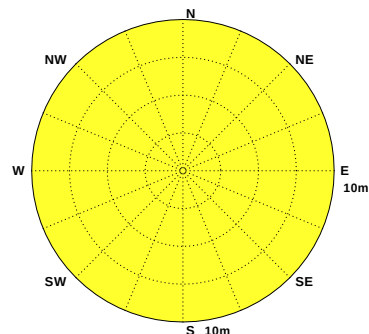
Wave of SAX0 at 2018/12



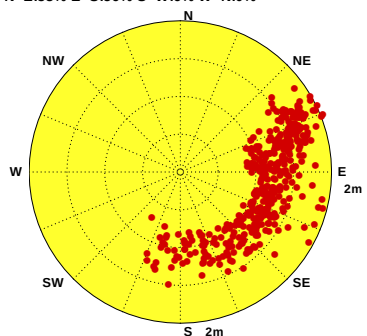
Wave of SAX0 at 2019/01



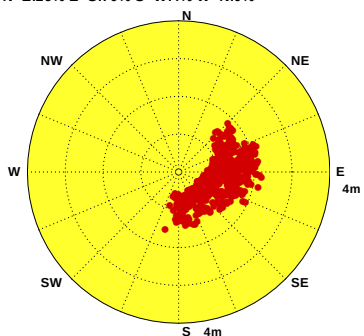
Wave of SAX0 at 2019/02



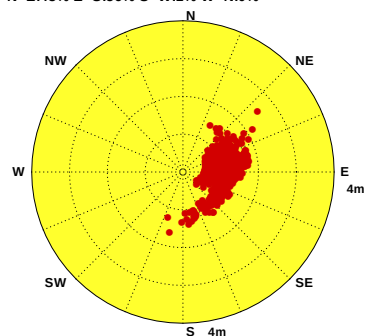
Wave of SAX0 at 2019/03 NO=415(56%)
Hs : MEAN=1.3m MAX=2.0m(ENE,10s)
N-E:38% E-S:56% S-W:6% W-N:0%



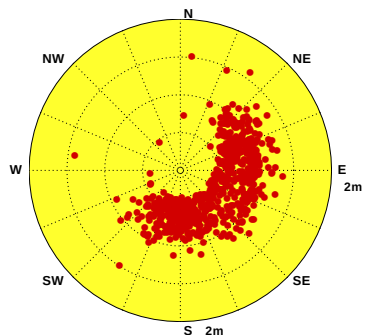
Wave of SAX0 at 2019/04 NO=720(100%)
Hs : MEAN=1.1m MAX=2.1m(E, 9s)
N-E:26% E-S:70% S-W:4% W-N:0%



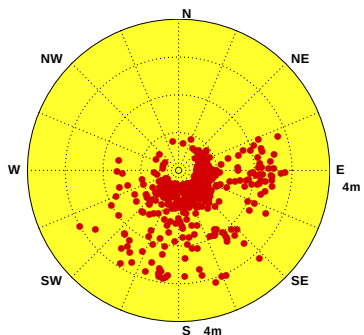
Wave of SAX0 at 2019/05 NO=718(97%)
Hs : MEAN=1.0m MAX=2.4m(NE,9s)
N-E:43% E-S:56% S-W:1% W-N:0%



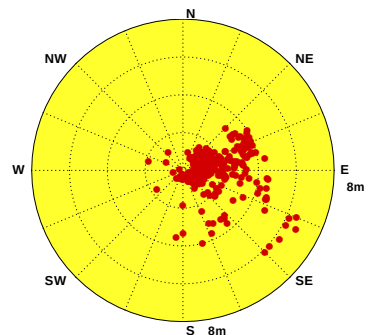
Wave of SAX0 at 2019/06 NO=695(97%)
Hs : MEAN=.8m MAX=1.6m(SSW,8s)
N-E:29% E-S:47% S-W:24% W-N:0%



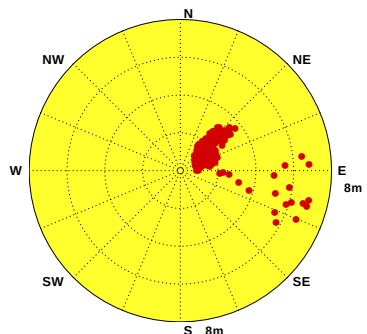
Wave of SAX0 at 2019/07 NO=737(99%)
Hs : MEAN=.9m MAX=3.2m(SSE,11s)
N-E:14% E-S:64% S-W:21% W-N:1%



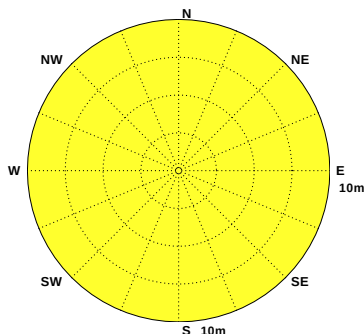
Wave of SAX0 at 2019/08 NO=562(76%)
Hs : MEAN=1.3m MAX=6.7m(ESE,13s)
N-E:62% E-S:34% S-W:3% W-N:1%



Wave of SAX0 at 2019/09 NO=460(64%)
Hs : MEAN=1.5m MAX=6.8m(ESE,14s)
N-E:93% E-S:7% S-W:0% W-N:0%



Wave of SAX0 at 2019/10



Wave of SAX0 at 2019/11

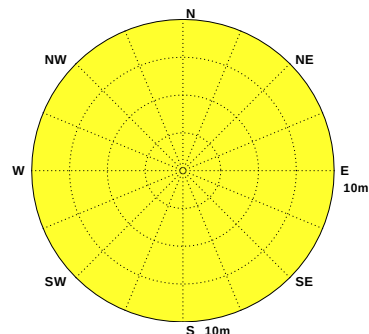


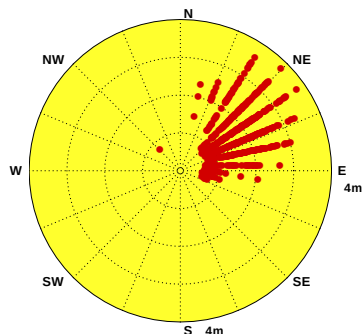
圖2.5.1 2019年宜蘭海域每月 X 站修補前觀測波高向量分佈圖

V18CSAX0.1H0 V191SAX0.1H0 V192SAX0.1H0 V193SAX0.1H0 V194SAX0.1H0 V195SAX0.1H0
V196SAX0.1H0 V197SAX0.1H0 V198SAX0.1H0 V199SAX0.1H0 V19ASAX0.1H0 V19BSAX0.1H0

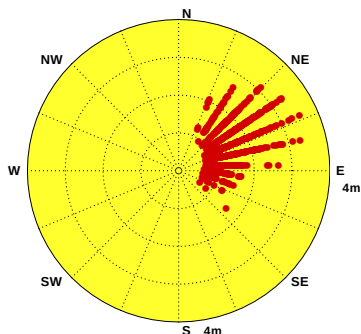
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Distribution of H_s Vectors

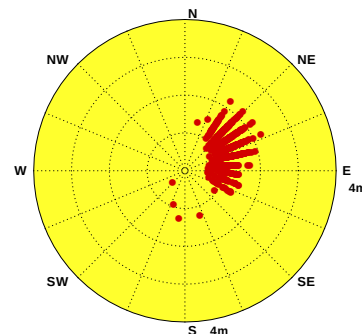
Wave of SAY0 at 2018/12 NO=646(87%)
Hs : MEAN=1.6m MAX=3.6m(NE,8s)
N-E:81% E-S:19% S-W:0% W-N:0%



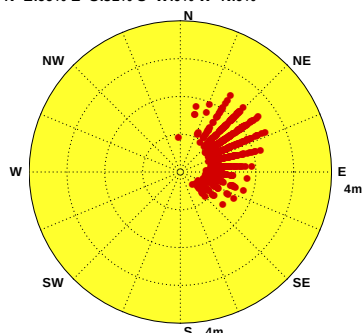
Wave of SAY0 at 2019/01 NO=710(95%)
Hs : MEAN=1.5m MAX=3.3m(ENE,7s)
N-E:76% E-S:24% S-W:0% W-N:0%



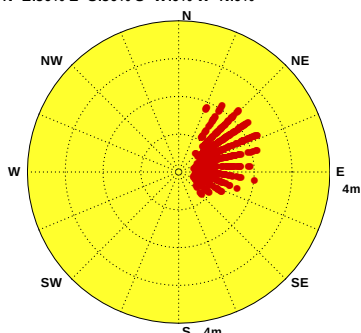
Wave of SAY0 at 2019/02 NO=642(96%)
Hs : MEAN=1.2m MAX=2.1m(ENE,6s)
N-E:78% E-S:22% S-W:0% W-N:0%



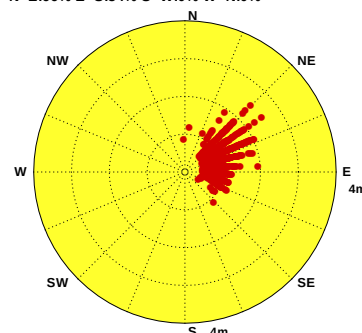
Wave of SAY0 at 2019/03 NO=726(98%)
Hs : MEAN=1.2m MAX=2.3m(NE,8s)
N-E:69% E-S:31% S-W:0% W-N:0%



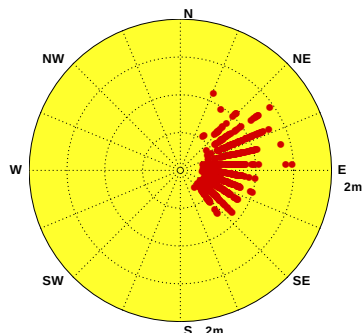
Wave of SAY0 at 2019/04 NO=698(97%)
Hs : MEAN=1.0m MAX=2.1m(ENE,6s)
N-E:50% E-S:50% S-W:0% W-N:0%



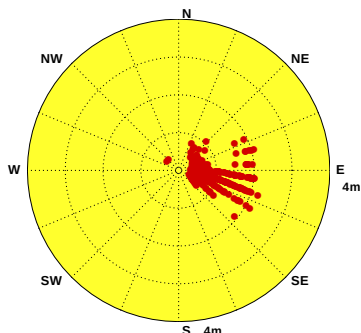
Wave of SAY0 at 2019/05 NO=717(96%)
Hs : MEAN=.9m MAX=2.3m(NE,7s)
N-E:66% E-S:34% S-W:0% W-N:0%



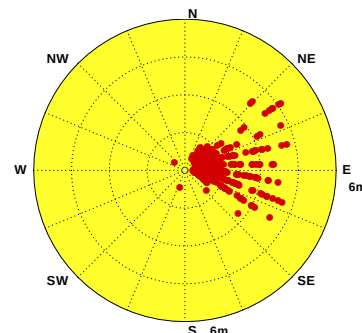
Wave of SAY0 at 2019/06 NO=641(89%)
Hs : MEAN=.6m MAX=1.4m(E, 5s)
N-E:30% E-S:70% S-W:0% W-N:0%



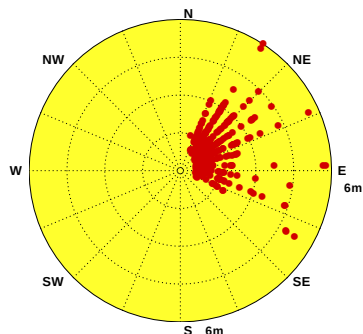
Wave of SAY0 at 2019/07 NO=618(83%)
Hs : MEAN=.7m MAX=2.1m(ESE,7s)
N-E:12% E-S:88% S-W:0% W-N:0%



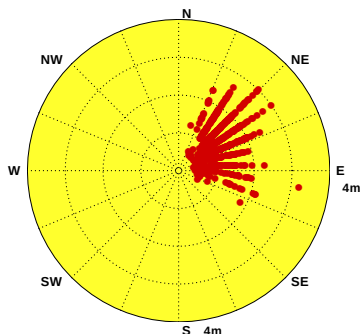
Wave of SAY0 at 2019/08 NO=681(92%)
Hs : MEAN=1.0m MAX=4.4m(NE,11s)
N-E:40% E-S:60% S-W:0% W-N:0%



Wave of SAY0 at 2019/09 NO=497(69%)
Hs : MEAN=1.3m MAX=5.7m(NNE,9s)
N-E:68% E-S:32% S-W:0% W-N:0%



Wave of SAY0 at 2019/10 NO=664(89%)
Hs : MEAN=1.2m MAX=3.1m(E, 11s)
N-E:82% E-S:18% S-W:0% W-N:0%



Wave of SAY0 at 2019/11 NO=713(99%)
Hs : MEAN=1.6m MAX=3.0m(NE,7s)
N-E:82% E-S:18% S-W:0% W-N:0%

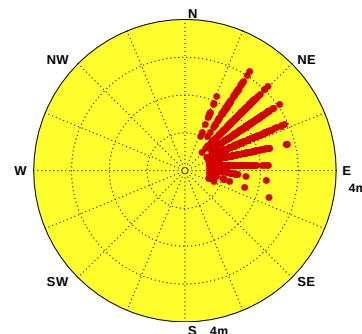


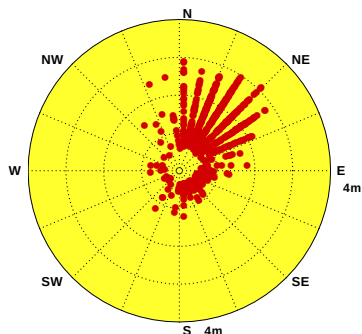
圖2.5.2 2019年宜蘭海域每月 Y 站修補前觀測波高向量分佈圖

V18CSAY0.1H0 V191SAY0.1H0 V192SAY0.1H0 V193SAY0.1H0 V194SAY0.1H0 V195SAY0.1H0
V196SAY0.1H0 V197SAY0.1H0 V198SAY0.1H0 V199SAY0.1H0 V19ASAY0.1H0 V19BSAY0.1H0

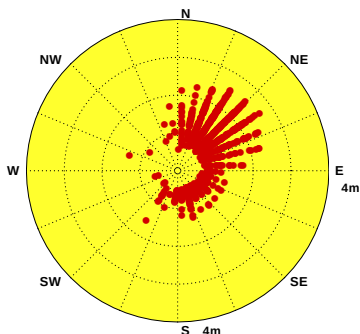
Institute of Harbor & Marine Technology

Distribution of H_s Vectors

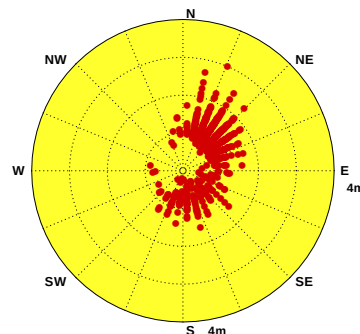
Wave of SAZ0 at 2018/12 NO=651(88%)
Hs : MEAN=1.3m MAX=2.9m(NE,7s)
N-E:75% E-S:15% S-W:6% W-N:4%



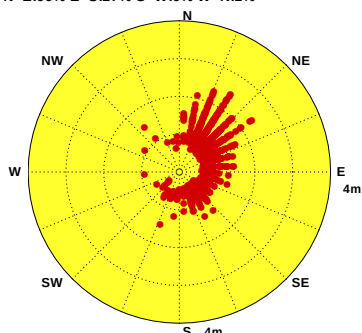
Wave of SAZ0 at 2019/01 NO=725(97%)
Hs : MEAN=1.2m MAX=2.5m(NE,7s)
N-E:74% E-S:18% S-W:7% W-N:1%



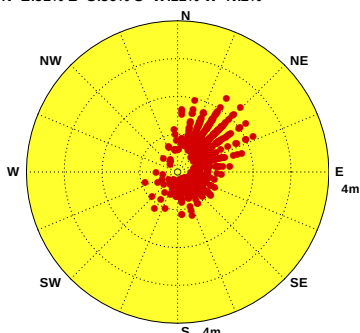
Wave of SAZ0 at 2019/02 NO=649(97%)
Hs : MEAN=1.1m MAX=2.8m(NNE,7s)
N-E:71% E-S:16% S-W:12% W-N:1%



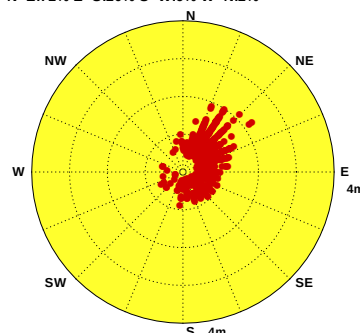
Wave of SAZ0 at 2019/03 NO=720(97%)
Hs : MEAN=1.0m MAX=2.3m(NNE,7s)
N-E:66% E-S:27% S-W:6% W-N:1%



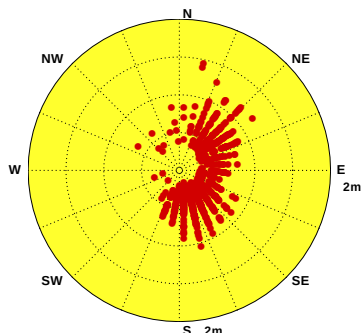
Wave of SAZ0 at 2019/04 NO=720(100%)
Hs : MEAN=.8m MAX=2.2m(NE,6s)
N-E:51% E-S:36% S-W:11% W-N:2%



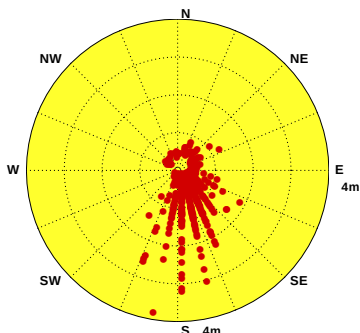
Wave of SAZ0 at 2019/05 NO=735(99%)
Hs : MEAN=.7m MAX=2.1m(NE,6s)
N-E:72% E-S:20% S-W:6% W-N:2%



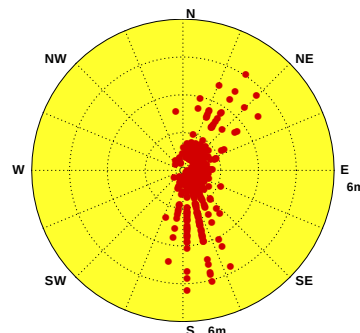
Wave of SAZ0 at 2019/06 NO=658(91%)
Hs : MEAN=.5m MAX=1.4m(N, 6s)
N-E:33% E-S:45% S-W:20% W-N:2%



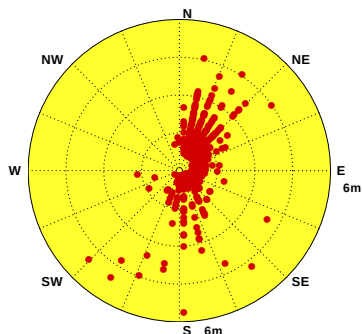
Wave of SAZ0 at 2019/07 NO=634(85%)
Hs : MEAN=.7m MAX=4.0m(S, 9s)
N-E:5% E-S:67% S-W:25% W-N:3%



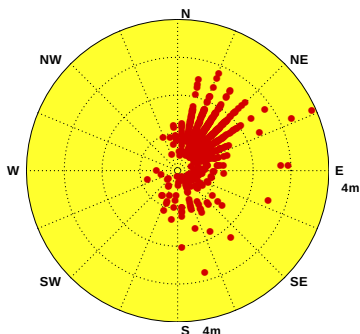
Wave of SAZ0 at 2019/08 NO=700(94%)
Hs : MEAN=.9m MAX=5.0m(S, 9s)
N-E:31% E-S:50% S-W:17% W-N:2%



Wave of SAZ0 at 2019/09 NO=567(79%)
Hs : MEAN=1.2m MAX=5.9m(S, 10s)
N-E:59% E-S:28% S-W:12% W-N:1%



Wave of SAZ0 at 2019/10 NO=697(94%)
Hs : MEAN=1.0m MAX=3.7m(ENE,9s)
N-E:80% E-S:13% S-W:5% W-N:2%



Wave of SAZ0 at 2019/11 NO=710(99%)
Hs : MEAN=1.3m MAX=3.1m(NNE,7s)
N-E:77% E-S:18% S-W:3% W-N:2%

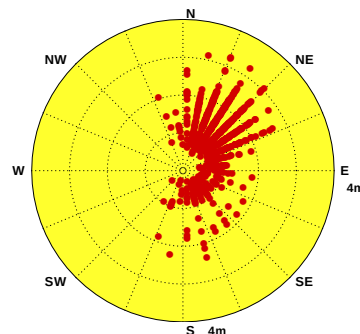


圖2.5.3 2019年宜蘭海域每月 Z 站修補前觀測波高向量分佈圖

V18CSAZ0.1H0 V191SAZ0.1H0 V192SAZ0.1H0 V193SAZ0.1H0 V194SAZ0.1H0 V195SAZ0.1H0
V196SAZ0.1H0 V197SAZ0.1H0 V198SAZ0.1H0 V199SAZ0.1H0 V19ASAZ0.1H0 V19BSAZ0.1H0

Institute of Harbor & Marine Technology

第三章 2019 年宜蘭海域觀測潮汐資料年報

2019 年宜蘭海域潮汐之觀測包括測站 **T**、測站 **X**、測站 **F**、測站 **J**、測站 **P**、測站 **G**、測站 **Q** 及測站 **K** 等 8 個測站(測站位置如第 O 章圖 TS1，各測站歷年觀測潮汐資料蒐集概況如表 TS1)。測站 **T** 與測站 **F**、測站 **X**、測站 **J**、測站 **G** 及測站 **P** 等 5 個測站特性相近，測站 **K** 與測站 **Q** 站等 2 個測站特性相近。本年報取經檢核及補遺之測站 **T** 資料作為**主要測站 1**，測站 **K** 資料作為**主要測站 2**，測站 **G** 資料作為**主要測站 3**。

3.1 2019 年宜蘭海域觀測潮汐資料年報圖表

本章第 1 節**潮汐**年報資料處理之圖表包括：

1. 表 3.1.1a 2019 年**各觀測站**每月**觀測潮汐**資料**修補前**記錄表。
2. 表 3.1.1b 2019 年**主要測站**每月**觀測潮汐**資料**修補後**記錄表。
3. 表 3.1.2 2019 年**主要測站 1** **修補後**每月(季)及整年觀測潮位、潮差及週期重要統計量統計表。
4. 表 3.1.3 2019 年**主要測站 2** **修補後**每月(季)及整年觀測潮位、潮差及週期重要統計量統計表。
5. 表 3.1.4 2019 年**主要測站 3** **修補後**每月(季)及整年觀測潮位、潮差及週期重要統計量統計表。
6. 圖 3.1.1 2019 年**主要測站 1** **修補前後**每月觀測潮位歷線比較圖。
7. 圖 3.1.2 2019 年**主要測站 1** **修補後**每月觀測潮位及計算天文潮位歷線比較圖。
8. 圖 3.1.3 2019 年**主要測站 2** **修補前後**每月觀測潮位歷線比較圖。

9. 圖 3.1.4 2019 年**主要測站 2 修補後**每月觀測潮位及計算天文潮位歷線比較圖。

10. 圖 3.1.5 2019 年**主要測站 3 修補前後**每月觀測潮位歷線比較圖。

11. 圖 3.1.6 2019 年**主要測站 3 修補後**每月觀測潮位及計算天文潮位歷線比較圖。

第 2 節潮汐年報資料處理之圖表包括：2019 年宜蘭海域**各測站修補前**每月(季)及整年潮位、潮差及週期重要統計量統計表。

第 3 節潮汐年報資料處理之統計圖包括：2019 年宜蘭海域**主要測站 1 修補後與其他測站(修補前)**每月觀測潮位歷線比較圖。

第 4 節潮汐年報資料處理之統計圖包括：2019 年宜蘭海域**主要測站 2 修補後與其他測站(修補前)**每月觀測潮位歷線比較圖。

第 5 節潮汐年報資料處理之統計圖包括：2019 年宜蘭海域**主要測站 3 修補後與其他測站(修補前)**每月觀測潮位歷線比較圖。

表 3.1.1a 2019 年每月宜蘭海域修補前各測站觀測潮汐資料紀錄表

3-1-3

海域 年月/測站	宜蘭海域 T	宜蘭海域 K	宜蘭海域 G	宜蘭海域 F	宜蘭海域 X	宜蘭海域 P	宜蘭海域 J	宜蘭海域 Q	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
2018/12 月	743(99.9%)	657(88.3%)	744(100%)	645(86.7%)	*	645(86.7%)	657(88.3%)	*	*	*	*	*
2019/ 1 月	654(87.9%)	744(100%)	744(100%)	744(100%)	*	744(100%)	744(100%)	*	*	*	*	*
2019/ 2 月	667(99.3%)	672(100%)	357(53.1%)	655(97.5%)	*	655(97.5%)	671(99.9%)	*	*	*	*	*
2019/ 3 月	724(97.3%)	705(94.8%)	744(100%)	705(94.8%)	415(55.8%)	705(94.8%)	705(94.8%)	*	*	*	*	*
2019/ 4 月	712(98.9%)	720(100%)	720(100%)	720(100%)	720(100%)	720(100%)	720(100%)	*	*	*	*	*
2019/ 5 月	744(100%)	744(100%)	730(98.1%)	744(100%)	718(96.5%)	744(100%)	744(100%)	*	*	*	*	*
2019/ 6 月	720(100%)	604(83.9%)	720(100%)	604(83.9%)	695(96.5%)	604(83.9%)	604(83.9%)	*	*	*	*	*
2019/ 7 月	503(67.6%)	154(20.7%)	744(100%)	154(20.7%)	737(99.1%)	155(20.8%)	154(20.7%)	*	*	*	*	*
2019/ 8 月	539(72.4%)	652(87.6%)	744(100%)	651(87.5%)	562(75.5%)	651(87.5%)	650(87.4%)	*	*	*	*	*
2019/ 9 月	673(93.5%)	715(99.3%)	720(100%)	720(100%)	460(63.9%)	720(100%)	656(91.1%)	*	*	*	*	*
2019/10 月	744(100%)	686(92.2%)	744(100%)	716(96.2%)	*	716(96.2%)	716(96.2%)	205(27.6%)	*	*	*	*
2019/11 月	720(100%)	679(94.3%)	720(100%)	682(94.7%)	*	682(94.7%)	682(94.7%)	679(94.3%)	*	*	*	*
2019/冬季	2064(95.6%)	2073(96.0%)	1845(85.4%)	2044(94.6%)	*	2044(94.6%)	2072(95.9%)	*	*	*	*	*
2019/春季	2180(98.7%)	2169(98.2%)	2194(99.4%)	2169(98.2%)	1853(83.9%)	2169(98.2%)	2169(98.2%)	*	*	*	*	*
2019/夏季	1762(79.8%)	1410(63.9%)	2208(100%)	1409(63.8%)	1994(90.3%)	1410(63.9%)	1408(63.8%)	*	*	*	*	*
2019/秋季	2137(97.8%)	2080(95.2%)	2184(100%)	2118(97.0%)	460(21.1%)	2118(97.0%)	2054(94.0%)	884(40.5%)	*	*	*	*
2019/整年	8143(93.0%)	7732(88.3%)	8431(96.2%)	7740(88.4%)	4307(49.2%)	7741(88.4%)	7703(87.9%)	884(10.1%)	*	*	*	*
起始年月	2018/12	2018/12	2018/12	2018/12	2019/03	2018/12	2018/12	2019/10	*	*	*	*
結束年月	2019/11	2019/11	2019/11	2019/11	2019/09	2019/11	2019/11	2019/11	*	*	*	*

表 3.1.1b 2019 年每月宜蘭海域修補後各測站潮汐資料紀錄表

海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
年月/測站	T	K	G									
2018/12 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/ 1 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/ 2 月	672(100%)	672(100%)	672(100%)	*	*	*	*	*	*	*	*	*
2019/ 3 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/ 4 月	720(100%)	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*
2019/ 5 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/ 6 月	720(100%)	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*
2019/ 7 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/ 8 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/ 9 月	720(100%)	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*
2019/10 月	744(100%)	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*
2019/11 月	720(100%)	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*
2019/冬季	2160(100%)	2160(100%)	2160(100%)	*	*	*	*	*	*	*	*	*
2019/春季	2208(100%)	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*
2019/夏季	2208(100%)	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*
2019/秋季	2184(100%)	2184(100%)	2184(100%)	*	*	*	*	*	*	*	*	*
2019/整年	8760(100%)	8760(100%)	8760(100%)	*	*	*	*	*	*	*	*	*
起始年月	2018/12	2018/12	2018/12	*	*	*	*	*	*	*	*	*
結束年月	2019/11	2019/11	2019/11	*	*	*	*	*	*	*	*	*

表3.1.2 2019年宜蘭海域主要測站1修補後潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	T	92	158	123	145	12.4	14.0	13.2	13.8	59	94	195	-10	744(100)	140	155	49	40
2	2019/01	T	94	215	157	197	12.4	14.0	13.7	14.0	58	95	194	-21	744(100)	141	159	47	38
3	2019/02	T	98	155	145	154	12.7	26.0	14.3	16.6	51	93	191	-11	672(100)	141	154	46	41
4	2019/03	T	95	183	141	165	12.6	25.0	14.4	16.6	55	100	193	8	744(100)	146	161	53	40
5	2019/04	T	97	161	136	151	13.1	25.0	15.8	21.4	54	103	189	17	720(100)	151	168	56	37
6	2019/05	T	95	179	145	171	12.4	15.0	13.8	14.6	59	106	194	11	744(100)	153	168	58	41
7	2019/06	T	94	185	152	176	12.4	15.0	13.9	14.2	57	115	192	7	720(100)	161	165	68	47
8	2019/07	T	93	194	157	185	12.4	14.0	13.5	14.0	59	117	210	8	744(100)	163	171	70	53
9	2019/08	T	96	186	137	179	12.9	27.0	15.2	19.4	54	120	211	11	744(100)	168	177	70	58
10	2019/09	T	92	184	131	159	13.4	26.0	16.4	23.4	53	116	227	12	720(100)	164	172	67	47
11	2019/10	T	100	166	139	156	13.1	26.0	15.3	21.0	56	106	193	-1	744(100)	157	172	56	40
12	2019/11	T	93	186	133	171	12.9	27.0	14.7	19.0	55	93	174	-15	720(100)	140	150	46	36
13	2019/冬	T	93	165	129	149	12.6	26.0	13.8	15.4	171	94	195	-21	2160(100)	141	156	48	40
14	2019/春	T	96	167	134	151	12.6	25.0	14.4	16.8	171	103	194	8	2208(100)	150	166	56	39
15	2019/夏	T	92	194	138	168	12.5	27.0	14.0	15.1	173	117	211	7	2208(100)	164	171	70	52
16	2019/秋	T	93	206	131	155	13.0	27.0	15.1	20.0	167	105	227	-15	2184(100)	154	165	58	41
17	2019/年	T	93	178	128	148	12.7	27.0	14.2	17.0	684	105	227	-21	8760(100)	152	165	58	43

表3.1.3 2019年宜蘭海域主要測站2修補後潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	K	55	117	87	104	13.9	25.0	17.9	24.6	50	-194	-130	-273	744(100)	-167	-155	-219	-225
2	2019/01	K	53	118	89	114	14.1	26.0	19.3	25.3	46	-197	-138	-257	744(100)	-171	-161	-220	-223
3	2019/02	K	55	120	93	114	14.7	26.0	20.5	25.5	42	-196	-135	-256	672(100)	-166	-159	-220	-219
4	2019/03	K	60	100	85	96	13.8	24.0	17.8	24.0	48	-191	-131	-252	744(100)	-161	-154	-219	-228
5	2019/04	K	62	102	86	95	13.4	26.0	16.8	23.8	41	-187	-133	-242	720(100)	-156	-149	-214	-226
6	2019/05	K	56	105	86	101	14.3	25.0	19.4	24.5	49	-182	-126	-247	744(100)	-153	-147	-208	-217
7	2019/06	K	52	118	91	112	13.1	27.0	16.7	21.6	54	-174	-130	-252	720(100)	-147	-147	-199	-214
8	2019/07	K	53	120	93	106	13.5	26.0	17.1	23.0	50	-174	-116	-260	744(100)	-147	-137	-199	-200
9	2019/08	K	57	132	91	124	13.6	29.0	17.3	25.5	49	-170	-119	-253	744(100)	-141	-138	-199	-203
10	2019/09	K	56	114	85	101	13.5	25.0	16.4	24.8	45	-174	-113	-249	720(100)	-145	-144	-203	-213
11	2019/10	K	57	116	79	93	13.8	27.0	17.4	25.6	53	-184	-121	-260	744(100)	-155	-147	-212	-216
12	2019/11	K	59	105	84	100	14.3	26.0	18.8	25.8	45	-196	-144	-277	720(100)	-165	-163	-224	-229
13	2019/冬	K	51	118	86	105	14.4	27.0	19.6	25.3	140	-196	-130	-273	2160(100)	-168	-159	-220	-223
14	2019/春	K	58	102	83	93	13.9	26.0	18.3	24.2	142	-187	-126	-252	2208(100)	-157	-150	-213	-223
15	2019/夏	K	53	125	91	108	13.6	29.0	17.4	24.5	157	-173	-116	-260	2208(100)	-145	-140	-199	-205
16	2019/秋	K	58	114	85	98	14.0	27.0	17.8	25.5	143	-184	-113	-277	2184(100)	-155	-151	-213	-219
17	2019/年	K	55	128	86	103	14.1	27.0	18.1	25.4	582	-185	-113	-277	8760(100)	-156	-150	-211	-217

表3.1.4 2019年宜蘭海域主要測站3修補後潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	G	100	196	137	178	13.7	26.0	16.9	25.0	48	94	194	-4	744(100)	143	157	46	40
2	2019/01	G	98	213	162	197	12.9	24.0	15.1	18.0	53	94	187	-26	744(100)	142	159	46	36
3	2019/02	G	100	153	145	153	12.9	27.0	15.1	20.5	48	86	182	-21	672(100)	134	145	37	33
4	2019/03	G	93	150	133	147	13.3	26.0	16.4	23.4	55	92	182	3	744(100)	138	151	48	33
5	2019/04	G	102	166	141	160	13.7	26.0	17.4	25.3	49	94	177	11	720(100)	143	158	45	30
6	2019/05	G	94	174	141	166	12.6	25.0	14.6	17.2	58	97	181	1	744(100)	143	157	50	34
7	2019/06	G	91	179	148	172	12.4	15.0	13.8	14.4	57	106	181	1	720(100)	152	155	61	41
8	2019/07	G	89	187	140	179	12.7	24.0	14.0	16.2	58	113	199	5	744(100)	157	165	67	50
9	2019/08	G	92	180	144	173	13.6	27.0	17.2	24.6	51	114	201	4	744(100)	160	168	66	52
10	2019/09	G	90	150	122	139	13.6	27.0	16.9	25.8	52	108	212	4	720(100)	156	163	59	40
11	2019/10	G	97	151	137	148	13.1	25.0	15.2	20.2	56	100	190	-1	744(100)	151	166	52	38
12	2019/11	G	97	182	129	159	13.1	26.0	15.5	20.8	50	89	169	-13	720(100)	138	145	41	33
13	2019/冬	G	98	196	135	160	13.3	26.0	16.0	22.1	151	92	194	-26	2160(100)	140	154	43	36
14	2019/春	G	95	163	130	146	13.2	26.0	16.0	21.6	164	94	182	1	2208(100)	142	155	48	33
15	2019/夏	G	90	187	142	175	12.9	27.0	14.9	18.6	168	111	201	1	2208(100)	156	163	65	48
16	2019/秋	G	95	205	135	160	13.3	27.0	15.8	21.8	160	99	212	-13	2184(100)	149	158	51	37
17	2019/年	G	94	208	132	156	13.1	30.0	15.4	20.6	644	99	212	-26	8760(100)	147	158	52	38

Tidal Level in Su-Ao Harbor of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

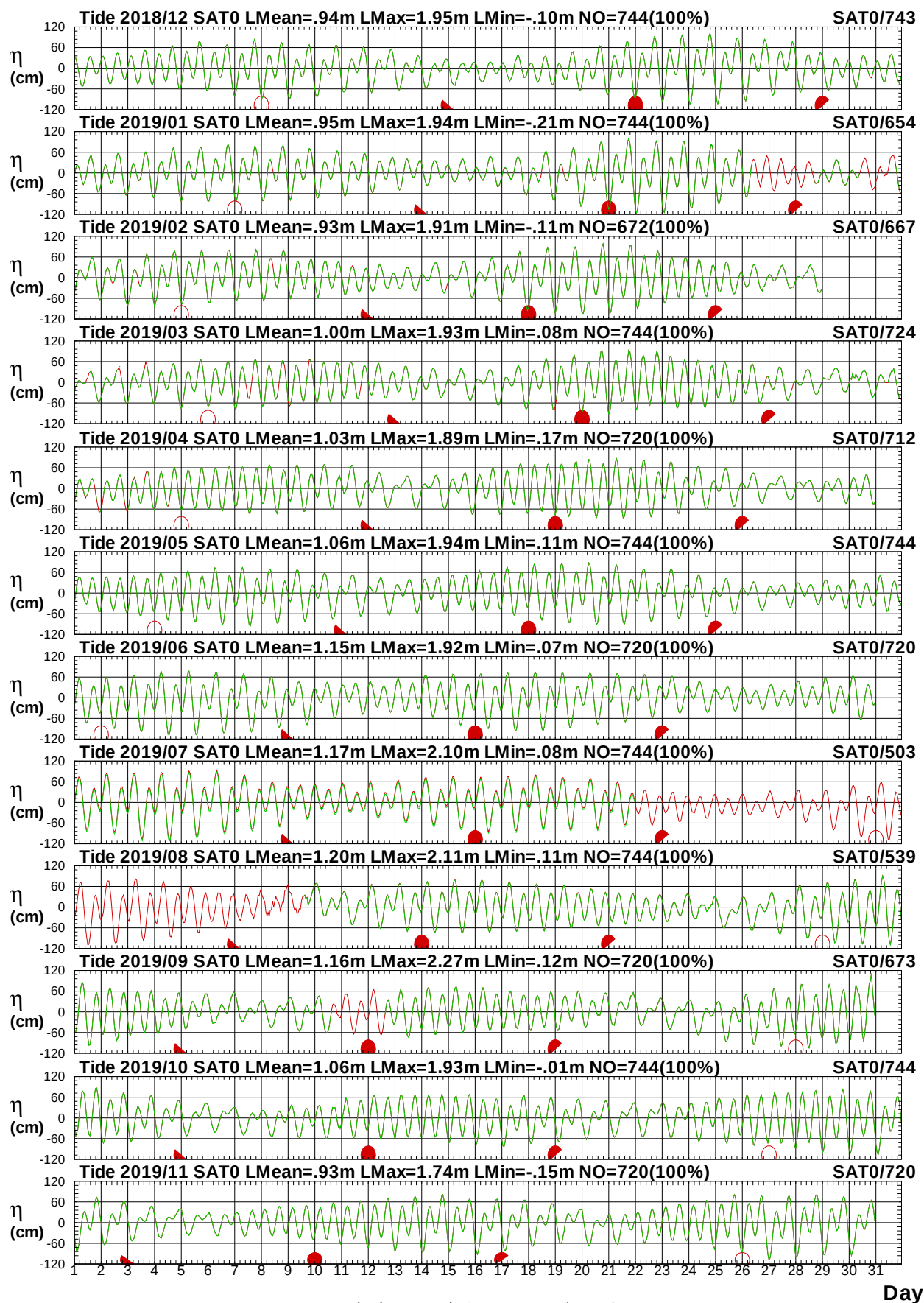


圖3.1.49 2019年每月宜蘭海域 T 站修補前後之潮位比較圖

T18CSAT0.1HA T18CSAT0.1H0 T191SAT0.1HA T191SAT0.1H0 T192SAT0.1HA T192SAT0.1H0
T193SAT0.1HA T193SAT0.1H0 T194SAT0.1HA T194SAT0.1H0 T195SAT0.1HA T195SAT0.1H0

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Tidal Level in Su-Ao Harbor of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

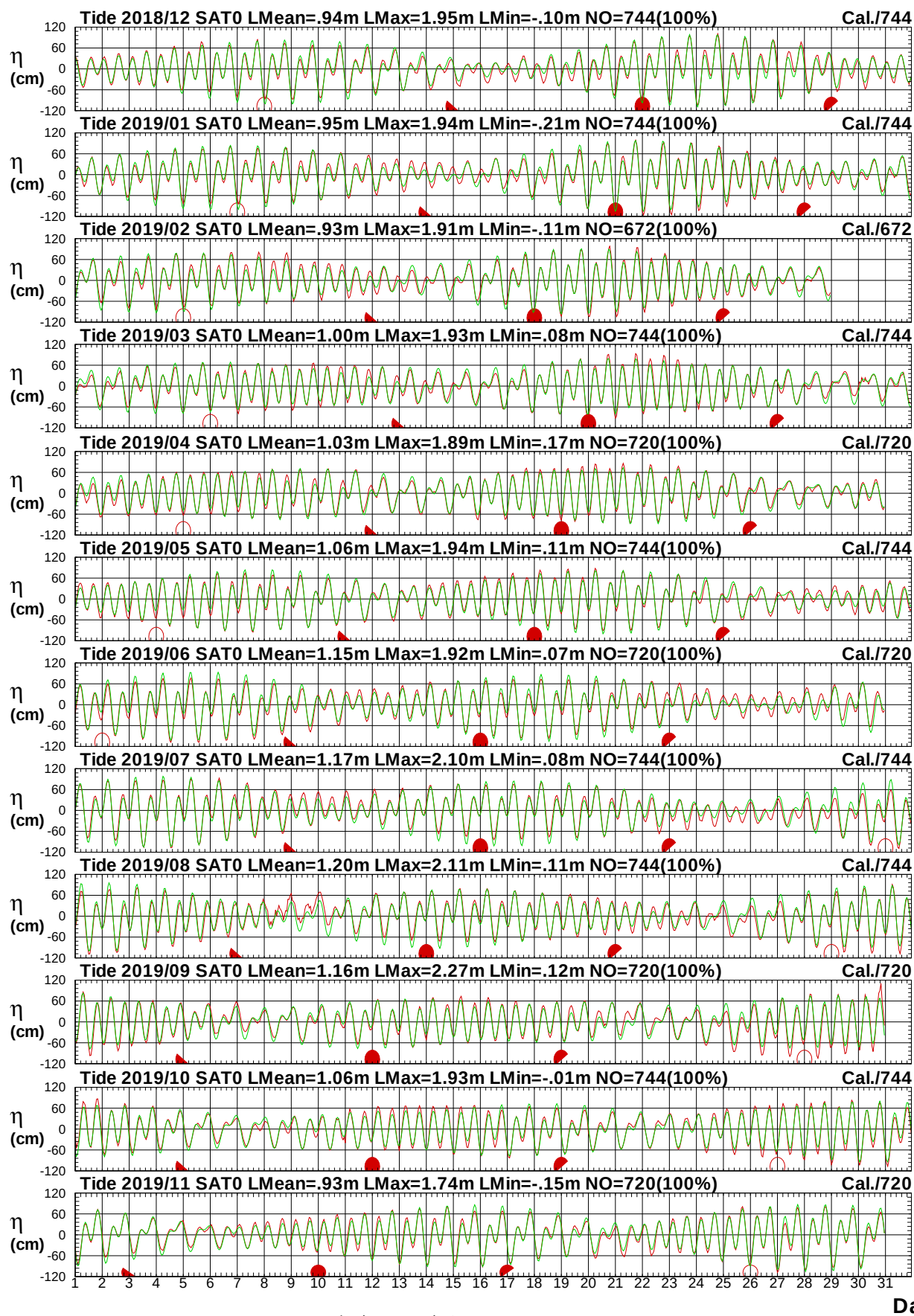


圖3.1.50 2019年每月宜蘭海域 T 站潮位歷線圖 (綠線: 天文潮)

T18CSAT0.1HA T18CSAT0.1HC T191SAT0.1HA T191SAT0.1HC T192SAT0.1HA T192SAT0.1HC
T193SAT0.1HA T193SAT0.1HC T194SAT0.1HA T194SAT0.1HC T195SAT0.1HA T195SAT0.1HC

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Tidal Level in Su-Ao Harbor of SAK0 at 2019

1 ○ 8 ● 15 ● 22 ●

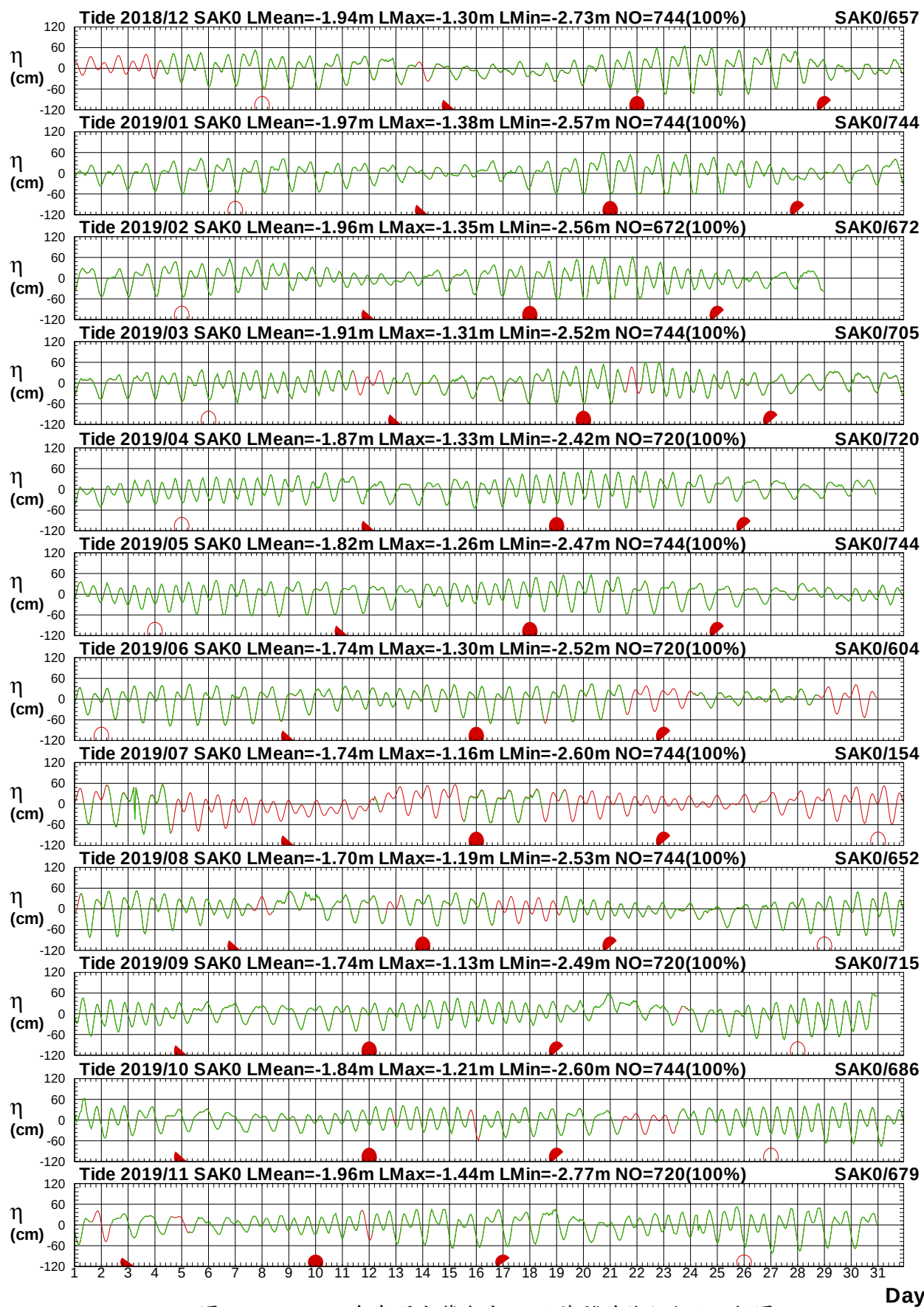


圖3.1.51 2019年每月宜蘭海域 K 站修補前後之潮位比較圖

T18CSAK0.1HA T18CSAK0.1H0 T191SAK0.1HA T191SAK0.1H0 T192SAK0.1HA T192SAK0.1H0
T193SAK0.1HA T193SAK0.1H0 T194SAK0.1HA T194SAK0.1H0 T195SAK0.1HA T195SAK0.1H0

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Tidal Level in Su-Ao Harbor of SAK0 at 2019

1 ○ 8 ● 15 ● 22 ●

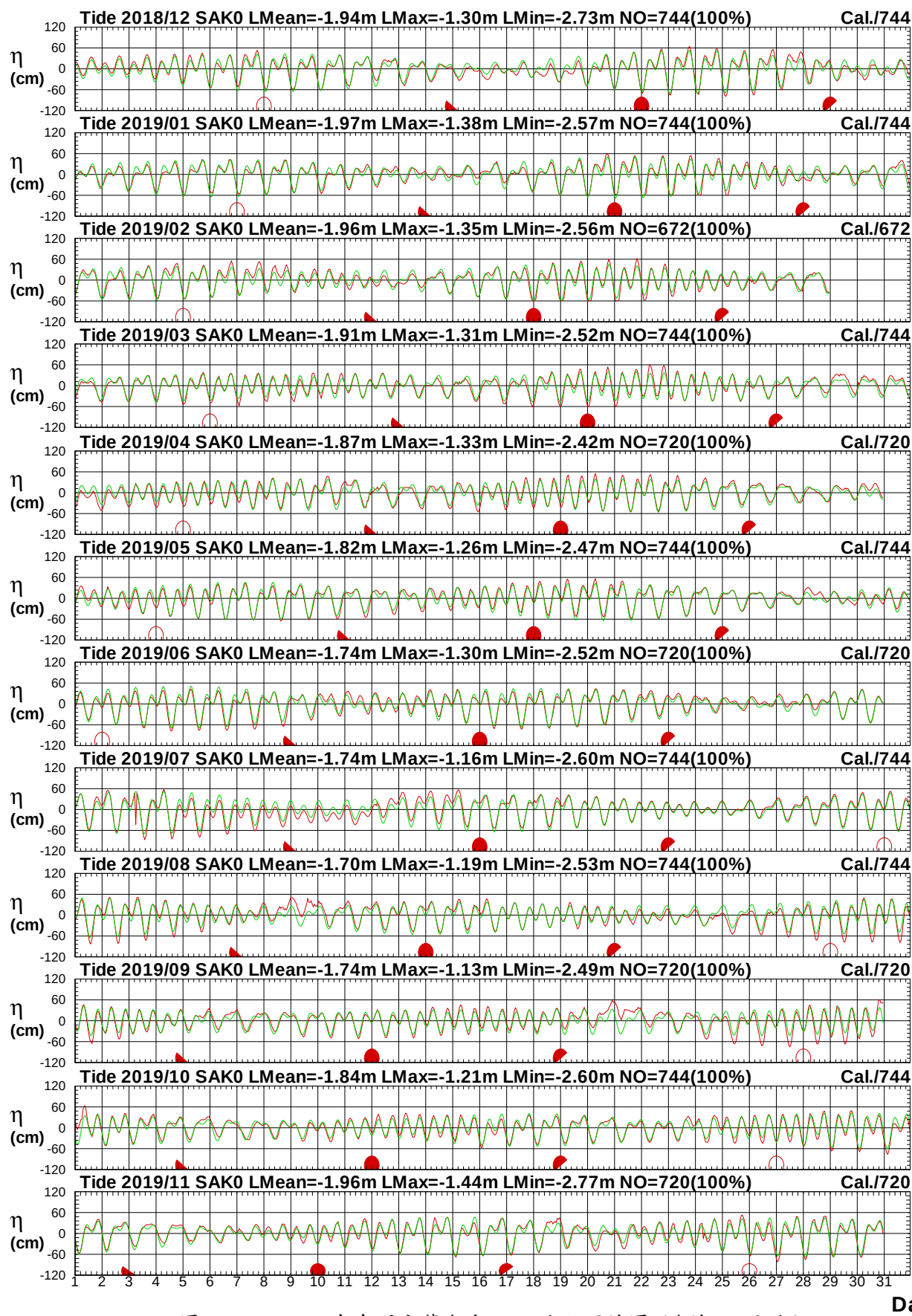


圖3.1.52 2019年每月宜蘭海域 K 站潮位歷線圖 (綠線: 天文潮)

T18CSAK0.1HA T18CSAK0.1HC T191SAK0.1HA T191SAK0.1HC T192SAK0.1HA T192SAK0.1HC
T193SAK0.1HA T193SAK0.1HC T194SAK0.1HA T194SAK0.1HC T195SAK0.1HA T195SAK0.1HC

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Tidal Level in Su-Ao Harbor of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

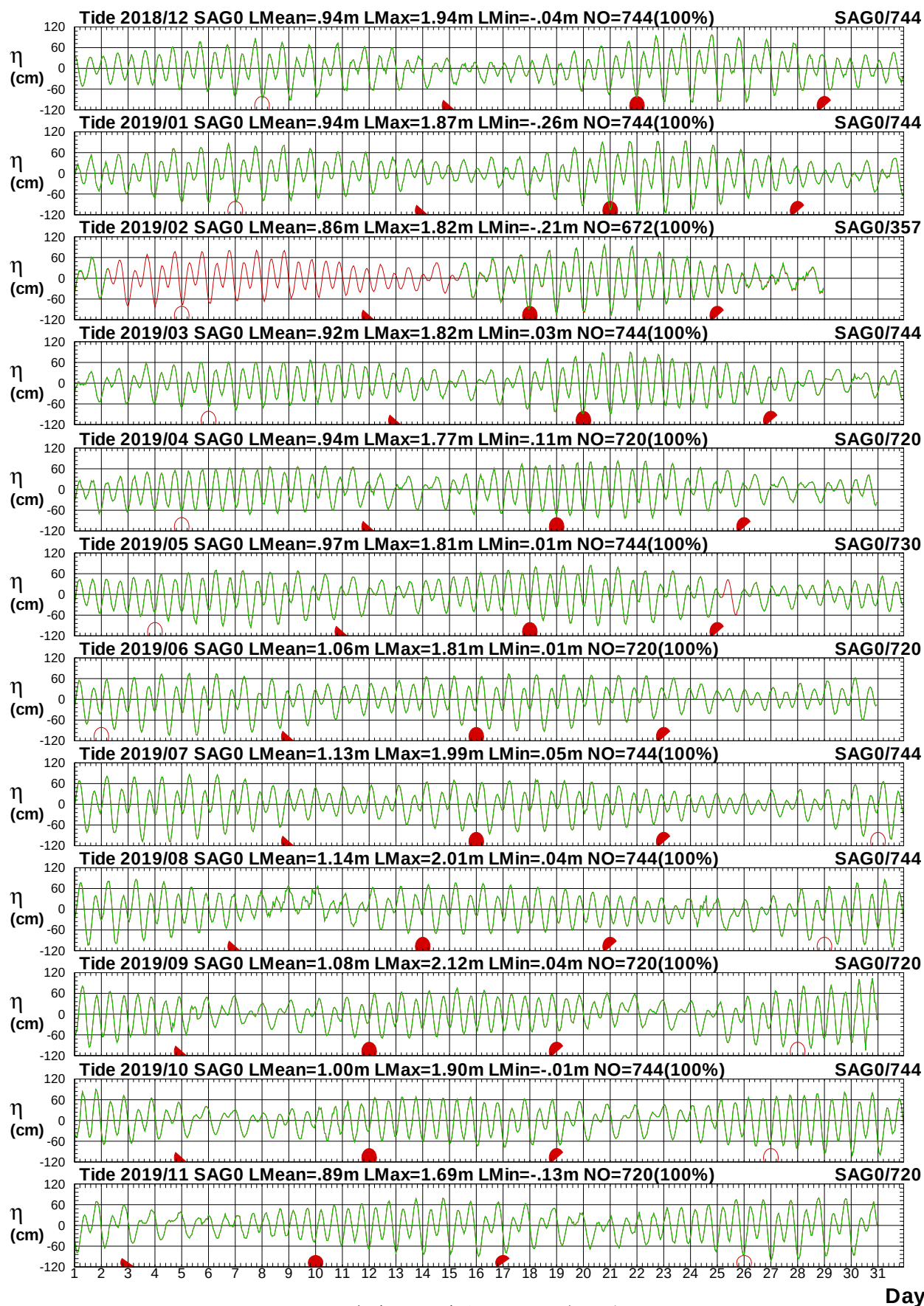


圖3.1.53 2019年每月宜蘭海域 G 站修補前後之潮位比較圖

T18CSAG0.1HA T18CSAG0.1H0 T191SAG0.1HA T191SAG0.1H0 T192SAG0.1HA T192SAG0.1H0
T193SAG0.1HA T193SAG0.1H0 T194SAG0.1HA T194SAG0.1H0 T195SAG0.1HA T195SAG0.1H0

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Tidal Level in Su-Ao Harbor of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

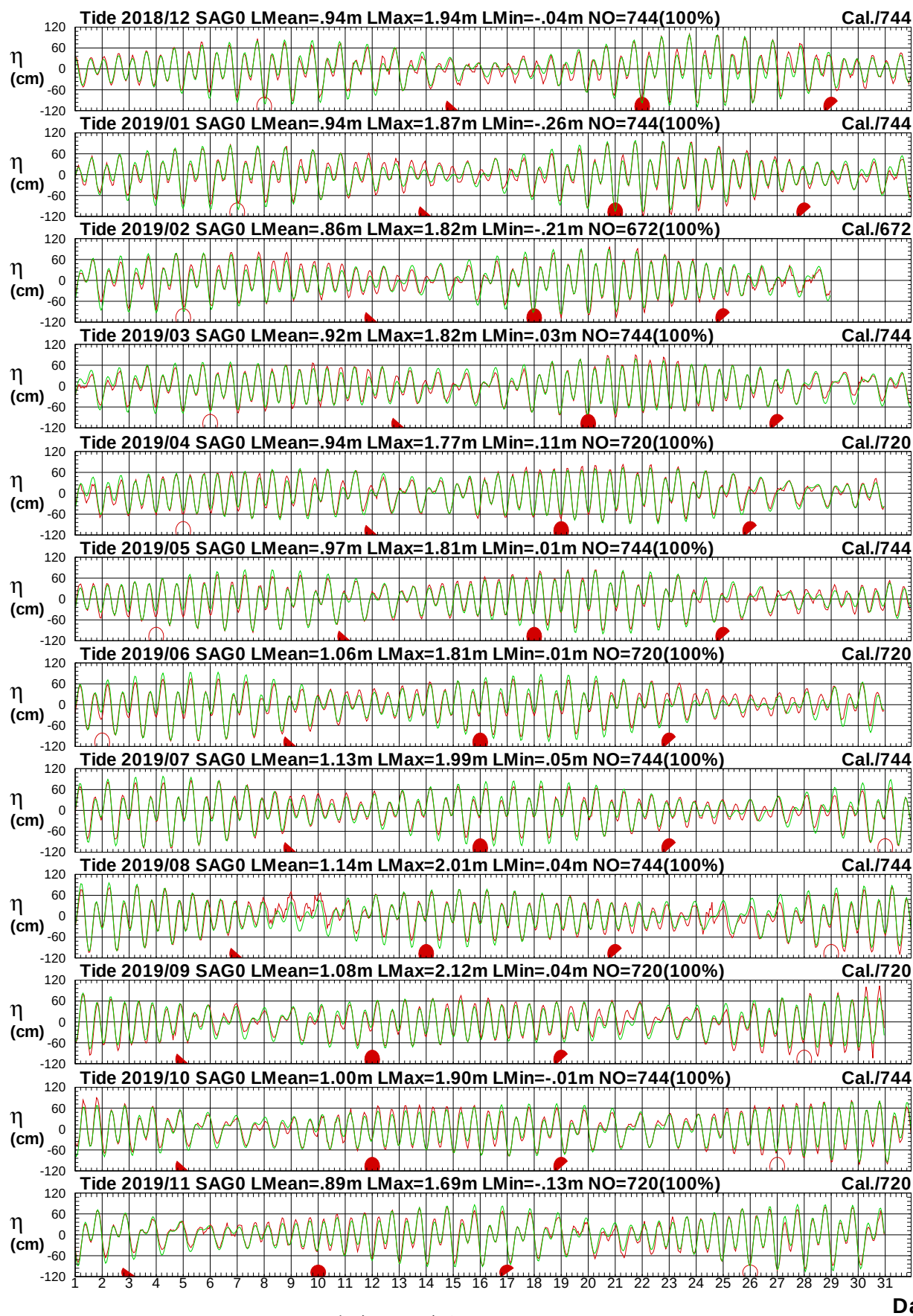


圖3.1.54 2019年每月宜蘭海域 G 站潮位歷線圖 (綠線: 天文潮)

T18CSAG0.1HA T18CSAT0.1HC T191SAG0.1HA T191SAT0.1HC T192SAG0.1HA T192SAT0.1HC
T193SAG0.1HA T193SAT0.1HC T194SAG0.1HA T194SAT0.1HC T195SAG0.1HA T195SAT0.1HC

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3.2 2019 年宜蘭海域各測站修補前 潮汐統計量統計表

表3.2.1 2019年宜蘭海域 T 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	T	92	158	123	145	12.7	26.0	13.8	16.2	58	94	195	-10	743(100)	140	155	48	40
2	2019/01	T	97	215	163	197	12.4	14.0	13.8	14.0	50	94	194	-21	654(88)	143	159	47	38
3	2019/02	T	100	155	135	153	13.2	26.0	15.8	22.5	49	93	191	-11	667(99)	141	154	45	41
4	2019/03	T	96	183	140	164	13.7	25.0	17.7	25.0	47	100	193	8	724(97)	145	161	54	43
5	2019/04	T	100	170	139	162	13.7	25.0	17.5	24.5	49	103	189	17	712(99)	152	168	56	35
6	2019/05	T	95	179	145	171	12.4	15.0	13.8	14.6	59	106	194	11	744(100)	153	168	58	41
7	2019/06	T	94	185	152	176	12.4	15.0	13.9	14.2	57	115	192	7	720(100)	161	165	68	47
8	2019/07	T	103	194	165	192	12.7	24.0	14.5	17.3	39	122	210	10	503(68)	173	176	71	58
9	2019/08	T	92	154	139	151	12.7	25.0	14.8	17.5	41	121	211	12	539(72)	167	177	74	58
10	2019/09	T	93	184	133	162	13.5	26.0	16.5	25.5	48	116	227	12	673(93)	164	174	67	39
11	2019/10	T	100	166	139	156	13.1	26.0	15.3	21.0	56	106	193	-1	744(100)	157	172	56	40
12	2019/11	T	93	186	133	171	12.9	27.0	14.7	19.0	55	93	174	-15	720(100)	140	150	46	36
13	2019/冬	T	93	172	137	157	12.7	26.0	14.3	17.1	159	94	195	-21	2064(96)	141	156	48	40
14	2019/春	T	96	172	135	154	13.1	25.0	15.6	20.5	156	103	194	8	2180(99)	150	166	57	40
15	2019/夏	T	93	185	139	165	12.5	24.0	14.1	15.2	138	119	211	7	1762(80)	166	173	71	55
16	2019/秋	T	93	173	130	150	13.0	27.0	15.1	20.0	162	105	227	-15	2137(98)	153	165	58	38
17	2019/年	T	93	186	129	149	12.9	27.0	14.8	18.8	618	104	227	-21	8143(93)	152	165	58	43

表3.2.2 2019年宜蘭海域 K 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	K	57	143	108	133	13.3	26.0	16.8	22.8	42	-195	-130	-273	657(88)	-167	-155	-221	-225
2	2019/01	K	53	118	89	114	14.1	26.0	19.3	25.3	46	-197	-138	-257	744(100)	-171	-161	-220	-223
3	2019/02	K	55	120	93	114	14.7	26.0	20.5	25.5	42	-196	-135	-256	672(100)	-166	-159	-220	-219
4	2019/03	K	60	100	88	97	13.9	24.0	18.5	24.0	42	-192	-131	-252	705(95)	-162	-155	-219	-228
5	2019/04	K	62	102	86	95	13.4	26.0	16.8	23.8	41	-187	-133	-242	720(100)	-156	-149	-214	-226
6	2019/05	K	56	105	86	101	14.3	25.0	19.4	24.5	49	-182	-126	-247	744(100)	-153	-147	-208	-217
7	2019/06	K	54	118	98	114	13.2	25.0	16.9	22.5	43	-175	-130	-252	604(84)	-147	-147	-199	-214
8	2019/07	K	79	109	109	0	21.7	25.0	25.0	.0	3	-172	-116	-260	154(21)	-140	-145	-199	-202
9	2019/08	K	59	132	97	127	13.9	29.0	17.9	26.7	39	-171	-119	-253	652(88)	-141	-138	-201	-203
10	2019/09	K	56	114	85	101	13.5	25.0	16.4	24.8	45	-174	-113	-249	715(99)	-145	-144	-203	-213
11	2019/10	K	57	116	80	96	14.2	27.0	18.6	25.8	47	-184	-121	-260	686(92)	-153	-147	-212	-216
12	2019/11	K	60	105	84	103	13.9	26.0	17.8	25.7	39	-196	-144	-277	679(94)	-166	-164	-225	-229
13	2019/冬	K	50	143	93	114	14.0	26.0	18.9	25.1	131	-196	-130	-273	2073(96)	-168	-159	-221	-223
14	2019/春	K	58	108	88	101	14.0	26.0	18.5	24.3	136	-187	-126	-252	2169(98)	-157	-150	-213	-224
15	2019/夏	K	54	118	95	113	13.8	29.0	18.1	25.5	85	-172	-116	-260	1410(64)	-144	-142	-200	-209
16	2019/秋	K	58	114	85	98	14.0	27.0	17.8	25.4	132	-184	-113	-277	2080(95)	-154	-151	-213	-219
17	2019/年	K	55	143	89	109	13.9	29.0	18.4	24.9	484	-186	-113	-277	7732(88)	-157	-151	-213	-219

表3.2.3 2019年宜蘭海域 G 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	G	100	196	137	178	13.7	26.0	16.9	25.0	48	94	194	-4	744(100)	143	157	46	40
2	2019/01	G	98	213	162	197	12.9	24.0	15.1	18.0	53	94	187	-26	744(100)	142	159	46	36
3	2019/02	G	110	201	170	194	12.9	27.0	15.1	20.5	22	84	182	-21	357(53)	136	145	32	31
4	2019/03	G	93	150	133	147	13.3	26.0	16.4	23.4	55	92	182	3	744(100)	138	151	48	33
5	2019/04	G	102	166	141	160	13.7	26.0	17.4	25.3	49	94	177	11	720(100)	143	158	45	30
6	2019/05	G	96	174	143	166	12.6	25.0	14.6	17.0	55	97	181	1	730(98)	144	157	50	34
7	2019/06	G	91	179	148	172	12.4	15.0	13.8	14.4	57	106	181	1	720(100)	152	155	61	41
8	2019/07	G	89	187	140	179	12.7	24.0	14.0	16.2	58	113	199	5	744(100)	157	165	67	50
9	2019/08	G	92	180	144	173	13.6	27.0	17.2	24.6	51	114	201	4	744(100)	160	168	66	52
10	2019/09	G	90	150	122	139	13.6	27.0	16.9	25.8	52	108	212	4	720(100)	156	163	59	40
11	2019/10	G	97	151	137	148	13.1	25.0	15.2	20.2	56	100	190	-1	744(100)	151	166	52	38
12	2019/11	G	97	182	129	159	13.1	26.0	15.5	20.8	50	89	169	-13	720(100)	138	145	41	33
13	2019/冬	G	100	196	140	175	13.4	26.0	16.3	23.2	125	92	194	-26	1845(85)	141	155	43	37
14	2019/春	G	96	164	136	154	13.2	26.0	16.1	21.6	161	94	182	1	2194(99)	142	155	47	32
15	2019/夏	G	90	187	142	175	12.9	27.0	14.9	18.6	168	111	201	1	2208(100)	156	163	65	48
16	2019/秋	G	95	205	135	160	13.3	27.0	15.8	21.8	160	99	212	-13	2184(100)	149	158	51	37
17	2019/年	G	95	196	132	157	13.1	30.0	15.4	20.7	615	99	212	-26	8431(96)	147	158	52	39

表3.2.4 2019年宜蘭海域 X 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	X																	
2	2019/01	X																	
3	2019/02	X																	
4	2019/03	X	94	158	142	154	13.3	26.0	16.0	21.7	31	2650	2738	2555	415(56)	2696	2716	2604	2582
5	2019/04	X	94	168	140	160	12.8	26.0	15.2	19.4	55	2648	2728	2560	720(100)	2695	2711	2602	2583
6	2019/05	X	95	174	144	167	12.4	15.0	13.8	14.4	55	2647	2731	2554	718(97)	2694	2708	2600	2584
7	2019/06	X	94	178	153	173	12.7	25.0	14.5	16.2	53	2636	2723	2539	695(97)	2682	2693	2589	2579
8	2019/07	X	93	199	145	188	12.9	24.0	14.8	18.0	57	2611	2698	2497	737(99)	2658	2665	2564	2544
9	2019/08	X	96	183	136	159	13.9	25.0	18.1	25.0	40	2612	2702	2509	562(76)	2657	2662	2564	2560
10	2019/09	X	97	176	136	155	14.0	26.0	18.1	25.7	31	2677	2761	2575	460(64)	2726	2733	2626	2608
11	2019/10	X																	
12	2019/11	X																	
13	2019/冬	X																	
14	2019/春	X	93	174	141	162	12.8	26.0	14.3	17.2	143	2648	2738	2554	1853(84)	2695	2711	2602	2583
15	2019/夏	X	94	178	139	163	13.1	25.0	15.7	20.5	151	2620	2723	2497	1994(90)	2666	2674	2573	2559
16	2019/秋	X	99	176	142	166	13.2	26.0	15.8	22.0	31	2677	2761	2575	460(21)	2726	2733	2626	2608
17	2019/年	X	93	201	134	159	13.0	26.0	14.9	19.2	325	2638	2761	2497	4307(49)	2685	2698	2591	2576

表3.2.5 2019年宜蘭海域 F 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	F	89	146	118	135	12.9	25.0	14.7	18.4	51	-218	-120	-318	645(87)	-173	-160	-261	-271
2	2019/01	F	90	207	152	191	12.4	14.0	13.6	14.0	59	-217	-122	-329	744(100)	-172	-155	-262	-273
3	2019/02	F	96	157	132	151	12.9	25.0	15.0	19.5	48	-219	-125	-322	655(97)	-171	-159	-265	-267
4	2019/03	F	88	177	135	156	13.1	25.0	15.9	21.0	53	-214	-126	-303	705(95)	-170	-156	-257	-271
5	2019/04	F	94	157	132	147	13.1	26.0	15.8	21.4	54	-211	-127	-296	720(100)	-164	-148	-257	-275
6	2019/05	F	93	175	141	167	12.4	15.0	13.8	14.6	59	-209	-125	-300	744(100)	-162	-149	-255	-272
7	2019/06	F	95	181	147	175	12.7	24.0	14.6	16.5	45	-203	-126	-307	604(84)	-156	-152	-250	-267
8	2019/07	F	122	188	181	0	12.3	13.0	13.0	.0	7	-198	-116	-305	154(21)	-146	-148	-258	-261
9	2019/08	F	92	151	129	145	12.8	25.0	14.4	17.3	45	-194	-106	-302	651(88)	-148	-140	-242	-255
10	2019/09	F	93	156	130	151	12.4	15.0	13.5	14.4	57	-196	-105	-295	720(100)	-150	-142	-243	-265
11	2019/10	F	98	174	135	160	12.9	25.0	14.5	18.4	54	-204	-118	-303	716(96)	-155	-139	-253	-265
12	2019/11	F	90	140	122	136	13.1	26.0	15.3	20.8	54	-215	-135	-319	682(95)	-170	-159	-260	-270
13	2019/冬	F	91	200	138	173	12.7	26.0	14.3	16.9	160	-218	-120	-329	2044(95)	-172	-158	-263	-271
14	2019/春	F	91	177	136	158	12.9	26.0	15.1	18.8	168	-211	-125	-303	2169(98)	-165	-151	-256	-273
15	2019/夏	F	94	189	142	172	12.6	25.0	14.4	16.4	98	-198	-106	-307	1409(64)	-151	-147	-248	-262
16	2019/秋	F	94	177	135	153	12.8	26.0	14.4	17.6	167	-205	-105	-319	2118(97)	-158	-146	-252	-267
17	2019/年	F	92	200	135	161	12.8	26.0	14.4	17.3	594	-209	-105	-329	7740(88)	-163	-151	-255	-268

表3.2.6 2019年宜蘭海域 P 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	P	89	147	119	136	12.9	25.0	14.7	18.4	51	-218	-120	-319	645(87)	-173	-160	-262	-272
2	2019/01	P	90	208	153	191	12.4	14.0	13.6	14.0	59	-217	-121	-329	744(100)	-172	-155	-263	-274
3	2019/02	P	96	158	132	151	12.9	25.0	14.9	19.5	48	-219	-125	-322	655(97)	-171	-159	-265	-267
4	2019/03	P	89	178	136	157	13.1	25.0	15.9	20.8	53	-213	-125	-303	705(95)	-169	-155	-257	-272
5	2019/04	P	97	166	135	157	13.8	26.0	17.9	25.2	51	-209	-126	-295	720(100)	-163	-147	-255	-275
6	2019/05	P	93	176	142	167	12.4	15.0	13.8	14.6	59	-208	-123	-300	744(100)	-161	-148	-254	-271
7	2019/06	P	95	180	148	175	12.7	24.0	14.6	16.5	45	-202	-125	-307	604(84)	-155	-151	-249	-267
8	2019/07	P	122	188	182	0	12.4	14.0	13.5	.0	7	-198	-115	-304	155(21)	-146	-147	-257	-261
9	2019/08	P	93	150	129	145	12.8	26.0	14.3	17.3	45	-193	-104	-301	651(88)	-146	-139	-241	-254
10	2019/09	P	90	152	127	146	12.9	26.0	14.8	19.0	55	-195	-113	-293	720(100)	-149	-140	-242	-263
11	2019/10	P	97	174	134	154	13.1	26.0	15.2	20.6	53	-202	-116	-301	716(96)	-153	-137	-251	-264
12	2019/11	P	90	140	122	136	13.1	25.0	15.3	20.6	54	-213	-133	-317	682(95)	-168	-157	-258	-268
13	2019/冬	P	91	197	129	158	12.7	26.0	14.3	16.9	160	-218	-120	-329	2044(95)	-172	-158	-263	-271
14	2019/春	P	92	178	137	160	13.1	30.0	15.8	20.8	164	-210	-123	-303	2169(98)	-164	-150	-255	-273
15	2019/夏	P	95	180	144	172	12.6	25.0	14.5	16.8	98	-197	-104	-307	1410(64)	-150	-146	-246	-262
16	2019/秋	P	93	178	134	159	13.1	26.0	15.3	20.3	163	-204	-113	-317	2118(97)	-157	-144	-250	-265
17	2019/年	P	92	197	134	160	12.9	28.0	14.8	18.8	586	-208	-104	-329	7741(88)	-162	-150	-254	-268

表3.2.7 2019年宜蘭海域 J 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	J	84	189	143	175	12.6	24.0	14.8	16.6	52	-200	-115	-304	657(88)	-157	-144	-241	-246
2	2019/01	J	83	165	129	150	12.6	26.0	14.8	17.0	58	-199	-119	-313	744(100)	-158	-143	-241	-252
3	2019/02	J	88	164	133	153	13.2	25.0	16.3	22.3	47	-199	-117	-304	671(100)	-156	-146	-241	-243
4	2019/03	J	88	150	123	142	13.2	25.0	16.1	22.5	46	-195	-112	-281	705(95)	-154	-143	-236	-247
5	2019/04	J	89	148	124	139	13.1	25.0	15.6	20.8	54	-191	-119	-272	720(100)	-148	-135	-236	-253
6	2019/05	J	82	154	126	147	12.4	15.0	14.0	15.0	59	-187	-113	-273	744(100)	-145	-134	-228	-244
7	2019/06	J	86	160	135	154	12.7	24.0	14.6	16.8	46	-180	-115	-281	604(84)	-136	-133	-221	-237
8	2019/07	J	111	151	146	0	13.8	24.0	18.5	.0	8	-174	-100	-275	154(21)	-123	-123	-224	-233
9	2019/08	J	90	180	133	174	13.2	25.0	16.0	22.5	47	-175	-95	-284	650(87)	-128	-123	-220	-232
10	2019/09	J	96	163	129	153	12.7	26.0	14.0	17.0	48	-179	-83	-280	656(91)	-129	-126	-226	-246
11	2019/10	J	96	164	132	152	12.6	25.0	13.8	16.0	55	-187	-105	-287	716(96)	-138	-125	-234	-245
12	2019/11	J	81	159	128	153	12.9	26.0	14.6	18.4	52	-199	-128	-297	682(95)	-157	-150	-238	-246
13	2019/冬	J	85	186	134	160	12.9	26.0	15.4	19.0	158	-199	-115	-313	2072(96)	-157	-145	-241	-247
14	2019/春	J	86	150	120	137	12.9	25.0	15.1	18.8	161	-191	-112	-281	2169(98)	-149	-137	-233	-248
15	2019/夏	J	88	170	131	152	12.9	25.0	15.1	18.5	100	-177	-95	-284	1408(64)	-131	-126	-221	-236
16	2019/秋	J	91	196	125	146	12.7	26.0	14.1	16.9	157	-188	-83	-297	2054(94)	-142	-133	-232	-246
17	2019/年	J	86	187	129	153	12.8	26.0	15.1	18.6	579	-190	-83	-313	7703(88)	-146	-135	-233	-244

表3.2.8 2019年宜蘭海域 Q 站修補前潮差週期及潮位重要統計量統計表

序 號	日期 (年/月)	測 站	平均 潮差 (公分)	最大 潮差 (公分)	1/3 潮差 (公分)	1/10 潮差 (公分)	平均 週期 (時)	最大 週期 (時)	1/3 週期 (時)	1/10 週期 (時)	潮差 個數 (個)	平均 潮位 (公分)	最高 潮位 (公分)	最低 潮位 (公分)	水位 點數 (個)(%)	平均 高潮位 (公分)	大潮平均 高潮位 (公分)	平均 低潮位 (公分)	大潮平均 低潮位 (公分)
1	2018/12	Q																	
2	2019/01	Q																	
3	2019/02	Q																	
4	2019/03	Q																	
5	2019/04	Q																	
6	2019/05	Q																	
7	2019/06	Q																	
8	2019/07	Q																	
9	2019/08	Q																	
10	2019/09	Q																	
11	2019/10	Q	70	116	101	116	12.1	15.0	13.6	15.0	16	-186	-136	-259	205(28)	-150	-146	-220	-222
12	2019/11	Q	56	105	82	95	13.9	26.0	17.4	25.3	42	-196	-147	-277	679(94)	-167	-165	-224	-229
13	2019/冬	Q																	
14	2019/春	Q																	
15	2019/夏	Q																	
16	2019/秋	Q	61	123	99	115	13.2	27.0	16.5	23.2	59	-194	-136	-277	884(40)	-163	-158	-223	-227
17	2019/年	Q	61	123	99	115	13.2	27.0	16.5	23.2	59	-194	-136	-277	884(10)	-163	-158	-223	-227

3.3 2019 年宜蘭海域**主要測站 1**(修補後)與 **其他測站**(修補前)潮位歷線比較圖

Tidal Level in Yi-Lan Seas of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

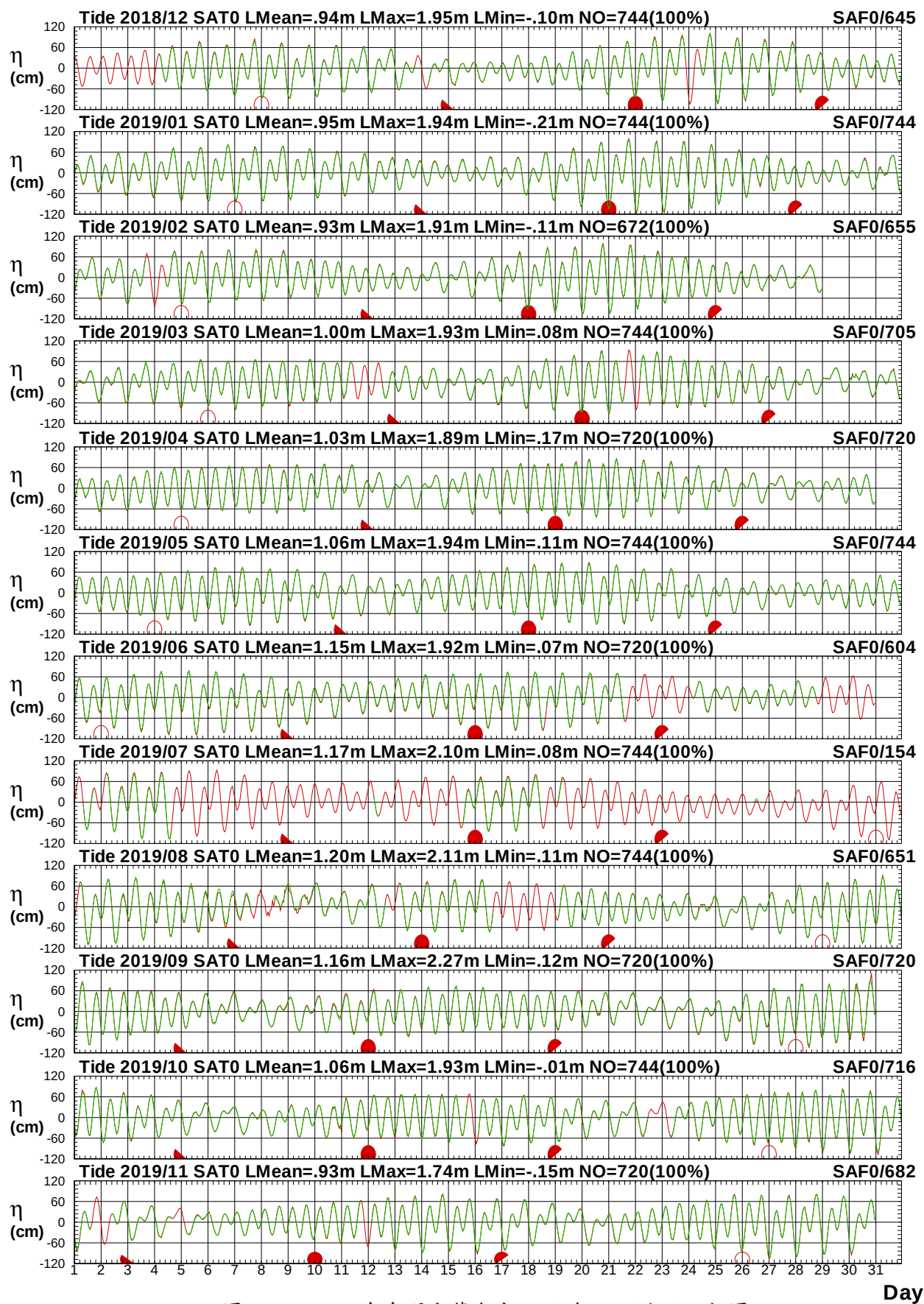


圖3.3.1 2019年每月宜蘭海域 T 站與 F 站潮位比較圖

T18CSAT0.1HA T18CSAF0.1H0 T191SAT0.1HA T191SAF0.1H0 T192SAT0.1HA T192SAF0.1H0
T193SAT0.1HA T193SAF0.1H0 T194SAT0.1HA T194SAF0.1H0 T195SAT0.1HA T195SAF0.1H0

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Tidal Level in Yi-Lan Seas of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

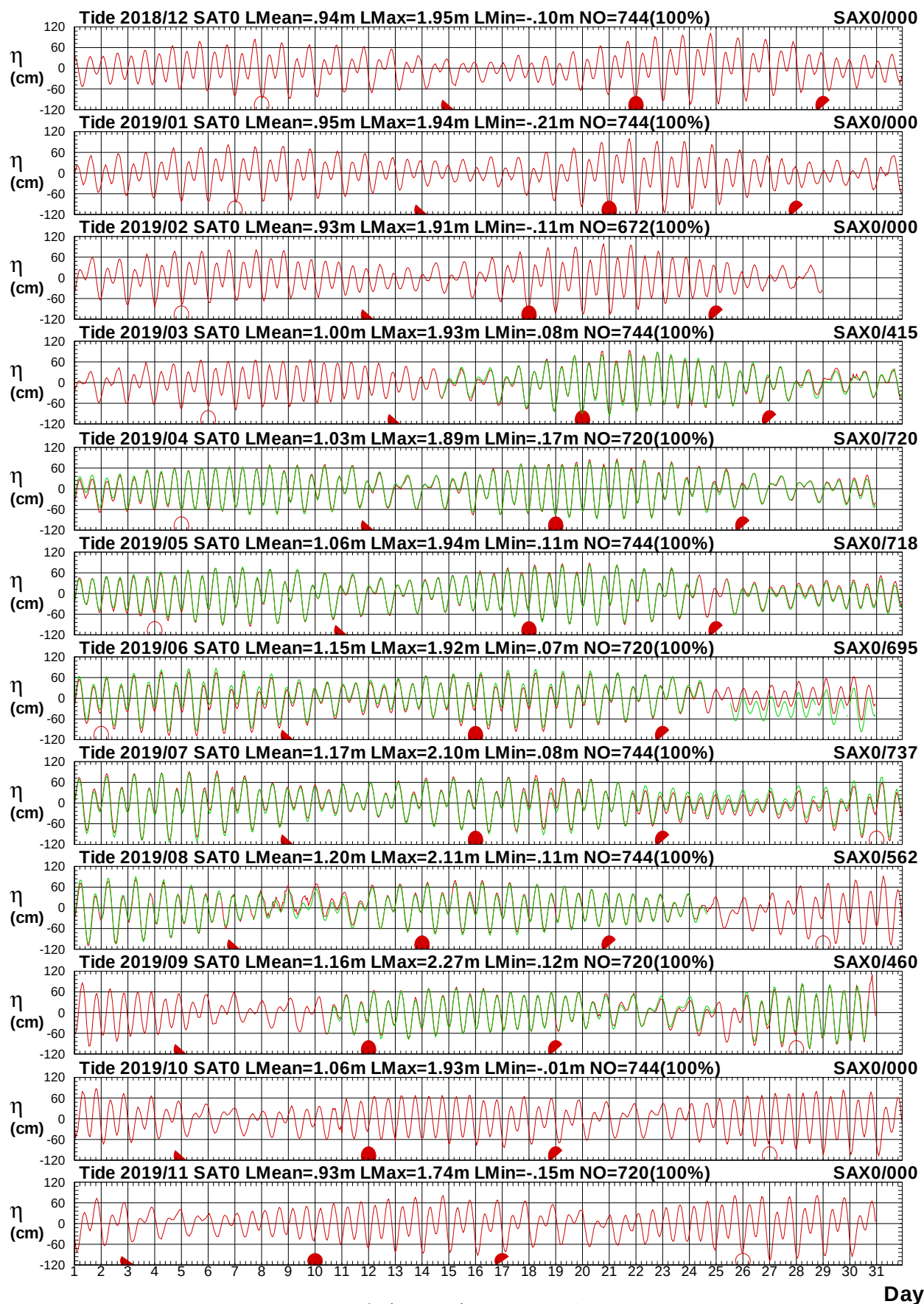


圖3.3.2 2019年每月宜蘭海域 T 站與 X 站潮位比較圖

T18CSAT0.1HA T18CSAX0.1H0 T191SAT0.1HA T191SAX0.1H0 T192SAT0.1HA T192SAX0.1H0
T193SAT0.1HA T193SAX0.1H0 T194SAT0.1HA T194SAX0.1H0 T195SAT0.1HA T195SAX0.1H0

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Tidal Level in Yi-Lan Seas of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

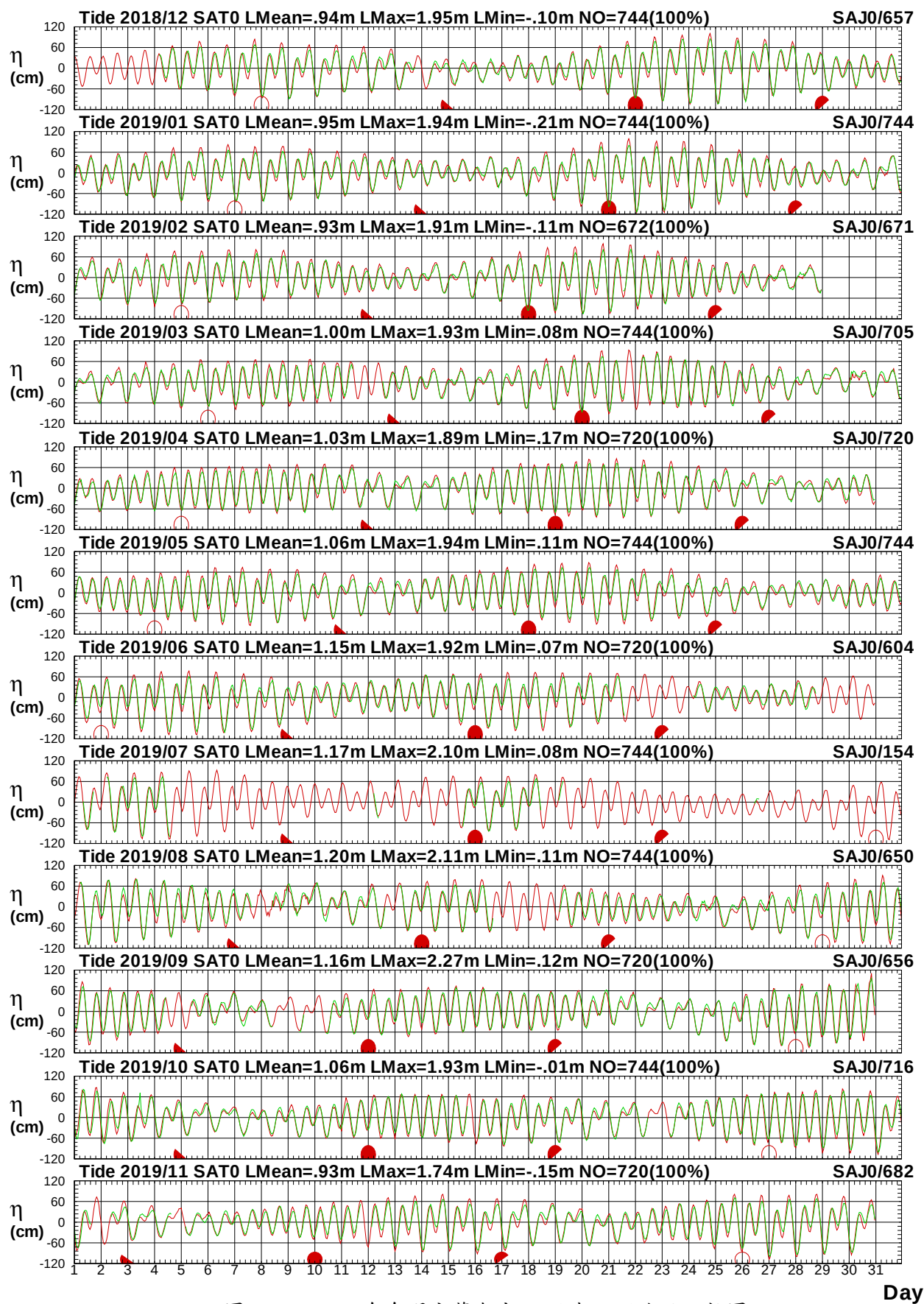


圖3.3.3 2019年每月宜蘭海域 T 站與 J 站潮位比較圖

T18CSAT0.1HA T18CSAJ0.1H0 T191SAT0.1HA T191SAJ0.1H0 T192SAT0.1HA T192SAJ0.1H0
T193SAT0.1HA T193SAJ0.1H0 T194SAT0.1HA T194SAJ0.1H0 T195SAT0.1HA T195SAJ0.1H0

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Tidal Level in Yi-Lan Seas of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

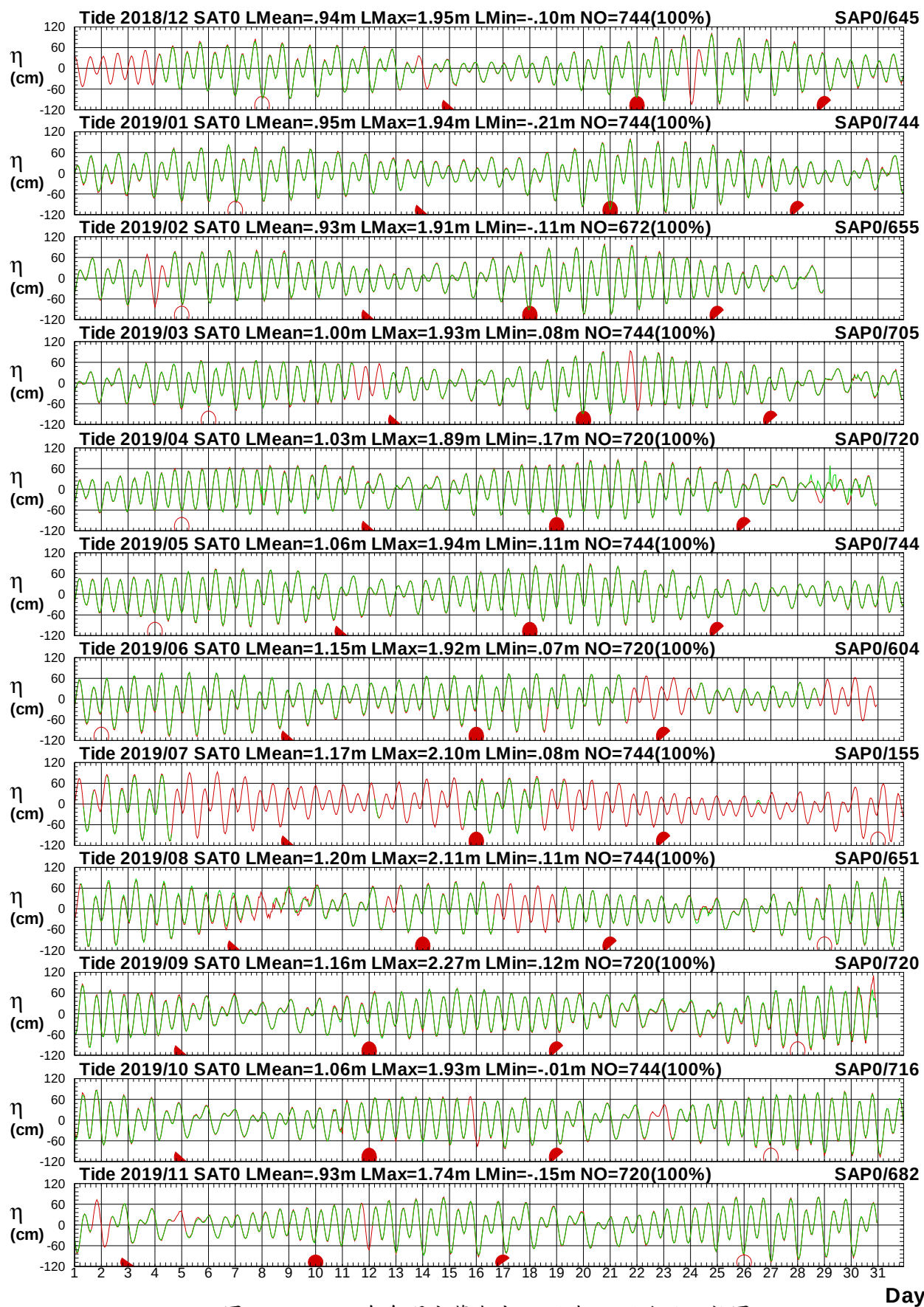


圖3.3.4 2019年每月宜蘭海域 T 站與 P 站潮位比較圖

T18CSAT0.1HA T18CSAP0.1H0 T191SAT0.1HA T191SAP0.1H0 T192SAT0.1HA T192SAP0.1H0
T193SAT0.1HA T193SAP0.1H0 T194SAT0.1HA T194SAP0.1H0 T195SAT0.1HA T195SAP0.1H0

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Tidal Level in Yi-Lan Seas of SAT0 at 2019

1 ○ 8 ● 15 ● 22 ●

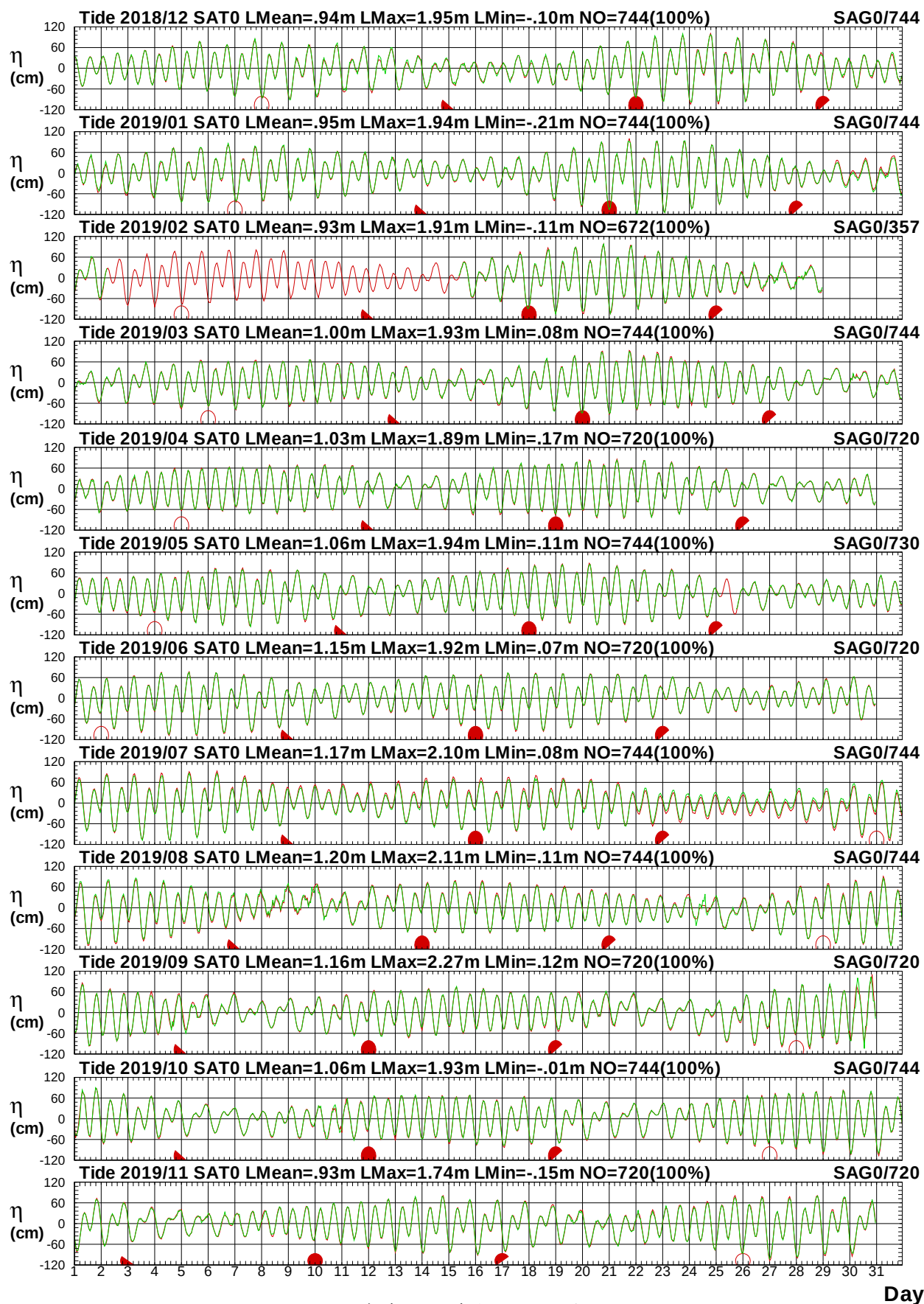


圖3.3.5 2019年每月宜蘭海域 T 站與 G 站潮位比較圖

T18CSAT0.1HA T18CSAG0.1H0 T191SAT0.1HA T191SAG0.1H0 T192SAT0.1HA T192SAG0.1H0
T193SAT0.1HA T193SAG0.1H0 T194SAT0.1HA T194SAG0.1H0 T195SAT0.1HA T195SAG0.1H0

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3.4 2019 年宜蘭海域**主要測站 2**(修補後)與 **其他測站**(修補前)潮位歷線比較圖

Tidal Level in Yi-Lan Seas of SAK0 at 2019

1 ○ 8 ● 15 ● 22 ●

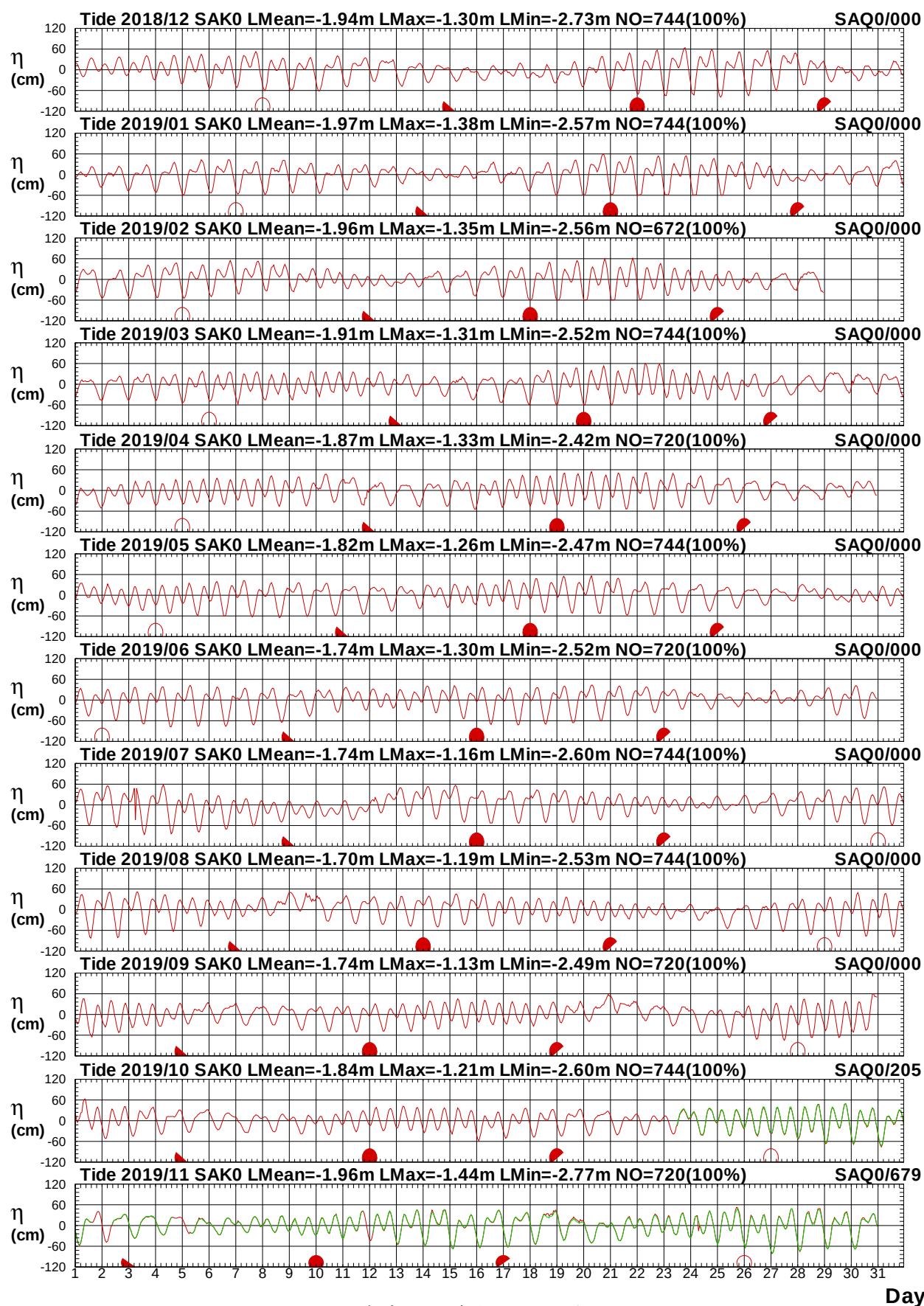


圖3.4.1 2019年每月宜蘭海域 K 站與 Q 站潮位比較圖

T18CSAK0.1HA T18CSAQ0.1H0 T191SAK0.1HA T191SAQ0.1H0 T192SAK0.1HA T192SAQ0.1H0
T193SAK0.1HA T193SAQ0.1H0 T194SAK0.1HA T194SAQ0.1H0 T195SAK0.1HA T195SAQ0.1H0

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Tidal Level in Yi-Lan Seas of SAK0 at 2019

1 ○ 8 ● 15 ● 22 ●

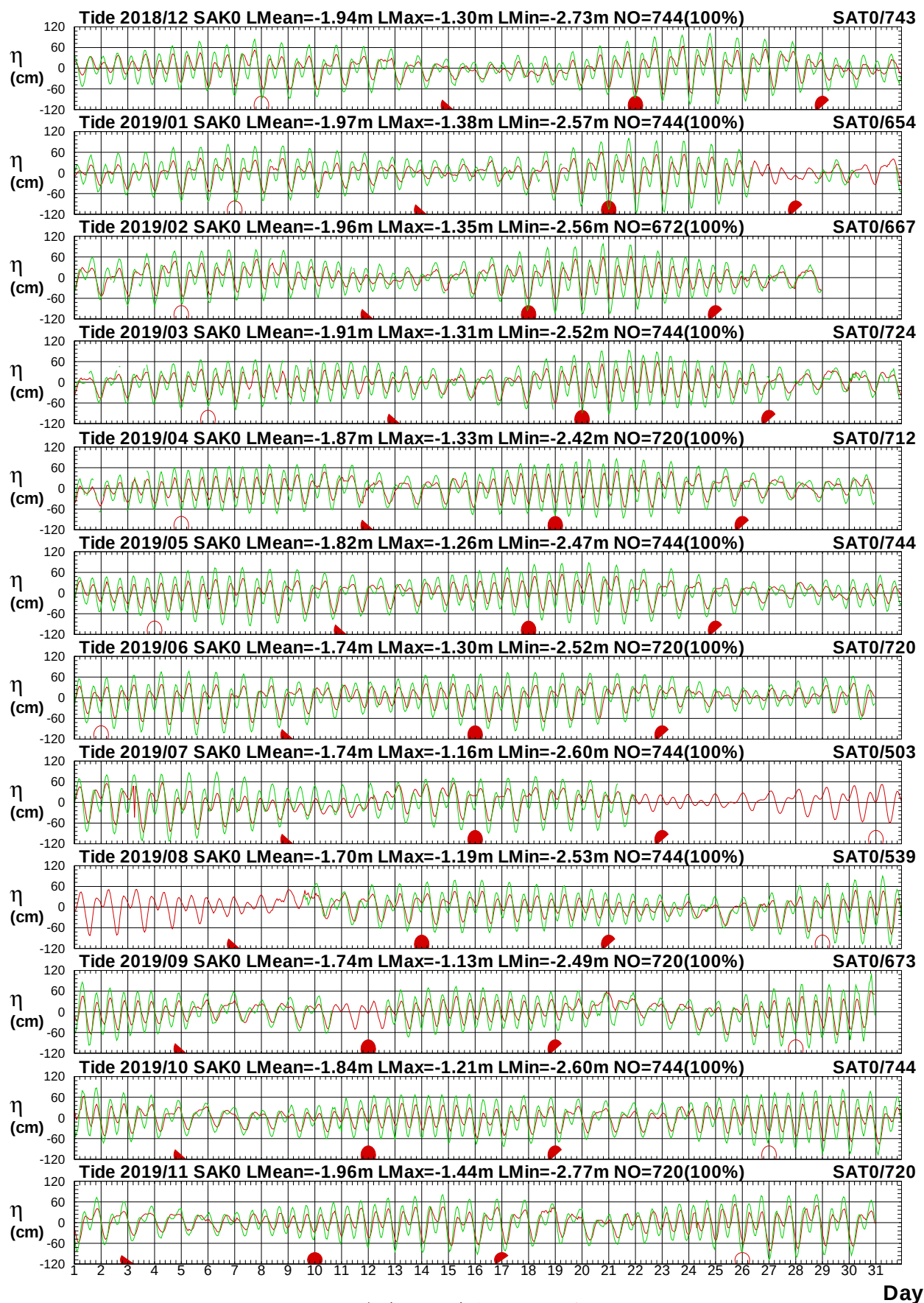


圖3.4.2 2019年每月宜蘭海域 K 站與 T 站潮位比較圖

T18CSAK0.1HA T18CSAT0.1H0 T191SAK0.1HA T191SAT0.1H0 T192SAK0.1HA T192SAT0.1H0
T193SAK0.1HA T193SAT0.1H0 T194SAK0.1HA T194SAT0.1H0 T195SAK0.1HA T195SAT0.1H0

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3.5 2019 年宜蘭海域**主要測站 3**(修補後)與 **其他測站**(修補前)潮位歷線比較圖

Tidal Level in Yi-Lan Seas of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

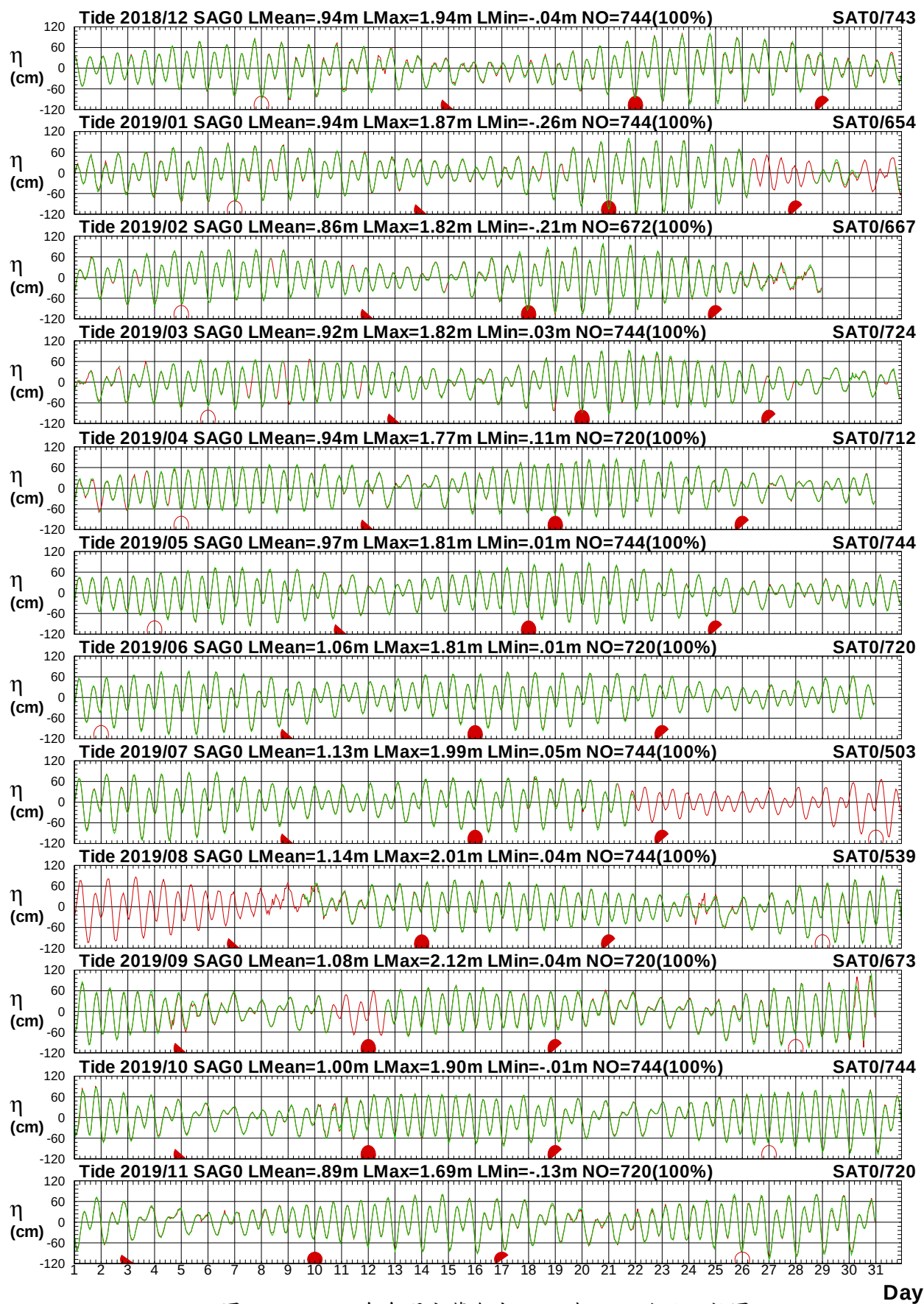


圖3.5.1 2019年每月宜蘭海域 G 站與 T 站潮位比較圖

T18CSAG0.1HA T18CSAT0.1H0 T191SAG0.1HA T191SAT0.1H0 T192SAG0.1HA T192SAT0.1H0
T193SAG0.1HA T193SAT0.1H0 T194SAG0.1HA T194SAT0.1H0 T195SAG0.1HA T195SAT0.1H0

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Tidal Level in Yi-Lan Seas of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

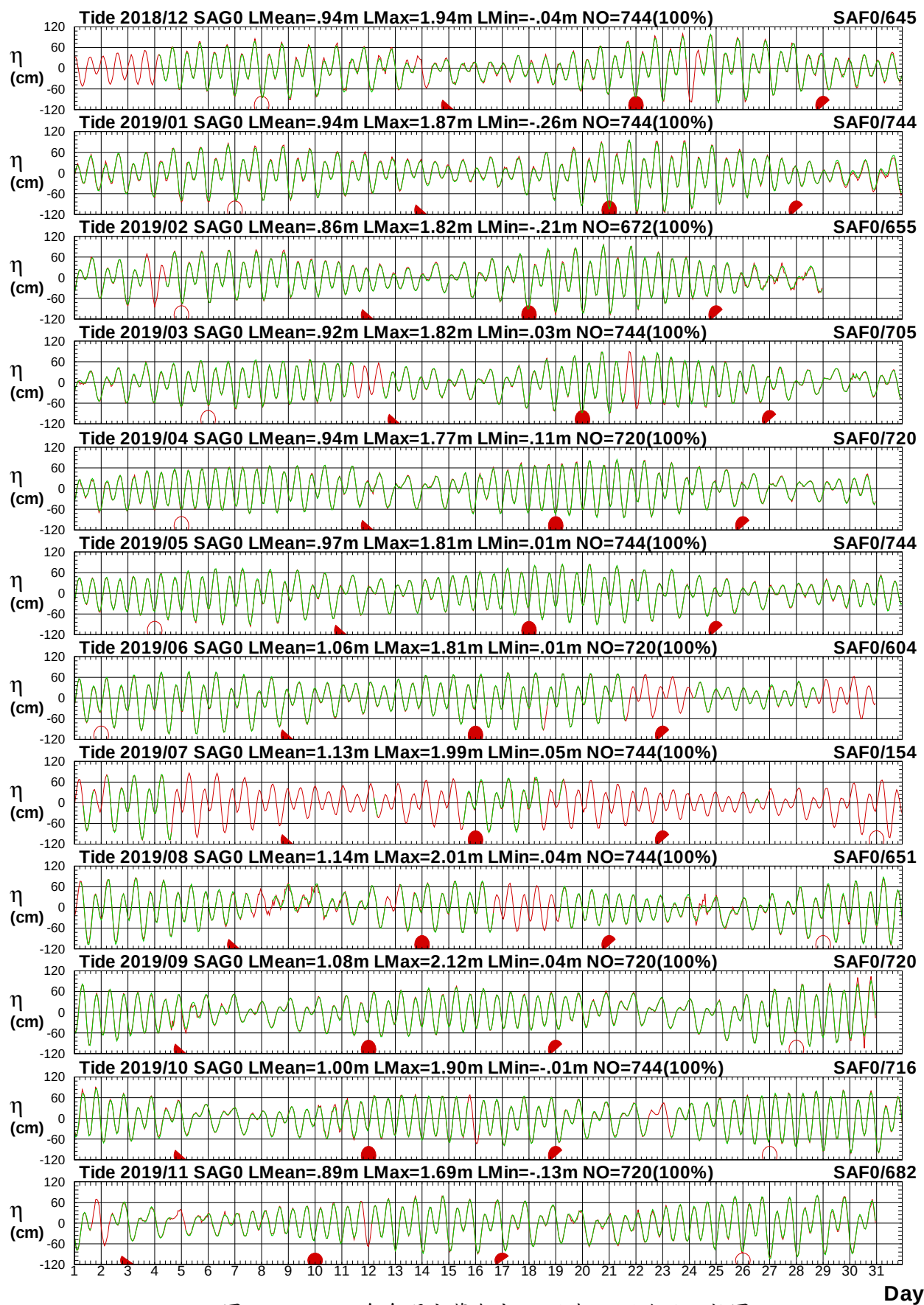


圖3.5.2 2019年每月宜蘭海域 G 站與 F 站潮位比較圖

T18CSAG0.1HA T18CSAF0.1H0 T191SAG0.1HA T191SAF0.1H0 T192SAG0.1HA T192SAF0.1H0
T193SAG0.1HA T193SAF0.1H0 T194SAG0.1HA T194SAF0.1H0 T195SAG0.1HA T195SAF0.1H0

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Tidal Level in Yi-Lan Seas of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

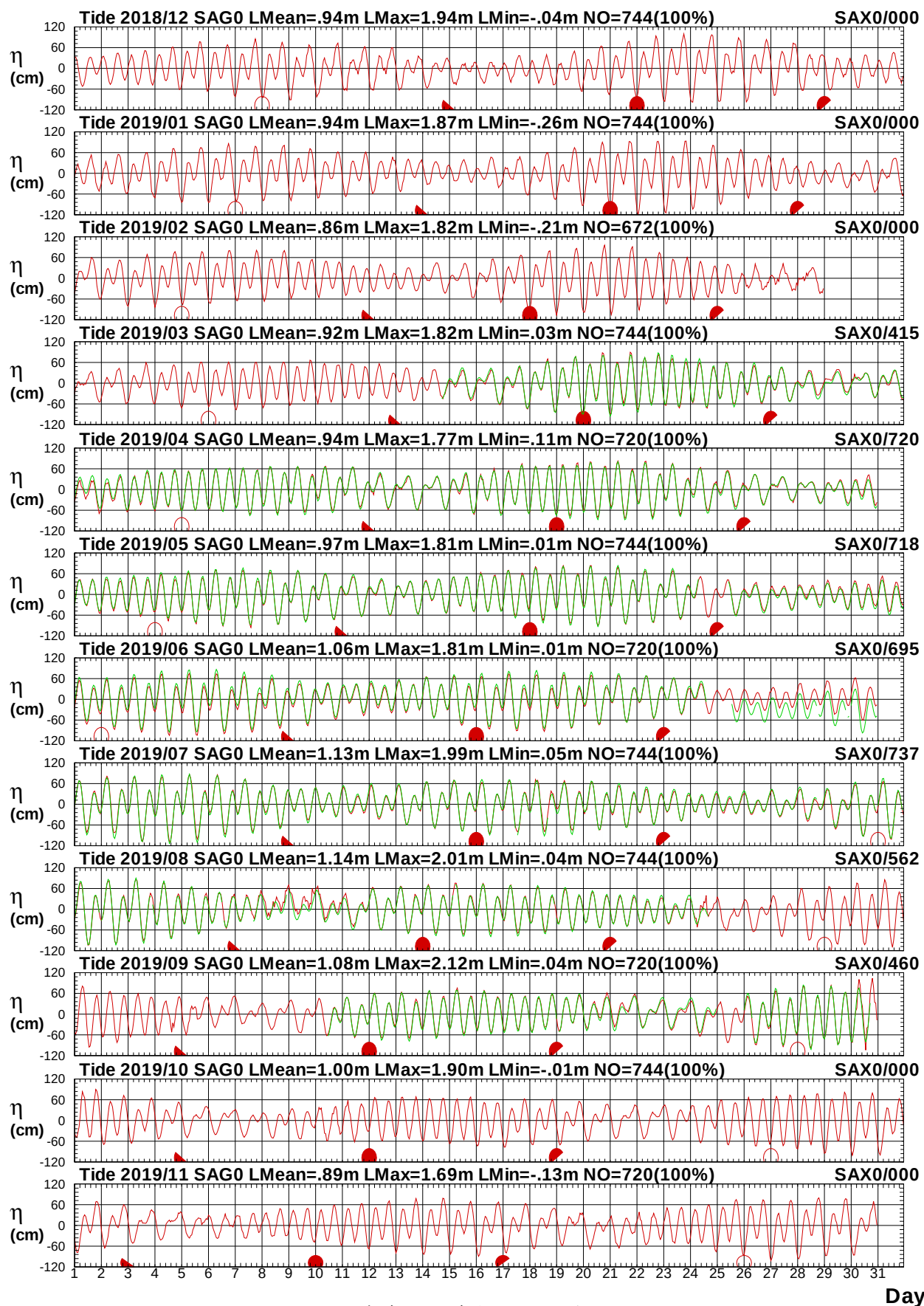


圖3.5.3 2019年每月宜蘭海域 G 站與 X 站潮位比較圖

T18CSAG0.1HA T18CSAX0.1H0 T191SAG0.1HA T191SAX0.1H0 T192SAG0.1HA T192SAX0.1H0
T193SAG0.1HA T193SAX0.1H0 T194SAG0.1HA T194SAX0.1H0 T195SAG0.1HA T195SAX0.1H0

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Tidal Level in Yi-Lan Seas of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

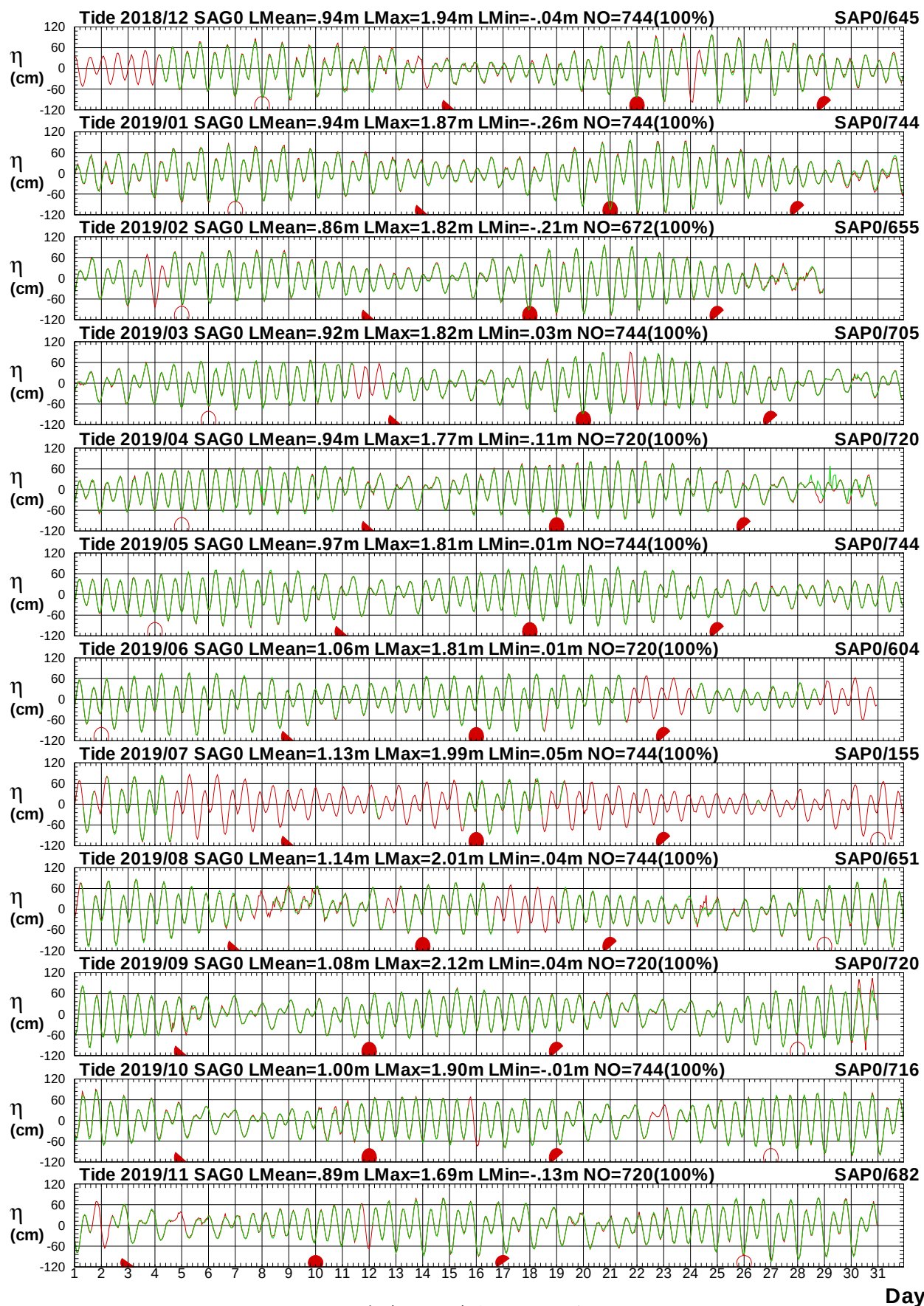


圖3.5.4 2019年每月宜蘭海域 G 站與 P 站潮位比較圖

T18CSAG0.1HA T18CSAP0.1H0 T191SAG0.1HA T191SAP0.1H0 T192SAG0.1HA T192SAP0.1H0
T193SAG0.1HA T193SAP0.1H0 T194SAG0.1HA T194SAP0.1H0 T195SAG0.1HA T195SAP0.1H0

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Tidal Level in Yi-Lan Seas of SAG0 at 2019

1 ○ 8 ● 15 ● 22 ●

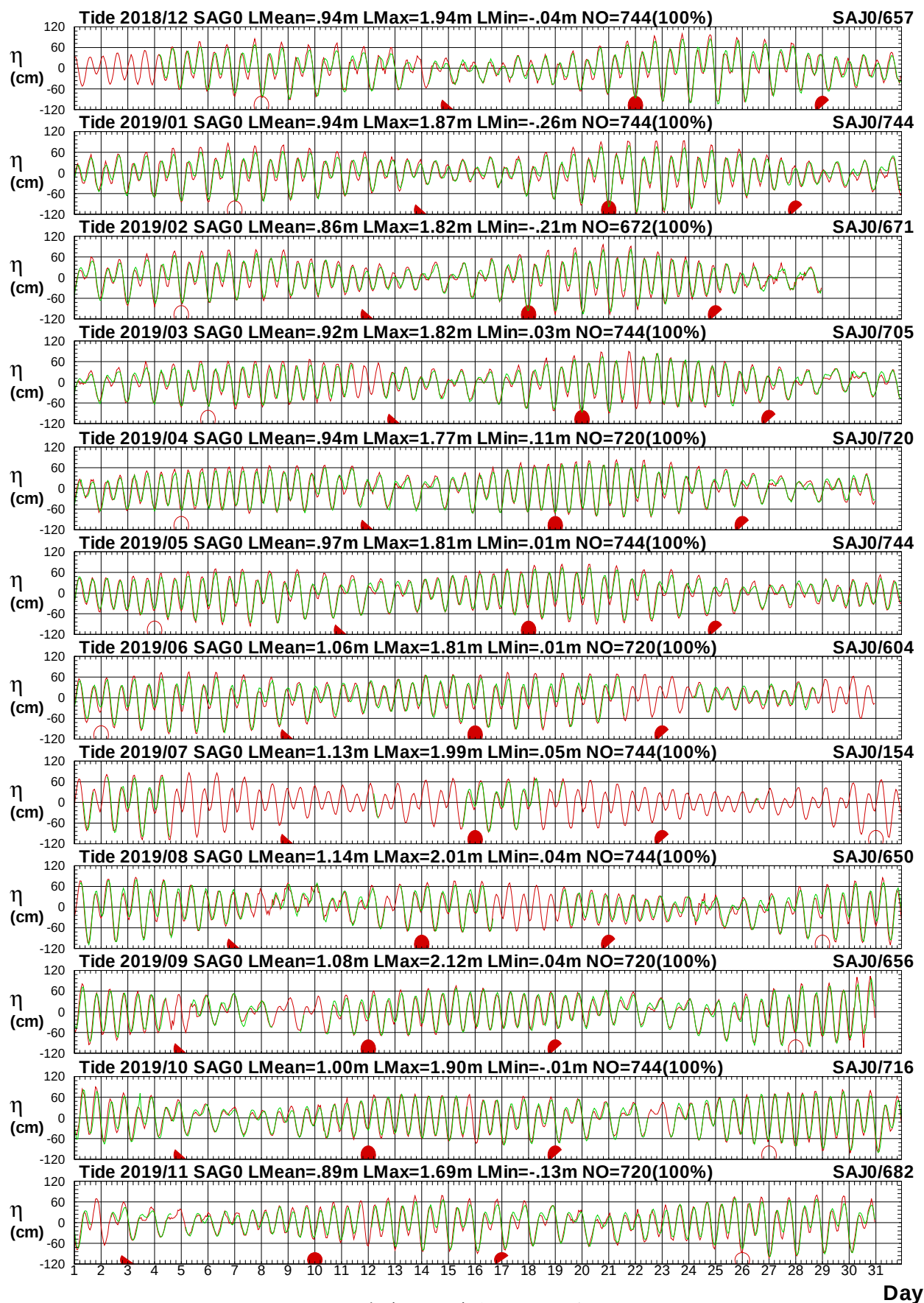


圖3.5.5 2019年每月宜蘭海域 G 站與 J 站潮位比較圖

T18CSAG0.1HA T18CSAJ0.1H0 T191SAG0.1HA T191SAJ0.1H0 T192SAG0.1HA T192SAJ0.1H0
T193SAG0.1HA T193SAJ0.1H0 T194SAG0.1HA T194SAJ0.1H0 T195SAG0.1HA T195SAJ0.1H0

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第四章 2019 年宜蘭海域觀測海流資料年報

2019 年宜蘭海域海流之觀測包括測站 **X** 及測站 **Y** 等 2 個測站(測站位置如第 0 章圖 CS1，各測站歷年觀測海流資料蒐集概況如表 CS1)。

本年報利用調和分析方法**觀測海流可分解為：**

(1)計算潮流(包括平均流)。

(2)計算殘(餘)流(或稱非潮流)。

4.1 2019 年宜蘭海域觀測海流資料年報圖表

本章第 1 節**海流**年報資料處理之統計表包括：

1. 表 1.1.1a 2019 年**各觀測站**每月**觀測海流**資料記錄表。
2. 表 1.1.1b 2019 年**各觀測站**每月**計算潮流**資料記錄表。

本章第 2 節海流年報資料處理之統計表包括：

1. 2019 年**各觀測站**每月**觀測**流速及流向重要統計量統計表。
2. 2019 年**各觀測站**每月**計算潮流**流速及流向重要統計量統計表。
3. 2019 年**各觀測站**每月**計算殘(餘)流**流速及流向重要統計量統計表。

本章第 3 節海流年報資料處理之統計圖包括：

1. 2019 年**各觀測站**之**觀測海流**與**計算潮流**歷線比較圖。
2. 2019 年**各觀測站**之**觀測海流**與**計算殘(餘)流**歷線比較圖。

本章第 4 節海流年報資料處理之統計圖包括:2019 年各觀測站之觀測海流、計算潮流及計算殘流等 3 個向量分佈圖。

本章第 5 節海流年報資料處理之統計圖包括:2019 年各觀測站之觀測海流、計算潮流及計算殘流等 3 個向量行進圖。

表4.1.1a 2019年每月宜蘭海域各測站觀測海流資料紀錄表

海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
年月/測站	X	Y										
2018/12月	*	672(90.3%)	*	*	*	*	*	*	*	*	*	*
2019/ 1月	*	727(97.7%)	*	*	*	*	*	*	*	*	*	*
2019/ 2月	*	662(98.5%)	*	*	*	*	*	*	*	*	*	*
2019/ 3月	415(55.8%)	742(99.7%)	*	*	*	*	*	*	*	*	*	*
2019/ 4月	719(99.9%)	719(99.9%)	*	*	*	*	*	*	*	*	*	*
2019/ 5月	718(96.5%)	740(99.5%)	*	*	*	*	*	*	*	*	*	*
2019/ 6月	695(96.5%)	629(87.4%)	*	*	*	*	*	*	*	*	*	*
2019/ 7月	737(99.1%)	583(78.4%)	*	*	*	*	*	*	*	*	*	*
2019/ 8月	562(75.5%)	646(86.8%)	*	*	*	*	*	*	*	*	*	*
2019/ 9月	460(63.9%)	505(70.1%)	*	*	*	*	*	*	*	*	*	*
2019/10月	*	226(30.4%)	*	*	*	*	*	*	*	*	*	*
2019/11月	*	633(87.9%)	*	*	*	*	*	*	*	*	*	*
2019/冬季	*	2061(95.4%)	*	*	*	*	*	*	*	*	*	*
2019/春季	1852(83.9%)	2201(99.7%)	*	*	*	*	*	*	*	*	*	*
2019/夏季	1994(90.3%)	1858(84.1%)	*	*	*	*	*	*	*	*	*	*
2019/秋季	460(21.1%)	1364(62.5%)	*	*	*	*	*	*	*	*	*	*
2019/整年	4306(49.2%)	7484(85.4%)	*	*	*	*	*	*	*	*	*	*
起始年月	2019/03	2018/12	*	*	*	*	*	*	*	*	*	*
結束年月	2019/09	2019/11	*	*	*	*	*	*	*	*	*	*

表4.1.1b 2019年每月宜蘭海域計算潮流各測站資料紀錄表

海域 年月/測站	宜蘭海域 X	宜蘭海域 Y	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域	宜蘭海域
2018/12月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 1月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 2月	672(100%)	672(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 3月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 4月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 5月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 6月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 7月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 8月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/ 9月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/10月	744(100%)	744(100%)	*	*	*	*	*	*	*	*	*	*
2019/11月	720(100%)	720(100%)	*	*	*	*	*	*	*	*	*	*
2019/冬季	2160(100%)	2160(100%)	*	*	*	*	*	*	*	*	*	*
2019/春季	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*	*
2019/夏季	2208(100%)	2208(100%)	*	*	*	*	*	*	*	*	*	*
2019/秋季	2184(100%)	2184(100%)	*	*	*	*	*	*	*	*	*	*
2019/整年	8760(100%)	8760(100%)	*	*	*	*	*	*	*	*	*	*
起始年月	2018/12	2018/12	*	*	*	*	*	*	*	*	*	*
結束年月	2019/11	2019/11	*	*	*	*	*	*	*	*	*	*

4.2 2019 年宜蘭海域各測站觀測海流與 計算潮流(殘流)統計量統計表

表 4.2.1a 2019 年宜蘭海域 X 站觀測流速及流向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	流速 平均值 (cm/s)	平均流 流速/流向 (cm/s)/(來向)	最大流 流速/流向 (cm/s)/(來向)	1/2 節流 <25.7 (%)	1 節流 ~51.4 (%)	2 節流 ~103 (%)	大流 >103 (%)	流向 N~E (%)	流向 E~S (%)	流向 S~W (%)	流向 W~N (%)	主要流向 方向/百分比
1	2018/12													
2	2019/01													
3	2019/02													
4	2019/03	415(56%)	14.3	3.9/WNW	56.8/N	87.5	12.3	.2	.0	25.8	10.4	38.6	25.3	N /16.9%
5	2019/04	719(100%)	14.2	4.1/NW	68.8/SW	87.5	11.7	.8	.0	29.5	12.2	33.0	25.3	N /16.7%
6	2019/05	718(97%)	14.7	2.4/WNW	64.9/N	85.5	13.9	.6	.0	27.2	16.2	35.8	20.9	N /14.9%
7	2019/06	695(97%)	15.9	2.4/NW	53.5/N	82.6	17.1	.3	.0	27.2	15.0	37.1	20.7	N /17.3%
8	2019/07	737(99%)	16.7	5.3/NNW	69.3/N	81.1	17.6	1.2	.0	27.5	9.9	36.5	26.1	N /19.1%
9	2019/08	562(76%)	16.2	3.6/NW	70.2/SW	81.5	17.8	.7	.0	33.3	10.1	35.4	21.2	SW /15.5%
10	2019/09	460(64%)	14.8	5.2/SW	49.6/N	88.0	12.0	.0	.0	17.4	18.3	43.5	20.9	SSW/13.5%
11	2019/10													
12	2019/11													
13	2019/冬													
14	2019/春	1852(84%)	14.4	3.3/NW	68.8/SW	86.7	12.7	.6	.0	27.8	13.3	35.3	23.6	N /16.0%
15	2019/夏	1994(90%)	16.3	3.8/NW	70.2/SW	81.7	17.5	.8	.0	29.0	11.7	36.4	22.8	N /17.3%
16	2019/秋	460(21%)	14.8	5.2/SW	49.6/N	88.0	12.0	.0	.0	17.4	18.3	43.5	20.9	SSW/13.5%
17	2019/年	4306(49%)	15.3	3.2/NW	70.2/SW	84.6	14.8	.6	.0	27.2	13.1	36.7	22.9	N /15.8%

表4.2.1b 2019年宜蘭海域 X 站潮流流速及流向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	流速 平均值 (cm/s)	平均流 流速/流向 (cm/s)/(來向)	最大流 流速/流向 (cm/s)/(來向)	1/2節流 <25.7 (%)	1節流 ~51.4 (%)	2節流 ~103 (%)	大流 >103 (%)	流向 N~E (%)	流向 E~S (%)	流向 S~W (%)	流向 W~N (%)	主要流向 方向/百分比
1	2018/12	744(100%)	6.0	3.2/NW	12.6/N	100.0	.0	.0	.0	7.0	.5	40.6	51.9	N /22.3%
2	2019/01	744(100%)	6.0	3.2/NW	13.1/N	100.0	.0	.0	.0	7.8	.4	41.0	50.8	N /22.2%
3	2019/02	672(100%)	6.0	3.2/NW	14.5/N	100.0	.0	.0	.0	7.3	.1	40.6	51.9	N /23.5%
4	2019/03	744(100%)	5.9	3.2/NW	15.1/N	100.0	.0	.0	.0	3.6	.0	40.6	55.8	NNW/22.3%
5	2019/04	720(100%)	6.0	3.2/NW	14.9/N	100.0	.0	.0	.0	2.2	.0	40.3	57.5	SW /22.2%
6	2019/05	744(100%)	6.0	3.2/NW	13.9/N	100.0	.0	.0	.0	4.6	.0	41.1	54.3	N /22.7%
7	2019/06	720(100%)	6.0	3.2/WNW	12.5/N	100.0	.0	.0	.0	7.4	.4	40.7	51.5	N /22.5%
8	2019/07	744(100%)	6.0	3.2/NW	12.1/SW	100.0	.0	.0	.0	8.5	.5	40.5	50.5	N /22.2%
9	2019/08	744(100%)	6.1	3.2/NW	14.3/N	100.0	.0	.0	.0	7.5	.1	41.1	51.2	N /23.7%
10	2019/09	720(100%)	6.0	3.2/NW	14.9/N	100.0	.0	.0	.0	3.6	.0	41.4	55.0	N /21.7%
11	2019/10	744(100%)	6.1	3.3/NW	14.9/N	100.0	.0	.0	.0	2.2	.0	40.7	57.1	SW /23.7%
12	2019/11	720(100%)	6.1	3.2/NW	13.8/N	100.0	.0	.0	.0	4.9	.0	40.1	55.0	N /23.5%
13	2019/冬	2160(100%)	6.0	3.2/NW	14.5/N	100.0	.0	.0	.0	7.4	.4	40.7	51.5	N /22.6%
14	2019/春	2208(100%)	6.0	3.2/NW	15.1/N	100.0	.0	.0	.0	3.5	.0	40.7	55.8	SW /21.6%
15	2019/夏	2208(100%)	6.0	3.2/NW	14.3/N	100.0	.0	.0	.0	7.8	.4	40.8	51.1	N /22.8%
16	2019/秋	2184(100%)	6.1	3.2/NW	14.9/N	100.0	.0	.0	.0	3.5	.0	40.8	55.7	N /22.2%
17	2019/年	8760(100%)	6.0	3.2/NW	15.1/N	100.0	.0	.0	.0	5.5	.2	40.7	53.6	N /22.2%

表4.2.1c 2019年宜蘭海域 X 站殘流流速及流向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	流速 平均值 (cm/s)	平均流 流速/流向 (cm/s)/(來向)	最大流 流速/流向 (cm/s)/(來向)	1/2節流 <25.7 (%)	1節流 ~51.4 (%)	2節流 ~103 (%)	大流 >103 (%)	流向 N~E (%)	流向 E~S (%)	流向 S~W (%)	流向 W~N (%)	主要流向 方向/百分比
1	2018/12													
2	2019/01													
3	2019/02													
4	2019/03	415(56%)	12.2	.7/WNW	53.5/N	94.2	5.5	.2	.0	28.4	20.7	33.7	17.1	SW /11.1%
5	2019/04	719(100%)	12.6	1.4/N	60.4/SW	92.1	7.5	.4	.0	30.7	24.6	26.6	18.1	N /13.5%
6	2019/05	718(97%)	14.0	1.3/SSE	56.8/N	89.0	10.7	.3	.0	30.5	23.7	31.2	14.6	SSW/15.2%
7	2019/06	695(97%)	14.9	.9/ESE	52.9/SSW	86.8	13.1	.1	.0	31.4	25.2	31.1	12.4	SSW/14.8%
8	2019/07	737(99%)	15.0	2.6/N	71.8/N	85.1	14.5	.4	.0	33.9	17.9	31.6	16.6	N /16.4%
9	2019/08	562(76%)	15.5	.8/N	67.6/SW	84.3	15.1	.5	.0	37.7	16.0	32.6	13.7	SSW/15.3%
10	2019/09	460(64%)	14.5	5.4/SSW	46.0/NNE	89.8	10.2	.0	.0	18.3	29.8	37.4	14.6	S /14.6%
11	2019/10													
12	2019/11													
13	2019/冬													
14	2019/春	1852(84%)	13.0	.1/NNE	60.4/SW	91.4	8.3	.3	.0	30.1	23.4	30.0	16.5	N /12.0%
15	2019/夏	1994(90%)	15.1	1.1/NNE	71.8/N	85.5	14.2	.4	.0	34.1	19.9	31.7	14.3	SSW/14.6%
16	2019/秋	460(21%)	14.5	5.4/SSW	46.0/NNE	89.8	10.2	.0	.0	18.3	29.8	37.4	14.6	S /14.6%
17	2019/年	4306(49%)	14.2	.0/S	71.8/N	88.5	11.2	.3	.0	30.7	22.5	31.6	15.3	SSW/13.3%

表 4.2.2a 2019 年宜蘭海域 Y 站觀測流速及流向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	流速 平均值 (cm/s)	平均流 流速/流向 (cm/s)/(來向)	最大流 流速/流向 (cm/s)/(來向)	1/2 節流 <25.7 (%)	1 節流 ~51.4 (%)	2 節流 ~103 (%)	大流 >103 (%)	流向 N~E (%)	流向 E~S (%)	流向 S~W (%)	流向 W~N (%)	主要流向 方向/百分比
1	2018/12	672(90%)	21.4	9.5/SSE	70.9/SSE	66.4	30.2	3.4	.0	7.3	53.3	12.2	27.2	SSE/25.3%
2	2019/01	727(98%)	21.8	11.3/SSE	74.0/SSE	68.1	27.5	4.4	.0	7.4	58.2	8.7	25.7	SSE/25.3%
3	2019/02	662(99%)	20.7	10.8/SSE	72.4/SSE	68.6	28.5	2.9	.0	6.5	57.9	9.5	26.1	SE /24.6%
4	2019/03	742(100%)	21.2	7.8/SSE	69.1/SSE	66.6	31.3	2.2	.0	7.0	55.9	7.8	29.2	SE /24.0%
5	2019/04	719(100%)	20.8	8.4/SSE	66.3/SSE	67.0	30.7	2.2	.0	5.7	57.3	7.8	29.2	SE /25.3%
6	2019/05	740(100%)	21.1	10.2/SSE	85.7/SSE	68.1	26.5	5.4	.0	4.9	53.5	12.0	29.6	SE /21.6%
7	2019/06	629(87%)	21.3	9.0/SSE	89.0/SE	68.8	25.8	5.4	.0	5.1	51.8	10.0	33.1	SE /22.6%
8	2019/07	583(78%)	18.5	3.2/S	86.7/SSE	77.7	19.9	2.4	.0	6.2	40.5	12.9	40.5	SSE/15.4%
9	2019/08	646(87%)	20.8	5.5/SSE	83.2/SSE	70.1	26.0	3.9	.0	9.8	42.4	11.6	36.2	SSE/18.9%
10	2019/09	505(70%)	23.6	9.1/SSE	79.3/SSE	62.4	31.5	6.1	.0	8.7	48.3	12.3	30.7	SSE/21.6%
11	2019/10	226(30%)	22.0	11.4/SSE	73.9/SSE	69.9	23.9	6.2	.0	10.6	52.7	16.8	19.9	SSE/25.7%
12	2019/11	633(88%)	21.9	10.4/SSE	72.6/SSE	67.6	28.3	4.1	.0	7.3	53.6	13.6	25.6	SSE/26.7%
13	2019/冬	2061(95%)	21.3	10.5/SSE	74.0/SSE	67.7	28.7	3.6	.0	7.1	56.5	10.1	26.3	SSE/24.8%
14	2019/春	2201(100%)	21.0	8.8/SSE	85.7/SSE	67.2	29.5	3.3	.0	5.9	55.6	9.2	29.4	SE /23.6%
15	2019/夏	1858(84%)	20.2	5.9/SSE	89.0/SE	72.1	24.0	3.9	.0	7.1	45.0	11.5	36.5	SSE/16.9%
16	2019/秋	1364(63%)	22.6	10.1/SSE	79.3/SSE	66.1	28.7	5.2	.0	8.4	51.5	13.6	26.5	SSE/24.6%
17	2019/年	7484(85%)	21.2	8.8/SSE	89.0/SE	68.3	27.8	3.9	.0	6.9	52.4	10.8	29.8	SSE/21.3%

表4.2.2b 2019年宜蘭海域 Y 站潮流流速及流向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	流速 平均值 (cm/s)	平均流 流速/流向 (cm/s)/(來向)	最大流 流速/流向 (cm/s)/(來向)	1/2節流 <25.7 (%)	1節流 ~51.4 (%)	2節流 ~103 (%)	大流 >103 (%)	流向 N~E (%)	流向 E~S (%)	流向 S~W (%)	流向 W~N (%)	主要流向 方向/百分比
1	2018/12	744(100%)	10.1	8.8/SSE	24.2/SSE	100.0	.0	.0	.0	.0	74.6	14.0	11.4	SSE/66.4%
2	2019/01	744(100%)	10.3	8.8/SSE	25.7/SSE	99.9	.1	.0	.0	.1	75.1	12.5	12.2	SSE/66.5%
3	2019/02	672(100%)	10.4	8.7/SSE	26.4/SSE	99.4	.6	.0	.0	.0	72.3	14.3	13.4	SSE/65.5%
4	2019/03	744(100%)	10.3	8.8/SSE	26.3/SSE	99.6	.4	.0	.0	.0	73.1	12.9	14.0	SSE/66.3%
5	2019/04	720(100%)	10.1	8.8/SSE	25.6/SSE	100.0	.0	.0	.0	.0	72.4	14.0	13.6	SSE/66.7%
6	2019/05	744(100%)	9.9	8.8/SSE	24.1/SSE	100.0	.0	.0	.0	.0	73.7	13.8	12.5	SSE/67.1%
7	2019/06	720(100%)	10.1	8.8/SSE	24.3/SSE	100.0	.0	.0	.0	.0	73.6	13.6	12.8	SSE/67.4%
8	2019/07	744(100%)	10.4	8.8/SSE	24.4/SSE	100.0	.0	.0	.0	.0	73.8	13.8	12.4	SSE/64.4%
9	2019/08	744(100%)	10.5	8.8/SSE	26.3/SSE	99.9	.1	.0	.0	.0	72.0	14.5	13.4	SSE/64.4%
10	2019/09	720(100%)	10.4	8.8/SSE	26.4/SSE	99.7	.3	.0	.0	.0	72.6	12.5	14.9	SSE/64.9%
11	2019/10	744(100%)	10.2	8.8/SSE	25.9/SSE	99.9	.1	.0	.0	.0	71.5	14.1	14.4	SSE/65.2%
12	2019/11	720(100%)	10.0	8.8/SSE	24.2/SSE	100.0	.0	.0	.0	.0	72.4	14.6	13.1	SSE/65.3%
13	2019/冬	2160(100%)	10.3	8.8/SSE	26.4/SSE	99.8	.2	.0	.0	.0	74.1	13.6	12.3	SSE/66.2%
14	2019/春	2208(100%)	10.1	8.8/SSE	26.3/SSE	99.9	.1	.0	.0	.0	73.1	13.6	13.4	SSE/66.7%
15	2019/夏	2208(100%)	10.3	8.8/SSE	26.3/SSE	100.0	.0	.0	.0	.0	73.1	14.0	12.9	SSE/65.4%
16	2019/秋	2184(100%)	10.2	8.8/SSE	26.4/SSE	99.9	.1	.0	.0	.0	72.2	13.7	14.1	SSE/65.1%
17	2019/年	8760(100%)	10.2	8.8/SSE	26.4/SSE	99.9	.1	.0	.0	.0	73.1	13.7	13.2	SSE/65.8%

表4.2.2c 2019年宜蘭海域 Y 站殘流流速及流向重要統計量統計表

序 號	日期 (年/月)	觀測 點數	流速 平均值 (cm/s)	平均流 流速/流向 (cm/s)/(來向)	最大流 流速/流向 (cm/s)/(來向)	1/2節流 <25.7 (%)	1節流 ~51.4 (%)	2節流 ~103 (%)	大流 >103 (%)	流向 N~E (%)	流向 E~S (%)	流向 S~W (%)	流向 W~N (%)	主要流向 方向/百分比
1	2018/12	672(90%)	17.7	.6/SSE	55.3/NW	78.3	21.3	.4	.0	12.6	40.3	10.3	36.8	SSE/17.3%
2	2019/01	727(98%)	17.3	2.7/SE	53.9/SSE	80.2	19.7	.1	.0	12.1	47.0	7.4	33.4	SSE/17.7%
3	2019/02	662(99%)	17.4	2.1/SE	51.4/SSE	78.7	21.3	.0	.0	13.0	46.7	5.4	34.9	SE /16.8%
4	2019/03	742(100%)	17.8	1.4/NNE	58.9/NW	77.5	22.0	.5	.0	16.2	39.9	6.3	37.6	NNW/15.8%
5	2019/04	719(100%)	18.2	.8/NE	63.0/WNW	75.1	24.1	.8	.0	15.4	39.2	5.3	40.1	NW /16.0%
6	2019/05	740(100%)	18.0	1.4/SSE	68.7/SSE	78.2	21.2	.5	.0	10.4	40.1	9.7	39.7	NW /15.7%
7	2019/06	629(87%)	18.9	.5/SE	76.9/SE	76.0	22.7	1.3	.0	11.1	36.9	7.0	45.0	NNW/18.3%
8	2019/07	583(78%)	17.5	4.8/NNW	65.2/SSE	81.3	18.0	.7	.0	9.3	27.6	8.2	54.9	NNW/23.5%
9	2019/08	646(87%)	20.1	2.7/NW	82.2/SSE	72.0	26.5	1.5	.0	9.4	33.0	7.7	49.8	NNW/22.9%
10	2019/09	505(70%)	21.2	1.6/WSW	74.8/NW	69.5	28.3	2.2	.0	9.1	37.8	11.3	41.8	NW /16.4%
11	2019/10	226(30%)	19.0	3.1/S	56.2/S	79.2	18.6	2.2	.0	12.8	38.9	13.7	34.5	SSE/14.2%
12	2019/11	633(88%)	18.5	2.0/S	64.5/WNW	75.8	23.1	1.1	.0	12.3	40.0	11.7	36.0	SSE/17.1%
13	2019/冬	2061(95%)	17.5	1.8/SE	55.3/NW	79.1	20.7	.2	.0	12.6	44.7	7.7	35.0	SSE/17.3%
14	2019/春	2201(100%)	18.0	.6/ENE	68.7/SSE	77.0	22.4	.6	.0	14.0	39.8	7.1	39.1	NW /15.7%
15	2019/夏	1858(84%)	18.9	2.3/NW	82.2/SSE	76.3	22.6	1.2	.0	10.0	32.6	7.6	49.8	NNW/21.5%
16	2019/秋	1364(63%)	19.6	1.9/SSW	74.8/NW	74.0	24.3	1.7	.0	11.2	39.0	11.9	37.9	SSE/16.2%
17	2019/年	7484(85%)	18.4	.2/SSE	82.2/SSE	76.8	22.3	.8	.0	12.1	39.2	8.3	40.4	NNW/15.8%

4.3 2019 年宜蘭海域各測站觀測海流與 計算潮流(殘流)歷線比較圖

Current Speed in Su-Ao Harbor of SAX0 at 2019

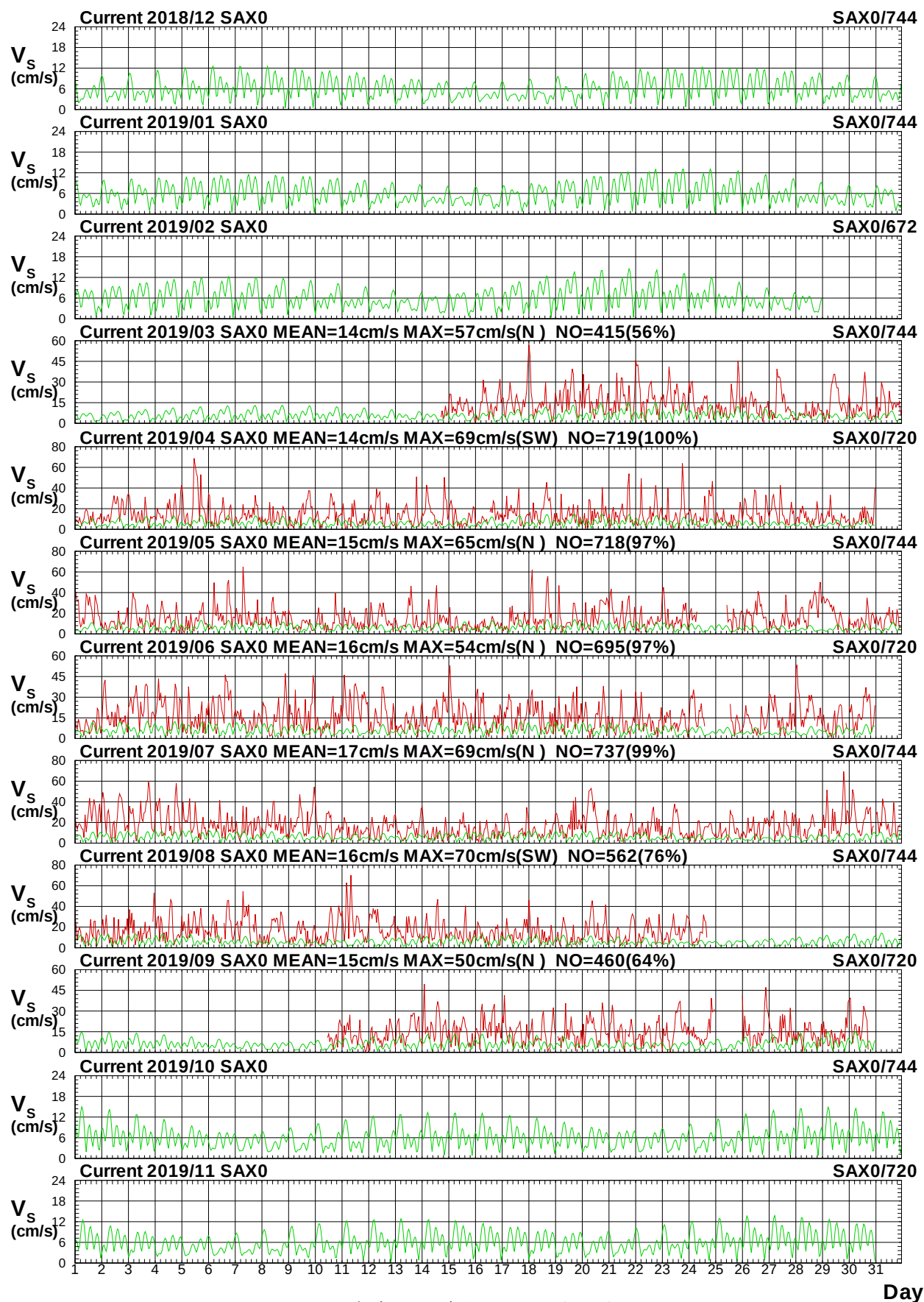


圖4.3.1a 2019年每月宜蘭海域 X 站觀測與潮流流速比較圖

C18CSAX0.1H0 C18CSAX0.1HD C191SAX0.1H0 C191SAX0.1HD C192SAX0.1H0 C192SAX0.1HD
C193SAX0.1H0 C193SAX0.1HD C194SAX0.1H0 C194SAX0.1HD C195SAX0.1H0 C195SAX0.1HD

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Current Direction in Su-Ao Harbor of SAX0 at 2019

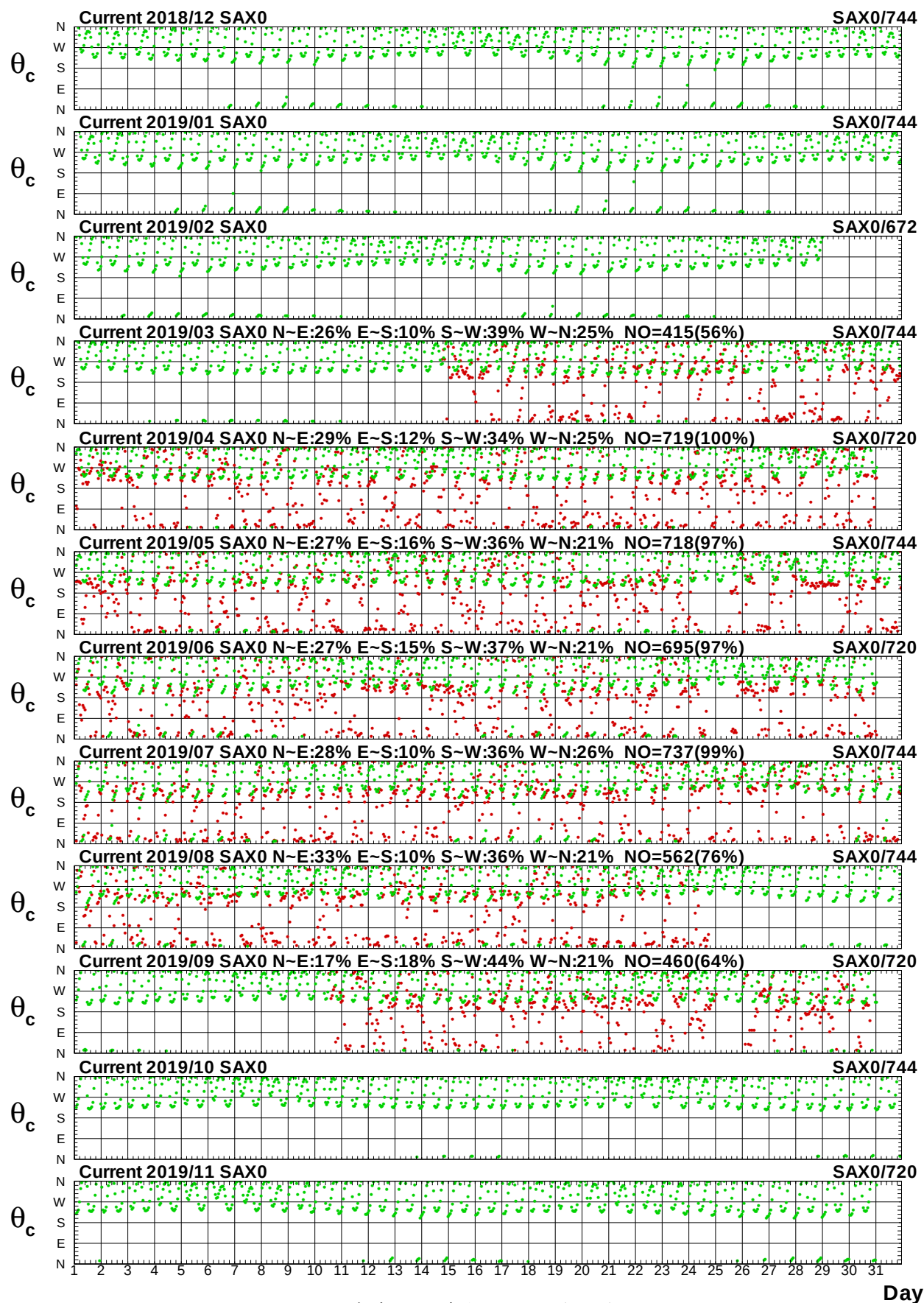


圖4.3.1b 2019年每月宜蘭海域 X 站觀測與潮流流向比較圖

C18CSAX0.1H0 C18CSAX0.1HD C191SAX0.1H0 C191SAX0.1HD C192SAX0.1H0 C192SAX0.1HD
C193SAX0.1H0 C193SAX0.1HD C194SAX0.1H0 C194SAX0.1HD C195SAX0.1H0 C195SAX0.1HD

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Current Speed in Su-Ao Harbor of SAX0 at 2019

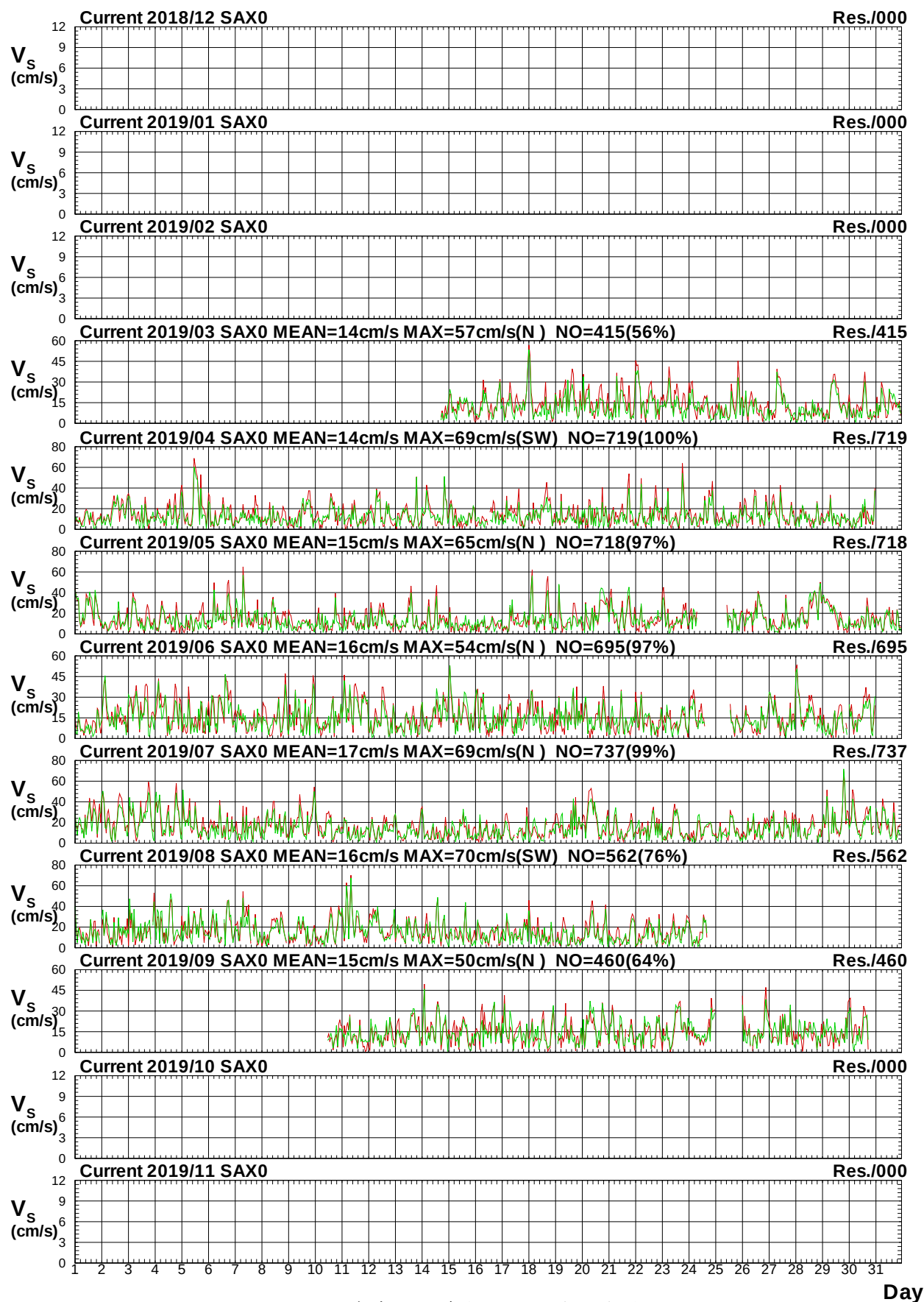


圖4.3.2a 2019年每月宜蘭海域 X 站觀測與殘流流速比較圖

C18CSAX0.1H0 C18CSAX0.1HR C191SAX0.1H0 C191SAX0.1HR C192SAX0.1H0 C192SAX0.1HR
C193SAX0.1H0 C193SAX0.1HR C194SAX0.1H0 C194SAX0.1HR C195SAX0.1H0 C195SAX0.1HR

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Current Direction in Su-Ao Harbor of SAX0 at 2019

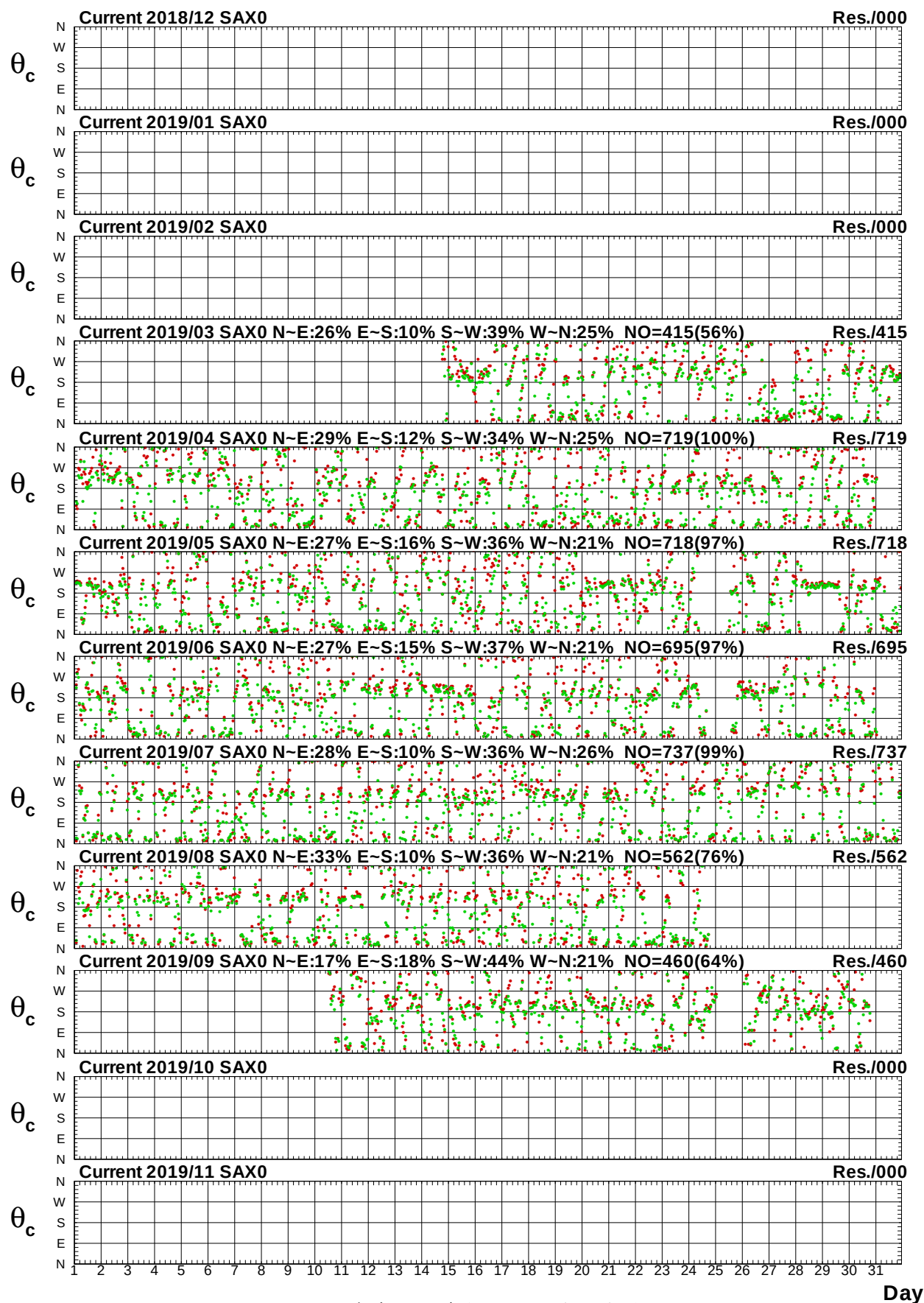


圖4.3.2b 2019年每月宜蘭海域 X 站觀測與殘流流向比較圖

C18CSAX0.1H0 C18CSAX0.1HR C191SAX0.1H0 C191SAX0.1HR C192SAX0.1H0 C192SAX0.1HR
C193SAX0.1H0 C193SAX0.1HR C194SAX0.1H0 C194SAX0.1HR C195SAX0.1H0 C195SAX0.1HR

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Current Speed in Su-Ao Harbor of SAY0 at 2019

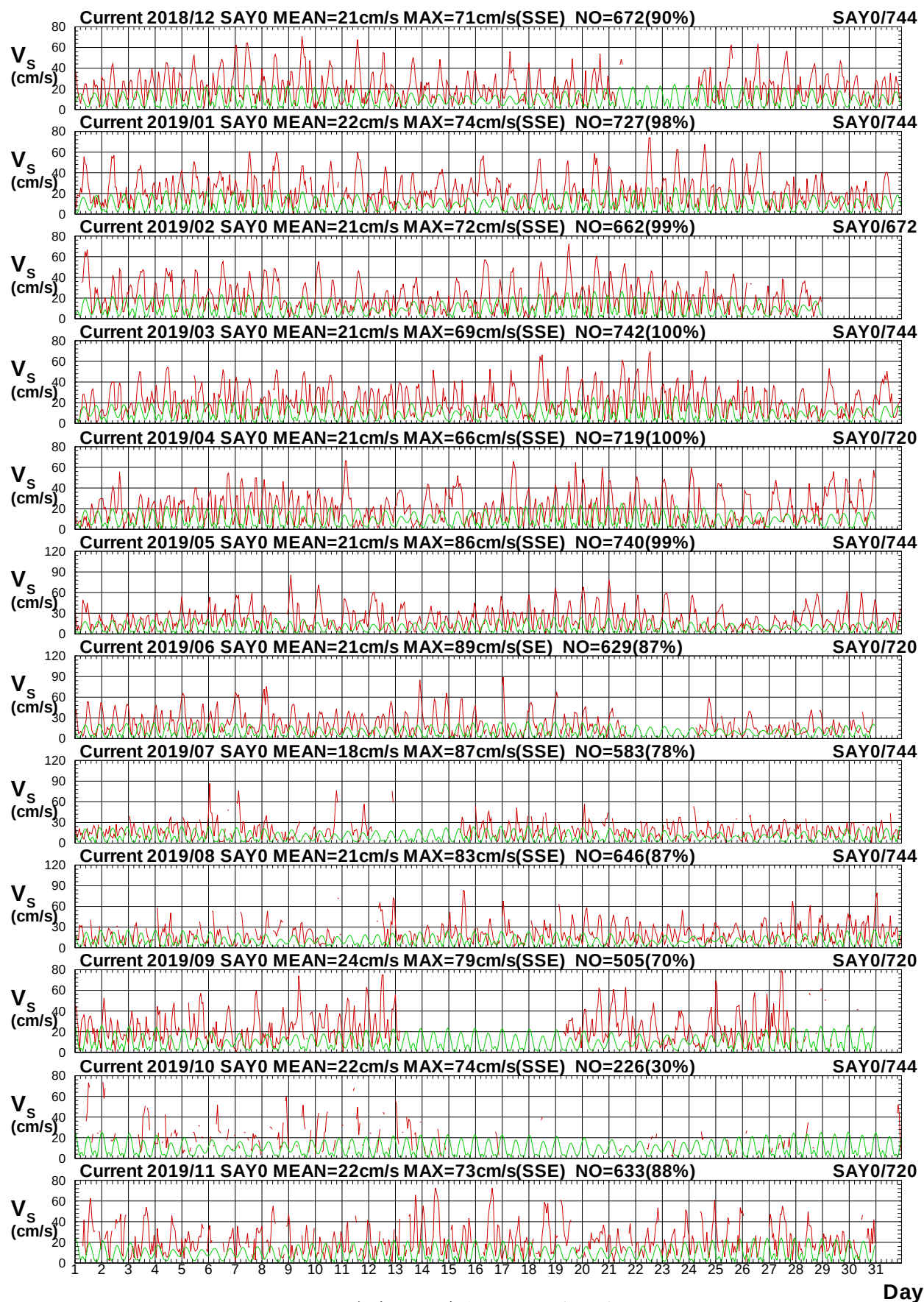


圖4.3.3a 2019年每月宜蘭海域 Y 站觀測與潮流流速比較圖

C18CSAY0.1H0 C18CSAY0.1HD C191SAY0.1H0 C191SAY0.1HD C192SAY0.1H0 C192SAY0.1HD
C193SAY0.1H0 C193SAY0.1HD C194SAY0.1H0 C194SAY0.1HD C195SAY0.1H0 C195SAY0.1HD

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Current Direction in Su-Ao Harbor of SAY0 at 2019

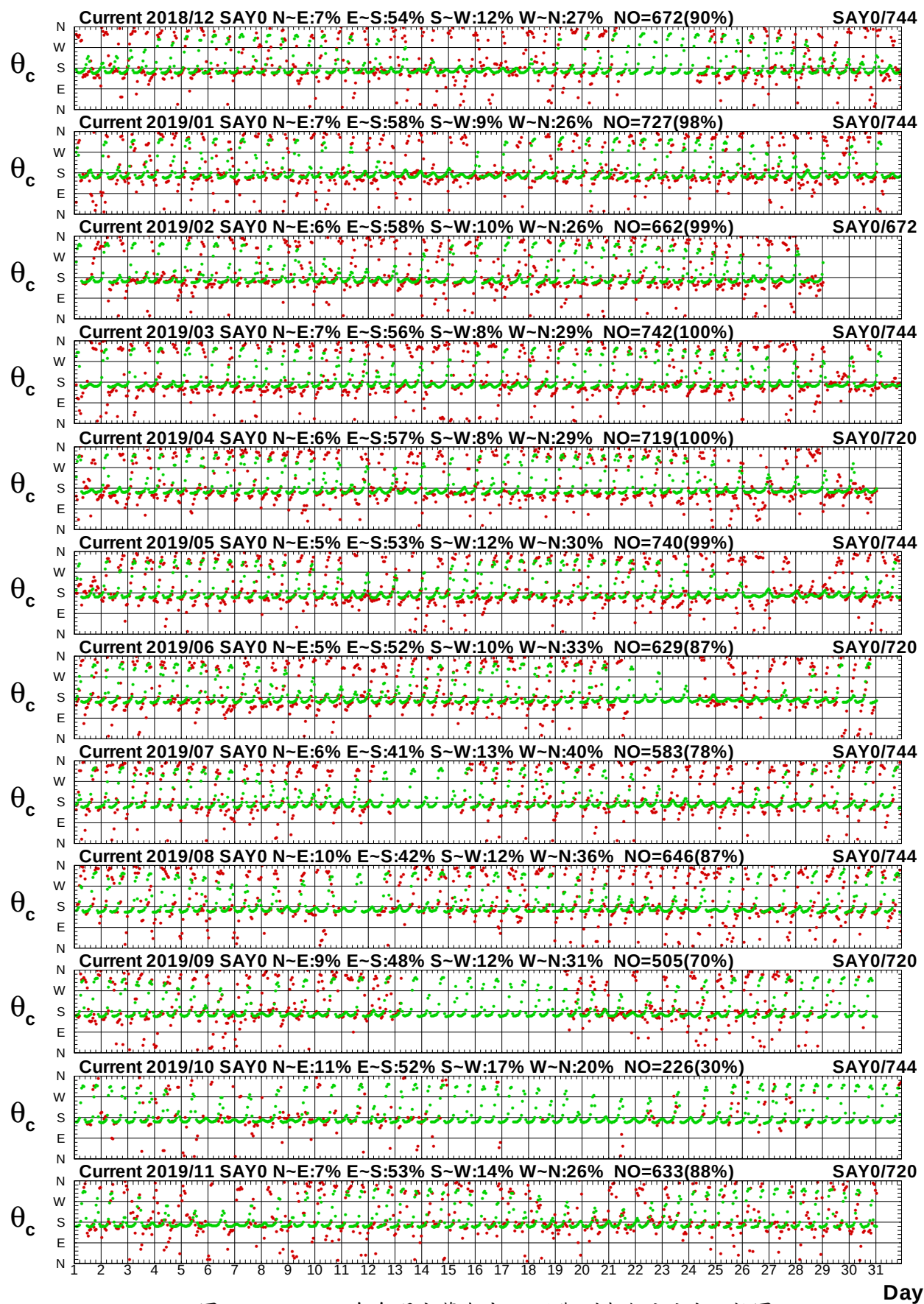


圖4.3.3b 2019年每月宜蘭海域 Y 站觀測與潮流流向比較圖

C18CSAY0.1HD C18CSAY0.1HD C191SAY0.1HD C191SAY0.1HD C192SAY0.1HD C192SAY0.1HD
C193SAY0.1HD C193SAY0.1HD C194SAY0.1HD C194SAY0.1HD C195SAY0.1HD C195SAY0.1HD

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Current Speed in Su-Ao Harbor of SAY0 at 2019

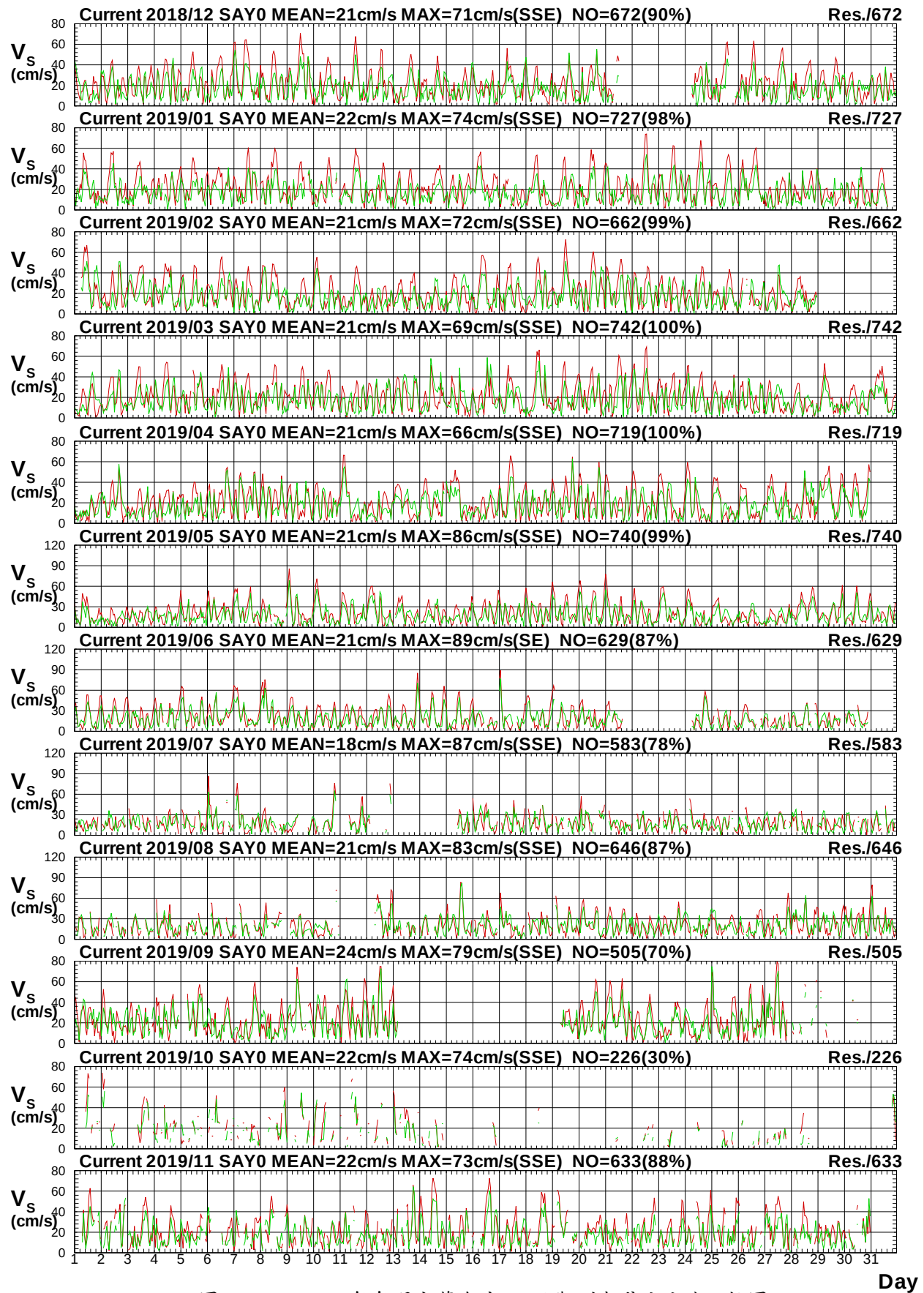


圖4.3.4a 2019年每月宜蘭海域 Y 站觀測與殘流流速比較圖

C18CSAY0.1H0 C18CSAY0.1HR C191SAY0.1H0 C191SAY0.1HR C192SAY0.1H0 C192SAY0.1HR
C193SAY0.1H0 C193SAY0.1HR C194SAY0.1H0 C194SAY0.1HR C195SAY0.1H0 C195SAY0.1HR

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Current Direction in Su-Ao Harbor of SAY0 at 2019

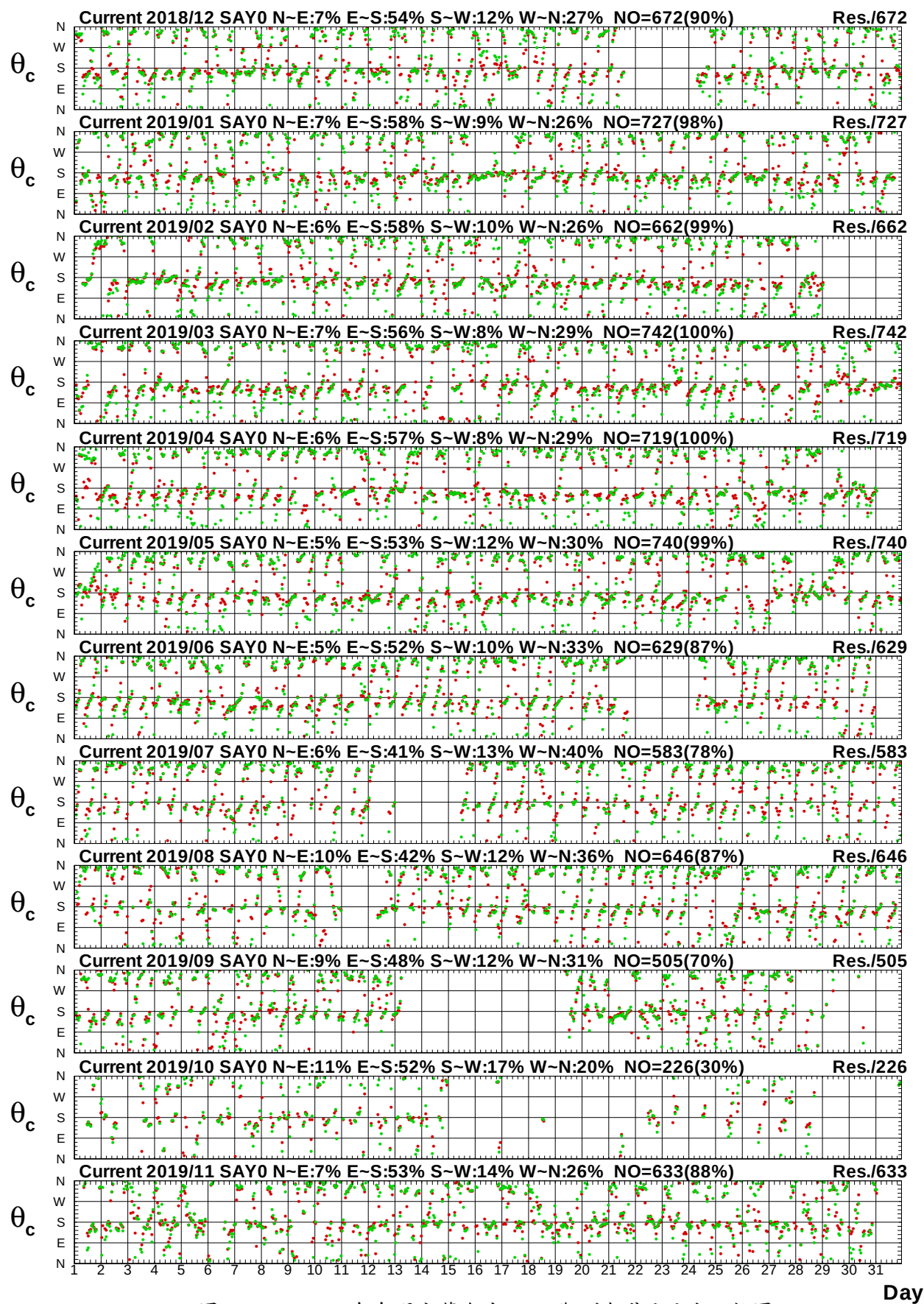


圖4.3.4b 2019年每月宜蘭海域 Y 站觀測與殘流流向比較圖

C18CSAY0.1H0 C18CSAY0.1HR C191SAY0.1H0 C191SAY0.1HR C192SAY0.1H0 C192SAY0.1HR
C193SAY0.1H0 C193SAY0.1HR C194SAY0.1H0 C194SAY0.1HR C195SAY0.1H0 C195SAY0.1HR

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4.4 2019 年宜蘭海域各測站觀測海流與 計算潮流(殘流)向量分佈圖

Distribution of Current Vectors

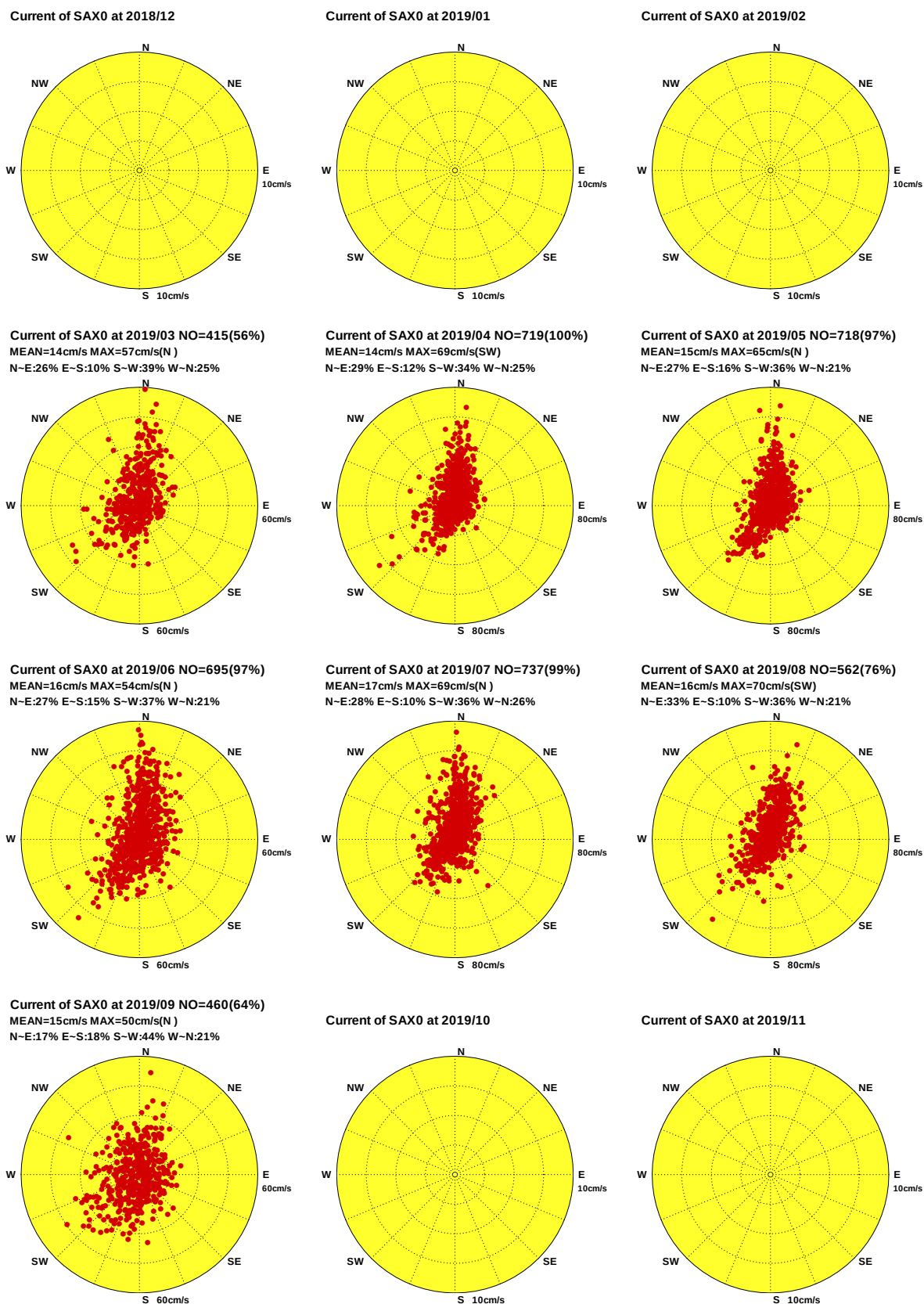


圖4.4.1a 2019年宜蘭海域每月測站 X 觀測海流向量分佈圖

C18CSAX0.1H0 C191SAX0.1H0 C192SAX0.1H0 C193SAX0.1H0 C194SAX0.1H0 C195SAX0.1H0
 C196SAX0.1H0 C197SAX0.1H0 C198SAX0.1H0 C199SAX0.1H0 C19ASAX0.1H0 C19BSAX0.1H0

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Distribution of Current Vectors

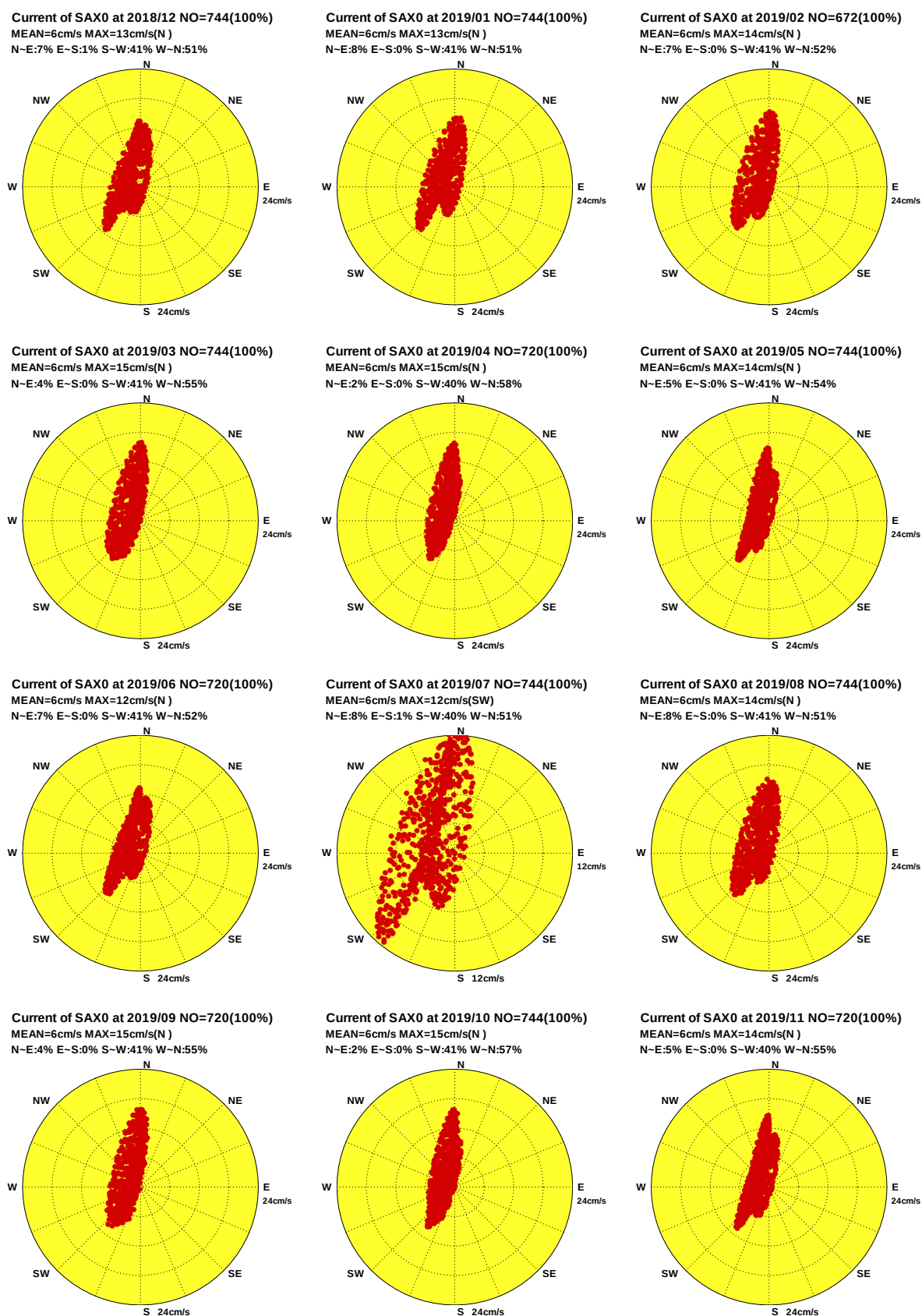


圖4.4.1b 2019年宜蘭海域每月測站 X 計算潮流向量分佈圖

C18CSAX0.1HD C191SAX0.1HD C192SAX0.1HD C193SAX0.1HD C194SAX0.1HD C195SAX0.1HD
C196SAX0.1HD C197SAX0.1HD C198SAX0.1HD C199SAX0.1HD C19ASAX0.1HD C19BSAX0.1HD

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Distribution of Current Vectors

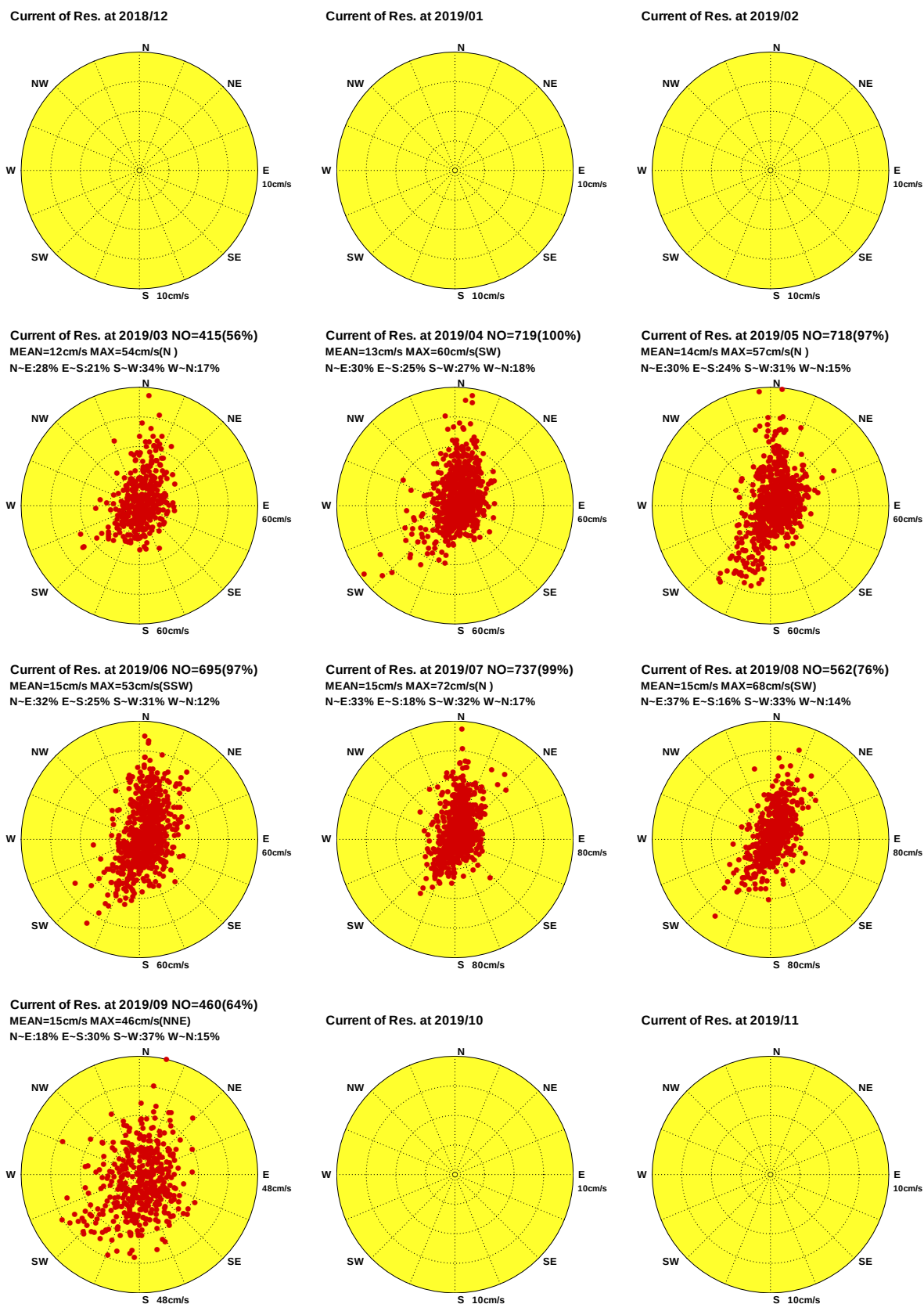


圖4.4.1c 2019年宜蘭海域每月測站 X 計算殘流向量分佈圖

C18CSAX0.1HR C191SAX0.1HR C192SAX0.1HR C193SAX0.1HR C194SAX0.1HR C195SAX0.1HR
C196SAX0.1HR C197SAX0.1HR C198SAX0.1HR C199SAX0.1HR C19ASAX0.1HR C19BSAX0.1HR

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Distribution of Current Vectors

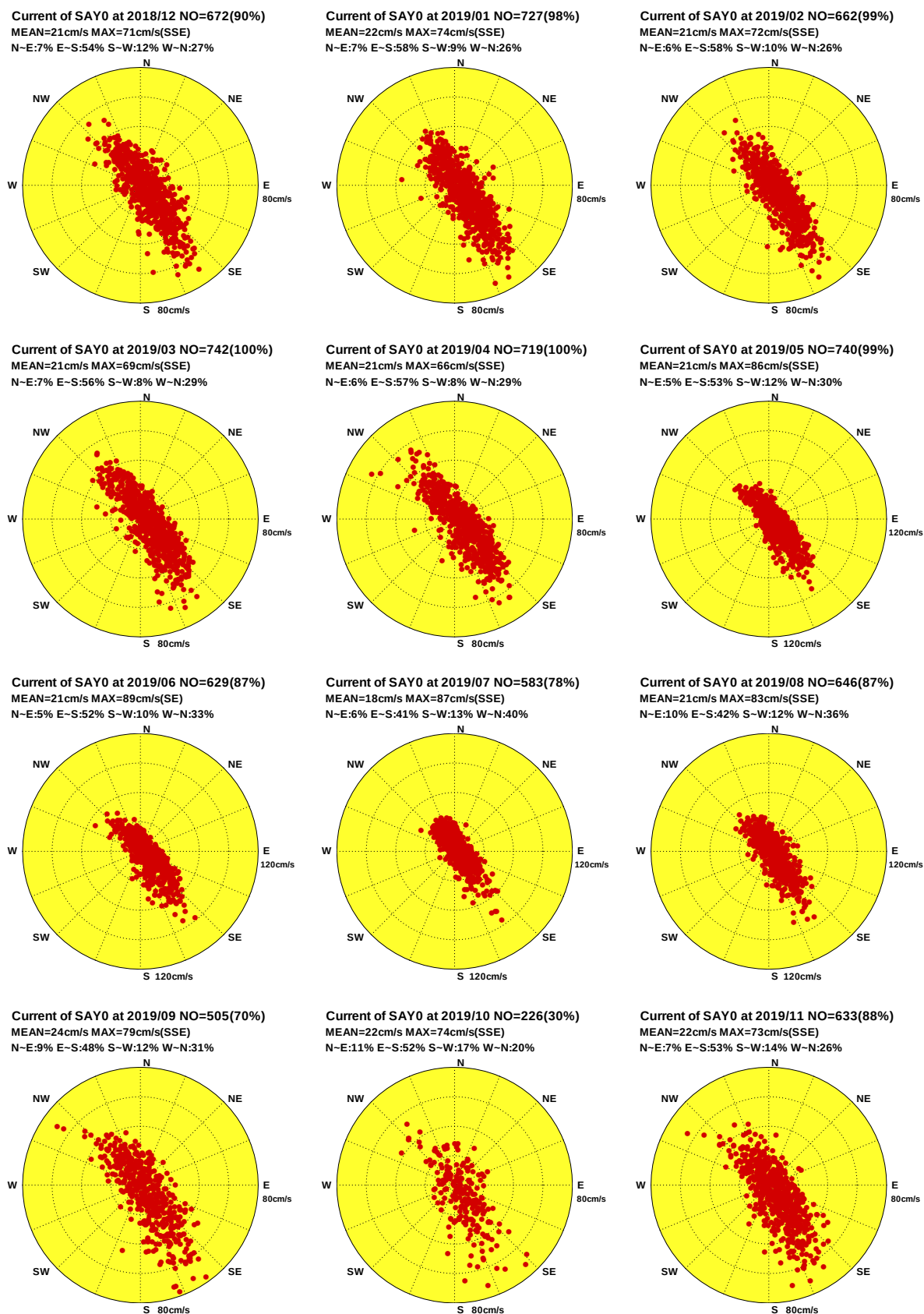


圖4.4.2a 2019年宜蘭海域每月測站 Y 觀測海流向量分佈圖

C18CSAY0.1H0 C191SAY0.1H0 C192SAY0.1H0 C193SAY0.1H0 C194SAY0.1H0 C195SAY0.1H0
C196SAY0.1H0 C197SAY0.1H0 C198SAY0.1H0 C199SAY0.1H0 C19ASAY0.1H0 C19BSAY0.1H0

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Distribution of Current Vectors

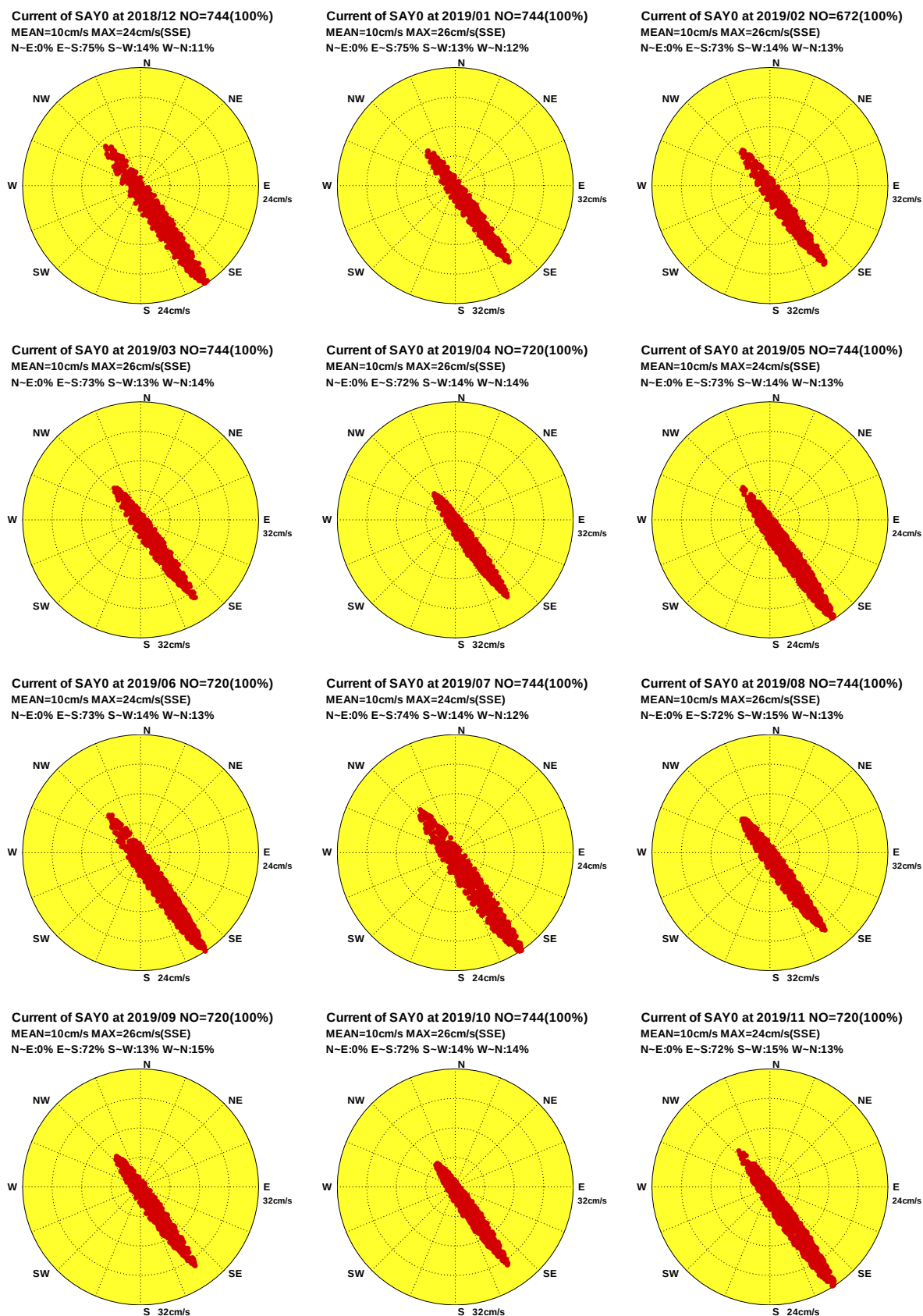


圖4.4.2b 2019年宜蘭海域每月測站 Y 計算潮流向量分佈圖

C18CSAY0.1HD C191SAY0.1HD C192SAY0.1HD C193SAY0.1HD C194SAY0.1HD C195SAY0.1HD
C196SAY0.1HD C197SAY0.1HD C198SAY0.1HD C199SAY0.1HD C19ASAY0.1HD C19BSAY0.1HD

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Distribution of Current Vectors

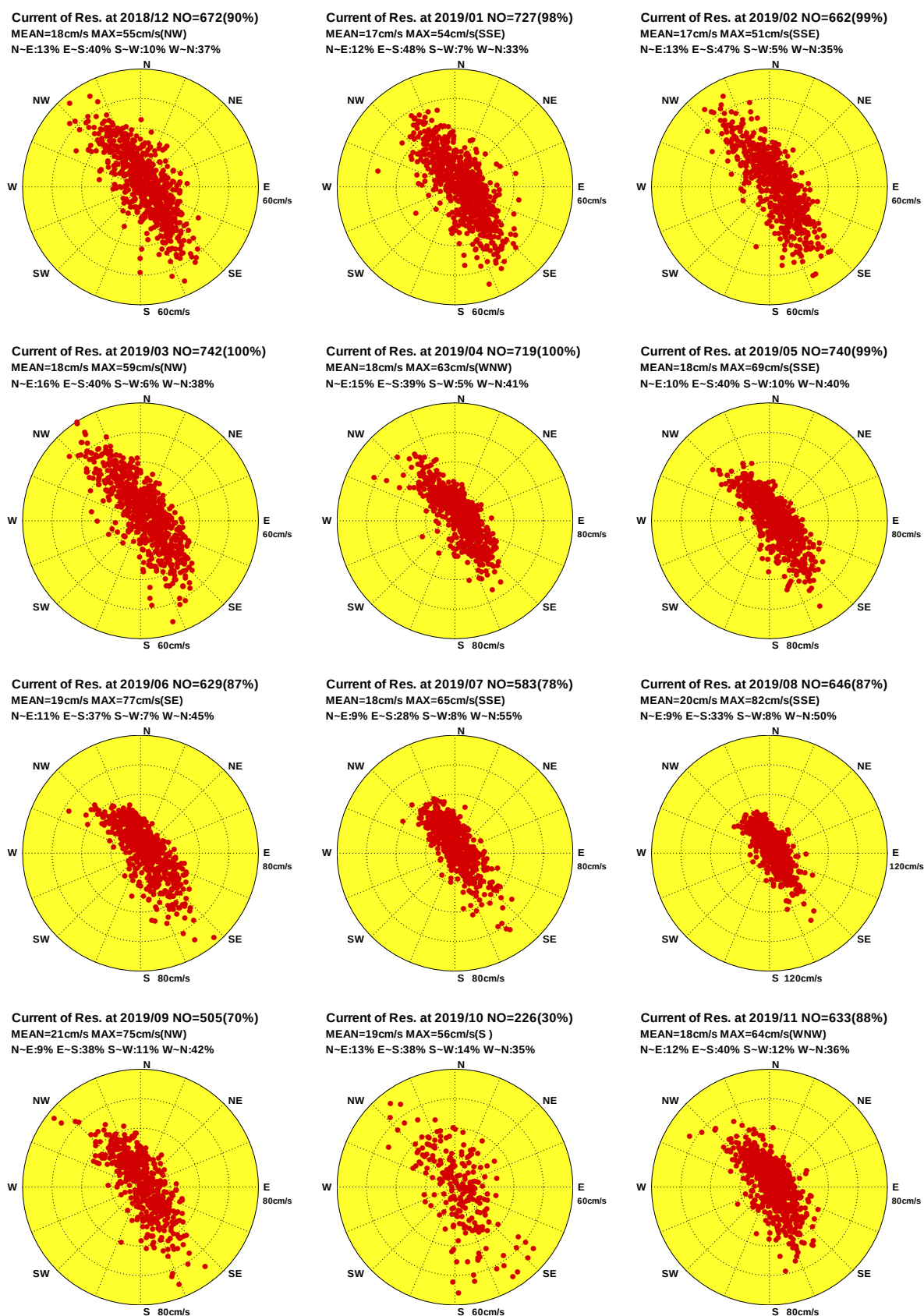


圖4.4.2c 2019年宜蘭海域每月測站 Y 計算殘流向量分佈圖

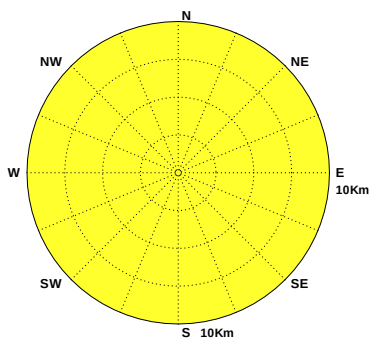
C18CSAY0.1HR C191SAY0.1HR C192SAY0.1HR C193SAY0.1HR C194SAY0.1HR C195SAY0.1HR
C196SAY0.1HR C197SAY0.1HR C198SAY0.1HR C199SAY0.1HR C19ASAY0.1HR C19BSAY0.1HR

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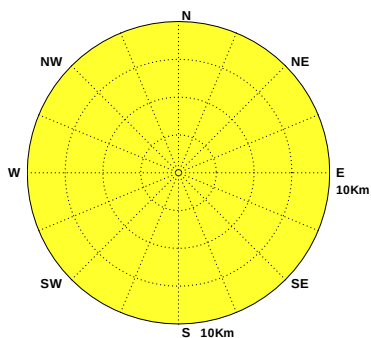
4.5 2019 年宜蘭海域各測站觀測海流與 計算潮流(殘流)向量行進圖

Progressive Vector Diagram of Current

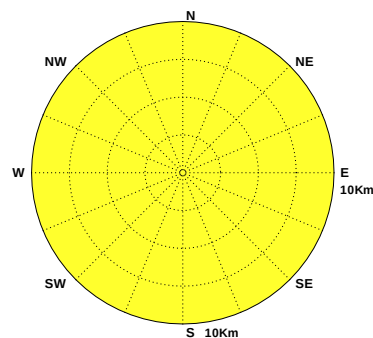
Current of SAX0 at 2018/12



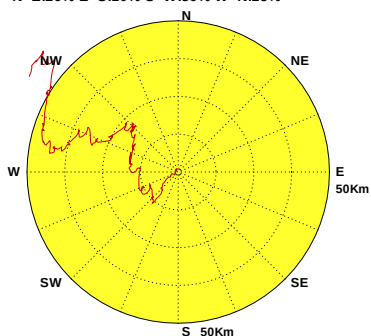
Current of SAX0 at 2019/01



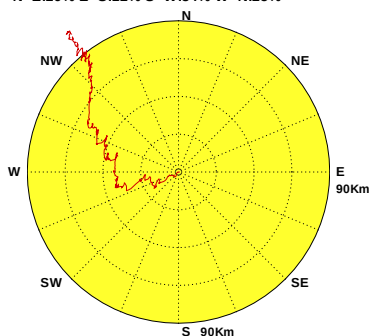
Current of SAX0 at 2019/02



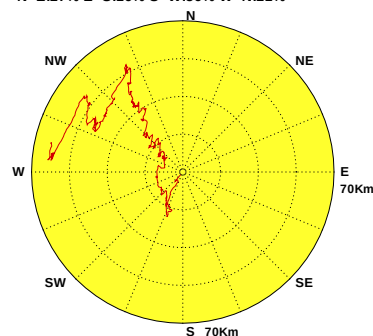
Current of SAX0 at 2019/03 NO=415(56%)
MEAN=14cm/s MAX=57cm/s(N)
N-E:26% E-S:10% S-W:39% W-N:25%



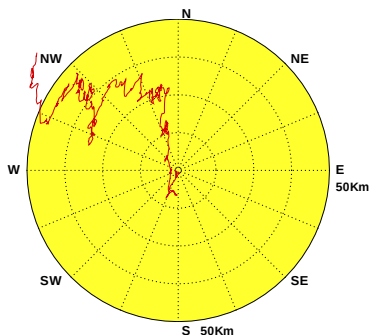
Current of SAX0 at 2019/04 NO=719(100%)
MEAN=14cm/s MAX=69cm/s(SW)
N-E:29% E-S:12% S-W:34% W-N:25%



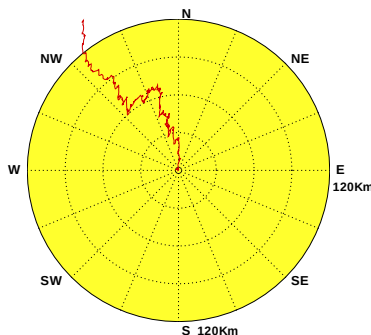
Current of SAX0 at 2019/05 NO=718(97%)
MEAN=15cm/s MAX=65cm/s(N)
N-E:27% E-S:16% S-W:36% W-N:21%



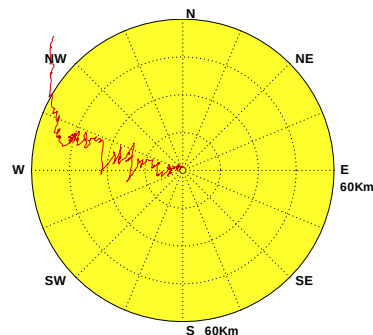
Current of SAX0 at 2019/06 NO=695(97%)
MEAN=16cm/s MAX=54cm/s(N)
N-E:27% E-S:15% S-W:37% W-N:21%



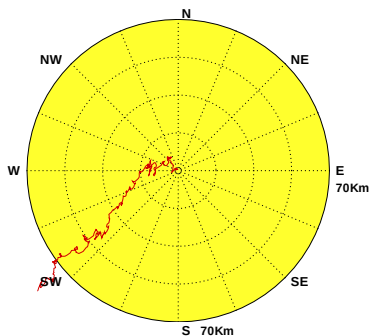
Current of SAX0 at 2019/07 NO=737(99%)
MEAN=17cm/s MAX=69cm/s(N)
N-E:28% E-S:10% S-W:36% W-N:26%



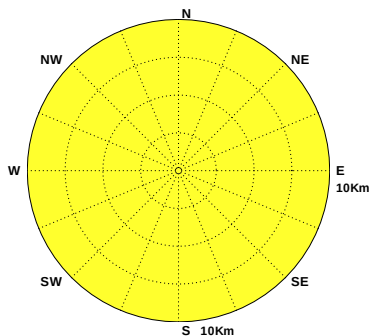
Current of SAX0 at 2019/08 NO=562(76%)
MEAN=16cm/s MAX=70cm/s(SW)
N-E:33% E-S:10% S-W:36% W-N:21%



Current of SAX0 at 2019/09 NO=460(64%)
MEAN=15cm/s MAX=50cm/s(N)
N-E:17% E-S:18% S-W:44% W-N:21%



Current of SAX0 at 2019/10



Current of SAX0 at 2019/11

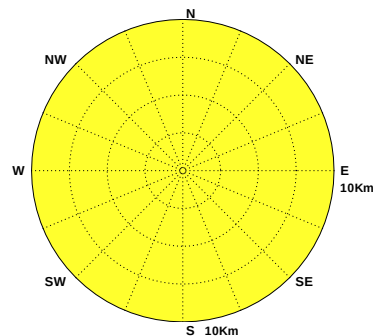


圖4.5.1a 2019年宜蘭海域每月測站 X 觀測海流向量行進圖

C18CSAX0.1H0 C191SAX0.1H0 C192SAX0.1H0 C193SAX0.1H0 C194SAX0.1H0 C195SAX0.1H0
C196SAX0.1H0 C197SAX0.1H0 C198SAX0.1H0 C199SAX0.1H0 C19ASAX0.1H0 C19BSAX0.1H0

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Progressive Vector Diagram of Current

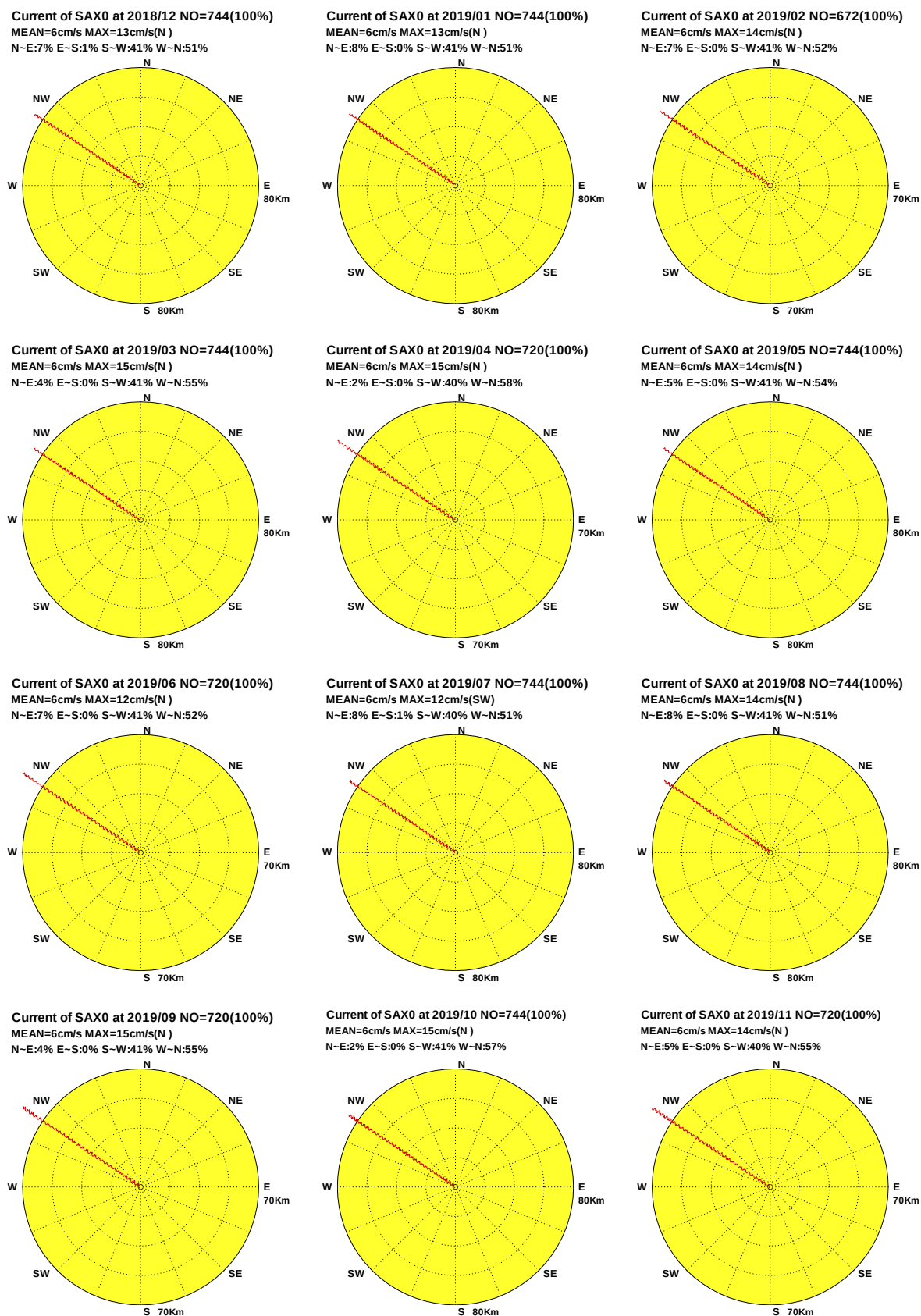


圖4.5.1b 2019年宜蘭海域每月測站 X 計算潮流向量行進圖

C18CSAX0.1HD C191SAX0.1HD C192SAX0.1HD C193SAX0.1HD C194SAX0.1HD C195SAX0.1HD
C196SAX0.1HD C197SAX0.1HD C198SAX0.1HD C199SAX0.1HD C19ASAX0.1HD C19BSAX0.1HD

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Progressive Vector Diagram of Current

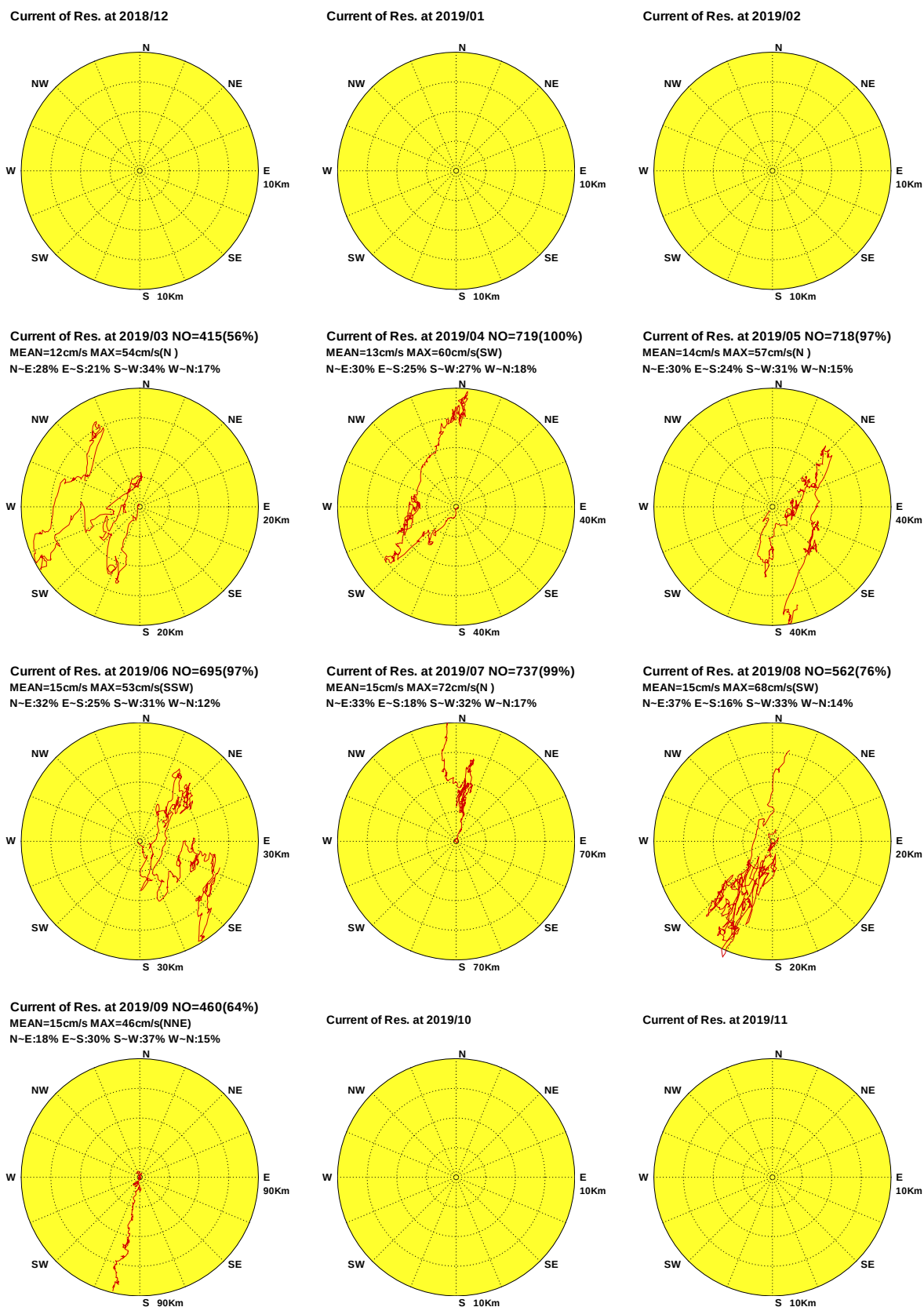


圖4.5.1c 2019年宜蘭海域每月測站 X 計算殘流向量行進圖

C18CSAX0.1HR C191SAX0.1HR C192SAX0.1HR C193SAX0.1HR C194SAX0.1HR C195SAX0.1HR
C196SAX0.1HR C197SAX0.1HR C198SAX0.1HR C199SAX0.1HR C19ASAX0.1HR C19BSAX0.1HR

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Progressive Vector Diagram of Current

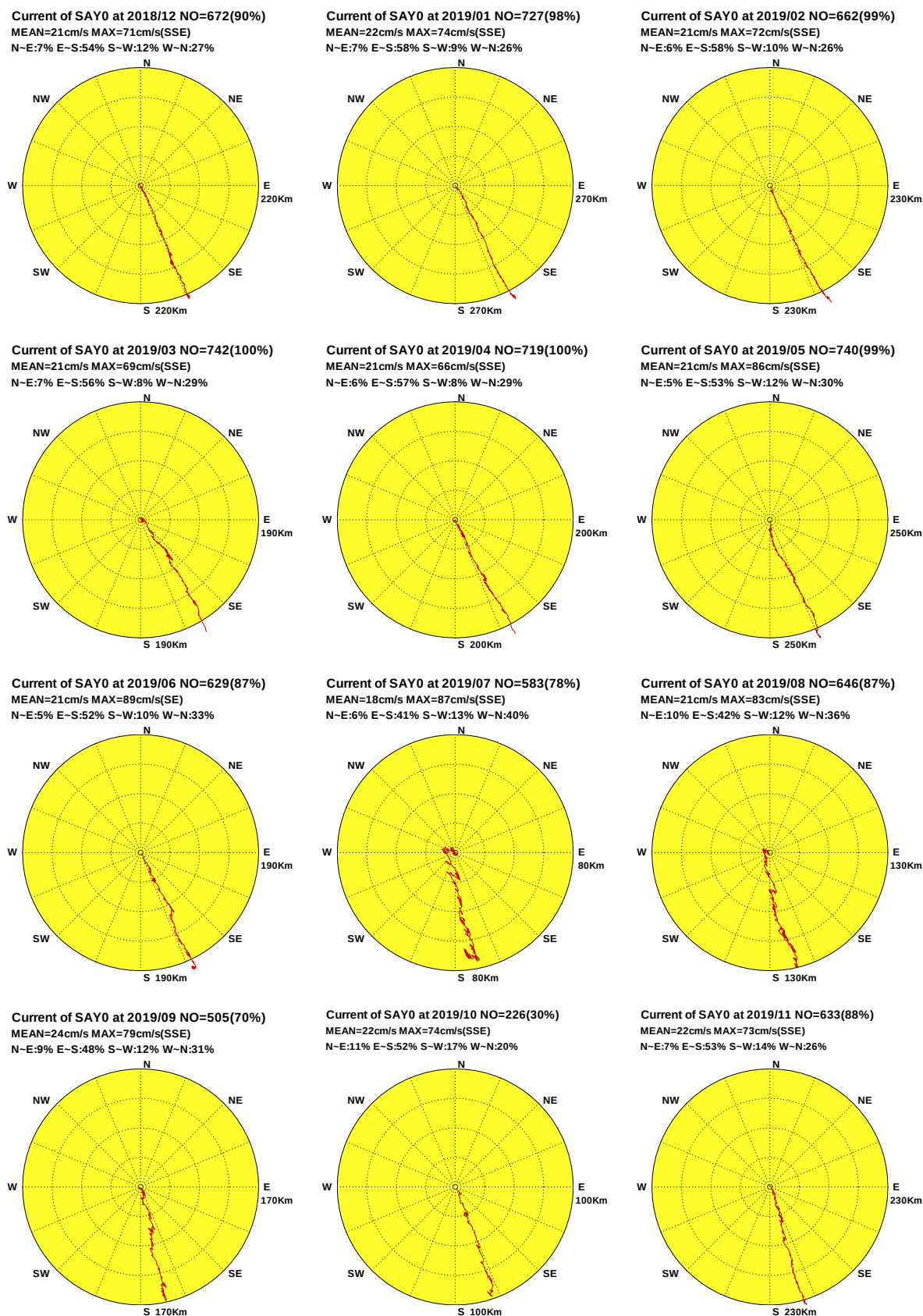


圖4.5.2a 2019年宜蘭海域每月測站 Y 觀測海流向量行進圖

C18CSAY0.1H0 C191SAY0.1H0 C192SAY0.1H0 C193SAY0.1H0 C194SAY0.1H0 C195SAY0.1H0
C196SAY0.1H0 C197SAY0.1H0 C198SAY0.1H0 C199SAY0.1H0 C19ASAY0.1H0 C19BSAY0.1H0

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Progressive Vector Diagram of Current

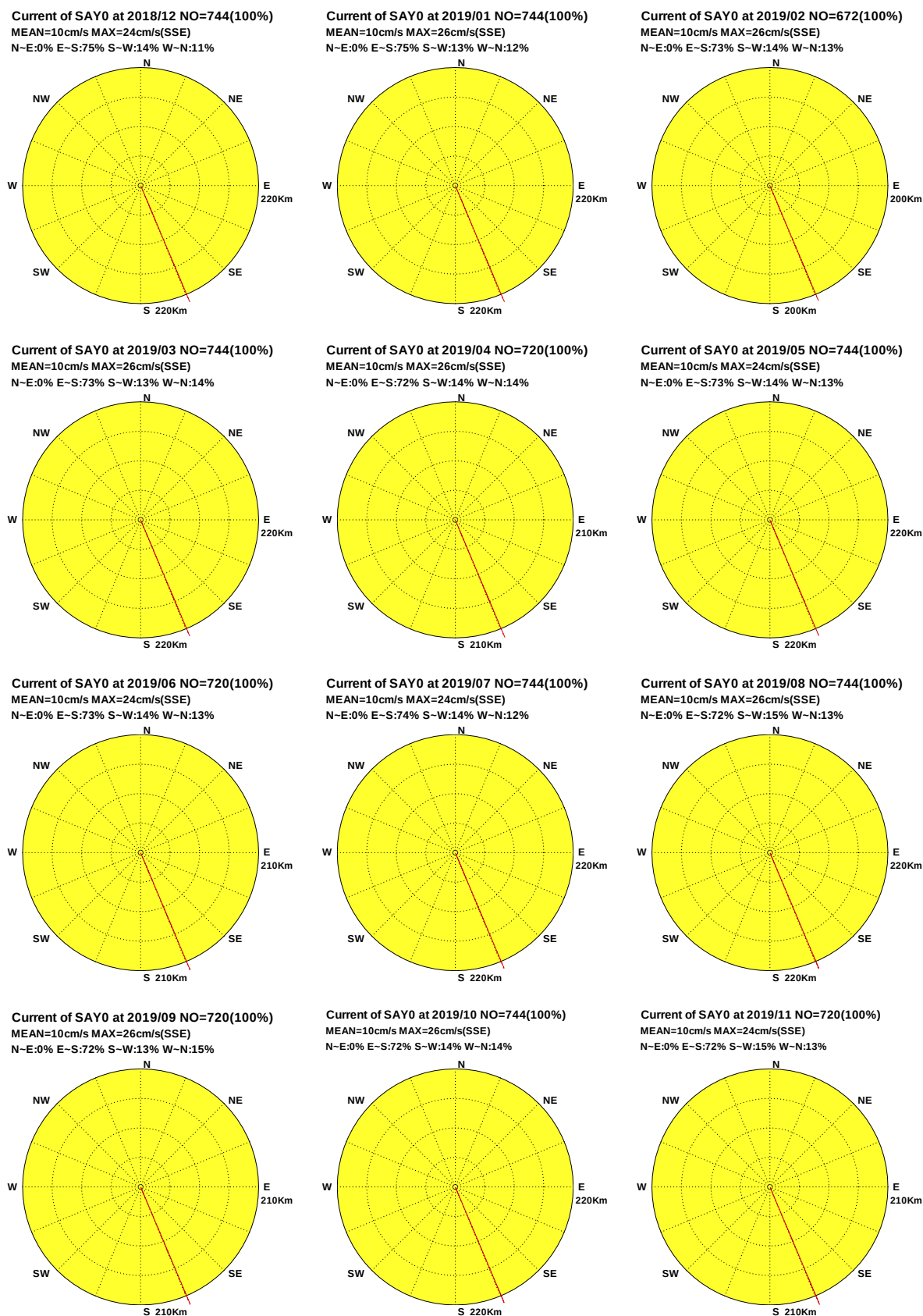


圖4.5.2b 2019年宜蘭海域每月測站 Y 計算潮流向量行進圖

C18CSAY0.1HD C191SAY0.1HD C192SAY0.1HD C193SAY0.1HD C194SAY0.1HD C195SAY0.1HD
C196SAY0.1HD C197SAY0.1HD C198SAY0.1HD C199SAY0.1HD C19ASAY0.1HD C19BSAY0.1HD

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Progressive Vector Diagram of Current

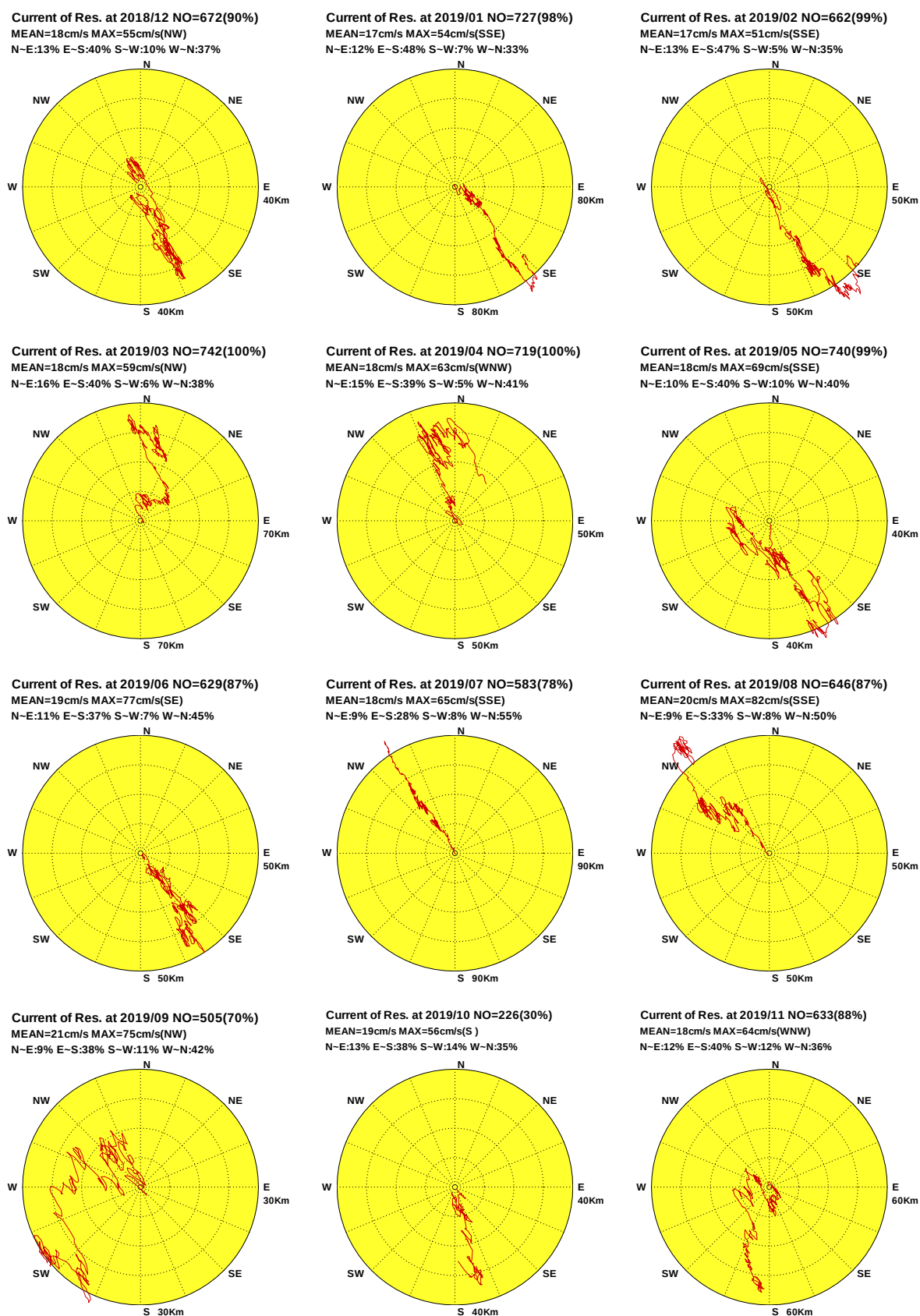


圖4.5.2c 2019年宜蘭海域每月測站 Y 計算殘流向量行進圖

C18CSAY0.1HR C191SAY0.1HR C192SAY0.1HR C193SAY0.1HR C194SAY0.1HR C195SAY0.1HR
C196SAY0.1HR C197SAY0.1HR C198SAY0.1HR C199SAY0.1HR C19ASAY0.1HR C19BSAY0.1HR

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