Scarborough Directional Waverider Buoy

Location			
OS	509578 E 489934 N		
WGS84	*Latitude:* 54° 17.598' N *Longitude:* 00° 19.077' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~19m CD	Buoy in situ off Scarborough beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
93	30 minutes

Monthly Averages - 2014

All times are GMT

Month	H_s (m)	T_p (s)	T_z (s)	Dir. (°)	SST (°C)	No. of days
January	1.30	8.1	4.9	92	7.0	31
February	1.09	7.0	4.2	117	6.3	28
March	0.98	8.5	4.4	85	6.8	31
April	0.95	7.3	4.5	80	7.9	30
May	0.94	7.1	4.6	68	9.6	31
June	0.92	6.8	4.6	54	12.8	27
July	0.70	5.6	3.8	105	15.5	31
August	0.92	7.3	4.2	98	14.7	20
September	0.83	7.6	4.9	64	14.3	19
October	1.05	7.4	4.4	100	13.2	31
November	1.33	7.9	5.0	84	11.6	30
December	1.20	9.7	4.7	81	9.4	31

Storm Analysis

Date/Time	H_s (m)	T_p (s)	T_z (s)	Dir. (°)	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
14-Oct-2014 04:30	4.45	9.1	6.7	61	0.32	HW -3	3.4	0.11	0.22
22-Oct-2014 00:30	3.92	11.1	7.5	17	1.79	HW -2	3.0	0.77	1.16
28-Mar-2014 00:00	3.45	8.3	6.3	73	1.02	HW -2	3.8	0.06	0.18
19-Jan-2014 20:30	3.43	10.0	8.2	62	0.89	HW +2	4.3	-0.10	-0.10
09-Jul-2014 19:30	3.39	9.1	6.7	21	-1.23	HW +6	3.2	0.21	0.27

Annual Statistics

Year	Annual H_s exceedance* (m)						Annual Maximum H_s	
	0.05%	0.5%	1%	2%	5%	10%	Date	A_{max} (m)
2013	-	4.93	4.46	3.76	2.89	2.12	10-Oct-2013 20:30	6.03
2014	3.91	3.16	2.95	2.63	2.22	1.84	14-Oct-2014 04:30	4.45

** i.e. 5 % of the H_s values measured in 2013 exceeded 2.89 m*

Distribution plots

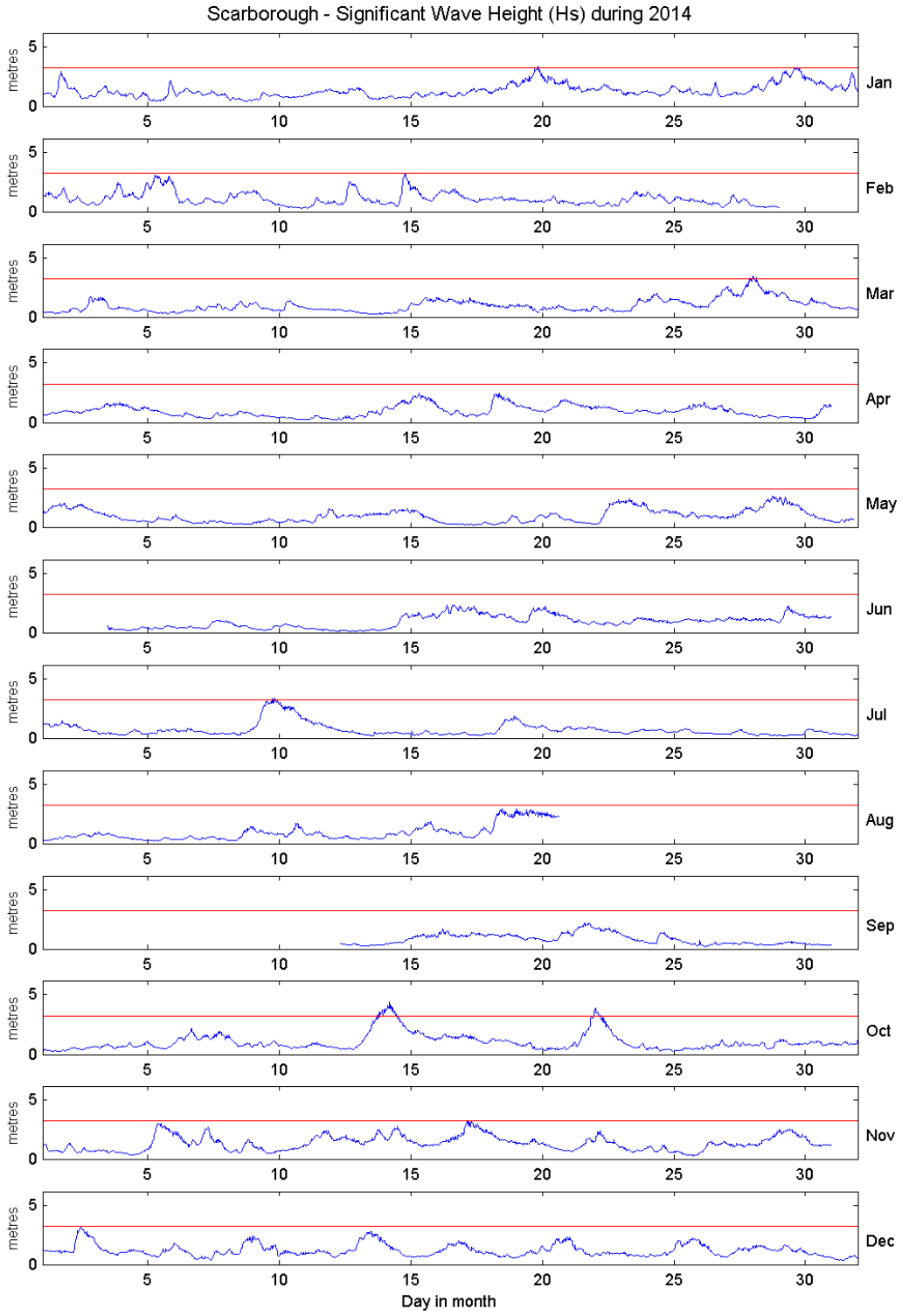
The distribution of wave parameters are shown in the accompanying graphs/tables of:

- Annual time series of H_s (red line is 3.25 m storm threshold)
- Wave rose (percentage of occurrence of Direction vs. H_s) for all measured data
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2014
- Incidence of storm waves for 2014. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

General

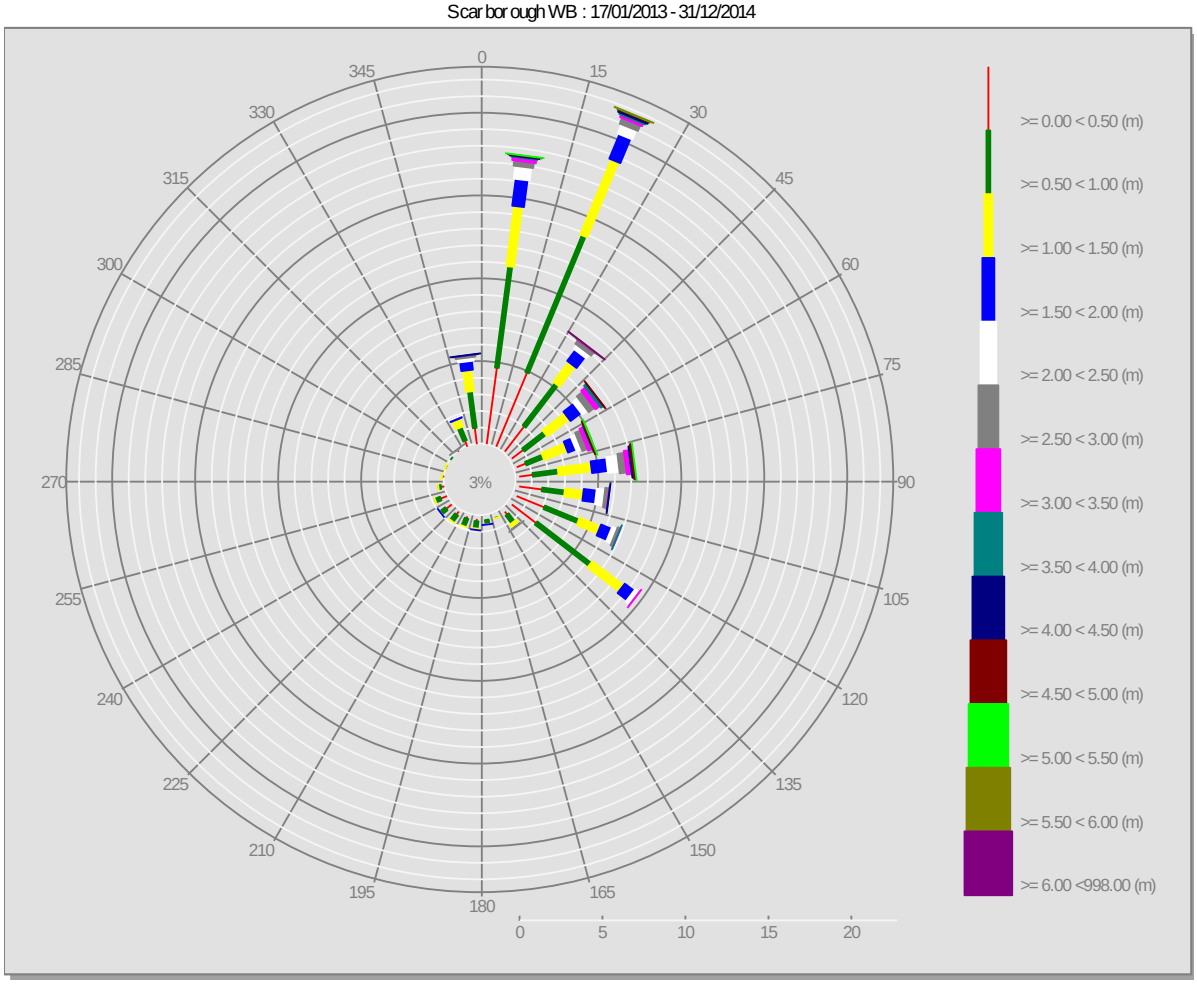
The buoy, owned by Scarborough Borough Council, was deployed on 18 January 2013, at which time the magnetic declination at the site was 1.66° west, changing by 0.18° east per year.

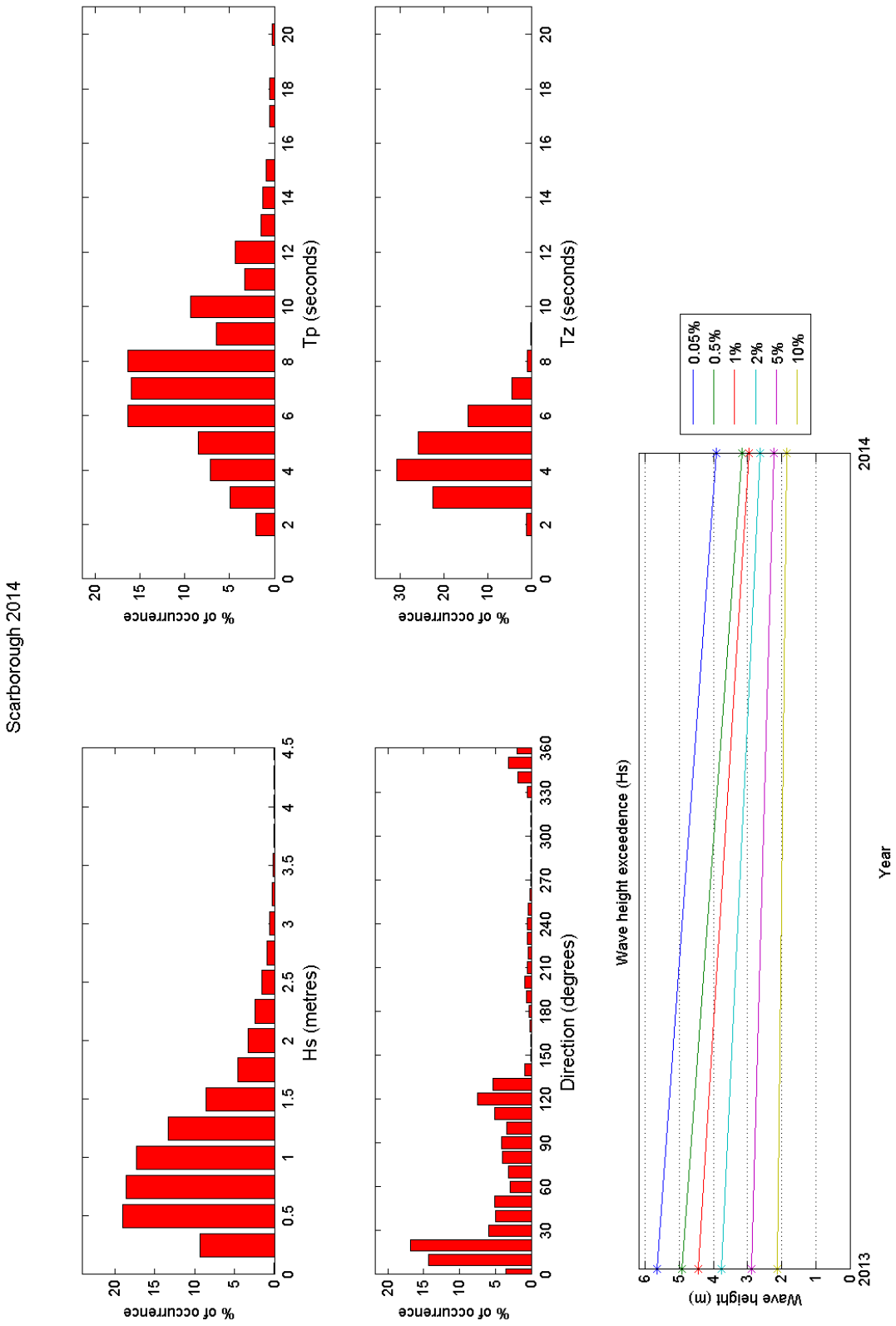
** Tidal information is obtained from the nearest recording tide gauge (the tide gauge at Scarborough). The surge shown is the residual at the time of the highest Hs. The maximum tidal surge is the largest positive surge during the storm event.*

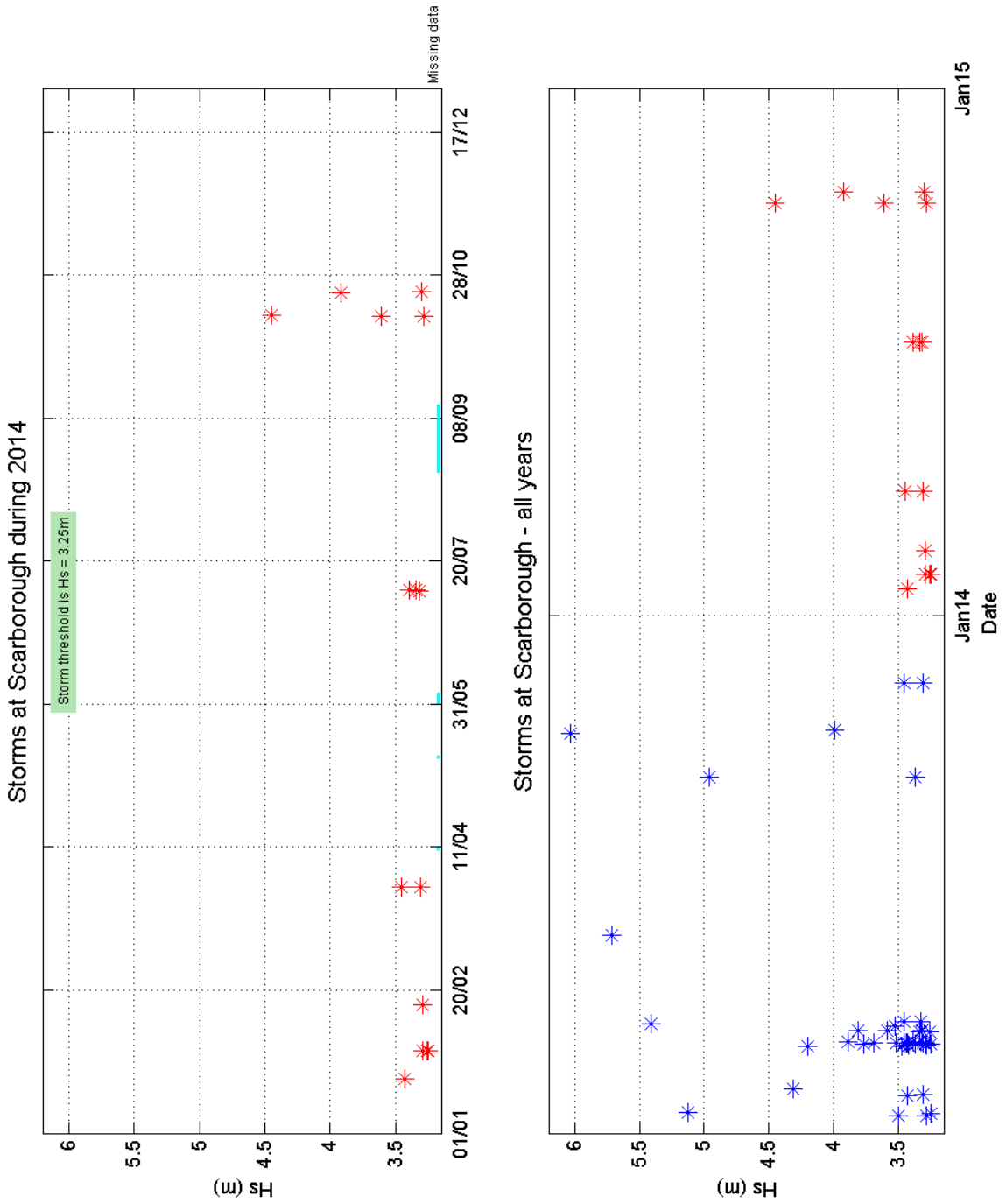

Scarborough - Significant Wave Height (Hs) during 2014
metres
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
5
10
15
20
25
30
Day in month

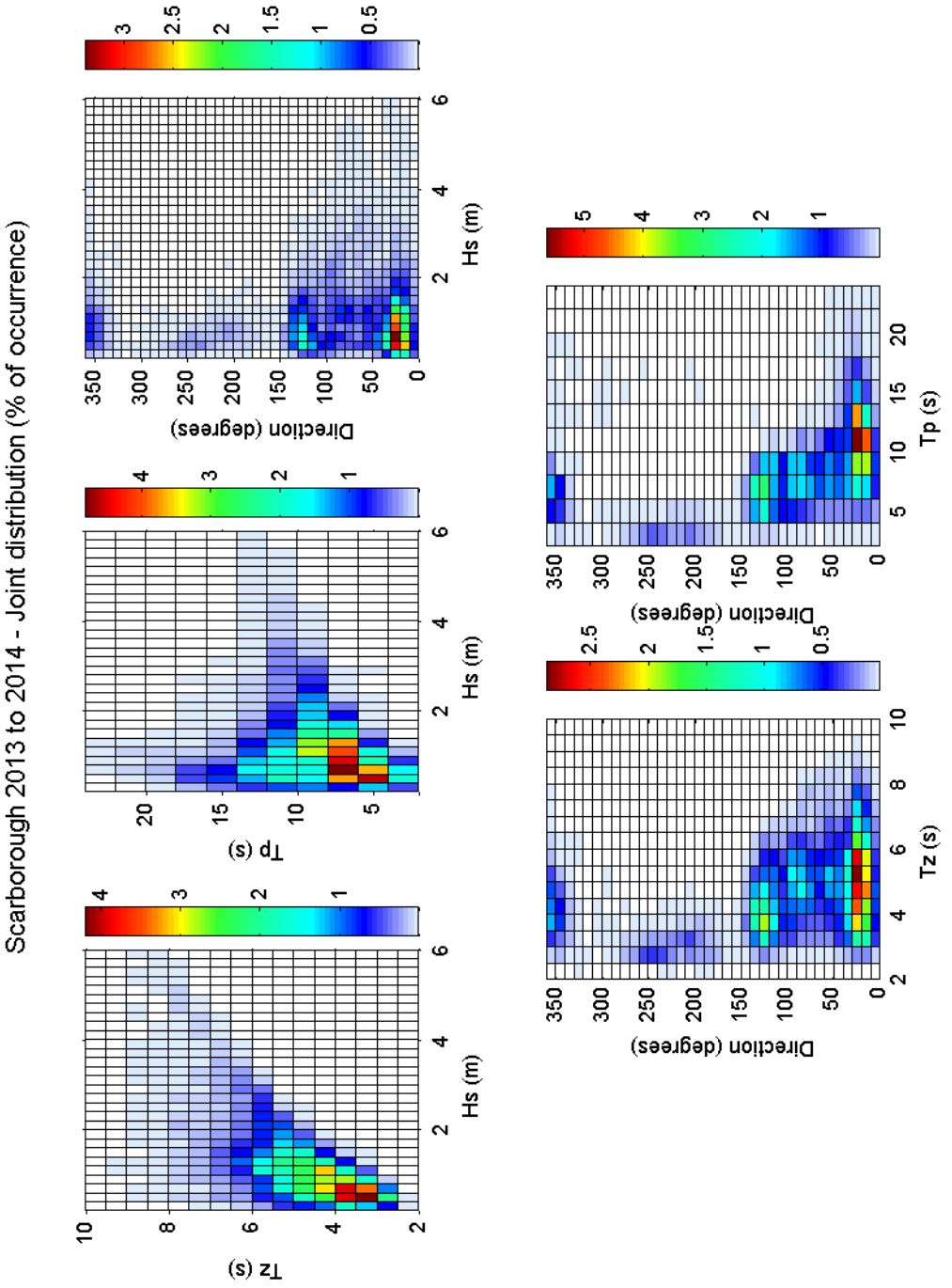
Offshore Wave Hs (m)

Scarborough WB : 17/01/2013 - 31/12/2014




Scarborough 2014
% of occurrence
Hs (metres)
Tp (seconds)
Direction (degrees)
Tz (seconds)
Wave height exceedence (Hs)
Wave height (m)
Year
2013
2014
0.05%
0.5%
1%
2%
5%
10%


Storms at Scarborough during 2014
Storm threshold is Hs = 3.25m
Missing data
Hs (m)
6
5.5
5
4.5
4
3.5
01/01
20/02
11/04
31/05
20/07
08/09
28/10
17/12
Storms at Scarborough - all years
Hs (m)
Jan14
Jan15
Date


Scarborough 2013 to 2014 - Joint distribution (% of occurrence)
Direction (degrees)
Hs (m)
Tp (s)
Tz (s)