Boscombe Directional Waverider Buoy

Location

OS: 411412E 90203N

WGS84: *Latitude:* 50° 42.681' N *Longitude:* 01° 50.384' W

Water Depth

~10 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
97	30 minutes

Statistics - 2012

All times are GMT

Month	H_s (m)	T_p (s)	T_z (s)	Dir. (^{o})	SST (^{o}C)	No. of days
January	0.62	7.5	3.9	181	9.1	30
February	0.40	8.6	4.3	178	6.5	29
March	0.36	9.7	4.1	182	8.4	29
April	0.67	7.1	4.0	178	10.0	30
May	0.35	5.8	3.6	177	12.2	29
June	0.65	5.7	3.7	183	14.9	28
July	0.45	5.6	3.5	188	16.5	30
August	0.54	5.8	3.5	184	18.4	31
September	0.45	6.1	3.6	184	17.1	28
October	0.65	7.6	4.1	177	14.3	31
November	0.67	8.0	4.3	182	11.3	30
December	0.79	9.5	4.4	186	9.0	30

Storm Analysis

Date/Time	H_s (m)	T_p (s)	T_z (s)	Dir. (^{o})	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
25-Apr-2012 10:30	3.31	8.3	6.1	162	0.77	HW -1	1.2	0.32	0.66
30-Apr-2012 08:00	3.22	7.7	5.9	156	0.26	HW +2	0.4	0.23	0.31
22-Nov-2012 20:00	2.88	8.3	5.6	188	0.62	HW	0.8	0.20	0.41
03-Jan-2012 11:30	2.78	10.5	5.2	197	-	HW +4	0.5	-	-

* *Tidal information is obtained from the nearest recording tide gauge (the National Network gauge on Bournemouth Pier). The surge shown is the residual at the time of the highest H_s. The maximum tidal surge is the largest positive surge during the storm event.*

Annual Statistics

Year	Annual H_s exceedance* (m)						Annual Maximum H_s	
	0.05%	0.5%	1%	2%	5%	10%	Date	A_{max} (m)
2003	-	2.17	1.95	1.53	1.19	0.98	14-Nov-2003 11:00	2.79
2004	2.98	2.28	1.96	1.69	1.30	1.02	08-Jan-2004 09:30	3.62
2005	2.62	1.81	1.59	1.40	1.11	0.90	02-Nov-2005 01:00	2.84
2006	2.82	2.24	2.03	1.82	1.47	1.17	29-Dec-2006 23:00	3.14
2007	2.94	2.07	1.84	1.63	1.33	1.07	18-Nov-2007 14:00	3.19
2008	3.08	2.32	2.02	1.71	1.34	1.05	10-Mar-2008 07:00	3.84
2009	2.87	2.18	1.93	1.72	1.39	1.10	13-Nov-2009 23:30	3.10
2010	2.75	2.13	1.76	1.48	1.14	0.90	08-Nov-2010 08:30	3.21
2011	2.61	2.11	1.91	1.57	1.26	1.04	10-Jan-2011 22:30	2.88
2012	3.06	2.25	2.04	1.76	1.34	1.07	25-Apr-2012 10:30	3.31

** i.e. 5 % of the H_s values measured in 2003 exceeded 1.19 m*

Distribution plots

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

- Annual time series of H_s (red line is 2.75m storm threshold)
- Wave roses (Direction vs. H_s and vs. T_p) for all measured data from 01 April 2004
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2012
- Incidence of storm waves for 2012. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown. Note that the buoy was not deployed during the late autumn storms in 2005
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

Significant wave height return periods

Return periods for significant wave height can be calculated since the buoy has been deployed for more than 5 years. The return periods are based on 3-hourly records and are calculated for periods up to 10 times the record length, using a Weibull distribution.

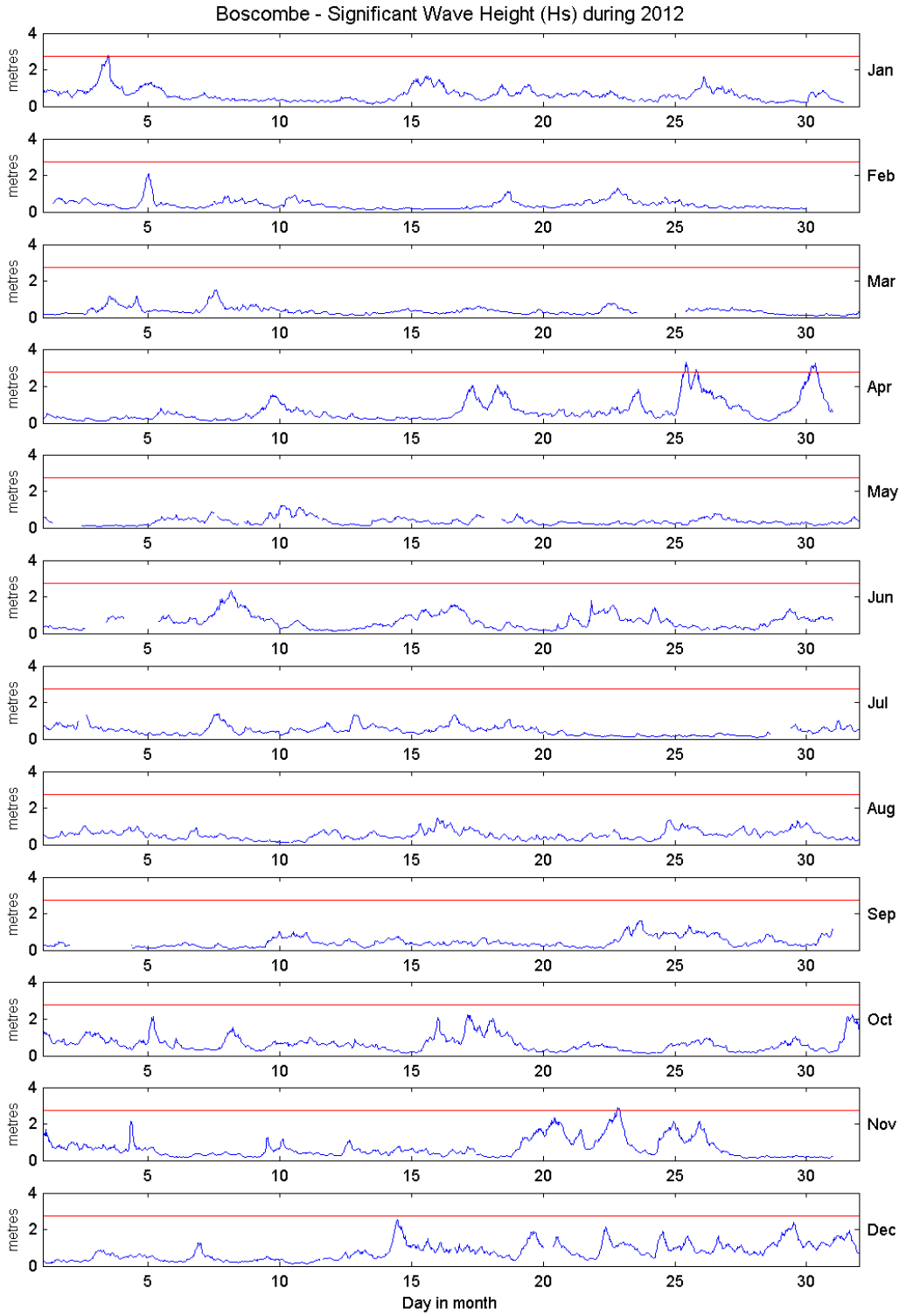
Return period (years)	Significant wave height (m)	Comments
1	3.2	No depth limitation
2	3.3	
5	3.5	
10	3.7	
20	3.9	
50	4.0	Depth-limited at MLWS

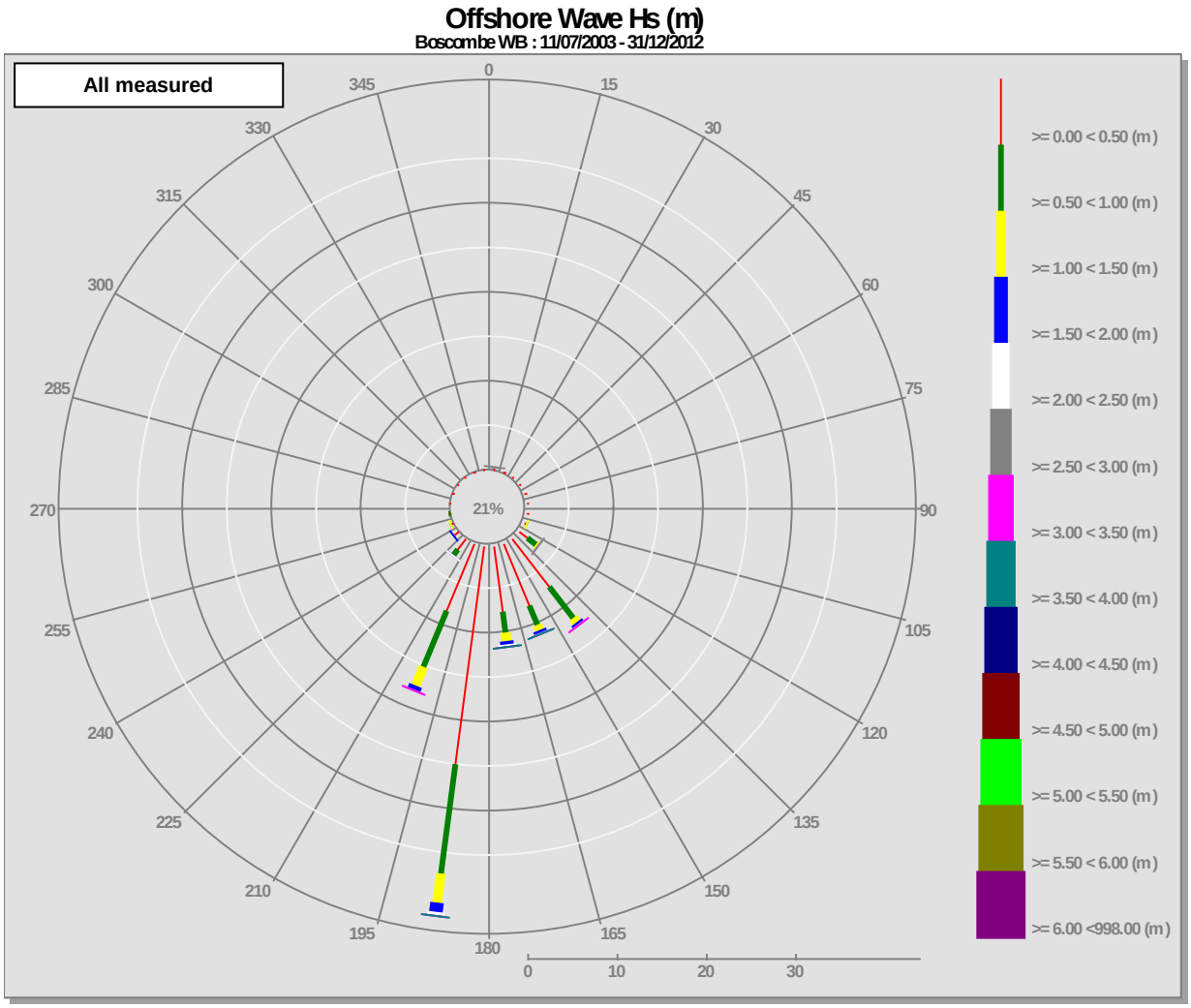
General

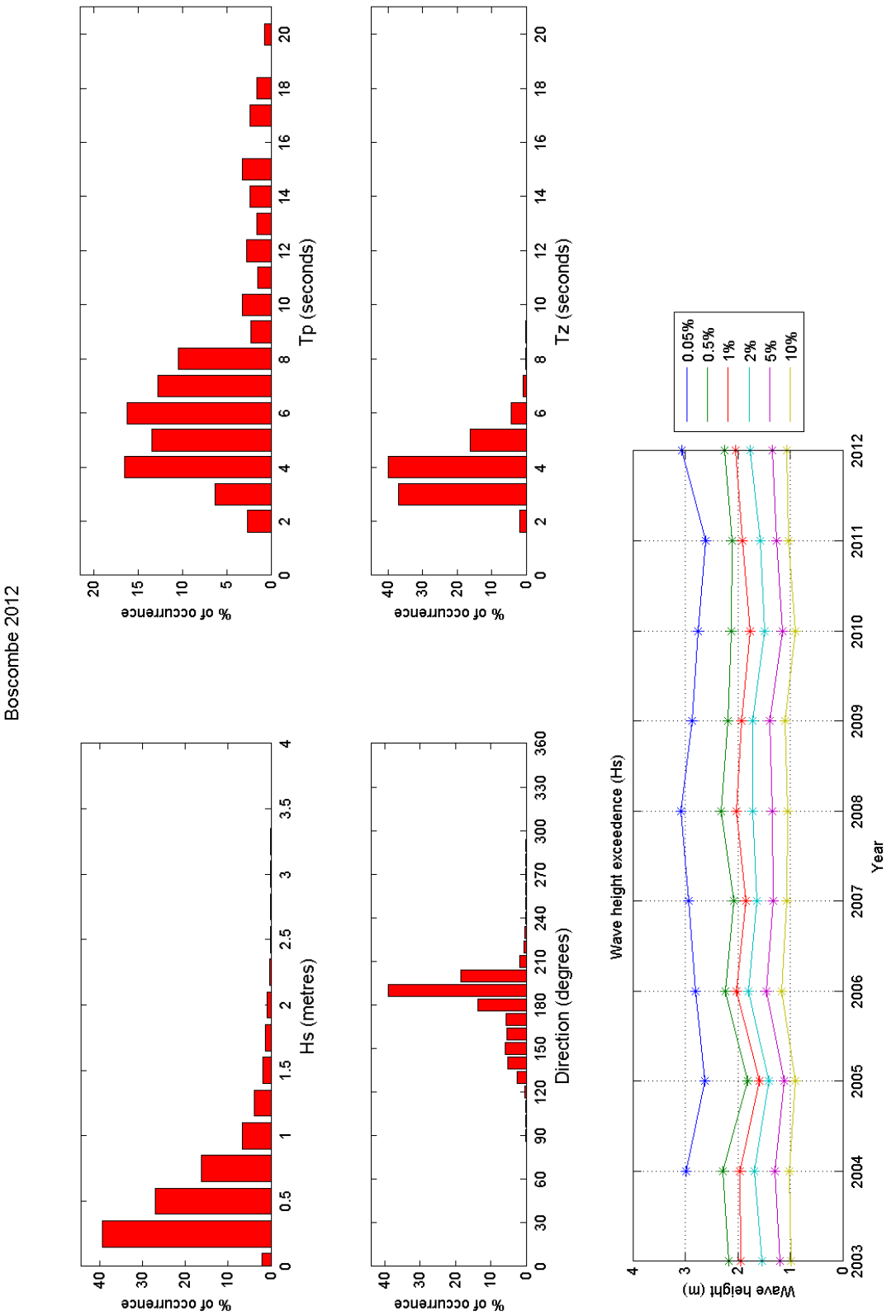
The buoy was first deployed on 11 July 2003, at which time the magnetic declination at the site was 3.2° west, changing by 0.15° east per year.

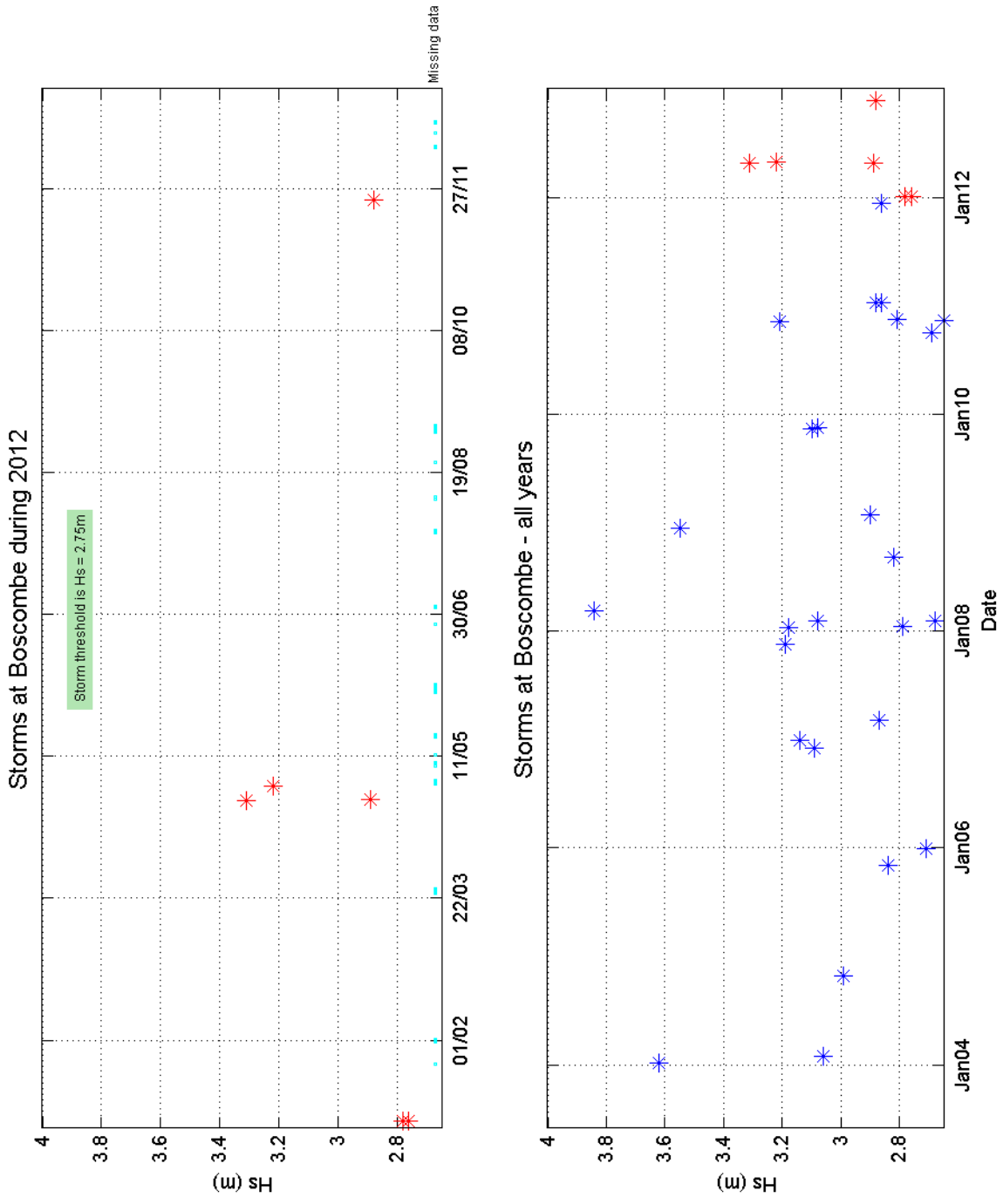
Acknowledgements

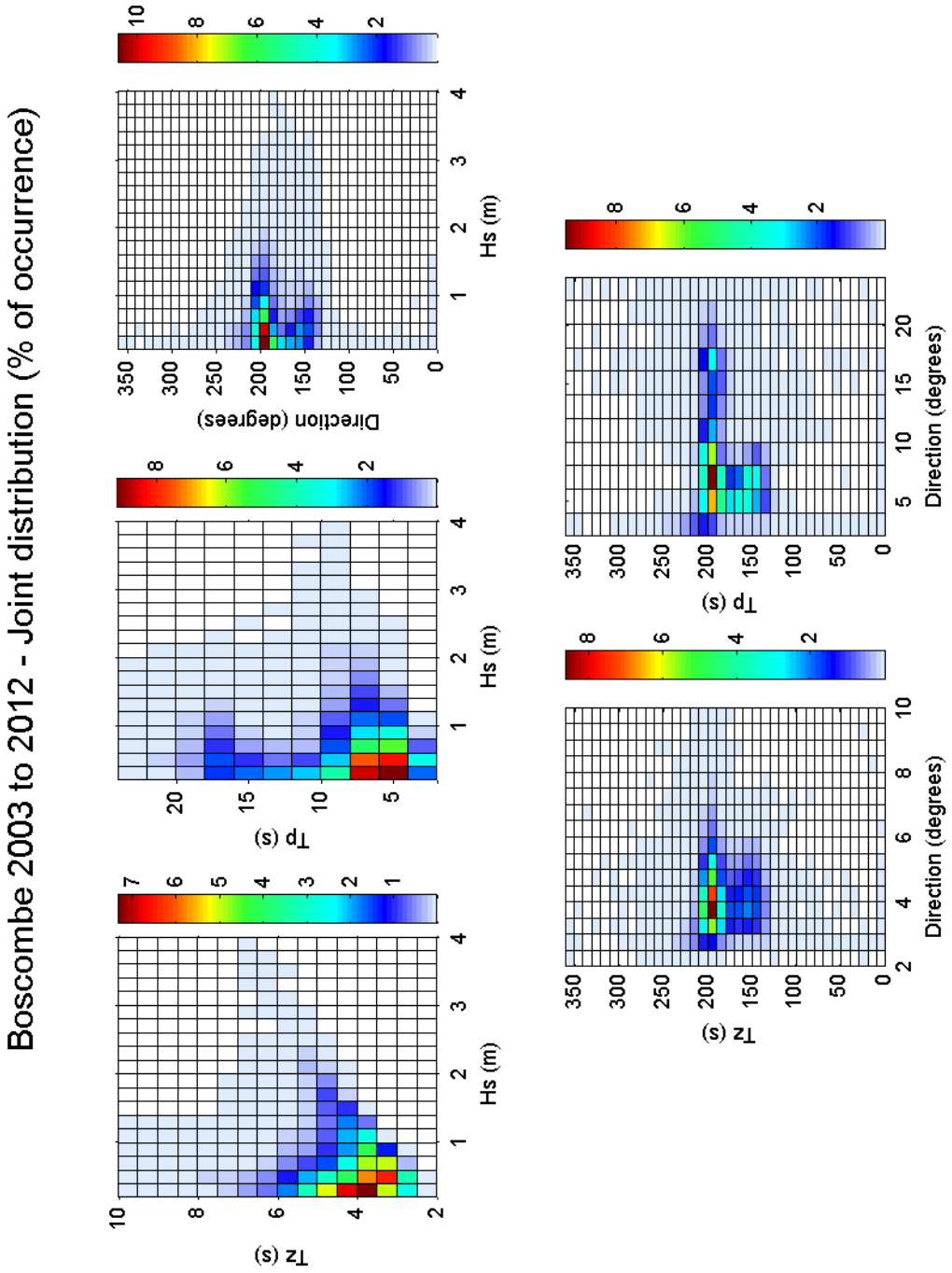
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.


Boscombe - Significant Wave Height (Hs) during 2012
metres
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
2
4
5
10
15
20
25
30
Day in month


Offshore Wave Hs (m)
Boscombe WB : 11/07/2003 - 31/12/2012
All measured
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
21%
0
10
20
30
>= 0.00 < 0.50 (m)
>= 0.50 < 1.00 (m)
>= 1.00 < 1.50 (m)
>= 1.50 < 2.00 (m)
>= 2.00 < 2.50 (m)
>= 2.50 < 3.00 (m)
>= 3.00 < 3.50 (m)
>= 3.50 < 4.00 (m)
>= 4.00 < 4.50 (m)
>= 4.50 < 5.00 (m)
>= 5.00 < 5.50 (m)
>= 5.50 < 6.00 (m)
>= 6.00 <998.00 (m)


Boscombe 2012
% of occurrence
Hs (metres)
Direction (degrees)
Tp (seconds)
Tz (seconds)
Wave height exceedence (Hs)
Wave height (m)
Year
0.05%
0.5%
1%
2%
5%
10%


Storms at Boscombe during 2012
Storm threshold is Hs = 2.75m
Missing data
Hs (m)
4
3.8
3.6
3.4
3.2
3
2.8
01/02
22/03
11/05
30/06
19/08
08/10
27/11
Storms at Boscombe - all years
Hs (m)
Jan04
Jan06
Jan08
Jan10
Jan12
Date


Boscombe 2003 to 2012 - Joint distribution (% of occurrence)
Direction (degrees)
Hs (m)
Tp (s)
Tz (s)