Boscombe Directional WaveRider Buoy

Location
OS: 411413E 90302N
WGS84: *Latitude:* 50° 42.681'N *Longitude:* 001° 50.376'W

Water Depth
10.4m CD

Instrument Type
Datawell Directional WaveRider Buoy Mk III

Data Quality

C1(%)	Sample interval
99	30 minutes

Monthly Means *All times GMT*

Month	H_s (m)	T_p (s)	T_z (s)	Direction (°)	SST (°C)	No. of days
January	0.80	9.6	4.2	185	9.8	31
February	0.78	10.2	4.4	180	8.6	28
March	0.54	10.0	4.5	179	9.5	30
April	0.30	6.9	3.8	167	11.2	30
May	0.55	6.1	3.9	176	13.6	31
June	0.45	5.9	3.6	181	16.4	30
July	0.56	5.4	3.5	187	17.2	31
August	0.37	5.6	3.6	178	18.2	31
September	0.35	5.3	3.7	177	17.6	30
October	0.42	6.9	4.0	172	15.2	31
November	0.48	6.0	3.9	179	12.0	28
December	0.77	9.0	4.3	176	9.7	31

Tables and plots of these values, together with the minimum and maximum values and the standard deviation are available on the website.

Highest storm events in 2007

Date/Time	H_s	T_p	T_z	Dir.	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
18-Nov-2007 14:00	3.19	7.7	5.9	177	0.43	HW - 4	0.3	0.12	0.13
06-Mar-2007 02:00	2.87	7.7	5.6	186	1.14	HW + 4	0.9	0.75	0.80
08-Dec-2007 13:30	2.34	6.3	5.0	179	0.30	HW + 6	1.2	0.40	0.56

* *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.*

Year	Annual H_s exceedance* (m)						Annual Maximum H_s	
	0.05%	0.5%	1%	2%	5%	10%	Date	A_{max} (m)
2003	2.74	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

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

Distribution plots

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

- Percentage of occurrence of H_s, T_p, T_z and Direction for 2007
- Percentage wave height exceedance (all recorded years) – note that the statistics for 2003 were based on measurements from July to December only
- Joint distribution of all parameters for 2007, given both as number of observations and as percentage of occurrence
- Cumulative joint distribution of parameters from start of records (percentage of occurrence only)
- Incidence of storm waves for 2007 and for all previous years. 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 – see below.
- Annual time series of H_s (red line is storm threshold)

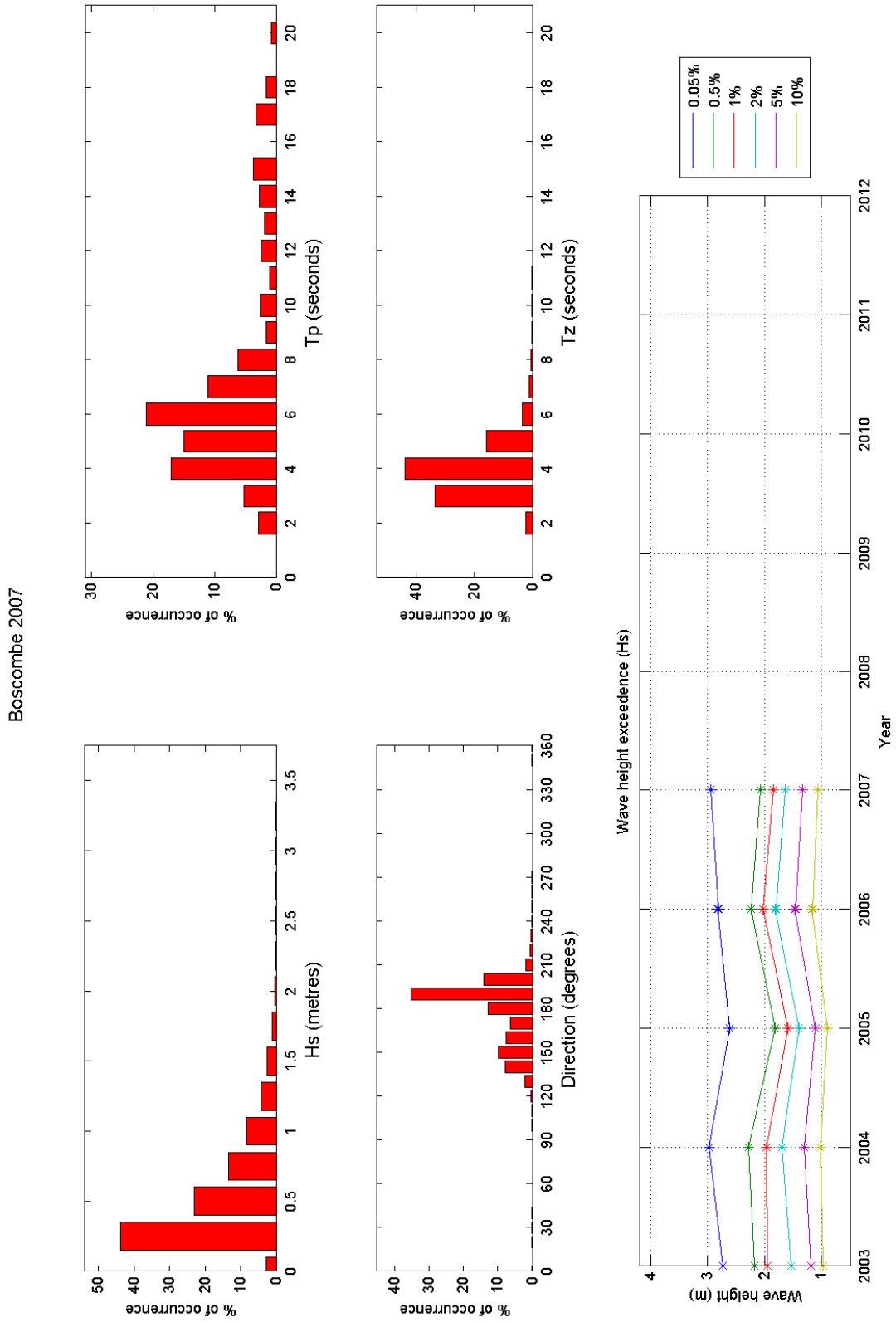
General

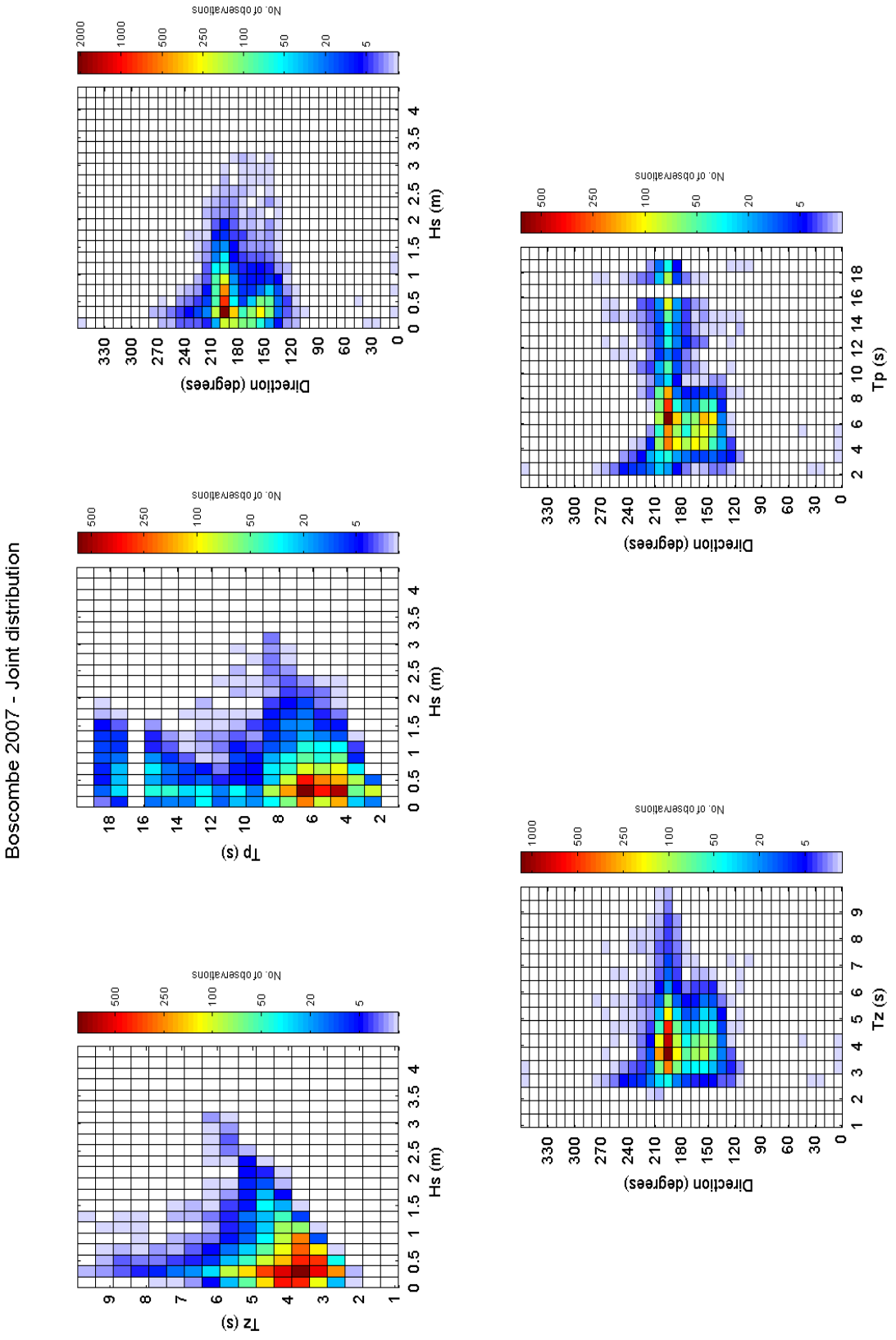
The wave directions recorded by the Datawell Directional WaveRider Mk III were found to be contaminated by a significant tidal signature, compounded by the on-board data processing. The buoy received new electronics to fix this problem in February 2004; wave directions measured before March 2004 were excluded from the analysis.

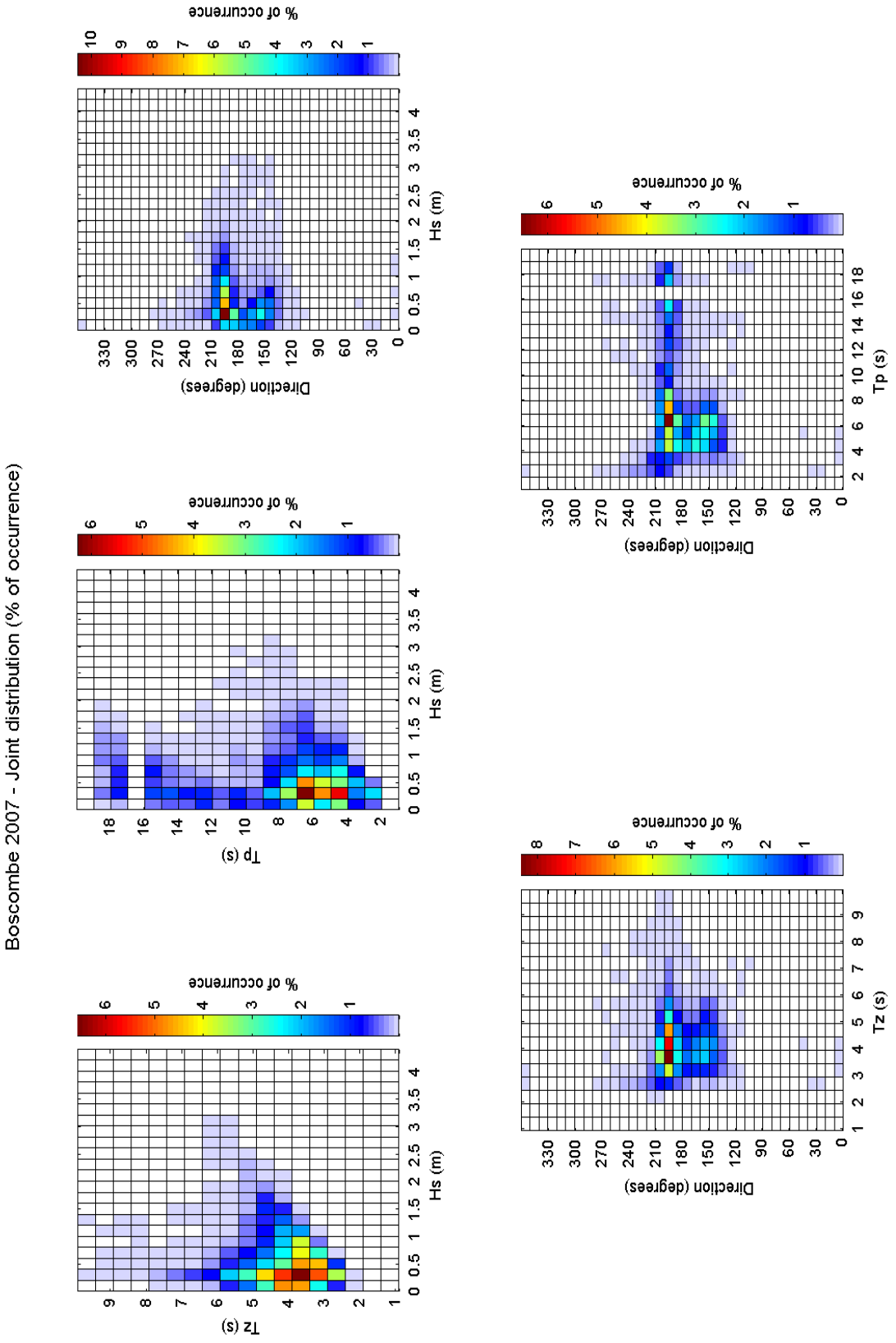
The buoy was badly damaged in November 2005, just prior to the series of storms which occurred that month. The buoy was replaced in December 2005.

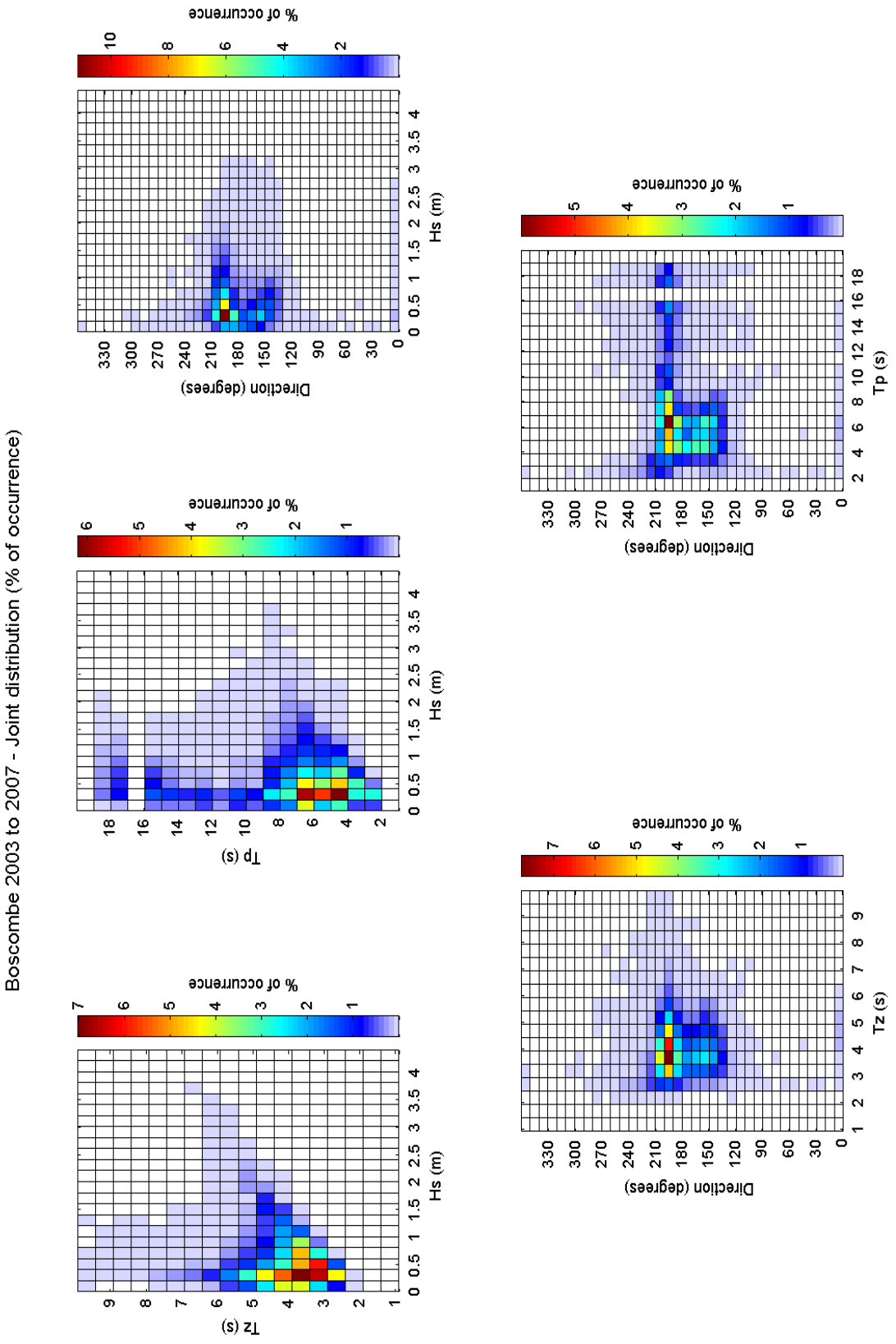
Acknowledgements

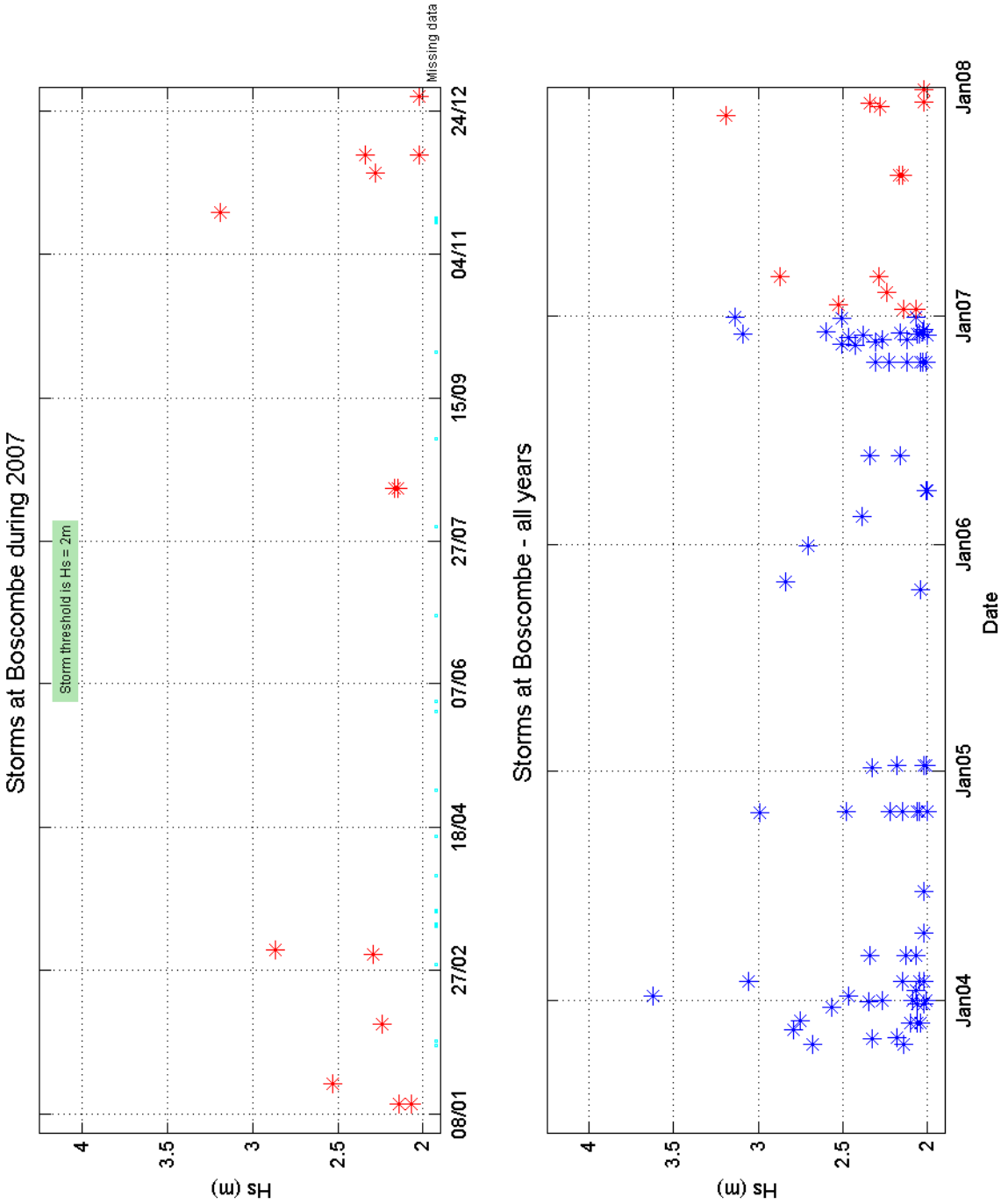
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

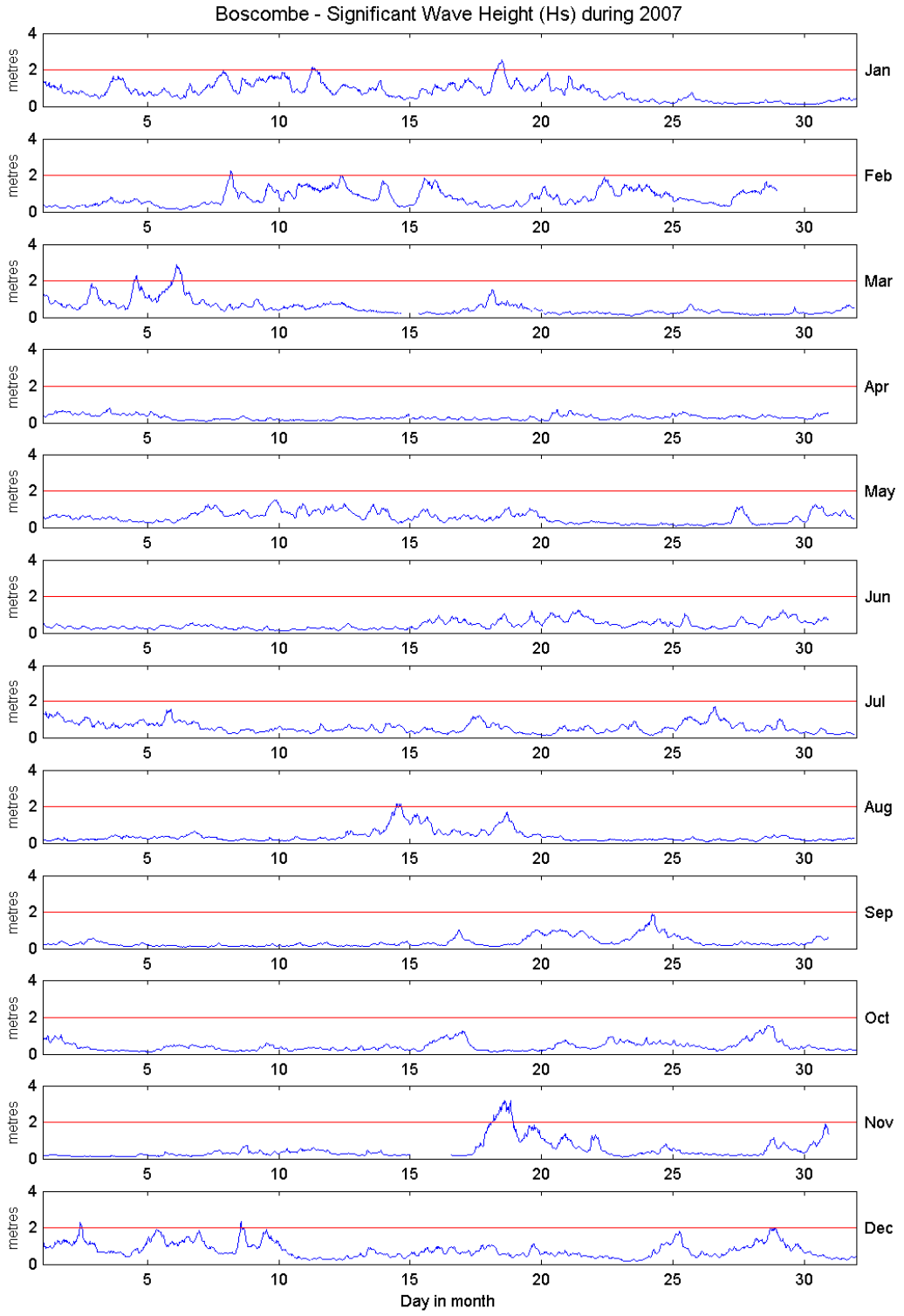

Boscombe 2007
% of occurrence
Hs (metres)
% of occurrence
Tp (seconds)
% of occurrence
Direction (degrees)
% of occurrence
Tz (seconds)
Wave height exceedence (Hs)
Wave height (m)
Year
0.05%
0.5%
1%
2%
5%
10%


Boscombe 2007 - Joint distribution
Direction (degrees)
Hs (m)
No. of observations
Tp (s)
Tz (s)


Boscombe 2007 - Joint distribution (% of occurrence)
Direction (degrees)
Hs (m)
% of occurrence
Tp (s)
Tz (s)


Boscombe 2003 to 2007 - Joint distribution (% of occurrence)
Direction (degrees)
Hs (m)
% of occurrence
Tp (s)
Tz (s)


Storms at Boscombe during 2007
Storm threshold is Hs = 2m
Missing data
Hs (m)
4
3.5
3
2.5
2
08/01
27/02
18/04
07/06
27/07
15/09
04/11
24/12
Storms at Boscombe - all years
Hs (m)
Jan04
Jan05
Jan06
Jan07
Jan08
Date


Boscombe - Significant Wave Height (Hs) during 2007
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