Pevensey Bay Directional Waverider Buoy

Location

OS: 570429E 100915N

WGS84: *Latitude:* 50° 46.966' N *Longitude:* 00° 24.975' E

Water Depth

~10 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
97	30 minutes

Statistics - 2011

All times are GMT

Month	H_s (m)	T_p (s)	T_z (s)	Dir. (^{o})	SST (^{o}C)	No. of days
January	0.86	6.0	3.8	167	6.6	31
February	0.89	7.6	4.0	197	7.0	28
March	0.57	5.0	3.3	137	7.3	30
April	0.45	6.5	3.6	163	10.4	30
May	0.68	5.6	3.6	195	13.4	31
June	0.72	5.2	3.5	195	15.3	30
July	0.56	5.1	3.4	174	17.1	31
August	0.59	4.7	3.4	188	18.1	28
September	0.82	5.7	3.7	199	17.1	30
October	0.89	5.6	3.8	194	15.8	31
November	0.89	5.8	3.7	172	13.8	30
December	1.26	7.0	4.5	219	10.3	26

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)
13-Dec-2011 01:30	4.42	9.1	6.9	203	2.84	HW +1	5.5	0.32	0.43

* *Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Newhaven). 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	-	2.66	2.41	2.08	1.61	1.34	02-Nov-2003 11:30	4.18
2004	3.65	2.72	2.51	2.24	1.86	1.53	31-Oct-2004 17:00	3.92
2005	3.44	2.83	2.37	2.09	1.71	1.31	03-Dec-2005 00:00	3.55
2006	3.59	2.89	2.64	2.33	1.91	1.59	03-Dec-2006 09:30	4.10
2007	3.85	2.84	2.58	2.26	1.89	1.54	18-Jan-2007 12:00	4.23
2008	3.79	3.04	2.73	2.44	2.03	1.65	13-Dec-2008 12:00	3.97
2009	3.43	2.88	2.66	2.38	1.92	1.56	14-Nov-2009 17:30	3.61
2010	3.62	2.64	2.24	1.91	1.52	1.22	08-Nov-2010 12:00	4.13
2011	3.85	2.57	2.29	2.02	1.69	1.43	13-Dec-2011 01:30	4.42

** i.e. 5 % of the H_s values measured in 2003 exceeded 1.61 m*

Distribution plots

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

- Annual time series of H_s (red line is 3.5 m 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 2011
- Incidence of storm waves for 2011. 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

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.

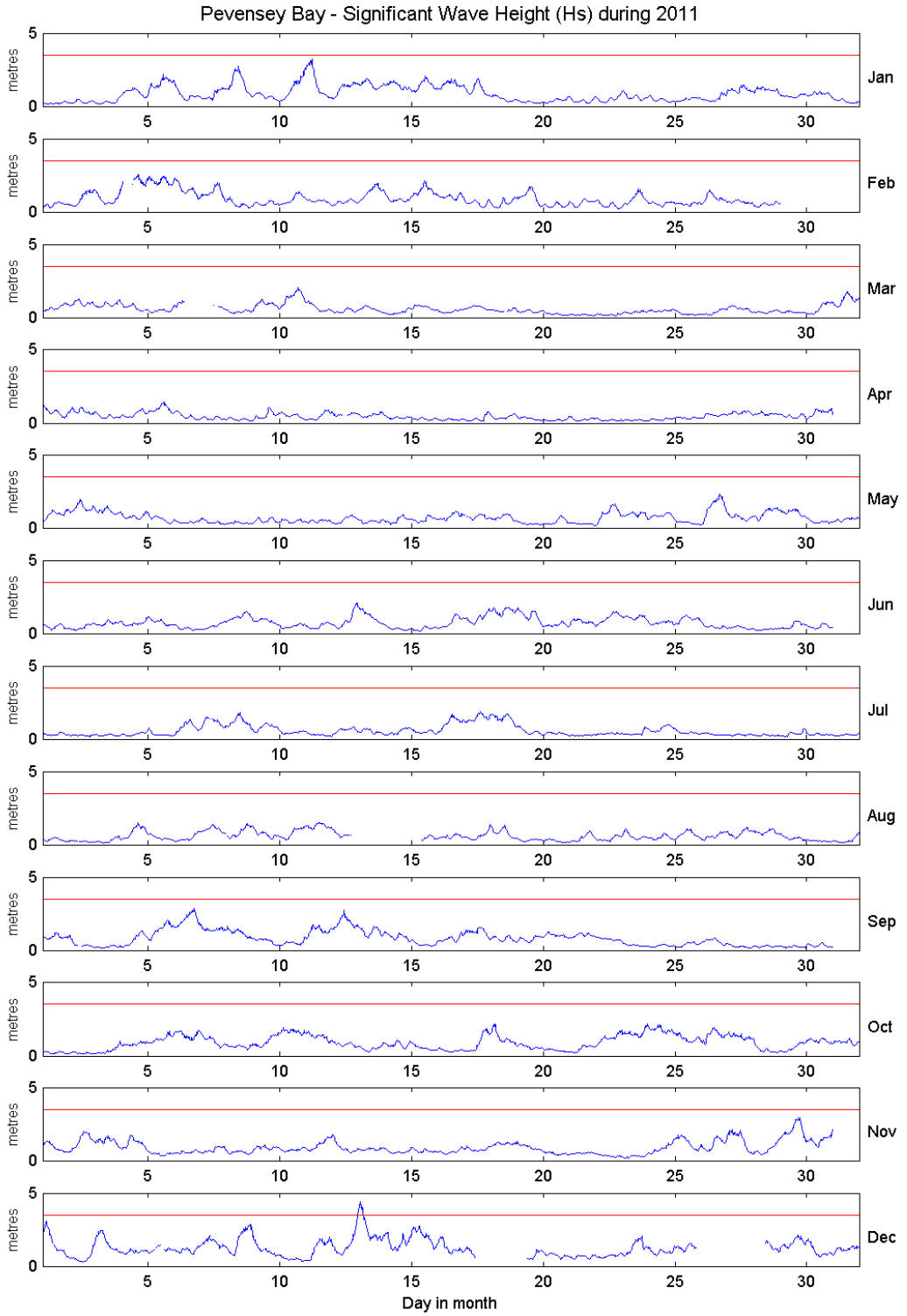
Return period (years)	Significant wave height (m)	Comments
1	3.84	No depth limitation
2	3.98	
5	4.16	
10	4.28	Depth-limited at MLWS
20	4.40	
50	4.55	

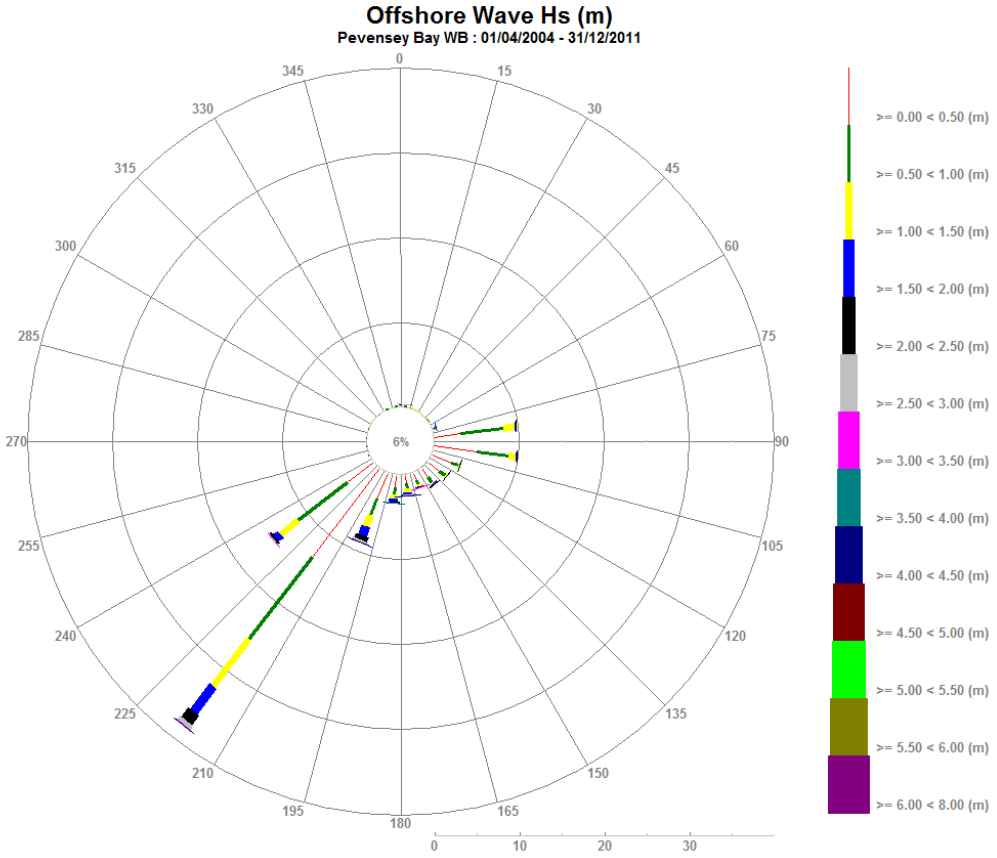
General

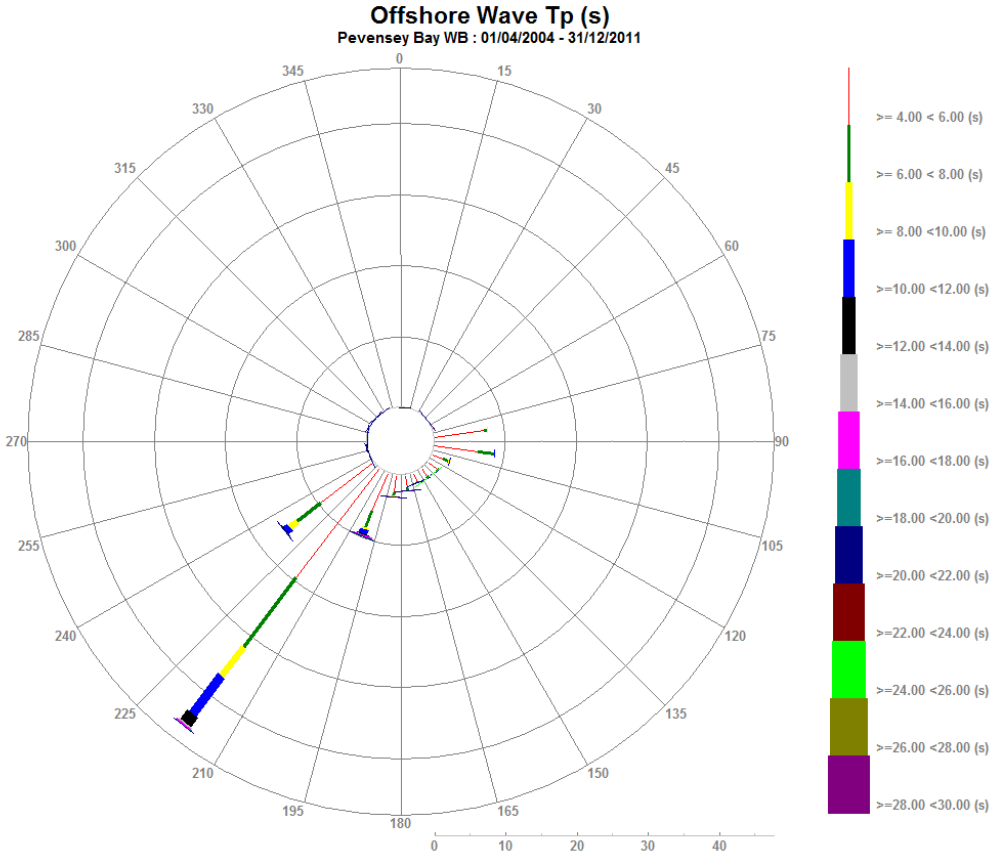
The buoy was first deployed on 9 July 2003.

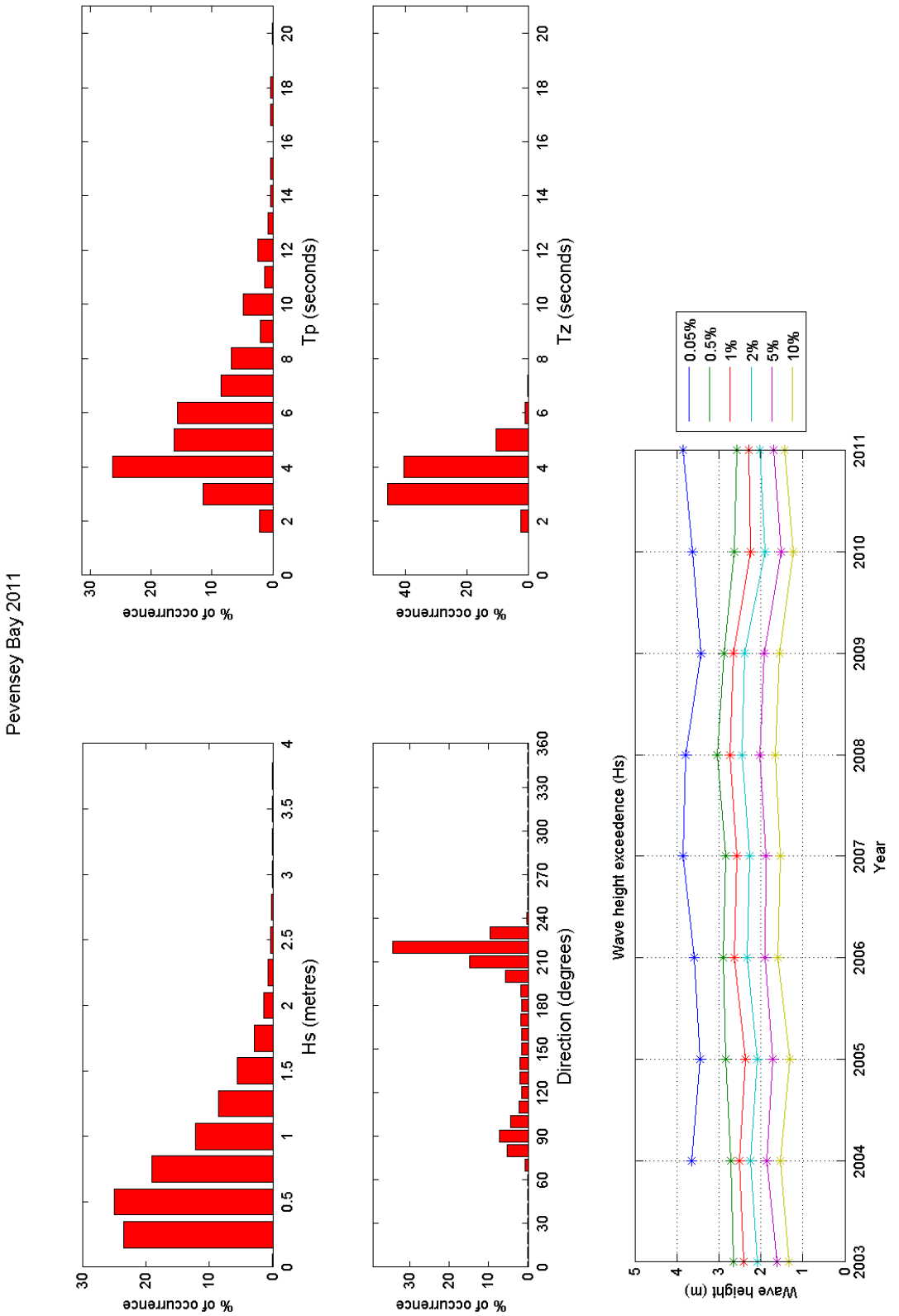
Acknowledgements

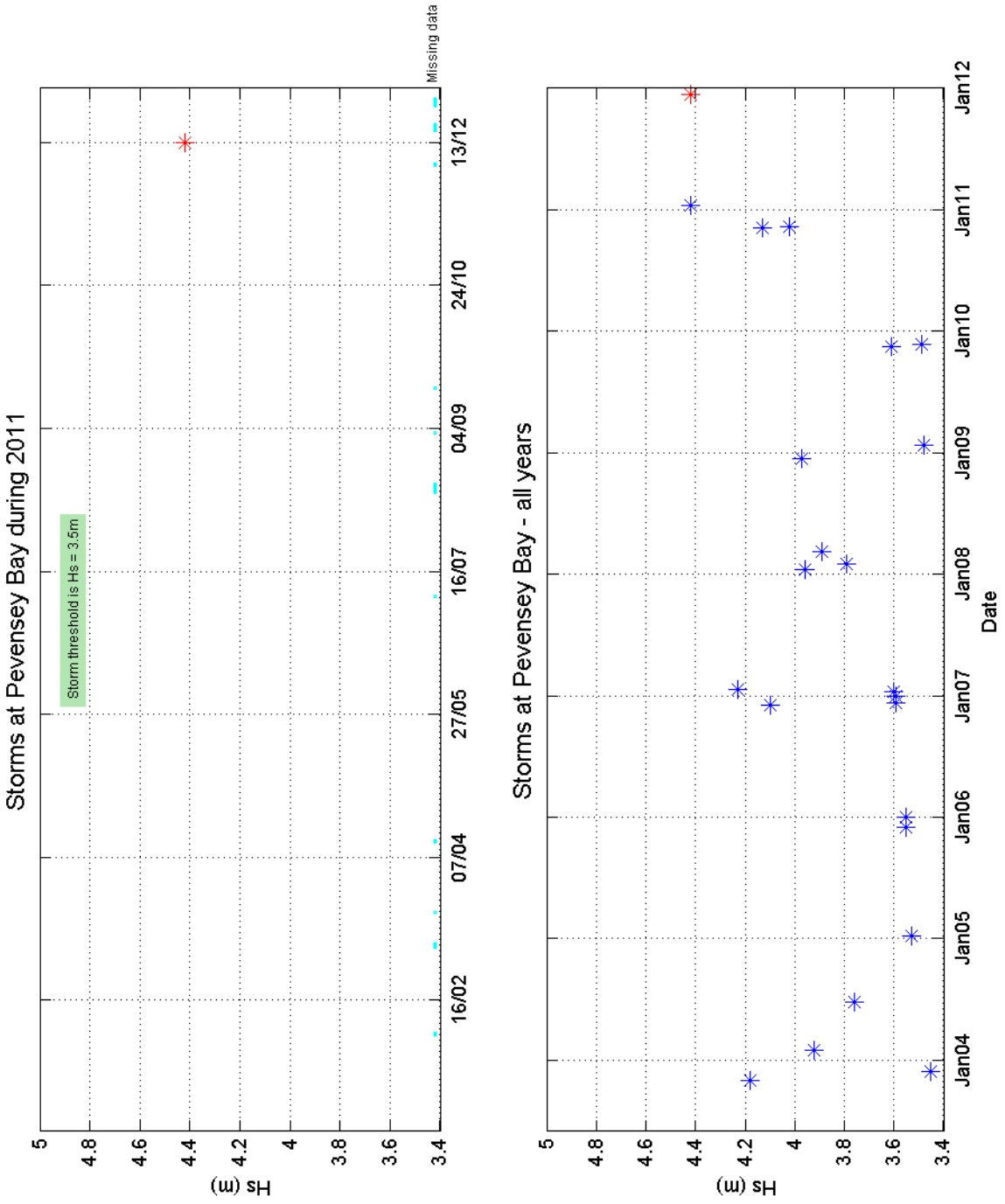
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

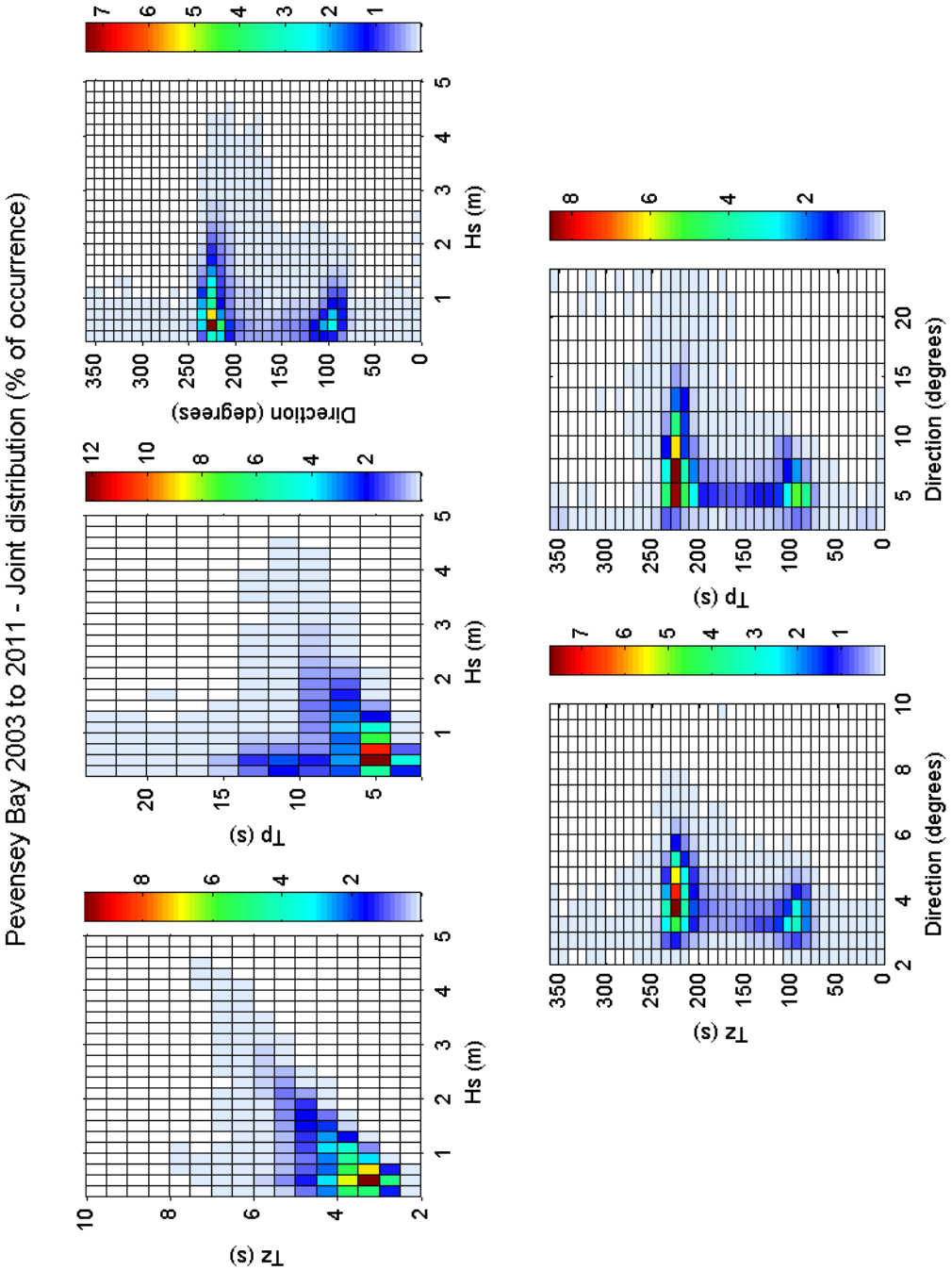

Pevensey Bay - Significant Wave Height (Hs) during 2011
metres
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
5
10
15
20
25
30
Day in month


Offshore Wave Hs (m)
Pevensey Bay WB : 01/04/2004 - 31/12/2011
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
6%
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 < 8.00 (m)


Offshore Wave Tp (s)
Pevensey Bay WB : 01/04/2004 - 31/12/2011
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
0
10
20
30
40
>= 4.00 < 6.00 (s)
>= 6.00 < 8.00 (s)
>= 8.00 <10.00 (s)
>=10.00 <12.00 (s)
>=12.00 <14.00 (s)
>=14.00 <16.00 (s)
>=16.00 <18.00 (s)
>=18.00 <20.00 (s)
>=20.00 <22.00 (s)
>=22.00 <24.00 (s)
>=24.00 <26.00 (s)
>=26.00 <28.00 (s)
>=28.00 <30.00 (s)


Pevensey Bay 2011
% of occurrence
Hs (metres)
Tp (seconds)
Direction (degrees)
Tz (seconds)
Wave height exceedence (Hs)
Wave height (m)
Year
0.05%
0.5%
1%
2%
5%
10%


Storms at Pevensey Bay during 2011
Storm threshold is Hs = 3.5m
Missing data
Hs (m)
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
16/02
07/04
27/05
16/07
04/09
24/10
13/12
Storms at Pevensey Bay - all years
Hs (m)
Jan04
Jan05
Jan06
Jan07
Jan08
Jan09
Jan10
Jan11
Jan12
Date


Pevensey Bay 2003 to 2011 - Joint distribution (% of occurrence)
Hs (m)
Direction (degrees)
Tp (s)
Tz (s)