Weston Bay Directional Waverider Buoy

Location

OS: 329183E 162109N

WGS84: *Latitude:* 51° 21.217' N *Longitude:* 03° 01.101' W

Water Depth

~13 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
77	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	0.58	5.4	3.4	242	7.4	31
February	0.32	5.1	3.2	240	5.7	27
March	0.24	5.0	3.3	248	8.0	31
April	0.47	4.1	3.0	206	9.8	30
May	0.32	4.6	2.9	208	11.9	31
June	0.45	4.7	3.2	240	15.4	30
July	0.44	4.4	3.2	248	16.8	31
August	0.35	4.5	3.1	239	18.0	31
September	0.47	4.5	3.1	252	17.0	21
October	-	-	-	-	-	0
November	-	-	-	-	-	0
December	0.53	4.9	3.5	244	7.2	18

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)
05-Jan-2012 06:00	2.33	6.7	5.2	255	-	HW +3	6.2	-	-
08-Jun-2012 10:30	2.11	5.9	4.6	269	-	HW +1	10.5	-	-
03-Jan-2012 15:30	2.09	7.1	4.8	259	-	HW +2	6.0	-	-

* *Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Hinkley Point). The surge shown is the residual at the time of the highest H_s. The maximum tidal surge is the largest 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)
2009	-	-	-	1.42	1.20	1.02	14-Nov-2009 15:30	2.42
2010	2.28	1.45	1.23	1.07	0.85	0.69	12-Nov-2010 00:00	2.77
2011	1.85	1.64	1.52	1.36	1.14	0.93	13-Dec-2011 08:00	2.02
2012	2.16	1.69	1.49	1.27	1.01	0.84	05-Jan-2012 06:00	2.33

** i.e. 5 % of the H_s values measured in 2009 exceeded 1.20 m*

Distribution plots

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

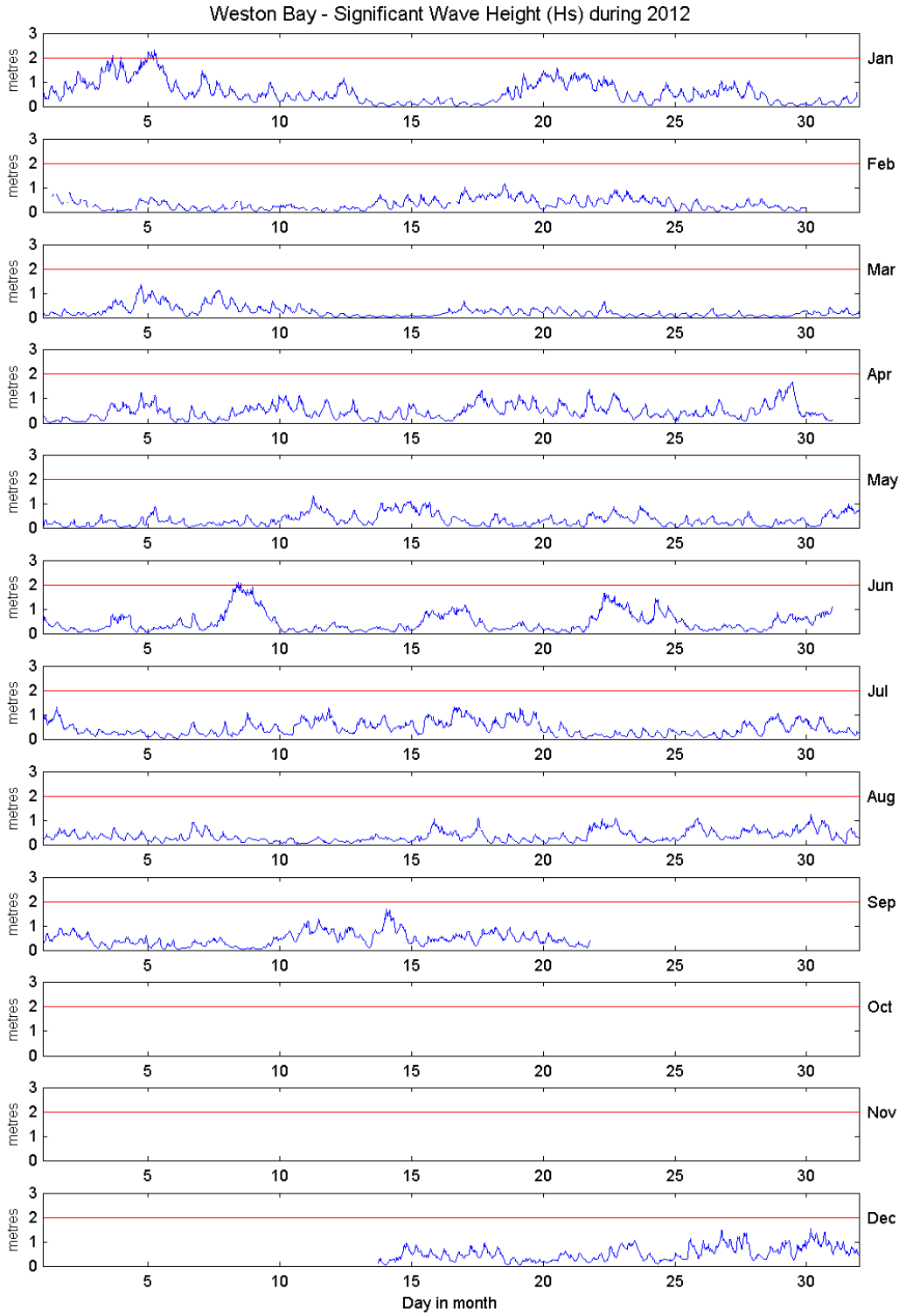
- Annual time series of H_s (red line is 2.0 m storm threshold)
- Wave roses (Direction vs. H_s and vs. T_p) for all measured data
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2012
- Incidence of storm waves for 2012. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

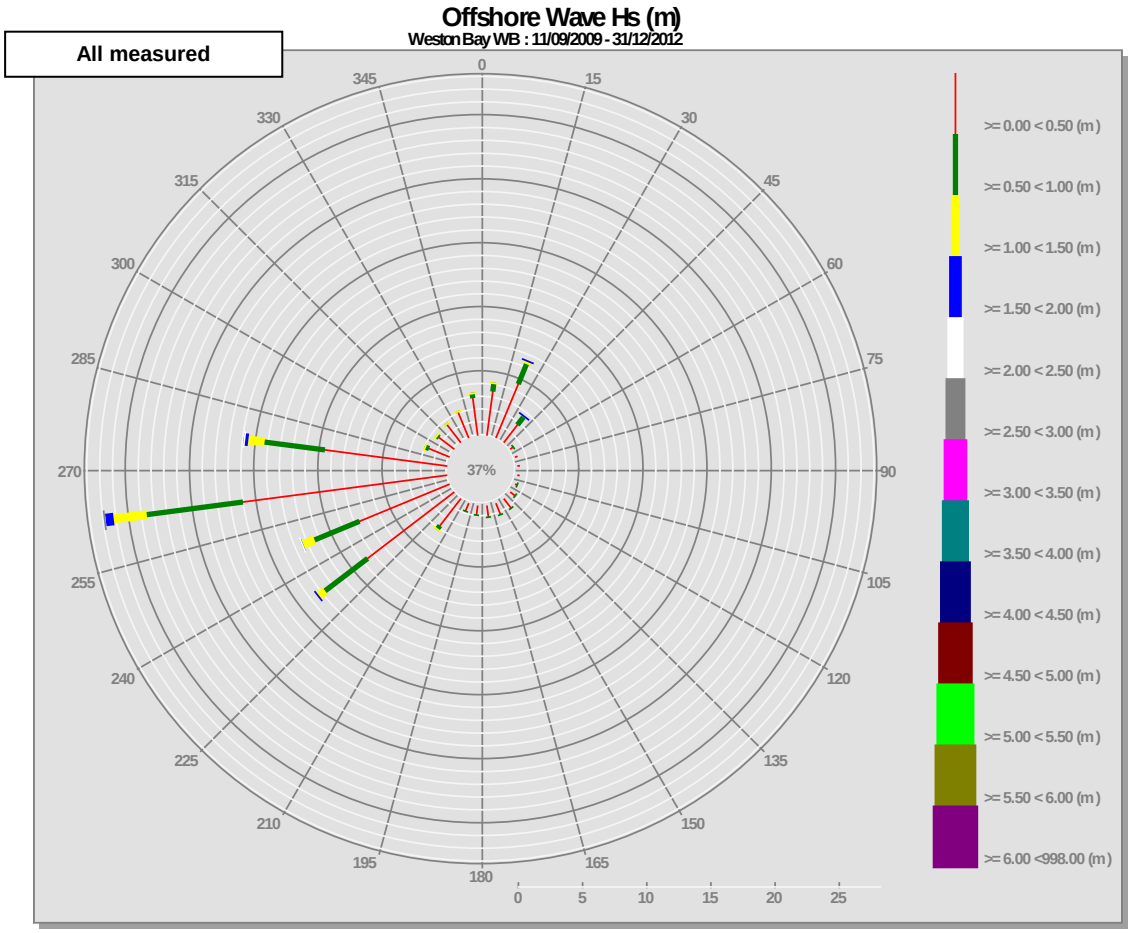
General

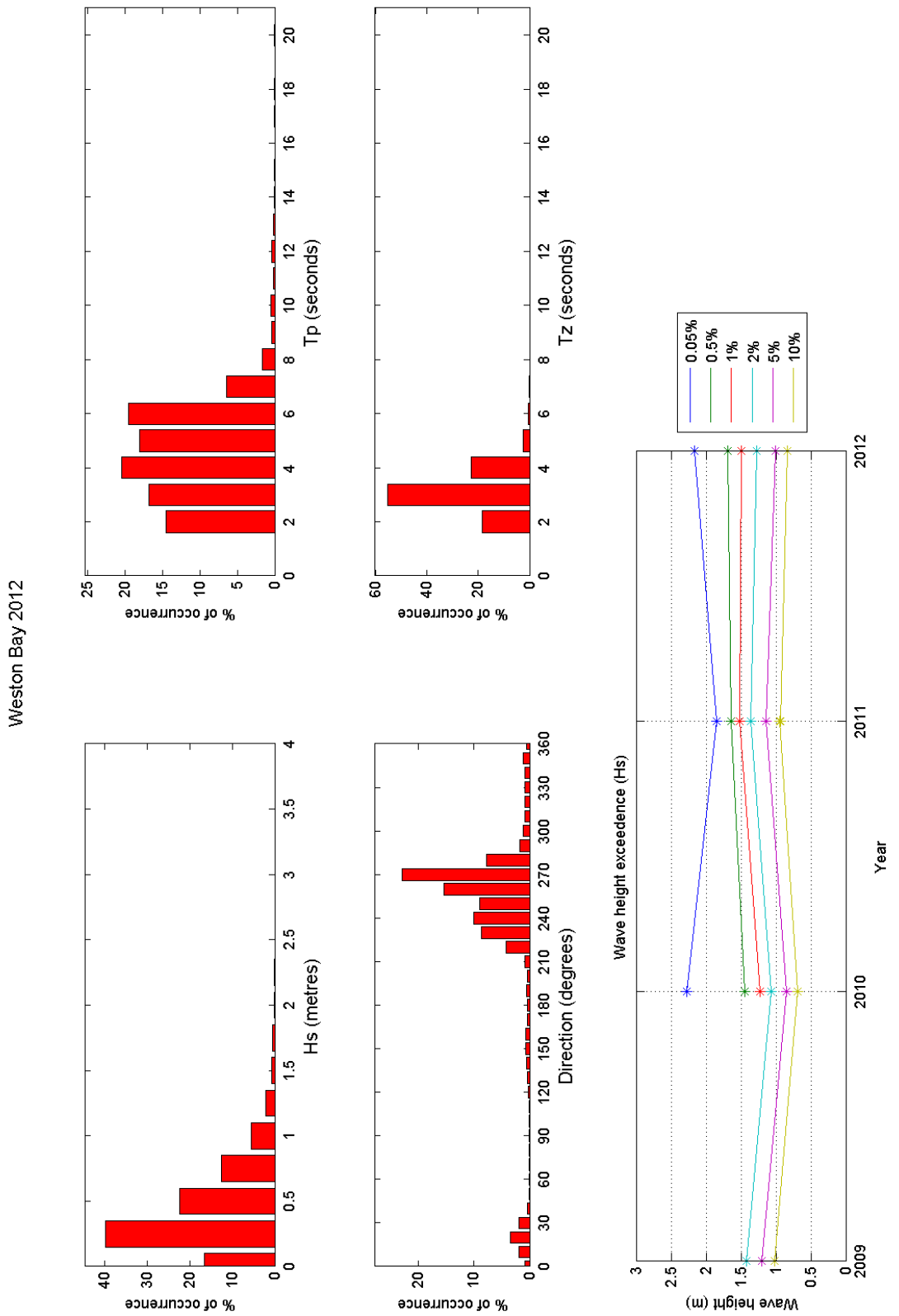
The buoy, owned by the Environment Agency (Southwest Region), was first deployed on 11 September 2009, at which time the magnetic declination at the site was 2.8° west, changing by 0.15° east per year.

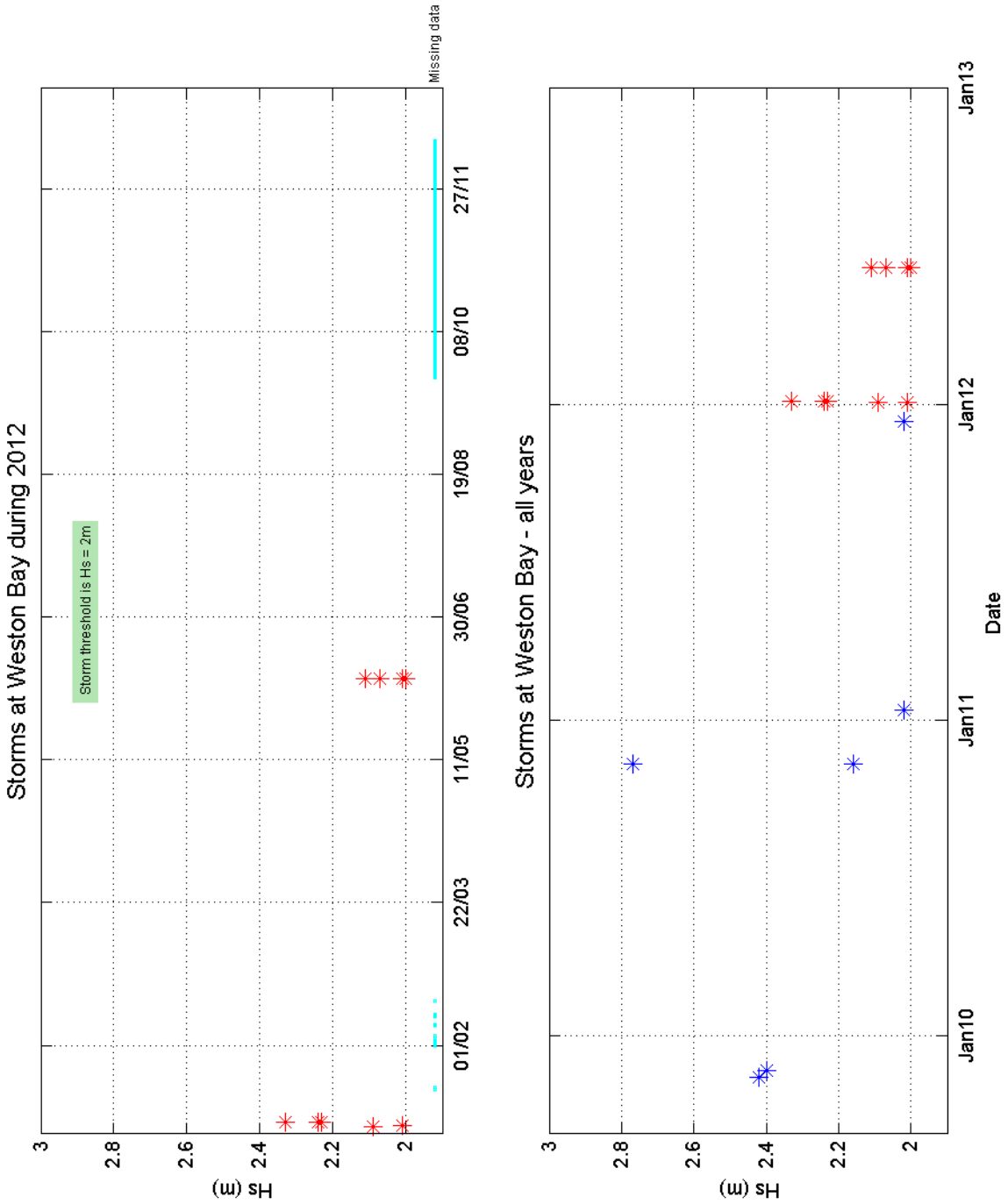
Acknowledgements

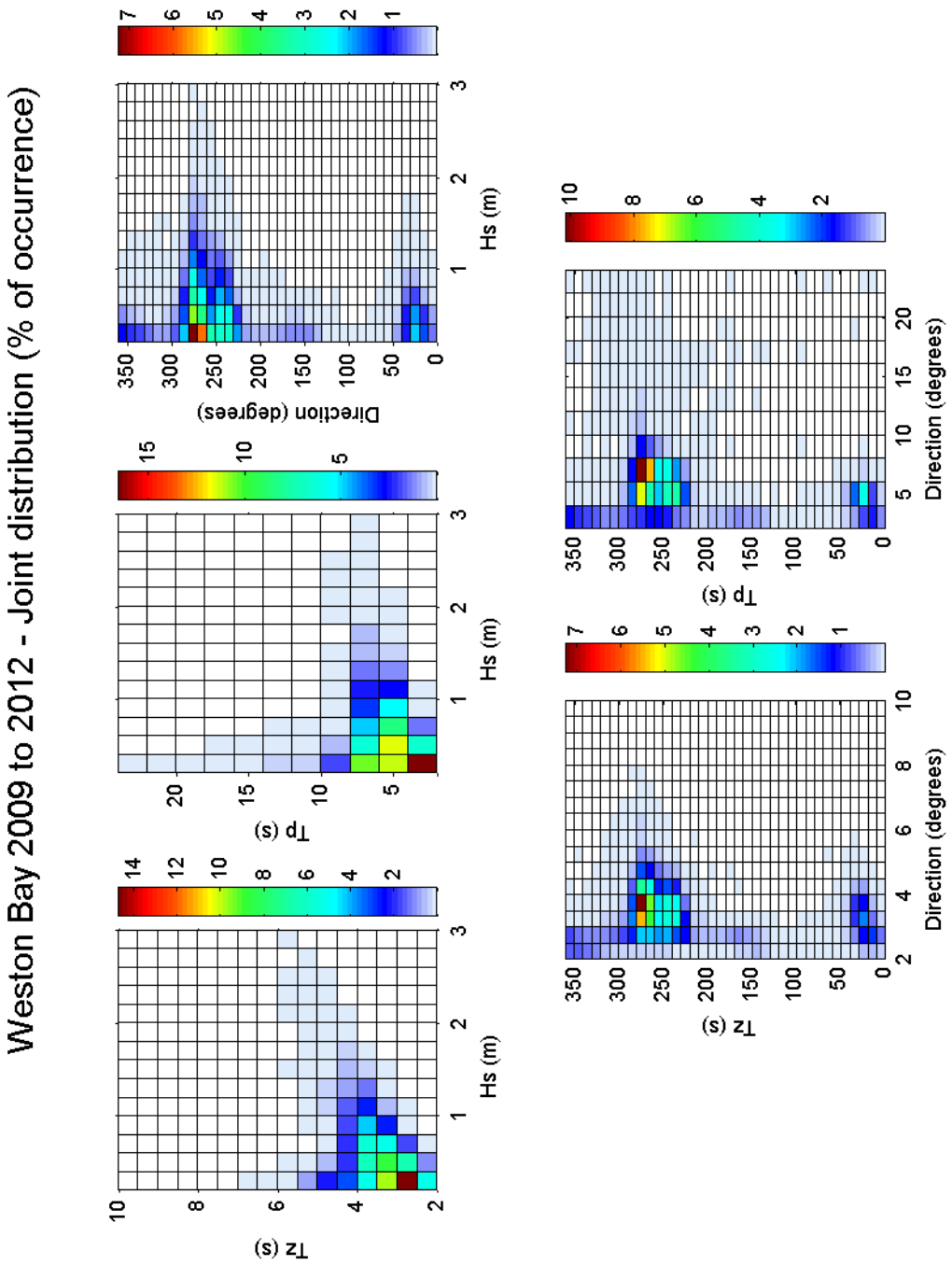
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.


Weston Bay - Significant Wave Height (Hs) during 2012
metres
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
1
2
3
5
10
15
20
25
30
Day in month


Offshore Wave Hs (m)
Weston Bay WB : 11/09/2009 - 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
37%
0
5
10
15
20
25
>= 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)


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


Storms at Weston Bay during 2012
Storm threshold is Hs = 2m
Missing data
Hs (m)
3
2.8
2.6
2.4
2.2
2
01/02
22/03
11/05
30/06
19/08
08/10
27/11
Storms at Weston Bay - all years
Hs (m)
Jan10
Jan11
Jan12
Jan13
Date


Weston Bay 2009 to 2012 - Joint distribution (% of occurrence)
Hs (m)
Tz (s)
Tp (s)
Direction (degrees)