Tor Bay Directional Waverider Buoy

Location

OS: 292267E 60381N

WGS84: *Latitude:* 50° 26.001 N *Longitude:* 03° 31.097' W

Water Depth

~11 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
95	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	0.60	5.9	3.6	129	8.1	31
February	0.48	7.9	3.6	135	8.4	28
March	0.52	5.9	3.6	120	8.8	31
April	0.32	6.5	3.4	117	11.2	26
May	0.20	5.4	3.0	185	12.2	19
June	0.29	4.6	3.1	156	14.1	30
July	0.23	4.6	3.1	135	15.9	31
August	0.25	4.6	3.2	145	16.8	31
September	0.32	4.8	3.0	160	16.2	30
October	0.41	5.6	3.3	154	15.4	31
November	0.64	6.0	3.7	125	13.5	30
December	0.30	6.4	3.2	173	11.6	31

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)
24-Oct-2011 16:30	2.63	7.7	5.8	115	2.13	HW +1	3.6	0.42	0.50
27-Jan-2011 08:30	2.44	7.1	5.3	108	0.09	HW -3	2.5	-0.27	-0.32

* *Tidal information is obtained from the nearest recording tide gauge (the WaveRadar REX on Teignmouth Pier). 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)
2008	-	2.20	2.10	2.01	1.22	0.88	28-Dec-2008 04:00	2.60
2009	2.56	1.79	1.60	1.43	1.10	0.84	12-May-2009 05:00	2.88
2010	2.50	1.96	1.85	1.67	1.40	1.10	12-Jan-2010 22:30	2.70
2011	2.39	1.84	1.63	1.39	1.06	0.78	24-Oct-2011 16:30	2.63

** i.e. 5 % of the H_s values measured in 2008 exceeded 1.22 m*

Distribution plots

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

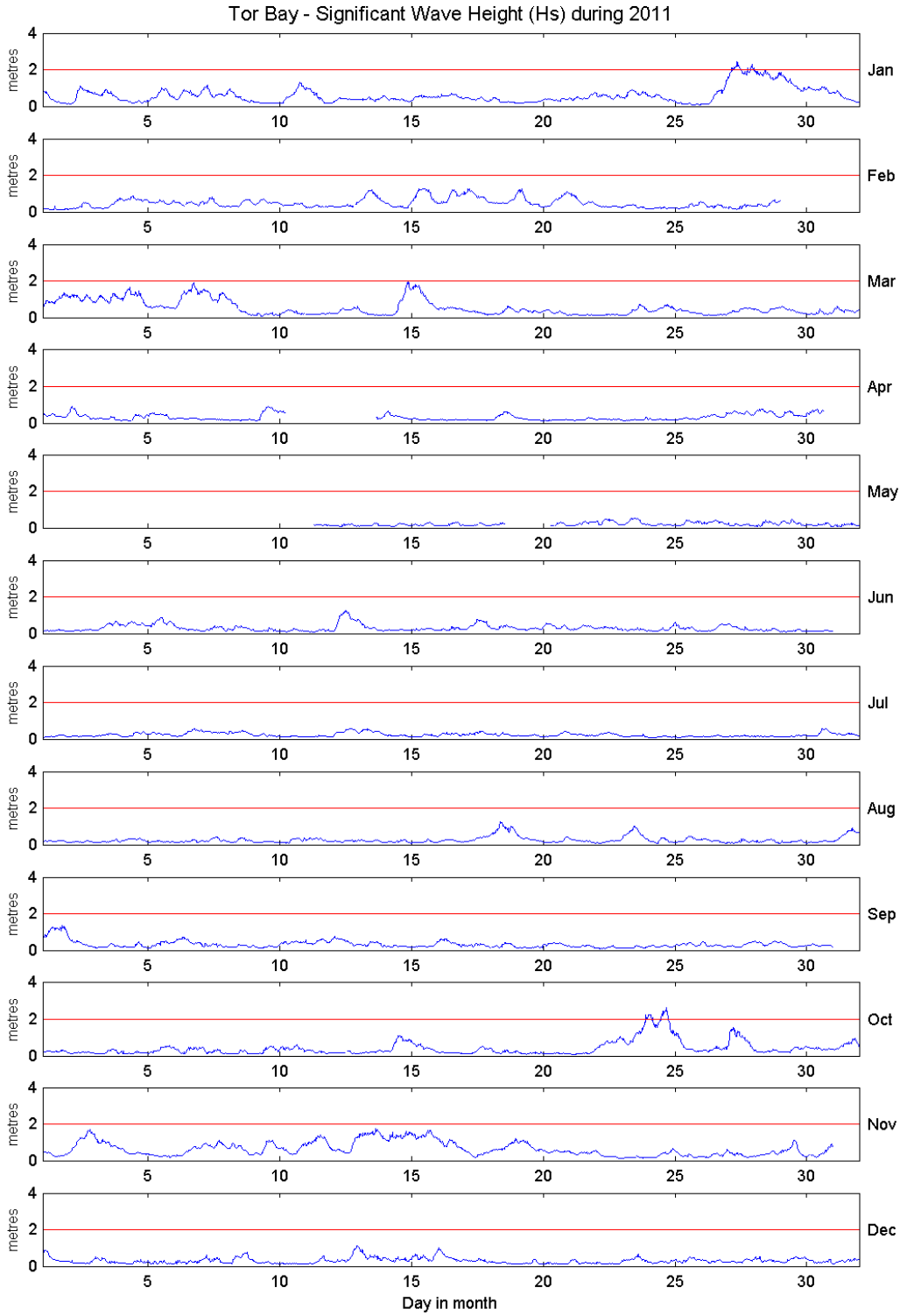
- Annual time series of H_s (red line is 2.0 m storm threshold)
- Wave roses (Direction vs. H_s and vs. T_p) for all measured data
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2011
- Incidence of storm waves for 2011. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

General

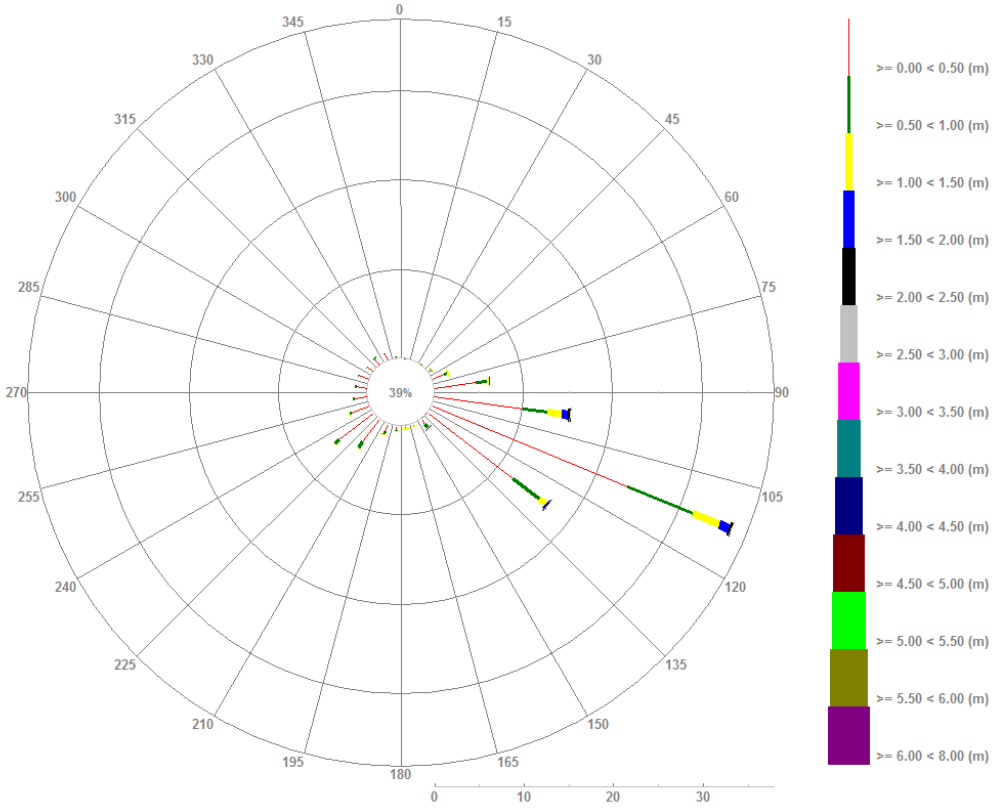
The buoy, owned jointly by Torbay Council and the Environment Agency (Southwest Region), was first deployed on 4 July 2008. During 2011 the buoy was set adrift on four separate occasions.

Acknowledgements

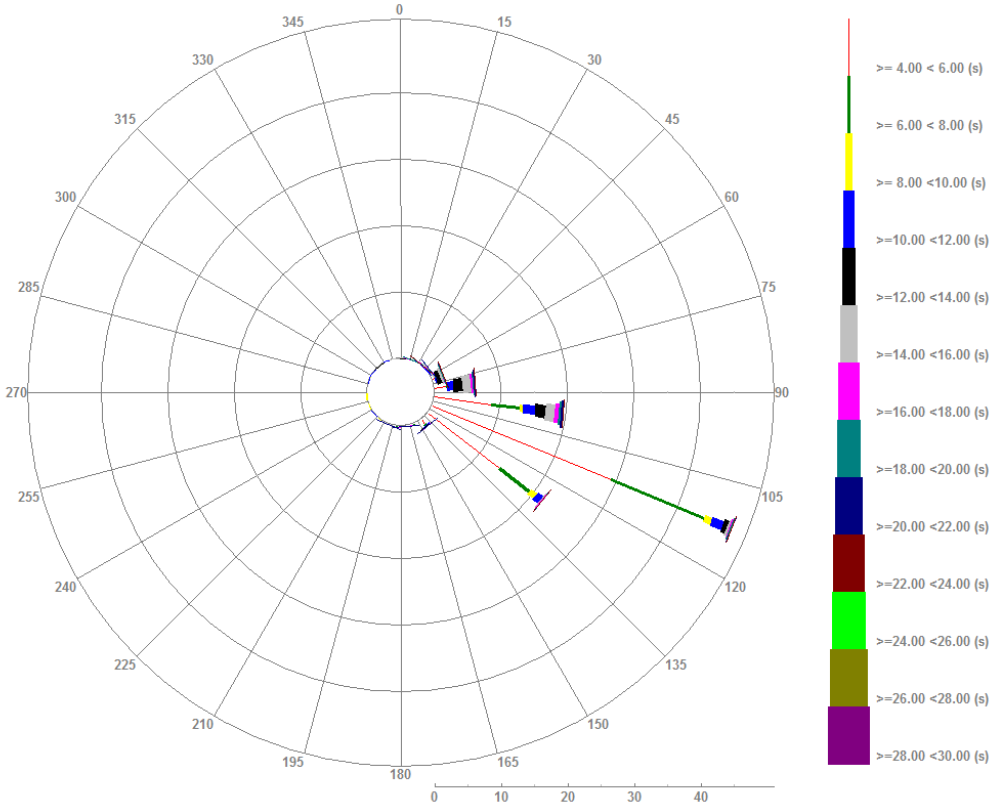
TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory.

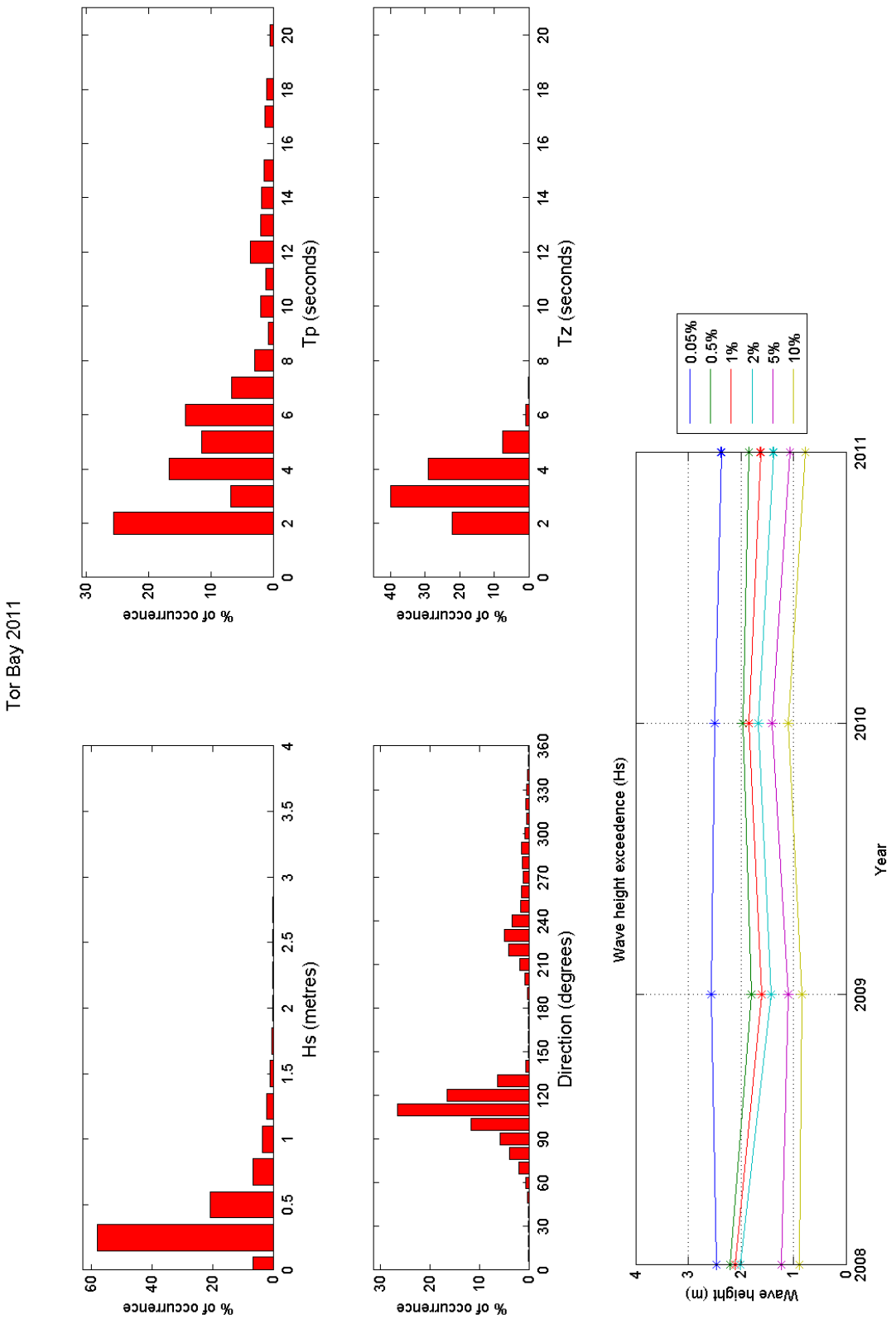

Tor Bay - Significant Wave Height (Hs) during 2011
metres
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
2
4
5
10
15
20
25
30
Day in month

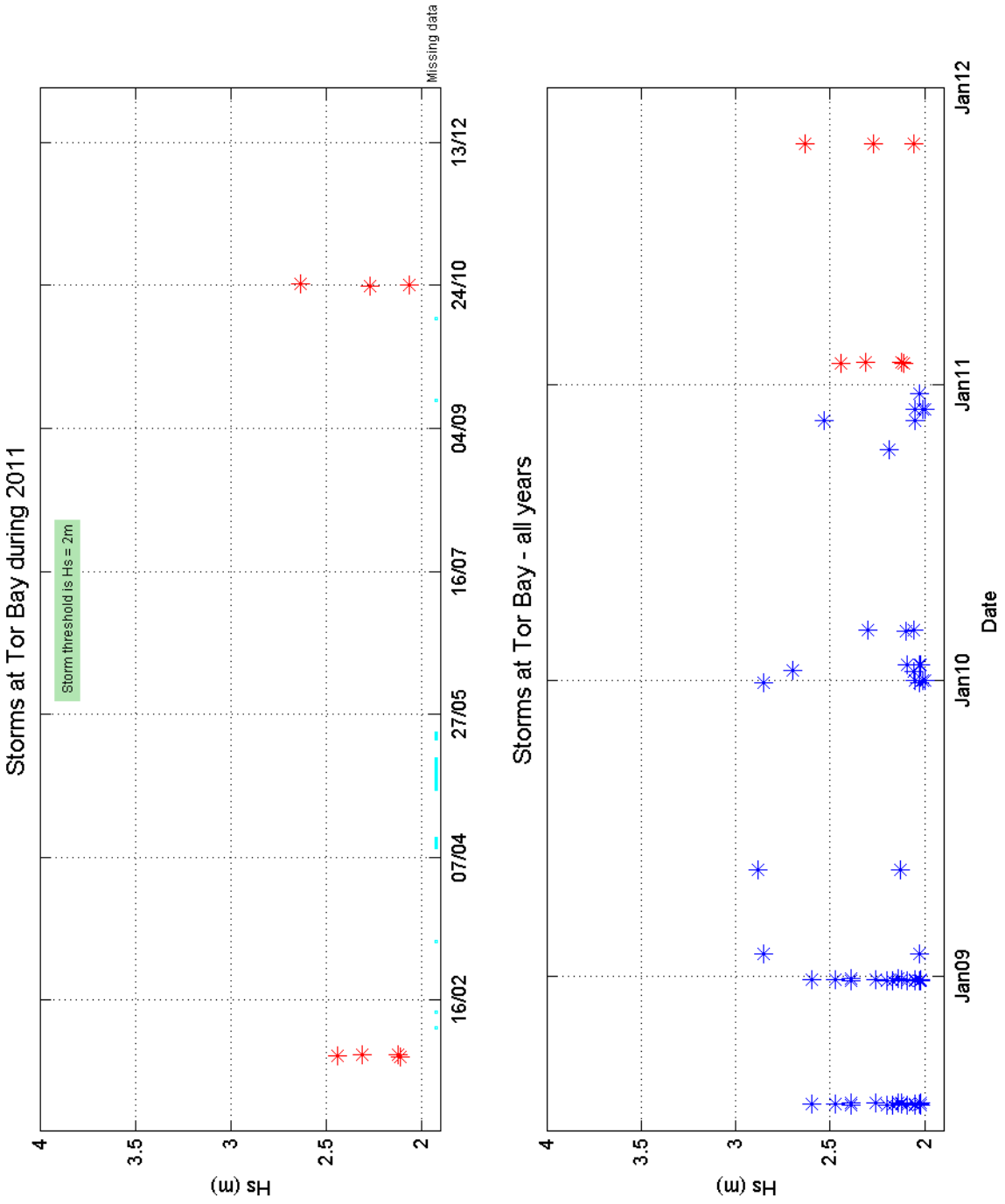
Offshore Wave Hs (m)
Tor Bay WB : 04/07/2008 - 31/12/2011

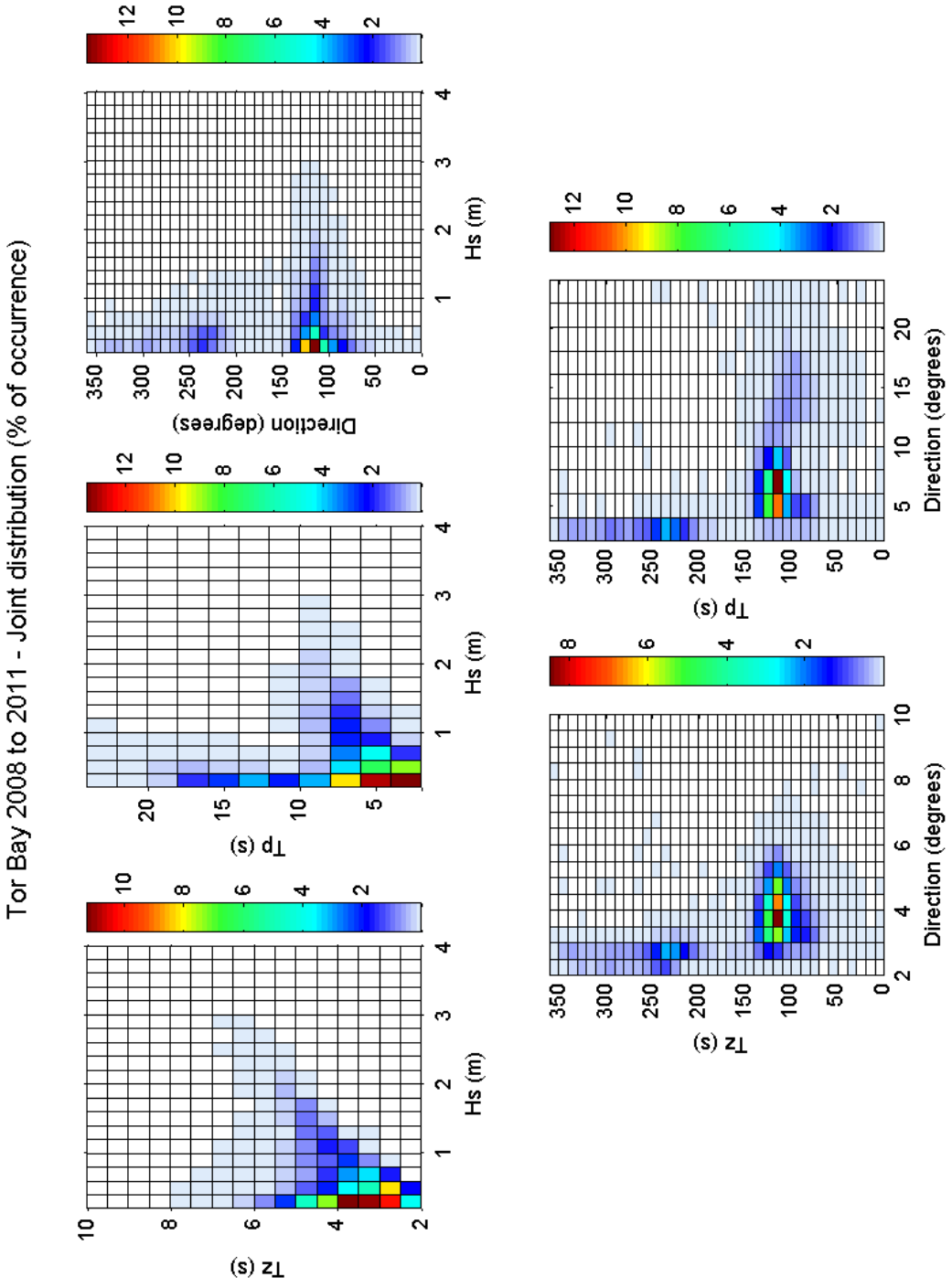


Offshore Wave Tp (s)
Tor Bay WB : 04/07/2008 - 31/12/2011




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


Storms at Tor Bay during 2011
Storm threshold is Hs = 2m
Missing data
Hs (m)
4
3.5
3
2.5
2
16/02
07/04
27/05
16/07
04/09
24/10
13/12
Storms at Tor Bay - all years
Hs (m)
Jan09
Jan10
Jan11
Jan12
Date


Tor Bay 2008 to 2011 - Joint distribution (% of occurrence)
Direction (degrees)
Hs (m)
Tz (s)
Tp (s)
Direction (degrees)