

## Sandown Bay Directional Waverider Buoy

### Location

OS: 461478E 83827N

WGS84: Latitude: 50° 39.053' N Longitude: 01° 07.904' W

### Water Depth

~11 m CD

### Instrument Type

Datawell Directional Waverider Mk III

### Data Quality

Recovery rate (%)	Sample interval
99	30 minutes

### Statistics - 2012

All times are GMT

Month	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	SST (°C)	No. of days
January	0.54	5.9	3.8	168	8.9	31
February	0.42	6.5	3.8	156	6.6	29
March	0.31	6.3	3.6	155	8.3	30
April	0.62	5.9	3.8	161	9.8	30
May	0.33	5.0	3.4	157	11.7	31
June	0.54	5.1	3.5	164	14.6	30
July	0.37	5.2	3.4	174	16.4	31
August	0.42	5.2	3.4	170	18.2	31
September	0.39	5.1	3.5	168	17.4	30
October	0.62	5.7	3.8	157	14.7	31
November	0.61	5.7	3.9	163	11.9	30
December	0.70	6.7	4.0	172	9.1	29

### Storm Analysis

Date/Time	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
25-Apr-2012 08:30	2.87	7.7	5.6	-	-0.21	HW -5	2.8	0.5	0.5

\* Tidal information is obtained from the nearest recording tide gauge (the WaveRadar REX on Sandown Pier). The surge shown is the residual at the time of the highest H<sub>s</sub>. 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	-	2.21	2.02	1.65	1.35	1.13	29-Nov-2003 09:00	2.79
2004	2.64	2.11	1.82	1.61	1.29	0.97	08-Jan-2004 10:30	3.17
2005	3.23	2.15	1.69	1.44	1.11	0.86	02-Dec-2005 18:00	3.79
2006	2.47	1.97	1.80	1.61	1.33	1.10	30-Dec-2006 00:00	2.75
2007	3.06	1.91	1.64	1.44	1.18	0.96	18-Nov-2007 16:00	3.22
2008	3.11	2.23	1.91	1.64	1.26	0.99	10-Mar-2008 11:30	3.63
2009	2.56	2.07	1.81	1.61	1.31	1.01	18-Nov-2009 03:00	2.70
2010	2.66	2.06	1.8	1.52	1.13	0.89	09-Nov-2010 21:00	2.93
2011	2.52	1.92	1.62	1.37	1.12	0.90	12-Dec-2011 23:30	2.87
2012	2.55	2.06	1.84	1.62	1.24	0.96	25-Apr-2012 08:30	2.87

\* i.e. 5 % of the  $H_s$  values measured in 2003 exceeded 1.35 m

## Distribution plots

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

- Annual time series of  $H_s$  (red line is 2.75 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 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

## 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.

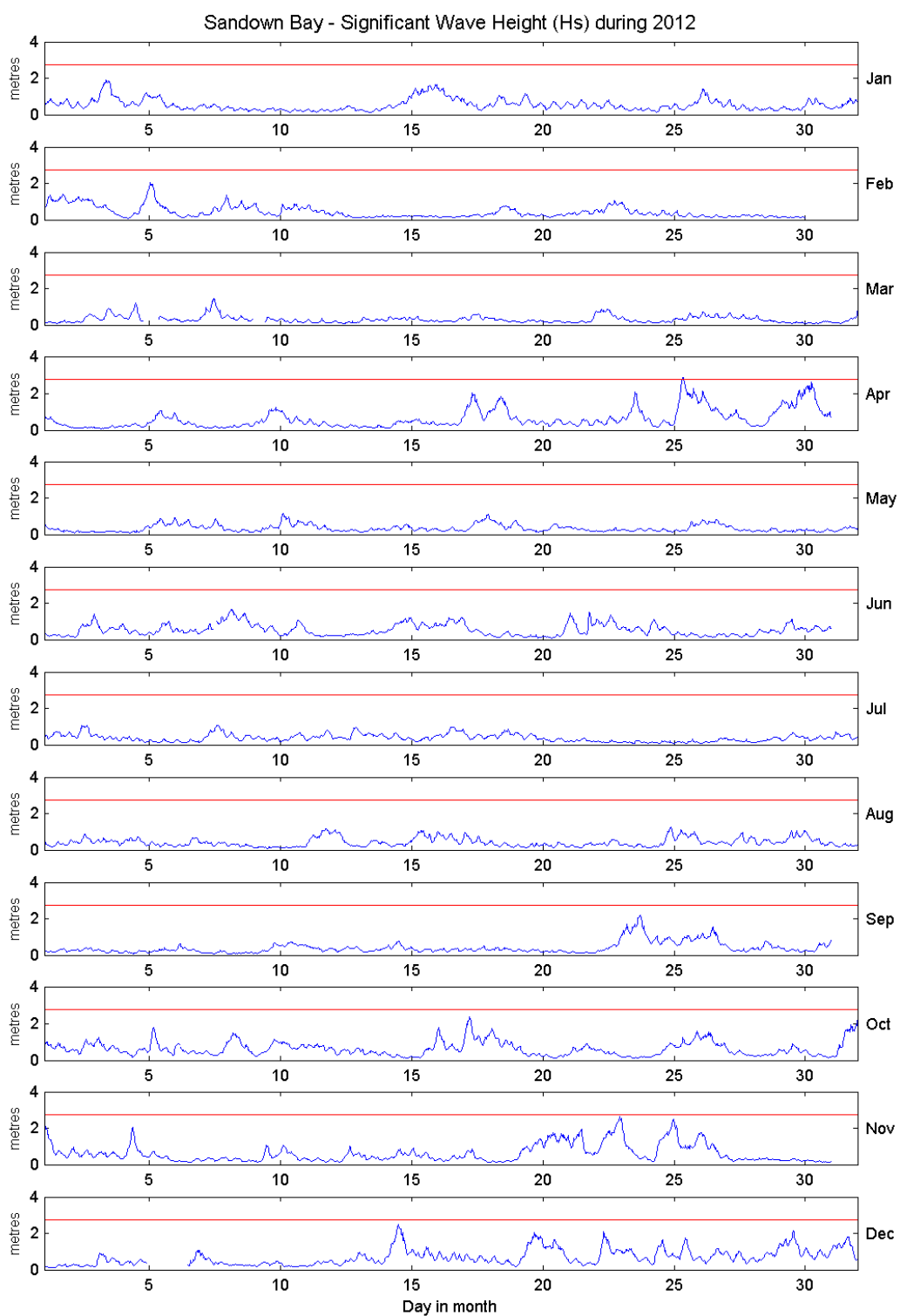
Return period (years)	Significant wave height (m)	Comments
1	3.1	No depth limitation
2	3.3	
5	3.5	
10	3.7	
20	3.9	
50	4.1	

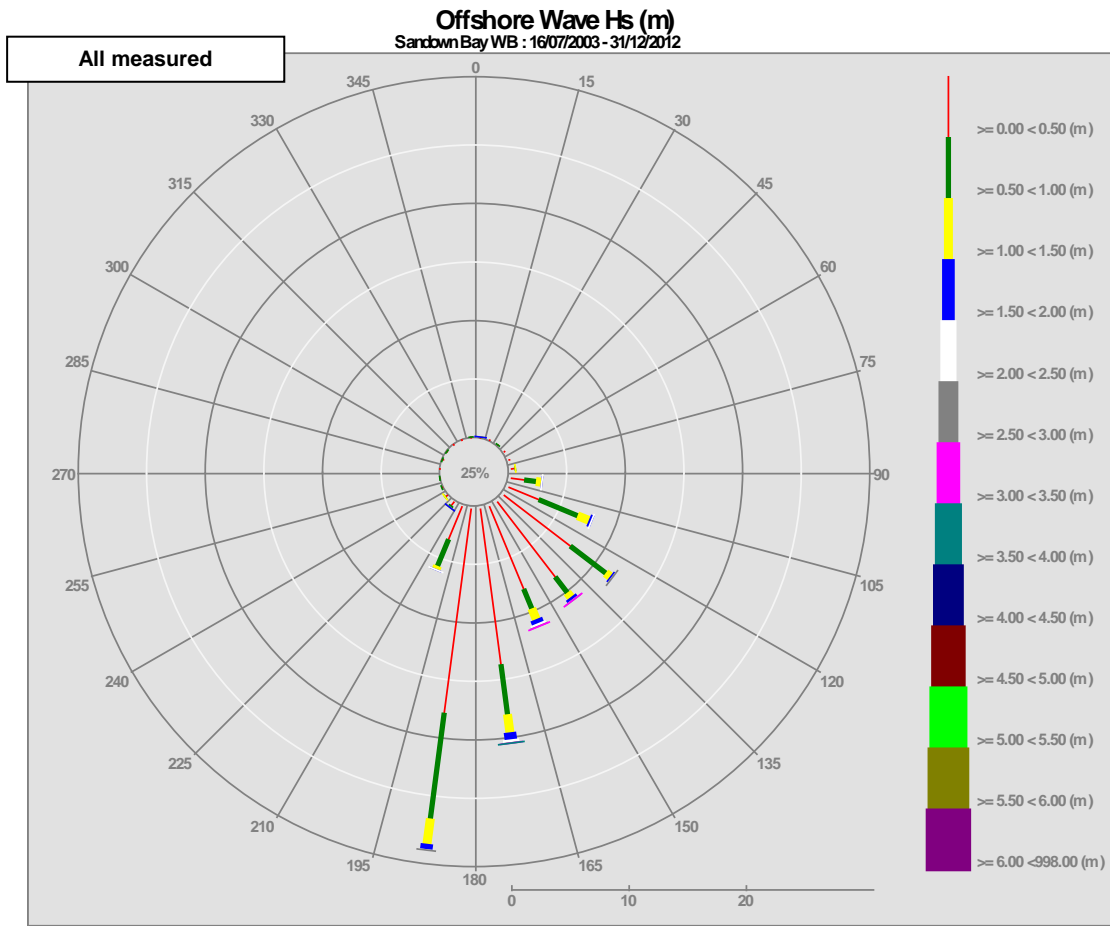
## General

The buoy was first deployed on 16 July 2003, at which time the magnetic declination at the site was 2.9° west, changing by 0.14° east per year.

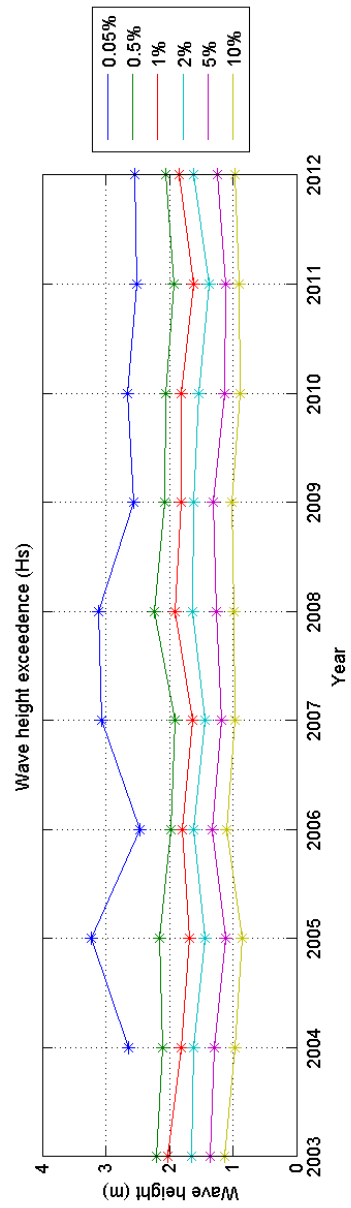
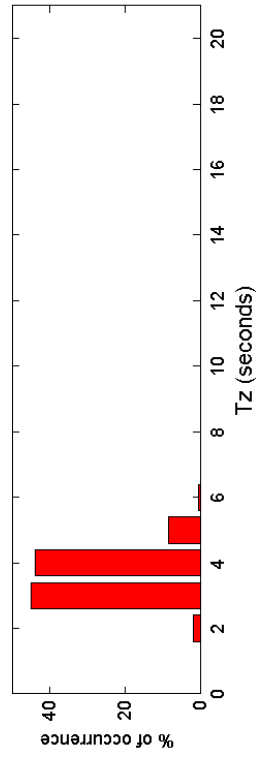
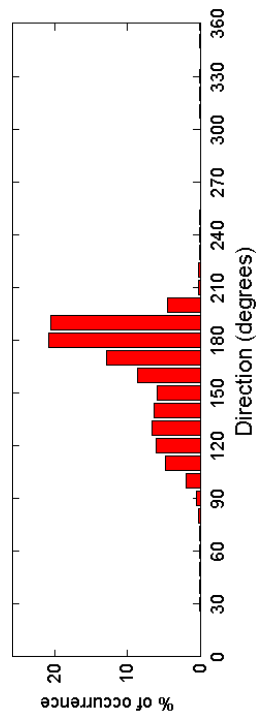
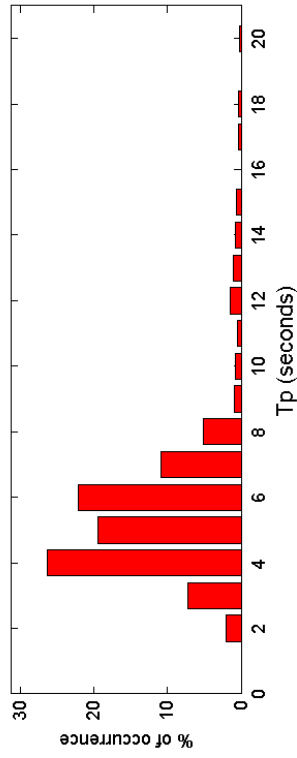
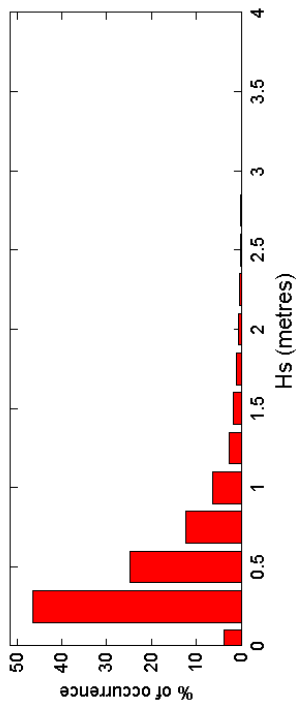
## Acknowledgements

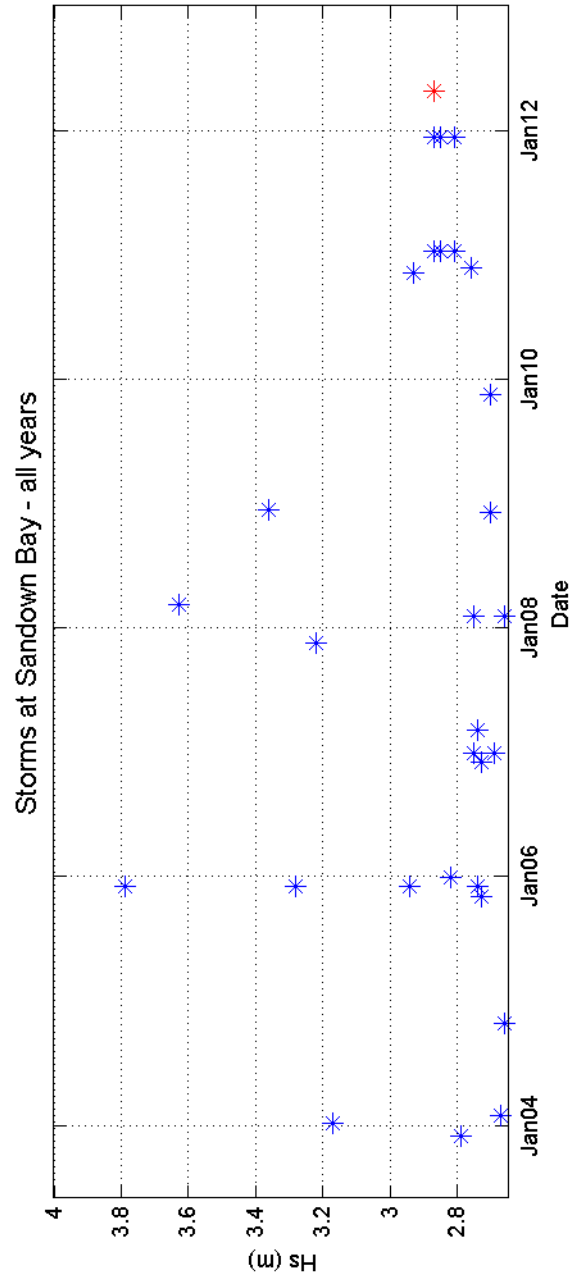
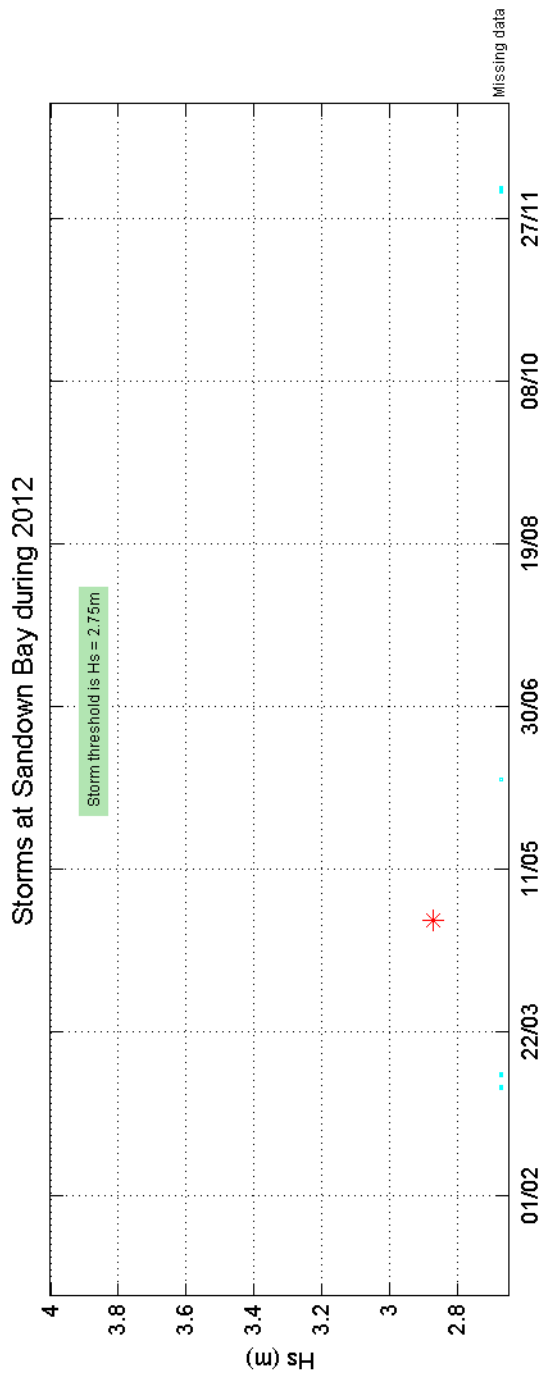
TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory. The shore station is kindly hosted by Sandown Golf Club.





Sandown Bay 2012





Sandown Bay 2003 to 2012 - Joint distribution (% of occurrence)

