

## Goodwin Sands Directional Waverider Buoy

### Location

OS: 643171E 155848N

WGS84: Latitude: 51° 14.996' N Longitude: 01° 28.994' E

### Water Depth

~10 m CD

### Instrument Type

Datawell Directional Waverider Mk III

### Data Quality

Recovery rate (%)	Sample interval
91	30 minutes

### Statistics - 2011

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	0.66	5.4	3.7	134	5.9	7
February	0.73	5.2	3.6	156	6.7	28
March	0.55	4.9	3.4	115	6.8	30
April	0.48	4.9	3.4	121	10.1	26
May	0.59	4.9	3.4	158	12.6	31
June	0.63	4.9	3.5	156	14.7	29
July	0.63	5.5	3.7	122	16.6	30
August	0.55	4.9	3.4	151	17.6	30
September	0.64	5.0	3.5	166	16.9	30
October	0.69	5.1	3.5	159	15.8	31
November	0.70	4.9	3.4	141	13.7	29
December	0.89	6.1	3.8	176	10.6	31

### 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)
13-Dec-2011 02:00	3.16	7.7	5.1	194	1.74	HW +2	4.9	-0.15	-0.29
03-Dec-2011 04:00	2.52	7.7	5.0	187	1.34	HW	2.9	-0.31	-0.48
01-Dec-2011 03:30	2.39	6.3	4.5	187	1.60	HW +1	4.3	-0.64	-0.67
12-Sep-2011 10:00	2.38	7.1	4.9	187	2.12	HW -1	4.6	-0.04	-0.27
26-May-2011 14:30	2.34	7.7	5.6	184	-0.58	HW -4	2.9	-0.02	0.20

\* Tidal information is obtained from the nearest recording tide gauge (the Wave Radar REX at Deal Pier). The surge shown is the residual at the time of the highest H<sub>s</sub>. 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	-	1.99	1.86	1.69	1.42	1.20	05-Oct-2008 04:00	2.37
2009	2.45	2.07	1.90	1.73	1.46	1.24	28-Nov-2009 06:00	2.57
2010	2.59	2.02	1.86	1.65	1.39	1.19	11-Nov-2010 10:30	2.81
2011	2.81	2.00	1.74	1.56	1.34	1.16	13-Dec-2011 02:00	3.16

\* i.e. 5 % of the  $H_s$  values measured in 2008 exceeded 1.42 m

## Distribution plots

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

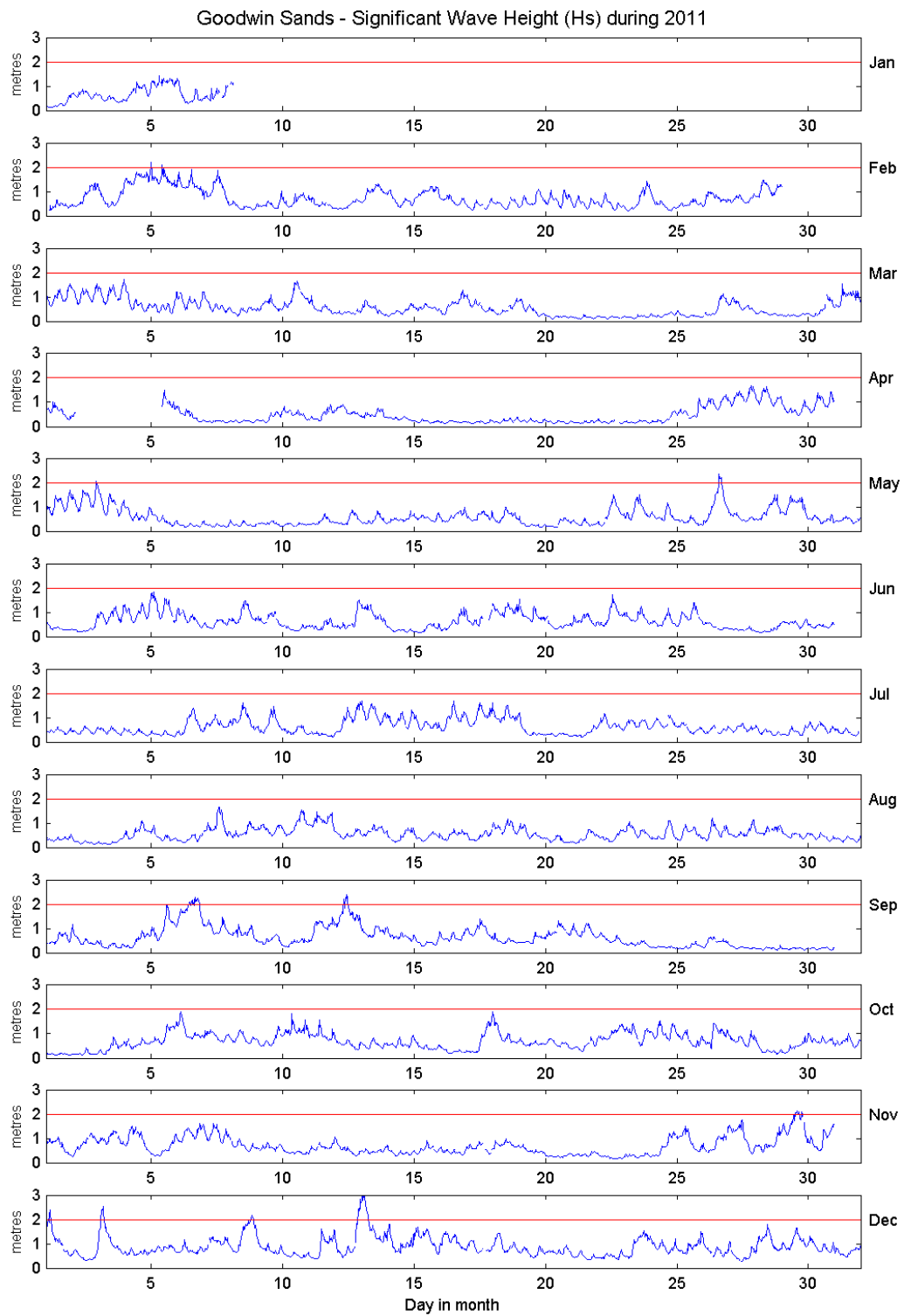
- Annual time series of  $H_s$  (red line is 2.0 m storm threshold)
- Wave roses (Direction vs.  $H_s$  and vs.  $T_p$ ) for all measured data
- Percentage of occurrence of  $H_s$ ,  $T_p$ ,  $T_z$  and Direction for 2011
- Incidence of storm waves for 2011. Storm events are defined using the Peaks-over-Threshold 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

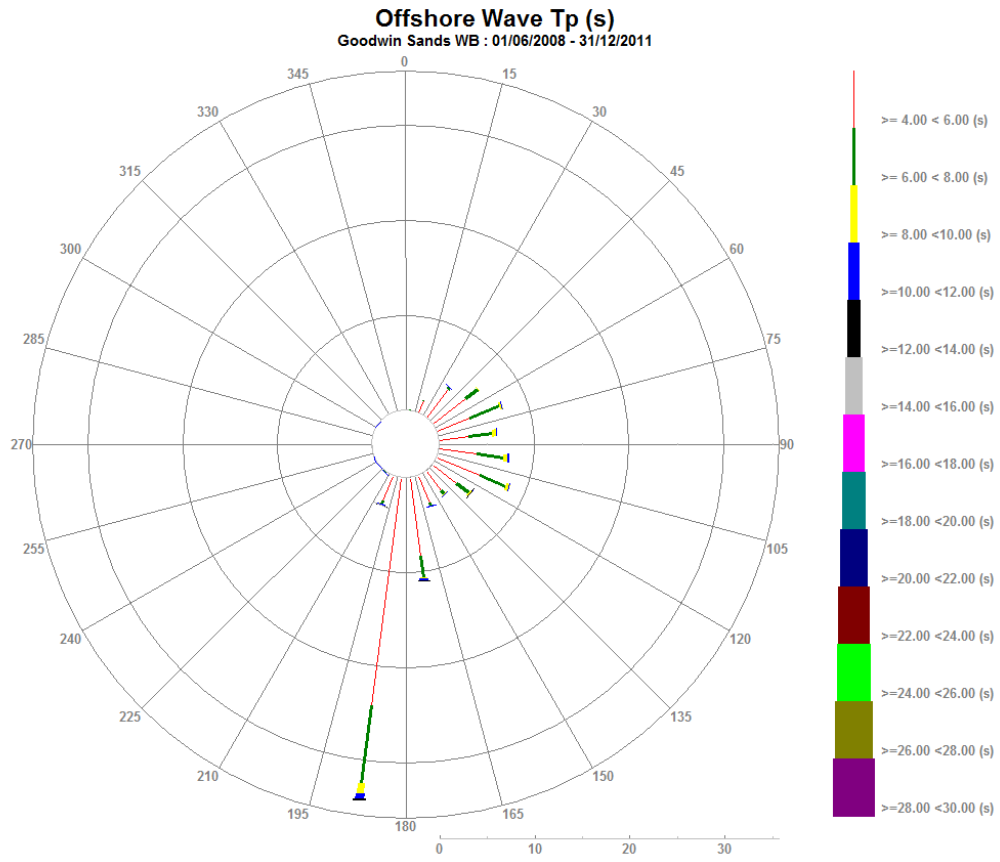
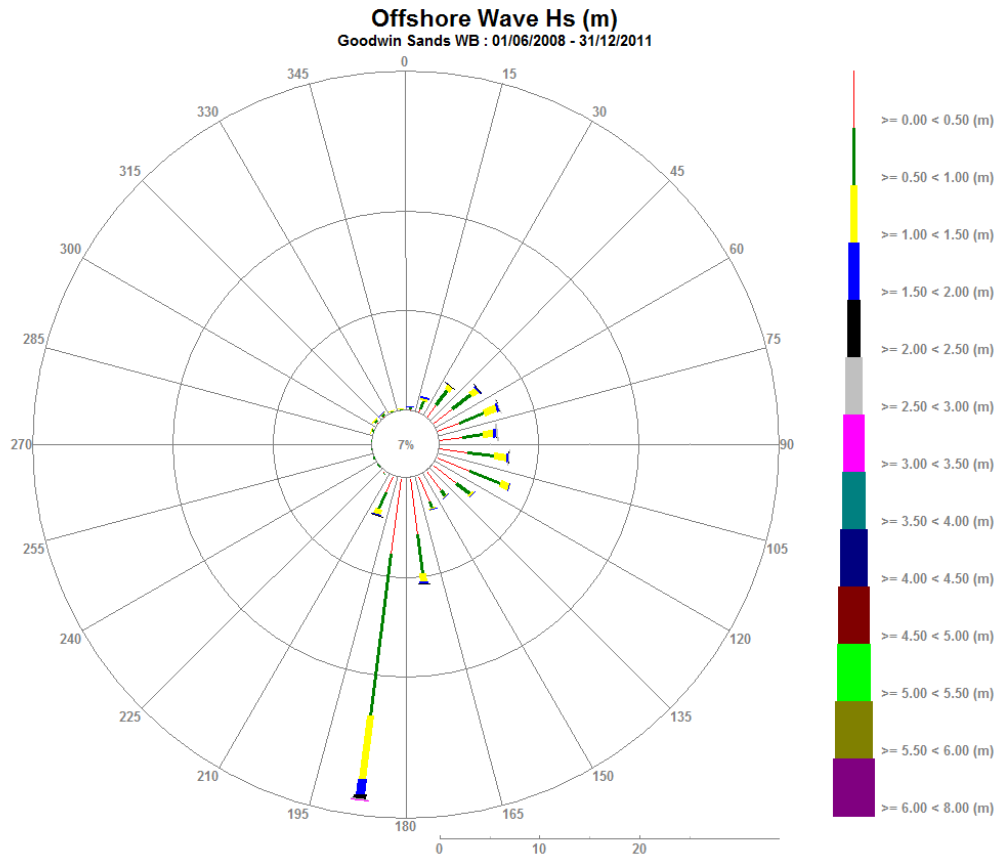
## General

The buoy was first deployed on 4 June 2008. On 8 January 2011 the buoy was recording poor quality and erroneous wave measurements. The buoy was recovered for further investigation and a replacement buoy was deployed on 1 February 2011.

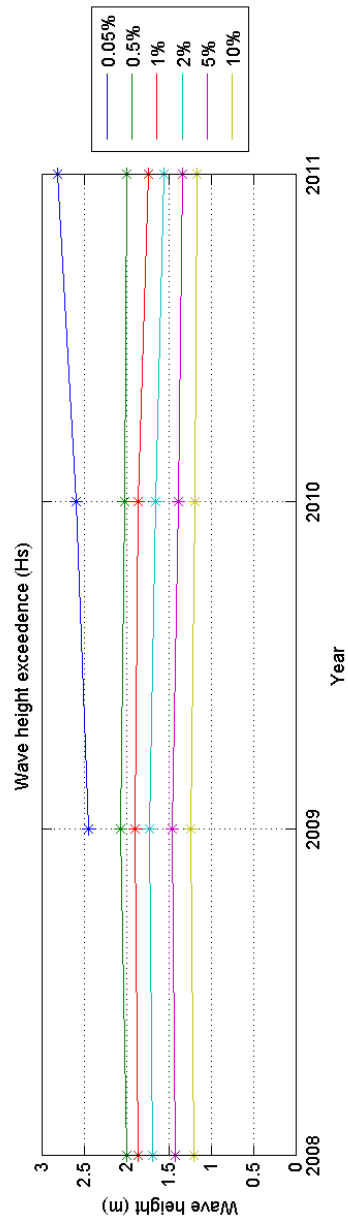
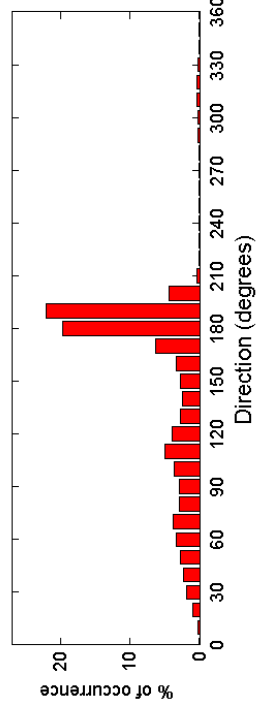
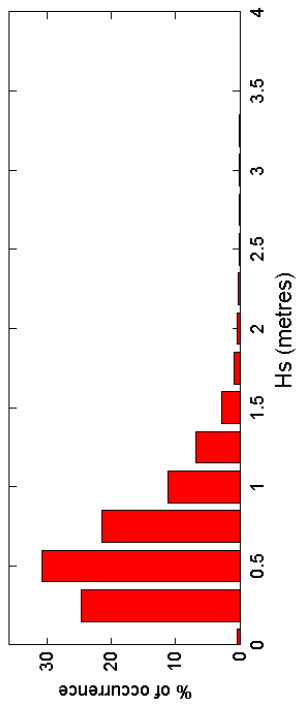
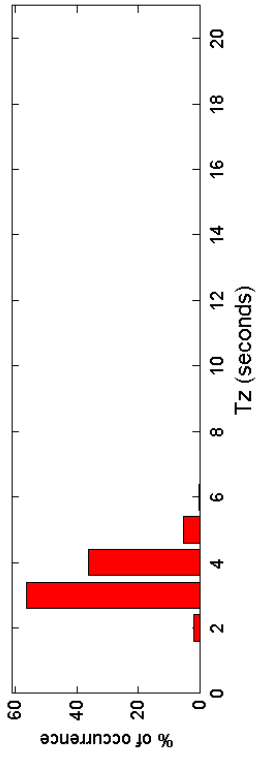
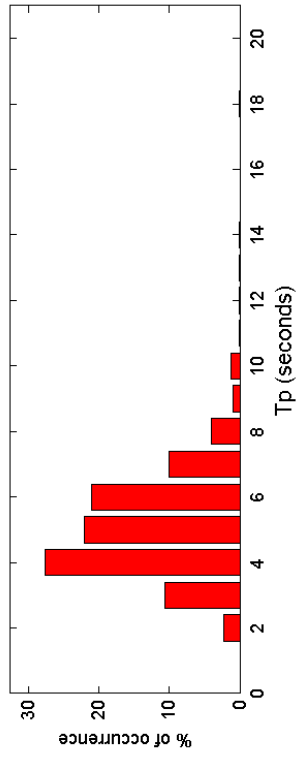
## Acknowledgements

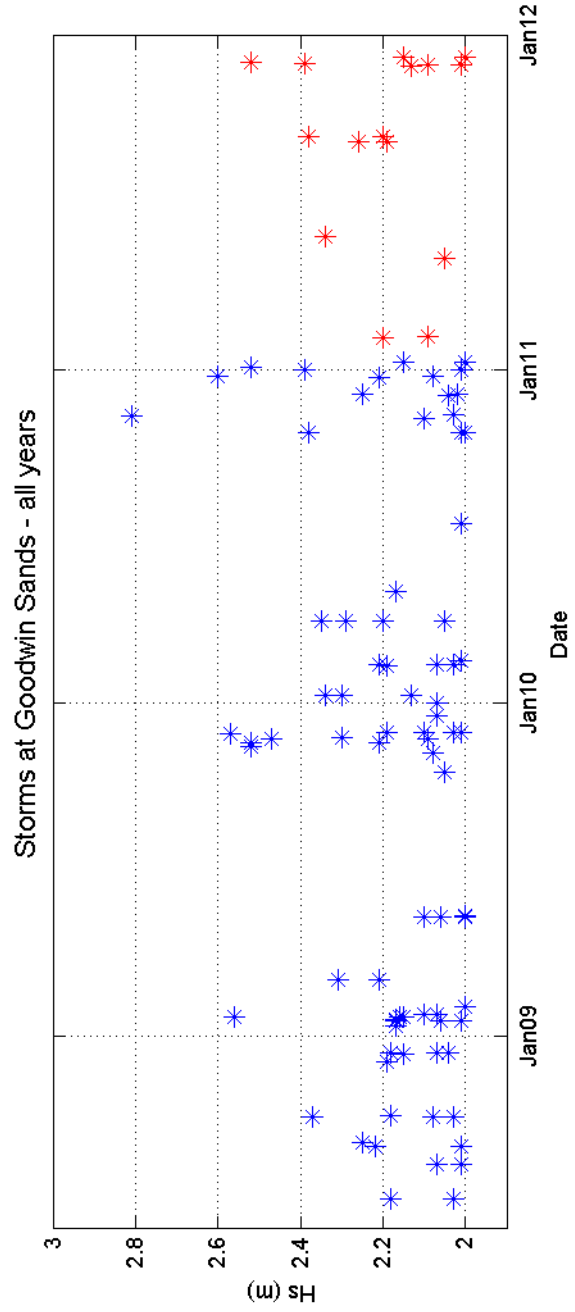
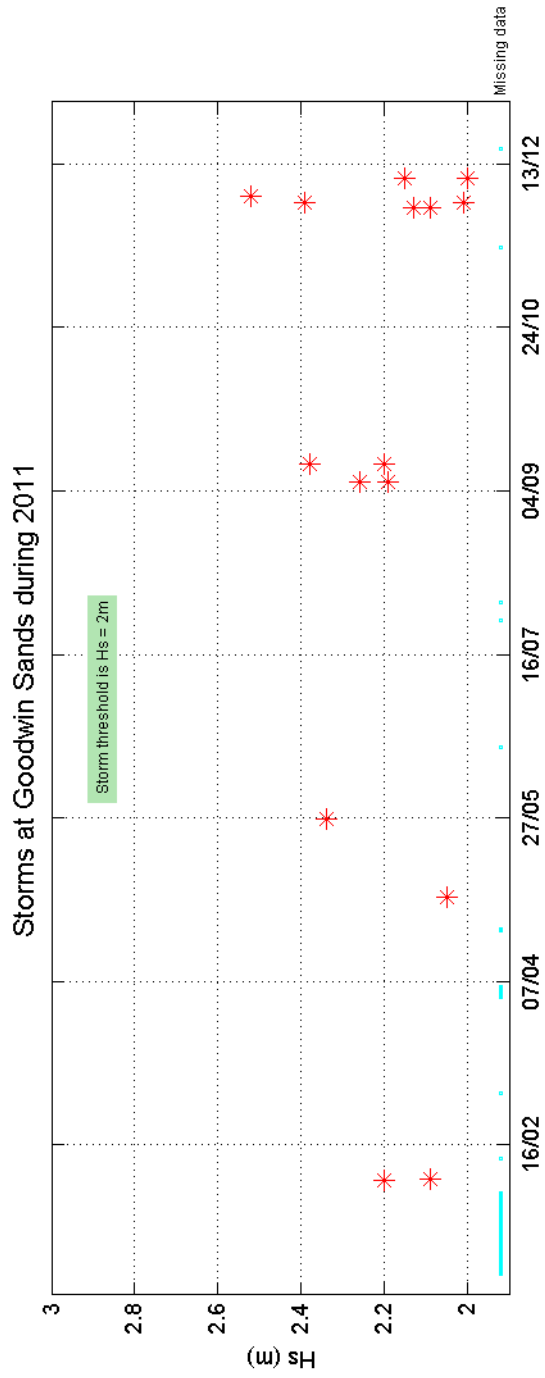
The shore station for the Waverider is kindly hosted by Ramsgate Harbourmaster. TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory.





Goodwin Sands 2011





Goodwin Sands 2008 to 2011 - Joint distribution (% of occurrence)

