

## Rustington Directional Waverider Buoy

### Location

OS: 506333E 93783N

WGS84: Latitude: 50° 44.04' N Longitude: 000° 29.68' W

### Water Depth

Approx. 10m CD

### Instrument Type

Datawell Directional Waverider Buoy Mk III

### Data Quality

C1 (%)	Sample interval
99	30 minutes

### Monthly Means

All times GMT

Month	H <sub>s</sub>	T <sub>p</sub>	T <sub>z</sub>	Direction	SST	No. of days
	(m)	(s)	(s)	(°)	(°C)	
January	0.79	7.6	3.9	186	6.2	31
February	0.87	8.1	3.9	189	5.8	28
March	0.75	6.5	3.7	183	6.4	31
April	0.60	6.0	3.7	173	9.1	30
May	0.47	6.2	3.4	175	11.8	31
June	0.43	6.8	3.5	183	15.5	30
July	0.58	5.7	3.5	218	18.6	31
August	0.69	5.0	3.4	216	18.3	31
September	0.70	6.8	3.5	212	16.9	30
October	0.90	5.7	3.7	182	14.7	31
November	0.99	6.9	4.0	191	12.0	30
December	0.69	5.6	3.5	171	7.0	30

Tables and plots of these values, together with the minimum and maximum values and the standard deviation are available on the website.

Highest storm events in 2010									
Date/Time	H <sub>s</sub>	T <sub>p</sub>	T <sub>z</sub>	Dir.	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
08-Nov-2010 11:00	3.86	8.3	6.3	180	2.59	HW -1	5.02	0.18	0.47
11-Nov-2010 10:00	3.76	8.3	6.3	200	-0.48	HW -3	3.54	0.39	0.55

\* Tidal information is obtained from the nearest recording tide gauge (the tide gauge on Arun Platform). 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.

Year	Annual $H_s$ exceedance* (m)						Annual Maximum $H_s$ (m)	
	0.05%	0.5%	1%	2%	5%	10%	Date	$A_{max}$
2003	-	2.76	2.47	2.27	1.85	1.45	29-Nov-2003 13:00	3.34
2004	3.83	2.81	2.62	2.37	2.03	1.65	08-Jan-2004 11:30	4.17
2005	3.64	3.01	2.56	2.19	1.79	1.42	02-Dec-2005 19:00	3.84
2006	3.84	3.01	2.76	2.45	2.05	1.68	03-Dec-2006 08:00	4.81
2007	3.89	2.98	2.70	2.41	2.03	1.69	18-Jan-2007 10:00	4.32
2008	3.70	3.02	2.74	2.46	2.05	1.70	13-Dec-2008 12:00	4.01
2009	3.72	3.09	2.87	2.47	2.01	1.66	14-Nov-2009 13:00	3.91
2010	3.53	2.78	2.38	1.98	1.62	1.30	08-Nov-2010 11:00	3.86

\* i.e. 5 % of the measured  $H_s$  values in 2003 exceeded 1.85m

### Distribution plots

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

- Percentage of occurrence of  $H_s$ ,  $T_p$ ,  $T_z$  and Direction for 2010
- Percentage wave height exceedence (all recorded years) – note that the statistics for 2003 were based on measurements from July to December only
- Joint distribution of all parameters for 2010, given both as number of observations and as percentage of occurrence
- Cumulative joint distribution of parameters from start of records (percentage of occurrence only)
- Wave roses (Direction vs.  $H_s$  and vs.  $T_p$ ) for all measured data
- Incidence of storms during 2010 and for all previous years. Storm events are defined using the Peaks-over-Threshold method. The highest  $H_s$  of each storm event is shown.
- Annual time series of  $H_s$  (red line is storm threshold)

### Significant wave height return periods

Return periods for significant wave height can be calculated since the buoy has been deployed at this site 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	3.96	
2	4.14*	* depth-limited at MLWS
5	4.37*	* depth-limited at MLWS
10	4.54*	* depth-limited at MLWS
20	4.70*	* depth-limited at MLWS
50	4.91*	* depth-limited at MLWS

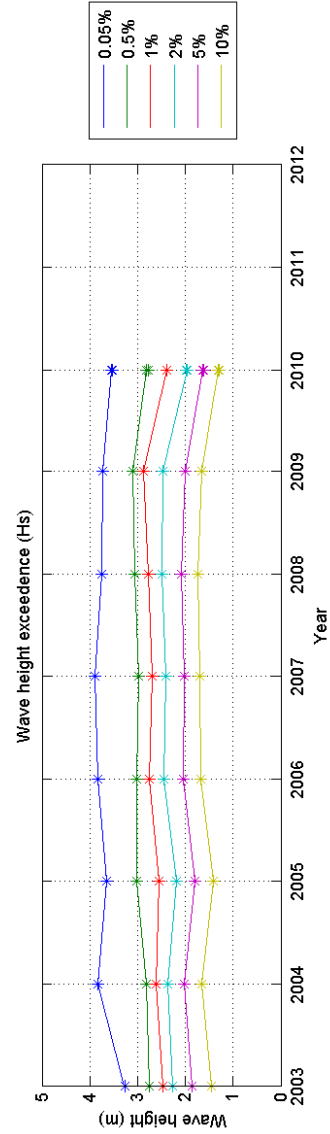
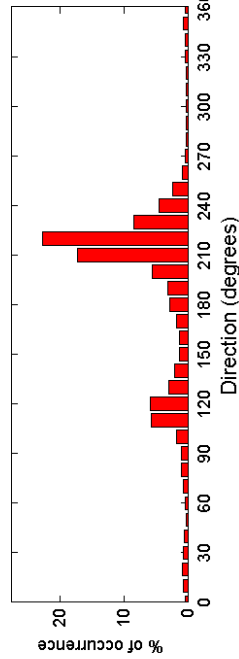
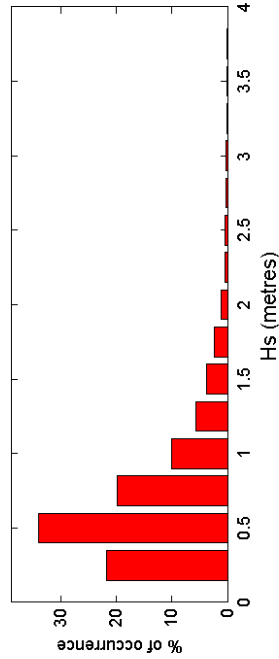
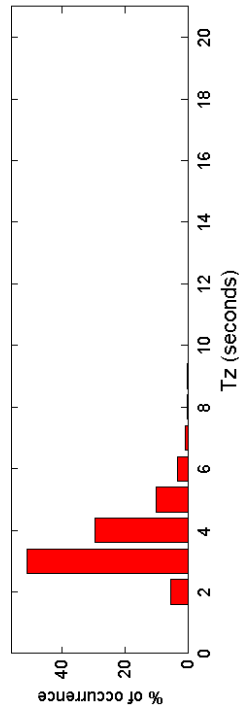
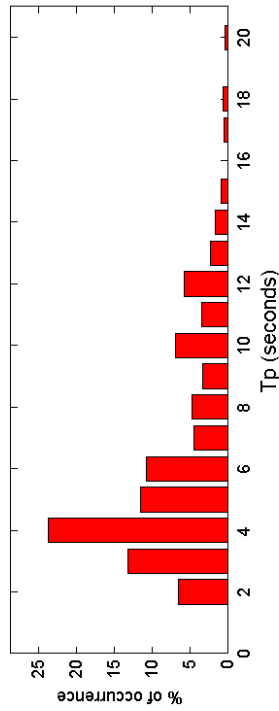
### General

The buoy was first deployed on 15 July 2003.

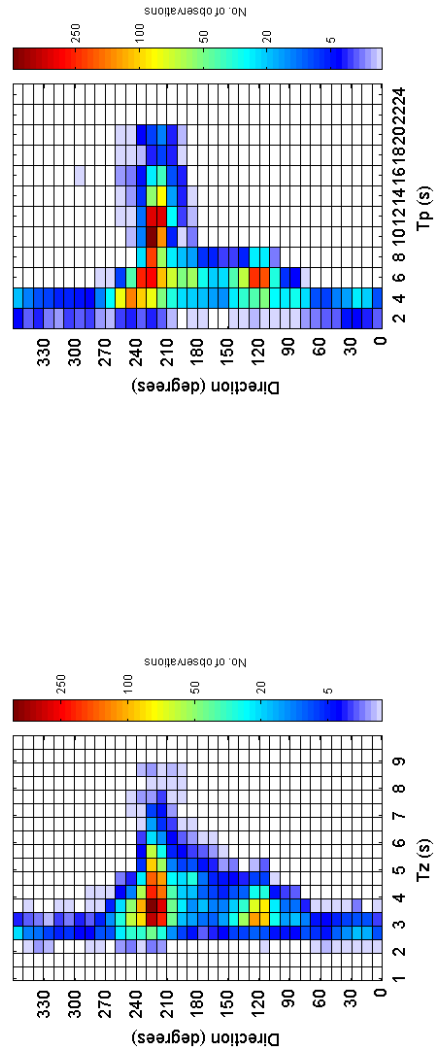
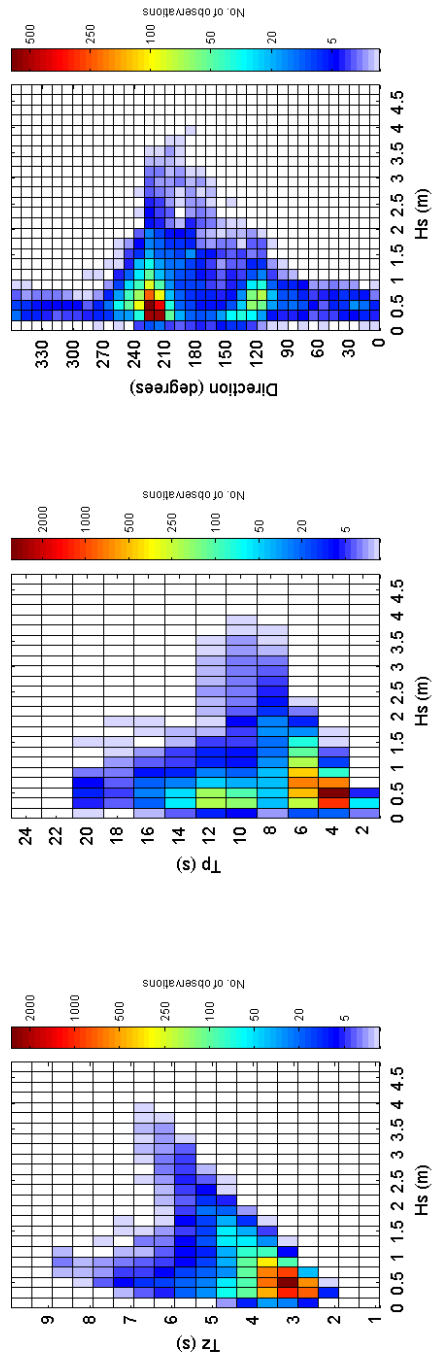
### Acknowledgements

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

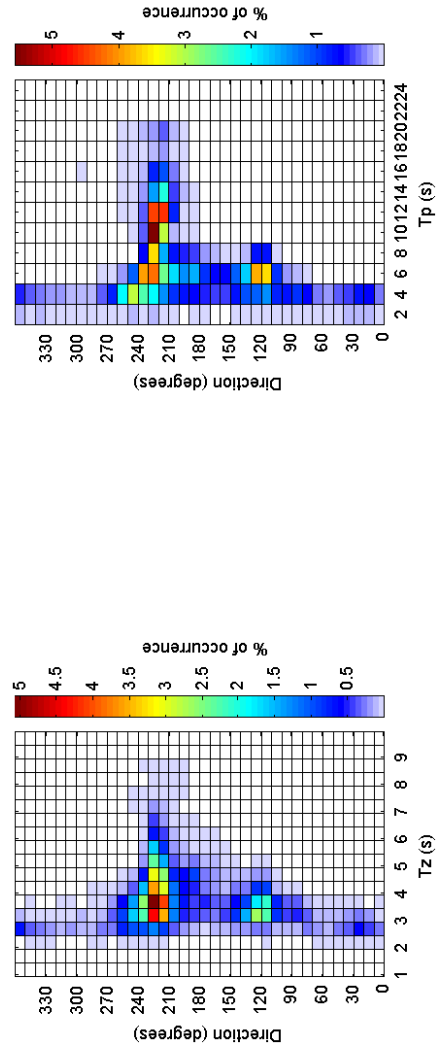
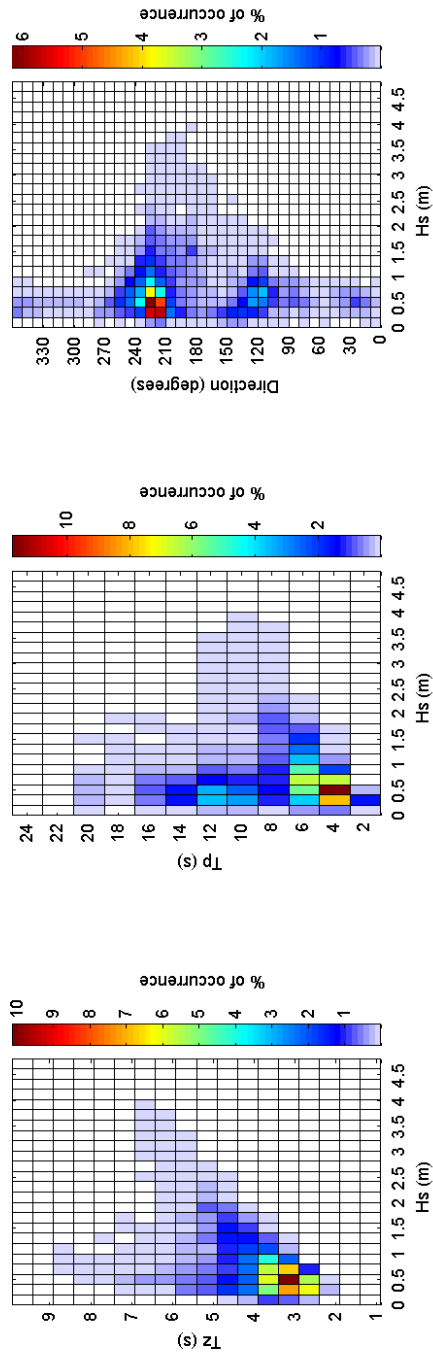
Rustington 2010



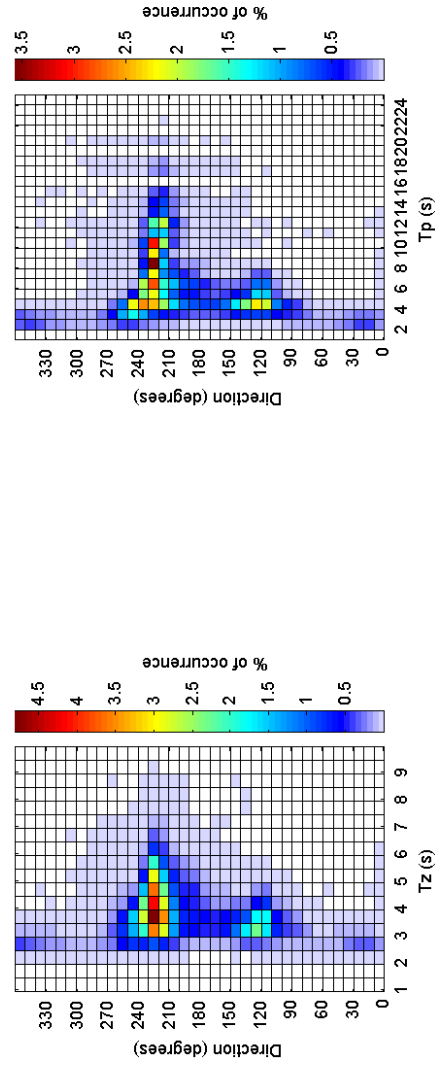
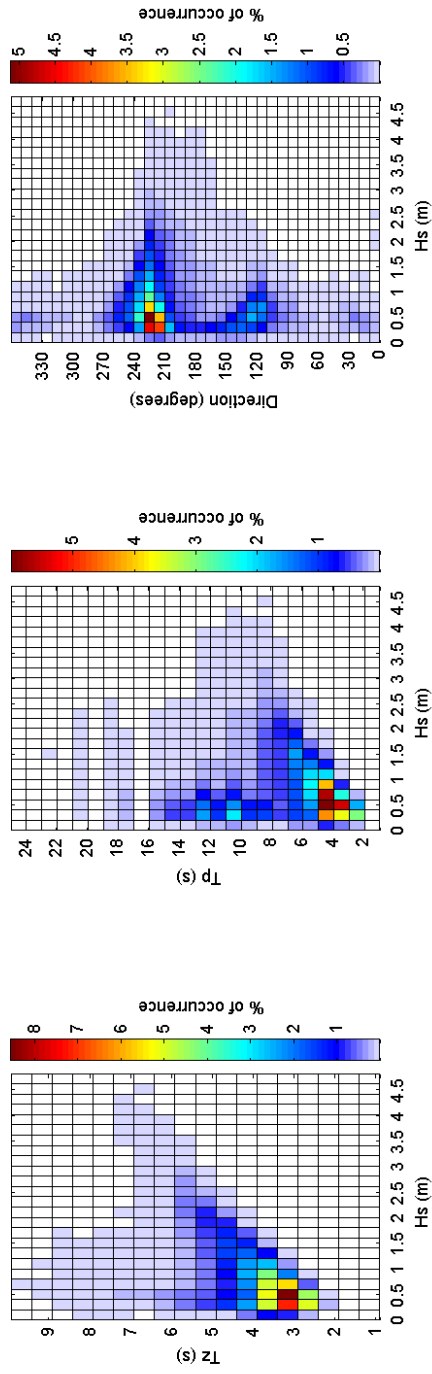
Rustington 2010 - Joint distribution

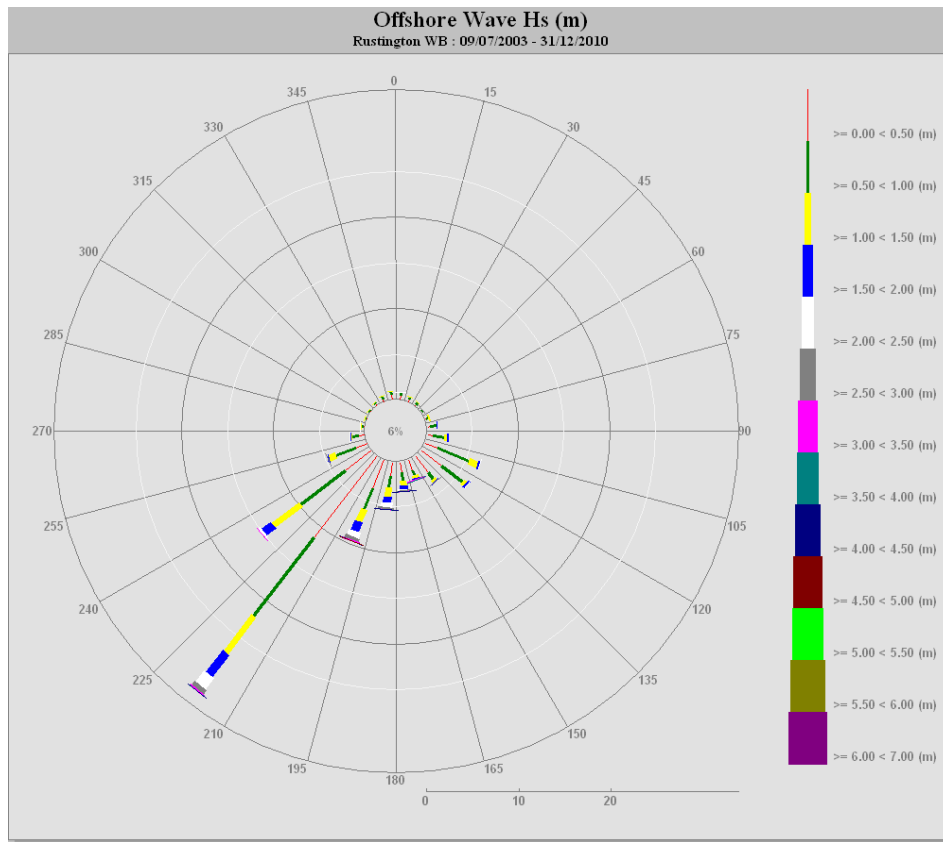


Rustington 2010 - Joint distribution (% of occurrence)

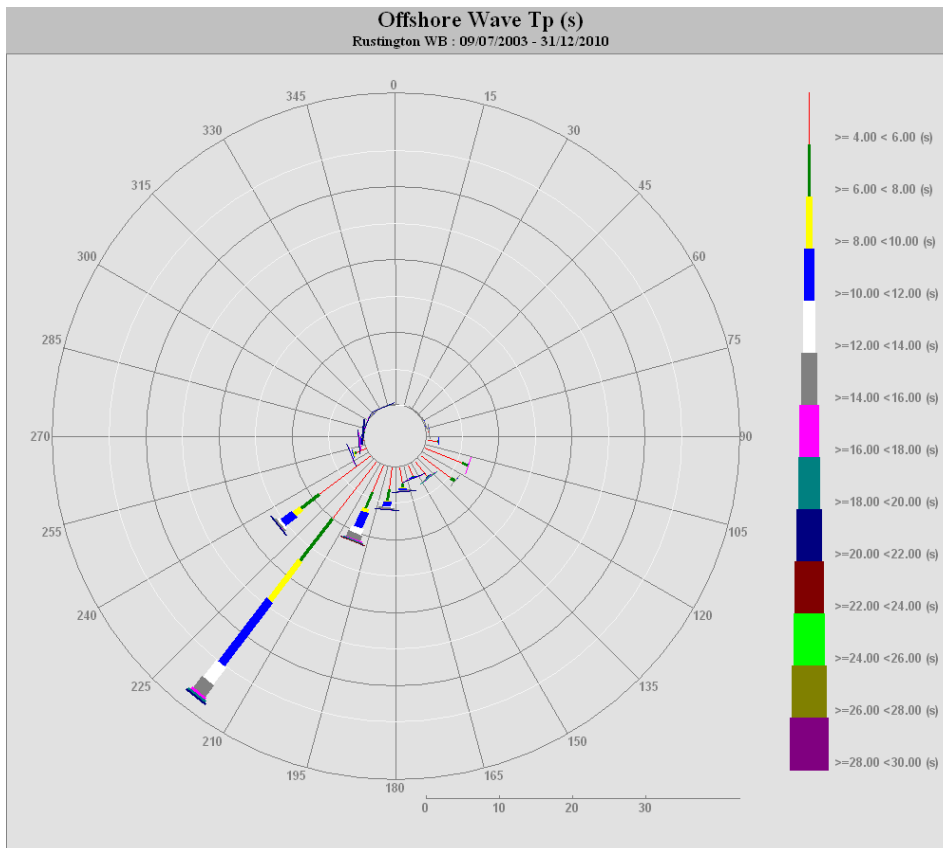


Rustington 2003 to 2010 - Joint distribution (% of occurrence)





Direction vs. H<sub>s</sub> (all measured data)



Direction vs. T<sub>p</sub> (all measured data)





