



Rustington Directional Waverider Buoy

Location			
OS	506331 E 93783 N		
WGS84	Latitude: 50° 44.036' N Longitude: 00° 29.677' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~10m CD	Buoy in situ off Rustington beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
96	30 minutes

Monthly Averages - 2014

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	No. of days
January	1.51	8.5	4.7	202	8.7	30
February	1.83	9.0	5.0	206	8.1	27
March	0.78	8.8	4.1	201	9.0	29
April	0.57	7.3	3.7	191	11.1	26
May	0.71	5.7	3.5	194	13.6	30
June	0.44	5.4	3.4	177	16.5	29
July	0.47	4.6	3.1	202	19.2	30
August	0.79	5.0	3.5	218	19.1	30
September	0.45	6.3	3.3	167	18.2	28
October	1.01	6.8	4.0	203	16.3	29
November	1.13	7.4	4.2	183	13.4	29
December	1.05	6.8	4.0	204	10.8	30

Storm Analysis

Date/Time	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
15-Feb-2014 00:30	4.97	11.1	7.7	215	-	-	-	-	1.02
05-Feb-2014 14:30	4.72	8.3	7.1	194	-	-	-	-	0.64
12-Feb-2014 15:00	4.18	9.1	6.8	197	-	-	-	-	0.76
01-Jan-2014 13:30	4.01	8.3	6.7	187	-	-	-	-	0.61
31-Jan-2014 22:30	3.93	7.7	6.2	204	-	-	-	-	0.45

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	-	2.76	2.47	2.27	1.85	1.45	29-Nov-2003 13:00	3.34
2004	3.83	2.82	2.62	2.38	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	3.78	3.01	2.75	2.44	2.05	1.67	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
2011	3.43	2.61	2.39	2.15	1.81	1.54	13-Dec-2011 00:30	4.55 ⁺
2012	3.59	2.94	2.67	2.36	1.94	1.59	03-Jan-2012 09:30	3.86
2013	4.40	3.24	2.88	2.57	2.02	1.62	24-Dec-2013 02:30	5.46 ⁺
2014	4.38	3.50	3.16	2.80	2.27	1.85	15-Feb-2014 00:30	4.97 ⁺

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

**Note that waves were breaking at the buoy for several hours during this storm; where breaking waves were clearly present in the measured time series, the parameters have been omitted. Accordingly, there may have been short periods where measured significant wave heights exceeded this value.*

** Tidal information is usually obtained from the nearest recording tide gauge (the tide gauge on Arun Platform) although this was out of action for most of 2014. The maximum tidal surge is the largest positive surge during the storm event and has been taken from the next closest tide gauge (the National Network gauge at Newhaven).*

Distribution plots

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

- Annual time series of H_s (red line is 3.5 m storm threshold)
- Wave roses (percentage of occurrence of direction vs H_s) for all measured data from 01 April 2004
- Percentage of occurrence of H_s , T_p , T_z and Direction for 2014
- Incidence of storm waves for 2014. 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.

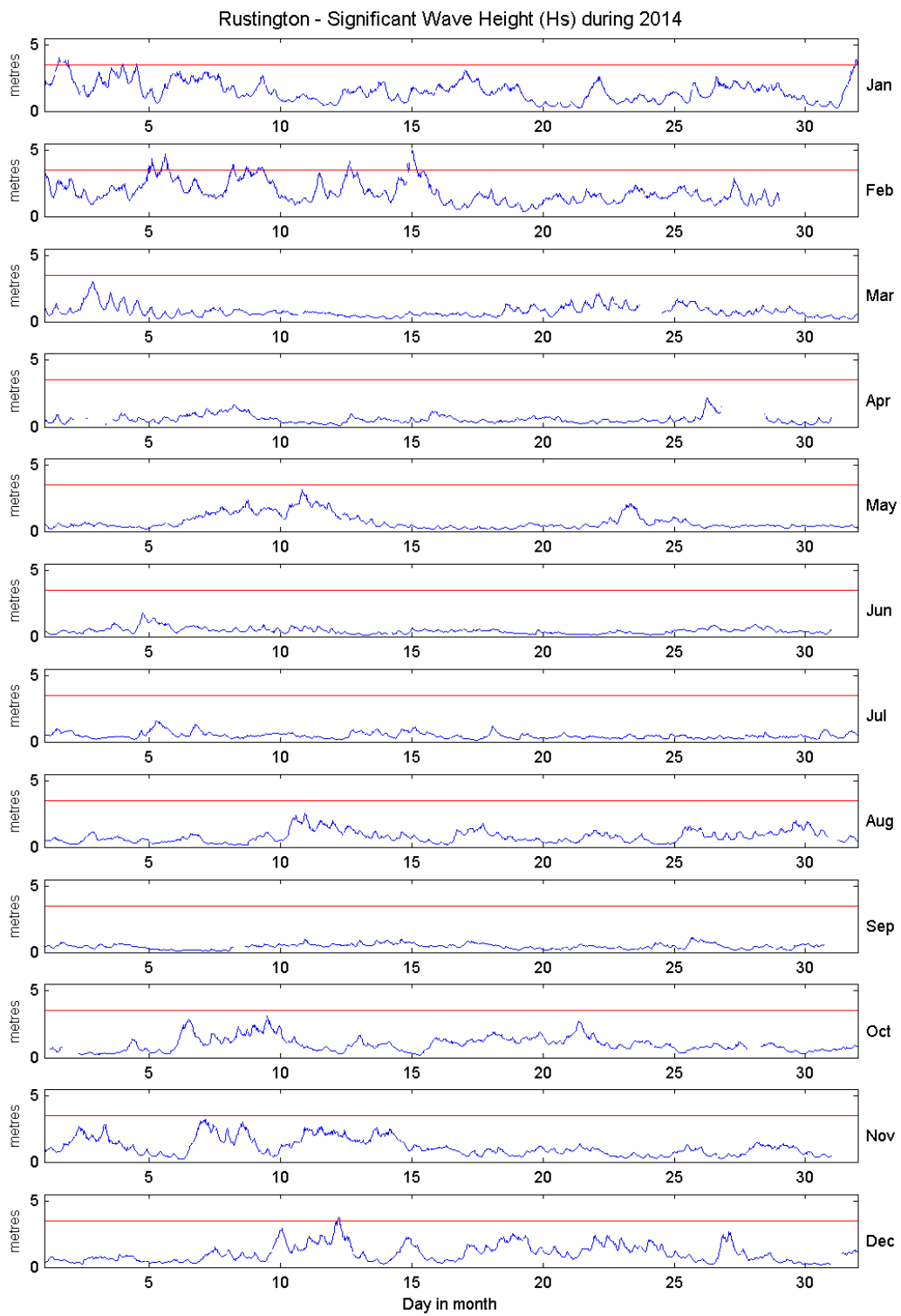
Return period (years)	Significant wave height (m)	Comments
1	4.3	No depth limitation
2	4.5	
5	4.9	Depth-limited at MLWS
10	5.1	
20	5.3	
50	5.6	
100	5.8	

General

The buoy was first deployed on 15 July 2003, at which time the magnetic declination at the site was 2.7° west, changing by 0.14° east per year.

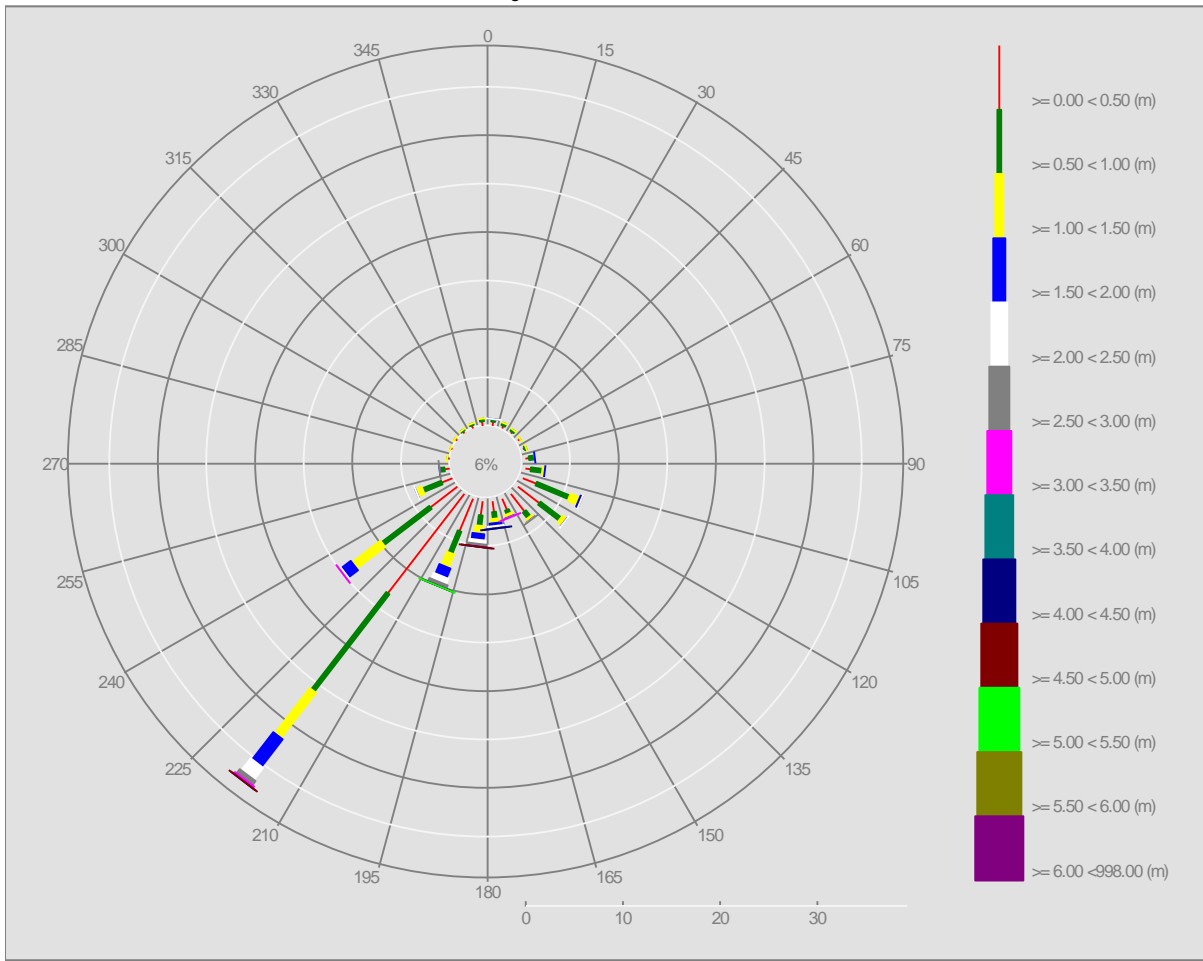
Acknowledgements

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

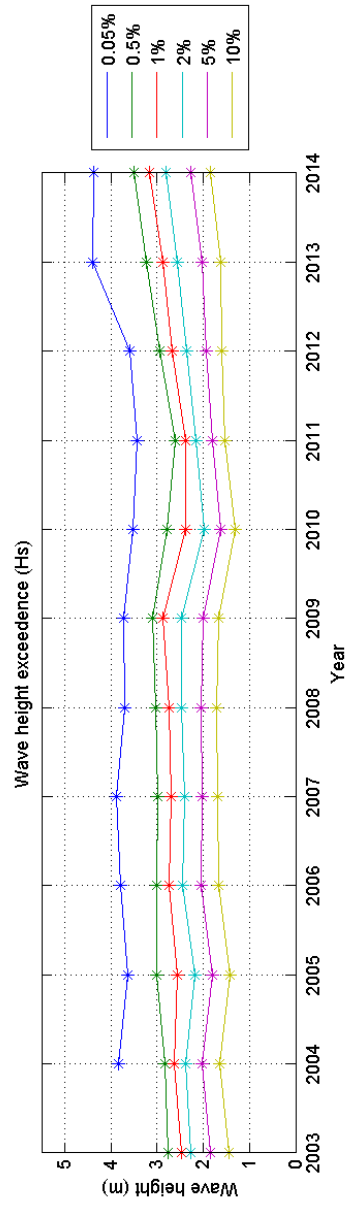
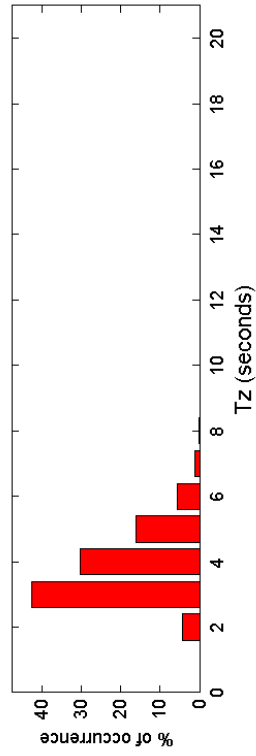
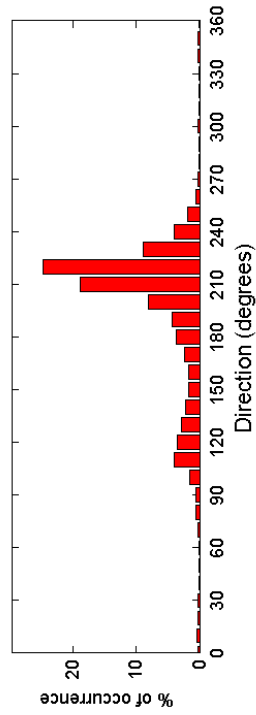
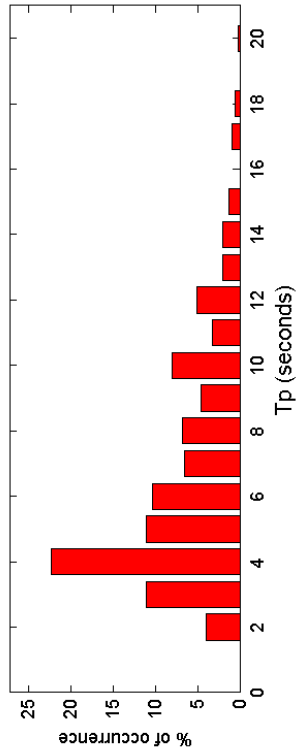
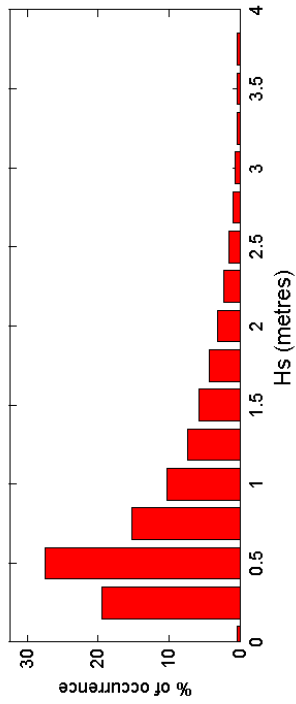


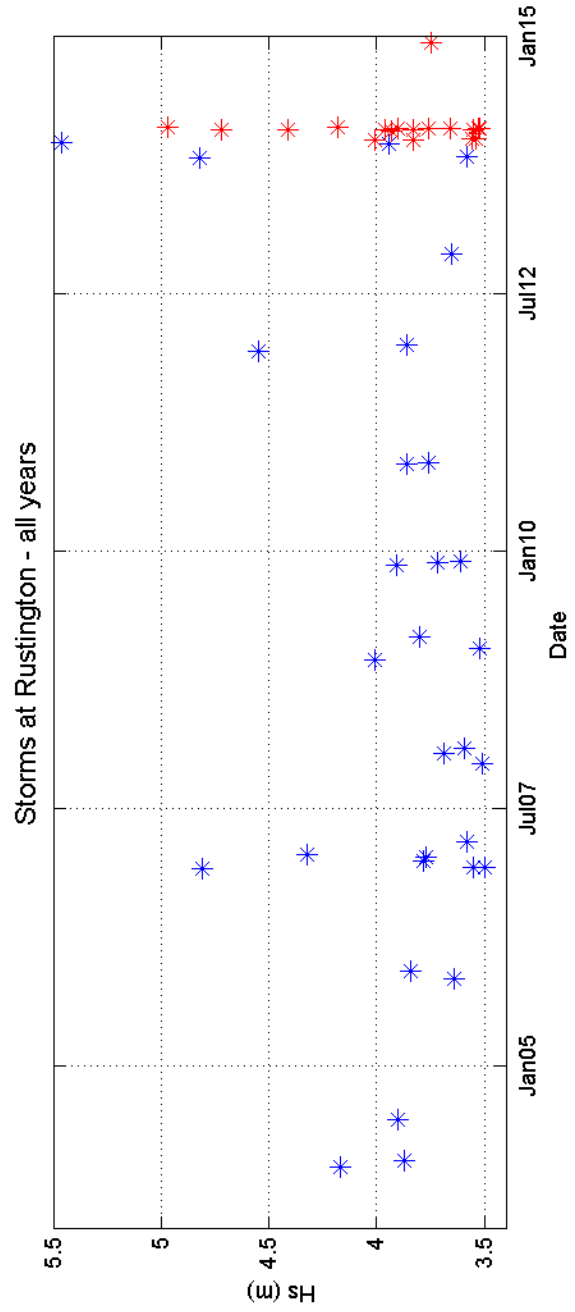
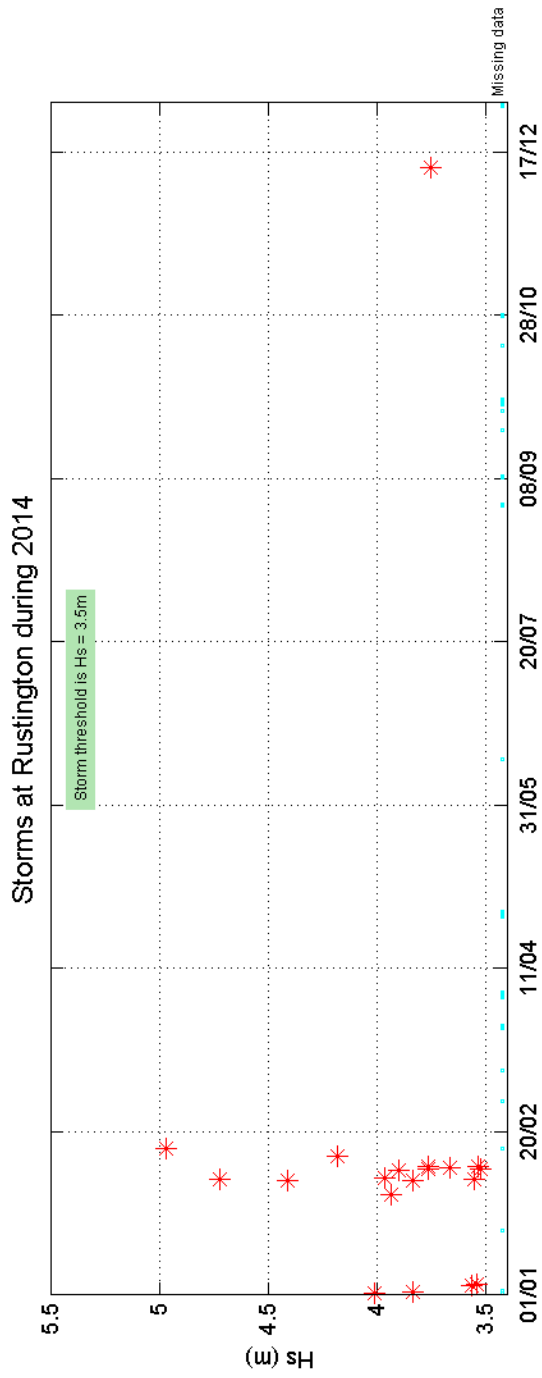
Offshore Wave Hs (m)

Rustington WB : 01/04/2004 - 31/12/2014



Rustington 2014





Rustington 2003 to 2014 - Joint distribution (% of occurrence)

