



Pevensey Bay Directional Waverider Buoy

Location			
OS	570486 E 100959 N		
WGS84	Latitude: 50° 46.99' N Longitude: 00° 25.03' E		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~10m CD	Buoy in situ in Pevensey Bay. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
97	30 minutes

Monthly Averages - 2015

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	No. of days
January	1.17	6.8	4.3	205	8.4	31
February	0.80	6.6	3.9	177	6.5	28
March	0.78	6.2	3.7	175	7.9	31
April	0.60	5.4	3.4	156	9.7	29
May	0.75	5.4	3.6	196	12.4	31
June	0.61	5.4	3.4	183	15.1	30
July	0.69	5.3	3.4	202	17.6	30
August	0.54	4.7	3.3	176	18.5	31
September	0.71	4.9	3.6	159	16.9	30
October	0.62	4.8	3.4	139	14.6	24
November	1.25	6.8	4.3	207	13.4	30
December	1.57	6.4	4.5	209	11.6	31

Monthly Averages - All Years (July 2003 – December 2015)

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)
January	1.06	6.4	4.1	187	7.6
February	0.86	6.5	3.9	178	6.6
March	0.73	6.2	3.7	173	7.0
April	0.57	5.8	3.5	168	9.3
May	0.63	5.3	3.5	174	12.2
June	0.58	5.2	3.4	174	15.0
July	0.59	5.0	3.4	190	17.4
August	0.59	4.9	3.4	194	18.5
September	0.64	5.2	3.5	175	17.5
October	0.87	5.6	3.7	180	15.3
November	0.98	6.1	3.9	185	12.6
December	1.05	6.3	4.0	188	9.5

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-Jan-2015 05:00	3.95	9.1	6.2	207	1.94	HW -1	2.9	0.31	0.68
29-Nov-2015 15:00	3.31	10.5	6.3	228	2.28	HW +2	5.9	0.31	0.44
30-Nov-2015 15:30	3.29	10.0	6.3	224	2.30	HW +2	5.5	0.35	0.54

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	-	2.66	2.41	2.08	1.61	1.34	29-Nov-2003 13:00	3.45
2004	3.65	2.72	2.51	2.24	1.86	1.53	31-Oct-2004 17:00	3.92
2005	3.44	2.83	2.37	2.09	1.71	1.31	03-Dec-2005 00:00	3.55
2006	3.59	2.89	2.64	2.33	1.91	1.59	03-Dec-2006 09:30	4.10
2007	3.85	2.84	2.58	2.26	1.89	1.54	18-Jan-2007 12:00	4.23
2008	3.79	3.04	2.73	2.44	2.03	1.65	13-Dec-2008 12:00	3.97
2009	3.43	2.88	2.66	2.38	1.92	1.56	14-Nov-2009 17:30	3.61
2010	3.62	2.64	2.24	1.91	1.52	1.22	08-Nov-2010 12:00	4.13
2011	3.85	2.57	2.29	2.02	1.69	1.43	13-Dec-2011 01:30	4.42
2012	3.33	2.75	2.49	2.19	1.82	1.48	03-Jan-2012 13:00	3.51
2013	3.82	2.86	2.62	2.31	1.87	1.47	24-Dec-2013 03:30	4.79
2014	4.00	3.10	2.84	2.54	2.11	1.72	15-Feb-2014 02:30	4.26
2015	3.31	2.77	2.58	2.40	2.08	1.70	15-Jan-2015 05:00	3.95

* i.e. 5 % of the H_s values measured in 2003 exceeded 1.61 m

Distribution plots

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

- Annual time series of H_s (red line is 3.25 m storm threshold)
- Incidence of storm waves for 2015. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Wave height exceedance each year since deployment
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2015
- Joint distribution of all parameters for all measured data, given as percentage of occurrence
- Wave rose (percentage of occurrence of direction vs H_s) for all measured data from 01 April 2004

* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Newhaven). The surge shown is the residual at the time of the highest H_s. The maximum tidal surge is the largest positive surge during the storm event.

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.

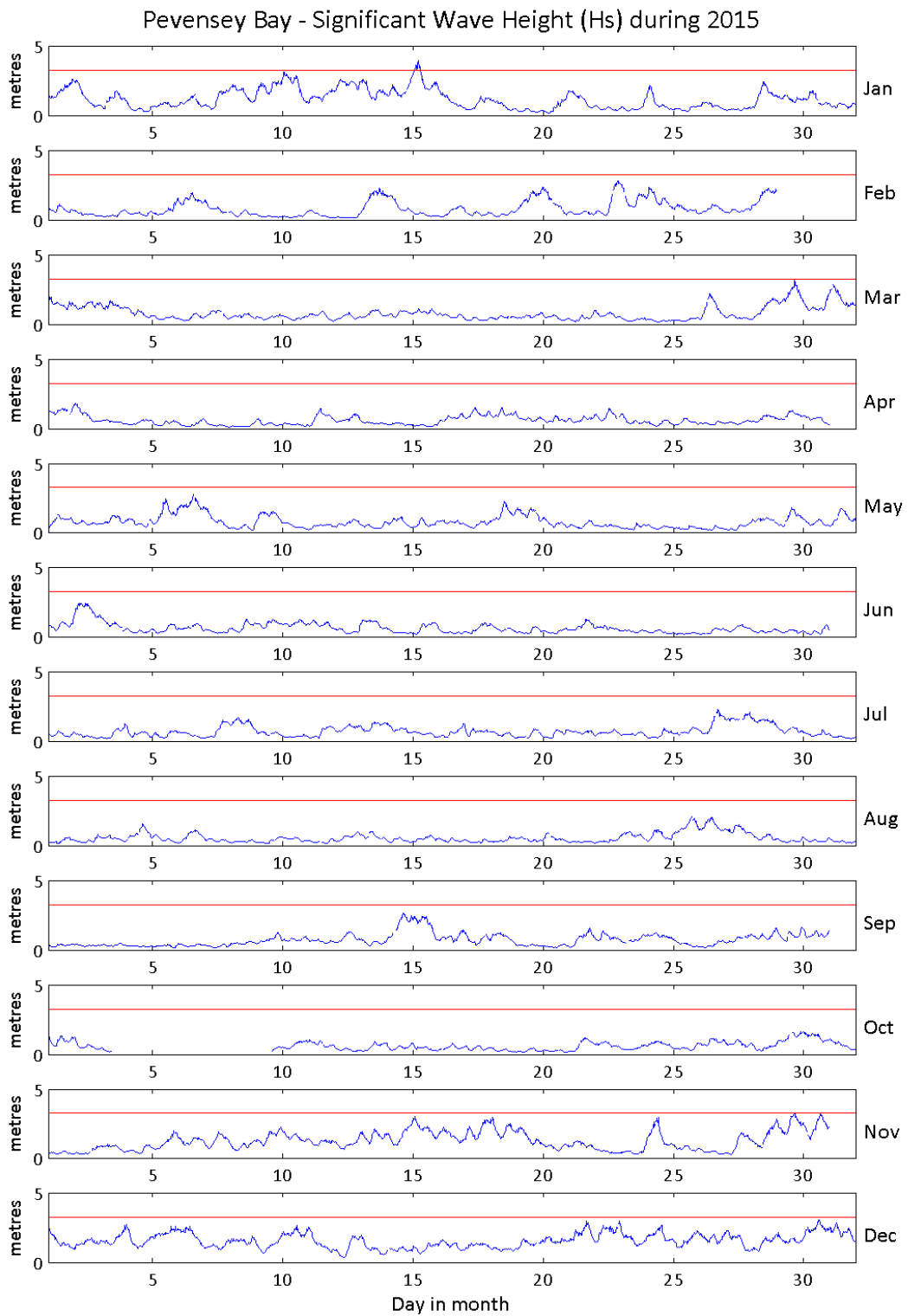
Return period (years)	Significant wave height (m)	Comments
1	3.9	No depth limitation
2	4.1	
5	4.3	Depth-limited at MLWS
10	4.5	
20	4.7	
50	4.9	
100	5.1	

General

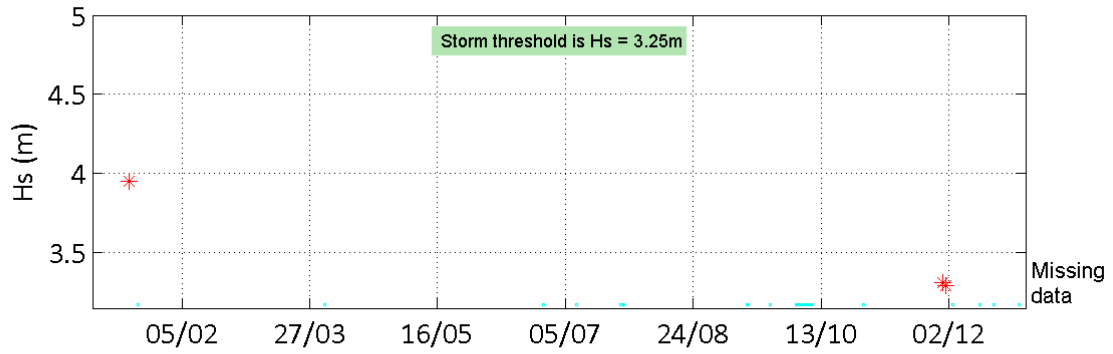
The buoy was first deployed on 9 July 2003, at which time the magnetic declination at the site was 2.3° west, changing by 0.14° east per year.

Acknowledgements

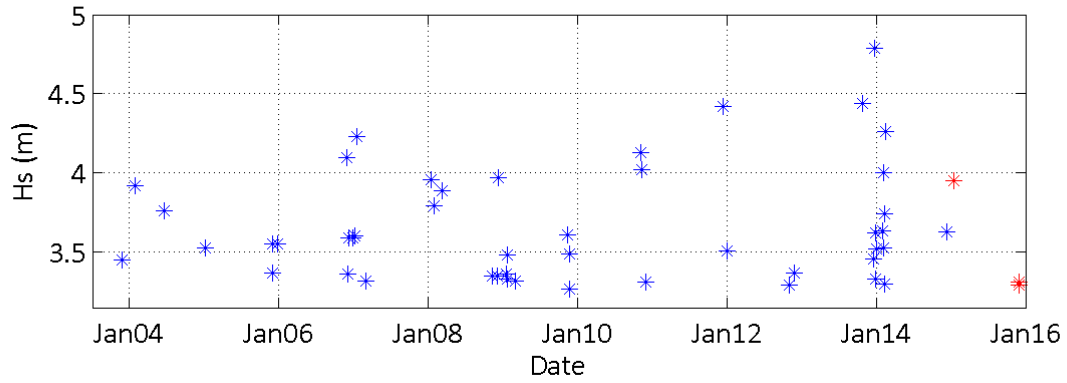
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.



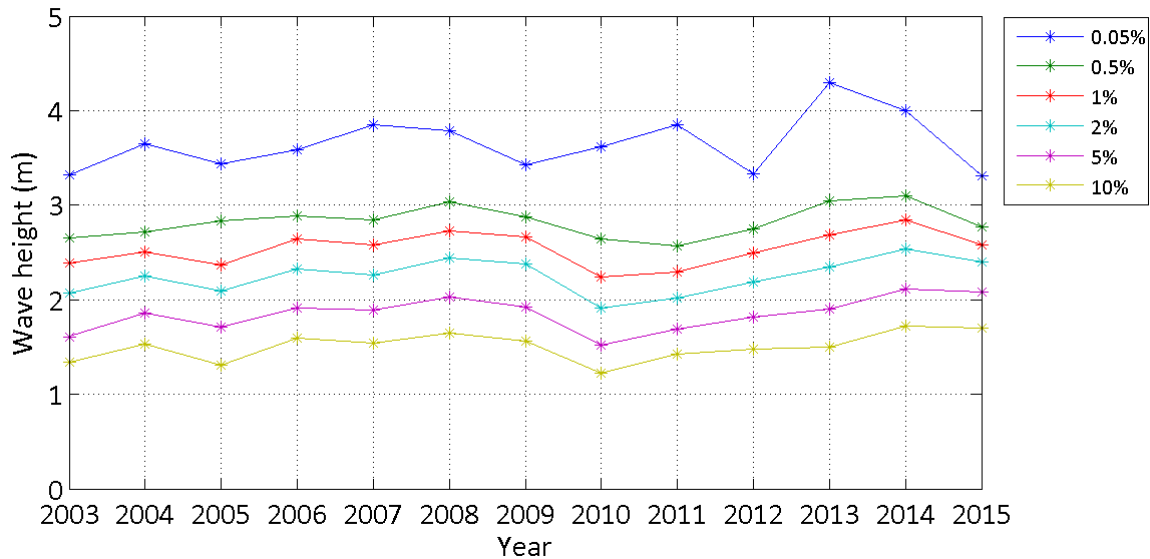
Storms at Pevensey Bay during 2015



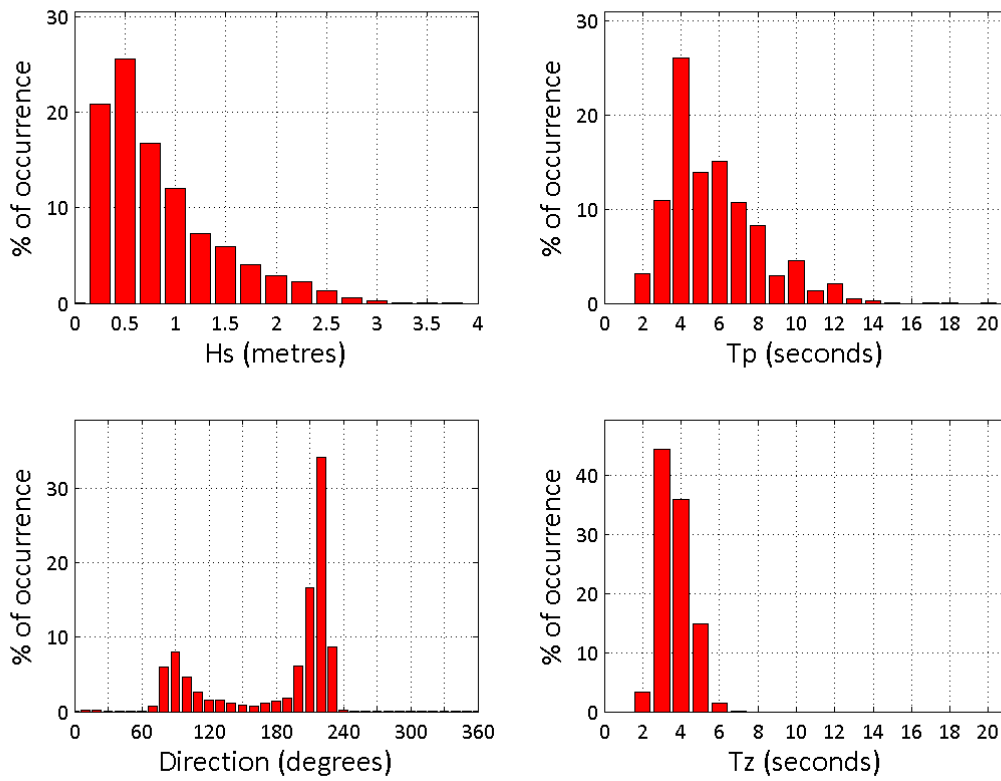
Storms at Pevensey Bay - all years



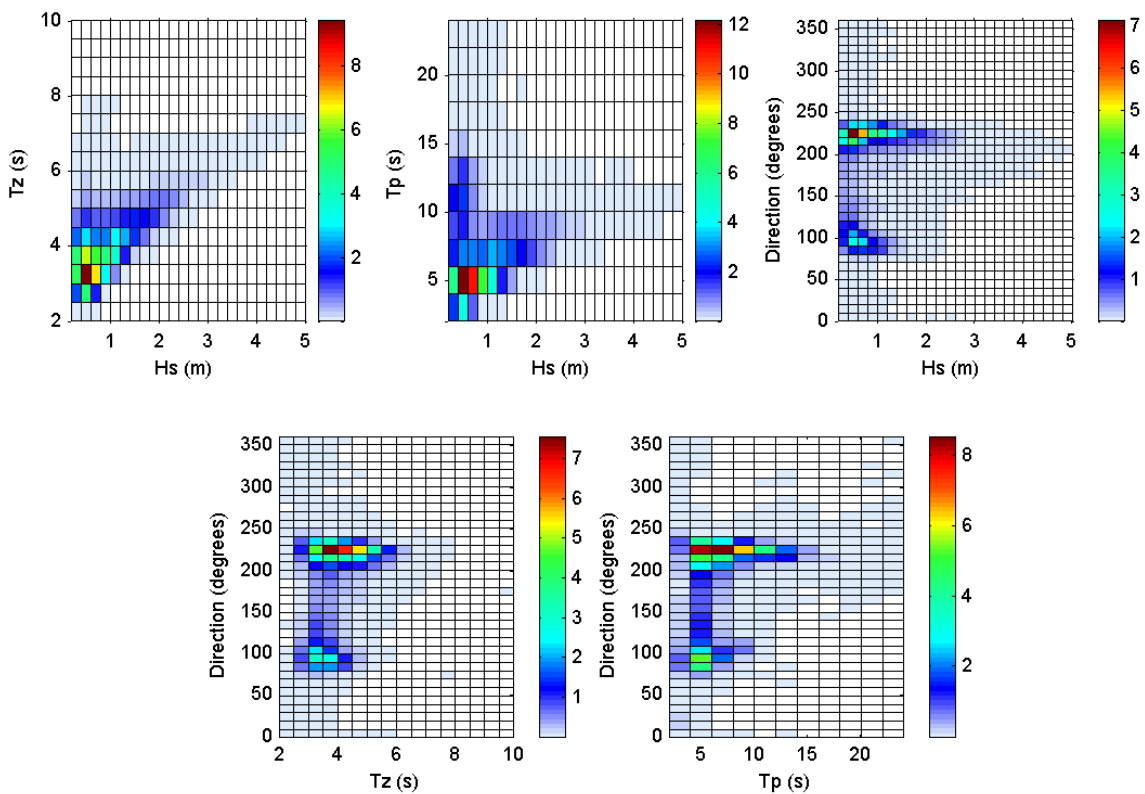
Pevensey Bay - Wave height exceedance (Hs)



Pevensey Bay 2015



Pevensey Bay 2003 to 2015 - Joint distribution (% of occurrence)



Offshore Wave Hs(m)
Pevensey Bay WB : 01/04/2003 - 31/12/2015

