



Seaford Directional Waverider Buoy

Location			
OS	546386 E 98393 N		
WGS84	Latitude: 50° 46.00' N Longitude: 00° 04.47' E		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~11m CD	Buoy in situ off Seaford beach. Photo courtesy of Fugro GB Marine Limited	Location of buoy (Google mapping, image ©2016 TerraMetrics)

Data Quality

Recovery rate (%)	Sample interval
99	30 minutes

Monthly Averages - 2016

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	Bimodal seas (%)	No. of days
January	1.54	6.6	4.6	212	9.1	5	31
February	1.24	7.9	4.5	210	8.2	1	29
March	0.79	7.9	4.2	208	7.8	1	31
April	0.64	6.1	3.8	215	10.0	0	30
May	0.43	5.9	3.4	215	12.5	0	31
June	0.59	6.1	3.6	229	15.5	0	30
July	0.71	5.0	3.5	236	18.0	0	31
August	0.73	5.8	3.7	225	19.0	1	31
September	0.69	6.2	3.8	225	19.2	1	30
October	0.51	7.0	3.6	192	15.3	0	31
November	0.87	5.4	3.8	200	12.1	0	30
December	0.79	7.3	4.1	203	9.4	3	31

Monthly Averages - All Years (January 2008 – December 2015)

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	Bimodal seas (%)
January	1.06	7.3	4.3	208	7.5	2
February	0.89	7.7	4.2	207	6.7	4
March	0.68	7.5	3.9	206	7.4	1
April	0.56	6.9	3.8	206	9.5	1
May	0.61	6.0	3.6	211	12.5	0
June	0.57	5.8	3.6	210	15.2	0
July	0.64	5.5	3.6	224	17.7	0
August	0.71	5.3	3.6	227	18.6	0
September	0.65	6.0	3.6	210	17.3	0
October	0.91	6.1	3.9	208	15.0	1
November	1.15	6.7	4.2	209	12.4	1
December	1.18	6.6	4.3	214	9.0	3

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)
28-Mar-2016 04:00	5.11	9.1	7.4	191	1.84	HW +3	4.72	0.92	1.14
22-Nov-2016 06:00	5.10	10.0	7.3	203	2.09	HW +1	3.70	0.29	0.36
20-Nov-2016 06:00	4.87	10.0	7.0	190	1.33	HW +3	4.65	1.03	1.08
08-Feb-2016 17:30	4.47	10.0	6.7	226	-2.28	HW +6	5.70	0.52	0.80
07-Feb-2016 23:00	3.95	8.3	6.3	221	3.05	HW	5.30	0.16	0.38
09-Mar-2016 08:00	3.68	7.7	6.3	188	-0.22	HW -3	6.26	0.44	0.53

* Tidal information is obtained from 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 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	4.20	3.53	3.15	2.79	2.30	1.80	10-Mar-2008 10:30	4.48 ⁺
2009	3.87	3.28	3.00	2.72	2.23	1.80	14-Nov-2009 14:00	4.53 ⁺
2010	4.06	2.94	2.62	2.25	1.71	1.33	11-Nov-2010 13:00	4.82 ⁺
2011	3.87	2.99	2.71	2.46	2.04	1.75	13-Dec-2011 03:00	5.21 ⁺
2012	4.27	3.22	2.92	2.59	2.14	1.73	25-Nov-2012 06:00	4.39
2013	4.36	3.41	3.17	2.75	2.21	1.73	24-Dec-2013 02:30	5.18
2014	4.62	3.58	3.30	2.97	2.49	2.02	14-Feb-2014 23:00	5.34 ⁺
2015	4.03	3.40	3.17	2.87	2.48	2.07	15-Jan-2015 03:30	4.61 ⁺
2016	4.65	3.30	3.02	2.67	2.17	1.76	28-Mar-2016 04:00	5.11 ⁺

** i.e. 5 % of the H_s values measured in 2008 exceeded 2.30 m

⁺ Note that waves were breaking at the buoy 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.

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 0.5-hourly and 3-hourly records and are calculated for periods up to 10 times the record length, using a Weibull distribution.

0.5-hourly records January 2008 – December 2016		
Return period (years)	Significant wave height (m)	Comments
1	5.1	Depth-limited at MLWS
2	5.3	
5	5.6	
10	5.8	
20	5.9	
50	6.2	Depth-limited at MHWS

3-hourly records January 2008 – December 2016		
Return period (years)	Significant wave height (m)	Comments
1	4.7	Depth-limited at MLWS
2	4.9	
5	5.3	
10	5.5	
20	5.8	
50	6.1	

Distribution plots

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

- Annual time series of H_s (red line is 3.85 m storm threshold)
- Incidence of storm waves for 2016. 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 2016
- 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

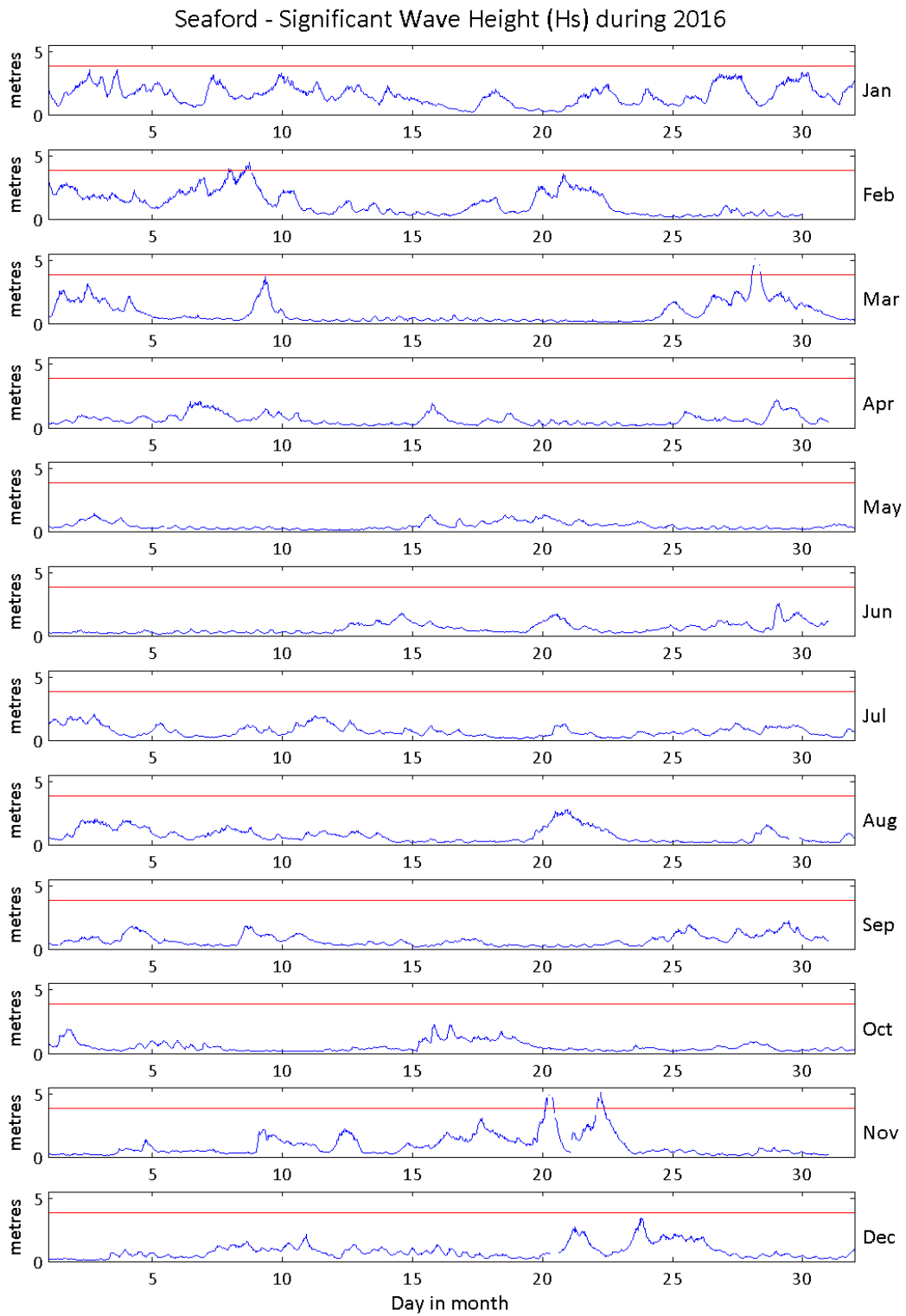
General

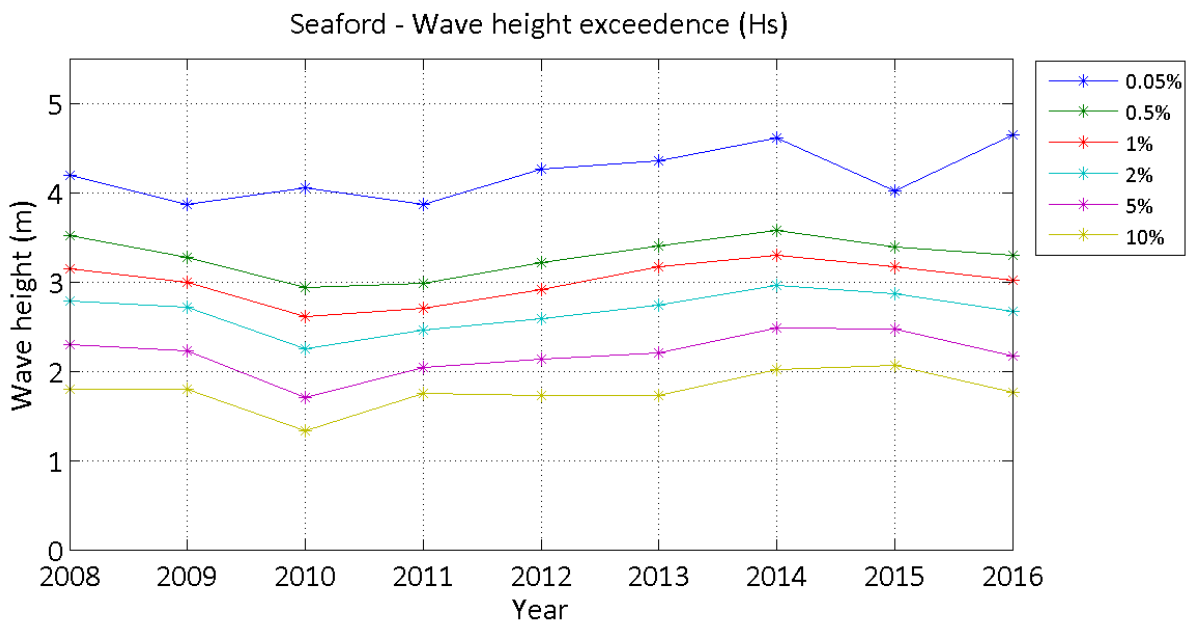
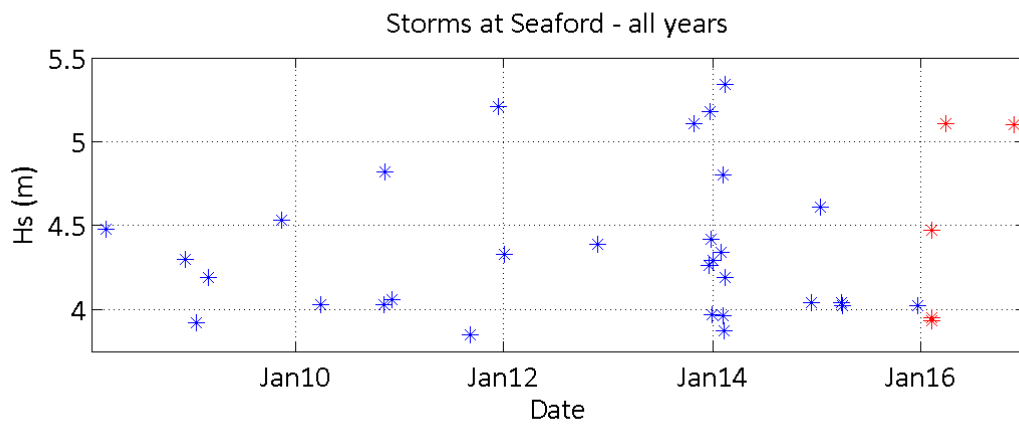
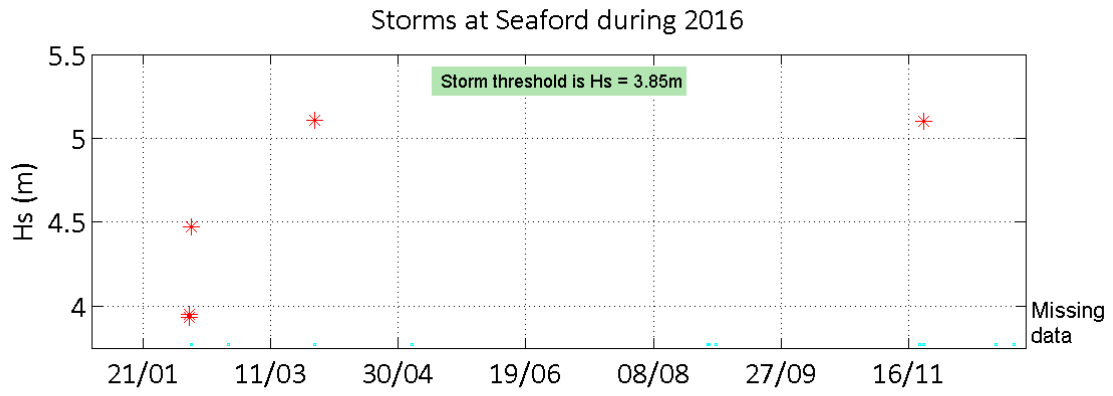
The buoy, owned by Adur & Worthing Councils, was first deployed on 22 January 2008, at which time the magnetic declination at the site was 1.8° west, changing by 0.14° east per year.

Acknowledgements

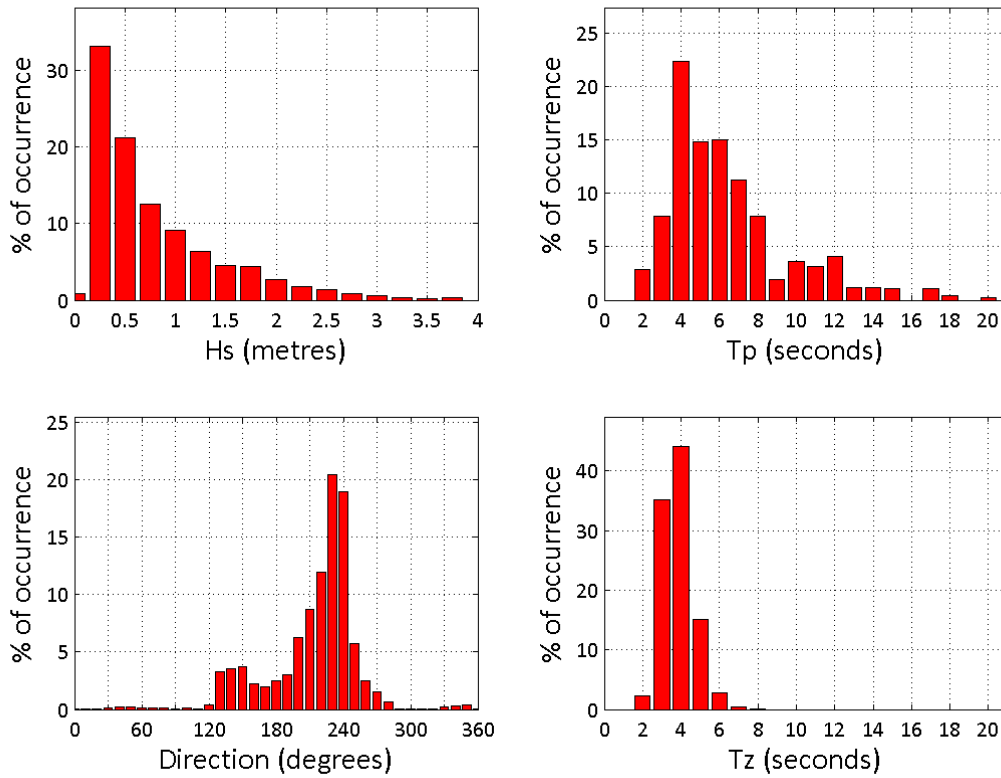
The shore station is kindly hosted by Newhaven Fort.

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.





Seaford 2016



Seaford 2008 to 2016 - Joint distribution (% of occurrence)

