



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 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	1.38	6.9	4.5	223	8.3	30
February	0.79	7.1	4.1	207	6.5	27
March	0.80	8.0	4.1	213	7.6	31
April	0.54	7.3	3.8	201	9.9	28
May	0.86	5.4	3.7	222	12.6	31
June	0.61	5.4	3.5	212	15.2	30
July	0.79	5.8	3.6	230	17.9	30
August	0.58	5.3	3.6	217	18.3	31
September	0.67	5.3	3.6	202	16.9	29
October	0.60	5.6	3.7	190	14.6	27
November	1.51	6.7	4.5	223	13.1	30
December	1.81	6.2	4.6	213	11.3	31

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

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

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 03:30	4.61	8.3	6.7	212	1.36	HW -1	2.9	0.54	0.68
29-Mar-2015 15:00	4.04	10.0	6.5	224	-0.12	HW -4	2.5	0.50	0.68
31-Mar-2015 03:00	4.02	8.3	6.5	231	-1.53	HW -6	3.4	0.13	0.30
21-Dec-2015 15:00	4.02	7.7	6.9	217	-1.02	HW -4	4.2	0.41	0.41

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 ⁺

* 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.

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 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

* 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 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.

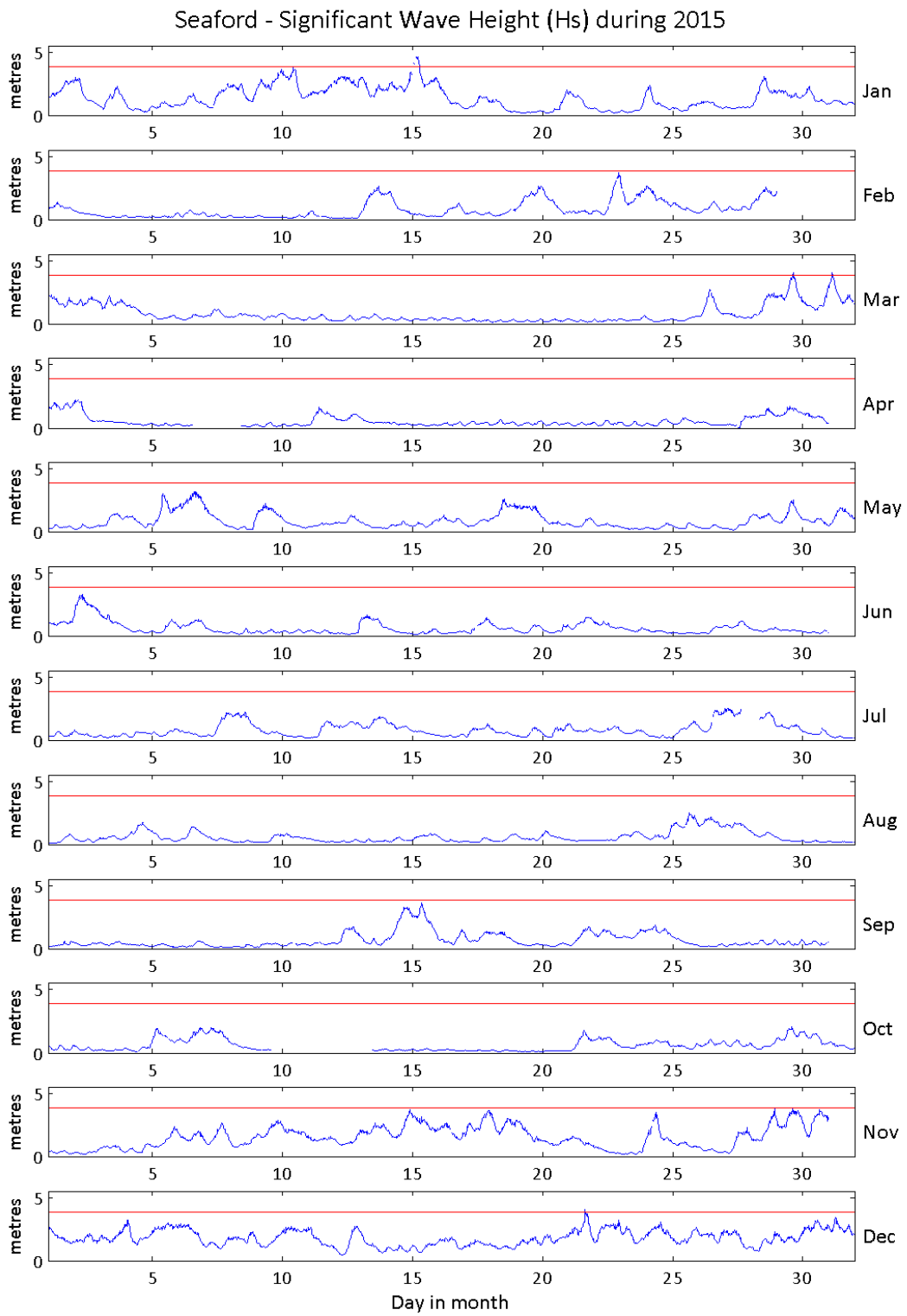
Return period (years)	Significant wave height (m)	Comments
1	4.6	Depth-limited at MLWS
2	4.8	
5	5.1	
10	5.4	
20	5.6	
50	5.9	

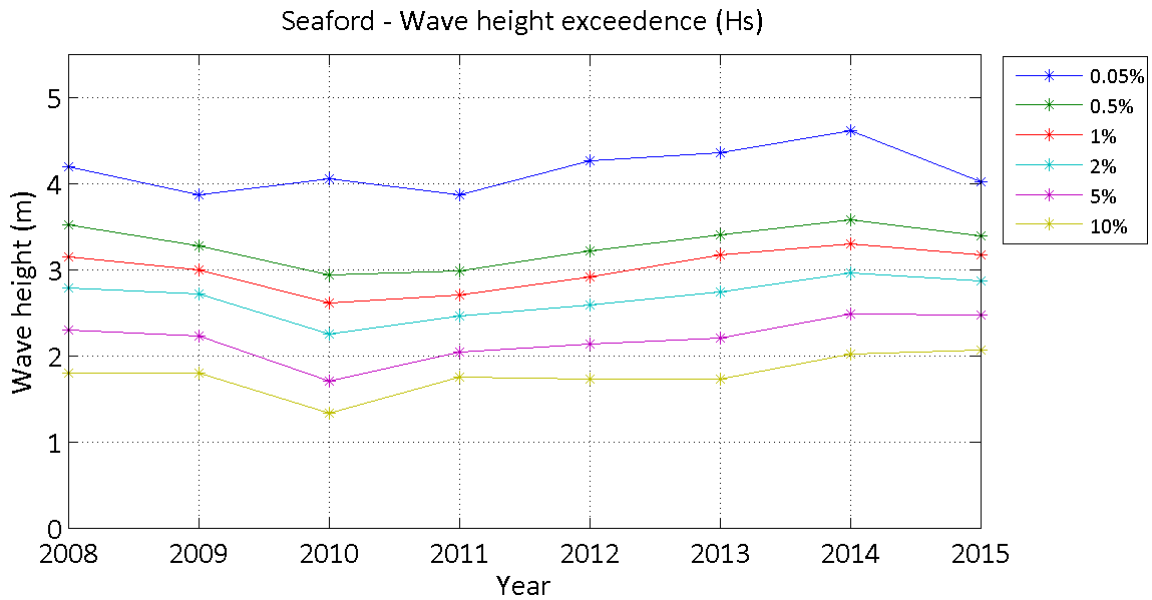
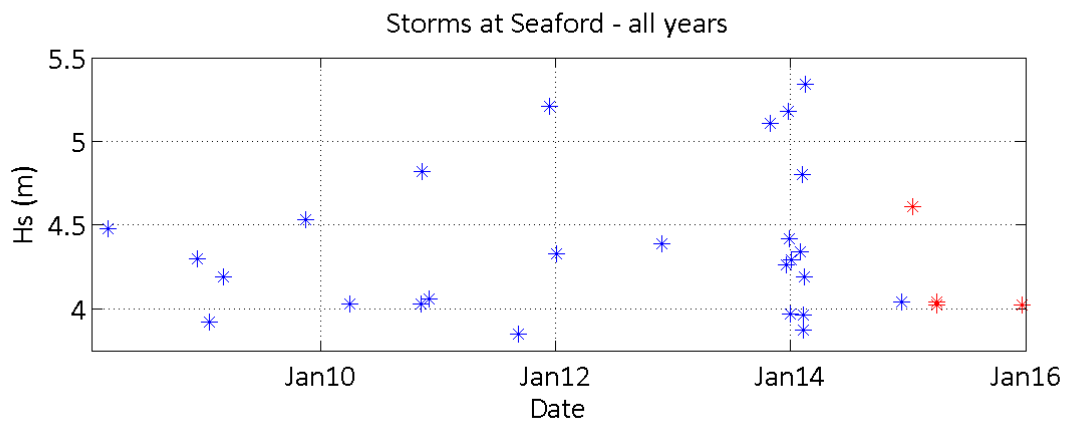
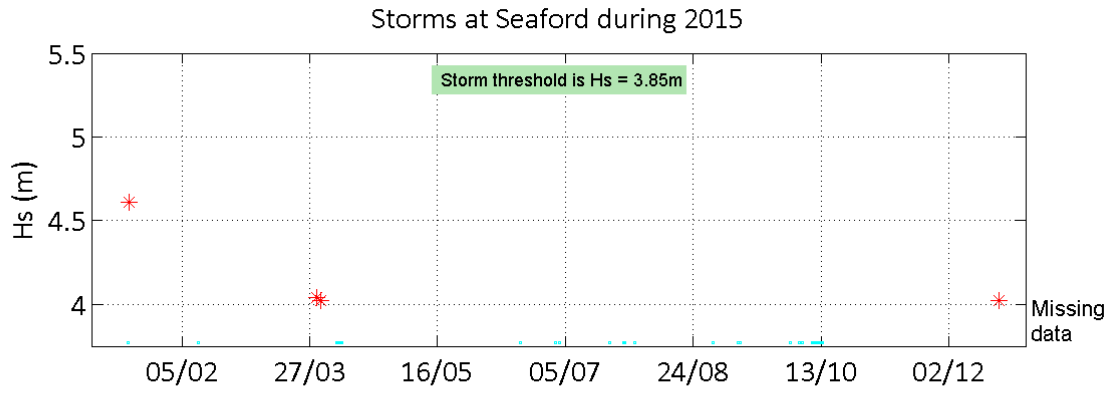
General

The buoy 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.

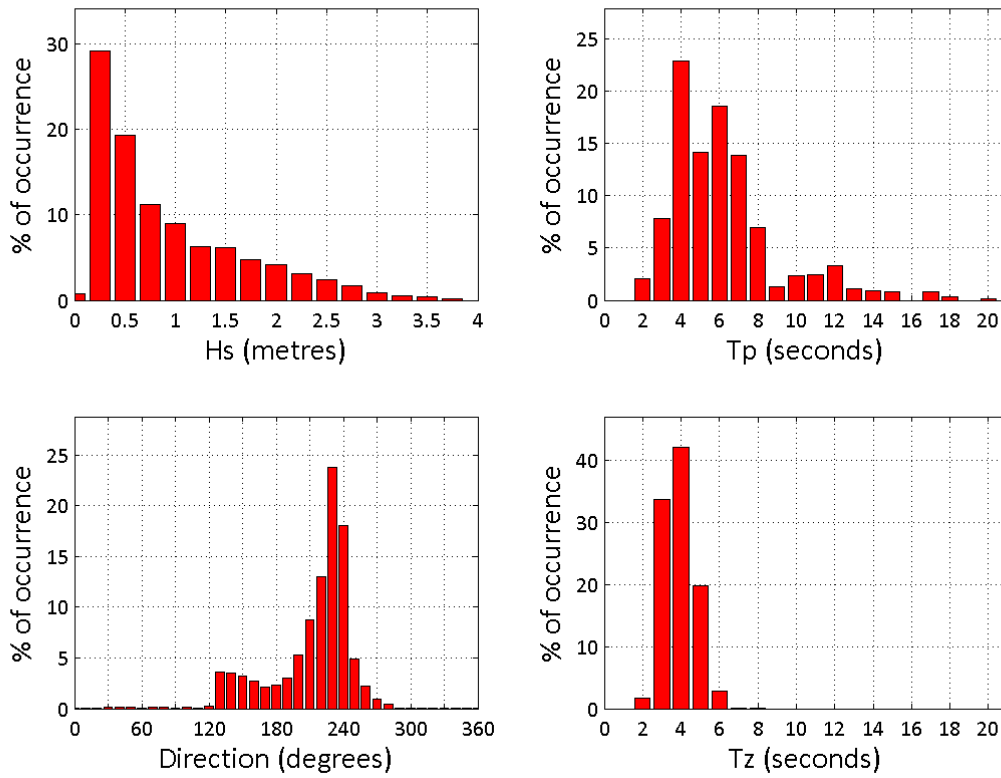
Acknowledgements

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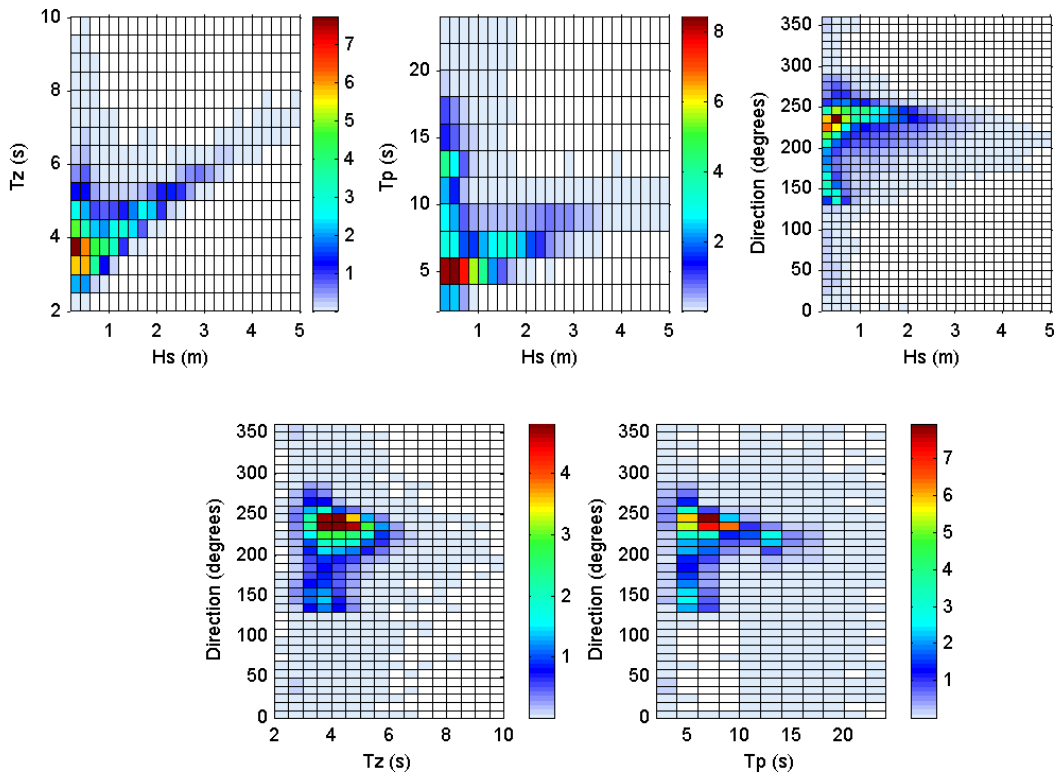




Seaford 2015



Seaford 2015 - Joint distribution (% of occurrence)



Offshore Wave Hs (m) Seaford WB : 22/01/2008 - 31/12/2015

