



Folkestone Directional Waverider Buoy

Location			
OS	619271 E 133887 N		
WGS84	Latitude: 51° 03.76' N Longitude: 01° 07.68' E		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~13m CD	Buoy in situ off Sandgate beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
96	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	0.93	6.2	3.9	174	8.6	18
February	0.60	6.4	3.9	143	6.3	26
March	0.55	5.6	3.5	146	7.8	31
April	0.43	5.0	3.3	136	9.6	30
May	0.58	4.7	3.3	164	12.0	31
June	0.47	4.8	3.3	152	14.8	30
July	0.53	4.8	3.3	167	17.1	31
August	0.43	4.3	3.2	149	18.1	31
September	0.54	5.1	3.6	136	16.7	30
October	0.48	5.1	3.6	134	14.7	31
November	0.80	5.9	3.8	169	13.1	30
December	1.11	5.5	3.9	179	11.4	31

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

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)
January	0.78	5.8	3.8	157	7.7
February	0.65	6.1	3.7	147	6.7
March	0.54	5.8	3.6	143	7.1
April	0.44	5.4	3.4	139	9.3
May	0.48	5.0	3.4	143	12.1
June	0.45	4.9	3.4	145	14.7
July	0.47	4.6	3.3	157	17.0
August	0.47	4.6	3.3	161	18.1
September	0.48	5.0	3.4	146	17.5
October	0.66	5.2	3.6	154	15.3
November	0.72	5.7	3.8	154	12.4
December	0.75	5.9	3.8	155	9.3

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)
15-Jan-2015 06:00	2.71	7.7	4.9	181	-	HW	~3.3	-	-

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	-	2.23	2.03	1.75	1.37	1.16	29-Nov-2003 13:30	3.07
2004	2.91	2.30	1.97	1.75	1.44	1.18	08-Jan-2004 12:00	3.25
2005	2.90	2.15	1.81	1.54	1.25	0.97	30-Dec-2005 14:00	3.15
2006	2.55	2.08	1.84	1.68	1.42	1.17	03-Dec-2006 09:00	3.13
2007	2.56	2.06	1.83	1.59	1.34	1.11	08-Dec-2007 17:00	2.86
2008	2.98	2.40	2.10	1.85	1.44	1.16	10-Mar-2008 10:30	3.58
2009	2.65	2.14	1.88	1.68	1.39	1.12	22-Jan-2009 08:30	2.98
2010	2.66	1.95	1.69	1.42	1.15	0.94	08-Nov-2010 12:00	2.92
2011	2.91	1.99	1.73	1.52	1.31	1.09	13-Dec-2011 01:30	3.11
2012	2.69	2.12	1.94	1.71	1.38	1.1	14-Dec-2012 13:00	2.87
2013	3.16	2.31	2.02	1.75	1.40	1.10	24-Dec-2013 05:30	3.41 ⁺
2014	2.82	2.42	2.21	1.94	1.60	1.27	05-Feb-2014 04:00	3.64 ⁺
2015	2.47	1.95	1.82	1.67	1.44	1.18	15-Jan-2015 06:00	2.71

* i.e. 5 % of the H_s values measured in 2003 exceeded 1.37 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 obtained from the nearest recording tide gauge (the National Network gauge at Dover). 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.

Distribution plots

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

- Annual time series of H_s (red line is 2.5 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

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.

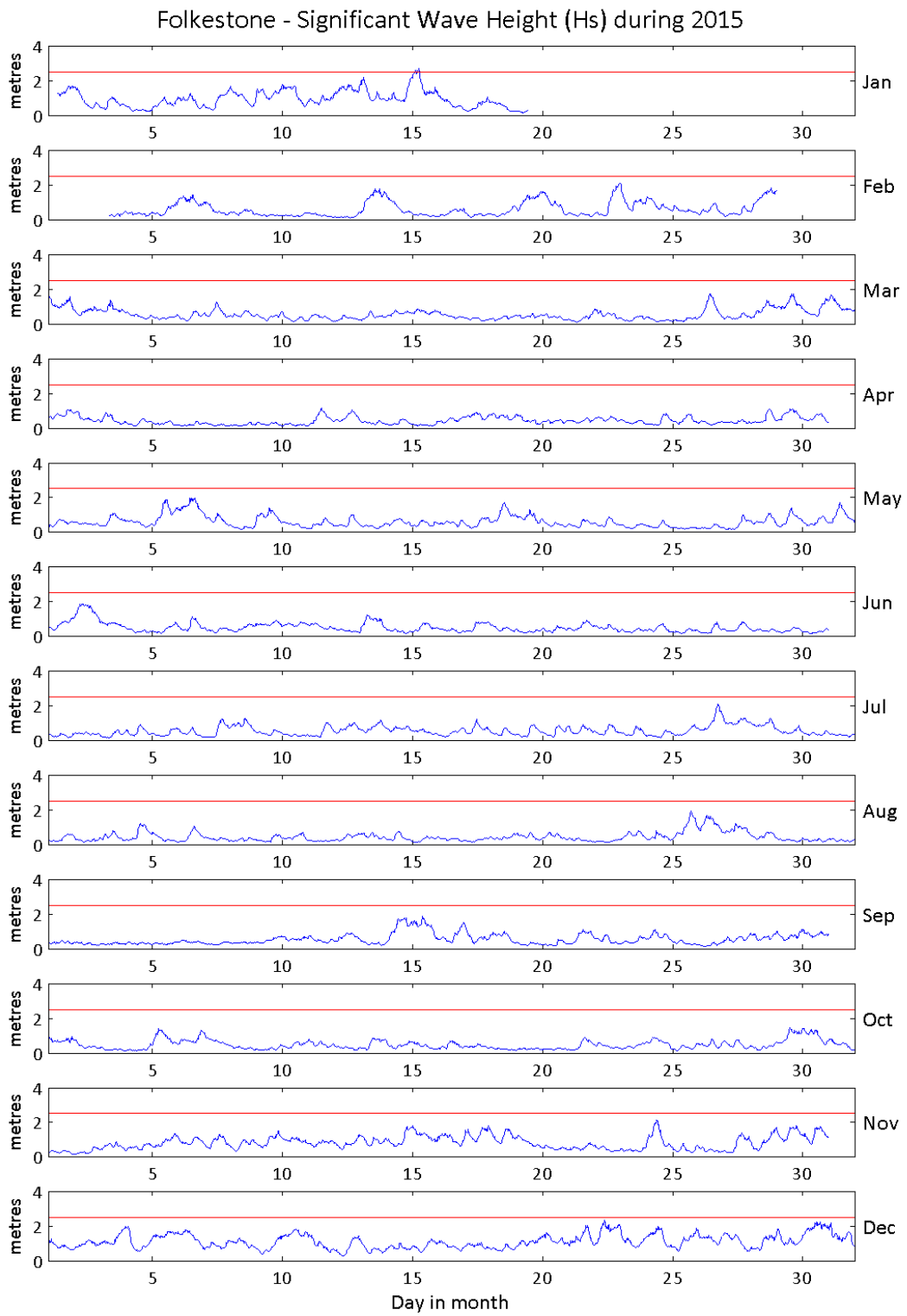
Return period (years)	Significant wave height (m)	Comments
1	3.1	No depth-limitation
2	3.3	
5	3.5	
10	3.7	
20	3.8	
50	4.0	
100	4.2	

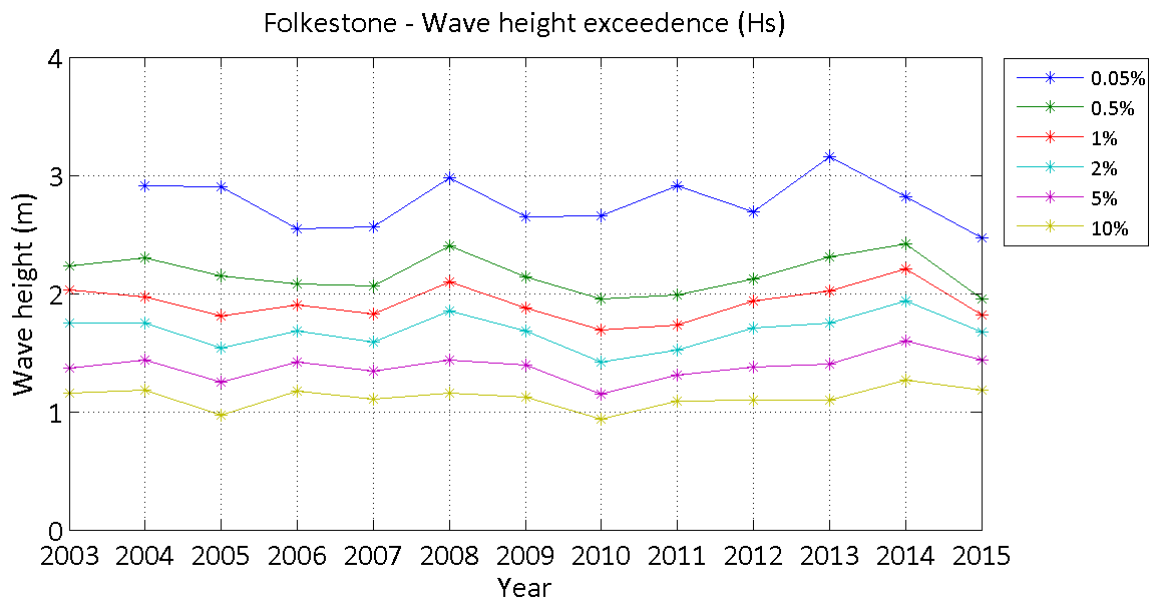
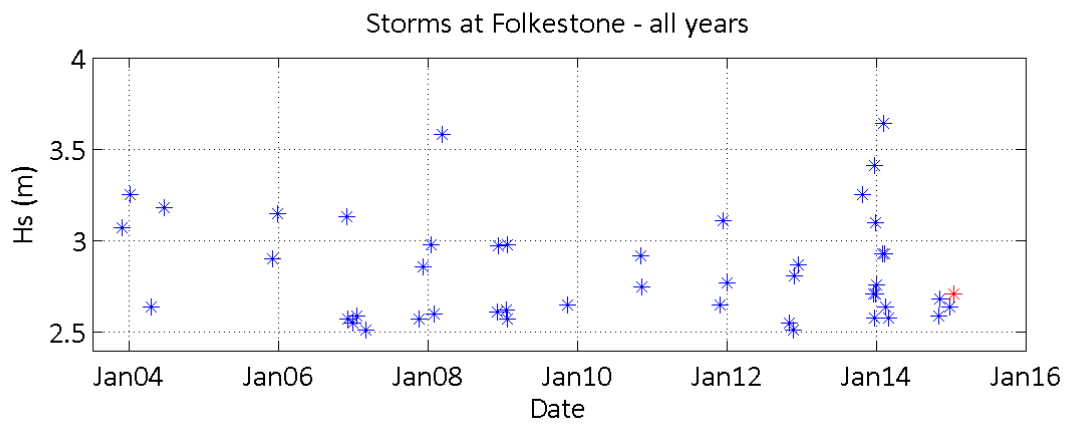
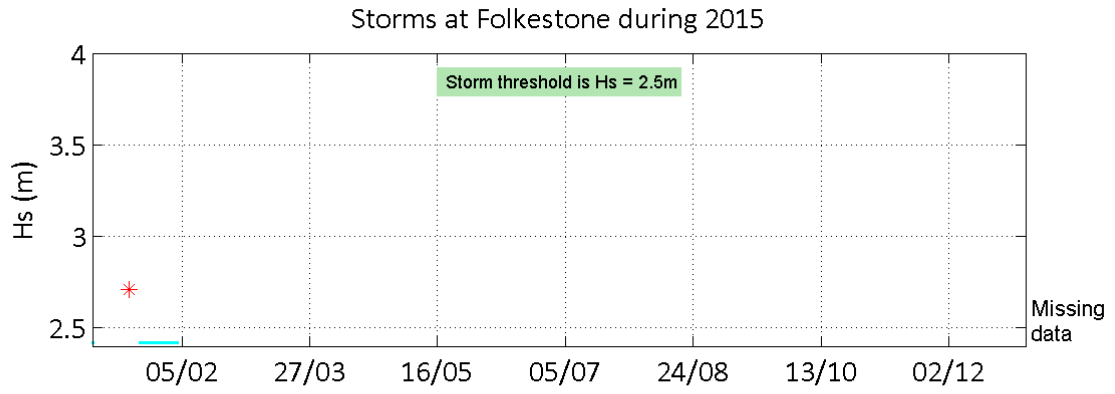
General

The buoy was first deployed on 1 June 2003, at which time the magnetic declination at the site was 2.1° west, changing by 0.14° east per year.

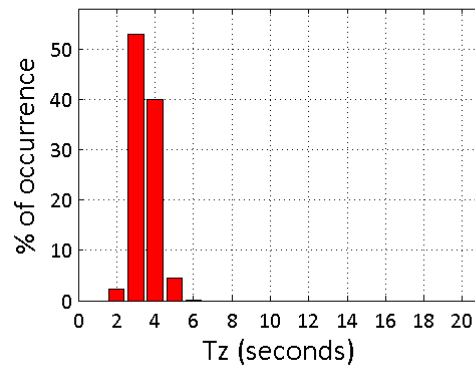
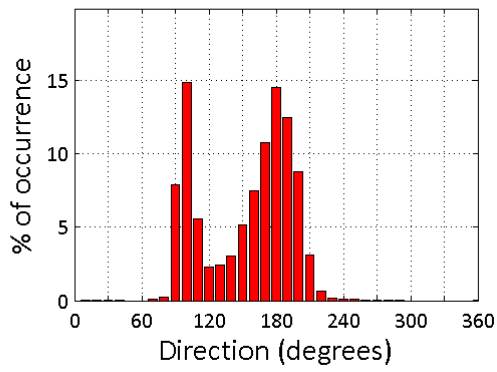
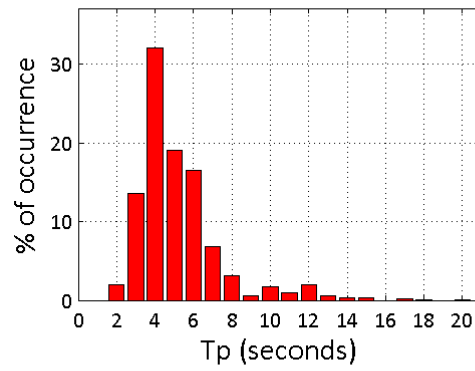
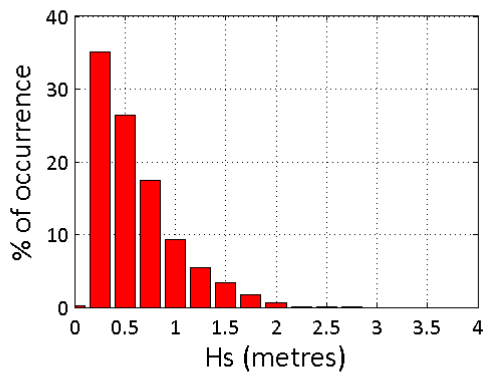
Acknowledgements

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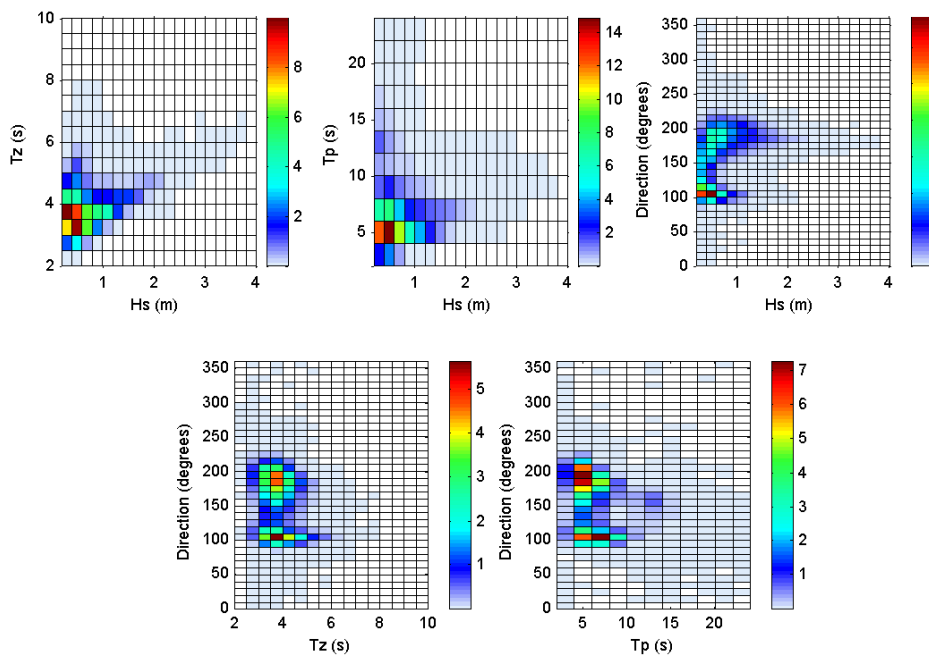




Folkestone 2015



Folkestone 2003 to 2015 - Joint distribution (% of occurrence)



Offshore Wave Hs (m)

Folkestone WB : 01/04/2004 - 31/12/2015

