


Folkestone Directional Waverider Buoy

Location			
OS	619260 E 133909 N		
WGS84	Latitude: 51° 03.76' N Longitude: 01° 07.67' E		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~13m CD	Buoy in situ off Sandgate beach. Photo courtesy of Fugro GB Marine Limited	Location of buoy (Google mapping, image ©2016 TerraMetrics)

Data Quality

Recovery rate (%)	Sample interval
100	30 minutes

Monthly Averages – 2017

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	Bimodal seas (%)	No. of days
January	0.50	6.0	3.6	146	6.8	0	31
February	0.69	5.8	3.6	157	7.2	1	28
March	0.60	6.2	3.5	155	8.8	1	31
April	0.34	5.5	3.4	144	10.8	0	30
May	0.39	4.8	3.3	137	12.8	0	31
June	0.49	5.2	3.3	156	16.2	1	30
July	0.50	4.3	3.3	160	18.2	0	31
August	0.43	4.3	3.2	158	18.6	0	31
September	0.52	5.3	3.4	158	17.4	0	30
October	0.63	5.6	3.6	165	15.6	1	31
November	0.50	5.7	3.8	155	12.3	0	30
December	0.69	6.4	3.9	156	8.7	0	31

Monthly Averages - All Years (July 2003 – December 2016)

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	Bimodal seas (%)
January	0.80	5.9	3.8	157	7.8	0
February	0.66	6.1	3.8	148	6.8	0
March	0.54	5.8	3.6	142	7.2	0
April	0.44	5.3	3.4	139	9.4	0
May	0.47	5.0	3.4	142	12.1	0
June	0.45	4.9	3.4	145	14.7	0
July	0.47	4.6	3.3	158	17.1	0
August	0.47	4.6	3.3	160	18.2	0
September	0.48	5.0	3.4	148	17.6	0
October	0.65	5.2	3.6	152	15.3	0
November	0.71	5.7	3.8	153	12.4	0
December	0.73	5.9	3.8	155	9.3	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)
26-Dec-2017 01:00	2.76	7.7	5.2	179	~-0.42	HW -3	3.35	0.00	0.00
27-Dec-2017 02:00	2.57	7.7	5.3	181	~0.38	HW -3	3.50	~0.20	~0.45
10-Dec-2017 09:30	2.46	7.1	5.3	179	~-1.22	HW +6	4.30	~0.40	~0.50
23-Nov-2017 05:30	2.34	6.3	4.7	177	-0.45	HW +4	4.35	0.00	0.04
29-Jan-2017 23:30	2.30	6.7	4.8	186	2.90	HW	5.72	0.11	0.27

* Tidal information is obtained from 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.

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
2016	3.18	2.23	1.86	1.65	1.33	1.04	20-Nov-2016 08:30	3.92
2017	2.35	2.01	1.80	1.55	1.22	0.97	26-Dec-2017 01:00	2.76

** 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.

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 records and are calculated for periods up to 10 times the record length using a peaks-over-threshold method and Weibull distribution.

Observation period	July 2003 to June 2017	
Return period (years)	Significant wave height (m)	Comments
0.25	2.67	No depth limitation
1	3.16	
2	3.39	
5	3.67	Depth-limited at MLWS
10	3.88	
20	4.08	
50	4.33	
100	4.52	

Distribution plots

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

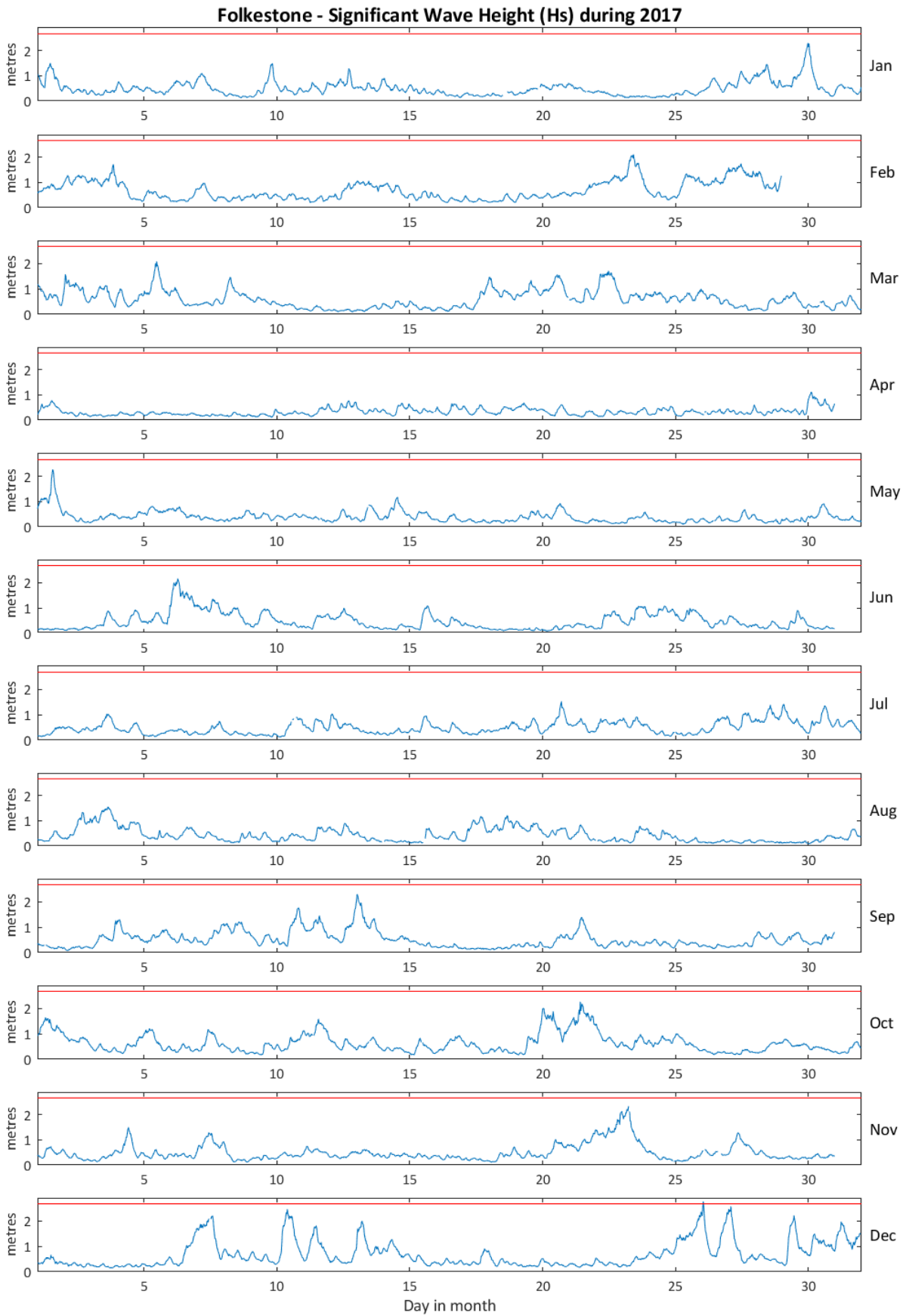
- Annual time series of H_s (red line is 2.67 m storm alert threshold)
- Incidence of storm waves for 2017. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Wave height exceedance each year since deployment
- Percentage of occurrence of H_s , T_p , T_z and Direction for 2017
- Wave rose (percentage of occurrence of direction vs H_s) for all measured data
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

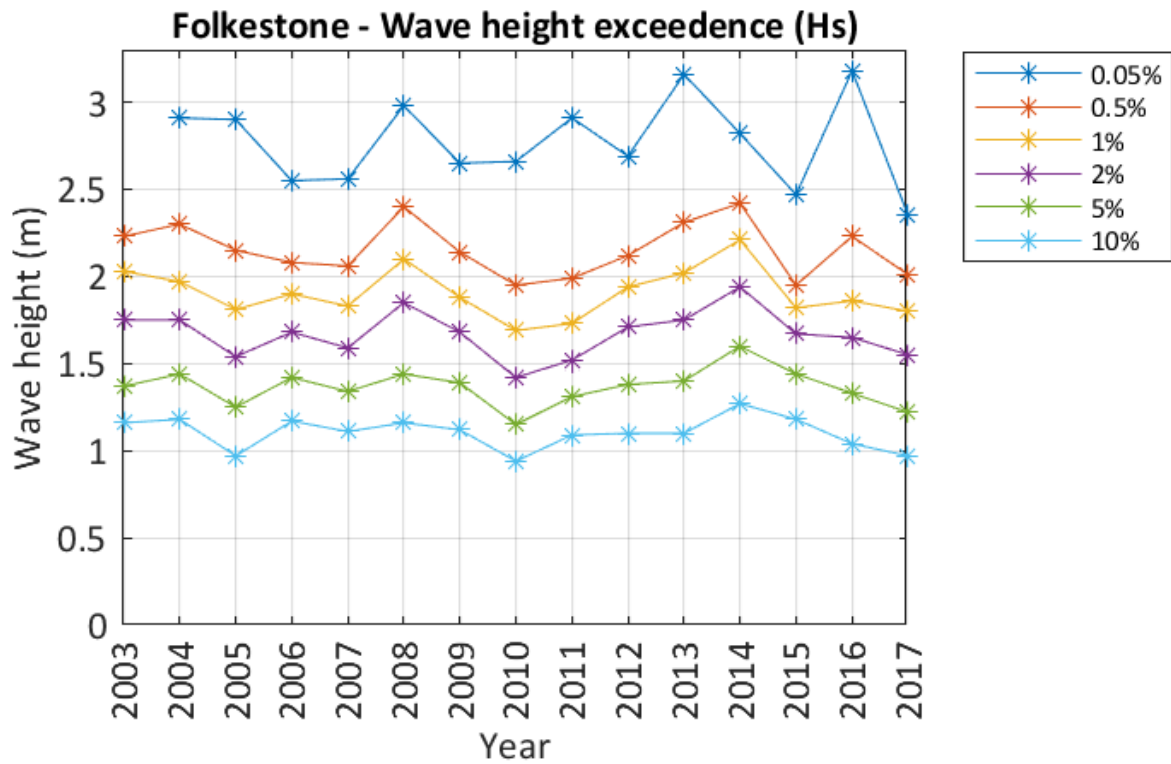
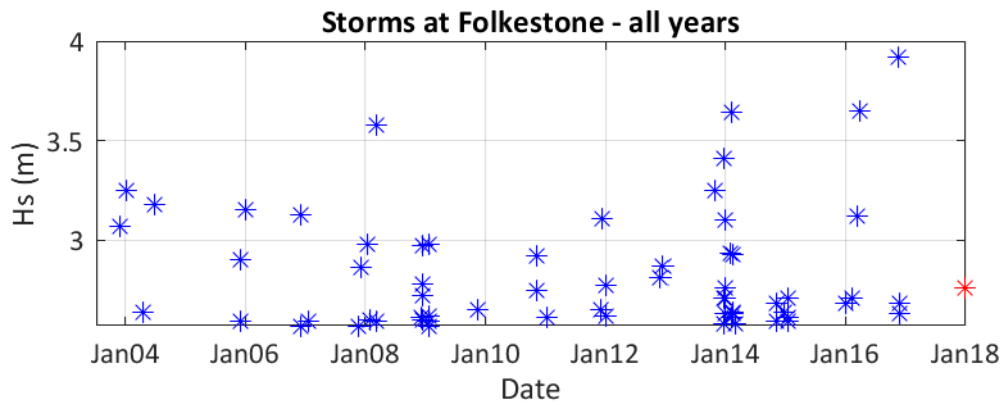
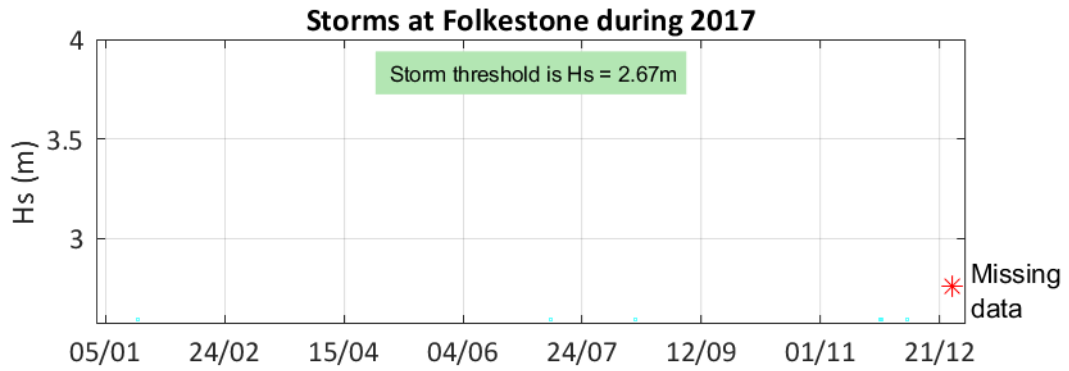
General

The buoy, owned by Canterbury City Council, 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.

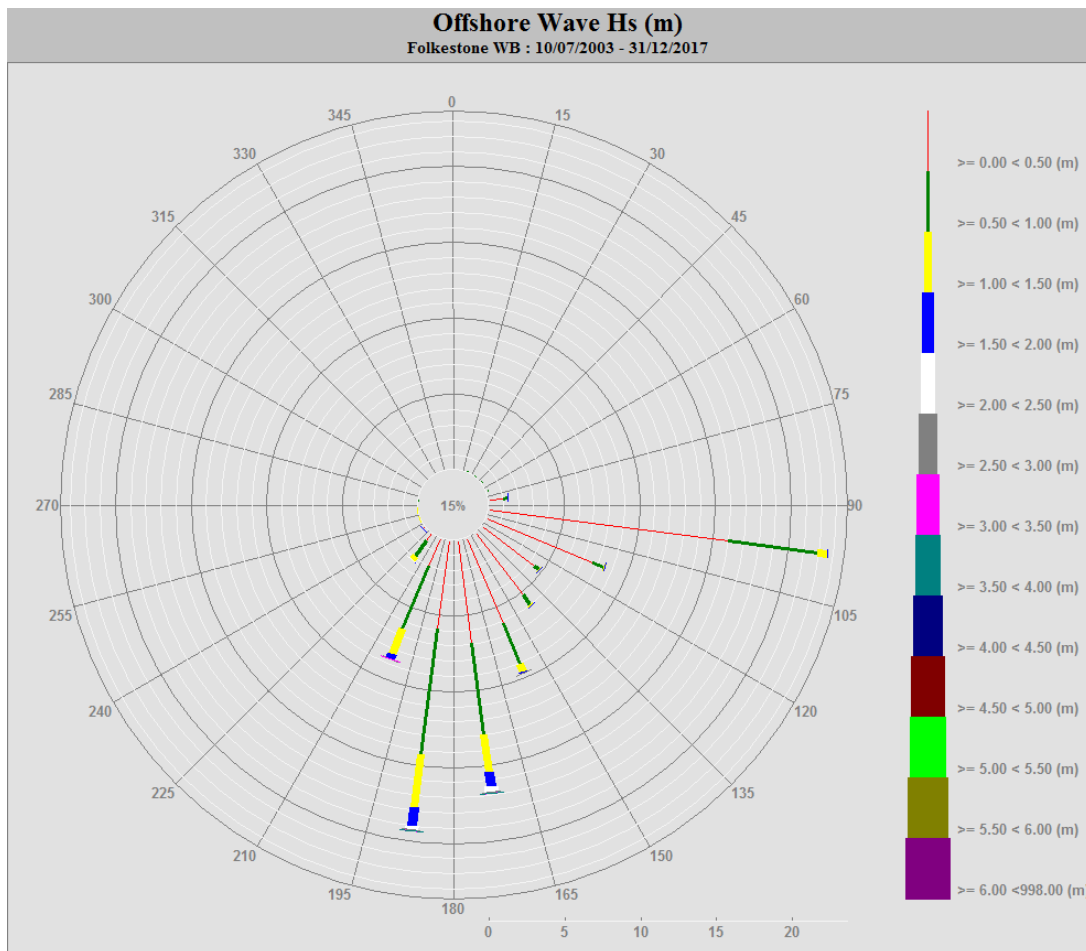
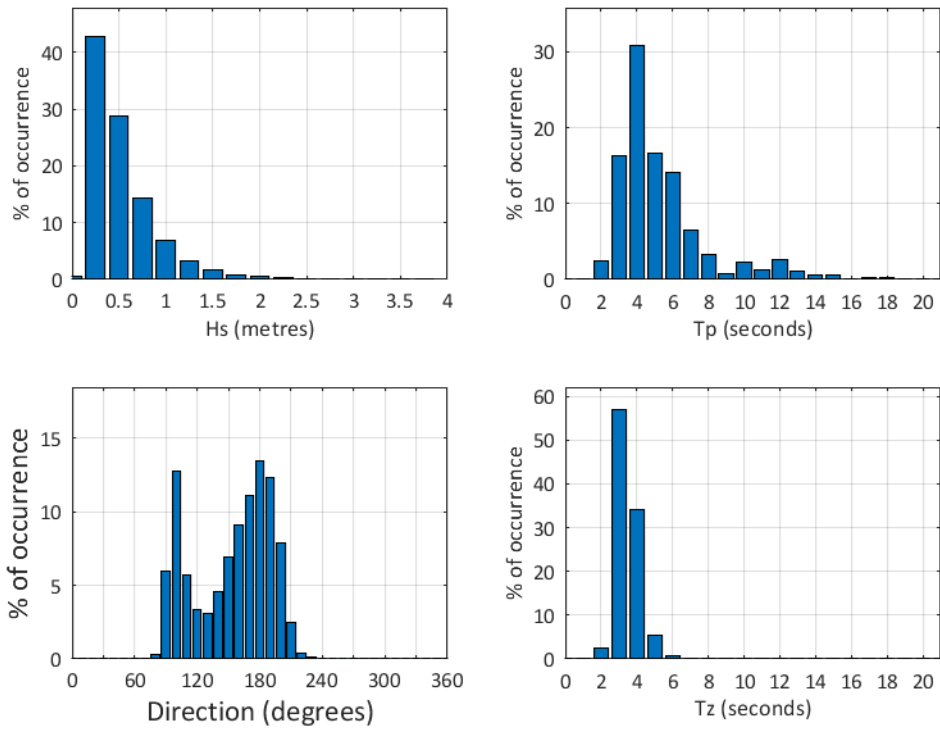
Acknowledgements

Tidal data at Dover were provided by the British Oceanographic Data Centre from the UK national tide gauge network, owned and operated by the Environment Agency.





Folkestone 2017



Folkestone 2003 to 2017 - Joint distribution (% of occurrence)

