



Newbiggin Directional Waverider Buoy

Location			
OS	433325 E 587994 N		
WGS84	Latitude: 55° 11.11' N Longitude: 01° 28.69' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~18m CD	Buoy in situ off Newbiggin-by-the-Sea. Photo courtesy of Fugro GB Marine Limited	Location of buoy (Google mapping, image ©2016 Getmapping plc)

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	1.06	9.6	5.1	72	7.3	4	31
February	1.44	8.1	4.9	84	6.9	4	28
March	0.86	9.3	5.0	69	7.0	11	31
April	0.84	7.9	4.8	66	7.9	3	30
May	0.92	6.6	4.4	77	9.6	1	31
June	0.68	6.7	4.2	86	11.2	4	30
July	0.65	5.8	4.1	86	12.7	0	31
August	0.57	6.7	4.1	81	13.1	2	31
September	0.81	6.4	4.2	78	12.9	1	30
October	0.86	8.0	4.6	80	12.1	2	31
November	1.11	9.7	5.5	58	9.9	7	30
December	1.09	10.2	5.4	59	7.5	8	31

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)
13-Jan-2017 16:30	4.45	12.5	8.9	44	3.02	HW +1	5.14	0.38	0.45
12-Feb-2017 16:30	4.20	10.0	6.9	84	2.55	HW	4.95	0.00	0.00
04-Jan-2017 15:00	3.66	11.8	7.5	44	-0.38	HW +2	3.00	0.07	0.19
08-Feb-2017 01:00	3.49	10.0	7.1	73	1.69	HW	3.26	0.00	0.00
30-Nov-2017 19:30	3.42	10.5	6.6	39	~-0.80	HW -6	3.00	~0.10	~0.10

* Tidal information is obtained from the National Network gauge at North Shields and/or estimated from the predicted tide levels (Admiralty Total Tide). 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)
2013	-	3.26	3.04	2.71	2.27	1.88	10-Oct-2013 18:30	4.15
2014	3.76	3.27	3.01	2.73	2.24	1.86	19-Jan-2014 20:00	4.22
2015	3.90	2.90	2.66	2.37	1.97	1.61	21-Nov-2015 04:30	4.74
2016	5.04	4.47	3.97	3.08	2.22	1.82	03-Jan-2016 10:30	5.46
2017	4.00	3.40	3.07	2.80	2.35	1.87	13-Jan-2017 16:30	4.45

** i.e. 5 % of the H_s values measured in 2013 exceeded 2.27 m

Distribution plots

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

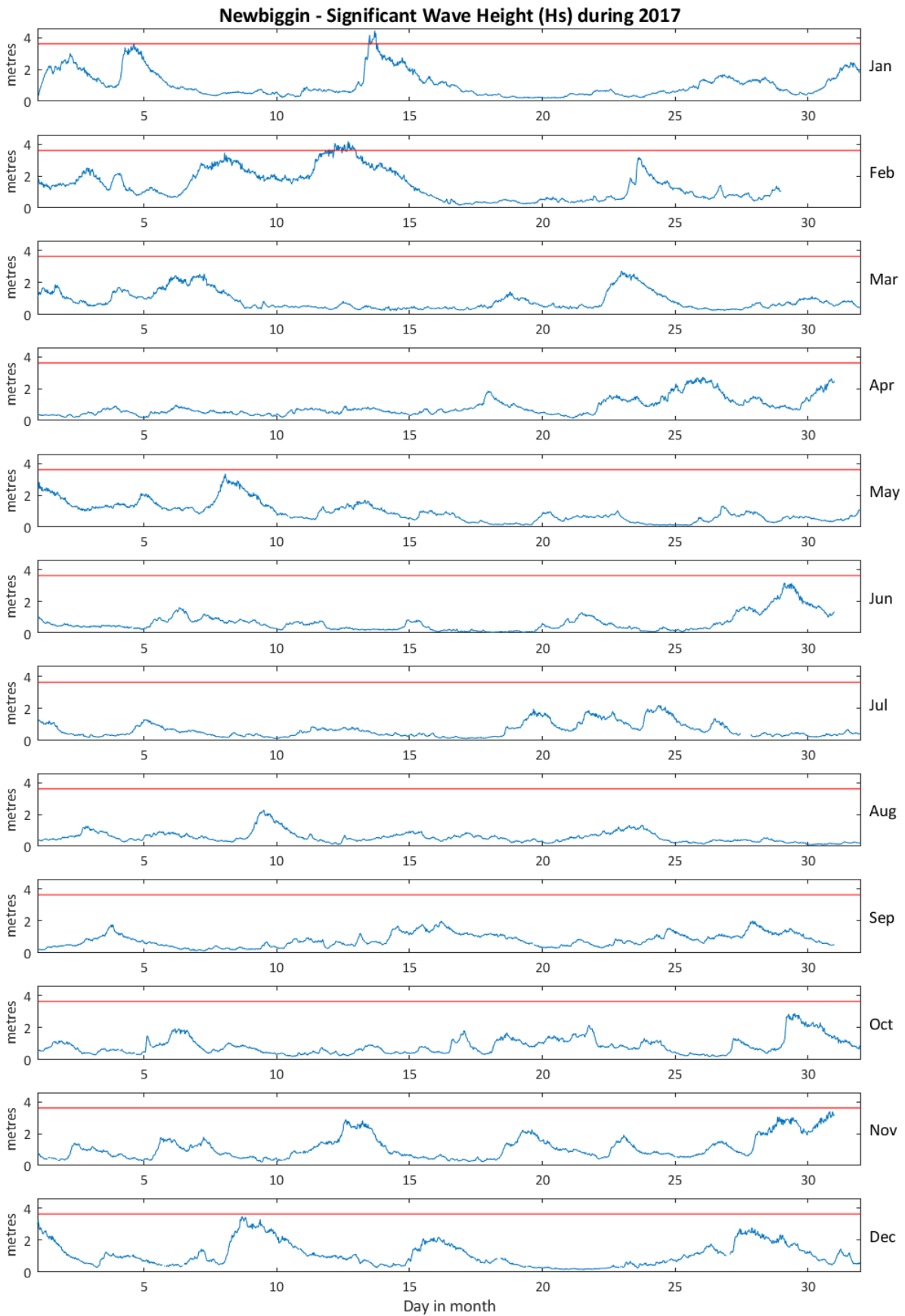
- Annual time series of H_s (red line is 3.63 m storm alert threshold)
- Incidence of storm waves for 2017. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Wave height exceedance each year since deployment
- Percentage of occurrence of H_s, 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

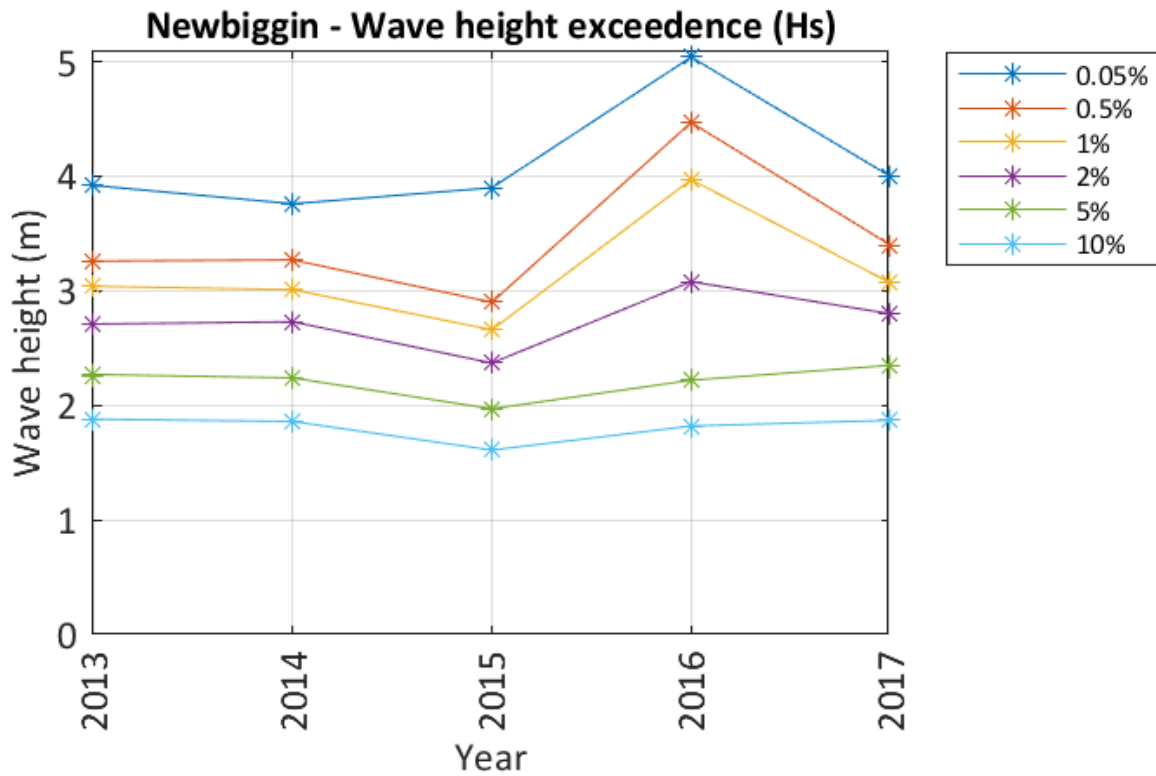
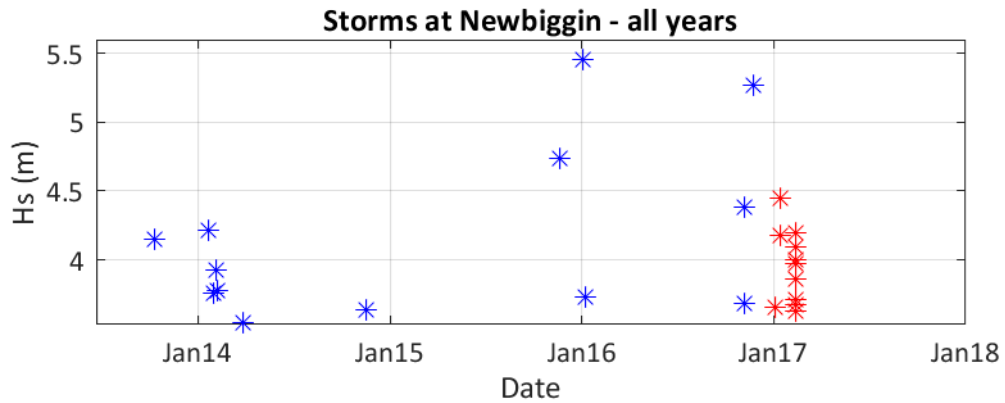
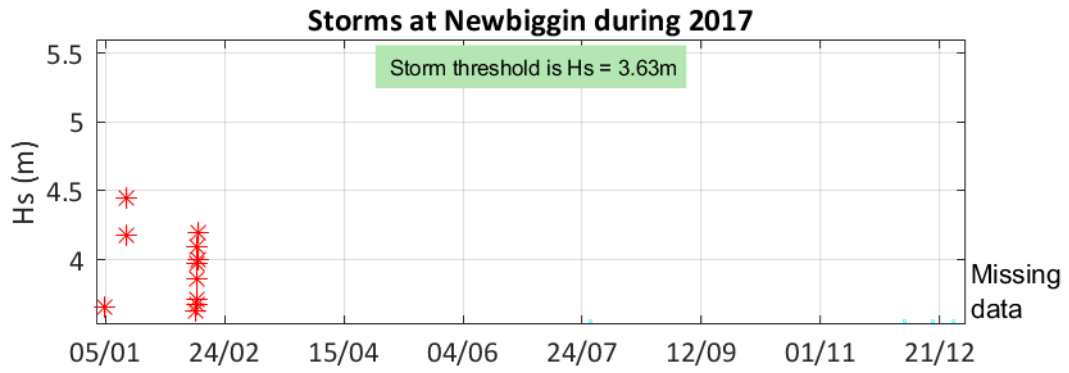
General

The buoy, owned by Scarborough Borough Council, was deployed on 21 June 2013, at which time the magnetic declination at the site was 2.2° west, changing by 0.18° east per year. A DWR had previously been deployed at this location from 20 May 2010 to 04 February 2011.

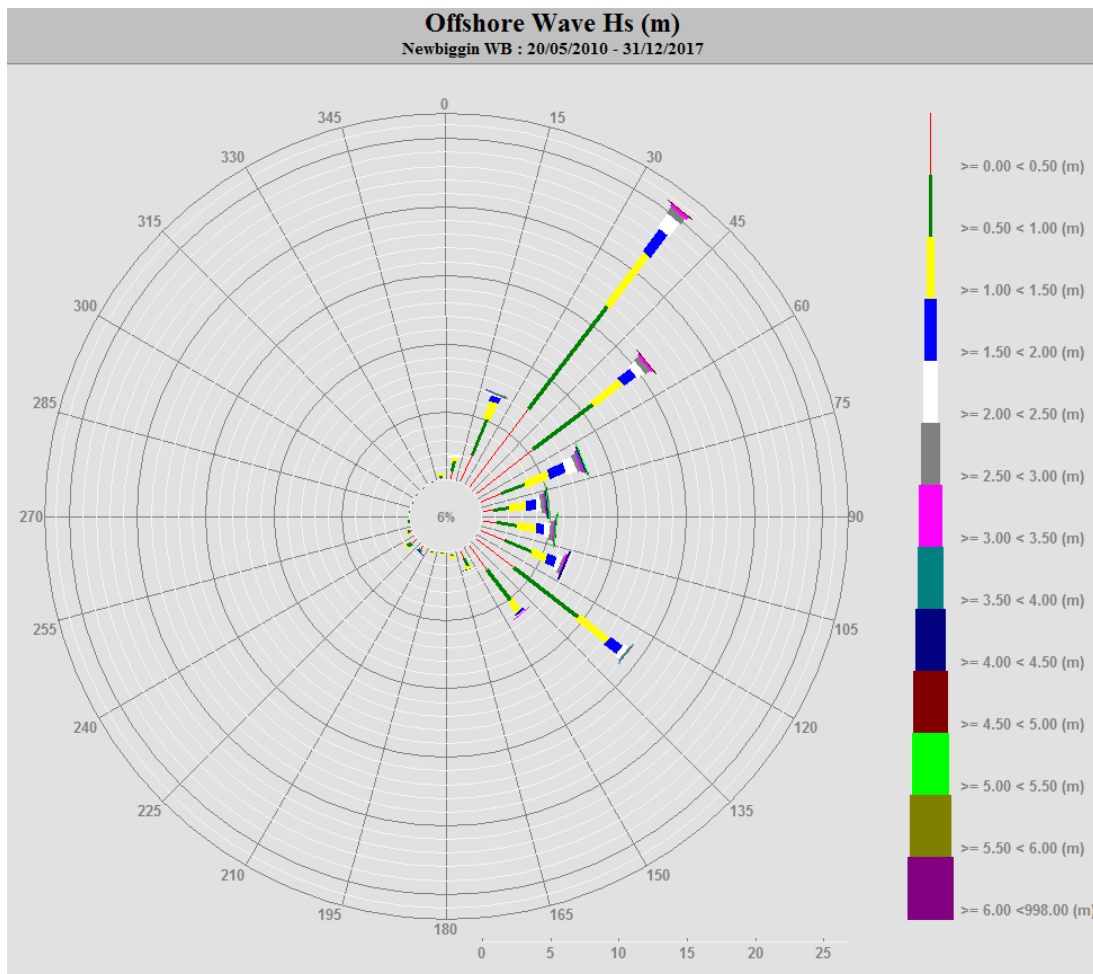
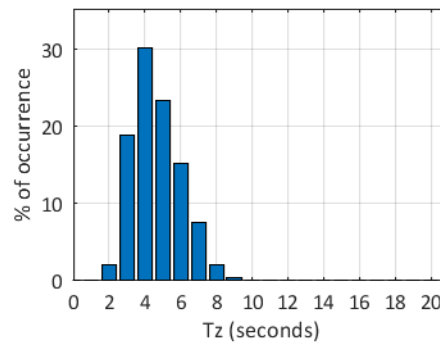
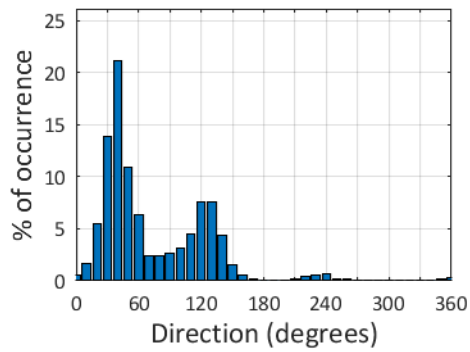
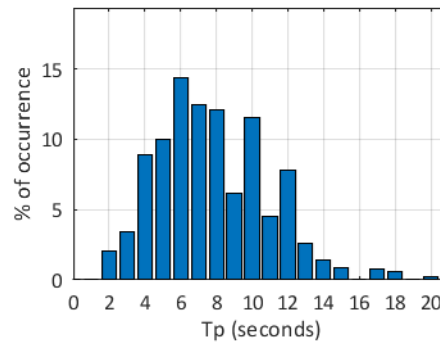
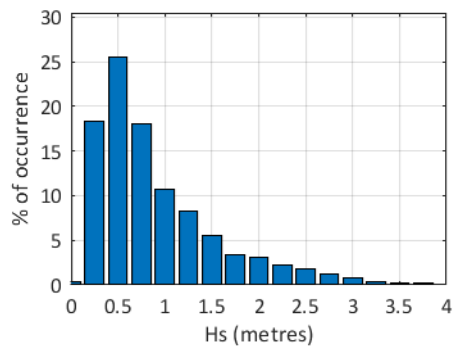
Acknowledgements

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





Newbiggin 2017



Newbiggin 2013 to 2017 - Joint distribution (% of occurrence)

