



New Brighton Directional Waverider Buoy

| | | | |
|--|---|--|---|
| Location | |  |  |
| OS | 331389 E 394507 N | | |
| WGS84 | Latitude: 53° 26.57' N Longitude: 03° 02.06' W | | |
| Instrument type | | | |
| Datawell Directional Waverider Mk III | | | |
| Water depth | ~5m CD | Buoy in situ off New Brighton. Photo courtesy of Fugro EMU Limited | Location of buoy (Google mapping) |

Data Quality

| Recovery rate (%) | Sample interval |
|-------------------|-----------------|
| 99 | 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 | 0.39 | 4.6 | 3.5 | 167 | 5.8 | 31 |
| February | 0.25 | 4.0 | 3.2 | 176 | 4.5 | 28 |
| March | 0.27 | 4.1 | 3.2 | 163 | 6.3 | 31 |
| April | 0.20 | 4.2 | 3.0 | 173 | 9.5 | 29 |
| May | 0.29 | 3.9 | 3.1 | 196 | 11.8 | 31 |
| June | 0.23 | 3.7 | 3.0 | 196 | 15.0 | 30 |
| July | 0.25 | 3.8 | 3.1 | 189 | 17.0 | 31 |
| August | 0.20 | 3.7 | 3.0 | 189 | 17.0 | 31 |
| September | 0.22 | 4.1 | 3.1 | 185 | 15.3 | 29 |
| October | 0.18 | 4.1 | 3.1 | 178 | 13.0 | 30 |
| November | 0.38 | 4.2 | 3.4 | 194 | 10.5 | 30 |
| December | 0.30 | 4.3 | 3.4 | 191 | 8.9 | 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) |
|-------------------|--------------------|--------------------|--------------------|----------|-----------------------------|----------------------------|-----------------|------------------|-----------------|
| 29-Nov-2015 15:00 | 1.97 | 10.0 | 6.3 | 10 | 3.89 | HW +1 | 7.7 | 1.23 | 1.31 |
| 10-Jan-2015 15:30 | 1.80 | 9.1 | 5.8 | 359 | 3.22 | HW +1 | 6.9 | 0.41 | 1.38 |
| 13-Nov-2015 12:30 | 1.63 | 7.1 | 5.8 | 349 | 4.34 | HW | 7.2 | 0.34 | 0.81 |
| 14-Nov-2015 00:30 | 1.63 | 6.3 | 5.3 | 339 | 4.28 | HW | 7.4 | 0.29 | 0.81 |
| 16-Nov-2015 02:00 | 1.61 | 7.7 | 5.3 | 339 | 4.35 | HW +1 | 6.7 | 0.81 | 0.97 |

Annual Statistics

| Year | Annual H _s exceedance* (m) | | | | | | Annual Maximum H _s | |
|------|---------------------------------------|------|------|------|------|------|-------------------------------|----------------------|
| | 0.05% | 0.5% | 1% | 2% | 5% | 10% | Date | A _{max} (m) |
| 2014 | - | 1.51 | 1.31 | 1.11 | 0.84 | 0.61 | 24-Dec-2014 13:00 | 1.93 |
| 2015 | 1.63 | 1.27 | 1.12 | 0.97 | 0.75 | 0.57 | 29-Nov-2015 15:00 | 1.97 |

* i.e. 5 % of the H_s values measured in 2014 exceeded 0.84 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 1.6m 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

General

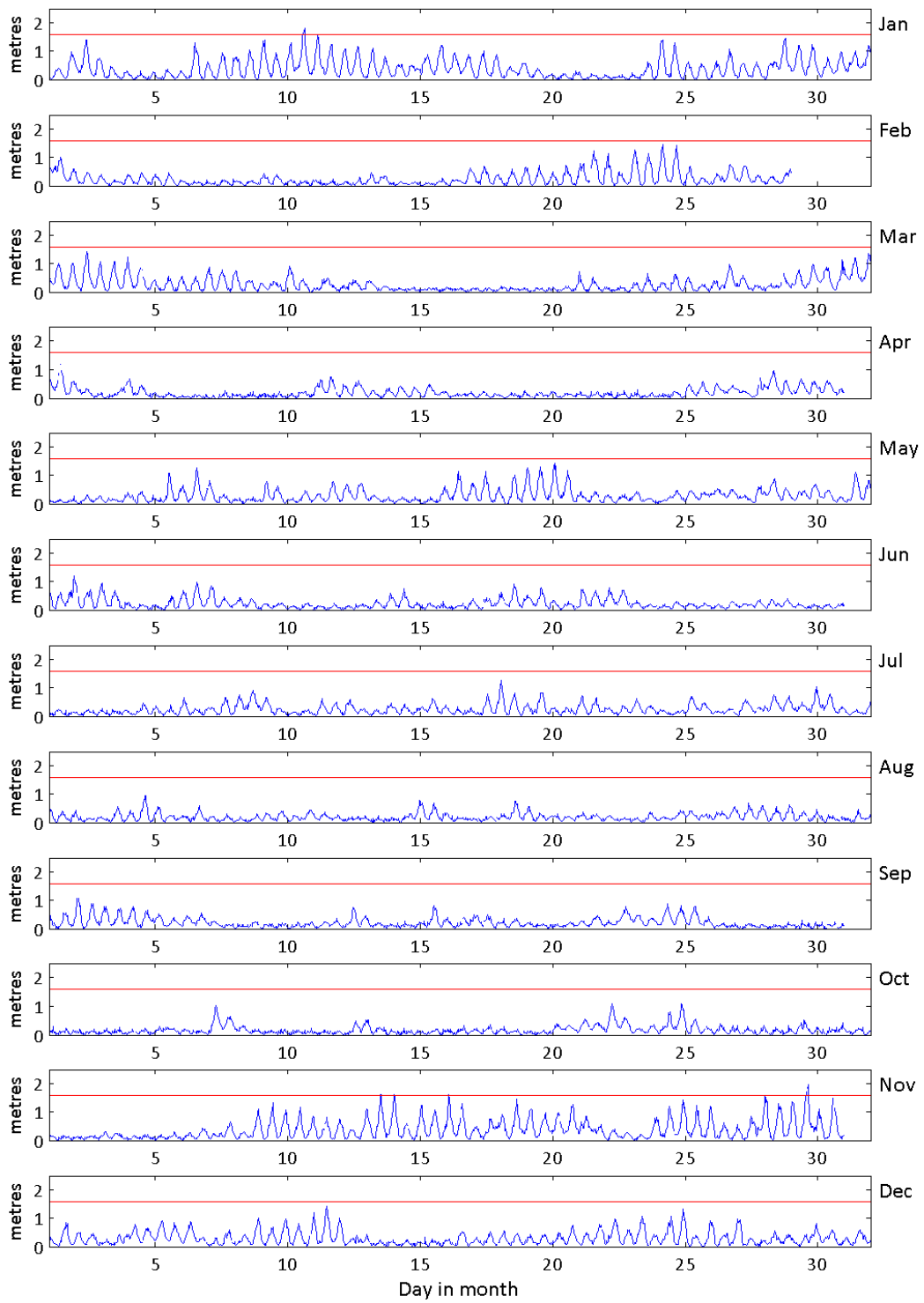
The wave buoy at New Brighton was deployed on 06 August 2014, at which time the magnetic declination at the site was 2.31° west, changing by 0.18° east per year. There is a notable tidal signature to significant wave heights at this location, given the water depth of the buoy (~5m CD) and the spring tidal range (~8.4m).

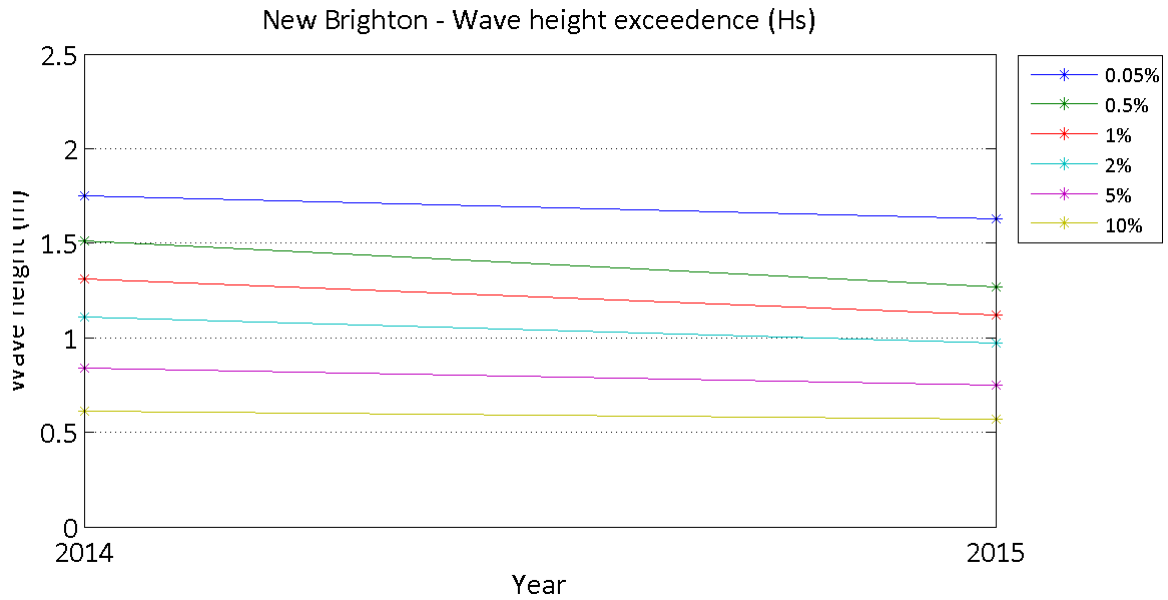
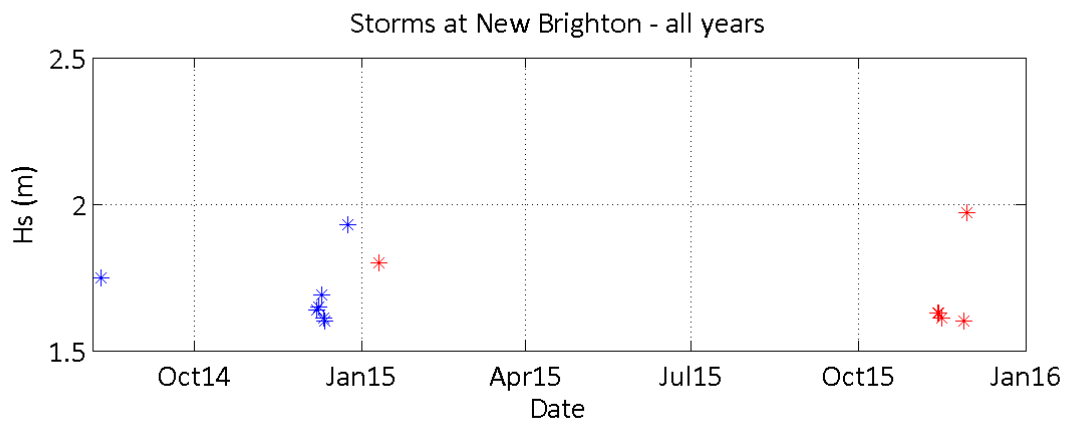
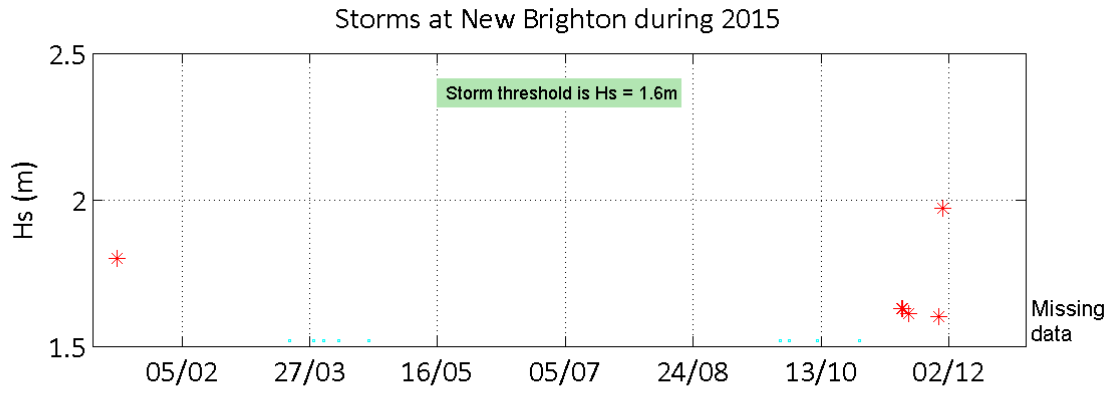
* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Liverpool). The surge shown is the residual at the time of the highest H_s. The maximum tidal surge is the largest positive surge during the storm event.

Acknowledgements

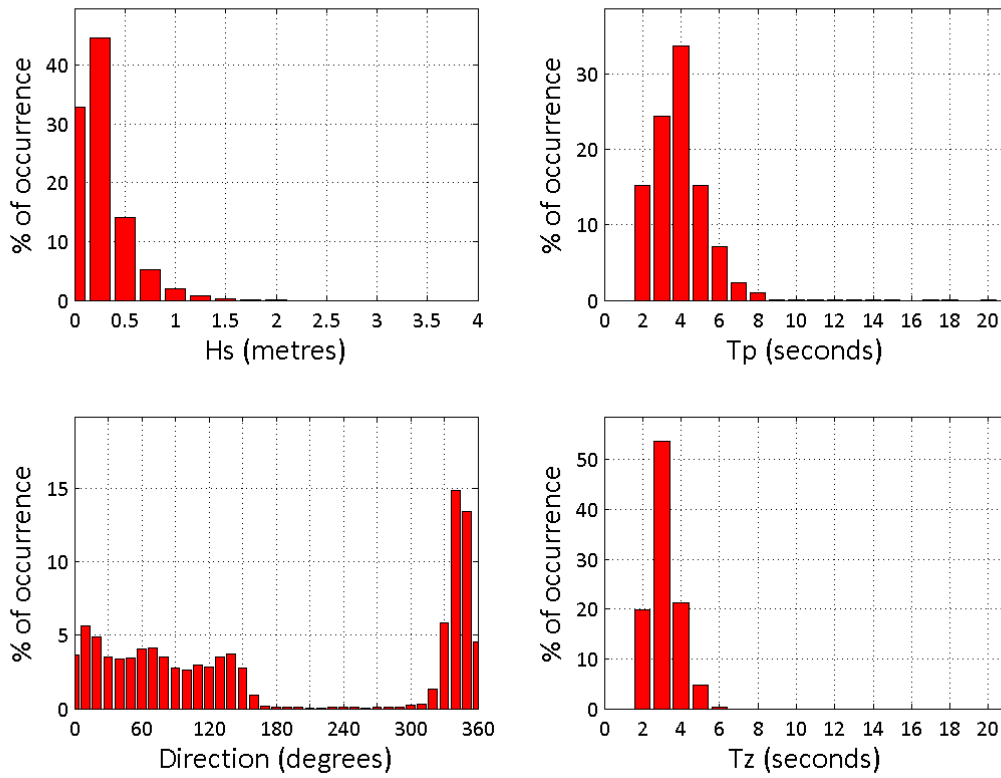
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

New Brighton - Significant Wave Height (Hs) during 2015





New Brighton 2015



New Brighton 2014 to 2015 - Joint distribution (% of occurrence)

