

Sandown Bay Directional WaveRider Buoy

Location

OS: 461654E 83776N
 WGS84: Latitude: 50°39.0240'N Longitude: 01°07.7555'W

Water Depth

10.7m CD

Instrument Type

Datawell Directional WaveRider Buoy Mk III

Data Quality

| C1(%) | Sample interval |
|-------|-----------------|
| 100 | 30 minutes |

Monthly Means

All times GMT

| Month | H _s | T _p | T _z | Direction | SST | No. of days |
|-----------|----------------|----------------|----------------|-----------|------|-------------|
| | (m) | (s) | (s) | (°) | (°C) | |
| January | 0.70 | 6.7 | 4.0 | 173 | 9.6 | 31 |
| February | 0.68 | 7.6 | 4.0 | 164 | 8.4 | 28 |
| March | 0.49 | 7.6 | 4.0 | 162 | 9.1 | 31 |
| April | 0.33 | 5.6 | 3.6 | 140 | 10.8 | 30 |
| May | 0.51 | 5.5 | 3.6 | 165 | 13.3 | 31 |
| June | 0.40 | 5.2 | 3.5 | 164 | 15.8 | 30 |
| July | 0.47 | 5.2 | 3.5 | 179 | 17.1 | 31 |
| August | 0.35 | 4.9 | 3.4 | 157 | 18.2 | 31 |
| September | 0.34 | 4.9 | 3.4 | 160 | 17.7 | 29 |
| October | 0.44 | 5.5 | 3.6 | 149 | 15.4 | 31 |
| November | 0.48 | 5.4 | 3.8 | 165 | 12.6 | 30 |
| December | 0.73 | 6.6 | 4.0 | 159 | 9.6 | 31 |

Tables and plots of these values, together with the minimum and maximum values and the standard deviation are available on the website.

| Highest storm events in 2007 | | | | | | | | | |
|------------------------------|----------------|----------------|----------------|------|-----------------------------|----------------------------|-----------------|------------------|-----------------|
| Date/Time | H _s | T _p | T _z | Dir. | Water level elevation* (OD) | Tidal stage (hours re. HW) | Tidal range (m) | Tidal surge* (m) | Max. surge* (m) |
| 18-Nov-2007 16:00 | 3.22 | 7.7 | 6.0 | 156 | 1.02 | HW -1 | 1.8 | 0.02 | 0.21 |
| 06-Mar-2007 05:00 | 2.74 | 7.7 | 5.8 | 172 | -0.39 | HW +4 | 3.2 | 0.68 | 0.68 |

* Tidal information is obtained from the nearest recording tide gauge (the wave radar at Sandown Pier also provides tidal data). 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.

| Year | Annual H_s exceedance* (m) | | | | | | Annual Maximum H_s (m) | |
|------|------------------------------|------|------|------|------|------|--------------------------|-----------|
| | 0.05% | 0.5% | 1% | 2% | 5% | 10% | Date | A_{max} |
| 2003 | 2.64 | 2.21 | 2.02 | 1.65 | 1.35 | 1.13 | 29-Nov-2003 09:00 | 2.79 |
| 2004 | 2.64 | 2.11 | 1.82 | 1.61 | 1.29 | 0.97 | 08-Jan-2004 10:30 | 3.17 |
| 2005 | 3.23 | 2.15 | 1.69 | 1.44 | 1.11 | 0.86 | 02-Dec-2005 18:00 | 3.79 |
| 2006 | 2.47 | 1.97 | 1.80 | 1.61 | 1.33 | 1.10 | 30-Dec-2006 00:00 | 2.75 |
| 2007 | 3.06 | 1.91 | 1.64 | 1.44 | 1.18 | 0.96 | 18-Nov-2007 16:00 | 3.22 |

* i.e. 5 % of the measured H_s values in 2003 exceeded 1.35m

Distribution plots

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

- Percentage of occurrence of H_s , T_p , T_z and Direction for 2007
- Percentage wave height exceedance (all recorded years) – note that the statistics for 2003 were based on measurements from July to December only
- Joint distribution of all parameters for 2007, given both as number of observations and as percentage of occurrence
- Cumulative joint distribution of parameters from start of records (percentage of occurrence only)
- Incidence of storms during 2007 and for all previous years. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown.
- Annual time series of H_s (red line is storm threshold)

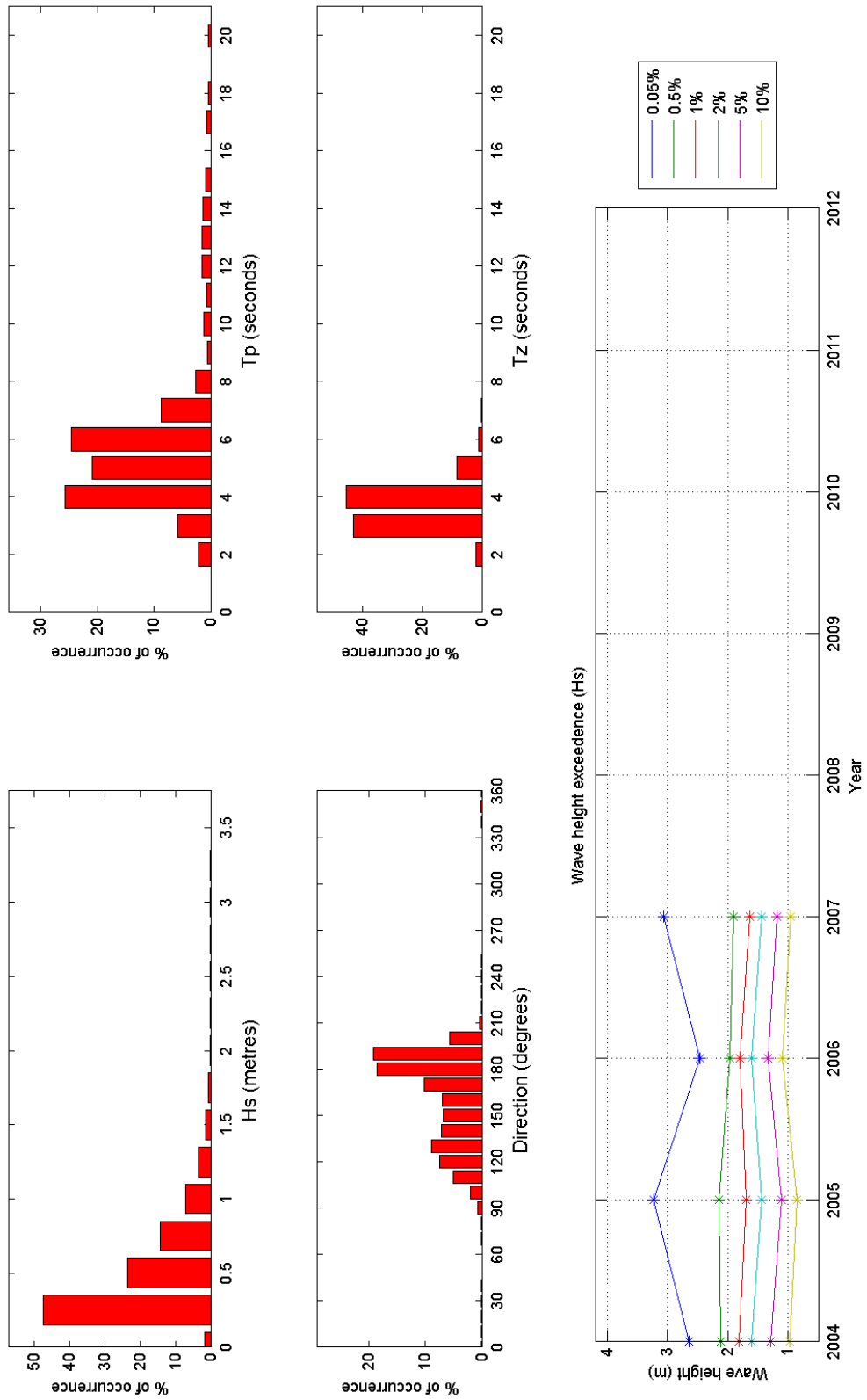
General

The buoy was first deployed on 10 July 2003. The wave directions recorded by the Datawell Directional WaveRider Mk III were found to be contaminated by a significant tidal signature, compounded by the on-board data processing. The buoy received new electronics to fix this problem in February 2004; wave directions measured during before March 2004 were excluded from the analysis.

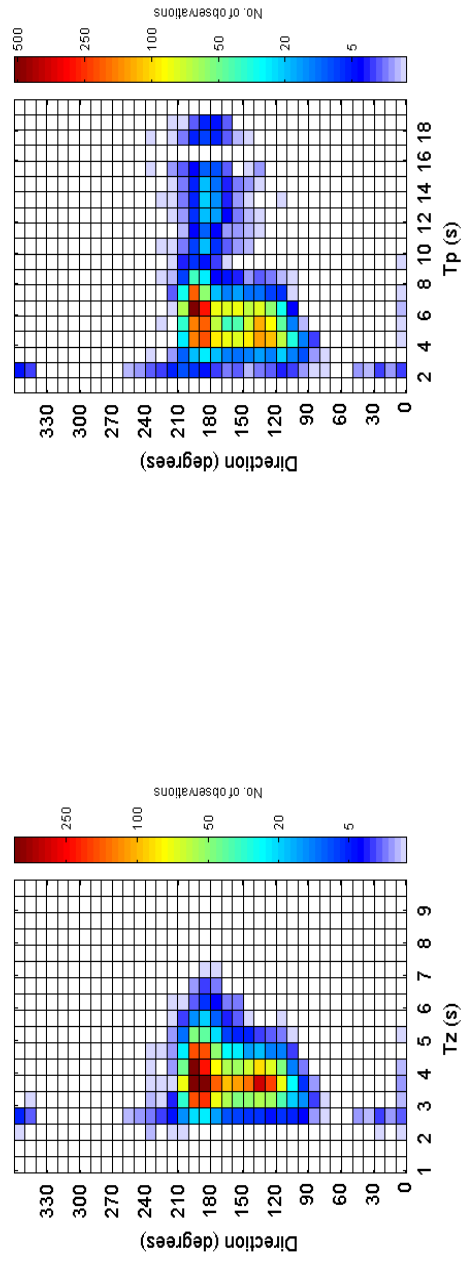
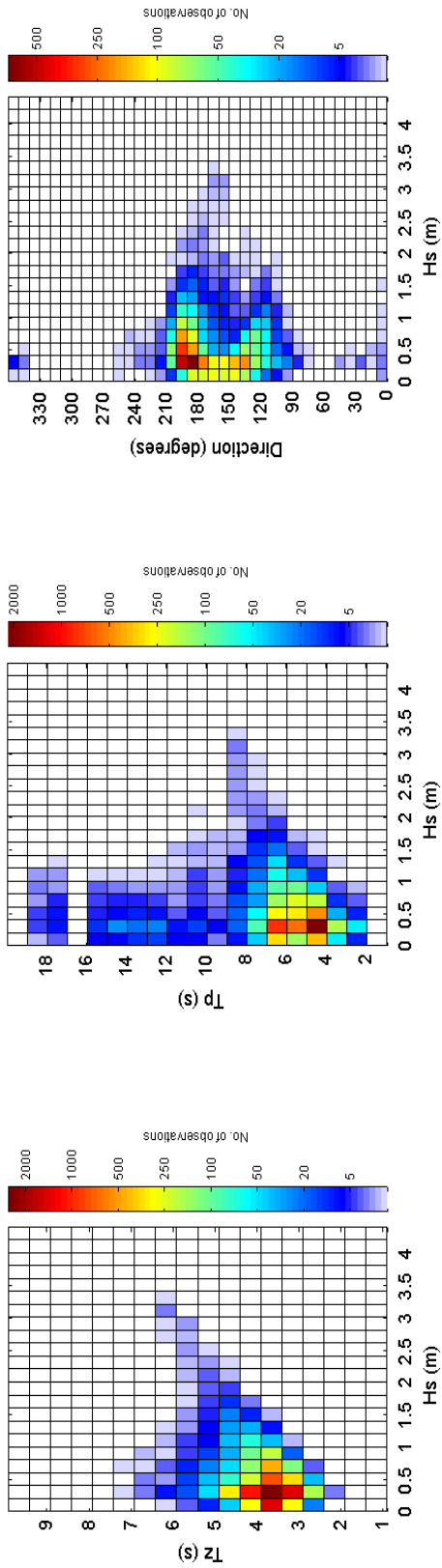
Acknowledgements

TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory.

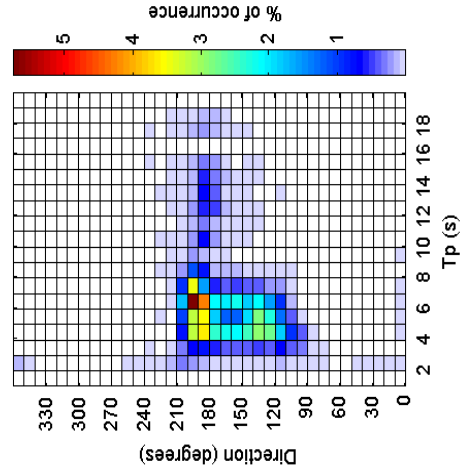
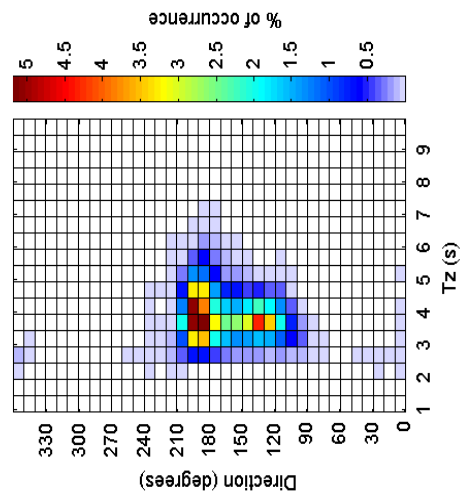
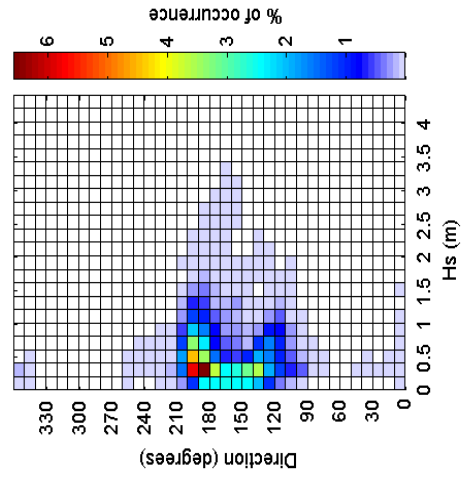
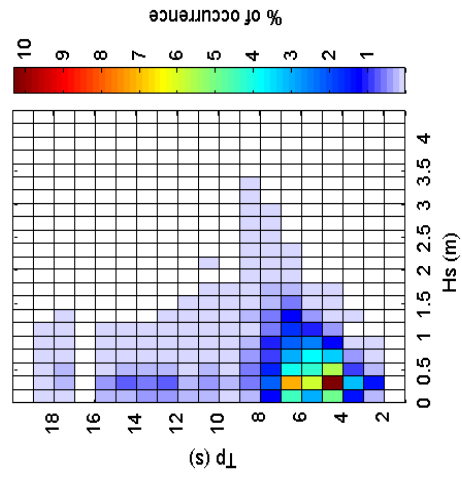
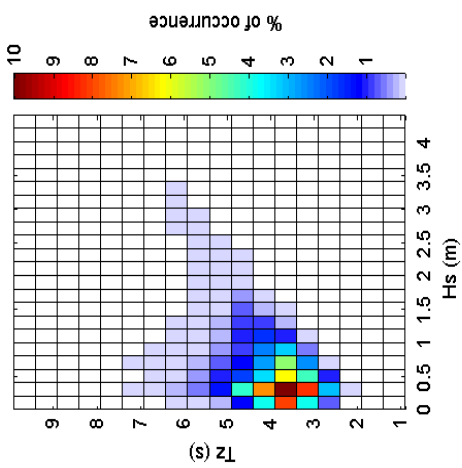
Sandown Bay 2007



Sandown Bay 2007 - Joint distribution



Sandown Bay 2007 - Joint distribution (% of occurrence)



Sandown Bay 2003 to 2007 - Joint distribution (% of occurrence)

