



REPORT ON WAVE DATA

Compiled by Uwe Dornbusch

1 Introduction

The two DOBIE wave recorders described in the Phase 1 report have also been deployed during Phase 2, however, the recorder at Cooden has malfunctioned intermittently and so the data record for this site is rather patchy (see Figure 4). After more than two years deployment at Telscombe this recorder was moved to Cuckmere Haven and has provided useful results over a period of 8 months. The purchase of a MIDAS directional wave recorder in 2006 provided the opportunity to deploy the DOBIE and MIDAS over a few weeks in one location to compare the output and has since provided useful directional data from locations in the intertidal both at Birling Gap and Pevensy bay. As this data is used in Jérôme Curoy's PhD it does not form part of this report.

This report provides only a glimpse of the data which is all available for download from the BAR website at <http://www.geog.sussex.ac.uk/BAR/>.

2 Sites

Sites were chosen in proximity to beach survey work being carried out and at elevations that would allow access not just at the spring tides. The locations at Cooden and Cuckmere were also determined largely by the availability and location of structures to which the DOBIE could be fastened.



Figure 1: **Telscombe**. A hole measuring 30cm x 50cm and 25 cm deep was excavated into the platform which took $x = 539146.931$, $y = 101391.797$ and $z = -1.482$ m OD. The recorder is 39m seawards of the beach toe and 80m seawards of the cliffs backing the beach. The recorder was always submerged in the hole, providing a rather stable pressure when the tide was not covering the recorder. The red arrow shows the location where the MIDAS directional wave recorder was placed.

In April 2006 the recorder was relocated to Cuckmere Haven.



Figure 2: **Cuckmere Haven**. The recorder at Cuckmere Haven was installed upside down on the first suitable groyne pile at the end of the western groyne at Cuckmere Haven. The coordinates are $x=551515.256$, $y=97610.388$, $z=-1.21$ m.



Figure 3: **Cooden Bay**. The coordinates of the pressure transducer opening are $x = 571206.9$, $y = 106370.8$ and $z = -1.397$ m OD. The recorder is secured to the end on the terminal groyne and is ~40m seawards of the beach toe. From November 2005 the recorder was changed from a horizontal position to a vertical position with the pressure sensor at -1.18 m OD. The recorder had always performed poorer than the one at Telscombe and had to receive a new pressure transducer in 2005, though still not working satisfactorily after that.

3 Data

Figure 4 gives an overview over the periods of deployment and the type of data recording (information about the data and settings can be found in the following file <http://www.geog.sussex.ac.uk/BAR/data/meta-dobie.pdf>)

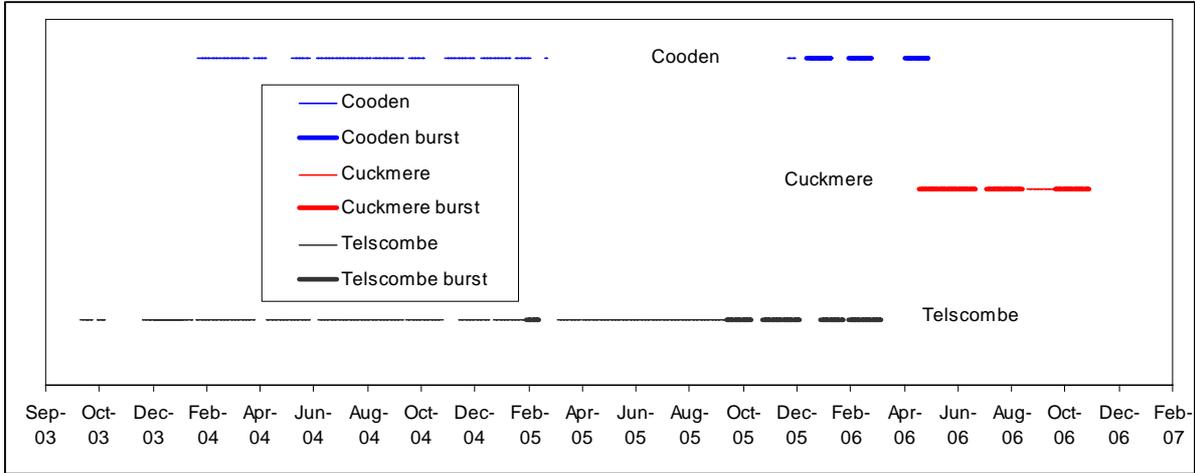


Figure 4: Graph showing data available for the three locations differentiated to the type of recording. For period with bold bars data for each burst exist.

Fortunately, the highest offshore waves during the period of the BAR project were recorded at the beginning of December which were recorded with the DOBIE at Cuckmere Haven. However, as Figure 5 shows, wave heights very similar to those recorded at Cuckmere Haven at the beginning of December have been recorded during several occasions during the deployment. The most likely reason is that during the December storm waves at Rustington came from 210 to 220° which would mean that Seaford Head would afforded some protection to the western beach at Cuckmere Haven

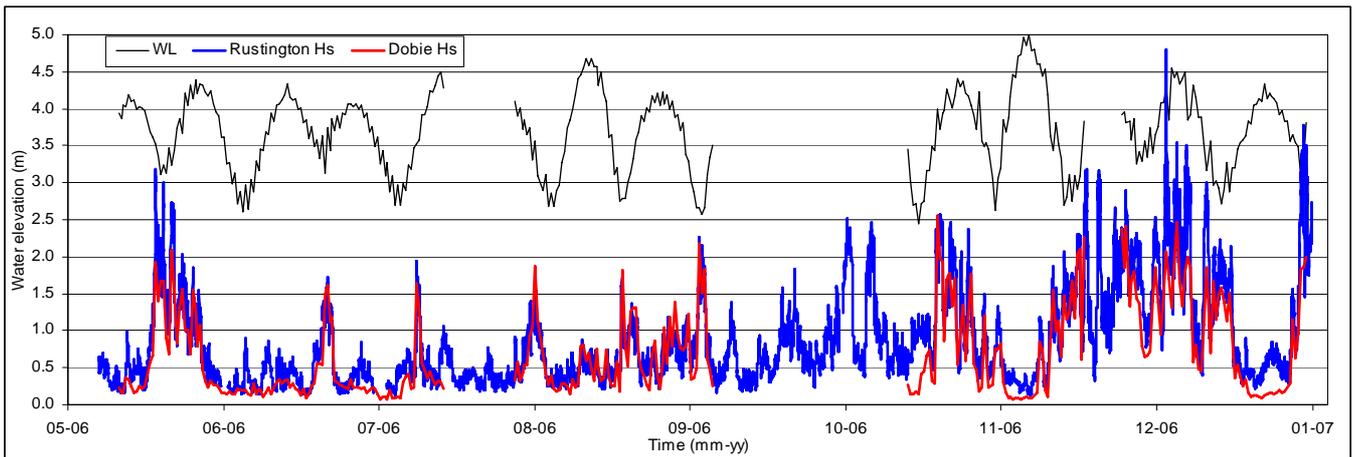


Figure 5: Comparison between Hs at Rustington and Hs measured by the DOBIE at Cuckmere Haven. Water depth above the DOBIE is shown as reference.

Figure 6 and Figure 7 show a comparison of the wave data recorded by both the DOBIE and MIDAS over a six week period around February 2006. For 2044 data point the correlation is only .884 with a standard deviation of almost 0.2m, however, for wave heights >1.3m the correlation is much better. One of the reasons for the relatively poor correlation is likely to be the fact that both recorders did not co-record. Gaining experience with the MIDAS during

these deployments it became apparent that the MIDAS did record before the time it was set for while the DOBIE records after the time it was set for and therefore both recorders did record different waves. Given that during the period of recording of ~8min there are only ~60 to 80 waves recorded this could explain the larger difference. There is also the circumstance that both recorders were located ~10m apart (the MIDAS being more seawards), and to ensure comparable elevations of the pressure transducers, the surface on which the MIDAS was located was ~50cm lower than that of the DOBIE.

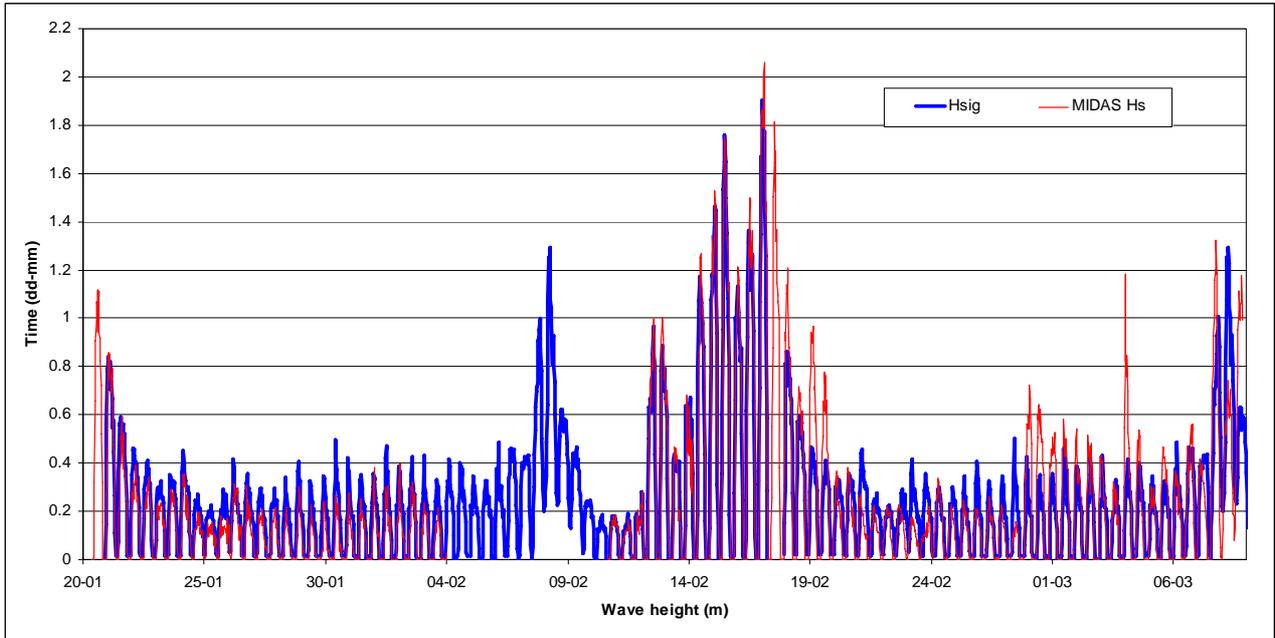


Figure 6: Comparison of wave heights recorded with DOBIE and MIDAS wave recorders at Telscombe in 2006.

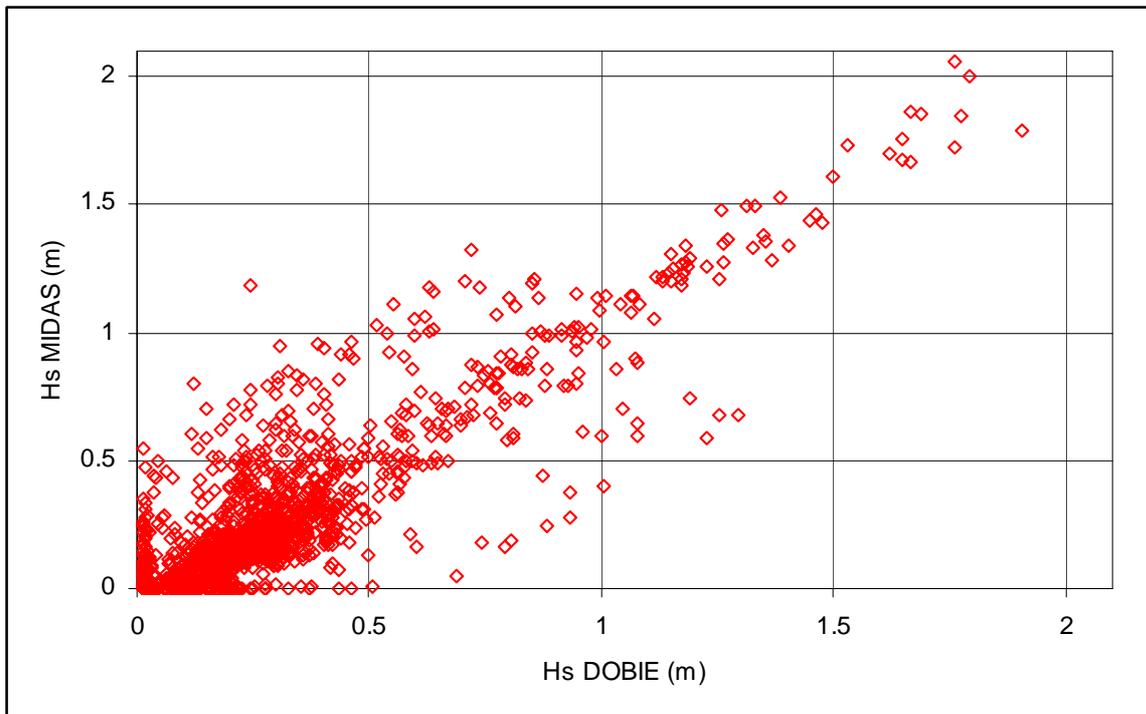


Figure 7: Scatterplot of the wave heights recorded with DOBIE and MIDAS wave recorders at Telscombe in 2006 (see Figure 6).

Dornbusch: Wave data

The DOBIE wave recorders have gone into storage at the end of Phase 2 but the MIDAS will remain to be deployed at Birling Gap or Pevensy.

Uwe Dornbusch, 15-01-2007