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Field measurement of nearshore wave conditions at the Aran Islands, Co. Galway- Winter 2016/2017

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Recent evidence from winter 2013/14 has shown that storm waves are responsible for transporting boulders on the Aran Islands and at other locations in Galway Bay, Ireland [1, 2]. Transportation of boulders and megagravel with masses greater than 50t, and at least one block of mass exceeding 500t, has been recorded at elevations of up to 25m above the high water mark [1]. Boulder transport on this scale would not have been predicted based on the existing wave records. During this period of observation the greatest significant wave height recorded west of the Aran Islands was 13.6m (on 26th January 2014). This measurement was obtained from the M6 weather buoy located over 300km from the study location.

In order to improve our understanding of the nearshore wave climate in this energetic environment, and to further our understanding of boulder transport in this area, a field measurement campaign was undertaken to measure waves incident at Inishmann, the middle Island. Instrumentation during the winter of 2016/17 included the deployment of 3 intertidal DHI Sense pressure sensors sampling continuously at 10Hz, coupled with a tide gauge and atmospheric pressure sensor on Inishmann. These data are also correlated with wave measurements offshore.

This data will further our understanding of nearshore wave climate variability and contribute to the development of wave propagation models for prediction of storm wave impacts on our coastlines.

References

[1] Cox, R. et. al., 2016, Movement of boulders and megagravel by storm waves Vol. 18, EGU2016-10535, 2016 EGU General Assembly 2016

[2] Erdman. et. al., 2015, Origin and Formation of Coastal Boulder Deposits at Galway Bay and the Aran Islands, Western Ireland, Springer International Publishing, 978-3-319-16332-1