



The response and recovery of coastal beach-dune systems to storms

Eugene Farrell, Kevin Lynch, Sinead Wilkes Orozco, and Guillermo Castro Camba
National University Ireland Galway, Geography, Galway, Ireland (eugene.farrell@nuigalway.ie)

This two year field monitoring project examines the response and recovery of a coastal beach-dune system in the west coast of Ireland (The Maharees, Co. Kerry) to storms. Historic analyses were completed using maps, aerial photography, and DGPS surveys with the Digital Shoreline Analysis System. The results establish that the average shoreline recession along the 1.2 km site is 72 m during the past 115 years. The coastal monitoring experiment aims to link micro-scale aeolian processes and meso-scale beach-dune behaviour to identify and quantify sediment exchange between the beach and dune under different meteorological and hydrodynamic conditions. Geomorphological changes on the beach and near-shore bar migration were monitored using repeated monthly DGPS surveys and drone technology. Topographical data were correlated with atmospheric data obtained from a locally installed Campbell Scientific automatic weather station, oceanographic data from secondary sources, and photogrammetry using a camera installed at the site collecting pictures every 10 minutes during daylight hours. Changes in surface elevation on the top of the foredune caused by aeolian processes are measured using erosion pin transects. The preliminary results illustrate that natural beach building processes initiate system recovery post storms including elevated foreshores and backshores and nearshore sand bar migration across the entire 1.2 km stretch of coastline. In parallel with the scientific work, the local community have mobilized and are working closely with the lead scientists to implement short term coastal management strategies such as signage, information booklets, sand trap fencing, walkways, wooden revetments, dune planting in order to support the end goal of obtaining financial support from government for a larger, long term coastal protection plan.