

# Rates, patterns and processes of rock breakdown on the west coast of Ireland

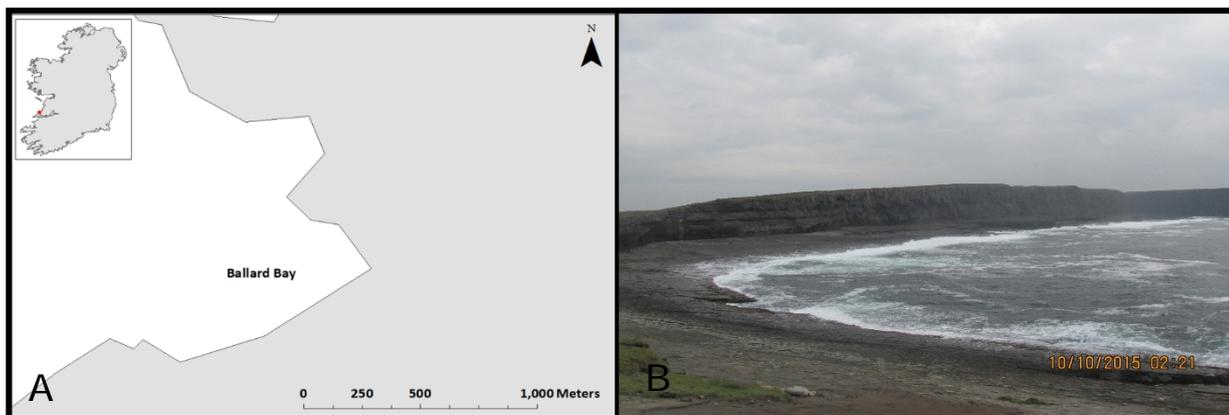
Cullen, N\* and Bourke, M

Earth and Planetary Surface Processes Group, Department of Geography, Trinity College Dublin, Ireland. [cullenni@tcd.ie](mailto:cullenni@tcd.ie)

**Project Rationale:** The impacts of climate change on coastal recession (style and rates) require data on the rates of coastal retreat. However, we lack long term records of rock coast erosion against which future change can be compared (Lim, 2014). Contrary to traditional views, rock cliffs may be far from 'resilient' since they have limited capacity for dynamic response to climate change pressures (Naylor et al., 2010). Previous research on rocky shorelines has tended to focus on either the cliff or the platform, despite acknowledgement that these two important components of rocky shorelines are inextricably linked. The relative efficacy of rock breakdown processes and their interactions across different scales remains poorly understood, while the response of rock coasts to climate change remains largely unknown (Naylor et al., 2014).

The BSG PG Research Grant was used to purchase of a Transverse Micro Erosion Meter (TMEM) which will be used to measure the short term rates of vertical erosion on the shore platform. These data will form an integral part of a larger research project that seeks to provide empirical data on rates and styles of rock breakdown on Ireland's coastline. The work will permit a more robust assessment of the potential impacts of climate change, either by extreme storm events and/or gradual rock breakdown processes.

**Methodology:** To measure short term rates of microscale vertical erosion on the shore platform, 28 TMEM stations have been installed in transects across and down the shore platform, with a further 15 stations proposed. Station locations were chosen to capture variations in platform morphology, lithology, biological cover and position relative to the tidal frame. Baseline measurements have been collected and repeat surveys will be carried out on a seasonal basis for the duration of the project to capture temporal (seasonal) variability in rates of vertical erosion. These data will be assessed in relation to other measurements of cliff and platform erosion (collected using Terrestrial Laser Scanning and Structure from Motion Photogrammetry) to determine the rates and dominant scale of erosion at the study site.



**Figure 1. A)** Location of the study site at Ballard Bay, Co. Clare on the west coast of Ireland; **B)** Looking south east at the study site in Ballard Bay, Co. Clare. The platform is approximately 800m long and 100m at its widest point. Cliff is approximately 30m at the highest point. Cliff and platform lithology is comprised of upward coarsening sequences of mudstones, siltstones and sandstones.

## References

- LIM, M. 2014. The rock coast of the British Isles: cliffs. *Geological Society, London, Memoirs*, 40, 19-38.
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