Sea level Rise and Ireland

- Ireland’s complex coastline shelters coastal communities, with population centres in Cork Harbour, and Galway Bay.
- Key infrastructure such as roads and ports/docks are built along shorelines in many places.
- Existing defences and currently safe areas are at risk of storm surge and storm waves with increased sea level.
- Understanding regional dynamics of sea-level change is essential to inform adaptation planning and action.

Irish stakeholders can now position themselves to harness new coastal sea level products

**Baltic SEAL Project**

Using the Baltic Sea (with low tide signal) as a testbed to:
- Exploit high-frequency multi-mission altimetry observations (LRM & SAR);
- Advance data retrieval very close to coasts (~ 3 km);
- Improve and update our understanding of mean sea level in the entire Baltic Sea, in the vicinity of jagged coastlines and sea-ice;
- Provide various timeframe datasets, extending as far as 25 years, with monthly triangulated meshes, high-temporal resolution grids, and validated with tide gauge data.

**Research Approach**

![Flowchart](image)

Re-tracking and validating will produce a series of inter-related sea-level products, and knowledge about (i) multi-mission calibration, (ii) classification approaches, (iii) regionally-tailored geophysical corrections, and (iv) harmonising trans-national gauge datasets.

**Global Sea Level Products: ESA-CCI**

- Global mean sea level products are available.
- Initiatives are currently examining products to assess changes closer to coasts – e.g. Marti et al. (2019).
- Altimetry measurements need to be re-processed to maximise the information yield closer to the coast.
- Coastal Altimetry studies are constantly improving the possible information yield.

**Lessons will be learned from extracting coastal sea level measurements for coastal areas along the low-tide Baltic Sea. These can be examined in the context of complex coastlines with a greater tidal influence, such as along Ireland’s west coast.**

**Charting a course beyond Baltic SEAL**

- It is essential to ensure the lessons learned and best practice approaches (i) integrate with global initiatives, and (ii) can be tailored to other regions.
- ESA Baltic SEAL is road-mapping the way forward for its research discoveries.

**Join the conversation**

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