



## **Shallow water ocean tides observed by ICESat altimeter**

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Thanks to the launch of Topex-Poseidon satellite in August 1992, and its follow mission Jason-1 in December 2001, ocean tidal modelling experienced a tremendous improvement over the last decade. However because of the large radar footprint on the ocean surface, as well as the large distance between tracks, they do not allow the observations of small wavelength tidal variations on shallow water areas. The precise knowledge of tidal sea height variations over the main continental shelves is now required for precise geodetic corrections, and, for example, for new gravity satellite missions.

One way to improve tidal modelling on shallow water areas is to use tide gauge observations; however there are mainly available along the coasts where very local effects can occur, and only over few regions (Western Europe, Japan, etc.). A way to recover tidal observations over shallow water regions on a global scale is to use ICESat sea height observations; the size of the laser footprint is typically one order of magnitude smaller than T/P or Jason radar footprint, and because of the smaller sampling between tracks. Due to the lack of both temporal sampling and length of the ICESat observations, it is not possible to perform a tidal analysis of observed sea surface height, as it is classically done with T/P or Jason.

One viable approach is to directly compare the observed sea height variations with sea height variations computed from various ocean tidal models. We choose to analyse and present here the first results over the North-Western European shelf, mainly because of the availability of tide gauge data as well as the large number of different models to test.