



## **Assessing GOCE Gravity Models using Altimetry and In-situ Ocean Current Observation**

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The Gravity and steady state Ocean Circulation Explorer (GOCE) satellite mission measures Earth's gravity field with an unprecedented accuracy at short spatial scales. Previous results have demonstrated a significant advance in our ability to determine the ocean's general circulation. The improved gravity models provided by the GOCE mission have enhanced the resolution and sharpened the boundaries of those features and the associated geostrophic surface currents reveal improvements for all of the ocean's current systems.

In this study, a series of 23 newer gravity models including observations from GOCE are combined with the DTU13MSS mean sea surface to derive models for the Mean Dynamic Topography (MDT). The series of GOCE based MDT models are compared in regional analyses to identify differences and to quantify quality measures associated with the models. By using Fourier techniques the spectral characteristics are obtained as well as their anisotropic patterns.

Then, regional analyses are carried out using in-situ observations of the geostrophic surface currents. This is done to analyse correlations and to derive resolution capacities of the MDT models. Also this information is used as quantified quality measures associated with the 23 GOCE gravity models.