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Mean dynamic topography from integration of gravimetry and mean sea surface heights

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Mean dynamic topography (MDT) and its error field is computed from gravity data, mean sea surface heights (MSSH) and their associated errors in the Fram Strait between Svalbard and Greenland (i.e. the OCTAS region). The estimation technique least squares collocation (LSC) is used to combine the different data streams. The computed MDT is then compared with existing oceanographic MDT models in the area. The independent MDT from the combination technique shows similar features as the oceanographic models. The computed MDT also yields reliable smaller scale features than seen in the oceanographic models. Subsequently, geoid residuals and error fields are computed. In the calculation of e.g. the NKG geoid, mean sea surface heights have been transformed to pseudo-gravity anomalies to fill in gaps in the sea surface gravity distribution. The MDT gravity anomalies are then assumed to be zero. We have used the mean sea surface heights directly and accounted for MDT in the geoid determination.