



## **Error covariance estimates in the Arctic Ocean**

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For the combination of geoid solutions which are the result of using different kinds of data or methods, or for the assimilation of new results in already existed solutions (such as gravimetric geoid solutions), error covariance estimates are necessary in order to obtain a proper weighting of the different data types and to achieve a realistic error propagation. In the Arctic Ocean a combination of an improved gravimetric geoid, Mean Sea Surface (MSS) determination from altimetry, and Mean Dynamic Topography (MDT) and tides from models is needed in order to obtain an improved determination of the sea-ice free-board. Using gravity data, a regional and a block wise computation of the gravimetric geoid for the Arctic Ocean were derived and associated error covariance estimates were computed by Least Squares Collocation. The most realistic error-estimates were obtained using block wise computation, since in this case the inhomogeneities of the statistical properties of the gravity field could be taken into account.