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Arctic marine gravity and bathymetry from 3 years of Cryosat-2 SAR altimetry (DTU13 Gravity)

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TITLE: Arctic marine gravity and bathymetry from 3 years of Cryosat-2 SAR altimetry (DTU13 Gravity)

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ABSTRACT BODY: The accuracy of the Arctic marine gravity field has for many been severely limited by the availability and accuracy of altimeter data in the Arctic Ocean. Until recently only ERS-1 provided non-repeat (0.9 year) geodetic mission altimetry in the Arctic Ocean and only up to 82N.

With the launch of Cryosat-2 three years ago a new source of high quality altimetric data has become available. The Cryosat-2 delay Doppler altimeter offers a factor of 20 improvements in along track resolution, an along-track footprint length that does not vary with wave height (sea state) and at least a factor of two in sea surface height precision. Over the Arctic Ocean the Cryosat-2 generally operates in SAR altimetry mode for cryospheric studies. We have tested the standard ESA L2 SAR altimetric data for the first 3 years and developed robust empirical retracers for ice-covered regions and processing 3 years of L1 SAR altimetry in the Arctic Ocean for gravity field determination. Extensive testing, interpretation and improvement of methods to handles the new class of data has been investigated and the first result from a new Arctic Ocean wide gravity field will be presented as well as initial test of derived altimetric bathymetry using the new gravity field data.

KEYWORDS: 1219 GEODESY AND GRAVITY Gravity anomalies and Earth structure, 1241 GEODESY AND GRAVITY Satellite geodesy: technical issues, 1640 GLOBAL CHANGE Remote sensing.

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