The Geoid, Mean sea surface and mean dynamic topography

Splinter summary & recommendations

Y. Faugere and O. Andersen
The Session.

• 6 oral presentations

• 2 on Geoid/Gravity (Sandwell/Garcia & Andersen)

• 2 on MSS (Pujol/Faugere & Andersen)

• 2 on MDT (Mulet & Gille)

2 Posters:
Bosch et al. Instantaneous profiles of dynamic ocean topography (iDOT)
Knudsen: A Global mean ocean circulation estimation using GOCE
• Recognizing the importance and impact of
  
  GOCE
  
  Jason-1 EOL Geodetic Mission
  
  Cryosat-2 (near Geodetic Mission)
  
  Major improvement in geoid/gravity MSS/MDT
TECTONIC STRUCTURES UNDERNEATH SEDIMENTS

old
V18
TECTONIC STRUCTURES UNDERNEATH SEDIMENTS

new
V22
TECTONIC STRUCTURES UNDERNEATH SEDIMENTS

new
V22
\[ \text{DTU13MDT} = \text{Filtered(DTU13MSS-Eigen6C1)} \]
Discussion recommendation (1/4)

Input altimetry data

• Reprocessing of old missions. Geosat, ERS-1, T/P – Jason1
  – Importance of SSB / Retracking - spectral hump
  – Continuity between regional and global products / Tide correction

• SAR Mode for MSS/MDT (Cryosat-2 and future satellites)
  – Reprocessing of C2 SAR (> 3 years)
  – Area-request:
    • SAR regions for improved MSS -> SWOT preparation
    • Consistency of existing regions (long terms observations)
    • Consistency between LRM/SAR/SAR-in -> MSS Sensitivity to gradients.
Discussion recommendation (2/4)

Input altimetry data

• **Future Geodetic Missions:**
  – Recommending Jason-2 geodetic End of Life vs interleaved mission.
  – Recommending possible HY-2 geodetic Mission.

• **Higher resolution products (1->5->10->20->40 Hz):**
  – We recommend/need higher resolution products for MSS
  – Investigate issuing higher hz data (with SAR and Altika -> SWOT preparation)

• **SWOT discussion:**
  – Study Limitation of the current MSS for SWOT?
  – High latitudes / sea ice coverage
Discussion recommendation (3/4)

Models/technique

• MSS reference (continuation).
  – Focusing on estimating MSS/MDT accuracy/error -> future OSTST
  – 20 Year averaging period (variability mapping).
  – Arctic/Antarctica (different averaging period north/south 66°)
  – Urges future work at high latitudes.
  – Geoid (satellite only/GOCE) secondary reference
Discussion recommendation (4/4)
Models/technique

• MDT development
  – Need of good in-situ data -> work on processing
  – Coastal region (broader coast vs near-shore) - tidal errors
  – Deriving currents. Directional filtering/adaptive filtering

• Future Applications:
  – Use of Geoid/MSS for height (and tide gauge) unification.
20 years of absolute surface currents relative to CLS/CNES MDT

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