



SPECTRAL PROPERTIES OF THE SEA SURFACE TOPOGRAPHY - IMPACT OF THE NEW GRAVITY FIELD MISSIONS

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The possibility to determine the sea surface topography from satellite altimetry and a precise independent geoid and the perspective to assimilate these new data into ocean circulation models have been one of the driving factors for the realization of the new generation of gravity field missions CHAMP, GRACE and GOCE.

In this contribution we analyze spectral representations a) for the geoid from the new satellite based models and from EGM96, b) for various sea surface topography solutions computed using the altimetric method (differencing between mean sea surface from altimetry and geoid) including the newest gravity field models and c) for sea surface topography data sets from ocean circulation and climatological models.

The comparison of the spectra allows to judge on the resolution of geoid and sea surface topography models and their impact on circulation models. We concentrate on some factors, which distort the spectral representations and hamper the comparability (e.g. non-global data sets, edge effects). Strategies for the reduction of these distortions and for filtering will be discussed, and the impact of the distortions on the omission error for geoid and sea surface topography will be analyzed. Global and regional representations of the various sea surface topography solutions will be checked, whether certain ocean current structures (e.g. of the Antarctic Circumpolar Current) can or cannot be identified.