KMS03 MEAN SEA SURFACE - AND
INTER-ANNUAL SEA LEVEL VARIABILITY

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Different global mean sea surfaces (CSR98, GSFC00, CLS-SHOM98, CLS01, KMS01) are based on limited T/P time-epoch used in their derivation. Consequently, inter-annual ocean variability (like the major El-Nino event in 1997-1998) will be visible to a larger or smaller extend in these different MSS (the MSS are actually quasi-stationary MSS). In a comparison between hydrodynamic derived mean dynamic topography MDT) and synthetic derived MDT (derived from the difference between the MSS and the geoid), the results depend on the quality of the MSS and geoid, but also on the inter-annual ocean variability. In principle the MSS used to derive the synthetic MDT should be averaged over the same period in time as used to average the hydrodynamic derived MDT to avoid leakage of inter-annual ocean variability on the result.

In our new mean sea surface (KMS03) we have included a method to account for the inter-annual ocean variability. By investigating the inter-annual ocean variability from T/P the MSS can be made to include the inter-annual variability over a specific period in time.

From the 9.9 years of T/P altimetry the inter-annual ocean variability for each year have been modeled using the annual mean sea level height once the ”intra”-annual ocean variability have been removed. The ”intra”-annual variability was initially removed by removing the mean monthly value of all months from the 9.9 years period. Evaluation of the available mean sea surfaces will primarily be carried out in the GOCINA study area in the Northern Atlantic region. An extended comparison will also be presented in the Arctic Ocean to demonstrate the impact of improved geoid and mean sea surface modeling to derive reliable synthetic MDT. Finally, a validation using Jason1 data that have not been used in the mean sea surface computations will be performed.