



## **Empirical tide modeling by analyzing multi-mission altimeter data**

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Although the accuracy of most recent global ocean tide models is very high there is no tide model describing the tide regime exactly. Therefore tide modeling remains to be one important topic of the Earth sciences. The long time series of altimeter data allow the estimation of major and some minor tidal constituents for most parts of the world ocean and to obtain very accurate empirical ocean tide models. One advantage of the empirical modeling is that disputable information on the bathymetry is not required. The main obstacles are the low temporal resolution of altimeter data and its limited accuracy – in particular in coastal areas. The latter limits in general the possibilities for estimating weak tidal constituents. The infrequent sampling causes severe alias-effects which can be solved only by combining multi-mission-altimeter time series with different space-time sampling. For the development of the EOT08a tide model the time series of six altimeter systems with five different sampling characteristics have been carefully homogenized and cross-calibrated and could be used as a single virtual altimeter system. This way even data from geodetic, non-repeat missions contributed to a de-correlation of tidal constituents. Results of the tide analysis will be shown and the possibilities for further improvements of empirical tide modeling are discussed.