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Stable and precise orbits over the entire time span of available altimeter data are essential for analysis of altimeter data, and the interpretation of periodic, aperiodic and long-term oceanographic signals. Important issues for precision orbit determination relate to the stability and quality of the tracking systems and of the precision force and measurement models that underpin the POD analysis. We provide an update on the latest POE's computed by GSFC, which include the following updates: (1) Use of a new low-degree 5x5 series to model the variations in the geopotential over the entire time period, 1993-2013; (2) The application of the Vienna Mapping Function (VMF) as a standard troposphere correction for the radiometric data; (3) The impact of corrections to the DORIS frequency modeling. We review the impact of time-variable gravity modeling on the altimeter satellites, comparing and contrasting the 5x5 solution with those available from other sources, and assess their impact in the Jason-2 era with respect to trends in mean sea level. We review the stability of the tracking systems, primarily SLR and DORIS, and assess other prospects for model improvement.
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