



Global monitoring of mean sea level, satellite altimetry, and the IERS Conventions.

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"How well, how soon?" is the main practical question in the monitoring of mean sea level change, a change of obvious interest to those living in coastal areas around the world.

At present, satellite altimetry is a very important tool for the continuous, global observation of the tidal, seasonal, secular, and permanent components of mean sea level, resolving also, in great detail, their spatial variability. Those different constituents reflect ocean dynamics, reveal interactions between the oceans, the atmosphere, and the cryosphere, and also show anomalies in the marine gravity field, all this across a broad range of temporal and spatial scales.

Whichever the technique, monitoring global sea level change means measuring, precisely and consistently, very small signals in the vertical direction —something usually hard to do well— over such long periods of time that not only those doing it change, but also the instruments and the methods they use.

The Space Geodesy Branch of Goddard Space Flight Center participates in a NASA-sponsored study of global mean sea level monitoring using a combination of altimetry, tide-gage records, and other data. In this context, one of the tasks is to take a close look at the implementation of the terrestrial reference frame, to avoid artifacts that may obscure the observation of sea level change.

The IERS Conventions, which include detailed specifications of the frame, are tools for the production, and clear communication, of consistent and compatible results, so as to combine the contributions from many independent sources into coherent pictures of such global processes as mean sea level change.

The speaker will point out issues relevant both to the Conventions and to the study of mean sea level change. Some issues are suggested by discrepancies found when processing altimetry with slightly different realizations of the frame, others, by the possible need to correct for some secular effects that might get aliased into the estimated sea level changes. Still under study, some of these questions might, eventually, be included in the discussion of future revisions to the Conventions.