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Poster
The global tide gauge network provides the only independent validation of trends in global mean sea level (GMSL) derived from satellite altimetry. The technique requires computing the difference between altimeter and tide gauge sea surface heights at many different comparison points, increasing degrees of freedom and allowing the precise estimation of bias drift in the altimeter climate record. Key components of the technique include the mitigation of energy at tidal frequencies between the tide gauge and comparison point, as well as accounting for vertical land motion (VLM) at the tide gauge. As estimates of VLM improve, and as refinements in the validation approach are made, it is important to revisit the validation of the entire Jason-class sea level climate record.

We present the development of a refined strategy that is insensitive to outliers such as sites affected by earthquakes or unresolved datum changes, and not overly influenced by any specific small subset of sites in the network. We assess the sensitivity of the technique to a range of processing strategies used to mitigate effects such as tides and across track sea surface slopes. The impact of using a new GPS-derived vertical land movement correction for TGs is also investigated. We apply our bias drift estimation strategy to asses a number of different variants in altimeter datasets across TOPEX, Jason-1 and OSTM/Jason-2, beginning with standard GDR processing and then applying combinations of a number of other commonly used corrections (orbits, SSB and wet and dry troposphere). Results suggest subtle differences in bias drift between different altimeter datasets, with implications approaching the 1 mm/yr level for parts of the climate data record depending on the chosen mission and dataset.
OSTS session
Regional and Global CAL/VAL for Assembling a Climate Data Record
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