

Sea Level Variations in the Yangtze River Estuary Coastal Ocean from Altimetry Waveform Retracked Data

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Abstracts: Satellite altimetry has proved to be an effective way of monitoring sea level changes on global and regional scales. In the coastal ocean, satellite altimetry suffers from low data quality and its use is not as straightforward. After investigating some sources of low satellite data quality in the coastal ocean, we derive a new processing of Envisat altimetry waveform data for the Yangtze River Estuary (YRE) coastal ocean and generate merged Sea Surface Height (SSH) over the 2004-2012 periods. This improved dataset provides a better sampling of the YRE coastal ocean compared to the AVISO multi-mission global grids used as a reference. The new dataset is used to calculate new estimate of regional sea level variation and trends which are slightly different from previous estimates of YRE coastal ocean mean sea level rise. This work provides one of the first reliable attempts to evaluate regional coastal sea level rise in the YRE coastal ocean from Envisat altimetry waveform retracked data. The results show that the sea level rise is about 2.77 mm/a over the YRE coastal ocean from 2004 to 2012, in which the contribution of ocean mass change derived from GRACE RL05 data is about 2.50 mm/a.