The Retrieval of Multi-Mission Altimetry Heights by Combined Retracking Procedure near Coastline around Taiwan

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Satellite radar altimetry has been successfully applied to accurately map global sea surface topography with weekly to monthly sampling during the past 2–3 decades and progressively extended the applications for interdisciplinary field like geophysics, climate and earth science. However, retrieving accurate measurements over the non-ocean surfaces remain a challenge by reason of variable land contamination adjacent to the desirable targets. For solving the problems of complicated waveforms from diverse surfaces, the recently launched advanced altimeters, including SARAL/Altika (Ka-band altimeter), CryoSat-2 (SAR Interferometric Radar Altimeter, SIRAL), Sentinel-3 (SAR altimeter) and Jason-3, were expected to improve the drawback of satellite altimetry in variable surfaces like coastal and land regions by the developed instruments and higher spatial resolution data. In this study, the multi-mission altimetry data including Envisat, SARAL/Altika, CryoSat-2 and Jason-2 are used. The complex returned waveforms over land surface or near coast are to be retracked by respective optimal waveform retracking algorithms pertaining to each altimeter system. In order to make more efficient retracking work and eliminate the serious contamination waveforms, we will build an innovative waveform classification method to exactly classify the ocean and non-ocean waveforms based on its physical property over seacoast region before retracking. Eventually, the retrieved heights will be validate with available *in situ* measurements to demonstrate interdisciplinary scientific applications over or near Taiwan.

Keywords: Satellite altimetry, waveform retracking, waveform classification, SARAL/Altika, CryoSat-2, Envisat