Shannon
Brown
JPL
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The Jason-1 sensor provided more than a decade of sea level measurements and with the conclusion of the mission, the job is now to ensure the final mission product contains the highest quality climate calibration. In this paper, we describe the end of mission calibration process planned for the Jason Microwave Radiometer (JMR). The first step in the process is to ensure the long term stability of the brightness temperatures. To maintain the radiometer brightness temperature calibration on long time scales requires that it be referenced to stable sources external to the radiometer, where the long term calibration is then dependent upon the stability of these external sources. Using several independent external references and demonstrating consistency between them increases the confidence in the resulting long term WPD record and hence GMSL record.
The previous end-of-mission calibration for the Topex Microwave Radiometer relied on natural on-Earth references. Recently, a complimentary inter-satellite calibration approach was developed and applied to the Jason-2 Advanced Microwave Radiometer calibration. This approach essentially transfers the long term calibration from other stable externally calibrated satellite microwave radiometers to the altimeter radiometers. A newly developed fundamental SSM/I TB fundamental climate data record (FCDR) (Kummerow et al., 2010) will now allow us to extend this inter-satellite calibration approach back to the start of the altimetry record to validate and improve upon the long term calibration that we previously performed for the TMR and the JMR. The SSM/I FCDR was developed by Colorado State University (CSU) for NOAA and extends from 1987 to the present, covering the altimeter time period. Applying the inter-satellite calibration approach to the JMR using the new SSM/I FCDR will provide a second independent reference (in addition to the natural reference method) which will improve the long term WPD calibration and reduce the uncertainty in the GMSL trends on shorter time periods, improving the data for studies looking at interannual variability.
This paper will describe the inter-comparison between the JMR and the SSM/I FCDR calibration and discuss the re-calibration process for the JMR. An error estimate of the JMR PD stability over the mission will be provided.
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