

Validations of surface salinity estimated from Aquarius/SAC-D for summertime Changjiang diluted water

Seung-Yong Lee¹, Il-Ju Moon¹

¹ *Typhoon Research Center/Graduate School of Interdisciplinary Program in Marine Meteorology, Jeju National University, Jeju, Korea*

Salinity in ocean plays important role in marine biology inhabitant as well as researches on global ocean circulation and climate change. Global sea surface salinity data have been relied on in situ measurements before launching of two salinity-measured satellites, Soil Moisture Ocean Salinity (SMOS) from the European Space Agency (ESA) in November 2, 2009 and Aquarius/SAC-D from National Aeronautics and Space Administration (NASA) in June 10, 2011. This study evaluates the accuracy of the surface salinity estimated from Aquarius/SAC-D, particularly for summertime Changjiang diluted water (CDW) during 2012–2014, using in situ measurements from National Fisheries Research & Development Institute (NFRDI). Since the Aquarius/SAC-D provides the global surface salinity data with the spatial resolution of about 150 km at 7 day interval, we only used in situ measurements matching with the resolution and interval. The comparisons reveal that the RMSE for all data was 2.47 psu and the bias was 1.79 psu. Due to the radio frequency interference (RFI), the RMSE along the ascending track (1.89 psu) were greater than that along the descending track (3.04 psu) as previously reported. If we limits the data points in the central regions of the East China Sea that less affected by land emission, the bias and errors reduced to 0.44 psu and 1.0 psu, respectively. These results suggest that the satellite-estimated salinity data can be used in monitoring the CDW in summer, particularly approaching to Jeju Island from the central regions of the East China Sea where the reliable data exist.

Key words: East China Sea, salinity, validation, Aquarius

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