

The Joint Kuroshio–Ryukyu Current System Study and a rapid report about mooring observations southeast of Miyakojima

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From June 2015 to June 2017, an international cooperative research project called “Joint Kuroshio-Ryukyu Current System Study” (JKRYCSS) was conducted by scientists from Japan, China, and South Korea. Tall moorings with current meters (CMs) and upward-looking acoustic Doppler current profilers (ADCPs), and current and pressure-recording inverted echo sounders (CPIESs) were deployed on northwestern and southeastern sides of Miyakojima Island to observe the Kuroshio and the Ryukyu Current, simultaneously. These mooring sites lay along the altimeter track used by TOPEX/Poseidon and Jason-1/2/3, which is roughly perpendicular to the isobath of the continental shelf break.

In this talk, we will illustrate the velocity structure and variability of the Ryukyu Current by analyzing the 2-year record from a mooring array southeast of Miyakojima Island. The results showed that the shoreward intensified currents flowed northeastward. The subsurface core of the Ryukyu Current was located near the 1000 m isobath, with a maximum of 19.4 cm/s at 500 m. The observed velocity structure was reproduced well by the HYCOM reanalysis, except that the observed current core was stronger and shallower. The mean estimated volume transport across the observation section was 9.0 Sv with a standard deviation of 8.7 Sv, with a near 100-day variability dominant in the upper layer but absent in the deep layer.