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Title: Mesoscale Eddies in the Kuroshio Recirculation Region and Their Influences on the Variations of the Kuroshio Path South of Japan

Abstract: Mesoscale eddies in the Kuroshio recirculation region south of Japan have been investigated by using surface current data measured by an Acoustic Doppler Current Profiler (ADCP) installed on a regular ferry shuttling between Tokyo and Chichijima, Bonin Islands, and sea surface height (SSH) anomaly derived from the TOPEX/POSEIDON altimeter. Many cyclonic and anticyclonic eddies were observed in the region. Spatial and temporal scales of the eddies were determined by lagcorrelation analyses in space and time. The frequency of occurrence, temporal and spatial scales, and intensity are all nearly the same for the cyclonic and anticyclonic eddies. Phase speed of westward propagation of the eddies is estimated as 6.8 cm/s, which is faster than a theoretical estimate based on the baroclinic firstmode Rossby wave with or without a mean current. Trajectories of the eddies were also traced using SSH maps observed by the TOPEX/POSEIDON and ERS altimeters. Both the cyclonic and anticyclonic eddies propagate westward in the Kuroshio recirculation region from a region south of the Kuroshio Extension. In the region south of Shikoku and east of Kyushu, some of the eddies coalesce with the Kuroshio. It is also suggested that this coalescence may trigger the path variation of the Kuroshio in the sea south of Japan.

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