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Variations of Kuroshio axis east of Taiwan from satellite altimetry

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Satellite altimeter data are used to study variations of Kuroshio axis east of Taiwan from 18°N to 26°N. The Kuroshio axis is defined as a line with the maximum surface velocity along the Kuroshio path. The absolute geostrophic velocity is calculated from the absolute dynamic topography data derived from satellite altimetry with the geostrophic relations. Seasonally averaged location of the Kuroshio axis from 22-year data shows that the Kuroshio axis deviates from the shore in summer and fall, and closes to the shore in spring and winter. Besides, large eastward meander of the Kuroshio is found 13 times from 1993 to 2013. This kind of meander is caused by the propagation of cold eddy from the western Pacific. The maximum duration of the influence is about 80 days, and the farthest eastward shift of the Kuroshio axis is around 200 km away from its average position. Due to the effect of cold eddy, the velocity of the Kuroshio axis is reduced to around 84% of its mean value.