

Identification of the Kuroshio and its extension paths from satellite altimetric measurements.

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The Kuroshio is the western boundary current of the subtropical gyre of the North Pacific Ocean, it flows eastward along the south coast of Japan. The Kuroshio has typical two paths. One is called large-meander path and the other is called non-large-meander path (Kawabe, 1995).

After the Kuroshio is separating from east of the Boso peninsula, we call the eastward jet as the Kuroshio Extension (KE). It is considered that the KE has basically quasi-stationary meanders with two ridges located at 144 and 150E. Recently, satellite altimetric measurements of the sea surface height field allow us to have been clarified various meander patterns of the KE due to mesoscale eddies and its decadal changes (Qiu and Chen, 2005).

Using sea surface height of satellite altimetric measurements, to determine the path of flows in the ocean is generally very difficult. Determination of the KE path, in particular, is difficult because of existence of many mesoscale eddies.

In this study, using daily gridded absolute dynamic sea surface height (ADH) distributed by AVISO, we try to determine the paths of the Kuroshio/Kuroshio Extension.

Although previous studies have been individually discussed the Kuroshio paths and the KE paths, we here regard the Kuroshio and the KE as one system.

The determination processes of the path are follows. (1) the daily ADH fields and the surface geostrophic flows derived from those are smoothed by 3-month. (2) the maximum absolute geostrophic flows are detected by scanning north-south at the intervals of 1/4 degree longitude from 130E to 140E. The ADHs corresponding the maximum absolute geostrophic flow detected at each longitude are averaged. This mean ADH from 130E to 140E is determined as the ADH which show the Kuroshio path. (3) the start point of the Kuroshio path is determined by the mean ADH on the 126E longitude line. After scanning the south-north along longitude lines and scanning the east-west along latitude lines in order, the next point is selected the shortest distance from among the position of the same values of ADH. (4) this method is repeated to 170E. One path of the Kuroshio/Kuroshio Extension at a instantaneous section is obtained in this way.

We discuss on the statistics of the Kuroshio/Kuroshio Extension paths obtained by the above method.

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