Effects of uniqe flow paths during the Kuroshio Large Meander since 2017

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The Kuroshio Large Meander began in August 2017 and has lasted more than 5 and half years, the longest ever since 1965. The flow path of the Kuroshio Large Meander during this period is often characterized by a large S-shaped curve south of the Tokai coast. At the same time, there are many periods when the breakaway is large at Cape Ashizuri in Shikoku. These characteristics are common to the 1975-1980 event, which was the second longest event ever. The common feature of both events is thought to be the low transport of the Kuroshio Current. To investigate how the flow paths have changed during this meandering period, we used a multiresolution EOF analysis, in which EOF analysis is performed on different time scales by wavelets. The method is applied to the daily mean sea level of the JCOPE2M ocean reanalysis since 2016. The first mode of slow variation represents a typical Kuroshio Large Meander, and the third mode represents a meandering path with a large S-shaped curve. The second mode, which alternates between the first and third modes, is thought to be related to the strength of the Kuroshio Current. The second mode seems to affect the stability of the Kuroshio Extension.

Keywords: Kurshio Large Meander, EOF analysis, wavelet, Kuroshio Extension, mesoscale eddy, ocean reanalysis

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