Long-term forecast of the Kuroshio large meander in 2017

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The Kuroshio large meander (KLM) occurred in the end of August 2017 for the first time in 12 years, and has maintained for more than a year. Changes in the oceanic condition south of Japan associated with the KLM have a large impact on various fields such as fisheries, marine transportation, and local weather. The KLM has, therefore, been received much attention. In this presentation, we discuss prospects of the KLM in 2017 on the basis of a long-term forecast experiment using an eddy-resolving ocean model. First, the actual Kuroshio state in the end of August 2018 is reproduced by applying data assimilation. We then conduct ensemble simulations with 40 members, in which atmospheric forcing data are replaced by those on the same day from 1975 to 2014 and the model is integrated for more than three years starting from 28 August 2018. In most cases, the KLM maintains for more than one and a half years (i.e. February 2020). After that, differences in the Kuroshio state among the ensemble members become large. As pointed out be former studies, these behaviors of the Kuroshio path are largely explained by the Sverdrup transport estimated from the wind stress field used in the experiment. In the presentation, we will evaluate the ensemble simulations results using the actual Kuroshio state in May 2019, and will show more detailed results.

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