

# Temporal and spacial changes in relative vorticity along the Kuroshio axis

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The transition process of the Kuroshio path has been investigated by many previous studies. According to these studies, the transition from a non-large-meander path to a large-meander path is considered to be caused by a eastward propagation of a "Kuroshio small meander" which occurs southeast of Kyushu (e.g. Solomon, 1978; Sekine, 1895; Kawabe, 2003). Not all small-meanders, however, form large-meander-paths. In many cases, magnitudes of small-meanders usually become smaller before reaching at Shionomisaki. In this study, we therefore calculate temporal and spacial changes along the Kuroshio axis in relative vorticities using maps of the absolute sea surface dynamic topography (MADT) providing from AVISO describe transition processes the Kuroshio meandering in detail. Here, we use MADT with weekly mean temporal resolution and  $0.25 \times 0.25$  grid spatial resolution from January 4, 1993 to June 4, 2018. In addition, we also focus on the intensity of the Kuroshio recirculation gyre located stably at south of Shikoku.

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