Travelling eddies in the South China Sea - multi-decadal statistics and large-sale conditioning

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The multi-decadal simulation STORM with the state-of-the-art and eddy-permitting model MPI-OM has been examined with respect to the formation and travelling of near-surface eddies in the South China Sea. The derived statistics are broadly consistent with the statistics derived from the AVISO data set.

The grid-resolution of STORM of about 0.1 degrees allows the formation of broad features of such eddies; in an additional model experiment it is shown how the level of eddy generation – which represents unprovoked noise in the sense of the statistical climate model for the generation of low-frequency variations – increases with decreasing grid-resolution.

A significant question is if the spatial and temporal variations of the eddy statistics, in terms of density and intensity, are conditioned by "external" factors, such as ENSO or global warming. EOF analyses of the fields of such seasonal statistics lead to white eigenvalue spectra, and thus reveal hardly any external steering. Even when including the annual cycle, with its monsoonal alternation, the spatial density of travelling eddies varies hardly in a deterministic manner.