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Poster
We use a high-resolution realistic simulation of the North Pacific to characterize the evolution of both the mesoscales (200 km – 300 km) and submesoscales (10 km – 100 km) in a large box region around the Kuroshio Extension (150–160°E and 25–45°N). Results reveal that the rms values of the relative vorticity (mostly captured by submesoscales) exhibits a conspicuous seasonal evolution with large values observed in winter (principally explained by mixed-layer instabilities). In contrast, the rms SSH (mostly captured by mesoscales) exhibits a very different time evolution with maxima occuring during the summer or later. Since the relative vorticity can be well estimated from SSH using a Laplacian operator, this means that these conspicuous differences between mesoscale and submesoscale activities can be captured by the spectral characteristics of the SSH (including the spectral slope).
As such, these results highlight the strong potential of the future satellite altimeter missions (such as SWOT and COMPIRA) -whose resolution should be ten times higher than that of conventional altimeters - to capture the submesoscales and their impact on the large-scale ocean dynamics.
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