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Poster
Low-frequency motions in the eastern part of the subtropical North Pacific are dominated by multiple, alternating quasi-zonal jet-like features (striations), which slowly, at a speed of about 0.3 km/day, propagate toward the equator. Their structure and energetics are studied using three data sets: satellite sea level anomaly observations, historical hydrographic data, and output of the Ocean general circulation model For the Earth Simulator (OFES). We find that the striations' energy cycle is dominated by two dynamically distinct components. The first one is attributable to baroclinic instability of the large-scale, weekly-sheared meridional flow in the eastern limb of the subtropical gyre. Potential energy stored in the large-scale flow is accessible for conversion directly to the zonal striations. The latter, therefore, may have a profound effect on the thermohaline structure of the subtropical gyre and the mean circulation. The second component arises from the nonlinear interactions between the zonal striations and eddies and can be put into the context of the geostrophic turbulence theory. While the baroclinic conversion from the mean state to the zonal striations occurs throughout the layer between 200 and 600 m depth, the eddy effects are primarily confined to the upper 200 m.
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