

Eddy-resolved ocean characteristics of the MIROC coupled model incorporating effects of tidal mixing of the 18.6-yr modulation

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A comparative study of long-term simulations (200-500 years) of three versions of the MIROC coupled model (MIROC3.2, MIROC5.2, and MIROC6.subhi) was performed. This model incorporates the effects of the 18.6 tidal period into the ocean mixing process. It is revealed that in Miroc6.subhi, the main factors of ocean-atmosphere interaction (SST, SSH, SLP) and the internal structure distribution of the ocean (potential temperature, salinity, potential density, and current) were the most consistent with the observations. Long-term variability (decadal to multidecadal) was evident in the waters off the Kuril-Aleutian and off Southeast Asia where tidal and topographical interactions are prominent.

Keywords: MIROC coupled model, 18.6-yr tidal period, eddy-resolving modeling, Kuril-Aleutian Islands, off Southeast Asia, long-term variability