Satellite Altimetry Helps Validate Ocean Model for the Earth Simulator

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In collaboration with colleagues at FRCGC and ESC, IPRC scientists have analyzed the first multi-decadal, global, eddy-resolving ocean-hindcast performed on the Earth Simulator with the Ocean GCM for the Earth Simulator (OFES) and have compared its solutions for the Kuroshio Extension (KE) region with satellite altimetry measurements (top panel). OFES shows remarkable skill in simulating decadal variability of the Kuroshio Extension jet.

Middle panel: the time series of the first EOF mode observed by TOPEX/Poseidon satellite (black) and simulated by OFES (red) captures the jet’s southward shift and subsequent northward migration. The second EOF mode shows variations in the jet’s intensity. Bottom panel: (a) meridional structure of the leading modes of KE variability derived from the EOF of the OFES hindcast; (b) the associated zonal current velocity at 100 m depth; and (c) the mean zonal current profile (blue line represents the mean KE frontal position averaged over 142-180E).