

Regional air-sea coupled modeling for climate study in Kuroshio/Oyashio region

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Regional climate modeling is an effective way to study phenomena found interesting in global General Circulation Model. Regional models can play a complementary role to global models in experimental designs. While global models are free running, but may suffer from biases, regional models are bounded at lateral boundaries and achieve better realism. The International Pacific Research Center (IPRC) regional ocean-atmosphere coupled model (iROAM) was applied to the eastern equatorial Pacific Ocean, and has produced successful results (Xie et al, 2007, 2008; Small et al, 2009, 2011; de Szoeke et al, 2006, 2007; de Szoeke and Xie, 2008; Richards et al., 2009). Collaborating with Prof. Y. Wang in IPRC, a new version of the IROAM has been developed with state of art models (a new version of the IPRC regional atmospheric model and Hybrid Coordinate Ocean Model (HYCOM)) and more flexible coupling using Earth System Modeling Framework. This coupled model was applied to the Kuroshio/Oyashio region. The ocean model covers the entire North Pacific Ocean. The atmospheric model cover the domain in the mid-latitude Pacific Ocean. The model results showed that precipitation over the Kuroshio is affected by high sea surface temperature.