
[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG34]Extratropical oceans and atmosphere

convener:Hatsumi Nishikawa(Institute of Low Temperature Science, Hokkaido University), Yoshi N Sasaki(Hokkaido University), Satoru Okajima(東京大学先端科学技術研究センター, 共同), Thomas Spengler(University of Bergen)

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The extratropical ocean had been considered passive to atmospheric variability. Recent studies, however, revealed some active role of the extratropical ocean in modulating the atmosphere. The goal of this session is to deepen our understanding of the air-sea interaction in the extratropics. A wide variety of researches whose topics range from mesoscale to basin-scale, and from daily to global warming are welcomed. Researches on cloud, aerosol, and ecosystem related to the extratropical air-sea interaction are also welcomed.

[ACG34-P07]Decadal variability of the Kuroshio extension in a high-resolution ocean-atmosphere coupled model

*Yoshi N Sasaki¹, Ryosuke Kimura¹ (1.Hokkaido University)

Keywords:Kuroshio Extension, Decadal variability, Rossby wave, air-sea interaction, ocean-atmosphere coupled model

Decadal variability of the Kuroshio Extension (KE) jet is examined by using a 42-yr output of a high-resolution ocean and atmosphere coupled model (Community Earth System Model; CESM). A comparison of the path length change between the model and the satellite observations shows that the model can reproduce realistic stable and unstable states of the KE jet on decadal timescales. The path length of the KE jet on decadal timescales is negatively correlated to the speed of the KE jet, consistent with observations.

Interestingly, the speed change of the KE jet propagates eastward with an phase speed of few centimeter per second, suggesting the importance of the advection or higher-modes of the Rossby wave.

Similar eastward propagation can be seen in the satellite observations.

On the other hand, the path length change is not related to the latitude change of the KE jet, which is not consistent with satellite observations. The latitude change of the KE on decadal timescales results from the westward propagation of the jet-trapped Rossby wave, which is induced by wind-stress curl variability over the eastern North Pacific.