[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)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe) The extratopical ocean had been considered passive to atmospheric variability. Recent studies, however, revealed some active role of the extratopical 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 extratopical air-sea interaction are also welcomed.

[ACG34-P03]How do differing front types arise?

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This study is based on a recently proposed detailed front type classification. In addition to the wellknown distinction between warm and cold fronts, this classification also takes into account (a) front intensity, (b) surface fluxes, and (c) intensity of the associated conveyor belts to distinguish between many additional front types. While these additional distinctions appear physically meaningful, the dynamical processes leading to these differences remain unclear.

We investigate the dynamical differences between fronts of different types using dry hydrostatic simulations of the cross-frontal plane. Despite its very idealised character, the model can generate fronts covering all types of the proposed front type classification. We achieve this variety by adjusting the initial surface pressure distribution, the initial vertical stability, the basic-state vertical shear, and the surface sensible heat flux. We analyse the differences in the dynamical evolution leading to frontal collapse between fronts of differing types, comparing amongst others the cross-frontal Sawyer-Eliassen circulation.