

# Interannual modulations of the influence of North Pacific oceanic fronts on the atmosphere as revealed in the JRA-55 family

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Influence of frontal SST anomalies associated with North Pacific subarctic frontal zone on the overlying atmosphere are investigated through comparison between two sub-products of a new Japanese reanalysis for the global atmosphere (JRA-55). In one sub-product, JRA-55C, all the observational data but satellite data are assimilated on horizontal resolution of ~60km with COBE SST data on 1-degree resolution prescribed over 55 years. The other sub-product, JRA-55CHS, is the same as JRA-55C, but with MGSST data on a quarter-degree resolution only over 28 recent years.

Atmospheric response to SST anomaly associated with meridional displacement of oceanic frontal zone is investigated as an interannual modulations of the influence of North Pacific oceanic fronts. In JRA-55CHS, SST anomaly is much better collocated with anomalous heat/moisture release in October. Enhancement of convective precipitation over warm SST anomalies is larger and so is area-averaged precipitation anomaly in JRA-55CHS. Anomalous upward motion and convective heating are also enhanced over the warm SST anomaly, not only within the atmospheric boundary layer but also in free troposphere. These results suggest that assimilating high-resolution SST data has a certain impact for global atmospheric reanalysis.

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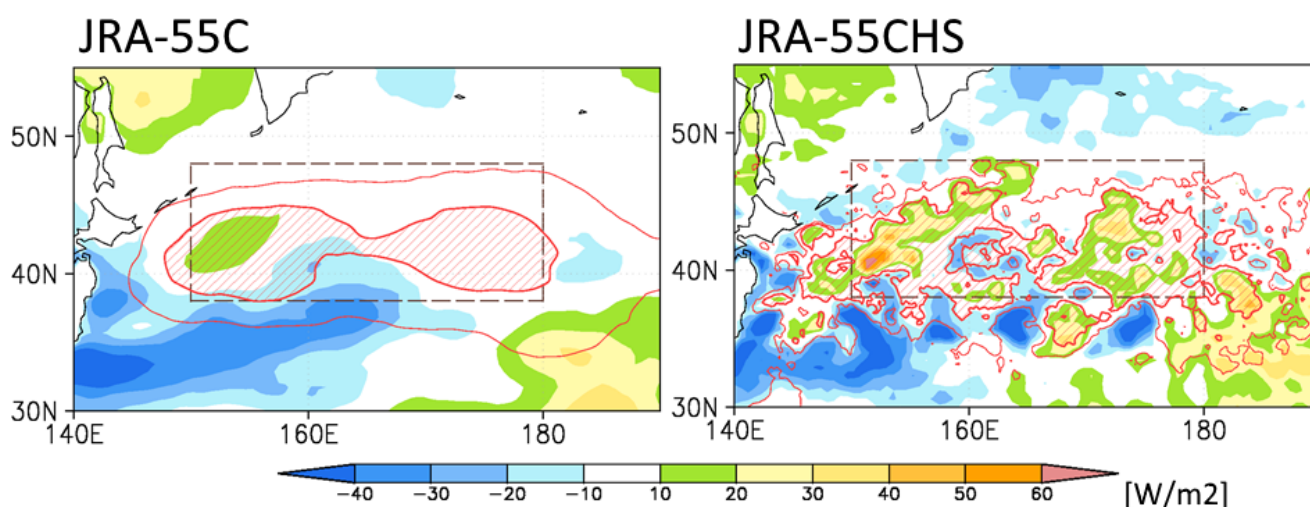


Fig. Anomalous SST (red contours for +0.8K, red hatches for +1.4K) and net turbulent heat flux (color as indicated) in October