Liu, Y. L., C.-Y. Tam, and A. Y. M. Au-Yeung, 2022: Sensitivity of western north Pacific summertime tropical synoptic-scale disturbances to extratropical forcing – A regional climate model study. *J. Meteor. Soc. Japan*, **100**, 167-180.
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Plain Language Summary: This study investigates the contribution of extratropical forcing in triggering summertime tropical synoptic-scale disturbances (TSDs) and their later development over the western north Pacific region. When short wave signals from the extratropical region are filtered out, TSD activity, as well as the related rainfall, are both suppressed. Mixed Rossby gravity waves in the equatorial western Pacific area are also weakened due to less wave activity propagated from the north. Further inspection reveals that both the strength as well as coherency of the eddies, over different parts of the TSD wavetrain, can be affected by extratropical forcing in relation to the upper-level westerly pattern.

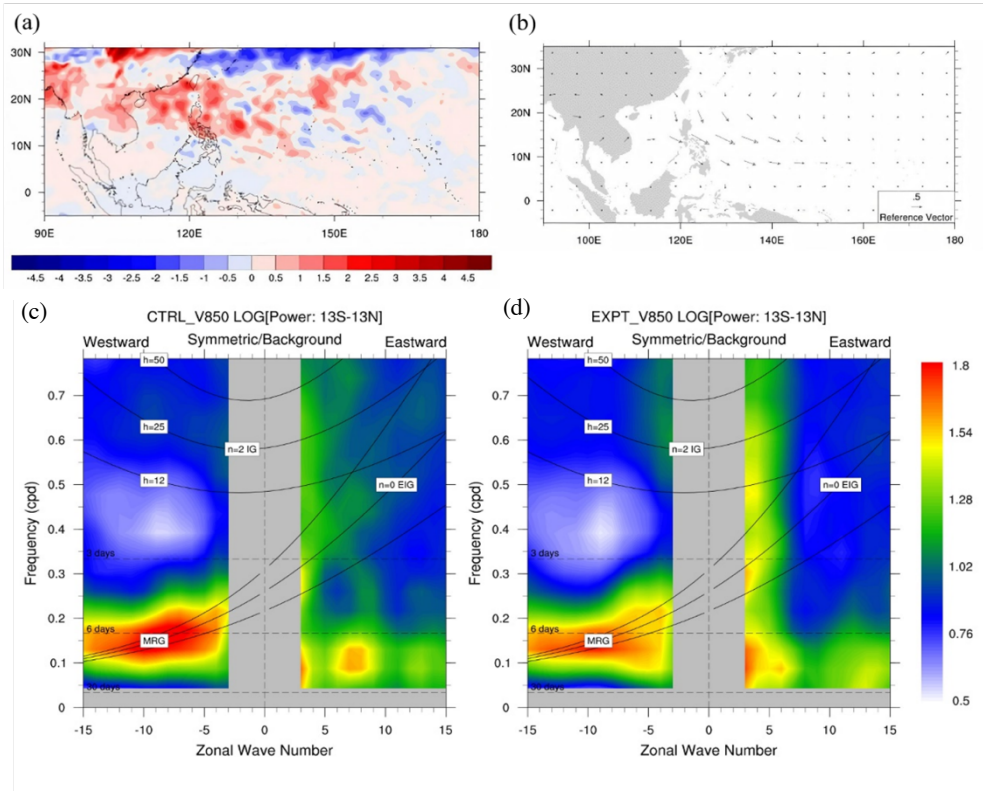

Figure 1. (a) JJA variance of 3-to-8-day band-pass filtered vorticity (units: 10^{-10} s^{-2}) and (b) E-vectors calculated from westward propagating ($-20 \leq k \leq -4$) and 3-to-8-day band-pass filtered 850hPa wind (see lower right for scale, in units of m^2s^{-2}) for model outputs from control runs (CTRL) minus northern short waves filtered runs (EXPT). (c) and (d) are the space-time spectrum of the symmetric component of the 850hPa meridional wind averaged over 13°S to 13°N for (c) CTRL and (d) EXPT. Spectra for $|k| < 3$ are not computed due to longitudinal boundaries of the experiments (80°E – 160°W).

- The contribution of the extratropical forcing in the amplitude and characteristics of tropical synoptical-scale disturbances (TSDs) over the western north Pacific is analysed.
- When short waves from the extratropical region are filtered, TSD activity and its related rainfall are suppressed.
- Mixed Rossby gravity waves over the equatorial western Pacific region are also weakened without extratropical forcing.
- Extratropical forcing can influence TSD through the intrusion of wave activity and modulation of background circulation.