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Extratropical forecast errors associated with tropical heating anomalies

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Tropical convection produces Rossby waves that radiate into the extratropics and may interact with the prevailing midlatitude circulation. Significant extratropical weather forecast errors, or possibly enhances predictability, may result from these waves, particularly over the North Pacific ocean, where the Pacific jet serves as a waveguide for waves generated over the tropical Pacific warm pool. While extensive attention has been given to the wave generation problem due to tropical convection, relatively less attention has been given to the forecast errors associated with these waves. Here we examine forecast errors associated with significant tropical heating anomalies by drawing a large sample of cases from the ensemble reforecasting project dataset available at the U.S. National Oceanic and Atmospheric Administration (NOAA) Climate Diagnostics Center (Hamill et al. 2006, Bull. Amer. Meteor. Soc.). Conditional sampling from the large sample is used to study the structure and importance of errors in the extratropical circulation relative to the tropics. Composite responses, and dominant patterns of tropical–extratropical covariability will be discussed for these events.