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Decadal covariability between ocean temperatures and weather extremes

Patrick Martineau, Hisashi Nakamura, Bunmei Taguchi, Yu Kosaka, and Masato Mori
Research Center for Advanced Science and Technology, The University of Tokyo, Tokyo, Japan

The relationship between the frequency of weather extremes and the slowly-varying ocean state is still elusive. In this study, statistical modes of covariability between sea surface temperatures (SST) and subseasonal temperature variability in the lower troposphere midlatitudes over decadal timescales are identified by applying singular value decomposition analysis to observational data. While SSTs are found to have a local impact on subseasonal variability and the frequency of weather extremes over the Pacific, SSTs over the Atlantic and Pacific sectors also have an important remote influence on subseasonal variability over continents, affecting North America, Europe and Asia. Changes in Rossby wave activity and propagation are investigated to explain the observed decadal evolution of subseasonal variability.