



Mid-Oceanic Troughs and Associated Teleconnection Patterns

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The mid-oceanic troughs (MOTs) are two prominent circulation systems over the North Pacific and the North Atlantic during the boreal summer, which act as the atmospheric bridges linking their adjacent continental climate. On interannual time scale, the variation of the mid-Atlantic trough (MAT) is significantly associated with the NAO variability and a southeastward propagating stationary wave that originates from the northeastern Pacific. The MAT is significantly correlated with the surface climate including the precipitation and surface temperature over the American-Atlantic-Eurasian sector. On interdecadal time scale, the variation of the MAT is strongly related to the AMO and associated with a dipole structure of anomalous precipitation over the North Atlantic and the Greenland.

This study also shows that the most dominant mode of the mid-Pacific trough (MPT) is associated with the eastern Pacific La Niña-like pattern and Atlantic SST variability, while the second mode is related to the central Pacific El Niño-like pattern and Arctic sea ice variability. These two modes of the MPT are linked to the Asian-Pacific-American precipitation and surface temperature differently.