Geophysical Research Abstracts
Vol. 14, EGU2012-3446, 2012
EGU General Assembly 2012

Interannual and Intraseasonal Variability of North American Storm Tracks

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Wintertime storm tracks over eastern North America are commonly characterized by two branches: 1) a northern branch of storms forming in the lee of the Canadian Rockies and tracking southeastward across the Great Lakes region and 2) a southern branch of storms forming in the lee of the Colorado Rockies and tracking toward the eastern seaboard of the United States. In this study, the authors examine the interannual and intraseasonal variability of these storm tracks in ERA-Interim reanalysis data using the Lagrangian storm-tracking algorithm first developed by Hodges (1994). The results indicate strong variability in both the location and intensity of extratropical cyclones in association with the El Niño–Southern Oscillation, the North Atlantic Oscillation, and the Pacific–North America pattern. Sudden stratospheric warmings, the Madden–Julian oscillation, and so-called central Pacific El Niño events may also play a role in the observed storm track variability. The results are compared and contrasted with previous studies, particularly those that focused on Eulerian methods.