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The Role of Storm Activity in the Enhancement of Poleward Atmospheric Moisture Transport[1] GIAN VILLAMIL-OTERO, JING ZHANG, North Carolina A&T State University, XIANGDONG ZHANG, University of Alaska Fairbanks — Enhanced poleward atmospheric moisture transport is a driver of streamflow increases into the Arctic Ocean. On the other hand, enhanced storm activities in the northern latitudes have also been detected in both observations and climate projections forced by the greenhouse gas. To investigate what role storm activity plays in enhancing poleward atmospheric moisture transport, this study analyzes the relationship between storm activity and poleward atmospheric moisture transport for the time period from 1948 to 2008 with the NCAR/NCEP reanalysis. The atmospheric moisture transport presents clear regional variations with poleward transport mainly over the North Atlantic Ocean, which contributes 57% of total poleward transport, and North Pacific Ocean, adding another 33%. The rest 10% of total poleward transport is from the Eurasia and North America continents. Similarly storm activity also demonstrates regional variations. Annually, about 208 synoptic storms cross the 60°N latitude and move northward, which include 68 (33% of the total) from the North Atlantic Ocean, 56 (27%) from Eurasia, 47 (23%) from the North Pacific Ocean, and 37 (17%) from North America. Correlations between the poleward moisture transport and storm activity include that cyclone intensity and number are generally well correlated with the poleward moisture transport and the regions that contribute the most are the North Atlantic and North Pacific Oceans.

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