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More Evidence Linking Arctic Amplification with Changes to Mid-Latitude Weather Patterns (Invited)

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In this presentation I will build on analysis presented in Francis and Vavrus (GRL, 2012) in which mechanisms were proposed and demonstrated that link rapid Arctic warming (Arctic amplification) during recent decades with changes in the trajectory of the upper-level flow in mid-latitudes. Evidence suggests that Arctic Amplification has contributed to an increase in large-scale wave amplitude and slower zonal winds, both of which favor more persistent weather patterns in mid-latitudes. Prolonged weather conditions are often associated with extreme weather – such as droughts, cold spells, heat waves, and some flooding events – some of which appear to be increasing in frequency. New analysis of fields from reanalyses and climate model projections will be presented that provides further evidence supporting this hypothesis and also highlights challenges in understanding the mechanisms of atmospheric response to Arctic amplification.