Geophysical Research Abstracts
Vol. 20, EGU2018-10937, 2018
EGU General Assembly 2018

Simulated Air-Ground Temperature Coupling and Extreme Events: The Role of the Land Surface Model

Almudena García-García (1,2), Francisco José Cuesta-Valero (1,2), Hugo Beltrami (2,3), and Joel Finnis (4)

(1) Environmental Sciences Program, Memorial University of Newfoundland, Canada, (2) Climate & Atmospheric Sciences Institute, St. Francis Xavier University, Antigonish, Nova Scotia, Canada, (3) Environmental Sciences Program, St. Francis Xavier University, Nova Scotia, and Centre ESCER pour l'étude et la simulation du climate à l'échelle régionale, Université du Québec à Montréal, Canada, (4) Department of Geography, Memorial University of Newfoundland, Canada

Previous studies have suggested a Land Surface Model (LSM) dependency for the coupling between air and ground surface temperatures within climate model simulations. We have performed three simulations, from 1980 to 2005 for North America using the WRF regional model coupled to three different LSMs (CLM4, Noah and Noah-MP) with output from the North American Regional Reanalysis as boundary conditions. We evaluated the representation of air-ground temperature coupling within these simulations, finding discrepancies at annual and seasonal scales among LSMs. Such discrepancies are associated with the LSMs treatment of land-cover and soil-moisture content, which results in different energy balance at the surface. The choice of LSM also affects the simulation of air temperature and precipitation extremes.