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TITLE: Regional climate extremes in Northern Eurasia associated with atmospheric blockings: Interannual variations and tendencies of change

PRESENTATION TYPE: Assigned by Committee (Oral or Poster)

CURRENT SECTION/FOCUS GROUP: Global Environmental Change (GC)

CURRENT SESSION: GC16. Regional Climate Impacts 7. Environmental, Socio-economic and Climatic Changes in Northern Eurasia and their Feedbacks to the Global Earth System: The Role of Remote Sensing and Integrative Studies

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ABSTRACT BODY: Large regional climate anomalies associated with atmospheric blockings have been noted during last years in Northern Eurasia. Impact of blockings is exhibited in such extremes as heat and cold waves, droughts, and forest fires. In order to detect changes in the blocking activity characteristics an analysis of different data for the Northern Hemisphere with the use of various methods for blockings detection was carried out. In particular, the data for 500 hPa geopotential from the NCEP/NCAR Reanalysis 1 (1948-2010) and NOAA-CIRES 20th Century Reanalysis v2 (1871-2008) have been used as well as climate model simulations for the 20th and 21st centuries with anthropogenic forcing. Special attention is paid to the analysis of extreme dry conditions in the Northern Eurasia regions and to the 2010 Russian heat wave associated to atmospheric blockings with the use observational data (1891-2010) for surface air temperature, precipitation and different indices for the drought conditions. Tendencies of change and interannual variations are analyzed with an assessment of effects of El-Nino/La-Nina phenomena. Possibility of intensification of blocking-associated climate impacts under global warming is discussed. Changes of blocking characteristics and associated regional climate anomalies in the 21st century based on model simulations with anthropogenic scenarios are analyzed.

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INDEX TERMS: [1610] GLOBAL CHANGE / Atmosphere, [1620] GLOBAL CHANGE / Climate dynamics.