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AUTHORS (FIRST NAME, LAST NAME): Andrei P Sokolov[1], Erwan Monier[1], Jeffrey R Scott[1], Chris E Forest[2], C Adam Schlosser[1]

INSTITUTIONS (ALL): 1. Joint Prog on the Sci & Pol, MIT, Cambridge, MA, United States.
2. PSU, State College, PA, United States.

Title of Team:

SPONSOR NAME: Andrei Sokolov

ABSTRACT BODY: In an attempt to evaluate possible climate change over EURASIA, we analyze results of six AMIP type simulations with CAM version 3 (CAM3) at 2x2.5 degree resolution. CAM3 is driven by time series of sea surface temperatures (SSTs) and sea ice obtained by running the MIT IGSM2.3, which consists of a 3D ocean GCM coupled to a zonally-averaged atmospheric climate-chemistry model. In addition to changes in SSTs, CAM3 is forced by changes in greenhouse gases and ozone concentrations, sulfate aerosol forcing and black carbon loading calculated by the IGSM2.3. An essential feature of the IGSM is the possibility to vary its climate sensitivity (using a cloud adjustment technique) and the strength of the aerosol forcing. For consistency, new modules were developed in CAM3 to modify its climate sensitivity and aerosol forcing to match those used in the simulations with the IGSM2.3.
The simulations presented in this paper were carried out for two emission scenarios, a “Business as usual” scenario and a 660 ppm of CO2-EQ stabilization, which are similar to the RCP8.5 and RCP4.5 scenarios, respectively. Values of climate sensitivity used in the simulations within the IGSM-CAM framework are median and the bounds of the 90% probability interval of the probability distribution obtained by comparing the 20th century climate simulated by different versions of the IGSM with observations. The associated strength of the aerosol forcing was chosen to ensure a good agreement with the observed climate change over the 20th century. Because the concentration of sulfate aerosol significantly decreases over the 21st century in both emissions scenarios, climate changes obtained in these simulations provide a good approximation for the median, and the 5th and 95th percentiles of the probability distribution of 21st century climate change.

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