

**Proof****CONTROL ID:** 1816903**TITLE:** Probabilistic projections of 21st century climate change over Northern Eurasia

ABSTRACT BODY: We present probabilistic projections of 21st century climate change over Northern Eurasia using the Massachusetts Institute of Technology (MIT) Integrated Global System Model (IGSM), an integrated assessment model that couples an earth system model of intermediate complexity, with a two-dimensional zonal-mean atmosphere, to a human activity model. Regional climate change is obtained by two downscaling methods: a dynamical downscaling, where the IGSM is linked to a three dimensional atmospheric model; and a statistical downscaling, where a pattern scaling algorithm uses climate-change patterns from 17 climate models. This framework allows for key sources of uncertainty in future projections of regional climate change to be accounted for: emissions projections; climate system parameters (climate sensitivity, strength of aerosol forcing and ocean heat uptake rate); natural variability; and structural uncertainty. Results show that the choice of climate policy and the climate parameters are the largest drivers of uncertainty. We also find that different initial conditions lead to differences in patterns of change as large as when using different climate models. Finally, this analysis reveals the wide range of possible climate change over Northern Eurasia, emphasizing the need to consider all sources of uncertainty when modeling climate impacts over Northern Eurasia.

CURRENT SECTION/FOCUS GROUP: Global Environmental Change (GC)**CURRENT SESSION:** GC049. Environmental, Socio-Economic and Climatic Changes in Northern Eurasia and their Feedbacks to the Global Earth System**INDEX TERMS:** 1637 GLOBAL CHANGE Regional climate change, 1622 GLOBAL CHANGE Earth system modeling, 1626 GLOBAL CHANGE Global climate models, 1616 GLOBAL CHANGE Climate variability.**AUTHORS/INSTITUTIONS:** E. Monier, A.P. Sokolov, C.A. Schlosser, J.R. Scott, X. Gao, MIT, Cambridge, Massachusetts, UNITED STATES;**CONTACT (E-MAIL ONLY):** emonier@mit.edu**TITLE OF TEAM:**

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