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GC34A-06: Assessing the Global Climate Response to Freshwater Forcing from the Antarctic Ice Sheet Under Future Climate Scenarios

Wednesday, 13 December 2017

17:15 - 17:30

 *New Orleans Ernest N. Morial Convention Center - 265-266*

Observational evidence indicates that the West Antarctic Ice Sheet (WAIS) is losing mass at an accelerating rate. Impacts to global climate resulting from changing ocean circulation patterns due to increased freshwater runoff from Antarctica in the future could have significant implications for global heat transport, but to-date this topic has not been investigated using complex numerical models with realistic freshwater forcing. Here, we present results from a high resolution fully coupled ocean-atmosphere model (CESM 1.2) forced with runoff from Antarctica prescribed from a high resolution regional ice sheet-ice shelf model. Results from the regional simulations indicate a potential freshwater contribution from Antarctica of up to 1 m equivalent sea level rise by the end of the century under RCP 8.5 indicating that a substantial input of freshwater into the Southern Ocean is possible. Our high resolution global simulations were performed under IPCC future climate scenarios RCP 4.5 and 8.5. We will present results showing the impact of WAIS collapse on global ocean circulation, sea ice, air temperature, and salinity in order to assess the potential for abrupt climate change triggered by WAIS collapse.

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