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Are there differences in atmospheric circulations between a 1.5°C and a 2.0°C warmer world?

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In this presentation, we use a multi-model ensemble of global atmospheric model simulations to examine how the atmospheric circulation at mid-latitudes may change in a world that experiences a warming of 1.5°C and of 2.0°C over pre-industrial conditions. The data are taken from a suite of simulations carried out for the international project "Half a degree Additional Warming, Prognosis and Projected Implications" (HAPPI), coordinated by Oxford and Bristol Universities as a follow-up of the "Paris agreement" of December 2015 (http://www.happimip.org/).

The HAPPI data set includes simulation results from several (∼10) atmospheric models, each with 50–100 ensemble members covering 10-year long periods. This large sample size enables assessing the systematic climate response relative to the internal climate variability. We will present results from the present decade, as well as the 1.5°C and 2.0°C experiments. The presentation focuses on data from the interim version of the Norwegian Earth System Model (NorESM1_Happi), but also includes data from the other models participating in the project as they become available.

The analysis will mainly focus on changes in extratropical atmospheric circulation patterns, including the jet streams, the mid-latitude storm tracks, and the frequency and duration of blocking events.

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