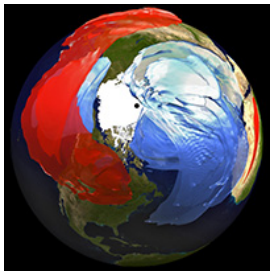

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Causes and fixes for stratospheric temperature biases in IFS and their impact on predictability

Tuesday, 19 November 2019 10:00 (30 minutes)

Accurate representation of the stratospheric circulation in numerical weather prediction models is important for tropospheric predictability on medium-range and seasonal timescales. However, operational forecast systems at the European Centre for Medium Range Weather Forecasts suffer from a number of stratospheric biases, two of which are highlighted in this talk: i) The cold polar tropopause bias, which maximizes in the Northern Hemisphere summer and is common to most numerical weather and climate prediction models; and ii) The global-mean cold bias in the stratosphere that amplifies with increase in the horizontal resolution without concomitant increase in the vertical resolution. The reasons behind these biases are discussed and solutions to alleviate them are proposed. More importantly, it is illustrated that eradicating the biases results in improved forecast skill in the troposphere at extended and seasonal forecast ranges motivating the need for further work in reducing stratospheric biases in numerical weather prediction models.

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