SESSIONS: (A7/A8) Stratosphere/Chemistry

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The role of stratosphere - troposphere coupling in sub-seasonal to seasonal prediction using the S2S database

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Over the past decades, the stratosphere has been found to strongly couple with surface processes, especially in winter. In the light of improving predictions on sub-seasonal to seasonal timescales, the stratosphere has been found to potentially represent a crucial source of predictability, in particular after stratospheric extreme events. It however remains to be quantified to what extent this predictability is reproduced in sub-seasonal model predictions. In a community effort, we explore the predictability arising from stratosphere – troposphere coupling on sub-seasonal timescales in a wide range of models from the S2S database. Surface predictability arising from a range of stratospheric events such as sudden and final stratospheric warmings, strong vortex events, and negative wave-1 heat flux events is quantified, as well as predictability of the stratosphere itself, arising from remote connections in the climate system. A comparable analysis is performed for the Southern Hemisphere. This contribution will provide an overview of the state-of-the-art of the currently available forecast skill arising from the coupling between the troposphere and the stratosphere.