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The representation of stratosphere-troposphere coupling in S2S models

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Stratospheric variability is increasingly being investigated as a potential source of tropospheric predictive skill on sub-seasonal to seasonal (S2S) timescales. Here we provide a broad overview of stratosphere-troposphere coupling processes in the S2S prediction systems. We consider both the predictability of the stratosphere itself, and the influence of stratospheric variability on the predictive skill of surface climate. We apply this framework to different types of extratropical stratospheric variability, such as sudden stratospheric warmings and final stratospheric warmings. We highlight issues in the S2S models, such as the loss of the Quasi-biennial Oscillation signal within 1-2 weeks after initialization. Finally, we will discuss future experiments using the S2S models that are being proposed to the modeling community to better isolate the role of the stratosphere in surface climate predictability.

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