Predictability of the Stratosphere and Stratosphere-Troposphere coupling in the S2S models.

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The stratosphere has been recognized to play an important role in the predictability of surface weather on subseasonal to seasonal (S2S) timescales. This study evaluates to what extent predictability related to the extratropical stratosphere indeed exists in hindcasts of operational S2S prediction systems in the S2S database. The analysis includes predictability for stratospheric events for the extratropics of both hemispheres and potential precursors of stratospheric predictability in the tropics and extratropics, as well as changes in surface predictability after stratospheric events. It is found that different prediction systems exhibit a wide range of skill in predicting stratospheric events, though skill generally only exists at the deterministic level for daily lead times. Probabilistic skill exists for stratospheric events when including precursor events and teleconnections, though these are only captured by a limited set of models. At the surface, predictability is increased after stratospheric events for all prediction systems.