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Predicting Sudden Stratospheric Warming 2018 and its Climate Impacts with a Multi-Model Ensemble

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Sudden Stratospheric Warmings (SSWs) are significant source of enhanced sub-seasonal predictability but whether this source is untapped in operational models remains an open question. Here we report on the prediction of the SSW on 12 February 2018, its dynamical precursors, and surface climate impacts by an ensemble of dynamical forecast models. The ensemble forecast from 1 February predicted 3 times increased odds of an SSW compared to climatology, although the lead-time for SSW prediction varied among individual models. Errors in the forecast location of an Ural high and underestimated magnitude of upward wave activity flux reduced SSW forecast skill. Although the SSW's downward influence was not well forecasted, the observed northern Eurasia cold anomaly following SSW was predicted, albeit with a weaker magnitude, due to persistent tropospheric anomalies. The ensemble forecast from 8 February predicted the SSW, its subsequent downward influence and a long-lasting cold anomaly at the surface.

Primary authors: KARPECHKO, Alexey (Finnish Meteorological Institute); Dr CHARLTON-PERES, Andrew (University of Reading); ALONSO BALMASEDA, Magdalena (ECMWF); Dr TYRRELL, Nicholas (Finnish Meteorological Institute); Dr VITART, Frederic

Presenter: KARPECHKO, Alexey (Finnish Meteorological Institute)

Session Classification: Prediction and verification

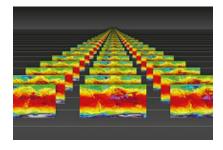**Track Classification:** Workshop on Predictability, dynamics and applications research using the TIGGE and S2S ensembles