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Title: Evaluation of CFSv2 Predictions for the Stratospheric Circulation Anomalies

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Abstract:

We have made preliminary analysis of prediction skill of the stratospheric circulation anomalies of CFSv2 reforecast for the period from January 1, 1999 to December 2010. The goal of this study is to explore if the CFSv2 forecasts for stratosphere would remain skillful beyond the inherent tropospheric predictability time scale in the operational model. We calculated anomaly correlation (AC) between analysis (observations) and forecasts as a function of forecast lead time. The results show the AC skills of the forecasts for temperature field at 50 hPa (T50) of NH and SH is much longer than that of counterpart (T500) in the troposphere. It is seen that the CFSv2 forecasts for T500 drop very quickly in few days in all seasons. However, the AC skills for T50 degrade with the lead time at a much slower rate. This is particularly true for winter and spring seasons in both hemispheres. The slowest degrading of forecast skill in NH takes place in February, in which the AC skill for T50 is as high as 0.5 at lead time day 25 and so does in SH but in November. The seasonality of the AC skill for T50 closely follows the seasonality of the meridional mass circulation. The maximum AC skill for T50 in late winter/early spring in NH coincides with the strongest poleward warm air mass transport in the stratosphere in NH whereas the maximum AC skill in later spring in SH is associated with the strongest poleward mass flux in SH.

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