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Title: Analysis of 35 Years of Hindcasts made in Conjunction with CFSR
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Abstract:
The CFSR was ostensibly a Reanalysis effort but, as is the habit at NCEP, five-day forecasts were also run every day at 00Z as part of the quality control of the CFSR. Indeed, the CFSR was halted many times when one such bad forecast signaled trouble at the initial time. The result is a 1979-2013 (and ongoing) data set of day 1-5 forecasts of many variables made by an (intended to be) constant model used in making the background guess field for the CFSR. This model is similar, but not identical, to the CFSv2 forecast model. This 35 year data set of forecasts allows unprecedented study of systematic error correction, its applicability inside and outside the years from which it was derived, and its applicability in a real time operational environment where some changes, unfortunately, are inevitable. We focus on the method of systematic error correction, its success (or lack thereof) for about 15 variables (temperature, mass, flow fields, stratosphere, troposphere and both hemispheres), the occasional lack of success even on dependent data (the effect of the flow of the day or month or even years), and secular changes both due to climate change and increasingly improved initial conditions and more abrupt changes in data assimilation in recent years.
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