



The Twentieth Century Reanalysis Project

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A potential consequence of climate variability and change is an altered likelihood of weather extremes. To estimate the fidelity of regional projections of these altered risks in the Twenty-first century, daily data is needed to assess the simulations of weather and climate throughout the Twentieth century. Such daily data must have quantified estimates of uncertainty in Twentieth century weather to allow quantitative comparison with simulations.

To this end, we have begun the Twentieth Century Reanalysis Project. This Project is an effort to produce a reanalysis dataset spanning the 20th Century assimilating only surface observations of synoptic pressure, monthly sea surface temperature and sea ice distribution. The project uses the recently developed Ensemble Filter data assimilation system which allows direct computation of both the analysis and the uncertainty in that analysis. The dataset will provide the first estimate of global tropospheric and stratospheric variability spanning more than 100 years with 6 hourly resolution. The first version has global coverage spanning 1908-1958 and 2 degree longitude-latitude horizontal resolution. Comparison with independent radiosonde data indicates that the analyses have a high quality, with correlations higher than 0.94 throughout the troposphere. Overall, the quality is similar to that of current 3-day operational numerical weather prediction forecasts, as anticipated from previous studies.