

Global OSSE at NCEP, Results from High resolution experiments and AIRS

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Abstract

OSSE at NCEP has been focused on evaluating data impacts on a global scale. A 31-day run (February 5th to March 7th 1993) by ECMWF has been used as the Nature Run (NR). The NCEP operational data assimilation system is used to assimilate the data. Adjustment of the NR and calibration using existing instruments were performed (Masutani et al. 1999). The results were satisfactory and justified conducting more OSSEs to evaluate future instruments. During the calibration process, a larger impact from wind as compared to temperature data was confirmed. OSSE has been conducted using T62 spectral resolution and NOAA 11 and 12 TOVS level 1B radiance data (which are available in 1993) due to the computational ability. The OSSE system has been transferred to NCEP's IBM SP system in order to accommodate high resolution data, such as AIRS radiance and high resolution data assimilation. AIRS and AMSU data are simulated by NOAA/NESDIS. The resolution is also upgraded to T170 and effect of using higher resolution is investigated. The combined impacts from high resolution radiance data and DWL is being studied.

It is found the data impact depends on the observational error assigned. The correlated error in observation particularly important to assess the impact on large scale. More detail diagnostics including study of error characteristics is being proposed. In order to pursue a more detailed assessment of the future data, a NR with higher resolution over a longer period is considered. Based on the results the requirement for the NR for the next generation of OSSE will be discussed. .