

Observing System Simulation Experiments for NPOESS - Assessment of Doppler Wind Lidar and AIRS -

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Abstract

National POES System (NPOESS) is scheduled to fly during the 2007-2010 period. The impact of future instruments such as Doppler Wind Lidar (DWL) need to be assessed with experiments using simulated observations. These experiments are known as Observing System Simulation Experiments (OSSEs). OSSE will provide a guideline for selection and design of the instrument.

The first "nature run" (true atmosphere for the OSSEs) was provided by the European Centre for Medium- Range Weather Forecasts (ECMWF) for February 1993. An alternative nature run has also been prepared by NASA/DAO including summer and is being evaluated.

Data impact of existing instruments in real and simulated data are compared for calibration. The impact test show satisfactory similarity with TOVS 1B data and RAOB wind between real and simulated analysis. Impact of inconsistent surface height and SST between the real and the nature run is evaluated and adjustment may be required.

For the DWL OSSE, the bracketing OSSEs have been performed for various concepts to bound the technology neutral potential impact. The results show that scanning is most important particularly in the upper atmosphere.. The first set of atmospheric infrared sounder (AIRS) data has been simulated. Simulation of cloud motion vectors (CMV) are under preparation. Impact of AIRS and CMV can be compared with impact in current real data. Impact of DWL will be reassessed with AIRS and CMV.