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# Initial Evaluation of JEDI Unified Forward Operator For Use in NCEP's Global Data Assimilation System

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## Abstract

The Joint Effort for Data assimilation Integration (JEDI) project aims to create a modern, advanced, and configurable data assimilation system to be used by numerous operational forecast centers and researchers alike. Led by the Joint Center for Satellite Data Assimilation (JCSDA), groups from NOAA, NASA, the US Navy and Air Force, and the UK MetOffice all contribute to development and testing of this system. One component of JEDI, the Unified Forward Operator (UFO) is a collection of model-agnostic, generic forward operators and quality control procedures that can be used with a variety of observation types to compute the first-guess departures needed for assimilation. Currently, the National Centers for Environmental Prediction (NCEP) uses the Gridpoint Statistical Interpolation (GSI) software in the operational Global Data Assimilation System (GDAS). Here we present a comprehensive evaluation of the UFO in comparison to the operational GSI system for the same set of observations and model backgrounds. This evaluation includes comparing first-guess departures and final observation counts after quality control produced using UFO to that from GSI for a variety of observation types (conventional and satellite) over a period of one month. Overall results and statistics will be shown as well as a deeper investigation into specific cases/scenarios where the two systems differ. The results presented here represent the first milestone in the process of NCEP's acceptance of JEDI and its path towards a transition to operations.

**Keywords:** JEDI, forward operators, evaluation, global

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