The New Observing Strategy (NOS) concept is designed to optimize data from many different sensors and models in response to specific measurement needs or water-related events.

The NASA Land Information System (LIS), developed in Goddard’s Hydrological sciences lab, was used as the modeling environment to drive the initial NOS demonstration for a hydrology application.

A historical case of floods over the Midwest U.S. in March 2019 was used for the first ‘proof-of-feasibility’ demonstration. NASA LIS was used to assimilate information from in-situ soil moisture and low latency VIIRS flood products to issue forecasts of flooding conditions.

Based on these forecasts, taskable high-resolution commercial satellite data was obtained over the locations of anticipated flooding and were used to refine the forecasts. Assimilating all NOS-directed observations improves forecasts of flooding conditions by as much as 30%.

A fully automated NOS testbed informed by LIS forecasts was successfully demonstrated, and shown to significantly improve forecasts.