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# Impact of Losing Aqua and Legacy POES and of Gaining Radio-Occultation Observations

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## Abstract

This work summarizes the findings of a GMAO Observing System Simulation (OSE) study to evaluate the impact of Aqua leaving the A-Train and the termination of access to the Legacy Polar Operational Environmental Satellites (POES) for NWP applications. The summary also provides a brief assessment on the potential for new data sources to compensate for the loss of Aqua-POES; a case study is developed here that looks at the impact of adding COSMIC-2 to the main observation denial experiment. Overall, the impact of losing the observations from Aqua-POES is found to be large and particularly detrimental to forecasts, especially in the range of a few hours to about three days. Introduction of COSMIC-2 is seen to largely compensate for the loss of Aqua-POES in the Tropics, but the Extratropics are found not to recover to the level of performance of the control experiment. Ultimately, results from the GMAO OSEs suggest that loss of Aqua-POES would come to considerable detriment to the quality of its NWP system. In the hopes of trying to regain lost skills in the Extratropics, this work looks further into studying the impact of commercial RO being added to the mix. This presentation will show the highlights of this investigation.

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