Title: ANCHOR DA Model

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ANCHOR is a novel assimilative model developed at the U.S. Naval Research Laboratory, which was designed for rapid assimilative runs. ANCHOR uses recently developed PyIRI model for the background and for the formation of the background covariance matrix. It only takes a few minutes for ANCHOR to complete the data assimilation (DA) for one day, including data pre-processing and model set up. ANCHOR extracts ionospheric parameters from radio occultation (RO) and ionosonde data using PyIRI formalism and assimilates them as point measurements into maps of the background parameters using a Kalman Filter approach. This presentation introduces the ANCHOR algorithm, discusses its coordinate system and background, explains the background covariance formation, discusses the extraction of the ionospheric parameters from the data and the assimilation process, and, finally, shows the results of the observing system simulation experiment with synthetic data simulated using the SAMI3 model. ANCHOR reduces the root mean square errors in the analysis by more than a half for all the ionospheric parameters in comparison to the background. Finally, this presentation discusses advantages and limitations of the parametrized ionospheric DA, highlighting the avenues for its future improvement.

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