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Type: Talk

How stratospheric composition Limb observations improve weather model forecasts

The Microwave Limb Sounder (MLS) on the Aura satellite has been providing essential observations of ozone for the upper troposphere and lower stratosphere (UTLS). The relevance of the UTLS region for key weather and climate patterns, and coupling between the troposphere and stratosphere, highlights the capacity of MLS O₃ to enhance weather forecasting.

This study investigates the impact that the assimilation of MLS ozone data has on meteorological fields in NWP simulations using the European Centre for Medium-Range Weather Forecasts (ECMWF) IFS model. We will show results that focus on short- and medium-range forecasts for recent weather events that were influenced by stratosphere-troposphere interactions.

Our study also explores alternatives to be used after MLS data will stop being available. And it shows the need for new observation platforms like the ESA-CAIRT instrument, to provide atmospheric composition measurements that will enable better representation of UTLS processes and enhance stratosphere-troposphere coupling in weather forecast systems and reanalyses.

Topic

Applications (e.g., data assimilation, gridded products, spacecraft re-entry plumes)

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