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infrasound to constrain ensemble predictions and detect model biases

For users of ensemble weather forecasts, a key metric of forecast success is its ability to effectively predict the uncertainty of a given weather condition happening at some point in the future. Knowledge on the quality of the forecasting system is essential. Evaluation methods of forecast performance focus predominantly on the surface and troposphere. However, knowledge on the stratospheric performance is valuable.
The potential of infrasound as an independent measure to evaluate the stratospheric forecast performance has been demonstrated for the 2013 sudden stratospheric warming, addressing a model bias due to a data assimilation issue. In this study, the performance of the stratospheric ensemble forecasts is evaluated to constrain ensemble predictions and detect model biases. A year of near continuous infrasound from the volcano Etna is compared with simulations using the ensemble forecast of the European Centre for Medium-range Weather Forecasts (ECMWF).

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