ID: Type: **Poster**

the use of infrasound for constraining global climate models

Numerical prediction of infrasound is a complex issue due to constantly changing atmospheric conditions and to the random nature of smallscale flows. Although part of the upward propagating wave is refracted at stratospheric levels, where gravity waves significantly affect the temperature and the wind, yet the process by which the gravity wave field changes the infrasound arrivals remains poorly understood. In the present work, we use a stochastic parameterization to represent the subgrid scale gravity wave field from the atmospheric specifications provided by the European Centre for MediumRange Weather Forecasts. It is shown that regardless of whether the gravity wave field possesses relatively small or large features, the sensitivity of acoustic waveforms to atmospheric disturbances can be extremely different. Using infrasound signals recorded during campaigns of ammunition destruction explosions, a new set of tunable parameters is proposed which more accurately predicts the smallscale content of gravity wave fields in the middle atmosphere. Climate simulations are performed using the updated parameterization. Numerical results demonstrate that a network of groundbased infrasound stations is a promising technology for dynamically tuning the gravity wave parameterization.

Primary author: RIBSTEIN, Bruno (CMLA - ENS Paris Saclay)

Presenter: RIBSTEIN, Bruno (CMLA - ENS Paris Saclay)

Track Classification: Analysis of Sources and Scientific Applications