

EGU21-15038

<https://doi.org/10.5194/egusphere-egu21-15038>

EGU General Assembly 2021

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Impact of planetary waves on infrasound propagation uncertainties

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The uncertainties in the infrasound technology arise from the middle atmospheric disturbances, which are partly underrepresented in the atmospheric models such as in the European Centre for Medium-Range Weather Forecasts (ECMWF) products used for infrasound propagation simulations. In the framework of the ARISE (Atmospheric dynamics Research InfraStructure in Europe) project, multi-instrument observations are performed to provide new data sets for model improvement and future assimilations. In an unexpected way, new observations using the autonomous CORAL lidar showed significant differences between ECMWF analysis fields and observations in Argentina in the period range between 0.1 and 10 days. The model underestimates the wave activity, especially in the summer. During the same season, the infrasound bulletins of the ISO2 station in Argentina indicate the presence of two prevailing directions of the detections, which are not reflected by the simulations. Observations at the Haute Provence Observatory (OHP) are used for comparison in different geophysical conditions. The origin of the observed anomalies are discussed in term of planetary waves effect on the infrasound propagation.