ID: Type: **oral**

we use infrasound data from bolides to constrain global celerity models?

Thursday, 7 November 2024 13:55 (25 minutes)

Global celerity and back azimuth deviation models are used within infrasound detection association and event location estimation algorithms. A previous study, InfGEM (Infrasound Global Empirical Models), used a database of ground-truth mine blasts and chemical explosions to derive a celerity-range model, using the arrival time of the maximum peak-to-trough amplitude to calculate celerity for each detection. The majority of arrivals used to build the InfGEM celerity-range model are at station to event ranges of less than 2000 km, with only a few detections out to 6000 km. To further constrain celerity models at ranges greater than 2000 km we assess the feasibility of adding bolide data into InfGEM. A bolide is a meteor that explodes in the atmosphere producing an infrasound signal that is often detectable at long ranges. We analyse signals generated by 10 well characterised bolides that were recorded on International Monitoring System (IMS) stations with a maximum station to event range of at least 5000 km. We compare celerities of bolide signals with those that constrain the InfGEM model, to assess the potential of bolide detections to provide celerity range information for distances greater than 2000 km.

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Session Classification: Sources and Scientific Applications

Track Classification: Sources and Scientific Applications