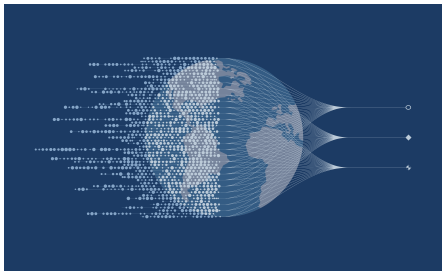

ID: **P2.1-548** Type: **E-poster**

from rocket launches and reentries observed at the IMS

Rocket launches and reentries are powerful atmospheric noise sources detectable at infrasound arrays in thousands of kilometers distance. Recorded signatures originate from the ignition, launch, supersonic movement, stage separation and reentry of rockets within the first about 100 kilometers of altitude of the atmosphere. We use IMS infrasound data to localize and characterize these events all over the world.

During the last 20 years, an increasing number of annual space missions was conducted from various globally distributed space ports. These missions were mainly launched to inject satellites in Earth's orbit, but also for space station flights and the exploration of the Moon and other bodies in the solar system. In this context, an increasing number of infrasound events related to rockets was also identified in IDC bulletins.

We investigate and present infrasound detections of interest, including NASA's Artemis 1 Moon mission using the Space Launch System in 2022, SpaceX's orbital flight tests of Starship starting in 2023 and ESA's first launch of the new Ariane 6 rocket in 2024. Furthermore, we highlight a systematic analysis of infrasound recorded from multiple, regularly launched vehicles like Ariane 5, Falcon 9, and various Soyuz and Long March rocket types.

E-mail

christoph.pilger@bgr.de

In-person or online preference

Primary author: Mr PILGER, Christoph (Federal Institute for Geosciences and Natural Resources (BGR))

Co-authors: Dr HUPE, Patrick (Federal Institute for Geosciences and Natural Resources (BGR)); Mr GAEBLER, Peter (Federal Institute for Geosciences and Natural Resources (BGR))

Presenter: Mr PILGER, Christoph (Federal Institute for Geosciences and Natural Resources (BGR))

Session Classification: P2.1 Characterization of Treaty-Relevant Events

Track Classification: Theme 2. Monitoring events and Nuclear Test Sites: T2.1 Characterization of Treaty-Relevant Events