

ARISE project: Infrasound monitoring for civil applications

The ARISE (Atmospheric dynamics InfraStructure in Europe) project combines the International infrasound Monitoring system developed for the verification of the Comprehensive nuclear-Test-Ban Treaty (CTBT) with lidar and radar networks and satellites for an improved description of the atmospheric dynamics. Civil applications are the following: - Weather forecasting: It is demonstrated that a better knowledge of the stratosphere, for example at the onset of stratospheric warming events, improves forecasts at time scales of several weeks. Gravity waves observed in the lower part of the infrasound spectrum can also be parameterized for improved representation in models. - Climate change: The long duration infrasound time series are relevant to determine the evolution of disturbances with the climate change. This concerns tropical convection, lightning activity, cyclones and ice breaking in polar regions. - Civil security: Infrasound remote monitoring is well adapted to automatically detect and notify volcano eruptions at global scale. The impact for civil aviation is large especially for unmonitored volcanoes. The Volcano Information System (VIS) is proposed in cooperation with CTBT organization and the Toulouse Volcano Ash Advisory Center (VAAC). A prototype is included in the ARISE data Center. Infrasound observations are also relevant for the monitoring of thunderstorms and meteors.

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