

Atmospheric dynamics InfraStructure in Europe: The ARISE project Atmospheric dynamics InfraStructure in Europe: The ARISE project

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There is currently a lack of observations, data and model parameters, which are needed in weather and climate models. ARISE is an EU-funded infrastructure project (FP7 2012-2014 and H2020 2015-2018) with a long-term objective to fill this gap and solve persistent problems facing the applications which depend on atmospheric dynamics. The atmosphere is a dynamic medium being continuously disturbed by winds and atmospheric waves over a broad range of time and spatial scales. Disturbances include large-scale waves such as gravity and planetary waves which transfer energy and momentum from one region of the atmosphere to another. Atmospheric extreme events such as volcanoes, stratospheric warming events, magnetic storms, tornadoes and tropical thunderstorms also constitute significant disturbances to atmospheric dynamics.

The ARISE project aims at establishing a unique atmospheric research and data platform in Europe and outlying regions, including the polar and equatorial regions. It will combine observations with theoretical and modelling studies to elucidate the dynamics of the middle and upper atmosphere. For the first time, several technologies (infrasound, lidar, airglow, radars, ionospheric observations and satellites) will be used simultaneously and in a complementary way. The measurements will be used to improve the parameterization of gravity waves in the stratosphere to better resolve climate models. Such description is crucial to estimate the impact of stratospheric climate forcing on the troposphere. The collected data are required to improve weather forecasting to monthly or seasonal scales, remote volcano monitoring, climate monitoring and other applications. The ARISE data portal aims to provide high-quality, easy-to-use data and advanced data products to a wide scientific community.

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