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# The Ruisdael Observatory: The Atmospheric Research Infrastructure in The Netherlands 2018 – 2027

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A consortium of 10 Dutch institutes have started this year with the construction of a distributed atmospheric observatory. The observatory will focus on boundary layers, clouds, air quality, GHG and their interactions. The Ruisdael Observatory will consist of: 1) four advanced anchor stations: the already existing grassland site at Cabauw, the forest site Loobos, the land-sea transition site Lutjewad, and a new urban station in the Randstad agglomeration; 2) a number of mobile facilities to probe the physical and chemical state of the atmosphere; and 3) a computational facility for real-time assimilation of the observations into high-resolution atmospheric models. In addition use will be made of the data of other existing observational sites in the Netherlands.

Even though the observatory includes existing observational networks of (largely) localized point measurements, the major advancement of the observatory will lie in its expansion with new stations that are capable of three-dimensional measurements, and the real-time assimilation of data in atmospheric models. The observatory will operate at the full scale of The Netherlands at the unprecedented spatial resolution of one kilometer, augmented with selected (urban) regions of even higher resolution to zoom in on specific processes and the role of small-scale heterogeneity.

The Ruisdael Observatory forms the Dutch contribution to the European Atmospheric Research Infrastructures ICOS and ACTRIS.

The Ruisdael Observatory will make it possible to address a number of outstanding challenges in atmospheric science and policy. This includes questions related to land-atmosphere interactions and their impact on cloud formation, the role of aerosol growth and aging, and atmospheric transport processes across scales. On basis of better understanding and representation of small-scale processes the aim is to improve forecasts of weather, air quality and climate.