

## **DUST-DN: Doctoral Network on Atmospheric Dust**

### **Description**

Atmospheric dust gives us one of the most visible and detectable aspects of transboundary transport of atmospheric constituents, impacting visibility, radiation and climate. What is less evident are its impacts on health, transportation and energy production.

Atmospheric dust is not fully understood at the fundamental level and models fail to fully reproduce its properties, limiting potential societal benefits that could arise from more accurate predictions. Moreover, dust observations are abundant, but are still under development, and each technique gives a different picture of a phenomenon with multiple facets. Finally, dust affects the environment, society, and several socio-economic sectors.

Here, we propose the first doctoral network on a European scale (to our knowledge), bringing together expertise on mineral dust in the atmosphere and multidisciplinary methods. Dust-DN is a strategic, international, and intersectoral alliance of high-profile partners. It will be able to deliver advances in understanding fundamental dust properties, and improve our knowledge and prediction of the socio-economic impacts of dust.

We will address the knowledge gaps through creating a cohort of early career scientists within a network between academic and non-academic partners. The doctoral network will be driven by the following research objectives, at the frontier of science on atmospheric mineral dust:

- Understanding of the fundamentals of dust microphysical properties and processes
- Identifying the influence of source regions on atmospheric dust properties
- Socio-economic impacts of dust on health, aviation and energy production
- Dust in the global climate system.

The partners have unique scientific facilities for addressing these questions, and a number of methodologies will be used, including field observations, remote sensing, numerical modelling and laboratory experiments.

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme under the Marie Skłodowska-Curie grant agreement No 101168425

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**Source URL (retrieved on 19 Oct 2024 - 11:28):** <https://www.bsc.es/es/research-and-development/projects/dust-dn-doctoral-network-atmospheric-dust>