

Our world leading team of European experts combine modelling and observation expertise to understand cloud-aerosol processes & interactions, and their impact on global climate and society.



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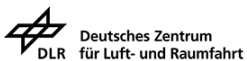


# TEAM

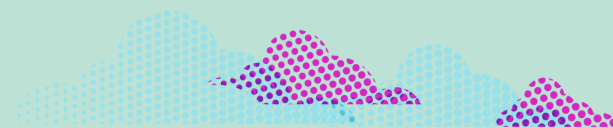
+100 researchers  
10 countries  
18 partners



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Cloud-aERosol  
inTeractions  
& their impActs  
IN The earth sYstem



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## ACCELERATED CLIMATE CHANGE & RELATED WEATHER EXTREMES

In the last decade, an unprecedented **acceleration in climate change and related extreme weather events** has occurred. In 2022, Europe experienced the hottest summer on record with a severe drought and raging wildfires.

The IPCC Summary for Policymakers (IPCC, 2021) notes: “continued **global warming is projected to further intensify** the global water cycle, including its variability, global monsoon precipitation and the severity of wet and dry events”.

## THE ROLE OF CLOUDS & AEROSOLS

Clouds are key modulators of the Earth’s energy balance and any perturbation due to aerosol–cloud interactions can profoundly impact weather and climate affecting both natural and human systems.

Aerosol–cloud interactions contribute about 3 times more to the negative Effective Radiative Forcing (a cooling effect) of aerosols on climate, than aerosol-radiation interactions. Although it is virtually certain that aerosol forcing exerts a net cooling impact upon climate, partly masking greenhouse gas warming, **its magnitude is highly uncertain and varies strongly with time and location**, which severely limits our understanding.

## KEY TARGET UNCERTAINTIES CERTAINTY IS WORKING ON

- Warm-cloud processes,
- cold-cloud processes,
- precipitation formation,
- aerosol lifecycle,
- aerosol–cloud interactions & aerosol-radiation interactions impacts on weather,
- aerosol–cloud interactions & aerosol-radiation interactions impacts on climate.

## BETTER UNDERSTAND AND PREDICT WEATHER & CLIMATE

CERTAINTY aims to deliver the **knowledge and models** that provide **enhanced confidence & representation of the role of cloud- aerosol-radiation interactions** in climate and weather.

This translates to:

- **better understanding & predictions of extreme events,**
- **improved planning climate mitigation & adaptation strategies for the good of the society.**

Significant questions remain about how aerosol-cloud-radiation interactions influence and modify weather events.

The CERTAINTY team of European experts is dedicated to addressing this critical scientific challenge.