



Strengthening Climate Research in Europe



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# High Impact Events and Climate Change

An ECRA network enhancing European collaboration for the benefit of society

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## Introducing High Impact Events (HIE) ECRA

**By definition the occurrence of high impact events (HIEs) has significant consequences. We need a better understanding of how we can avoid or mitigate the worst consequences for the benefit of society.**

There is growing awareness that **climate change** cannot solely be considered as a “**mean state**” modification. Changes in the characteristics, frequency, and severity of **extreme or coincident events** are often responsible for the most important impacts, and consequently are amongst the most significant aspects of climate change to understand and predict.

This Collaborative Programme (CP) examines how **HIEs** work, how long-term records for the past can be constructed, how they can be simulated accurately in fluid-dynamical and statistical models, and how we might be able to project future changes reliably.

The CP is structured along three questions:

- 1) Will high impact events occur more frequently?
- 2) What are regional impacts of extreme events?
- 3) How could prediction and projection capabilities be enhanced?

More information about HIE ECRA is available online at:

<http://www.ecra-climate.eu/index.php/collaborative-programmes/hievents>

### **Examples of HIEs:**

- Storms: Tropical, extra-tropical and thunderstorms (including hail)
- Flooding: Extreme precipitation, coincident events (high tides and river-runoff)
- Heat waves (including air pollution) and droughts
- Storm surges

### **Activities:**

- Assessment of past and future HIEs (e.g. storms and floods)
- High resolution climate modelling
- Downscaling (using different methodologies)
- Climate risk analysis, vulnerability and adaptation

HIE ECRA is one of four Collaborative Programmes (CPs) of the European Climate Research Alliance (ECRA). It is open to ECRA members and non-members, and offers expertise in theory, observations, modelling and impact assessments. It is unique in its flexibility and responsiveness to new ideas, new results and emerging challenges. HIE ECRA is an inclusive organisation that is open to new participants. The CP is coordinated by the Karlsruhe Institute for Technology (KIT), DE with input from the National Centre for Atmospheric Science (NCAS), UK and the Technical University of Denmark (DTU), DK.