

Disciplines interlinked in CEDIM

- Geosciences:
 - Meteorology & Climate Research
 - Geophysics & Seismology
 - Hydrology
 - Geoinformatics & Remote Sensing
 - Geology & Geography
 - Environmental Sciences
- Engineering
- Economics
- Social Sciences
- Regional Science
- Security Research

Skills

- Forensic Disaster Analysis
- Early Warning Systems
- Hazard Analyses & Risk Estimations
- Near-Real-Time Loss Estimation
- Decision Support Systems
- Resilience & Vulnerability Analyses
- Geographic Information Management
- Regional Climate Modeling
- Hydro-Meteorological Modeling
- Transportation Interruptions
- Critical Infrastructures
- Smart Technologies
- Systemic Risks & Criticality

Currently, 12 KIT institutes are involved in CEDIM.

Spokesmen of CEDIM



Prof. Dr. Michael Kunz
CEDIM Spokesman

Institute for Meteorology and Climate Research,
Department Troposphere Research

Prof. Dr.-Ing. Stefan Hinz
CEDIM Deputy Spokesman

Institute of Photogrammetry and Remote Sensing

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An aerial photograph showing a road intersection completely surrounded by brown floodwater. A white car is visible on the road. The surrounding area is mostly green, indicating a rural or semi-rural setting.

KIT
Karlsruhe Institute of Technology

100% recycled paper with the quality label „Der Blaue Engel“ || Photos: © Marco Kaschuba (Danube flood 2013; Elbe drought 2018).

**Center for Disaster
Management and Risk
Reduction Technology**

CEDIM

Mission

For 20 years, CEDIM has been conducting research on disasters, risks, and security in societal demand areas. It was established to understand better, detect earlier, and manage natural and anthropogenic risks.

CEDIM is...

...an interdisciplinary research center at the Karlsruhe Institute of Technology (KIT) in the field of disasters, risks, and security in social requirement areas.

CEDIM conducts research...

...on causes, management, and prevention of natural and technical risks.

CEDIM develops...

....models and concepts to strengthen the security and resilience of our rapidly changing society and environment.

CEDIM connects...

...scientific research in the fields of natural sciences, social sciences, economics, and engineering at KIT.



Current projects

CEDIM's current research focus is on *Impacts of heat waves and droughts in Germany on society, economy and ecology*:

- Impact of recent and future drought events on river discharge and fluvial transport sector for the Rhine River
- Capturing the effects of droughts and heat waves on forests in central Europe
- Utilization extension of dams in Baden-Württemberg for real-time management of heat, drought and floods
- Perception of heat periods in public areas: discrepancy of measurement and subjective perception in a social context
- Wildfire risk in Southern Germany

Selection of highlights

- **Hazard and risk assessments** of storms, earthquakes, and floods; accessible interactively via the **CEDIM Risk Explorer Germany** (https://www.risklayer-explorer.com/cedim_explorer), e.g., relevant to site analysis for certified sustainable construction by the Federal Office for Building and Regional Planning (BBSR).
- **Crisis manual for power blackouts in Baden-Württemberg** for municipal disaster management institutions (municipalities, fire departments).
- **Development of novel risk models** for hail, floods, and earthquakes with operational application in the insurance market.
- **Corona Dashboard** in cooperation with Risklayer GmbH (spinoff of KIT); used by various media, academic institutions, decision makers in politics, and authorities.

Forensic Disaster Analysis

Near-real-time forensic disaster analysis (FDA) is a major focus of CEDIM's collaborative research activities. In the case of a current disaster, the CEDIM FDA Task Force immediately investigates its temporal and spatial evolution, estimates the direct effects (damage, fatalities), identifies its most important determinants, and derives conclusions for prevention measures.

CEDIM publishes a first report within days. For example, the World Bank uses the results of rapid loss assessments based upon model data, remote sensing data, and socio-economic information, as well as past events in the region affected to determine the financial volume of disaster relief necessary in specific disaster scenarios. This is particularly relevant in the case of severe disasters in developing countries so relief funding from the international community can be provided as quickly as possible.

The results of the FDAs, as well as other results of CEDIM's risk research, are made available publicly via the interactive **Risklayer Explorer** (<https://www.risklayer-explorer.com>). Scientists, actors in disaster management, decision makers, and the interested public can obtain detailed information in the form of easy-to-read metrics, reports, and graphics.

