



JCAR

Zusammenarbeit im Hochwasser- und Dürremanagement (JCAR-ATRACE)



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Deltares



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JCAR ATRACE

- Flooding is a transboundary challenge
- The ambition of JCAR ATRACE is to foster long-term international research partnerships to enhance the knowledge base and knowledge network on flood and drought risk management in transboundary regional river basins.
- JCAR ATRACE is based on two pillars:
 - ≡ annual applied research studies and activities
 - ≡ long-term applied research activities

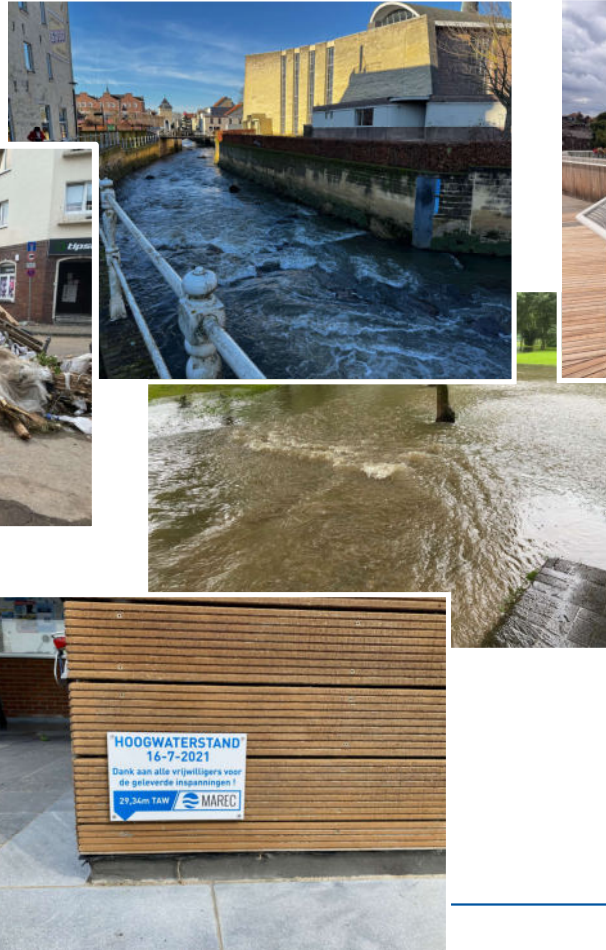


Evaluation floods 2021

Germany



The Netherlands



Belgium



Photos: Schüttrumpf, 2021, 2023, 2025

Evaluation floods 2021

Aanbeveling 19

Voer grensoverschrijdende

De beleidstafel adviseert de afstemming van watersystemen uit te voeren op basis van de volgende principes: ***„Wir werden Hochwasservorhersagesysteme für so viele Gewässer wie möglich einführen“***

a) Per grensregio nationale afstemming op te richten. **10-Punkte Arbeitsplan, 2022**

b) Samen met de grensoverschrijdende aangestuurde gansregio's. **„Wir erweitern und verbessern das Hochwasserpegelnetz“**

c) De stresstester. **10-Punkte Arbeitsplan, 2022**

Actiehouders: ***„Durch die bessere grenzüberschreitende Vernetzung und Weitergabe von Wissen können sich interregionale Behörden besser auf die Folgen extremer Wettersituationen vorbereiten.“***

a) Ministerie van Buitenlandse Zaken
b) Ministerie van Infrastructuur en Waterstaat
c) Provincies en buitenlandse partners **Ziel 13: Wasserwirtschaft im Klimawandel, 2024**

„Verbeter neerslagmonitoring, hoogwatermetingen en hoogwaterverwachting en sluit aan bij behoefte gebruikers“

Beleidsstafel Hoogwater en Wateroverlast

„Intensiveer grensoverschrijdende uitwisseling van data over hoogwaterverwachtingen“

Beleidsstafel Hoogwater en Wateroverlast

„Een grensoverschrijdend alarmerings- en crisisbestrijding-systeem in geval van calamiteiten“

Opbouwplan programma WRL

elijk niveau

nale watersystemen

dersaksen en

ersysteem (van bron
nenlijk meerjarig
de uitwisseling van

kend van lessons
en en onderzoek uit
t blijft niet beperkt
belgië en Duitsland,
europese landen

Ministerie van Infrastructuur en Waterstaat in samenwerking met provincies, waterschappen, buitenlandse partners

aanbeveling 19

Juli 2022



Our main objectives

Our main objectives

Guided by a thorough consultation with our research partners and review of official evaluations of the 2021 floods in Western Europe, the main objectives of this joint cooperation program are:



Better prepared

Facilitate regional governments in Belgium, Germany, Luxembourg and the Netherlands in improving integrated planning, development and management of regional river basins, preparing for extreme climate events.

Pillar I: annual applied research studies and activities



Transboundary collaboration

Foster long-term partnerships between European knowledge institutes to enhance the knowledge base and inform flood and drought strategies in transboundary regional river basins.

Pillar II: long-term applied research activities

Transboundary regional river basins

Explore the transboundary regional basins

Gentse kanalen

[Dommel](#) →

Jeker

[Geul](#) →

[Roer](#) →

Niers

[Oude IJssel](#) →

[Vecht](#) →

[Brabantse Delta](#) →

Uffelschebeek

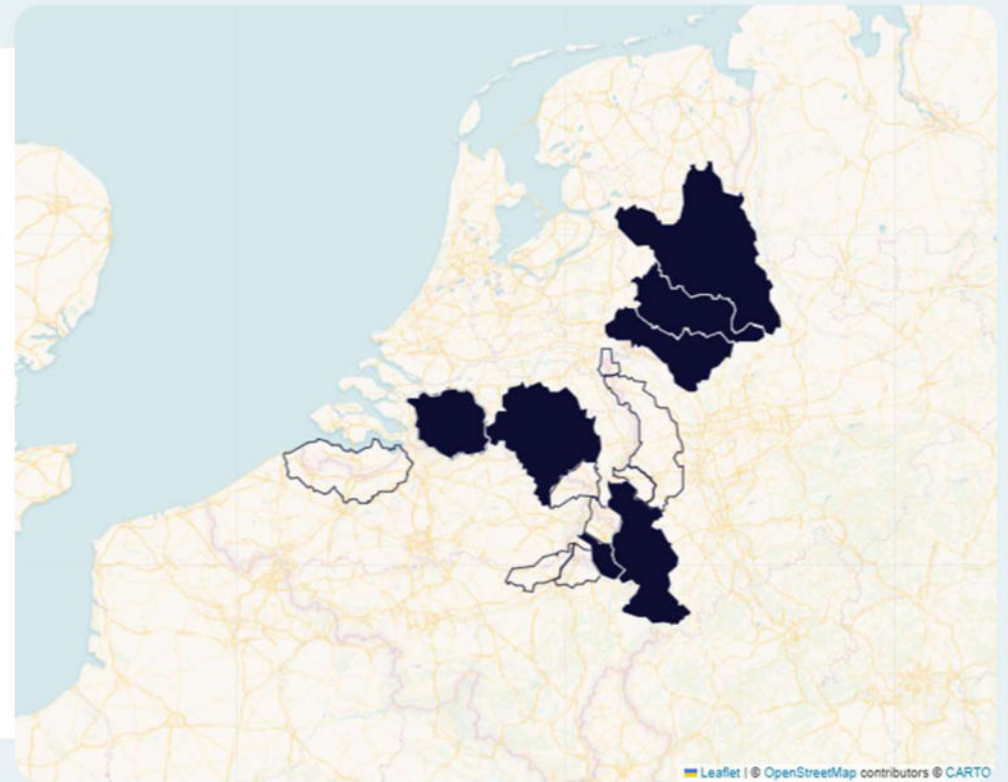
Voer

Rode Beek

Swalm

Groesbeek

[Berkel](#) →



Main Research topics



Extreme Hazards

Exposure

Vulnerability



Compound risks and adaptation solutions

Technology development

European Research Partners

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 **TU**Delft

KU LEUVEN

LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY

LIST 

 **LIÈGE**
université

Deltares

VU  **VRIJE**
UNIVERSITEIT
AMSTERDAM

**UNIVERSITY
OF TWENTE.**

GFZ
Helmholtz-Zentrum
POTSDAM

Pillar I examples: rapid assessment studies

- 1. Cross-border stresstest approach
 - 2. Effects of nature-based solutions on high-and low flows in regional river basins
 - 3. Comparing flood forecasting and early warning systems in the Benelux+ region
 - 4. The effects of nature-based solutions on high- and low flows in the Vechte river basin
 - 5. Assessment of Delft-FIAT functions based on field data from the Vesdre catchment
 - 6. Scoping Cross-Border Stress Test for Flemish-Dutch Streams
 - 7. Flood experience and access to insurance contribute to differences in homeowners' post-disaster adaptation in a cross-border region of Western Europe
-
- And many more topics: [Insights | JCAR ATRACE](#)

Pillar II: In-depth research topics



UNIVERSITY
OF TWENTE.



VU AMSTERDAM

Assessing trade-offs between early action and long-term flood adaptation under climate- and socio-economic change




LIST

Using experimental catchment data and machine learning to benchmark hydrological models for hydrological extremes




UTWENTE

How collaboration contributes to improved flood and drought risk management in transboundary regional river basins



KU LEUVEN

Stress testing of Dutch-Flemish regional river basins




RWTH AACHEN

Reservoir operation under a changing future



UNIVERSITY OF LIÈGE

Impacts of hydrological hazards in the business sector



TU DELFT

Towards better monitoring and modelling approaches to the impacts of floods on infrastructure




GFZ POTSDAM

Understanding and preparing for High-Impact and Low-Probability flood events




Pillar II: Reservoir operation under a changing future: Rur River Catchment Area

■ Climate Change Impact:

- ≡ Rising temperatures influence water availability
 - ≡ Weather becomes more unpredictable
 - ≡ Increase in floods and droughts
- => New challenges for water management**

■ Growing Water Demand

- ≡ Population growth increases water demand
 - ≡ Agricultural water consumption increases
- => Additional pressure on water resources**

■ Importance of Reservoirs:

- ≡ Drinking water supplies
 - ≡ Protect against flooding
 - ≡ Buffer periods of drought
- => Multifunctionality under pressure**



Olef-Dam (Schüttrumpf, 2008)

=>Project Objective:

To unlock the potential of the Eifel reservoirs for sustainable water management in a changing future by developing new, flexible operational rules.

Upcoming Studies in Rhine and Meuse catchments by JCAR ATRACE partners

- Overview on existing and planned upstream measures and the potential effects on the downstream water flow

- Impact on water retention in the Rhine and Meuse catchment
 - ≡ Potential of natural and technical water retention in upstream areas
 - ≡ Database on existing and planned water retention measures
 - ≡ Assessment of the water retention capacity of the measures and its impact on different flood events

- Impact of river management measures on the flood peak attenuation in the (lower) Rhine

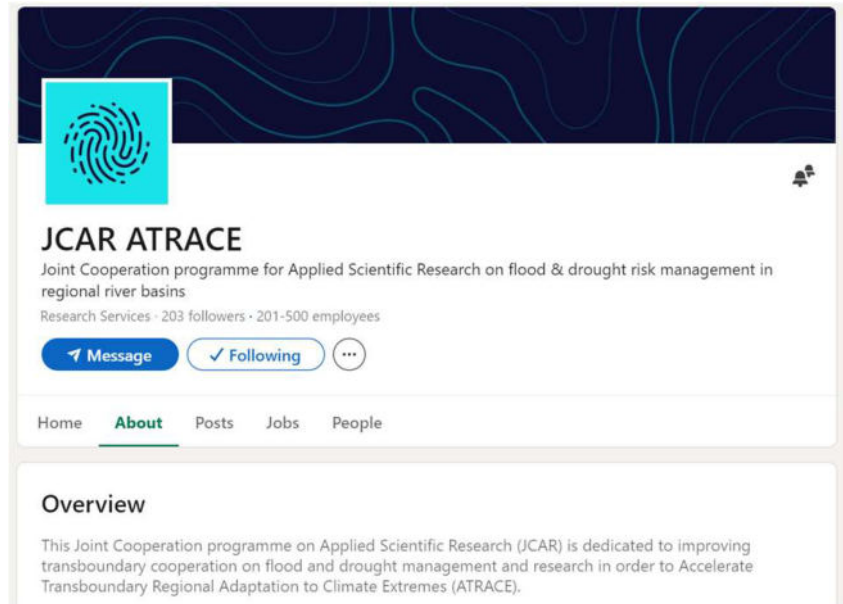
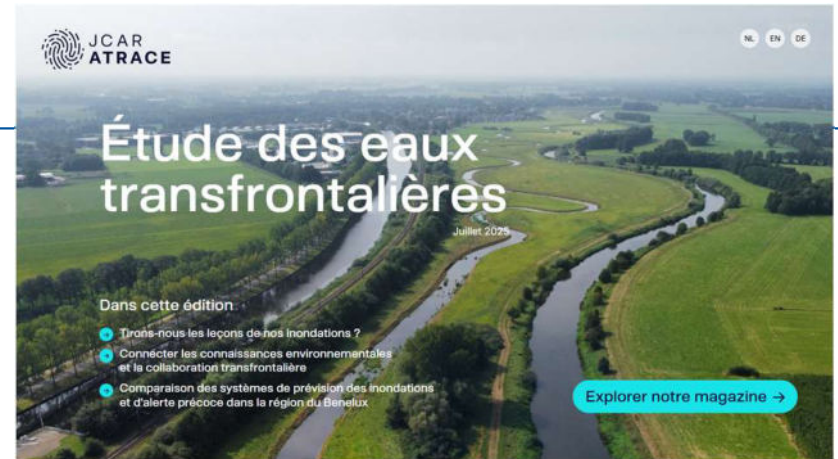
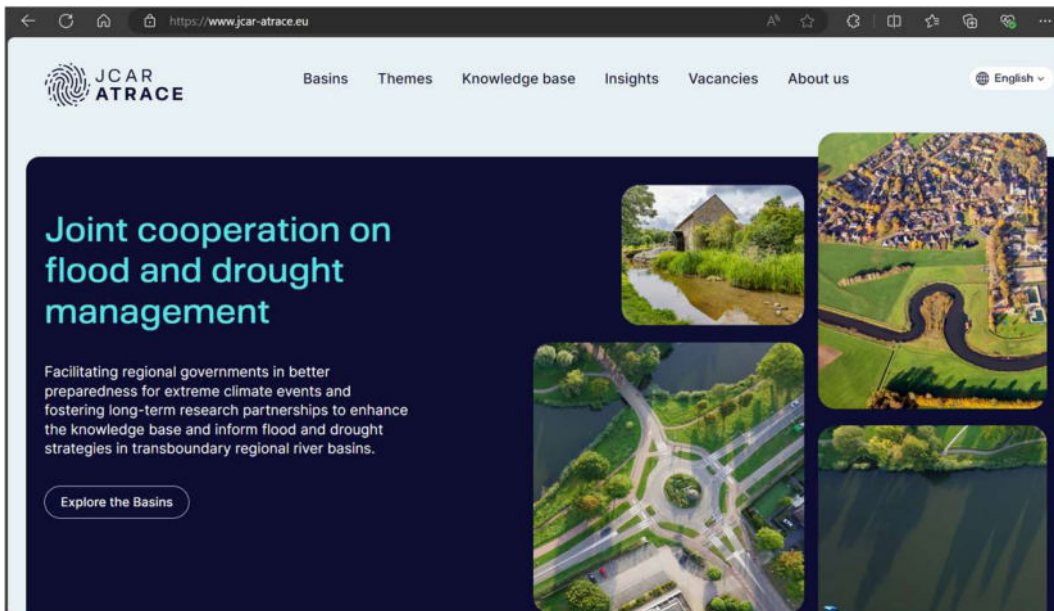
- Arbeitsgruppe Hochwasser Rhein
 - ≡ Multi-year support from RWTH Aachen and Deltares on knowledge questions in the Arbeitsgruppe
 - ≡ Study topics to be defined together with the Arbeitsgruppe

Upcoming international events

- 1. International workshop 'Use of Climate change scenarios in Flood risk management in Benelux+' (17. and 18. Feb 2026, Aachen)
- 2. International workshop 'Recovery from floods in Europe' (14. to 16. April 2026, GER/BEL)

Photo: JCAR ATRACE

Communication



Vielen Dank für Ihre Aufmerksamkeit

Bei Fragen:
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