

Project partners

German partners

Koblenz University of Applied Science
Potsdam Institute for Climate Impact Research
Hamburger Stadtentwässerung AöR
Kisters AG

Institute for Technical and Scientific Hydrology
ISOE – Institute for Social-Ecological Research

Jordanian partners

Ministry of Environment of Jordan
Ministry of Water and Irrigation of Jordan
National Agricultural Research Center
Greater Amman Municipality
Petra Development and Tourism Region Authority

Duration:

2021/06 – 2024/05

Funding:

German Federal Ministry of Education and Research (BMBF) within the framework of „CLIENT II – International Partnerships for Sustainable Innovations“



The CapTain Rain project at a glance

The transdisciplinary, German-Jordanian project focuses on flood prediction and prevention in Jordan

- ❖ to analyse the **social-ecological drivers of flash floods** and interactions between climate and land use change allowing a better simulation and prognosis of flash flood events;
- ❖ to assess the **social-ecological risk of flash floods** using an integrated vulnerability analysis by looking at flash flood hazard, spatial exposure, sensitivity and coping capacity;
- ❖ to **develop climate services** for decision making based on stakeholder dialogues and participatory approaches;
- ❖ to identify promising measures to improve the coping capacity of the local population including methods and technologies to **capture and retain water from heavy rainfall**, but also to prevent damages.

Study area

Urban-rural gradient in Jordan

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Visit our webpage at www.captain-rain.de



Capture and Retain Heavy Rainfalls in Jordan

Understanding drivers of flash floods and improving flash flood prediction and prevention



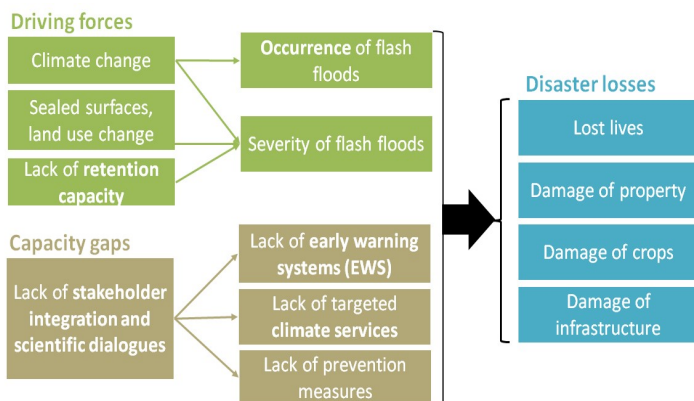
A short introduction to the project

Background

Jordan is one of the most affected countries in the Middle East regarding climate change, vulnerable to climate change impacts and severe weather events, and confronted with rapid population growth and unregulated urban development.

One of the major climate change risks are flash floods.

- ❖ heavy and recurrent rainfall events play a key role in the water cycle, since they replenish scarce freshwater resources that are crucial for agriculture
- ❖ rapid population growth triggered land use changes and unplanned urban growth in flood-prone areas
- ❖ impermeable surfaces, agricultural intensification, upstream deforestation and the abandonment of traditional agricultural terraces cause reduced water infiltration and accelerated runoff rates



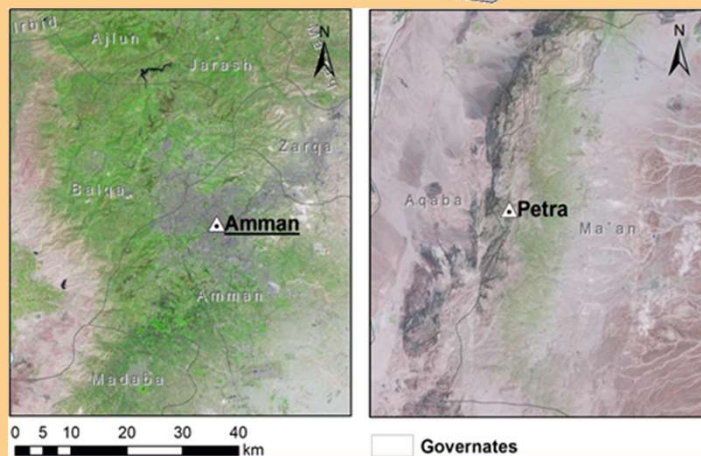
Project objectives

In CapTain Rain, scientists and stakeholders collaborate closely to:

- ❖ understand the social-ecological interactions of flash floods with climate, land use and watershed management as well as river engineering interventions to allow a better simulation and prognosis of flash flood events;
- ❖ provide a revision of the current methods for flash flood prediction and prevention based on an improved transdisciplinary knowledge basis.

Research area

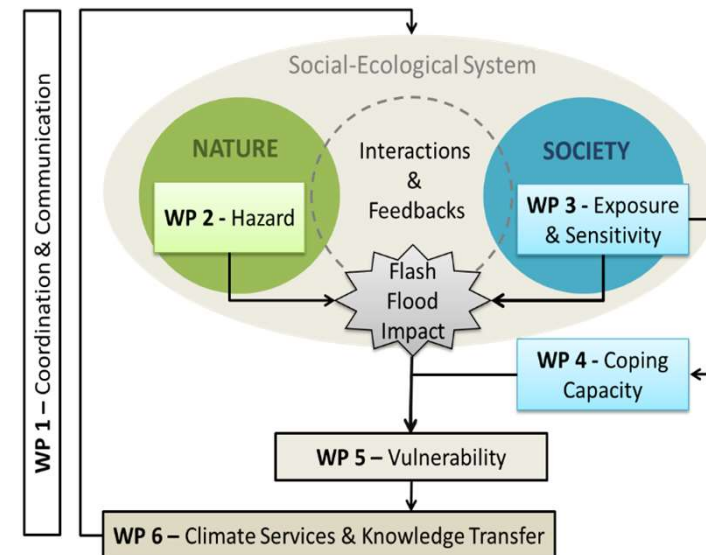
Our research focuses on an urban-rural gradient and comprises the capital Amman (high economic relevance) and the UNESCO heritage site Petra (high cultural relevance).



Overview of the selected study areas: The capital Amman (left) and Petra (right) in Jordan (satellite image scene in the background: Sentinel-2B, April 2019).

Project framework

- ❖ Six work packages (WP) with researcher from Germany and Jordan work on social-ecological risk assessment using a common framework for flood vulnerability analysis



Sustainability potential

Stakeholder-oriented dissemination tools to transfer project results and climate services into practice:

- ❖ **Provide Climate services:** Flood risk maps, tools for improved flash flood forecast, early warning system
- ❖ **Provide Training** for local stakeholders on risk mapping and early warning systems