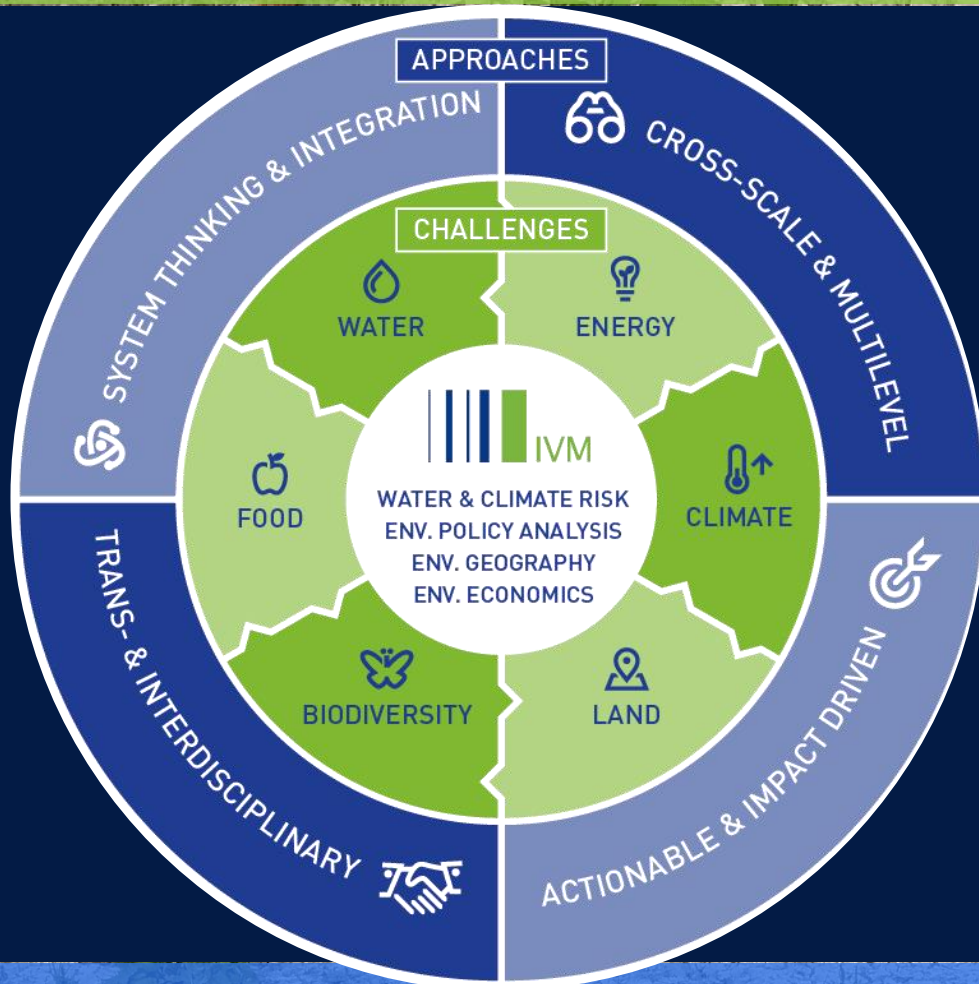


Institute for Environmental Studies

<https://vu.nl/en/about-vu/research-institutes/ivm>



Water and Climate Risk department

~ interaction between society and the hydrological and climate systems



Jeroen Aerts



Philip Ward



Dim Coumou

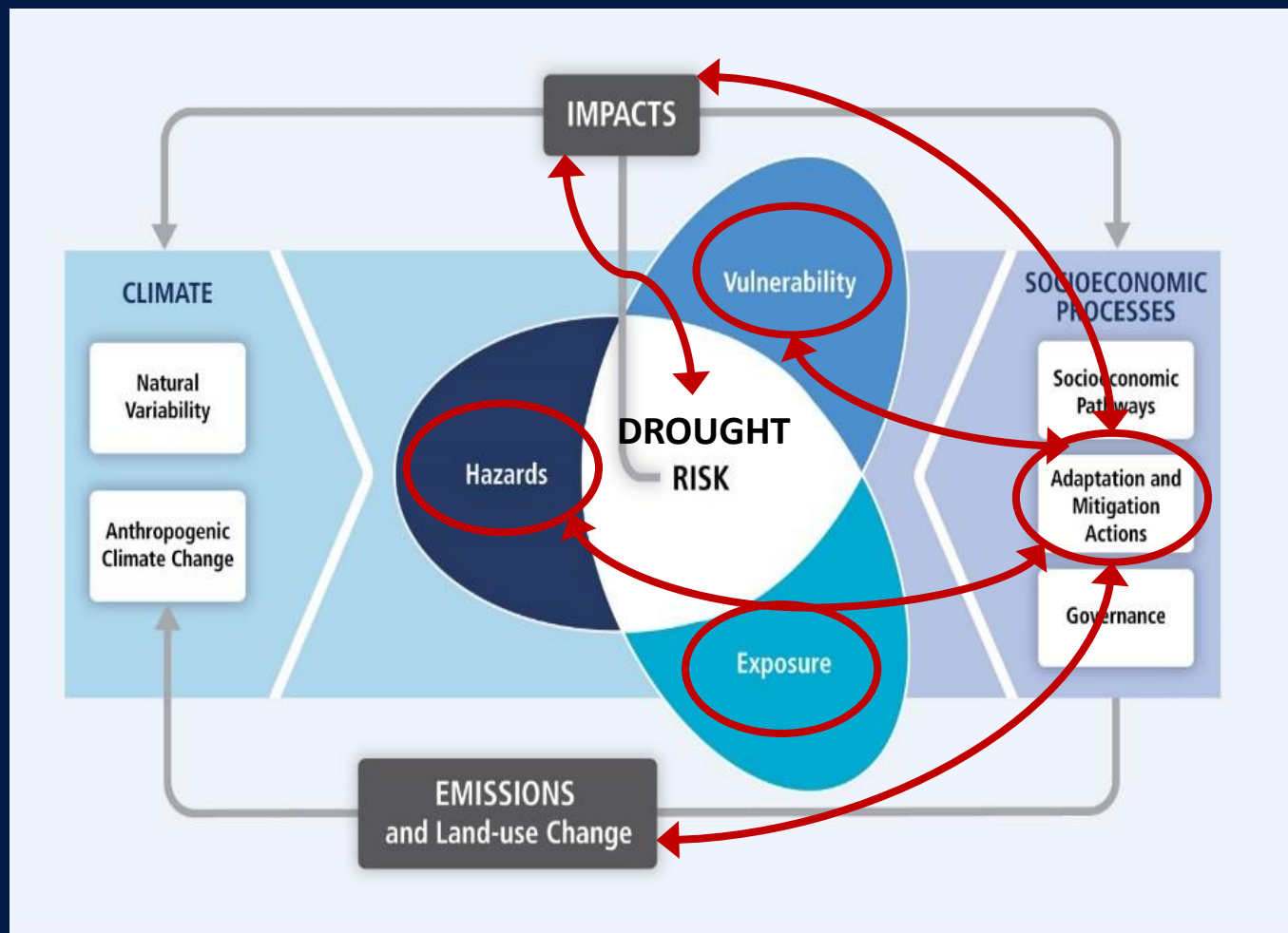


Anne Van Loon



Marthe Wens

Drought disaster risk research at the Institute for Environmental Studies



RESEARCH NEEDED:

- Understanding drought exposure
- Quantifying (time-varying) drought vulnerability
- Feedbacks between adaptation & drought hazard

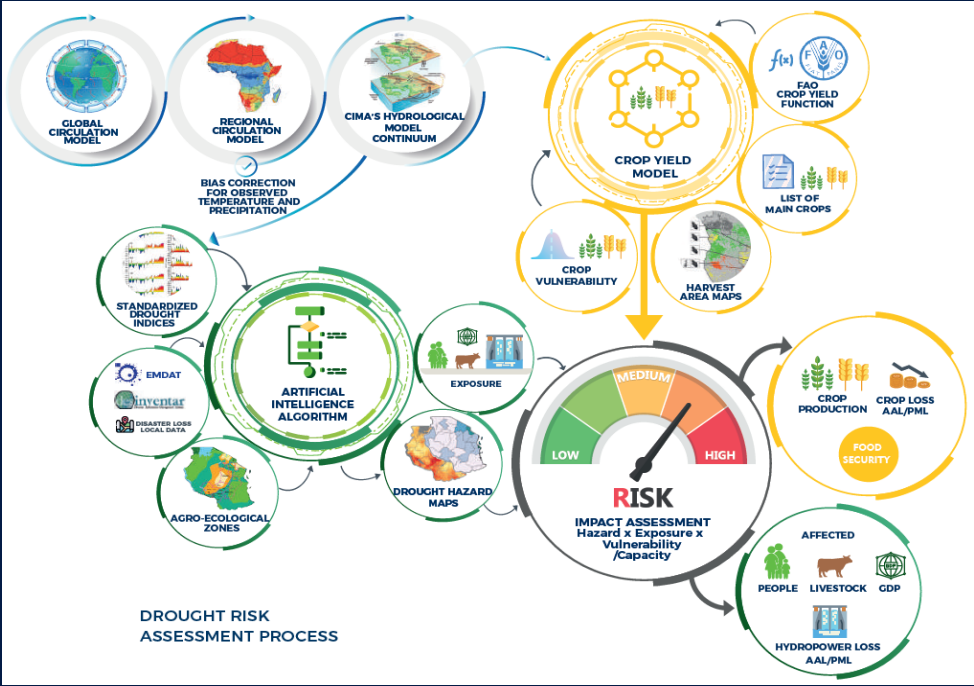
FOCUS TOPICS:

- Propagation of impacts
- Role of storage (groundwater, reservoirs, snow & ice)
- Human adaptive behaviour
- Forecast-based action
- Compound events (drought + heatwave, drought + flooding)

METHODS:

- Quantitative & qualitative data analysis
- Modelling (socio-hydrological, ABM, statistical, econometric)
- Storylines, visualisation

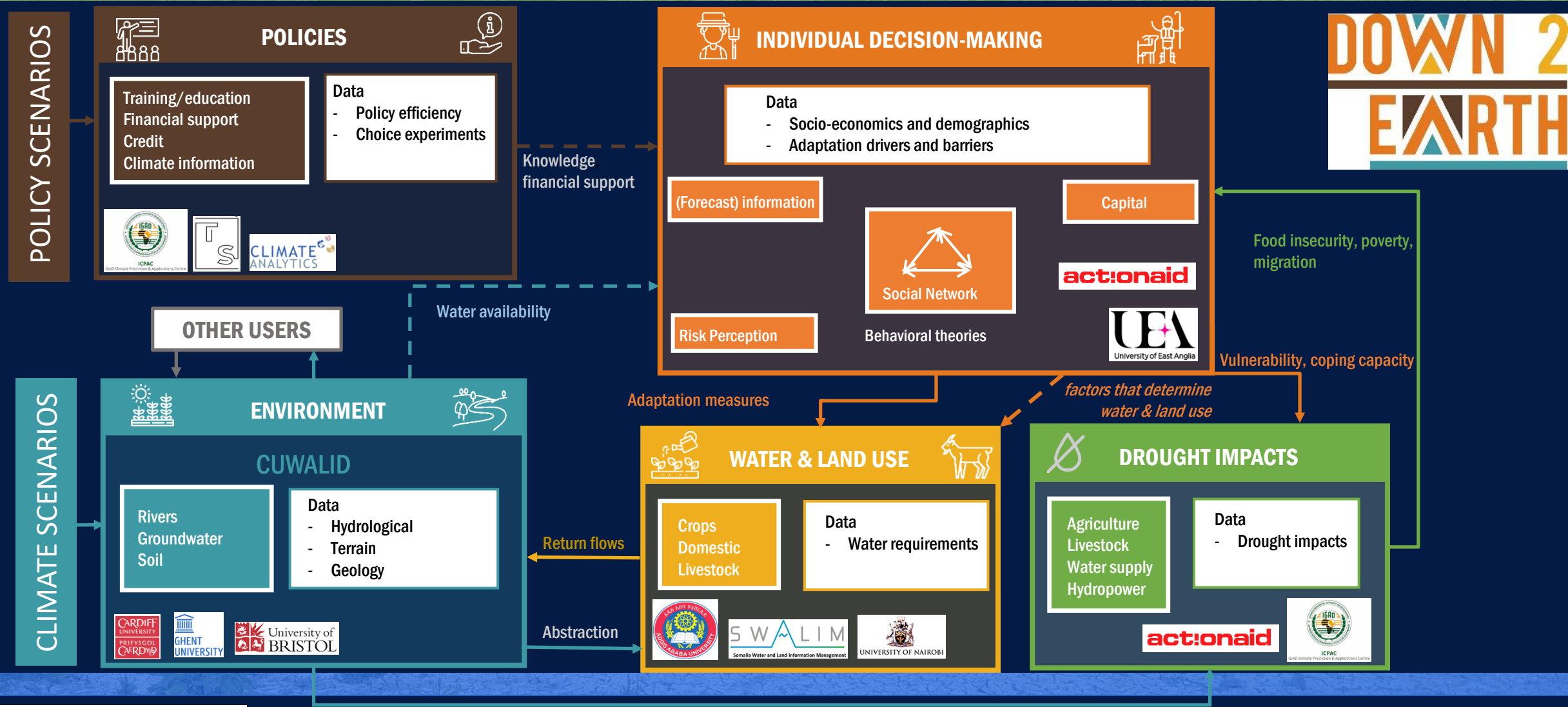
Scientific Modelling for Probabilistic Risk Assessment to bring risk information closer to the decision makers and officials



Strengthening policy and institutional capacity for integrated flood and drought management at the local, national and trans-boundary levels



Understanding interactions and feedbacks between climate stressors, human behaviour, food insecurity and policies in the Horn of Africa drylands



Droughts in rainfall, soil moisture, streamflow, groundwater

<http://down2earthproject.org/>

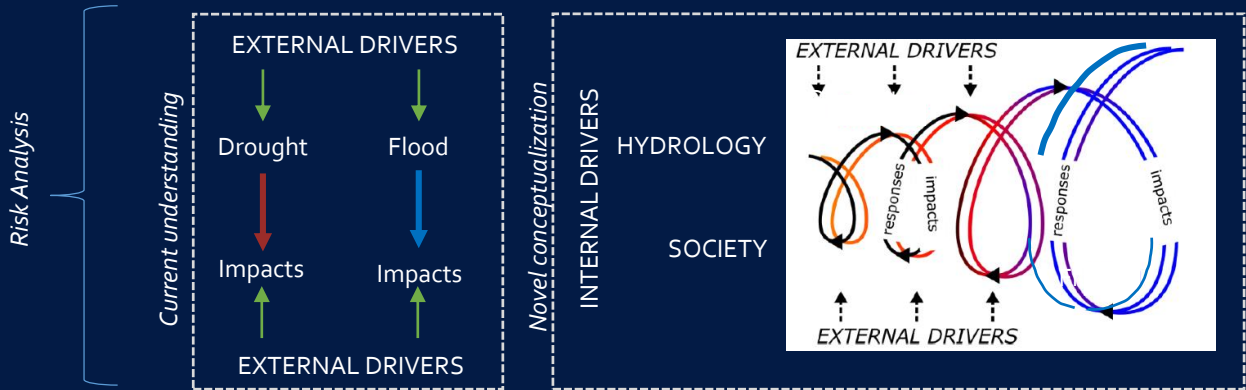
STORYlines of futuRe extreMes: Unravel the interlinked social and hydrological processes in future cascading drought-to-flood risks

ERC grant for Anne Van Loon

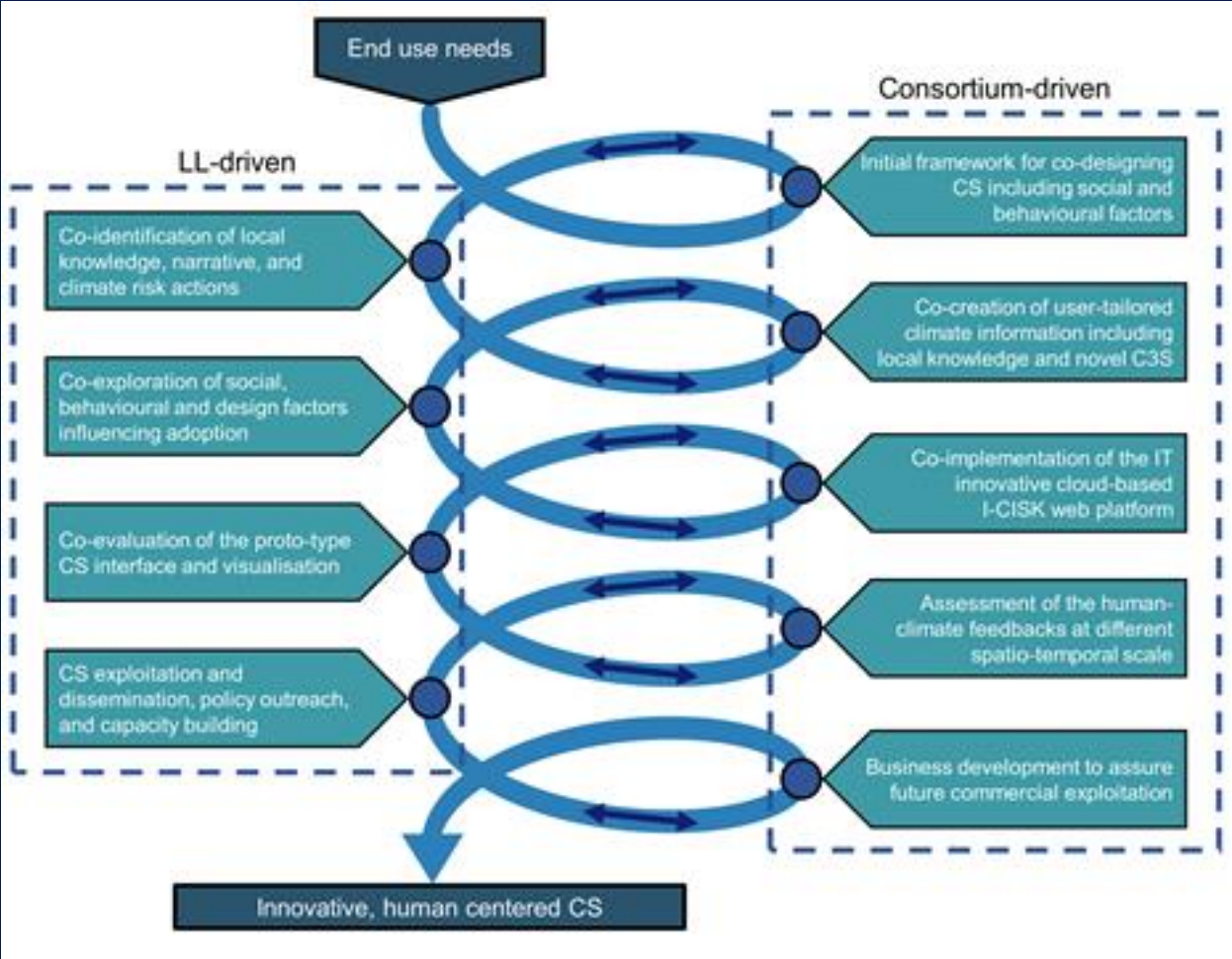


Methodology:

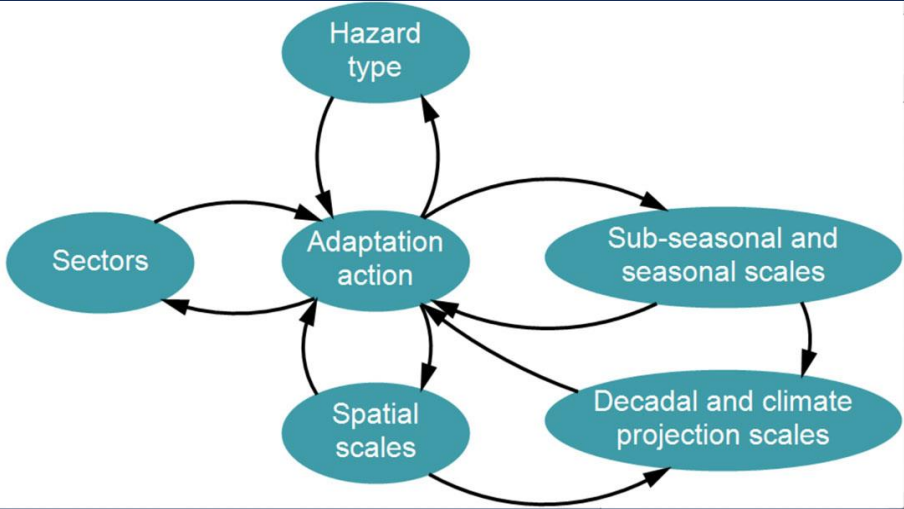
- Storylines & narratives
- Quant. & qual. data analysis
- Socio-hydrological modelling
- Past & future
- Visualisation
- Case studies & global



Innovating Climate Services (drought risk early warning and monitoring) through Integrating Scientific and local Knowledge in Europe



IHE Delft Institute for Water Education
European Centre for Medium-Range Weather Forecasts
SVERIGES METEOROLOGISKA OCH HYDROLOGISKA INSTITUT
STICHTING VU
CENTRO DE INVESTIGACION ECOLOGICA Y APLICACIONES FORESTALES
UPPSALA UNIVERSITET
HET NEDERLANDSE RODE KRUIS VERENIGING
GECOSISTEMA SRL
CAUCASUS ENVIRONMENTAL NGO NETWORK ASSOCIATION
UNIVERSIDAD COMPLUTENSE DE MADRID
52°North Initiative for Geospatial Open Source Software GmbH
IDEAS SCIENCE KFT
EMVIS SYMMVOULOI MICHANIKOI ANONYMI ETAIREIA



FORECAST-BASED FINANCING FOR FOOD SECURITY

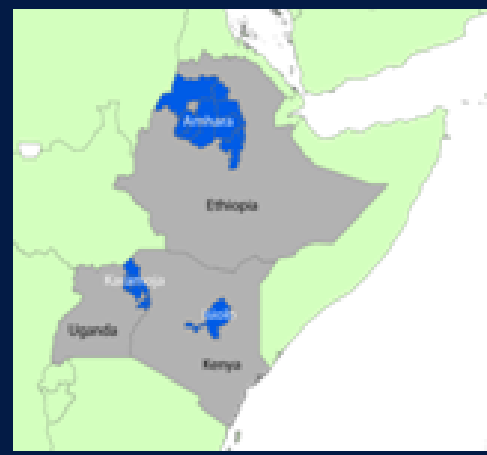
T1: Food insecurity forecasting model



T2: Flexible survey and choice experiment



T3: Evaluating the cost-effectiveness



REPORTS / BOOKS / WEBSITES

https://droughtcatalogue.com/en/index.php

Catalogue of Drought Hazard and Risk Tools

<https://droughtcatalogue.com/>

Assessing drought around the world

As worldwide drought impacts rise across the globe there is a high demand for guidelines and tools to assess drought hazards, impacts, and risk. This website provides such guidelines as well as an online catalogue of existing drought hazard and risk tools for the main impacted sectors: agriculture, hydro-power, industries and municipal water supply, ecology, and population.

About

This website is an online catalogue of drought hazard and risk tools, supplemented with a report describing the underlying comprehensive global inventory that was done to create the catalogue.

Catalogue

Currently, the drought catalogue contains over 200 drought risk tools available worldwide: drought hazard and risk tools, ranging from drought indices and datasets to online platforms, newsletters, and software products.

Contact

All suggestions for improvements and additions are welcome at info@deltares.nl

Logos: Deltares, GFDRR, IAGLR, NDMC, IAHN, VU, IHE Delft

<https://iahs.info/Commissions--W-Groups/Working-Groups/Panta-Rhei/Working-Groups/Drought-in-the-Anthropocene.do>

DROUGHT IN THE ANTHROPOCENE

Working Group: Drought in the Anthropocene
Chair: [Anne Van Loon](#)

In this human-influenced era, we need to rethink the concept of drought to include the human role in mitigating and enhancing drought. One major challenge is the quantification of impacts of drought on society, i.e. finding the relation between physical drought characteristics and wildfires, crop yields, electricity production, navigation, etc. This is a basic prerequisite for the prediction of changes in risk and vulnerability in the future. The aim of the working group is to investigate and quantify the interactions between drought and people.

For more background information on this topic, please find our [Drought in the Anthropocene](#) paper in Nature Geoscience or browse in the [Panta Rhei Library](#) for related papers.

Activities of the working group:
We are setting up a number of experiments with the aim to study the influence of people on drought, the impact of drought on people and the feedbacks between drought and society. Our overarching goal is to increase understanding of drought-society feedbacks, both positive and negative. The research questions we want to answer are:
A: How are people enhancing/alleviating drought events?
B: How are people impacted by drought events?
C: How are people responding to drought events by changing water use, land use, water management, water storage?
D: How do these feedback processes result in aggravated (or alleviated) drought conditions and more (or less) impacts?
E: How human activities can exacerbate or alleviate societal impacts of droughts?

Ongoing collaborative projects: There are a few initiatives that are open for contributions, please contact [Anne Van Loon](#) for an updated list.

Student Projects

Logos: IAHN, AISH, Panta Rhei, Everything Flows

Diagram: Drivers (Climate variability, Anthropogenic climate change, Human activities) leading to Hydrological processes (Meteorological drought, Soil moisture drought, Hydrological drought) leading to Consequences (Ecological impacts, Socioeconomic impacts). Responses include Land use, Irrigation, Dam building, Water abstraction.

Navigation: CANDHY, PANTA RHEI, PREDICTION IN UNGAUGED BASINS, MOXXI, ICCE, CONTINENTAL EROSION, THE DEATH OF ART HOROWITZ, ICCE NEWS, ICCE PUBLICATIONS, PAST INFORMATION, ICCE EVENTS, ICCLAS, COUPLED LAND-ATMOSPHERE SYSTEMS, PUBLICATIONS, ACTIVITIES, ICGW, GROUNDWATER

<https://iahs.info/Commissions--W-Groups/Working-Groups/Panta-Rhei/Working-Groups/Drought-in-the-Anthropocene.do>

Global inventory of drought hazard and risk modeling tools and resources

European Drought Centre

Latest Posts

Forecasting of hydrometeorological drought in Europe months in advance
EDCadmin | October 19, 2020 | 0 Comments
Contributed by: Samuel J. Sutan and Henny A.J. Van Lanen Hydrology and Quantitative Water Management Group, Wageningen University and Research, the Netherlands In the past three years, from 2018 to 2020, extensive areas in Europe once more suffered from...

GRDC Data Download
EDCadmin | July
The GRDC Data Download provides the Global Runoff Data "historical" mean daily...

Navigation: ABOUT US, RESOURCES, SOFTWARE, ACTIVITIES, ORGANISATION

<http://europeandroughtcentre.com/>
DOWNLOAD 2004 Hydrological Drought book here:
<http://europeandroughtcentre.com/resources/hydrological-drought-1st-edition/>

News

FRIEND-Water is at the 5th rank in the report of the IHP Family

GRDC Data Download provides River Discharge Data online

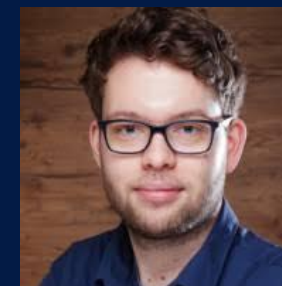
Upcoming:

- Update Hydrological Drought book (Tallaksen & Van Lanen)
- Panta Rhei book – chapter on Drought in the Anthropocene

People working on drought risk @ IVM



- **Dr Anne van Loon:** Quantifying drought risk, feedbacks between drought-people, groundwater
- **Dr Hans de Moel:** National (flood and) drought risk profiles for SSA countries, water management
- **Dr Gabriela Nobre:** Financing agricultural drought risk through ex-ante cash transfers Kenya (F4S)
- **Dr Maurizio Mazzoleni:** Integrating Multiple Research Methods to Unravel the Complexity of Human-Water Systems
- **Dr Marlies Barendrecht** How is drought-to-flood risk shaped by the interactions between people & water? (PerfectSTORM)
- **Marthe Wens:** Drought adaptation behavior of agricultural stakeholders: Agent-Based Modelling
- **Raed Hamed:** Developing storylines on impacts of climate on global crop production (RECEIPT)
- **Tristan Scholte:** Flood and drought risk for 96 global cities (C40 City Group project)
- **Tim Busker:** Effectivity and efficiency of forecast-based actions of farmers in HAD (Down2Earth)
- **Teun Schrieks:** Modelling human choice behavior and drought adaptation (Down2Earth)
- **Ileen Streefkerk:** Integrating human dynamics in risk and adaptation modelling (Down2Earth)
- **Rhoda Odongo:** Climate and societal drivers of drought risk (Down2Earth)
- **Alessia Matanó:** Developing quantitative storylines on feedback drought/flood-people (PerfectSTORM)



• **Heidi Mendoza**

• **Ruben Weesie**

• **Ruoying dai**

• **Judith Claassen**

anne.van.loon@vu.nl / marthe.wens@vu.nl

<https://vu.nl/en/about-vu/research-institutes/ivm>