CLUVA Project

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amra

■ analysis and monitoring of environmental risk

Project data and context

- FP7 project EU contribution : 3 500 000 €
- 13 research partners : Africa

Gaston Berger University Sénégal

University of Ouagadougou Burkina Fasso

University of Yaoundé 1 (ENSP) Cameroon

Ardhi University Tanzania

Addis Ababa University (EIABC) Ethiopia

Centre for Scientific and Industrial Research South Africa

Project data and context

CLUVA

EU

SEVENTH FRAMEWORK PROGRAMME

AMRA Italy coordinator

University of Copenhagen Denmark

University of Manchester UK

Technical University of Munich Germany

Helmoltz Centre for Environmental Research Germany

Euro-Mediterranean Centre for Climate Change Research

Norwegian Institute for Urban and Regional Research

Climate Change and Urban Vulnerability in Africa

SEVENTH FRAMEWORK PROGRAMME

Multidisciplinary & Interdisciplinary vulnerability knowledge production

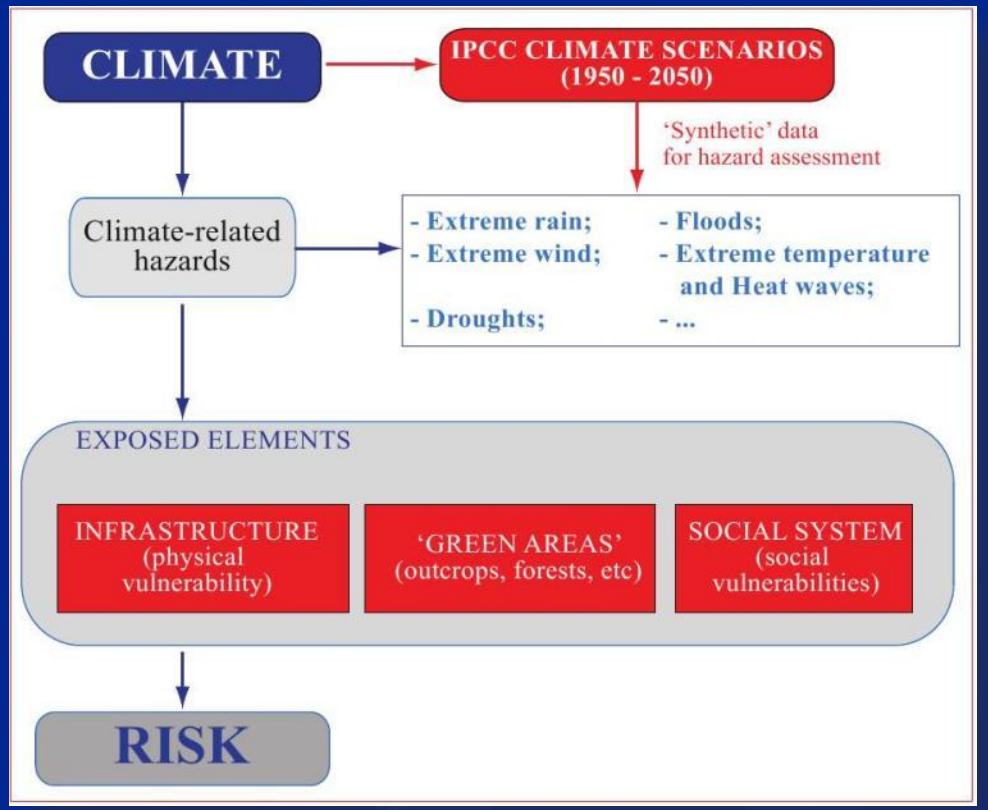
The CLUVA project is an integrated effort between seven European institutions and six African research establishments.

The overall objective of CLUVA is to develop methods and knowledge to be applied to African cities to manage climate risks, to reduce vulnerabilities and to improve coping capacity and resilience towards climate changes.

www.cluva.eu

From Climate-change scenarios to quantitative (multi) risk assessment:

- ✓ Starting from the Climate, hazards are assessed using:
  - Observed data (1960 – 2011);
  - Synthetic data produced considering three different climate-change scenarios from the IPCC (1960 – 2050)
- ✓ Different dimensions of vulnerability are considered:
  - Physical infrastructure
  - Green areas
  - Social vulnerability
- ✓ Risk assessment considering a multi-risk approach



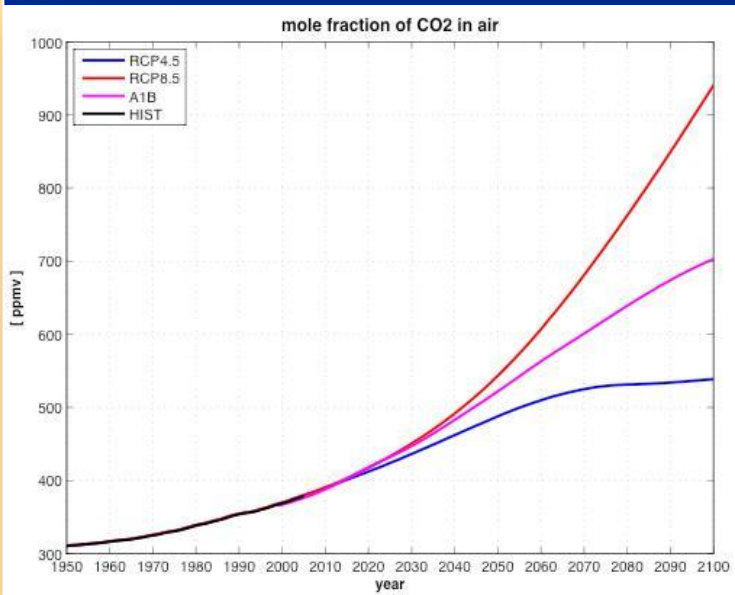
Climate-change scenarios:

- are plausible descriptions of how the future may develop;
- are neither predictions nor forecasts. They describe several factors generally associated with climate change;
- consider the following IPCC scenarios:

RCP4.5 (AR5)
High income growth, low population growth, gain in clean energy and efficiency resulting from aggressive carbon Pricing.

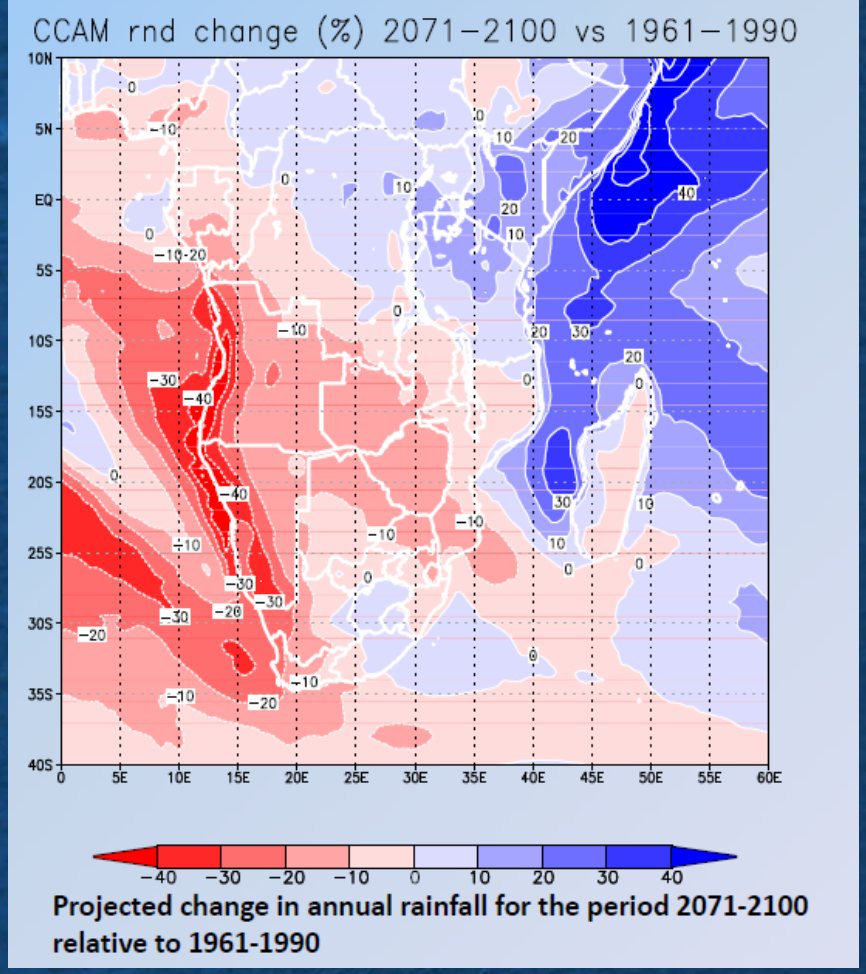
A2(AR4)
Uneven economic growth. Global atmospheric concentrations of greenhouse gases increased due primarily to fossil fuel use land use change.

RCP8.5 (AR5)
High emission scenario, high population growth, coal intensive energy scenario.



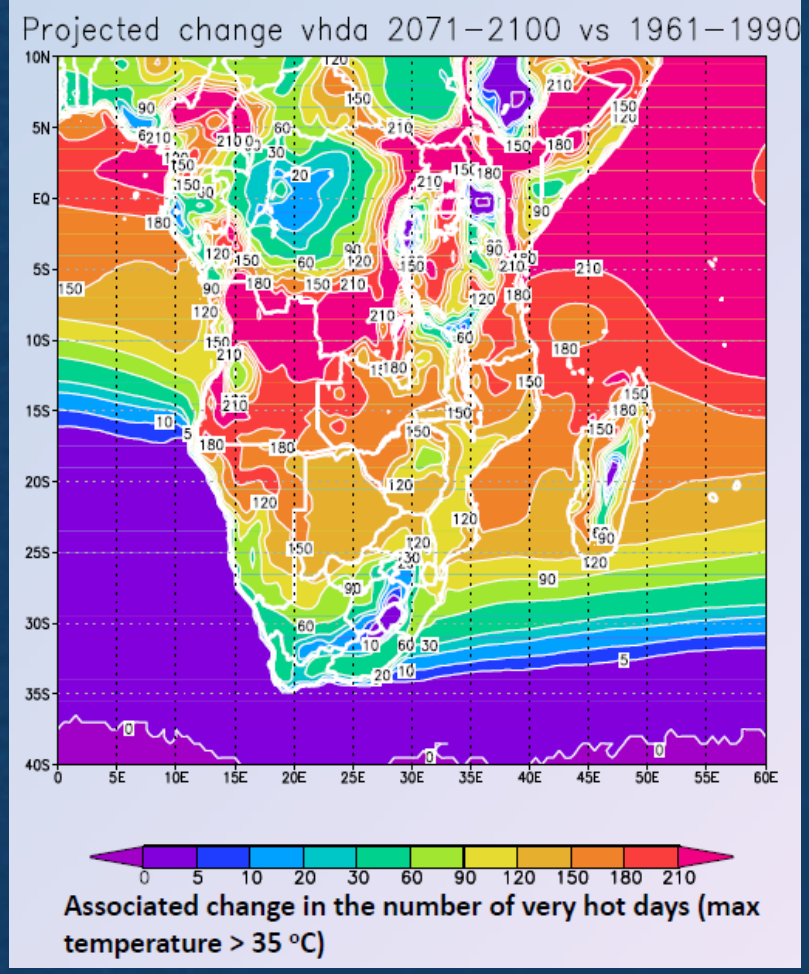
Very High-Resolution Climate Change Data

Rainfall change



Projected change in annual rainfall for the period 2071-2100 relative to 1961-1990

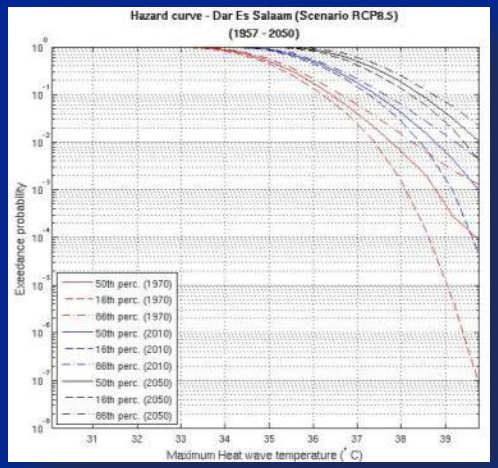
Temperature change

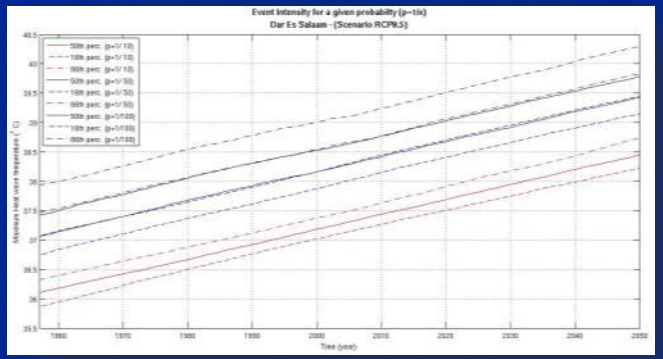


Associated change in the number of very hot days (max temperature > 35 °C)

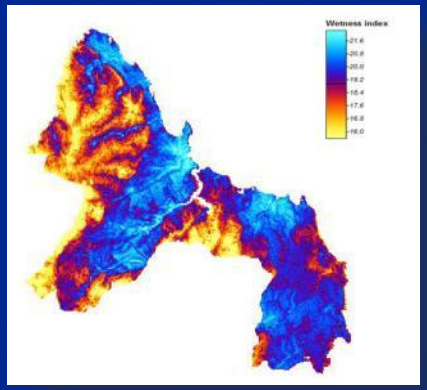
CLUVA Hazard assessment :

Time dependent hazard assessment (considering Climate change scenarios)

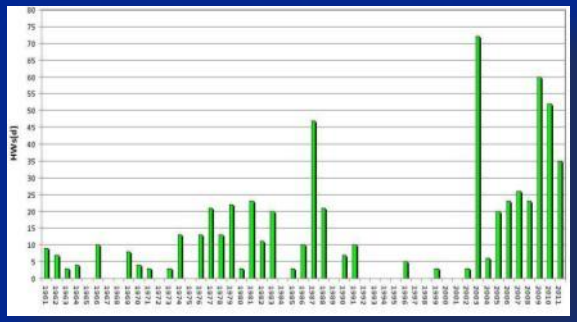




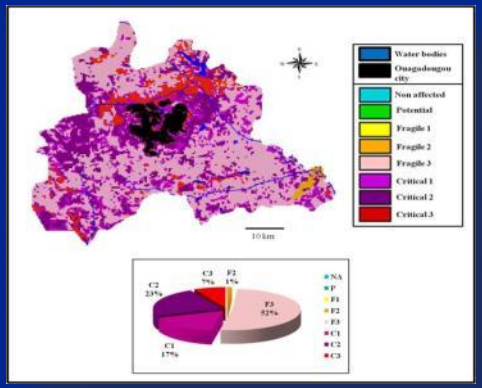
Floods



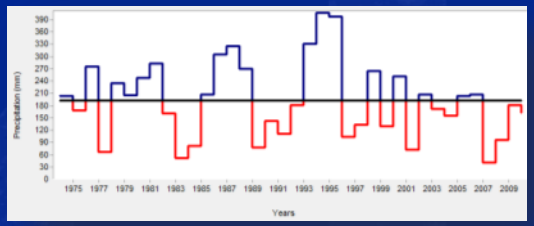
Heat waves



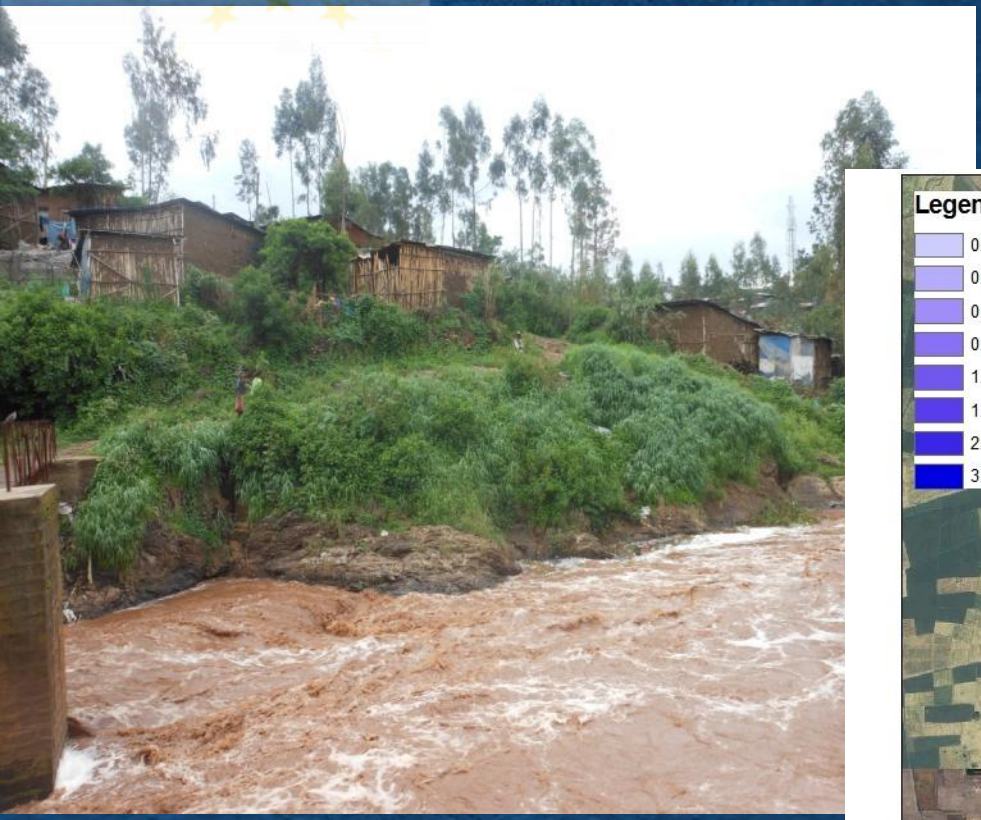
Desertification



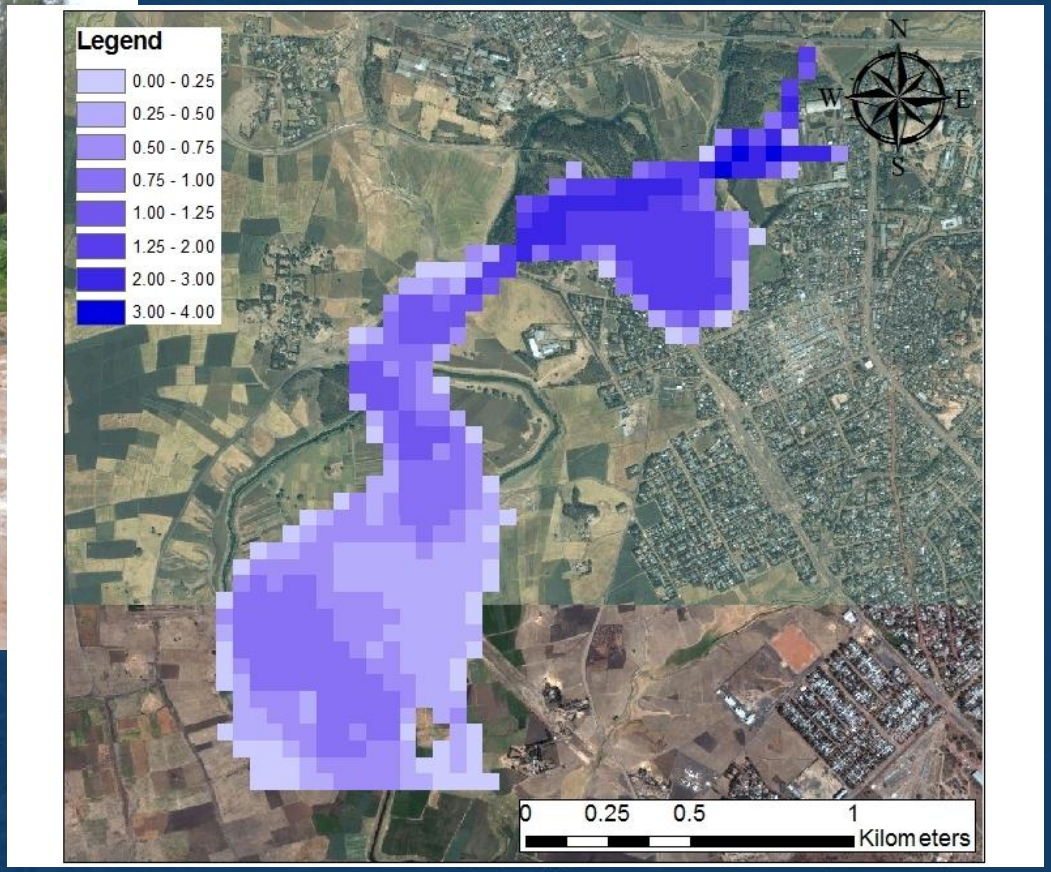
Droughts



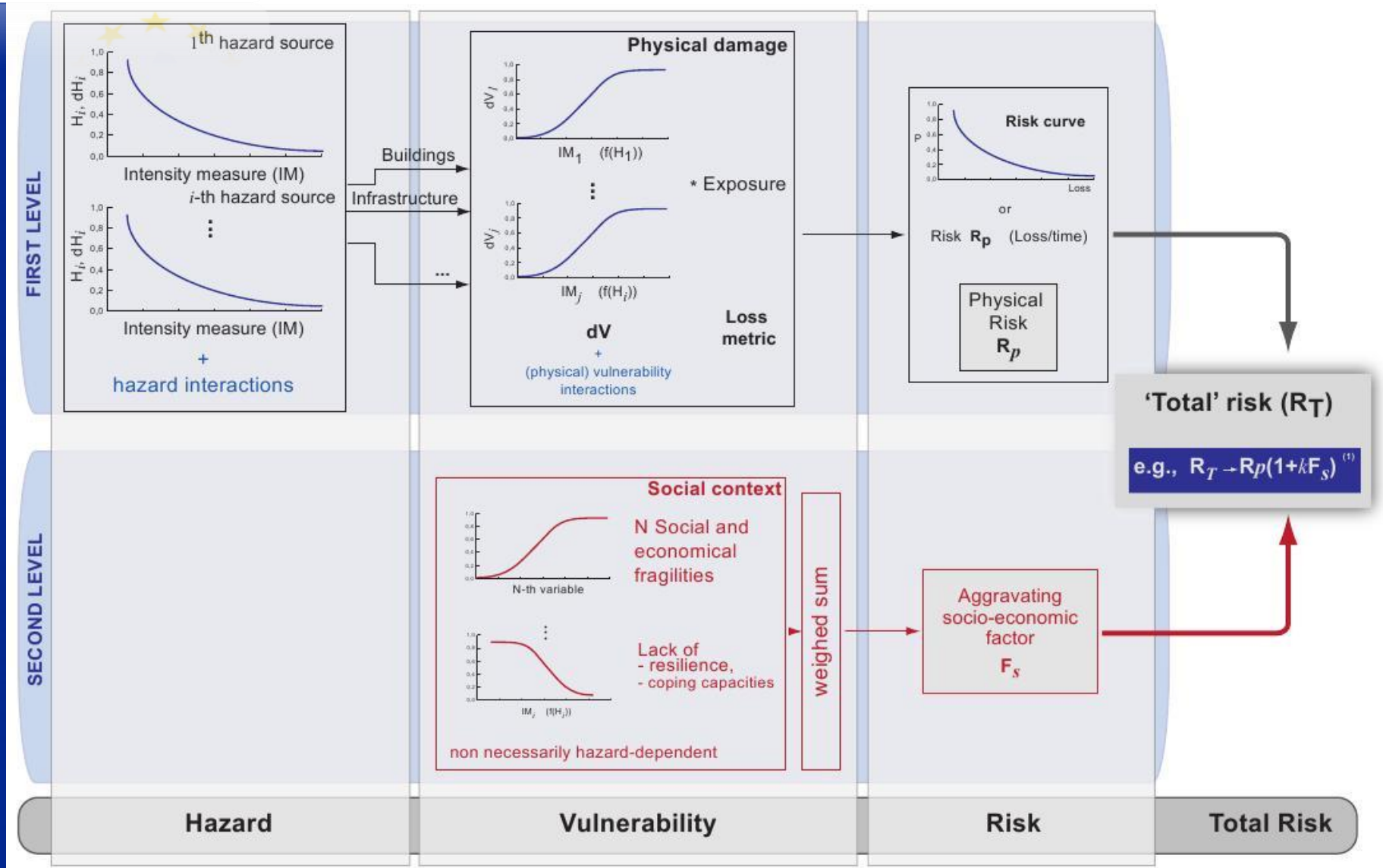
Flood Hazard Assessment



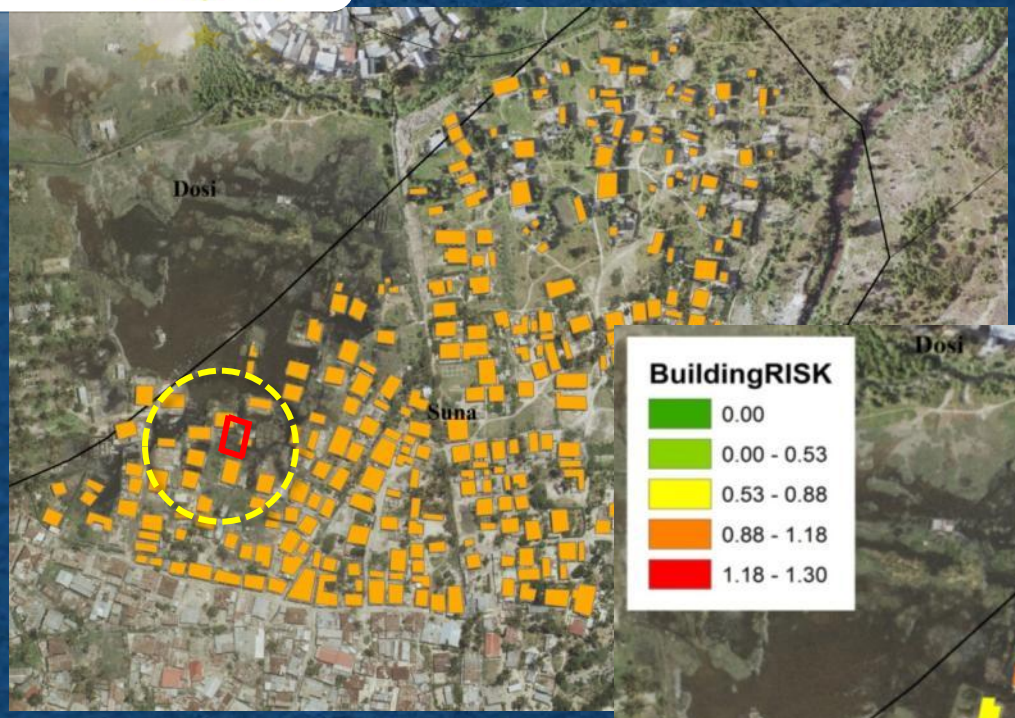
Understand the hazards and how climate change will effect them

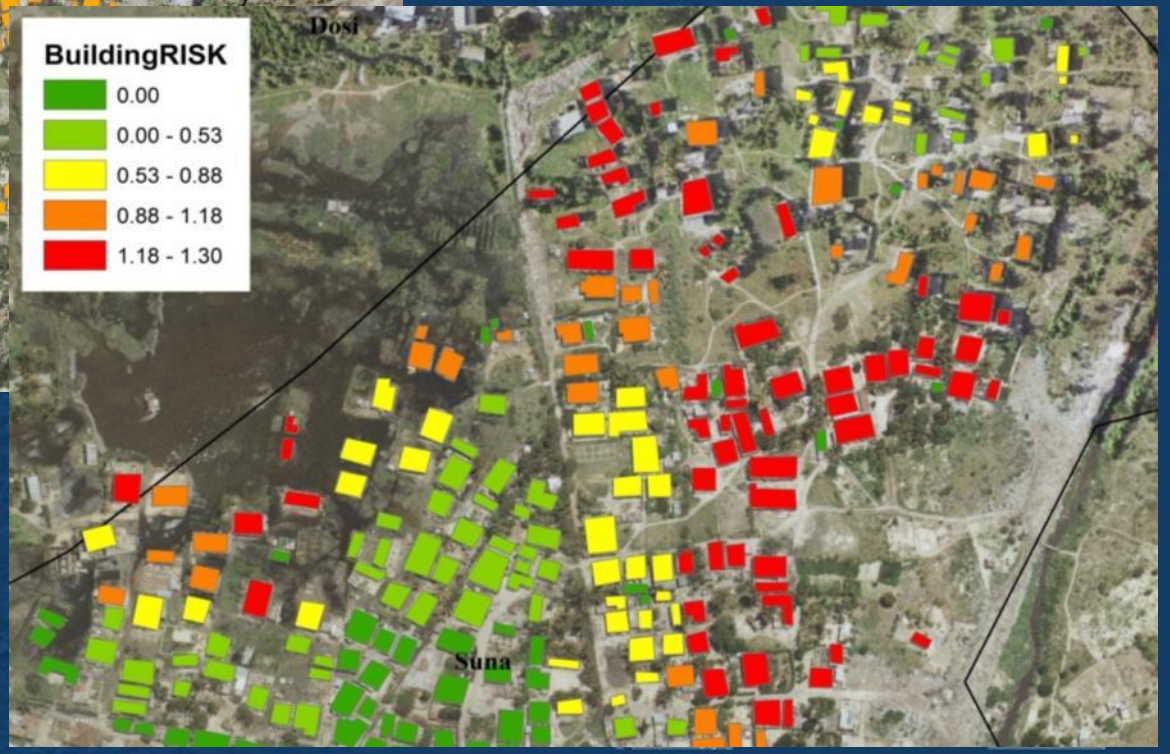


CLUVA Multi-risk framework:



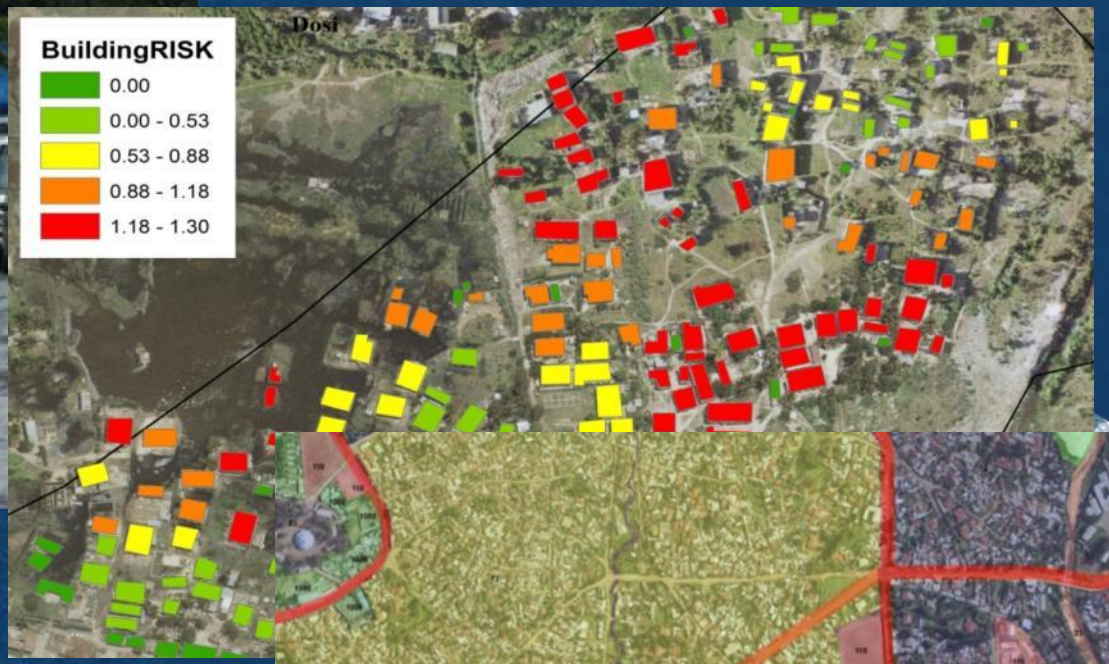
Assessing Vulnerability of Informal Settlements





Analyze local vulnerability based on flood hazard assessments

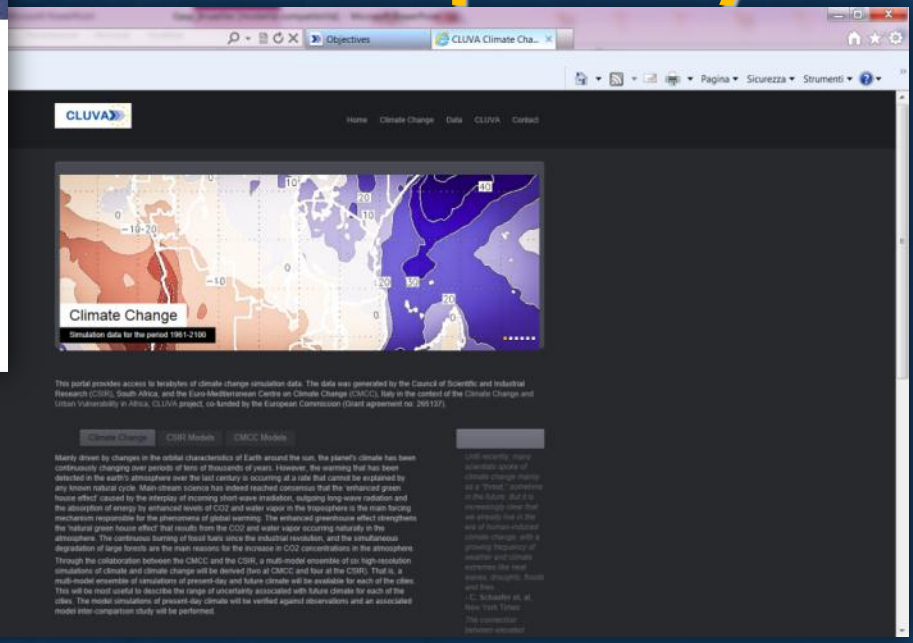
Development of strategies to enhance resilience of urban areas towards climate change



Understand the governance situation, develop mitigation strategies

CLUVA website

CLUVA Climate Change Data Repository



Educational programs as long-term capacity building

UN HABITAT
FOR A BETTER URBAN FUTURE

UNITED NATIONS UNIVERSITY
UNU-EHS
Institute for Environment and Human Security

Technische Universität München

CLUVA

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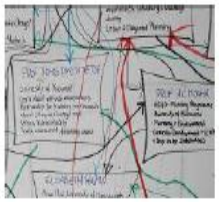
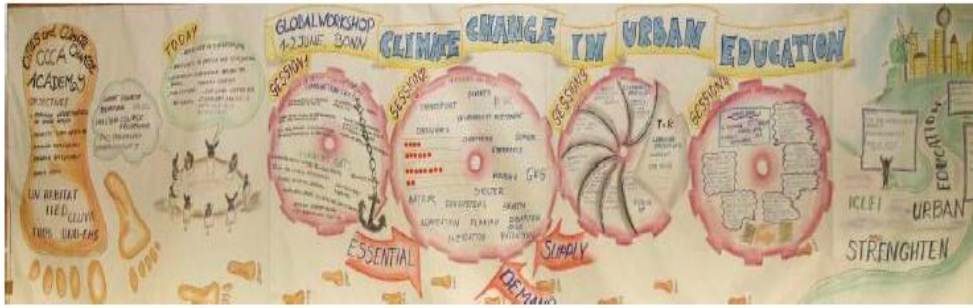
Strengthening Climate Change in Urban Education
Cities and Climate Change Academy (CCCA)
Global Workshop
Bonn, 1-2 June 2011





Solid partnership with UN Habitat for the elaboration of CLUVA related modules and integration into existing MSc programs

Research capacity building: workshops and training courses

Management of natural risks in urban areas

- RESEARCH ISSUES

- An unified probabilistic estimate of all the natural risks and their prioritization
- Climate change effccts must be estimated taking into account the socialeconomic context and human feedback
- Resilience can be improved by proper urban planning
- Use of green areas and soils as hazard mitigators

A vision for the future

- **Technical issues**
  - Protection of strategic structures and infrastructures in European high risk areas
  - Specialized decision support modules
  - Low cost very dense sensor nets in urban environment
  - Citizen's involvement in the protection actions
  - Co-existence of centralized and de-centralized decision making
- **Social and legal issues**
  - Education and training
  - End-to-end diffusion of information
  - Solution of legal problems

THANK YOU FOR YOUR ATTENTION