

~~CHANGES~~

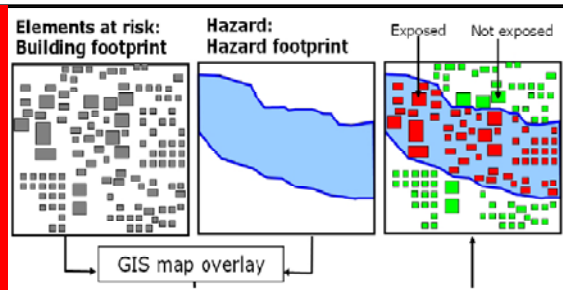
Risk=HVA

Changing Hydro-meteorological Risks – as
Analyzed by a New Generation of European
Scientists

A Marie Curie Initial Training Network – Jan 2011 to Dec 2014.



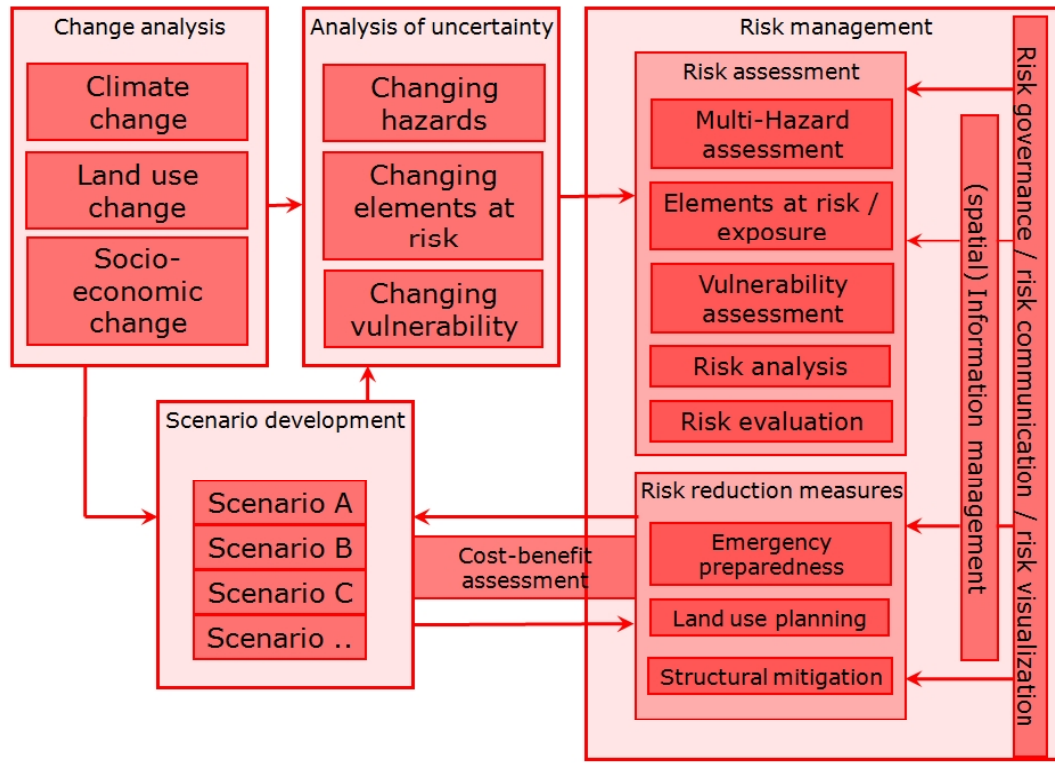
The analysis of changes in hydro-meteorological risk requires accurate spatial information and models as well as well-trained experts who can provide this information.



CHANGES Initial Training Network

The CHANGES network will develop an advanced understanding of how global changes, related to environmental and climate change as well as socio-economical change, will affect the temporal and spatial patterns of hydro-meteorological hazards and associated risks in Europe; how these changes can be assessed, modeled, and incorporated in sustainable risk management strategies, focusing on spatial planning, emergency preparedness and risk communication.

The CHANGES network hopes to contribute to the Topical Action numbers 2 and 3 of the Hyogo Framework for Action of the UN-ISDR, as risk assessment and management, combined with innovation and education are considered essential to confront the impacts of future environmental changes.





Research objectives

- Analysis of the changes in the frequency, magnitude and extend of hydro-meteorological hazards, as a result of environmental changes.
- Analysis of the changes in exposed elements at risk and their vulnerabilities.
- Probabilistic hazard scenarios are combined with scenarios of exposure data and their vulnerabilities to assess the risk in a probabilistic manner.
- Hazard, vulnerability and risk assessment models will be combined into a web-based platform based on Open Source software .
- These risk scenarios form the starting point for defining risk management strategies that will concentrate on spatial planning and emergency preparedness

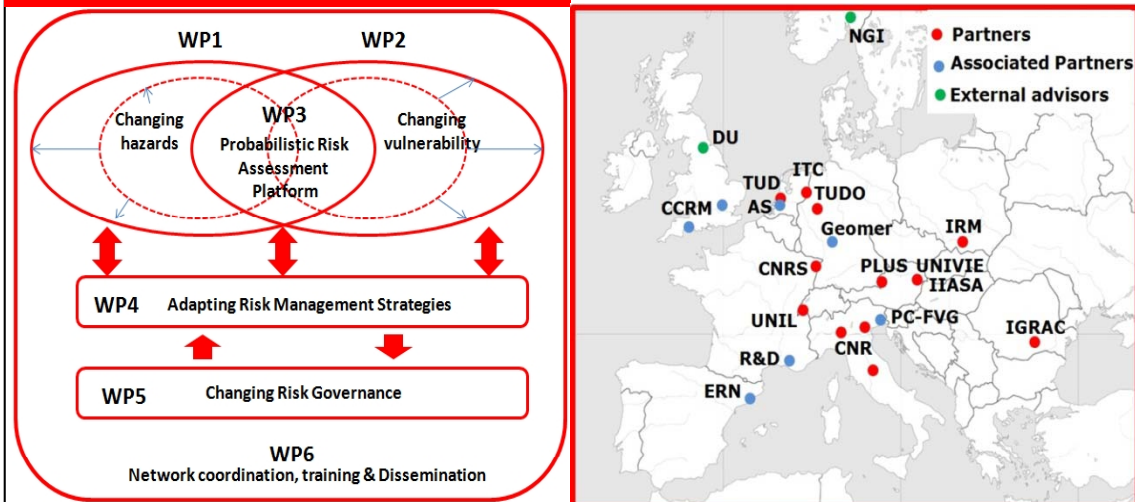
Partners

1. **ITC.** University of Twente, Netherlands.
2. **CNRS.** Centre National de la Recherche Scientifique. France.
3. **UNIVIE.** University of Vienna. Austria.
4. **UNIL.** University of Lausanne, Switzerland.
5. **CNR.** Consiglio Nazionale delle Ricerche, Italy.
6. **PLUS.** Paris-Lodron Universität Salzburg, Austria.
7. **TUDO.** Technische Universität Dortmund, Germany.
8. **TUD.** Technische Universiteit Delft, Netherlands.
9. **IGRAC.** Institutul de Geografie, Romania.
10. **IRM.** Instytut Rozwoju Miast, Poland
11. **IIASA.** International Institute for Applied Systems Analysis, Austria.

Associated Partners

1. **R&D.** Risques & Developpement, France.
2. **Geomer** GmbH, Germany.
3. **AS.** Alert Solutions , Netherlands.
4. **ERN.** Estudios de Riesgos Naturales, CIMNE, Spain.
5. **CCRM.** Climate Change Risk Management, United Kingdom.
6. **PC-FVG.** Protezione Civile of Regione Friuli-Venezia-Giulia, Italy.

11 Partner Institutions
and 6 Associated
Partners





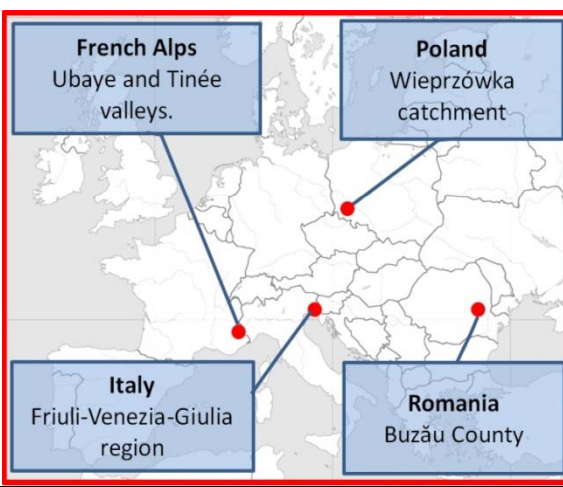
12 Early Stage Researchers and 3 Experienced Researchers

| Early Stage Researchers | | |
|-------------------------|--|--------|
| ESR-01 | Translation of the results of climate change models to expected changes in triggering conditions of hydro-meteorological hazards | ITC |
| ESR-02 | Development and application of probabilistic models for flood hazard assessment at regional and local scales. | PLUS |
| ESR-03 | Development and application of probabilistic models for mass movement hazard assessment at regional and local scales. | CNRS |
| ESR-04 | Analysis of expected changes in ecosystems and land use patterns in relation to climate change and future economic development. | IIASA |
| ESR-05 | Expressing uncertainties in vulnerability and value of infrastructure, buildings and land use to hydro-meteorological hazards | UNIVIE |
| ESR-06 | Design of a tool for probabilistic risk assessment of hydro-meteorological hazards | CNR |
| ESR-07 | Development of a method for constructing risk scenarios and risk maps with associated uncertainties | IGRAC |
| ESR-08 | Use of risk information in Strategic Environmental Assessment and spatial planning | IRM |
| ESR-09 | Development of an internet-based Decision Support System for the use of risk information in risk reduction | UNIL |
| ESR-10 | Emergency preparedness and early warning scenarios based on the outcomes of the probabilistic risk assessment | CNR |
| ESR-11 | Comparing risk governance strategies for different EU countries, | TUDO |
| ESR-12 | Risk communication with a focus on risk visualisation tools. | TUD |

Within the CHANGES project the following positions for Early Stage Researchers and Experienced Researchers are planned. The Early Stage Researchers (ESRs) are all hired in the beginning of the project and the announcement is open till April 2011. The positions are likely to start by September 2011. The three positions for Experienced Researchers are expected to open from August 2012 onwards.

| Experienced Researchers | | |
|-------------------------|--|------|
| ER-1 | Development of web-based tool for probabilistic risk assessment | PLUS |
| ER-2 | Development of web-based decision support tool for risk management | ITC |
| ER-3 | Development of a web-based risk communication and visualisation tool | TUDO |

Case study areas
The research methods and the methodology will be applied and tested in four pilot study sites where hazards are currently evident and some risk management procedures have already been implemented. The study areas are located in the French Alps, North Eastern Italy, Romania and Poland





Training courses

Courses will be held in different locations, including each of the pilot study areas. During these intensive courses, also PhD and MSc researchers from outside the CHANGES network are welcome to join. Also local stakeholders, administration officers and representatives from the civil protection are invited to participate..

Professional skills (PS)

These courses are intended to train the ERS in the skills required as young researcher to increase their professional skills.

- Research work plan development and scientific writing. September 2011, Poland
- Research ethics. September 2011, Poland
- Valorisation of scientific results. June 2012, Italy
- Dissemination of scientific results to the public. June 2013, France
- Writing research grant proposals. September 2012, Romania
- Project management. September 2014, Switzerland

Technical skills (TS)

These courses are intended to train the ERS in the technical skills related to the research theme.

- Probabilistic risk assessment. September 2011, Poland
- Monitoring and prediction of environmental changes. September 2012, Romania
- Web-GIS and Spatial Data Infrastructure. December 2012, France
- Tools for risk Management. April 2013, Austria (&EGU)
- Use of risk information in Spatial Planning. September 2013: Italy

Workshops

A topical workshop is a meeting focusing on one of the topics of the Network in which the ESR/ERS and all partners (full partners and associated partners from private sector) present their results and discuss the relationships between the different components of the project. The following workshops are planned:

- Risk governance implications of changing risks. June 2012, Italy
- Environmental changes. June 2013, France
- Modelling changes in hazard and risk. December 2012, France
- Changes in Risk Management, September 2013, Italy
- Web-based platform. September 2014, Switzerland

Extensive training programme also open to researchers from outside the network

Scientific meetings and publications

Project results will be published in ISI journals, with special focus on co-authorship of several ESRs/ERS. Intermediate results will be presented in International conferences (e.g. EGU). At the end of the project an international conference will be organized to disseminate the results.

The software tools that are developed will be made as Open Source, and will be distributed through a Web-based platform.

The CHANGES project seeks active collaboration with other relevant EU FP7 research projects in the field of hazard and risk assessment.



Impact

The CHANGES project aims to have the following impact:

- Career development of young researchers as experts in the field of natural risk assessment, management and mitigation
- Increase the inter-sectoral mobility between academia and industry
- Strengthen research capacity in multi-hazard risk assessment
- Provision of an e-learning package
- Provision of open source tools for loss estimation.
- Increase international cooperation,

Coordinator

The Faculty of Geo-Information Science and Earth Observation (ITC), University Twente, the Netherlands - was established in 1950 by the Netherlands government to enhance the capacity of organizations in developing countries in surveying, mapping and spatial analysis.
www.itc.nl

- Project coordinator: Dr. Cees van Westen (westen@itc.nl)
- Project deputy coordinator: Dr. Dinand Alkema (alkema@itc.nl)
- Project manager: Sabine Maresch (maresch@itc.nl)



Funded by the European Community's 7th Framework Programme FP7/2007-2013 under Grant Agreement No. 263953

For more information on CHANGES:
www.itc.nl/changes