Earthquake, Landslide and Flood Disaster Prevention: the SciNetNatHaz project

Acknowledgments:
The SciNetNatHaz Project is co-funded by the EU within the context of the Black Sea Basin Joint Operational Programme 2007-2013

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www.scinetnathaz.net
The Proposal

The trip to ...starting implementation

• Proposal submitted on September (30th) 2011
• Approved on June 2012
• Preparation of the Grand Contract: August 2012 – February 2013
• Grand Contract Signed: April 2013
• Project Start: May 2013

The Partnership!

Black Sea Basin Joint Operational Programme
2007-2013

Duration: 31 months
Starting-Ending Dates: 01.05.2013 - 31.11.2015

Budget (ENPI + IPA): 1,053,000,00 €
EU Contribution (ENPI + IPA): 947,700,00 €
From “Hazard” to ...Disaster!

Why is that?
Vulnerability and Insufficient capacity to reduce the Risk

Possible reasons
• Unforeseen events
• Inaccurate foreseen location and estimation of magnitude of events
• Lack of Preventive measures
• Limited public awareness
...lack of sufficient resources...money and time!
Disaster Prevention – overcoming blocks

• Lack of Data (the...information gap!)
• A methodological ....”Babel”
• Lack of Applied Research
• Flash Floods

• Most (if not all) of these problems have already been identified and recognized by the EU Commission DG Environment and there are some effort towards resolving them (ie. Directive 2007/60/EC).
A. To establish a strong regional (BS) cooperation by developing a SCientific NETwork for Earthquake, Landslide and Flood (ELF) Hazard Prevention that will set the basis for:

B. Systematic data acquisition, harmonization, management and sharing with the scientific community

C. Harmonization of Methodologies and Procedures used to assess ELF hazards

D. A systematic Hazard assessment - Pilot implementation in selected areas so that preventive measures can be proposed
Some of the Project Achievements & Outputs

The SciNetNatHaz project was awarded by the Joint Managing Authority (JMA) of the Black Sea JOP 2007-13 as a “Best Practice” project (May 2014, Thessaloniki, Hellas)
...some of the outputs #1

A. **More than 80 Scientists** are already participating in the Project coming from 12 different Universities, Academies of Sciences and Research Institutes around the Black Sea area. More scientists have expressed their interest in being voluntarily involved in the implementation phase.

B. **Maps** in analogue and digital format, **digital and tabular data were collected, processed and Metadata files created** according to the INSPIRE directive (around 1000 files).

- A **Geodatabase** has been developed as part of a WeGIS which hosts both data and Results produced by the Project. The **Web GIS platform** has been developed and is already operational. It will provide free access to data and pilot implementation results to stakeholders.
- **Open source software has been adopted** for all applications in order to be freely shared with the stakeholders.
C. Harmonized Methodologies selected/adapted to local conditions are proposed and **are being used for ELF Hazard assessment** throughout the implementation area.

D. **Pilot Implementations of Flash Flood Hazard** assessment/Design of Preventive measures, have already been carried out in Greece, in Turkey, in Romania, in Bulgaria, in Moldova and in Ukraine.

- A large number (more than 18) of presentations in International Conferences and publications in Scientific Journals have already been supported by the project. Publications are being made in order to communicate the Project Outputs, funding resources & Programme with the stakeholders –especially the Scientific Community and practitioners-and receive feedback.

- **Open Seminars** have been organized in partner countries. In Hellas alone, **more than 360 people** (experts, executives, stuff members working in the public sector, researchers etc) **have attended**.

Earthquake Hazard - Seismicity

Scordilis 2015

(Papaioannou, 2014)
Seismic Hazard Assessment • Seismicity • Recording the Strong Ground Motion
Earthquake Hazard Assessment Results based on Peak Ground Acceleration (cm/sec²)

(Papaioannou, 2014)

Flood Hazard Assessment... in 2 steps!

TWI = ln \left( \frac{A_s}{\tan \beta} \right)

As: Upstream Contributing AREA per contour unit length
\beta: Slope

Area: 500km²
Topographic Maps 1:50000
Risk Assessment
Regional scale - Reliability and Accuracy of Outputs

Applied Research on a Local Scale

Implementation on a Local (site-specific) scale

RTK GPS

Software used

HEC-RAS

Flood Hazard Maps

High hazard zone: Almost any size adult is in danger of floodwater
Medium hazard zone: Extreme caution is required
Low Hazard zone: Almost any size adult is not seriously threatened by floodwater

Bureau of Reclamation, 1988
Landslide Hazard Assessment


Compare FS with recorded Landslides
Evaluation of outputs by comparison to actual facts
Incorporation of Geomatics technologies

Black lines: fault traces on existing Geologic Maps
RED lines: fractures mapped using RS

High Level of accuracy

1

2

3

4
The last task...Dissemination

- Dissemination of outputs
- Exploitation of new information regarding seismic hazard
- Science and technology transfer in order to build capacity in the state authorities (public sector) and experts regarding earthquake, landslide and flood hazard assessments
- ....in order to broaden the number of users assessing those hazards and to cover larger areas in less time, to plan effective preventive actions and promote safety.

Contact & Information &!

News & updates @: http://www.scinetnathaz.net/

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Follow us on Twitter: https://twitter.com/SciNetNatHaz

YouTube Channel: http://www.youtube.com/user/SciNetNatHaz
Thank you for supporting the SciNetNatHaz project!
Selected References
(just for the “problems and solutions” part)


✓ Council of the European Union (2009): Council Conclusions on a Community framework on disaster prevention within the EU 2979th JUSTICE and HOME AFFAIRS Council meeting, Brussels, 30 November 2009


Selected References
(just for the “problems and solutions” part)


✓ Miet Van Den Eeckhaut and Javier Hervás (2012): Landslide inventories in Europe and policy recommendations for their interoperability and harmonisation, A JRC contribution to the EU-FP7 SafeLand project. JRC Scientific and Policy Reports.