

NATO

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SESSION 3: Partner Country Priorities for NATO SPS Programme

BALKANS STABILITY PACT -

BALKAN HARMONISATION OF SEISMIC HAZARD MAPS

NATO SFP Project 983054

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MONTENEGRO is the leading partner country for the NATO SFP Project 983054

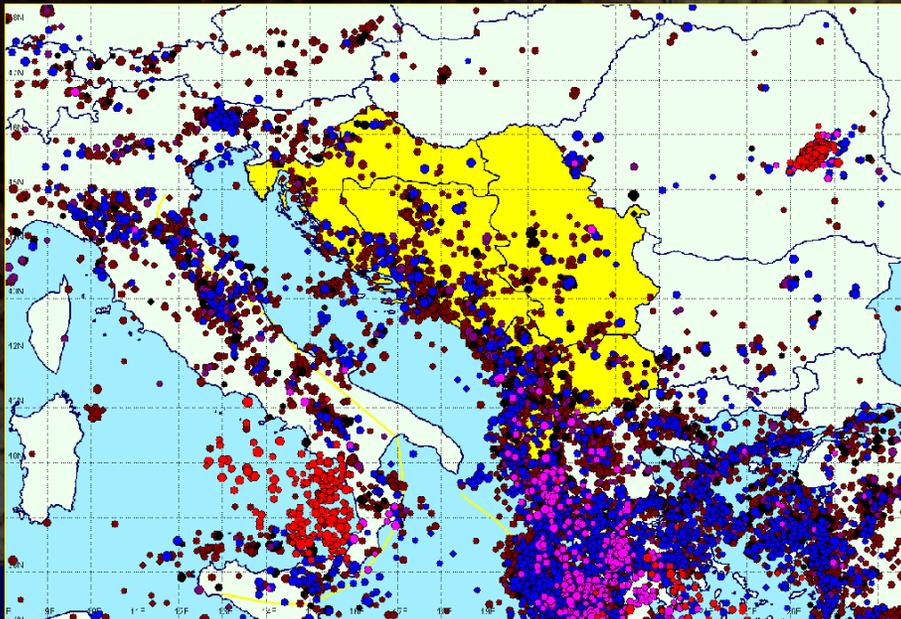
NATO PARTNER COUNTRY PRIORITIES

Montenegrin Government has identified the **environmental security as the main priority in the near future regional cooperation** (besides information technology, biotechnology and human and social dynamics).

Through the active cooperation in regional initiatives, organizations and collaboration with partners on a bilateral basis, as well as through the most important multilateral forums, **Montenegro will provide contribution to the stability and security**, not only in the region, but also at the wider context.

The Government of Montenegro recently adopted **National Strategy for Emergency Management**, recognizing the seismic risk as a dominant one that affects very wide range of economical and social values.

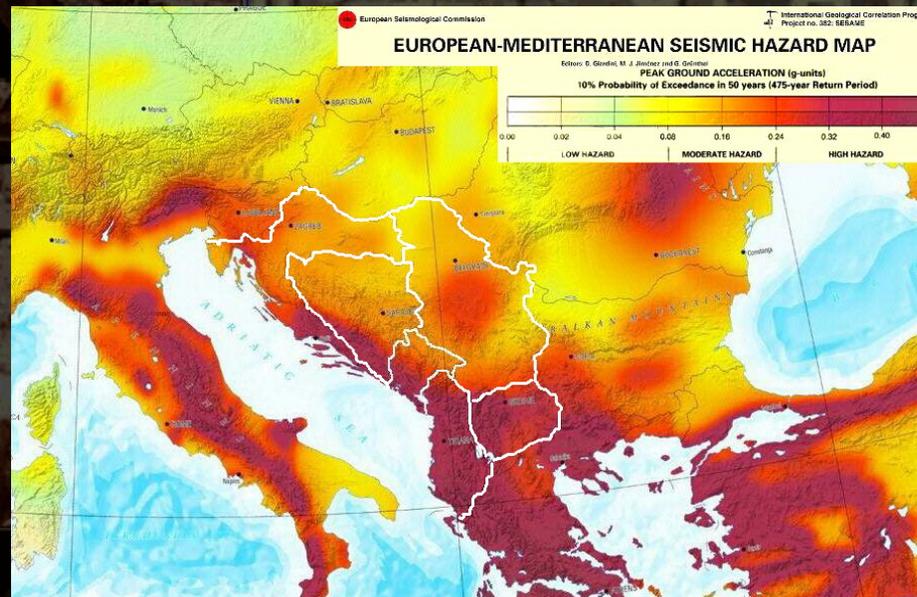
The Montenegrin Government has underlined the regional scientific activities and cooperation in the frame of NATO Science for Peace and Security Project **“Harmonisation of Seismic Hazard Maps for the Western Balkan Countries”** as a very important issue for Montenegro as the Project leading country, as well as for the whole region.



**Stronger earthquakes
in last 33 years**

Seismic hazard in Montenegro and the whole Balkan region is significant. **Its reliable assessment is crucial** for seismic risk evaluation and risk mitigation, including minimization of human loss, property damage and socio-economic disruption due to strong earthquakes.

Seismic hazard assessment is an important step towards preparedness and prevention activities in disaster management and seismic safety improvement what is in reference with the security mission of the NATO Science for Peace and Security Programme.





“HARMONISATION OF SEISMIC HAZARD MAPS FOR THE WESTERN BALKAN COUNTRIES” NATO SFP Project 983054

Project was launched on **2nd October 2007**
It will be carried out during 3 years by **12**
institutions from **6** partner countries:

- **Montenegro,**
 - **Croatia,**
 - **Bosnia and Herzegovina,**
 - **Serbia,**
 - **Albania and**
 - **FYR Macedonia**
- and **Turkey** and **Greece** as **NATO countries**

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8 Crucial objectives to be achieved:

1. To increase security of human lives, social and economical values as well as historical heritage exposed to significant seismic hazard in this region,
2. Existing seismic hazard maps should be updated and improved,
3. Recently acquired seismic and other data should be integrated and implemented in hazard assesment,
4. New methodological approach and new empirical ground-shaking models for hazard assessment should be implemented,
5. Seismic hazard maps should be harmonized with EU standards (EUROCODE 8),
6. Local seismic code regulations, seismic risk estimation and risk management should be based on reliable hazard maps,
7. Scientific collaboration in seismic hazard analysis and seismic data exchange in the region should be improved and
8. Young scientists in the region should be trained in seismic hazard assesment.

7 End Products:

1. Integrated database organized in a GIS application for the whole region: unified earthquake catalogue, seismotectonical data, focal mechanism data, morphological and geological data, etc.
2. Intergrated seismogenic model for the whole region,
3. Seismic hazard maps, harmonized with the EU standards - as a base for seismic safety improvement, seismic risk management, and seismic design codes,
4. Improved seismic monitoring networks through the deployment of new instrumentation,
5. Improved scientific collaboration between the participating countries and institutions,
6. Trained young scientists in earthquake-hazard related topics,
7. Published and disseminated the major Project results.

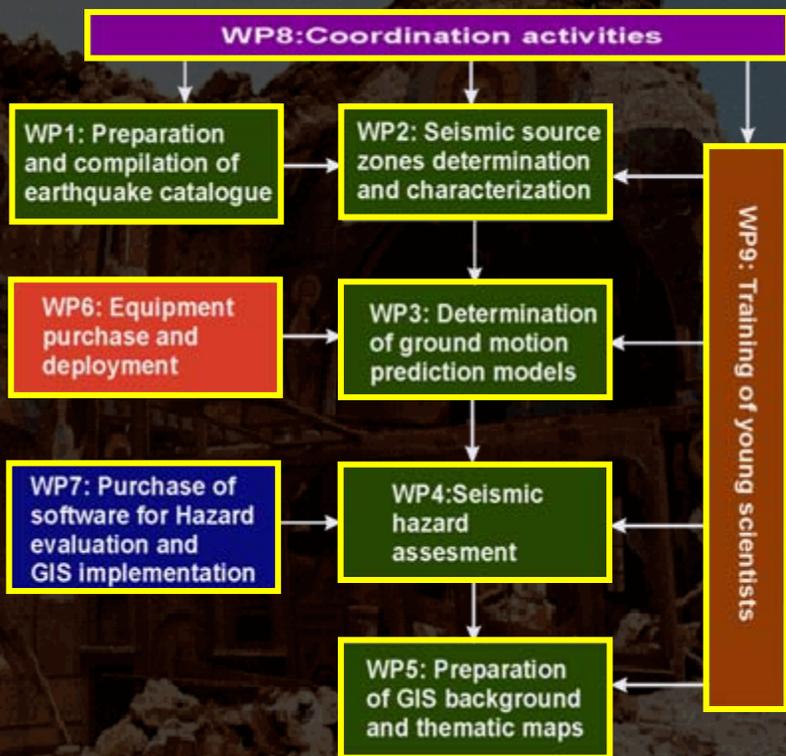
7 End Users:

1. Civil protection agencies,
2. Agencies for urban planning,
3. Ministries responsible for seismic safety improvement and seismic risk management,
4. Authorities for seismic design code legislation,
5. National seismic networks,
6. Seismological, geological and geophysical institutions in the Region,
7. Insurance companies.



Project consists of 9 working packages

Flow chart of Project activities



All planned Project activities are ongoing according to the schedule

8. PROJECT STRUCTURE AND ACTIVITIES

8.1. MILESTONES, DELIVERABLES AND SCHEDULE



Milestone:	Month:	1 st year				2 nd year				3 rd year					
		1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12		
1. Compilation of earthquake catalogue data		✓	✓												
1.1. Earthquake catalogue completion		✓	✓												
1.2. Unification of magnitude scale		✓	✓												
2. Seismic source modeling															
2.1. Seismotectonical elaboration															
2.2. Recurrence of earthquakes inside the identified seismic sources															
2.3. Modeling of seismic sources using smoothed seismicity approach															
3. Determination of GMP models			✓												
3.1. Investigation of available GMP models			✓												
3.2. Comparison of results from different GMP models															
4. Seismic hazard assessment															
4.1. Preparation and testing of input database															
4.2. Computation of hazard probabilities															
5. GIS implementation															
5.1. Preparation of GIS background and thematic maps															
5.2. Elaboration of hazard GIS maps															
6. Equipment purchase and deployment		✓	✓												
7. Software purchase			✓												
7.1. Accelerogram analysis software			✓												
7.2. GIS software															
7.3. Alternative hazard computation software with limited license															
8. Project coordination activities and issuing information and results in the Project															
8.1 Web site preparation		✓													
8.2 Web maintenance, Workshops, coord. and dissemination of the results		✓	✓												
8.3 Presentation and dissemination of the final hazard results			✓												
9. Training of young scientists		✓	✓												
Deliverable		Web site of Project ✓				Completed Earthq. catalogue	Determined GPM	alternat. source models		GIS background maps	Seismic hazard maps in GIS form				
Reporting		1st Progress Report ✓				2nd Progress Report	3rd Progress report	4th Progress Report	5th Progress Report						Final Report

Concluding remarks: Important Objectives already achieved

- Improvement of international cooperation with similar EU institutions
- Introducing many governmental and scientific institutions with the benefits of the NATO SPS Programme
- Advocacy for the importance of mitigation of seismic risk in the region and education of society
- Fostering of other NATO SfP Projects in the Region
- Training of young scientist in the methodology of seismic hazard assessment through Project workshops
- Stimulating of cooperation between partner institutions:
 - *Parametric seismic data exchange, including earthquake catalogue compilation,*
 - *Introduction of new agreements and practice on real time seismic data exchange,*
 - *Determination of joint criteria for seismological instruments improvement and harmonization in the region.*