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NATO SCIENCE FOR PEACE PROJECT NO. 983054 (BSHAP)
"Harmonization of Seismic Hazard Maps for the Western Balkan Countries"

Ohrid, Macedonia

27 – 28 May 2010

MINUTES OF THE WORKSHOP

(joint workshop of the groups for identifying the seismic sources and their characteristics and hazard computation)

PARTICIPANTS:

Prof Llambro Duni, Prof Rexhep Koci, Prof Neki Kuka, Prof Ismail Hoxha, Prof Nazim Hrvatovic, Amer Zoranic, Vlado Kuk, Kresimir Kuk, Prof Zoran Milutoinovic, Radmila Salic, Jadranka Mihaljevic, Slavica Radovanovic, Svetlana Kovacevic, Vladan Kovacevic.

GOALS: The groups were established upon the decision of Co-directors Meeting (Sarajevo, March 2010) with the aim to harmonize the identified seismic sources (seismic sources group) and their characteristics and to perform PSHA analysis using OHAZ and another benchmark software (CRISIS or EZFRISK) (hazard group established under the coordination of Prof Kuka).

FIRST DAY SESSIONS:

The groups discussed the way to convert the unified catalogue into suitable M_w magnitude. The differences in national catalogue were recognized as well as the time frames in which the magnitudes had been defined in particular ways. The conclusion is that each partner performs such conversion for its own part of catalogue. As recommendations two approaches are suggested:

- Regression relations of Scordilis (2006) to convert magnitudes M_S and m_b of ISC into M_w .
- Recently revised paper "Local relations for converting M_l to M_w in Sothern-western Balkan region", LL. Duni¹, Sh. Kuka², N. Kuka¹.

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The paper copy is delivered during the workshop and revised paper is going to be published on Project web page.

In addition, all Co-directors will revise again the notified errors in last catalogue edition: the colleagues from Serbia have recognized non-existing events for territory of Serbia. They also provided data on some reevaluation of historic data analysis and re-location of near border events in Montenegro. For this purpose the last catalogue BSHAP_E version will be sent by e-mail to all Co-directors along with the Minutes of this Meeting. They will re-inspect the catalogue and make comments on any changes if introduced.

Having in mind the purpose of magnitude conversion (the implementation in ground motion prediction formulas), the overview of recent GMP equations was discussed: the outcomes of Prof S. Akkar study on applicability of GMPEs from active shallow crustal regions are discussed in light of possibility to introduce it in OHAZ software. The conclusion is to ask Prof Akkar for revised PGME *Akkar and Bommer, 2010*.

Beside the usual comparison of recorded data set to results of PGMEs results, Prof Milutinovic is proposing to evaluate the results of chosen set of PGME results for number of real sites: namely to assess attenuation for the important cities in region, than to add the local soil influence and to realize what will be real demand to civil engineers.

For the alternative hazard software the CRISYS software was discussed, available versions and the ways to ask for password to use it.

The differences in preparing the input seismic zones for CRISYS and OHAZ are elaborated: uniqueness of a , b , λ and M_{max} with defined source zones and background seismicity in contrast to continuous zones of smoothed seismicity approach (with recommended b and M_{max} close values).

The present ideas about existing seismic source zones were presented by participants from Albania, Montenegro, Serbia and Bosnia and Herzegovina with the discussion on bordering areas and continuation of source zones in neighboring countries. The Croatia will provide work of Prologovic by the end of June. Macedonia also had to provide own data (available Arsovski Study on seismotectonics, no identification of source zones).

Along with this WS Minutes, Mihaljevic will provide scanned paper on *Seismotectonic Input File for Spatially Smoothed Seismicity Approach* (M. Poljak, P. Zupancic, j.K. Lapajne, B. Sket Motnikar).

SECOND DAY SESSIONS:

Prof Kuka provided detailed introduction to OHAZ software. The new release of software was delivered and newly implemented features of program presented. The minor differences in input file preparation were recognized. Particular attention is paid on PGMEs choice and theirs use limitation - that is stated in the

model itself. Although possible the model combination is not recommended – it is better to perform analysis with single PGME and later on to combine results so that an evidence of the particular model's influence is shown in obvious way.

All prepared presentations in OHAZ and used case study is delivered to all participants, as well as the available literature on CRYISIS software.

Prof Milutinovic reminded on the decision of Sarajevo Meeting about the BSHAP Project presentation on next XII EAEE Congress, August 2010 –Ohrid. He asked each partner to present its work during the planed separate BSHAP session. The abstracts should be prepared and sent within next 15 days.

All data were exchanged to continue work in harmonized way. For the data exchange the FTP server of MSO (password protected manner) will be used. MSO will inform on all partners on this possibility.