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OBAVIJEST

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sljedeće izlaganje:

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Recent Advances in the Seismic Hazard Assessment Framework at the Western Balkan Region

ABSTRACT: The Harmonization of Seismic Hazard Maps in the Western Balkan Countries Project (BSHAP) was funded for 7 years by NATO-Science for Peace Program to support the preparation of new seismic hazard maps of the Western Balkan Region using modern scientific tools. One of the most important outputs of the BSHAP is an updated and unified BSHAP earthquake catalogue that is compiled directly from the datasets of earthquake data providers of the region. The BSHAP earthquake catalogue covers the geographic area limited by 38.0° - 47.5°N, 12.5° - 24.5°E and includes 26,118 earthquakes that occurred in the region between 510 BC and 2012. New magnitude conversion equations for various local magnitude scales of the data providers are developed with the aim of having homogeneous moment magnitude estimates. Completeness time intervals for the catalogue data are provided as inputs to the seismic source models for updated seismic hazard of Western Balkan Region. The unified and updated BSHAP catalogue is found to be compatible with the current well-established European and world-wide catalogues and represents a sound basis for analysis of the seismicity of this region.

In the framework of BSHAP, the regional free field strong motion network capacity was increased significantly by the purchased and installed recorders and the BSHAP strong motion database that includes both pre-BSHAP (mostly analog) and post-BSHAP (all digital) recordings was compiled. The BSHAP harmonized strong motion database includes the uniformly processed strong motions along with the related earthquake metadata and station information; therefore, it provides a solid background for the ground motion characterization studies in the surrounding region. The BSHAP strong motion database is used for proper selection of the ground motion prediction

equations (GMPEs) for the probabilistic seismic hazard assessment (PSHA) by comparing the compiled strong ground motions with the predictions of candidate global, European, and Euro-Med GMPEs in a systematic manner.

BSHAP collected relevant knowledge about the geological structure of southwestern Balkans. Database of 714 focal plane solutions, held by BSHAP partners, provided a better understanding of the prevailing stress regime in the region. Entire influence area covered by earthquake catalogue data is represented by logic-tree branches of seismic source models: each model is composed of full set of seismogenic zones (groups of cells with the same attributes that are grouped into regions). The recurrence parameters for the seismic source zones are calculated using MLE and manual fits. Seismic source models - represented by its geometry, seismicity and seismotectonic information is provided as the input to perform the spatial smoothing of seismic activity rates for the hazard calculations.

The main output of BSHAP is the new probabilistic seismic hazard maps for Western Balkans, obtained by implementation of the smoothed-gridded seismicity approach. They are prepared based on the BSHAP earthquake catalogue, selected GMPEs and developed seismotectonic model. Hazard calculations are carried out following a logic-tree structure with 48 branches describing the epistemic uncertainties associated with construction of the seismic source model, and of the GMPEs selected for ground motion prediction. The results are expressed in terms of peak horizontal acceleration (PGA) for 95 and 475 years return periods. The assessment has been carried out for rock conditions with average velocity of shear waves $V_S \geq 800$ m/sec in the upper 30 meters of soil section (classified as soil type A according to Eurocode 8 soil definitions). Thus, obtained results are in full agreement with the Eurocode 8 standard for seismic zonation and aseismic design. The seismic hazard maps derived in this project are a good basis to characterize the seismic hazard of Western Balkans. They will help the national authorities, public and private institutions, civil emergencies agencies, etc., for urban planning, disaster preparedness, and seismic hazard mitigation.

Pozivaju se studenti, apsolventi i svi zainteresirani da prisustvuju predavanju, koje će se održati u **predavaoni P2** Geofizičkog odsjeka PMF-a, Horvatovac 95, Zagreb.