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Organizing Committee Chair: Alena Rybkina (GC RAS)



## Systems Analysis and Seismic Hazard Assessment

School for Young Scientists

## Moscow, 12-15 July 2016

Venue: Lomonosov Moscow State University (MSU)

Feel free to contact us: <u>school2016@gcras.ru</u>

http://school2016.gcras.ru

## School for Young Scientists "System Analysis and Seismic Hazard Assessment"

Reducing the impact of natural and man-caused catastrophic events is a complex scientific and technical problem, which is of great social and economic importance. Its urgency is continuously increasing due to rising population density, development of environmentally hazardous industries etc. The largest earthquakes occur rarely but lead to huge economic, financial, and human losses.

Modern methods of seismic hazard assessment though being rather developed are not always able to characterize in detail a particular region at real threat as a result of strong earthquake. At the same time the estimates obtained by the classical methods of seismic zoning were exceeded in each of the 88 earthquakes with magnitude  $M \ge 7.5$ that struck around the world since 1990 including the 12 deadliest earthquakes that shook since 2000.

Thus enhancement of the existing methods and development of new ones for adequately assessing and predicting seismic hazard and risks are fundamental scientific problems addressed to reducing losses associated with natural hazards. Taking into account multiple-factor processes causing earthquakes the decision of these problems can be achieved only on the basis of applying the complex of methods and the further systems analysis of the results obtained. The subject area of the School will be devoted to the new methods developed recently for seismic hazard assessment and integration on the basis of the systems analysis of results obtained by these methods. Examples of seismic hazard assessment for specific regions will be also considered.

Lectures at the School will be given by leading scientists representing Geophysical Center, Russian Academy of Sciences (GC RAS), MSU Faculty of Mechanics and Mathematics, CODATA, Schmidt Institute of Physics of the Earth, Russian Academy of Sciences (IPE RAS), International Institute for Applied Systems Analysis (IIASA) (Laxenburg, Austria), Institute of Earth Physics of Paris (IPGP) (France), Institute of Earthquake Prediction Theory and Mathematical Geophysics, Russian Academy of Sciences (IEPT RAS), University of Trieste (Italy), and other scientific institutions.



Lectures will focus on the following specific topics:

- application of the artificial intelligence techniques for determination of areas prone to large earthquake;
- morphostructural zoning and its usage for determination of areas prone to large earthquake;
- seismic hazard assessment based on the Unified Scaling Law for Earthquakes (USLE) that generalizes the Gutenberg-Richter law;
- system algorithmic approach to seismic hazard assessment;
- modeling of blocks-and-faults system dynamics and seismicity;
- relevant subjects of data mining and advanced systems analysis.



Along with the lectures two hours will be devoted each work day to direct scientific conversations between School participants and lecturers. This will offer an opportunity for participants to penetrate deeply application of seismic hazard assessment methods and to discuss their own studies and research projects.