IPL Project Annual Report Form 2012
1 January 2011 to 31 December 2011

1. Project Title
Mechanical-mathematical modeling and monitoring for landslide processes

2. Main Project Fields
   (1)A+(2)B
   (1) Technology Development
       A. Monitoring and Early Warning,
   (2) Targeted Landslides: Mechanisms and Impacts
       B. Landslides Threatening Heritage Sites

3. Name of Project leader     Dr. Svalova Valentina
Affiliation: (office and position) Institute of Environmental Geoscience RAS, Head of International Projects
Department, Leading Scientist
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Core members of the Project: 1.Prof. , Corr.-Member RAS Nikolaev A.V., Director of Seismological Center
IEG RAS, 2. Dr. Mironov O., Head of Lab. of Geoinformation and Computer Mapping, 3. Dr. Batrak G., Senior
Scientist, hydrogeologist, 4. Ginzburg A., Head of Department of Information and Measurement Systems

4. Objectives: (5 lines maximum)
Elaboration of mechanical-mathematical model for landslide process on the base of Navier-Stocks
equation.
Investigation of trigger mechanism for landslide process. Monitoring system promotion.
Geophysical background research in earthquake areas. Alarm and early warning systems elaboration.

5. Study Area: (2 lines maximum)
Moscow landslides, Russia landslides, some references to Italy, India and Taiwan landslides
6. Project Duration (1 line maximum) 3 years

7. Report

1) Progress in the project: (30 lines maximum)
Geological-geophysical and monitoring data of landslide processes were combined and analyzed for some territories in Russia, Italy, India and Taiwan. Mechanical-mathematical models of landslide processes of some different types and stages were preliminary suggested and elaborated. Mechanical-mathematical model of high viscous fluid was used for modeling of matter behavior on landslide slopes. Equation of continuity and an approximated equation of the Navier-Stockes for slow motions were used. Model gives possibility to investigate some fundamental aspects of matter movement on landslide slope. Researches on Russia-Taiwan project "Theory and methods of earthquake early warning systems for underground pipelines and hazardous slopes" were provided in 2008-2011. Geophysical research and promotion of early warning system were fulfilled.

2) Planned future activities or Statement of completion of the Project (15 lines maximum)
Development and promotion of the model. Comparison of results of modeling with results of monitoring. Revealing of features of activization of landslips of various types, including deep landslips. Geophysical research in earthquake areas. Elaboration and promotion of alarm and early warning systems on the base of seismic phone change measurements and analysis. New devices construction.

3) Beneficiaries of Project for Science, Education and/or Society (15 lines maximum)
Recommendations of the project can be used for optimal construction of monitoring systems, for decision makers, for education and development of alarm and early warning devices.

4) Results: (15 line maximum, e.g. publications)

3) Svalova V.B.

Geological-Geomechanical Simulation of the Late Cenozoic Geodynamics in the Alpine-Mediterranean Mobile Belt. // New Frontiers in Tectonic Research - General Problems, sedimentary Basins and Island Arcs. INTECH, Croatia, 18-38.

5) Svalova V.B.


7) Valentina Svalova

8) Svalova, V.B.

9) Valentina Svalova

10) Svalova, V.B.

Note:
1) If you will change items 1)-6) from the proposal, please write the revised content in Red.
2) Please fill and submit this form by 30 March 2012 to ICL Network <icl-network@iclhq.org>