

Interactive comment on “Impact data bases application for natural and technological risk management” by Nina I. Frolova et al.

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Answer to the Editor comments Dear Maria,

Thank you for your comments and positive decision about our manuscript publication with minor revisions. The infrastructure described in the manuscript was developed within the Russian Federal Programs and is maintained by EMERCOM National Center for Crisis Management. We suppose that similar infrastructures exist in many countries, especially in National Emergency Management Agencies, and used for natural and technological emergency management at the country level. Usually such infrastructures are accessible within specific projects to solve definite tasks. The examples of these data usage within national projects are given in our paper. This and other

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similar infrastructures should be definitely accessed within the international projects as well. We do our best to participate in international activity aimed at disaster risk reduction with special attention to earthquake risk management. In 2004 we were invited to JRC to share our experience on global system Extremum assigned for near real time loss assessment due to earthquakes. At that time Extremum and its latest versions were most probably the best probabilistic earthquake mortality model existing and by that time it had been tested and improved for over 10 years. It was a large interest on both sides, JRC and Russian Academy of Sciences, to collaborate on the issue of near real-time earthquake impact modelling and alerting. Both parties were aware that a single model is not enough for informed decisions. Decision makers wanted to be able to compare and/or combine the outcomes of many models, many approaches and many methodologies. We are quite aware that impact databases on earthquake consequences are very important in order to increase the reliability of loss estimations by application of existing near real time global Systems. In 2010 my coauthor and me prepared the proposal for the 27th CODATA General Assembly about new Task Group “Knowledge-Base on Physical and Socio-Economical Consequences of Damaging Earthquakes”. Many scientists who were ready to take part in this TG activity are still involved in this field (see attached file). For instance, in 2011-2014 prof. Robin Spence was one of the scientific leaders of the GEM Project aimed at development of the Global Earthquake Consequence Database. In 2018 we initiated together with him and CODATA the ESC special session in order to investigate the state of the art of existing impact databases on past earthquake consequences, to summarize different factors affecting on the reliability of near real time loss estimations and identify the way to minimize their influence. The important aim of this session was to explore ways in which the datasets on earthquake consequences from different countries and institutions could possibly be merged, and to what extent these data should be harmonized, as well as to discuss different issues dealt with creation of distributed data base. At present we continue this activity within the CODATA Task Group on Linked Open Data for Global Disaster Risk Research. This September we issued the study

report “Next Generation Disaster Data Infrastructure” (see attached file). In this Report the proper attention is given to impact databases on earthquakes and loss estimations in emergency mode. The general issues of disaster data collection and transmission, standards and formats, quality and control, availability and others are discussed. We do hope that the proposed in the Report the next generation of disaster data infrastructure, which includes both novel and the most essential information systems and services that a country or a region can depend on to successfully gather, process and display disaster data to reduce the impact of natural hazards, including earthquakes. Therefore, in our manuscript we gave reference to this study report and do hope it will stimulate the development of distributed databases on separate disasters in order to include the data from national database similar to ours described in the manuscript. I am sorry for this long response on your comments on cooperation programmes. I am afraid that we will need another paper in order to analyze the achievements on development impact databases and increasing loss estimation reliability within international cooperation activity. In the manuscript submitted for your special issue we did our best to describe Russian national IS and its impact database, as well as the results of our study of these data usage within the Russian national projects. In the final version of the manuscript we took into account your and Referee #1 comments and added new references of foreign investigators.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-264>, 2019.



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**NEW TASK GROUP PROPOSAL FOR PRESENTATION TO THE
27th CODATA GENERAL ASSEMBLY
Cape Town, 28-29th October 2010**

1 Name of the Proposed Task Group

**Knowledge-Base on Physical and Socio-Economical Consequences of
Damaging Earthquakes**

2 Objective(s) of the Proposed Task Group

Social and economic losses caused by strong earthquakes increase markedly in the recent decades, which is a definite trend of Society's evolution. By far, the best way to mitigating the effects of an earthquake on population and artifacts, is to apply prevention measures before the earthquake occurs : as earthquake occurrence is not predictable in the present state of knowledge, one is led to implement prevention measures relying on an assessment of what could be the consequences of an earthquake likely to occur in an earthquake-prone region; in other words to imagine a scenario of the occurrence of the given earthquake in the region under investigation. One can also apply the scenario approach in an emergency mode just upon occurrence of the event; indeed, it is then too late to think of prevention measures, but the outcome of this fast approach can then be hopefully useful for advising, as early as feasible, on how to best orient the rescue teams. Both approaches require ideally a good background knowledge of the objects-at-risk and the way they respond to potential earthquake solicitation. Simulation codes exist, both in emergency mode and in longer-term mode; the quality of the assessment output is directly dependent upon the quality of input data and of the simulation models. An obvious way of improving the whole process is to confront the assessment output with the known consequences of previous events; *i.e.* data on impact of past earthquakes could help "calibrating" somehow the simulation models; furthermore, scenario earthquake approaches suffer from more or less badly-known parameters (inventory of objects-at-risk, vulnerability/fragility functions of buildings submitted to shaking, *etc.*) : to a certain extent, these weaknesses can be partially mended through calibration procedure, in addition to improvement of available databases. In this respect, the information on physical and socio-economical consequences of past damaging earthquakes is very critical.

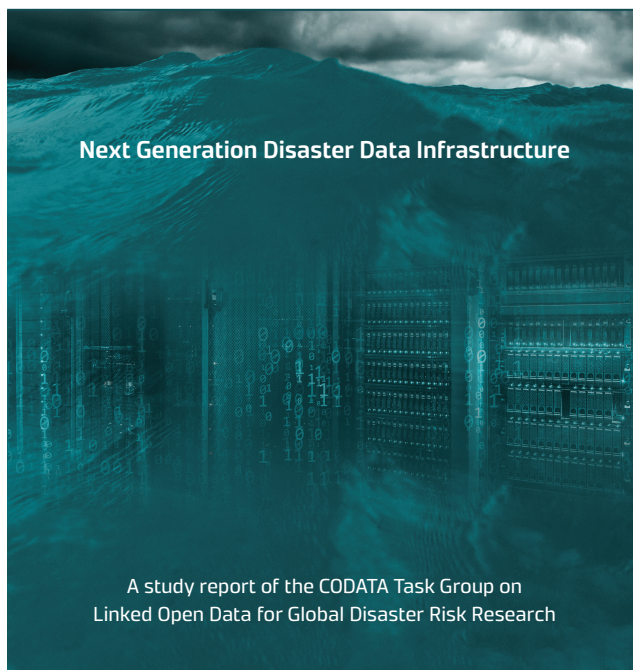
At the moment, data sets on impact of past earthquakes are not readily accessible to many potential users; actually, if partial data sets have been developed here and there, no significant initiative has yet been taken to collect, organize, and make easily available the corresponding data

The role of the foreseen Task Group is to prepare the construction and initial development (structure and content) of a database on earthquake impact data. Its role will

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Fig. 3.