Nat. Hazards Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/nhess-2019-264-AC4, 2019

Natural Hazards and Earth System Sciences
Discussions

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

Nina I. Frolova et al.

frolova@esrc.ru

Received and published: 8 November 2019

Authors response to the editor comments

Dear Maria,

Thanks again for your kind comments. According to your comment we added the reference for the CODATA study report to the list of references. In the previous version of the manuscript it was only mentioned as web reference https://doi.org/10.5281/zenodo.3406127 on line #60. We are also looking for future cooperation.

Printer-friendly version

Discussion paper

2019-264, 2019.

Printer-friendly version

Discussion paper

NHESSD

Interactive comment

Interactive comment on "Impact databases application for natural and technological risk management" by Nina I. Frolova et al.

Maria Bostenaru Dan (Editor)
csipike@web.de

Received and published: 8 November 2019

Many thanks for your thorough and detailed response! It is indeed very interesting to read about all these initiatives. It would be very good if reference is included to those attached to your response, and sufficient. Looking forward for a future article or presentation describing what is in the response!

Authors response to the editor comments

Dear Maria,

Thanks again for your kind comments.
According to your comment we added the reference for the CODATA study report to the list of references. In the previous version of the manuscript it was only mentioned as web reference https://doi.org/10.5281/zenodo.3406127 on line #60.
We are also looking for future cooperation.

Fig. 1.

Printer-friendly version

Discussion paper

Impact databases application for natural and technological risk management

Nina I. Frolova[1], Valery I. Larionov[1], Jean Bonnin[2], Sergey P. Suchshev[3], Alexander Ugarov[3], Nataliya Malaeva[3]

[1]Seismological Center of IGE, Russian Academy of Sciences, Moscow 101000, Russia
[2] Institut de Physique du Globe, University of Strasbourg, Strasbourg F-67084, France
[3] Extreme Situations Research Center, Moscow 127015, Russia

Correspondence to: Nina I. Frolova (frolova@esrc.ru)

Abstract. Impact databases development and application for risk analysis and management promotes the usage of self-learning computer systems with elements of artificial intelligence. Such systems learning could be successful when the databases store the complete information about each event, parameters of the simulation models, the range of its application and residual errors. Each new description included in the database could increase the reliability of the results obtained with application of simulation models. The calibration of mathematical models is the first step to self-learning of automated systems. The article describes the events' database structure, and examples of calibrated computer models as applied to the impact of expected emergencies and risk indicators assessment. Examples of database statistics usage in order to rank the subjects of the Russian Federation by the frequency of emergencies of different character, as well as risk indicators are given.

1 Introduction

Analysis of the natural and technological emergencies consequences gives an evidence that natural hazards and technological disasters pose an increasing threat to the safety of citizens and the economy of the Russian Federation. The increasing severity of the impact indicates the need to improve the effectiveness of measures aimed at risk reduction. The Ministry of Emergency Situations (EMERCOM) of the Russian Federation considers preventive measures as the priority. They are based on application of information systems (IS) that provide reliable forecasts, including a reliable assessment of a spatially distributed indicator that characterizes the safety of a region, which makes it possible to rationally distribute forces and resources in order to reduce risk.

Another important task, which may be solved with IS usage, is to enhance the efficiency of rescue operations. This could be achieved by higher reliability of the operational forecast of situations based on the data contained in the database of events (DB). Examples of successful rescue operations accumulated in DB facilitate the decision-making process and reduce the time when people stay in the affected area, which results in decreasing the fatality likelihood.

Fig. 2.

Printer-friendly version

Discussion paper