Geophysical Research Abstracts
Vol. 18, EGU2016-7526, 2016
EGU General Assembly 2016

Conceptual geoinformation model of natural hazards risk assessment

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Natural hazards are the major threat to safe interactions between nature and society. The assessment of the natural hazards impacts and their consequences is important in spatial planning and resource management. Today there is a challenge to advance our understanding of how socio-economical and climate changes will affect the frequency and magnitude of hydro-meteorological hazards and associated risks. However, the impacts from different types of natural hazards on various marine and coastal economic activities are not of the same type. In this study, the conceptual geomodel of risk assessment is presented to highlight the differentiation by the type of economic activities in extreme events risk assessment.

The marine and coastal ecosystems are considered as the objects of management, on the one hand, and as the place of natural hazards' origin, on the other hand. One of the key elements in describing of such systems is the spatial characterization of their components. Assessment of ecosystem state is based on ecosystem indicators (indexes). They are used to identify the changes in time. The scenario approach is utilized to account for the spatio-temporal dynamics and uncertainty factors. Two types of scenarios are considered: scenarios of using ecosystem services by economic activities and scenarios of extreme events and related hazards. The reported study was funded by RFBR, according to the research project No. 16-35-60043 mol_a_dk.