

Natural hazards as triggers of accidents in the infrastructure and technological systems

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The impact of different types of natural hazards on the society, economics and technological systems is increasing around the world during the last decades. Natural hazard impacts trigger so called natural-technological accidents in the infrastructure, transport and industrial facilities. The term “natural-technological” applies to both human-induced intensification of natural risks and any accidents in the technosphere triggered by natural processes or phenomena. The growth in the number and severity of natural-technological events is caused by the observed increasing in the activity and scale of various natural hazards as well as in the complication of modern technological systems prone to natural hazard impacts and by increasing advancement of economic activities and population into areas at natural risk. The author divided all natural hazards into two groups according to their distribution in space and development in time and their impacts on the technosphere and population. The first group includes global-scale solar disturbances, so called “space-weather”, and geophysical field anomalies. They can influence on the technosphere both directly by causing various electronic errors and automatic machinery failures and indirectly by enhancing a “human factor”. Geological, hydro- meteorological, and other natural hazards belong to the second group. They mostly cause mechanical impacts on the infrastructure and technological systems. The author created a database of natural-technological accidents occurring in Russia. The collected information allows analyzing the main causes and triggers of accidents, their distribution within Russian regions and changes in time and revealing “weak spots” to cope with. More than 90% of all natural-technological accidents in the RF are caused by natural hazards of hydro-meteorological origin. The risk of natural-technological accidents was assessed within regions of the RF. Sakhalin region, Krasnodarsky and Primorsky territories are at the most risk.

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