



## **Modeling of the Geosocial Process using GIS «Disasters»**

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The natural and social disasters generate a huge stress in the world community. Most researches searching for the relationships between different catastrophic events consider the limited sets of disasters and do not take into account their size. This fact puts to doubt the completeness and statistical significance of such approach. Thus the next indispensable step is to overpass from narrow subject framework researches of disasters to more complex researches.

In order to study the relationships between the Nature and the Society a database of natural disasters and dreadful social events occurred during the last XXXVI (36) centuries of human history weighted by the magnitude was created and became a core of the GIS «Disasters» (ArcGIS 10.0). By the moment the database includes more than 2500 most socially significant ("strong") catastrophic natural (earthquakes, fires, floods, droughts, climatic anomalies, other natural disasters) as well as social (wars, revolts, genocide, epidemics, fires caused by the human being, other social disasters) events. So far, each event is presented as a point feature located in the center of the struck region in the World Map. If the event affects several countries, it is placed in the approximate center of the affected area. Every event refers to the country or group of countries which are located in a zone of its influence now. The grade J (I, II and III) is specified for each event according to the disaster force assessment scale developed by the authors. The GIS with such a detailed database of disastrous events weighted by the magnitude over a long period of time is compiled for the first time and creates fairly complete and statistically representative basis for studies of the distribution of natural and social disasters and their relationship.

By the moment the statistical analysis of the database performed both for each aggregate (natural disasters and catastrophic social phenomena), and for particular statistically representative types of events led to the following conclusions: natural disasters and dreadful social events have appeared to be closely related to each other despite their apparently different nature. The numbers of events of different magnitude are distributed by logarithmic law: the bigger the event, the less likely it happens. For each type of events and each aggregate the existence of periodicities with periods of  $280 \pm 60$  years was established. The identified properties of cyclicity, grouping and interaction create a basis for modeling essentially unified Geosocial Process at a high enough statistical level and prove the existence of the uniform planetary Geosocial Process. The evidence of interaction between "lifeless" Nature and Society is fundamental and provided a new forecasting approach of demographic crises taking into account both natural disasters and social phenomena. The idea of the interaction of Nature and Society through the disasters «exchange» as a uniform planetary Geosocial Process is an essentially new statement introduced for the first time.