

## Utilization of the Historical and Instrumental Data for Natural Hazards Rythmicality Estimation in Basarabia Region

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For the last decades ecological balance became very fragil in many densely populated regions of the Earth. It is evidently more pronounced in intensively populated and developed regions of arid and semiarid zones to wich the territory of the Basarabia is atributed. The disturbance of the ecological balance in our region provoked increase of the frequency and negative influence of a lot of extreme phenomena, such as long-term droughts, strong storms, excessively humid seasons, big torrential rains, frequently with hail, vast floods, bizzards and strong hurricanes, extremely severe winters, late spring or early fall frosts, epidemics, epizootics, landslides, earthquakes and other destructive processes and phenomena.

Although all these flagela cause enormous damage, affecting the material well-being, sometimes endangering not only the health, but also the life of the people, they are studies very little now.

The rezults of recent paleogeographical and historical investigations in our region permit us to suppose that the above-mentioned negative phenomena don't appear chaotically. A very large group of destructive processes and phenomena is lakely to have certain rythmical repetitions and some cosmic factors may increase or decrease their destructive effect. Unfortunately, the rows of the instrumental observations in our region are too short and characterise only the last century. In order to prolong them we decided to collect carefully all known historical, paleogeographical, geochemical, archaeological, dendrological and other indirect data about concret cases of manifestation of extreme phenomena during lasts millenia.

People were afraid of extreme phenomena and the damage was great in the past, that's why the natural hazards are described in detail even in ancient chronicles, anales and others archives for this region. No less important are the first instrumental data about such manifestations, wich we select from divers regional periodical sourses, as the bulletin of balneological stations (for example, discribing the geochemical content of the medicinal mud of different lagoon), as well as the indirect commercial data about prices on bread, salt and other food. The contunuation of droughts in the past can be estimated by duration of seasonal works for salts extractions. For example, Dr.

Th. Porucic (1924) described that the annual volume of extracted salt from every lagoon of Southern Basarabia evidently pointed to long-term periods of droughts.

The main aim of our investigations were to select all of these data concerning the concret cases of different hazards manifestation in our region and to compile the regional data base.

The brief description of this data base were already published in the last volume of GIS Simpozion Works (Mikhailescu and others, 1995, pp. 53-60).

Up-to-date 2 134 calamities have been registered. Their distribution, according to the main groups of extremum processes, is as follows: droughts - 462, invasions - 112, falls with big rains - 63, summers with big rains - 371, floods - 314, frosty winters - 392, late spring or early fall frosts - 119, big storms and hurricanes - 85, earthquakes - 107, epizotiums - 109 cases.

The performance of a preliminary analysis of the selected data had given the possibility to find out about the existence of certain phases and rhythms of different duration with the invading of frequency of different types of natural calamities. Thus, the selected data helped to confirm the existence of rhythms and pseudorhythms with durations of 170-180, 85-90, 44-45, 33-34, 21-22 and 10-11 years, which, probable, are caused by the rhythmical changes of solar activity intensity and planet configurations. The correlation of the selected data with the astronomical data put in evidence a great influence which have same cosmic factors to the recent changes in climat variability of our region.

To estimate the mechanism and real influence of every cosmic factor to the frequency of manifestation of each group of natural hazards we consider that are necessary to develop a special heliogeographical investigations. Suggested approach may serve as a basis for the prediction of natural hazards in the future.

Geographically, the natural calamities differ from usual natural phenomena only by their intensity and speed of manifestation.

Natural processes do not occur chaotically, they follow certain laws, circumstances and factors, which provoke their occurrence, evolution and their rhythmical repetition. The rhythm and periodicity are a universal natural law, undoubtedly founded by many researches of famous geographers: L.S. Berg, I.P. Gherasimov, I.P. Isacenco, C.C. Marcov, V.E. Proca, G.K. Tushinsky, A.A. Veliciko etc.

Since the natural flagella are per se the result of some natural processes, it is evident that their repetition is caused by certain factors (both spacial and terrestrial), which occur according to the same nature evolution laws. The regional antropic impact causes only certain circumstances able to change only the amplitude and the destructive effect of natural calamities, but not the time and place of their manifestations. The debates in the field exist only in area of the extent, to which these laws, circumstances and factors are known in the region. The same criteria determine the degree of their

practical application both for calamities prevention and the elaboration of effective actions for their consequences liquidation.

## References

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