System analysis in the study of natural extreme events and their trigger effects

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Today we live in the world of Big Data. Rapidly growing external and internal information flows in this world constantly change the priorities of scientific analysis as a function of time. The paper will attempt to outline the answers to the following questions arising in this connection.

In which direction monitoring on our planet Earth and environment sciences is developing today? What are the current priorities for the acquisition, accumulation and recognition of knowledge in the Big Data obtained by modern Earth observation systems? What problems do we solve - those that we are capable to solve today or those that need to be solved? How are observational data, extreme events, Big Data and system analysis related with each other?

Are we in that situation where being inside the immense world of Big Data, which requires permanent resources to overtake it, we are concentrating on what lies on the surface? In other words, do we see the “forest” of Big Data behind its “trees”?

Actively developing science of systems analysis helps to advance in the answers to these and other similar questions of Big Datatoday. To some extent, this is, so to speak, the new mathematics of Big Data.

Big Data is a gigantic systemwhich is characterized by the fact that its information satisfies the principles of high values of four V (4V-principal):

1. Volume
2. Velocity
3. Veracity
4. Variety.

The 4V system has countless number (continuum) of objects and connections between them. It is difficult for an incoming researcher to determine where to start and how to construct the stages of Big Data studies in time and space. System analysis in its various forms is coming to help here.