Cartographic analysis of the damage, associated with geocryological processes

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The data base on unfavorable consequences of geocryological processes was prepared synthesizing materials of Russian and international conferences devoted to geocryological problems. The conferences were held in 2008-2014. The data have a spatial attachment. They characterize processes and their consequences, as well as expanded data on each recorded case.

While preparing the base of factual data, classifiers were elaborated for grouping the information and creating thematic cartographic coverings.

Major information data base fields are as follows: Type of a cartographic object, Geocryological process, Branch of economy, Element of the object (impact recipient). Stage of life cycle of the object, Month/ Season and Year of the damage recording, the period of the process development (during one year or many years), Geographic coordinates, Description of the damage, the Magnitude of the damage (money equivalent), Bibliographic reference. The applied structure secures the multidisciplinary character of accumulated information and its commonality.

The spatial attachment of data allowed preparation of thematic maps, which can be used for analysis of various aspects of the current and cumulative damage to economic facilities, caused by exogenic geological processes within the cryolithozone of Russia. The work demonstrates a wide geographical coverage of problems associated with the activity of geocryological processes, making evident that the climate warming is not the main cause of damage to the economy. It was found out that most problems are not associated with objects under construction but with those under operation.

The increasing need to develop methods of geocryological forecast, which could make it possible to assess the cost of protective and compensating measures in the process of operation of industrial object is also an original conclusion received during the work.

The authors plan further replenishment and development of the data base interconnected in time and space to secure systems of support of the managing decisions in all Arctic sectors. For this purpose it is suggested to use it together with spatial models of the geocryological forecast, similar to GIPL.

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