



## **GIS as effective tool of researching of karst areas in Perm region (Russia).**

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GIS - GeoInformation Systems are widely used now in very different areas of human activity, such as geodesy, transport, environment and so on. GIS let to effectively analyze and work with different types of spatial information. Absolutely everywhere, in all spheres of human activity we meet with such information - maps, schemas, diagrams and so on. Now we are developing GIS project for karst areas of Perm district, which includes semantic databases joined with electronic maps of different scale. There was made catalog of spreading of karst forms at these territories. Data for one were collecting more than 60 years yet. At territories with the most active karst processes we are making addition works (creating web of points of hydrogeological monitoring). Also we have created set of karstologic maps of different karst areas of region for estimating of level of potential karst hazard. The importance of new methods of researches of karst processes is not only accumulation and collecting of different data about geological structure of territory. The important aspect is also approbation and using of modern technologies of researching of karst processes and forecasting of development of ones. So inside one of the biggest karst caves of Ural - Kungur Ice cave - has been created system of seismologic monitoring - the first in the world among similar objects. This system is able to register as regional events as local ones (falls of rock, cracks, landslide and so on). Analyzing of results of such observations let to get more precise representation about development of karst processes inside cavities, layering in the gypsum and anhydrite rocks. Such system is installed also at accident's area (waterflooding of salt mine) of salt mine field in Berezniki town. It allows to research karst processes in salt layers.