Geophysical Research Abstracts
Vol. 17, EGU2015-4891-2, 2015
EGU General Assembly 2015

Integrate metalogenic database with GIS geological project (deposite Au-Ag Far East Russia). WEB-GIS approach.

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Resource depletion has forced us to search for new ore deposit and reanalyze old mineral deposits. This is the main aim of metallogenic studies. Synthesis information about features resources work out deposit and emerging fields will play a key role in future. Development of metallogeny databases is one of the most difficult tasks for Earth sciences.

Database needs to enter a large number of parameters describing the object of study - mine or ore occurrence. Majority of these parameters belong to different areas of geological knowledge. It can be ore mineralogy, geochemistry, lithology of host rocks, tectonic characteristics ore-controlling structures, geochemical parameters of ore processes, geochronological data on age of geological formations and processes of ore formation and some others. However, the cartographic materials of various scales apart from diverse documentation and numerical information are of a great importance. The adopted framework for the analysis of large-scale metallogeny has several levels:

1. The ore body (usually 1: 50000, 1: 100000)

2. The ore field, the field (1: 200000)

3. The ore cluster (1: 500000)

Researchers can vary scheme and scale values, but fundamentally three levels of scale describing the location and geological structures controlling the placement of ore are included at least. Attention should be pay to the system of description the ore deposit. It is necessary to create the universal scheme for development of metallogeny information systems and set up the universal algorithm of ore deposit description. There is its own order of importance of used features and a form of description for each type of deposits and ore and genetic group and ore element. Lack of definition in the classification of a particular metallogenic object makes the choice of algorithm description justified quite weakly.

It is quite notable that available features which used for description of different deposit (even of the same genetic group) are not of the same type or detailed enough. Waste deposit usually takes as a reference object with the most complete description in opposite to the recently discovered deposit not enough studied and with quite limited list of information indicators. There are following most actual tasks for information metallogeny system:

1. Search summarizing the characteristics of different objects

2. Select the most informative group of features

3. Show the links of groups of signs and analyze it as far as genesis of deposits.

The actual task's list could be continued but it is enough to start. Essentially mentioned problems put us in a situation when deposit's metallogenic database is not available. There is only limited number of typical databases (for certain types of minerals) characterized nothing more than name of the fields and basic indicators of its economic importance (stocks, component content, ore types). The additional information: the age of host rock or ores or geochemistry features of some geological objects uses quite rarely. There is no systematic data for all objects in the database.

Database of carbonatite deposits is the most well-developed. It should be also mentioned some works [Woolley & Kjarsgaard 2009; Bagdasarov et al.,2001; Burmistrov et al., 2008]. Unfortunately, such important characteristics as geological maps are not included there as well.

New opportunities in technologies and development of GIS systems, as well as publications of GIS projects in the Internet and Web tools, using for analysis, classification and mapping information make possible new challenge in design of metallogenic projects.

Now we started construction the information system on metallogenic Au-Ag deposit at the Russian Far East (http://simplegis.ru/geohim_AuAg/). This information used only for telethermal type deposits. Sergey F. Struzhkov, the brilliant explorer of the Far East Russia, who recently gone, was the first scientist, who got together this data [Struzkov & Konstantinov 2005]. WEB-GIS project on the geological structure was settled for this region of Russia in 2006 [Voroshin et al., 2006].

It is crucial that we managed to include for the Magadan region share GIS project built on open standard metadata 19115. The processed fields database was fully reconstructed. We used a system of individual list of attributes for each object. It is possible to sharply reduce the amount of empty fields in the database and at the same time to solve the problem of unlimited number of attributes for description of the field. This problem was solved by using one-to-many relations instead of one-to-one relationship between a table of coordinates and field attributes.

In tab.1 there is brief description of the deposit. In tab.2 complete project information is illustrated (the drop down signs in the database interface). It should be noted that in tab.2 the signs occupy multiple records, while in the primary tab.1 each record corresponds to one unique object.

In addition, we have made a procedure to connect to the point deposit next GIS project with large-scale geological map fields and locations of ore samples. This allows us use analysis the hierarchical maps and spatial data when we use metallogenic information system. Need to use the system in conditions of active work with the data and connect to other open GIS resources.

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