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Database for geoarchaeological sites of the coastal areas of the Black Sea (Ukraine)

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A great number of well-known archaeological sites are located in the northern coastal lowlands of the Black Sea. Many of these sites can be also related to geoarchaeological ones. Geoarchaeological site is an exposure, which demonstrates the geological age and environmental conditions of the human material culture development or, otherwise, a human impact on environmental evolution (Wimbledon et al., 1999). Geoarchaeological sites are valuable both for archaeology and geosciences. These sites provide a unique possibility to get reliable information on mutual impact and connection between environment and human changes.

A significant part of archaeological sites in the Black Sea coastal areas have been studied by the methods of natural sciences (Velichko, 1988; Pashkevich, 1981; Stanko et al., 1989; The Middle Paleolithic of Western Crimea, Chabai, Monigal, Eds., 1999; The Middle Paleolithic and Early Upper Paleolithic of Eastern Crimea, Chabai, Monigal & Marks, Eds., 2004; Cohen et al., 1996; Gerasimenko, 1997a, b; and many others). Some of the geoarchaeological sites have been proposed as the candidates to the List of Protected Geosites of Ukraine (Gerasimenko, 2000). Nevertheless, the problem of classification and systematization of the existing abundant information on geoarchaeological site of the Black Sea area is an urgent and necessary task. The creation of database enables correlation of our knowledge on past environment in different areas and the better understanding of environmental impact on human activity.

In order to create the database of geoarchaeological sites of the coastal areas of the Black Sea, the following tasks should be solved:

– to collect all available data on geoarchaeological sites;

– to elaborate the system of classification and organization of these data;

– to create methodology of database compiling.

Such a system of data organization is proposed for the database:

1. Name of a site
2. Geographical coordinates
3. Administrative location
4. Physical-geographical zone
5. Position in the relief
6. Lithological-pedological column
7. One cultural layer or many of them

In the following points, the structure data is organized separately for each individual cultural layer:

1. Material culture
2. Archaeologist providing the information
3. Background of archaeological investigations
4. Stratigrafic unit
5. Geologist providing the stratification
6. Correlation with different stratigrafical frameworks
7. Absolute dating (labs providing the dating)
8. Preservation of the layer (*in situ*, re-deposited, etc.)
9. Type of the site (settlement, workshop, etc.)
10. Methods of natural sciences applied
11. Lithology and pedology
12. Palynology

13. Botanical macrofossils
14. Domestic plants
15. Malacology
16. Microvertebrates
17. Large mammals
18. Domestic animals

Each of points 18-25 includes such the information:

– scientist(s), providing the data;

– available reconstruction of a studied component

- available complex environmental and climatic reconstruction

Each of points 5-25 includes references

All above-listed components are the fields in relation tables of the database. Computer sofware program Allfusion Erwin Data Modeler is proposed for this database creation.

Database development is divided into such basic stages:

1. Creation of the adequate *Entity-Relationship model*. Requirements to the ER-model in progress are absence of redundancy, presence of the keys and presence of relations between tables.
2. Physical creation of the database relation tables which include all corresponded components (keys, tables, relations)
3. Elaboration of the database management system (DBMS): creation of the inquires, reports, etc; programming of the convenient interface.

The proposed database can be used for elaboration of GIS-maps of the geoarchaeological sites of the Ukrainian Black Sea coastal area, and for creation of GIS-models on human–environement development.

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