BATHYMETRIC SEABED MAPPING BASED ON GIS-TECHNOLOGY

S. Nikiforov[1], Y. Pavlidis[1], V. Rachold[2] , D. Albulatov[3] and A. Artem'ev[1]

[1]P.P.Shirshov Institute of Oceanology RAS, Moscow, Russia

[2]Alfred Wegener Institute for Polar and Marine Research, Potsdam, Germany

[3]Lomonosov Moscow State University, Moscow, Russia

Morphology appears to be one of the most significant relief characteristics, but it is controlled by a set of interactive processes acting over long periods. Initial structures form the basement surface that has been reworked, or is now being reworked, by a complex of environmental processes. Relief morphology does not appear steady and changes with time. Analogous changes took place in the past, occur in the present and will continue in the future. We have developed our understanding that the origin of relief is the main factor that created the existing coastal morphology. Our approach, in which a multitude of interacting factors are simultaneously analyzed and determined, could be called "morphogenetic". Bathymetric seabed mapping is the main component of the developed morphogenetic approach and forms the base of geomorphologic mapping as well.

Today bathymetric digital mapping is developed rather intensively, however, mechanical interpolation of depths is still used during processing, available geophysical, geological, morphological and other data are not involved and complex analyses are not carried out either. Electronic maps usually have a base scale of 1:1 000 000, which does not reflect the complete variety of the seabed relief. At the same time, the definition of relief origin already at a preliminary stage of processing has a basic value. Our technique of bathymetric mapping includes (1) joint analysis of structural and exogenic peculiarities aimed at the determination of relief origin (2) manual map processing on the base scale of 1:200 000 (3) digital transference. In this poster bathymetric maps of the Pechora Sea, the Laptev Sea (eastern sector) and the offshore bathymetry of Yamal Peninsular will be presented.

This study is support by INTAS (grant no.2332).