

Creation of global erosion GIS and evaluation the role of relief in the sediment discharge
O.P. Yermolaev, K.A.Maltsev, V.V.Mozzherin

Introduction Primary objective is to develop a unique specialized global GIS: "Suspended sediments yield in the river basins of the Earth" for purposes of quantitative evaluation and spatial analysis of fluvial systems on the Earth.

Creation of such GIS assumes a number of interrelated stages: Development of software for processing of digital relief of the Earth; Formation of a global system of operational-territorial units represented by two types of basin geosystems: planar basins of a certain order and basins chosen for the suspended sediment discharge (SSD) observations; Formation of a geospatial database of the river basins of the Earth containing both SSD data and other basin-linked parameters; Development of methodology of computer-aided thematic and complex zoning based on Neural Networks technology; Creation of a set of electronic thematic maps of fluvial systems on the Earth.

Methods During the first stage we have accomplished research in the territory of Northern Eurasia. The total number of river basins with hydrological stations amounts to 1200. Automated rendering of watersheds involved the use of the global DEM "Gtopo30" and the "TAS" software.

Results Most extended part of the database contains various information on river basins' natural-anthropogenic conditions, including geomorphology characteristics of watershed, climate, engineering-geological parameters, landscape and land use.

Discussion and conclusion Addition or removal of data due to extension or correction of a row leads to renewal of the entire set of statistical characteristics used as the basis for the development of both spatial and temporal mathematical-statistical models of the river sediment yield.