The Role of Hydrology in Water Resources Management (Proceedings of a symposium held on the island of Capri, Italy, October 2008). IAHS Publ. 327, 2009, 45-51

Integrated scenarios of long-term river runoff changes within large river basins in the 21st century

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Abstract Global and regional climate changes and anthropogenic impacts are the leading factors determining the future state of large river basin water systems which play important roles in the economic development of Russia. That is why it is necessary to create integrated scenarios of river runoff changes within large river basins. Such scenarios should make one of the main bases for ecologically safe management of water systems in the future. Integrated scenarios include the following components: (a) Scenarios of global climate change and methods of their assimilation. (b) Scenarios of hydrological consequences caused by climate changes. (c) Scenarios of hydrological consequences of socio-economic development, including changes in the water management complexes. Results of development of integrated scenarios are submitted by the example of Lena River basin – one of the largest rivers of Northern Eurasia. It is especially important for permafrost regions of Russia which covers two thirds of its territory.

Key words scenarios of global climate warming; water management complex; river runoff changes; monthly water budget model; Lena River basin