# Hydrological Regime of Continental Glaciers on the Earth

Vladimir Konovalov

Russian Federation (vladgeo_exp@mail.ru)

A new concept is elaborated for large scale modeling, calculations and forecast of glaciers runoff, and assessing its contribution to the change of World Ocean Level. This approach includes solutions of the following tasks.

1. Regionalization of glacial areas into the specific sub-areas: tributaries of main rivers of various sizes, mountain ranges, macro-slopes of ridges of various aspects, geographic areas, etc.

2. Computerized identification in each sub-area the distinctive groups of glaciers which are distributed according to eight aspects (azimuths) and 23 intervals of area, and possessed a common set of parameters for all groups of glaciers.

3. Modeling and calculation of glacier runoff as a function of climatic factors (precipitation, air temperature and humidity, cloud cover, solar radiation, etc.) and altitudinal-morphological parameters of glacier groups.

4. Analysis of glacier runoff as a component of the total river flow which is formed by the melting of perennial ice reserves and firn. Estimating volumes of yearly evaporation, melted ice, firn and debris covered ice. Assess the quality of calculation of glacier runoff as the part of water balance of river basin. Long term forecasting of glaciers runoff.

5. Determining the contribution of glacier runoff to changes of the ocean level in relation to different types of connection of river basins with the ocean.

Published Glacier Inventories, different reference books and online informational resources serve as input data for calculations.

Numerical realization of the approach is related mainly to the Amudarya and Brahmaputra rivers basins. The first river is located in closed (not drained) Aral Sea Basin, the second has direct contact with the ocean.