Geophysical Research Abstracts, Vol. 7, 08358, 2005
SRef-ID: 1607-7962/gra/EGU05-A-08358

Initial discontinuity decay problem for stationary shallow water equations on step

K.V. Karelsky (1), **A.S. Petrosyan** (1), A.N. Volodkovich (1)
Space Research Institute of the Russian Academy of Sciences (apetrosy@iki.rssi.ru)

The problem of a stationary flow over a step by a stream of a fluid in approximation of shallow water is completely solved in the article. The research of restrictions on character of possible currents, applied by a condition of one-connectivity of the area occupied by fluid near a step, is presented. Restrictions on possible currents depending on a direction of a stream are considered. All modes of currents described by the attitude of magnitude of a stream to height of a step and a direction of a stream are found. Analytical expressions for restrictions of values of hydrodynamical parameters of current in each mode are received. The stationary flow over a step is the particular solution of a non-stationary Riemann problem for the shallow water equations with a bottom step. It is supposed for the analytical decision of a non-stationary problem, that there is always an area of stationarity near a step. The results of the problem solved are necessary for the analytical decision of a non-stationary Riemann problem for the shallow water equations with a bottom step