The modeling of the atmospheric flux perturbations and wave clouds in the mountain regions

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The atmospheric fluxes perturbations and clouds formation over the mountain may be dangerous for the aircraft flights. The space distribution of the wave clouds and the atmospheric fluxes perturbations over the complex relief mountains in the South Zagros region of Iran are modeled.

The nonelinenear two dimensional stationary model of the overflow of mountains develop by V.N. Kozhevnikov is used. The main equations system involves the two dimensional equations of the motion, not discontinuity and adiabatic equations. The equation system is solved under the known boundary distribution of the horizontal wind component, temperature and humidity. The field of the flux perturbations is presented and discussed. There are rotors in some places of the fluxes field.

The calculations of the humidity distribution is based on the supposition that the humidity is transferred along the trajectory without change till the condensation point is achieved. As a result of this procedure the humidity field is differed from the initial boundary distribution. The condensation rate is calculated using the formula that takes into account the vertical velocity, temperature and saturated humidity values. The space evolution of the condensation rate distribution is presented.

For the cloud distribution diagnostic over the mountains the parameterization method that based on the critical values of the relative humidity is used. The dependence of the cloud location upon the humidity distribution in overflow flux is investigated. The possibility of cloud formation near the mountain tops as a cap in dependence of the

initial humidity vertical distribution is discussed.