Optical Observations of the Acoustic-Gravity Waves (AGW) Supposedly Initiate by the Rocket Launches

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Wave-like structures in the upper atmosphere luminosity were find out by TV SIT all-sky camera installed in the Lovozero observatory 10.01.1997 in 15.08 UT (18.08 MSK) at the Kola Peninsula. Data analysis shows that the most probable source of the pattern is rocket launch from the rocket range in Arkhangelsk region. The preliminary information was announced by the Russian ITAR-TASS agency and the trajectory of flight were observed by the Lovozero observatory TV camera (Geographical latitude ~ 68° , longitude ~ 35°) in 18.13 MSK. The rocket plume was marked at 18.13.20 and at 18.13.30 sharp flash was recorded at the azimutal angle ~ 60E. Most probably it was accompanied by the rocket second stage separation. Two hours later several optical wave-like structures appear under the Kola peninsula in the nightglow. The large scale phenomena parameters were registered and documented. Calculation of the projection of registered luminosity pattern on the surface geographical grid was done at supposed fixed altitude of the object under observation by traditional formula of spherical trigonometry. Scales, velocities, wavelenghths and periods of the wave-like structures calculated by the time delays after the launch and wave crest shifts are presented. The direction to source of waves was pointed out by the individual wave-crests shift and by their curvature radius. Another case of the AGW connected with rocket launch was find out by retrospective analysis of TV observations at North-West of Europe. The feature of both events is related to the auroral activity provided highest level of the background intensity. This level permits us to visualize the AGW and observe them by the optical imagers. The physical nature of the observed AGW is under consideration.