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Characteristics of a surface waves transitional radiation near the temperature jump

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The acoustic-gravity waves radiation by point source of mass, which moves vertically and intersecting the interface between two media, in which the equilibrium pressure and density change according to the barometric law with different temperature is investigated. Main attention is given to study of the problem about the transitional radiation. An expression for the power flow density of this radiation as the function of frequency and direction is analyzed. Special attention is given to the surface waves, whose dispersion equation for the form coincides with the equation of waves on the deep water surface. Properties of the exact solution of model equation for the vertical component of the medium velocity in the vicinity of atmosphere temperature jump are analyzed. The obtained results are useful for the interpretation of wave processes in the Saturn and Jupiter atmospheres, and near the Solar atmosphere transition region.