



Dynamics of cloud formation in atmosphere due to evaporation from the ocean

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Mechanism of cloud formation is an important research object in meteorology and weather forecasting, and plays an important role in theory of cyclogenesis. It is commonly accepted, that the humidity flux is directed from warm bottom layers towards cold dry heights, and the evaporation from the surface is an external parameter. Later the vapor condensates creating clouds. The layer of clouds divides the atmosphere into three significantly different parts, where the areas above and below the clouds follows a dry-adiabatic temperature profile, while inside the cloud it is moist-adiabatic. However, up to now a theoretical model of moist-adiabatic atmosphere has not been developed. In this work we introduce a thermodynamic model of moist atmosphere, and implement it for description of the processes at the top edge of cloud layer. The heat released during vapor condensation significantly deviates the temperature profile inside the clouds. Assuming constant vapor flow from the underlying surface, we also determine the dynamics of cloud formation. The work is supported by the RFBR grant 06-05-64275-a.