



Investigation of structures and mechanisms of atmospheric pollution by arid aerosol

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The report presents the results of research of layered structures of fine aerosol in the boundary layer, discovered during field studies in the desert and desertified regions of Russia and CIS in 1991-2006.

We investigate also the influence of local convective motions on the process of leaching and dust deposition smallest fraction.

Thoroughly investigated and set such an important characteristic of atmospheric turbulence, as spirality, continuously replicated in the boundary layer due to the effects of rotation and the forces of friction. Its visible impact on the stability and dynamics meso-scale movements is discovered. Numerical, analytical and experimental studies of the formation, dynamics and characteristics of longitudinal structures of developed roller circulation in the atmospheric boundary layer were fulfilled. At the present time, taking into account the results of experimental studies in 2007 in Kalmykia, model original researches are conducted to clarify the role of the boundary layer vortex structures in the vertical and horizontal transport of dust particles with the aim of parameterization process and the integration into the meso-scale model MM5 or WRF type. Preliminary results show a picture of horizontal layers of aerosol formation, qualitatively similar to that observed in nature.

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