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Dust flow generation in the ionosphere

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A possibility of the generation of vertical dust flows in dusty ionosphere is considered. It is shown that in the ionosphere at the altitudes larger than 80 km the vertical dust flows can be excited due to the nonlinear (modulational) interaction with surface dust vortices in the presence of a dust cloud with density gradient. The formation of dust particle vertical flows at the lower altitudes is hampered because of the dissipation due to collisions with the neutrals. At the altitudes of 110–130 km the conditions for the formation of acoustic–gravitational vortices are fulfilled. It is shown that nanoscale dust particles are driven by vortex motion. Thus surface dust vortices can be formed. This work was supported by the Russian Foundation for Basic Research.