



Oscillatory instability in the free turbulent atmosphere

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It is well known that such phenomena as tornado and tropical cyclone cause damages. Nowadays there exists a great amount of recorded data on these phenomena; however theory of these phenomena is not yet developed. The existence and repeatability of these phenomena can be explained if there exists an instability, responsible for their formation. On the other hand it is well known that presently in hydrodynamics there is the only instability (in the initially steady air), namely, convection; and this instability is not applicable for these phenomena. In the present report we describe instability in the atmosphere, which can be responsible for these phenomena. The instability appears in the atmosphere of Earth if certain conditions are fulfilled, in particular at the presence of rotation and dissipation. The instability is characterized by oscillations. That means that if the linear amplitude growth is accompanied by oscillations with frequency comparable to the growth rate of the instability. On the nonlinear phase the oscillations in the considered in the report cases are suppressed. The work is supported by the RFBR 06-05-64275-a.