TO THE PROBLEM OF THE DYNAMICS OF GROUND ATMOSPHERE

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In the analysis of air flow in the surface layer of the atmosphere is necessary to consider the presence of the vertical temperature stratification and associated vertical turbulent heat flux.

The problem of stability is essential in technical systems. In an isolated system in which the main parameters are constant, there are conditions for stability.

The purpose of research - development research method of flow hydrodynamics surface atmosphere.

Materials and methods of research. One of the features of the flow of the wind is its instability, depending on random factors. Another feature of the flow of the wind in that it is characterized by severe fluctuations. Analysis of the stochastic nature of these events and the determination of their basic regularities can point the way to maximize the use of wind energy.

The results of research. Fluctuations characterize the random variations of physical values from their average values. The simplest measure of the magnitude of the fluctuations is its variance t. E. The mean square deviation of the mean hot.

Fundamentals of the theory of fluctuations contained in the works of George. W. Gibbs.

With Gibbs distributions, both in classical and in the quantum case, it is possible to calculate the fluctuations in the state of statistical equilibrium for systems located in different physical conditions; The fluctuations are expressed in terms of the equilibrium thermodynamic parameters and derivatives of thermodynamic potentials. In most cases, the assumptions that the equilibrium thermodynamic relations hold for the thermodynamic variables defined in the elementary volume. This is the concept of local equilibrium.

Very important are the secondary thermal processes, such as heat transfer wind flow, the processes of condensation of water vapor and the formation of

small droplets or ice particles in the atmosphere. It is known that condensation and freezing are accompanied by heat generation. In general, the condensation of water vapor (accompanied by the formation of clouds and fog) provides a considerable inflow of energy into the atmosphere than the heat from the Earth's surface.

Heating of the Earth's surface by solar radiation leads to disruption of the stability of the atmosphere, caused by intense convection (vertical movement).

The stability of the system depends on many interrelated factors.

Studies have shown that the relative location of the critical section of the boundary layer in which the laminar layer becomes turbulent, essentially depends on the degree of disturbance incident on the body of the external flow.

Important role played by the curvature of the surface. On the concave surface of even a relatively small curvature has a significant impact on the transition to the turbulent regime. On convex surfaces is influenced by.

The bumps roughness act as the sources of disturbances in the boundary layer. These disturbances are attached to those introduced into the boundary layer of the external flow.

Mixing is an important factor which characterizes the gap, which can be expressed as a parameter.

The momentum of the fluid near the wall a little and her ability to move in the direction of increasing pressure is limited. Slowing the main thread is not able to report energy fluid in the boundary layer and to accelerate its movement. At the point of flow separation begins to move away from the wall at a slight angle. It is accompanied by a significant hydrodynamic losses.

Conclusions

The study of the mechanics of the flow of air in the surface layer, including the flow of the wind is used to determine the stability of the analyzed system and to use these laws in solving technological problems.