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# Global Mechanisms in the Earth Atmosphere Models and Global Energy and Angle Momentum Balance: Atmospheric circulation forms, Teleconnection and Radio-Waveguides

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The satellite data and data of observing the radio-waveguide parameters (especially in the low troposphere layers) by means of radio-technical devices (in the ultra short-wave diapason) is the informative basis of the modern atmosphere long-term forecasts. As any water quantities in atmosphere are formed on the basis of the cycle- and front-genesis (or in the convective non-stability lines) one can introduce the corresponding model on the basis of thermodynamics and hydro-mechanics of the corresponding processes. For example, physics of these processes can coincide with the a soliton mechanics, which has the long-periodical basis of the energy support. The action mechanics of such a soliton provides the key thermo-hydro-dynamical parameters of the atmosphere ultra-short-wave radio-waveguide. We present principally new methods of monitoring the Earth system low-frequency scale processes on the basis of observing some summated contributions of low frequency oscillations for geophysical factors. They base on the energy and angle moment balance relations and new scheme for calculation of the macro-turbulence regime in typical atmospheric processes, which are known as atmospheric circulation forms [1,2]. The balance analysis allows to predict the large-scaled atmospheric transformations and teleconnection phenomena and to give their quantitative description. We carried out a series of the computer experiments at the Pacific ocean region in order to study global mechanisms in the atmospheric models and check the seasonal sequences of the balance or disbalance of the Earth atmosphere energy and angle momentum and to provide new predictors for the long-termed and super long-termed forecasts of the low frequency atmospheric processes. The current function (complex velocity) fields are calculated for typical atmospheric circulation's forms. The experiments allowed quantitatively defining a direct link between an atmospheric turnover and atmospheric circulation forms through the front divider position and typical low frequency process of conservation of the angle moment balance. Besides, we have adapted the modified theory of the macro-turbulence for possible using the atmosphere radio-waveguides as a special effective predictors in the long-termed plan.
[1]. Glushkov A.V. etal Water resources in Asia Pasific Region.- Kyoto, Japan .-2003.-P.1355-1358; Nonlinear Proc. in Geophys. 11, 285 (2004);
[2]. Glushkov A., Khokhlov V., Loboda N., Quart.J.Royal Met..Soc. 132, 447 (2006); Glushkov A., Loboda N., Khokhlov V., Lovett L., Journ. Hydr.322, 14 (2006