

## Manifestations of tides in geospheres and in the biosphere Manifestations of tides in geospheres and in the biosphere

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The gravitational tides in the atmosphere are recorded as the waves with the periods close to one day and its sub harmonics. Some of them are usually interpreted as the proper atmospheric modes. They commonly have either the amplitude or the frequency modulations. A new explanation of the quasi-diurnal and quasi-semidiurnal tides lines in the spectrum of the atmospheric angular momentum and other atmospheric characteristics is proposed. The role of gravity tides in the dynamics of the atmosphere and the ocean is underestimated. The reasons of a wrong estimation of a role of the tidal phenomena in geophysics are explained.

It's shown here that zonal tidal forcings with periods of ~3.5 and ~7 days determine processes in the atmosphere (weather change, formation of tropical depressions, cyclones (including typhoons), monsoon precipitation periodicity, in the magnetosphere (increasing geomagnetic activity), in the lithosphere (seismic-disturbances, including earthquakes) and increase the medical statistics in cardio-vascular illnesses and in other ones as well (see below). Luni-solar gravitational tides correlates absolutely with Earth rotation rate (ERR) and can be calculated for any time in advance. The correlation of 3,5 and 7 days periods of weather change with the same periods of human health parameters has been established. That has been demonstrated during International Conference "Space Weather Effects on Humans: in Space and on Earth" (Moscow, from 4-8 June 2012) and II Russian Conference on chronobiology and chronomedicine (in the frames of XIV World congress "Health & Education millennium" (14-17 November 2012, Moscow, Russia).

We discuss some new physical processes which are very important for Earth's climate. An example of our analysis of a number of annual rings of Japanese cypress, 800 years (data for 1100-1920 taken from the book Selected papers on Climatic Change written by well known Japanese climatologist H.Arakava) is given. This analysis shows a clear link of QBO periods with periods of El Nino - Southern Oscillation and the Chandler period (CP) first mentioned by Sidorenkov. Major and decisive role for the Earth as an open system, are external to it gravitationally interacting system of "oscillators" (Moon, Earth, Sun and planets) and gravity (as well as for the thermal atmosphere of the Earth) tidal forces. The interaction of the tides of all types and multiple binding modes with phase transitions of water vapor forms quasi-three-dimensional structures. Such structures have been discovered on space-time sections, constructed from orbital observations from satellites. We suggest new concept of tidal phenomena in the atmosphere, which is in conflict with the existing classical theory of Chapmen and Lindzen

After conducting field experiments in southern India, and at the equator in the Indian Ocean in March and June 1990 within the framework of the international program DYANA, observing a wide range of fluctuations of the ozone layer and the middle atmosphere of the author formulated a working hypothesis - the atmosphere is a system of oscillators interacting with each other and with oscillators in other geospheres and in space.

A new approach to the problem of long- and short-term prediction of atmospheric phenomena should be done, taking into account all types of tides and their multiple modes. Results of successful experiments on modification of meteorological processes are given.

So, the 1st main conclusion must be done that atmosphere/ocean phenomena are deterministic processes rather than stochastic ones. That leads inevitably to the 2nd important inference: so called the time limit of forecasting (f.e. for weather change) is not exist! 3d one is: we deal with open physical system that is resonant one. Mentions above will open a way to high technology of weather and climate modification.

キーワード: Luni-solar gravitational, Manifestations of tides, Earth's climate., weather modification

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