SnT 2019
CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

ИФА
A.M. Oboukhov Institute of Atmospheric Physics RAS

Temporal variations of the intensity spectra of atmospheric pressure fluctuations in different frequency ranges and their possible connection with climate change

T1.1-P25

Sergey Kulichkov, Gregory Bush, Igor Chunchuzov, Vitalii Perepelkin, Elena Golikova
A.M.Oboukhov Institute of Atmospheric Physics Russian academy of sciences
Pyzhevskii 3, Moscow, 119017, RUSSIA,snik1953@gmail.com

[Insert QR code]

The possibility of using data from the registration of atmospheric pressure fluctuations obtained on a microbarograph network to study the problem of climate change is studied.

The study of atmospheric pressure fluctuations in the range of periods of infrasonic and internal gravity waves (periods from 10 seconds to 3 hours) recorded in 2009-2018 at the network of OIAP microbarographs located in the region of Moscow was conducted. The average distance between microbarographs is about 7 km.

Additionally, data on the recording of atmospheric pressure and temperature in the city of Moscow, obtained at the regular meteorological station of the Hydrometeorological Center of Russia for 50 years (1966-2015), were analyzed.

Long series of data on the temporal variations of the intensity of the spectra of atmospheric pressure fluctuations in different frequency ranges (from 10 seconds to several days) were constructed.

The presence of dominant periods in the time variations of the intensity spectra of atmospheric pressure fluctuations was revealed. Additionally, the possibility of the influence of atmospheric pressure fluctuations on human health and some physiological mechanisms in animals is discussed.

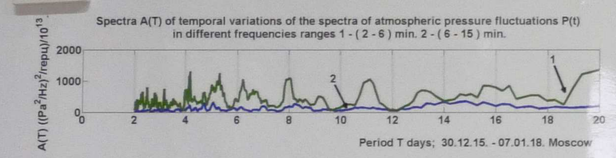


Fig.1. Sample of having dominant periods in the time variations of the intensity spectra of the spectra of atmospheric pressure fluctuations in different frequency ranges.

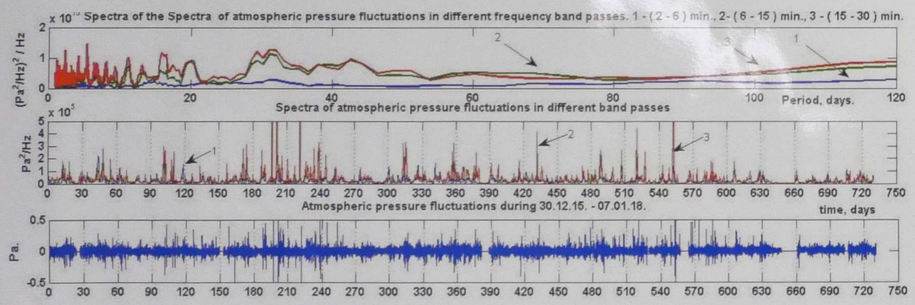


Fig.2. Bottom panel – atmospheric pressure fluctuations during 30.12.15-07.01.18; Intermediate panel - spectra of atmospheric pressure fluctuations in different frequency ranges; Top panel – spectra of the Spectra of atmospheric pressure fluctuations in different frequency ranges.

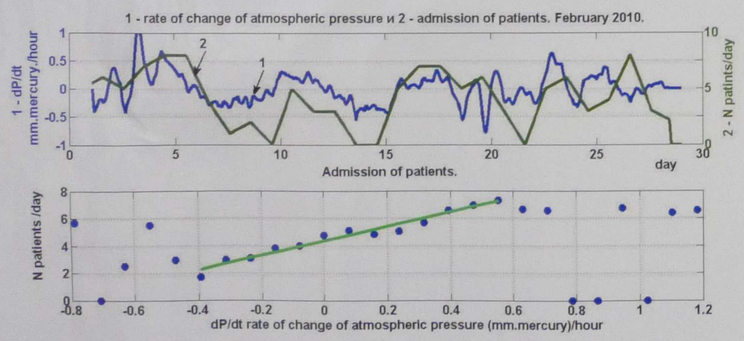


Fig.3. Emergency hospitalization of patients together with the rate of change in atmospheric pressure – top panel. Dependence of the density of admission of patients on the rate of change of atmospheric pressure – bottom panel.

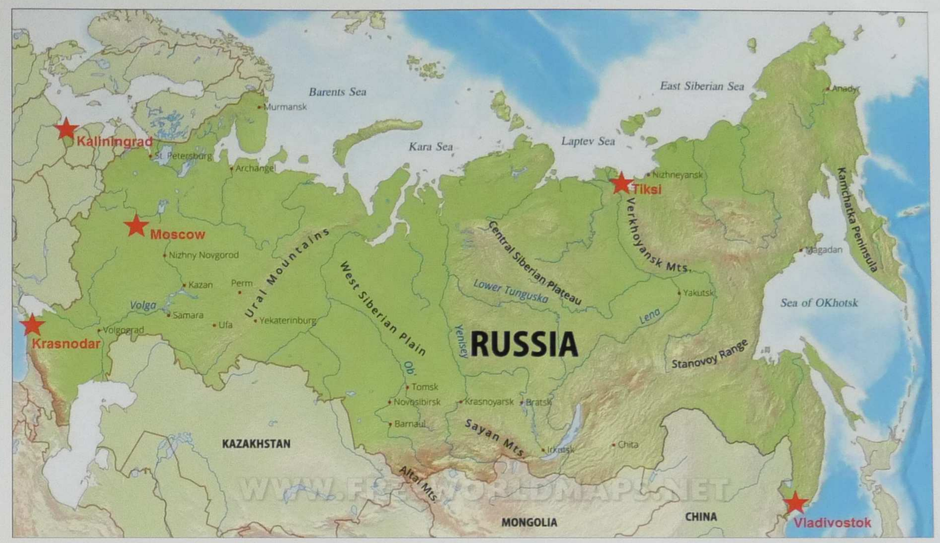


Fig.4. Map of Russia

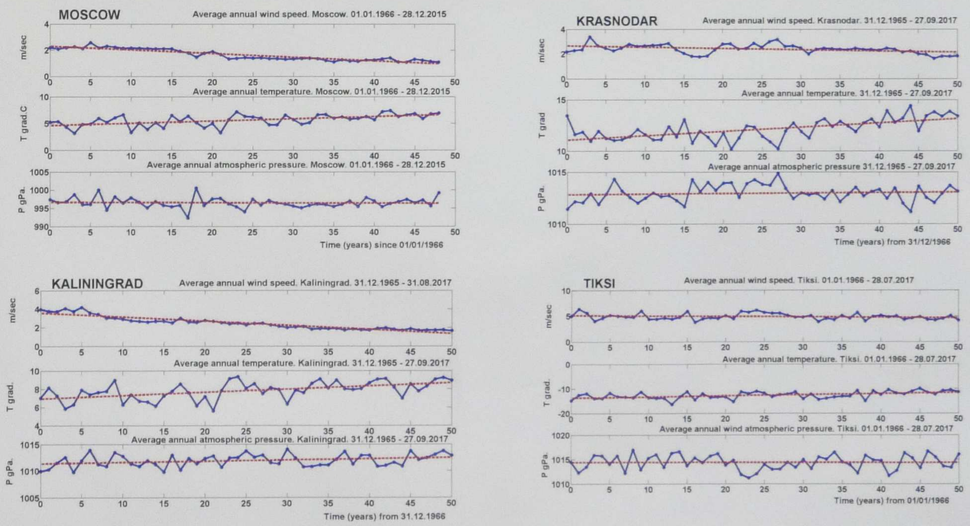
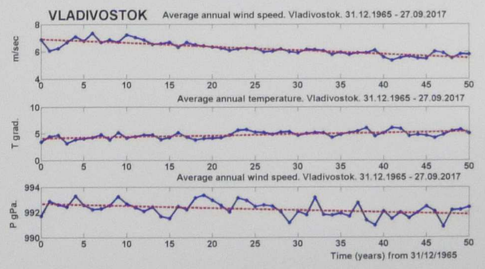


Fig.5. Temporal variations of wind speed, temperature and atmospheric pressure from 1966-2017 in different cities of Russia (Moscow, Krasnodar, Kaliningrad, Tiksi, Vladivostok).



Linear approximation coefficients to change the temperature (T), wind speed (V) and atmospheric pressure (P) from 1966-2017.

OBSERVATION POINTS	K_T (grad.C/year)	K_v (m/sec/year)	K_p (gPa/year)
MOSCOW	0.0414	-0.0280	-0.0065
KALININGRAD	0.0347	-0.0446	0.0224
KRASNODAR	0.0415	-0.0102	0.0045
TIKSI	0.0434	-0.0098	-0.0014
VLADIVOSTOK	0.0254	-0.0277	-0.0170

Disclaimer: The views expressed on this poster are those of the author and do not necessarily reflect the view of the CTBTO