ON THE PRESENT CLIMATE WARMING AND THE FUTURE EXPECTED CLIMATE

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The Earth climate change regularities analysis has been has been given in the paper. The author's paleoclimatic reconstruction mathematical model of the atmospheric air temperature oscillations for the period of 100 thousand years ago has been presented, and the possible changeability forecast for the period of 100 thousand years for the moderate latitudes (e.g. 45–50 degrees of the northern latitude) has been given. The biggest climate fall of temperature was 23–18 thousand years ago, but the warming – took its place 5 - 4 thousand years ago. At present, the planet is being at the moderate fall of temperature stage just after the holocenic optimum (e.g. 4 – 5 thousand years ago) with the subsequent warming process.

The air temperature regular measurements at the Earth surface have been permitted to be found out the changes of its average zonal, the average ones by the hemispheres, and also the average ones, concerning the global values for the period from 1860 till 1990 years. The climate has already been grown warm for 0,5 – 0,6 degrees by C by the observations results for 130 years. The subsequent warming has been reached 1,0 – 1,5 by C in the high latitudes. So, the world ocean level has been raised up for 10 – 12 cm, at the expense of the thermal water widening and the snow thawing just for this period of time. Though, it was observed, that the total amount of precipitation had been decreased in the low latitudes, and it had been raised up – in the high latitudes.

Now, the climate, on the whole, is being defined by the physicochemical and also by the geographical factors, which are the following: the solar radiation flux, the Earth planet main characteristics, and the radioactive elements amount in its bowels, having defined the volcanic processes power, and also the carbonic acid velocity ingress of the gas into the atmosphere. The anthropogenic activity contribution into the Earth climate change is being made up no more, than 15%, and for the rest 85% is being fallen for the share of the global natural cycles, by the number of the Russian scientists' estimations. The most global space cyclone, having had the influence upon the Earth climate, is the galactic one. The galactic cycle is being depended on the galactic year prolongation, by the well – known Soviet scientist P.P. Parenago's data.

The galactic year – this is the Solar system circulation time around the Galaxy center, which is being made up 212 mln. years (176 mln. years). The existing difference in millions years is being conditioned by the Sun's elliptical orbit with the perigalaxium – that is the moment of the most approaching with the Galaxy center, and with the apogalaxium – that is the moment of the most moving off. This orbit plane itself, as much as, is being rotated towards the Sun motion. On account of this, having left the pe(c)rigalaxium, the Sun will enter into it again not through 212 mln. years, but much earlier, through 176 mln. years. (Fig.1).

The Sun with its planetary system is being appeared to be at the shortest distance up to the Galaxy center through every 176 mln. years. The «Sagittarius» constellation is our Galaxy center, the powerfulness of which is being made up 50 thousand solar masses.

At present, the Sun, having had the 240 km/sec. velocity, is being approached to the perigalaxium, and it is being reached it through 12 mln. years. As far as the further approaching to the Galaxy center, the Sun is being passed through the space with denser sector structure of the interplanetary magnetic field, the space which is being saturated with the sidereal substance and the cosmic

and the space rays. This is being stimulated the solar activity, as by the magnetic inversions frequency, well as the solar flares intensity, that, in its return, it is being conditioned the Earth climate warming.

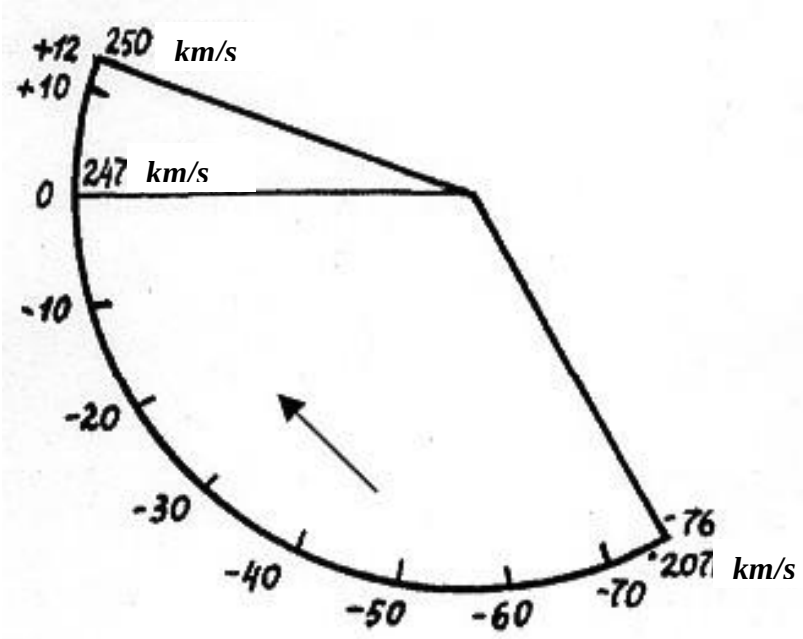

Figure 1. The Solar system way around the Galaxy center from the apogalaxium (it was passed 176 mln. years ago) up to the perigalaxium.

P.P. Parenago has divided into 4 galactic seasons the Sun rotation orbit around the galactic nucleus: spring, summer, fall, and winter. Each season is equal to 44 mln. years. So, the biggest climate warming on the planet is being registered in the years, when the Sun is being found itself just in the summer galactic season, and the biggest fall of the temperature is being revealed in the winter galactic season. The most severe fall of the temperature and the glaciation epochs are being related, exactly to the time of the galactic winter season, having registered by the paleogeographers in the past.

At present, the Solar system has been entered into the galactic summer, and the Earth climate will be appeared to be in the maximum warming state through 12 mln. years. This will be conditioned the corresponding consequences: the glaciers thawing at the Poles and in the highlands and the high mountains, the further world ocean level rise, and the volcanic activity activization. Then the warming process will not be smooth and the gradual one. It will be accompanied by the temperatures variations, as the Earth planet climate is constantly being depended on the other factors of the local significance.

To all these factors, it is quite possible to be related *the Solar activity rhythms* with the 11, 22, 44, 88, 176 years period and so on and so forth, *the precessions (*the precession – this is the Earth slow motion by the circular cone with the 26 thousand years period), *of the Earth orbit excentricitetus* (the excentricitetus – this is the Earth orbit elongation degree, which is, periodically, being changed, now it is being increased, now it is being decreased with the 90 thousand years period) and *the ecliptic inclination* (the ecliptic – this is the Earth axis inclination in the range from 21 degrees 58 min. with respect to the axis vertical position up to 24 degrees 36 min. with the 40 thousand years period). The ecliptic inclination – this is celestial sphere section by the Earth orbit plane. So, the Earth orbit is quite able to be acquired the ellipse, the parabola, or the hyperbola form, depending on the excentricitetus quantity.

The registered factors are being made the considerable contribution into the atmospheric circulation processes, and they are also being exerted their influence upon the weather conditions formation on the planet. So, the Solar activity is being made its the biggest influence upon the Earth climate among all the above – mentioned and the above – listed factors. The Sun, having rotated by its galactic orbit, from time to time, is being appeared now in the positive sign, now in the negative one of the interstellar magnetic field.

This is being resulted in the signs change of the magnetic field at the Poles. The magnetic inversions are being conditioned by the Sun's impulse radiation with the defined and the specific cyclic recurrence: 11, 22, 44, 88, 176 and more years. The more solar flares powerfulness, the more solar activity influence upon, as the geo – and the biophysical Earth processes. The geomagnetic storms, the air masses circulation strengthening, the seismic activity, and the convex – concave deformation in the lithosphere advent are being connected with them.

M.V. Lomonosov (1711–1765) in the «On the Earth Strata» paper wrote: «The animal and the vegetable origin tracks and footprints had been preserved just in the Earth strata, having corresponded to the last and the passed geological epochs' climates».

The instrumental observations for the weather on our planet were begun, since the 16 – th century, when the thermometer and the barometer had been invented. So, the meteorological observations have been acquired the scientific character, since the 17 – th century. Thus, the first attempts of the concentricity century – long oscillations influence study, the longitude of the perihelion, and the ecliptic inclination on the air temperature regime in the atmosphere surface layers for the latitudes of the 50 degrees of the North latitude have been done by the English researchers, such as Meech, Winner (1877), Hargrieves (1896) in the 19 – th century. M.Milankovich (1920) has made up the mathematical model, having permitted to be calculated the planetary air temperature, depending on the solar radiation quantity that or many points, according to its geographical latitude.

The palaeo – climatic reconstruction multi – dimentional mathematical model for the moderate latitudes (e.g. 45 – 50 degrees of the North latitude) for the last geological epochs and also for the weather forecast for the nearest future, with due regard for the temporal scale has been made up by us (e.g. Sverdlova L.I., 2004).), having based on the palae – ontological data, and also on the existing investigation in the field of the galactic seasons influence, the Earth orbit concentricity century – long oscillations, the ecliptic inclination, the precession period and the solar activity on the Earth climate.

The two models of the atmospheric air bottom layers temperature variations have been given, as the example on the 1:100 (e.g. the Fig.2) and the 1:10 (e.g. the Fig.3) scales. All these models have been made for the latitudes of the 45 – 50 degrees. The atmospheric air temperature oscillations for the 100 thousand years ago period have been presented, and the probable changeability weather forecast for the 100 thousand years forward has been given in the Fig. 2. The atmospheric air temperature oscillations for the 2 thousand years ago period, and also for the 1,8 thousand years forward from the present time (e.g. 2000) have been given in the Fig. 3.

The most climate fall of the temperature was 23 – 18 thousand years ago, and the warming took its place – 5 – 4 thousand years ago. At present, the planet is being found to be at the fall of the temperature stage just after the holocenic optimum (e.g. 5 – 4 thousand years ago) with the subsequent warming process.

The World Meteorological Organization (WMO) is being predicted, that in 100 years the world ocean level will be quite able to be raised almost for 100 cm. By our calculations, this phenomenon will be able to be taken its place in 2200, in connection with the climate warming.

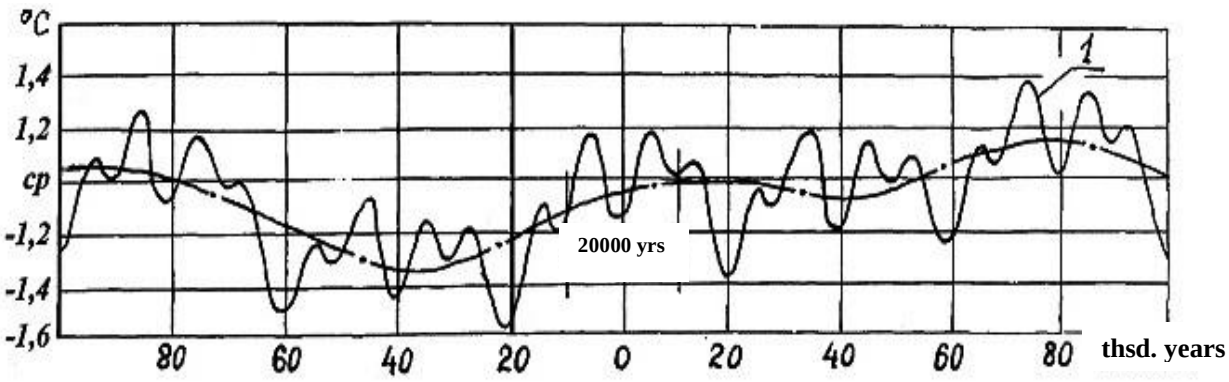

Figure 2. The atmospheric air temperature oscillations for the 90 thousand years ago period and the probable changeability weather forecast for the 90 thousand years forward has been given in this Figure.

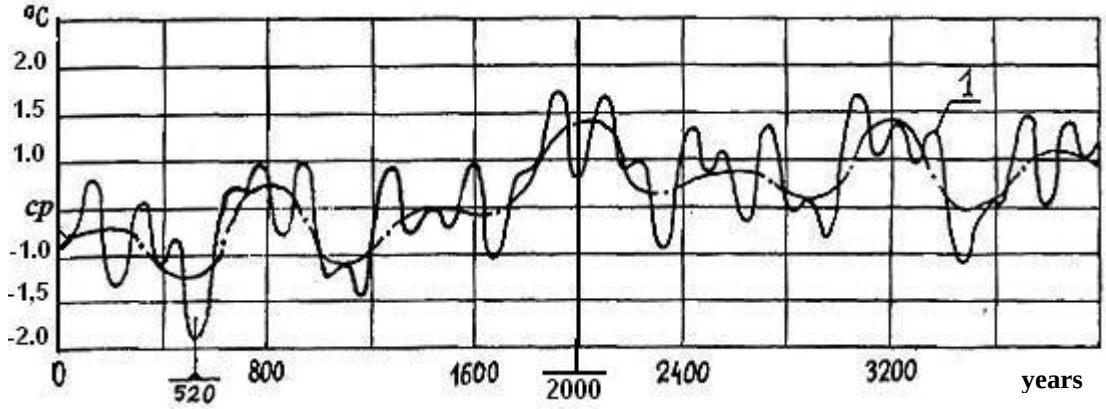

Figure 3. The atmospheric air temperature oscillations for the 2 thousand years ago period and for the 4,5 thousand years forward from the present time (e.g. 2000).

The subsequent fall of temperature will be reached its maximum in 2300, 2650, 2835 and 3400 years. The temperature fallings will be the most severe and intensive in the moderate latitudes in 2250 – 2350, 2600 – 2700, 2785 – 2885 and 3350 – 3450 years. So, it is necessary to be prepared already today to the probable and predictable falls of temperature, having carried out the energy – efficient policy.

This fall of temperature will be conditioned by the world ocean level lowering. Thus, the climate warming and the fall of temperature are always being accompanied by the world ocean level oscillations and the continents' coastline migration.

At the same time, the Earth climate oscillations processes are being closely connected with the Earth's crust tectonic movements. The Earth's crust tectonic activity is usually being revealed in the form of the earthquakes, the volcanoes eruptions and the orogenic and the mountain – forming processes, which are being changed the continents' coastline architectonics in the world ocean level raise periods.

The world ocean level raise is being taken its place in the most eventful, dramatic and impressive climate warmings periods. In the result of all these phenomena, the Alaska is being separated from the Chukchi Peninsula by the Bering Straits, and the Sakhalin Island – from the continent by the Strait of Tartary. All these Straits are almost being disappeared in the deepest and the most severe temperature fallings periods.