

English Presentation Sponsored By:
THE MILLENNIUM GROUP
<http://www.tmgnow.com/>

January 8, 1998

PLANETOPHYSICAL STATE OF THE EARTH AND LIFE

By DR. ALEXEY N. DMITRIEV*

Published in Russian, IICA Transactions, Volume 4, 1997

*Professor of Geology and Mineralogy, and Chief Scientific Member, United Institute of Geology, Geophysics, and Mineralogy, Siberian Department of Russian Academy of Sciences.

Expert on Global Ecology, and Fast -Processing Earth Events.

Russian to English Translation and Editing:

by A. N. Dmitriev, Andrew Tetenov, and Earl L. Crockett

Summary Paragraph

Current PlanetoPhysical alterations of the Earth are becoming irreversible. Strong evidence exists that these transformations are being caused by highly charged material and energetic non-uniformity's in anisotropic interstellar space which have broken into the interplanetary area of our Solar System. This "donation" of energy is producing hybrid processes and excited energy states in all planets, as well as the Sun. Effects here on Earth are to be found in the acceleration of the magnetic pole shift, in the vertical and horizontal ozone content distribution, and in the increased frequency and magnitude of significant catastrophic climatic events. There is growing probability that we are moving into a rapid temperature instability period similar to the one that took place 10,000 years ago. The adaptive responses of the biosphere, and humanity, to these new conditions may lead to a total global revision of the range of species and life on Earth. It is only through a deep understanding of the fundamental changes taking place in the natural environment surrounding us that politicians, and citizens a like, will be able to achieve balance with the renewing flow of PlanetoPhysical states and processes.

INTRODUCTION

Current, in process, geological, geophysical, and climatological alterations of the Earth are becoming more, and more, irreversible. At the present time researchers are revealing some of the causes which are leading to a general reorganization of the electro-magnetosphere (the electromagnetic skeleton) of our planet, and of its climatic machinery. A greater number of specialists in climatology, geophysics, planetophysics, and heliophysics are tending towards a cosmic causative sequence version for what is happening. Indeed, events of the last decade give strong evidence of unusually significant heliospheric and planetophysic transformations [1,2]. Given the quality, quantity, and scale of these transformations we may say that:

The climatic and biosphere processes here on Earth (through a tightly connected feedback system) are directly impacted by, and linked back to, the general overall transformational processes taking place in our Solar System. We must begin to organize our attention and thinking to understand that climatic changes on Earth are only one part, or link, in a whole chain of events taking place in our Heliosphere.

These deep physical processes, these new qualities of our physical and geological environment, will impose special adaptive challenges and requirements for all life forms on Earth. Considering the problems of adaptation our biosphere will have with these new physical conditions on Earth, we need to distinguish the general tendency and nature of the changes. As we will show below, these tendencies may be traced in the direction of planet energy capacity growth (capacity), which is leading to a highly excited or charged state of some of Earth's systems. The most intense transformations are taking place in the planetary gas-plasma envelopes to which the productive possibilities of our biosphere are timed. Currently this new scenario of excess energy run-off is being formed, and observed:

In the ionosphere by plasma generation.

In the magnetosphere by magnetic storms.

In the atmosphere by cyclones.

This high-energy atmospheric phenomena, which was rare in the past, is now becoming more frequent, intense, and changed in its nature. The material composition of the gas-plasma envelope is also being transformed.

It is quite natural for the whole biota of the Earth to be subjected to these changing conditions of the electromagnetic field, and to the significant deep alterations of Earth's climatic machinery. These fundamental processes of change create a demand within all of Earth's life organisms for new forms of adaptation. The natural development of these new forms may lead to a total global revision of the range of species, and life, on Earth. New deeper qualities of life itself may come forth, bringing the new physical state of the Earth to an equilibrium with the new organismic possibilities of development, reproduction, and perfection. In this sense it is evident that we are faced with a problem of the adaptation of humanity to this new state of the Earth; new conditions on Earth whose biospheric qualities are varying, and non-uniformly distributed. Therefore the current period of transformation is transient, and the transition of life's representatives to the future may take place only after a deep evaluation of what it will take to comply with these new Earthly biospheric conditions. Each living representative on Earth will be getting a thorough "examination," or "quality control inspection," to determine its ability to comply with these new conditions. These evolutionary challenges always require effort, or endurance, be it individual organisms, species, or communities. Therefore, it is not only the climate that is becoming new, but we as human beings are experiencing a global change in the vital processes of living organisms, or life itself; which is yet another link in the total process. We cannot treat such things separately, or individually.

1.0 TRANSFORMATION OF THE SOLAR SYSTEM

We will list the recent large-scale events in the Solar System in order to fully understand, and comprehend, the PlanetoPhysical transformations taking place. This development of events, as it has become clear in the last few years, is being caused by material and energetic non-uniformity's in anisotropic interstellar space[2,3,4]. In its travel through interstellar space, the Heliosphere travels in the direction of the Solar Apex in the Hercules Constellation. On its way it has met (1960's) non-homogeneities of matter and energy containing ions of Hydrogen, Helium, and Hydroxyl in addition to other elements and combinations. This kind of interstellar space dispersed plasma is presented by magnetized strip structures and striations. The Heliosphere [solar system] transition through this structure has led to an increase of the shock wave in front of the Solar System from 3 to 4 AU, to 40 AU, or more. This shock wave thickening has caused the formation of a collusive plasma in a parietal layer, which has led to a plasma overdraft around the Solar System, and then to its breakthrough into interplanetary domains [5,6]. This breakthrough constitutes a kind of matter and energy donation made by interplanetary space to our Solar System.

In response to this "donation of energy/matter," we have observed a number of large scale events:

A series of large PlanetoPhysical transformations.

A change in the quality of interplanetary space in the direction of an increase in its interplanetary, and solar-planetary transmitting properties.

The appearance of new states, and activity regimes, of the Sun.

1.1 A Series of Large PlanetoPhysical Transformations.

The following processes are taking place on the distant planets of our Solar System. But they are, essentially speaking, operationally driving the whole System.

Here are examples of these events:

1.1.1 A growth of dark spots on Pluto [7].

1.1.2 Reporting of auroras on Saturn [8].

1.1.3 Reporting of Uranus and Neptune polar shifts (They are magnetically conjugate planets), and the abrupt large-scale growth of Uranus' magnetosphere intensity.

1.1.4 A change in light intensity and light spot dynamics on Neptune [9,10].

1.1.5 The doubling of the magnetic field intensity on Jupiter (based upon 1992 data), and a series of new states and processes observed on this planet as an aftermath of a series of explosions in July 1994 [caused by "Comet" SL-9] [12]. That is, a relaxation of a plasmoid train [13,14] which excited the Jovian magnetosphere, thus inducing excessive plasma generation [12] and its release in the same manner as Solar coronal holes [15] inducing an appearance of radiation belt brightening in decimeter band (13.2 and 36 cm), and the appearance of large auroral anomalies and a change of the Jupiter - Io system of currents [12, 14].

Update Note From A.N.D Nov. 1997:

A stream of ionized hydrogen, oxygen, nitrogen, etc. is being directed to Jupiter from the volcanic areas of Io through a one million amperes flux tube. It is affecting the character of Jupiter's magnetic process and intensifying its plasma genesis. {Z.I.Vselennaya "Earth and Universe" N3, 1997 plo-9 by NASA data}

1.1.6 A series of Martian atmosphere transformations increasing its biosphere quality. In particular, a cloudy growth in the equator area and an unusual growth of ozone concentration[16].

Update Note: In September 1997 the Mars Surveyor Satellite encountered an atmospheric density double that projected by NASA upon entering a Mars orbit. This greater density bent one of the solar array arms beyond the full and open stop. This combination of events has delayed the beginning of the scheduled photo mission for one year.

1.1.7 A first stage atmosphere generation on the Moon, where a growing sodium atmosphere is detected that reaches 9,000 km in height. [17].

1.1.8 Significant physical, chemical and optical changes observed on Venus; an inversion of dark and light spots detected for the first time, and a sharp decrease of sulfur-containing gases in its atmosphere [16].

1. 2 A Change in the Quality of Interplanetary Space Towards an Increase in Its Interplanetary and Solar-Planetary Transmitting Properties.

When speaking of new energetic and material qualities of interplanetary space, we must first point out the increase of the interplanetary domains energetic charge, and level of material saturation. This change of the typical mean state of interplanetary space has two main causes:

1.2.1 The supply/inflow of matter from interstellar space. (Radiation material, ionized elements, and combinations.) [19,20,21].

1.2.2 The after effects of Solar Cycle 22 activity, especially as a result of fast coronal mass ejection's [CME's] of magnetized solar plasmas. [22].

It is natural for both interstellar matter and intra-heliospheric mass redistribution's to create new structural units and processes in the interplanetary domains. They are mostly observed in the structured formation of extended systems of magnetic plasma clouds [23], and an increased frequency of the generation of shock waves; and their resulting effects [24].

A report already exists of two new populations of cosmic particles that were not expected to be found in the Van Allen radiation belts [25]; particularly an injection of a greater than 50 MeV dense electron sheaf into the inner magnetosphere during times of abrupt magnetic storms [CME's], and the emergence of a new belt consisting of ionic elements traditionally found in the composition of stars. This newly changed quality of interplanetary space not only performs the function of a planetary interaction transmission mechanism, but it (this is most important) exerts stimulating and programming action upon the Solar activity both in it's maximal and minimal phases. The seismic effectiveness of the solar wind is also being observed [26,27].

1.3 The Appearance of New States and Activity Regimes of the Sun.

As far as the stellarphysical state of the Sun is concerned, we must first note the fact that significant modifications have occurred in the existing behavioral model of the central object of our solar system. This conclusion comes from observations and reportings of unusual forms, energetic powers, and activities in the Sun's functions [20,21], as well as modifications in it's basic fundamental properties [28]. Since the end of the Maunder minimum, a progressive growth of the Sun's general activity has been observed. This growth first revealed itself most definitely in the 22nd cycle; which posed a real problem for heliophysicists who were attempting to revise their main explanatory scenarios:

1.3.1 Concerning the velocity of reaching super-flash maximums.

1.3.2 Concerning the emissive power of separate flashes.

1.3.3 Concerning the energy of solar cosmic rays, etc.

Moreover, the Ulysses spacecraft, traversing high heliospheric latitudes, recorded the absence of the magnetic dipole, which drastically changed the general model of heliomagnetism, and further complicated the magnetologist's analytic presentations. The most important heliospheric role of coronal holes has now become clear; to regulate the magnetic saturation of interplanetary space. [28,30]. Additionally, they generate all large geomagnetic storms, and ejection's with a southerly directed magnetic field are geo-effective [22]. There is also existing substantiation favoring the solar winds effects upon Earth's atmospheric zone circulation, and lithospheric dynamics [31].

The 23rd cycle was initiated by a short series of sunspots in August 1995 [32], which allows us to predict the solar activity maximum in 1999. What is also remarkable, is that a series of class C

flares has already happened in July 1996 . The specificity and energy of this cycle was discussed at the end of the 1980's. [23]. The increased frequency of X-Ray flux flares which occurred in the very beginning of this cycle provided evidence of the large-scale events to come; especially in relation to an increase in the frequency of super-flashes. The situation has become extremely serious due to the growth in the transmitting qualities of the interplanetary environment [2 3, 24] and the growth of Jupiter's systems heliospheric function; with Jupiter having the possibility of being shrouded by a plasmosphere extending over Io's orbit [13].

As a whole, all of the reporting and observation facilities give evidence to a growth in the velocity, quality, quantity, and energetic power of our Solar System's Heliospheric processes.

Update Note 1/8/98: The unexpected high level of Sun activity in the later half of 1997, that is continuing into present time, provides strong substantiation of the above statement. There were three "X" level Goes 9 X-Ray Flux events in 1997 where one was forecasted; a 300% increase. The most dramatic of these, a X-9.1 coronal mass ejection on November 6, 1997, produced a proton event here on Earth of approximately 72 hours in duration. The character, scale, and magnitude of current Sun activity has increased to the point that one official government Sun satellite reporting station recently began their daily report by saying, "Everything pretty much blew apart on the Sun today, Jan. 3,1998."

2.0 THE EARTH REORGANIZATION PROCESSES

The recorded and documented observations of all geophysical (planetary environmental) processes, and the clearly significant and progressive modifications in all reported solar-terrestrial physical science relationships, combined with the integral effects of the antropohenedus activity in our Solar System's Heliosphere, [33,34], causes us to conclude that a global reorganization and transformation of the Earth's physical and environmental qualities is taking place now; before our very eyes. This current rearrangement constitutes one more in a long line of cosmo-historic events of significant Solar System evolutionary transformations which are caused by the periodic modification, and amplification, of the Heliospheric-Planetary-Sun processes. In the case of our own planet these new events have placed an intense pressure on the geophysical environment; causing new qualities to be observed in the natural processes here on Earth; causes and effects which have already produced hybrid processes throughout the planets of our Solar System; where the combining of effects on natural matter and energy characteristics have been observed and reported.

We shall now discuss global, regional, and local processes.

2.1 The Geomagnetic Field Inversion.

Keeping clearly in mind the known significant role of the magnetic field on human life, and all biological processes, we will outline the general features of this changing state of the Earth's geomagnetic field. We have to remind ourselves of the many spacecraft and satellites that have registered the growth of heliospheric magnetic saturation in recent years [11,18,35]. The natural response of the Earth to this increased saturation level reveals itself in its dipole intensity, its magnet "c" poles localization, and in its electromagnetic field resonance processes[36]. Earth is number one among all of the planets in the Solar System with respect to its specific ability regarding the magnetization of matter [6].

In recent years we have seen a growth of interest by geophysicists and magnetologists, in general, to geomagnetic processes [37-40], and specifically, to the travel of Earth's magnetic poles [41,42]. They are particularly interested in observing the facts surrounding the directed, or vectored, travel of the Antarctic magnetic pole. In the last 100 years this magnetic pole has traveled almost 900 km towards, and into, the Indian ocean. This significant shift by the magnetic poles began in 1885. The most recent data about the state of the Arctic magnetic pole (which is moving towards the Eastern Siberian world magnetic anomaly by way of the Arctic Ocean) reveals that this pole "traveled" more than 120 km during the ten year period 1973 through 1984,

and 150 km during the same interval, 1984 through 1994. This estimated data has been confirmed by direct measurement (L. Newwitt. The Arctic pole coordinates are now 78.3 deg. North and 104.0 deg. West) [42].

We must emphasize that this documented polar shift acceleration (3 km per year average over 10 years), and its travel along the geo-historic magnetic poles inversion corridor (the corridor having been established by the analysis of more than 400 paleoinversion sites) necessarily leads us to the conclusion that the currently observed polar travel acceleration is not just a shift or digression from the norm, but is in fact an inversion of the magnetic poles; in full process. It is now seen that the acceleration of polar travel may grow to a rate of up to 200 km per year. This means that a polar inversion may happen far more rapidly than is currently supposed by those investigators without a familiarity with the overall polar shift problem.

We must also emphasize the significant growth of the recognized world magnetic anomalies (Canadian, East-Siberian, Brazilian, and Antarctic) in the Earth's magnetic reorganization. Their significance is due to the fact that these world anomalies constitute a magnetic source that is almost independent from Earth's main magnetic field. Most of the time, the intensity of these world magnetic anomalies substantially exceeds all of the residual non-dipole component; which is obtained by the subtraction of the dipole component from the total magnetic field of the Earth.[48]. It is the inversion of the magnetic fields process which is causing the various transformations of Earth's geophysical processes and the present state of the polar magnetosphere.

We also have to take into account the factual growth of the polar cusp's angle (i.e. The polar slots in the magnetosphere; North and South), which in the middle 1990's reached 45 degrees (by IZMIRAN data). [Note: The cusp angle was about 6 degrees most of the time. It fluctuates depending upon the situation. During the last five years, however, it has varied between 25 and 46 degrees.] The increasing and immense amounts of matter and energy radiating from the Sun's Solar Wind, and Interplanetary Space, by means previously discussed, has begun to rush into these widened slots in the polar regions causing the Earth's crust, the oceans, and the polar ice caps to warm[27].

Our study of geomagnetic field paleoinversions, and their after effects, has lead us to the unambiguous, and straight forth, conclusion that these present processes being observed are following precisely the same scenarios as those of their distant ancestors. And additional signs of the inversion of the magnetic field are becoming more intense in frequency and scale. For example: During the previous 25 million years, the frequency of magnetic inversions was twice in half a million years while the frequency of inversions for the last 1 million years is 8 to 14 inversions [43], or one inversion each 71 to 125 thousand years. What is essential here is that during prior periods of maximum frequency of inversions there has also been a corresponding decrease in the level of oceans world-wide (10 to 150 meters) from contraction caused by the wide development of crustal folding processes. Periods of lessor frequency of geomagnetic field inversions reveals sharp increases of the world ocean level due to the priority of expansion and stretching processes in the crust. [43-44]. Therefore, the level of World's oceans depends on the global characteristic of the contraction and expansion processes in force at the time.

The current geomagnetic inversion frequency growth phase may not lead to an increase in oceanic volume from polar warming, but rather to a decrease in ocean levels. Frequent inversions mean stretching and expansion, rare inversions mean contraction. Planetary processes, as a rule, occur in complex and dynamic ways which require the combining and joining of all forces and fields in order to adequately understand the entire system. In addition to the consideration of hydrospheric redistribution, there are developing events which also indicate a sudden and sharp breaking of the Earth's meteorological machinery.

2.2 Climate Transformations.

Since public attention is so closely focused on the symptoms of major alterations, or breakdowns, in the climatic machinery, and the resulting and sometimes severe biospheric ef-

fects, we shall consider these climatic transformations in detail. Thus, while not claiming to characterize the climatic and biospheric transition period completely, we will provide a recent series of brief communications regarding the temperature, hydrological cycle, and the material composition of the Earth's atmosphere.

The temperature regime of any given phase of climatic reorganization is characterized by contrasts, and instabilities. The widely quoted, and believed, "Greenhouse Effect" scenario for total climatic changes is by far the weakest explanation, or link, in accounting for this reorganization. It has already been observed that the growth in the concentration of CO₂ has stopped, and that the methane content in the atmosphere has begun to decrease [45] while the temperature imbalance, and the common global pressure field dissolution has proceeded to grow.

There were reports of a global temperature maximum in 1994, and the almost uninterrupted existence of an "El-Nino" like hydrological effect. Satellite air surface layer temperature tracking [49,50] allowed the detection of a 0.22 degrees C global temperature variation (within a typical specific time period of about 30 days) that correlated with recorded middle frequency magnetic oscillations. The Earth's temperature regime is becoming more, and more, dependent on external influences. The representative regulating processes, or basis, of these general climatic rearrangements are:

2.2.1. A new ozone layer distribution.

2.2.2. Radiation material (plasma) inflows and discharges through the polar regions, and through the world's magnetic anomaly locations.

2.2.3. Growth of the direct ionospheric effects on the relationship between the Earth's meteorological (weather), magnetic, and temperature fields.

There is a growing probability that we are moving into a rapid temperature instability period similar to the one that took place 10,000 years ago. This not so ancient major instability was revealed by the analysis of ice drilling core samples in Greenland [51]. The analysis of these core samples established:

2.2.4. That annual temperatures increased by 7 degrees centigrade.

2.2.5. That precipitation grew in the range of 3 to 4 times.

2.2.6. That the mass of dust material increased by a factor of 100.

Such high-speed transformations of the global climatic mechanism parameters, and its effects on Earth's physical and biospheric qualities has not yet been rigorously studied by the reigning scientific community. But, researchers are now insisting more, and more, that the Earth's temperature increases are dependent upon, and directly linked to, space-terrestrial interactions [52,53]; be it Earth-Sun, Earth-Solar System, and/or Earth-Interstellar.

At the present time there is no lack of new evidence regarding temperature inversion variations in the hydrosphere [oceans]. In the Eastern Mediterranean there have been recordings of a temperature inversion in depths greater than two kilometers from a ratio of 13.3 to 13.5 degrees centigrade to a new ratio of 13.8 to 13.5; along with a growth in salinity of 0.02% since 1987. The growth of salinity in the Aegean Sea has stopped, and the salt water outflow from the Mediterranean Basin to the Atlantic has diminished. Neither of these processes, or their causes, has been satisfactorily explained. It has already been established that evaporation increases in the equatorial regions causes a water density increase which results in an immediate sinking to a greater depth. Ultimately this would force the Gulfstream to reverse its flow. A probability of

this event happening is confirmed by other signs as well as multiparameter numeric models [53]. Therefore the most highly probable scenario for the European Continent is a sharp and sudden cooling. Elsewhere, the Siberian region has been experiencing a stable temperature increase [58] along with reports from the Novosibirsk Klyuchi Observatory of a constant growth of up to 30 nanoteslas per year of the vertical component of the magnetic field. This growth rate increases significantly as the Eastern Siberian magnetic anomaly is approached.

Update Note 1/8/98: The National Oceanic and Atmospheric Administration reported today, 1/8/98, that 1997 was the warmest year on record since records began in 1880, and that nine of the warmest years since that time have occurred in the last eleven years.

2.3 Vertical and Horizontal Ozone Content Redistribution.

Vertical and horizontal ozone content redistribution is the main indicator, and active agent, of general climatic transformations on Earth. And, evidence exists that ozone concentrations also have a strong influence upon Earth's biospheric processes. Widespread models for "ozone holes" being in the stratosphere [7 to 10 miles above Earth] (Antarctic and Siberian) are receiving serious corrective modifications from reports of vertical ozone redistribution, and its growth in the troposphere [below 7 miles]. It is now clear that the decrease in our atmosphere's total ozone content is caused by technogenic [industrial, human designed, pollution], and that the total ozone content in general has serious effects upon the energy distribution processes within Earth's gas-plasma [atmospheric] envelopes [54].

Stratospheric, tropospheric, and surface layer ozone's are now being studied [55,56]. Photodissociation [the process by which a chemical combination breaks up into simpler constituents] of ozone, controls the oxidizing activities within the troposphere. This has created a special atmospheric, physio-chemical, circumstance by which the usual tropospheric concentrations, and lifetimes, of carbon monoxide, methane, and other hydrocarbon gases are modified and changed. So, with the established fact that a statistically significant rise in the ozone concentrations has taken place in the tropospheric layers between 5 and 7 miles, and with the addition, and full knowledge, of ozone's oxidizing properties, we must conclude that a basic and fundamental alteration of the gas composition and physical state of Earth's atmosphere has already begun.

There are continuing reports of diminishing regional stratosphere ozone concentrations [25 to 49% or more above Siberia (57)], and of global decreases of ozone content in altitudes of 20-26 miles; with the maximal decrease of 7% being at 24 miles [55]. At the same time, there is no direct evidence of a growth of UV radiation at the ground surface [58]. There are, however, a growing number of "ozone alerts" in large European cities. For example, in 1994 there were 1800 "ozone alerts" in Paris. In addition, remarkably high concentrations of surface layer ozone were registered in the Siberian Region. There were ozone concentration splashes in Novosibirsk that exceeded 50 times the normal level. We must remember that ozone smell is noticeable in concentrations of 100 mg/m³; i.e. at 2 to 10 times the normal level.

The most serious concern of aeronomists comes from the detection of HO₂ that is being produced at an altitude of 11 miles by a completely unknown source or mechanism. This source of HO₂ was discovered as a result of the investigation of OH/HO₂ ratios in the interval between 4.35 and 21.70 miles in the upper troposphere and stratosphere. This significant growth of HO₂, over the course of time, will create a dependence on this substance for the ozone transfer and redistribution process in the lower stratosphere[56].

The submission of the ozone's dynamic regime and space distribution to the above unknown source of HO₂, signifies a transition of Earth's atmosphere to a new physico-chemical process. This is very important because non-uniformity's in the Earth's ozone concentrations can, and will, cause an abrupt growth in temperature gradients, which in turn do lead to the increase of air mass movement velocities, and to irregularities of moisture circulation patterns[46,59]. Temperature gradient changes, and alterations, over the entire planet would create new thermodynamic conditions for entire regions; especially when the hydrospheres [oceans] begin to participate

in the new thermal non-equilibrium. The study [53] supports this conclusion, and the consideration of a highly possible abrupt cooling of the European and North American Continents. The probability of such a scenario increases when you take into account the ten year idleness of the North Atlantic hydrothermal pump. With this in mind, the creation of a global, ecology-oriented, climate map which might reveal these global catastrophes becomes critically important.

3.0 THE ARRIVAL OF NEW CONDITIONS AND CONSEQUENCES

Considering the totality and sequential relationship of transient background, and newly formed processes, brought about by the above stated cosmogenic and anthropogenic PlanetoPhysical transformations and alterations of our weather and climatic systems, we find it reasonable to divide matters into their manifest (explicit) and non-manifest (implicit) influences upon Earth's environment.

3.1 The Manifest or Explicit Consequences.

The classes or categories of effects brought about by the Earth's current stage of reorganization are very diverse. Most often, however, they tend to the transient high-energy type of event. Based on the results of the Yokohama Conference (Fall 1994,) they can be called "significant catastrophes". There are nine types of "significant catastrophes:"

Catastrophes By Type: For the period of 1963-1993

	Number	\$ Damage(Billions)	Deaths
Flooding	76	162	202,000
Hurricanes	73		153,000
Drought	53	167	
Frost	24		
Storms	6		
Epidemics	100		133,000
Earthquakes	20		102,000
Starvation	18		
Landslides			54,000

In addition, we must point out the abrupt growth of meteorological/weather catastrophes in recent years. In the Atlantic region alone there were 19 cyclones in 1994; 11 of which became hurricanes. This is a 100 year record [60]. The current year, 1996, is especially laden with reports of flooding and other types of meteocatastrophes. The dynamic growth of significant catastrophes shows a major increase in the rate of production since 1973. And in general, the number of catastrophes has grown by 410% between 1963 and 1993. Special attention must be focused on the growing number and variety of catastrophes, and to their consequences.

Years	total	Annual	total	annual	total	annual
1963-1967	16	3.2	39	7.8	89	17.8
1968-1972	15	3.0	54	10.8	98	19.6
1973-1977	31	6.2	56	11.2	95	19
1978-1982	55	11.0	99	19.8	138	27.6
1983-1987	58	11.6	116	23.2	153	30.6
1988-1992	66	13.2	139	27.8	205	41.0
	241	8.0	503	16.8	778	25.5

Damage >1% of Casualties>1% gross national product. of population. > 100 deaths.

One must keep in mind that the growing complexity of climatic and weather patterns signals a transformation tending towards a new state, or as Academician Kondratyev says, data indicates that we are moving in the direction of climatic chaos. In reality this transition state of our climatic machinery is placing new requirements upon Earth's entire biosphere; which does include the human species. In particular, there are reports from Antarctica that show a dramatic reaction by vegetation to the recent changes in climate; there were 700 species found growing in 1964 and 17,500 in 1990 [61]. This increase in Earth's vegetative cover provides evidence of the biosphere's reaction to the ongoing process of climatic rearrangement.

The overall pattern of the generation and movement of cyclones has also changed. For example, the number of cyclones moving to Russia from the West has grown 2.5 times during the last 10 years. Increased ocean levels caused by the shedding of ice from the polar regions will lead to sharp changes in coast lines, a redistribution of land and sea relationships, and to the activation of significant geodynamic processes. This is the main characteristic of those processes leading to a new climatic and biospheric order.

3.2 The Non-Manifest or Implicit Consequences.

Implicit consequences are those processes which are below the threshold of usual human perception, and are therefore not brought to our common attention. Instrument recordings, and even direct observations, of these phenomena throughout Earth's electromagnetic field provides evidence that an immense transformation of Earth's environment is taking place. This situation is aggravated by the fact that in the 1990's anthropogeneous (human) power production/usage increased to $(1-9)E+26$ ergs/per year which means it reached the conservative energetic production/usage values of our planet. For example, Earth's annual energy consumption is comprised of $(1-9)E+26$ ergs for earthquakes, $(1-9)E+24$ for geomagnetic storms, and $(1-9)E+28$ for heat emission [54].

There already are technogeneous effects upon the functional state of Earth's electromagnetic skeleton being registered and recorded. A seven-day technogeneous cycle for geomagnetic field dynamic parameter variations was revealed in 1985 [62,63]. This cycle has affected many of the short cycles in Solar-terrestrial relationships. More than 30% of middle magnetosphere disturbances are caused by power production, transmission, and consumption. The Van Allen radiation belt has abruptly lowered above the East Coast of the US from 300 km to 10 km. This process is associated with electricity transmission from the Great Lakes to the South along a magnetic meridian, and usage of the ionosphere-resonance frequency (60Hz) of energy consumption [63]. There is also a registered coherence between the gutter qualities of the Brazilian magnetic anomaly, and the "Hydro-Quebec" power production system. Combined techno-natural electromagnetic processes in megalopolises are very complex and as yet unstudied. A 1996 study of

mortality from cardiovascular diseases in St. Petersburg, Russia uncovered a direct connection between the city's power consumption and mortality.

Moreover, the increase in the frequency, and scope, of natural self-luminous formations in the atmosphere and geospace forces us to wake up, and take notice [64,65,66]. The processes of generation, and the existence of such formations, spreading all over the Earth, represents a remarkable physical phenomenon. What is most unusual about these natural self-luminous formations is that while they have distinct features of well-known physical processes, they are in entirely unusual combinations, and are accompanied by process features which cannot be explained on the basis of existing physical knowledge. Thus, features of intense electromagnetic processes are being found in the space inside and near these natural self-luminous objects. These features include:

3.2.1. Intense electromagnetic emissions ranging from the micrometer wave band through the visible diapason, to television, and radio wavelengths.

3.2.2. Electric and magnetic field changes such as electric breakdowns, and the magnetization of rocks and technical objects.

3.2.3. Destructive electrical discharges.

3.2.4. Gravitation effects such as levitation.

3.2.5. Others.

All of the qualities of this class of phenomena are requiring the development of new branches of modern physics; particularly the creation of a "non-homogeneous physical vacuum model". [67]. An advancement of the sciences in this direction would allow us to reveal the true nature of these objects, which are acting apparently, and latently, upon our geological-geophysical and biospheric environment, and on human life [68].

Therefore, we must first take into account all of the newly developed processes and states of our geological-geophysical environment. These processes, for the most part, manifest themselves in the hard-to-register, and observe, qualities of the Earth's electromagnetic skeleton. This data also concerns the geophysical and climatic meanings of Solar-terrestrial and planetary-terrestrial interactions. This is especially true of Jupiter which is magnetically conjugate to our planet. The totality of these planet-transforming processes develops precipitately, ubiquitously, and diversely. It is critical that politicians be informed and trained to understand these global relationships between the totality of natural and anthropogeneous activities, and their fundamental causes and effects [69]. A compelling need exists to commence a scientific study which would delineate the problems associated with Earth's current transformational processes, and the effects they will have on global demographic dynamics. [70]. The sharp rise of our technogeneous system's destructive force on a planetary as well as a cosmic scale, has now placed the future survival of our technocratic civilization in question [33,7]. Additionally, the principle of Nature's supremacy [72] over that of humanities current integral technogeneous and psychogenic activities and results, becomes more, and more, apparent.

CONCLUSIONS

The situation that has been created here in our Heliosphere is of external, Interstellar, cosmic space origin, and is herein assumed to be caused by the underlying fundamental auto-oscillation, space-physical, processes of continuous creation that has shaped, and continues to evolve our Universe. The present excited state of our Heliosphere exists within the whole, or entire, organism that makes up the Solar System; the Sun, Planets, Moons, Comets, and Asteroids, as well as the plasmas, and/or electromagnetic mediums, and structures, of Interplanetary Space. The response to these Interstellar energy and matter injections into our Heliosphere has been, and continues to be, a series of newly observed energetic processes and formations on all of the Planets; between the Planets and their Moons, and the Planets and the Sun.

Earth's ability to adapt to these external actions and transference's is aggravated, made more difficult, by the technogeneuous alterations we have made to the natural quality, or state, of our geological-geophysical environment. Our Planet Earth is now in the process of a dramatic transformation; by altering the electromagnetic skeleton through a shift of the geomagnetic field poles, and through compositional changes in the ozone, and hydrogen, saturation levels of its gas-plasma envelopes. These changes in the Earth's physical state are being accompanied by resultant climatic/atmospheric, and biospheric, adaptation processes. These processes are becoming more and more intense, and frequent, as evidenced by the real time increase in "non-periodic transient events"; ie., catastrophes. There are reasons favoring, or pointing to, the fact that a growth in the ethical, or spiritual quality, of humanity would decrease the number and intensity of complex catastrophes. It has become vitally important that a world chart be prepared setting forth the favorable, and the catastrophic, regions on Earth taking into account the quality of the geologic-geophysical environment, the variety and intensity of cosmic influences, and the real level of spiritual-ethical development of the people occupying those areas.

It is reasonable to point out that our Planet will soon be experiencing these new conditions of growing energy signifying the transition into a new state and quality of Space-Earth relationship. The living organisms of those regions of Earth having the major "inlets", or attractions, for cosmic influences will be taking the lead in evolving life's appropriate reactions, or processes, to these new conditions. These zones of vertical commutations and energy transfers are already becoming the heart, or hotbeds, in the search for new systems of adaptation and mutual transformation. The general list of these zones includes the polar regions, the eastern continental extremities of the equatorial regions [Caribbean, Madagascar, Philippines, Yellow Sea, etc.], and the inner continental zones tending to folding and uplifting [Himalayas, Pamir-Hindukush, Altay-Sayan systems, etc.]

The most significant of these areas are the helio-sensitive zones which have intense responses to geoeffective solar activities [Note #1]; responses that include the very dramatic and unusual manifestation of non-homogeneous vacuum, or classical non-mechanical ether, domain structures. These structures, or objects, then interact with the heliosensitive zones producing deep and powerful effects upon the environment such as the alteration of seismic activities, and chemical compositions. Because these non-homogeneous vacuum domain objects display not-of-this-physical-world characteristics such as "liquid light" and "non-Newtonian movement" it is difficult not to describe their manifestations as being "interworld processes". It is important to note that those heliosensitive zones that exhibit middle and large scale processes are also those that are closely associated with these "interworld processes" produced by physical vacuum homogeneity disturbances.

Such disturbances cause, and create, energy and matter transfer processes between the ether media and our three-dimensional world. The multitude of such phenomena, which is rich in it's quality and variety, is already growing quickly. Hundreds of thousands of these natural self-luminous formations are exerting an increasing influence upon Earth's geophysic fields and biosphere. We suggest that the presence of these formations is the mainstream precedent to the transformation of Earth; an Earth which becomes more and more subject to the transitional physical processes which exist within the borderland between the physical vacuum and our material world.

All of this places humanity, and each one of us, squarely in front of a very difficult and topical problem; the creation of a revolutionary advancement in knowledge which will require a transformation of our thinking and being equal to this never-before-seen phenomena now presenting itself in our world. There is no other path to the future than a profound internal experiential perception and knowledge of the events now underway in the natural environment that surrounds us. It is only through this understanding that humanity will achieve balance with the renewing flow of the PlanetoPhysical States and Processes.

End Paper

NOTES

1. Since the Earth is a large very highly organized organism, each of its structural units or territories such as, mountain systems, rivers, tectonic faults, ore deposits, oil fields etc. plays a certain functional role in its life, and in its connections with the outer world. For example, iron ore deposits support the climate stability because they perform the connection between the electrical activity in the atmosphere, and the electrical activity beneath the Earth's surface.
2. Nowadays we all know the works of Tschizhevsky who discovered, and proved in the 1920's, that deep and various connections exist between Solar activity and various life processes. Using vast historical and statistical material he showed that Solar activity acts as an accelerator and moderator upon the whole biosphere, which manifests in the frequency and quantity of : births, deaths , harvests, epidemics, heart attacks, emergencies, bank crashes, catastrophes, suicides, populations growths and decreases, etc., etc.
3. Since different zones of Earth have different functions in the Earth organism, their response to Solar activity is also different. For example, the polar regions are first to react to Solar disturbances, which we know well in the form of magnetic storms, auroras, and nowadays, in ocean warming at the 75 degree North latitudes. We also know other places which demonstrate intense reactions to different kinds of solar activity; that's what we call heliosensitive zones. Such reactions include local electromagnetic disturbances, low-latitude auroras, and specific changes in the pattern of magnetic field variations on the short term scale. There are also long-term reactions in the state of the biosphere. One of our colleagues, Ildar Mingazov, found, in studying the distribution and frequency of different types of diseases in various regions, that the intensity of disease frequency in correlation with solar activity varies between regions, and is maximal for heliosensitive zones (for example, cardiovascular diseases).
(Notes by: Andrew Tetenov)

END NOTES

REFERENCES

1. Vasil'yeva G.Ya., Kuznetsov D.A., Shpitalnaya A.A. On the question of galactic factors' influence upon Solar activity. "Solar Data", 1972, , N9, p. 99- 106 (in Russian).
2. Kurt V. G. Interstellar medium and it's interaction with stars. Zemlya i Vselennaya (Earth and Universe), 1994,N5, p.3-10. (in Russian).
3. Parker E.. Space magnetic fields (their formation and manifestations). 2-, 1982, 469'.
4. Zakoldaev Yu.A., Shpitalnaya A.A., Efimov A.A. Cyclic pattern and evolution of geology processes as a consequence of Sun's circulation in anisotropy interstellar space. // New ideas in interaction of sciences on Earth and Universe (Internat. conference transactions). Sanct-Peterburg., 1996. - p. 23-24.
5. Kruzhevskii B.M., Petrov V.M, Shestopalov I P. On radiation conditions forecasting in interstellar space. / Kosmicheskiye Issledovaniya (Space research), v. 31, no. 6, - 1993. - p. 89-103.
6. Dmitriev A.N. Mahatmas and the Science of new quality of Solar System. Tomsk. Human Sciences Institute, "Natural Sciences" series, 1995.
7. Science News, 1994. 144. 334.
8. Science News, 1955. vol. 148, N 21.
9. Dolginov Sh.Sh. Magnetic fields of Uranus and Neptune : a look from the Earth. // Geomagnetism and aeronomy.33, N 2, 1993. 1-22.
10. New Scientist, 1994. 144. 18.
11. Space flight. - 1992, v. 34, N 3, p. 75.
12. Fortov V.E., Gnedin Yu.I., Ivanov A.V., Ivlev A.V., Klumov B.A. The collision of Shoemaker-Levy comet with Jupiter / Sov.Phys.Uspehi, v. 166, N 4, - 1996. - p. 391-422.
13. Churyumov K.I.. Once more about comet's collision with Jupiter.- Zemlya i Vselennaya (Earth and Universe) - 1994, No.1. - p. 83-85.
14. Dmitriev A.N. Earth responses to high-energy processes in Jovian system // Novosibirsk, IICA Transactions, vol. 1, 1994. - p. 16-21.
15. Haynes P.L., Balogh A., Douherty H.K., et. Null fields in the outer Jovian magnetosphere: Ulysses observations // Geophys. Res. Zett. - 1994, - 21, N 6. - p. 405-408.
16. Wireless File, 24,3. - 1995.
17. "Popular Science", N 4, 1995.
18. Shestopalov I.P., Bengin V.V., Kolesov G.Ya. et al.. SCR Flashes and large-scale structures in interplanetary environment. A forecast of proton Solar events. / Space Research. v. 30. - Moscow: Nauka publishers., publ#6, 1992. p.816-825.

19. Ishkov V.N. Solar activity in 1991-1992 . (22-th cycle) Astronomy calendar for 1994 . - Moscow:1993, p. 190-197.
20. Ishkov V.N. 22-th cycle of Solar Activity : main characteristics and evolution / Astronomy calendar for 1993 . - Moscow:1992, p.215-229.
21. preliminary Report and Forecast of Solar-Geophysical Date / Space Environment Services Center, Boulder, Colorado USA: 1992, N 2.
22. Crocker N.U. Geoeffective space storms: Abstr. Spring Meet. Baltimore, Md, May 23-28, 1994 // EDS. - 1994. - 75, N 16, Suppl. - p. 312-313.
23. Ivanov K.G. The Earth magnetosphere/Electromagnetic and plasma processes from Sun to Earth core . - Moscow: Nauka publishers,1989. - p. 62-75.
24. Kovalevskii I.V. Some aspects of Solar-Terrestrial interactions energetics/ Interplanetary Environment and Earth Magnetosphere - Moscow: Nauka publishers, 1982. - p. 25-63.
25. The Van-Helen radiation belts - two newly observed populations: Abstr. Spring Meet. Baltimore. Md. May 23-28, 1994 / Blake J.R. // EOS. - 1994. -75. N 16.
26. Drobzhev V.I., Kazakov V.V. , Chepurchenko L.V. Foundations of external helio- and geophysical control of seismicity./ Vestnik of Kazakh SSR Acad. of Sci. , No. 3, - 1988. - p. 12-18.
27. Sytinsky A.D. On geoeffectivity of Solar wind streams.USSR Acad.Sci. Doklady, 1988, v. 298, N 6. - p. 1355-1357.
28. Solar cycles and Solar output: Abstr. AGU Fol Meet. San Francisco Calif. Dec. 7-11, 1992 / McIntosh P.S. // EOS. - 1992 - 73, N 43. Suppl. - p. 436.
29. "Geophysical Research Letters". vol. 21, 1994.
30. Mogilevsky E.I. Sun coronal holes energy and recurrent geomagnetic distributions . // Geomagnetism and aeronomy. 1995,. 35, N 6. - 11-19.
31. Kazimirovsky E.S., Kokourov V.D. Meteorology effects in ionosphere(a survey) // Geomagnetism and aeronomy. 1995,.35, N 3. - . 3-23.
32. New Scientist. 1995.- 147. 11.
33. Dmitriev A.N. Technogeneous impact upon Geospace (the problems of global ecology). - Novosibirsk, Novosibirsk State University, 1993. - p. 68.
34. Zanetti J., Potoma A., Anderson B. J. et set. Correlation's of satellite observed auroral currents induced in a power generating system: Abstr. AGU West. Pacif. Geophys. Meet., Hong-Kong, July 25-29, 1994.
35. Space Rays physics: the research continues in SNG. Russian Acad.Sci. Vestnik, v. 63, N 7, 1993. - p. 650-654.
36. Nesmenovich E.I. Resonance's in Solar System // Space physics problems. Kiev, 1984, N 19. - p. 84-93.

37. Rodionov B.U. Possible geophysics manifestations of magnetic monopoles. Preprint of Moscow Eng.Phys.Institute - 1995 - N 021 - 95. - p.1-24.
38. Sumaruk Yu.P., Sumaruk P.V. Secular variations of geomagnetic field in middle latitudes and their relation to geomagnetic and solar activity. / Geophysics Journal N 6, 1995, - v. 17. - p. 59-62.
39. Zhidkov M.P., Lihacheva N.A. Anomalous field influence upon placement and growth of cities. / Russian Acad. Sci. Izvestiya, geography series. N 1, 1996. - p. 71-84.
40. Fedorova N.V. The research of long-wave large-scale anomalies above northern Eurasia / Doklady RAN, 1996, vol 347, N 5, p. 681-684.
41. Kopytenko A.Yu., Pochtarev V.I. On dynamics of Earth magnetic poles. /Geomagnetism and aeronomy. v. 32, 1992, N 5 - p. 201-202.
42. Kuznetsov V.V. The position of North magnetic pole in 1994 (forecast and detection) /Doklady RAN, 1996, vol 348, No.3, p.397-399.
43. Milanovsky E.E. On phase correlation of geomagnetic field inversions frequency, World ocean level decrease and Earth crust folding deformations strengthening phases in Mesozoic and Cainozoic. / Geotectonics, 1996, N 1. - p. 3-11.
44. Ryskunov A.L. The comparison of large scale characteristics of geophysical fields. / USSR Acad.Sci. Doklady, v. 267, N 6, 1982. - p. 1336-1340.
45. Kondratyev K.Ya. Modern stage of research of global change: US program // Investigation of Earth from space N 2, 1995. - p. 98-105.
46. Wilson N. Global temperatures approach record values // J. Meteorol. - 1995. - 20, N 200. - p. 194-196.
47. "Science News", 1994. 146. 13.
48. New Scientist, 1995. 146. 18.
49. "Geophysical Research Letters", 1994, v. 21.
50. "New Scientist", 1995, vol. 145, N 1962.
51. New Scientist, 1995, vol. 145, N 1967.
52. Netreba S.N. On relation of short-periodic thermodynamic pulsation's of atmosphere boundary layer with Solar X-Ray emission. // Meteorology and hydrology, N 4, - 1996. - p. 95-101.
53. New Scientist, 1995, vol. 147, N 1993.
54. Dmitriev A.N. Belyaev G.K. Technogenic causes of total ozone content decrease. (USSR Ac.Sci. Siberian Branch Institute of Geology and Geophysics preprint No. 15) Novosibirsk, 1991.
55. Claude H., Schnenborn F., Stethbrecht W. New evidence for ozone depletion in the upper stratosphere // Geophys. Res. Lett. - 1994. - 21, N 22. - p. 2409-2412.

56. Wemberg P.O., Hanisco T.F., Stimphl R.M., Japson L.B., Anderson J.G. In situ measurements of andin the upper troposphere and stratosphere // J. Atmos. Sci. - 1995, - 52, N 19. - p. 1413-1420.
57. Karol' M.L. , Klyatina L.P. , Romashkina K.I., Shalaminskii A.M. Extremely low ozone content above Russia in 1995 winter . // Meteorology and hydrology, N 6, - 1995. - p. 115-116.
58. Vozhkov R.D., Fioletov V.E., Kadygrova T.V. et al. Ozone decrease estimate for Eurasia in 1973-1993 on a base of filter ozonometer registrations correlated data. // Meteorology and hydrology, N 9, - 1995. - p.30-40.
59. "Global Change Newsletter", 1994, N 19.
60. Science News. vol. 148. N 25, 1995.
61. Science News. vol. 146. N 334, 1994.
62. Tsirs G.P.,Loginov G.A. The characteristics of weekly moves of geomagnetic oscillations 1985, v. 25, N 2. - p. 153-154.
63. Biryukov A.S., Grigoryan S.R., Garkusha V.I. et al. Low frequency radiation sources. Their action upon Earth radiation belts.(a survey) - Moscow: VINITI # 5204-88, 1988. - 1236.
64. Plasma generation in energy active zones./ Dmitriev A.N., Poholkov Yu.P.,Protasyevic' E.T., Skavinskii V.P. / USSR Ac.Sci. Siberian Branch Institute of Geology and Geophysics-Novosibirsk, 1992.
65. Non-periodic transient phenomena in environment: II interdisciplinary workshop transactions-Tomsk, Tomsk Polytech.Inst.,1990.
66. Dmitriev A.N. Correcting dfunction of heliocentered unusual atmospheric phenomena./ Izvestiya Vis'shih Uch.Zaved.,Physics,Tomsk, v.35, 1992, N 3, p. 105-110.
67. Dmitriev A.N., Dyatlov V.L. A model of non-homogeneous physical vacuum and natural self-luminous formations. /IICA Transactions Novosibirsk, 1996, v.3 - p. 65-76.
68. Environment monitoring and problems of solar-terrestrial physics. / Theses of international symposium June 18-21 1996 - Tomsk, Tomsk Univ., Sib.Phys.-Tech.Inst. , 1996.
69. Natek K. The necessity of future politicians learning global relations between natural processes and antropogeneous activity. // Global Changes and Geogr.: IGU Conf. Moscow. Aug. 14-18, 1995: Abstr. - Moscow, 1995, - 251.
70. Kondratyev K.Ya. Global change and Demography dynamics.Rus.Acad.Sc.Vestnik, 1996, v. 66, N 4. - p. 364-375.
71. Dmitriev A.N.. Tecnogeneous challenge to the planet Earth. / Vestnik Vys'shei Shkoly, 1989, N 7. - p. 38-44.
72. Kosygin Yu.A.. The highway of synthesis. / Pacific Geology, 1995, v. 14, N 6. - p. 8-15.

END REFERENCES