

Further about impact of solar activity on geospheres

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Summary. — Twenty-five years high-mountainous researches on solar-weather effects have given a number of direct proofs of the occurrence of weather meteorological elements abnormal responses (in scale hours-days-week) on the passage in the central area of the solar disk by separate large sunspots and powerful groups of spots. The brightest shows were marked by us in October 1981 and in the last decade of October 2003. Certainly, the most grandiose effect was registered in March 1920 at the Calama station of the Smithsonian Astrophysical Observatory ($\Delta S_0 \approx 5\%$). The analysis of the data set unambiguously has specified the presence of a special kind of radiation in the solar emissions—spirally vortical radiation (SVR), having a forcible pulse and powerful angular moment. In our opinion spirally vortical radiation is generated in the nucleus of the Sun with a speed of 10^4 quanta/s and leaves the photosphere through magnetic structures with a speed $\sim 8-9 \cdot 10^3$ km/s. In the paper we discuss the effects of the direct interaction of spirally vortical radiation with different kinds of terrestrial environments, including the biosphere. It is supposed that SVR in the Universe can play a role of dark energy, as it is radiated by each star and has a pulse.

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1. – Introduction

The monitoring of solar emission variations in the ultraviolet (UV), visible and near-infrared (IR) spectral regions was carried out from 1978 to 2002 at the High-Mountain Base of the Research Institute of Physics of the State University of St. Petersburg. Years of long-term studies of the electromagnetic radiation of the Sun (EMRS) have paved the way for detecting a beam structure of bursts of induced spectral optical radiation from

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numerous open magnetic formations [1]. The impact of spectral EMRS bursts upon the value of total solar radiative flux divergence to the atmosphere and the Earth's surface amounted to only a few percent in cases of high solar activity. Because the additional energy of the bursts incomes to the entire sunlit part of the globe at the same time but by short-time portions (during 1.5–2 h) [2], respective variations in the latitudinal temperature gradient of air masses will not radically affect the meridional circulation, but will create wave perturbations in the air flows.

2. – Results of further studies

Beginning with 2001, alongside spectral measurements, an ever-growing interest was shown towards meteorological response to the activity of processes in the photosphere, chromosphere and the solar corona. The obvious effects of solar emissions upon the meteorological, weather and climate parameters of the “atmosphere-Earth's surface” system attracted our attention to direct energy contributions related, as it appeared, not to EMRS but to spirally-vortical radiation of the Sun (SVRS) from active regions of the photosphere, coronal holes and the magnetic grid.

According to observations conducted in 2002–2003 and the results of the analysis of a number of investigations in various areas of physics, direct power impacts of SVRS on the Earth's atmosphere, hydrosphere, lithosphere and biosphere were discovered and identified. An energy flow equal to $(3\text{--}5) \cdot 10^6 \text{ erg/cm}^2\text{c}$ was expended only to decrease the barometric pressure by 5–7 hPa in local areas. The peculiar features of the effects of the impacts on the atmosphere, hydrosphere and lithosphere indicated the vortical nature of this radiation, while the direction of the moment of movement amount and the pulses of the orbital and angular moments showed the *negative* pressure of the field energy of this radiation with respect to the gravity field. Evidently, this energy is not that connecting the gravitating bodies and having a positive sign; it is the direct energy of the spirally-vortical radiation of the Sun, radially oriented from the Sun's nucleus [3].

3. – SVRS and its source

SVRS quanta—high-frequency vortical gravitons (spirons)—are emitted, according to one of astrophysical hypotheses, in stellar (solar) nuclei as a result of quenching of the excited high-energy levels of the nuclei of iron and carbon isotopes, and are transported in the radiative zone in the same way as gamma-quantums, *i.e.* radially, and losing in the process a considerable portion of their initial energy ($E = h \cdot T \cdot c/b$). The speed of SVRS propagation decreases from the velocity of light in the emission acts to approximately 8500 km/s in the photosphere and 6000 km/s in the internal solar corona over active areas. The velocity of the emission of vortical gravitons in the star (solar) nuclei is assessed by us as $10^{40} c^{-1}$. According to the theory of elementary particles, gravitons possess energy, impulse, the spin angular moment of the impulse, whereas vortical gravitons (spirons), just like the photon, have an orbital impulse moment. The spiron spin equals 1. According to our estimations, the spiron energy is $\sim 10^{-8}$ erg, and the rest mass is $\sim 1.1 \cdot 10^{-29}$ g.

There is a hypothesis that toroidal flows of SVSR, passing at the bottom of convective zone of the Sun through an azimuthal magnetic field, capture it and form magnetic tubular vortical structures, which radially penetrate the convective zone. During its movement in the convective zone, SVRS effectively coexists with the twisted magnetic field and possibly structures it into bunches of power tubes. Inside the tubes, protons

and ions are thrown away to the periphery by the magnetic field, thus clearing the axial space of the tubes for SVRS flows, which complete the clearing of the cavities of magnetic tubes from any particles, irrespective of the presence of the charge or its sign. Because magnetic tubes are twisted and the movement of SVRS flows has a vortical nature, along the way of hundreds of thousands of kilometers a complete coordination of the spiral nature of their movement takes place.

In coronal holes occupying (in the periods of decreased activity in the 11-year cycle) spacious areas of the Sun's surface, through open (radial) unipolar magnetic structures, vast super-high-speed SVRS flows are thrown out into the heliosphere; they cover the entire Earth for several days. However, the stochasticity of the SVRS flow from coronal holes hardly ever results in local catastrophic events on the Earth (see below: the 1st type of the background vortical radiation). Consequences can be different when the Earth is covered by a *collimated* beam of SVRS from the umbra of a large spot. In this case, an additional flow of vortical energy incoming to the "atmosphere-Earth's surface" system in the sunlit hemisphere of the Earth reaches apparently $5 \cdot 10^{23}$ erg/s = $0.5 \cdot 10^{17}$ J/s. It should be noted that the income of an integral flow of EMRS, on the average, amounts to about $1.7 \cdot 10^{17}$ J/s, *i.e.* in the case considered, the vortical energy may amount to $\sim 30\%$ of the integral electromagnetic energy of the Sun incoming to the Earth's atmosphere boundary. However, the spirally vortical radiation is not immediately transformed into heat, but actively participates in the formation of vortices of various scales, both in the atmosphere and the hydrosphere. Since the ionosphere and thermosphere are structured into "rivers" of various scales (see the headband), represented, for instance, by ring currents, there is no doubt that in these "spheres" as well, under the influence of SVRS, large-scale vortices (eddies) are formed, resulting, first of all, in variations of the geomagnetic field constituents.

If one assumes that the SVRS velocity near the Earth exceeds at least by several times the speed of the solar wind flux accelerated by SVRS (the velocity of the electronic component of the super-high-speed solar wind flux $V \geq 1600$ km/s), the time of the SVRS flight to the Earth will be about 0.3 of 24 h, *i.e.* about 8 h. If a spiron flow leaves the powerful active region, its flight time to the Earth may be less—about 0.2 of 24 h (4.8 h). Such time lags in SVRS income to the Earth should be taken into account in forecasting various effects in the Earth's spheres.

4. – Previous studies of vortex fields

As far back as in 1950s, the astrophysicist Kozyrev [4] claimed that both in animate and inanimate nature indications of the existence of vortical (chronal) fields were marked long ago. On the basis of experimental results, Kozyrev found that the sources of these fields were stars, and their carriers at the micro-level were elementary spin particles. It is via the spins of nuclei and atoms of a particular substance that spirality is transferred to its macroscopic characteristics.

According to the results of recent observations with gravivariometers at the Institute of the Earth's Physics of the Russian Academy of Sciences (G. A. Sobolev, S. M. Krylov, 1994-1999) [5], from the discovered vortical (non-EM) low-frequency (the range of 0.02–20 Hz) field, three types of radiation of tectonic origin (in the authors' opinion) were detected:

- 1) The background, spatially homogeneous radiation with wave characteristics of the type of quasi-stationary noise with random superposition of sinusoidal oscillations of various frequencies (0.1–20 Hz), amplitudes and duration.

- 2) The super-low-frequency (0.02–2 Hz) highly local noise radiation with higher amplitudes, which, however, rapidly decrease when the instruments are plunged into a mine.
- 3) The pulsed broad-band vortical radiation having a random nature and amplitudes from average values characteristic for the first and second types to those exceeding these average values by a factor of 10–20. The attenuation due to the Earth's rocks is not large. It is most often registered in tectonically active regions and zones of fractures.

The above authors relate the appearance of vortical radiation to tectonic processes in the Earth's crust, especially where the influence of these processes concerns bodies and materials with torsional efforts applied to every elementary volume of the substance. It should be added that the resistance of the structures to such efforts is rapidly diminished with the transition to micro-scales.

In earlier publications (1969-1971) Weber of the University of Maryland [6] presented the results of measurements of gravitational signals for the period from August to December 1969. The registering of gravitational signals was performed with the help of a whole series of precision gravimeters of his own construction. During the above-mentioned period, 252 impulses were registered with duration up to 10 s and surface energy density from $5 \cdot 10^5$ to 10^7 erg/cm²s. It has been found that the income of gravitational impulses is significantly correlated with the geomagnetic index D_{st} and certain three-hour periods within every 24 hours, that are calculated according to sidereal time. If the three-hour intervals are calculated according to local solar time, there is no significant correlation. This circumstance made it possible for Weber to state that about half of the impulses come from the region of the center of our Galaxy. However, in the process of analyzing the geometry of the directional diagram of the sensitivity of the gravimeters, we found out that, due to a large expansion of the main (circular) lobe of the diagram (72°, centered over the local meridian), gravimeters could also register signals incoming from the Sun but arriving during the nighttime! This circumstance and the facts of the appearance at the Earth's surface, at night, of craters of a certain configuration (with a hill in its center) and with dimensions from 30 to 50 m, as well as catastrophic destructions, such as the Moscow Aquapark accident, or Chernobyl, or the Khabarovsk forest fall-down, etc., made it possible for us to substantiate the phenomenon of focusing of spirally vortical radiation (close in its characteristics to the above-mentioned 3rd type) in the Earth's spherical body.

5. – On the effects and the interaction mechanism between SVRS and the geospheres

It appears that the directed flow of SVRS, while passing through the globe, is not only attenuated due to absorption and scattering, but is also refracted and reflected in such a way that the focus of the radiation flow is realized on the nocturnal surface of the globe, in particular, in the form of a crater with a hill in the center. It looks like that a typical “focusing” coefficient can be determined relative to the areas of the globe cross-section and the crater (*e.g.*, Sasovo of the Ryazan' region, 12 Apr. 1991 [7]). The crater was formed as a result of a blowout of a round piece of the upper layer of the soil, 3.5 m thick and 28 m across. Because vortical radiation, in the geophysical sense, is a torsional oscillation, and the latter, in fact, is a transverse vibration (similar to transverse waves),

which cannot propagate in the outer super-viscous shell of the Earth's core, it becomes clear why central hills are formed in craters resulting from the outcome of a focused beam (in the form of a soliton) of powerful spirally-vortical radiation. Now one can have an idea of the initial form of the thrown-out volume of ground (a somewhat flattened toroid, or, using everyday language, a roll) and the geometry of the cross-section of the focused SVRS beam (a toroid with the radiuses $R = 8.5$ m and $r \sim 5.5$ m).

So, when determining the coefficient for calculations of the specific volume density of the vortical energy of an SVRS flow outcoming from the Earth, one should take it into account that only 2/3 of the Earth's cross-sectional area must participate in the focusing.

The SVRS flow energy can be assessed from the luminescence of the air volume over the location of the soliton outcome noted by a number of observers. They estimated the luminous volume as a sphere with diameter ~ 15 m. The luminous air volume was similar in colour to the luminescence of sealing, which indicates a high level of excitation of atoms, close to the threshold of ionization. The luminous formation volume will be $1.77 \cdot 10^9$ cm³. The number of molecules in this volume will be $2.68675 \cdot 10^{19} \cdot 1.77 \cdot 10^9 = 4.76 \cdot 10^{28}$. The ionization energy of these molecules will constitute $4.76 \cdot 10^{28} \cdot 33$ eV = $1.57 \cdot 10^{30}$ eV $\cdot 2.5 \cdot 10^{18}$ erg = $2.5 \cdot 10^{11}$ J. Therefore, the specific energy concentration (maximum) in a luminous volume can be estimated at 141 J/cm³. In real conditions the specific energy was at least an order of magnitude smaller.

To explain the suggested mechanism of SVRS impact on the geospheres, fig. 1 shows a diagram, which gives an idea of the nature of propagation of the background and quasi-collimated SVRS (and other kinds of solar radiation, *e.g.*, electromagnetic radiation of the Sun—EMRS) from a source to the Earth, and the interaction between the collimated SVRS with the lithospheric substance (focusing). On the nocturnal side, the outgoing concentrated spirally vortical field (SVF), when it separates from the channel relating SVRS to the source, rolls up into a spherical or elliptical soliton, which “travels” for hours over the “waves” of the background SVF. Effects revealed during contacts with such solitons (well known as anomalous atmospheric phenomena, AAP) and observed physical events accompanying such AAP were systematized as far back as in 1991 by Platov and Rubtsov [8].

6. – Anomalous atmospheric phenomena (AAP)

The generalized image of AAP should first of all be attached to certain time limits to be distinguished from contemporary military aspects and the problem of extraterrestrial civilizations. Consideration of archived materials shows that atmospheric anomalous phenomena (AAP) have been known from ancient times. There are numerous hystorical sources which describe in detail the forms, nature and dynamics of unusual, apparently natural phenomena. First of all, attention should be paid to luminous objects having a definite geometric shape, high speed and mobility. Such phenomena could be as new and incomprehensible as, for instance, the source of solar or stellar energy seemed obscure and incomprehensible in the 19th century. This aspect (the source of AAP energy) is most important for the understanding of the physical nature of AAP, which radiate visible light and radiowaves (EM pulses in the microwave region from 200 to 3000 MHz). Besides, radar-visual and magnetometric observations indicate that some AAP are capable of reflecting light rays and being sources of a quasi-stationary magnetic field with the intensity up to 1000 Ersted. The above-mentioned fields and possibly other kinds of fields somehow participate in affecting technological objects (car engine failures, shutdown or impairment of car headlights, radio and television noise, fluctuation and rotation of the compass needle, etc.).

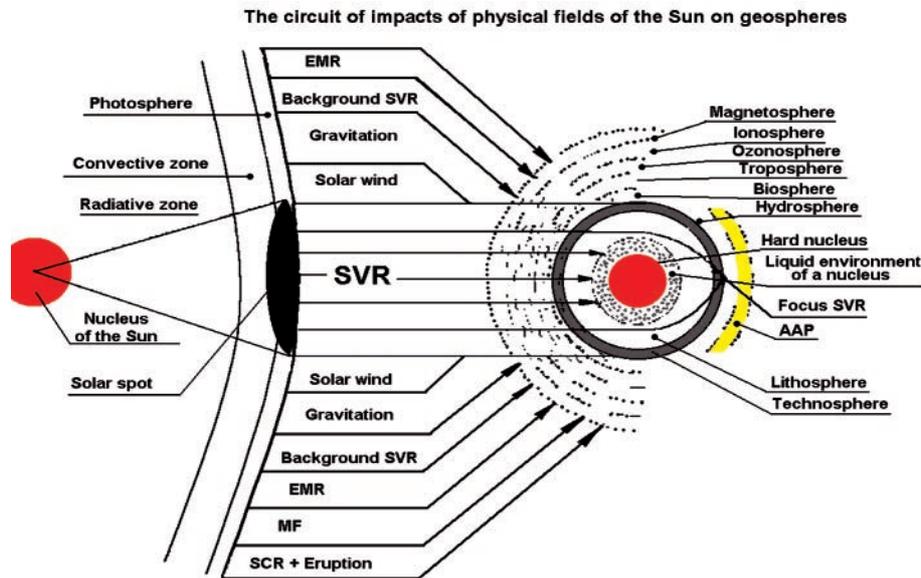


Fig. 1. – A schematic presentation of the process of formation of a directional flow of spirally vortical radiation (SVR), irradiating the Earth from a big solar spot. Also simulated from the Sun's photosphere are: electromagnetic radiation (EMR), background radiation SVR, magnetic field (MF), solar cosmic rays (SCR) and solar substance eruptions. A gravitational field is originated from the solar body (gravitation). From the solar corona, radial beam fluxes of the solar substance are ejected (the solar wind). The Earth's environment is schematically presented as a number of spherical shells (layers) consisting of various physical substances: magnetosphere, ionosphere, troposphere, hydrosphere, biosphere and technosphere. SVR easily penetrates the earth's interior, but only up to the upper core boundary. The above-lying hard shell (lithosphere) refracts and reflects SVR very well, thus collecting the collimated radiation at the geoid boundary. The focal spot of SVR, estimated according to the craters' dimensions, is within a few dozens of meters. The focused SVR has a high energy density of the flux. These fluxes are sources of the formation of numerous atmospheric anomalous phenomena (AAP) of various size, form and luminescence intensity. Quite peculiar are the outcomes of toroidal solitons of SVR out of water depths, which were observed from an orbit and looked like huge water pillars. The high-volume energy concentration in solitons sometimes is conducive to natural and technogenic catastrophes.

The observed AAP attracted the attention of their witnesses because their shapes, colours or movement parameters seemed unusual. Discs, spheres, cigar-shaped ellipses, cylinders were observed more often than other shapes. Sometimes the shapes and colours change, and objects themselves merge and separate from one another. Colours: for example, the silver, metallic or white colours by daylight become intensive white at night (partial ionization of all gases, decomposition of metastable nitrogen); red and orange follow from the ionization of neon atoms; blue luminescence is due to the excitation of xenon atoms alone (low excitation power).

The movement of the observed AAP was characteristic of soaring, fast acceleration, abrupt changes in trajectories at motion with high speeds. Sometimes disc- and sphere-shaped objects rotated around their axes. Multiple observed direct physical impacts on humans, soil, vegetation, instrumentation, snow cover (AAP traces) have the following

manifestations. Humans, who happened on the spot, lost orientation or felt depressed. After contacts with the Earth's surface, sphere-, ring-, or irregular-shaped areas appeared on the soil, and these areas were dehydrated, or parched, or they suffered from mechanical pressure. Grass within a circle with the diameter of several meters was pressed and twisted either clockwise or counter-clockwise. Various solid, dust-like, thread-like or liquid substances were found in the affected regions but nowhere in their vicinity.

AAP experts built an average “physical equivalent” of the described AAP, or their associative image: a sphere or a disc with the diameter from several meters to a few tens of meters, with a powerful source of light, thermal and microwave radiation and a quasi-constant magnetic field; the object is capable of soaring or floating in the air, rotating and moving at high speeds and accelerations, reflecting ultra-short radiowaves and visible light, thermally and mechanically affecting the soil, plants, living organisms, electric instrumentation and internal-combustion engines (via the ignition system). The creators of the associative image state that it is hardly possible (or rather practically impossible) at present to identify it with empirical facts. However, the authors of this paper have apparently found the sought object-hypothesis—*the focused spirally vortical radiation. One finds out that all the above-mentioned phenomena describe, most comprehensively and adequately, the characteristics and effects of the interaction between the focused form of SVRS and natural, technological, biological objects, and humans.*

7. – Crop circles

Phenomena known as “crop circles”, “graffiti” and “pictograms” are very spectacular for the analysis of focused SVR structures, and at the same time very attractive. These phenomena are based on geometrically precise pictures of various figures, which mainly consist of combinations of circles, rings, circumferences and spirals of different scales. It is a known fact [9] that multi-meter images over the “canvas” of wheat, rye, barley, etc. fields appear at night only, during 5–20 s intervals. In most cases, the circles are filled with spirally located prostrate plants; it is interesting to note that the plants took this position not momentarily, during a single rotation of the angular-moment vector of the force field, but during 2–5 such rotations. Another and apparently original feature of the position of the prostrate plants is their alternating direction corresponding to every consecutive rotation of the angular-moment vector of the SVR field.

To illustrate the diversity, originality and geometric accuracy of pictogram building, we limit ourselves to three photographs out of many thousands of photographs accumulated during the last 30 years. The elegant pattern of the first photograph, when observed thoroughly, lets one make sure visually of the consecutively changing direction of rotation of the spin-polarization vector of the orbital angular moment of the spirally vortical field (SVF) (see fig. 2, photo No. 1—“the bowl”). Besides, the pictogram was obviously formed during two passages of twenty-two phase fronts of the orbital angular moment of SVF through the plane of the Earth's surface and crops, with a very slow axial rotation of polarization vectors (one of which was right-hand rotating, and the next one left-hand rotating), apparently, only due to the translational motion of the soliton upwards from under the Earth. This means that in our case vectors shifted by 180° form the SVR spin polarization.

The second photograph (fig. 3) shows a pictogram formed by a large-scale SVF soliton with perfectly different parameters and structure of the force field. There, on six quasi-immobile phase fronts of the orbital moment, practically identical chains of tubular SVF structures of various calibers are located, which are filled with a lowly rotating field piling

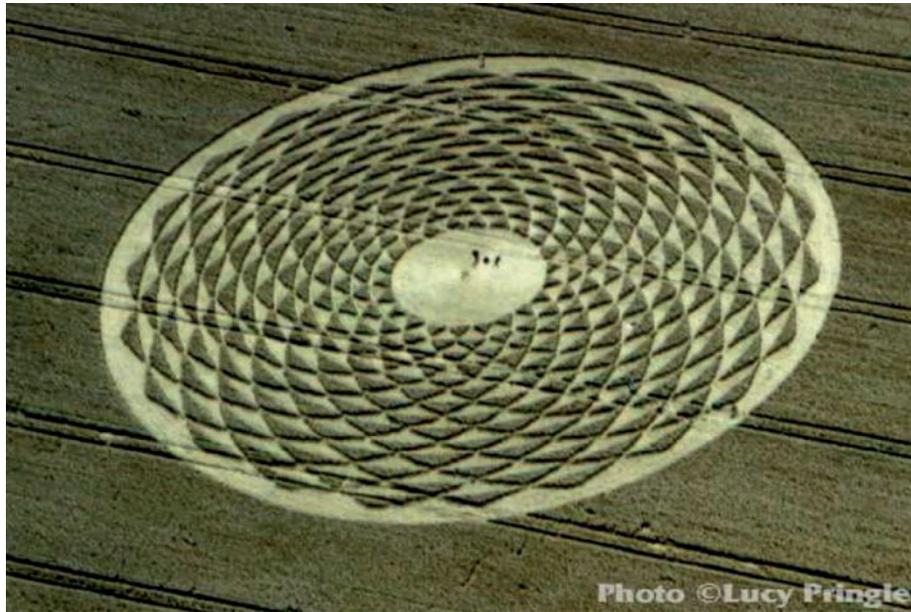


Fig. 2. – A photograph of one of the most beautiful “Bowl” pictograms is presented. A soliton, coming out of the lithospheric depth, carries 22 wave fronts, altering their direction of rotation by 180° every half-period of the spin polarization. It is amazing how geometrically precise are the figure on the whole and its individual elements, taking into account the impressive size of the figure (its cross-section is 120 m). The scale of the pictogram can easily be assessed judging by human figures inside the central spot and on the outer ring. Nature managed to “locate and portray” an area with intact (standing) wheat, that one has the impression of an amphitheatre with an arena situated much lower than the surrounding field. All the light areas of the pictogram are relevant to regions of horizontally placed (in several layers) and accurately interlaced wheat stems. The crop fields are cultivated in Britain with the help of special tractors with high seats, which move carefully along chosen tracks.

the crops into accurate layers in circles of various diameters.

The third photograph (fig. 4) presents a general view of a trivial size circle with rows of ears stacked at night. The observers present in the field are busy with measuring the superfluous infrared radiation (IR) of the soil inside and on the outside circle.

The precision of the formation of pictograms indicates, above all, the high quality of focusing, *i.e.* the high efficiency of the lithosphere as a transferring medium for SVRS with wavelengths 0.3–3 mm. The great diversity of pictograms is apparently due to the many-sided forms of the structures of SVR sources, partly visualized upon the Sun’s surface as magnetic structures, with imposition of the dynamics of the movements of the sources in the photosphere, and relative displacements of the Earth and the Sun during the flight time of SVRS from the source to the pictogram location.

During the recent years, in England, where about 80% of cases of crop circles were registered, the observers mark the appearance of luminous discs and spherical formations, which are forerunners if not the causes of the appearance of figures. In reality, the luminous formations are only the subsequent phase of the process of the SVR soliton outcome from the lithosphere. During the first phase, preceding the ionization of the



Fig. 3. – A photograph of a delicate pictogram is presented, which has been formed on a crop “sheet” in Britain by a vortical soliton coming out of the earth’s interior. In this case, the soliton structure contains six wave fronts formed by a lot of different-size vortical tubes (little solitons). The high-frequency carrier of the SVR field in a tube ($\sim 10^{11}$ Hz) instantly heats a small zone in the lower part of wheat stems, which simultaneously get bent and twisted. In the tubes, the frequency of rotation of the spin polarization vector is apparently ~ 0.5 Hz. The change in the twisting direction by 180° occurs every half a spin polarization of the SVR field. The turning of the fronts around the soliton axis, in this case, occurs with a frequency of not over 10^{-3} Hz, since the circles do not acquire an ellipsoidal shape.

air volume over the circle, the impact of the vortical field (with the carrier frequency of the order of 10^{11} Hz) takes place upon the structures of the lower part of the ear stems, which lose their rigidity for tenths of a second, which is followed by plants falling prostrate, in accordance with the left- or right-hand direction of rotation of the angular-moment vector of the SVR field. The change of the rotation direction occurs periodically with frequencies ranging from the shares of 1 Hz to a few dozens of Hz, representing the frequencies of the spin polarization of the spiron.

It follows from the IR-radiometer readings (used by well-equipped observers) that the outcome of the wave soliton is accompanied by the appearance of the IR radiation emission not only from the area of the circle formed in their presence, but also from the adjacent regions of the field surface. These circumstances indicate that a broad afterproduct of the SVR soliton comes out, at the gradually decreasing field intensity. In the surface soil layer, preserving a sufficient moisture reserve, apart from its heating by a high-frequency field, a deep fragmentation of the initial soil structures and the sub-soil layer takes place, also accompanied by the release of thermal energy.

Quite important is evidence about sound effects accompanying the soliton outcome



Fig. 4. – The figure shows a blow-up of a field region in the environs of the city of Voronezh (Russia), where during the previous night there was an outcome of a typical vortical soliton, whose external ring had a cross-section over 30 m. On the central circle area one can clearly see the spirally vortical structure of the arrangement of plants; their upper layer is twisted counter-clockwise. The employees of the Ministry for Extremal Situations are in the process of measuring thermal radiation at the point of the soliton appearance, comparing it with the thermal emission of the soil in the adjacent regions of the field.

and registered not by acoustic instruments but by the observers themselves, who reported that they heard some low-tone sounds inside their heads. There is interesting evidence of a person with imperfect hearing, who lived near a mobile communication centre and sometimes could hear phone talks in the GHz carrier frequency range of electromagnetic wavelengths (EMR) in the absence of any kind of instrumentation. The examples presented above seem reliable because, both in the cases of SVRS and EMR, microwave radiation certainly penetrates the human brain, and the low-frequency modulated signal is detected there.

8. – The Khabarovsk forest fall-down

Along with the above-considered cases of solitons possessing relatively low energies coming out (crop circles), Nature continues bringing to our attention new phenomena, which strongly differ from hundreds of already well-known pictograms. One can mention here the appearance of an SVF soliton, an order of magnitude more powerful, which happened on 3-4 July, 2005 near the city of Khabarovsk [10]. According to preliminary expert assessments, the energy expended for forest fall-down and wrenching the tree trunks of century-old cedars, pines, birches and ashes over an area of about 12 square kilometers amounts to 2×10^{10} J. Our evaluations of the outcoming soliton energy show that the ionization and luminescence of the excited air molecules (in the volume of the front part of the soliton) require several orders of magnitude higher energy expenditures than the amount of energy spent on the above-described mechanical destructions. Local



Fig. 5. – A photograph of the Sun (in the H-alpha line) from the SOHO satellite taken on 04.07.2005 at 00 UT. In the central sector of the Sun, a powerful active area No. 0783 is located, the leading spot of which is apparently the source of SVR that covered the Earth's western hemisphere. Having been focused in the lithosphere, the concentrated SVR flow came out near the town of Khabarovsk, in the taiga, during the night from July 3rd to July 4th and arranged century-old trees prostrate round the circle like grass. Tree trunks with big crowns have been twisted like ropes. The entire area of the thrown down forest amounted to 12 square kilometers.

people give evidence of numerous appearances of extraordinary luminous formations in the region during the period of 3–5 July 2005. The local forestry managers state that all the trees fell down in a certain order, and their trunks were twisted counter-clockwise. They also state that the grass there was cut so evenly as if cut by a huge scythe. According to human witnesses, the picture resembles the well-known maize corn circles in the United States, but, instead of ears, there were ancient trees lying on the ground [10].

If now we consider the most probable source of focused spirally vortical radiation, namely the Sun, we will see on the central meridian of the disc, *i.e.* in the most geoeffective position (see the Sun's photograph obtained from the SOHO satellite on July 4, 2005, at 00 UT, fig. 5), a huge leading spot No. 0783 of the active area. Doubtless, the SVRS flow from the shade of this very spot covered the entire Earth and, about 01 h of local time of the 9-hour time zone, came out upon the surface in the region of 135° E in the form of a soliton of a focused SVF.

To make clear the internal structure of SVRS fields, and particularly of solitons formed when SVRS is focused on outlet from the lithosphere, it is most important to analyze in detail the original configurations of pictograms, which are “dactylographic imprints” of the central inner part of solitons upon the “sheets” of agricultural crops. One can state that the greatest Artist, Nature alone, is capable of reflecting in natural colours the picture of SVRS outcome upon the surface (after penetrating the Earth), thus acknowl-

edging and proving the very existence of SVRS.

So, basing oneself on the above-presented evidence and facts (to which a lot of other material could be added), one can apparently support our concept of the existence of a spirally vortical field (SVF) and its most important role in solar-terrestrial relations, and not only these.

9. – The biosphere in the iron fist of SVRS

Our daytime star has been illuminating with its life-giving rays and warming the Earth for many millions of years; however, it has also been sending us flows of hard quanta of electromagnetic radiation (gamma-, X-ray-, and ultraviolet), as well as fluxes of high-energy particles (electrons, protons and neutrons) which are not at all favourable for the biosphere. But Nature took care of the biosphere, and us and formed around the Earth several protective envelopes, the most important of which are the magnetosphere, ionosphere, ozonosphere and troposphere. These protect reliably enough the biosphere from hard solar radiation (see fig. 1).

However, if a supernova star appears not very far away or a “white” 4-point flare happens in the geo-effective position on the Sun, the biosphere “population” will be more or less reduced. Fortunately, the probability of such events is extremely low.

But now we know that there is another unfavourable circumstance for biological communities, also relevant to the Sun: the spirally vortical solar radiation (not known until recently but supposed by some seer-researchers), which is deflected and refracted in the lithospheric thickness and consequently “focused” on the surface of the nocturnal side of the globe.

As has been mentioned above, the energy involved within the focal volume can be estimated according to SVRS impacts upon objects, which happened to be in the focus, or from the luminescence of the air contained in its volume, because a considerable part of the collected energy is expended on the excitation of luminescence. Our estimate of specific energy in a luminous volume is 15 J/cm^3 . The influence of an SVR flow with such energy upon the dry substance of vegetative origin can lead to its inflammation (if exposed during 3 s). So one can see that the impact of focused SVRS on biological and even technological objects is fraught with catastrophic consequences.

On the diurnal side of the Earth, the illumination of biospheric objects by even a collimated SVRS beam is an event which is multiply realized throughout millions of years; evidently, it is not a catastrophic event but its effect is depressive. Since the SVRS wavelength spectrum is in the millimeter range and the basic energy impact takes place at the transmission of the angular and orbital momentums, the affected objects, first of all, appear to be “light” and asymmetric structural elements of biological objects (and, of course, of the atmosphere and hydrosphere), *i.e.* the molecules of water.

As has been noted, the influence of SVRS upon any macro-object, including a biological one, starts with micro-levels and is transferred, after synchronization of most homogeneous micro-objects, over the entire macro-object (which can be a living creature as a whole or its individual systems or organs). In a human, the following organs are, above all, subjected to the impact of SVRS: the circulatory and lymphatic systems, the brain, eyes, the nervous system and the internal secretion organs. But haematogenic organs and joints remain intact. Therefore, one can state that SVRS as well as microwave electromagnetic fields affect most of all those systems and organs, in whose functional processes water molecules take part being, to some extent, in the unbound phase.

The influence of SVRS on the biosphere has been continuing for millions of years, and apparently the biosphere has been developing being dependent on water modified by solar spirally vortical radiation (with anomalous physico-chemical properties). That is why healthy organisms endure the influence of SVRS, coming directly from the Sun (*i.e.* on the diurnal side of the Earth), without any noticeable reactions, even during explosive processes on the Sun. However, for humans suffering from atherosclerosis, chronic diseases or acute infections, nervous or brain disturbances, an abrupt impact of SVRS can have tragic consequences.

But really fatal consequences can result from focused SVRS fields coming out of the Earth's interior in the early morning (3 to 8 a.m.), if a collimated SVRS flow from an active area or a coronal hole situated in a geo-active position come onto the illuminated antipode part of the globe (fig. 1). These early morning hours are characteristic of maximum amounts of lethal cases resulting from the above-described diseases and disturbances.

SVRS fields are not perceived directly by human organs of sense, but are felt indirectly, as a result of their influence on the internal organs, in the form of dizziness, head-ache, nausea, sudden weakness, etc. Researchers who collected specimens of vegetation and soil 24 h after the outcome of focused SVRS beams (crop circles) had such complaints. An elderly researcher, who investigated a crop circle, lost capacity for work for two days because of several symptoms, such as a heavy head, a slowed flow of thought and a loss of concentration; the symptoms are characteristic for a strong poisoning.

In the consideration of biological and physiological effects of solar emissions, one should also take into account potential simultaneous influence of geomagnetic and meteorological factors; according to statistical data, these factors have a specific effect on the human organism; however, their influence is certainly inferior to that of the impact of SVRS.

10. – Cosmological aspects: antigravitation and dark energy

Since all stars are capable of emitting some amount of SVR, one of the most important conclusions is that in the Universe there is an antigravitational effect of vortex radiation (extrusion) upon matter masses around the stars, together with the stellar wind driven away by spirally vortical field (SVF). Consideration of contemporary problems of cosmology, viz. of the abstract “dark energy”, leads to the idea that its role belongs to the above-described SVF. In fact, SVR apparently propagates from stellar sources uniformly over the entire Universe, playing the role of quasi-antigravitation concerning masses it comes across on the way of its spreading (the sweeping effect).

The term “dark energy” (DE) is naturally related to SVR because SVR has been concealed from science under various names (*e.g.*, Z is the Chizhevsky radiation [11], the Gurvich “bio-field” [12]; N is the Blondlo radiation [13], etc.) in the absence of any detectors of vortical radiation. However, one finds out that the “dark energy” has no definite form because several versions of this kind of energy are considered. Cosmologists put forward two especially different forms of DE, one of which is characteristic of an increasing negative energy as DE moves into the depths of outer space, and the other of a decreasing one. The last version of DE, named “quintessence”, resembles SVR.

In a formal reflection, the spirally vortical field can be presented as a cosmological constant Λ (lambda), introduced by A. Einstein into the General Relativity Theory equations in 1917. However, in 1929 he decided it was a great mistake. But today we

should probably assume that Einstein was wrong in 1929, but it was not a great mistake on his part but rather a delusion.

11. – Conclusion

In conclusion it should be noted that the manifestations of the already known and yet unknown forms of solar radiation could be intercorrelated. This circumstance makes it difficult to build a comprehensive model of the observed phenomena. And in this connection, one should realize that the suggested numerical values of energy parameters must be considered very preliminary. A short-range monitoring and subsequent analysis of the totality of solar phenomena and the response in the Earth's atmosphere, accompanying such phenomena, would make it possible to discover the delay of the response on different atmospheric levels and in different geographical regions. An increased amount of observations would probably allow estimating all kinds of energy carriers participating in the process of solar-terrestrial relations. After the details of the bonding mechanisms are accurately investigated, the study of solar-terrestrial impacts will have a statistical basis. Thus, it will become possible to predict reliably the anomalous changes of weather and catastrophic events in various regions of the globe.

REFERENCES

- [1] NIKOLSKY G. A. and SCHULTZ E. O., *Violet "needles" of the diurnal star*, State Univ. St. Petersburg Press, No. 23 (3519), November 1999, pp. 20-22 (<http://www.spbumag.nw.ru/oldindex.html>).
- [2] NIKOLSKY G. A., SCHULTZ E. O. and MAKAROVA V. V., *Discovery of powerful non-equilibrium anisotropic multispectral radiation from faculae magnetic structure. Solar synchrotron masers. JENAM 2000. Symposium on "Spectrophotometric and Photometric Catalogues. Standard Stars and Solar Analogues", June 5-8, 2000*, Proc. Pulkovo Observatory, St. Petersburg (2000), pp. 170-183.
- [3] KONDRATYEV K. YA. and NIKOLSKY G. A., *Issledovaniya Zemli iz Kosmosa*, No. 3 (2005) 22; KONDRATYEV K. YA. and NIKOLSKY G. A., *Nuovo Cimento C*, **29** (2006) 253.
- [4] KOZYREV N. A., *Causal or non-symmetric mechanics in the linear approximation* (USSR Acad. Sci. Press, Pulkovo) 1958; *Problemy Issledovaniya Vselennoy*, No. 9, Moscow-Leningrad (1980).
- [5] KRYLOV S. M. and SOBOLEV G. A., *Dokl. Russ. Acad. Sci., Ser.: Geophys.*, **339** (1994) 396.
- [6] WEBER J., *Phys. Rev. Lett.*, **25** (1970) 180.
- [7] OLKHOVATOV A. YU., *Izv. Russ. Acad. Sci., Ser.: Physics of the Earth*, No. 3 (1995) 88.
- [8] PLATOV YU. V. and RUBTSOV V. V., *UFO and Modern Science* (Nauka Publ., Moscow) 1991.
- [9] PRINGLE L., *Crop Circles: The Greatest Mystery of Modern Times* (Helios Publ., Sofia) 2002 (in Russian).
- [10] A mysterious natural phenomenon in the Khabarovsk region (http://www.1tv.ru/owa/win/ort6_main.main?p_.news_title_id=78934).
- [11] CHIZHEVSKY A. L., *The Cosmic Pulse of Life: The Earth in the Sun's Arms. Heliotaraxis* (Mysl Publ., Moscow) 1995.
- [12] GURVICH A. A., *The Theory of the Biological Field* (Sov. Nauka, Moscow) 1944.
- [13] BLONDLOT M. R., *Memoires et Communications. Academie des Sciences*, 9 Nov. (1903).