– An international journal for New Concepts in Global Tectonics –

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Please feel free to contact the CEO of the IEVPC, Mr. Bruce Leybourne, at mail@ievpc.org For contact, correspondence, or inclusion of material in the NCGT Journal please use the following methods: NEWCONCEPTS IN GLOBAL TECTONICS. 1. E-mail: louis.hissink@bigpond.com.com; 2. Mail, air express, etc., 33 Fields Road, Tanja, NSW 2550, Australia (files in MS Word or ODT format, and figures in gif, bmp or tif format) as separate files; 3. Telephone, +61 419 283 775. DISCLAIMER: The opinions, observations and ideas published in this journal are the responsibility of the contributors and do not necessarily reflect those of the Editor and the Editorial Board. NCGT Journal is a refereed quarterly international online journal and appears in March, June, September and December. For Mac computer users, this journal in pdf format must be opened with Acrobat or Acrobat Reader. ISSN number; ISSN 2202-0039.

From The Editor

This issue of the NCGT Journal deals with a couple of philosophical issues and an article by V. Gordienko describing the viscosity of the upper mantle, an important factor in understanding tectonics. Cliff Ollier reviews the latest publication from the Non-governmental International Panel On Climate Change (NGIPCC, and in a letter Valentino Straser proposes a new symposium on the solar contribution to earthquake processes.

During the last week of June a large number of earthquakes occurred along with some rather extreme weather phenomena including the highest ever recorded temperature in France, snow in Colorado and record low temperatures in Australia, among other occurrences. Weather changing? Obviously. Human induced? The answer to that questions depends on the magnitude of the human hubris factor, and how realistic and accurate the physical climate models are, but it's fairly obvious from the mainstream media surprise that snow in Colorado in summer is unexpected, so we can tentativley assume we don't really understand the Earth's geophysics and the physics of the weather systems.

Climate science limits the global weather energy input solely as Total Solar Irradiance (TSI), but ignores the solar electromagnetic or plasma input that is assigned to the human climate forcing by IPCC definition. This fact was highlighted in the recent Suspicious Observer's conference in Albuquerque, New Mexico this year(2019), when convenor Ben Davidson neatly summarised the problem with two slides, the upper, Fig 1, as the consensus IPCC model and the lower, Fig 2, as physical reality. QED.

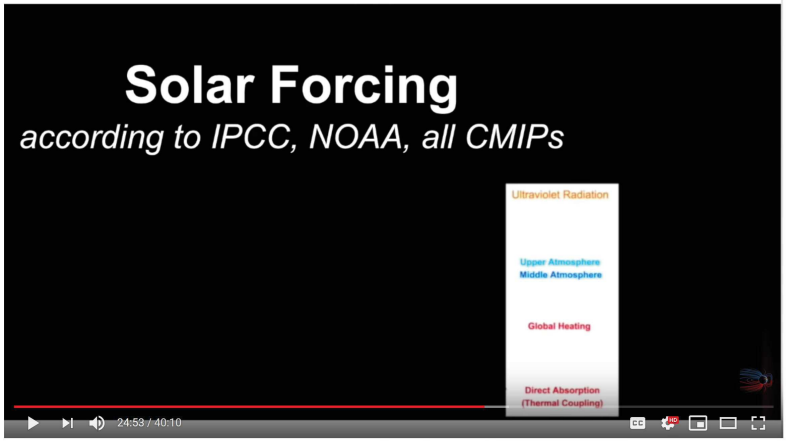

Fig. 1 IPCC Standard Model

Fatal Flaw In Climate Change Science

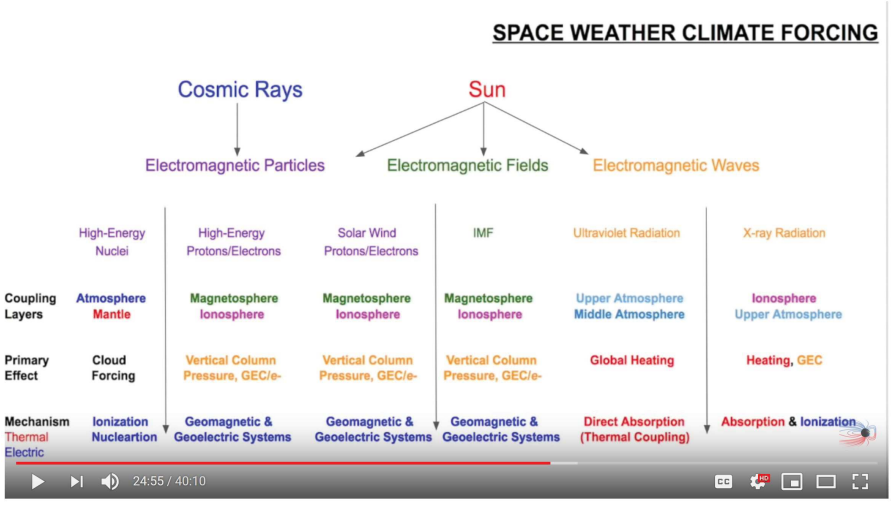

Fig. 2 Reality

Fatal Flaw In Climate Change Science

More at https://www.youtube.com/watch?v=NYoOcaqCzxo&t=2s

Letters

Dear Editor,

After a long pioneering period, the physical relationship between solar activity and earthquakes is now widely accepted and from the "Hypothesis" we are now gradually travelling to the "Theory".

The scientific contributions on this innovative theme were numerous at the EGU General Assembly 2019 in Vienna and some 16,273 scientists from 113 countries joined together and encouraged much discussion on the scientific themes of Geosciences. To affirm the scientific interest for the link between solar activity and terrestrial dynamics is the study presented by Gerald Duma and Friedemann Freund titled "Undoubtedly, solar flare activity acts as a trigger for strong earthquakes" which is in synergy with the research presented by the IEVPC Team "Multi-parametric Earthquake Forecasting From Electromagnetic Coupling between Solar Corona and Earth System Precursors", signed by Valentino Straser, Hong-Chun Wu, Arun Bapat, Natarajan Venkatanathan, Zhonghao Shou, Giovanni Gregori, Bruce Leybourne, and Louis Hissink.

In the titles of the studies presented at EGU 2019 the term "Multi-parametric" is used to indicate the scientific multidisciplinary synergy that is needed to understand the complexity of natural phenomena. When this stage is reached we can then talk about a new objectivity and a starting point for the study of earthquakes and the related crustal diagnosis. Objectivity is achieved only through the sharing of thinking minds which, as the great J. H. Poincarè said, through continued dialogue and therefore that "without dialogue there can be no objectivity".
From my reflections of the post-Vienna conference a proposal is born: to organize a symposium specifically dedicated to this emerging scientific topic. Parma, my city, would be happy to welcome this event.

Valentino Straser

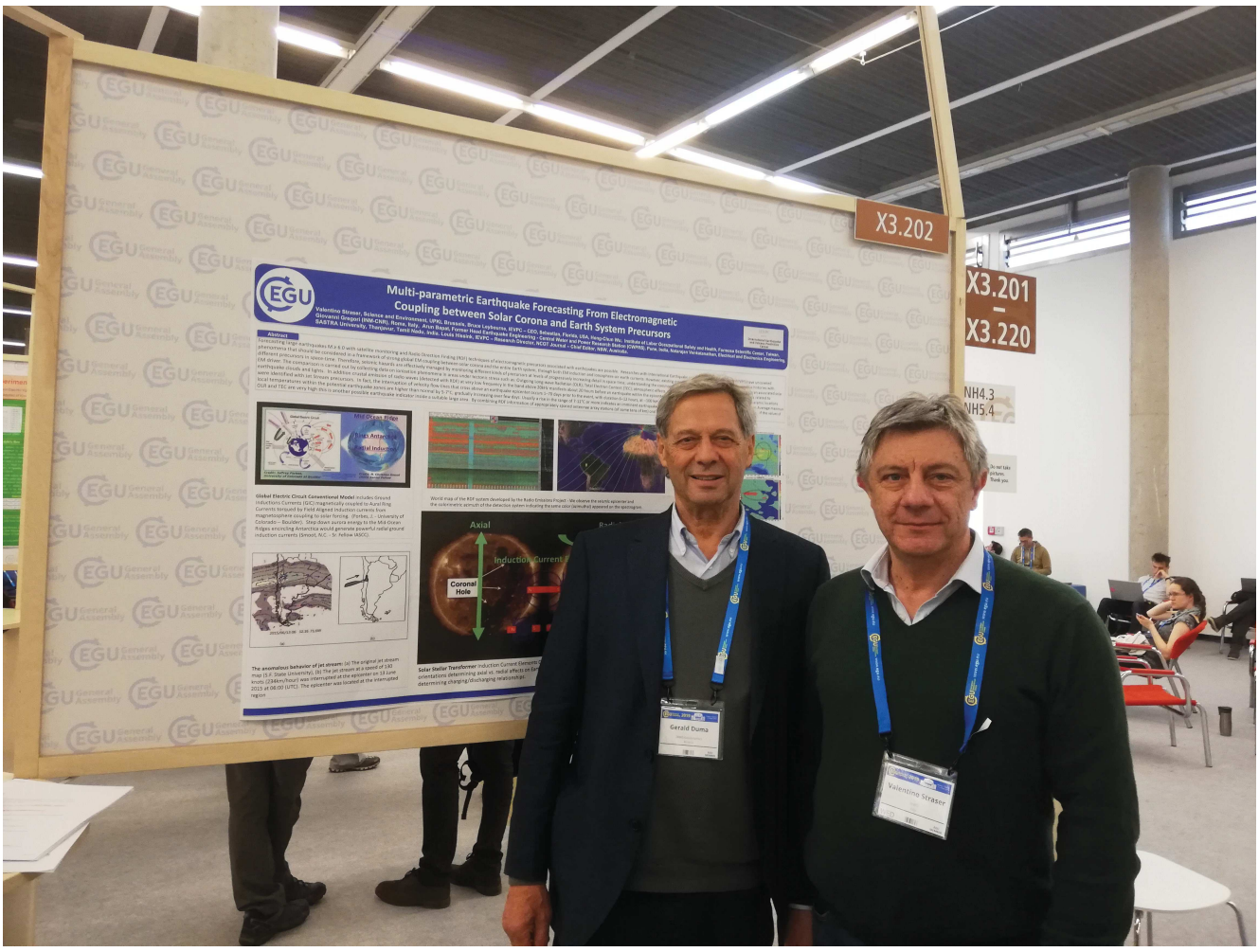

Plate 1: Gerald Duma (L) and Valentino Straser (R) in front of IEVPC Poster, EGU 2019

Seismic waves, water and electromagnetic background for DNA research on Mars

Valentino Straser

International Earthquake and Volcano Prediction Center

Abstract

One of the most amazing discoveries in recent years is the transmission of DNA in an aqueous solution stressed by resonance phenomena in coherent structures. The controversial technique used by Luc Montagnier's team had used a 7 Hz background excitation to carry out the oscillation transmission of nanostructures originating from DNA in pure water. Starting from this experiment, the collection of geomagnetic data, produced both from endogenous activity and from solar wind, was carried out starting from 2012, which preceded earthquakes of magnitude equal to or greater than 6. To date there are over 950 data collected and all the earthquakes show to be always preceded by anomalies lower than 5 Hz and in many cases in the ELF range, between 5 and 10 Hz. The Earth, but the experiment could also extend to Mars or other celestial bodies of the Solar System, it proves to be a natural laboratory for the production of frequencies that, and in particular conditions, could give rise to the transmission of DNA in an aqueous medium, which follows the experiment of Montagnier. The recent discovery of water reservoirs in the subsoil of Mars, of bacterial traces in the ALH-77005 meteorite and the occurrence of Marsquake of equal intensity to the earthquakes, could open a new scenario for the search for traces of life on Mars, present or passed. But the most interesting data comes from the recent recording of a Marsquake candidate who produced a frequency in the range between 5 and 10 Hz.

Key Words: Mars, DNA, electromagnetic waves, water, marsquake, solar wind, life on Mars.

1. Introduction

The search for organic traces and testimonies of life on Mars represents one of the most fascinating themes of Science. After the missions carried out over forty years ago, the research has accelerated with the recent space missions and, above all with the identification of water in the Martian subsoil (Orosei et al., 2018). This is a discovery that opens new perspectives on the search for living forms as we know them on Earth and forms of life unknown to us. The presence of water in the Martian soil, which was in the distant past, is no longer a novelty today. In fact, the morphology of the "Red Planet", with traces of erosion, sedimentation and phenomena associated with karst morphologies, reveals a modeling of the primitive Martian hydrosphere (Baioni et al., 2014; Baioni and Tramontana, 2016). The upcoming missions, and among these ExoMars (Parnell et al., 2007), have among their aims the search for evidence of biological and non-biological compounds on the Martian surface. The target compounds were selected to represent meteoritic input, fossil organic matter, existing or recently dead organic matter, and its possible contamination. Among the recent theories of Bio-Physics is included the one proposed by the French virologist Luc Montagnier and by Italian theoretical physicists, such as Emilio Del Giudice, regarding the transmission of DNA at a distance in an aqueous medium subjected to electromagnetic background noise (Montagnier et al., 2011; Del Giudice and Tedeschi, 2009). According to the Montagnier Team study (2009), some bacterial DNA sequences would induce low frequency electromagnetic signals in highly dilute aqueous solutions. These solutions would then retain a memory of the characteristics of the DNA

fragments, even after dilutions so strong as to eliminate all traces of DNA from the solutions themselves. This memory, according to Montagnier, could be transmitted at a distance, exploiting the electromagnetic signals emitted and the recreating of the molecule thanks to precise enzymes that interact with the electromagnetic impression. In the experience carried out by Montagnier and his collaborators, two adjacent and physically separated test tubes were placed inside a copper coil and subjected to a weak electromagnetic field of 7 Hz. The apparatus was subsequently isolated from the natural magnetic field terrestrial to avoid interference. A test tube contained a fragment of DNA 100 bases long, a second test tube pure distilled water. After 16 - 18 hours, both samples were subjected to a routine method used to amplify traces of DNA, using enzymes, in order to reproduce copies of the original material. Montagnier then stated that many species of bacteria and many viruses emit electromagnetic signals exactly as some human cells do. The environment in which biophysical processes take place can be associated with a context of resonance, according to the modern physical concept of "coherence". DNA emits electromagnetic signals and spontaneous quantum light, already demonstrated and discussed by biophysicist and Nobel laureate Fritz-Albert Popp (2003), (Cohen and Popp, 2003) and by eminent scientists such as Herbert Froehlich and Nobel prize winner Ilya Prigogine. The search for low frequency signals, in the range between 0.1 and 10 Hz (Straser et al., 2015), found a positive result in the search for electromagnetic signals generated by endogenous phenomena in the pre-seismic stage (Straser, 2013) . The research, begun in 2009, concerns the collection and analysis of over 950 earthquakes on a global scale of magnitude equal to or greater than 6 on the Richter scale. The low frequencies have also been recorded for earthquakes that are very distant or with a magnitude greater than 6. The analysis of the spectrograms has shown that frequencies very similar to those used by the Montagnier Team can be produced in a natural environment such as the Earth. laboratory experiment for DNA transmission in aqueous solution. The data, therefore, can be considered a test bed to export the laboratory experience in a natural environment like the Earth, but also for other celestial bodies and among these Mars, also in light of the recent discoveries concerning traces of microbial life from the past found in the ALH-77005 meteorite (Gyollai et al., 2019). The presence of water in the subsoil of Mars and the possibility of transmitting DNA in aqueous solution in particular conditions, have inspired this study, aimed at searching for natural sources capable of producing an electromagnetic "background noise" of 7 Hz in a natural environment terrestrial.

2. Marsquake

The manifestations of endogenous activity on Mars are now certain, thanks also to the sound recording of a recent Marsquake and to the study of an earthquake that had produced an energy comparable to a magnitude 7 at an unspecified point in the Cerberus Fossae fault, near the Elysium Mons. volcano (Roberts et al, 2012). The study of the endogenous activity of Mars is now entrusted to the NASA InSight space mission and no longer to indirect deductions. The instruments laid by the lander on the Martian soil in 2018 will in fact study the seismic activity of the Red Planet for almost two Earth years (Witze, 2018). The InSight lander should measure 50-100 earthquakes, as well as monitor changes in the Martian magnetic field, which will help identify non-seismic activity sources (https://mars.nasa.gov/insight/spacecraft/instruments/seis /).And since the seismic waves carry the information of the rock strata they cross will contribute to a better understanding of the internal structure of Mars. But the most interesting implications of this study are those related to the role that marsquake seismic waves could play for life on the Red Planet. If the faults along the Cerberus Fossae region are active, and the earthquakes are triggered by the movements in the magma of the nearby volcano, Elysium Mons, the energy that volcanic activity under the surface of Mars is able to release , in the form of heat, may be sufficient to melt the ice. And the resulting liquid water could give rise to a habitat favorable to life. 6 April 2019 The highly sensitive InSight

probe seismograph recorded the first vibration of the Martian soil, associated with a marsquake, recorded by the Seis seismometer (Witze, 2019; www.nasa.gov/Insight). It is a weak signal, so weak that it was not possible to see the return wave after crossing the planet. After the arrival of the probe, the InSight team had recorded only microvibrations induced by the Martian wind. The vibration recorded by the Seis seismometer shows an interesting fact for this study, namely the production of low frequencies, between 5 and 10 Hz, similar to those recorded by the geophone of the Rovigo station (Italy).

3. Materials and Methods

The method adopted is deductive and based on an instrumental detection system. The data relating to the solar, seismic and geomagnetic activities, and to the radio emissions, were compared with each other to test any interconnection of electromagnetic type. The data on solar activity and seismic activity were real-time retrieved from the websites.

To realize this study, I have analyzed the space weather conditions (near Earth) and the characteristics of the geomagnetic field in the days that preceded the strong earthquake. In particular, the data taken into consideration were: data on the solar activity concern variation in the ionic density of the solar wind detected by the ACE (Advanced Composition Explorer) satellite orbiting the L1 point (Lagrange point) at 1.5 million kilometers from Earth; Solar Wind Density (ENLIL Heliosphere Ecliptic Plane), variations in interplanetary magnetic field or IMF (GOES); X-ray flux (GOES), temporal monitoring of CMEs events or Solar Coronal Mass Ejections (ISWA); monitoring of the coronal hole position on the Sun's surface (NSO/SOLIS-VSM Coronal Hole); Solar Wind Velocity (ENLIL Heliosphere Ecliptic Plane); Electron flux (NOAA/SWPC); Magnetopause Standoff Distance (CCMC/RT). The data on geomagnetic activity used for the study are represented by Kp-Index and were provided by Space Weather Prediction Center (SWPC). The data on geomagnetic activity provided by major geomagnetic observatories situated in Northern Europe and the Russian Republic. The data on Geomagnetic and Electromagnetic Environmental Monitoring provided by Radio Emissions Project’s Station, located near the cities of Albano Laziale and Lariano, Rome, Italy. The data on M6+ global seismic activity were provided by United States Geological Survey (USGS).

The choice to monitor the SELF-VLF band (> 0-30kHz), and in particular for frequencies below 10 Hz, is scientifically based on the results of the studies conducted on Electromagnetic Seismic Precursors starting from the 70s, when the scientific community international began to reconsider the results of the first correlation studies conducted between solar activity and seismic activity. (Moore, 1964; Molchanov et al. 2006, 2016; Fraser-Smith, 1990; Karakelian et al., 2002; Kotsarenko et al., 2004, 2007; Prattes et al., 2008; Akhoondzadeh et al., 2013; Athanasiou et al., 2011; Ohta et al., 2013; Straser et al, 2012-2017; Cataldi et al., 2013-2017).

4. Monitoring and instrumentation system Radio Emissions Project

Monitoring of pre-seismic radio emissions is accomplished through the use of a series of radio receivers able to work efficiently over a specific bandwidth. The Radio Emissions Project (Rome, Italy), developed by Gabriele Cataldi and Daniele Cataldi, mainly uses two types of radio receivers to continuously monitor the electromagnetic spectrum located between the lower limit of the SELF band (Super Extremely Low Frequency, 0-30Hz) and the upper limit of the VLF band (Very Low Frequency, 3-30kHz): a total bandwidth of about 30kHz (> 0-30kHz). The station is equipped with two main radio receivers of which the electromagnetic monitoring station of the Radio Emissions Project is equipped. The first receiver (SELF-ULF Receiver) is equipped with a magnetic induction sensor (coil antenna) vertically aligned by ad-hoc electronics to work efficiently between 0.001 and 700-800Hz. The second receiver (SLF-VLF Receiver) is connected to a system of orthogonal loop antennas, horizontally aligned, able to work efficiently between 0.1 and 30kHz with RDF (Radio Direction Finder) technology. The SELF-ELF receiver (> 0-30Hz) consists of an amplification unit and a magnetic induction sensor represented by a coil antenna with a ferromagnetic core containing tens of thousands of turns while maintaining a low impedance. Through a software, the data output from the amplification system are converted into 24-bit digital signals and sampled at 192kHz. A further monitoring station is also a monitoring station in Rovigo (North East, Italy) where a geophone is located (Fig. 1).

Figure 1. Index map. Monitoring station in Rome (square with the number 1 on the side) and Rovigo (square with the number 2 on the side).

5. Data analysis

1 The analysis of the ionic variation of the solar wind in the interplanetary medium has allowed to determine that the earthquakes had occurred after a gradual variation, i.e. lasting more than 24 hours, in the proton density with energy subdivided into five groups: 1060-1900 keV, 795-1193 keV, 310-580 keV, 115-195 keV, 47-68 keV.

The flux of ions from the Sun that reaches the Earth is mainly due to explosions that occur in the solar flare. Fluxes of ions are also originated from coronal holes (50) and are high-density fluxes.
In some cases, the increase of the electron density was superimposed on the increase of the proton density, with energy distributed into two groups: 175-315 keV e 38-53 keV

The variation in proton density observed preceded potentially destructive earthquakes, was divided into four time intervals that were analyzed as follows:

A) during the increase phase of the proton density;
B) at the maximum value recorded of the proton density;

C) during the decrease phase of the proton density;
D) after the complete decrease of the proton density which restored to the basic level.
Basic level in this study refers to the proton density whose energy is included within 1220 and 761 keV (values derived from the ISWA charts) and within 1900 and 1060 keV (EPAM charts). The basic level of protons that have this type of energy corresponds exactly to 0.1-0.5 particles / cm^2/s.

2 The variation of the terrestrial geomagnetic field has been analyzed in the components related to the Z, H and D. The Z component is a vertical component, assumed positive when it's directed towards the inside of the Earth. The H component is the horizontal component, namely the component aligned in the direction of the magnetic North. The D component is magnetic declination angle between the direction of H and the geographic meridian passing through the point in question (Dikson Geomagnetic Observatory), taken as positive when H is directed to the East of the geographic Nord.

3 The electromagnetic monitoring station of Radio Emissions Project is the only electromagnetic monitoring station located on the Italian territory that has been specially created for the study of electromagnetic seismic precursors (SEPs) and the seismic geomagnetic precursors (SGPs), and is also active 24h7.

The station is equipped with two prototypes of radio receivers made by Gabriele Cataldi designed to monitor the Earth's natural electromagnetic background between the SELF band (f <3 Hz) and the VLF band (3- 30kHz) and, potentially, it may be employed to monitor the electromagnetic spectrum up to a frequency of 65MHz.

The heart of the VLF monitoring station is represented by a radio receiver prototype equipped by LM386 chip: a very common operational amplifier in the electronic field capable of working at a bandwidth of 300kHz and providing an amplification of between 20 and 74 dB.

This is the same chip found in the famous receiver "INSPIRE VLF-3" but unlike this last, the prototype developed by Gabriele Cataldi has a single amplification stage (always represented by the LM386 chip) that provides a gain of 44,95dB (177x).

This receiver is connected to a loop antenna of square shape of dimensions of 60 x 60cm containing 50 turns of enameled copper wire of 0.18mm diameter. The antenna is aligned in the direction of 310°NW and maintains a high directivity in this direction and in the opposite direction, i.e. at 130°SE. Instead, it is "blind" to the electromagnetic radiation in the direction of 40°NE and 220°SW corresponding to the two null points.

6. Data

The data relates to the collection of seismic events of magnitude equal to or greater than 6 on the Richter scale, which occurred on a global scale, found on the websites and published in real time (Usgs, Ingv, Emsc) 24/7. The data considered concern the place, the energy of the earthquake, the date and time and the time interval between the variation of proton density, accompanied by the emission of low frequency waves in the interval considered in this study, and the main shock.

7. Discussion

The natural radio emissions that can be detected at a frequency lower than 50 Hz, derive from:
1. modes of free oscillation of the magnetospheric cavity (0.001 Hz - 0.01 Hz);
2. modes of resonance of the alpvenic cavity (0.1 Hz 10 Hz);
3. modes of longitudinal resonance of the Earth-ionosphere cavity (6 Hz - 50 Hz);
4. emissions related to various processes of instability in the magnetospheric and ionospheric plasma (0.001Hz - 100 kHz);
5. secondary emissions generated by magneto-hydrodynamic waves produced inside the magnetosphere, excited by artificial and natural EM transients (10 Hz - 20 kHz);
6. emissions associated with tectonic and volcanic phenomena (0.001 Hz - 1000 Hz);
The intensity of ionospheric emissions varies according to some factors, including: time, the level of terrestrial emissions and the changes in the ionospheric layer, solar activity and geographical location. While the variations of the magnetospheric background occur mainly due to the changes in the solar wind beyond the time.

The 950 earthquakes of magnitude greater than or equal to 6 on the Richter scale, studied starting in 2012 (Straser and Cataldi, 2015) were preceded by radio frequencies in the ELF range, and by a variation in the proton density of the solar wind, both candidates for this study.
All earthquakes analyzed were preceded by an increase in the electromagnetic background, lasting some hours, in the ELF band. Within this trend, at least four types of increments can be identified, different in shape and duration: from gradual to impulsive.
The first type (A) concerns a modest increase in frequency for a duration that varies from 12 to 15 hours; the second (B), 6-8 hours, the third (C) 4 hours and the fourth (D), two hours before the main shock, with high frequency values. (Fig. 2)

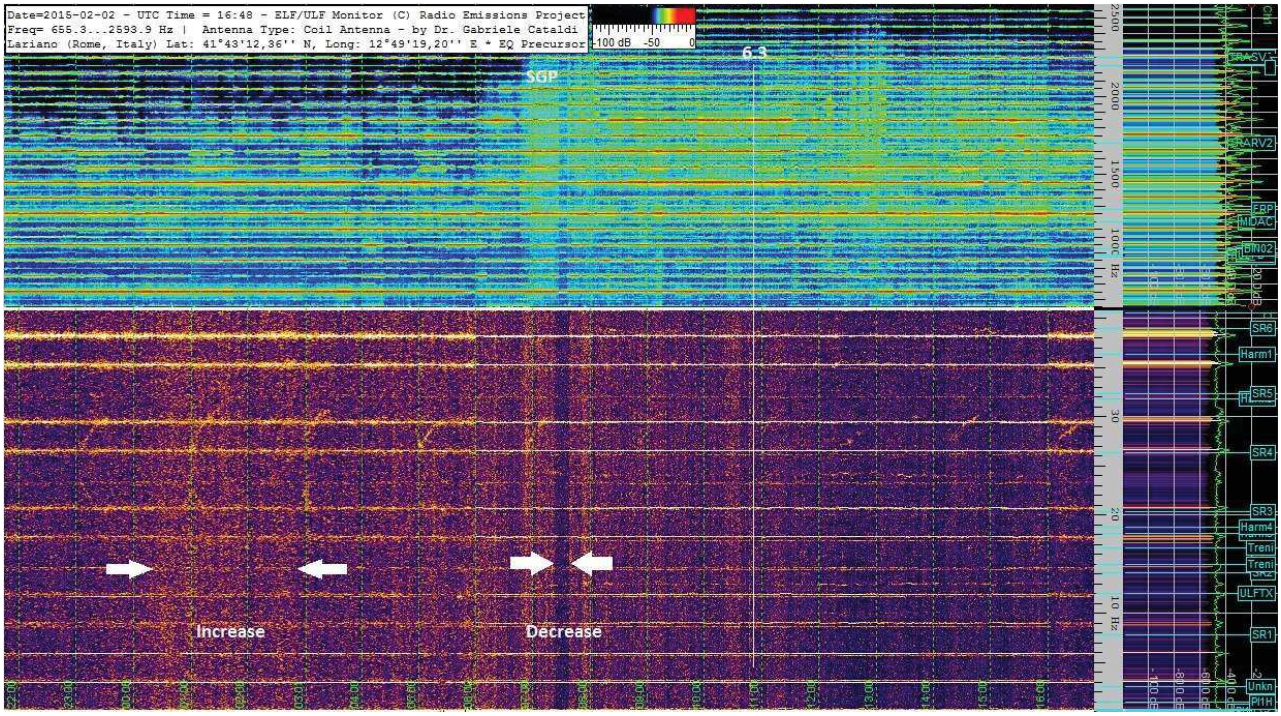

Figure 2. Electromagnetic background trend before a seismic event, equal to or greater than M6. The main shock is preceded by increments that occur at intervals ranging from 15 to 12 hours, up to two hours before the earthquake. In the image we can see that the main shock occurs when the increase of the electromagnetic background ceases. In particular, the impulsive trend lasting about 4 hours is indicated, followed by a decrease in the electromagnetic background and the earthquake of (Argentina, 2 February 2014, magnitude M6.3). Courtesy Gabriele Cataldi, Radio Emission Project – Rome, Italy.

Similar results can be obtained with a geophone (I / O Sensor Nederland bv, SM-24 / UB 10 Hz 375 Ohm. Applications: 2-D & 3-D seismic exploration with bandwidth from 10 Hz up to 240 Hz, www.geophone. com) located about a meter deep in another Italian city (Rovigo), located in the North-East and about 400 kilometers from the Radio Emission Project station. Also in this case the recorded signal falls within the range of the ELF, with frequencies that are concentrated within 10 Hz, both before and after the main shock, and for an earthquake with an epicenter located a few tens of kilometers from the detection station, both for earthquakes with epicentres greater than 10,000 kilometers (Fig. 3).

The appearance of low frequency signals (ELF) caused by changes in endogenous activity were also detected in correspondence with changes in micro-gravity, for example during the two earthquakes in Italy in 2012 in the Po Valley, of magnitude 5.9 (Fig.4).

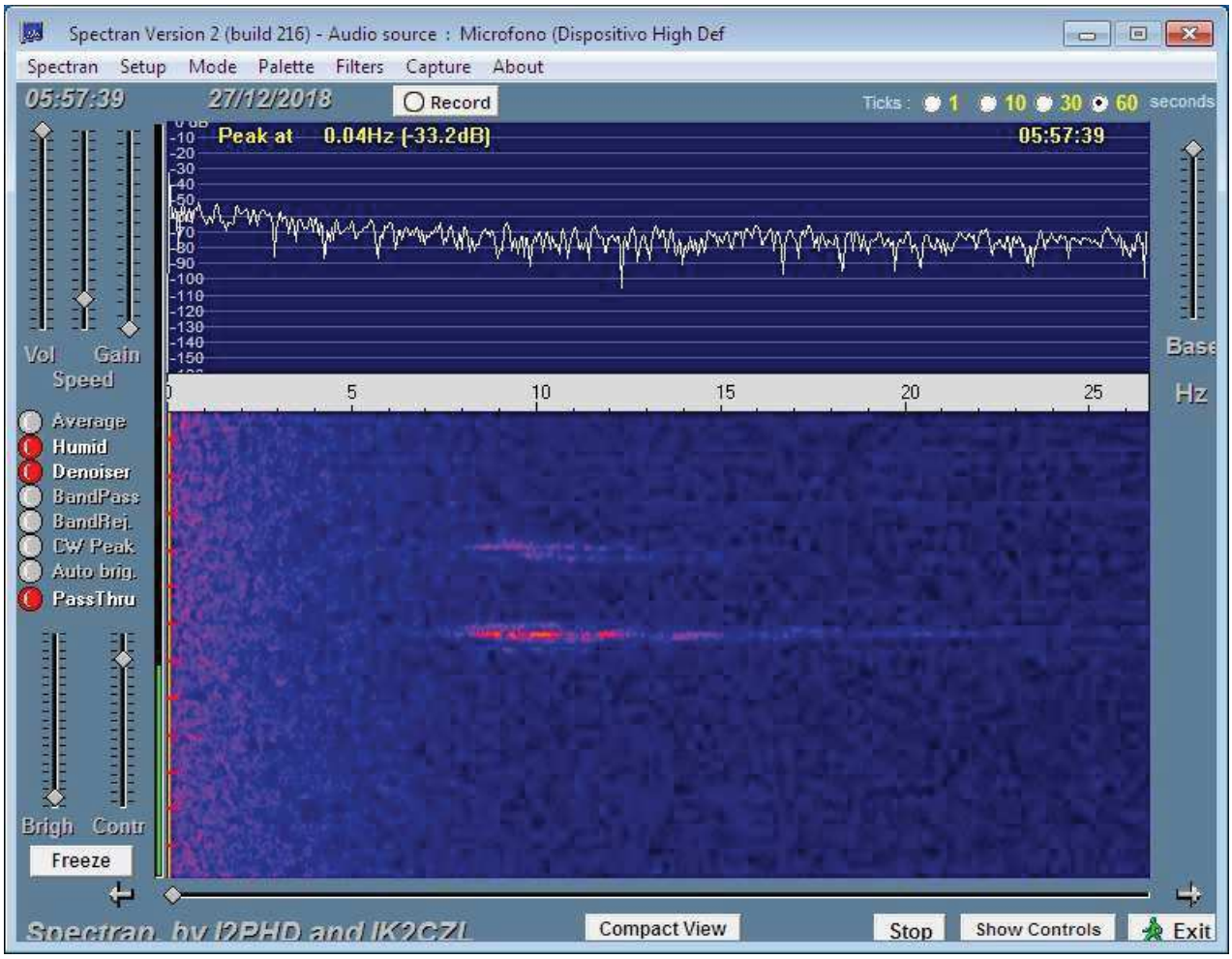

Figure 3. Screen of the geophone SENSOR NEDERLAND B.V. model SM-24, located in Rovigo (North East, Italy) taken on 12/27/2018 at 05.57 with a peak between 7-13Hz. The screen shows the interference investigated in this study. The signal was detected about 26 hours after the earthquake of Mw 4.9 on date 12-26-2018 and time 03:19:14 (Italy) in region 4 km NE Viagrande (Catania, Italy).

From the graph of the earthquake distribution during the year exceeding a magnitude 6 we note a "seasonality", (Table 1) with a greater concentration in January and February, in April, and between August and September. For an element of coincidence, we also note a seasonality due to the concentration of methane on Mars, which occurs between summer and autumn and winter (Yung et al., 2018; Mumma et al., 2003, Formisano et al., 2004)

	2012	2013	2014	2015	2016	2017	2018
January	10	7	6	4	12	8	12
February	9	23	8	11	8	4	11
March	13	5	17	8	5	4	8
April	19	16	26	14	24	7	5
May	9	12	18	14	5	8	6
June	11	8	16	11	11	10	2
July	8	12	18	11	8	7	6
August	13	11	8	3	13	8	24
September	8	16	8	22	13	9	11
October	10	16	8	4	7	10	17

November	12	12	13	17	12	17	12
December	11	4	9	8	19	10	14

Table1. Number of seismic events of magnitude equal to or greater than M6 on the Richter scale recorded in the survey period, from 2012 to 2018. The table shows the distribution of earthquakes in relation to seasonality. As can be seen, the greater frequency of seismic events is concentrated in the spring period (April), between summer and autumn (August-September), and in the winter months (November-December).

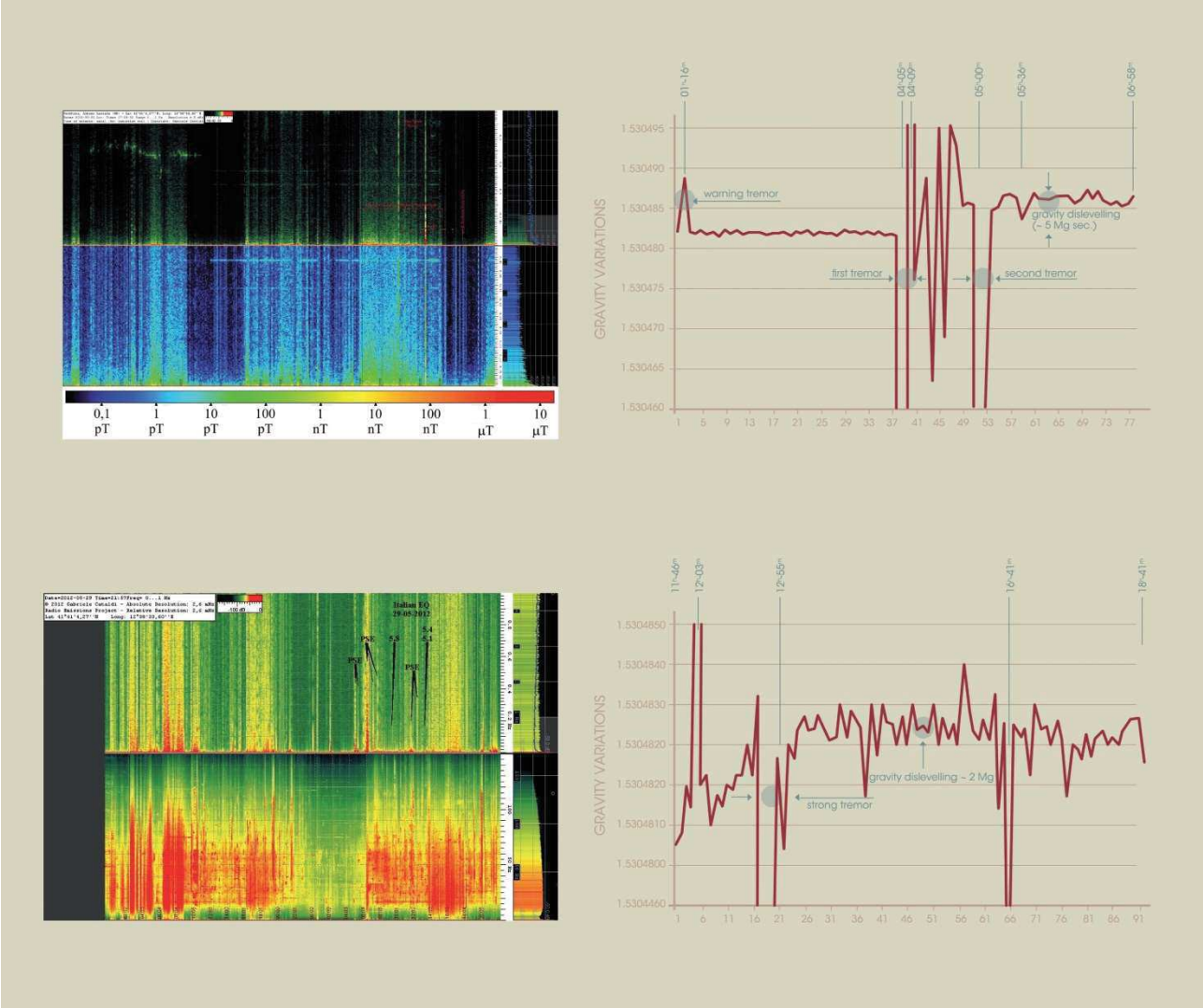

Figure 4. The appearance of ELF with changes in micro-gravity during two earthquake occurred in Italy

7.1. Ionic variation of the interplanetary medium

Following the evolution of solar activity, it is possible to understand that when the solar wind strengthens (increase in the density and velocity of the subatomic particles that compose it) and affects our planet, disturbances of the geomagnetic activity that occur are generated. through intense radio emissions, the "ELF storms" (the frequency of these signals falls within the ELF band: 0.001-

30 Hz). Analyzing the temporal evolution of these storms, the Radio Emissions Project (Rome - Italy) has succeeded in verifying that the global seismic activity M6 + is associated with terrestrial geomagnetic activity. The solar ionic flux (solar wind) consists mainly of protons and electrons that propagate through the heliosphere following a spiral path, ie along the extension of the solar magnetic field. The ionic density level and the temporal modulation of the same are used as indicators of solar activity, in relation to the energy level of the particles. The increase in the ion density of the interplanetary plasma was analyzed in five energy fractions of the proton density (761-1220 keV; 1060-1900 keV; 310-580 keV; 115-195 keV and 47-68 keV).

Following the evolution of solar activity it was possible to understand that when the solar wind strengthens (increase in the density and speed of the subatomic particles that compose it) and affects our planet, disturbances of the geomagnetic activity that occur are generated. through intense radio emissions called "ELF storms" (the frequency of these signals falls within the ELF band: 0.001-30 Hz). Analyzing the temporal evolution of these storms, the Radio Emissions Project (Rome - Italy) has succeeded in verifying that the global seismic activity M6 + is associated with terrestrial geomagnetic activity. The study conducted from 1st January 2012 to 31st December 2018 by Gabriele Cataldi, Daniele Cataldi and Valentino Straser made it possible to ascertain that 2.63% of potentially destructive earthquakes (M6 +) occurring on a global scale are preceded by an ionic increase " impulsive"; 97% of potentially destructive earthquakes are preceded by a gradual ionic increase (Straser and Cataldi, 2014; Cataldi et al., 2019), while 0.37% of potentially destructive earthquakes are preceded by both types of ionic increase, caused by a solar flare, from a coronal hole or simply from the magnetic loops that form above the sunspots. Impulsive increments are characterized by a high electron / proton ratio and modest ionic increments, generally lasting less than 24 hours. The gradual increases are instead characterized by a large ionic increase, a low electron / proton ratio and a duration of more than 24 hours, which in some cases can last even for a few weeks.

On average, between the beginning of the Ionic increment (measured by the Advanced Composition Explorer - ACE and Deep Space Climate Observatory - DSCOVR satellites, in orbit at the Lagrange L1 point, 1.5 million km from the Earth) and the event seismic activity associated with it takes about 5.36 days (the data is based on the analysis of solar ion flux modulation and of 923 seismic events that took place between January 1, 2012 and December 31, 2018) that correspond to 128.79 hours (Fig. 5).

At this time interval it is necessary to consider that the interplanetary plasma to travel the Sun-Earth distance takes on average 2 or 3 days. Taking this time into account, the recovery of the M6 + global seismic activity occurs on average with an advance of about 7.3 to 8.3 days; considering only the solar ionic flux and not the electromagnetic phenomena that produce it. Moreover, the analysis of time differences showed that these tend to decrease as the magnitude of the seismic event increases (Cataldi et al., 2013). For these characteristics, the analysis of this type of event that precedes the global seismic activity on Earth was named by Gabriele Cataldi, Daniele Cataldi and Valentino Straser, "Interplanetary Seismic Precursor" (ISP). This precursor candidate can be monitored a few days before the ionic flow it generates.

Scientific Research Project For Solar, Interplanetary And Geomagnetic Seismic Precursors Monitoring — Radio Emission Project

Time interval (in minute) that elapses between the start of solar wind proton density increase and the M6+ earthquakes occurred on a global scale in 2012-2019

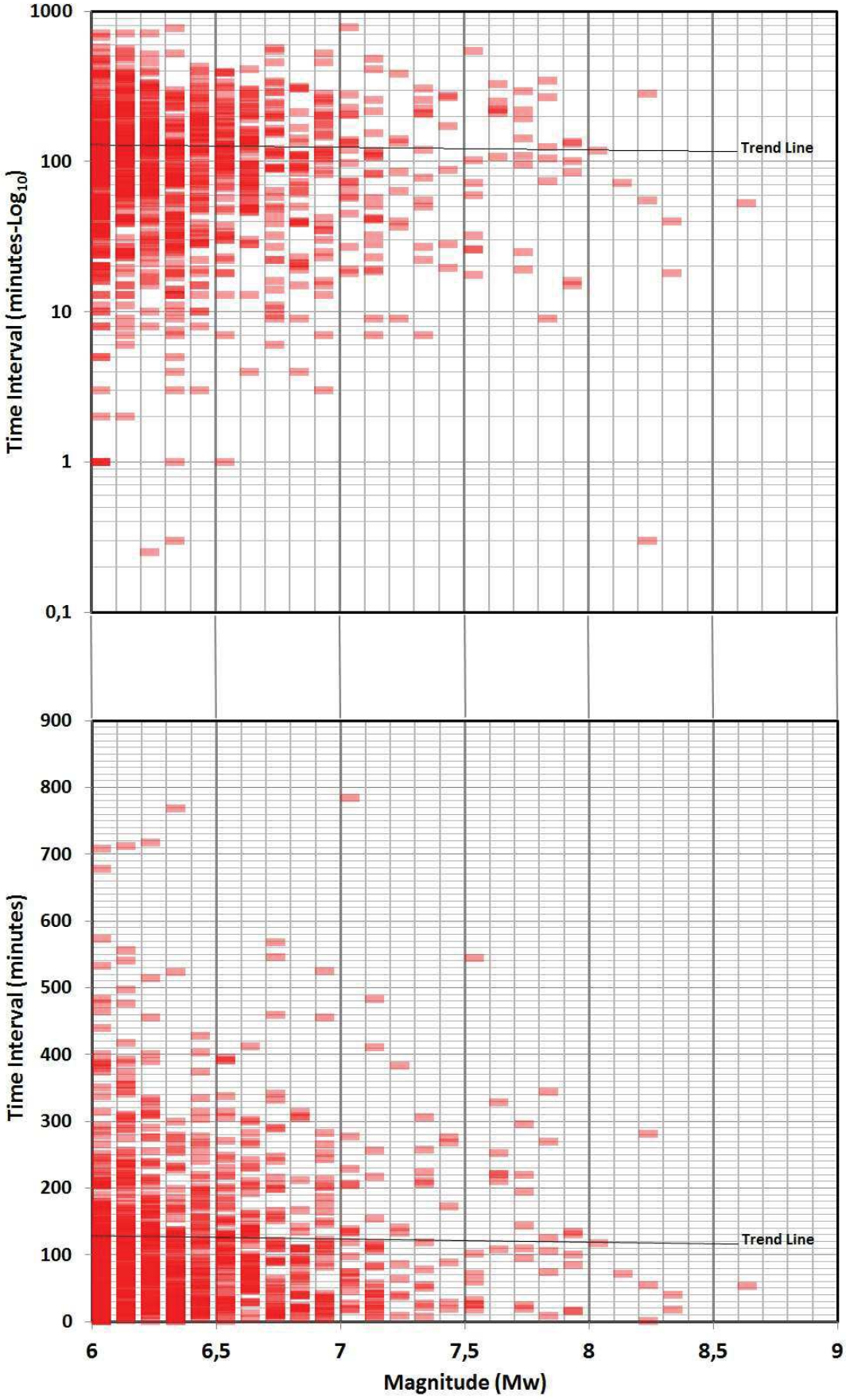

Figure 5. Time gap of the Interplanetary Seismic Precursor. The graph above shows the time differences recorded between the beginning of the protonic increase of the solar ion flow and the potentially destructive seismic event (M6 +) correlated to it in the period from January 1, 2012 and December 31, 2018. the X axis is distributed the magnitude (Mw) of the M6 + seismic events, while on the Y axis the magnitude of the time difference in minutes is reported. The graph was created with a sample of 923 seismic events, which correspond to all the M6 + earthquakes that occurred on a global scale between 2012 and 2018.Credits: Radio Emissions Project.

7.2. Increases in the Earth's geomagnetic background

When we talk about electromagnetic monitoring of Electromagnetic Seismic Precursors we need to define the type of "pre-seismic radio emission" that we want to monitor. In the present study, two main types of pre-seismic radio emissions were considered:

1) those of a “local” nature, generated following the creation of microfractures of the earth's crust and, for this reason, detectable in the immediate vicinity of the seismic epicenter;

2) those of a “non-local” nature, born from the interaction between solar activity (solar wind, solar flares) and the earth's atmosphere (magnetosphere and ionosphere) and, for this reason, can be detected from any point on the earth's surface through the aid of a magnetometer. Since 2013, these radio emissions have been called "Geomagnetic Seismic Precursors" (Cataldi et al., 2013) to distinguish them from those of the "local" type.

The increases in the geomagnetic background that last more than 15 hours can be found on a spectrogram very easily as they overlap with the physiological late-evening and night-time decrease of the geomagnetic bottom itself, resulting in a pro-extension of the general geomagnetic activity that seems to remain always active. The portion of band that assumes a greater magnetic increment is placed between 0 and 30 mHz.

The increase in the geomagnetic background of the second type (type B) usually has a duration of 6-8 hours and is distinguishable as an increase in the magnetic intensity of the band ranging from 0 to 0.15 Hz.
The third type (type C) of radio anomaly associated with high-magnitude earthquakes, is constituted by an increase in the geomagnetic background lasting about 4 hours whose major magnetic increase is recorded in the band ranging from 0 to 0.25 Hz.

The fourth and last type of radio anomaly (type D) that can be correlated to seismic events of high magnitude is represented by a marked increase in the geomagnetic background lasting about 2 hours, whose maximum magnetic intensity is found in the band going from 0 to 0.4 Hz.

8. Conclusion

We conclude that the electromagnetic background in the ELF / SELF band, which simulates the experiment of the Nobel Prize Luc Montagnier in a real context, can be produced both by the solar wind and by the Earth's endogenous activity. The most evident signals in the 0 to 10 Hz frequency band, detected at instrumental level, can be associated with the tectonic stress produced in the pre-seismic or post seismic phase, ie before and after an earthquake, generally with a magnitude greater than 4 and more evident if the magnitude is equal to or greater than 6 on the Richter scale. The signals near the frequencies from 5 to 7 Hz are more evident if the epicenter is near the monitoring

station, even if the second station of Rovigo (North-Eastern Italy) has detected similar signals for earthquakes of magnitude greater than 6.5 that occurred in remarkable distance. In reality, the problem of the connection between solar activity and seismic activity remains open, which appears to be synergistic and associated in all the cases studied. A similar investigation can be carried out on Mars, since the presence of an endogenous Martian activity and of the solar activity that influences as well as the Earth, even Mars, is now certain. An important confirmation on the noise of a fund on Mars, in the range between 5 and 10 Hz, arrived with the registration of the first candidate Marsquake on 6 April 2019. In the near future, if the outcome of the search for nucleic acids or microorganisms will give positive results in the analysis of water in the Martian subsoil, this hypothesis could pose the question about the origin of life, connected to an electromagnetic interaction. Further contributions in this sense may also concern the analysis of mechanisms such as those proposed by Tsytovich et al. (2007). In fact, laboratory experiments have shown that complex plasmas can self-organize naturally in stable helicoidal structures, similar to the double helix of DNA, that is, able to interact with each other and to self-duplicate, properties normally attributed to the peculiarities of living matter. It is a fascinating hypothesis that only interdisciplinary studies can confirm. The recent water table discovery on Mars and the tracking of signals in Extremely Low Frequency produced by endogenous activity open new hypotheses for the genetic material transmission, both on Mars, Europa, Titan and Enceladus.

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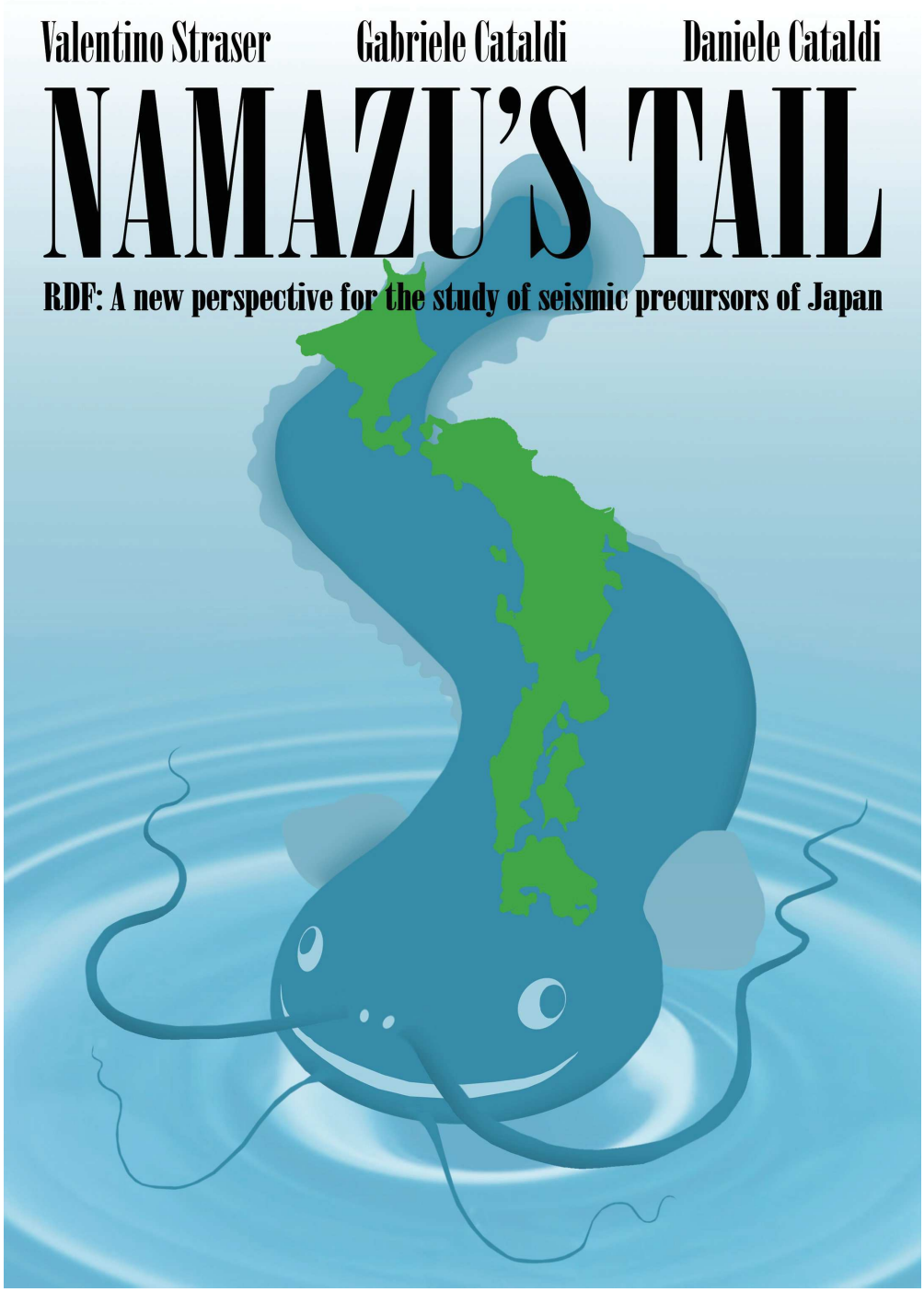

Valentino Straser (Parma, Italy), is an associate scientist at the International Earthquake and Volcano Prediction Center (USA). He presented his studies and research in the most important international conferences: India, Australia, Russia, South Africa, Africa, Europe (Italy, France, Austria) and USA.