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WUHAN LINEAR CLOUD

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Linear cirrus cloud as possible effect of tectonic processes

Satellite images of high altitude clouds, from the cirrus category (LANDSAT 8, 2019), can be admired using the Google Map Earth 3D Globe (internet) facilities. A cloudy, linear structure, extending about 2/3 of the northern hemisphere, which could fall into the category of atmospheric precursors of earthquakes, located in East Asia, attracts special attention. Following this phenomenon between April 1 and August 31, 2020, during 136 days, revealed some surprising features:

- there is a path with the appearance of a net discontinuity, at least at the level of the troposphere, between east and west, extending between the North Pole (I-Svalbard, 20ºE/78ºN) and the South Pole (Donning Maud Land, 20ºE/73ºS) on which, the linear cloud, possibly cirrus, appears alternating in the northern and southern hemispheres with durations of approximately 8 hours, with two transition intervals of 4 hours each, of total absence;

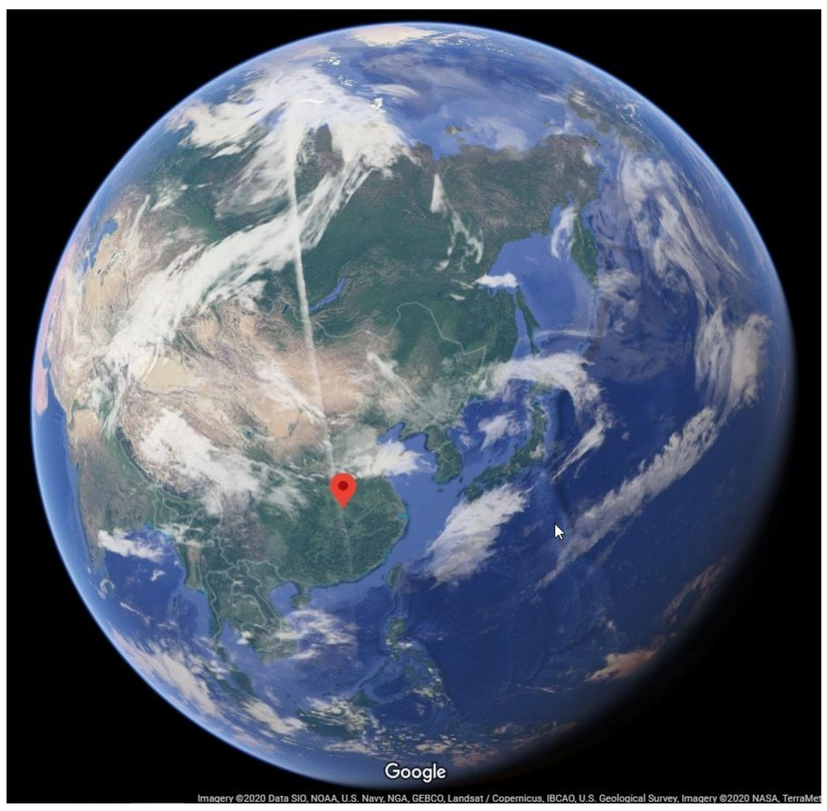

Figure no.1 The northern hemisphere segment of the linear cloud; red: Wuhan-China, 114ºE/30ºN *Google Earth 3D Globe*

- due to an unknown phenomenon, along the meridian of 115ºE, in the tropical area, the linear cloud has no formation conditions, this central segment being approximately between 20ºN and 25ºS latitude;
- the northern hemisphere segment (approximately 7000 km long), generally has a southern limit in the northern South China Sea, passes over Wuhan-China (114ºE/30ºN), over Lake Baikal (106ºE/53ºN), Tunguska (96ºE/63ºN) and ends on Novaia Zemlea Island (55ºE/75ºN), in the north (Figure no.1);
- the southern segment of the linear cloud (approximately 6500 km long), crosses the Indian Ocean between SW-Australia and Antarctica along the meridian of 115ºE, usually ending in Wilkes Land (Figure no.2);
- both the northern and the southern segments have similar structures, the extreme portions of the polar areas having widths greater than those in the tropical zones, where it tapers to extinction;
- on the middle and end portions of the cold areas, it interacts with cirrus formations of weather clouds, generating areas of influence that can reach several thousand kilometers laterally;
- the cirrus clouds of the two segments occur both day and night, even in the polar night, for example in Antarctica, observing an important seasonal variation of the time interval in which they appear during 24 hours;

Since no interactions were observed with possible subtropical and polar jet streams, although the northern and southern boundaries are generally on the latitudes of their manifestation, we will consider that the heights of linear clouds in the two hemispheres are over 15 km.

From the category of atmospheric precursors of earthquakes, "earthquake clouds" are described by quake scientists as forming suddenly in the presence of water vapor, are linear, immobile relative to active faults on the future epicentral areas and is electrically/electromagnetically related to the seismic source coupled to the global electrical circuit, whose influences can also reach the ionosphere (Shou, 2006 a, b; Guanmeng and Jie, 2013; Qin et al., 2009; Pulinets and Ouzounov, 2008; Sorokin 2007; Koldashov et al., 2013).

The conditions of existence of cirrus clouds imply altitudes of 6-24 km with temperatures in the range -25ºC, -90ºC, leading to the formation of ice in the upper troposphere, or mixed phases in the presence of aerosols (biological particles and mineral dust). The lowest temperatures (-91ºC) were measured in the tropics, between 15 and 20 km, where cirrus clouds have the highest frequency of occurrence, between 100ºE and 180ºE longitude (Haladay and Stephens, 2009). The same area has active tectonics and intense seismic activity caused by the contact of three major geological structures: the Indian Ocean, the Pacific Ocean and the Australian Continent. We consider that here, the ultra low frequency radiation (ULF, <40 Hz), emitted by the tectonic stress and the dilatancy phenomenon, can propagate in the vertical direction and can reach the heights of the ionosphere layers or, under different angles, maintaining the electrode effect between points located on the surface of the Earth.

Also, here, on the central segment of the described path, where there are no conditions for the formation of the linear cloud, along the meridian 115ºE and on the entire thickness of the troposphere, the weather clouds support a differentiation in terms of clarity in the frames taken by satellites, above the Indian Ocean appearing diffuse, compared to those belonging to the Pacific Ocean domain, this separation line frequently achieving clear sky corridor by scattering clouds, a phenomenon that can only be explained by a possible ULF electromagnetic field, of tectonic origin (Figure no. 3).

Testing this electromagnetic frequency range, but from magnetospheric-ionospheric sources, recorded by Intermagnet observatories around the globe, the anomalies SSC (Storm Sudden Commencement) in the geomagnetic field components, important precursors for the large earthquakes (Furnica, 2017), provided an interesting result: in two events which occurred on April 7 and May 9 2020, west of the meridian 115ºE the anomalies were recorded, but in the east, no. Ulterior, however, other SSC anomalies appeared on 20.04.2020 and 3.05.2020, were distributed similarly, both to the west and to the east of the 115ºE meridian.

Therefore, we consider that there are many similarities between the linear cloud, of planetary scale extension and an earthquake cloud, but at a more general, tectonic level. We can admit an electrical nature of the path of formation and maintenance of the linear cirrus cloud, having as source the tectonic processes at the scale of the terrestrial crust. It is possible that water vapor from the tropical area, rising at high speed to the tropopause (15-20 km high), to intersect the electrical path which in turn makes the long-distance connection between the thermodynamic conditions in the tropical area and those from poles, thus becoming a preferential path for ionized air, supersaturated water vapor and aerosols, being able to spontaneously form ice crystals specific to cirrus clouds. The speed of movement from south to north seems to be very high if we take into account the fact that at formation, for a distance of about 2000 km, the cloud needs about an hour. At maturity, when it reaches lengths of over 6000 km, we can speak of a "teleconnection cloud", frequently observing influences on ordinary clouds and, implicitly, changes in the weather over long distances.

The diurnal variation of the linear tectonic cloud

Pavlenkova (2012), in his concept "fluid-rotation", shows the special importance in global geodynamics of two main energy sources: one external to the Earth and one internal, with advection of fluids and heat. It is also stated, based on data of different ages, geological history and geological structure, that the Earth is divided into two hemispheres: one continental, with high relief and thick continental crust and another with lowered relief and oceanic crust (Pacific hemisphere). The phenomenon is common to other planets.

Therefore we considered important that, using the observation data indicating the assumed electrical path generating the linear cloud, to propose a qualitative model in which the meridian 115ºE is considered the idealized eastern boundary of two geological structures, of Earth's hemispheres dimensions, the meridian 65ºV becoming their western limit. We then associate to the hemisphere dominated by the Pacific Ocean the "Pacific tectonic vortex" and to the one centered on the African continent, the "tectonic vortex Africa" (Furnica, 2016). Although, both have anti-clockwise circulations under the external source - the Sun. At their common limit, the vortex lines, or possibly their vortical surfaces, will have opposite senses of movement in the north-south direction. Moreover, on the dark side of the Earth, alternately, after 12 hours, each vortex will become active relative to the internal source - the Earth's core, on which it eventually rests, allowing the fluids and associated geophysical fields to rise through an upward clockwise movement. Because there are no centrifugal forces in a vortex, the two hemispheres would have a tendency to move away, and combined with movements in opposite senses on the contact limit, can generate distensions in the continental and oceanic crust. Two paired vortices, of opposite directions, can be considered as two electric charges and thus the limit could have electric fields with periods of 12 hours.

The situation closest to the proposed model, in which the duration of the linear cloud is 8 hours in the two hemispheres, followed by the transition intervals of 4 hours, is that of an equinox day. The moments of sunrise and sunset being very important near the meridian 115ºE for the observed phenomenon, we will consider the Wuhan-China locality, where the legal time is expressed as UTC + 8 hours.

It is found that at 6 o'clock, the time of sunrise, the cloud disappears from the northern hemisphere. After 4 hours, when the dark-light limit of the morning reaches the 55ºE meridian (in East Africa), in the southern hemisphere the development of the southern segment of the linear cloud begins. When the eastern limit reaches the 65ºW meridian (in South America), on the western boundary between the Pacific and African tectonic vortices, Wuhan is 180º to the east, at the western line of the Sun (18 o'clock legal time). At this point, in the southern hemisphere, the linear cloud disappears and the 4-hour transition time begins, ending with the formation of a linear cloud in the northern hemisphere, with the sunrise line reaching the 125ºW meridian in the East Pacific, roughly to Central America.

At the time when the sunrise line reaches the Wuhan city line again, the Sun is in the middle of the Pacific tectonic vortex (155ºW), and when the sunrise reaches the 65ºW meridian, the Sun is in the middle of the Africa tectonic vortex (25ºE). At these moments, the two vortices are under the maximum influence of the external source - the Sun, alternately at 12 hours, and the cirrus linear cloud no longer has conditions of formation neither in the northern nor in the southern hemisphere for 4 hours, during the periods of transition.

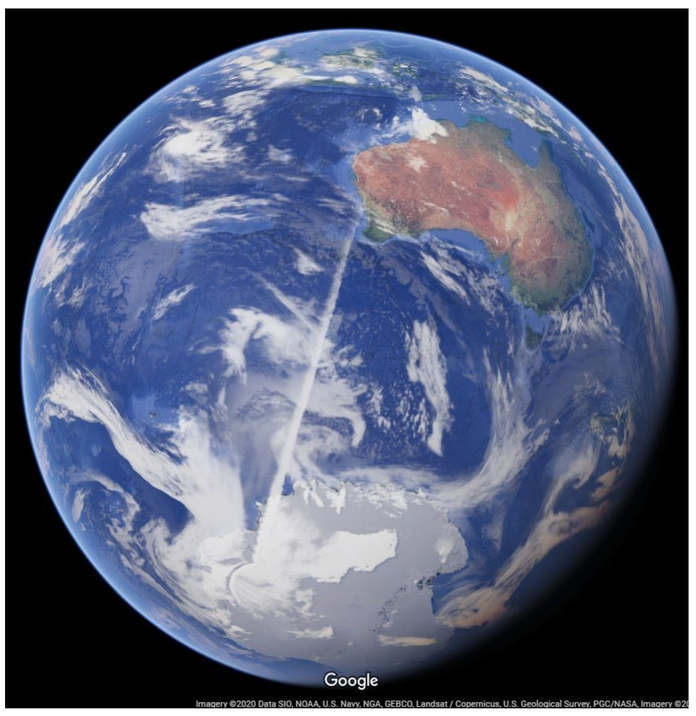

Figure no.2 The southern hemisphere segment of the linear cloud; *Google Earth 3D Globe*

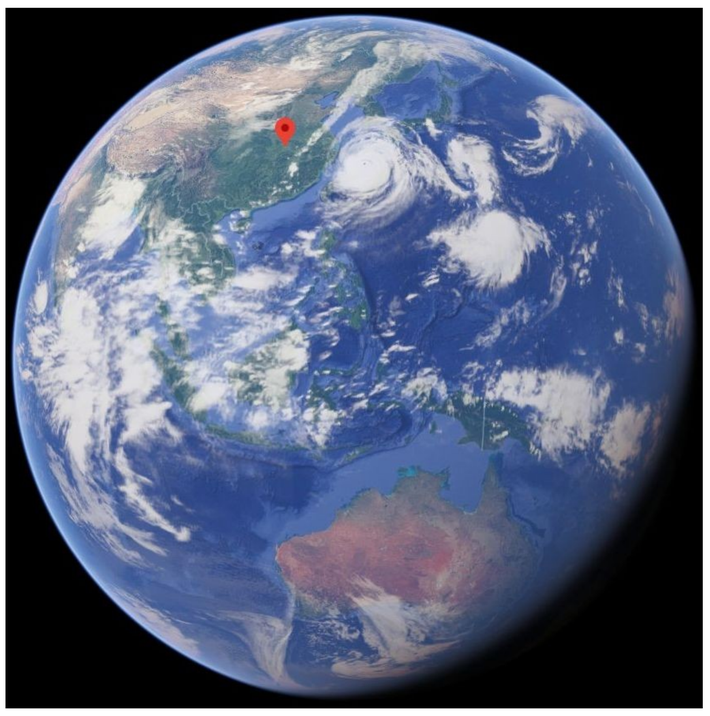

Figure no.3 The central segment of the linear cloud formation path; red: Wuhan-China, 114ºE/30ºN *Google Earth 3D Globe*

Some consequences

It is possible that the path on which the linear cirrus cloud develops became known with the development stage of the technology (eg detectors for the shortwave infrared band 1.36-1.38 μm - Cirrus), or became "visible" reaching a certain level of abundance of water vapor in the tropics, due to global warming.

Considering the Africa and Pacific tectonic vortices, seems to be a solution in explaining the strange behavior of the linear cloud on a planetary scale, but the model requires other hypotheses, such as the existence of a background of ULF radiation of tectonic origin, emitted in the dilatancy processes of the high seismicity zone between 100-180ºE and 20ºN-25ºS.

Regarding the two hemispheres associated with the Africa and Pacific vortices, it is found that the domain of the Indian Ocean unifies with that of the Atlantic Ocean in relation to that of the Pacific Ocean relative to the boundary of separation, Australia being in fact in movement under the influence of the central force towards the core area of the Pacific tectonic vortex. Subduction should be replaced with obduction, because the continental crust, although thicker, is lighter than the vortex fluid represented by the material of the upper mantle of the oceanic crust.

There are several coincidences: we are crossing the pronounced minimum of solar activity between cycles no. 24 and no. 25; this causes an increase in the intensity of cosmic radiation at the Earth's surface, one of the consequences being genetic mutations in viruses and the outbreak of pandemics (Mukherjee, 2014), as is the case with the coronavirus covid19 today. But, the city of Wuhan in China, where the flu originated and spread in December 2019, is right on the path and at the beginning of the northern segment of the linear cirrus cloud, which we consider to have tectonic causes.

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*** Google Earth 3D Globe – earth.google.com/web/clouds.