ISSN: 2639-7455

Review Article

Earth & Environmental Science Research & Reviews

The Air Circulation in Hadley and Ferrel Cells Ruled by Earth's Magnetic Field

Maria Kuman

Holistic Research Institute, 1414 Barcelona Dr., Knoxville, TN 37923

***Corresponding author**
Maria Kuman, PhD, Holistic Research Institute, 1414 Barcelona Dr., Knoxville, TN 37923; E-Mail: holisticare1@gmail.com

Submitted: 22 Feb 2019; **Accepted**: 28 Feb 2019; **Published**: 19 Mar 2019

Abstract

In the tropical belt, the global air circulation rises at the equator and falls down at 30° north and south of the equator. The differential heating of the Earth's surface was supposed to be causing it. It is called Hadley cells. However, the air circulation over the zones of 30° to 60° north and south of the equator is in opposite direction of the tropical circulation and cannot be explained with differential heating. It is called Ferrel cells. However, a specialist well acquainted with the magnetic fields of the Sun and Earth would see that in both Hadley and Ferrel cells the circulation of the electrically-charged earth atmosphere is determined by the ring currents under the earth surface. The earth spinning induces these ring currents and they crank the earth magnetic field in this area. Words: 137

Introduction

Julius Elster and Hans Geitel were the pioneers in atmospheric electricity [1]. They did their research in the last decade of the 19th century and they disclosed that the earth's soil continuously emits electrically charged particles in the air, which were either ionized atoms, group of atoms, or molecules.

In a clear day in good weather, the earth is negatively charged, while the atmosphere and the clouds are positively charged; and from the soil and plants electrical particles stream skywards. After storms, the polarity is reversed – the earth becomes positively charged and the bottom of the clouds negatively charged.

At the beginning of the 20th century, the Finish scientist Selim Lemstroem in four expeditions to northern Norway found luxurious vegetation at the poles, which he ascribed to the electrical stimulation of Aurora Borealis [2]. He claimed that the sharp points of the plants acted like lightening rods. They collected the atmospheric electricity, thus facilitating the exchange of electrical charges between the atmosphere and the ground.

When back to Finland, Lemstoem conducted a series of experiments [2]. Trying to simulate the conditions at the poles, he stimulated flower plants in metallic pots with a generator of static electricity, and his experiments were a success. After eight weeks, the electrified plants gained 50% more weight than their deprived neighbors; the crop of barley plants increased by 30%.

Let's explain what Aurora Borealis is. During solar activity, the solar anti-vortices, which spin counter-clockwise and throw energy out, throw large high-speed fluxes of ionized particles. They are called solar wind. It gusts with a speed of hundreds of miles per hour. If there is life on our Earth, it is because the spinning liquid magma our Earth cranks magnetic field, which catches or deflects these high-energy particles.

The earth's magnetic field is catching and slowing down most of the ions of the solar wind. They form the so-called ionosphere, which circle the earth as a donut around its equator leaving only the poles uncovered. The ionosphere protects the earth from the destructive power of the solar wind. Some high-energy ions do pass through the protective ionosphere and reach the earth. They are called cosmic rays, but they are not deadly.

In the areas around the poles, which are not protected by the earth's ionosphere, ionized particles of the solar wind bombard the earth's atmosphere, ionize and energize its molecules, and make them shine. It is called Aurora Borealis. Also, ionized particles, which hit the earth's magnetic lines at small angle, start spinning helically around the magnetic lines and when they reach the poles they cause more Aurora Borealis.

As a result of the ever-present flow of electricity from the ground and a flow of cosmic rays from the sun to the earth, there is a vertical electrical gradient. The voltage difference between the head of 6 feet man and the ground is 200 volts. This voltage is higher at higher altitudes.

The Earths' Magnetic Field

The Sun and Earth have the same torus-shaped electromagnetic fields with the same structure and dynamic. For the sun, most active is the equatorial areas of 30° north and south of the equator, where maximal number of solar spots is observed. They are the openings of counter-clockwise spinning anti-vortices, which throw spinning energy balls out, and clockwise spinning vortices, which suck back the balls in. The Earth's volcanic and seismic activity is also maximal

in the equatorial areas of 30° north and south of the equator.

The torus-shaped electromagnetic fields of both, Sun and Earth, result from their spinning, which induces ring currents in their hot cores. Since the Sun's activity is maximal in the equatorial zones of 30° north and south of the equator, the Sun's ring currents that cause this high activity, must be separate and more numerous in the active equatorial zones [3]. According to our solar model explaining the ever-changing periodic dynamic of the Sun, the number of induced ring currents must be twice or more in the equatorial active zones, than they are in the adjacent zones between 30° and 60° north and south of the equator, where the activity is usually much weaker [3].

Since the Earth's maximal number of volcanic eruptions and seismic activity is in the equatorial zones of 300 north and south the equator, the turbulence of the magma under the crust of both equatorial zones must be maximal. If so, just as in the case of the Sun, the ring currents in the earth magma of the active equatorial areas are expected to be more numerous than the ring currents in the adjacent two zones from 30° to 60° north and south of the equator with very low or no activity (Figure 1).

In both, Sun and Earth, in the tropical equatorial zones of 30° north and south of the equator, the ring currents run upward at the equator, then northward on the surface in the north hemisphere and downward in the southern hemisphere. They go downward at the lines 30° north and south of the equator to close the circle.

In the zones between 30° and 60° north and south of the equator, the ring currents are running in opposite direction-downward at 30° north and south of the equator, upward at 60° north and south of the equator, and on the surface toward the equator to close the circle.

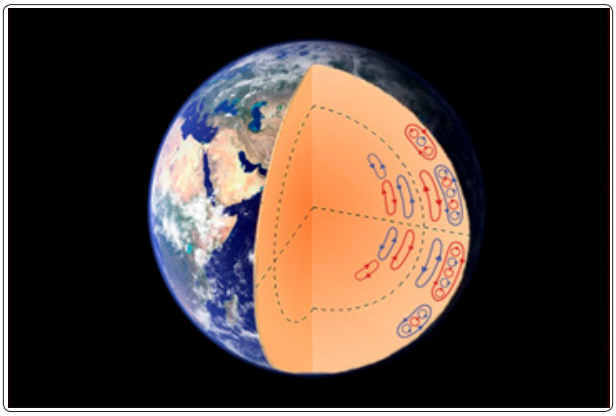

Figure 1: The ring currents in the liquid magma of earth induced by its spinning

Compare now the direction of air circulation over the equatorial area, called Hadley Cells (Figure 2), with the direction of the ring currents under the Earth surface in the same area (Figure 1), and you will find that they are the same [4]. Compare the direction of air circulation over the areas of 30° to 60° north and south of the equator, called Ferrel Cells (Figure 2), with the direction of the ring currents under the Earth surface in the same area (Figure 1), and you will find that they are the same[4].

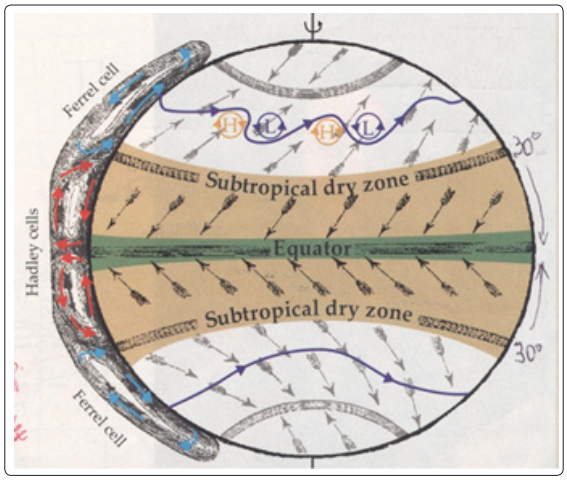

Figure 2: Hadley and Ferrel cells of air circulation over the Earth's surface

This should not be surprising considering the fact that the air is electrically charged as said in the introduction, and if so it is expected to follow the direction of the earth's magnetic field and the electric ring currents that generates it.

Additional proof that the ring currents creating the Earth's magnetic field are two separate sets (one in the active equatorial zones of 0°-30° from the equator and the other in the area 30-60° from the equator) is the fact that the bits of plastic dumped in the ocean accumulate only in the subtropical dry zone of 30° north and south of the equator (Figure 1). The plastic bits are found at the centers of the ocean gyres, in which the water circulate clockwise in the subtropical zone of 30° north of the equator and counterclockwise in the earth's subtropical zone of 30° south of the equator (Figure 3) [5].

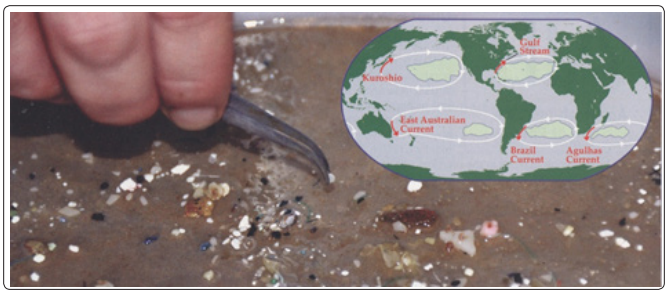

Figure 3: The ocean gyres, in which the water circulate clockwise in the subtropical zone of 30° north of the equator and counterclockwise in the earth's subtropical zone of 30° south of the equator.

Conclusion

Since, the air circulation in the Ferrel cells (Figure 2) is opposite to the air circulation in the Hadley cells (Figure 2), it cannot be explained with temperature gradient because it is opposite to it. However, the air circulation in the Ferrel cells is obviously ruled by the ring currents under the earth's surface in the zones of 30°to 60° north and south of the equator (Figure 1). Since the air is electrically charged, its circulation follows the direction of the ring currents under the earth's surface, which crank the earth magnetic field in this area.

This means that the air circulation over the equatorial zones, called Hadley cells, is not caused by the temperature gradient, but by the ring currents under the surface of this area, which crank the earth's magnetic field in this area.

References

1. Elstes J, Geitel H (2012) Terrestrial Magnetism, or A McAdie, Elstes and Geitel Resume, J. Geophysical Research 2: 128-132
2. Lemstroem, Salim, Electricity in Agriculture and Horticulture (The Electrician Publishing Co., London, 1904).
3. Kuman, Maria, Dynamic Model Explains the Dynamic of Solar Activity, APS Meeting, March, 2016.
4. Birner T, Davis S M, Seidel D J (2014) The Changing Width of Earth's Tropical Belt, Physics Today 67: 38-44.
5. Van Sebille, Erik (2015) The Ocean's Accumulating Plastic Garbage, Physics Today 68: 60-61.