Explanation of Carbon dioxide natural emissions

XX. Fluctuations of the Earth's dynamic oblateness J2 versus atmospheric emissions of Carbon dioxide

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An excerpt from the book “The new look at the Earth's climate mechanism and the Cosmo-geophysical system of the Earth”.

Fluctuations of the Earth's dynamic oblateness J2 are a measure of Earth's coating movement - the movements of the equatorial bulge and flattening of Earth on the poles. It is measured in SLR - geodetic satellite laser research. J2 is directly related to the degree-2 zonal (C20) coefficient of the gravity field

$J2=-\sqrt{5}C20$

Explanation of what is this the J2 coefficient is in Reference Earth Model -WGS84(Copyright 2002, David T. Sandwell). According to D. T. Sandwell, the J2 coefficient depends on polar radius c, flattening f = (a-cc)/a, equatorial radius a, the rotation rate of Earth’s -omega, gravitational constant G, the mass of earth Me.

Fluctuations in the degree-2 zonal spherical harmonic coefficient of the Earth's gravity potential C20 is shoved in the graph below. This coefficient is related to the Earth's oblateness and studying its temporal variations, ΔC20 can be used to monitor large-scale mass movements between high and low latitude regions. ΔC20 has been examining (2003-2019) inferred from six different sources, including satellite laser ranging (SLR), GRACE, and global geophysical fluids models. We further include estimates that we derive from measured variations in the length-of-day (LOD) from the inversion of global crustal displacements as measured by GPS, as well as from the combination of GRACE and the output of an ocean model.

Ocean emission of carbon dioxide depends (in my opinion) from the rate of photosynthesis in the surface layer of the ocean, which is fed by rising from the bottom fertile and dense waters of the ocean - by the oceanic upwelling.

Changes in Earth's shape, i.e., flattening, equatorial radius changed by movement of earth's coating (with equatorial bulge and flattening on the poles) relative to ecliptic plane cause changes of earth’s rotation rate and upwelling changes (the vertical mass movement of oceanic waters due to changes in centrifugal force and swaying of the Earth's axis of rotation) in oceans, i.e., increasing or decreasing of photosynthesis resulting in carbon dioxide emission changes from oceans (see the explanation to the next chapter). That is why we see an almost strict correlation of carbon dioxide emission with Earth's shape changes mirrored by the delta C20 coefficient on the graph below. In my opinion, when carbon dioxide emission increases, decrease upwelling and photosynthesis in the ocean together increases flattening of the Earth (due to Earth’s coating movement), and C20 increases accordingly because of the bigger earth’s rotation rate, and vice versa. Carbon dioxide emission from ocean decreases when increasing upwelling and photosynthesis in the ocean, together with decreasing the flattening of the Earth and the decreasing rotation rate because of an increase of the moment of Earth’s inertia due to Earths coating movement.

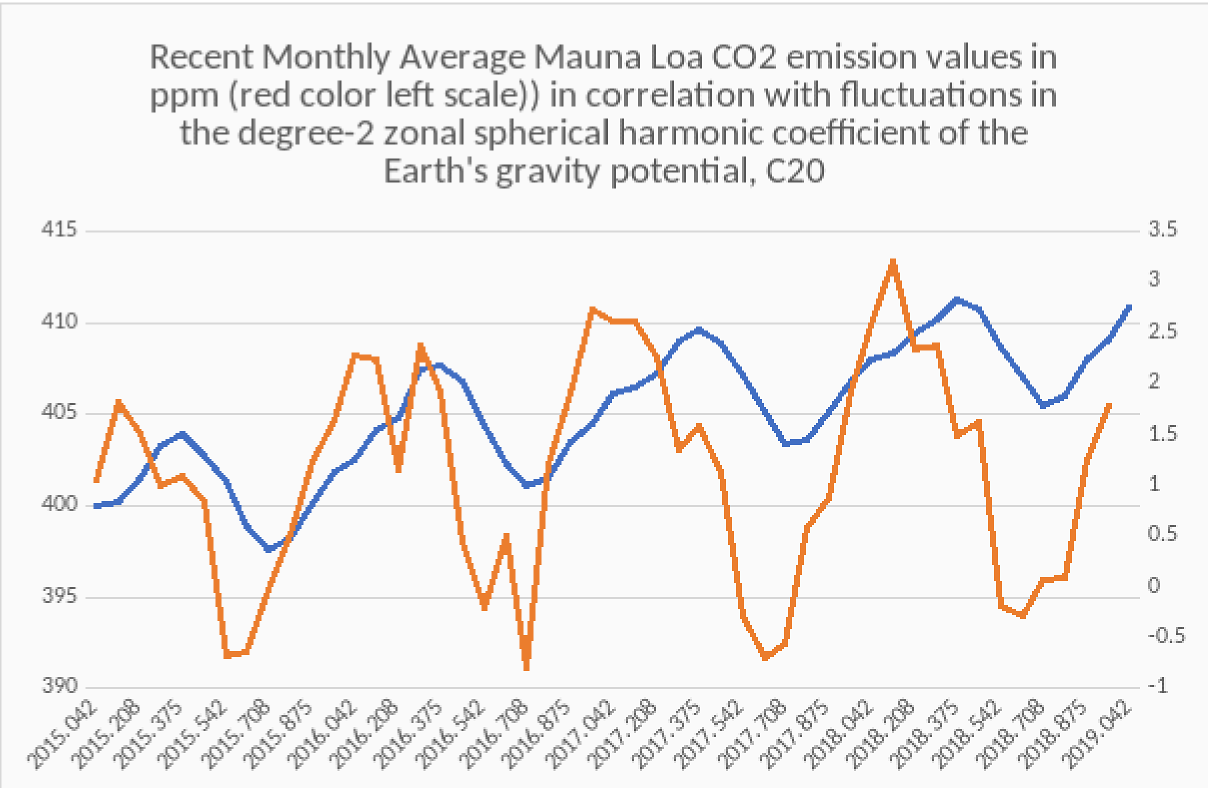

Fig.30. Carbon Dioxide atmospheric emission on Mauna Loa versus variations of flattening of the Earth the degree-2 zonal (C20) coefficient of the gravity field ($J2=-\sqrt{5}C20$

Sources of data:

Delta C20 relative to a mean value of -4.841694723127E-4 (1E-10)

Data downloaded 2019.02.09 https://grace.jpl.nasa.gov/data/get-data/oblateness/

Recent Monthly Average Mauna Loa CO_2

Data downloaded 2019.02.09 https://www.esrl.noaa.gov/gmd/ccgg/trends/

References

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Reference Earth Model -WGS84 (Copyright 2002, David T. Sandwell). Paper downloaded 2019.02.10:18:00 from site: https://topex.ucsd.edu/geodynamics/14gravity1_2.pdf

XXI. Ocean Physic-chemistry and carbon dioxide emissions versus Earth’s oblateness changes

Ocean acidification leads to a lowering in pH of surface ocean water remains an unsolved problem of science. My article will mark an attempt at proving that this is a regular phenomenon in ocean history linked to changes in the Earth’s shape and climate.

Ocean acidification is the ongoing increase in the concentration of hydrogen ions in seawater, which are formed from dissociated carbonic acid. It has been confirmed that a decline in the pH level is teamed up with a drop in the biological productivity in the oceans, a rise in ocean temperature and growth in the concentration of carbon dioxide in the atmosphere and in the ocean. The above facts have enabled me to formulate a theory that explains these phenomena. My theory is based on scientifically proven facts from numerous disciplines of science, which explains why researchers narrowly specializing in selected areas have not managed to-date to crunch the secrets of the ocean that call for the adoption of a multilateral approach to our Planet as a part of the Universe which surrounds it.

In the beginning, I would like to present the course of the carbon cycle in the natural environment, which highlights the vital role played in this respect by the ocean containing 98% of the Earth’s carbon dioxide. Surface ocean water carries more carbon in compounds than the atmosphere. Hiding the key to the mystery of ocean acidification, ocean’s interiors are the principal carbon reservoir.

Contemporary models shedding the light at the secret of seawater acidification assume that the ocean waters capture carbon dioxide from the atmosphere. Later, its reactions spur the acid reaction of the ocean. My reasoning has led me to a different conclusion. It is the dwindling ocean productivity which leaves dissolved carbon dioxide in the seawater. Its solubility is diminished by the rise in ocean water temperature (by one degree Celsius since

1910, according to IPCC). Excess carbon dioxide is emitted into the atmosphere, while its growing concentration in seawater leads to ocean acidification.

Declining ocean productivity is triggered by a slump in its nutrient uptake, i.e. shrinking supplies to ocean surface waters of silicates, phosphates, carbonates, iron, etc. elements driving the ongoing photosynthesis process binding carbon dioxide from seawater, carried from the ocean's interior. A decline in ocean productivity is an after-effect of low nutrient supply. Conversely, surface seawater is poor in life-giving elements as a result of cosmic processes, but let us discuss first things first.

The ocean is a biological machine, and its life depends on the mixing of waters in its deep ocean layers. Much remains to be learned about this process and currently, we have no knowledge of ocean water exchange processes. As life in the ocean thrives continuously, it is clear that water circulation covers the entire volume of the ocean. Circulation is triggered by the ongoing and variable impact of the gravitational interaction of the Moon and the Sun (and planets) on ocean waters demonstrating diversified density. Circulation is also triggered by the mixing of ocean waters (in my opinion) because of the movement of Earth's surface layer ie. movement Earth's coating (consisting of the crust and upper mantle) relative to the ecliptic plane. Oceanic tides are generated in the surface and deep waters. The cold and dense deep water masses carrying particles of bottom sediments (including life-giving elements and dissolved minerals) move upwards to cool down and supply nutrients to surface seawater, while surface waters descend into the ocean's interior to fuel biological processes with oxygen. Moreover, the impact of deep waters (rich in silicates, phosphates, carbonates) on the surface layers possibly alters their acidity by neutralizing it. Continuous shifts augment ocean water exchange between surface waters and the deepest layers in the location of Earth's coating - changes in the angle of the Earth's spin, which alters the centrifugal force impacting inert masses of water as well as its vertical and horizontal motions across the ocean. The shift in the location of Earth's coating is caused by changes in the location of objects in the Solar System, by the variable gravitational field. When the heavy metallic core is shifting within the liquid outer core, the location of the center of Earth's gravity is changed, just like its spin axis. This process leads to a change in the location of geographical poles, and consequently, the variable centrifugal force spurs movement of inert ocean waters and their mixing within the volume of the world ocean.

Shifts in the location of poles have probably been minor since the 17th century (LOD - length of day has stabilized according to EIRS). It is testified by the migration of the North Magnetic Pole, which is drifting in the 20th century towards the north geographical pole (within its close distance). In the 20th century, the Earth's coating and inner core were shifting towards a location assuring its equilibration with the current location of Earth's spin axis.

Therefore, the impact of the location of poles on the mixing of deep ocean water has been reduced. This phenomenon is tantamount to reduced upwelling - motion of cooler and nutrient-rich deep water towards ocean surface lowered supply of nutrients to surface layers of the ocean, limited ocean photosynthesis and a rise in surface water temperature, what has led to declining in the biological productivity of the ocean and impaired carbon dioxide binding in seawater. At the same time, this phenomenon was teamed up with a rise in acidification of ocean surface water related to a decrease in carbon dioxide solubility in ocean surface layers. The concentration of liquid carbon dioxide in seawater was increased as a result of a surge in its acidity and diffusion of excess carbon dioxide into the atmosphere where its level reached above 410 ppmv.

Witnessed since 1910, according to IPCC, ocean water warming has led to a shift in the location of low- and high-pressure areas in the troposphere, which results in changes in the Earth's climate known as "global warming". More important to global warming is the shift of Earth's coating.

According to IPCC (The IPCC Scientific Assessment 1990: 11, Figure 1.6)
, the same mechanism involving a rise in the concentration of carbon dioxide in the atmosphere to more than 300 ppmv and the warming of the Earth's climate by 12 degrees Celsius took place approx. 120,000-140,000 years ago, which means that anthropogenic factors did not cause it. Therefore, the reasons behind the seasonal surge in the atmospheric concentration of carbon dioxide should be sought elsewhere, perhaps in processes described above and below. Climate changes, shifts in carbon emissions from the ocean are, therefore, a side effect of changes in physicochemical processes in the ocean, which are controlled by the cosmic process described by scores of researchers, including Milutin Milinkovic. Obliquity changes, a shift in the spin axis, and the location of Earth's poles are driven by changes in the distribution of masses within the Solar System. Internal mass distribution within the Solar System is sensitive to the gravitational interactions of the Milky Way - our galaxy. Subsequent transitions across its spiral arms are marked by consecutive orogenic eras and related climatic periods - alternatingly cold or warm, as described by Klaus Pfeilsticker of Heidelberg University.

Diagram of cyclic changes in Earth's climate processes:

1. A period of fast and significant changes in the magnetic field of the Sun as a result of internal mass distribution within the Solar System.
2. A period of swift shifts in the location of Earth's poles and Earth's coating.
3. A surge in ocean upwelling leading to intensified photosynthesis and a slump in seawater temperatures.
4. Increased carbon solubility in seawater resulting from a drop in its temperature, capturing more CO_2 during photosynthesis, a decline in concentration of liquid CO_2 in surface waters as a result of their lower acidity, increased absorption of CO_2 from atmosphere and a gradual decline in CO_2 atmospheric concentration to 180 ppmv during intensive shifts of Earth's poles and coating lasting 100,000 years and related cooling of ocean water by approx. 12 ° C and cooling of Earth's climate by 12 ° C.

5. A period of stabilization of the Sun's magnetic field as a result of internal mass distribution within the Solar System.
6. A period is witnessing the stable location of Earth's poles and earth's coating.
7. A decline in ocean upwelling leading to a drop in photosynthesis and warming of seawater.
8. 4. Lowered carbon solubility in seawater as a result of higher temperature of ocean surface waters, capturing less CO_2 during photosynthesis, a surge in concentration of liquid CO_2 in surface waters as a result of their higher acidity, lower absorption of CO_2 from atmosphere and a gradual boost in CO_2 atmospheric concentration by diffusion of excess CO_2 from seawater into the atmosphere to over 300 ppmv during non-existent shifts of Earth's poles and coating lasting approx. Twenty thousand years and related warming of ocean water by approx. 12 ° C and warming of Earth's climate by 12 ° C.
9. The current rise in the atmospheric concentration of CO_2 to above 400 ppmv is triggered by both natural ocean processes and the combined impact of anthropogenic factors and natural CO_2 emissions. The effect is augmented by volcanic carbon and methane emissions from the mantle containing approx. Five hundred million of carbon gigatons from various compounds.
We should follow up on efforts aimed at the ultimate identification of Earth's climate mechanisms. My contribution to this research is the Polish book entitled "Historia naturalna i zmiany klimatu" published on the Internet in Google Play.

References

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