

# From climate change to climate discontinuity

By Hans Ulrich Schmutz

Today one usually speaks of climate change. When one speaks of *change* one generally thinks of a variation in an expected course of events such a new developmental step in an organic process. Can the dramatic climate events we are experiencing today be characterized as “climate change,” or does this term only veil the seriousness of the problem? In the following I will attempt to show that climate *discontinuity* (*Klimabruch*) more aptly describes the current crisis in the climate and the life processes of the Earth.

## Astronomically induced variations in climate

Until the beginning of the Anthropocene, variations in climate were determined by rhythms that correlated with cosmic rhythms. According to a proposal before the International Commission on Stratigraphy, the Anthropocene is a new geological epoch that began with industrialization and in which the human being has become an important factor influencing the biological, geological and atmospheric processes of the Earth.

Variations in the rhythmical movements of the solar system gave rise to variations in the sun's irradiation of the Earth that in turn led to periods of warming and Ice Ages.(1) Changes in the intensity of the sun's radiation are connected to rhythms of long duration such as the Platonic year (precession, 25,920 years), the rhythmical variation in the Earth's distance from the sun (110,000 years), variations in the angle of the Earth's axis to the Ecliptic (41,000 years), and variations in the deviation of the Earth's elliptical orbit from a circular orbit (100,000 years). Over a period of the last three million years the combined working of these four great rhythms gave rise to the very slow alternation of warm and cold periods, that is, to the rhythms of the Ice Ages. The overlay of these four great rhythms resulted in a shorter rhythm of ca. 21,000 years, which was incorporated into a longer rhythm of 100,000 years. According to these cosmic influences, a gradual cooling of the earth's atmosphere of about 4° C would be expected, beginning a few centuries ago and leading to the next Ice Age. The last Ice Age ended about 11,000 years ago, and the next period of glaciation would therefore be expected in 10,000 years. This reversal from a warming to a cooling period led to the so-called “Little Ice Age,” which began in the Middle Ages and continued until about 1850. However at this point a warming period began which has increased in intensity and has led to the present crisis.

## Research on climate history

A large body of scientific research shows a parallel convergence of temperature changes and changes in the amount of carbon dioxide in the atmosphere and in the water. This has been well demonstrated by an analysis of ice cores from Greenland, the Antarctic, and the Himalayas, so that the climate history of the last 800,000 years has been documented in detail.(6) Amazingly, changes in temperature of a maximum of 10° were accompanied by corresponding variations in atmospheric CO<sub>2</sub> of between 180 and 280 ppm (parts per million). High carbon dioxide levels were linked to warm phases. Changes in atmospheric carbon dioxide, but also greenhouse gas methane, correlated with changes in the following life processes on the Earth: the relationship between aquatic and terrestrial plants and animals, powerful volcanic events, and changes in global ocean currents and prevailing winds. These—even the volcanic activity—were all rhythmic processes. Rhythm is the basis of all life.

## Anthropogenic discontinuity in climate rhythms

Indisputable measurements show that the atmospheric carbon dioxide content has increased from 280 ppm in 1870 to 315 ppm after World War II, to 410 ppm in 2019. The last time the carbon dioxide content was this high was about 13 million years ago, at a time when cosmic rhythms could not lead to ice ages because carbon dioxide content and global temperatures were too high. A further important fact is the enormous increase in the burning of coal, oil and gas as a result of industrialization. Added to this is the rapid deforestation of tropical rain forests. In 1870, at the beginning of the industrial age, the annual release of carbon dioxide through the burning of coal was still a modest 0.37 billion tons. By the end of World War II it had increased to 3.7 billion tons, and in 2013 it surpassed 37 billion tons per year. A cosmically induced increase in atmospheric carbon dioxide from 180 ppm to 280 ppm took 10,000 times longer than the increase from 280 ppm to 410 ppm in the last 150 years. A time body, or body of formative forces, is active in all life where the speed of living processes such as growth and metabolism are adjusted to an organism's way of life. The powerful human-induced acceleration of the processes described above represent an attack on the integrity of the Earth as a living organism.

## The last 2000 years: the transition from regional warmth fluctuations to uniform global warming

Let us take a look at the history of temperature over the last 2000 years. Two comprehensive research reports issued in July of 2019 come to astonishing conclusions.(2,3) After studying hundreds of climate archives (annual tree rings, layering of ice, sedimentation in lakes and oceans, limestone deposits in caves)

researchers came to the following conclusions for the time period from the birth of Christ to the year 2000: until the middle of the 19<sup>th</sup> century there was a tendency toward declining temperatures that was interrupted by two warming phases, one in Roman times, the other in the Middle Ages. But it is notable that these variations in temperature could only be observed locally in different places and at different times. Short periods of cooling were caused by volcanic eruptions, especially in Indonesia (1808, 1815, 1822, 1831, 1835).

Beginning in 1870 when industrialization first took effect, an increasingly intensive warming trend could be observed on the continents, with the exception of uninhabited Antarctica, and this trend was simultaneous and uniform. Warming of the oceans began later because water warms more slowly, and it tended to occur somewhat more strongly in the Arctic than in the Antarctic oceans.

The fact that, beginning in 1850, the increase of atmospheric carbon dioxide has accelerated and that atmospheric CO<sub>2</sub> has since increased by one third is of special importance. The release of carbon dioxide through anthropogenic burning of coal, oil, gas, and wood (deforestation) during the same period is even more obvious. The increase in carbon dioxide in the air and in the oceans can therefore clearly be attributed to human activity.

Until about 1980 the curve of anthropogenic release of carbon dioxide rose more steeply than that representing the measurement of atmospheric carbon dioxide. This can be attributed to the fact that the oceans absorbed up to one third of the released carbon dioxide, drawing part of it down into great depths and making part of it available as nourishment to vegetative plankton. But through the acidification of the oceans the conditions for aquatic plant and animal life deteriorated, and the curve of carbon dioxide measurements in the air began to rise more steeply than that of the release of carbon dioxide. Since 1993 the rate of ocean warming has doubled. In its most recent special report on the oceans and cryosphere (those portions of Earth's surface where water is in frozen, solid form) the IPCC (Intergovernmental Panel on Climate Change) maintains that the sensitive life in the oceans plays a key role in changes in global biodiversity.(4)

## Thoughts on the controversy between the community of climate scientists and the climate skeptics

Climate skeptics also recognize that the increase of carbon dioxide in the atmosphere and oceans over the last 200 years can be mainly attributed to human activity. For the most part, the controversy centers around the question of whether carbon dioxide and methane are greenhouse gases and therefore influence climate. Year to year variations in air temperature close to the ground over the last 150 years can be compared with variations in the intensity of solar radiation (which varies slightly in a rhythm of about 11 years), the effects on weather of the

approximately 4-year El Niño rhythm, as well as seven strong volcanic eruptions that occurred during that time period.(6) If one correlates these natural climate factors with the variations in temperature, most of the temperature variations of short duration (2 to 5 years) can be explained, but not the accelerating rise in mean temperature of 0.7° since 1870.

Climate skeptics argue that the data from ice cores indicate increases in carbon dioxide after increases in temperature. They therefore see the related climate changes as resulting from variations in solar intensity and not from an increase in carbon dioxide. When related to the fluctuations of past Ice Ages that were influenced by cosmic rhythms, this is a simplified but not incorrect interpretation. But an entirely new situation has arisen in the last 200 years in which the rapid increase in carbon dioxide content is not of natural origin. In 2015, comprehensive measurements in the atmosphere over a period of 10 years proved uncontrovertibly that carbon dioxide is a greenhouse gas.(7) The effects of the gases carbon dioxide, ozone, methane, and water vapor were measured in the southern Great Plains and the north slope of Alaska—two dry regions with little cloud cover. In the measurements taken over 10 years, atmospheric carbon dioxide increased by 22ppm, and the intensity of radiative forcing increased correspondingly.

Because the increase in atmospheric carbon dioxide and the corresponding rise in global temperature cannot be explained by rhythmic events such as variations in solar radiation and volcanic eruptions, they must be mainly attributed to human activity. This is the conclusion of the international scientific community based on the results of many comprehensive studies.(8) However, the climate skeptics still balk at these insights and persist with their old arguments.

## The importance of the rate of change

The remarkable thing about these changes is not the quantities of substance that have been measured but the span of time in which these changes have occurred. The burning of fossil fuels such as coal, oil and gas has occurred 10,000 times more rapidly than the geological process in which carbon compounds have separated out from the cycle of life and been deposited in deep layers of the Earth. Consequently, atmospheric carbon dioxide has increased. As already mentioned, this increase is occurring far more rapidly than those natural processes that resulted from cosmic rhythms in the past, so that the life of the Earth is unable to handle this abrupt change. The mass extinction of plants and animals recently documented by the United Nations dramatically confirms that life on Earth is under attack.

What are we facing? Impulses from the cosmos have been greatly diminished or rendered ineffective by the modern, consumption-oriented way of life of an ever larger part of humanity. For the [cosmically induced] change in temperature on the Earth has not only been reversed (warming instead of cooling), but this has

occurred thousands of times more rapidly than would have been possible through solar rhythms—possibly so rapidly that the self-healing forces of the Earth have been overwhelmed. Today it is therefore more fitting to speak of climate discontinuity instead of climate change.

In 1923 Rudolf Steiner described poignantly how modern human beings, who have connected themselves with the Earth in a particular way by developing dead, intellectual thinking, can effect how the Earth changes. In this regard it is decisive whether they continue to maintain an intellectual mindset or begin to enliven their thinking.

“And indeed, if human beings do not enliven their thinking, if they continue with their intellectual, dead thinking, they must destroy the Earth. This destruction (*Zerbrechen*, literally “breaking up”), however, begins with the thinnest element, with warmth. And in the Fifth Post Atlantean Epoch they will only have the opportunity, by further continuing to develop merely intellectual thoughts, to ruin the warmth atmosphere of the Earth.

Then comes the Sixth Post Atlantean Epoch. If by then humanity has not converted from intellectualism to Imagination, then the ruination not only of the warmth atmosphere but of the air would begin, and human beings would poison the atmosphere with their intellectualistic thoughts. And the poisoned air would work back upon the earth and ruin vegetative life.

And in the Seventh Post Atlantean Epoch human beings would have the opportunity to spoil the water, and their excretions—if they were the results of purely intellectual thoughts—would flow into the general watery element of the Earth. And the mineral element of the Earth would then be deformed out of the fluid element. Human beings do indeed have the opportunity to break up the Earth if they do not enliven their thoughts and in so doing return to the cosmos what they have received from it.”(10)

## What can we do?

Amazingly, in recent months the youthful climate activists have understood the dramatic state of affairs and have seen through the hypocrisy of politicians’ statements. The so-called “Paris Agreement,” as a result of the last climate conference of December 2015, has become almost irrelevant due to the delaying of necessary actions. Climate activists are vigorously questioning and changing their way of life. They are beginning to take action.

The creative power of climate activists worldwide has largely been inspired by the consistent work the youthful Greta Thunberg. What the young people are calling for today is in line with the latest findings and warnings of concerned researchers. In particular, the IPCC Special Report on Climate Change and Land Systems published in August of this year (9) shows that global warming has greatly increased due to

the exploitation of soils by industrial agriculture. At least 25% of the carbon dioxide, methane, and nitrogen compounds entering the atmosphere are due to the use of artificial fertilizers, forest clearance, monoculture, food destruction, and rapidly increasing meat production.

Because most adults, politicians, and business leaders have not taken the scientific research seriously, young people have now become active in a steadily growing movement. Their motives are not the egotistic exploitation of natural resources but concern for the future of the refreshing life on earth. Out of these motives, they have begun to act in a variety of ways.

What can we adults do? If we can use our power of thought to gain insight into the meaning of the rhythmic processes on Earth, the relationship between Earth and cosmos, and the vital importance of the speed of events, then vigorous action can emerge in harmony with these insights. More and more people should take up a science of rhythms and of the working of etheric forces in life.

For example, giving up air travel can become easier when one realizes that slowness is a prerequisite for deepening one's inner connection with the Earth and with people in other parts of the world. Even when traveling, attending to the rhythms of time and space is important. If such insights lead to many actions that reduce our so-called ecological footprint and diminish the production of carbon dioxide, then the gap between adults and adolescents that has become so apparent today can be overcome.

What contributions can schools make, and do Waldorf schools have a special task? In the upper grades, practicing the formation of judgment on the basis of a deepened phenomenological approach to many world encounters can stimulate living, moving concepts of rhythm, metamorphosis, life forces and development. Exam-oriented learning of finished content leads to the paralysis of willpower and ultimately to lack of interest in the world. In their preparation, teachers would have to work through and enliven the legitimate results of science and thus transform the materialistic world view into a realistic view of life.

The Waldorf high school curriculum offers opportunities to gradually practice judgment in relation to different areas of the world.(11) In the ninth grade the emphasis is on the development of causal-logical thinking, for example in the study of machines in physics or the study of earthquakes and volcanism in geography. This can be expanded in the 10<sup>th</sup> grade through the practice of mobility in thinking where one has to consider a subject from many different points of view. An appropriate theme is the flow equilibrium in the currents of the Earth's oceans and in the movements of the atmosphere. In the 11<sup>th</sup> grade, insight into causal and reciprocal relationships as well as the concept of rhythm can be developed in the study of cellular biology and astronomy. Living thinking becomes intentional. The signature of the final year [12<sup>th</sup> grade] is the grasp of archetypal ideas, which leads to pure thinking. An appropriate theme is the study of evolution in biology, Earth science,

and anthropology. Projective geometry also provides practice in this kind of active thinking. In this way students develop the tools they need to exercise appropriate judgment vis-à-vis the four aspects of the world: the mineral, plant, and animal kingdoms, and human cultural life.

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