

## “INSTGROWTH Balanced System” and General Environmental Cycles

### Nature:

*One word that says so much in the minds or people. The boundless expanses, the seemingly never ending supply of land, the forest, the wildlife and the water. The great diversity of life within these landforms both macroscopic and microscopic seems as large as the land itself. Everything so large yet so fragile.*

### Man:

*manager keeper, and overseer – changing, moving and conquering four corners of the globe.*

In South America the burning of the rain forests, in North America the mass logging of trees, industrial pollution, and the conflicting agricultural practices. In Africa, Europe, Asia, Australia, the oceans and in the sky man is fulfilling one of his God Given Commands, “Fill the earth and subdue it.” Where is this leading us both globally and personally?

If one is to assess this, a basic understanding of nature and common sense is required. Life forms on earth interact with the planet, causing four major cycles. These four sequences balance each other and go into a dynamic equilibrium. The Atmospheric, the Hydrological, the Geological and the Biological Cycles interact and are dependent on each other. When one is affected, the others form a new equilibrium. Once the equilibrium is static, the biological cycle has ceased to exist. An excellent example of how changes occur is the study of Atmospheric Rivers (AR) that are showing how the flood or drought conditions happen in West Coast of North America.

The Gaia Theory, developed by James Lovelock, explains these interactions. In summation, it is the theory that states, “Just as countless organisms sustain human life, so living things have changed our planet from a chemical ball to a self-sustaining organism.”<sup>2</sup> Though change is occurring continuously, it is cyclical. If the cycles are disturbed or changed, a rebalancing will occur. If this were correct, in examining the history of these major cycles, any minor change within them would, therefore, signal a severe transformation is about to occur.



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1-5



In the earth's recent history, the major contributors to the planet's atmospheric stabilization are the photo synthesizers. They have held the atmospheric oxygen at 21% and the soil concentration of carbon dioxide 30 times higher than atmospheric carbon dioxide. Trees can be analogous, to biological pumps, producing oxygen in the atmosphere at the same time storing carbon dioxide and nutrients into their biomass. Currently, levels have been changing with an increase of carbon dioxide in the atmosphere. The burning of oil wells in Kuwait or the continuous combustion of fossil fuels in industry and automobiles are contributors to the increase in atmospheric carbon. The global and local haze impedes plant photosynthesis. Mass logging operations throughout the world and the slash and burn policies in the rainforest regions are depleting our trees. The greenhouse effect can only occur because the Biological Cycle is altered or impeded thus, causing alterations in the carbon cycle. The biological pumps ability to increase oxygen production and decrease carbon dioxide can be slowed or terminated. The beginning of changes can be seen in the Hydrological and the Geological Cycles relationship.

The Geological Cycle, though being affected by the Hydrological Cycle, is determined further by four factors. Biota, topography, climate and parent geological material and are all governed by the fifth time. The biota determines the amount of biomass that is inputted into the system that defines fertility of the soil through the fungistatic and allopathic activity of plants and the balance of the macro and microorganisms. This, in turn, determines soil pedogenesis and subsequent soil classification that is defined by a series of criteria one being the amount of soil organic matter present. General fertility is determined by the amount of soil organic matter and the decomposition of this material into humic/fulvic acid or humus content. The moisture retention capabilities of the soil are increased geometrically with the addition of organic matter into the soil. Precipitation has a direct correlation to the type and amount of the vegetation group (trees or grass). A mature forest ecosystem generally develops soils with low soil organic matter but has higher precipitation rates. The carbon sink is in the mass of the trees rather than the soils such as with grasses.



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When trees are burned or removed, carbon dioxide is released into the system through the following reactions:

1. The chemical release of carbon through the burning process (Atmospheric).
2. The decomposition of the stump and roots (Hydrological).

The little understood mechanism of carbon release is through the decomposition of the stumps and roots. During the decay state, carbon dioxide is produced, this combines with rain to form carbonic acid. In temperate zones, carbonic acid combines with other soil elements then leaches these, most importantly calcium, out of the soil profile. Acidity is observed with the changes of soil pH before and after the disturbances. Mature tropical rain forest soils differ in that the soils are nutrient weak because of the consistent leaching of the natural heavy rains. Elements are retained in the living bio-mass and maintained in the system through a slow recycling system. With a massive burning of trees, in these regions, the nutrients are stripped very quickly from the profile as there is not sufficient vegetation to immobilize the newly available nutrients. The poorly planned farming in the tropical regions and the slow revegetation programs in the temperate regions start to complicate and set the system off balance. Low soil fertility and lower rainfall problems, because of the lost ability of the forest to create rain, destroys the past ecosystems and hinders recovery. Initial erosion and decrease in pH have two effects:

1. Removing any soil organic matter necessary in soil fertility and the reduction of moisture retention.
2. Lowering the phosphorus availability in the soil required for germination and root growth.

In temperate regions, the cycle is slower, but higher amounts of calcium carbonate are leached. The reduction of plants has thus affected the Geological Cycle through soil erosion and nutrient leaching. The Hydrological cycle has also been altered with the change in precipitation.

The changes in the Hydrological Cycle start with the leaching of soil nutrients. In the oceans, approximately 500 mega-tons of salt are added yearly from continental runoff. Yet, the salt concentration remains at 3.5% by weight content, and the atmospheric carbon dioxide has only increased by 10%. Something else is stabilizing the system. The algae are the other photo synthesizers but living in the oceans.



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These microorganisms take calcium carbonate out of the ocean, release oxygen into the air, and deposit limestone or petroleum products back into the oceans. A third product produced by this cycle is dimethyl sulfide.<sup>4</sup>

In understanding the importance of this gas, digressing for one moment is needed to explain another critical point. This is that of water evaporation and the weather criteria that form clouds. Large amounts of moisture are continually being evaporated off the ocean surface. One aspect that has puzzled meteorologists was in the formation of clouds since there were no known cloud condensation nuclei out over the oceans. In their life cycle, these algae produce sulfur beanie that assists them to resist the reverse osmotic pull of seawater. When one of these organisms dies and decomposes, the betaine is converted into dimethyl sulfide (a compound capable of condensing water vapor). With the reduction of surface nutrients, large amounts of algae die, releasing high amounts of dimethyl sulfide into the atmosphere. Once in the atmosphere, dimethyl sulfide causes the condensation of water droplets. This releases about 600 calories for every gram of water produced. The result is a large updraft that creates a tropical storm or hurricane. With the increase in algae growth, this cycle promotes more severe storms causing movement of the calcium carbonate nutrients to come to the surface. In this case, two things have been noticed:

1. A 100% increase in the amount of algae growth over the last ten years.
2. In the last century, more than half of the most severe tropical storms have occurred within the previous ten years. This cycle is further supported by Arrhenius, who first said, "Trade wind variations are caused by the calcium carbonate enrichments in the deep seas."<sup>5</sup>

In assessing these cycles on a worldwide basis, the Atmospheric and Hydrologic Cycles will be the most violent if man is to continue with his current plans. The initial consequence, which is most predictable, is the significant changes in the weather. Desertification around the equatorial regions will occur because of the denuded land's inability to create rain. The temperate zones will have severe storms with massive flooding due to the energy released caused by the algae cycle. Once a balance has occurred between the calcium carbonate in the deep seas and the algae, the storm strength should subside with a weather reversal above and below the 30th parallels





The climatic equilibrium of the earth that of cooling will have been reduced because of the changes in the equilibriums. The weather system and calcium carbonate cycle will then further disrupt the current cycles with precipitation and weather changes. The greenhouse effect would continue until the excess carbon dioxide in the air has been redistributed into plant biomass. It is difficult to say whether the plant life will be as prolific or how quickly recovery will occur. Continued warming would lead to melting of the polar ice caps and a dramatic rise in sea level.

World agriculture production would most certainly be affected through loss of production of food. The world population could be fed on current production. However, because of political policies, wealth disparities, and corporate financial greed the health of our planet is jeopardized. Intensive farming practices must be employed utilizing G.E.M. (Germination Enhancement Method), the E.S.M. (Breakthru InstaGrowth Eco-logical Soil Management) or similar “Balance System” approaches. Essentially solutions that are long-term, environment and ecosystem friendly must be used.

Larger wildlife reserves must be allotted with more thought of preserving and recycling our resources. Northern prospects initially will be more beneficial. Global warming will produce more arable land further north or in the far southern hemisphere. With the desertification moving to be above the 30th parallel, however, lower altitudes will become parched and unproductive once the water resources in ice fields are used up, and irrigation becomes impossible. These results no one is wanting. However, we must become resource wise. We must have altruistic values and be recycle oriented if we are to avert disaster. Possibility we have gone too far, and we may be soon witnessing the first end time prophesy in revelations with states, “and a third part of the earth was burnt up, and a third part of trees was burnt up, and all green grass was burnt up”.<sup>6</sup> Each person must ask whether they are resourcefully subduing the earth or mindlessly destroying it.

#### References

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5-5

