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AN ECO TOUR INTO THE NATURAL CYCLES THAT SUSTAIN LIFE ON THE EARTH IN *THE BIBLE*

VIJAYARANI. A
Associate Professor of English
Avinashilingam Institute for Home Science and Higher Education For Women, Coimbatore- 641043.

VIJAYARANI. A

ABSTRACT

The term "ecocriticism" was coined in 1978 by William Rueckert in his essay "Literature and Ecology: An Experiment in Ecocriticism." Interest in the study of nature writing and reading literature with a focus on "green" issues grew through the 1980s, and by the early 1990s, ecocriticism had emerged as a recognizable discipline within literature departments of American universities. It is highly relevant today when man's life on earth is threatened by three major factors : Global warming; Ozone Depletion; Nuclear threat. It is important now that man focuses his attention on the marvellous creations of God, especially the three cycles–Water cycle, Carbon–oxygen cycle, Nitrogen cycle. In this regard, the scientific accuracy of *The Bible* is amazing. *The Bible* revealed astonishing details regarding earth's climate system, centuries before non–Biblical writings did. *The Bible* books genesis, Job, Isaiah, Ecclesiastes, Amos reveal details of the three cycles of nature. In the 11th century B.C.E., King Solomon of Israel wrote about water cycle in the book of Ecclesiastes and about 800 B.C.E. the prophet Amos, a humble shepherd and farmworker, wrote about the same without using complex, technical language. Both accurately described the water cycle. If man draws a deep breath, he owes much of that breath to the oceans because the algae in them, supply some 90 percent of the oxygen we breathe. The microscopic phytoplankton of the oceans provide maximum of planet's oxygen. The oceans play a crucial role in global climate and rain cycles. In short, the oceans are a key to life on this planet. This paper is an eco-tour into the concepts of vital cycles of nature in *The Bible*, with the aim of providing practical solutions to protect the earth, the only inhabitable planet.

Keywords : Ecocriticism, Paris climate deal, Bible, Water cycle, Carbon–oxygen cycle, Nitrogen cycle, Legumes, Phytoplankton.

CherylIGlotfelty, one of the pioneers in the field, has defined ecocriticism as "the study of the relationship between literature and the physical environment," and Laurence Buell says that this study must be "conducted in a spirit of commitment to environmentalist praxis." David Mazel declares that it is the analysis of literature "as though nature mattered." The term "ecocriticism" was coined in 1978 by William Rueckert in his essay "Literature and Ecology: An Experiment in Ecocriticism." Interest in the study of nature writing and reading literature with a focus on "green" issues grew

through the 1980s, and by the early 1990s ecocriticism had emerged as a recognizable discipline within literature departments of American universities. This paper is an eco-tour into the concepts of vital cycles of nature in *The Bible*, focusing on green issues, as *The Bible* yields a lot to this eco- critical analysis and provides practical solutions too.

The scientific accuracy of *The Bible* is simply amazing. When there was lot of speculation regarding how the earth was held, *The Bible* correctly noted that "He stretches out the northern sky over empty space, suspending the earth upon nothing"(Bible – Job 26:7 written about in 1613 B.C.E) and it is in perfect harmony with recently understood laws of gravity and motion. The Encyclopedia Americana says ". . . The concept of spherical earth was not widely accepted until the renaissance". But in *The Bible*, the book of Isaiah 40: 22 says "There is one who dwells above the circle of the earth**"**.(written about 732 B.C.E) The Hebrew word 'chugh' was translated as 'circle' and 'sphere' by Davidson's Analytical Hebrew and Chaldee Lexicon. Other translations say "the globe" of the earth. This evidence shows that *The Bible* is really inspired by God.

Creations of the world display God's unsurpassed wisdom and love. In *The Bible*, Psa: 104:24 says **"**How many your works are, O God You have made all of them inwisdom." After God created everything, He placed first man and woman in Eden-a paradise garden and blessed them "Be fruitful and become many and fill the earth and subdue it"... after that God saw everything he had made, and look! It was very good" (*The Bible*-Gen:1:28, 31). Yes God was satisfied that His creations were perfect. If God certifies, it is understood that the earth was not polluted at that time and that is why the genealogical record of Adam's generations show that they lived nearly thousand years-the life span of ten generations of our time. *The Bible* says Adam lived for 930 years and Methuselah lived the longest period that is 969 years (*The Bible*-Gen 5:5). How was it possible? Scientists unanimously agree that it was possible because at that time the earth was pollution free - with pure air and water and they were vegetarian-consuming fruits, greens and herbs and so people could live so long. The life span of man had been and has been gradually reduced over the time. Now the average age of man is 60 years. Several reasons contribute to this reduced life span of man and now man's life on the earth is threatened by three major factors: (a)Global Warming, (b)Ozone Depletion and (c)Nuclear Threat.

Global warming: it is not an abstract science but a daily reality. The dangers posed by climate change are nearly as dire as posed by the nuclear weapons says the "Bulletin of Atomic Scientists". The main reason is the accumulation of green house gases and the atmospheric concentration of GHG has increased markedly over the 250 years. Scientists believe that, the melting of ice caps and glaciers, and the death of coral reefs and important species, the burning of coal, oil, and natural gas-fossil fuels emit high amounts of carbon di oxide into the atmosphere –all point to global climate change. Because trees absorb carbon dioxide, large scale deforestation may also contribute to climate change. In "The Hindu" (English) dated 24th September 2016, the article 'Valuing the Forest Ecosystems' says "it is estimated that between 12-22% of GHG emissions are caused by deforestation across the world". Global warming causes topsy-turvey climate, flood, drought, torrential rain, cyclone, land slides and strange diseases.

Paris Climate Deal: According to the World Meteorological Organization (WMO), the year 2016 is the warmest year on record globally. The globally averaged concentration of CO2 in the atmosphere reached to 400 parts per million (ppm) for the first time in 2015. It is expected to surge again to new records in 2016 on the back of the very powerful EI Nino event. This is for the first time CO2 levels have reached the 400 ppm barrier on a global average basis for the entire year. Serious measures have been taken by the nations of the world to combat global warming at present. At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The threshold for entry into force of the Paris Agreement was achieved on 5th October 2016. 94 parties have ratified the convention. India was the 62nd country to ratify it on

2 October 2016. The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C.

Ozone depletion: The Ozone layer protects the most UVB coming from the Sun. Ozone layer depletion increases the amount of UVB that reaches the earth surface which causes non-melanoma skin cancer and plays a major role in malignant melanoma development. In addition UV has been leading to the cataracts. UVB radiation affects the plant kingdom also. It affects the process of how the nutrients are distributed within the plant, the timing of developmental phases and secondary metabolism.UVB radiation affects the very foundation of oxygen source and aquatic food web-phytoplankton. Phytoplankton productivity is limited to the euphotic zone, the upper layer of water column in which there is sufficient sunlight to support net productivity. This UVB radiation affects both orientation and motility in phytoplankton, resulting in reduced survival of the major source of oxygen. UVB radiation causes damage to all the living creatures of sea. It affects reproductive capacity and the larval development.

Nuclear threat: Today, nine countries: China, India, Israel, France, North Korea, Russia, the United Kingdom and the United States-altogether hold nearly 25,000 nuclear weapons and that's enough to destroy the planet hundreds of times over. "Nuclear weapons remain the gravest and most immediate threat to human civilization. . ." (Union Of Concerned Scientists).

Apart from these major threats, the world faces (a)Extinction of critical species (b)Super volcanoes and (c) Asteroids. "Every year between 18000 – 55,000 species become extinct due to human activities (United Nations Development Program). Volcanoes kill plants and animals for miles around. Super volcanoes threaten whole species with extinction by changing the climate across the entire planet"(National Geography). Impacts of asteroids happened more frequently in the past and they will happen again. It is just a matter of when. All these problems result in water and food shortages for the current population of the world and the governments worry about over population also .

Taking into consideration of all these alarming facts, it is important that man focuses his attention on the marvelous creations of God, especially the three cycles which are essential to sustain man's life on earth.

Water cycle:The importance of water and different forms of water are mentioned over 700 times in *The Bible* books. The water cycle which remained mystery for several thousand years to the scientists was clearly explained in the books of Isa: 55:10, Job: 36:16, 27, 28, Eccles: 1:7 and Amos: 5:8 of *The Bible*.

In addition to the general words for rain, a number of Hebrew and Greek terms in *The Bible* refer to various forms of rain - **"**Heavydownpour; rainy day" (1Kings:18:41; Eze:1:28), "spring rain" and "autumn rain" (Deut:11:14);Early rain and late rain (James: 5:7), "gentle rain" (Deut:32:2), "storms and the rain" (Isa: 4:6), and "showers of rain" (Psalms: 65:10).

At an early point in the history of the preparation of the earth, "God had not made it rain upon the earth," but "a mist would go up from the earth and it watered the entire surface of the ground." The time referred to is evidently early on the third creative "day," before vegetation appeared (*The Bible*-Gen 2:5, 6). The first instance of rainfall in the Biblical record was specifically mentioned in the account of the Noah's Flood, 4386 years before: "all the springs of the vast watery deep burst open and the floodgates of the heavens were opened. And the rain poured down on the earth for 40 days and 40 nights."-*The Bible*-Gen 7:11, 12.

Water cycle consists of three stages: Evaporation, Condensation, Precipitation.

Evaporation : about 97.5% of earth's water is held in the ocean and the rest 2.5% fresh water is locked up in glaciers or stored in lakes and aquifers. Glaciers and ice- bergs are the sources of 99% fresh water. Remaining 1% is supplied to global human population and other life forms. Of course ocean water is not drinkable. To reprise the cry of the anguished sailor in the poem the "Rhyme of the Ancient Mariner" by Coleridge "Water, Water everywhere but not a drop to drink". Before the

ocean water becomes drinkable, it takes a long complicated journey. First it evaporates and becomes a gas-water vapour. Every year heat from the sun draws up about 95000 cubic miles (4, 00,000 km^3) of Water from the land and the sea into the atmosphere. In *The Bible*, a man named Elihu gave the God, the credit for this process saying " He draws up water from the sea and distills rain from the mist He has made"-*The Bible*-Job:36:27.

Condensation: Condensation of the purified water produces clouds. How does it happen? The atmosphere is full of extremely small particles such as smoke dust and sea salt. As a parcel of air cools, water vapor condenses into tiny nuclei-minute water droplets and becomes visible in the form of clouds. However this water does not immediately fall to the earth, and moves to the next stage.

Precipitation: It is the real difficulty to explain how the water gets below again? It is the challenge of the atmosphere. Each individual cloud droplet is so small and light that it can float in the air currents. It may take different forms: hail, sleet, snow, and rain. When rain falls on the ground, the cycle is completed, which is ready to evaporate again. In *The Bible*, Elihumarveled at this fascinating part of water cycle: "Do you know how the clouds float?. These are the wonderful works of the One perfect in knowledge " (*The Bible*-Job 37:16) Is it not amazing that the small fluffy cloud floating in the air above contains 100- 1000 tonnes of moisture. How much water is thus recycled annually? According to the estimates, enough to cover the entire surface of the planet to a depth of 100cms. Regarding the earth's atmosphere, it was recorded in *The Bible* some 2,700 years ago: "For just as the rain and the snow pour down from heaven, and do not return until they saturate the earth making it produce and sprout, giving seed to the sower and bread to the eater." (*The Bible*-Isa 55:10) How succinctly that describes the hydrologic, or water cycle! Water vapour in the clouds condenses and precipitates as rain, which "saturates the earth." Solar heating causes moisture to evaporate and "return to that place," or the atmosphere, to start the cycle again.

The Bible revealed amazing details regarding earth's climate system centuries before non-Biblical writings did. When it comes to the outcome of the present climate crisis, would it not be reasonable for us to look to "the Creator of the wind," the "father of the rain," the one who knows how this planet functions?—(*The Bible*-Amos 4:13; Job 38:28). The oldest surviving non-Biblical references to this cycle are from the fourth century B.C.E., but Biblical statements predate that, by hundreds of years. For example, in the 11th century B.C.E., King Solomon of Israel wrote: **"**All the streams flow into the sea, yet the sea is not full. To the place from which the streams flow, there they return so as to flow again."— (*The Bible*- Eccles 1:7writtenbefore 1000 B.C.E). Likewise, about 800 B.C.E., the prophet Amos, a humble shepherd and farm worker, wrote that God is "the One who summons the waters of the sea, to pour them out on the surface of the earth." (*The Bible*-Amos 5:8). Without using complex, technical language, both Solomon and Amos accurately described the water cycle, each from a slightly different perspective.

The enormous volume of the oceans is the basis for the rain cycle, which makes plant growth possible. The oceans also prevent extreme temperature fluctuation.

Without the oceans, another cycle—the oxygen – carbon dioxide cycle—would fail. Oxygen is used by animal life and carbon dioxide by plant life. The oceans absorb and release billions of tons of carbon dioxide and oxygen as needed, to keep the supply balanced at all times. Of course, the oceans are also a source of abundant mineral and animal wealth. Deut 33:19 in *The Bible* says, "For they will draw from the abundant wealth of the seas."

Carbon – oxygen cycle: Billions of creatures take oxygen and give off carbon-dioxide. But why does our atmosphere never run out of oxygen and become overloaded with carbon dioxide? The answer lies in the oxygen carbon cycle-the awe inspiring process called "photo-synthesis"**,** which has not been completely understood by the scientists till now. Photo-synthesis uses sunlight, carbon dioxide and water to produce carbohydrates and oxygen. Respiration, which occurs in animals and humans, combines carbohydrates and oxygen to produce energy, carbon dioxide and water. Thus the output of one cycle is the input of the another, and it all happens cleanly, efficiently and quietly. The

cycles of the various chemical elements may combine or overlap. Oxygen for example is present in carbon dioxide, carbohydrates and water. Hence it shares in both the carbon and the water cycles. Acts 17:25 of *The Bible* says the Creator uses the vegetation that he designed to give "toall people life and breath and all things". What a remarkable wisdom!

Nitrogen cycle: Nitrogen is essential for plant growth and reproduction. But the gas has to be converted, or fixed, into compounds such as ammonia before vegetation can make use of it. Life on earth also depends on the production of such organic molecules as proteins. (a)To produce those molecules, nitrogen is needed. Happily, that gas makes up about 78 percent of our atmosphere. The cycle begins when lightning converts nitrogen into compounds that plants can absorb. (b) plants incorporate those compounds into organic molecules. Animals eat those plants and acquire nitrogen. (c) Finally, when plants and animals die, another family of bacteria breakdown the nitrogen compounds, releasing nitrogen back into the soil and atmosphere, thus completing the cycle.

In this process, legumes play a great role by working in close partnership with bacteria called rhizobia. By means of a special chemical, the legume attracts the bacteria to it's roots, which the bacteria then enter. Although the bacteria and the plant are members of two separate kingdoms, says the "Natural History" magazine, they work together "to construct what is essentially a new organ: a fully operational nitrogen- fixing root nodule". Such a mutually beneficial union between unlike organisms is called symbiosis. Inside the nodule, their new home and work shop, the bacteria get to work. Their main tool is a special enzyme – a form of protein called nitrogenase-which they use to fix nitrogen captured from air pockets in the soil.

"The planets entire supply of nitrogenase . . .could fit into a single large bucket," says "Natural History" magazine. So every molecule counts! But there is a problem. The enzyme is ruined by oxygen. The solution? The legume produces a special substance that snatches potentially harmful oxygen away. A membrane around the nodule controls the exchange of ammonia, sugars, and other nutrients between microbe and plant. Like all plants legumes also eventually die. When they do, the ammonia stays in the soil. Thus, legumes have rightly been dubbed "green manure". Amazingly we find species of legumes in tropical rain forests, in deserts and even in tundras. And if an area is burned over, legumes usually are the first plants to re-colonise. A dramatic example of this marvelous interlocking of air, soil, plant, animal and human life is seen in the nitrogen cycle.

The nature's cycles give enough proof that the earth's creator is not a God of confusion but of order. *The Bible*-Hos 2:21-23 says "I will answer the heavens, and they, will answer the earth; and the earth, will answer the grain and the new wine and the oil; and they, will answer Jezreel"..Yes God keeps the productive cycle in motion.. . Cosmologist Paul Davies writes : "As a cosmic drama unfolds it looks as if a there is a script –a coherent scheme of things. Nature is not an arbitrary juxtaposition of events but the manifestation of ingeniously interweaving mathematical laws". Lord Byron in "*Childe Harold's Pilgrimage" says*,

> Roll on, thou deep and dark blue ocean—roll!
> Ten thousand fleets sweep over thee in vain;
> Man marks the earth with ruin—his control
> Stops with the shore.

Now man's control no longer stops with the shore. He has left his mark on the sea, yes an ugly mark, an irrepairable mark.

The ocean does far greater job than please our senses. For instance, "*The New Encyclopedia Britannica" says,* "if man draws a deep breath, he owes much of that breath to the oceans". How so? It says that the waters of this planet, specifically the algae in them, supply some 90 percent of the oxygen we breathe. The microscopic phytoplankton of the oceans provide maximum of planet's oxygen. The oceans also moderate the globe's temperature, support an incredibly rich variety of life, and play a crucial role in global climate and rain cycles. In short, the oceans are a key to life on this planet. In *The Bible* Psalm 104: 25 says "there is the sea, so great and wide. Teeming with countless living things, both small and great".In harmony with this, Wordsworth says "The Ocean is a mighty harmonist".

Humans, with all their advanced technology, create countless tons of unrecyclable toxic waste annually. Yet, the earth recycles *all* its wastes perfectly, using ingenious chemical engineering. How the earth's recycling systems arose? "If the Earth's ecosystem had truly evolved by chance alone, it would not possibly have been able to reach such a perfect level of environmental harmony," says religion and science writer M. A. Corey. Yes The Universe is governed by laws "I (Jehovah) have established my covenant regarding the day and the night, "the laws" of heaven and earth" (*The Bible*-Jere: 33:25-written before 580 B.C.E).

When man discerns into nature's cycles, he can understand that God's wisdom is superior to his wisdom. If God can design things better than inventors can, does it not stand to reason that He can advise us better than human counselors can?

Though man has ruined the earth beyond repair, Bible assures that God will definitely restore his original purpose in His kingdom. Psa104:5 says " He has established the earth on its foundations. It will not be moved from its place forever and ever" and Ecclesiastes 1:4 says " a generation is going and a generation is coming. But the earth remains forever".

The Bible's description of paradise in God's kingdom is truly breathtaking, that it tells of a dramatic change. In *The Bible*, book of Isa 35:1-7 describes "The wilderness and the parched land will exult. And the desert plain will be joyful and blossom as the saffron"; "for waters will burst forth in the wilderness and streams in the desert plain"; "the heat- parched ground will become a ready pool, and the thirsty ground springs of water. . . There will be green grass and reeds and papyrus". Isa 55:13 says "instead of thornbushes the juniper tree will grow. And instead of the stinging nettle the myrtle tree will grow".

There will be perfect harmony between man and animal kingdom too.In *The Bible* the book of Isaiah 11:6-9 say the wolf and the lamb; the young goat and the leopard; the calf and the lion ; the cow and the bear and their young will lie down together . The lion will eat straw like the bull. The nursing child will play over the lair of a cobra and a weaned child will put his hand over the den of a poisonous snake. And the earth will be filled with the knowledge of God.

The original purpose of God is that the Man, the God and the Nature should live in harmony, which will be restored soon in "Gods" kingdom, which is fast nearing as we live in the verge of the last days foretold in *The Bible*. Until then it is very urgent and dire need that we should protect the earth by taking the real steps. Each and every individual of the globe should contribute to minimize the global warming and climate change by taking practical steps like: reducing waste by choosing reusable products instead of disposables; Buying products with minimal packaging; By recycling half of household waste, one can save 2,400 pounds of carbon dioxide annually. Reducing the amount of energy to heat and cool the home; Setting the thermostat just 2 degrees lower in winter and higher in summer could save amount 2000 pounds of carbon dioxide each year; Replacing regular light bulbs with LED bulbs; Using bicycles wherever possible; Buying Energy-efficient product home appliances now come in a range of Energy – efficient models; Setting water heater at 120 degrees to save energy; Buying low-flow showerheads to save hot water and save 350 pounds of carbon dioxide yearly; Washing clothes in cold or warm water can save 500 pounds of carbon dioxide annually in most house holds; Using the energy saving setting on the dishwasher and let the dishes air-dry; Turning off lights when not in room or home and save electricity; Planting more trees-a single tree absorbs approximately one ton of carbon dioxide during its life time. Getting a report card from utility company and sharing information about recycling and energy conservation to all.

"Nature never did betray the heart that loved thee" says Wordsworth in his poem "Tintern Abbey". So let us not betray nature and betray the God who created nature. If we betray nature and God we betray ourselves. So let us love nature, protect nature and the earth, the only inhabitable planet in the universe.

WORKS CITED

1. Durairaj Joseph, A. Interventions – Essays in Philosophy and Literary Theory. Folklore

Resources and Research Centre (FRRC) : South India. 2006 print.

2. Nagarajan M.S. English Literary Criticism and Theory –and Introductory History. Orient Black Swan: India.2006.Print.
3. New World Translation Of The Holy Scriptures. Watchtower Bible and Tract Society: New York. 2013.Print.
4. Watchtower Bible and Tract Society, What Does *The Bible* Really Teach?.New York: USA 2005.Print.
5. Watchtower Bible, and Tract Society. Life– How Did It Get Here? By Evolution or byCreation?.India, Lonavala. n.d.print.
6. Watchtower Bible and Tract Society. "Was Life Created?". New York: 2010.Print.
7. Watchtower Bible and Tract Society, pennsynvania : USA "Is planet Earth Under Threat?". Awake. Aug. 2008: 4, 5.Print.
8. Watchtower Bible and Tract Society, "Cycles for Life". Awake. Feb 2009:8, 9.Print
9. Watchtower Bible and Tract Society, pennsynvania : USA, "Awestruck by Nature" Awake Dec 2009.3.print
10. Competition Success. Tamil Nadu, India.2016.print.
11. MLA Hand Book for Writers of Research Papers – 7th Edition
12. http://www.scientificamerican.com
13. www.jw.org