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Why Deforestation of the Tropical Rainforests Will Change Wind Patterns And Cause Internal Heating Of The Earth

From common Geography, it is known that the Rainforests lie within the Tropics of Cancer and Capricorn. Trees that grow within this region are characterised by large root bases such as the Buttress, to support their incredible height within a thin soil layer. The height is important as increased competition for sunlight within the forest canopy can lead to non-survival of a species.

Within this tropical region, lies the Equator, which receives direct sunlight. Here, the air is heated and rises, leaving low-pressure areas behind. The trade winds – warm steady breezes – blow towards the Equator. From the North and South, they meet at the Equator at a point known as the Intertropical Convergence Zone (ICZ), where clouds and thunderstorms will be formed. The Rainforests were formed and adapted to meet this climate over millennia.

With the forests receiving direct sunlight and over 2 inches of rain per hour, the ecosystem is a hot and humid place with a constant temperature between 70-85°F. These conditions lead to evapotranspiration, the process where plants and trees release water, which evaporates into the atmosphere. Water moisture is condensed and circulated to the West where it forms as clouds and eventually into rain. Plants and trees absorb heat energy from the atmosphere in order to continue the process of evapotranspiration. However, deforestation means less heat is absorbed and therefore less moisture is released. It must be noted that although deforestation affects this process, plant life on the brim of the newly deforested area, and those plants that have thrived within the shade of the forest canopy, have been seen to stop photosynthesis and die due to changes in rainfall and solar radiation.

Although Rainforest deforestation can be attributed to a decline or increase in rainfall distribution, leading to drought, flooding and soil erosion, and the known view that the rainforests act as a carbon ‘sink’ by converting carbon dioxide into physical mass and releasing oxygen, it must be said that Rainforest deforestation also affects the Albedo of the equatorial region.

The tropical Rainforests have a low Albedo and as such, more solar radiation is absorbed. A percentage in the region of 5-15% is estimated as the albedo for tropical forests. With deforestation, the albedo decreases further and studies have shown that the temperature of a deforested area actually increases by 5°F over a year. An increase in surface temperature will lead to warm air which will rise, leading to low, cooler pressure areas.

Although the Hadley circulation cell will transfer this warmer air towards the polar regions by some 30° latitude north and south where the air will become cooler, the increased temperature variation will result in extreme behaviour in the temperature, velocity and stability of the winds, and with the Coriolis effect, the wind patterns will change. A change in wind patterns will lead to changing temperatures of ocean currents, which will affect global temperatures.

The process of global heat exchange at the Earth’s surface will struggle to maintain the equilibrium. These increased heat energies are ‘held’ at the surface, which elevate the temperatures of the convection currents in the Upper Mantle.

For the Rainforests to be continually deforested with so much at stake, is a catastrophic crime against the Earth, although with our current knowledge, it is one that we can reverse, but we must not continue with scientific studies with a view to change, for these

studies will be published too late for us to act upon their findings.

It is not a question of time being on our side, for we have seen the changes in the climate, and now it is the time of right to pursue a course of action that safeguards the future of generations to come. It must be stated that the countries, which have custodianship of these forests, must continue with this ownership but must accept help from other countries – the receivers of this deforestation – in order to bring a balance back to the Earth. Continuing on this current trend of deforestation will, by scientific evidence, lead to a breakdown of the carbon and hydrological cycles within the tropical ecosystems, and will release millions of tonnes of stored carbon into the troposphere. Globally, as each hectare of tropical rainforest is lost per second, 200 tonnes of carbon is released into the atmosphere, and we are edging closer to the limit of which the tropical ecosystems can contend with.

We must bring this cycle to an end and begin reforestation programmes as soon as humanly possible.

By the time you have finished reading this, 270 hectares or 648 acres of rainforest will have been deforested globally, and 54,000 tonnes of stored carbon will have been released into the atmosphere. Although fossil fuel burning contributes more pollutants into the troposphere, the tropical rainforests are more important to the global climate systems than was first thought.

This document was written, based on The Report by Ann Walker and White Arrow (1992)