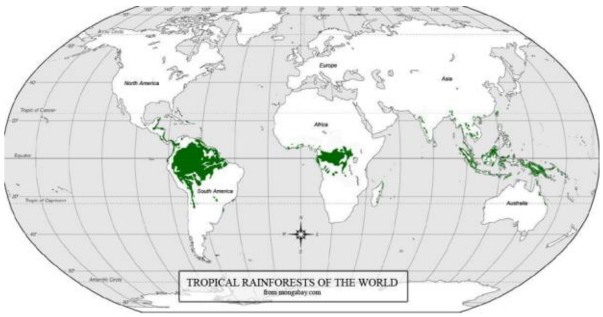
Junior High Geography
Chapter 4, Issue 1:
Climatics, Adaptations and Sustainable Management of Rainforests



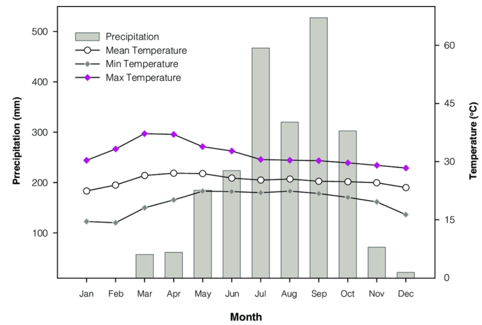
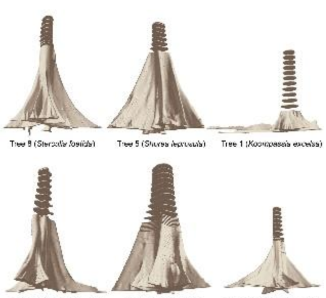


Fig. 1.1 **Fig. 1.2**

1.1 – *Global spatial distribution of tropical rainforests,* **1.2** – *a climograph of a tropical rainforest, as exemplified by the Cat Tien National Park (a lowland tropical rainforest in Vietnam)*

The **tropical rainforest** is the primary natural vegetation in the **tropical climate**. The tropical climate is characterised by a **high median temperature** and high levels of precipitation, especially during the **wet season** of a region. The part of the earth between the Tropic of Cancer and the Tropic of Capricorn (Fig. 1.1) is classified as the ‘tropics’.



1.3 – *the ‘long, elongated tip’ of a rainforest species,* **1.4** – *a research study on the Buttress roots of various tropical rainforest species and their diameter and skeletal structure*

The tropical rainforest consists of **4** layers: the **emergent layer** (top), the **canopy layer** (middle) and the **undergrowth layer** (bottom).

ACTIVITY: visit the *padlet link* and upload snaps of the college’s prominent rain trees (canopy) and low-lying shrubs (undergrowth). what observations can you infer?

Most rainforest species have **broad leaves** to maximize the surface area so that more chlorophyll can absorb sunlight for photosynthesis.
Most rainforest species have **waxy leaves** which give their surface a lustrous apperance. The characteristically high temperature of tropics **promotes transpiration** (loss of water vapour) which may have severe effects on plants in excess. Waxy leaves help reduce this by acting as a ‘barrier’ to the stomata through which plants transpire.

Due to the high precipitation in the tropics, many rainforest species – especially those in the undergrowth – have **drip tips** to promote surface runoff of water to deter fungal growth. (note: the characteristically high temperature of tropical environments also encourages fungi)

Many rainforest trees which are **taller in height** to reach for as much sunlight as possile usually have buttress roots, which prevent them from toppling over.

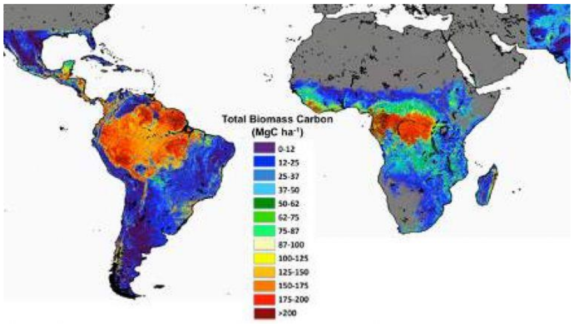


Fig. 1.5

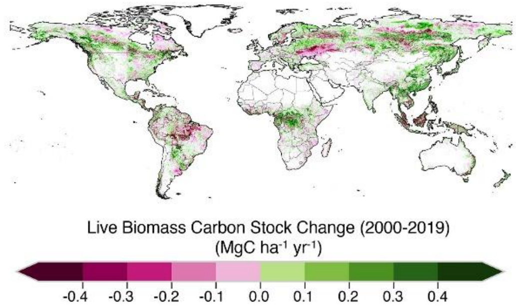


Fig. 1.6

1.5 – *a distribution of the total biomass of carbon stored (more carbon correlating to a brighter colour) in highly forested areas,* **1.6** – *a distribution from the NASA Propulsion Jet on how the biomass carbon stock change is starting to decrease in areas like the Amazon Tropical Rainforest*

The Amazon are the lungs of the world.

Tropical forests are simultaneously the **most extensive oxygen generators and carbon sinks on earth**. They release oxygen through their stomata as their chlorophyll photosynthesise, and as carbon dioxide is absorbed in photosynthesis – they **can store carbon** in solid form in leaves, branches, stems and roots. As plants die, the dead branches add carbon to the soil – which acts as fertiliser. We can observe that the biomass of carbon stored (MgC ha^{-1}) is **significantly** higher in extensive rainforests such as the Amazon **(1.5**) than in areas that are not as forested, such as Madagascar.

We are in a climate emergency. If we look at **1.6**, it becomes clear that many heavily forested regions are experiencing high **negative** change of biomass carbon storage, with the Amazon being as high as -0.4. Some regions are experiencing higher/moderate changes such as Alaskan forests and New Zealand, but note that these forests are **dedicuous/temperate** and do not store or generate as much carbon or oxygen as vast tropical rainforests – hence although it is a step in the right direction, these (+) do **NOT** uno-reverse the extremely negative (-) ramifications of deforestation. The aim is not balance, but **improvement**.

1.7 – the ‘climate clock’ in Glasgow