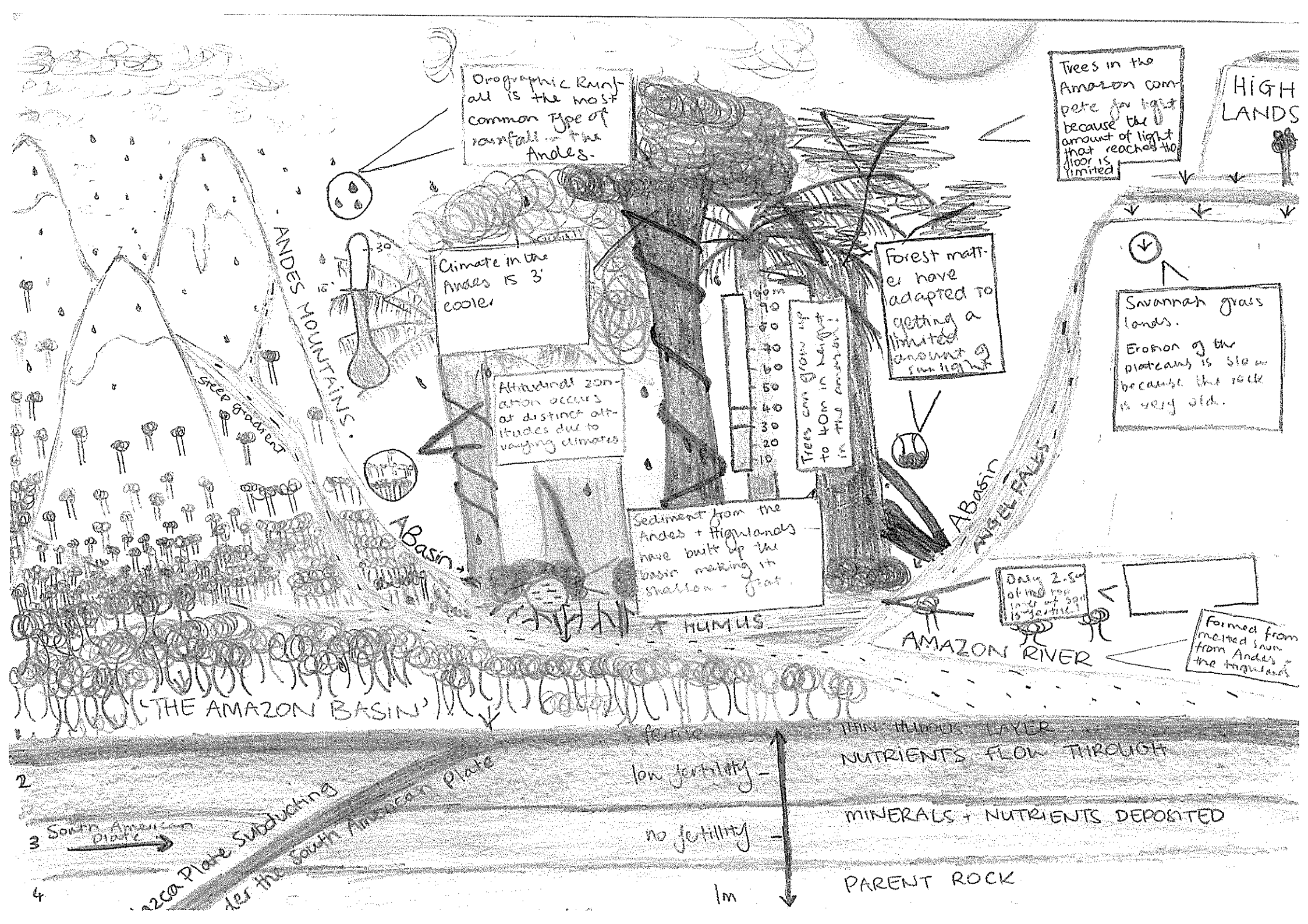
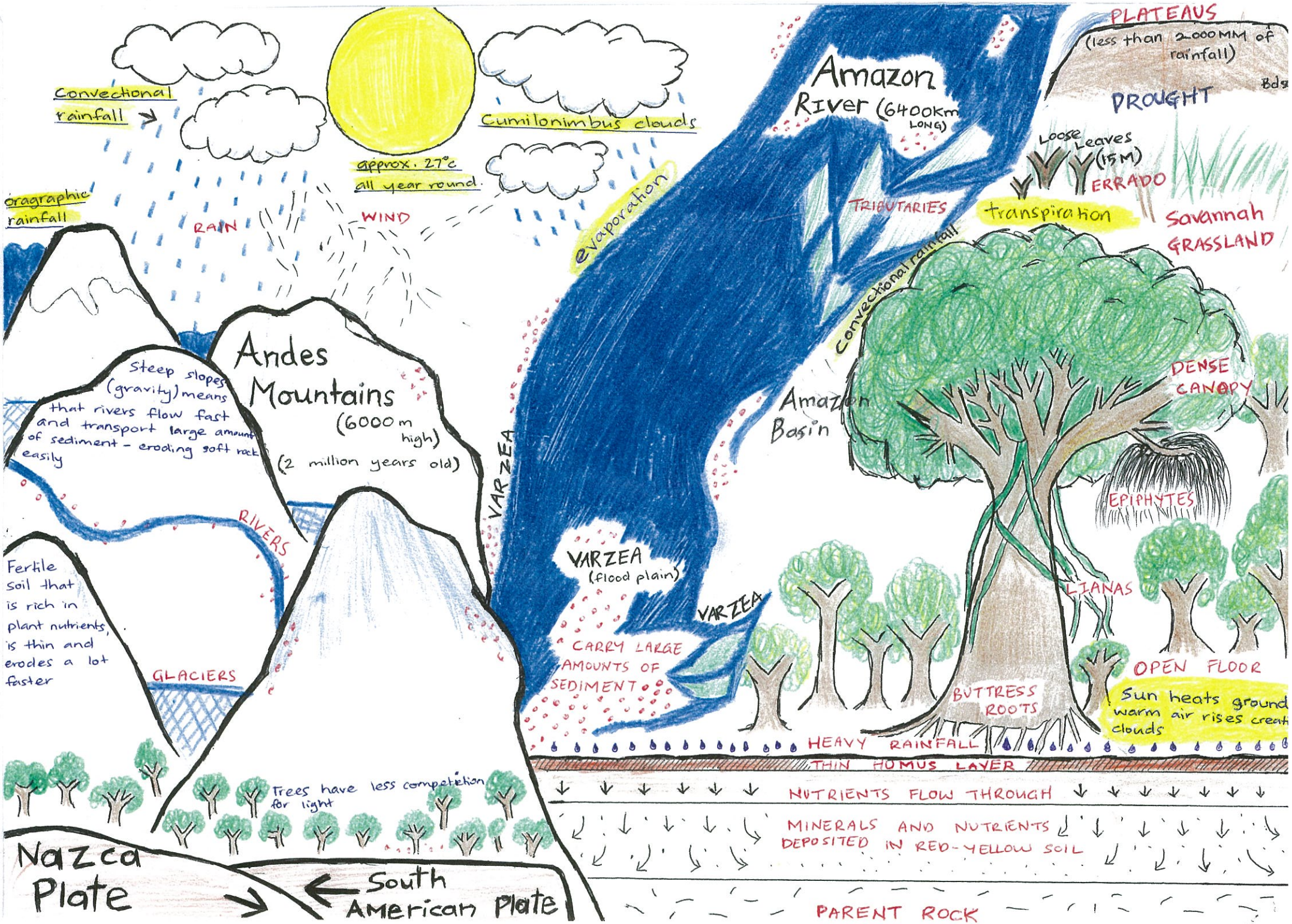
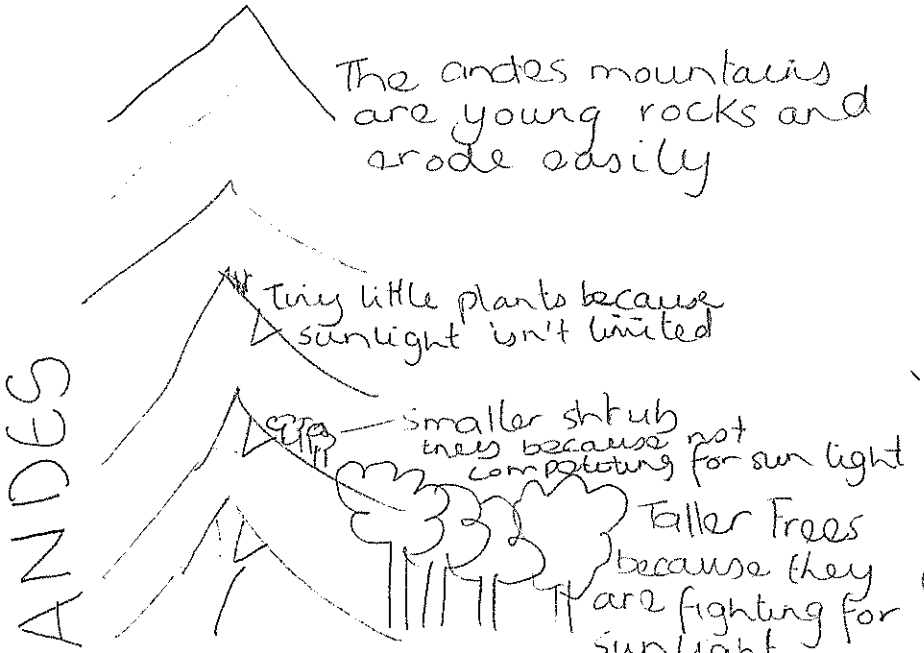
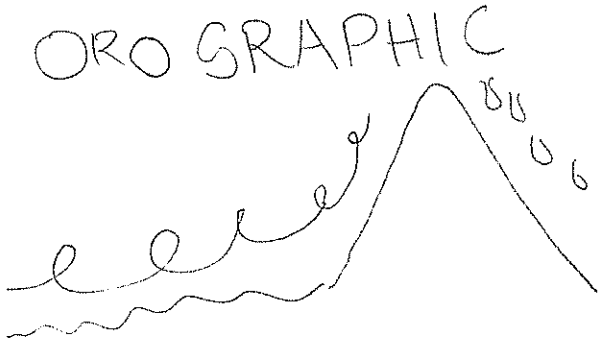

Orographic Rainfall is the most common type of rainfall in the Andes.
Trees in the Amazon compete for light because the amount of light that reaches the floor is limited
HIGH LANDS
ANDES MOUNTAINS.
Climate in the Andes is 3° cooler
Forest matter have adapted to getting a limited amount of sunlight
Savannah grass lands.
Erosion of the plateaus is slow because the rock is very old.
Altitudinal zonation occurs at distinct altitudes due to varying climates
Trees can grow up to 40m in height in the amazon
Sediment from the Andes + Highlands have built up the basin making it shallow + flat
A basin
ANGEL FALLS
HUMUS
Only 2.5cm at the top layer of soil is fertile
AMAZON RIVER
Formed from melted snow from Andes + the highlands
'THE AMAZON BASIN'
fertile
low fertility
no fertility
THIN HUMUS LAYER
NUTRIENTS FLOW THROUGH
MINERALS + NUTRIENTS DEPOSITED
PARENT ROCK
1m
2
3
4
South American plate
Nazca Plate subducting under the South American plate


Convectional rainfall
Cumilonimbus clouds
approx. 27°c all year round.
orographic rainfall
RAIN
WIND
evaporation
Andes Mountains (6000m high) (2 million years old)
Steep slopes (gravity) means that rivers flow fast and transport large amounts of sediment - eroding soft rock easily
RIVERS
Fertile soil that is rich in plant nutrients, is thin and erodes a lot faster
GLACIERS
Trees have less competition for light
Nazca Plate
South American Plate
Amazon River (6400km LONG)
TRIBUTARIES
VARZEA
VARZEA (flood plain)
VARZEA
CARRY LARGE AMOUNTS OF SEDIMENT
Amazon Basin
convectional rainfall
PLATEAUS (less than 2,000MM of rainfall)
PROUGHT
Loose Leaves (15M)
ERRADO
transpiration
Savannah GRASSLAND
DENSE CANOPY
EPIPHYTES
LIANAS
BUTTRESS ROOTS
OPEN FLOOR
Sun heats ground warm air rises creat clouds
HEAVY RAINFALL
THIN HUMUS LAYER
NUTRIENTS FLOW THROUGH
MINERALS AND NUTRIENTS DEPOSITED IN RED-YELLOW SOIL
PARENT ROCK



V shape valleys occur because of the formation of freeze and thaw.

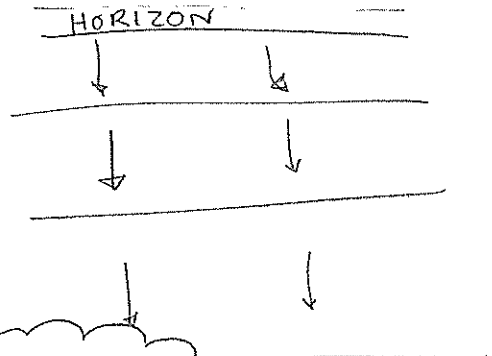


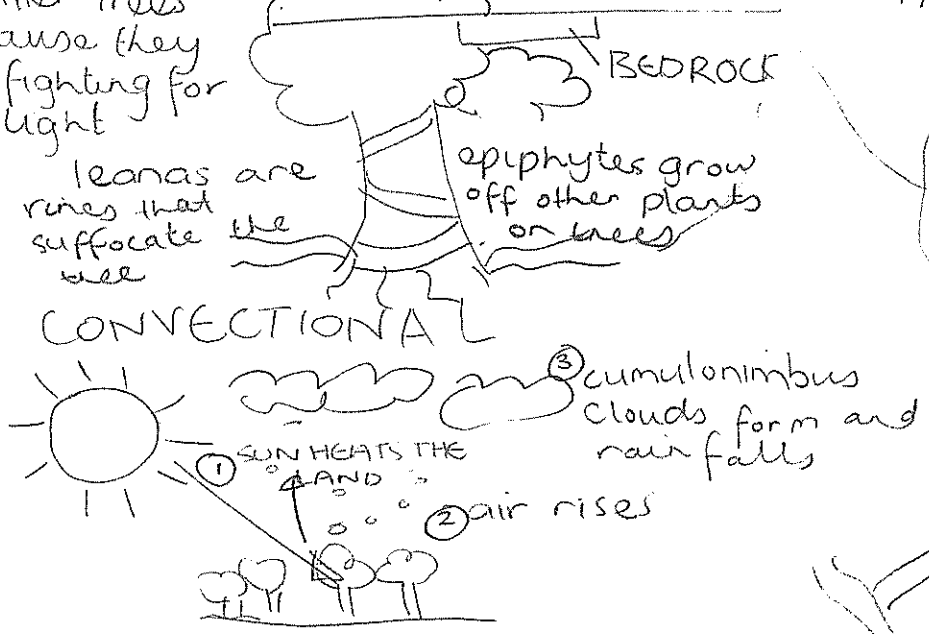
ATLANTIC OCEAN

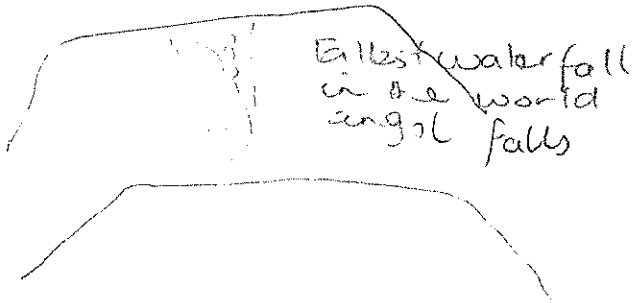
wind blows over ocean, picks up moisture, rises and gets dumped on the andes and flows down the other side.

NAZCA PLATE SUBDUCTING

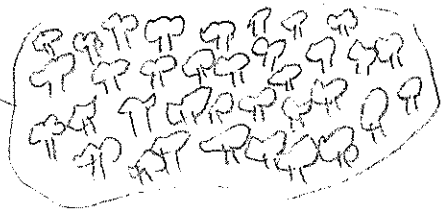
SOUTH AMERICAN PLATE



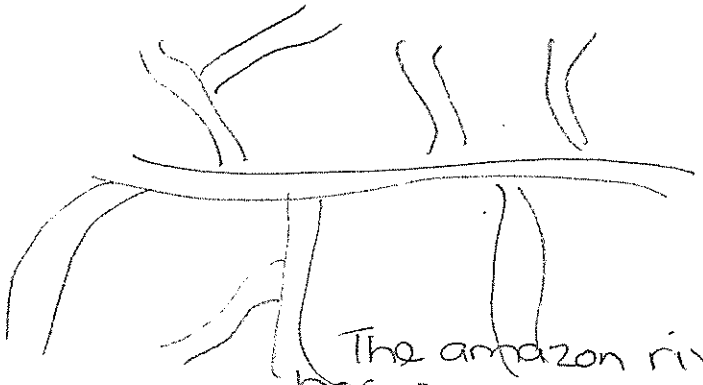




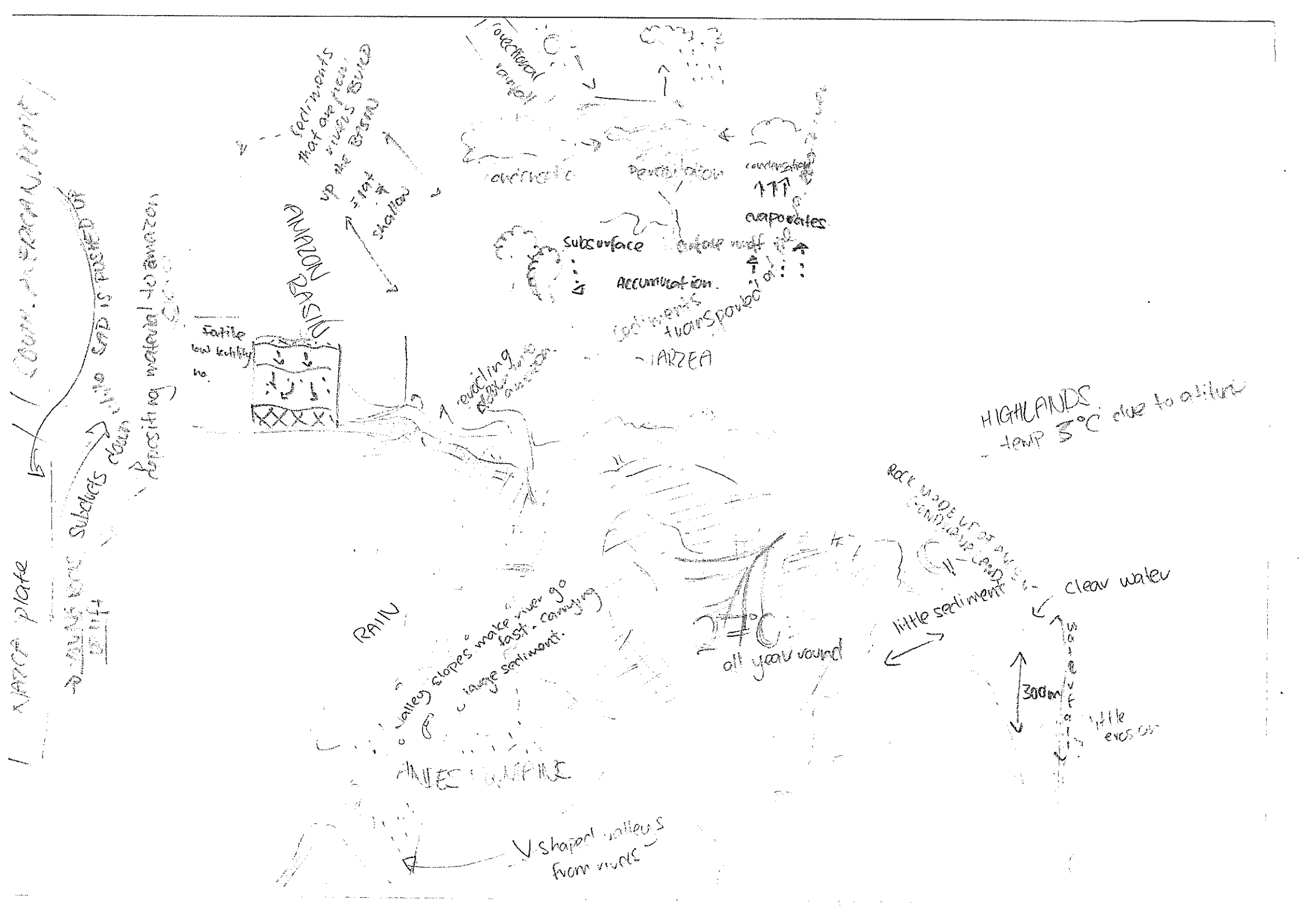
The high lands and Plateaus are old rock from Gondwana land. Water runs off the edges causing waterfalls to appear



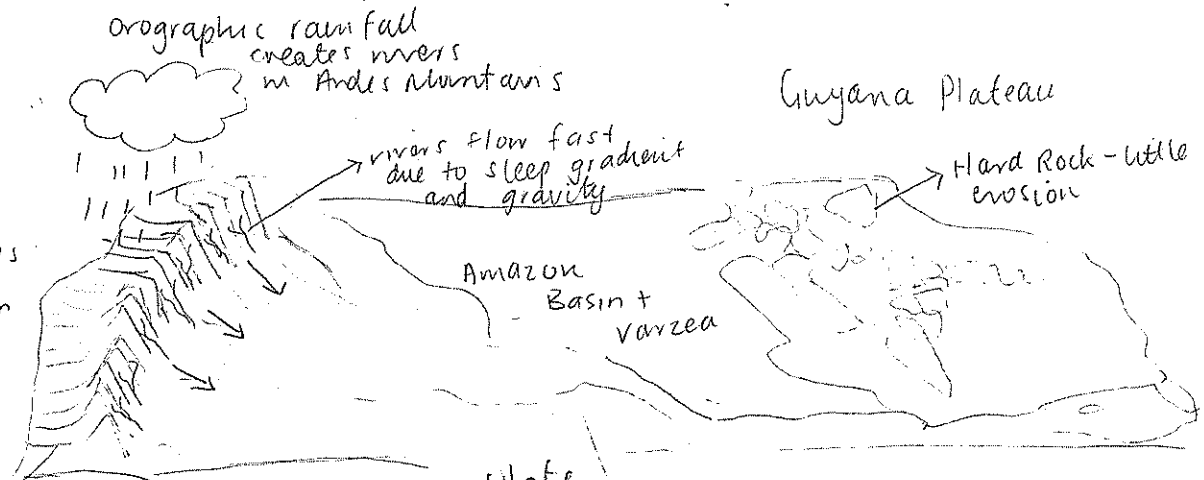
The basin is a shallow saucer because sediments are pushed everywhere from water off the andes



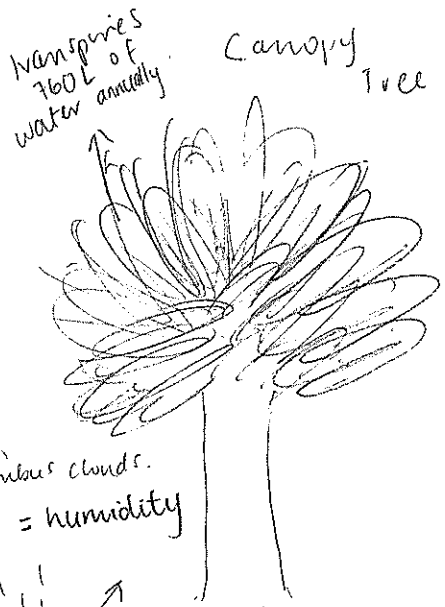
The amazon river has many tributaries running off it


AMAZON BASIN
sediments that are near rivers BURIED
up the BASIN
silt at shallow
overflow
evaporates
Subsurface
Accumulation
sediments transported
WARZEA
fertile
low fertility
no.
HIGHLANDS
temp 5°C due to altitude
clear water
little sediment
RAIN
valley slopes make river go fast, carrying large sediment.
all year round
300m
little erosion
V shaped valleys from rivers

Summary of the Amazon

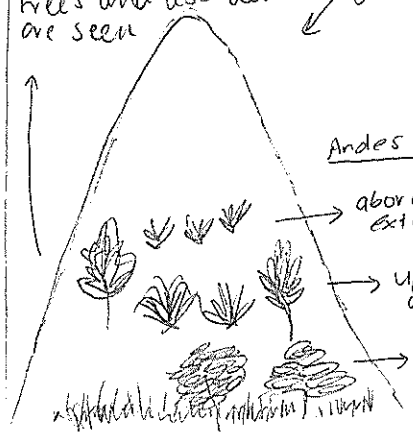


Andes mountains formed due to the subduction of the Nazca plate under the South American plate.



(24°C)

there are much cooler temperatures on the Andes foothills therefore smaller trees and less dense vegetation are seen



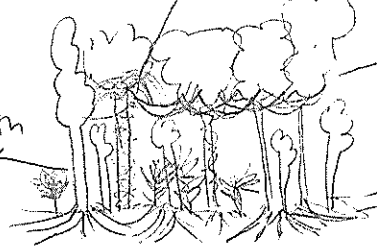
Andes Foothills:

- above 3000m, alpine pastures extend to the snowline
- up to 3000m, there are cold lands where coniferous forests and hardy grasses grow
- up to 2000m, is tierra templada where there are deciduous trees and grasslands

cumulonimbus clouds.

wet season - 1500-4000mm
Dry season - 960-2500mm

epiphytes (perching plants)



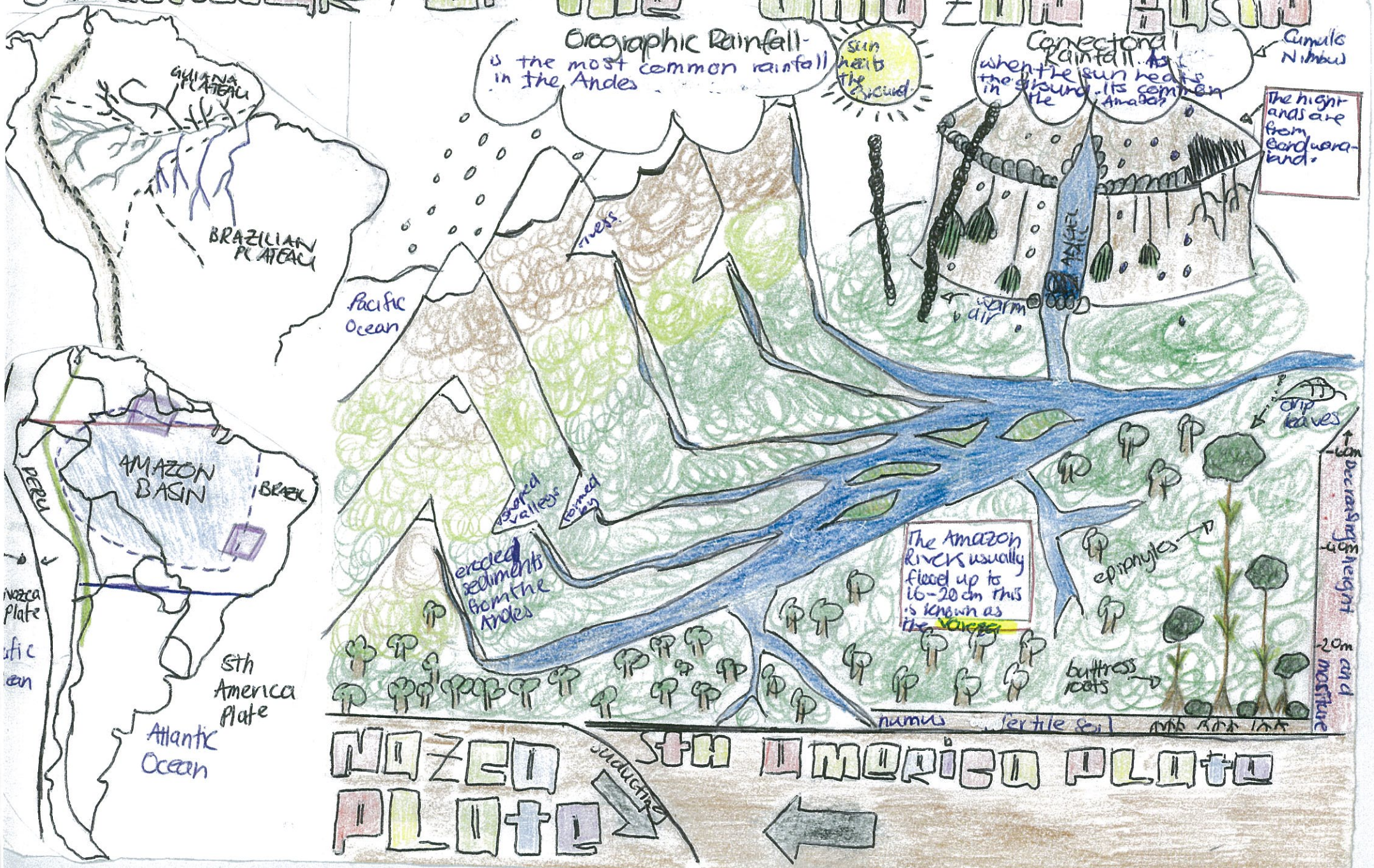
Dense canopy shows greater competition for light

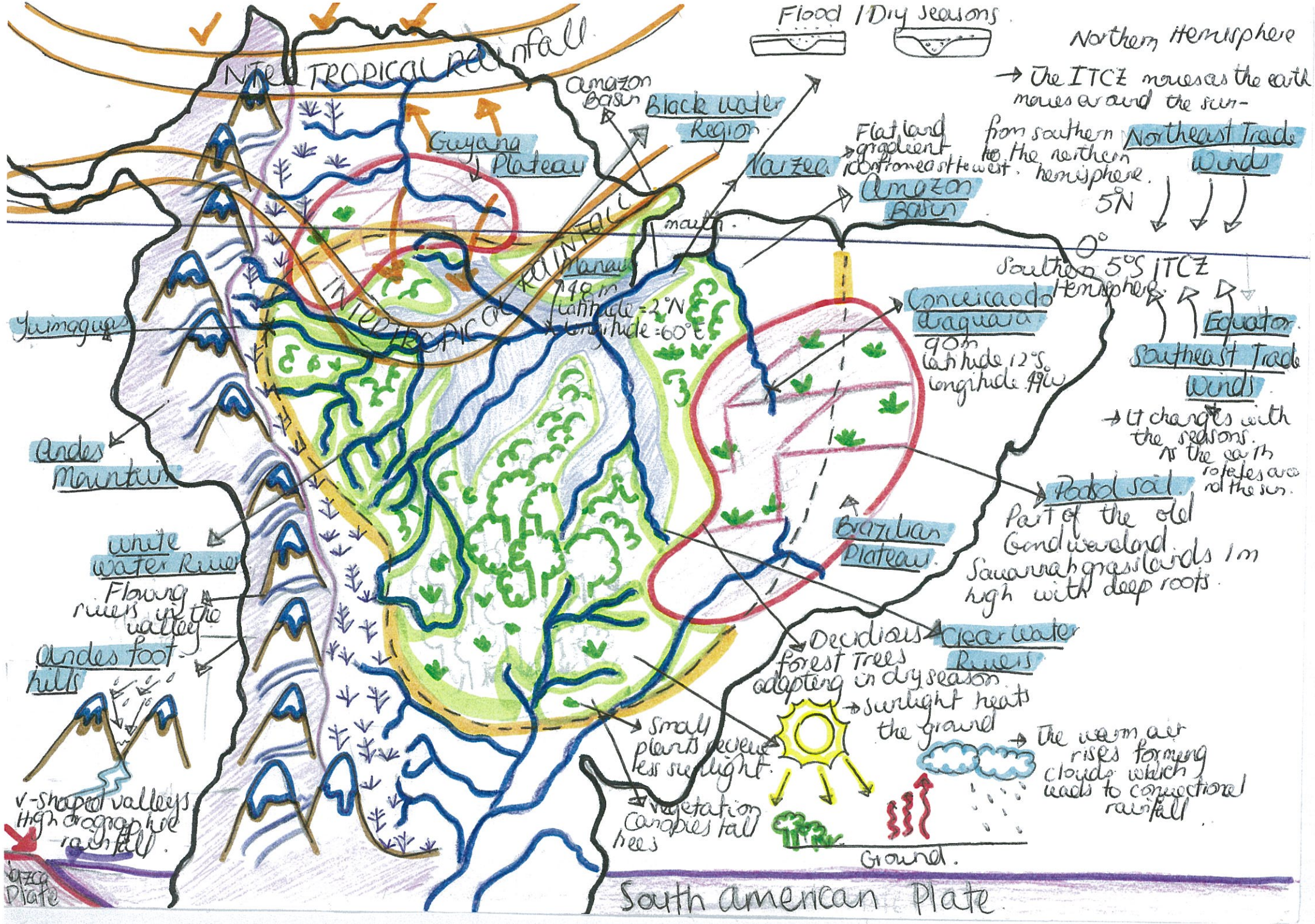
Buttress Roots

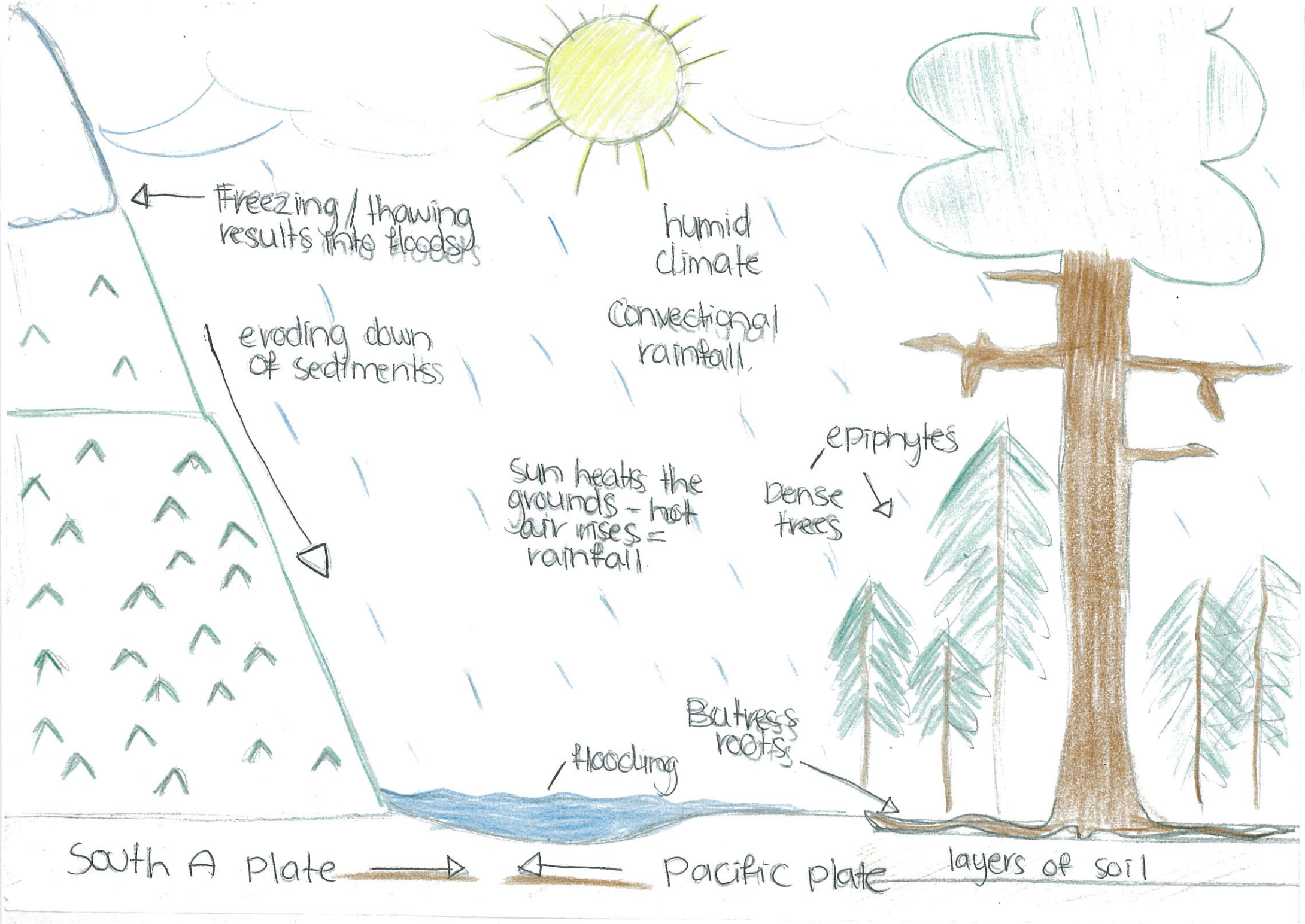
Little undergrowth due to lack of sunlight

Only the very top layer is fertile enough for vegetation to grow

SUMMARY OF THE AMAZON BASIN




Flood / Dry seasons
Northern Hemisphere
→ The ITCZ moves as the earth moves around the sun - from southern to the northern hemisphere.
Northeast Trade Winds
5°N
0°
5°S ITCZ
Southern Hemisphere
Equator
Southeast Trade Winds
→ It changes with the seasons. As the earth rotates around the sun.
N Tropical rainfall
Intertropical rainfall
Amazon Basin
Black water Region
Guyana Plateau
Flat land gradient from east to west.
Varzea
Amazon Basin
mouth.
Manaus
140 m
latitude = 2°N
longitude = 60°E
Yuimaguas
Conceicao do Araguaia
90m
latitude 12°S
longitude 49°W
Podol soil.
Part of the old Gondwaland
Savannah grasslands 1m high with deep roots.
Brazilian Plateau.
Andes Mountain
white water River
Flowing rivers in the valley
Andes foot hills
Deciduous forest trees adapting in dry season
Clear water Rivers
→ sunlight heats the ground
→ The warm air rises forming clouds which leads to convectional rainfall
Small plants receive less sunlight.
→ vegetation canopies tall trees
Ground.
V-shaped valleys high orographic rainfall.
Nazca Plate
South American Plate


Freezing / thawing results into floods
humid climate
Convectional rainfall.
eroding down of sediments
epiphytes
Dense trees
Sun heats the grounds - hot air rises = rainfall.
Butress roots
flooding
South A Plate
Pacific plate
layers of soil

Amazon Eco-system (environment)

FACTS: 25% of the worlds fresh water is found in Amazon Rainforest
*Amazon River is 6400km long: O.

Light energy (The Sun) 27° at the highest

-Rainy Season is 1500mm - 4500mm of Rainfall.

Orographical Rainfall

adding to rivers

snow melts

snow

easily eroded young volcanoes ACTIVE VOLCANOES

ANDEZ-shaped valleys

caused by rapid waters

folding occurs

Nazca Plate

South American Plate.

No vegetation into cold.

Rapid Rivers carry sediment which is deposited into the Amazon Basin making it ALLUVIAM, building up the Basin.

VARSEA.

White water Rivers.

ANDES FOOTHILLS Hardly any vegetation

-Heat Rises, cools and condences, forming clouds.

Convectional Rainfall

Drip leaves to help rainfall get to lower plants.

Drip leaves

-there is a major competition for light energy

VERY HUMID

DENSE CANOPY. vegetation stratification

every canopy tree transpires 760 Litres of water annually.

Dependant on its host

epiphyte

Perching plant

DOMINANT TREE - survived epiphytes and is shading other trees.

ANGEL FALLS - Biggest waterfall in the world.

Less than 2000mm of rain fall.

which isnt enough for tree growth

1m high

SAVANAH GRASSLANDS

The Guiana & Brazilian highands.

250yrs old

250 years old

Clear water rivers.

LIL EROSION

Boom high.

ROCK FROM GONDWANALAND

GONDWANALAND.

Low Gradient

Amazon Basin

which means sediment is deposited here.

Butress Roots

2 1/2cm

O-horizon 2.5cm

A-horizon 20cm

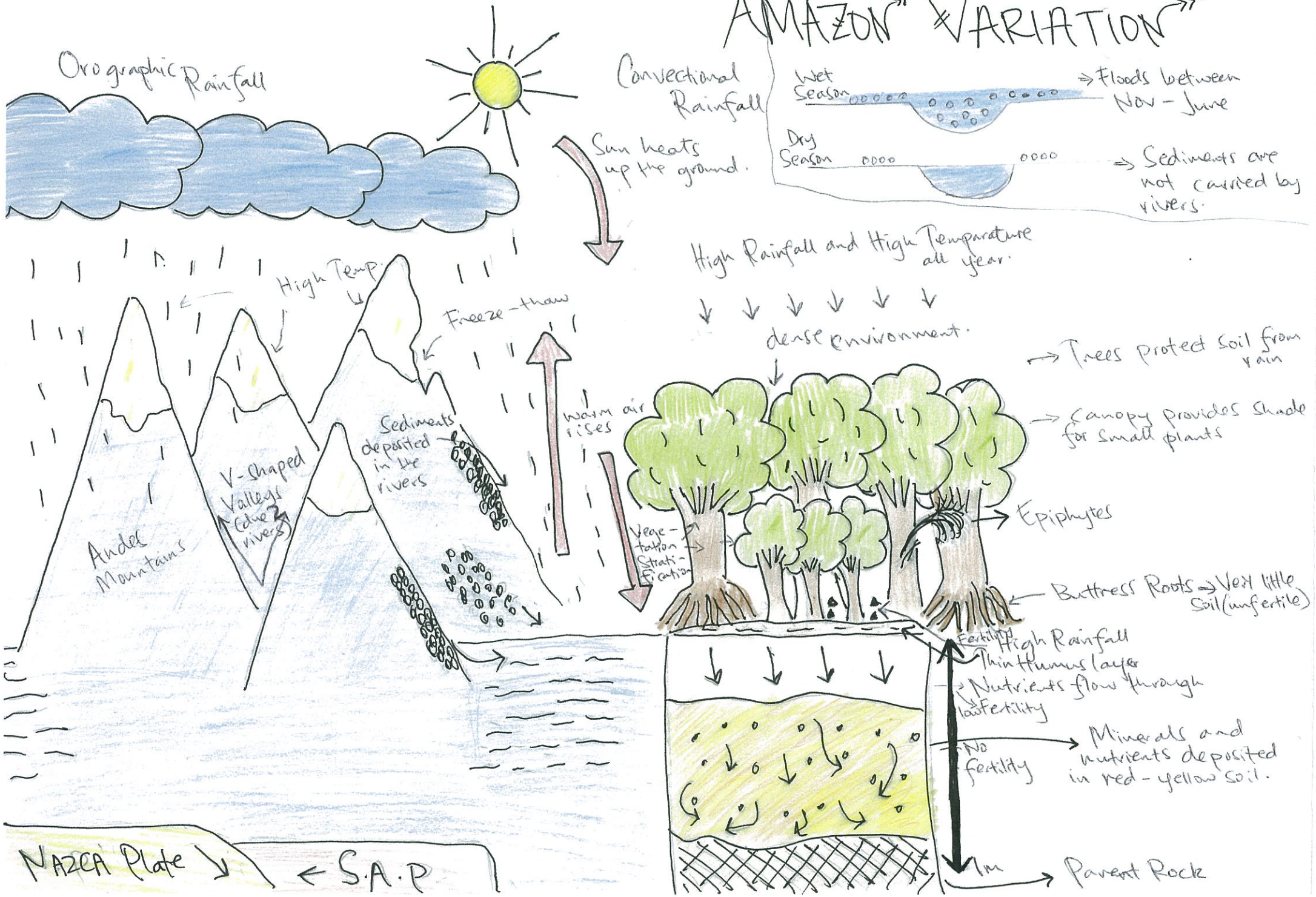
B-horizon

C-Horizon 1200m

SOIL LAYERS OF RAINFOREST

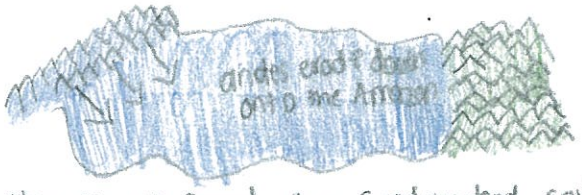
-The soil is small so roots grow on the sides.

AMAZON VARIATION



Amazon Basin

The amazon basin is a saucer-shaped basin of low elevation - Iquitos 3700km upstream from the mouth of the Amazon is less than 100 metres above sea level.



The area was formed when Gondwanaland split the Nazca Plate and the south American Plate collided.

Highlands / Plateau

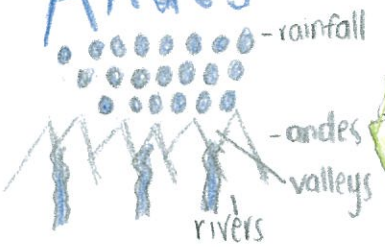
The highlands (Guiana and Brazilan) are comported of rocks which are at least 250million years old. They are made of ancient sedimentary rock from Gondwana

The highlands are around 300m high

The highlands have eroded over a long period of time. The sediment helped build the Amazon Basin.

→ A tepuis is a table-top mountain fou in the Guiana highlands espesia in Venezuela.

Andes



Rivers start in the Andes due to the high Orgraphic rainfall. V shaped valleys form due to rivers.

rivers flow fast and the energy is used to erode and transport amount of sediment.

young sedimentary rock.

The sedimentary rocks have uplifted and folded as the south american plate and Nazca plate collide.

The low gradient means rivers deposit sediment here. Flooding occurs in the rainy season on t varzea

Vegetation

The tree picks up nutrients from the roots

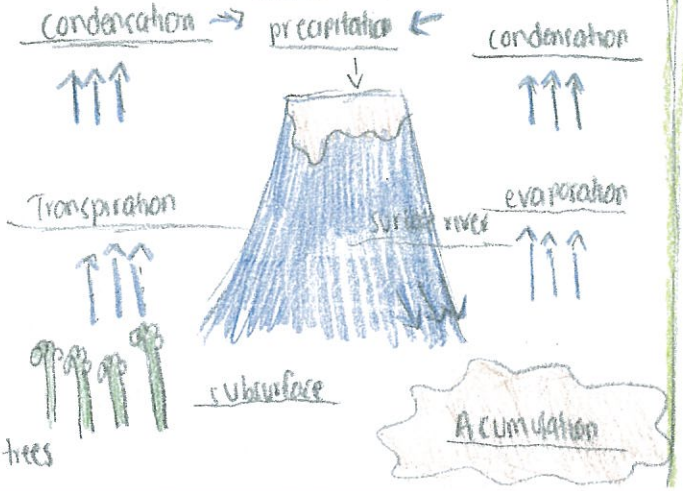
Dommmants have a very precarc foothold on the soil. The trees are supporting its neighbours.

The high rainfall and high temperature make trees grow. Trees protect soil from rain. Low growth - sparse/dark they can survive with lack of light penerating the canopy. The plants in this layer have adapted to live in low light.

The natural layering of vegetation that occurs at distinc altitudes due to varying climate conditions. Vegetation goes with the climate.

The water Cycle

This is continous movements of water on above and below the surface of the earth



Flooding

Flooding happens around November and June. The Rio Negro starts in Febuary or March and begins to recede in June. The Madera River rises and falls two months earlier than most of the rest of the Amazon.

These can rise to 16-20m above their usual levels. When the rivers hit the flood plain, their speed is reduced and unable to transport the sediments.

Andes Mountains:

Although the soil on the Andes is very fertile, rivers erode this away.

Orographic rainfall occurs here. Rivers are thus formed.

- V-shaped valleys are formed due to rivers.

Highlands / Plateaus:

The highlands/plateaus are old rock so erode very little.

Waterfalls occur as rivers run off the plateaus/highlands.

Andes foothills:

There is a very low amount of rainfall here and so not many plants flourish.

Savannah grasslands

- Alpine pastures.

3000m - Coniferous forest and shrubs

- Mixed deciduous trees and grasslands.

2000m.

Altitudinal zonation occurs here because of the varying altitudes.

Foot of Andes

- There is less competition for sunlight so the trees are shorter.

The nutrients are in the lower levels of the soil and so plants have deep roots.

Average temperature is 27°c.

- Very humid.

The Amazon Basin:

The main type of rainfall is convectional. The sun heats the ground then moist air rises and forms clouds and rainfall occurs.

Epiphytes use other plants to help themselves grow.

Lianas/Vines

Vegetation stratification occurs here because all the plants compete for sunlight.

The Amazon Basin is very flat. Due to this lots of sediment is deposited here.

O horizon

A layer ↕ 2.5cm.

B layer ↕ 2cm

C layer

1200 m

The soil is infertile so trees have 'buttress' roots on the surface.

sediment