Cluster 2 : Tropical Environments

- Resource 1 shows the climategraph of La Paz, Bolivia. Resource 2 shows the location of La Paz, Bolivia. Resource 3 shows floods which inundated parts of La Paz, Bolivia. Resource 4 shows deforestation data in La Paz, Bolivia.
- (a) Cite data from resource 1 to describe the temperature and rainfall patterns of La Paz, Bolivia.
 - Aw climate (this is a must point)
 - Average temperature is 26.6 degrees
 - Total rainfall is 1666mm
 - Temperature range is 28.5-25=3.5 degrees
 - Distinct wet and dry climate
 - 6 months of rainfall above 100 mm between May to October

(b) Account for the rainfall pattern of La Paz using resources 1 and 2. (4m)

- Explain for the high and the low rainfall
- 15 degrees North, within the Tropics
- Temperatures high between March to April and then from October to November when the region is intercepted by the ITCZ, high rainfall and high temperature, when the trade winds converge ITCZ, convectional rainfall
- Low rainfall, ITCZ moves or shifts away from La Pas to the South region
- The movement from 15 degress to 10 degrees, location of La Paz, rainfall for the 3 months
- Effect of the ITCZ felt by 5 to 7 degrees

(Have to give details of rainfall from the Climate graph and give evidence from Res 2)

(Lack of specific infor from Res, to cut up to a maximum of 2marks)

- (c) Explain the reasons for flooding in La Paz using resources 2, 3 and 4. (5m)
 - 3 reasons rainfall and ITCZ, high rainfall, convectional rainfall (Res 2)
 - Urbanisation, concretized floor and roads, lack of infiltration (Res 3)
 - Deforestation, overland flow increases (Res 4)

(All 3 resources must be used specifically, lack of use of res to cut up to a max of 2marks)

- (d) Account for the effects of floods in La Paz, such as that seen in resource 3. (5m) Effects can be
 - Social (pple having diarrhoea, spread of diseases, lack of water)
 - Economic (transport, communication affected, productivity affected, inability to function for a few weeks, depending on the situation etc)
 - Environment (floods, mosquito breeding, human environment affected)

(Have to have at least 2 types of effects, either LT and ST or SEE, make sure that the Res is well described, lack of use of Res to cut up to a max of 2marks)

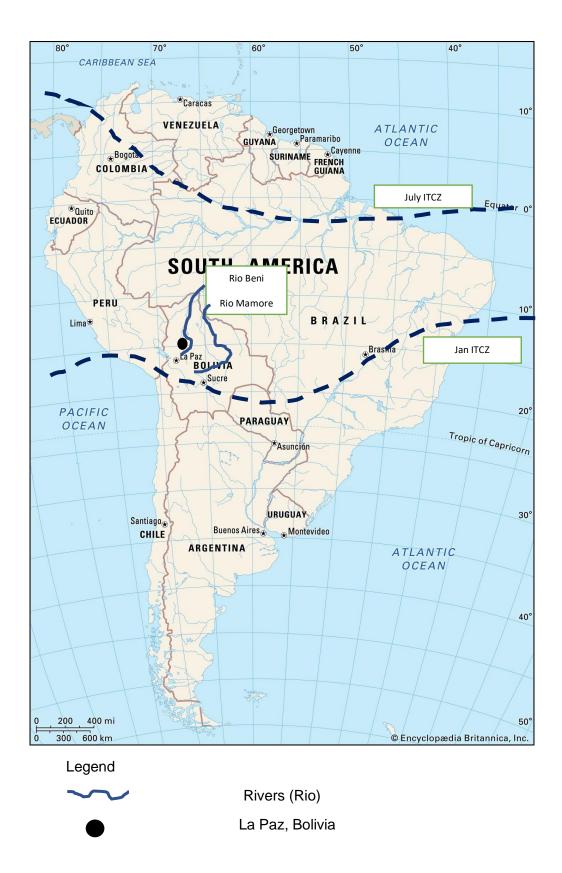
(5m)

- (e) With reference to resource 4, explain how deforestation can affect stores and flows in the Rio Beni and Rio Mamore basins.
- (6m)

(5m)

- Stores (lack of interception, no trees, no percolines for water to be infiltrated)
- Stores (lack of underground water and also soil moisture storage, lack of infiltration due to impermeable land and also lack of soil or natural ground)
- Lack of Baseflow to the rivers
- Stores (Channel flow/Lakes/Rivers have more discharge, overland flow and HOF and also floods
- Flows (HOF than SOF, higher overland flow))
- Flows (Vertical and Lateral Sub-Surface flows will be affected gravely, cease due to the concrete ground, lack of infiltration and so percolation will reduce. Then for throughflow there will be a lack of it due to the impermeable ground and so base flow will eventually reduce).
- Higher flows into the rivers
- (f) Explain 2 measures that you would recommend in La Paz, to manage floods such as the one seen in resource 3.
 - Drains (deep, wide channels) or maintain the ones that they may or may not have to cater to increase in water discharges due to heavy rainfall and deforestation
 - Reafforestation program to reduce flooding in the future, to increase interception storage and also allowo for infiltration and percolation
 - Channelisation of the 2 Rios (deepen, widen and straighten the river channels especially at the part where La Paz is at)

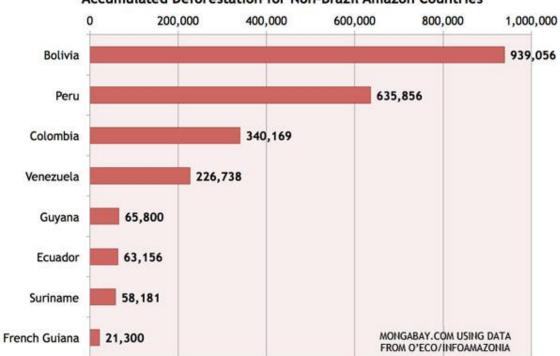
(pls be careful that not all strategies can be used eg: Dams or Land Use Pattern, considering the fact that it is a developing country)



Resource 3 : Floods in La Paz, Bolivia (2021)



Resource 4 : Deforestation in selected South American countries, (2010-2017)



Accumulated Deforestation for Non-Brazil Amazon Countries