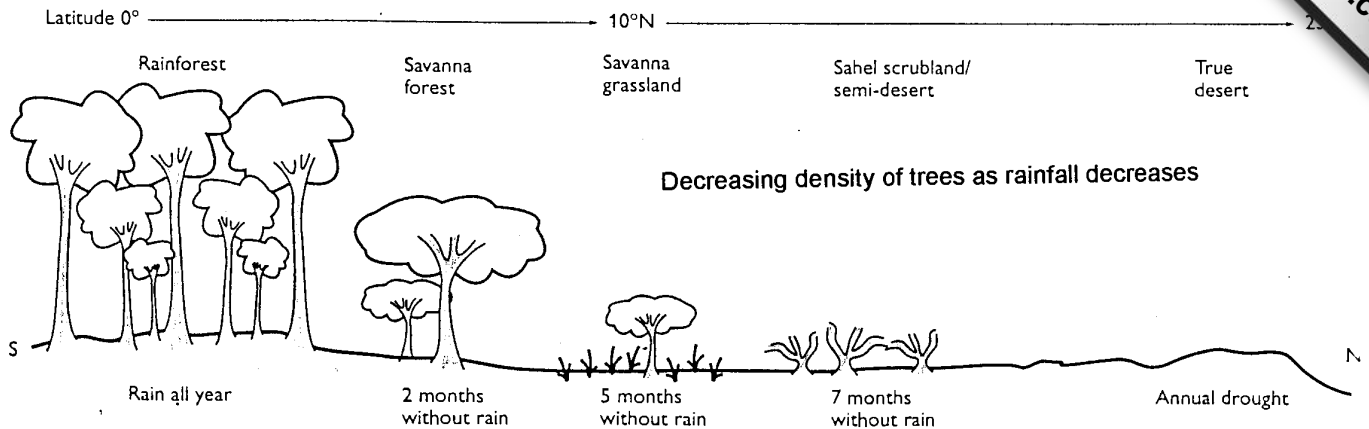


Fig 1

## West Africa An Ecocline (Vegetation transect)



### Equatorial rainforest

### Savanna forest-savanna grassland

### Savanna grassland-sahel

### Tropical desert

CLIMATE

- Temperature 26–30°C — range 4°C
- Annual precipitation: around 2000 mm; double maximum just after the equinoxes in March and September
- Daylight around 12 hours all year
- High humidity
- Very few limiting factors to vegetation growth

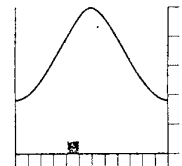
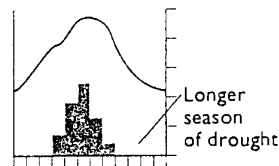
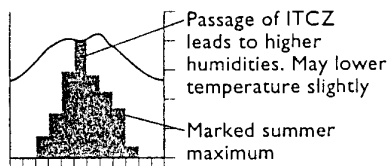
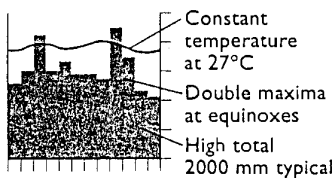
- Temperature 23–33°C — range 10°C
- Annual precipitation around 800–900 mm; summer maximum at solstice; rainfall spread over 7 months
- Daylight 11–13 hours

- Temperature 22–36°C — range 14°C
- Annual precipitation: 300–500 mm; summer maximum rainfall spread over 3–5 months
- Daylight 10–14 hours

- Temperature 10–40°C — range 30°C
- Annual precipitation can be zero; sometimes up to 100 mm in flash flood
- Very low humidity
- Daylight 8–16 hours

• Seasonal drought becomes an increasingly limiting factor to vegetation growth

### CLIMATE GRAPHS



ECOSYSTEM

- Tall, broad-leaved evergreens in continuous growth
- Canopied, stratified forest with a layered structure
- High species diversity
- Constant heat and humidity lead to high primary productivity with many ecological niches and a large biomass
- Rapid nutrient cycling

- Mixed grassland with trees; clearings of woody shrubs and tall trees
- Drought-resistant trees such as acacia and euphorbia appear as it starts to get drier (10°N)

- Tall savanna grass; isolated, small, drought-resistant trees; all vegetation develops protection against fire and animal predators

- Xerophytic plants such as cacti, yucca and tamarisk are adapted to arid conditions
- Slightly wetter stream course areas support scrub
- Limited species

NPP (kg/m<sup>2</sup>/yr) 2.2  
Biomass (kg/m<sup>2</sup>) 45.0  
Tropical red earths

NPP (kg/m<sup>2</sup>/yr) 1.2  
Biomass (kg/m<sup>2</sup>) 9.0  
Lateritic soils

NPP (kg/m<sup>2</sup>/yr) 0.9  
Biomass (kg/m<sup>2</sup>) 4.0

NPP (kg/m<sup>2</sup>/yr) 0.2  
Biomass (kg/m<sup>2</sup>) 0.6  
Desert soils

LAND-USE

- Traditional shifting agriculture in remote areas; otherwise subsistence bush fallowing
- Enormous range of tree crops; some plantations such as oil-palms and cocoa
- Range of vegetables and staple crops
- Forest exploitation

- A mixture of forest and grassland crops, grown according to the wet and dry seasons
- Crops include millet, maize, cotton and vegetables

- Largely cattle rearing by tribes following nomadic routes
- Severe droughts in recent years; desertification of sahel  
(Desert margins)

- Very limited settlement except at oases
- Some mining settlements for oil or precious metals
- Nomads herd camels