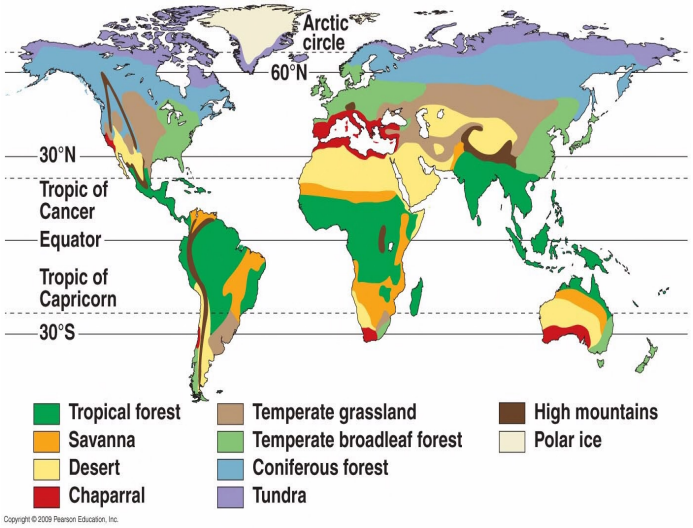
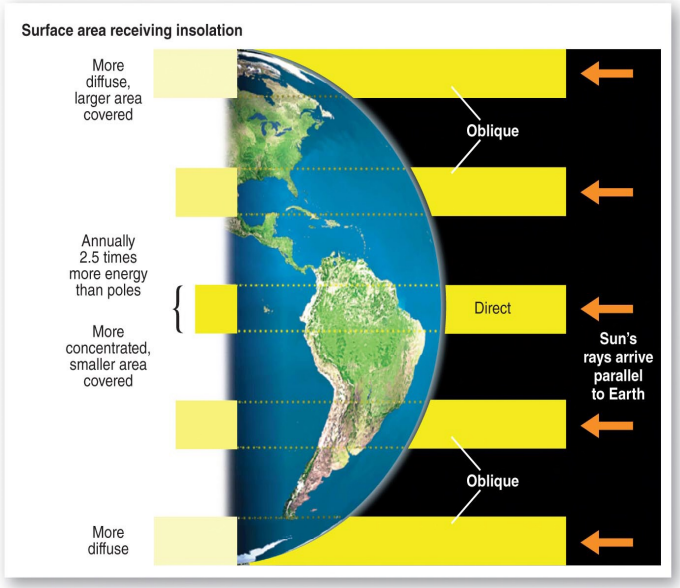
Global ecosystems:

Biomes = large scale global ecosystems with distinct bands & vegetation at similar latitudinal belts (distance north/south of equator) Abiotic & Biotic factors interact



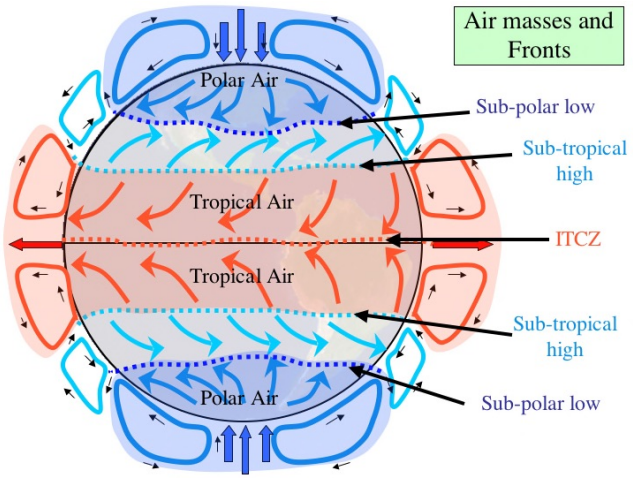
GLOBAL biome distribution factors:

Continentality: land vs marine climates: land heats & cools quick = extreme temps, water heats & cools slow = cooler temps e.g. Eastern Europe on mainland so massive temp variations, UK = coastal so small temp range as is a maritime nation

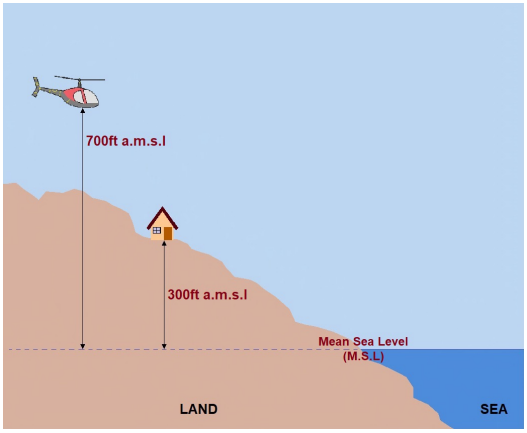


Latitude determines degree of insolation (at equator, Sunlight is concentrated = hotter), at the poles it's cooler (Sunlight has wider coverage)

Pressure belts determine rainfall: low pressure belt (at 0 & 60 degrees) = warm, less dense air rises, cools & condenses = cloud formation = rain



LOCAL Biome distribution:



Altitude: high (every 100m temp decreases by 6 degrees cel) = cold so minimal plant growth (need 5 degrees cel for photosynthesis) = poor soils as slow decomposition, little animal habitat & food too

Rock type: High weathering rate, low mineral content & impermeable (low infiltration rates & poor drainage) = nutrient poor soils

Soil type: low acidity & good drainage = supports plant growth
Peat bogs =acidic so conifers grow, clay soils = sticky so low infiltration rates

Drainage: poor drainage = water logging so only aquatic plants & animals thrive but excessive drainage e.g. Chalk means no nutrients for plants as it absorbs them & Clay has few air gaps so holds water & nutrients for wheat
Valleys hold more water (topography) & warm temps = evaporation

Interaction of biotic & abiotic components in biomes:

Biotic = flora & fauna so plants & animals
Abiotic = soil, water, rock & atmosphere

H2O availability: dry = only cacti survive, plants absorb & release water 4 rainfall

Vegetation: dense vegetation & leaf fall = rapid nutrient cycling = plant growth

Biological weathering: plants break down rocks

Tropical rainforest biomes:

Climate:
No definite seasons
20-28 degrees cel temperatures (Sun is at zenith at the equator)
12 hour day length
2000 mm rainfall/annum

Features:
Evergreen trees (there's a continual growing season)
Dense vegetation = lots of habitats = high biodiversity
Leaves on trees decompose quickly = soil is nutrient dense (rapid nutrient cycling)

Temperate forest biomes:

Climate:
4 distinct seasons
1500mm rainfall/annum
Sunshine hours vary (daylight savings)

Features:
Some plant variety as mild, wet climate e.g. broad leaved trees (oak) that drop their leaves in autumn & undergrowth e.g. ferns
Habitat supports high biodiversity (more than boreal, less than tropical rainforests)
Leaves are shed in autumn & rapid nutrient cycling as moist climate = nutrient rich soils

Global ecosystems:

Boreal forest biomes:

Climate:
Winter: -20 degrees cel average temp
Summer: 10 degrees cel average temp
500mm precipitation/annum
Short (but bright) summers & long (dark) winters

Features:
Coniferous trees e.g. pine & moss
Little biodiversity as little habitat & animals need to adapt to harsh climate e.g. wolves & eagles
Slow nutrient cycling as cold climate = slow decomposition of needles from trees = acidic & nutrient-poor soils (mostly covered in permafrost)

Tropical grassland biomes:

Climate:
900mm rainfall/annum
District wet & dry seasons
15-35 degrees cel temps (at the equator)

Features:

Grass dies during dry season = nutrient rich soil due to decomposition (but nutrients washed out during wet seasons)
Insects e.g. beetles & grasshoppers
Large animals e.g. lions & elephants

Temperate grasslands biomes:

Climate:
400mm rainfall/annum
40-> -40 degrees cel
Sunlight varies as further from equator

Features:
Grass & small plants
Fewer animals e.g. wild horses & rodents
High temps = rapid decomposing so soils are nutrient rich

Global ecosystems:

Desert biomes:

Climate:
<250mm rainfall/annum
0-45 degrees cel temps
Hot summer days, cold nights (not humid = cannot retain heat)

Features:
Sparse vegetation as little rain
Snakes, lizards ect are adapted to the dry climate
Little leaf litter & dry climate = slow decomposition so soils = nutrient poor

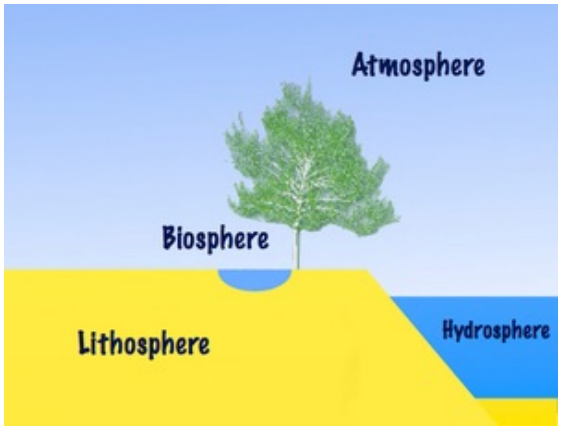
Tundra biome:

Climate:
Low temps: -30 -> 10 degrees cel
<250mm rainfall/annum
High latitudes = continuous daylight in summer, no daylight in winter

Features:
Sparse vegetation as dry & cold climate e.g. moss & grass
Little biodiversity as animals migrate south in winters e.g. arctic hares & foxes
Slow decomposition of minimal leaf littler & permafrost stops surface drainage = nutrient poor soils

Humans & the biosphere:

Biosphere = global ecological system with plants & animals



Goods= tangible commodities

Goods produced for indigenous tribes (use goods directly with minimal processing & transportation unlike western businesses) & locals:

Food: nuts, fish, livestock ect
Medicine: TRF created >7000 drugs e.g. aspirin
Building materials: pine for furniture, sap for glue & straw for roofs
Fuel: biomass (moss & wood) + blubber (seal fat) for oil lamps

Exploitation of the biosphere for commercial gain = resource don't replenish = unsustainable:

Energy: increased population = more energy demand for electronics & homes e.g. deforestation to plant crops for biofuels/ as space for coal mines. TRF flooded by HEP dams. Pipelines from drilling melt permafrost in tundras

Water: exploiting arid Sahara for water to farm & wash = disrupts ecosystems e.g. Iran built dams with poor irrigation systems = Afghanistan suffered drought
Aquifers = depleted faster than they're replenished = water shortages?

Minerals: Gold & iron demand increasing (for phone chips, buildings ect) = mining leaks toxic chemicals into water supplies & scars landscapes (open cast especially) via deforestation
Mountain top mining in USA Appalachians = removing tops to mine for coal

Roles (services) of the biosphere:

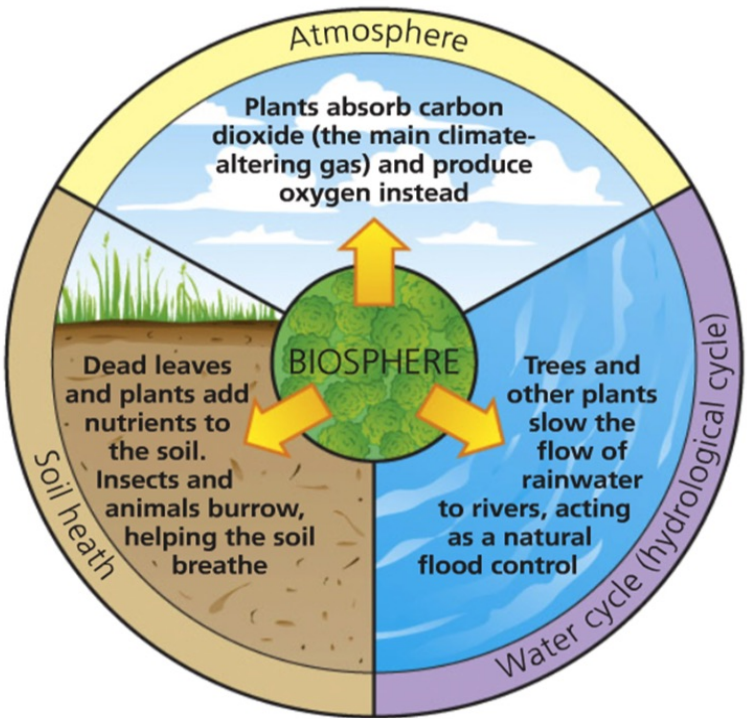
Regulates gases in atmosphere via photosynthesis (plants sequester CO2) & animals (respiration) as too much CO2 causes:
Global warming, acidic oceans but maintains earth's liveable temperature
Amazon = 'lungs of the world' as sequesters CO2

Soil health: plant roots spread nutrients through soils = solid structure & high fertility = growth
Roots hold soil together = prevents erosion
Vegetation intercepts rainfall = prevents leaching (nutrients washed out downwards)

Regulate hydrological cycle (movement of water from land, oceans & air), Mangrove forests in Bangladesh = natural defence against 2010 Pakistan flooding due to illegal logging as increased interception & absorption

Warm, less dense air rises, cools & condenses = rain

Water is absorbed by plants = prevents flooding & soil erosion in rivers
Plants store water & gradually release it to reduce drought e.g. in the Amazon



Demand for resources:

Population rise = demand rises

Projections:

Predictions of future human inhabitants of earth
UN highest prediction = 14 billion people by 2100!!!

Increased food demand = increased water demand for crops = transportation of water = energy intensive

Demand increase factors:

Increasing affluence: development = more disposable income = higher resource consumption (cars, new appliances) = energy & water intensive manufacture

Urbanisation: cities are more resource intensive (street lights, water fountains) than rural areas
Food & water is transported into cities from rural areas & waste is removed = energy intensive

Industrialisation: shift from primary -> secondary production
Manufacturing goods = energy & water intensive
Increased demand of processed goods e.g margarine = palm oil demand up (deforestation as HUGE plantations increases & correlation between palm oil & orang-utan decline in Indonesia)

Population & resource supply theories:

Malthus: malthusianism (PESSIMISTIC)

Population is increasingly more rapidly than resource production is = humans will run out & humans die (famine, war ect) then population will return (supported by resources available = positive check)
Preventative check: cultural choice to lower BR
Lines cross = point of catastrophe, population decreases until resources increase to support life

Boserup: Boserupian (OPTIMISTIC)

Population rises = people will produce sufficient resources to meet their needs
Resource scarcity = new tech (e.g. during the Green revolution= saw increase in crop yields) would produce new goods to support life
Population increase is equal to resource supply