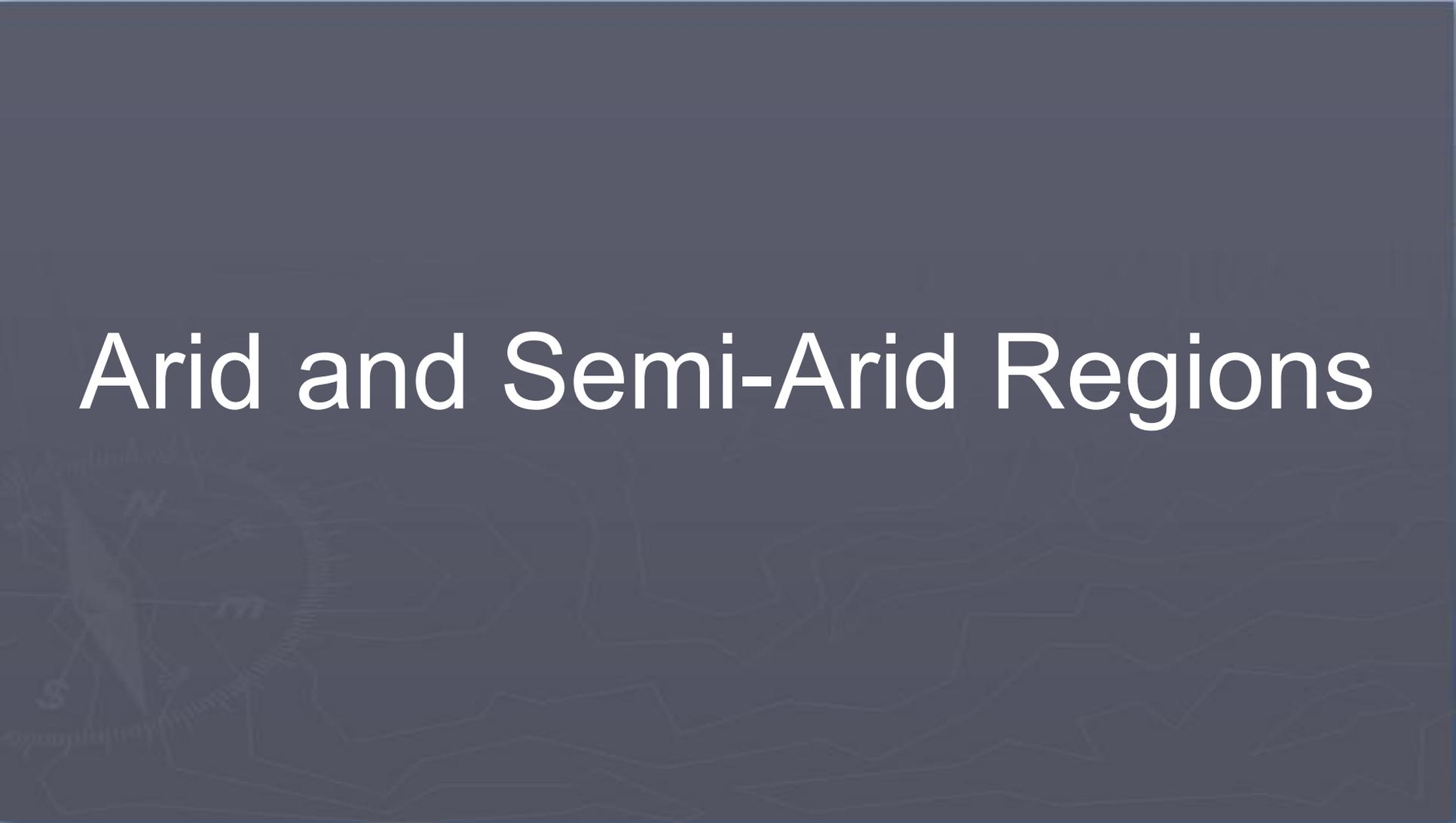


Arid and Semi-Arid Regions



Deserts

Deserts are defined as areas that receive less than 25cm (9.84 in) of rain annually

These can include hot and cold areas (The top five deserts in terms of area are the Antarctic, the Arctic, the Sahara, the Arabian, and the Gobi deserts)



The Chaparral / Mediterranean Climate

Chaparral receives between 35-125cm of rain a year, allowing for more diversity in flora and fauna. About 20% of planet's flora and fauna diversity is in Chaparral

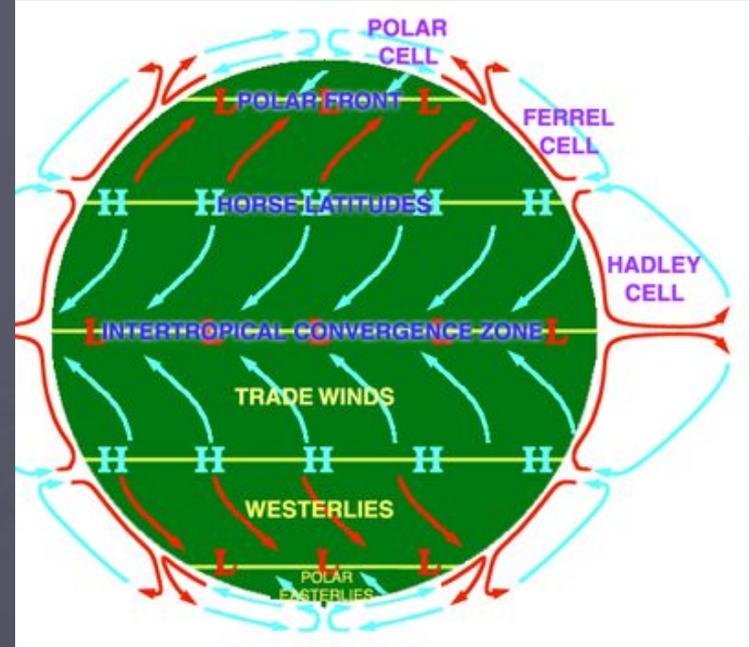
- Not enough precipitation to support mega-flora, leading to a landscape of shorter shrubs (especially sagebrush), and trees that can withstand long dry periods (eg. Lebanon Cedar, Olive Trees)
- Plants develop sclerophyll leaves - thicker waxier leaves that protect against dehydration (Agave and Aloe)
 - Plants designed to drop leaves during times of drought



The Horse Latitudes

Sun's direct rays directed near the equator (which is mostly ocean) causing evaporation and the rising of moist warm air. As the air rises it cools and drops moisture as precipitation before being pushed away from equator. Warm air eventually cools and drops, but has lost all its moisture

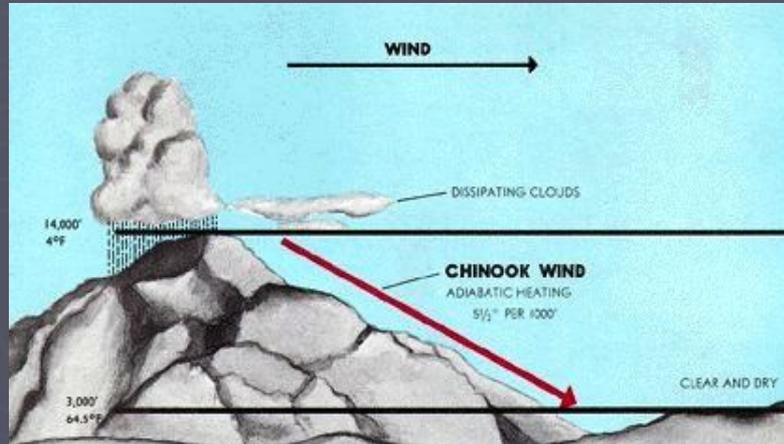
Air currents from the Hadley cell recycle air back to the equator where it warms and regains moisture to repeat the cycle



Fohn Wind / Chinook Winds / The Rain Shadow Effect

Moist air moves in from the sea and is pushed to higher altitudes by mountains. Moisture condenses and falls to the earth as precipitation. By the time air moves over mountains all moisture is dispelled.

Mid-continental regions can become deserts purely because they are so far away from the oceans, and there is not enough water around for evaporation



Deserts as Creators

Winds from the Sahara Desert carry phosphorous heavy dust to the Amazon to act as a fertilizer

- Ancient Diatoms from prehistoric ocean



Deserts as Critical Habitats

Microclimates - Sand is poor conductor of heat, leading to drastic differences of temperature below the surface. Sand also does not retain heat leading to high levels of variation (deserts can be really hot, but can get cold quick)

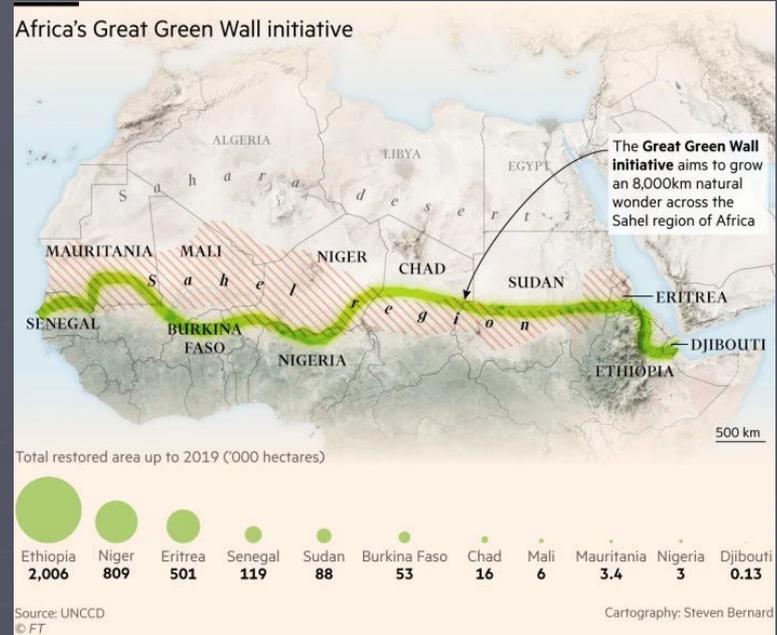
Ecosystem Fragility - Desert ecosystems take years to develop. Centuries of growth can be ruined in seconds. Biological soil crusts, for example are developed by lichens and mosses over many years, and can be destroyed by a foot print.



Ecological Issues of Arid Regions: Desertification

The spread of desert reasons either by natural or anthropogenic forces

- Over-cultivation
- Increased global temperatures
- Reduction of vegetation
- Dams & Irrigation



Ecological Issues of Arid Regions: Urban Sprawl

The increasing footprints of urban centers as more appealing land becomes increasingly scarce

- Puts additional pressure on already limited water resources
- Disrupts animal habitats



Las Vegas 1984 & 2009

Ecological Issues of Arid Regions: Drought

Shifting precipitation patterns due to climate change and increased demand for water resources making droughts more frequent, longer, and more intense

- Adds additional risk of increasing fire danger



Ecological Issues of Arid Regions: Floods and Mudslides

Decreased ground cover due to increased temperatures and over cultivation make the region threatened by flash-flooding, mudslides, dust storms, and erosion

