14.1 Why do deserts exist?

- Desert any spot on Earth that receives less than 25cm rain/yr
- Relation to latitude 30° N/S latitudes receive warm dry air.
 - Sinking dry air absorbs surface water and creates little rain

14.1 Why do deserts exist?

- Mountains: Rain-shadow deserts
 - Moisture rains out on windward side
 - · Leeward side of mountain is drier
- Coastal & interior deserts
 - Usually coasts receive oceanic moisture, some few exceptions (e.g.: coastal Chile)
 - Continental interiors may have long/multiple rain shadow effect (e.g.: Gobi Desert)
- More complex that just proximity to water and latitude







14.2 Water and deserts

- Deserts, with little precipitation, have sparse vegetation and easily erodable soil
- Desert streams water table usually deep
 - · Water flows from stream into ground
 - Small streams often do not flow far
 - Wash a streambed that is dry most of the time



14.2 Water and deserts

- Desert lakes may drain by any/all of streams, seepage, evaporation
 - Playa lake may dry up completely at some times of year (dry lake bed is a playa)
 - Salt deposits as mentioned in 10.4, dissolved salts can deposit in (or on) arid soils, sometime thickly (e.g. Death Valley, Bonneville Flats)













14.3 Two American deserts

- The Colorado Plateau covers parts of; UT, CO, AZ & NM
 - Has been covered in seas, lakes & deserts
 - Upthrust by tectonics, allowed Colorado river to cut Grand Canyon complex
 - Plateau large, elevated area of flat land
 - Butte flat-topped mountain with steep sides





14.4 Wind

- Wind erosion important in deserts
 - Aka: deflation, small particles are moved by wind, leaving larger bits behind
 - Desert pavement the remnant surface caused by deflation
 - Surface of pebbles and cobbles
 - Blocks further erosion from occurring
- Transport & Abrasion
 - Wind cannot lift particles high, keeping erosion low to the ground

14.4 Wind

- Dunes mound or ridge of wind-deposited sand
 - Often starts by filling in a depression
- Blowout saucer or trough shaped hollow caused by wind erosion

14.4 Wind

- Types of dunes depends on wind speed & sand supply mainly
 - Barchan crescent dunes, rocky deserts with little sand
 - Transverse sand ridges perpendicular to wind direction, plentiful sand and consistent winds
 - Parabolic a reverse crescent, moist semideserts with some vegetation
 - Longitudinal dune ridges parallel to wind direction; consistent wind, low sand supply



















14.5 Desertification

- The growth of deserts due, in large part, to human mismanagement
 - E.g.: the Sahel
 - Overgrazing, cattle will graze to roots and pack soil with hoofs
 - Intelligent practices have shown the ability to drive the Sahel north again

