**Denali National Park**  
Mount McKinley NP – 1917; Denali NP - 1980

I. Native History
   A. conditions in area marginal for year-round human subsistence.
   B. earliest known sites, >11,000 years old, located outside the park
   C. have existed within present-day park boundaries for > 7,000 years
   D. past 100+ years, Athabaskan-speaking Indians have lived in park

II. Non-native exploration
   A. slow because it was distant from coast and remote from navigable rivers
   B. purchase of Russian America by U.S. had few immediate impacts on Alaska outside of Sitka
   C. 1880 – 1902: major gold strikes took place
   D. 1897: prospector, William A. Dickey, publicize his trip in Eastern newspaper
   E. 1906: Charles Sheldon – proposed idea of area becoming a national park
   F. originally established to protect its large mammals

IV. Geologic History
   A. Geologists are still trying to understand Alaska’s complex geology
      1. use paleomagnetic signatures to determine latitude at which rock formed
         a. iron minerals in rocks lock in a record of direction and intensity of magnetic field when they form
         b. provides information on the past behavior of Earth’s magnetic field and past location of tectonic plates
      2. in some other terranes, complex nature of formation prevents use of paleomagnetic signatures to determine latitude of their origin
   B. North American Alaska
      1. North Slope, Brooks Range, and Yukon-Tanana Upland
      2. 500 million to one billion years old & formed in ancestral North America
   C. Accreted Alaska contains many parts that could be exotic to Alaska - ~ 90%
      1. Pacific Coast of North America, from Baja California to Alaska
      2. use paleomagnetic signatures to determine latitude at which rock formed
   D. Pacific plate has been acting like a conveyor belt for hundreds of millions of years, bringing bits of islands, ocean floor, and slivers of other continents northward to form accretionary terranes, which are pieced together
   E. 400 mya - shallow sediments with volcanic flows and intrusions (molten injections of
rock
1. buried, heat and pressure changed the rocks into schists, gneiss, phyllites
2. next 300 million years – tropical ocean environments
   a. marine shelf, slope and basin materials accumulated or accreted to become shale, limestone, and sandstone
      1.) hardened into rock to form mountains in the eastern portion of park
F. Alaska Peninsula, Wrangell Mountains, and regions in southwestern Alaska formed south of present location in equatorial regions some as old as 2 BY
G. Accretion of land is an ongoing process today
   1. Pacific plate moves northward, colliding with Alaska at about 5 cm/year
   2. New “additions to Alaska are a very slow process
   3. Most recent addition (the Yakutat block along SE coast) does not yet show obvious evidence of collision and accretion
H. 56 mya
   1. formation of Mt McKinley
      a. molten magma solidified deep beneath central Alaska
   2. volcanic activity: red, yellow & brown basalts, rhyolites, and other volcanic rocks
      a. Polychrome Pass, named for the colorful volcanic rocks exposed there
I. 38 mya
   1. another period of volcanic activity formed basalts and andesites
J. continuous plate movement
   1. land surfaces continually compressed and folded
   2. push up Mt. McKinley (20,320’) and mountains in the Alaska Range
      a. grow at rate of 1mm/year
   3. Denali Fault system – east to west through park for 1200km (720 miles)
      a. forms northern boundary of small lithospheric plate caught between the Pacific and American plates
   4. deformation, seismic activity
V. Glacial activity
   A. cover 1/6 (1 million acres) of Denali National Park
   B. glaciers flow from 19,000’ to elevations as low as 800’
   C. Mt McKinley’s glaciers
      1. Peters Glacier flows from the north and northwest
      2. Kahiltna Glacier is on the southwestern side
3. Ruth Glacier shares southern slopes with arm of Kahiltna and also occupies southeast side
   a. very deep gorge ~ 1.5 miles
   b. moves at 3.3’/day
   c. carries ~4 million pounds of ice/day
4. Harper Glacier dumps snow and ice into upper reaches of Muldrow Glacier, which carries snow and ice off northeast slopes
5. Ruth, Kahiltna & Muldrow Glaciers longest in park; each >30 miles long
6. Kahiltna Glacier, longest glacier in park & entire Alaska Range 44 miles in length

D. Recent climate warming has affected Denali
   1. reduced spring snowfall
   2. earlier snowmelt
   3. earlier green-up and thawing of permanent snowfields
   4. subarctic ecosystems extremely sensitive to climate variability and change