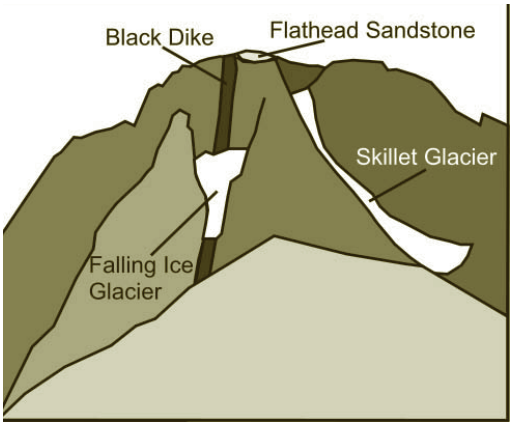
Grand Teton National Park

National Park in 1950

I. Human History
   A. 10,000 years ago - Nomadic paleo-Indians first entered Jackson Hole valley
   B. Euro-Americans
      1. early 1800s - Fur trapper, David Jackson based operations in the area
      2. survey expeditions mapped landscape, documented natural resources and scouted for future railroad access
      3. 1862 - Homestead Act of 1862 encouraged settlement of the West
         a. in Teton area, soil was sandy and rocky, winters long, and summers dry
         b. wealthy Easterners visited Jackson Hole for a "cowboy" experience
         c. 1908 – homesteaders/ranchers accommodated these visitors
      4. 1923 – encouragement of conservation and preservation of the area
      5. 1926, John D. Rockefeller, Jr. fell in love with scenery and began purchasing private land (35,000 acres) with intent of donating land to park
   C. Becoming a National Park
      1. 1929 - Congress established park to protect Teton Range and some of the lakes
      2. 1943 – FDR declared remaining federal land as Jackson Hole National Monument
      3. 1949 - John D. Rockefeller, Jr. donated land to be included in the national park
      4. 1950 - Congress combined original park, national monument, and Rockefeller land

II. Geologic History
   A. Precambrian
      1. 2.7 BYA
         a. sand and volcanic sediment fell into an ancient sea
         b. heat and pressure from collision of tectonic plates buried these sediments up to 20 miles deep and changed them into gneiss
      2. 2.5 BYA
         a. molten rock or magma squeezed into weak zones and cracks in the gneiss
         b. magma slowly cooled to form granite - inches to hundreds of feet thick
            1.) forms summits of Cathedral Group – Teewinot, Grand Teton, Mt Owen
      3. 775 MYA
         a. magma injected into vertical cracks in granite and gneiss to form dikes
            1.) dark-colored diabase
            2.) "Black Dike" on Mount Moran - 150' wide-continues west 6-7 miles
            3.) sticks out from face of Mount Moran - diabase is harder than gneiss

4.) dike on face of Middle Teton forms slot - granite is harder than diabase



B. Paleozoic
   1. 510 MYA
      a. inland seas flooded region deposited sand, mud, and formed coral reefs
         1.) lithified into 4,000’ of sandstone, shale, limestone and dolomite
            a.) flank the Teton Range and outcrop on Blacktail Butte

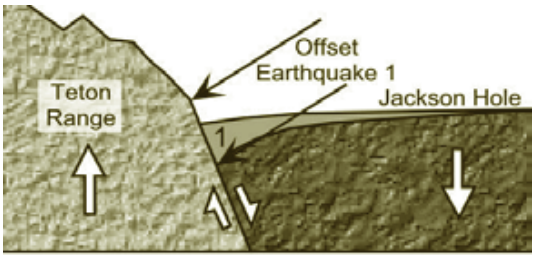
C. Mesozoic - Depositional environment was nonmarine and marine
   1. 15 formations composite thickness of 10,000’ – 15,000’
   2. 70 MYA - Laramide Orogeny: Rocky Mts & Gros Ventre Range formed
   3. Grand Teton-Gros Ventre arch
      a. broad low northwest-trending arch developed in area of present Teton Range and Gros Ventre Mountains

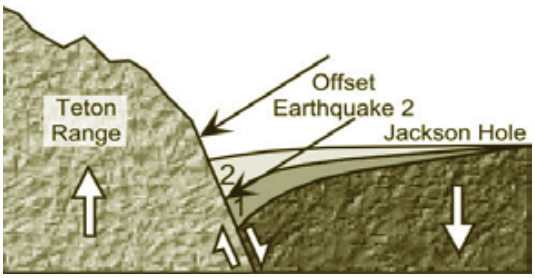
D. Cenozoic
   1. Buck Mountain Fault - reverse fault just west of highest Teton peaks
      a. raised a segment of Precambrian rocks several thousand feet
   2. entire range uplifted by movement along Teton fault
   3. Volcanic activity - lava & volcanic debris deposited to form Absaroka Range
   4. 10 – 13 MYA Teton Fault - accounts for dramatic Teton Range
      a. parallels eastern front of Teton Range 40 miles from north to south
      b. mountain block tilted upward and valley block dropped
      c. total offset on the Teton fault ~30,000 feet
      d. floor of Jackson Hole may have dropped 20,000’

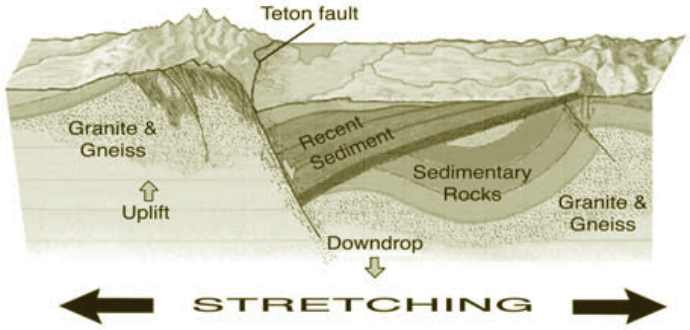
e. Flathead Sandstone caps Mount Moran about 6,000’ above valley floor and lies buried about 20,000’ beneath valley floor

f. result of extension or stretching in the earth's crust

g. currently inactive – last major earthquake ~ 7,000 years ago







5. 5 MYA Teton/Yellowstone hotspot Connection

a. hotspot erupted and sent volcanic ash into Jackson Hole area

b. heat from hotspot caused area to stretch more rapidly

1.) caused earthquakes and increased uplift on Teton fault

2.) increased uplift of Teton Range

a.) –2 million to 640 thousand years ago

6. 2 million to 640 thousand years ago

a. Yellowstone hotspot erupted 3 times

1.) materials cap Signal Mountain and north end of Teton Range

2.) Glaciation - landscape preserves signs of the last two glacial advances

b. ~ 3,500’ of ice flowed from topographic high of Yellowstone Plateau down into the valley of Jackson Hole numerous times
c. Bull Lake – much of evidence covered or scraped off
   1.) Two-Ocean Lake and Emma Mathilda Lake

6. Pinedale - 50,000 to 14,000 years ago
   a. reached Signal Mountain and Jackson Lake
   b. formed lake basins
   c. terminal moraines mark furthest extent of the glacier’s flow
      (1.) Burned Ridge
      (2.) dams for Phelps, Bradley, Taggart, Jenny, Leigh, and Jackson Lakes
      (3.) silt supports conifer forests - Timbered Island, Burned Ridge, and around Jenny Lake
   d. gravelly outwash plains
      (1.) Potholes area – sand, gravel, and cobbles
      (2.) dry, sandy soil supports sagebrush
7. alpine glaciers flowed eastward from the high peaks
   a. polished and grooved bedrock
   b. formed U-shaped valleys - Cascade Canyon
8. Little Ice Age 1400 – 1850
   a. dozen small glaciers formed during this cool period
9. Present-day glaciers
   a. Skillet and Falling Ice Glaciers carve Mount Moran
   b. Teton Glacier flows down Grand Teton