1 Billion Years ago

**Rodinia One Billion Years Ago**

Generalized Geologic Map of Washington

**A HOSTILE WORLD**

Atmosphere <1%

O\(_2\) & no O\(_3\)

Laurentia—(NA) its western parts were a vast flood plain; rocks deposited are sedimentary rx of the Belt Supergroup.

**Stromatolite – major fossil of Rodinia**

1 Billion Years ago

http://www.washington.edu/burkmuseum/geo_history_wa/

**1. Belt Supergroup**

70k ft of sedimentary rx!


**2. Rifting on Rodinia**

Supercontinent (750 m.y.)

Rift along dotted line

Stromatolite – major fossil of Rodinia

1 Billion Years ago

http://www.washington.edu/burkmuseum/geo_history_wa/
A view south some time after the rifting of Rodinia had begun...

Windermere: Toby Formation

Post-Rifting
West Coast Became a Passive Margin
750 to 200 Myrs Ago

Major
“Ice Ages”
in Earth History

http://www.scotese.com/climate.htm

Belt Supergroup

Windermere Supergroup

Continental Shelf Deposits

3. Kootenay Coastal
Sediments
(750 – 200 m.y.)
4. **Pangaea approximately 200 million years ago - fit of continents**

- Seattle

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**Breakup of Pangaea**

- 300 million years before present
- 200 million years before present
- 110 million years before present
- Today

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**Formation of Accreted Terrane**

- Approaching Arc or Microcontinent
- Accreted Microplate Terrane

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**Microplate terranes Added to Western North America Over the Past 200 Million Years**

- Quesnellia Terrane
- Part of the Intermontane Superterrane
- Farallon Plate

- Subduction zone backsteps
- 5. Docking of Okanogan Highlands (~170-180 m.y.)
Intermontaine Accretion

Intermontain Superterrane

200 Myrs
150 Myrs

Terranes
1. Stikinia
2. Cache Creek
3. Quesnellia
4. Slide Mtn

After Accretion - New Volcanic Arc Forms
About 150 Myrs

The rocks on the margins of the Intermontane Superterrane would undergo intense shear ~ 50 Ma during rise of Kettle and Okanogan domes.

Intermontaine Ages

Stikinia
Cache Creek
Quesnellia
Slide Mountain

Cambrian
Ordovician
Silurian
Devonian
Carboniferous
Permian
Triassic
Jurassic
Cretaceous
Tertiary
Precambrian

Kootenay Arc Accreted
Intermontaine Superterrane Amalgamated
Intermontaine Superterrane Accreted

6. Docking of the North Cascades
100 – 60 Ma

7. Eocene to Miocene Sandstones and Volcanics
(55 to 20 m.y.)
8. Docking of Olympic Peninsula (50 to 30 m.y.)

9. Eruption of the Columbia River Basalts
   17-6 Ma
10. Ice Age
(1.8 m.y.-12,000 years ago)

Glacial Lake Missoula
Puget Lobe
Okanogan Lobe
Columbia Lobe
Purcell Lobe

Tape here

Mt. Adams
Hood (1866)
Mt. Rainier (1854)
Glacier Peak (1750?)

11. Modern Cascade Volcanoes
(~2 m.y. to today!)

Mt. Baker (1880)