Cordilleran Passive Margin

Reading:
GNAM v-A: Ch. 1 Figs. 1, 15, & 16
Ch 8 pp. 139-163, Figs. 1, 2, 3, 5, 6, 7 & 8
Ch. 12 pp. 397-412 & Figs. 1, 2, 4 & 5

Passive Margin History

- Precambrian
  - Oblique distribution to present plate margin
- Cambrian to Devonian
  - Passive margin sedimentation

Middle & Upper Proterozoic

- < 1.7 Ga Age
- Thick Section of Red Bed Clastics
- Marine to Non-marine Origin
- Belt and Purcell Supergroups
- Tectonic Environment Unclear

Late Proterozoic Rifting

- Renewed rifting 780-730 Ma
  - Along whole length of Canadian Cordillera
- Deposition of Windemere Supergroup
  - 780-570 Ma rift-phase clastics

Cambrian/Silurian

- Passive margin deposits
  - Carbonates
  - Local thick deposits
- Broad zone of sedimentation
  - Extends from well upon the craton out to shelf edge
Cordilleran-Type Orogen

- Accretionary prism
- Fore arc basin
- Arc
- Old accretionary prisms
- Basement thrusts
- Foreland thrust & fold belt
- Foreland basement uplift

Oblique Convergence

Components
- Dip-slip
- Strike-slip
Common Cordilleran feature
Offshore British Colombia
Structural Regions

- Provenance and trends
- Oblique strike of Precambrian units to Cordilleran System

First-order Subdivisions

- Accretionary belt
- Fold and thrust belt
- Laramide deformation

Foreland Stratigraphy

- Canada
  - Narrow sub outcrop bands
  - Mainly Paleozoic
- USA
  - Broad platform
  - Mainly Mesozoic

Tectonic Provinces

- Craton & basins
- Miogeoclinal shelf
- Allochthons
- Accretionary complexes
- Island arc complexes

Basement Province

- Constitutes western edge of craton
- Located west of > 1.7 Ga crust
  - Juvenile crust added to continent
- Structural discontinuity
  - Basement and Cordilleran system

Precambrian Belts

- Yavapai
- Wyoming
- Trans-Hudson
- Superior
Precambrian within the Cordillera

Crystalline rocks (black)
Sedimentary rocks (red)
Sr lines (0.704 & 0.706)

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Late Proterozoic and Cambrian

Terrigeneous rocks
Prism thickens to the west

Late Proterozoic Early Cambrian

Cratonic sediments
Miogeoclinal sediments
Current directions suggest shallow tidal currents

Cambrian to Late Devonian

- Allochthonous off-shelf units
- Passive margin
- Metamorphic belt

Paleozoic Lithology

- Lower Paleozoic
  - Carbonates
  - Shale
  - Orogenic terranes
- Upper Paleozoic
  - Rift basins
  - Island Arcs
  - Subduction complexes