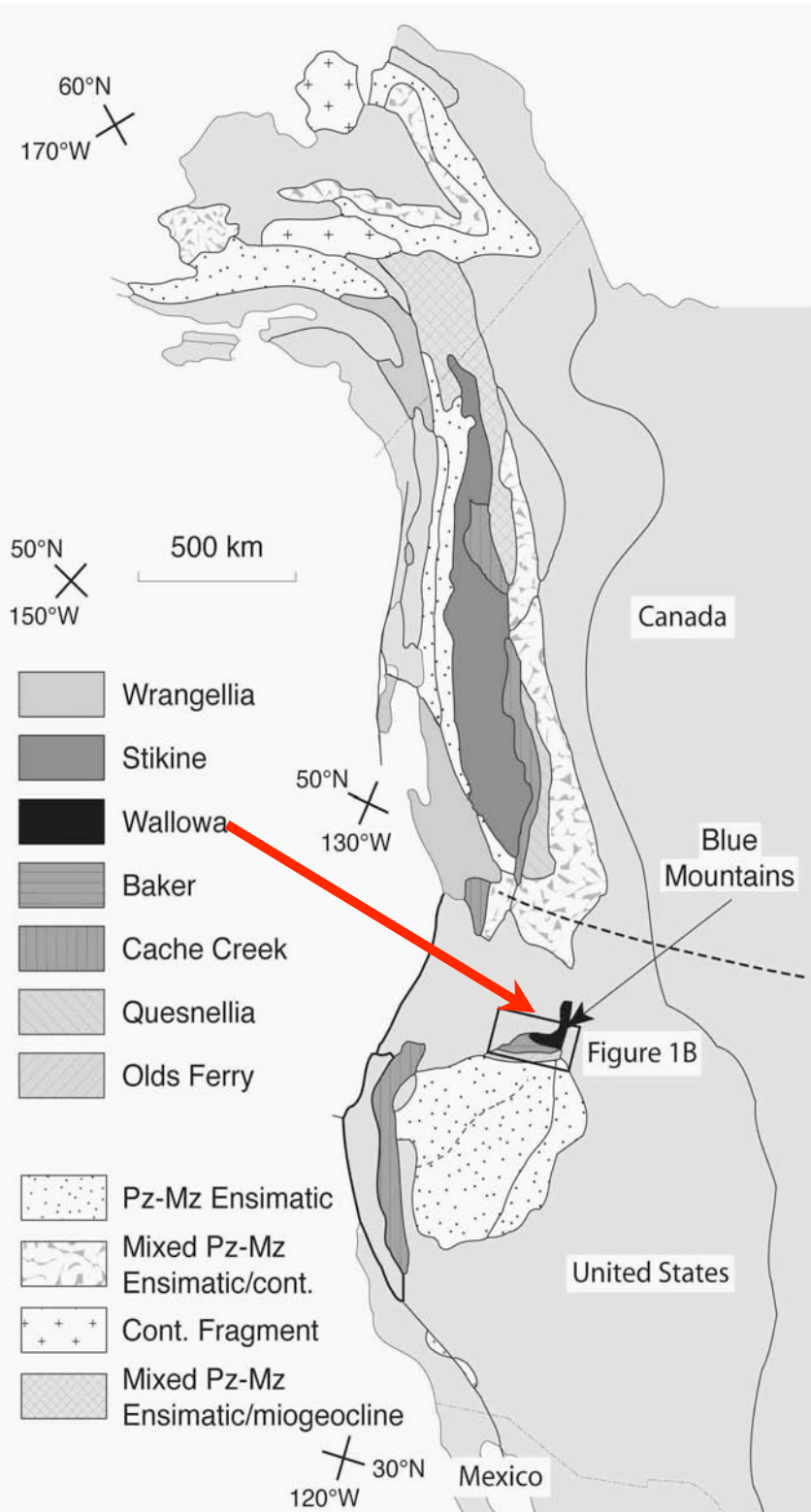
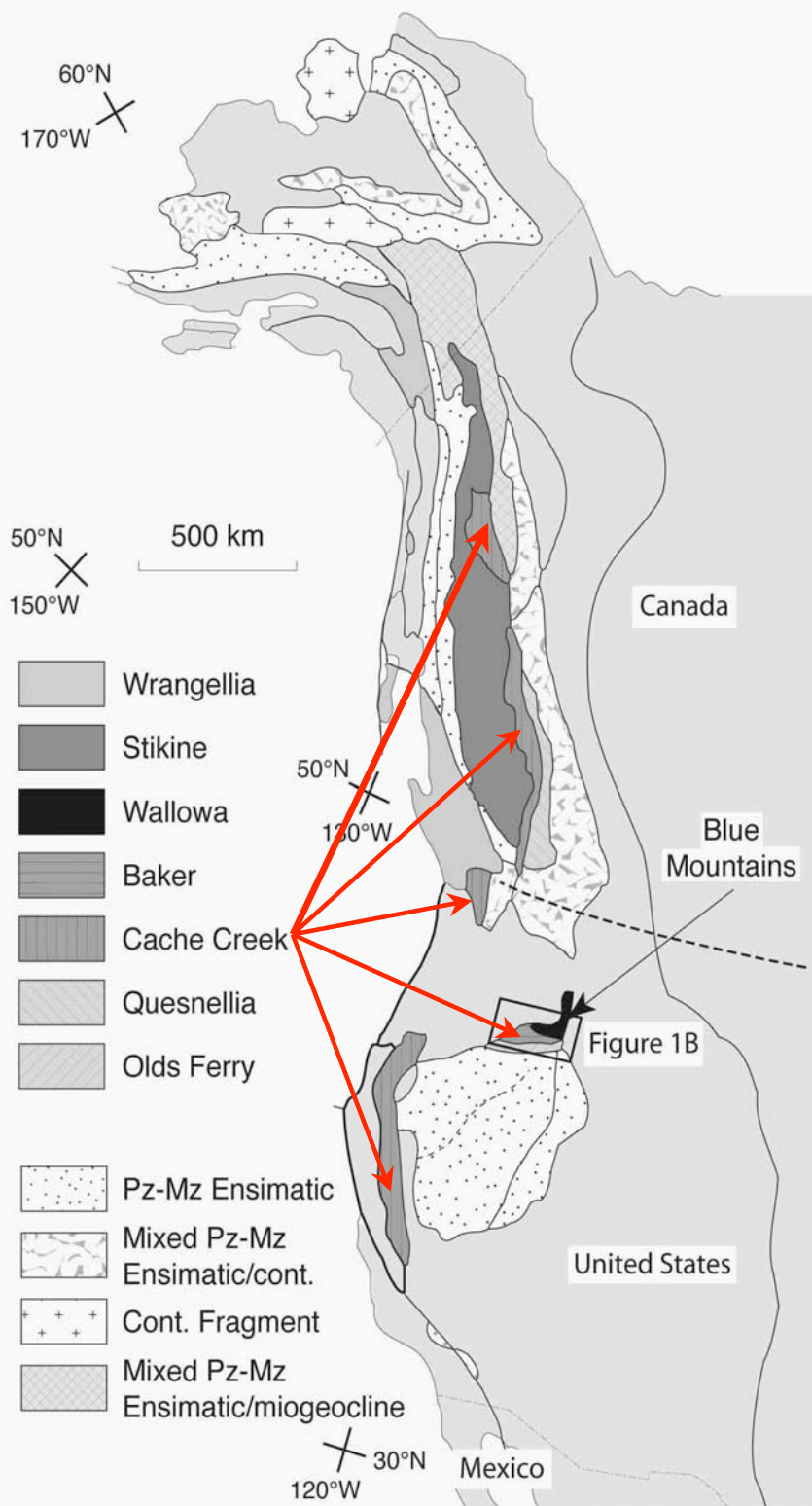


Tectonic Evolution of the Wallowa Composite Terrane

by

M. Allan Kays
University of Oregon
and
John P. Stimac
Eastern Illinois University



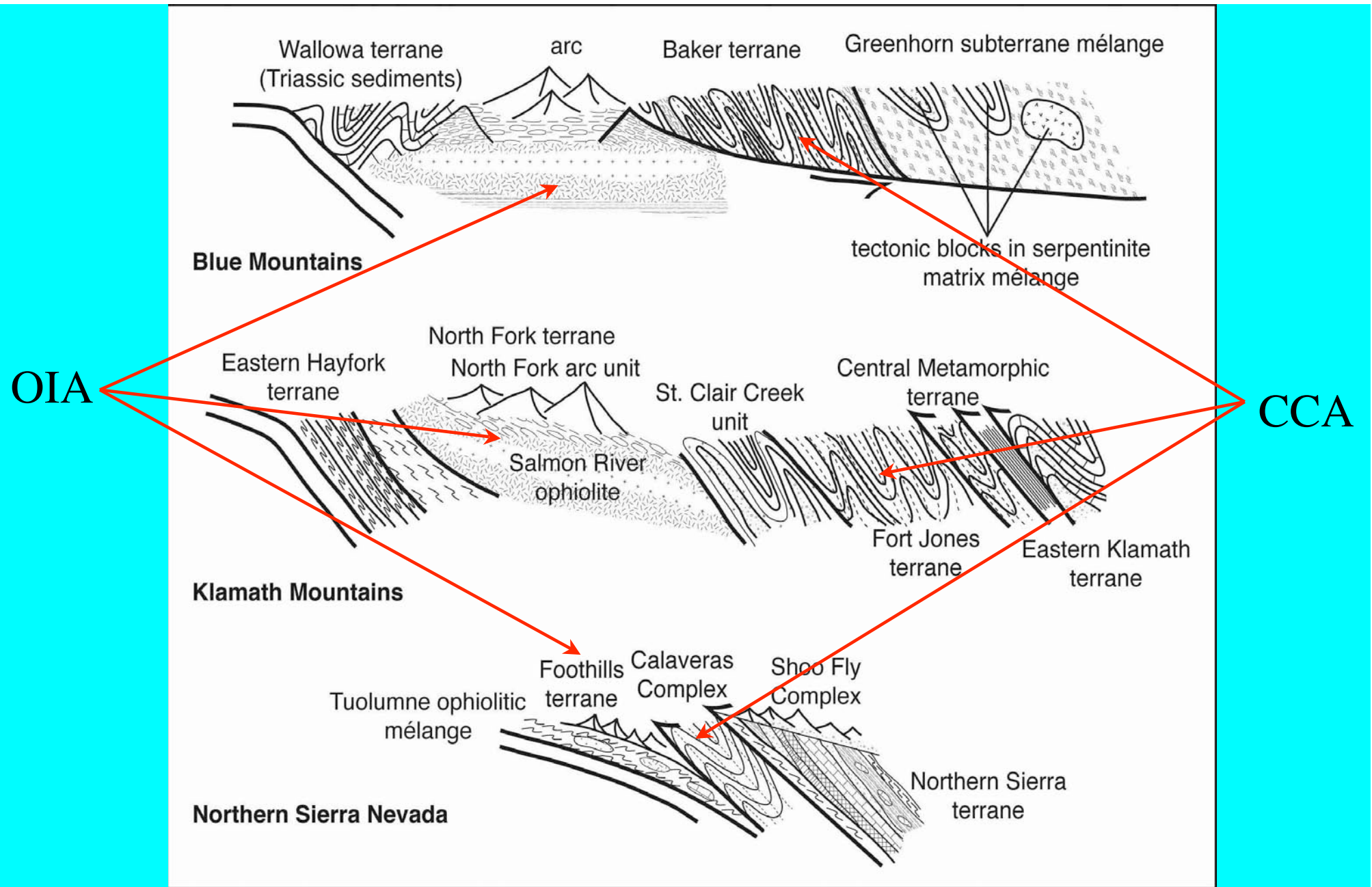


Terranes of Tethyan
Cache Creek Affinity
(CCA) (Saleeby, 1983)
Are Widespread;

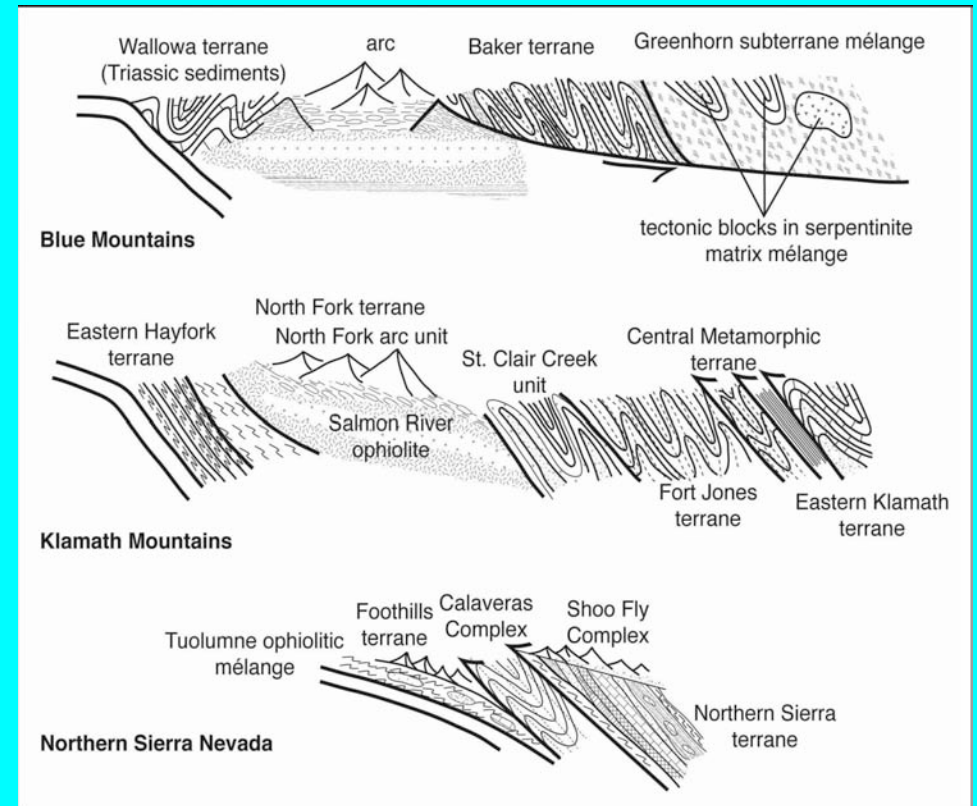
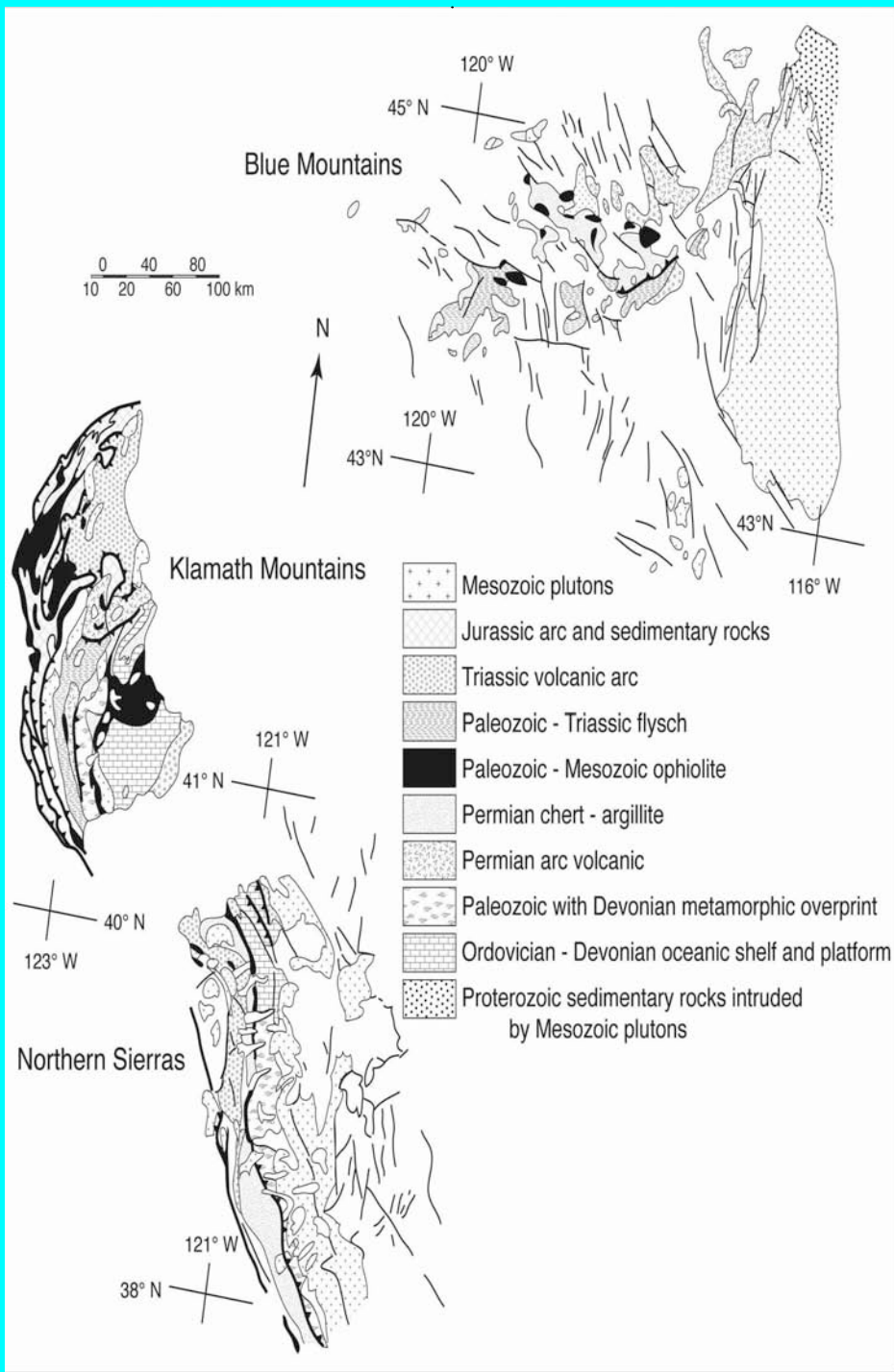
Goodge (1990)
Suggests an Origin as a
Backarc Basin in the
Klamath Mountains.

In All Occurrences High
Pressure Metamorphism
Suggests that the Backarcs
were subducted.

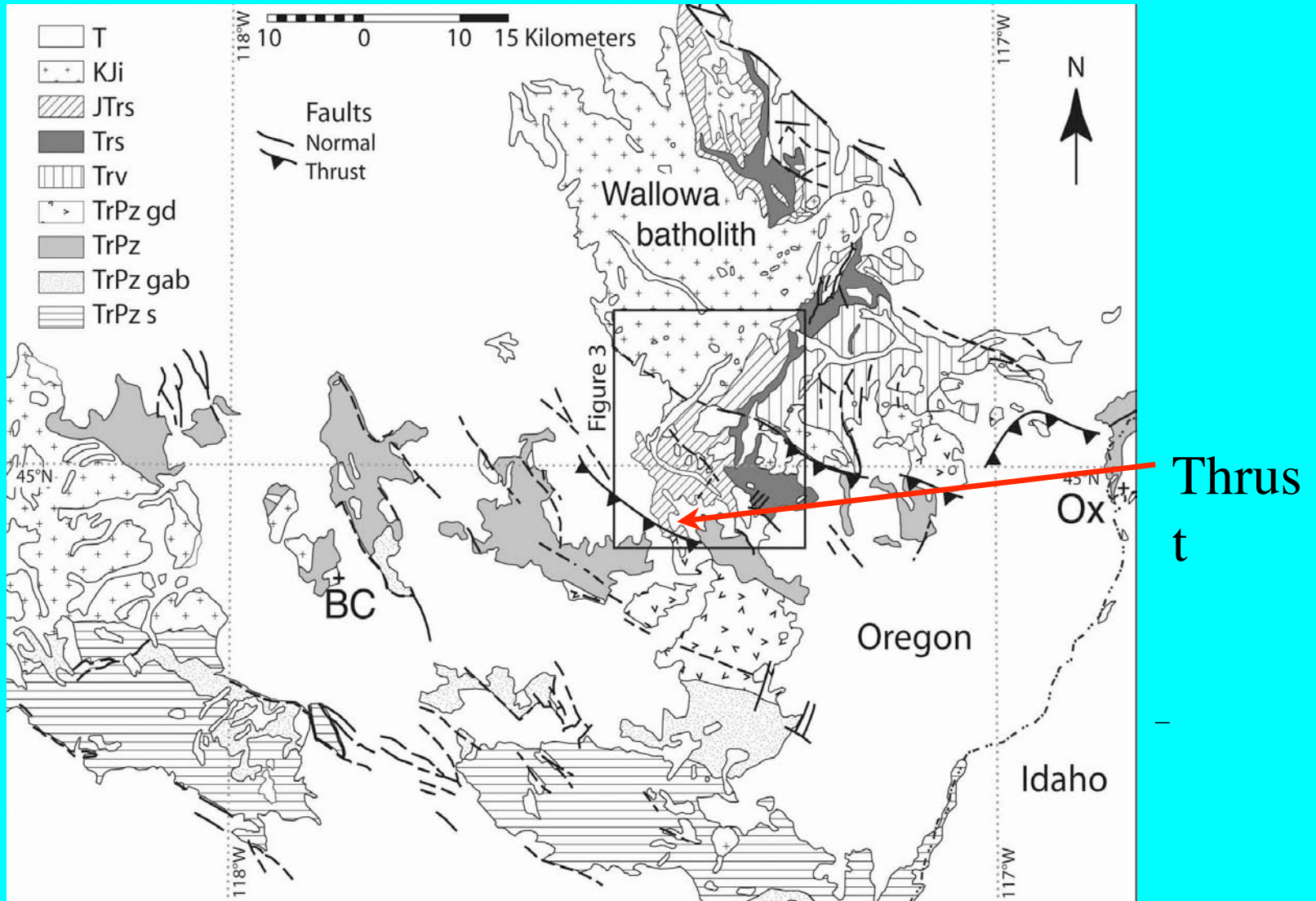
The Tethyan Backarcs may
be Paired with Tethyan
Arcs and Forearcs.



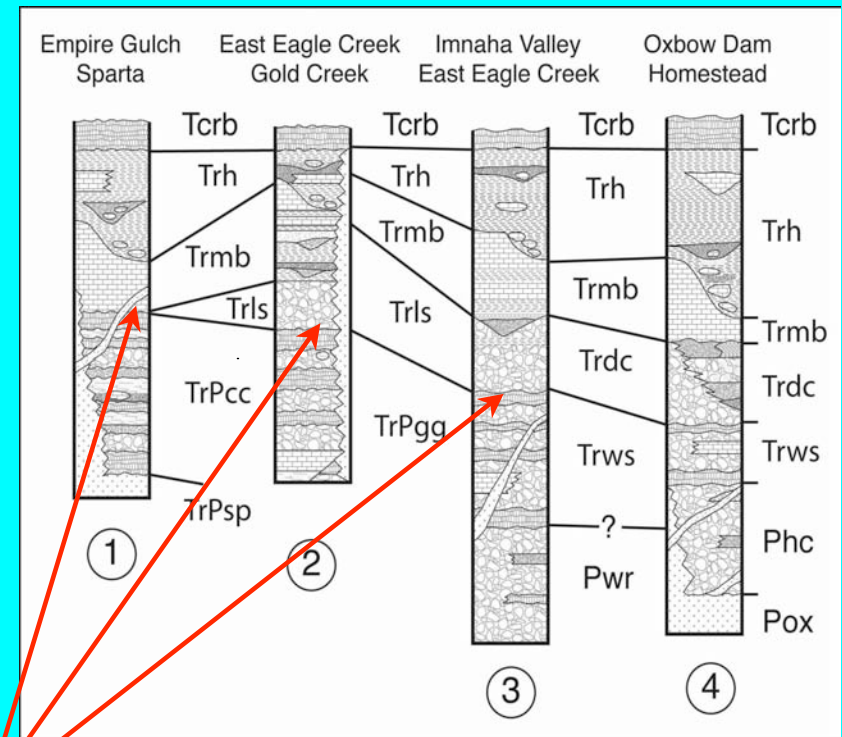
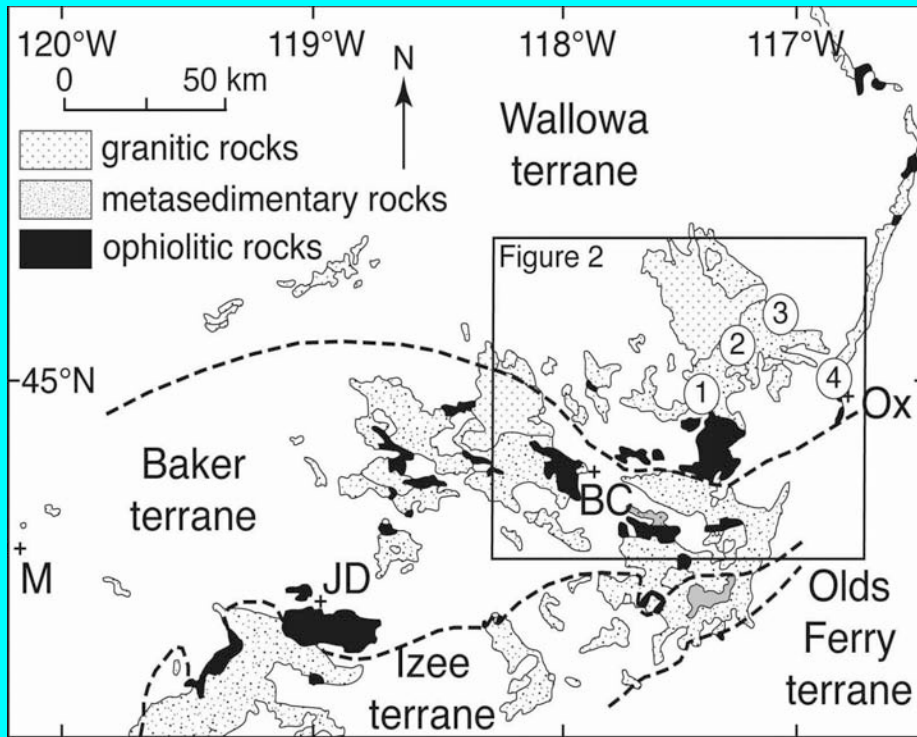
Examples of Paired Tethyan Arcs and Backarcs (CCA).
 Growth was Oceanward of McCloud Arcs. W to E order in
 all three Examples is Accretionary.



The E–W Order of Terranes is Maintained Throughout the Cordillera when the $\sim 65^\circ$ CW Post–Early Late K Rotation is Removed in the Blue Mountains.



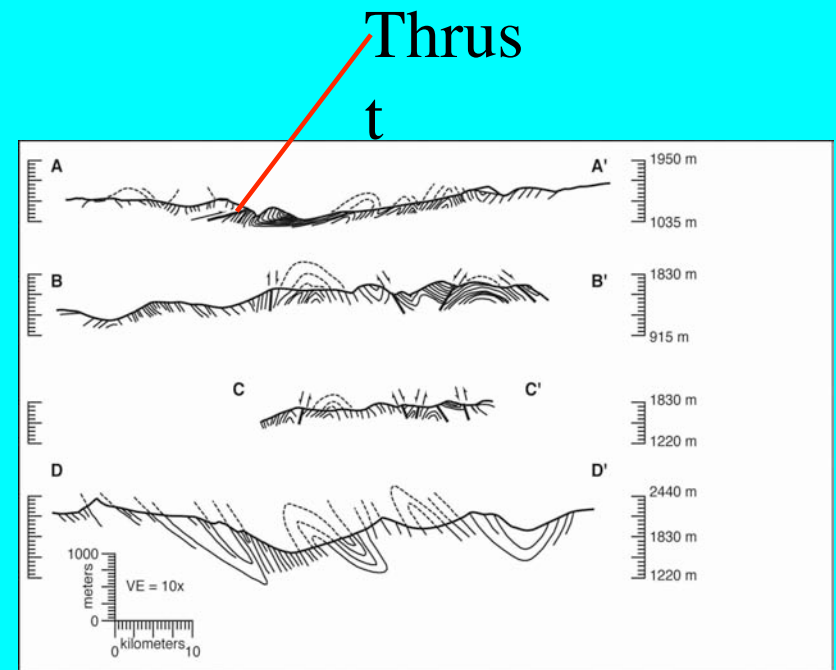
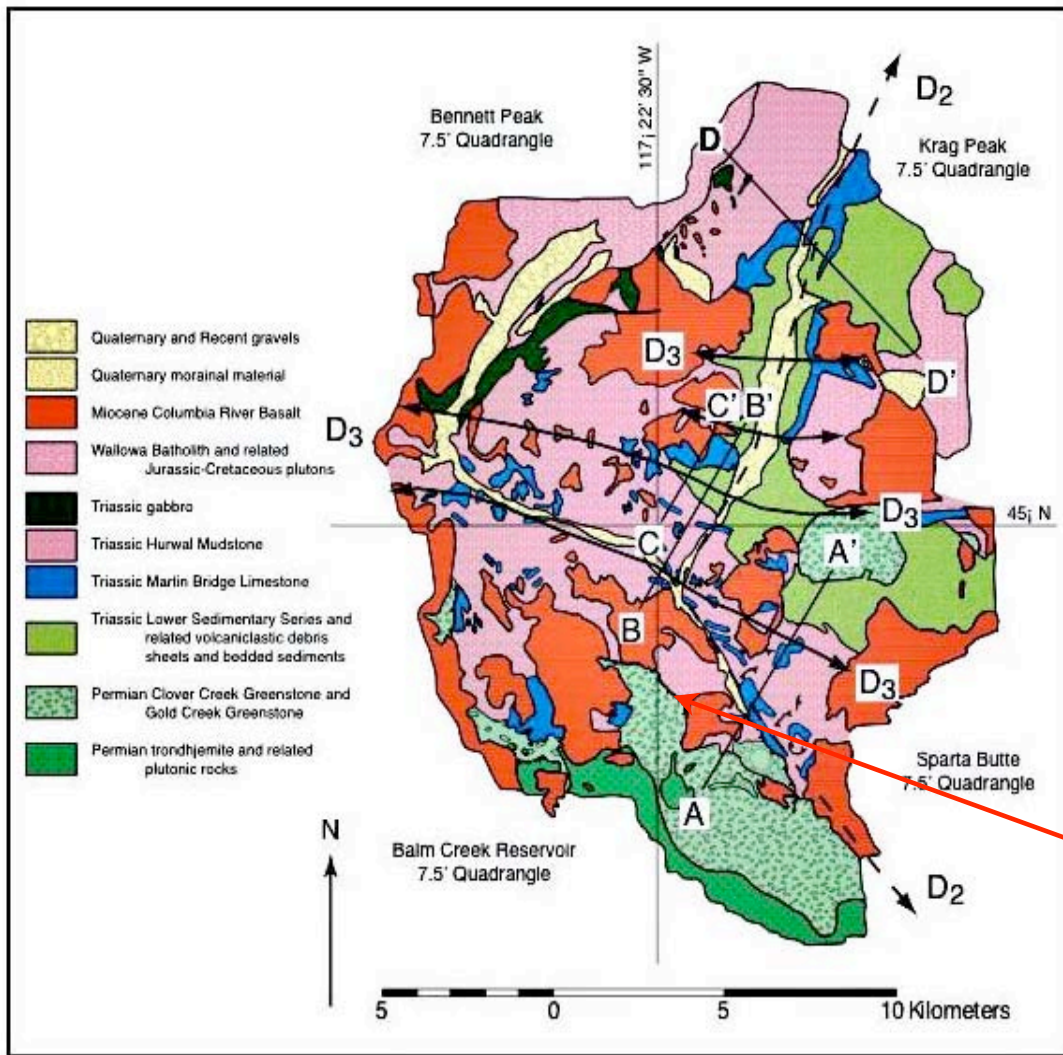
Thrust Faults Separate Triassic and Permian Arc Rocks in the Wallowa Terrane; The Rocks are Deformed, but the Stratigraphic Character in both Arcs is Well Preserved



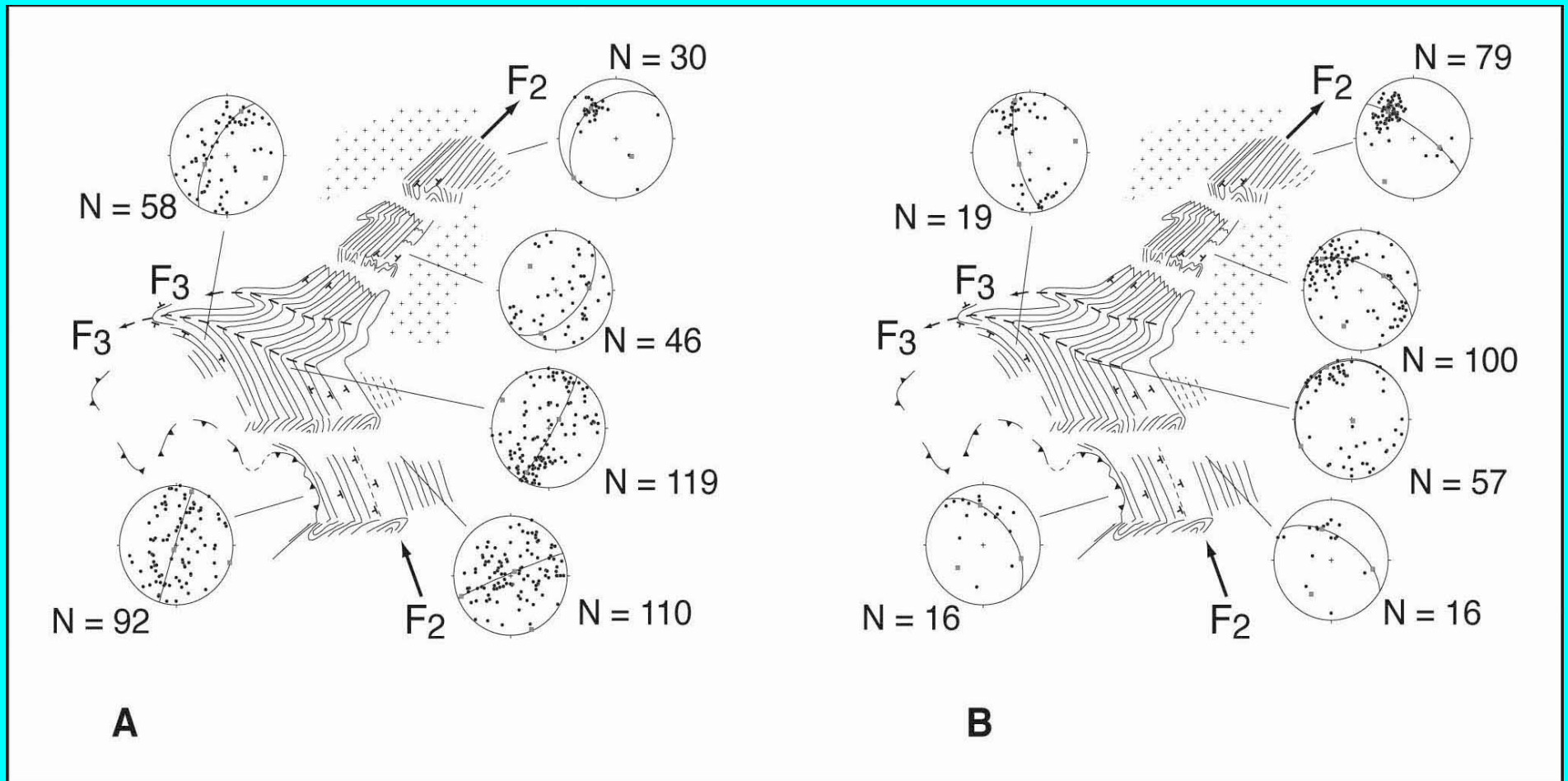
Locations: Columnar Sections

Faults

Permian and Triassic Sections of Columns (1)-(3)
 Juxtaposed During Late Jurassic Faulting; Were the
 Arcs Separated During Growth Before Faulting?



D₂ Folds Trend N-S to NE; D₃ Folds and Thrusts Trend ~E-W; D₂ Folds Triassic Rocks; Triassic and Permian Arc Rocks Are Juxtaposed by D₃ Thrusts.



_Schematic Structure Shows Trends of F_2 and F_3 Axes; Lower Hemisphere Girdles are Poles to S_0 (Bedding) And S_2 (Foliation).

_N-S- to NE-Trending F_2 Folds Affect Only Triassic Rocks;
 NNW- to E-W-Trending F_3 Folds Affect Permian and Triassic.

TECTONIC EVENTS:

1. Arc Growth is from E in Paleozoic to W in Triassic;

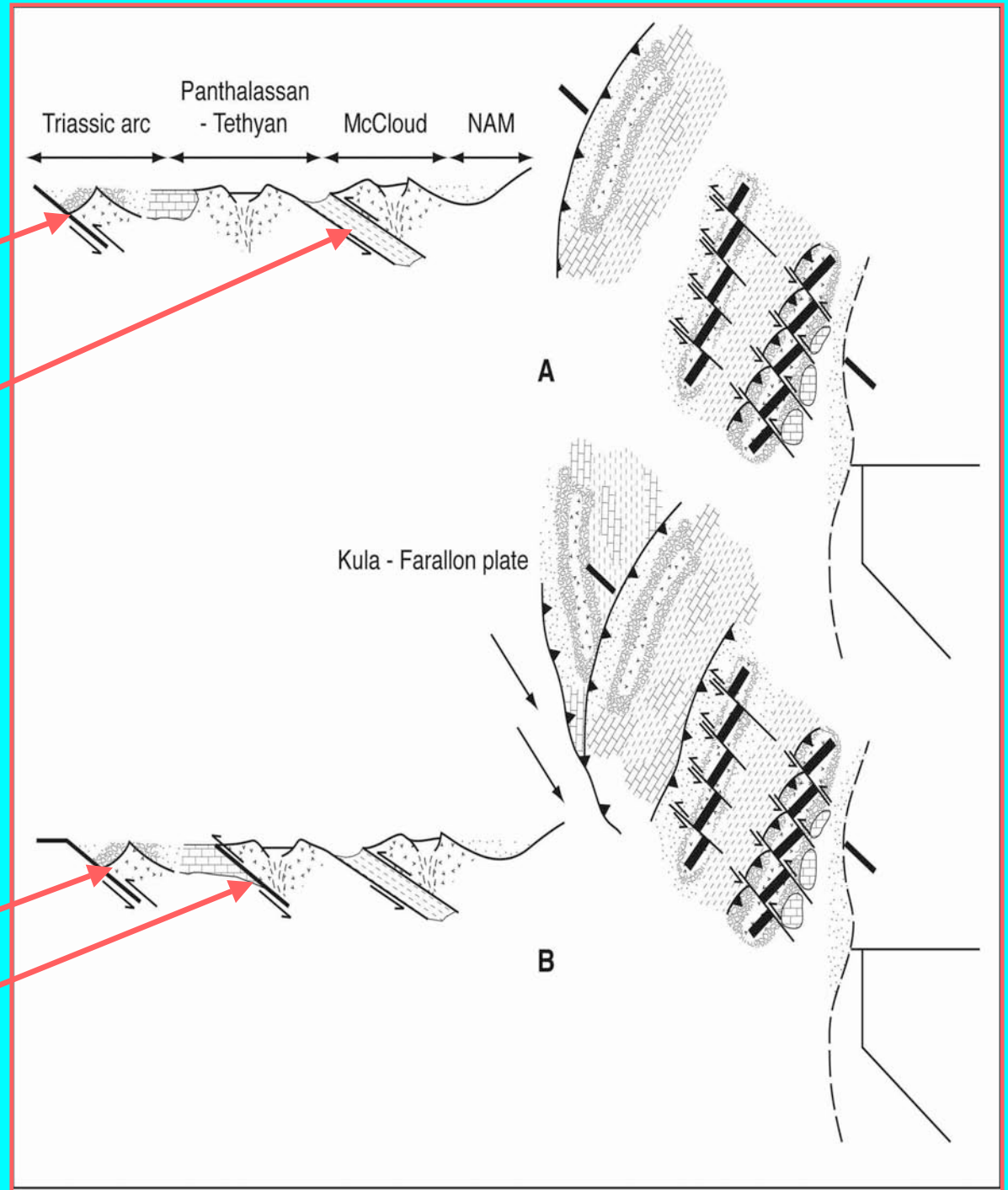
2. Late Triassic

Deformation by Shearing in Wallowa terrane (D_1) and by Subduction in Baker Metamorphism (D_1 - M_1)

3. Middle Jurassic

Deformation (D_2)-Metamorphism (M_2) affects Triassic Arc

4. Late Jurassic thrusts (D_3) Triassic under Permian Arc.

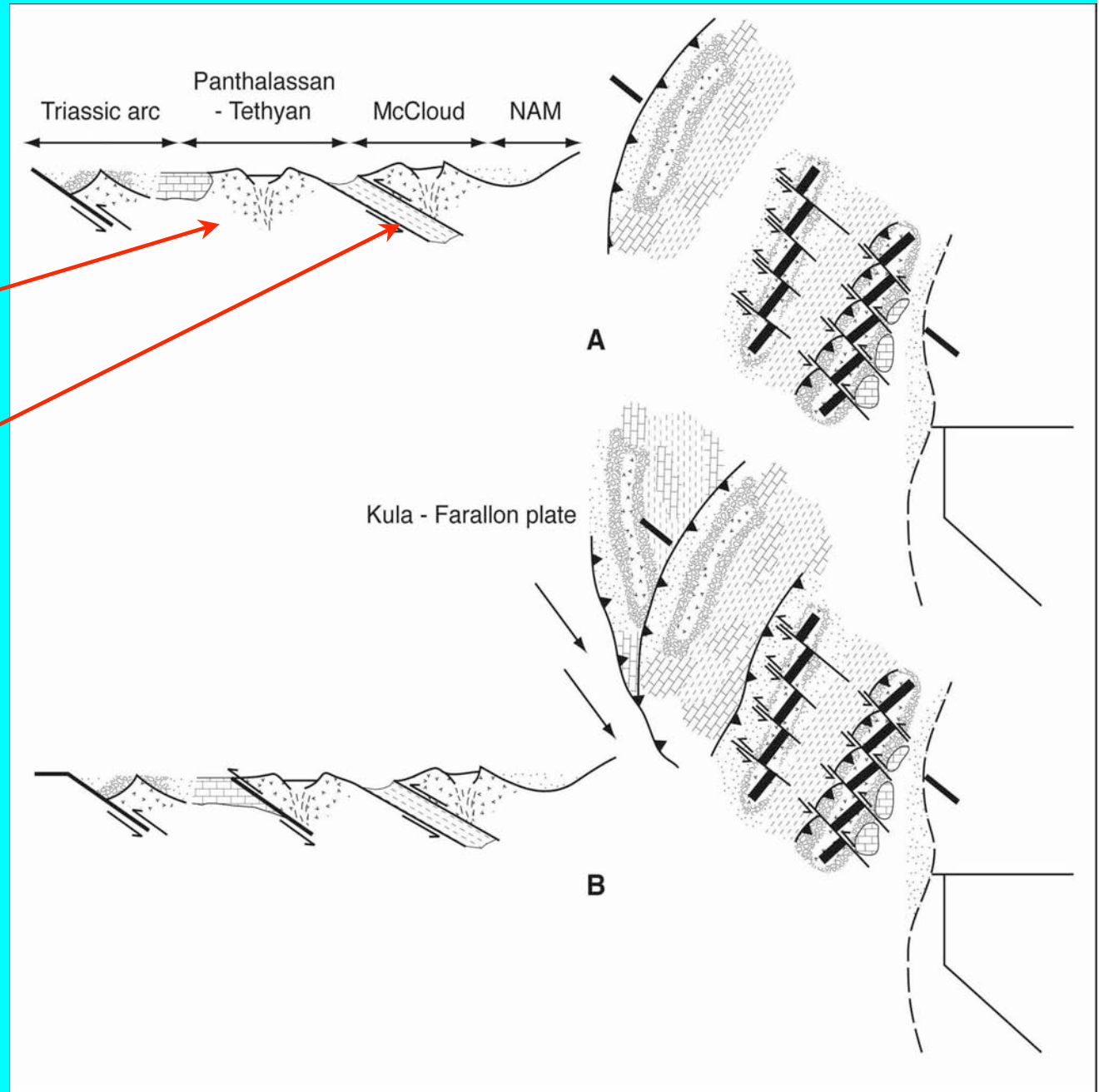


REVIE

W

1. Permian to Late
Triassic Arc Growth

2. Late Triassic
Subduction, F_1
Folding, and M_1
Blueschist Facies
Metamorphism



3. Middle to Late Jurassic F_2 Folding, S_2 Foliation, and M_2 Metamorphism in Triassic Wallowa Arc Rocks; Permian Rocks are Unaffected.

4. F_3 Folds and Thrusts Affect Permian and Triassic Rocks; Reflect D_3 Amalgamation of Permian and Triassic Wallowa Arc Rocks

