

The provenance of detrital zircons from the Cambrian Addy Quartzite, northeast Washington:

Connections between British Columbia and central Nevada?

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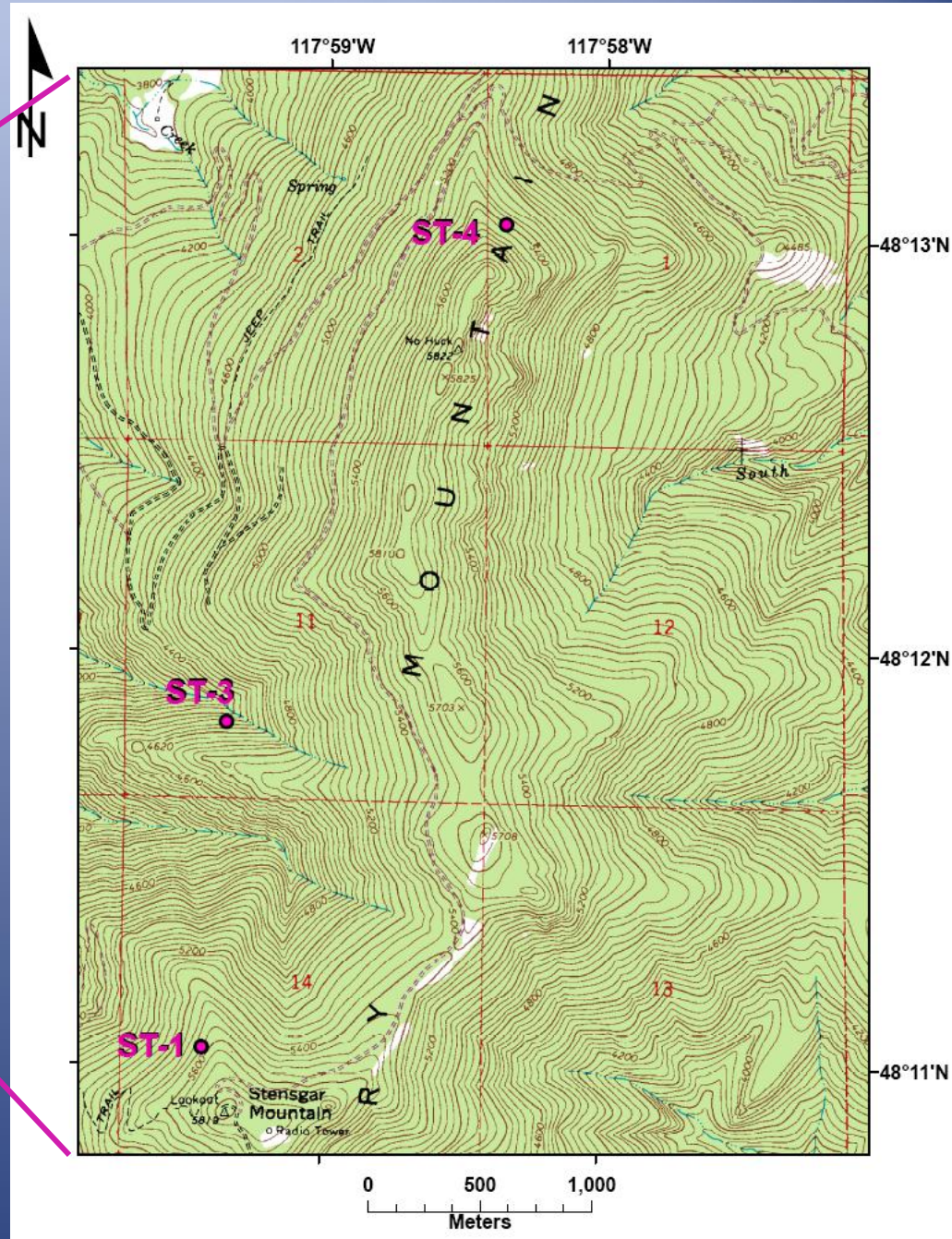
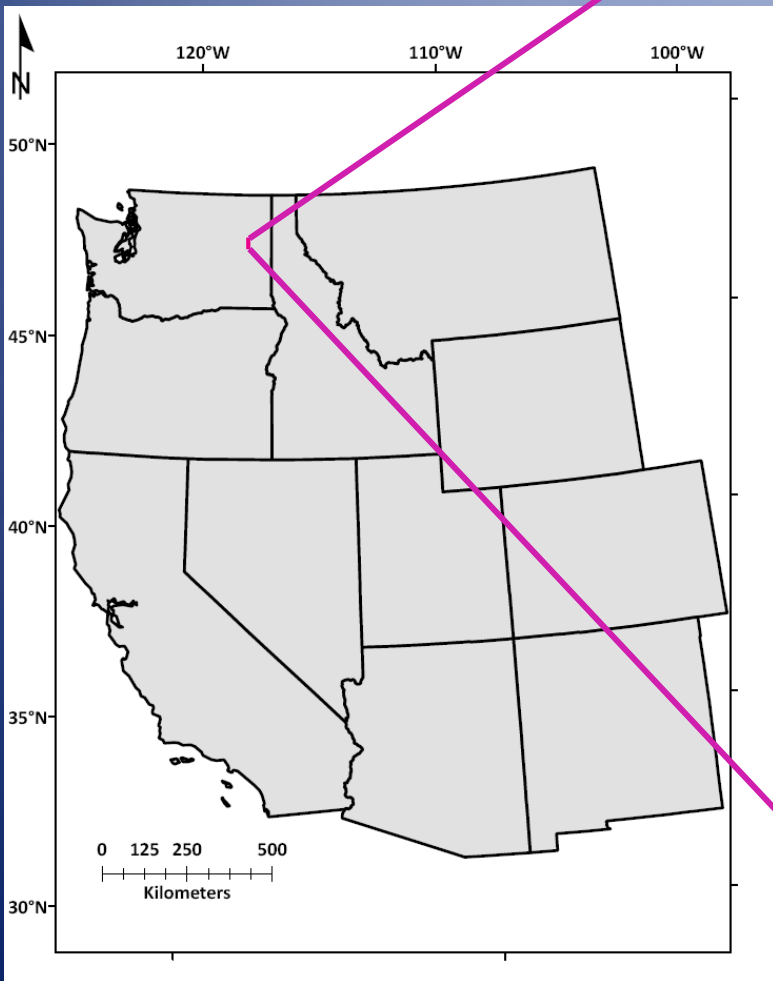
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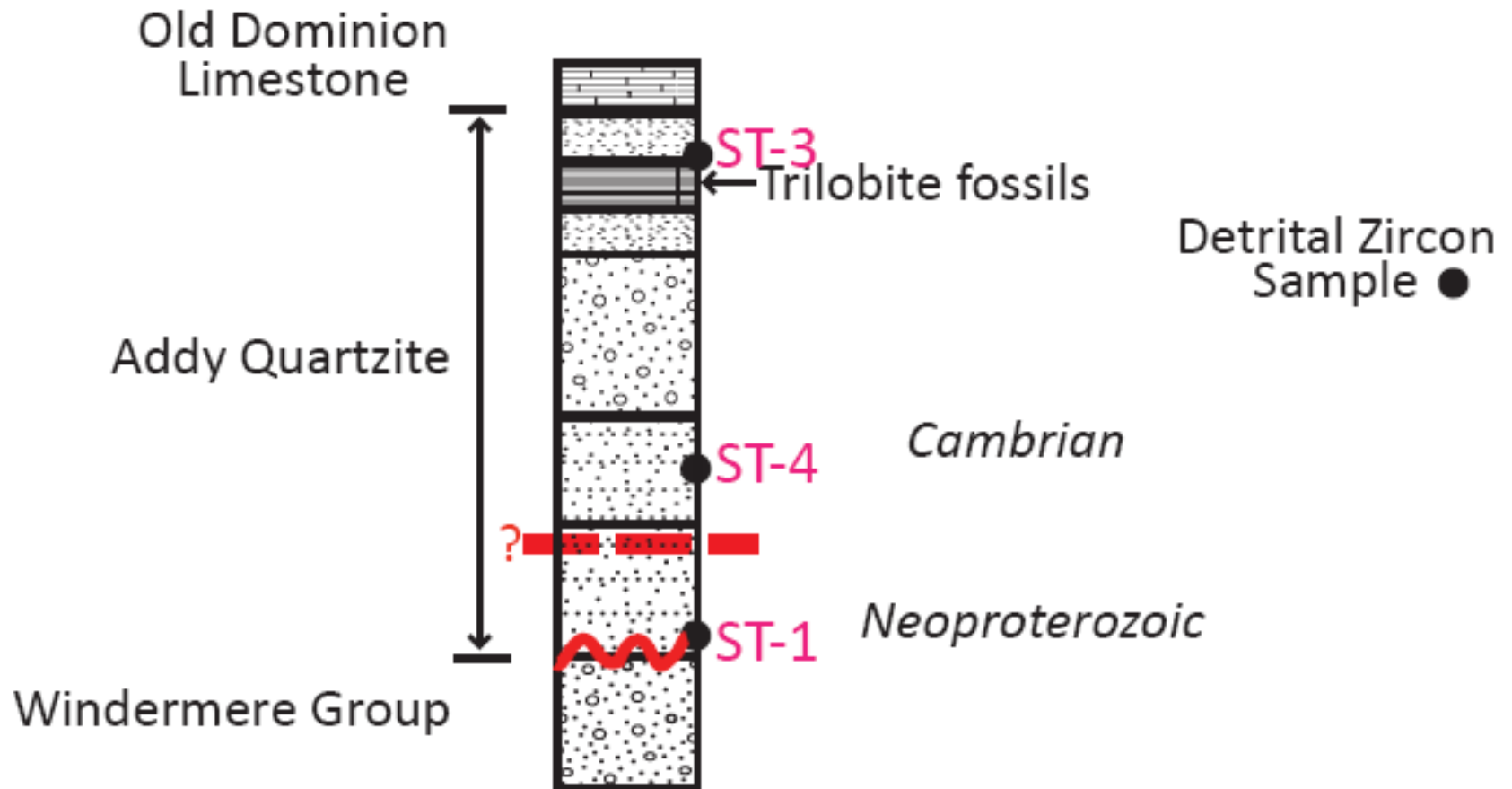
Addy Quartzite

- Late Neoproterozoic – Early Cambrian
- Passive Margin in NE Washington
- Questions:
 - Provenance?
 - Link to central Laurentian passive margin?
- Why Addy Quartzite?
 - Stratigraphy, location

Addy Quartzite



Addy Quartzite

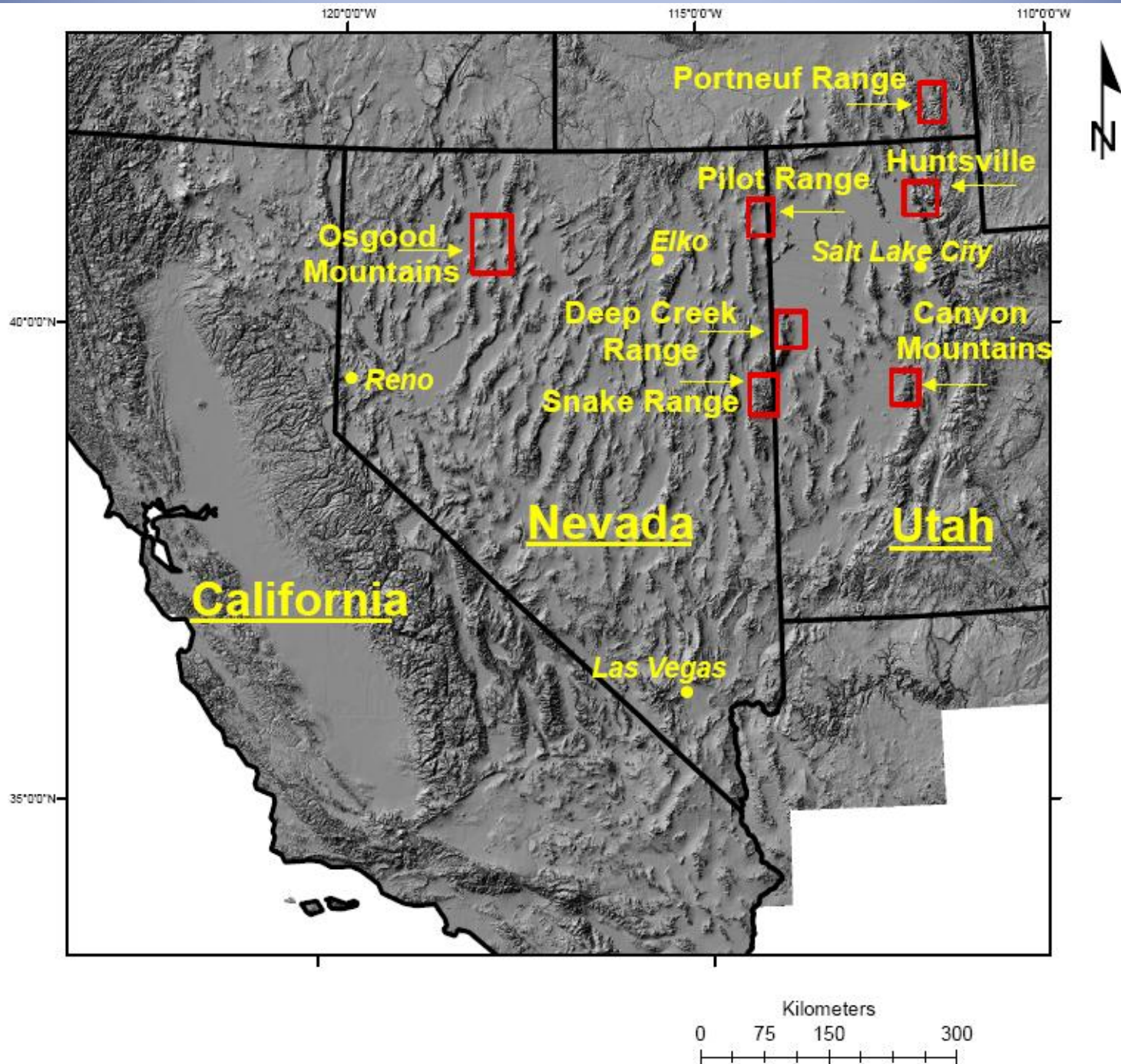


Addy Quartzite

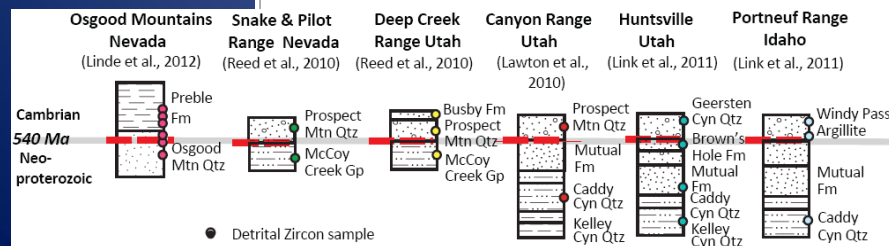
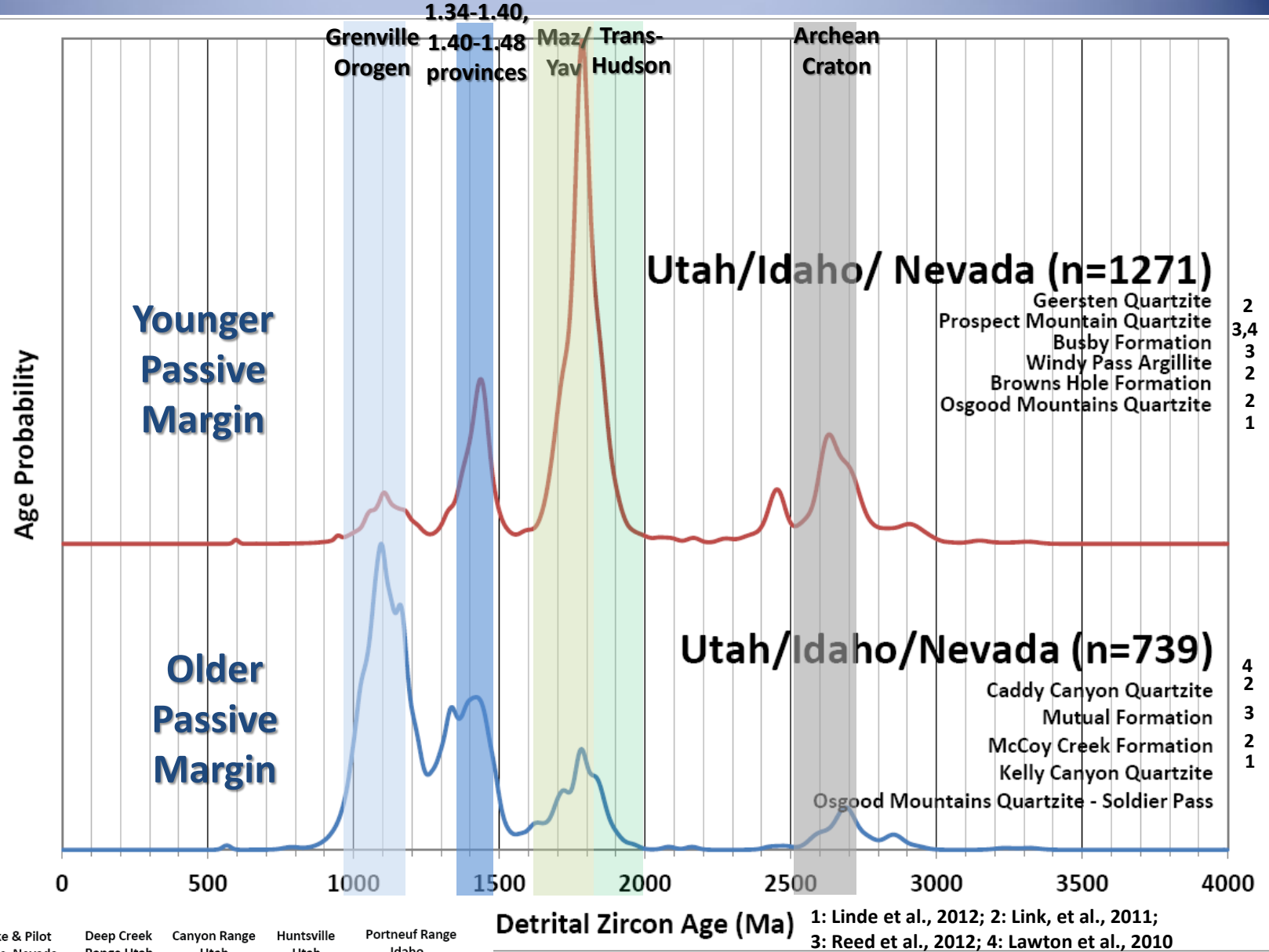


Lindsey et al., 1990

- Fluvial, nearshore, shelf (Lindsey et al., 1990)

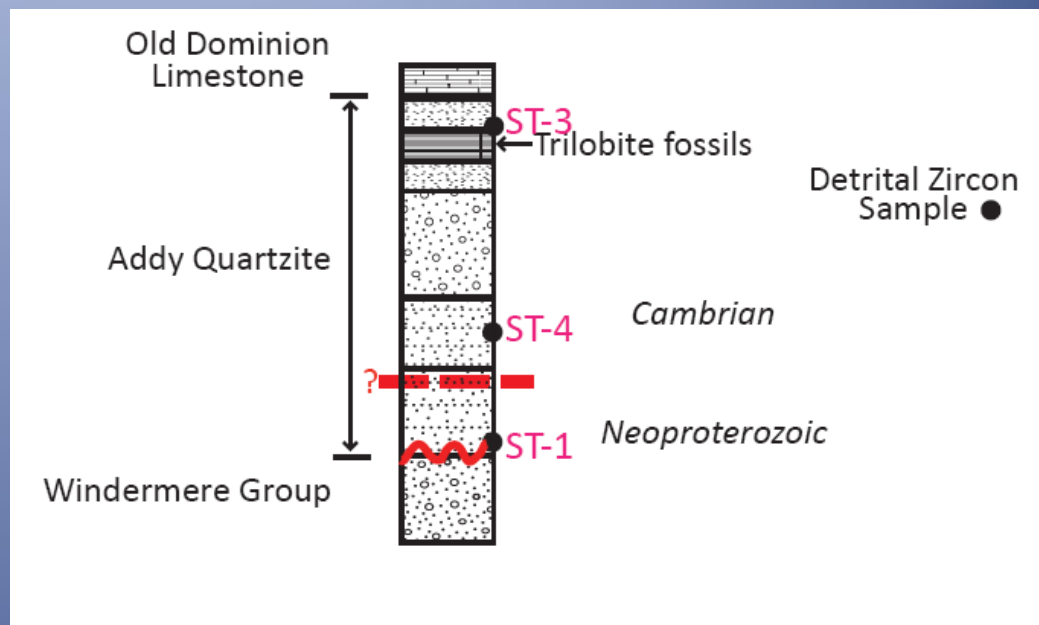
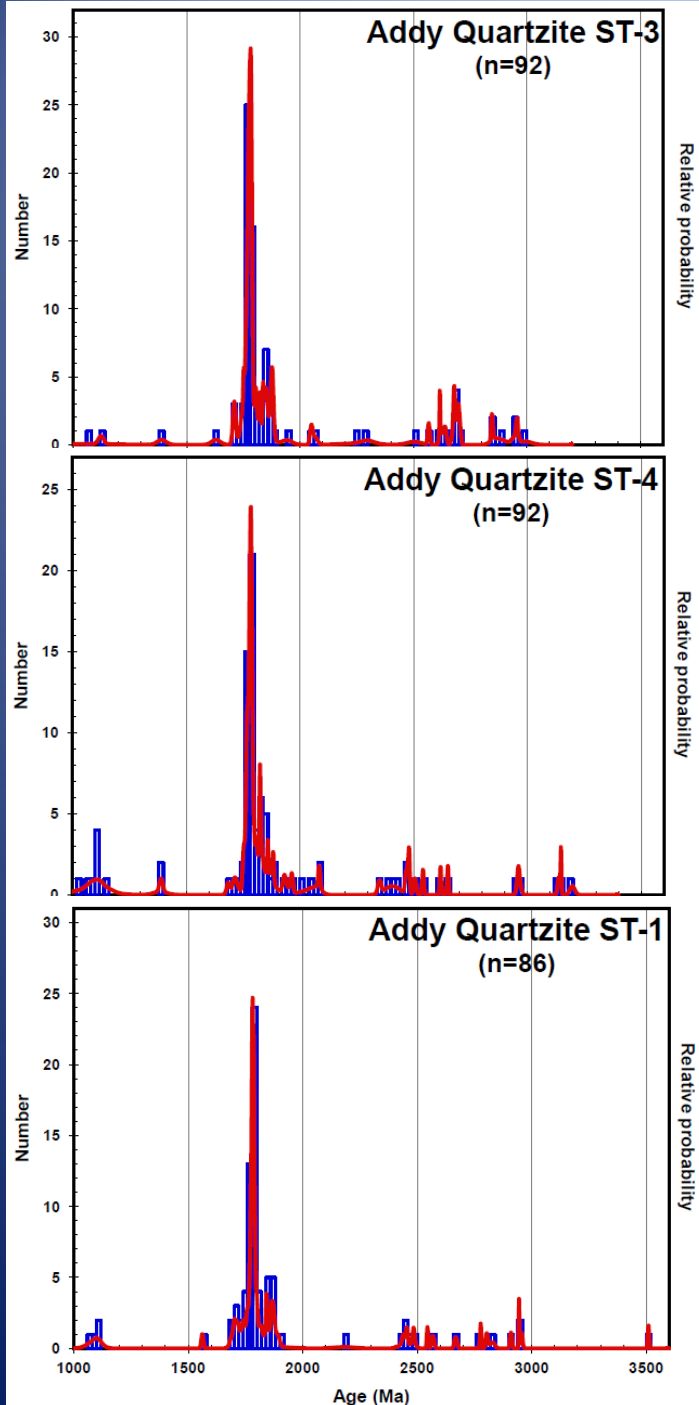


Great Basin Passive Margin



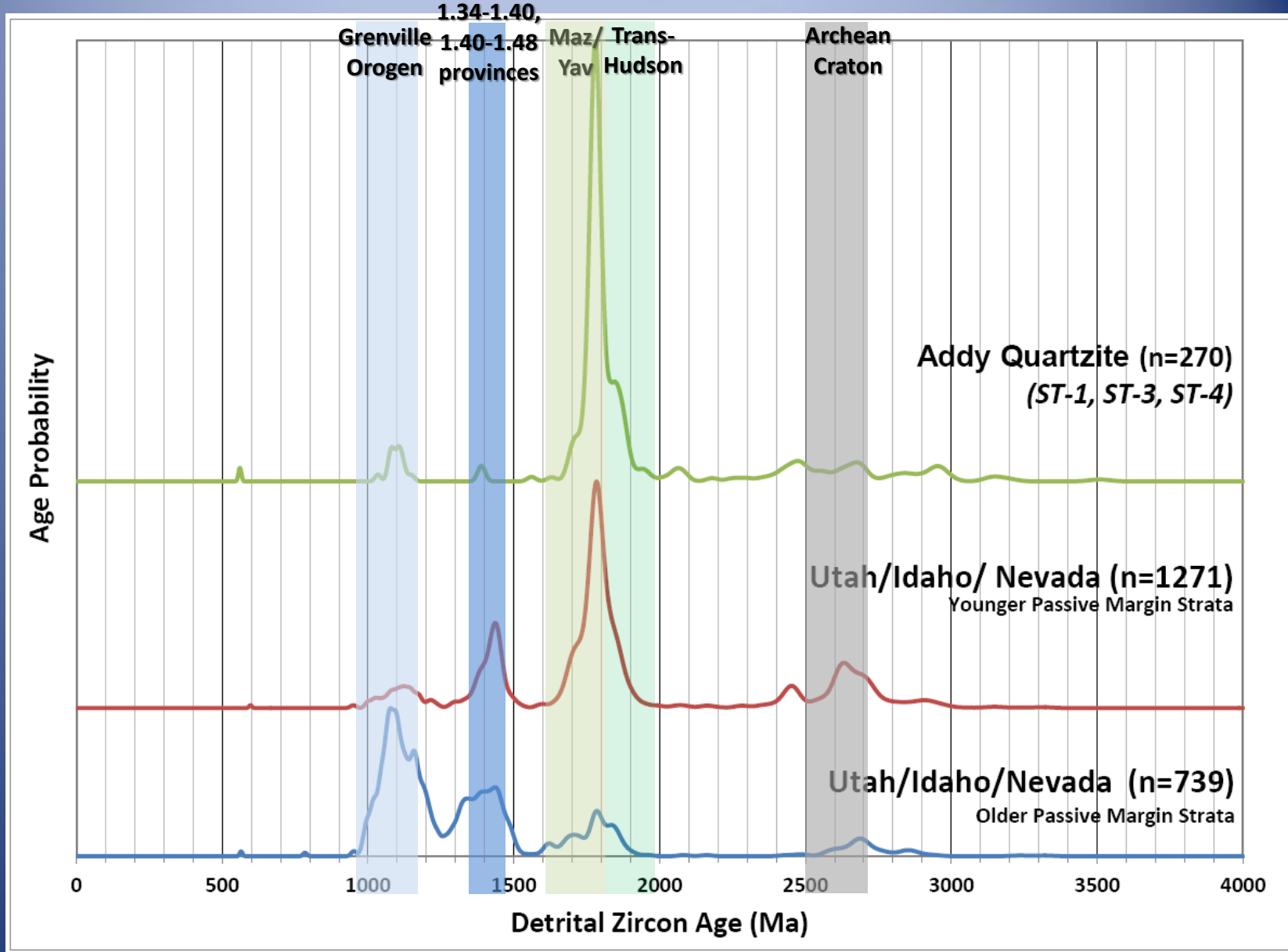
(Normalized probability graph)

Addy Quartzite

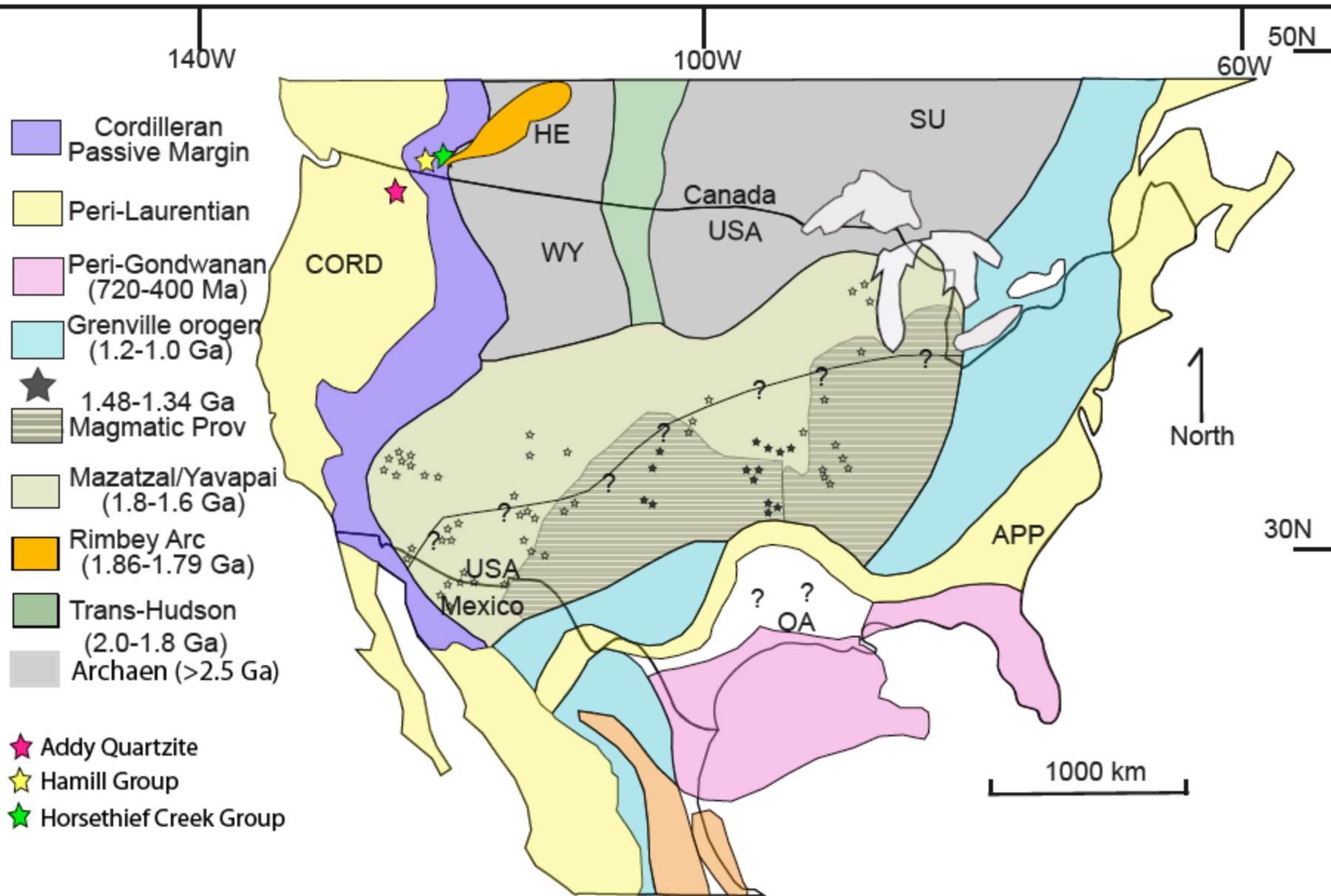


Reported U-Pb ages are concordant ages
from LA-ICP-MS at
University of Arizona LaserChron Center

(Relative probability graphs)



(Normalized probability graph)



Age Probability

1.34-1.40, 1.40-1.48
Grenville Orogen provinces
Maz/ Yav Trans- Hudson
Archean Craton

Addy Quartzite (n=270)
(This study; ST-1, ST-3, ST-4)

Hamill Group (n=193)
Gehrels & Pecha, 2014

Horsethief Creek Group (n=195)
Gehrels & Pecha, 2014

1000 1500 2000 2500 3000 3500 4000

Detrital Zircon Age (Ma)

(Normalized probability graph)

NE Washington (Lindsay and Gaylord, 1992)
SE British Columbia (Gehrels and Ross, 1998)

Detrital Zircon Sample ●

Cambrian

540

Neoproterozoic

ST-3

Addy Quartzite

ST-4

?

ST-1

Hamill Group

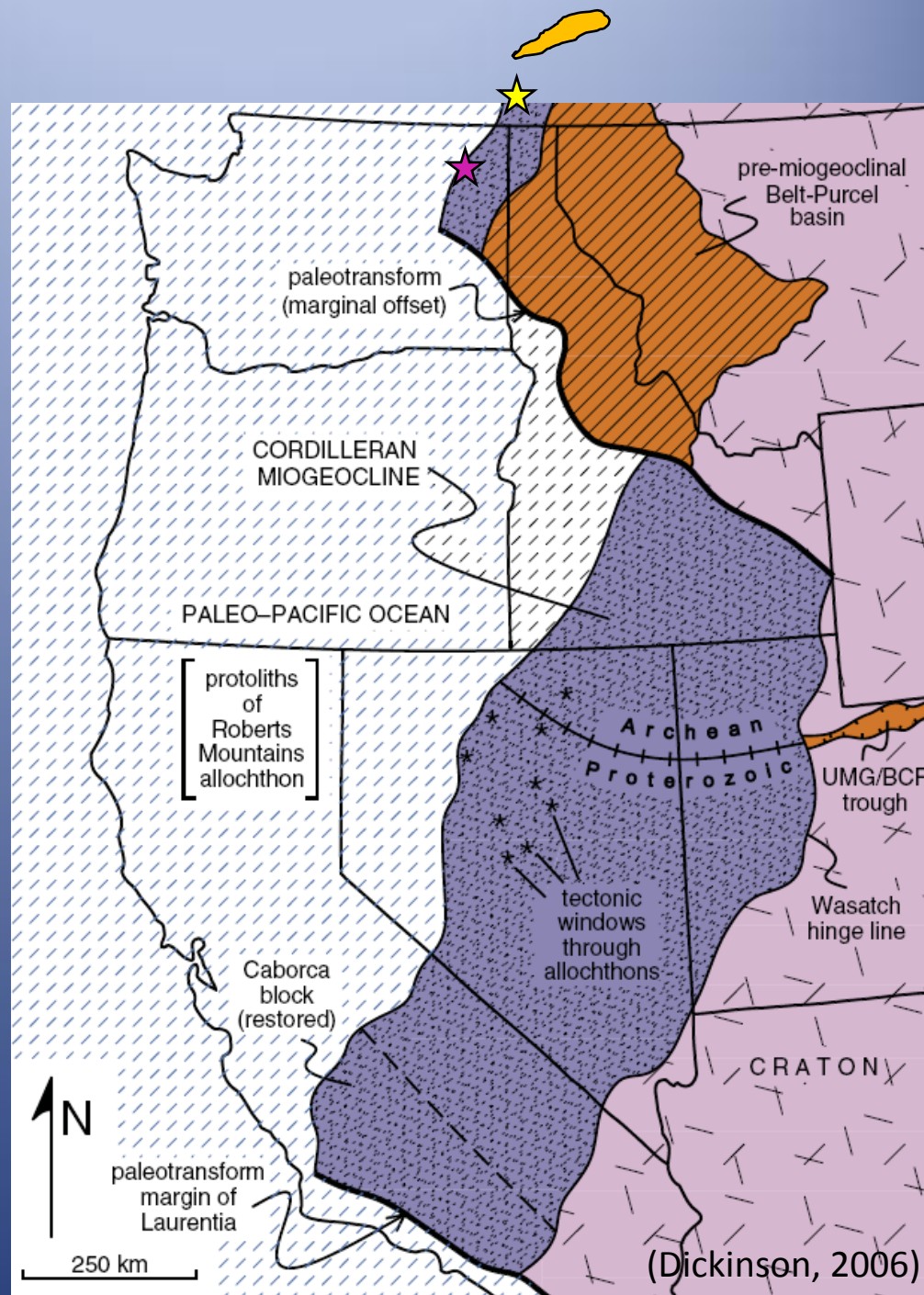
Horsethief Creek Group

Addy Quartzite

(Interim) Conclusions

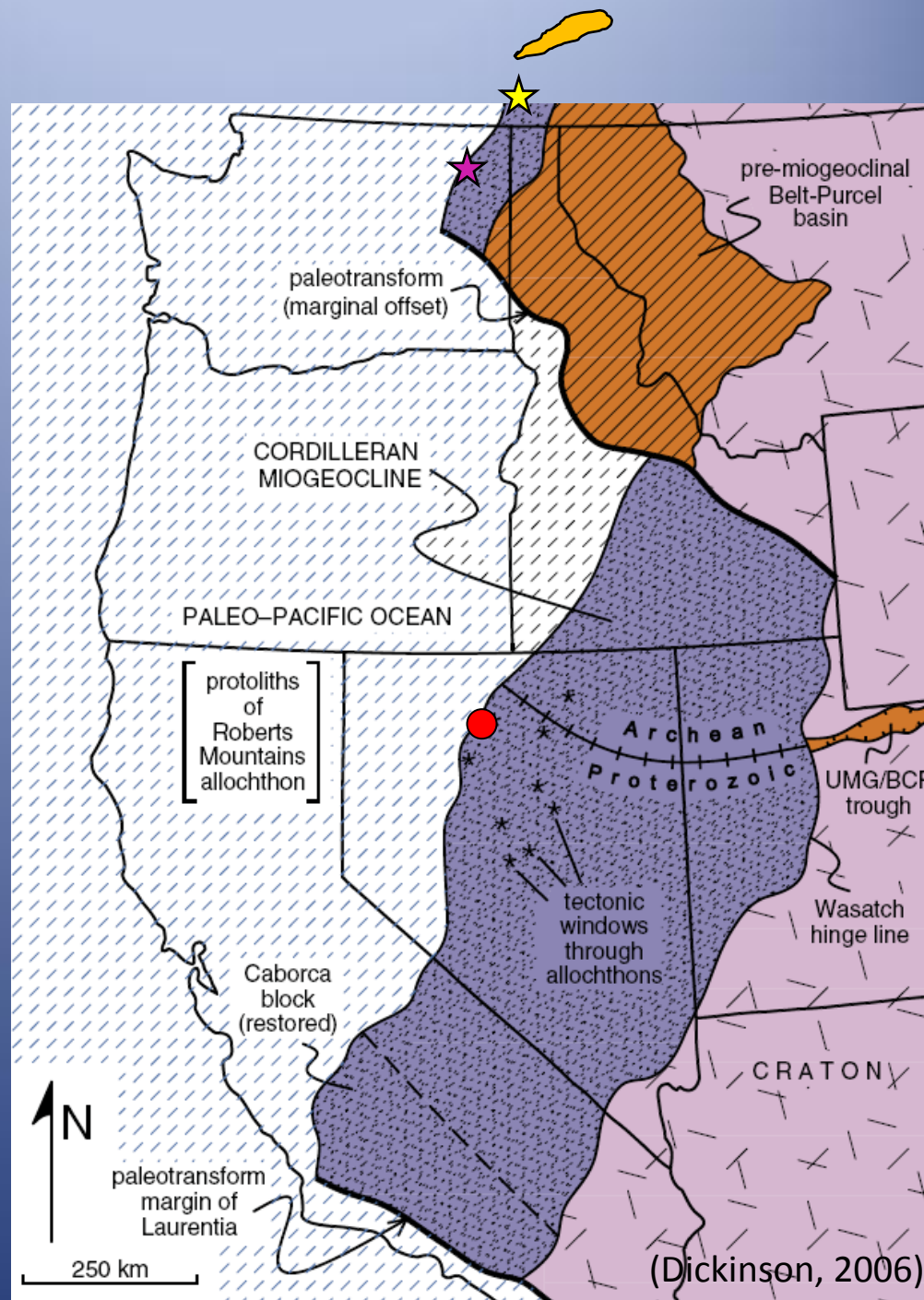
- No provenance link to the central Laurentian passive margin
 - No DZ signal change
 - DZ spectrum is different
- Link to the SE BC passive margin
 - Rimbey Arc

- Rimbey Arc
- ★ Hamill Group
- ★ Addy Quartzite



- Rimbey Arc
- ★ Hamill Group
- ★ Addy Quartzite

● Harmony Formation
(today)

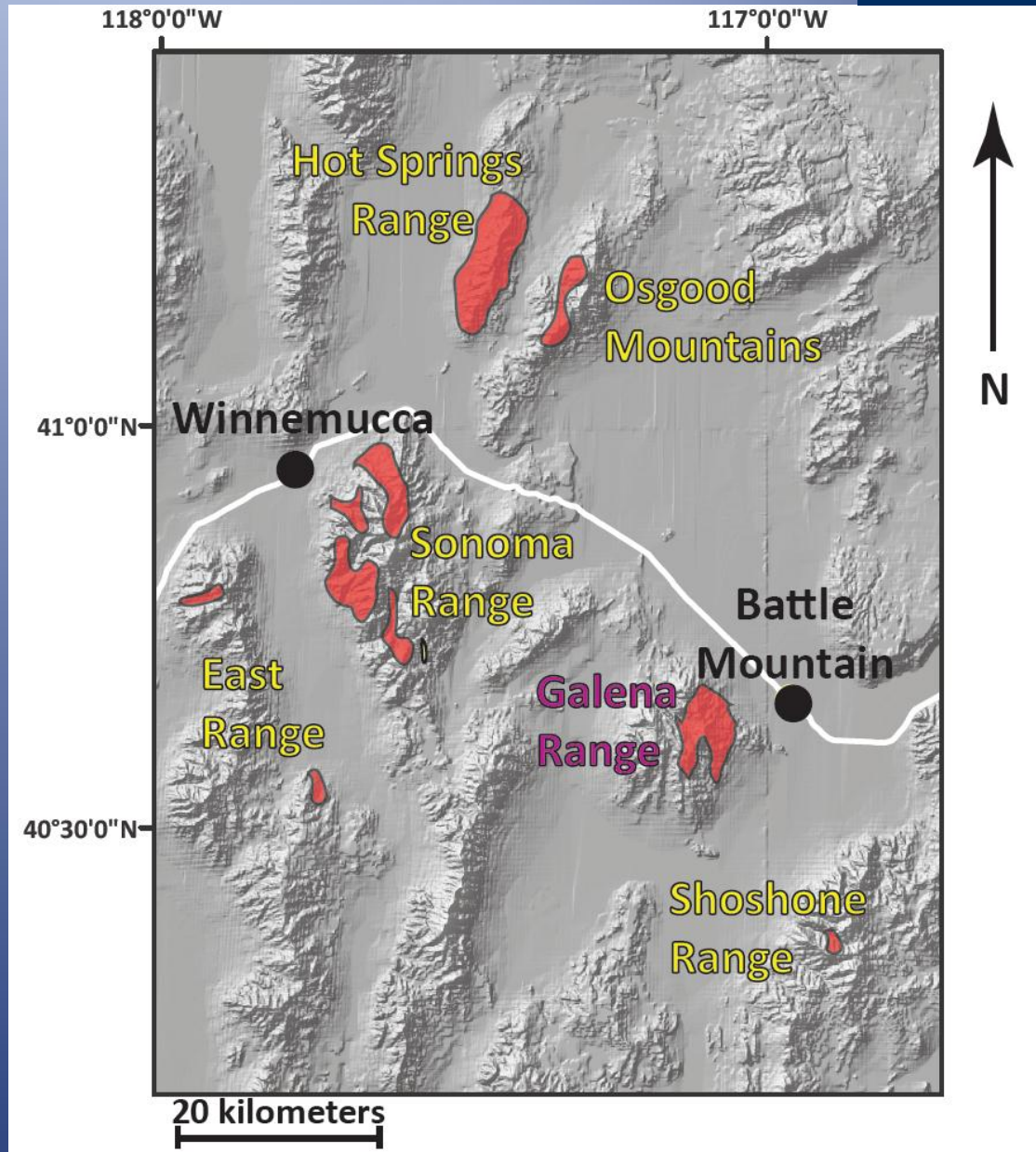


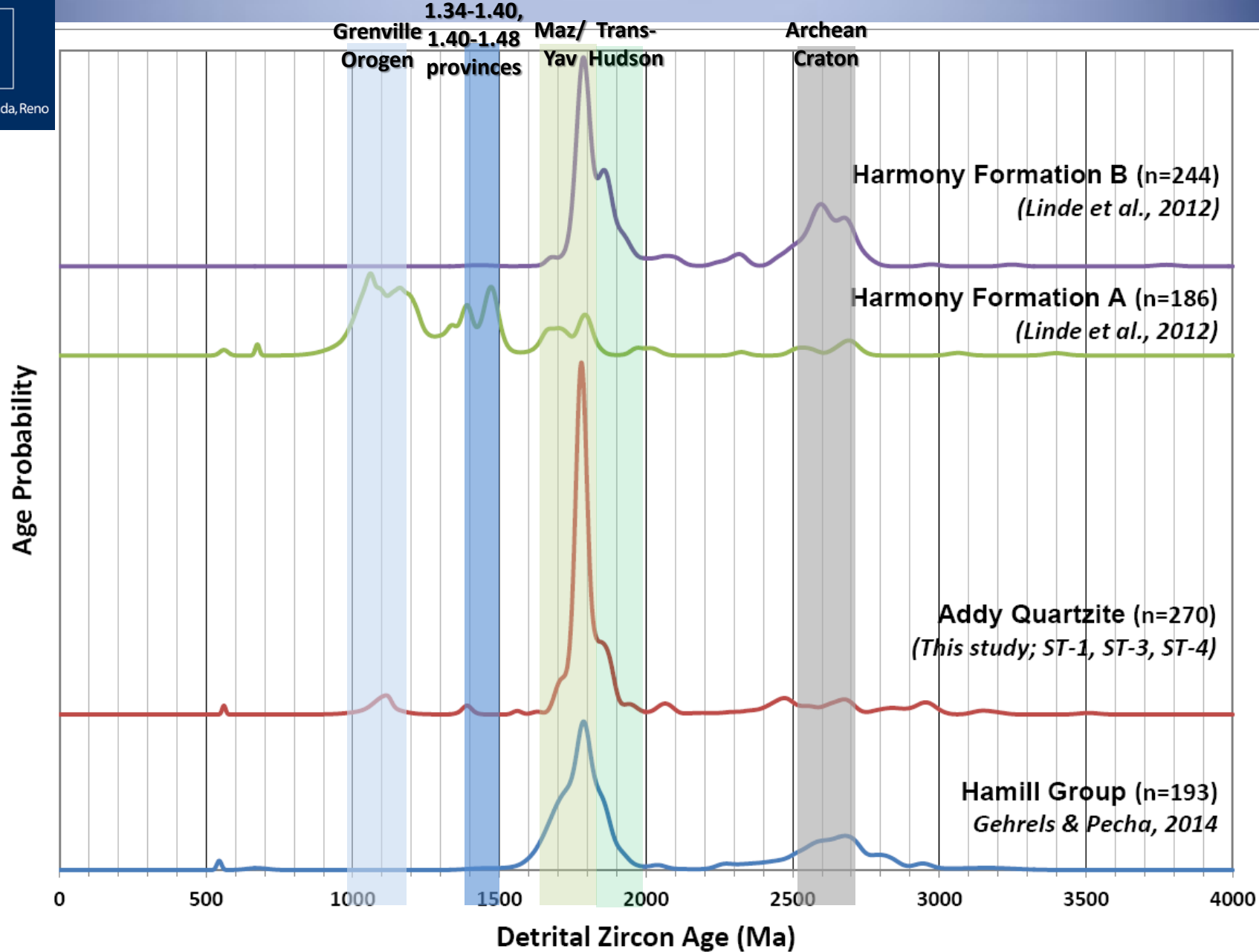
Harmony Formation



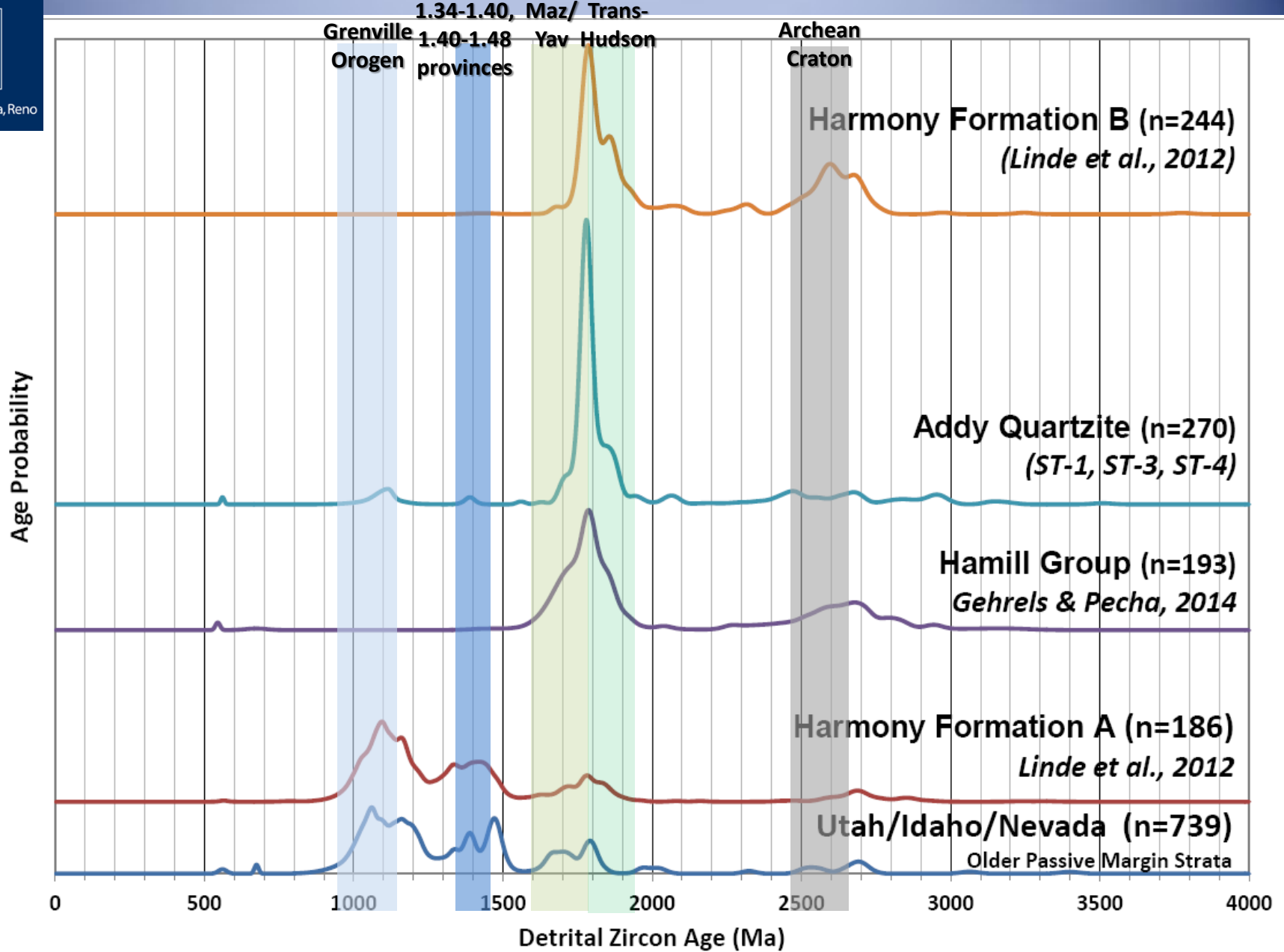
Harmony A – Galena Range

Harmony B – All ranges

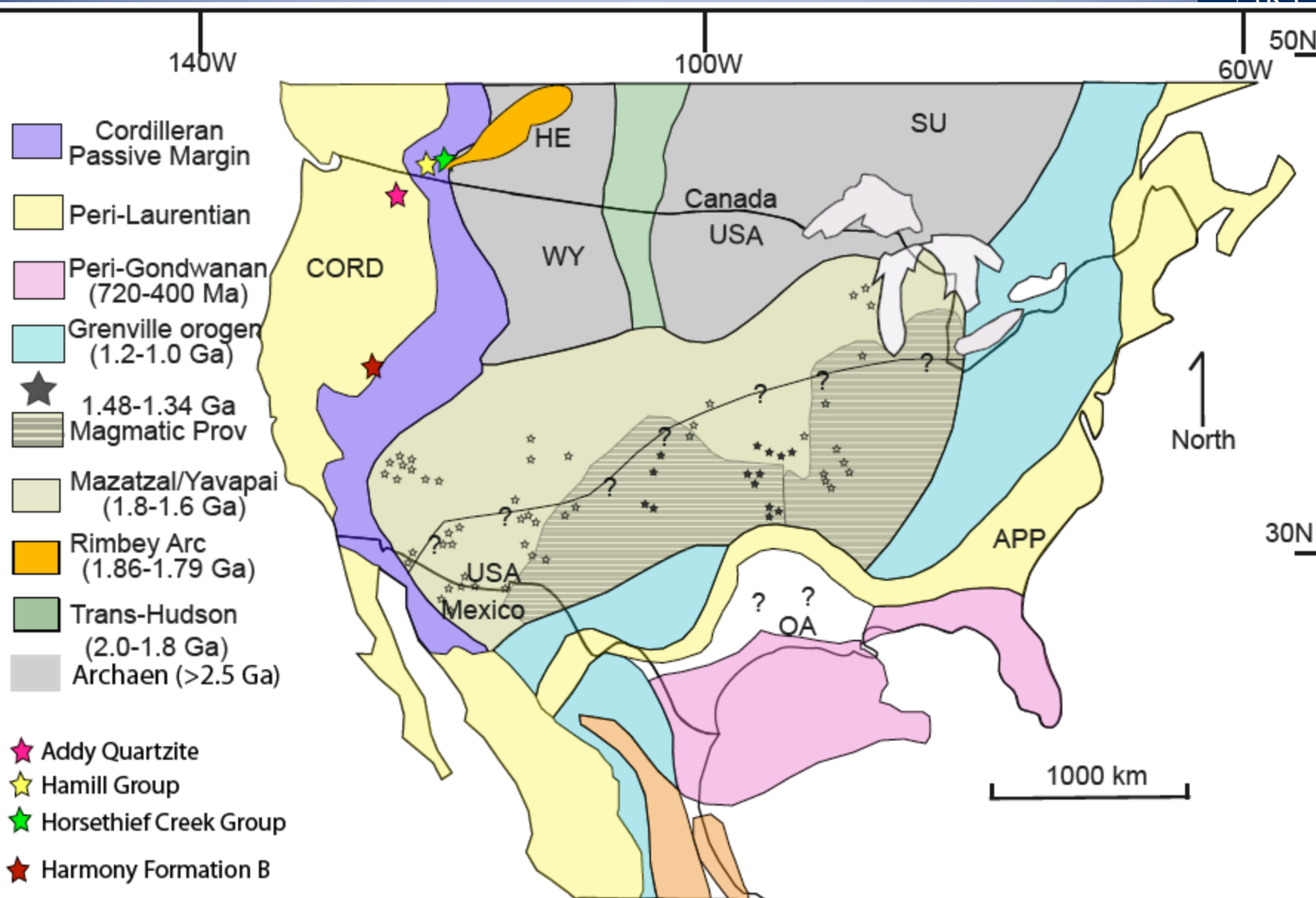




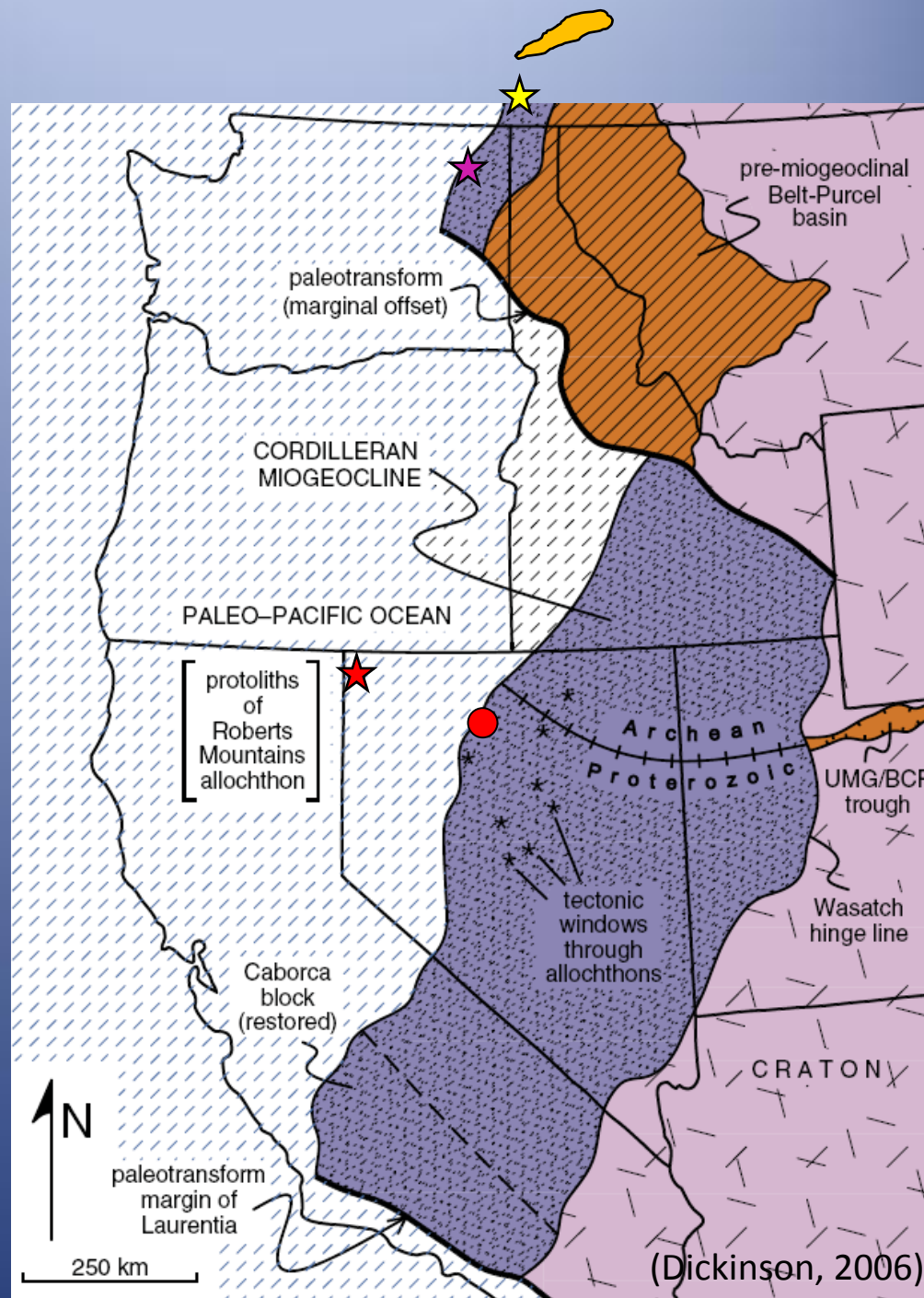
(Normalized probability graph)



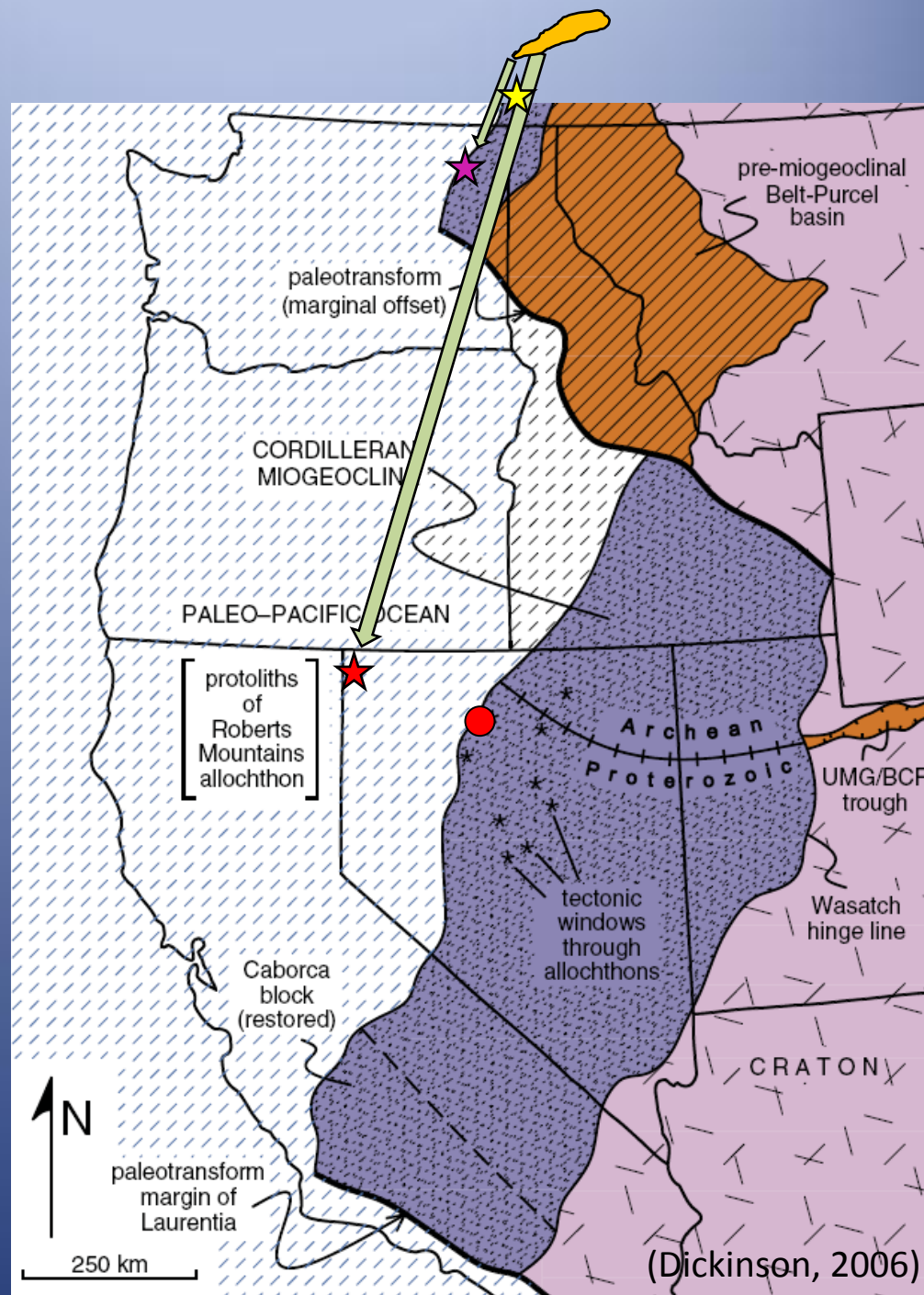
(Normalized probability graph)



- Rimbey Arc
- ★ Hamill Group
- ★ Addy Quartzite
- ★ Harmony Formation (pre-obduction)
- Harmony Formation (today)



- Rimbey Arc
- ★ Hamill Group
- ★ Addy Quartzite
- ★ Harmony Formation (pre-obduction)
- Harmony Formation (today)
- ➡ Sediment transport



Bengal Fan

— Coastline

— Active channel

- - - Today's fan

■ Rimbey Arc

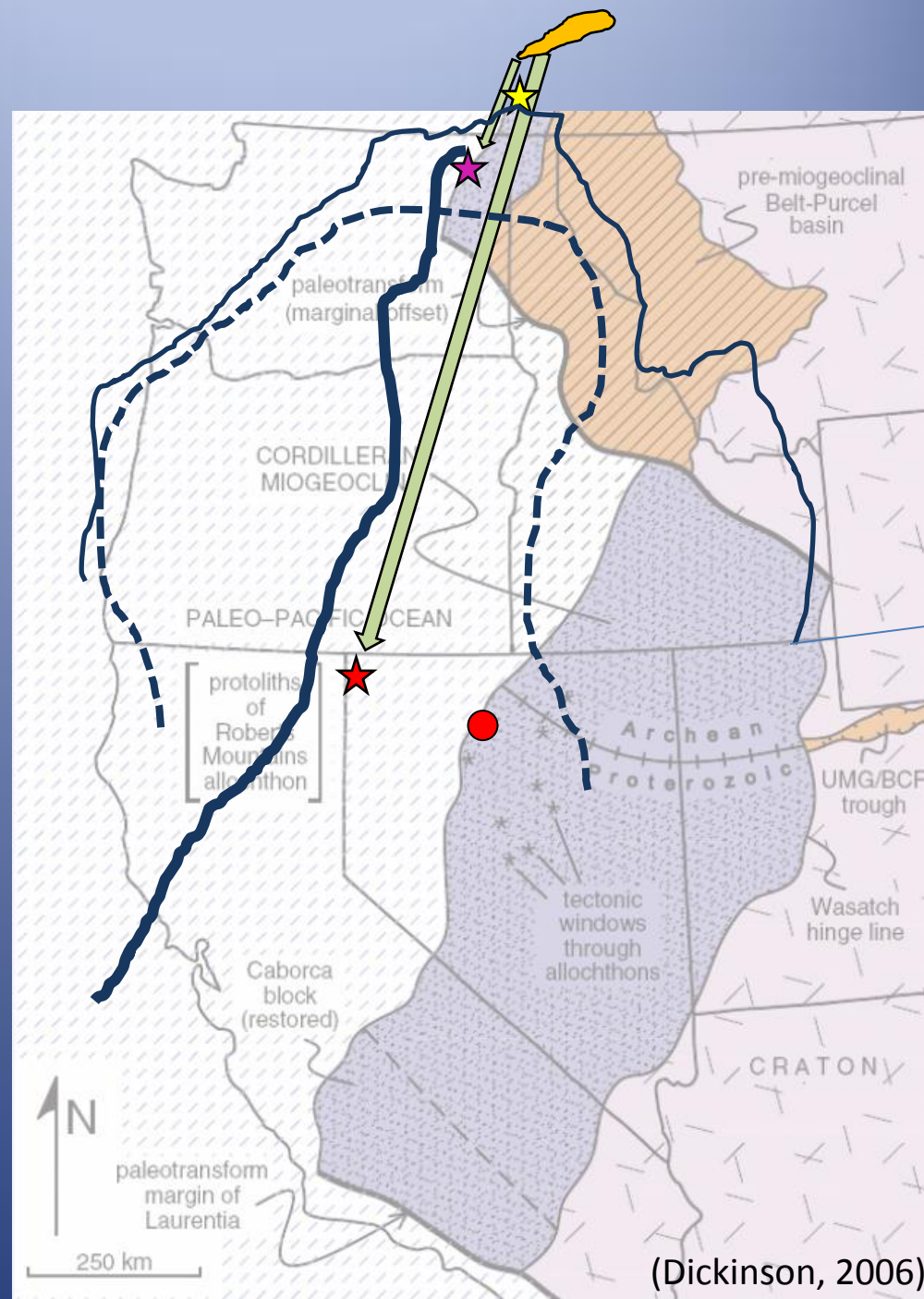
★ Hamill Group

★ Addy Quartzite

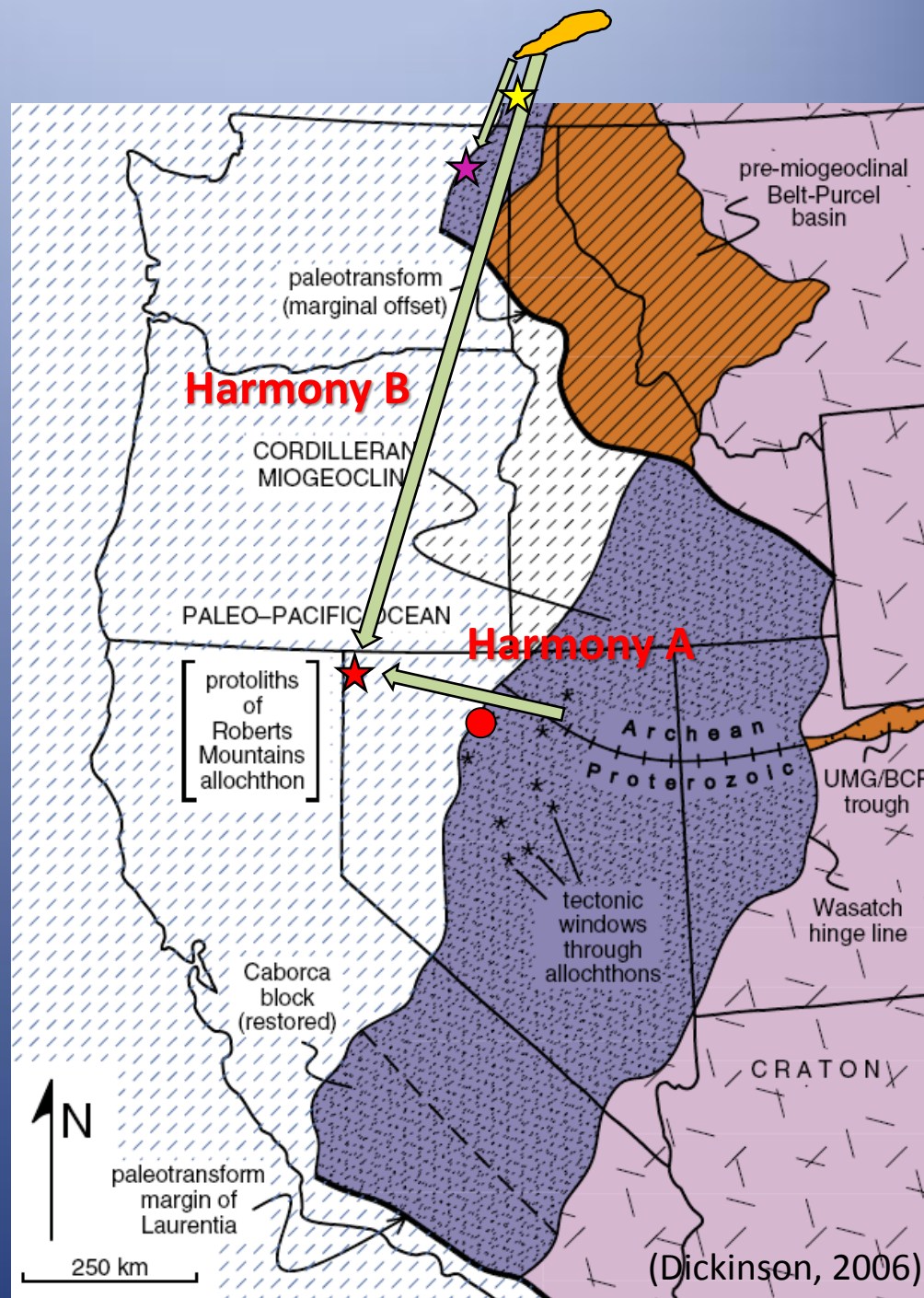
★ Harmony Formation (pre-obduction)

● Harmony Formation (today)

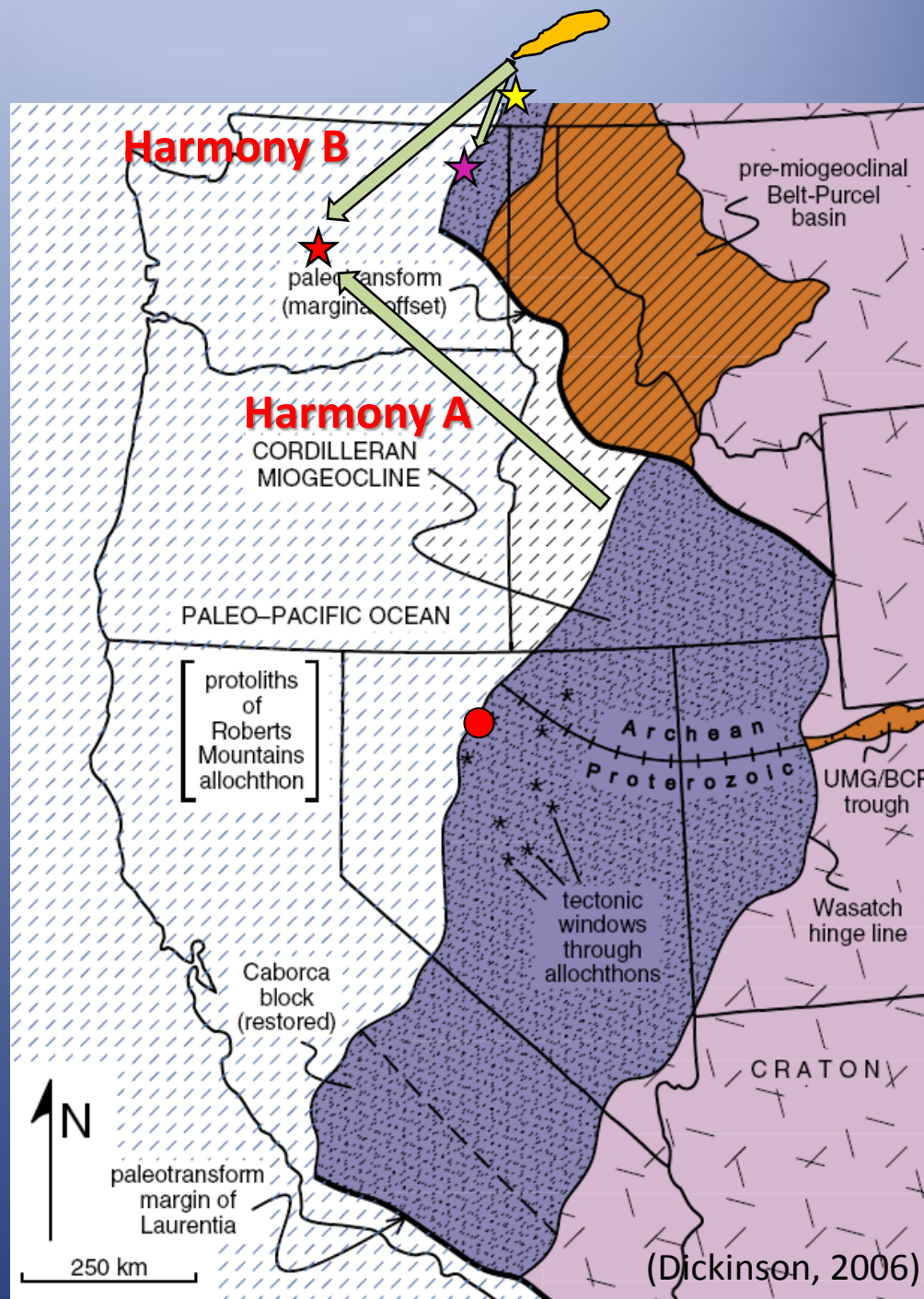
➡ Sediment transport



- Rimbey Arc
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- ➡ Sediment transport



Conclusions

The Addy Quartzite

- No link to central Laurentian passive margin
 - No DZ signal change
 - DZ spectrum is different
- Link to SE British Columbia passive margin
- Similarity to the Harmony Formation



Thank you!

- Dan Sturmer & LA-ICP-MS assistants
- George Gehrels, the Arizona LaserChron staff, and NSF EAR 1032156 supporting LaserChron & grad students
- NSF Graduate Research Fellowship Program
- NSF EAR 0510915 (Pat Cashman PI)
- UNR grad student association travel grant
- U.S. Dept of Veterans Affairs Post-9/11 G.I. Bill
- GSA travel grant



