

**A SUPPLEMENTAL WINTSCH I.R.A.  
(INTRIGUING RETIREMENT ACTIVITIES)**



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Queens College (CUNY)**

**Projects appropriate for Bob's eclectic interests:  
(all well north of Connecticut)**

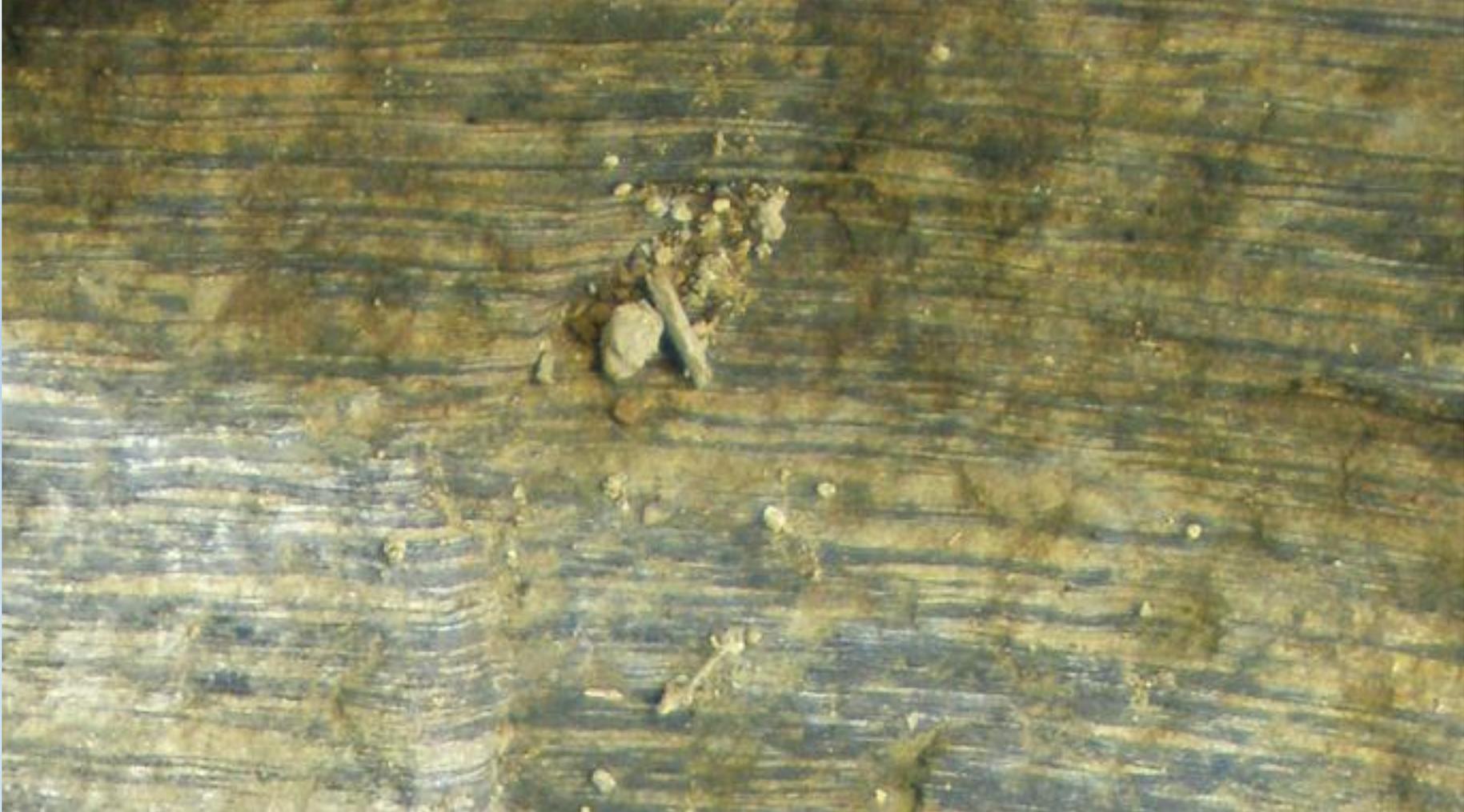
**Rock mechanics/structural geology: origin of multiple generations of transposed layering at chlorite and sub-chlorite conditions.**

**Igneous petrology: origin of very coarse grained, *shallow crustal, rapidly cooled* granite**

**Tectonics 1: Segmented orogen-parallel differential uplift**

**Tectonics 2: What was the tectonic setting of the Central Maine/  
Aroostook-Matapedia basin?**

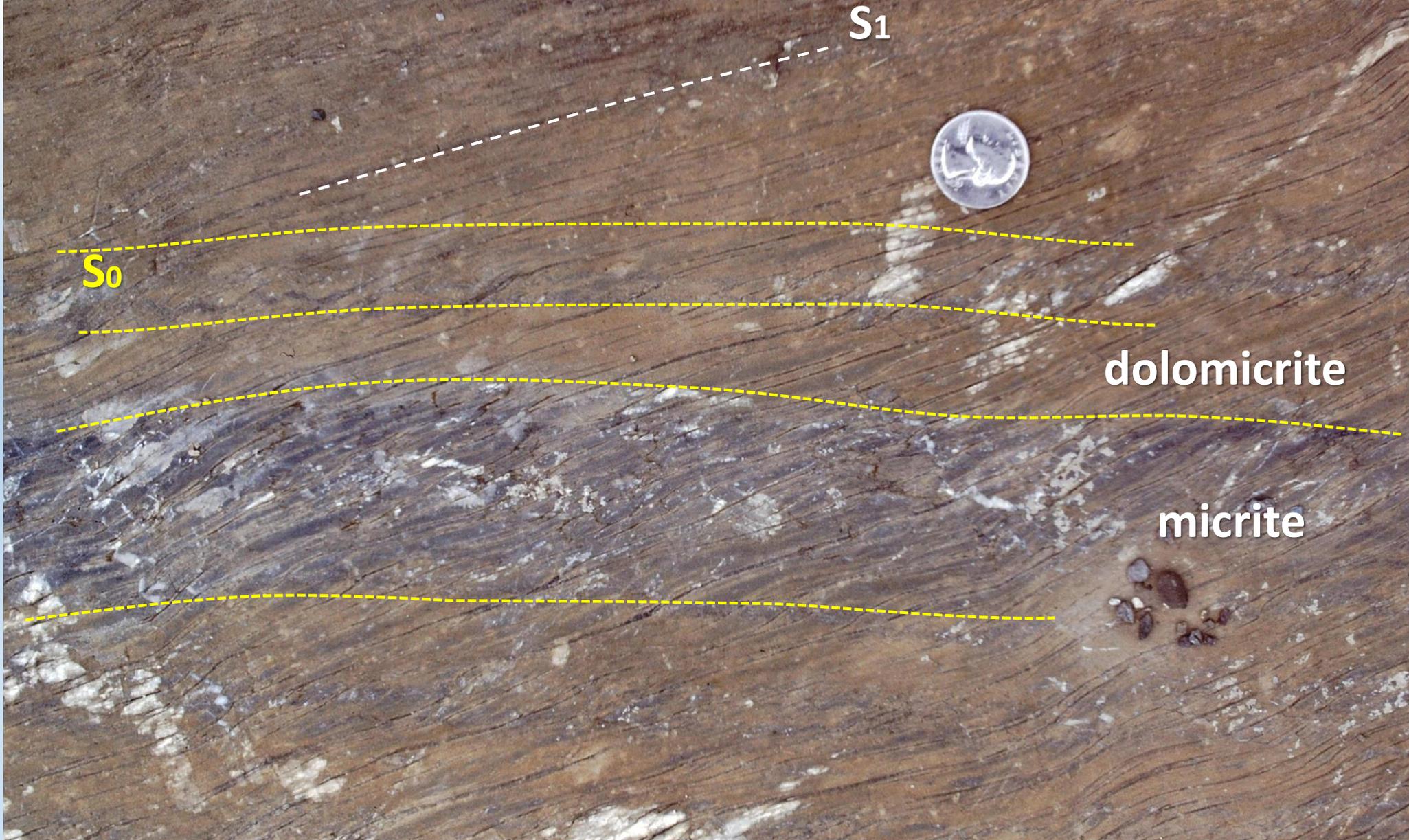
## Chlorite grade silt-mud low-energy turbidites (Smyrna Mills Fm)



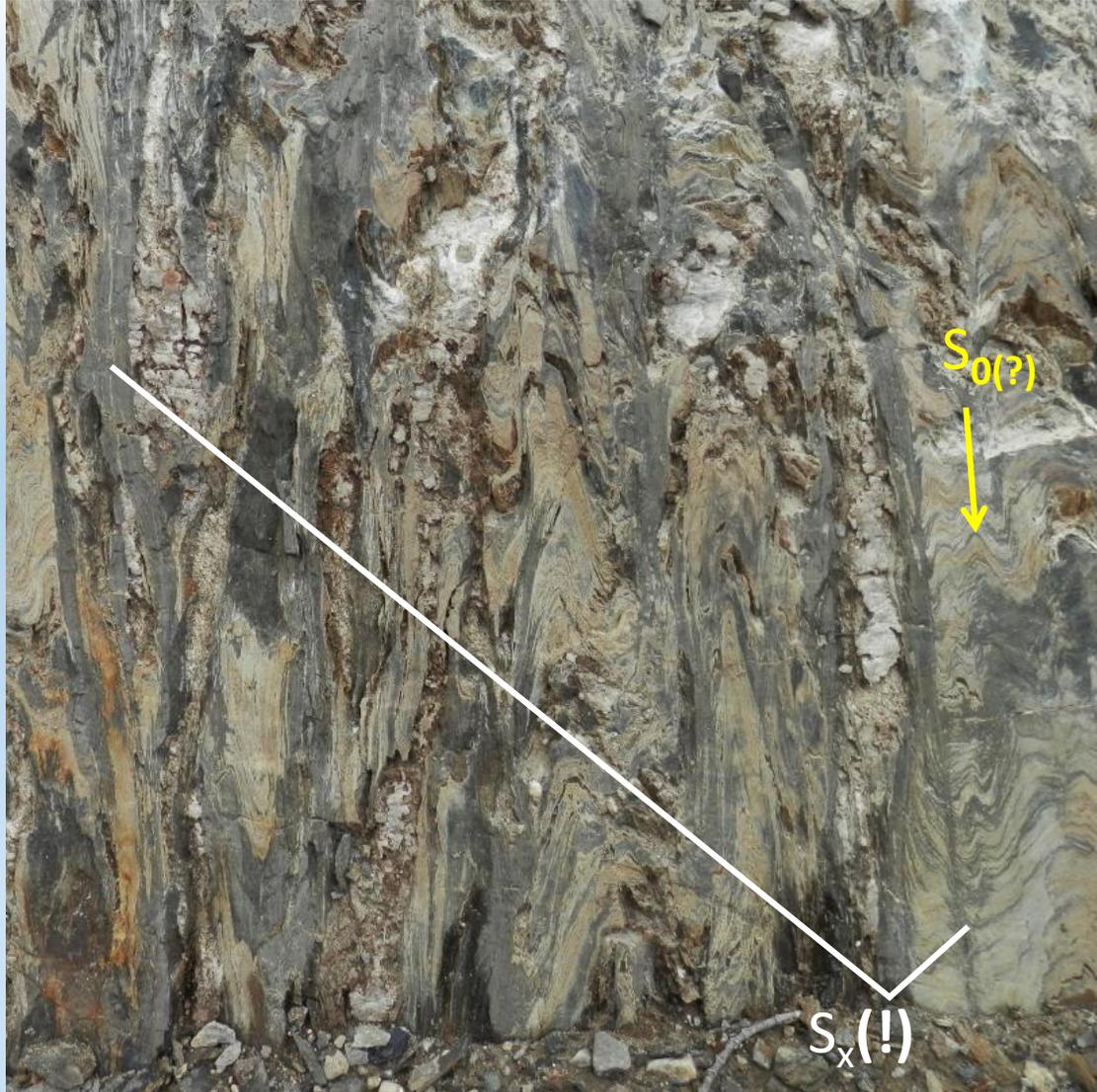
# Transposition in silt-mud turbidites (Smyrna Mills Fm.)



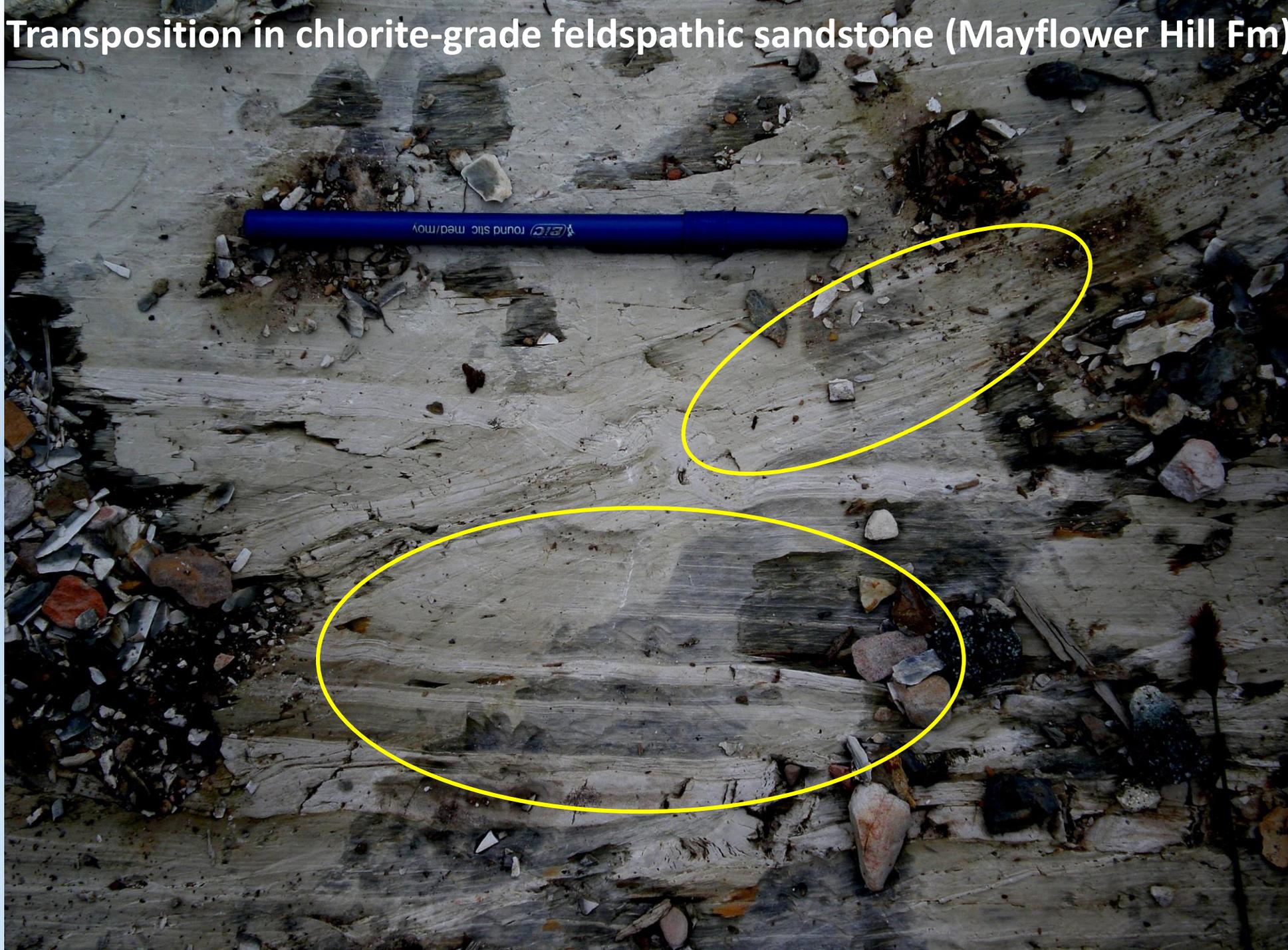
# Transposition in chlorite-grade micrite-dolomicrite (Carys Mills Fm)



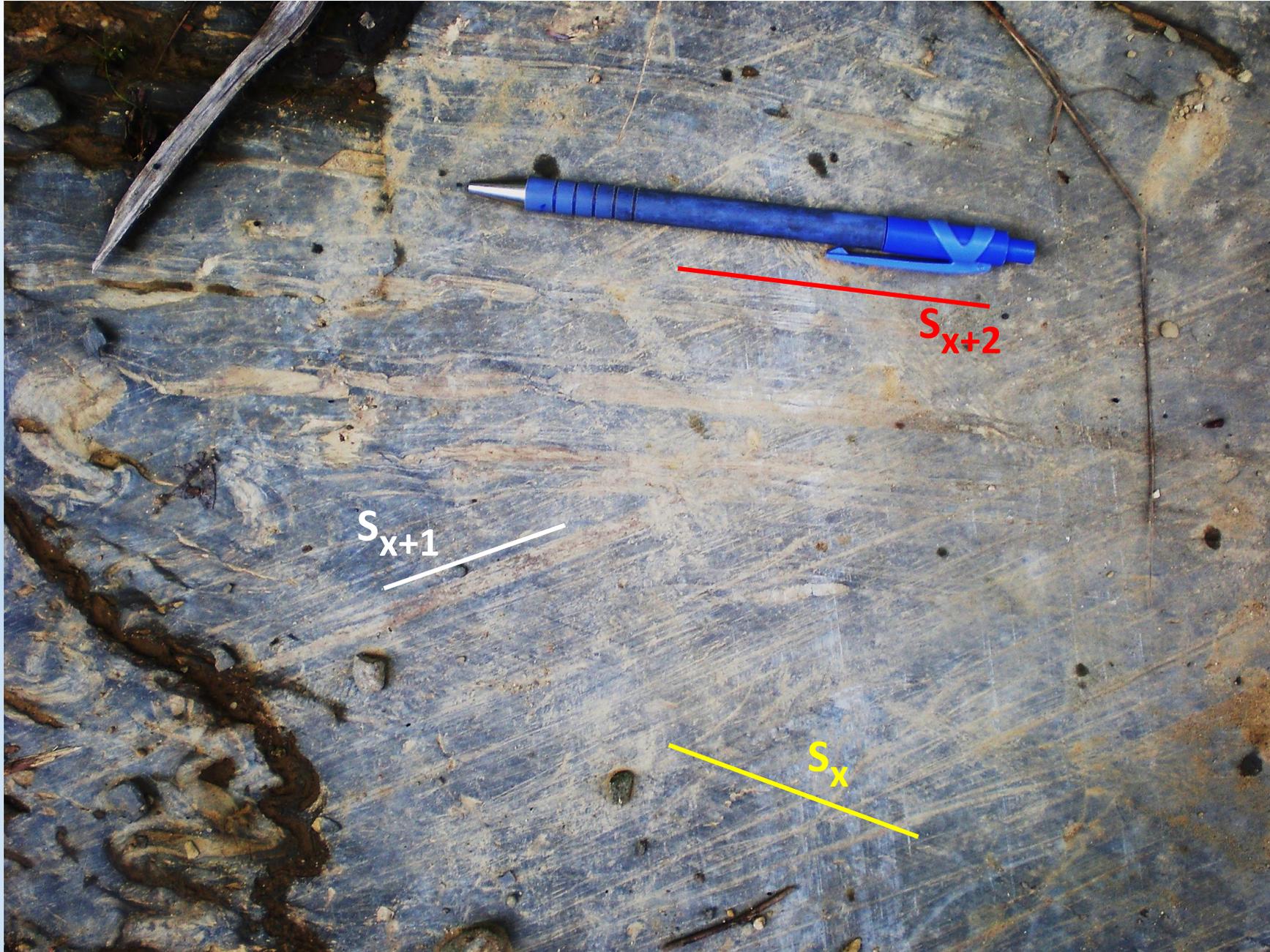
# Transposition in hornfelsed micrite-dolomicrite (Carys Mills Fm)



# Transposition in chlorite-grade feldspathic sandstone (Mayflower Hill Fm)



# Multiple compositional layering in the Kingman shear zone (Smyrna Mills Fm.)



3 of the 4 sets  
of layering

**What mechanical and chemical processes and conditions produce these transposition fabrics?**

**Would these multiple layers be preserved in staurolite- or sillimanite-grade rocks? How would they be interpreted?**

**INTERESTED, BOB??**

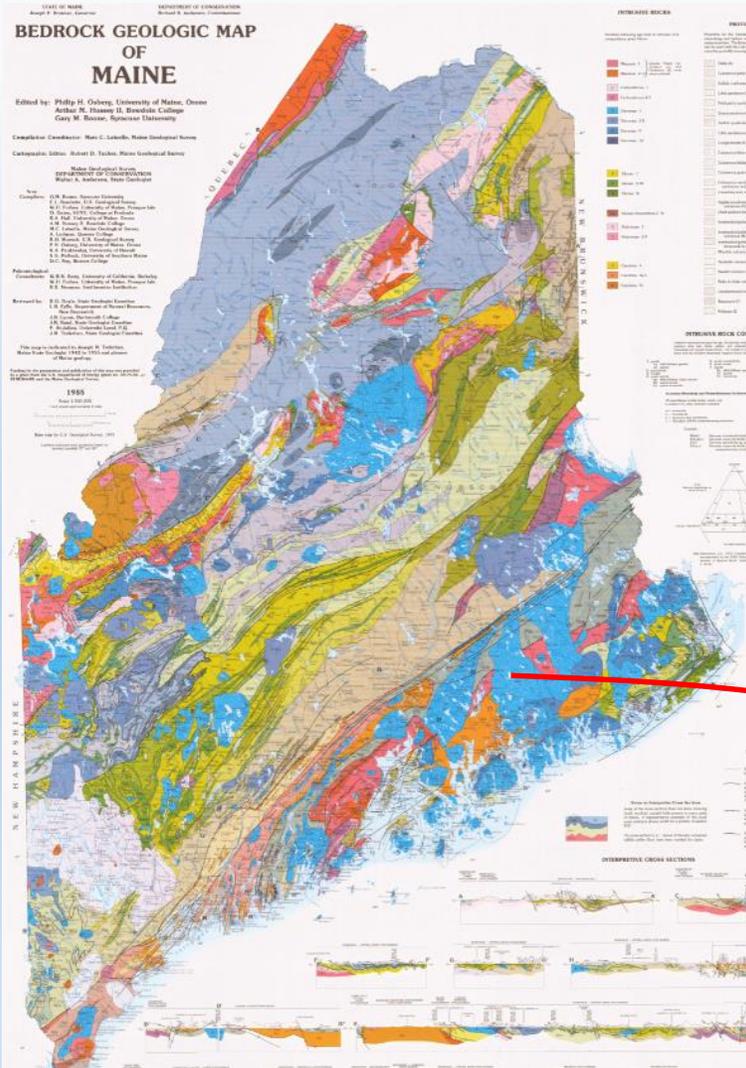
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Rock mechanics/structural geology: processes that form multiple secondary compositional layers in chlorite and sub-chlorite conditions.

**Igneous petrology: origin of very coarse grained, *shallow crustal, rapidly cooled* granite**

Tectonics 1: Segmented orogen-parallel differential uplift

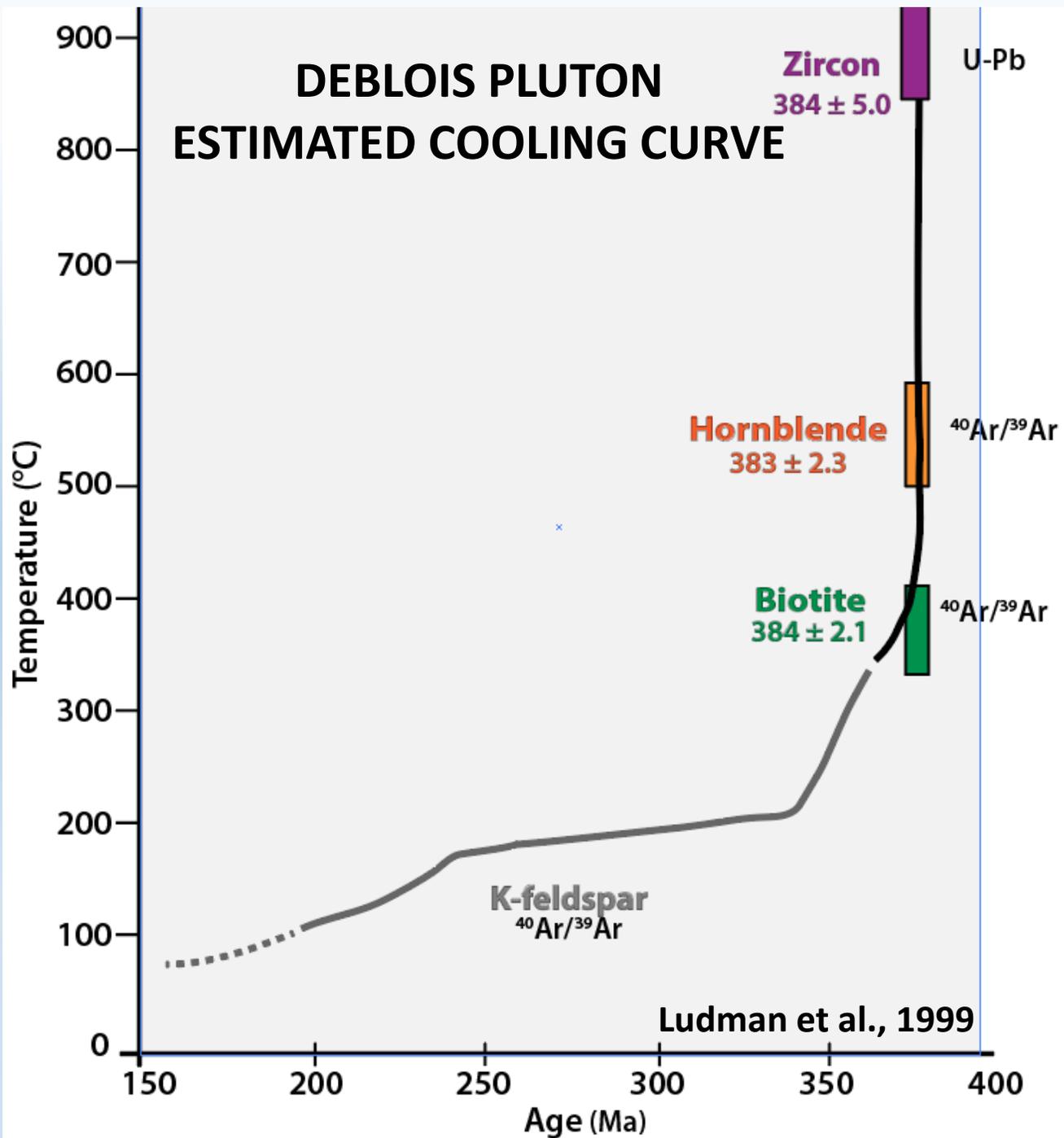
Tectonics 2: What was the tectonic setting of the Central Maine/Aroostook-Matapedia basin?







# DEBLOIS PLUTON ESTIMATED COOLING CURVE



## **SO, BOB, WHY IS THE PLUTON SO COARSE-GRAINED?**

- **The granites have normal igneous textures with no evidence that they were emplaced as a crystal mush.**
- **High fluid content is unlikely: the roof and margins of the pluton are well exposed and I've seen no signs of hydrothermal alteration, only two aplite dikes, and no pegmatites.**
- **Petrologists I've spoken with have shrugged their shoulders and said "that's interesting".**

**INTERESTING ENOUGH FOR YOU TO GIVE IT A SHOT?**

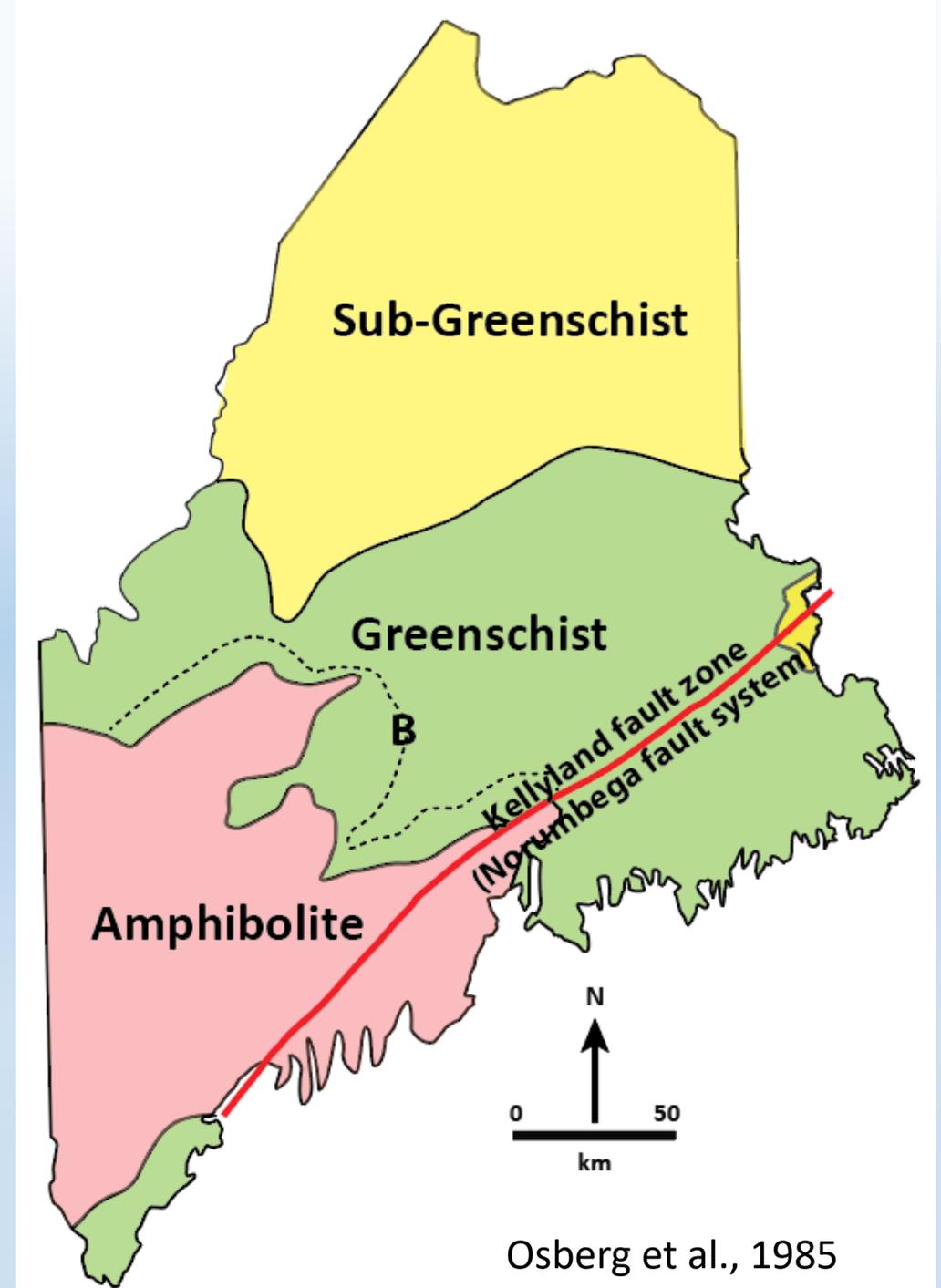
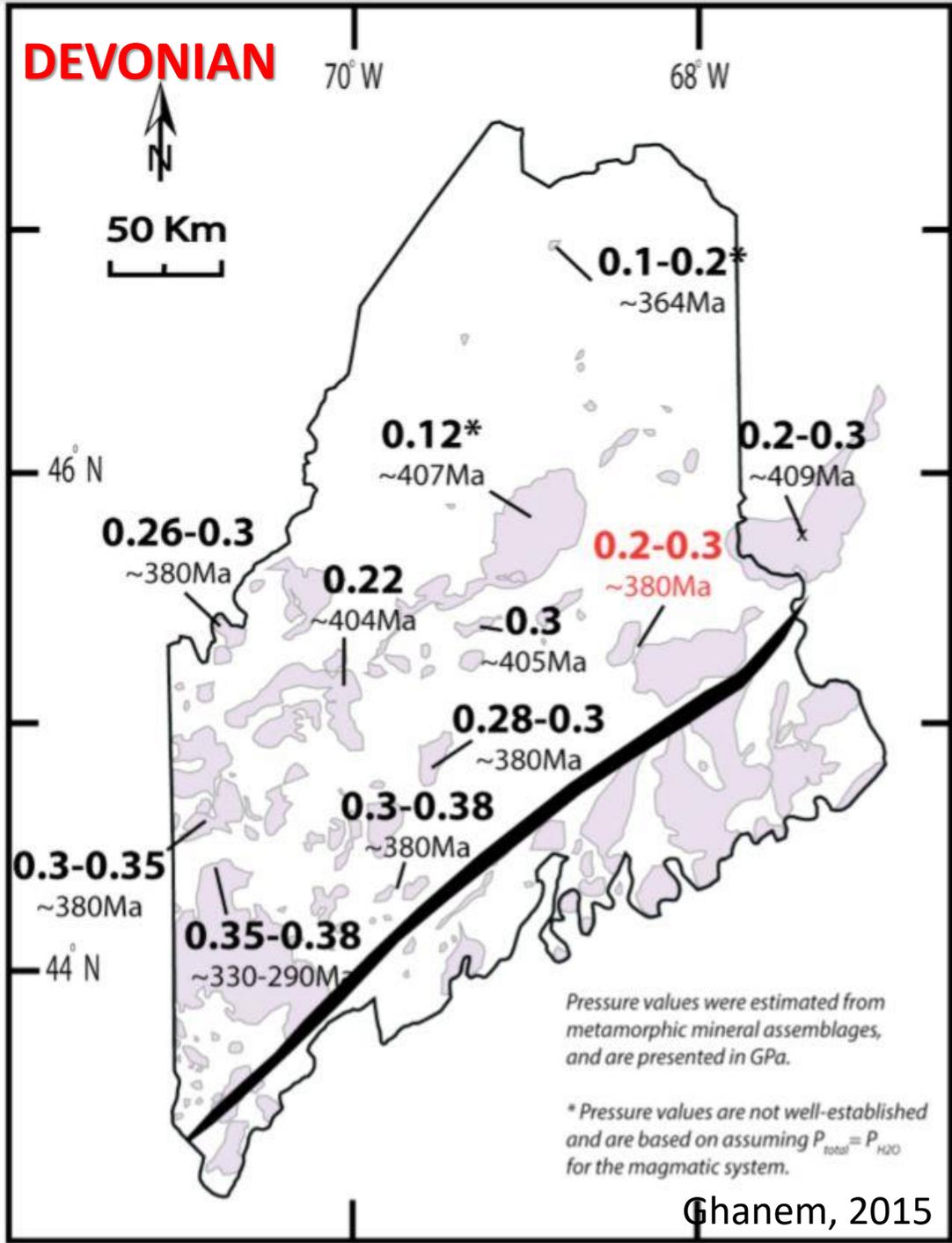
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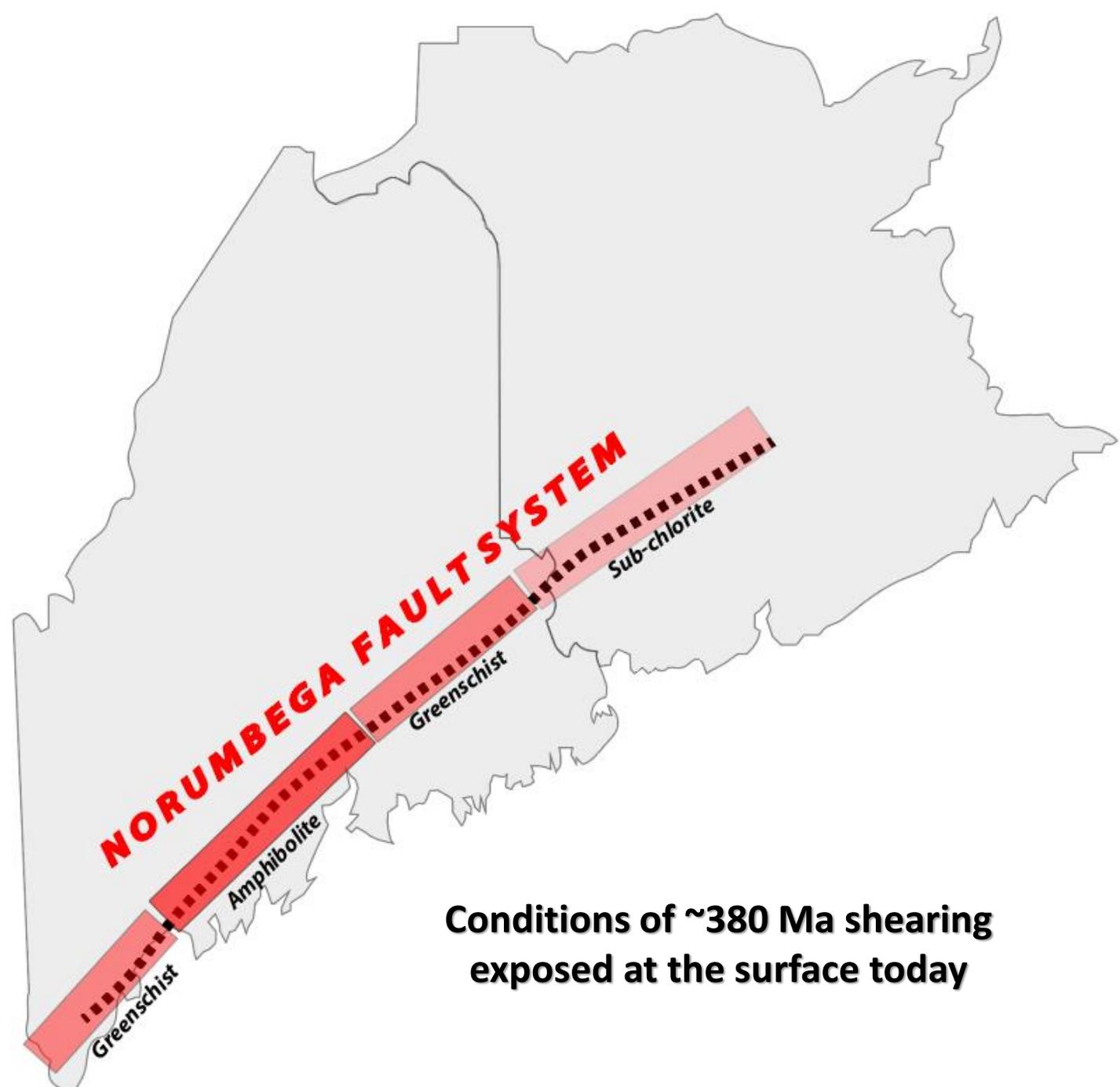
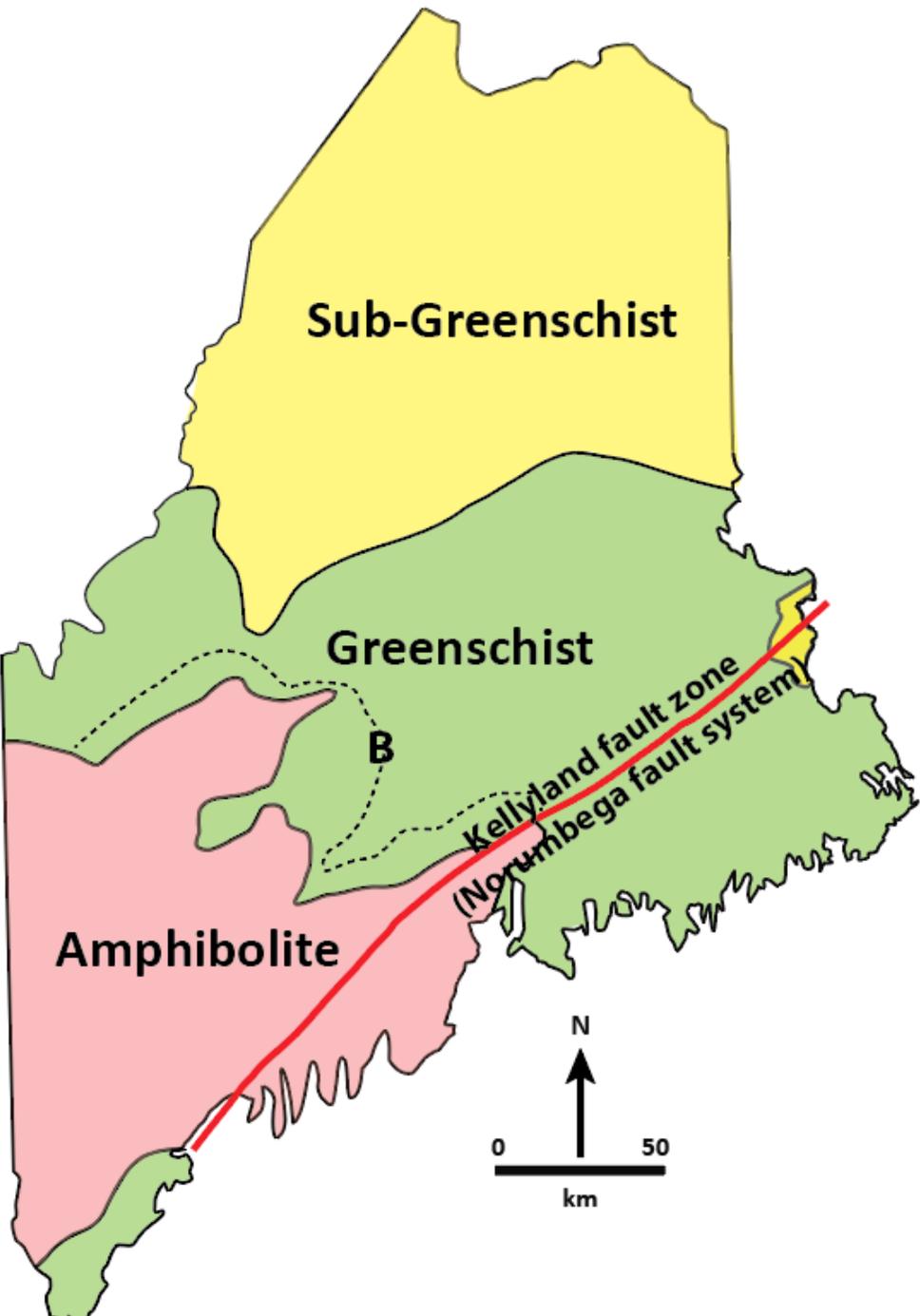
*Igneous petrology: origin of very coarse grained, shallow crustal, rapidly cooled granite*

*Rock mechanics/structural geology: formation of multiple transposed compositional layers at chlorite and sub-chlorite conditions.*

**Tectonics 1: Differential segmented orogen-parallel uplift**

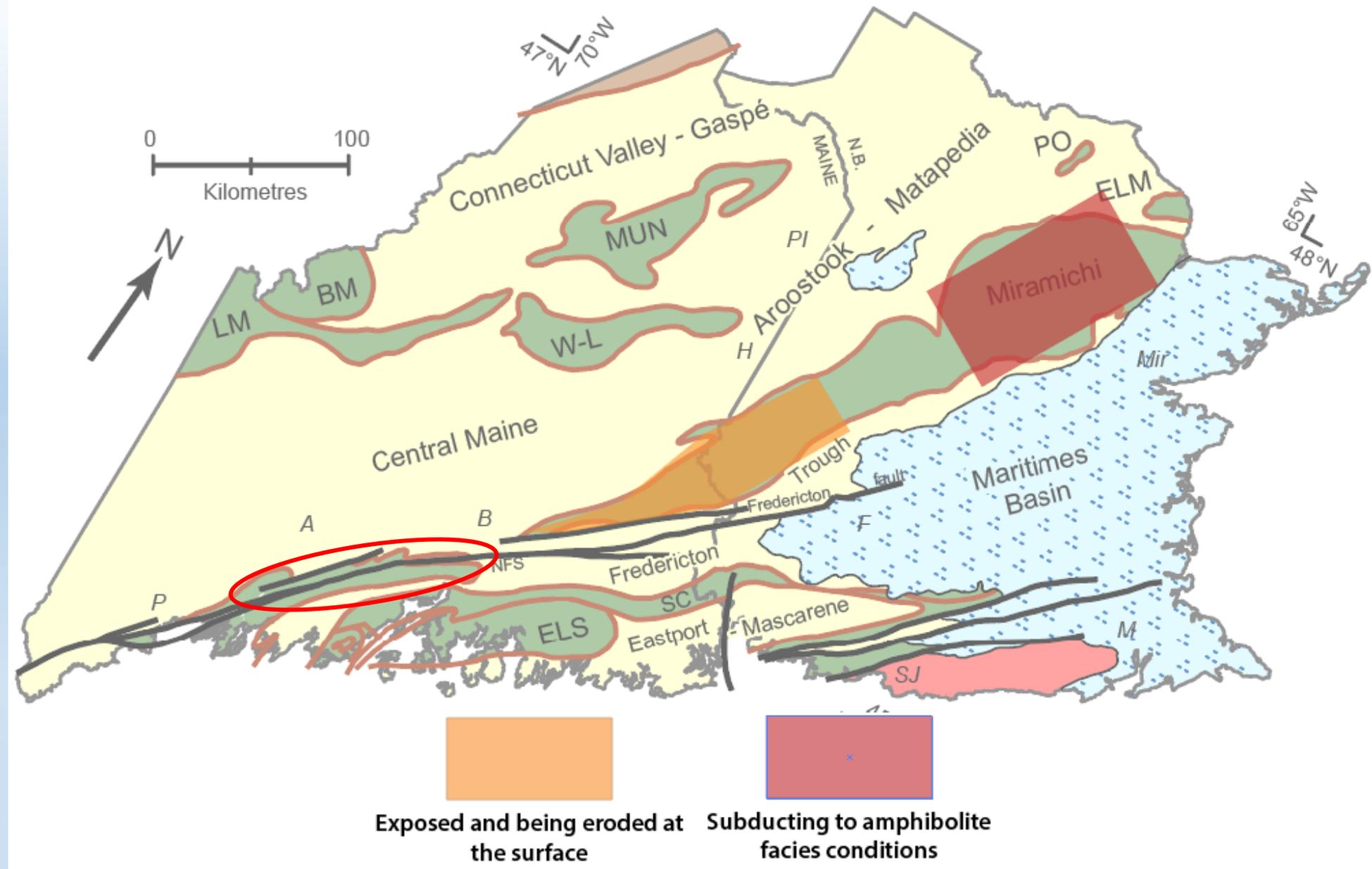
*Tectonics 2: What was the tectonic setting of the Central Maine/Aroostook-Matapedia basin?*





**Conditions of ~380 Ma shearing exposed at the surface today**

# EARLY SILURIAN



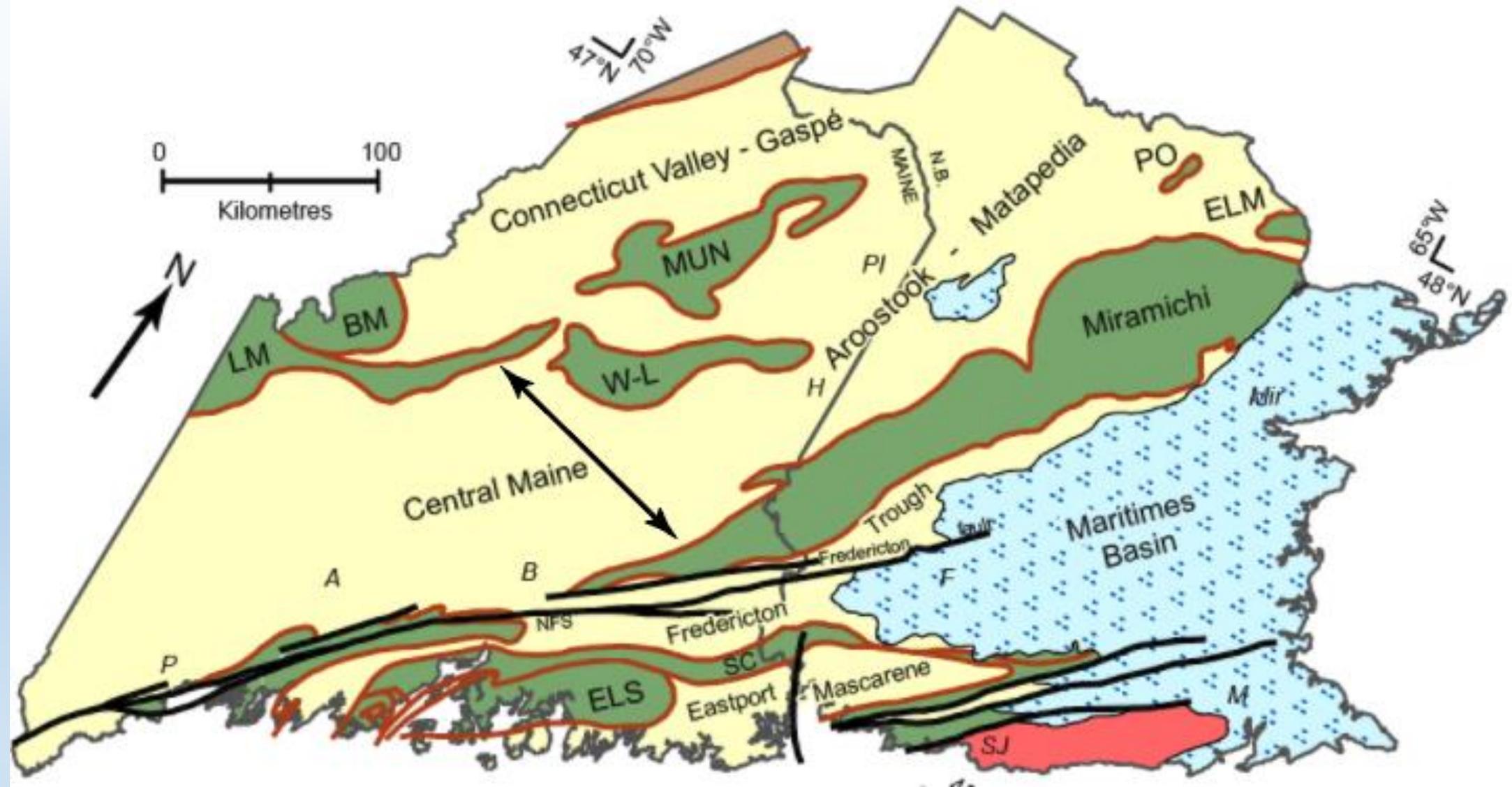
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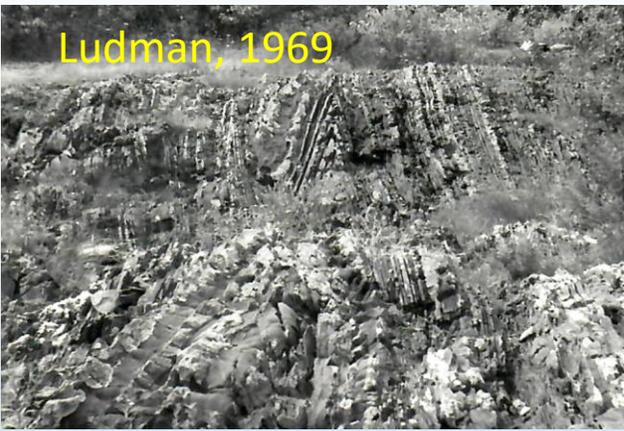
Tectonics 1: Differential segmented orogen-parallel uplift

**Tectonics 2: What is a modern analogue for the Central Maine /Aroostook-Matapedia basin?**



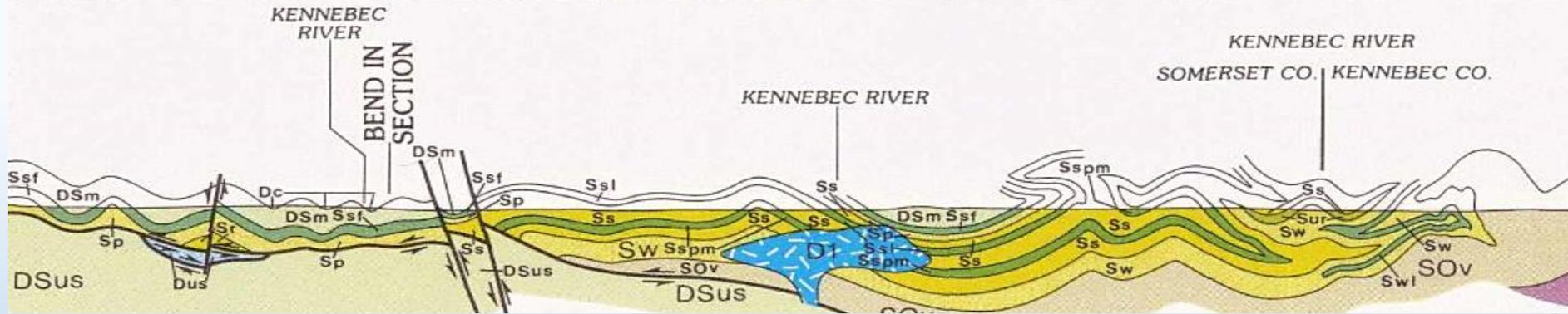
The Central Maine/Aroostook-Matapedia basin is ~150 Km wide *today*, *a* fraction of its pre-Acadian extent

Ludman, 1969



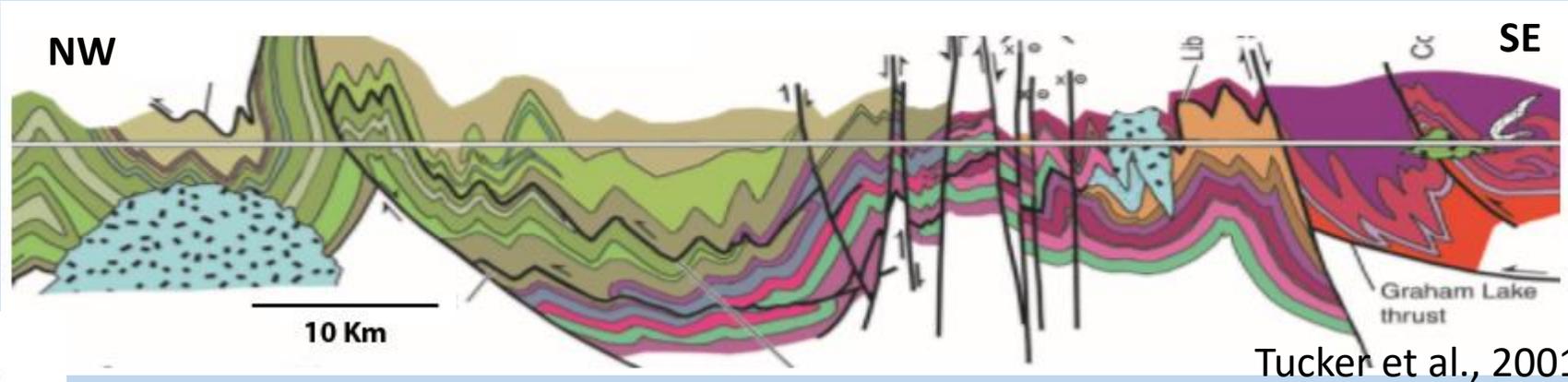
KEARSARGE — CENTRAL MAINE SYNCLINORIUM

Osberg et al., 1985



NW

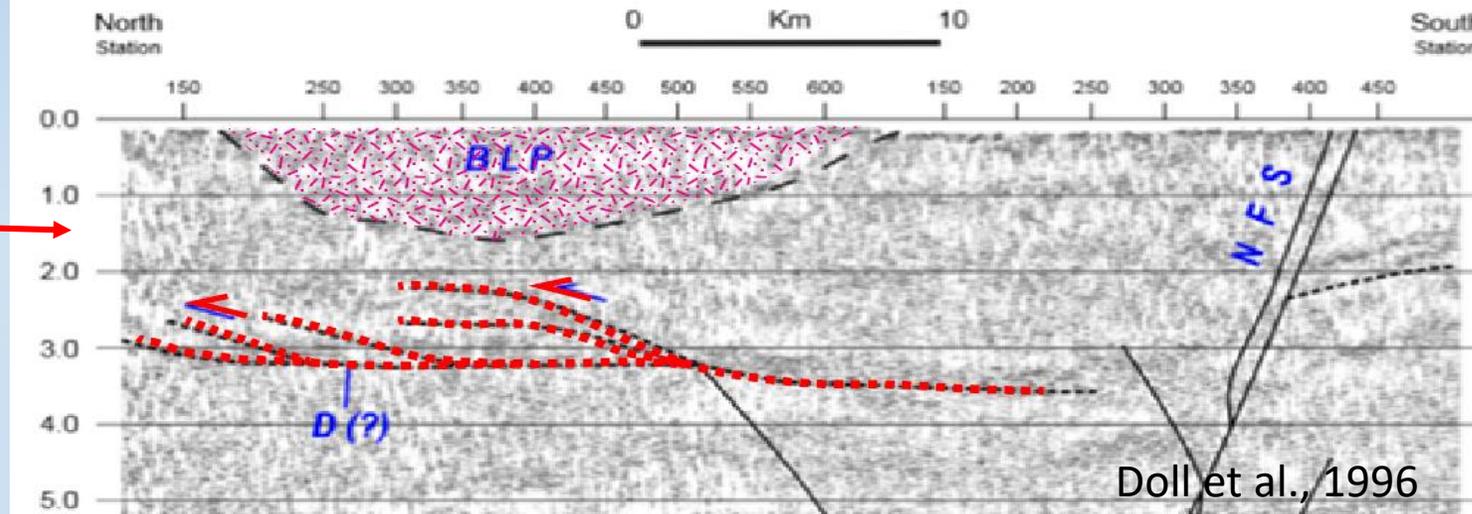
SE



Tucker et al., 2001



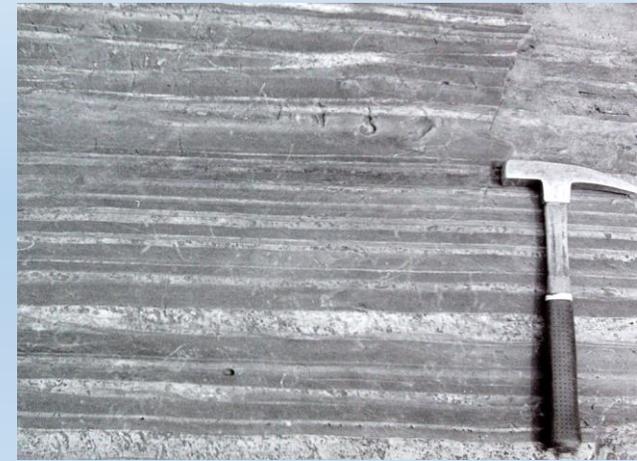
Bottle Lake



Doll et al., 1996

## The Central Maine/Aroostook-Matapedia basin

- ~135-150 Km wide today, 4-8 (?) times wider before Acadian deformation
- Received (deep-water?) turbidite sediment from intrabasinal and marginal highlands immediately after late Middle Ordovician deformation



- Well-defined proximal-intermediate-distal relationships on both flanks
- Rare pelagic fossils (graptolites) in basin; benthic shelly fauna in some proximal facies
- Latest tectonic models say not floored by ocean crust

**SO BOB, ANY THOUGHTS ON THE CENTRAL MAINE BASIN?**

**Where today is there such a broad basin with thousands of meters of deep-water turbidites not floored by oceanic crust?**

**You are most cordially invited to join this old codger in trying to tackle these problems.**

**I would appreciate your help, and geologic mappers in Maine would very much like to have a unique and most valuable asset:**

