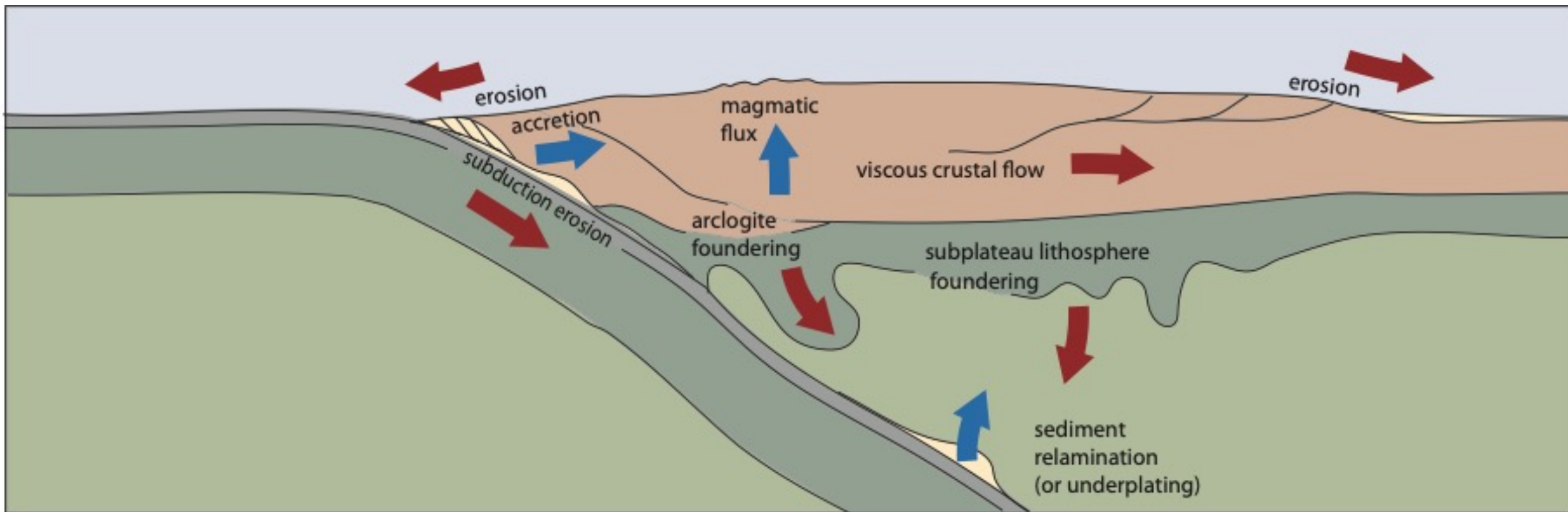
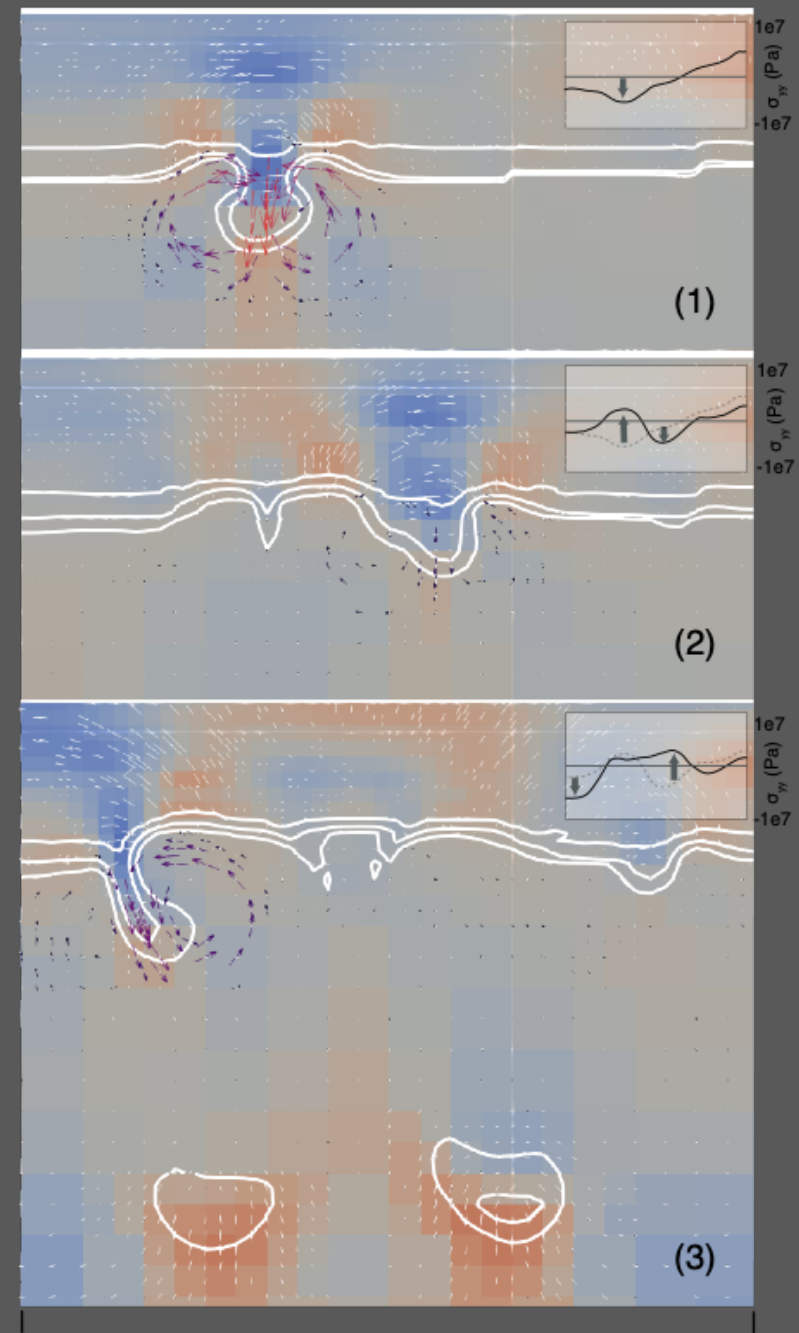
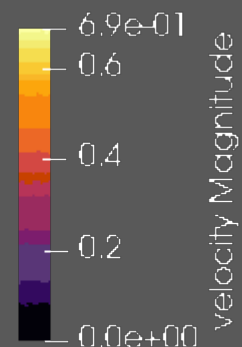
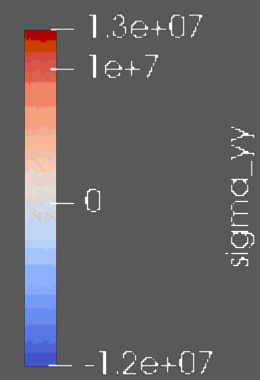
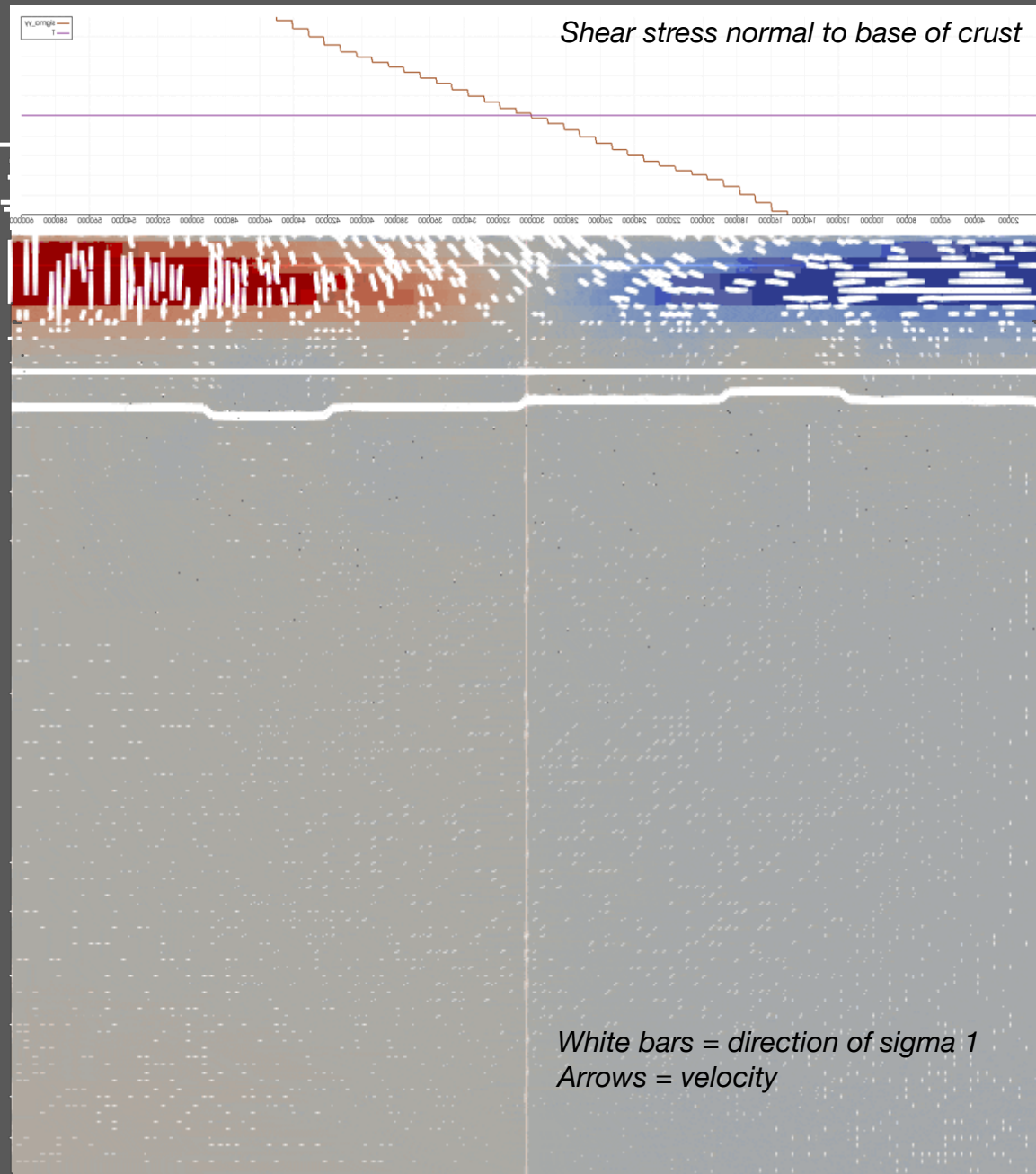


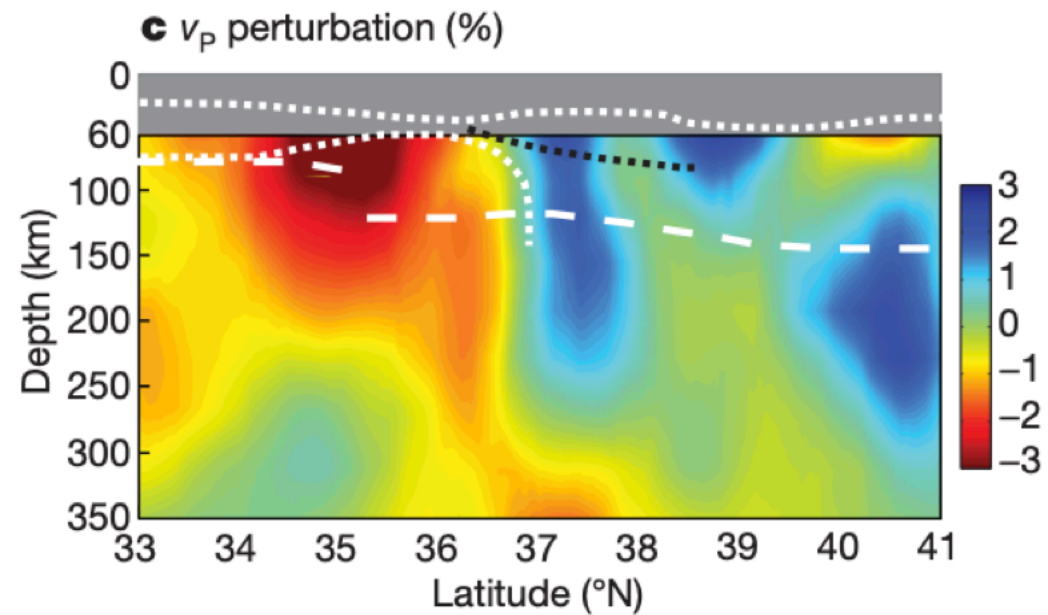
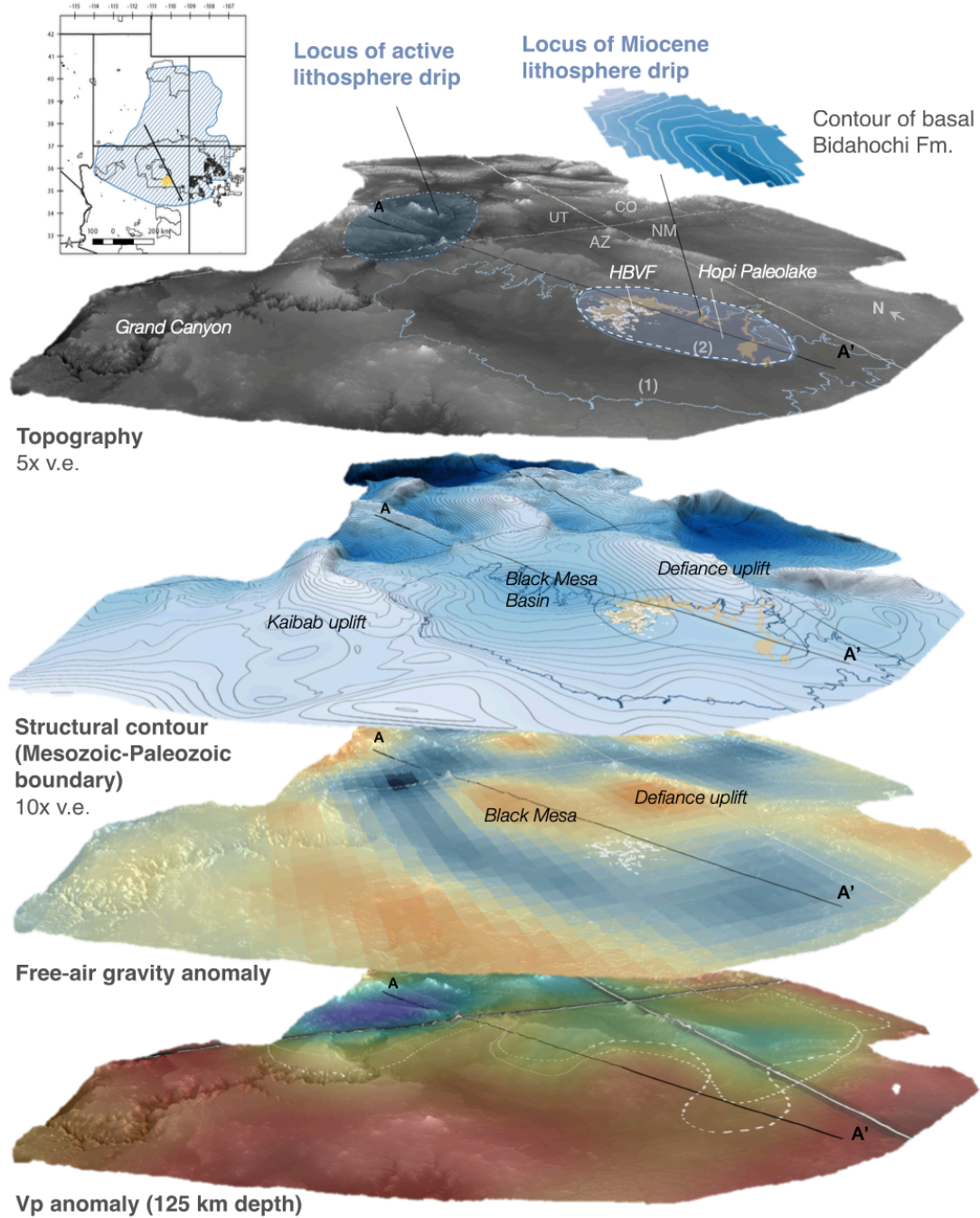


## Evaluating scant surface evidence of deep lithosphere removal:

*Towards a more comprehensive record*

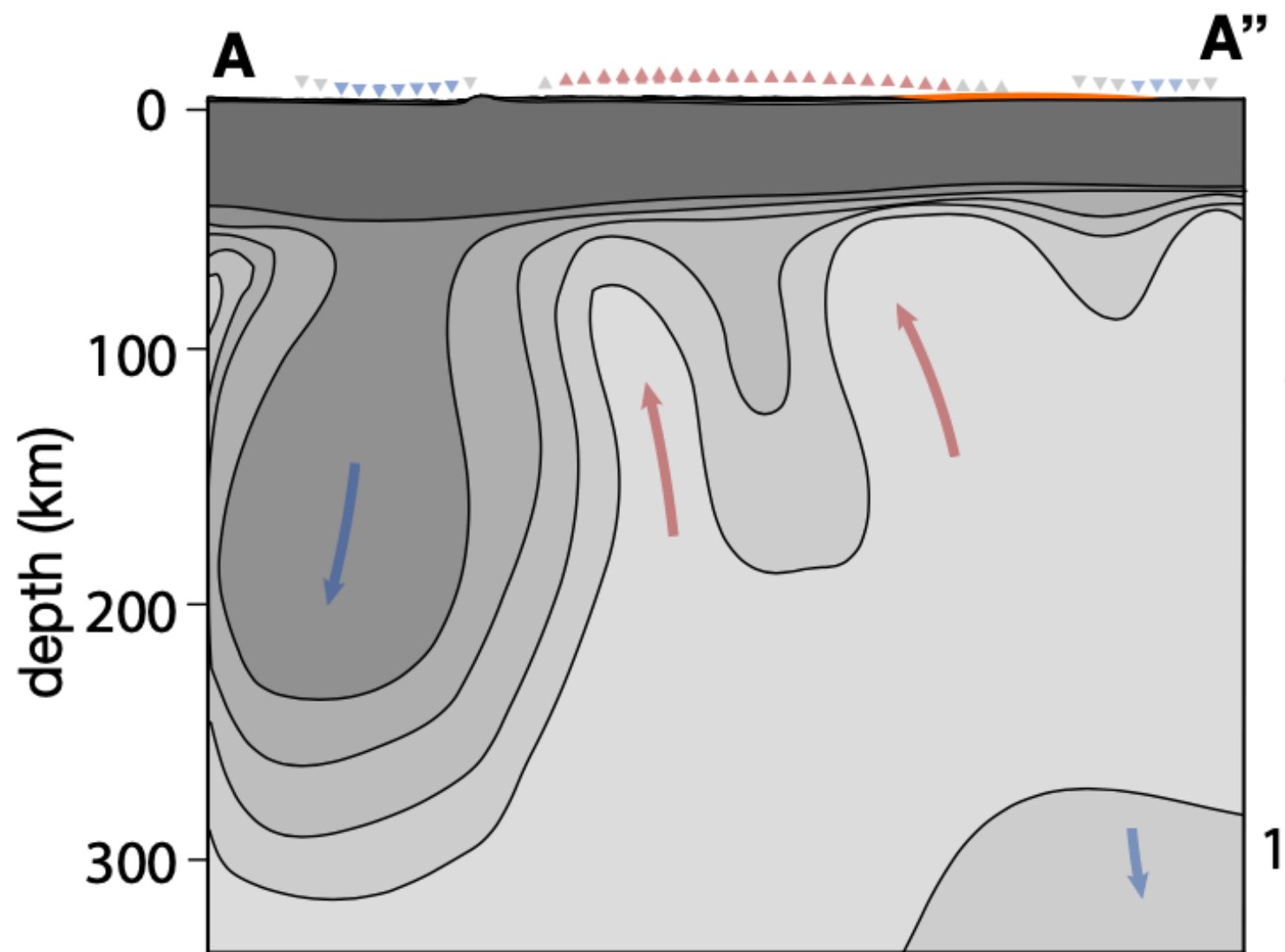
*John He, Paul Kapp – University of Arizona*





**Example from the Colorado Plateau**  
(Levander et al., 2011, Nature)

(He and Kapp, in prep)

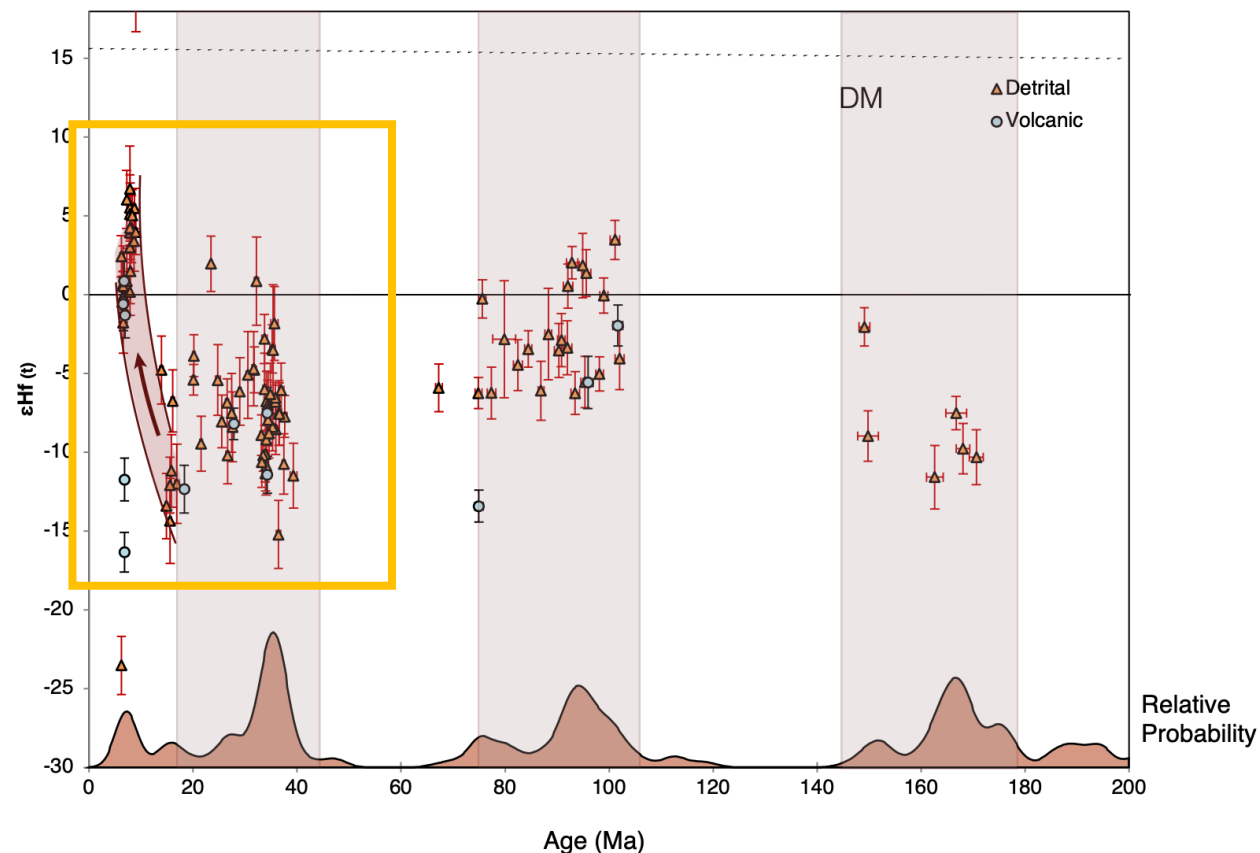


*(He and Kapp, in prep)*



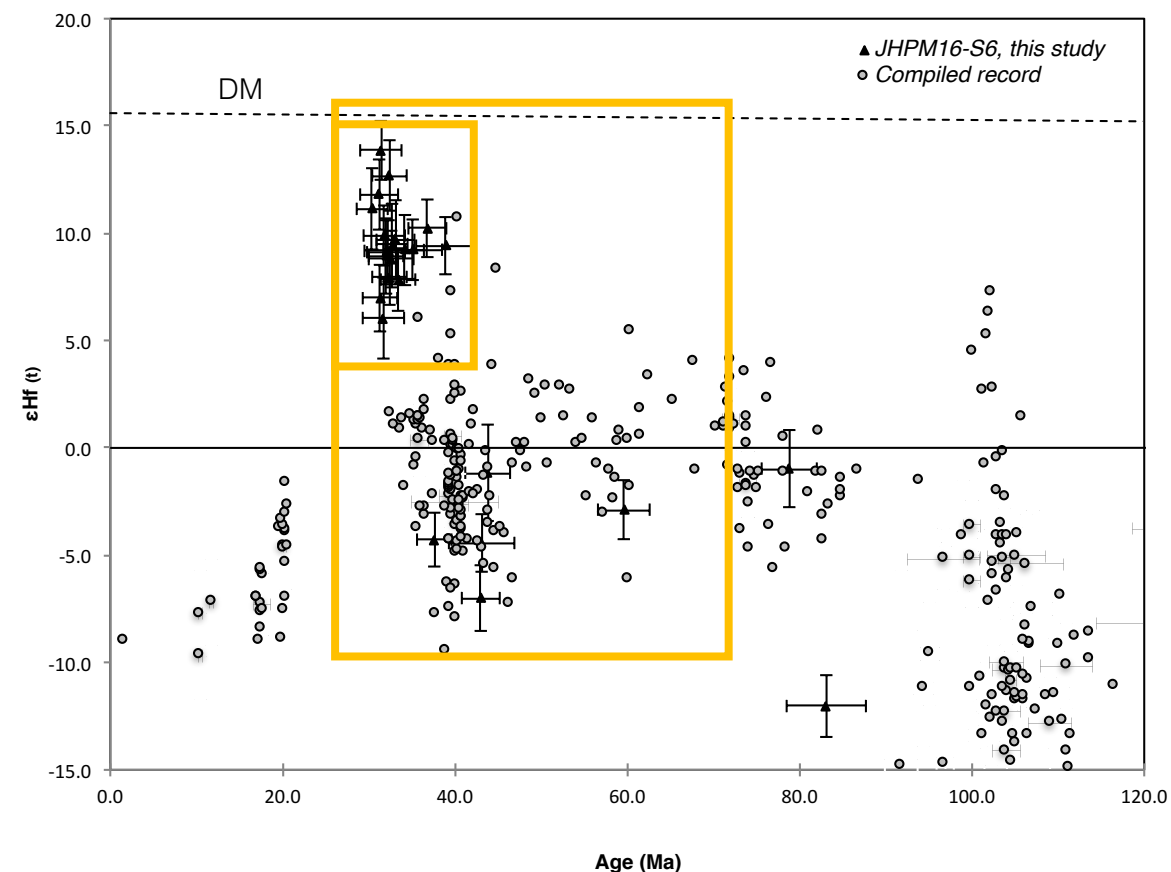
## ***Drip basins:***

Detrital zircon record from hinterland lacustrine strata



***Example from the Colorado Plateau***  
(He and Kapp, in prep)

***Full geologic context***

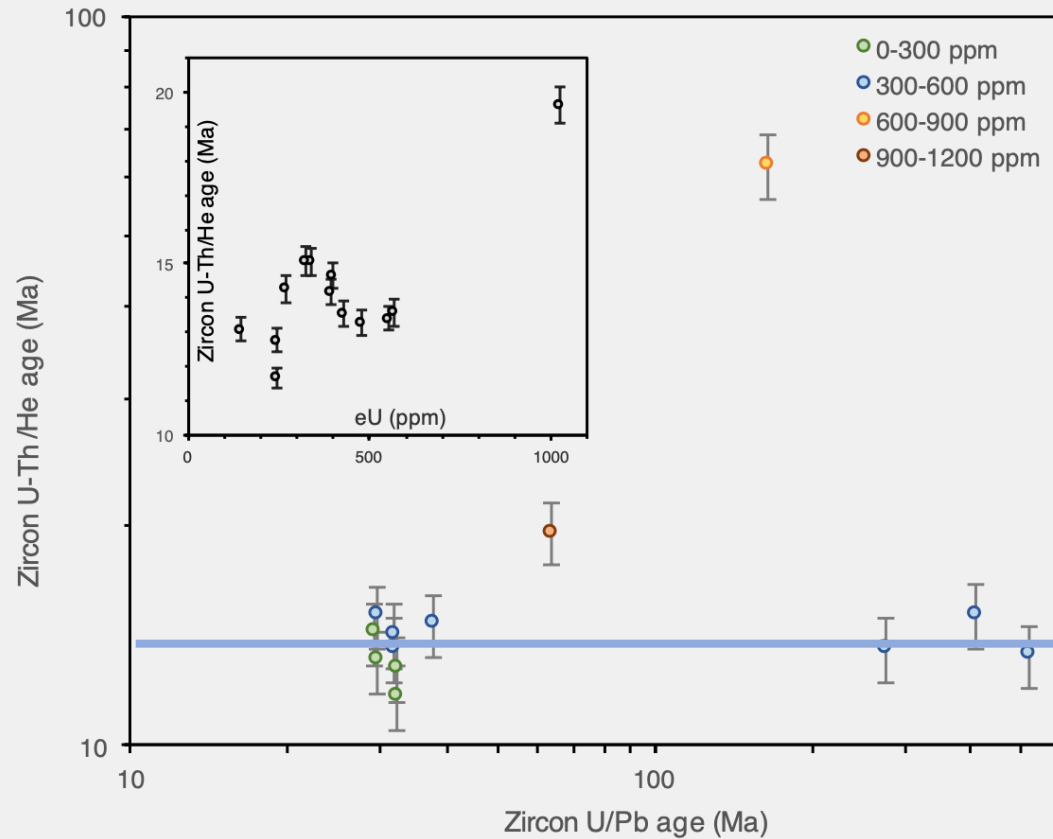


***Example from the Pamir Plateau***  
(He et al., 2019)

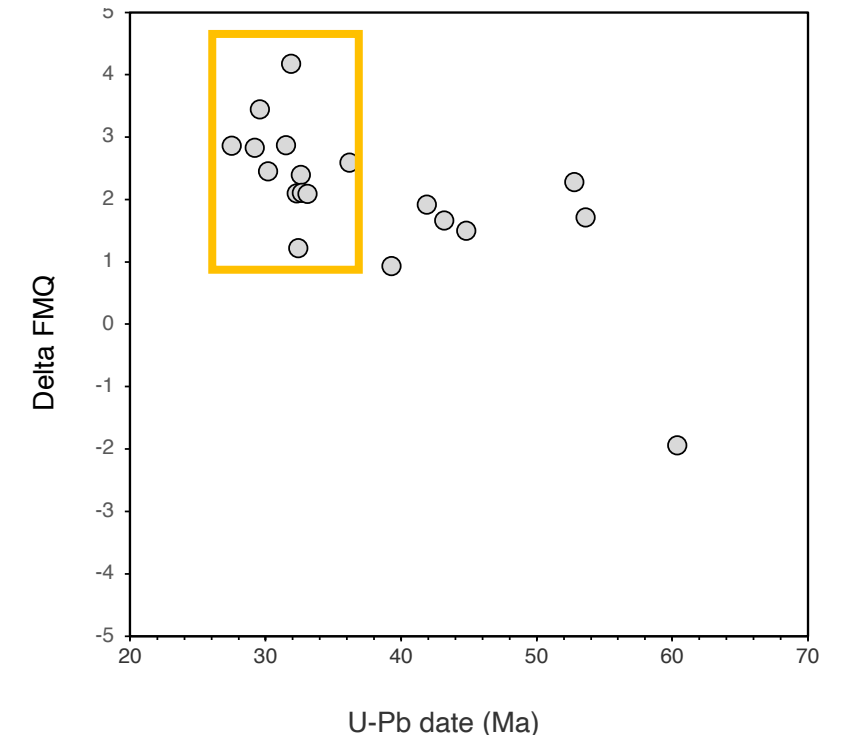
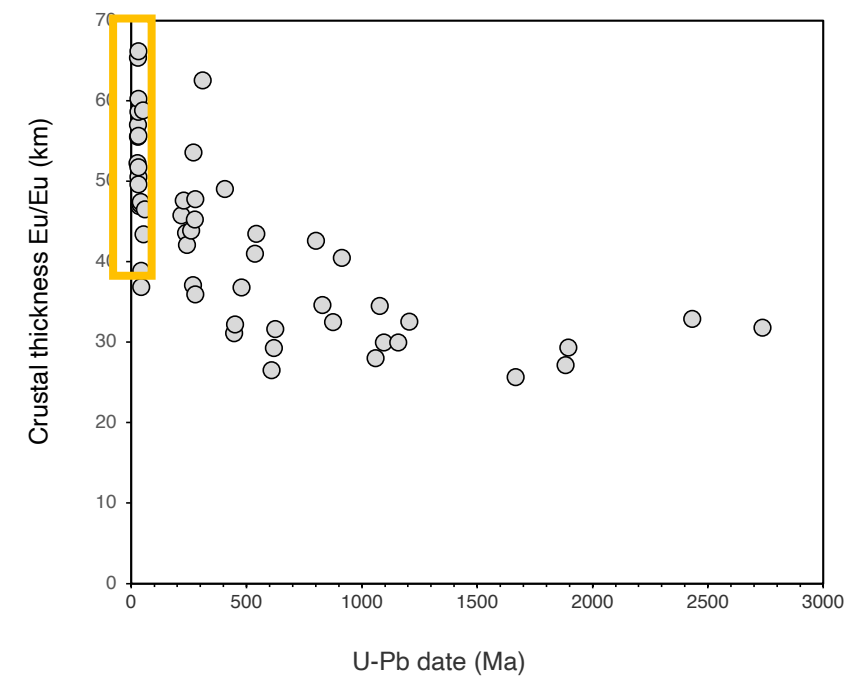
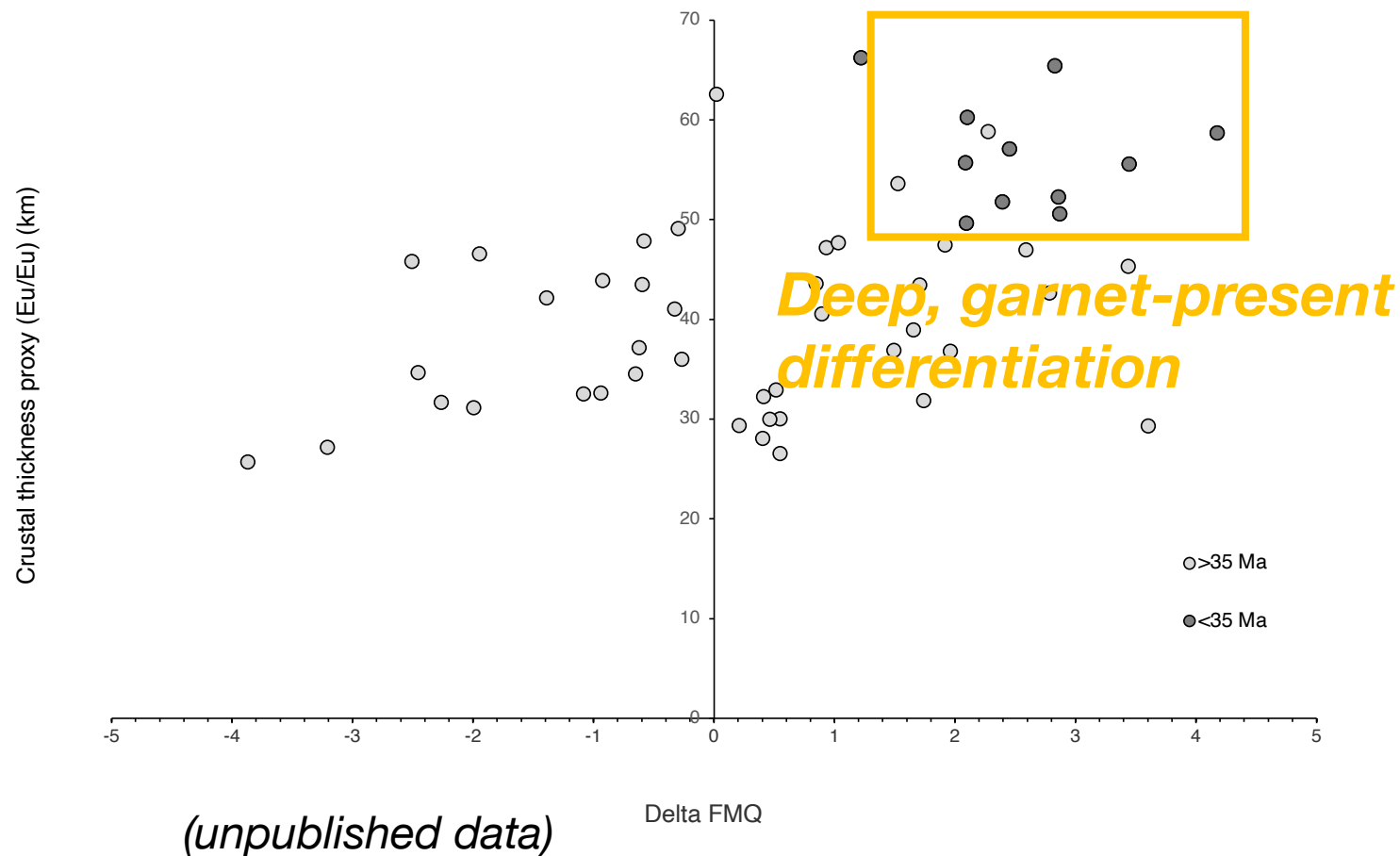
***Little geologic context,  
no remnant magmatic record***

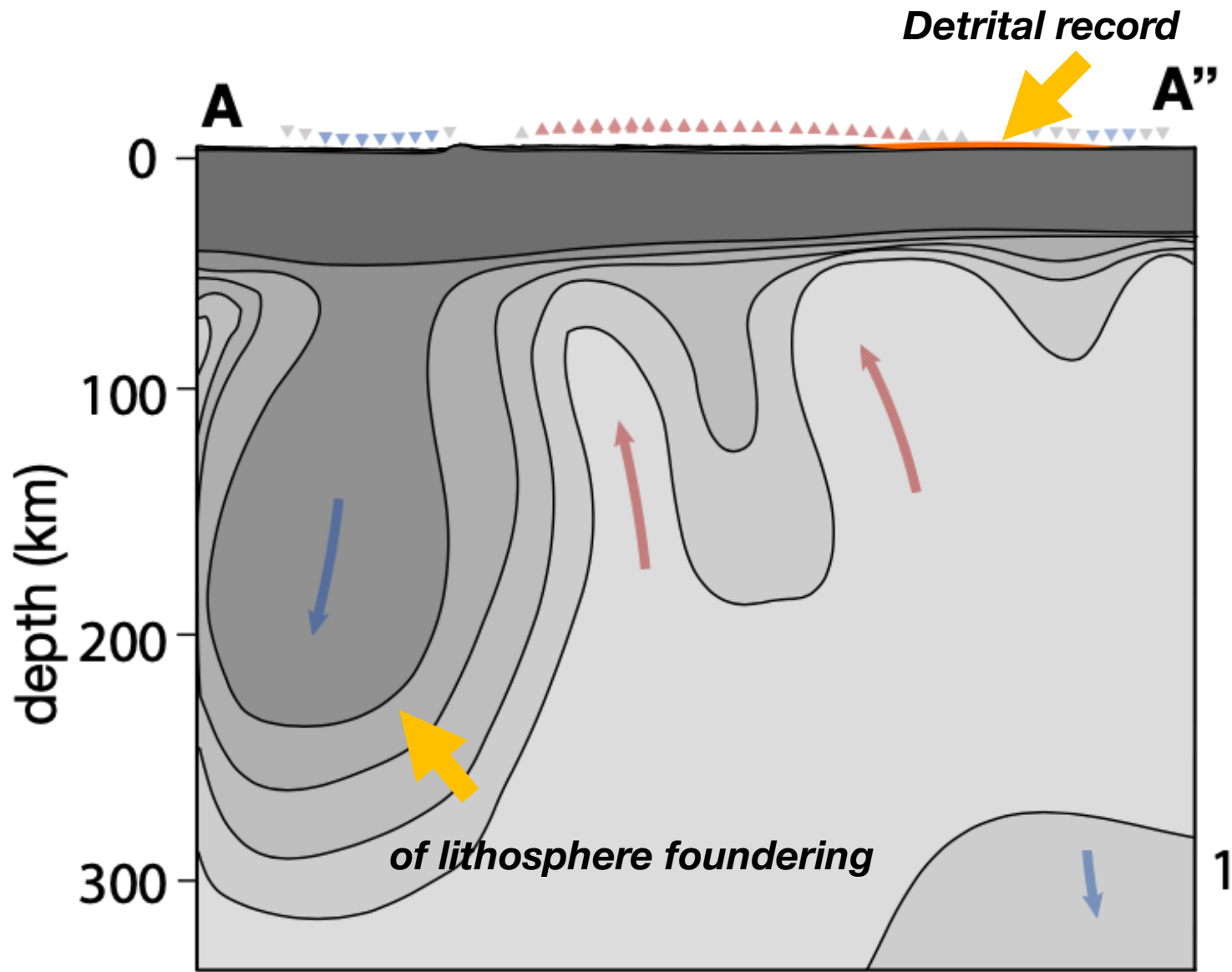
# Thermochronology:

Detrital zircon record from hinterland lacustrine strata



***Detrital zircon trace and rare earth element***  
Hinterland lacustrine strata: deciphering a magmatic record when non exists





(He and Kapp, in prep)

*Potential for detrital record of lithosphere foundering & surface response:*

**-Isotopic geochemistry:**  
depleted mantle melt with thickened lithosphere

**-Thermochronology:**  
thermal history of subsidence (burial) and uplift

**-Trace element geochemistry:**  
record of crustal thickening, oxybarometer, crystallization  $T$  and more....