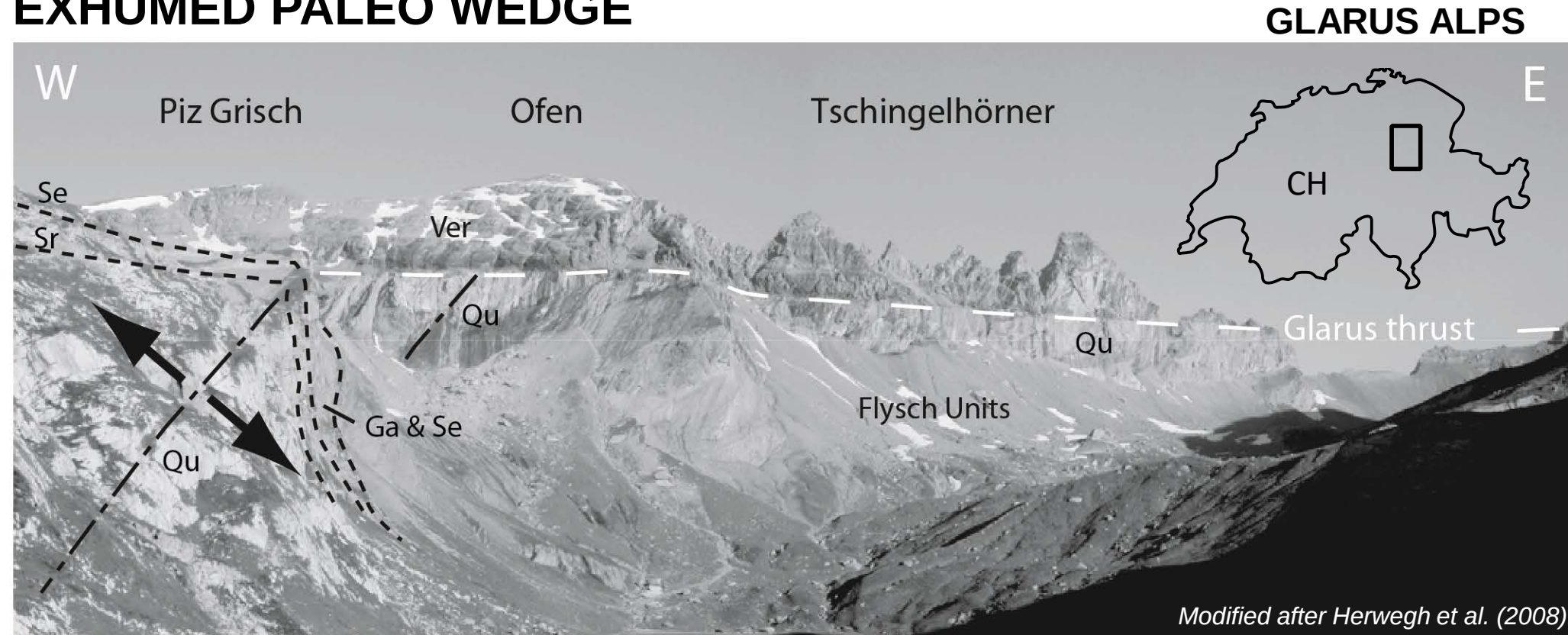


What slates can tell us about strain localisation and fluid flow in accretionary wedges

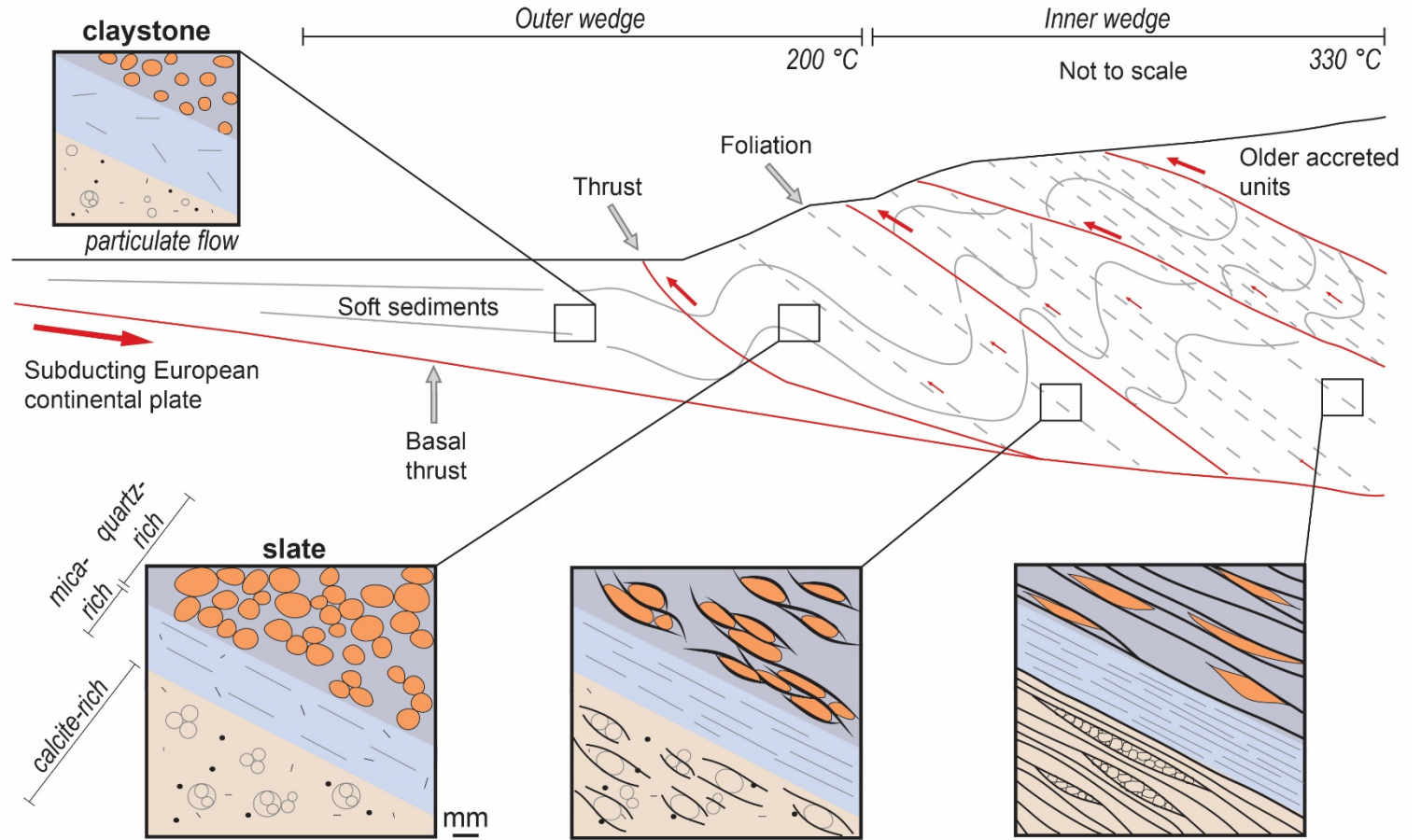
Ismay Vénice Akker, Christoph Schrank, Michael Jones, Cameron Kewish, Alfons Berger and Marco Herwegh

EXHUMED PALEO WEDGE



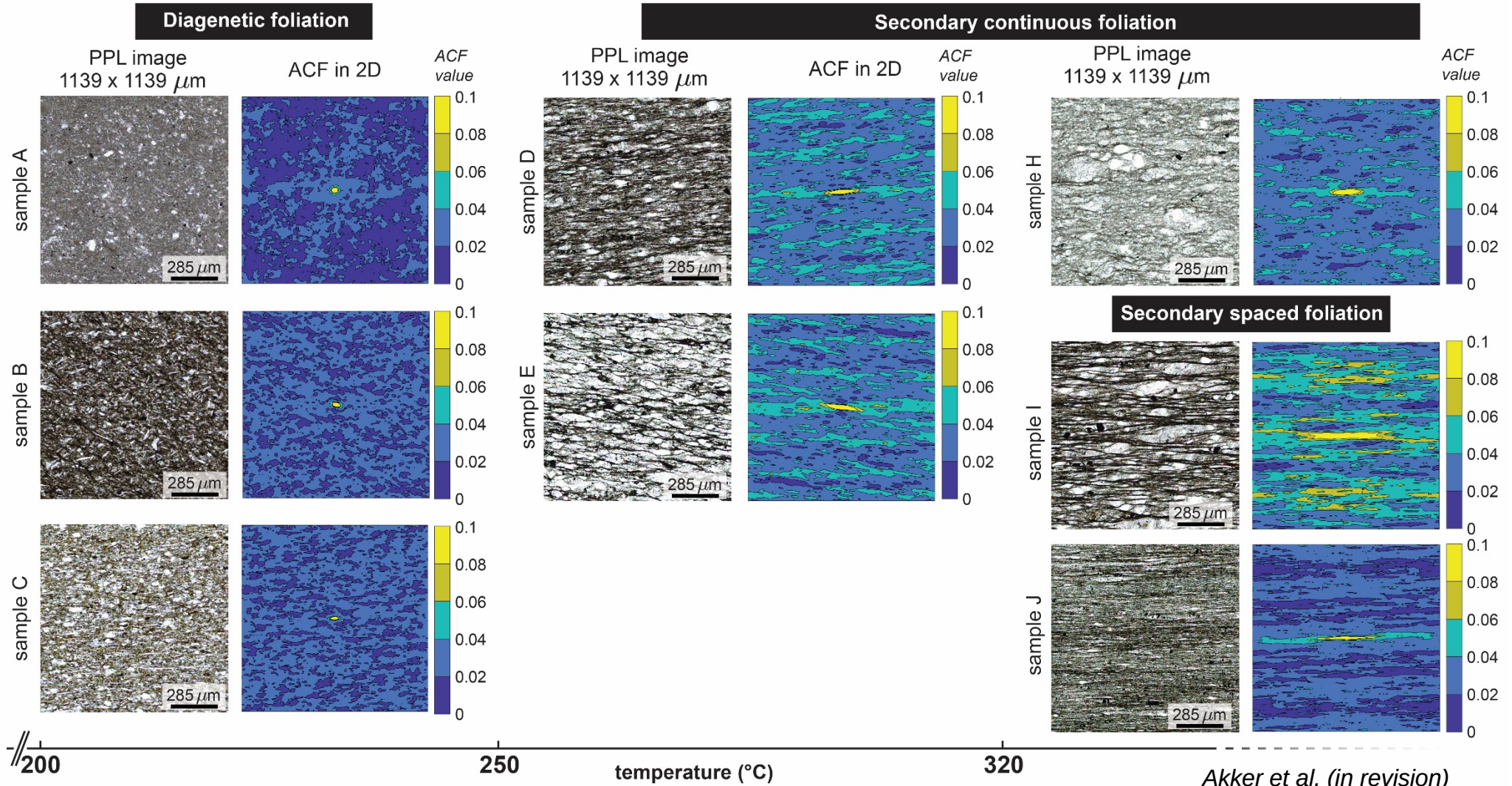
MECHANICAL-CHEMICAL TRANSFORMATION OF FLYSCH SEDIMENTS

- Matrix porosity
- Cleavage spacing
- Dissolution-precipitation
- Veining



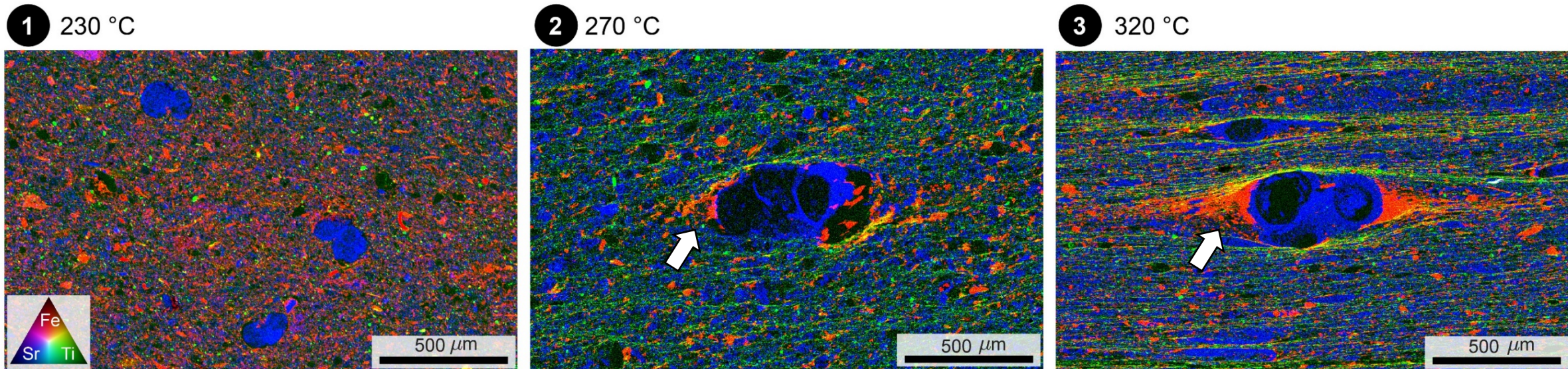
Akker et al. (in revision)

QUANTIFYING THE MICRO-FABRIC USING AUTOCORRELATION FUNCTIONS



THE ROLE OF FLUID ASSISTED- PRESSURE DISSOLUTION CREEP

Synchrotron X-ray Fluorescence Microscopy

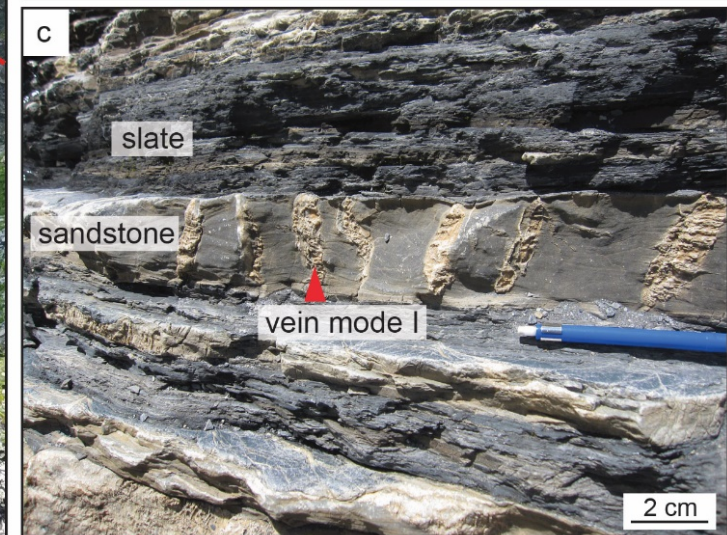
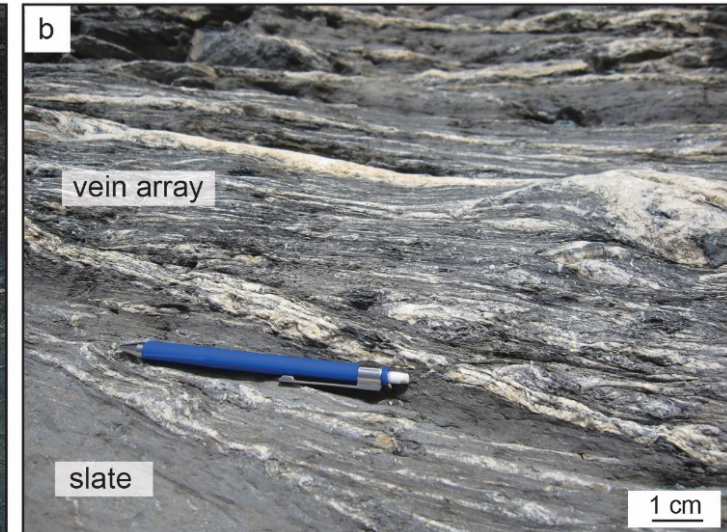
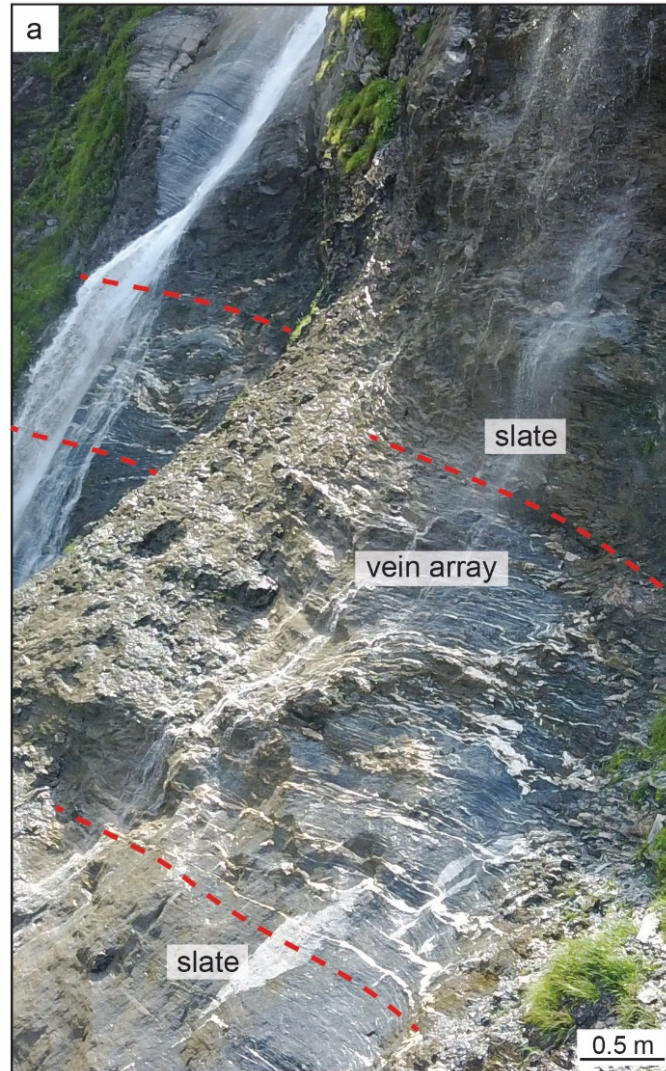


Formation of a spaced cleavage by dissolution-precipitation creep
(pressure shadows: white arrows)

→ Accommodates continuous background strain in the inner wedge

CALCITE VEIN ARRAYS

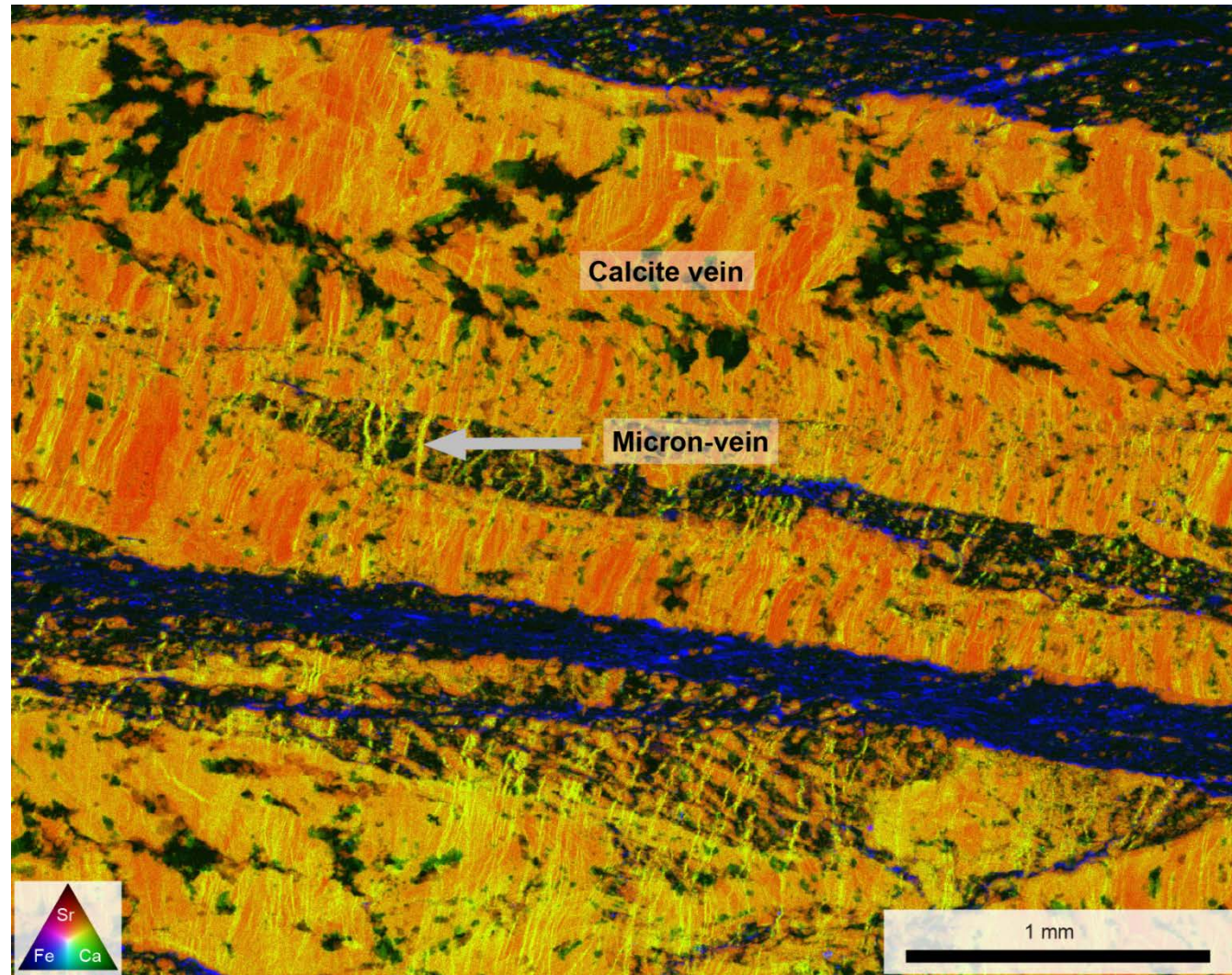
- Localized and temporal deformation events
- Vein arrays connect over 100 m
- Consist of layer-parallel veins
- → Enable fluid flow through large rock sequences



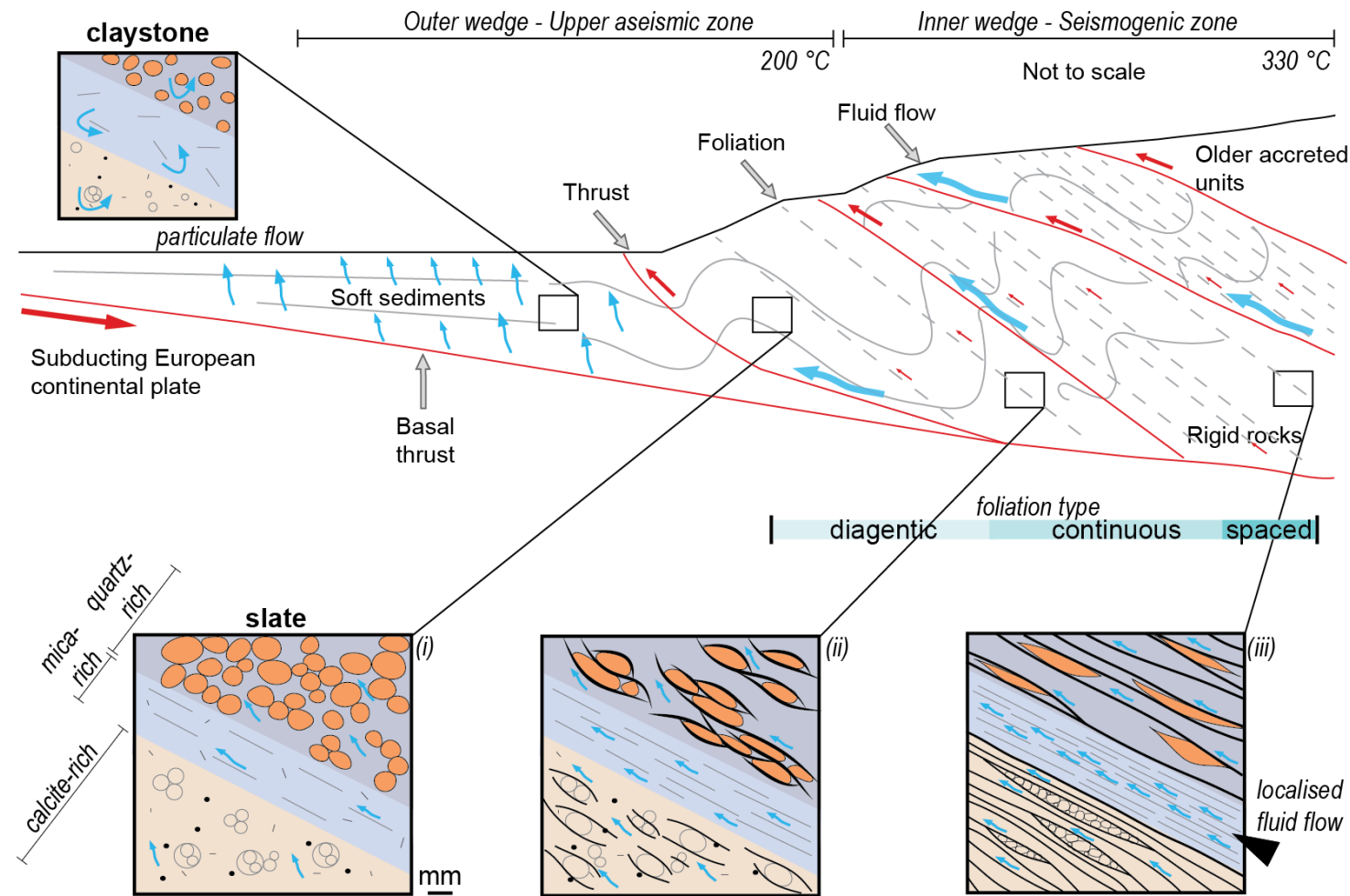
AN ACCUMULATION OF MICRON-VEINLETS

Synchrotron X-ray Fluorescence Microscopy

- Micron-veinlets: high spatial densities
- Cyclicity of ductile and brittle deformation
- Like layer-parallel veins, micron-veinlets enable movement of large amounts of fluids



FLUID FLOW OVER DIFFERENT SCALES



Interested...? Check out:

“Multiscale porosity changes along the pro- and retrograde deformation path: an example from Alpine slates”

<https://doi.org/10.5194/se-9-1141-2018>

“Structural and chemical resetting processes in white mica and their effect on K-Ar data during low temperature metamorphism”

<https://doi.org/10.1016/j.tecto.2020.228708>

Join me in the breakout text chat or email: ismay.akker@geo.unibe.ch