Pressure-temperature-time evolution of the Variscan high-pressure units of the eastern Massif Central: geodynamic implications

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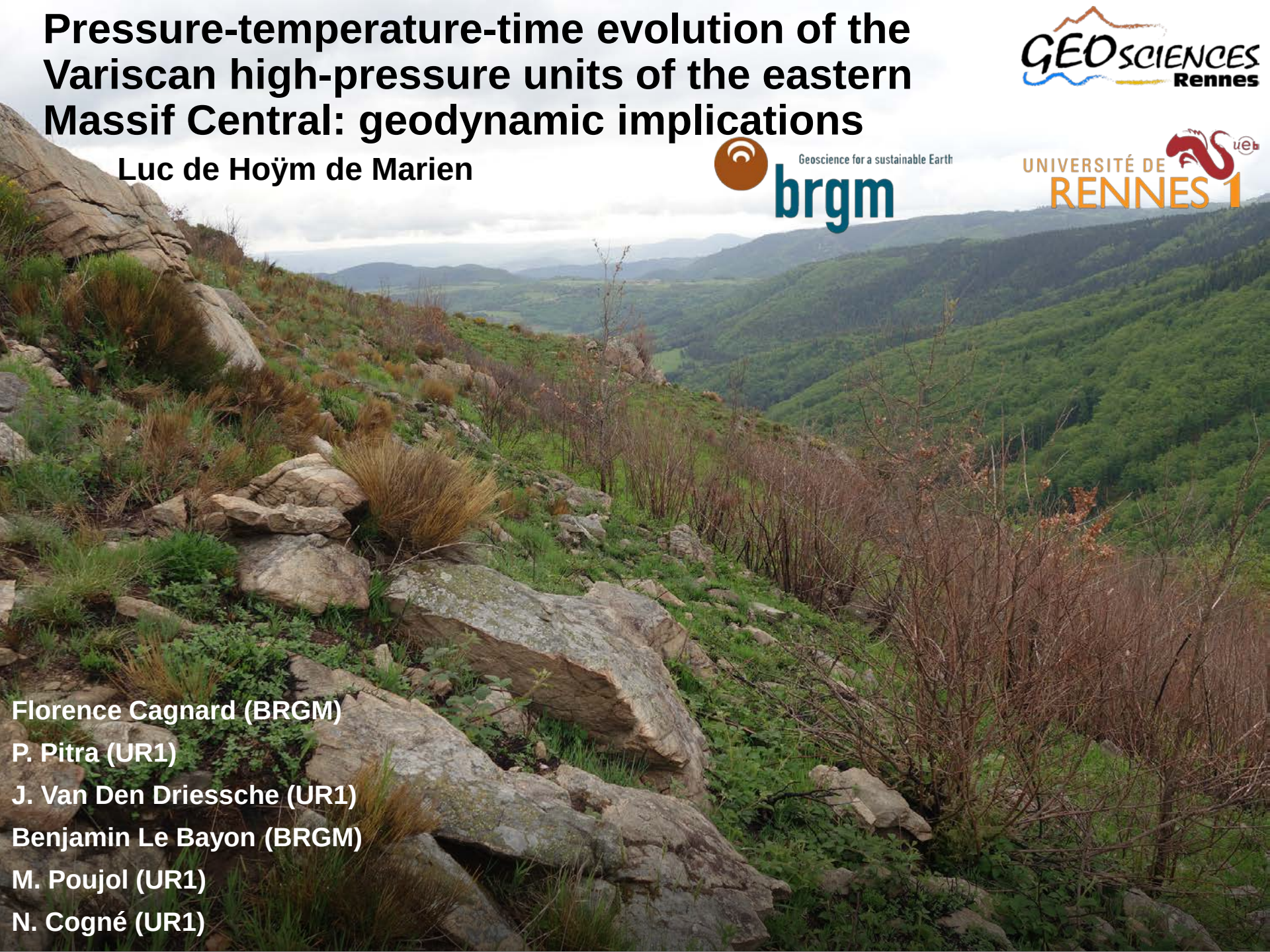
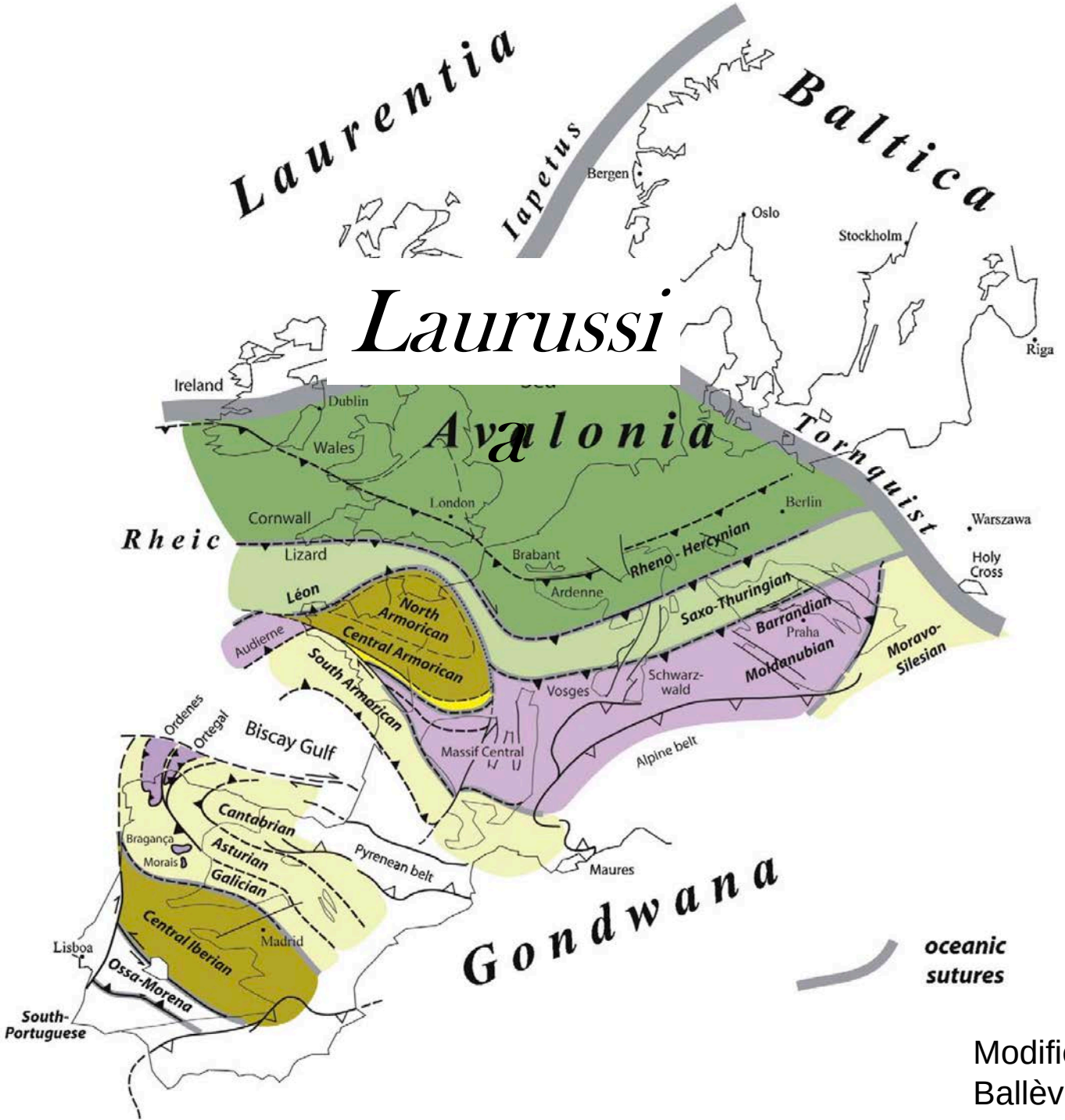
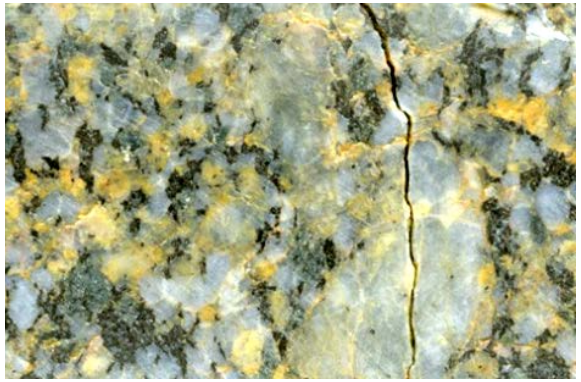
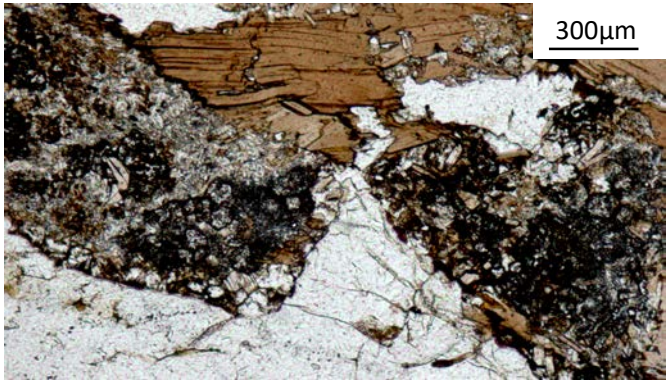


Laurussi

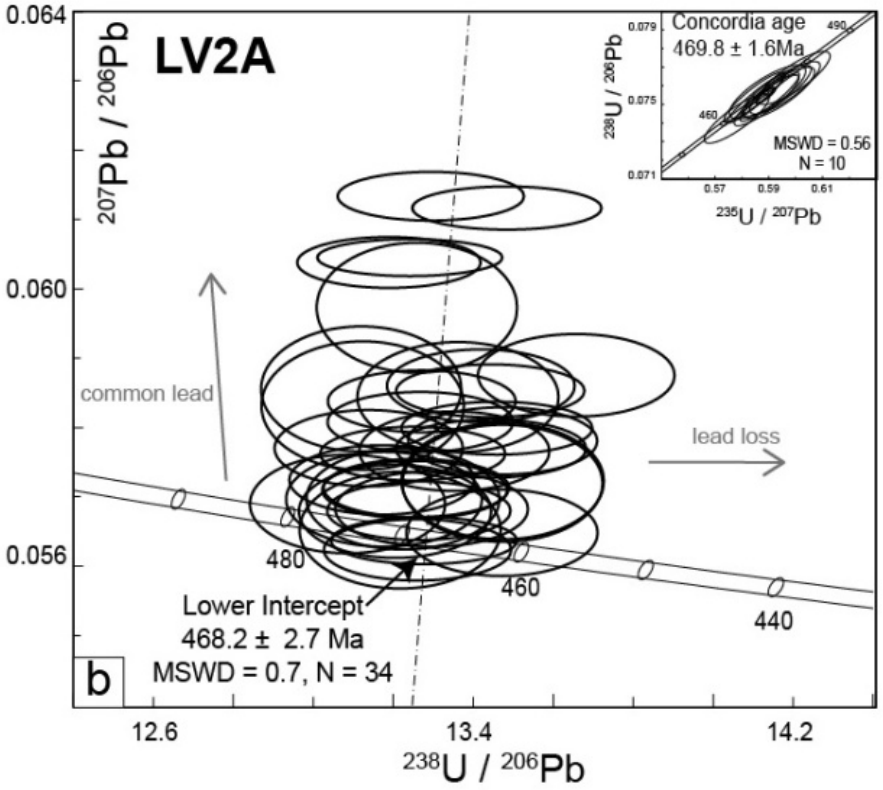


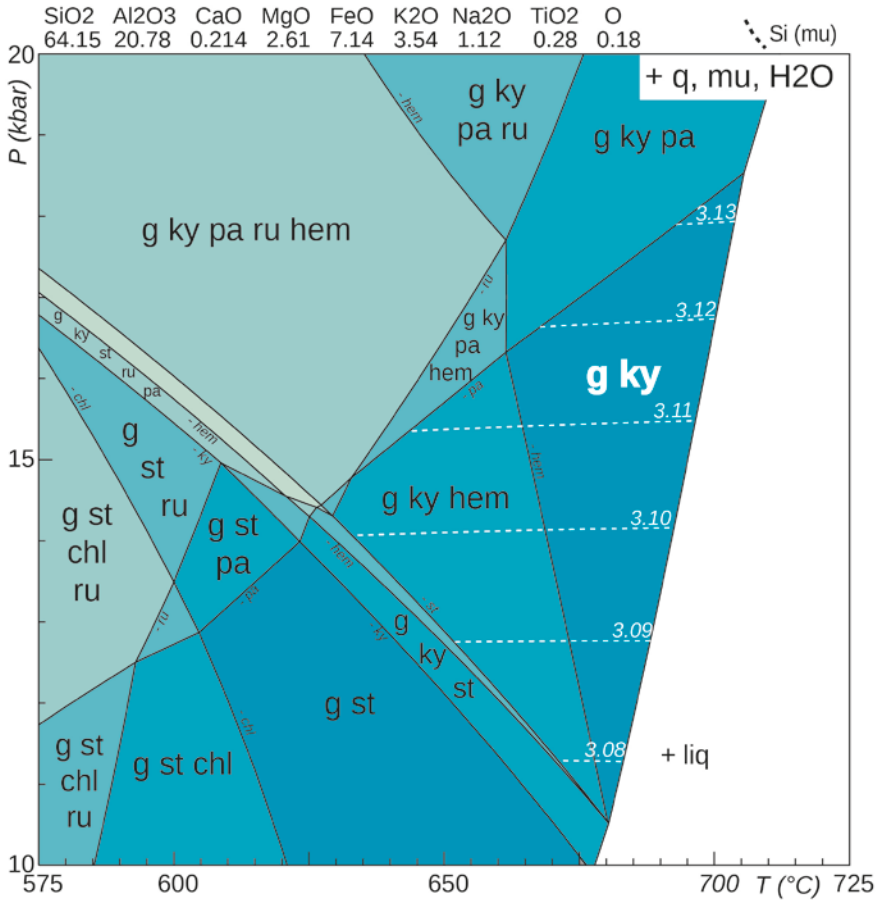
Modified after
Ballèvre et al., 2009

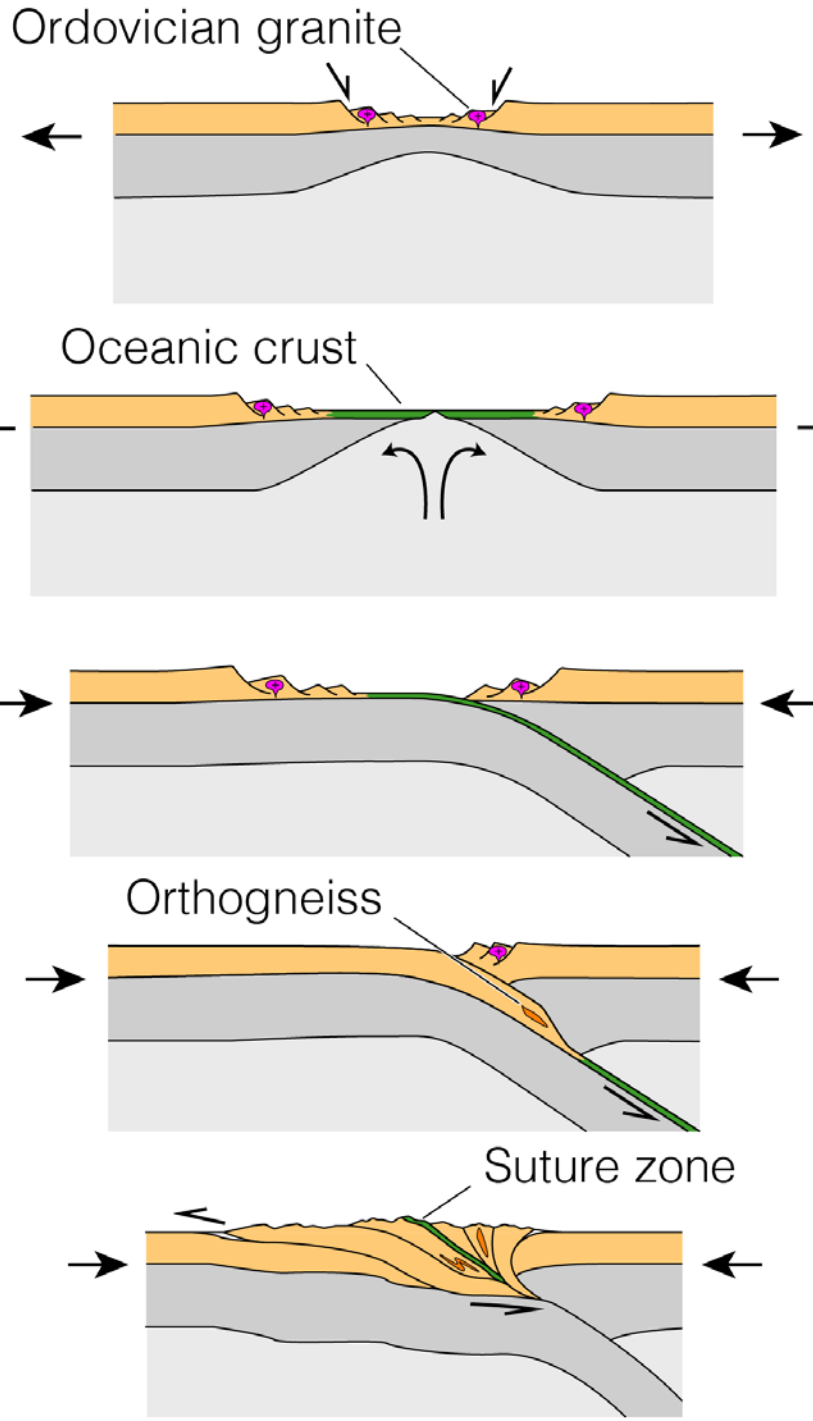




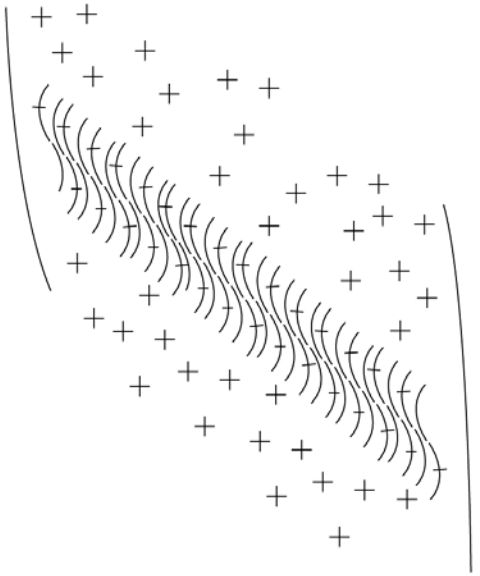
g-ky-mu-q after cd



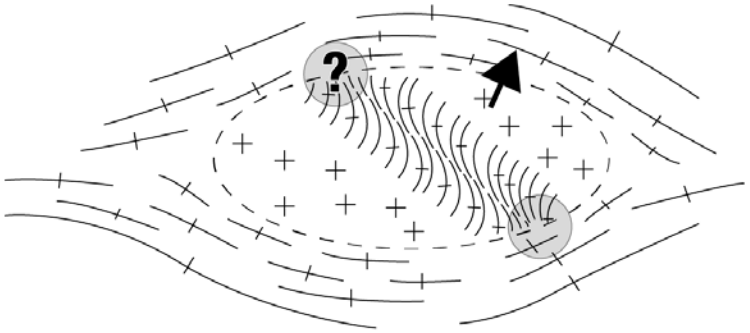




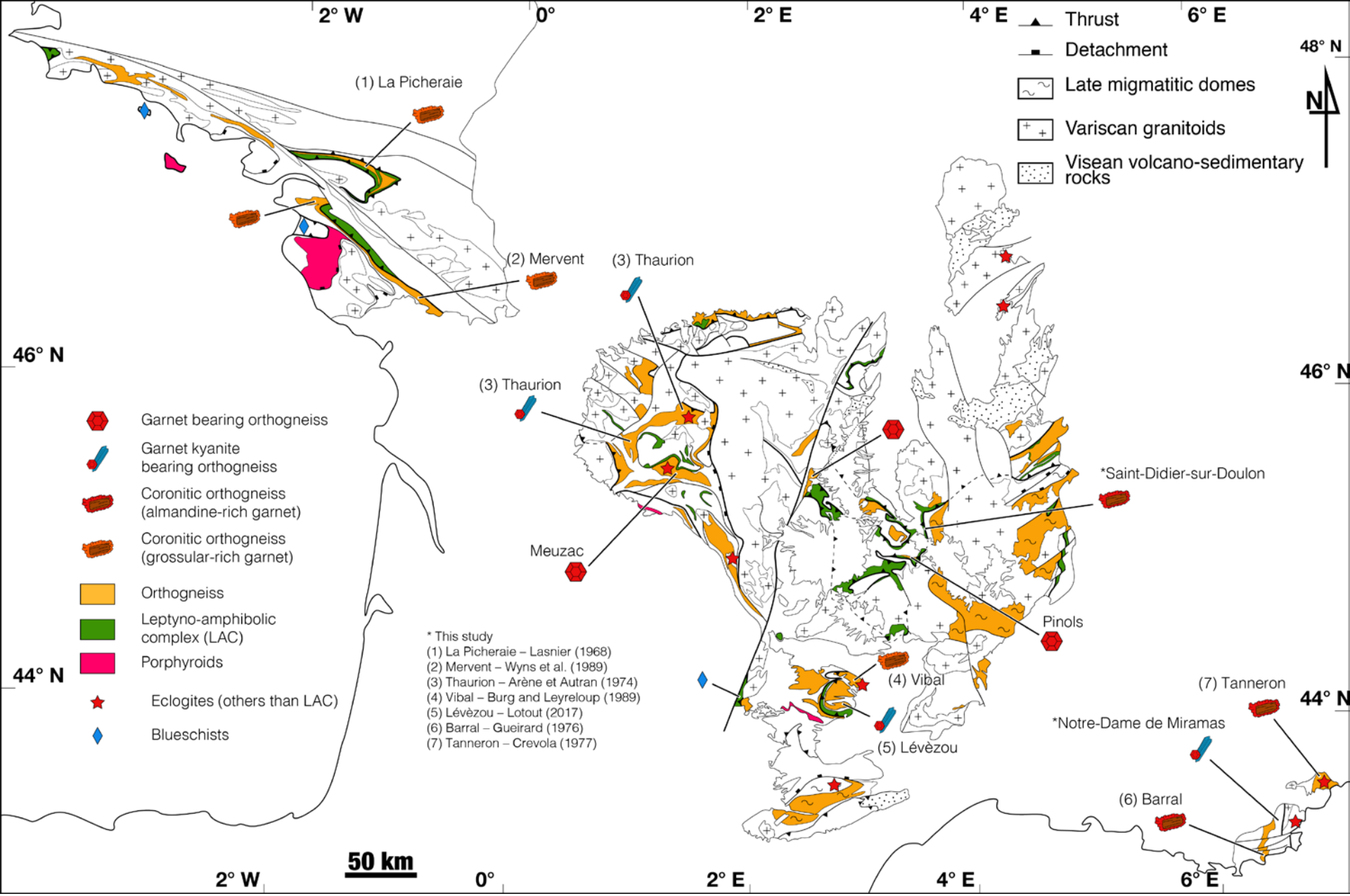
1. burial



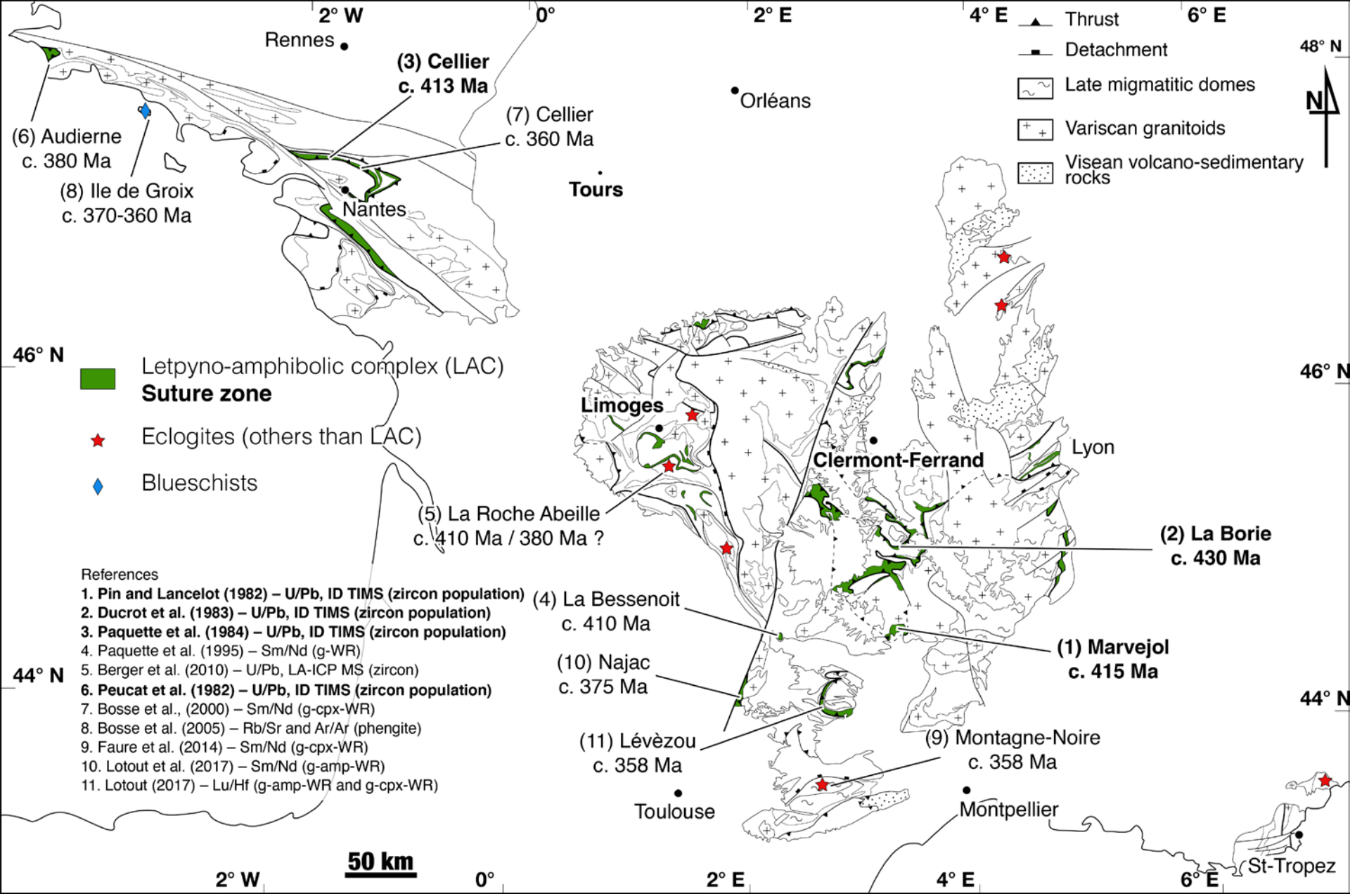
2. exhumation



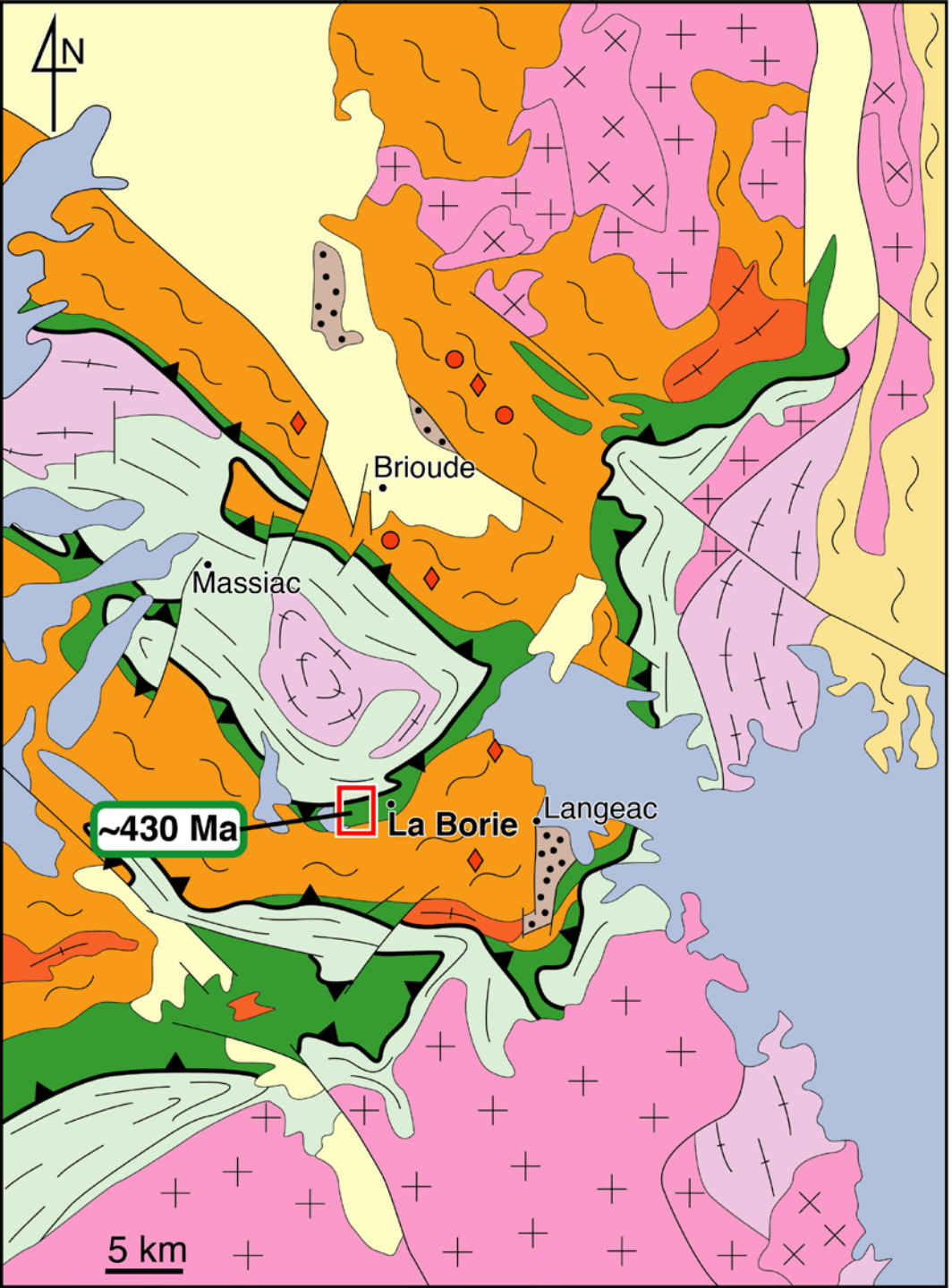
3 goals :
- Identify the structures related to burial
- Composite structures with opposed vergence (burial/exhumation)
- Identify the suture



Pseudosection analysis and quartz-in-garnet RAMAN spectroscopy yielded no results



Tectonic models for the Massif Central are based on the 420 Ma dates



Cenozoic sedimentation and magmatism

Cenozoic deposits

Cenozoic basalts

Faults

Late-variscan sedimentation
metamorphism and related magmatism

Carboniferous deposits

Peraluminous and metaluminous granites

Velay anatexites

Variscan metamorphic rocks

Migmatites with relictual pelitic (●)
and mafic (♦) granulite

Orthogneiss

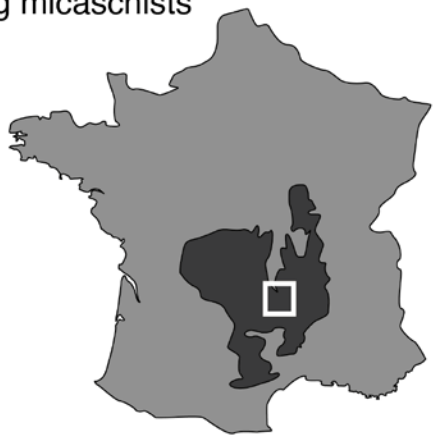
Mafic and felsic association with
retrogressed eclogites

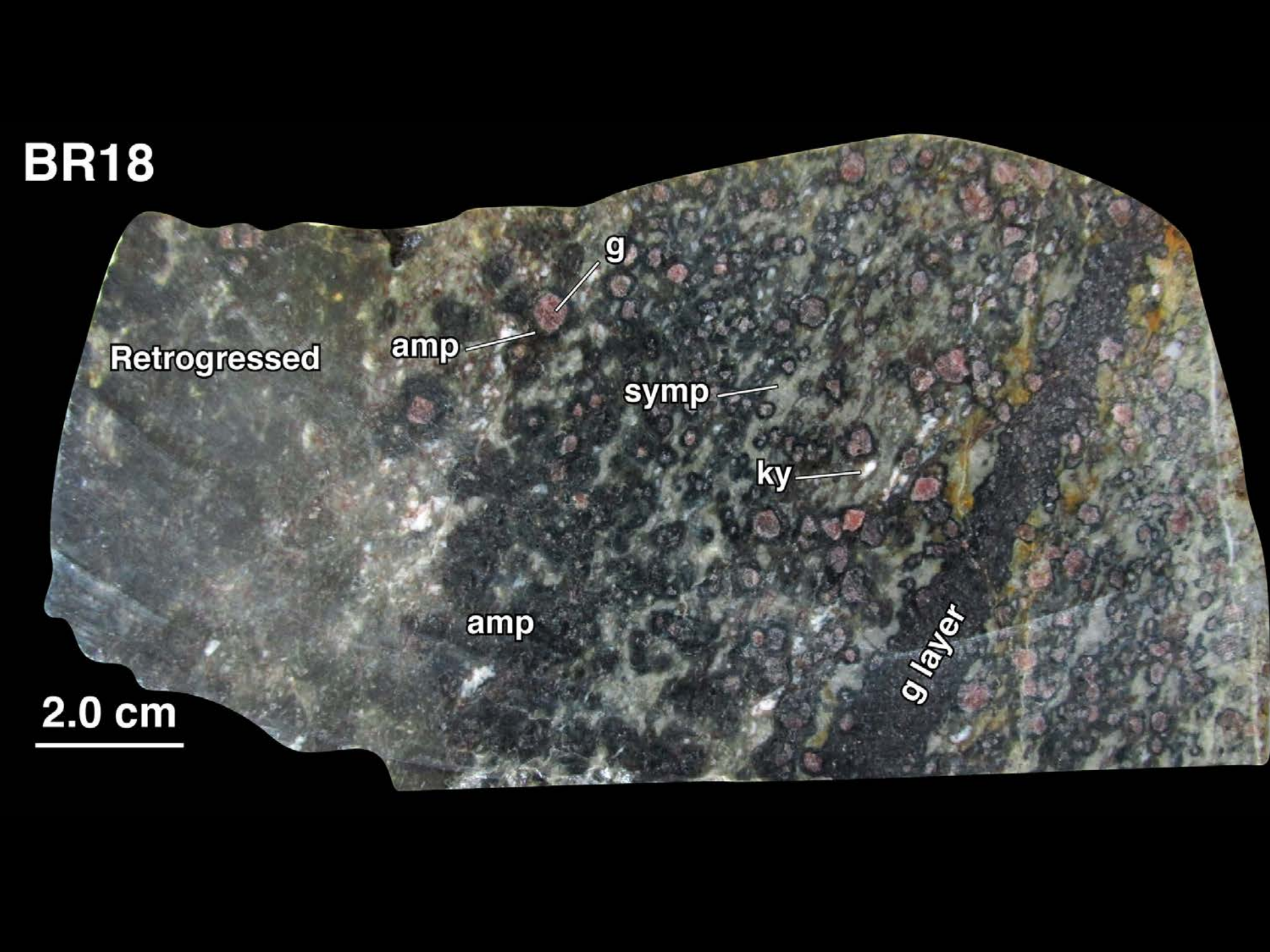
Variscan thrust

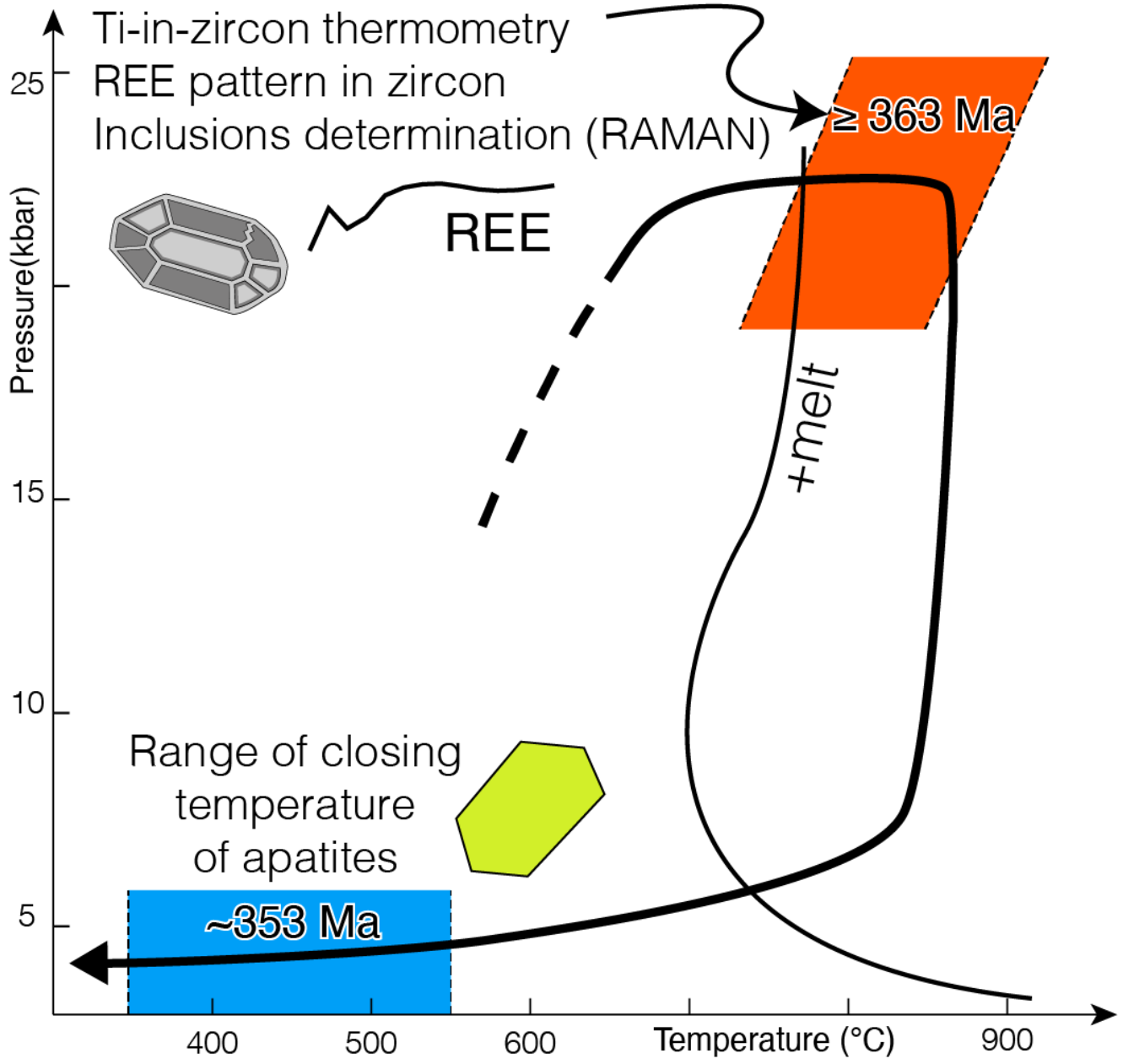
bt-sill and ky-st-g micaschists

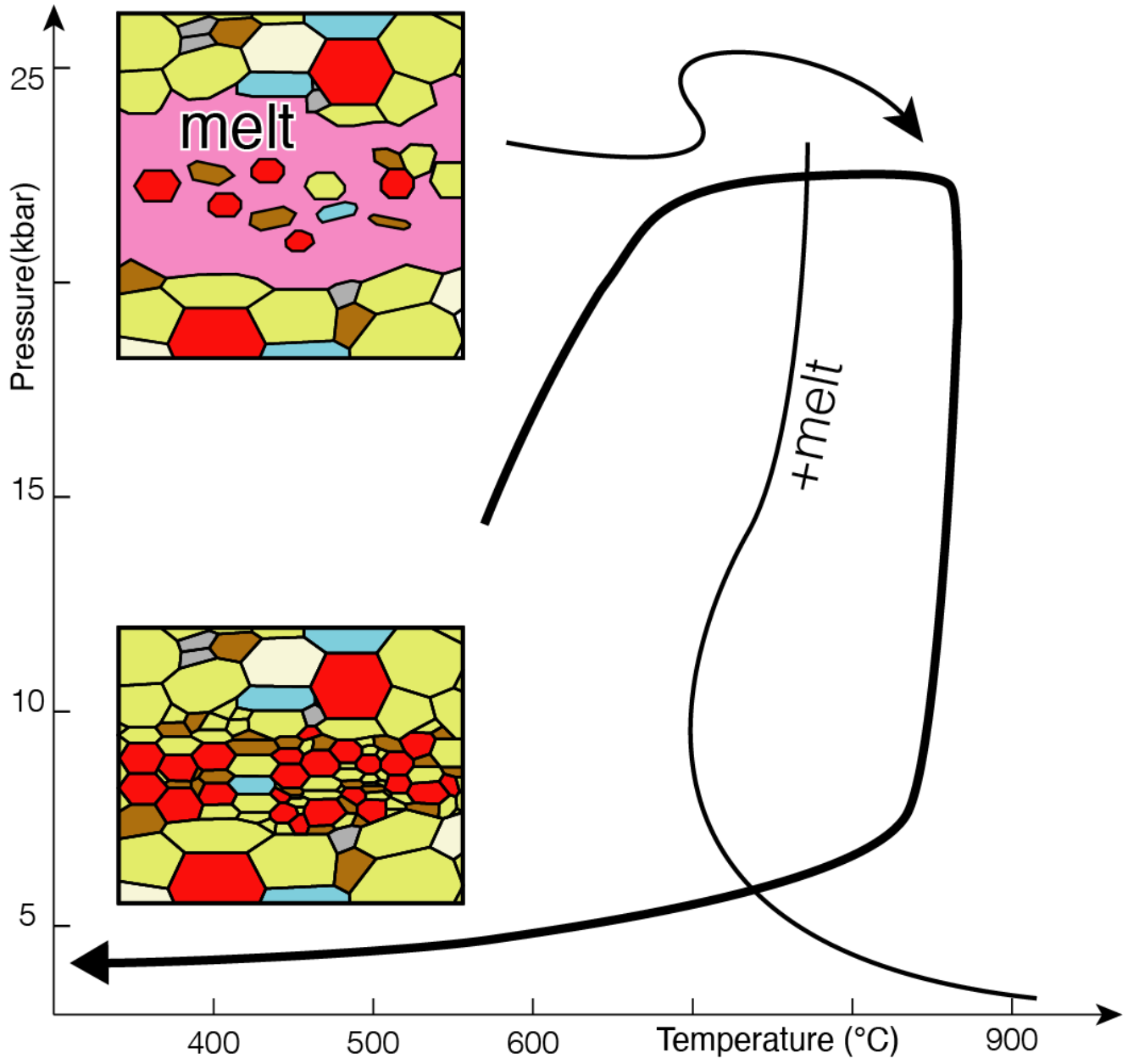
Orthogneiss

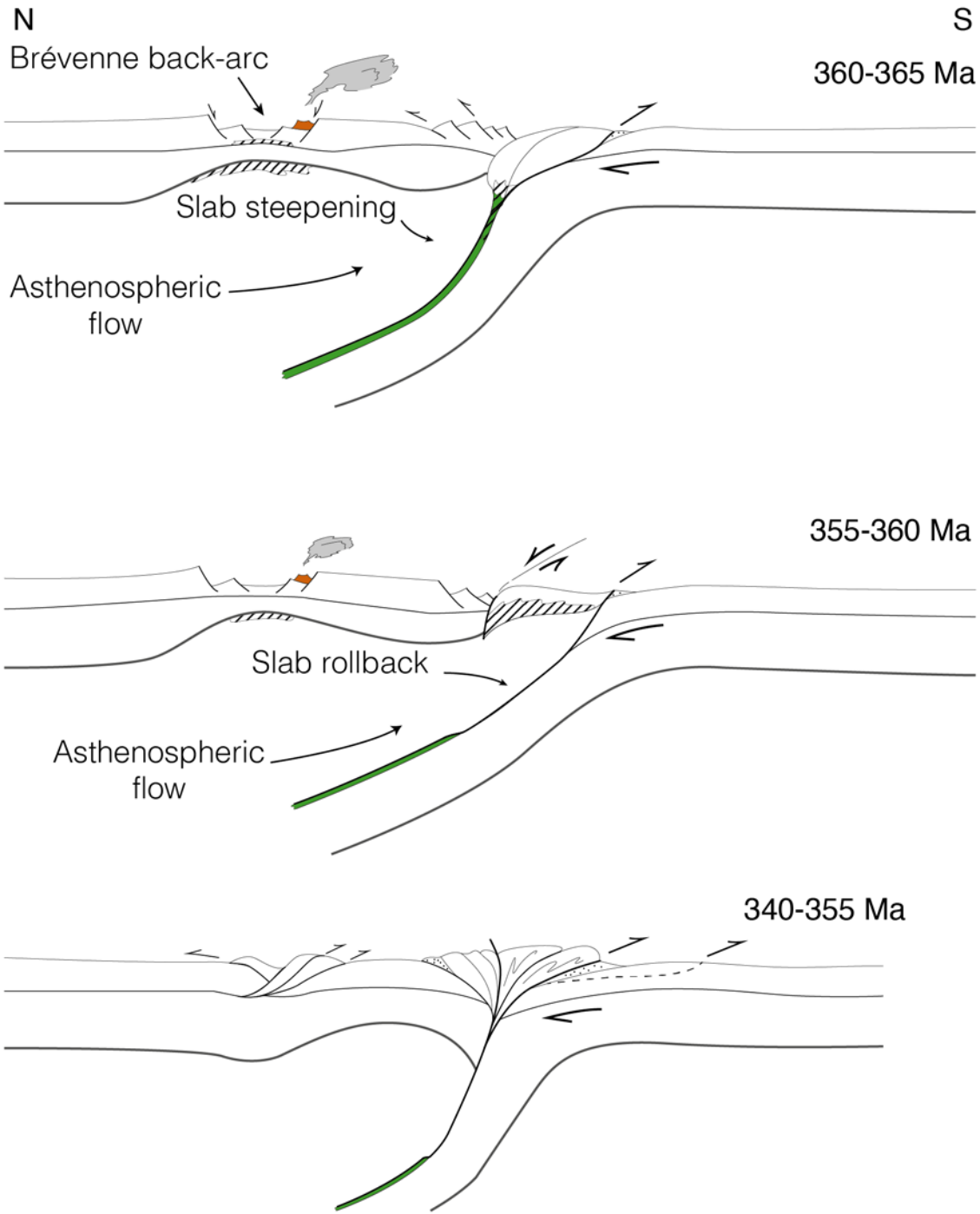
Studied outcrop

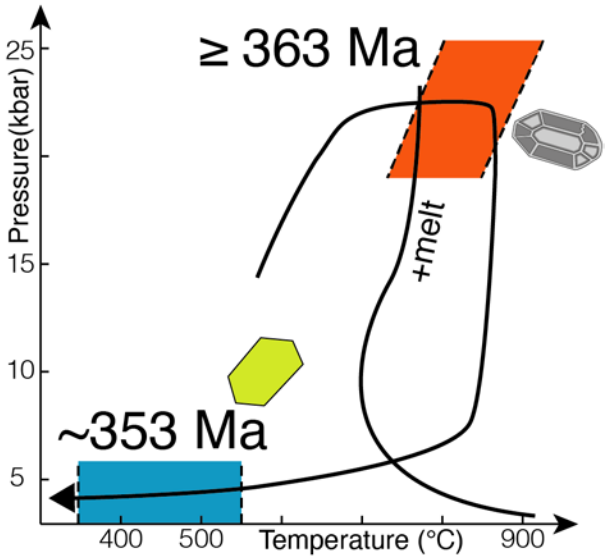



BR18
g
amp
Retrogressed
symp
ky
amp
g layer
2.0 cm


Ti-in-zircon thermometry
REE pattern in zircon
Inclusions determination (RAMAN)
REE
≥ 363 Ma
+melt
Range of closing temperature of apatites
~353 Ma
Pressure(kbar)
25
15
10
5
400
500
600
Temperature (°C)
900


melt
+melt
Pressure(kbar)
25
15
10
5
400
500
600
Temperature (°C)
900


N
S
Brévenne back-arc
360-365 Ma
Slab steepening
Asthenospheric flow
355-360 Ma
Slab rollback
Asthenospheric flow
340-355 Ma


≥ 363 Ma
+melt
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Pressure(kbar)
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15
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500
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Thank you for your attention !