

Contribution of magnetite (U-Th-Sm)/He thermometer to quantify the final exhumation of high-pressure ophiolite (Western Alps).



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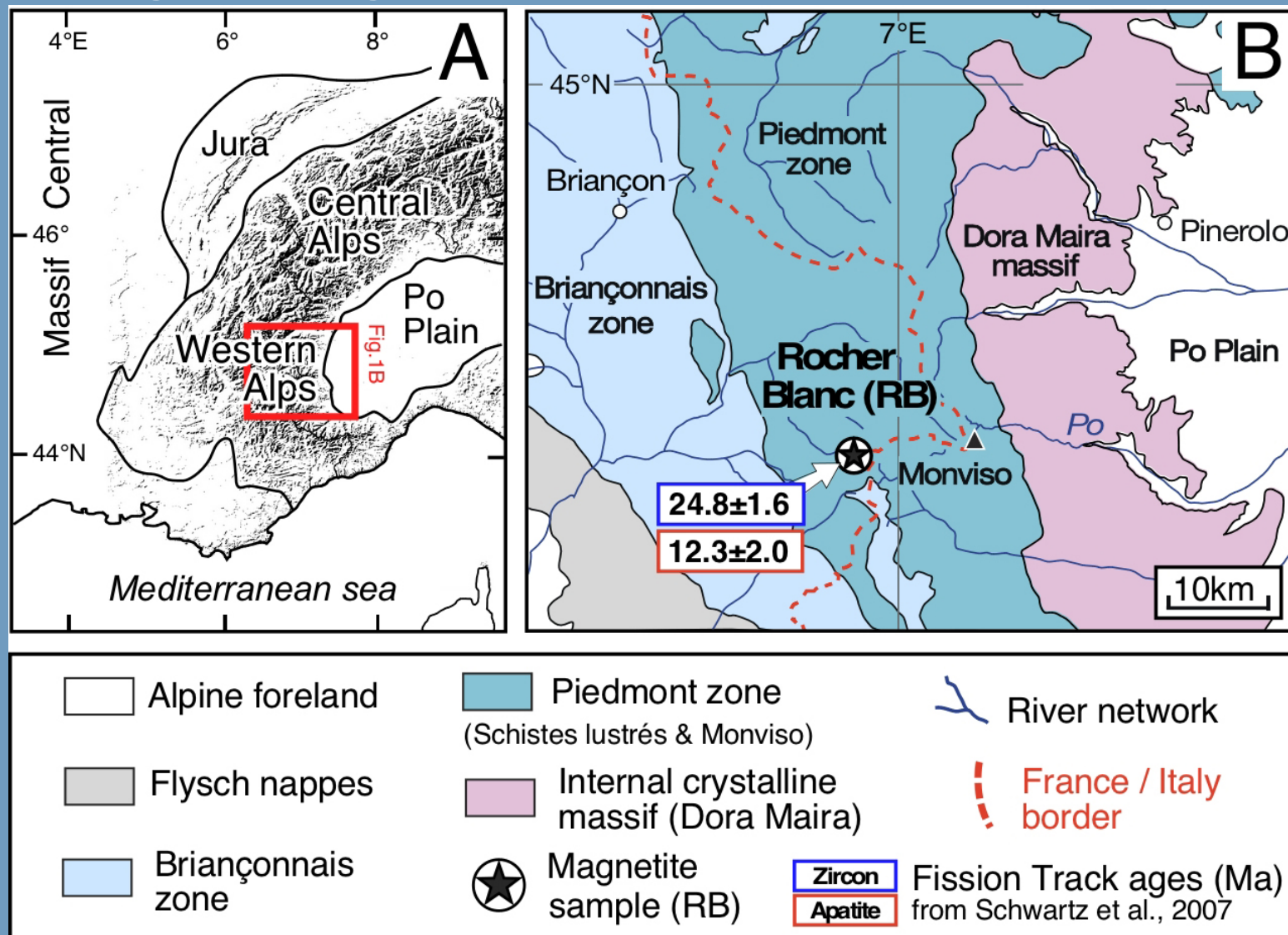
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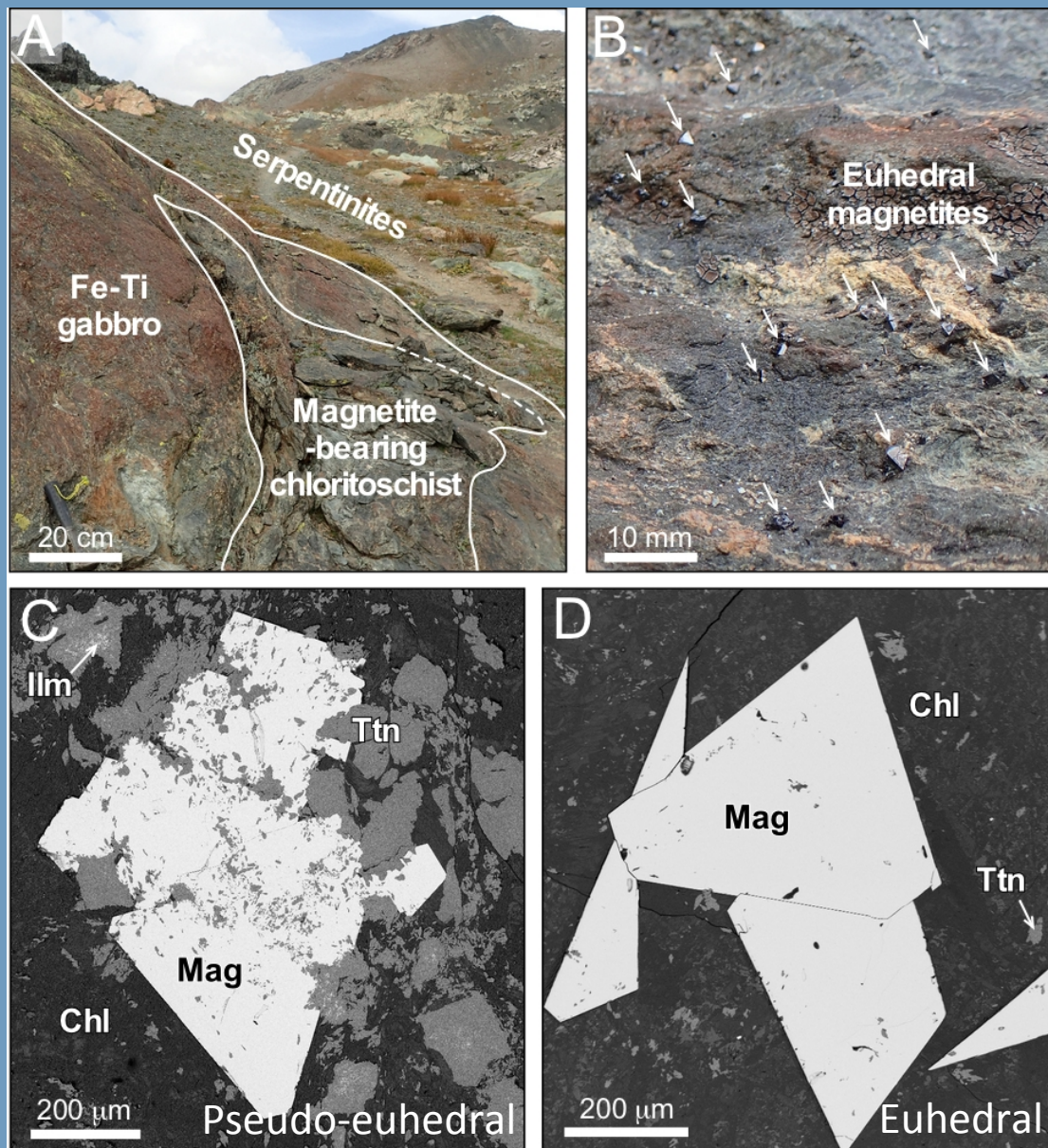
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1-Geological setting



We used magnetite (U-Th-Sm)/He method (MgHe), on a well-known high-pressure low-temperature alpine ophiolite (Rocher Blanc ophiolite, Western Alps)

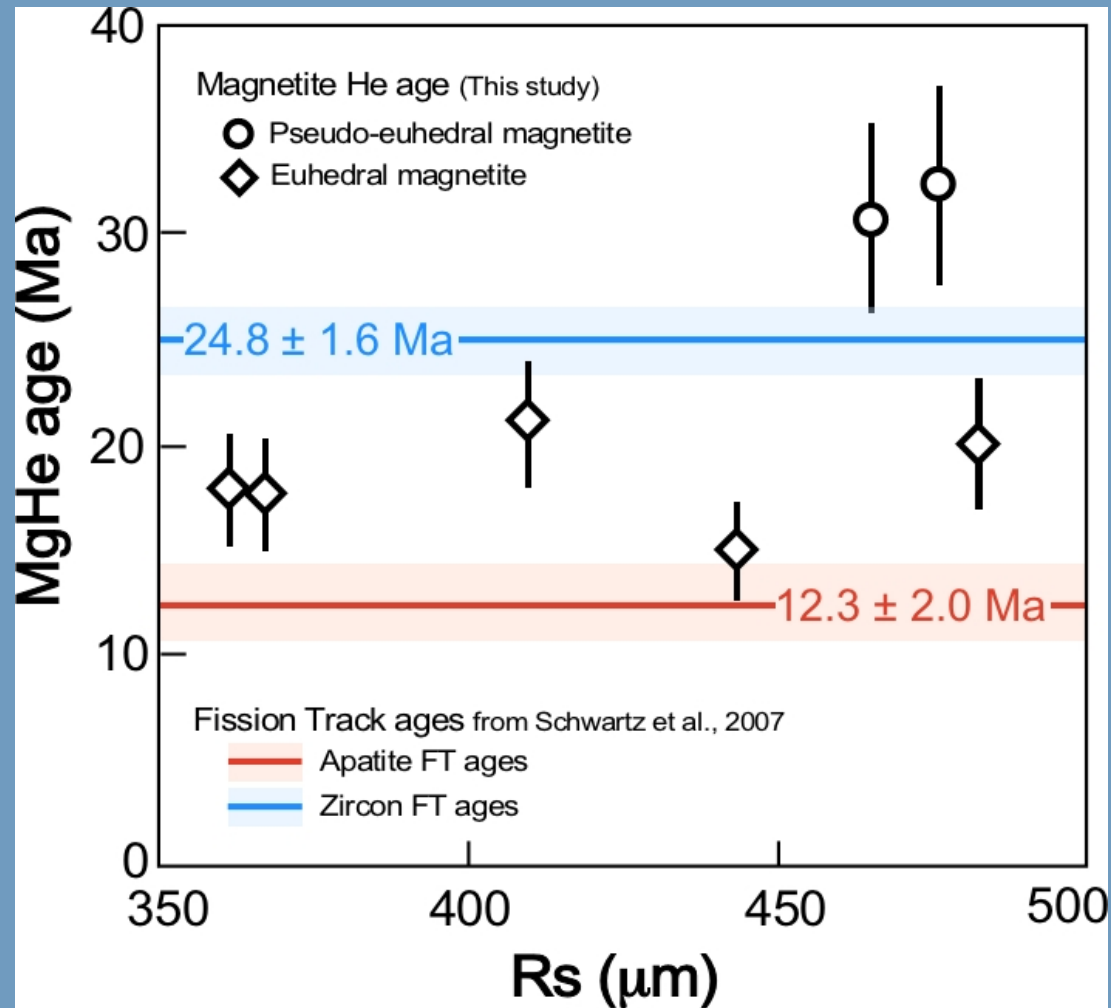
2-Sampling and petrologic characterization



→ The samples correspond to high-pressure Fe-Ti metagabbro embedded in serpentinite and developing magnetite-bearing chloritoschist at its interface.

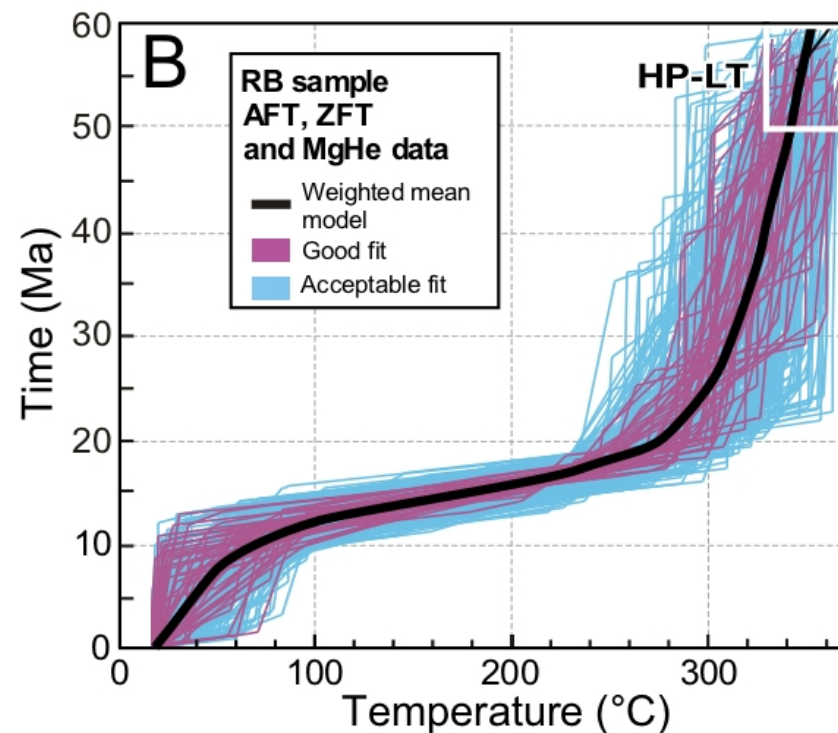
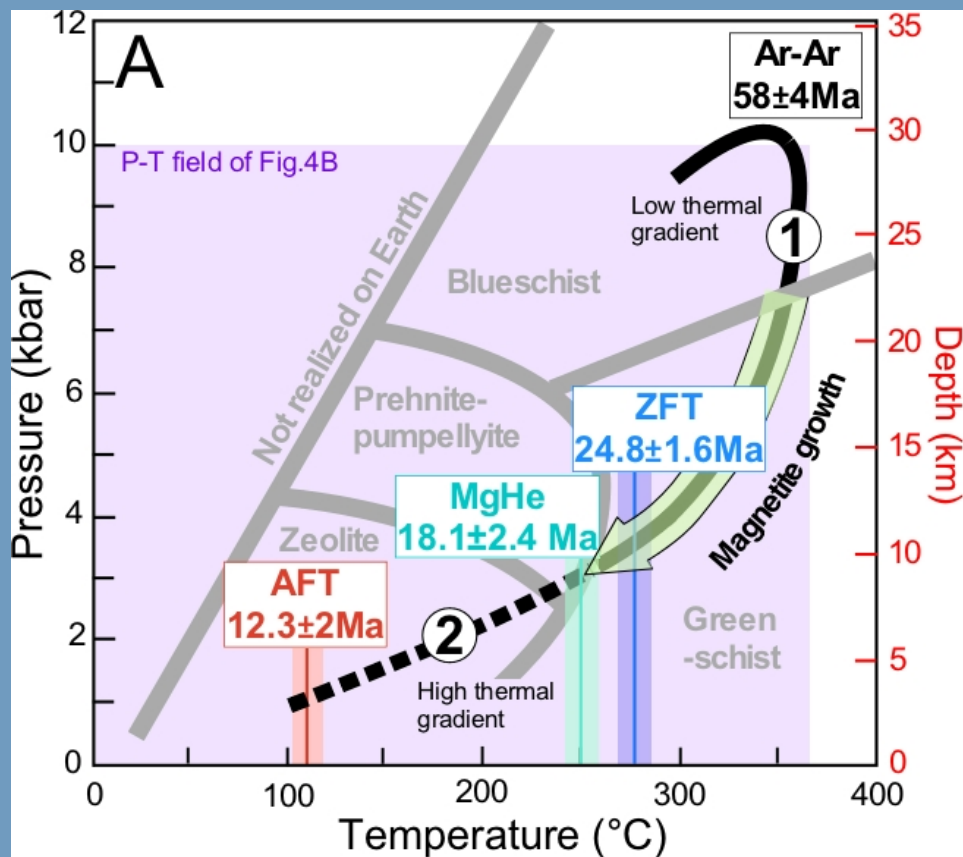
→ Magnetites crystallize following two habitus (pseudo-euhedral and euhedral) inherited from the initial distribution of magmatic minerals in the Fe-Ti gabbro.

3-Magnetite (U-Th-Sm)/He ages



MgHe ages range between apatite and zircon fission track (AFT and ZFT) ages of surrounding rocks in agreement with the known thermal sensitivity of those methods.

4- PT-t pathway and thermal history modeling



MgHe data were co-inverted with AFT and ZFT data to determine the most robust thermal history associated with the ophiolite cooling.

This result allows us to refine the thermal history and to precise the geodynamical context associated to the final exhumation of this alpine ophiolite.