

**Title:** Paleozoic magmatism in the Western Alps (Mont-Blanc & Aiguilles-Rouges Massifs, France and Switzerland)

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**Summary:** Magmatic activity in the Western Alps is recorded in polycyclic basement areas like the so-called External Crystalline Massifs. The latter underwent a major high-grade Variscan orogenic event (early high-pressure phase followed by a high temperature phase with local anatexis) and a superimposed deformation and low greenschist facies metamorphism linked to the Tertiary Alpine nappe stacking. Despite these orogenic events, various granitic intrusion types (e.g. calc-alkaline, alkali-calcic, peraluminous) of Ordovician to Late Carboniferous age are locally well preserved. On the other hand, extrusive rocks are virtually absent or unrecognizable. Mafic rocks (often retro-eclogites) are found as boudins in ortho- or paragneiss metamorphosed during the Variscan Orogeny. During the field trip, we will examine various granitic intrusions and their relationships to their host-rock and discuss the poly-orogenic evolution of the area from Ordovician times onward. Famous geological sites relating to the Alpine nappes will also be visited.

**When:** Post-conference, 5-8 July 2025

**Start and finish locality:** Martigny, Canton of Valais, Switzerland (direct connection by train from/to Geneva airport and Geneva downtown in ca 2h) at the [hotel](#).

**Program :**

(subject to last minute change or permutation depending on Alpine weather conditions)

**Day 1** – Saturday 5 July: individual arrival at the *Motel des Sports*, check-in from 1pm, meeting at 5pm for an introductory lecture on regional geology.

**Day 2** – Sunday 6 July: Geology in the Rhone Valley [lower facies of the 307 Ma Vallorcine peraluminous granite, Fully anatectic granodiorite with gabbro enclaves, inverted limb of the Alpine Morcles nappe at Saillon, Late Carboniferous intracontinental deposits at Dorenaz].

**Day 3** – Monday 7 July: the Mont-Blanc massif near Chamonix (France) [bus ride to Chamonix, cable-car ride up to the top of Western Europe, the [Aiguille du Midi](#) (3842m asl), intermediate stop at Plan de l'Aiguille (2317m) on the way down to look at the magmatic contact of the Mt-Blanc granite with its metamorphic country-rock].

**Day 4** – Tuesday 8 July: the Aiguilles-Rouges massif [bus ride to Emosson dam (2000m), Ordovician orthogneisses, Late Carboniferous anatexis, upper facies of the Vallorcine granite with hydraulic fracturing phenomena at contact with host-rock. Visit to the brand new 900MW Nant de Dranse underground pumped storage [hydroelectric](#)

[plant](#)]. Back to hotel/train station at ca 4pm (i.e. possibility to reach Geneva airport same day within 2 hours).

**Level of fitness:** medium, some walking over uneven blocky terrain, BUT good altitude resistance required (at least up to 2300m, the 3842m stop can be individually skipped) !

**Required equipment:** Passport or ID-card valid for Switzerland and France, good hiking boots, warm (it can be freezing up there in July) and waterproof jackets, sun protection, day pack.

**Accommodation type:** [Motel des Sports](#) in Martigny. Three nights in double rooms (single room at extra costs), breakfast included. Additional nights can be booked on request (i.e. Tuesday night) at extra costs.

**Number of participants:** approx. 20

**Costs:** ca 500CHF (for transportation from/to Martigny, 3-night accommodation with breakfast and cable-car ticket. **lunch and dinner excluded**). There are many restaurants and nice terraces at walking distance from the hotel in Martigny.



The Mont-Blanc (4806m) as seen from the Aiguille-du-Midi cable car station. Picture credit: François Bussy



Paragneisses and mafic boudins (left) and carboniferous migmatitic metagreywackes (right) in the Paleozoic metamorphic basement of the Aiguilles-Rouges Massif near the Emosson dam. Picture credit: François Bussy





Top left: Main facies of the porphyritic Mont-Blanc granite (303Ma). Top right: The cordierite(pinnite)-bearing Fully anatectic granodiorite (307Ma). Bottom left: Late Carboniferous intracontinental deposits at Dorenaz near Martigny. Picture credit: François Bussy