

Nepheline-jadeite field-trip in the Gran Paradiso Massif: Permian alkaline and Alpine problems

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The Gran Paradiso (GP) is the structurally lowest part of the W-Alps, that endured eclogitic conditions during the Alpine orogenesis. Its main rock-type is a porphyric orthogneiss of Permian age. Nepheline ± jadeite rocks (NJR) were discovered there in 2013 by one of us (¹), among Silvery Micaschists (SM) that were repeatedly used to calibrate the Alpine PT-events (after the 1977 work of ²) because of their peculiar chemistry (e.g. SiO₂ < 40 %, Al₂O₃ > 25 %) evoking a lamprophyre trend. Magmatic zircons from NJR and SM yielded U-Pb ages (^{3,4}) indistinguishable within error from the bulk of the GP metaluminous granitoids, near 270 Ma, with a crustal-type δ¹⁸O signature at 8.5 ± 1.2 ‰ (2σ). Nepheline occurs as late after paragonite in albite-aegirine-glaucophane-phlogopite-quartz rocks, but also in a quartz-absent, nepheline-normative type of hematite-rich albitite that contains jadeite. The occurrence of jadeite with nepheline and albite but without quartz questions the commonly admitted significance of jadeite as a high-pressure index in the Alps.

Paris is a crowded place in August with very high accommodation prices, whilst Bonneval-sur-Arc (Savoy, France) is quite the opposite starting September, 1st. Therefore the debate about the Gran Paradiso protoliths and Alpine high-pressure events should be held in the field, September 1 to 5, 2017 near the Refuge des Evettes (E 7.1119° – N 45.3614°, 2,500 m above sea-level). Specialists of nepheline syenite, fenite and fenitization, albitite and carbonatite are warmly welcome. Mountain boots are compulsory.