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Eclogitic metatrondhjemites from metaophiolites of the Western Alps

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In the Urtier valley (southern Aosta Valley, Italy), the Piemonte metaophiolites mainly consist of serpentinized peridotites including pods and boudinaged layers of Fe-metagabbro and trondhjemite transposed in the main eclogitic foliation. The contact between serpentinized peridotites and Fe-metagabbro/trondhjemite is locally lined by chloriteschist and rodingite. The high pressure parageneses in the Fe-metagabbro are omphacite-garnet-rutile-glaucophane-phengite, and in the metatrondhjemite plagioclase-quartz-phengite-clinozoisite-epidote-garnet, respectively. Bulk-rock major and trace elements in addition to O isotope analyses were performed in both rock types. Fe-metagabbros are characterized by MgO wt% ranging between 6.11 and 9.63%, $\sum$REE= 20-101 ppm, (La/Yb)N = 0.22-0.91; trondhjemites have SiO_2 43%, Al2O_3 ranging between 21 and 24%, CaO ranging between 17 and 20%, $\sum$REE = 172 - 272 ppm, (La/Yb)N ranging between 7.78 and 13.70. The δ18O is 5.9 ‰ in a Fe-metagabbro sample and 7.4 ‰ in a trondhjemite sample, suggesting that these rocks have been affected by a weak oceanic low temperature alteration. The high CaO content may indicate a metasomatic process which could have occurred during the oceanic stage or at high pressure conditions.