



Processes governing the magmatic-hydrothermal interface at the sheeted dike complex-gabbro transition: From the comparison between the IODP Hole 1256D and the Oman ophiolite to a general model?

L. France (1), B. Ildefonse(1), J. Koepke(2)

(1) Université Montpellier 2/ CNRS, France, (2) Institut fuer Mineralogie, Universitaet Hannover, Germany, (lyderic.france@gm.univ-montp2.fr / Fax: +334 67 14 36 03 / Phone: +334 67 14 39 44)

The Integrated Ocean Drilling Program (IODP) has recently cored the root zone of the sheeted dike complex in the eastern Pacific Ocean (IODP Hole 1256D). In the Oman ophiolite, this zone is a well exposed horizon, ~100m thick, between the main gabbro unit and the basaltic (sheeted dikes and lavas) upper crustal lid. To compare with recent observations in IODP Hole 1256D, we have performed detailed mapping and petrological analysis in various areas in the Oman ophiolite. The complex lithologies of the transition zone between sheeted dikes and gabbros most probably results from vertical movements of the magma lens, which in turn allow the hydrothermal system to move up and down. Ascent of the melt lens seems to be accompanied by reheating and assimilation of the root zone lithologies, as observed in the studied areas. This reheating lead to dehydration metamorphic reactions (such as Hornblende=>Clinopyroxene+Orthopyroxene+Plagioclase+H₂O) and to dehydration melting processes (this latter being linked to hydrous partial melting). These reactions mark the transition from green-schist/amphibolite facies to dry and wet granulitic facies, respectively, probably depending on the kinetics of reheating. Dehydration reactions also occur in stopped dike fragments that are observed in the underlying gabbros, and allow the introduction of water in the melt lens.