Geophysical Research Abstracts
Vol. 12, EGU2010-11983, 2010
EGU General Assembly 2010

Petrology of metagabbros and Schistes Lustrés through the Queyras accretionary wedge (Western Alps)

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Queyras units and Viso unit (Western Alps) are evidence of the Alpin Ocean constituted by pods of metagabbros/eclogite associated to a majority of Schistes Lustrés, oficalcits and serpentinite. This study presents detailed petrology of the metagabbro/eclogite constituted these units and thermobarometric datas using pseudosection modelling (PERPLEX) and RSCM thermometer on the Schistes Lustrés (SL) surrounding the metagabbro/eclogite pods.

All over the world, lawsonite assemblages are predicted in a broad PT field but are rare in blueschist and eclogite because its stability required high water content. However, the lawsonite blueschist facies is present in the most Queyras units which make of this domain a privileged locality to study the stability between lawsonite and zoisite. Despite the well preserved gabbroic texture of the Queyras blueschist, two types of well equilibrated HP-LT parageneses can be found: (1) lawsonite-glaucophane-omphacite-sphene or (2) zoisite-albite-omphacite-glaucophane-pumpelleyite. Pseudosection calculations reveal the link between the H2O content of the rock and the presence of these two types of parageneses. Moreover the present study shows that zoisite can appear, at the expense of lawsonite, in 2 different cases through the unit: (1) in H2O-undersaturated conditions and (2) in isothermal exhumation conditions. In fact the presence of zoisite in the metagabbro paragenese of the samples studied here, are not due to a temperature effect as commonly believed. PT estimates using pseudosection modelling on metagabbros seems quiet homogeneous through the sample locations. On the other hand, the RSCM results on the schistes lustres lithology show a weak increase of temperature from the west to the east part of the Queyras units.

Thus, we discuss the apparent homogeneity of our PT results through the Queyras unit, and the presence or not of a gradient through this unit as it is commonly describe further north in the Schistes Lustrés unit. This present work compares also the PT homogeneities of our results through the southern part of the Queyras unit to the different PT heterogeneities found in Viso unit following the rock type and their locations.