Lyrno 1717660

Home
Search Abstracts
Author Index
Symposia Programmes
Sponsors
Help

MPN-02 Metamorphism and metamorphic processes

Northern Andes blueschists and their tectonic evolution

Andrés Bustamante, *Universidade de São Paulo (Brazil)*
Caetano Juliani, *Universidade de São Paulo (Brazil)*
Eric J Essene, *University of Michigan (United States)*
Chris Hall, *University of Michigan (United States)*

In the Central Cordillera of the Colombian Andes two geological units with metamorphic rocks of high P/T ratio are recognized. One of them is in the Jambaló area (southwestern Colombia) and other one is in the Barragán area (west-central Colombia).
In the Jambaló area several lenses of blueschists crop out in an area that consists predominantly of greenschist facies rocks. They form preserved cores of retrometamorphic processes that variably affected the rocks of high pressure during exhumation. Petrographical and geochemical data obtained in Jambaló rocks indicate a trend of protoliths varying from basic to intermediate rocks that were a possible generated in island arc and MORB settings. Using software TWQ 1.02, P and T data were obtained that show a strong decompression with relatively small decrease in temperature for the blueschist to greenschist facies rocks. The pressure ranges varies between ~ 14-7 kbar with a decrease in temperature between 400 and ~300°C. For greenschist facies rocks of Jambaló decompression (8.2-6.6 kbar) was followed by a slight temperature increase (460-500°C), possibly due to the juxtaposition with hot ultramafic tectonic slabs in thrusting zones. The 40Ar/39Ar data shows that the blueschist facies rocks from Jambaló rocks has best interval of metamorphism estimated between 66 and 61 Ma (Maastritchtian-Danian), but there are also indications of possible ages older than 71 Ma. The exhumation of blueschist facies rocks in a thrust shear zone occurred close to 63 Ma, as indicated by 40Ar/39Ar ages of paragonite and minor phengite crystallized during the development of the mylonitic foliation.
In the Barragán area crops out a couple of lenses, one of them corresponding to blueschist facies rocks and the other one corresponding to amphibolite facies rocks (possibly retrograded eclogites). The geochemical data indicate that the protoliths of blueschist and amphibolite facies rocks correspond to N-MORB.
Geothermobarometrical data indicate that the samples of amphibolites facies were affected by strong decompression (~ 15?9.2 kbar), followed by a slight increase in temperature (640-670°C), suggesting that these rocks could be have reached eclogite facies. The blueschist facies rocks on its region, showed slight pressure (9.5-9.3 kbar) and slight temperature drops (400°C) associated with the transition from blueschist to greenschist facies rocks.
Geochronology data obtained by 40Ar/39Ar method on phengites in a metapelite rock associated to the blueschist facies rocks, gives an age of ~ 120 Ma, which suggests that the metamorphism in blueschist facies is older (125-150 Ma), depending on the model of generation and exhumation considered. The entire dataset suggests two important keys, the first that there are no relationship between blueschist and associated rocks from Barragán and Jambaló areas, and second that we consider an existence of a model of Andean blueschist generation.

CD-ROM Produced by X-CD Technologies