



P-T path of high-P metabasic rocks from the Samaná Peninsula complex, Hispaniola: record of subduction and collision processes in the northern edge of the Caribbean plate

J. Escuder Viruete (1, 2) Pérez-Estaún, A. (3)

1. Depto. Petrología y Geoquímica, Universidad Complutense. 28040 Madrid. Spain, (2) IGME. C. Ríos Rosas-23. 28003 Madrid. Spain, (3) I.C.T. Jaume Almera-CSIC. Lluís Solé i Sabarís s/n. 08028 Barcelona. Spain

Eclogite and garnet glaucophanite lenses from the Punta Balandra unit of the Samaná complex (northern Hispaniola) preserve information of the early metamorphic and tectonic history of subduction in the northern edge of the Caribbean plate and its collision with the North America plate. For this reason, P-T paths were reconstructed from interpretation of meso- and microfabrics, mineral assemblages, and garnet-omphacite-phengite chemistry, with the aid of equilibrium phase diagrams calculated for specific bulk compositions in the CKNFMASH system and isopleths for selected solution end-members. The obtained results suggest that the subduction-related prograde path evolved from garnet-free and garnet-bearing lawsonite-blueschist facies, to phengite eclogite facies conditions at $P=22-24$ kbar and $T=610-625^{\circ}\text{C}$, with a probable intermediate stage of low-P lawsonite eclogite facies. The subsequent retrograde P-T path entered the epidote-blueschist (garnet-free) facies and ended within the greenschist facies field, similar to the prograde evolution at low-P. Eclogites and garnet glaucophanites formed in a subduction zone in which oceanic lithosphere was subducted WSW/W beneath the Caribbean plate. Late Eocene to Early Oligocene $^{40}\text{Ar}/^{39}\text{Ar}$ plateau cooling ages are obtained from phengites are attributed to the regional exhumation of the Punta Balandra unit triggered by the initial oblique collision of the Bahama Platform beneath the Caribbean arc in Hispaniola.