

**ECLOGITES FROM THE CHUACÚS COMPLEX IN CENTRAL GUATEMALA:  
EVIDENCE FOR SUBDUCTION OF CONTINENTAL CRUST  
AT THE CARIBBEAN – NORTH AMERICAN PLATE BOUNDARY**

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Eclogites from the Cretaceous (?) Chuacús complex in the Baja Verapaz region of central Guatemala occur as pervasive concordant bands ~0.5 m thick within epidote-amphibolite-facies felsic gneisses. Regional association of the eclogites with Grt-Ky Qtz-micaschist, semipelitic gneisses, marble and quartzite positively indicate a continental origin for this high-pressure complex. Eclogites are fine-grained and granoblastic, and their peak-pressure assemblage consists of garnet + omphacite + amphibole + phengite + rutile + quartz. Abundant omphacite (Jd<sub>22-32</sub>Aeg<sub>3-7</sub>Aug<sub>60-78</sub>) crystals are well preserved; few were retrograded to symplectites of amphibole + albite along grain boundaries. Garnet is mainly an almadine-grossular solid solution (Alm<sub>50-55</sub>Py<sub>11-14</sub>Sps<sub>3-7</sub>Grs<sub>26-30</sub>) and occurs as fine-grained crystals in the matrix. Abundant amphibole is mainly pargasite with 0.47 - 0.53 X<sub>Mg</sub> and 0.44 - 0.51 <sup>[B]</sup>Na pfu. Rutile occurs as matrix mineral generally mantled by titanite; rutile inclusions also occur within omphacite, garnet and amphibole. Phengite (3.3 - 3.4 Si pfu) occurs as anhedral crystals in equilibrium with garnet and amphibole. Retrogression minerals are albite + garnet (rims) + titanite (mostly mantling rutile cores) + biotite. Albite grew from omphacite and formed poikiloblastic grains containing relics of garnet and amphibole. Country rock gneisses and pelitic schists chiefly contain phases formed during the epidote-amphibolite-facies retrogression event. Nevertheless scarce rutile and omphacite relics demonstrate that these lithologies were also subjected to eclogite-facies metamorphism. Grt-Cpx-Phe geothermobarometry of eclogites suggests peak conditions at 700 – 750 °C and 2.2 - 2.5 GPa, which indicates that Chuacús continental rocks were subducted to depths of ca. 75 km. Deeper subduction consistent with UHP conditions has been suggested based on petrographic features (ORTEGA-GUTIÉRREZ et al., 2004), but index UHP phases have not been confirmed in the Chuacús complex. Our ongoing research on minerals included in zircon by micro-Raman spectroscopy will help to clarify this issue.

**Reference**

ORTEGA-GUTIÉRREZ, F., SOLARI, L. A., SOLÉ, J., MARTENS, U., GÓMEZ-TUENA, A., MORÁN-ICAL, S., REYES-SALAS, M. & ORTEGA-OBREGÓN, C. (2004): Polyphase, high-temperature eclogite-facies metamorphism in the Chuacús complex, central Guatemala: petrology, geochronology and tectonic implications. *International Geology Review*, 46, 445-470.