LATE CRETACEOUS-EARLY TERTIARY JUXTAPOSITION OF PALEOPROTEROZOIC BASEMENT BLOCKS IN NW SONORA, MEXICO: TESTING THE MOJAVE-SONORA MEGASHEAR HYPOTHESIS

1IRIONDO, A., 2MARTINEZ-TORRES, L.M., and 1KUNK, M. J. 1USGS, MS 974, Box 25046, DFC, Denver, Colorado, USA; 2Depart. de Geodinámica, UPV, Apartado 644, Bilbao, Spain.

The Paleoproterozoic Caborca and North America basement blocks in the Quitovac area in NW Sonora, Mexico, are separated by the hypothetical, NW-trending, Late Jurassic Mojave-Sonora Megashear (MSM). Ages of eleven metamorphic white micas, from dynamically metamorphosed rocks associated with the MSM, were determined using 40Ar/39Ar geochronology. These ages are characterized by disturbed 39Ar released spectra and range from 45 to 65 Ma. They represent the minimum possible age for the ductile fabrics. However, that these ages denote regional uplift, or even thermal resetting of older fabrics, is rejected because the compressional fabrics clearly affect Late Cretaceous (U-Pb: ~79Ma) granites in the Quitovac area. In addition, the existence of well-constrained (post-peak metamorphism) mesothermal gold mineralization in the region at 50-55 Ma, requires a major orogenic event in the Late Creataceous-Early Tertiary that would trigger such regional phenomena.

Although no clear constraints have been obtained for all the ductile fabrics in the region, we conclude that the Late Cretaceous-Early Tertiary is the most likely time for the widespread regional (dynamothermal) metamorphism associated with the thrusting of the Caborca block into the North America block. Our data does not support the current hypothesis that these fabrics are exclusively related to movements along the Jurassic MSM. However, this study does not preclude the existence of older fabrics in the region. If the hypothetical MSM exists, we propose its trace should be postulated to the SW of the Quitovac region.