

1.4 TO 0.9 Ga TECTONICS OF SOUTHEAST LAURENTIA, AS SEEN FROM THE CARRIZO MOUNTAIN GROUP, GRENVILLE BELT, WEST TEXAS

1GRIMES, STEPHEN W., 1CONNELLY, JIM, 2COPELAND, PETER, and 1MOSHER, SHARON, 1Department of Geological Sciences, University of Texas at Austin, Austin, TX 78712, USA, 2Department of Geosciences, University of Houston, Houston, TX 77204-5503, USA

The Carrizo Mountain Group (CMG) of West Texas, comprising quartzite and feldspathic quartzite, peraluminous metarhyolite, lesser amounts of metapelite, minor carbonate, and metabasite sills, contains the only exposed 1.4-1.3 Ga volcanosedimentary section in southeast Laurentia. Existing CMG metarhyolite ages range from 1380 ± 20 to 1327 ± 28 Ma, including our new zircon U-Pb age for a flow-banded metarhyolite of $1332 \pm 7/-3$ Ma. We report a 1286 ± 3 Ma protolith age (zircon, U-Pb) for a metabasite sill. Trace-element discriminant plots for CMG metarhyolite and metabasite yield different interpretations, leading Rudnick (1983) to assign both to a back-arc environment. Given the distinct ages and the character of the sediments, however, it is more likely the rhyolites and sediment were deposited in a rift or passive-margin setting, preceeding possible back-arc spreading. The CMG metarhyolite ages and juvenile Sm-Nd signature suggest correlation with the southeastern edge of the Southern Granite-Rhyolite Terrane (SGRT) (Van Schmus et al. 1996). If this correlation is correct, the CMG implies that the 1.4-1.3 Ga SGRT magmatism was rift/passive-margin related, following 1.5-1.4 Ga subduction-related magmatism. During the Grenville Orogeny, the CMG underwent polyphase deformation and metamorphism and was finally thrust to near-surface levels during a brittle fold-thrust episode (Soegaard and Callahan 1994). Our muscovite, biotite and hornblende ^{40}Ar - ^{39}Ar data show that T_{max} occurred diachronously before 1060 to 1000 Ma, and that the entire CMG cooled through $\sim 350^\circ\text{C}$ by ~ 980 Ma. In contrast, deformation and granite emplacement in the Llano uplift, 500 km east, ended by ~ 1070 Ma.