ABSTRACT:

The youngest stratified rocks in Carolinia are within the Blacksburg Formation of the Kings Mountain terrane and the Asbill Pond Formation of the Carolina slate terrane. The 4-5 km thick sedimentary section of the Kings Mountain terrane is interpreted to have been deposited on the lower plate of the rifted Gondwanan Rheic margin, probably adjacent to the Paraguan craton, between 522 – 497 Ma. The Asbill Pond Formation is nominally 1-2 km thick and lies in angular unconformity above the Persimmon Fork and Emory Formations; biostratigraphy of the Asbill Pond Formation indicates it belongs to the P. atavus zone (504.5 – 503 Ma) of the Drumian, Series 3, Cambrian. The Asbill Pond Formation is interpreted to have been deposited on the upper plate rift shoulder of Carolinia. Thus the Kings Mountain terrane and the Asbill Pond Formation are interpreted to be deposited on Carolinian basement on either side of the asymmetric Rheic rift detachment. The present disposition of the Kings Mountain terrane between the Charlotte terrane and the central Piedmont shear zone is an artifact of later terrane dispersal. The Kings Mountain terrane is interpreted to have formed near the North Carolina slate terrane; the epiclastic portion of the Battleground Formation accepted detritus from both the older Hyco-Aaron arc and the younger Uwharrie – Albemarle arc. Additionally the epiclastic section records significant input from Rondonian-San Ignacio (1.55-1.3 Ga) and Sunsas (1.28-0.95 Ga) basement. This interpretation is consistent with 1.551 Ga and 1.229 Ga inheritance reported by Mueller et al (1996) for this part of the North Carolina slate terrane. Above the Jumping Branch Manganiferous Member of the Battleground Formation, the Ediacaran-Cambrian component of the detrital spectrum is lost, and all grains are derived from Amazonian-Paraguan Gondwana. Rheic ridge incision is interpreted to have separated the Kings Mountain terrane from the Gondwanan Paraguan craton.