

Antiquated subdivisions, distinct for each segment, implied that they had independent lithotectonic histories. Using new lithotectonic subdivisions we compare first order features of the pre-Silurian orogenic crustal ‘building blocks’ in order to test the validity of the implication of independent lithotectonic histories for the two segments.

Three lithotectonic divisions characterize the entire orogen, including the Laurentian, Iapetan, and the peri-Gondwanan realms. The Laurentian realm, composed of native North American rocks, is remarkably uniform for the length of the orogen. It records the multistage Neoproterozoic-early Paleozoic rift-drift history of the Appalachian passive margin, formation of a Taconic Seaway, and the ultimate demise of both in the Middle Ordovician. The Iapetan realm encompasses mainly oceanic and magmatic arc tracts that once lay within the Iapetus Ocean, between Laurentia and Gondwana. In the northern segment, the realm is divisible on the basis of stratigraphy and faunal provinciality into peri-Laurentian and peri-Gondwanan tracts that were amalgamated in the Late Ordovician. South of New York, stratigraphic and faunal controls decrease markedly; rock associations here are consistent with those of the northern Appalachians, although second order differences exist. Exotic crustal blocks of the peri-Gondwanan realm include Ganderia, Avalonia, and Meguma in the north, and Carolina in the south. Carolina most closely resembles Ganderia, both in early evolution and Late Ordovician-Silurian docking to Laurentia. Southern equivalents of Avalonia and Meguma have yet to be recognized.

Our comparison indicates that, to a first order, the pre-Silurian Appalachians developed uniformly, starting with complex rifting and a subsequent drift phase to form the Appalachian margin, followed by the consolidation of Iapetan components and ending with accretion of the peri-Gondwanan Ganderia and Carolina. This deduction implies that any first order differences between northern and southern segments post-date Late Ordovician consolidation of a large portion of the orogen.

Comparative analysis of pre-Silurian crustal blocks of the northern and southern Appalachians

JAMES P. HIBBARD,¹ CEES R. VAN STAAL,² AND DOUG W. RANKIN³

1. Department of Marine, Earth, and Atmospheric Sciences, Box 8208, North Carolina State University, Raleigh, NC, 27695, USA ¶ *2. Geological Survey of Canada, 101-605 Robson St., Vancouver, BC, Canada V6B 5J3* ¶ *3. United States Geological Survey, National Center, Mail Stop 926A, Reston, VA, 20192, USA.*

The New York promontory serves as the divide between the northern and southern segments of the Appalachians.