

PALEOGEOGRAPHIC IMPLICATIONS OF EARLY MIDDLE ORDOVICIAN GRAPTOLITE FAUNAS FROM NORTH AMERICA AND SOUTH AMERICA

1FINNEY, S.C. and 2PERALTA, S.H. 1California State University, Long Beach, USA;
2Universidad Nacional de San Juan, San Juan, Argentina.

The paleobiogeography of lower Whiterockian (upper Arenigian) graptolite faunas is inconsistent with most hypotheses proposed for the paleogeographic relationships of Laurentia and the Precordillera, Famatina, and Eastern Cordillera terranes. According to these hypotheses, the Argentine Precordillera formed as part of Laurentia, was in close proximity to Gondwana by the middle Ordovician and completely sutured to South America by the late Ordovician. Paleobiogeography of benthic shelly fossils strongly supports this paleogeographic relationship. Existing hypotheses differ, however, in these paleogeographic relations between Laurentia and Gondwana, whether they were in close proximity or widely separated. Although graptolite faunas were generally cosmopolitan, they displayed pronounced provincialism during the early middle Ordovician. Pacific province faunas, reported from Laurentia, Australasia, and parts of the Siberian and North and South China plates, were restricted to warm tropical waters. Atlantic province faunas, reported from the Eastern Cordillera of South America, Baltica, peri-Gondwana, Tibet, and parts of the North and South China plates, occurred in cooler water regions, generally at higher latitudes. In addition to the Eastern Cordillera, the Famatina terrane of South America is characterized by Atlantic province graptolite faunas. In contrast, Pacific province faunas are well represented in the Argentine Precordillera. These paleobiogeographic distributions indicate that during the early middle Ordovician, the Precordillera terrane was in close proximity to Laurentia and that Laurentia and the Precordillera were widely separated from Gondwana. On the other hand, the nature of graptolite provincialism may need to be reconsidered. Boundaries between Atlantic and Pacific provinces may have been narrow. Provincialism may not reflect great geographic distance; instead, it may result from abrupt environmental barriers.