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New Climatic Belt in Carboniferous of Southern Hemisphere

In the southern hemisphere of the Carboniferous Period both tropical Amerosinian and cool Gondwana realms are known. A new study of the Carboniferous flora from Paracas, Peru shows that it represents a temperate floral and climatic belt intermediate between the known tropical and cool temperate belts. Arborescent lycopods at Paracas are related to taxa in the northern temperate belt (Angara floral realm) as shown by the presence of the genus *Tomiodendron*. The name Paraca floral realm is proposed for the newly recognized southern temperate climate belt.

The Carboniferous flora from Paracas, Peru has long been considered as an enigma. The few recognized species were compared with Amerosinian or Gondwana taxa resulting in common misidentifications. In the literature eight generic names have been applied to the two published species of arborescent lycopods from this locality. Our recollecting and restudying of the Paracaas flora demonstrates that all eight generic names are incorrect and that more than two species of lycopods are present. At least one genus is new, and others correspond to genera known from the northern temperate flora of the Angara realm. In the size of their stems the plants at Paracas are intermediate between the large arborescent lycopods of the tropics and the more herb-like representatives from the cool realm of the south. We conclude that the fossil flora from Paracas can only be understood as the representative of a particular floral belt of temperate conditions between the tropical Amerosinian and cool Gondwana floral and climatic realms. Thus, it requires its own designation based on the name of the Indian culture that existed at Paracas in the past.

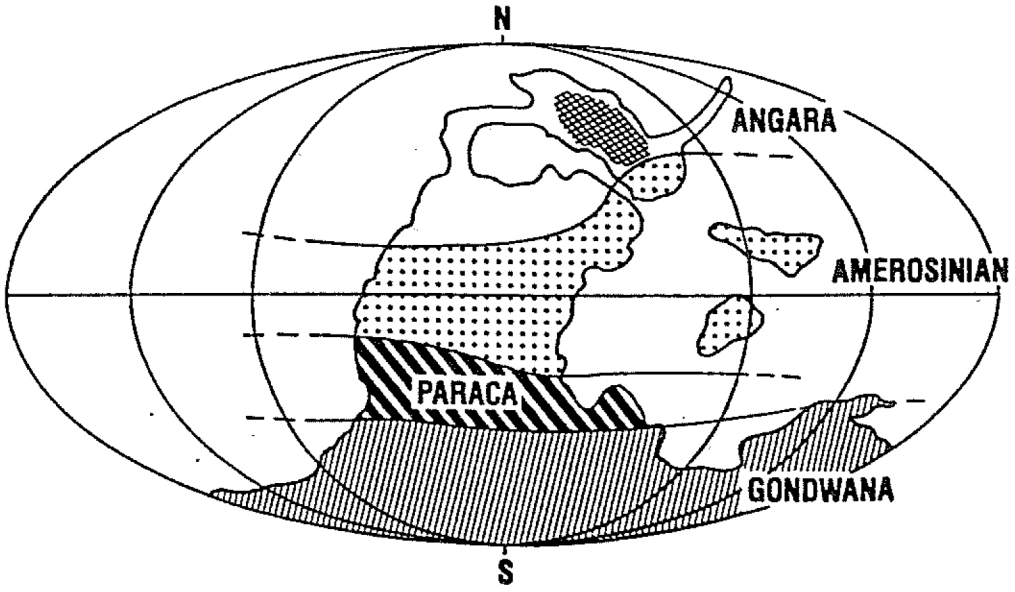

Figure 1—Map of floral realms during the Carboniferous. Newly proposed Paraca Floral Realm represents the southern temperate zone.