Miospores from Ordovician-Silurian Argentinean basins: evolution and relationships with other South American basins

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Abstract

Miospores from Ordovician-Silurian Argentinean basins: evolution and relationships with other South American basins

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The earliest evidence of land plants are cryptospores (*sensu* Steemans 2000) from the Middle Ordovician (Dapingian) of the Sierras Subandinas (NW Argentina). No uncontroversial data are available for the time period ranging from the Darriwilian to the Katian. In the latest Ordovician deposits from the northwestern geological provinces of the Central Andean Basin (Puna, Cordillera Oriental and Sierras Subandinas), there are few cryptospores in the palynological associations from the glacial-related strata (Caspalá and Zapla Formations). On the other hand, rich, diverse and well-preserved cryptospore assemblages are observed in the post Hirnantian glaciation levels (Salar del Rincón Formation). Lower Silurian cryptospores are known from the northwestern Argentina Basin and the Precordillera Basin, where they are preserved in marine sediments. The cryptospores are rare and no trilete spores have been observed. The low diversity of miospores is most probably due to the marine nature of the environment of deposition. Very few palynological data exists from Wenlockian layers. The palynological assemblages are exclusively marine, coming from the Chacoparanense Basin and probably from the northwestern Central Andean Basin. The FAD of trilete spores in Argentina occurs in Ludlovian sediments. The extensive outcrops of the Ludlovian-early Devonian (locally) Los Espejos Formation, in the Precordillera Basin, represent a muddy shelf to inner shelf exposed to storm activity, and storm-dominated shoreface towards the top. They yielded rich and diverse palynomorph assemblages assigned to the Ludlovian. The marine phytoplankton clearly dominates throughout the entire stratigraphic unit, except for the upper productive levels near the Siluro-Devonian boundary in the Río Jáchal locality. *Amicosporites* cf. *miserabilis*, *A.* cf. *streelii*, *Archaezonotriletes chulus* Morphon, *Chelinospora* cf. *cassicula*, *Ch. poecilomorpha*, *Ch. sanpetrensis*, *Clivosispora verucata* var. *verrucata*, *Retusotriletes* cf. *amazonensis* and *Synorisporites verrucatus* are among the most relevant trilete spores. Cryptospores such as *Artemopyra robusta*, *A. urubuense* and *Cymbohilates hystricosus* are the most informative taxa. Similarities and differences mainly with Brazilian and Paraguayan assemblages are noticed. The recorded miospore taxa of the Los Espejos Formation show differences with coeval assemblages, displaying evolutionary innovations that seem to appear firstly in the Precordillera Basin than in other regions.

References

Steemans, P. (2000). Miospore evolution from the Ordovician to the Silurian. *Review of Palaeobotany and Palynology*, 113, 189-196.