# VOLCANOCLASTIC CARBONACEOUS MICROFOSSILS FROM PARANÁ-ETENDEKA LIP, EARLY CRETACEOUS

**MOURO, L.D. (1;2); JANASI, V. A. (1); LIMA, E.F. (3); WAICHEL, B.L. (4); ROSSETTI, L.M.M. (5); CRUZ, V. G.P (3); SILVA, M.S. (4); BECKER-KERBER, B. (1); CARVALHO, M. (6)**

1. Universidade de São Paulo. Instituto de Geociências. ldmouro@usp.br, vajanasi@usp.br
2. Harvard University. Department of Organismic and Evolutionary. ldelmouro@fas.harvard.edu
3. Universidade Federal do Rio Grande do Sul. Instituto de Geociências. Evandro.lima@ufrgs.br, vinigpcruz@gmail.com
4. Universidade Federal do Santa Catarina. Departamento de Geologia. Breno@cfh.ufsc.br; geol.mateus.silva@gmail.com
5. Universidade Federal do Mato Grosso. Departamento de Geologia. lucasross@hotmail.com
6. Museu Nacional/Universidade Federal do Rio de Janeiro. Departamento de Geologia e Paleontologia. mcarvalho@mn.ufrj.br

**RESUMO –** Over the last 30 years, several studies have pursued on understanding how, when and what were the major consequences of climate change on ancient times, aiming to compare with our current climatic challenge. Thereby, Large igneous provinces (LIPs) — which comprises voluminous magmatic events (>$10^6$ $km^3$) from the past — are often recognized as driving forces of global environmental and biological crisis, such as mass extinctions (e.g., end-Permian Extinction). Among the LIPs, the continental flood basalt provinces (CFBs; as the Paraná-Etendeka - PE) are known for producing a diverse number of volcaniclastic deposits and releasing a significant quantity of volatiles, that disturbed local and global environments. It is estimated that PE released 6.2 x 106 Mt of SO2, 7.2x104 Mt of HCl and 6.3x106 HF, which may lead to an environmental turning point from prevailed arid conditions to adjective humid conditions—during the Valangian in South-Central part of the supercontinent Gondwana. Even though there were paleoenviromental changes, the deposits associated with the PE still seemed to be afossiliferous. Nevertheless, here we present a study about carbonaceous microfossils from interbedded peperite rocks, volcanoclastic sandstones and interpillow sandstones from the Paraná-Etendeka LIP. We report the presence of Volcanoclastic carbonaceous microfossils: spores, pollen grain, fungal spore, sporomorphs, acritarchs (?), phytoclasts and amorphous organic matter. These samples are the first biological evidence related to the PE-LIP paleoecosystem. They not only confirm a regional paleoclimatic amelioration induced by the volcanism, but also establish wet peperite rocks, which are usually considered devoid of evidence of life—a potential microfossiliferous source. This material highlights that several other igneous/volcaniclastic units (often underestimated for its paleontological potential) throughout the geological time may be hiding important evidence for past paleoenvironments. Once fossils in such ancient rocks are often scarce, carbonaceous microfossils from igneous rocks may have remarkable implications for understanding life in deep time (e.g., Archaean and Proterozoic eons).

**Palavras-chave:** Peperites; Palynofacies; Microfossils; Volcanic Rocks