



A new reference section from volcanoclastic rocks of Miocene terrestrial palynomorphs in Central Mexico

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To date, palaeobotany in volcanic settings has dealt with intercalated sediments namely paleosols, fluvial volcanoclastic sandstones, peat or lignites. Even when authors worked on tuffaceous material, they focussed on either the macroflora or charcoals. Publications on palynology in pyroclastic rocks and their reworked deposits (lahars) are rare. In this study we investigated a volcanoclastic section of the Mid-Miocene Tepoztlán Formation with respect to palaeoenvironment using palynology. The Tepoztlán Formation crops out in the States of Morelos and Estado de Mexico and consists of pyroclastic flows, volcanic debris-flows (lahars), dacitic lava flows, and intercalated fluvial or lacustrine sediments, attaining a total thickness of several hundred meters. K/Ar geochronology on some lava flows has revealed an age of about Early to Mid-Miocene. For palynological analyses we investigated the fine-grained matrix of lahars, ash-flow deposits, and clayey layers on top of those deposits. The samples reveal a diverse pollen and spore assemblage, enabling a first palaeoenvironmental interpretation of the Tepoztlán Formation. Pollen assemblages dominated by Caryophyllaceae, Chenopodiaceae, Asteraceae and Cupressaceae indicate dry conditions, whereas spore dominated associations accompanied by Cyperaceae pollen types indicate wet to aquatic conditions. Characteristic stratigraphical vegetation patterns are interpreted in terms of short-term destruction-recolonization cycles which are controlled by volcanic eruptions and intermittent quiescence. Present day vegetation of Central Europe is very similar to that recorded in the Tepoztlán section. Thus, a rather temperate climate is appropriate for the depositional environment of the Tepoztlán Formation.