Preliminary palynological results from onshore sediments of Brunei Darussalam.

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Despite the rich modern and fossil biodiversity of Borneo, the palynological record in Brunei is still very limited and this lack of data is a challenge in the interpretation of biostratigraphic and palaeoenvironment studies. In fact, palynological taxonomic work has only been done in the 1970s using only light microscopy (LM) and since then, no detailed work has been undertaken in this direction (and if, it was only used for very general palaeoenvironmental studies).

In this paper, we represent the result from our on-going research on diagnostic pollen assemblages from 25 Miocene localities consisting of shallow marine-, paralic- and coal-bearing sedimentary deposits in Brunei-Muara and Tutong districts. The investigation is aimed to provide a comprehensive LM and the first scanning electron microscopy (SEM) documentation of fossil pollen grains from the region together with an update of the existing limited palynological record.

During the investigation, the collected clay samples were crushed and treated following standard palynological preparation procedures using 98% HF, HCl and subsequent acetolysis. The organic residues were mixed with glycerine and stored in glass vials. The use of glycerine and slide preparation without cover slips facilitates isolating pollen grains from the residue for further documentation using SEM. The number of taxa comprises up to now ca. 35 pollen taxa, ca. 10 fern spore types, several fungal spores, and few dinocysts (3 taxa). The first results point to a low palynomorph diversity reflecting the poor preservation of the depositional environments, where pollen grains display often authigenic pyrite fillings. Among the better preserved palynomorphs, *Zonocostites ramonae* and *Zonocostites* spp. (ca. three species of the mangrove family, Rhizophoraceae) are the most abundant, relatively common are Malvaceae taxa (*Pentace-* and *Berrya*-types), accessory elements are two Sapotaceae types, two to three *Florschuetzia* types (mangrove genus *Sonneratia*), *Spinizonocolpites echinatus* (*Nypa* palm), two *Dicolpopollis* taxa (calamoid palms), Dipterocarpaceae (*Hopea-*, *Vatica*-types), *Ilex*, Proteaceae, Myrtaceae and *Lumnitzera*. Amongst the fern spores the smooth monolete and trilete forms are the most frequently encountered, however because of the loss of the outer characteristic spore wall these taxa are not helpful for biostratigraphy and environment reconstruction. Some *Verrucatosporites* spp.,particularly *V. usmensis* is stratigraphical more useful. Fungal spore types are also common but are difficult to affiliate. Only a few dinocyst taxa could be found (*Polysphaeridium subtile*, cf. *Lingulodinium*?) indicate probably Miocene age.