

## **Lipid analysis on a putative early land plant and its matrix; Preliminary results.**

**G.J.M. VERSTEEGH<sup>1,2</sup>, P. GERRIENNE<sup>3</sup>, E.J. JAVAUX<sup>3</sup>, T. SERVAIS<sup>4</sup>, J.-Y. STORME<sup>3</sup>, O. TINN<sup>5</sup>**

<sup>1</sup>Heimholz Zentrum für Polar und Meeresforschung, AWI Bremerhaven, Germany

<sup>2</sup>MARUM, Center for Marine Environmental Sciences, Bremen University, Germany

[gerard.versteegh@awi.de](mailto:gerard.versteegh@awi.de)

<sup>3</sup>Unité PPP, Département de Géologie, Université de Liège, Belgique.

[P.Gerrienne@ulg.ac.be](mailto:P.Gerrienne@ulg.ac.be); [EJ.Javaux@ulg.ac.be](mailto:EJ.Javaux@ulg.ac.be); [jystorme@ulg.ac.be](mailto:jystorme@ulg.ac.be)

<sup>4</sup>Unité Evolution, Ecologie et Paléontologie, Université de Lille 1, France

[thomas.servais@univ-lille1.fr](mailto:thomas.servais@univ-lille1.fr)

<sup>5</sup>Department of Geology, University of Tartu, Estonia

[oive.tinn@ut.ee](mailto:oive.tinn@ut.ee)

Organic geochemical analyses on a putative land plant from the Early Silurian and on its rock-matrix have been performed in order to shed more light on its growing conditions and taphonomy. The organic imprints of the embryophyte-like were scraped of the rock surface and extracted with Hexane. Furthermore, the rock, with embedded plant fossils was pulverized and extracted in Dichlormethane and separated in fractions according to lipid polarity. Differences in lipid composition and concentration will be explained. As expected, the main apolar compounds in the total lipid extract are series of branched and linear alkanes, hopanes (prokaryotes) and 24-ethylcholestane (eukaryotes). The distribution of the longer linear alkanes suggests a contribution of epicuticular waxes of land plants. A land-plant origin is supported by the presence of minor peaks of aromatic terpenoids. Although, all of these compounds also occur in the rock extract, the linear alkanes and aromatic terpenoids are more abundant in the extract of the studied organism, supporting the hypothesis that it has been living on land indeed. Since the material was not collected for organic geochemical purposes, unfortunately, large amounts of contaminants occur in the polar fractions such as plasticizers, wax-esters, mono- and di-alkylglycerols, diunsaturated sterols, squalene and fatty acids. None of these contaminants is strictly land-plant derived. They rather testify paleobotanical collection and handling including contact with hands, paper and plastic. Nevertheless, the lipid evidence mentioned above of the studied organism having been a land plant should be seen as preliminary until analysis of material collected according to organic geochemical standards has confirmed the results.