Geophysical Research Abstracts
Vol. 17, EGU2015-8796, 2015
EGU General Assembly 2015
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Leaf epicuticular waxes as proxies for paleoenvironmental conditions

Imke Schaefer (1), Jana Zech (1), Verena Lanny (2), Timothy Eglinton (3), and Roland Zech (1)

(1) University of Bern, Institute of Geography, Bern, Switzerland (imke.schaefer@giub.unibe.ch), (2) University of Bern, Institute of Geological Science, Bern, Switzerland (verena.lanny@geo.unibe.ch), (3) ETH Zürich, Department of Earth Science, Zürich, Switzerland (timothy.eglinton@erdw.ethz.ch)

Long-chain n-alkanes and n-carboxylic acids are essential constituents of leaf waxes and can be used for the reconstruction of the paleovegetation and paleoclimate (e.g. Zech et al. 2013a). However, more research is needed to assess the full potential of these leaf wax biomarkers. Here we present results from a study on a transect from Southern Germany to Sweden. Our resuts show that litter and soils under deciduous trees have a dominance of the C27 n-alkane and the C28 n-carboxylic acid. Conifers are characterized by the dominance of the C29 n-alkane and the C22 and C24 n-carboxylic acids. C31 and C33 n-alkanes and C32 and C34 n-carboxylic acids can be attributed to grasses and herbs. Degradation of both compound classes in paleosols and sediments should be taken into consideration (e.g. Zech et al. 2013b), but the impact of degradation is not yet fully understood. We are now running compound-specific stable isotope analyses on all transect samples to evaluate the potential of the deuterium/hydrogen ratios in leaf waxes as proxy for the hydrological conditions. In addition, we aim at presenting first results of leaf wax biomarker analyses for a last-glacial loess-paleosol sequence from Spain.

References

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