4.63.P09

Bulk and molecular hydrogen isotopic ratio of organic matter in epiphytic lichens

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Molecular δD of biomarkers is expected as a new proxy for paleoclimate reconstructions and organic geochemistry [1, 2] as organic hydrogen partially records the isotopic composition of plant's growing water [3]. However, hydrogen incorporation in organic molecules is accompanied by isotopic fractionation which needs to be recognised and calibrated.

Our purpose is to test the relationship between meteoric water, bulk organic hydrogen and compound-specific hydrogen in epiphytic lichens grown under variable climatic conditions. We measured the overall isotopic fractionation associated to the assimilation of meteoric water and the biosynthesis by lichens and compared these values with the distribution of δD into selected organic compounds from different organic fractions, such as saturated or polar compounds.

For this study, we used samples of epiphytic fruticose lichens collected on two transects, (1) from Northeastern USA to Hudson Bay, Canada, and (2) from Ethiopia to Northern Russia. The mean δD of precipitations along these transects range from -40‰ to -130‰ and from +10‰ to -110‰ respectively. δD measurements were performed by conventional extraction technique after equilibration of exchangeable hydrogen, and by using IRMS on-line coupled with EA and GC for bulk and molecular analyses.

Biomarkers are analysed after total extraction of soluble organic matter and separation into different fractions. δD values of the two series of samples range from -40‰ to -105‰. The coherence of the links between bulk and molecular data, as well as the geochemical implication wil be discussed.

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4.63.P10

Holocene record of atmospheric flux by geochemical and Pb isotopes signatures in a Belgian Hautes Fagnes peat bog: Preliminary results

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The Hautes Fagnes Plateau (SE Belgium) displays a lot of peat infillings that could be interesting for global paleoclimate reconstruction. These peat bogs have been abundantly studied by palynologists for more than 50 years. Moreover, in the last ten years, some geochemical works have been done on selected sites [1,2]. A study is actually in progress on the Misten peat bog (Belgian Hautes Fagnes) using several techniques (ICP-AES, ICP-MS, Nu-plasma MC-ICP-MS, ^{14}C and ^{210}Pb dates). This peat bog offers the opportunity to trace 9000 yr of atmospheric deposition fluxes, and to highlight punctual events using geochemical and Pb isotopes profiles as well as palynological archives. For example, in this peat bog, Persch [3] evidenced a rapid decrease of hazel tree around 8200 *a* cal B.P. This well known abrupt climatic event due to an ice-surge and release of freshwater in the North Atlantic Ocean seems to be recorded worldwide [4] and may be evidenced in geochemical profiles. On the other hand, recent anthropogenic inputs (*i.e.* industrial activity, gasoline impact) will also be detailed using Pb isotopes data and ^{210}Pb age dating.

This work will significantly improve the understanding of the geochemistry of the Misten peat bog. Further investigations using new tools like Cu and Zn isotopes will be performed to detail the Holocene paleoenvironment of this North European peat bog.

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