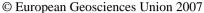
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Dissolved organic carbon flows from ombrotrophic peat profiles to porewaters.

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An important part of the peat bog carbon budget is the occurrence and transport of the dissolved organic carbon (DOC) fraction.

A peat core (2T, 15 x 15 x 105 cm) was removed in 2005 from a Swiss ombrotrophic bog and divided in several (n = 91) slices of 1 ± 0.15 cm of thickness. Porewaters were extracted and DOC was determined on 0.45 μ m filtered porewater samples.

In the upper-oxic zone (first 18 cm), DOC decreases with depth and ranges between 2201.0 ± 0.1 and 225.1 ± 0.6 mg l⁻¹. These high values are probably due to low molecular weight organic compounds resulting from the physiological activity of plants and microorganisms and/or affected by the period of sampling (end of June). In fact, several Authors (e.g., Scott et al., 1998) found a considerable seasonal variation of DOC concentration in peatlands, with an minimum concentration in winter time and a peak concentration reached in late summer, often in connection with an increase in water flow after a dry summer period. Consequently, the DOC variation could be not just a phenomena of dilution but reflect the seasonal variation of microbial activity.

In the lower suboxic-anoxic layers, instead, DOC ranges between 48.2 ± 0.4 and 115.3 ± 0.2 mg l⁻¹. Even if DOC is defined like the most mobile fraction of the organic matter, a direct correlation (R² = 0.88) was found with the dried peat density. Thus, in this zone data seem to suggest horizontal instead of vertical flows along the bog profile due to a stronger sorption of the hydrophobic fraction onto the peat.