

**Effects of land use and climate change on dissolved organic matter output of terrestrial ecosystems into the hydrosphere**

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Despite that terrestrial-derived dissolved organic matter (DOM) represents only a small part of soil organic matter, it appears to be involved in many soil processes and is a major carbon and energy source for organisms in aquatic ecosystems. The output from soils to the hydrosphere is controlled by complex interactions of biogenic formation in the surface soil, physical transport through the soil, and chemical retention mechanisms in the subsoil. All of these processes respond to changes in land use and climate. Literature evidence suggests that management practices are generally of short duration, whereas a change in vegetation type may lead to long-term effects on DOM output to the hydrosphere. Currently, in many areas of the world increasing DOC losses from soil to the hydrosphere are reported due to climatic change. The reason is polycausal and includes increase in MAT, increase in CO<sub>2</sub> partial pressure in the atmosphere but also changes in the amount and distribution of the precipitation. Own studies in Siberia revealed that permafrost ecosystems respond particularly vulnerable to DOC discharge. This might not have just consequences for the C balance in terrestrial and aquatic environments but e.g. also for food chains in rivers and lakes.

Within the planned collaboration in the CN cluster "C and N in Terrestrial Ecosystems of Baikal Area", it is intended to study the export of dissolved organic carbon (DOC) and dissolved inorganic and organic nitrogen (DIN, DON) from small catchments being representative for the circum-Baikal region. By analysis of catchments with contrasting land use or representing false time series of e.g. clear cutting areas, the effects of land use and land use change on DOC, DIN, and DON input to Lake Baikal may get assessed. The consequences of changing climate on DOC, DIN, and DON input to Lake Baikal may get studied by manipulation experiments or by comparison of different altitudinal belts in the surrounding mountain area. Employing <sup>13</sup>C/<sup>15</sup>N labelling of plant litter will inform about the sources of DOM being particularly prone to mobilization processes and about their age.