



## **The effect of catchment scale on element ratios in dissolved organic matter: from headwater catchments to large river basins**

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In boreal ecosystems, dissolved organic matter (DOM) is an important carrier of C, N and P from catchment soils to surface waters and coastal zones. Element ratios of DOM in surface waters are a result of nutrient availability (geology, deposition), catchment (in-soil processes, hydrology) and in-stream (biological processing, sedimentation) processes. The relative importance of these processes at various spatial scales is poorly understood which makes it difficult to interpret information obtained at smaller scales at the catchment level.

Here we investigate the role of catchment scale on concentrations of DOM and associated elements (C, N, P) and element ratios in streamwaters in south Norway, from very small (<0.001 km<sup>2</sup>) hydrological units to headwater catchments and larger river basins. Land cover is mostly forest and no agriculture, and DOC concentrations vary between 3 and 9 mg C/L. Seasonal patterns and annual means of C:N and N:P ratios of DOM in nutrient-poor streams and rivers are presented and analysed in relation to temperature and hydrology.

Absolute concentrations of DOC decline with increasing spatial scale, while element ratios of DOM appear to be highest in the headwater catchments. Element ratios of very small hydrological units (<0.001 km<sup>2</sup>) have a distinctly different seasonal pattern than headwater catchments (.1-1 km<sup>2</sup>). The results will be discussed in relation to

climate, hydrology, in-stream processing and recalcitrance of organic matter.