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Aquatic chemistry of flood events

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During flood events a major discharge of water and dissolved substances happens. However flood waters very much differs from water composition during low-water events. Aquatic chemistry of flood waters also is of importance at the calculation of loadings as well as they might have major impact on water quality in receiving water bodies (lakes, coastal waters and seas). Further flood regime of rivers is subjected to changes due to climate change and growing impact of human activities. The aim of this study is to analyse water chemical composition changes during flood events in respect to low water periods, character of high-water events and characteristics of the corresponding basin.
Within this study, the concentrations of major dissolved substances in the major rivers of Latvia have been studied using monitoring data as well as field studies during high water/ low water events. As territories of studies flows of substances in river basins/subbasins with different land-use character and different anthropogenic impacts has been studied to calculate export values depending on the land-use character. Impact of relations between dissolved substances and relations in respect to budgets has been calculated. The dynamics of DOC, nutrient and major dissolved substance flows depending on landuse pattern and soil properties in Latvia has been described, including emissions by industrial and agricultural production. In these changes evidently climate change signals can be identified. The water chemistry of a large number of rivers during flood events has been determined and the possible impact of water chemical composition on DOC and nutrient flows has been evaluated.
Long-term changes (1977-2013) of concentrations of dissolved substances do not follow linear trends but rather show oscillating patterns, indicating impact of natural factors, e.g. changing hydrological and climatic conditions. There is a positive correlation between content of inert dissolved substances and water discharge. This study did not reveal a clear correlation between the concentrations of dissolved substances and land-use types within the river basin. Conclusions in respect to calculation needed for loading calculations has been done.

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