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The effect of nitrogen mitigation measures evaluated from standardized monitoring of nitrogen transport in small Danish streams – 1990-2015.

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Measured nitrogen (N) concentration and transport in Danish streams has been performed as part of the National Monitoring Programme for Water and NAture (NOVANA) in order to follow the effect of agricultural mitigation measures to reduce the N load to the aquatic environment . The programme include measurements in 44 small catchments dominated by agriculture. The implemented agricultural mitigation measures resulted in lower consumption of commercial fertilizer, improved utilization of N in manure as well as more efficient and increased use of catch crops in periods with high percolation and leaching.

The inter-annual variations in the measured N load to all of the 44 monitored streams are found to be related to variations in precipitation and freshwater discharge, and when normalising the measured N loads based on mean annual runoff a 44% (median) reduction in the N load was determined for the period 1990-2015. However, catchment-specific reductions exhibit strong variations (6-64% as a downward trend). These variations are, among other factors, related to the difference in N reduction in anoxic/anaerobic aquifers during the transport of N from soil to surface water. In a few of the catchments N retention in reconstructed wetlands contributes significantly to the observed decline in N load. Another main factor influencing the annual N load is the annual runoff taking place during the winter period (Dec. – Feb.) where N concentrations in drainage water generally are high.