

Approaches to identify critical source areas at different scales in the Netherlands

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Abstract

The identification of critical source areas for pollution of ground- and surface water is an important issue both at a local scale and a national scale. The information requested depends on the scale considered. On a national scale authorities are mainly interested in the size and the geographical position of the regions that contribute significantly to eutrophication. Moreover, they are interested in the impact of current policies (e.g. manure reductions) on a reduction in pollution (time-issue). Going to a regional or local scale more geographical detail is needed whereas the time horizon becomes relatively less important.

To cover this change in focus different instruments are used in the Netherlands for the national, regional (catchment) and local scale. In this presentation the background of the instruments and the application at different scales will be illustrated focusing on phosphorus losses. At a national scale a comprehensive mechanistic simulation model (STONE, Wolf et al. 2005) is used focusing on changes in N and P leaching with time, whereas the geographical detail is less well developed. To apply this model at a regional scale hydrological, soil chemical, soil physical and land use data have to be provided at an appropriate scale to give the requested geographical detail. This process is (too) time consuming to perform for all the affected regions in the Netherlands. Instead a metamodel has been developed to indicate critical source areas on basis of the most important soil and hydrological properties. This metamodel is based on statistical analysis of a broad range of simulations with the model STONE. At the field scale the information provided by this metamodel is sometimes still too rough, so there is a demand for an instrument that is able to provide an estimate based on local easily measurable data. This instrument combines information on hydrological fluxes with information on the phosphorus concentration profile, in order to estimate P leaching losses from simple soil data.

Reference:

Wolf J, Hack-ten Broeke MJD, Rotter R., 2005. Simulation of nitrogen leaching in sandy soils in The Netherlands with the ANIMO model and the integrated modelling system STONE. *Agr. Ecosys Env.* 105 (3): 523-540