



Modelling Nitrogen from soil to sea in Denmark: Concept and major results using a new national Nitrogen model.

Henrik Tornbjerg (1), Jørgen Windolf (1), Brian Kronvang (1), Gitte Blicher-Mathiesen (1), Christen Duus Børgensen (2), Anker Lajer Højberg (3), and Lars Troldborg (3)

(1) Department of Bioscience, Aarhus University, Silkeborg, Denmark (hto@bios.au.dk) , (2) Department of Agroecology - Climate and Water, Aarhus University, Tjele, Denmark, (3) Department of Hydrology, Geological Survey of Denmark and Greenland (GEUS, Copenhagen, Denmark)

In order to improve the information on the variations and trends in sources and sinks of nitrogen a new national model linking nitrogen from Soil to Sea has recently been developed in Denmark. The strategic perspectives of the newly developed model include:

On a 15 km² scale to aggregate modelled data for the hydrological and nitrogen cycle.

To model the Nitrogen sources and sinks by coupling of submodels and then include these models in an overall model.

To link the sources, transport and sinks of Nitrogen for obtaining the resulting net nitrogen load to the Danish estuaries and coastal waters

To evaluate the modelled Nitrogen transport on measured nitrogen loads from around 300 gauging stations in Danish streams.

To combine modelled and measured Nitrogen loads thereby providing new time series and geographically distributed data for land based Nitrogen loadings to Danish coastal waters

The general modelling concept and overall results will be described. The modelled nitrogen transport on coastal gauging stations will be compared to measured data from the period 1990-2010. For some catchments the model fails to satisfactorily estimate the measured nitrogen load or the relative trend in these measurements. This includes some catchments rich on lakes and some catchments in areas where oxidized groundwater are present in deeper aquifers.