# Modelling marine and coastal eutrophication

The purpose of the ISECA project (www.iseca.org) is to bring together scientists and stakeholders from four countries to integrate field measurements, Remote Sensing data and models to help monitor and analyze marine eutrophication due to nutrients, which may lead to harmful algal blooms (HABs). The European countries have comitted themselves to the Oslo-Paris (OSPAR) Convention (http://www.ospar.org) of 1992, with the objective to reduce the input of nutrients coming from agriculture, industry and waste water by 50 % compared to the 1985 level. Another objective is to achieve a water quality which is not exceeding a level which is 50 % above the minimum level corresponding to the pristine situation without human interference. If these objectives are not met a country may risk penalties from the European Union.

But how can these objectives be achieved? In addition to data models can be useful to help us understand the land-based causes of eutrophication and try to forecast the future impacts of different management strategies on the marine water quality:
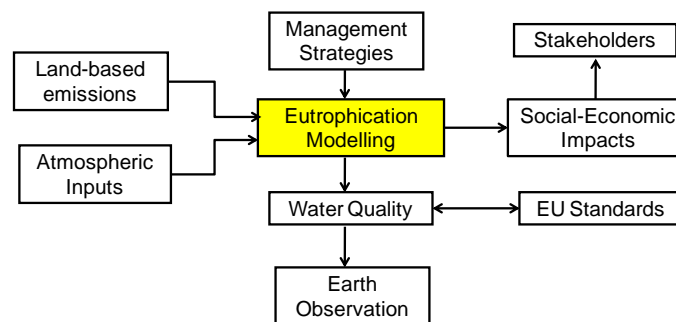
With models it is possible to find out which sectors contribute most to the loading of nutrients to the coastal waters under various scenarios. We can also compare the risk of a spring algal bloom in the 2Seas marine waters for 70 % reduction in the nutrient loading by looking at the result on the eutrophication during the winter months:
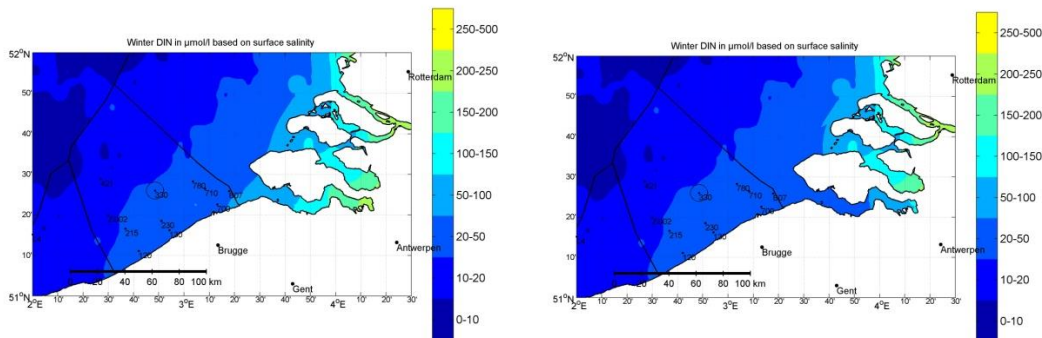
Simulation of average winter values of dissolved inorganic nitrogen, an indicator for nutrient enrichment, in the Belgian Coastal Zone without (left) and with (right) 70 % reduction nitrogen loading from the Scheldt catchment (GSHHS high-resolution coastline obtained from www.ngdc.noaa.gov; city coordinates obtained from www.geonames.org; Belgian marine boundaries obtained from http://www.vliz.be/vmdcdata/marbound).