



Large scale hydro-economic modelling for policy support

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To support European Union water policy making and policy monitoring, a hydro-economic modelling environment has been developed to assess optimum combinations of water retention measures, water savings measures, and nutrient reduction measures for continental Europe. This modelling environment consists of linking the agricultural CAPRI model, the LUMP land use model, the LISFLOOD water quantity model, the EPIC water quality model, the LISQUAL combined water quantity, quality and hydro-economic model, and a multi-criteria optimisation routine.

With this modelling environment, river basin scale simulations are carried out to assess the effects of water-retention measures, water-saving measures, and nutrient-reduction measures on several hydro-chemical indicators, such as the Water Exploitation Index (WEI), Nitrate and Phosphate concentrations in rivers, the 50-year return period river discharge as an indicator for flooding, and economic losses due to water scarcity for the agricultural sector, the manufacturing-industry sector, the energy-production sector and the domestic sector, as well as the economic loss due to flood damage.

Recently, this model environment is being extended with a groundwater model to evaluate the effects of measures on the average groundwater table and available resources. Also, water allocation rules are addressed, while having environmental flow included as a minimum requirement for the environment. Economic functions are currently being updated as well.

Recent development and examples will be shown and discussed, as well as open challenges.