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SCIENTIA

Assessing the environmental quality of rivers and coastal waters in Northern Ireland

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The shellfish aquaculture industry in Northern Ireland has expanded over the past decade and with this expansion has come increasing pressure for environmental regulation and the need for sustainable development. The Shared Waters Enhancement and Loughs Legacy (SWELL) and the Dundrum projects propose an ecosystem modelling framework that links catchment models, high resolution 3D hydrodynamic models, biogeochemical models and ecological models to assess the carrying capacity of coastal waters.

This presentation focuses on the development of catchment models to simulate terrestrial loads that enter the coastal system. The Soil and Water Assessment Tool (SWAT) model has been implemented in three Irish coastal catchments. SWAT is a hydro-ecological model that simulates land processes such as vegetation growth (taking into account agricultural and grazing activities), river flow, soil erosion and nutrients and bacteria transport from fields. The model is run at an hourly time step to capture the effect of storm events and is coupled with urban drainage models in order to assess the relative contribution of diffuse and point sources contamination on stream water quality.

In addition to predict the exports of nutrients and bacteria at a fine temporal scale, the application of the SWAT model allows to identify the main sources of contamination within the catchment. The model can also be run to investigate scenarios of climate, land use and agricultural management and provide useful information to the local stakeholders.

Thursday, February 28, 2019

FCUL (Building C2), 12h00-13h00, room 2.2.14

