

## Model output

During LOIS, models have been developed with the following objectives:

- to transport and transform water and the materials in it,
- to help estimate fluxes and fates of water and its contents.

The materials modelled include sediments, nutrients, metals and organic contaminants, for example. Process topics include carbon and nutrient cycling and transport in shelf-sea ecosystems.

LOIS models span the whole sequence of abutting domains from river catchments to the ocean. The sequence comprises the:

- catchments,
- non-tidal rivers,
- tidal reach and estuary,
- coastal zone immediately offshore,
- sea over the continental shelf,
- shelf-edge boundary with the ocean.

The Overview CD-ROM includes a selection of the models developed in LOIS. They illustrate the range from catchment to edge of the continental shelf and represent transports and simple ecosystem behaviour. Other CD-ROMs will include comprehensive outputs from the respective riverine, estuarine-coastal, shelf-edge, atmospheric and long-term components of LOIS. Model outputs will also be the subject of a later specific CD-ROM giving more comprehensive coverage (**Fact Box 6**).

In the Integrated Modelling phase of LOIS to meet Objective 4 (1998-2000) it is planned to run coupled models "off line" to simulate processes from catchment to the shelf edge. This involves the simulation of common periods with LOIS measurements and running other periods with different climate and land-use scenarios. Data will be transferred between models of adjacent domains. Such coupled runs will model the fate of materials. Initial steps are also expected towards a remaining LOIS objective: to model sediment transport and geomorphological responses on longer time-scales. A final CD-ROM is anticipated to cover all this work (**Fact Box 6**).

The model outputs illustrated on the Overview CD-ROM are:

- river flow and some constituent contents (nutrients, organic carbon) in selected representative areas of the Wharfe catchment (**river model output**),
- river flow and several constituent contents in a river (as a result of distributed inputs from the catchment area) (**river model output**),
- development of the ecosystem (nutrients, several plankton types and bacteria) through a year in the Humber estuary, offshore plume and sea bed (**Humber plume ecosystem model**),
- fine sediment transport from a model of the whole southern North Sea including the Humber estuarine plume (**southern North Sea sediment transport model**),
- flow through the North Channel between the Irish sea and the shelf sea west of Scotland (**North Channel of the Irish sea model**),
- development of the shelf-edge ecosystem (nitrate, microbiology) west of Scotland during 1995 (**shelf-edge ecosystem model**),
- development of a shelf-edge elevation model (**shelf-edge elevation model**).