The INCA-P model is a process-based, mass balance model that simulates the phosphorus (P) dynamics in both the plant/soil system and the stream. The model simulates variations in P export from different land use types within a catchment using a semi-distributed representation. The land-phase includes a simplified representation of direct runoff, soilwater and groundwater flows and soil P processes. The model also has a multireach in-stream component that routes water down the main river channel. It simulates organic and inorganic P concentrations in the land phase, and Total P concentrations in the in-stream phase. Soluble Reactive Phosphorus (SRP) concentrations are determined from the Total P concentrations and the macrophyte, epiphyte and algal biomasses are also simulated.

**Introduction**

**Components of the INCA-P model:**

- GIS interface (defines sub-catchments and calculates land-use)
- Land-phase hydrological model
- Land-phase P model
- In-stream P model

**Output**

- Daily and annual organic and inorganic P fluxes for all processes and stores within the land phase
- Daily time series of flows, organic and inorganic P concentrations in the soil, groundwater and direct runoff
- Daily time series of flows, TP, SRP, chlorophyll-α and macrophyte biomass
- Statistical summaries,
- Distribution graphs of flow and P concentration
- Profiles of P and flow down the river system
- Detailed mass balance checks

**Example output:** Daily simulation of organic and inorganic P in the soil, subsurface flow, runoff, and groundwater.

INCA and associated manuals and papers can be obtained from: Prof. Paul Whitehead, Aquatic Environments Research Centre, Department of Geography, The University of Reading, Whiteknights, Reading, RG6 6AB, U.K.
Tel: +44 118 378 8740 Email: p.g.whitehead@reading.ac.uk Internet: www.rdg.ac.uk/aerc