# Poster presentation – part I

Series 1: Monitoring –
          Diffuse Inputs into the Groundwater

Series 2: Modelling –
          Unsaturated and saturated zone,
          soil water budget and
          nutrient transport

# Series 1: Monitoring

17 contributions from various countries: Belgium, Slovakia, Slovenia, Greece, Cyprus, Croatia, Germany, UK, and Austria

➢ Monitoring is basic technique for all experiments and thus comprises a wide field of application

- Most contributions in the context of agriculture vs. protection of water resources; Nitrate as leading parameter
  - Regular vs. biological vegetable production
  - Use of Lysimeter to monitor and understand soil-groundwater system (Maribor, Ljubljana) -> development of protection strategies

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# Monitoring

S1

➢ Isotope use to identify long distance air pollution
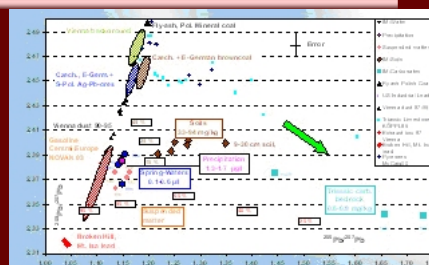➢ Diffuse nitrogen pollution – significance for surface waters

Fig.3: Isotopic composition of lead in precipitation, spring waters, soils and rock samples form a three source mixture between gasoline lead, industrial lead and Triassic bedrock.

Distribution of the area specific surplus in agriculture in the Danube Basin (Schreiber et al, 2003)

Distribution of the percentage of the surplus in surface area removed by denitrication in groundwater (deNuic, 2005)

Distribution of the area specific nitrogen emission over groundwater to surface water (Schreiber et al, 2003)

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# Series 1: Monitoring

➢ Other discussed topics:
- *Wastewater use for irrigation* – risk of salinity
- *Behaviour of acidic pesticides in soils* – meaning of $K_{ow}$ concept
- Experiments with *radioactive contaminated soils in lysimeters* – $K_{DL}$ coefficient
- *Nitrate trends in a chalk aquifer* in Belgium
- Validation of *pedotransferfunctions*
- Taking the *uptake of nutrients of oak trees as indicator for water quality*

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# Series 2: Modelling

- 12 contributions from Belgium, Poland, Germany and Austria
- Wide variety of topics and models (I):
  - *CATFLOW* (Richards Equation) to compute amount of leachate in a macropores rich soil
  - *Combination of 6 process oriented models* (incl. HYDRUS, BROOK90) to assess effects of warmer climate on nitrate leaching
  - *SMART* – reactive transport modelling by intraparticle diffusion
  - *SiWaPro DSS* – based on Richards equation and enhanced by a stochastic weather generator
  - Simulation model *EPIC* combined with GIS to calculate percolation and nitrogen leaching depending on water storage capacities
  - Fitting of *analytical CDE* to observed BTCs in a hyporheic setting

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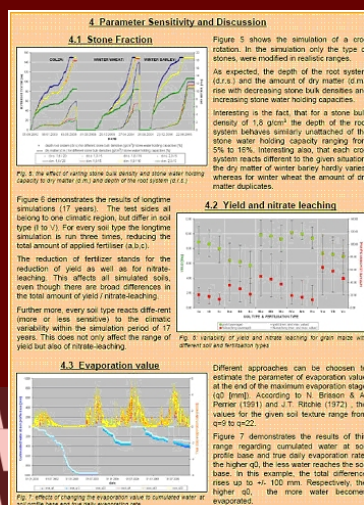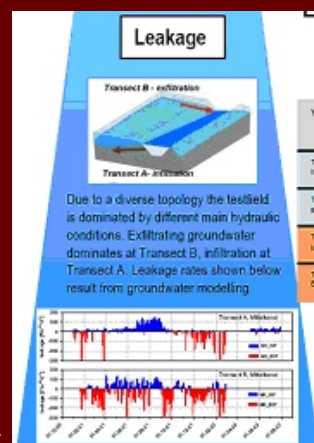
# Modelling

S2

- STIC – daily time step crop model to compare effects of crop rotation and grain maize



- Matter mobilisation from peat soils and groundwater

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# Series 2: Modelling

➢ Wide variety of topics and models (II):

- *Statistical functions* to relate precipitation and groundwater nitrate concentrations
- Environmental management system *REPRO* to evaluate nitrogen losses of agricultural land
- Approaches to reduce *uncertainties* in the application of numerical models
- Influence of *acidification* on the content of nutrients discussed by a laboratory experiment

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