GEO REFERENCING OF ZINC TOXICITY: towards catchment-based water quality standards

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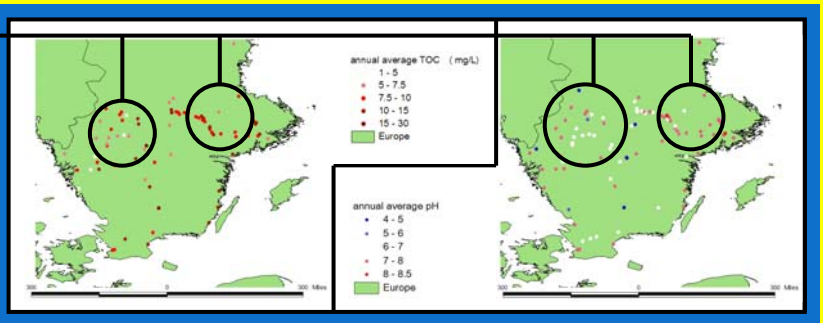
Introduction

Zinc-bioavailability modifying water characteristics (e.g. pH, DOC,…) show geographic differences. A case study: **southern Sweden**



The need: **Site-specific** water quality standard derivation

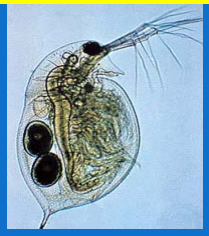
Current practice: **One** water quality standard for all types of surface waters

SITE-SPECIFIC CHRONIC ZINC BIOTIC LIGAND MODEL APPLICATION FOR THREE MODEL SPECIES

Methodology

Site-specific water characteristics like pH, DOC and hardness determine site-specific **No Observed Effect Concentrations** (NOECs) for zinc

Oncorhynchus mykiss



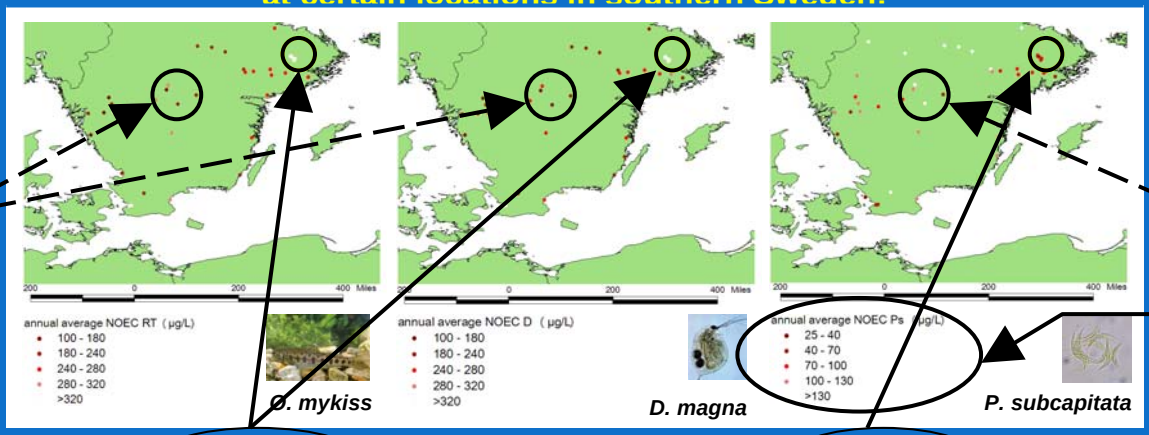
Daphnia magna

Pseudokirchneriella subcapitata

GIS (GEOGRAPHICAL INFORMATION SYSTEM) APPLICATION IN SOUTHERN SWEDEN

Results

When representing the average NOECs through the GIS it is demonstrated that at certain locations in southern Sweden:



- **Zinc toxicity decreases for trout and water flea, while increasing for the algae**
- **Zinc toxicity increases for trout and water flea, while decreasing for the algae**
- **Predicted NOECs for the alga vary from 25 to >130 µg Zn/L: a factor 6 difference**

The presented methodology shows that geographic differences in water characteristics can lead to geographic differences in zinc toxicity to the three model species and may therefore assist in site-specific assessment of the risks posed by zinc

Acknowledgements: This research was funded by the Flemish Institute for the Promotion of Scientific and Technological Research in Industry (IWT, Belgium). Website: www.iwt.be