

# **TRACKING NUTRIENT ENRICHMENT OF WATER RESOURCES IN THE 21<sup>ST</sup> CENTURY: CHALLENGES AND OPPORTUNITIES FOR INFORMATION MANAGEMENT AT THE NATIONAL LEVEL**

**Organizer: Dr. Gregory McIsaac, University of Illinois**

## **RATIONALE**

Problems related to the enrichment of freshwaters, estuaries and coastal marine waters with phosphorus (P) and nitrogen (N) have persisted for several decades because these macro-nutrients play critical roles in agriculture, human nutrition, and ecological systems. Additionally, atmospheric deposition of reactive N is a byproduct of high temperature combustion. Transport of N and P to water bodies is influenced by regionally variable watershed characteristics and several dynamic factors, such as human population growth, economic growth, urbanization, energy utilization, technological change, and weather. Demand for high quality water resources is likely to increase over time and providing effective and efficient protection of these resources from over enrichment will be increasingly challenging.

Advancements in the understanding of nutrient dynamics within watersheds, and the availability of spatially distributed data and modeling tools create opportunities to develop information systems that track nutrient inputs, outputs and related threats to water resources at the watershed, region and national scales. The national nutrient tracking system that we envision will compile data on N and P inputs to outputs from the nation's watersheds and thereby provide the basis for conducting nutrient accounting in a nationally consistent manner. In conjunction with data on watershed characteristics, this nutrient accounting system could provide a basis for further refinement in understanding of the relationship between terrestrial nutrient utilization, hydrologic processes and enrichment of water bodies. This improved understanding can inform the development and implementation of policies and programs aimed at protecting water resources based on the best available information and science.

The proposed plenary session will bring together scientists from university and government agencies (USGS, USDA and possibly US EPA) to discuss specific dimensions of the development of a national nutrient tracking system.

### Organization of the proposed session

Moderator: Dr. James Galloway, University of Virginia

Dr. Robert Howarth, Cornell University

Dr. Richard Alexander, US Geological Survey

Dr. Robert Kellogg, USDA-NRCS

Dr. Elizabeth Boyer, SUNY Syracuse

David Hair, US EPA East