

# **Applications of Remote Sensing and GIS technologies to the assessment of watershed health**

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## **Abstract**

The advent of a new range of earth-observing remote platforms and sensor technologies (RS), combined with the enhanced functionality of Geographical Information Systems (GIS), the availability of large resource databases and satellite imagery in the public-domain, as well as the advances in watershed process digital modeling provide for seemingly limitless opportunities for applications to the assessment, evaluation and modeling of natural resources and in particular of the multiple aspects and indicators of ecosystems health. Issues of Remote Sensing-GIS integration have ceased to be an important technical issue allowing for a range of powerful tools for representation, assessment and evaluation of watershed health and the development of potential scenarios of resource management and their effects in ecosystem health. The recent source protection legislation by Ministry of the Environment has placed significant emphases on watershed characterization and sustainable management. The integration of GIS, Remote Sensing and modeling technologies applied to watershed health and protection efforts is not only seen as a fruitful line of research in which the advent of new sensor technologies and distributed databases may facilitate assessments, but also as an important tool for resource management and protection. Yet, there are many aspects of the useful applicability and derived benefits of remote sensing and GIS technologies that need to be explored and elucidated for the benefit of deriving more accurate and reliable models of water protection at its source and its dependencies from all other aspects of ecosystem health, and appropriate watershed management. With this in view this session will focus on:

1. Experiences with the application of conventional remote sensing platforms and sensors and derived models (e.g. Landsat, SPOT, Radarsat, etc.) to the assessment of watershed health or any of its components. Particularly to:
  - Watershed and watershed health characterization and modeling.
  - Stormwater and source protection management
  - Water resource management in the municipal sector
  - Risk assessment, mitigation planning and disaster prevention
  - New approaches and models developed from these conventional sensors
  
2. Experiences with the application of new remote sensing platforms and sensors and programs, and/or new or innovative modeling approaches to the assessment and management of watershed health or any of its components, in particular:

- New approaches and paradigms that represent promising avenues for advancing the role of Remote sensing and GIS to watershed characterization, modeling and scenario development for management and policy frameworks.
  
  - New approaches to model-remote sensor-GIS integration that can be implemented in agency work for watershed health characterization, modeling and management and of source protection.
3. Experiences, conceptual development and implementation of new paradigms of distributed systems for information and process modeling (e.g. internet visualization, mapping and online modeling of any aspect of watershed health) for normative agency applications and/or public information consumption.