

Geospatial Analysis and Modelling

The development of GIS and carto-graphy can be characterised as information rich and knowledge poor. That is, the amount of geospatial information collected using geospatial technologies, including remote sensing, global positioning systems and digital mapping technology, has been growing rapidly, whereas geospatial knowledge or “useful information”TM, for decision making in terms of real-world problem solving is rather limited. Terabytes of geospatial information in the form of satellite imagery, aerial photos and maps have been integrated into Google Maps and Google Earth so that ordinary people using a decent internet-connected home computer can zoom from space right down to street level and easily pinpoint their individual houses. Yet these services are considered information providers rather than knowledge suppliers. Current GIS still lack relevant tools for uncovering geospatial knowledge in various forms of patterns, structures, relationships and rules.

The new International Cartographic Association (ICA) Working Group on Geospatial Analysis and Modeling aims to co-ordinate research on these topics to uncover geospatial knowledge from geospatial information. That is, to transfer geospatial information, which is massive, complex, incomplete and uncertain in nature, into the geospatial knowledge that can directly guide decision making and real-world problem solving. Through organised activities we hope to network cartographers, geospatial information scientists and other researchers in developing new models and modelling for the creation of geospatial knowledge. The following topics give a flavour of the analysis and modelling we refer to:

- cartographic modelling (map overlap and map algebra)
- quantitative geographic analysis such as spatial autocorrelation and modifiable area unit problem
- time-geography modelling (temporal modelling)
- individual-based modelling (cellular automata and agent-based modelling)
- small-world modelling (topological analysis and network modelling)
- qualitative reasoning (topological relationships, direction reasoning and fuzzy modelling)
- spatial data mining and knowledge discovery
- visual data mining and analysis.

With the working group we plan to organise a series of workshops and seminars and to publish research findings in various formats: proceedings, special issues, and books. The first ICA Workshop on Geospatial Analysis and Modeling (www.hig.se/~bjg/ica/workshop/) was successfully held in Vienna, Austria in July 2006 as a pre-conference workshop associated with the conference GICON 2006. The workshop attracted about thirty participants, half of them speakers whose presentations were organised into six sessions including temporal modelling, agent-based modelling, spatial-data mining way-finding, and spatial network modelling. We are currently guest-editing a special issue of the international journal *Computers, Environment and Urban Systems* by selecting a set of the best papers following a peer-review process.

If you are a researcher working on one of the above topics and are interested in the working-group activities, please feel free to contact us via the working-group website at www.hig.se/~bjg/ica/.