

Annual report DAQUAL 2008

Scientific level

At this stage DAQUAL is moving from its initial stage towards a stage in which decent output can be expected. We have identified general themes (image mining, spatial data quality, super pixel resolution mapping, monitoring, health issues in GIS) that are barely addressed elsewhere. In all, the aim of DAQUAL is to give these issues a more solid foundation. We do this as well by addressing relevant problems in developing countries. Most PhD students started within the last two years. Within 2008 we have been involved in publication of three published ISI journal papers. This number is at this stage of course far too low and we have good indications that in 2009 this number will increase substantially, also thanks to several visitors to our department. What we did publish in 2008 was a book (Quality Aspects in Spatial Data Mining, eds. Alfred Stein, Wenzhong Shi and Wietske Bijker) and three ISI journal papers (see below).

Relevance

We have been able to attract one externally funded PhD student to the DAQUAL program (Juan Pablo Ardila Lopez) and at present we have 2 PhD interns in this program (Umi Zakoyah and Rashmi Khandwal). Collaboration has been initiated with the C-Cycle theme (Yasseen Mustafa, lot 7), and with the CAN project (through Ms. Deepthi D.M.).

Partners

Partners in this program are

Biometris (Wageningen University)

Wuhan University (LIESMARS)

Chinese Academy of Surveying and Mapping (CASM)

Chinese Academy of Sciences

The Tea Research Association (Jorhat)

National Remote Sensing Centre (Hyderabad)

The RIVM (Bilthoven)

NEO (Amersfoort) and Alterra (Wageningen) (via externally funded PhD)

Royal Tropical Institute

Moreover, at least one PhD student will join the DAQUAL theme later in 2009 using a HEC fellowship.

Coherence

All students working in DAQUAL are focusing on issues of spatial data quality and image mining in the widest sense. Students that have been active in DAQUAL during 2008 are:

IIRS Students

Alka Singh: Analyzing tea replantation pattern by wavelet and geospatial technique

Vijay Pandey: Sampling scheme optimization using uncertainty in fuzzy agriculture parcel classification in the Context of urban expansion in urban fringe areas

Gaurav Kumar: Stochastic modelling of land cover (dynamic) elements to assess landslide vulnerability.
Amitava Dutta: Fuzzy C-Means Classification of Multispectral Data Incorporating Spatial Contextual Information by using Markov Random Field
Rahul Raj, Analyzing the Effect of Different Aggregation Approaches on Remotely Sensed Data.
Navneet Kumar, Investigating the Potentiality of Regression Kriging in the Estimation of Soil Organic Carbon Versus the Extracted Result from the Existing Soil Map.

ITC students

Aloyce Temba: Unmixing classes with help of spectral contextual information
Francis Akinluyi Omowonuola: Mapping of Hydrocarbon contaminated soil characterization using modern geostatistics
Frederick Bediako-Mensah: Detection of oil pipelines on a low resolution imagery in the Niger delta region of Nigeria
Imtiaz Hassan: spatial data quality – positional accuracy of information from laser scan data
Juan Pablo Ardila Lopez: Assessment and modelling of angular backscattering variation in ALOS ScanSAR images over tropical forest areas. (MSc Award 2008)
Phyllis Owusu-Ensaw: Comparison of spectral characteristics of satellite image using object-based and LBP texture for classification of vegetation patterns
Shang Xiao Use of Boosting methods to improve object-oriented classification for vegetation mapping in Kyabobo National Park, Ghana
Ye Du: Verification of tsunami reconstruction projects by object-oriented building extraction from high resolution satellite imagery

International scientific conferences and meetings attended

Alfred Stein

Invited seminar at Southampton University
Milano - giving a masterclass
Accuracy meeting at Shanghai (invited keynote)
GeoENV meeting at Southampton University
Soft Methods in Statistical and Fuzzy Spatial Information Processing meeting at Toulouse (invited contribution)

Nick Hamm

IGARSS meeting, Boston

Wietske Bijker

Vienna - EGU
Brussels for the 10 years SPOT-VEGETATION conference

Valentyn Tolpekin

Asian Conference of Remote Sensing

Evaluation

Progress is still somewhat slow, but going into a coherent and promising direction. We are present and visible in international meetings and a range of papers has been submitted to ISI journals. We are also visible in the Elsevier community and around CRC Press. But research output is too low, which is only partly due to a substantial non-research work load.

ISI Publications

- Dumont, E., Bakker, E.J., Bouwman, L., Kroeze, C., Leemans, R. and Stein, A. 2008. A framework to identify appropriate spatial and temporal scales for modeling N flows from watersheds. *Ecological modeling* 212 (3-4). 256 - 272
- Stein, A. 2008. Modern developments in image mining. *Science in China Series E: Technological Sciences*, 51, Supplement 1, 13-25.
- Gort, G., Koopman, W., Stein, A., and Van Eeuwijk, F. 2008. Collision probabilities for AFLP bands, with an application to simple measures of genetic similarity. *JABES* 13 (2), 177-198.

Book

- Stein, A., Shi, W. and Bijker, W. (eds.). 2008. *Quality Aspects in Spatial Data Mining*. CRC Press, Boca Raton.