Towards Real-time Data Collection and Visualization for Water Management

UNU-FLORES, Dresden
Helmholtz Center for Environmental Research (UFZ)
Technische Universität Dresden (TUD)
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13.45 – 15.30

BERLIN BOTANICAL GARDEN MEUSEUM

Each climatic region, eco-region and even watershed faces specific water-related problems. Successfully coping with them and handling future water demands depend on effective water resources management, which needs to take inter-related resources, such as soil and waste into account. Management needs data about the actual and future state of these environmental resources (considering quantity and quality) as well as socio-economic aspects and governance. Near-real time data collection, for instance based on automatic climate data or stream flow measurements stations that are communicating in real-time with a visualization tool might help to improve water management at short time scales (e.g. warning systems) but also provide the data basis for detecting long term trends. Remote sensing technologies contribute to water (and soil) management for e.g. mapping and monitoring of land coverage, infrastructure, soil moisture, and evapotranspiration estimation as well as precipitation distribution. However, remote sensing technologies for real-time data collection are limited by revisiting time, spatial resolution and weather conditions (depending on sensor used).

While data collection is certainly an issue on its own, the question of how to make use of the data in a way that enables decision makers to bridge from good science to good practice is of equal importance. Since pure data are meaningless without context and analysis with respect to a relevant question, a reliable interpretation scheme as well as an appropriate visualization technique is needed to support water management and decision making. For decision makers it is important to communicate explicitly their concerns and needs about environmental and socio-economic issues to scientists or other experts, while they need to be informed about possibilities and limitations of real time data, e.g. concerning which scales and processes need to be considered.

<u>The workshop aims at:</u>

- Providing a management-oriented overview and introduction to real-time data collection and visualization;
- Discussing examples relating to the use of real-time data in water management.

Discussions will help to

1. Identify the needs, opportunities and limitations of real-time data collection and the required infrastructure for integrated water management and decision making,
2. Understand requirements of and expectations to near-real time visualization from both the scientific perspective and decision maker's perspective to shape the design of monitoring programmes

Draft agenda

1. Presentations (order not final), 60 min
    - Introduction to workshop: UNU-FLORES
    - Theresa Mannschatz, Stephan Hülsmann, UNU-FLORES: Data visualization of water services: tools and approaches for data-scarce regions
    - Mathew Kurian, UNU-FLORES: Visualization for Governance: case study Water point mapping in Africa
    - Karsten Rinke, UFZ: Online water quality monitoring at Germany's largest drinking water reservoir: Data collection, visualization and their usage in reservoir operation
    - Daniel Kadner, Lars Bernard, TU Dresden: Dealing with temporal and real-time Geoinformation in support of water management
    - Eric Borg, DLR: DEMMIN – Remote Sensing calibration and Validation Test Site useable for hydrological applications

2. Discussion, guided by questionnaire: 45 min