Geophysical Research Abstracts
Vol. 18, EGU2016-11534, 2016
EGU General Assembly 2016

TransWatL – Crowdsourced water level transmission via short message service within the Sondu River Catchment, Kenya

Björn Weeser (1,2), Suzanne Jacobs (1,3,4), Lutz Breuer (1,2), Klaus Butterbach-Bahl (3,5), and Mariana Rufino (4)

(1) Institute for Landscape Ecology and Resources Management (ILR), Justus Liebig University Giessen, Germany (bjoern.weeser@umwelt.uni-giessen.de), (2) Centre for International Development and Environmental Research, Justus Liebig University Giessen, Germany, (3) Karlsruhe Institute of Technology – Institute of Meteorology and Climate Research, Atmospheric Environmental Research (KIT/IMK-IFU), Garmisch-Partenkirchen, Germany, (4) Centre for International Forestry Research (CIFOR), Nairobi, Kenya, (5) International Livestock Research Institute (ILRI), Nairobi, Kenya

The fast economic development in East African countries causes an increasing need of water and farmland. Ongoing changes in land use and climate may affect the function of water tower areas such as the Mau Forest complex as an important water source and tropical montane forest in Kenya. Reliable models and predictions are necessary to ensure a sustainable and adequate water resource management. The calibration and validation process of these models requires solid data, based on widespread monitoring in both space and time, which is a time consuming and expensive exercise. Countries with merging economies often do not have the technical capacity and resources to operate monitoring networks, although both the government and citizens are aware of the importance of sustainable water management.

Our research focus on the implementation and testing of a crowdsourced database as a low-cost method to assess the water quantity within the Sondu river catchment in Kenya. Twenty to 30 water level gauges will be installed and equipped with instructional signage. Citizens are invited to read and transmit the water level and the station number to the database using a simple text message and their cell phone. The text message service is easy to use, stable, inexpensive and an established way of communication in East African countries. The simplicity of the method ensures a broad access for interested citizens and integration of locals in water monitoring all over the catchment. Furthermore, the system allows a direct and fast feedback to the users, which likely increases the awareness for water flow changes in the test region.

A raspberry pi 2 Model B equipped with a mobile broadband modem will be used as a server receiving and storing incoming text messages. The received raw data will be quality checked and formatted by a python script and afterwards written back in a database. This ensures flexible and standardized access for postprocessing and data visualization, for which a web based databank is foreseen. For the validation of the method, TransWatL stations will also be installed next to permanent gauging stations to compare the quality of citizen's readings against permanent readings.