Geophysical Research Abstracts
Vol. 21, EGU2019-564, 2019
EGU General Assembly 2019

Stream level observations by citizens for water resources monitoring

Barbara Strobl, Simon Etter, Ilja van Meerveld, and Jan Seibert
University of Zurich, Department of Geography, Zurich, Switzerland (barbara.strobl@geo.uzh.ch)

Hydrology and water resources research is frequently restricted by limited data availability, particularly, but not only, in developing regions. Although new technical developments provide exciting novel opportunities for data collection, many hydrological variables remain difficult to monitor with a sufficient spatiotemporal resolution. The involvement of citizens in hydrologic monitoring provides an additional innovative approach to obtain hydrological data in thus far ungauged catchments. However, when implementing a citizen science approach, it is important to consider the possibilities for citizens to estimate or measure the variable of interest and the accuracy of the data. A recent study by Strobl, et al. (in press) showed that water level classes can be estimated more accurately by citizens than streamflow. Other studies have shown the value of water level (Seibert and Vis, 2016) and water level class (van Meerveld et al., 2017) data for hydrological model calibration. Here we present an approach based on a reference image of the river with a virtual staff gauge to obtain this water level class data. This virtual staff gauge approach has been implemented in the CrowdWater app, which is freely available and useable worldwide. The water level data collected through the CrowdWater app are fairly accurate. The data can however be even further improved by the citizen scientists via a data quality control mechanism where game players compare the reference image with the update image. The results of the CrowdWater project and CrowdWater game so far, indicate that this observation approach is promising for water resources monitoring in locations where traditional data are not available.

Seibert, J., and M. J. P. Vis (2016), How informative are stream level observations in different geographic regions?, Hydrol. Process., 30(14), 2498–2508, doi:10.1002/hyp.10887.
Strobl, B., S. Etter, I. van Meerveld and J. Seibert (in press), Accuracy of Crowdsourced Streamflow and Stream Level Class Estimates, Hydrol. Sciences Journal, (Special issue on hydrological data: opportunities and barriers).
van Meerveld, I., M. Vis, and J. Seibert (2017), Information content of stream level class data for hydrological model calibration, Hydrol. Earth Syst. Sci. Discuss., (February), 1–17, doi:10.5194/hess-2017-72.