



Visualizing landscape hydrology as a means of education - The water cycle in a box

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We used an aquarium to construct a physical model of the water cycle. The model can be used to visualize the movement of the water through the landscape from precipitation and infiltration via surface and subsurface flow to discharge into the sea. The model consists of two aquifers that are divided by a loamy aquitard. The 'geological' setting enables us to establish confining groundwater conditions and to demonstrate the functioning of artesian wells. Furthermore, small experiments with colored water as tracer can be performed to identify flow paths below the ground, simulate water supply problems like pollution of drinking water wells from inflowing contaminated groundwater or changes in subsurface flow direction due to changes in the predominant pressure gradients. Hydrological basics such as the connectivity of streams, lakes and the surrounding groundwater or the dependency of groundwater flow velocity from different substrates can directly be visualized.

We used the model as an instructive tool in education and for public relations. We presented the model to different audiences from primary school pupils to laymen, students of hydrology up to university professors. The model was presented to the scientific community as part of the "Face of the Earth" exhibition at the EGU general assembly 2014. Independent of the antecedent knowledge of the audience, the predominant reactions were very positive. The model often acted as icebreaker to get a conversation on hydrological topics started. Because of the great interest, we prepared video material and a photo documentation on 1) the construction of the model and 2) the visualization of steady and dynamic hydrological situations. The videos will be published soon under creative common license and the collected material will be made accessible online. Accompanying documents will address professionals in hydrology as well as non-experts.

In the PICO session, we will present details about the construction of the model and its main features. Further, short videos of specific processes and experiments will be shown.