

## Africa

**Field excursion 1 November:** Innovative field measurement methods using affordable and low complexity devices

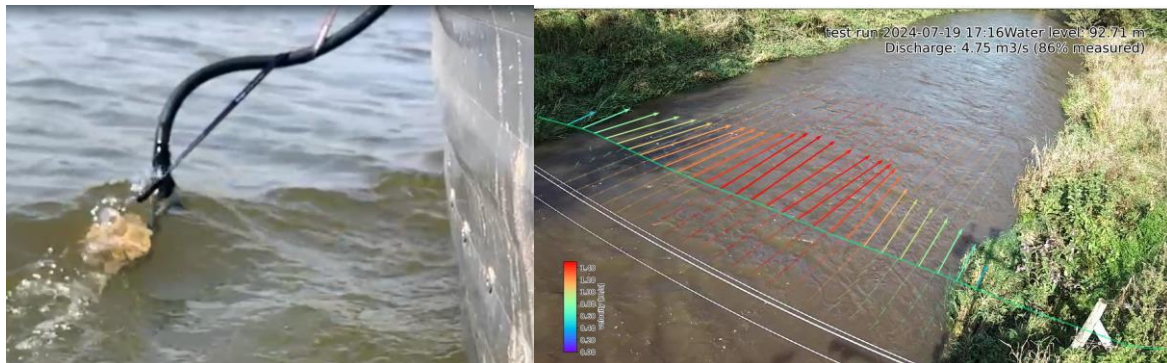
**Location:** Metolong Dam

**For whom:** all attendants of the annual Waternet symposium, interested in surface water observation methods.

**Register here for the for this excursion:** <https://forms.gle/9Ks4hrq5e2jbi8EN6>



In this excursion, the attendants will be acquainted with **innovative, affordable** and low complexity methods to measure river conditions, in particular **stream bathymetry** and **streamflow**. The following measurement methods will be demonstrated just downstream of Metolong Dam. The demonstrations will be given by Leisa Mokuoane (Dept. of Water Affairs Lesotho), Hessel Winsemius (Rainbow Sensing), Hubert Samboko (OpenDroneMap.org / UNZA), Micha Werner (IHE Delft) and Mark Graham (GroundTruth). You will see all methods indicated below.



*Left: affordable fish finder echo sounder - right: surface velocities measured from a video recording*

Bathymetry observations with a **fish finder** and **high precision GPS base-rover**. Set up a base station, and hook up an off-the-shelf fish finder on a self-made PVC rig and go measure super accurate bathymetry. The fish finder gives accurate depth, the GNSS device gives accurate west-east, south-north coordinates. Your smartphone does the rest!



Measure in-stream velocity with the **velocity plank**. Wade in the stream with a transparent board, measure the depth on one side, and through a look-up table, the velocity on the other by means of the backwater against the plank! Robust, no moving parts or electronics - simple and ideal for instantaneous habitat depth/velocity classes for e-flow assessments



**River flow measurements with videos.** With the software platform **OpenRiverCam**, you can convert videos, even taken under oblique angles, into surface velocities and river flows. It only takes one single field installation and survey of control points and a cross-section. With a web deployment of **LiveOpenRiverCam**, you can do this even automated and real-time with a fixed camera on a site for your organisation or clients. We will demonstrate this automated process!



Measuring river flow using the **salt dilution method**. In small streams this method can give extremely accurate discharge estimates with surprisingly simple materials. Some salt, a bucket to mix it, and an EC meter. That's everything you need.



Measuring flow with **propeller** or **electromagnetic flow** meter. The traditional and proven technology will also be brought into the field with us!

