HYPACK
a xylem brand

Sounding Better!

Surveys with HYPACK® and the SonTek HydroSurveyor

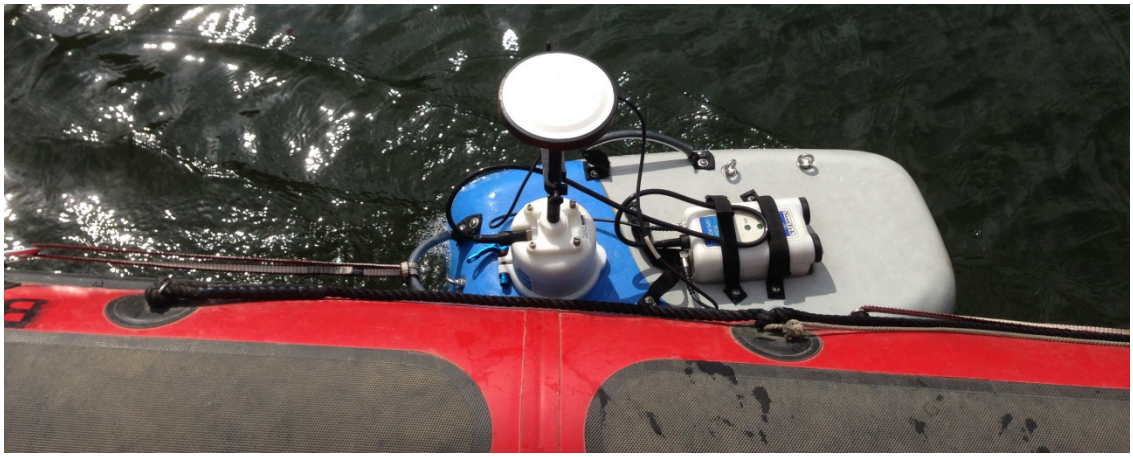
By Boris Schulze

In the last few weeks I have been doing a few demos in Europe with the SonTek HydroSurveyor and HYPACK®. The HydroSurveyor is a system designed to collect bathymetric, water column velocity profile, and acoustic bottom tracking data as part of a hydrographic survey. The HydroSurveyor collects five beams with a 50° swath. It collects bathymetry and measures the water velocity simultaneously. HYPACK® has integrated the instrument, so it can be used to map the reservoir or riverbed in addition to showing the water velocity.

I went to Spain to demonstrate the capabilities at a water reservoir which was a flooded river close to Seville. As we had a small ruby dinghy for the survey with limited space, we towed the instrument next to us on a Torrent board. The board is quite compact and has a mount for the HydoSurveyor, the battery pack and a GPS. The data was streamed to a laptop running HYPACK® via W-LAN. As no CastAway CTD was available, we used the built-in temperature sensor to measure the sound velocity.

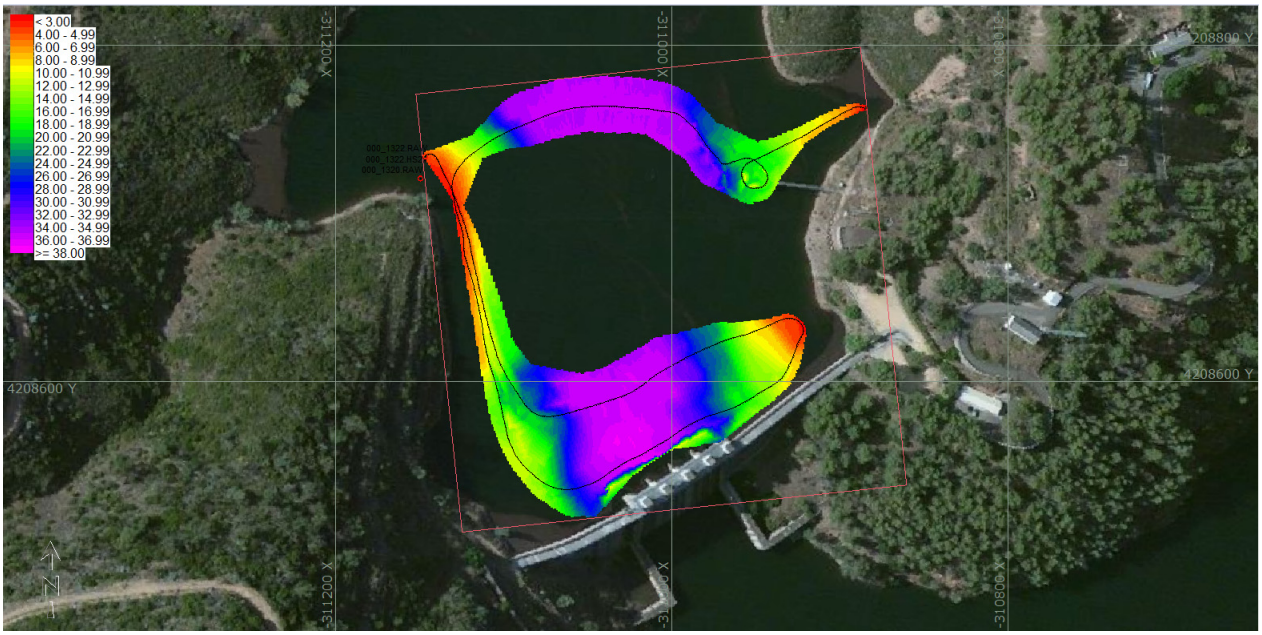
FIGURE 1. *Setting up the survey boat! The HydroSurveyor installed on a Torrent board is shown in the front.*

FIGURE 2. *The HydoSurveyor Mounted on the Torrent Board and Towed Alongside.*



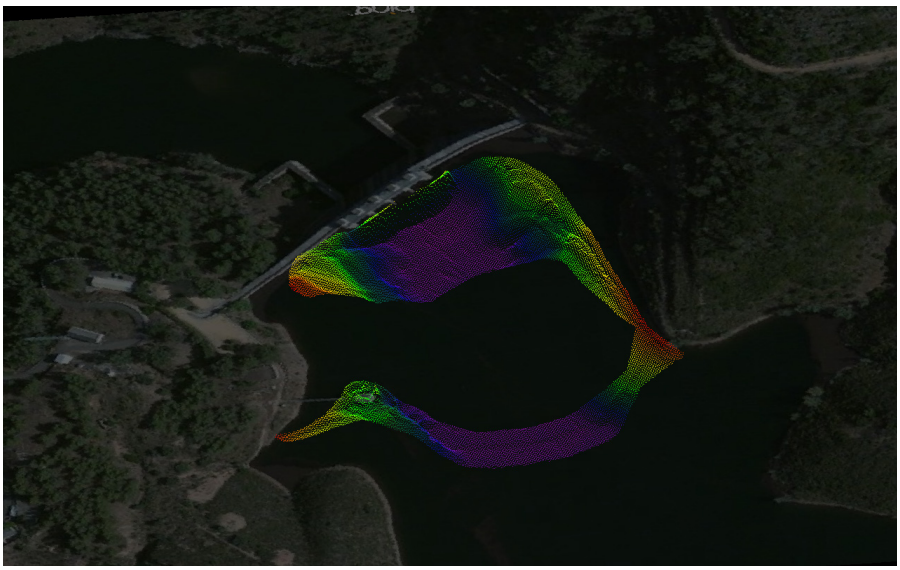
We then ran a line across the reservoir and back along the dam. The picture shows the track line and the DTM over a satellite image.

FIGURE 3. *Survey Results*



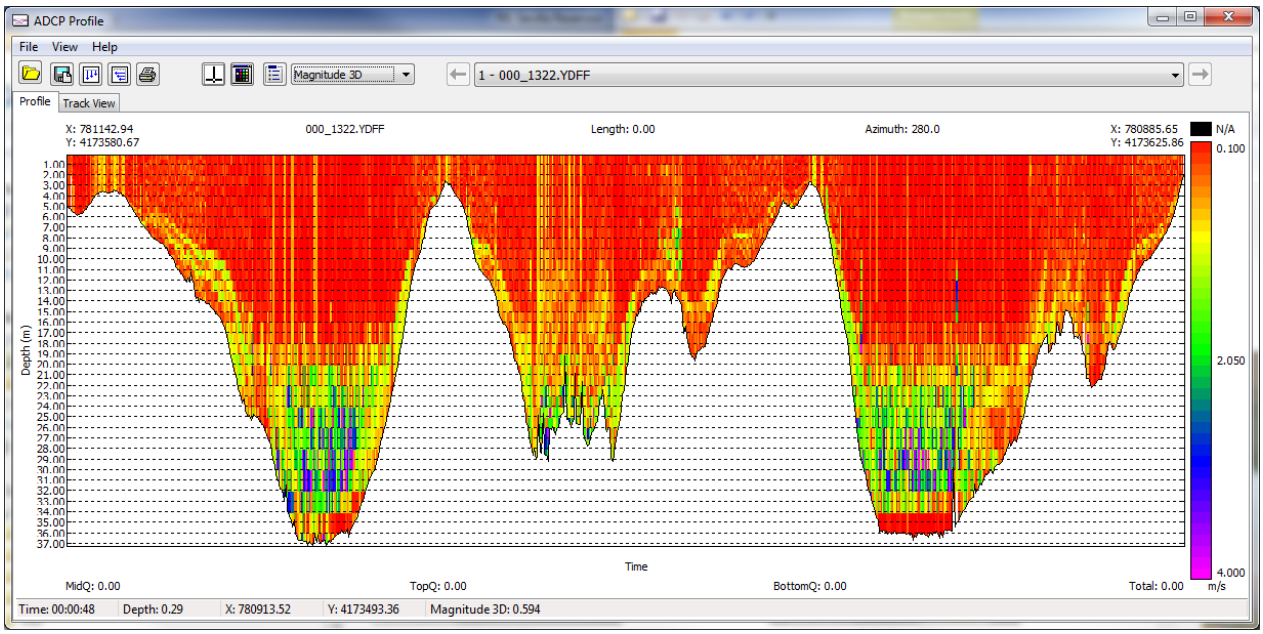
The data shows how fast you can map a reservoir quite nicely, and how good the results are from this instrument.

FIGURE 4. *Bathymetry in 3D*



The water velocity data looked quite surprising. There was a strong layer at about 18 m depth. Apparently this was caused by the river bringing cold water into the reservoir. The cold water does not mix with the reservoir water, but rather slips below the warmer water in the reservoir.

FIGURE 5. *ADCP Profile of the Complete Track*



This is quite a fascinating data set!

Boris

Boris@hypack.com