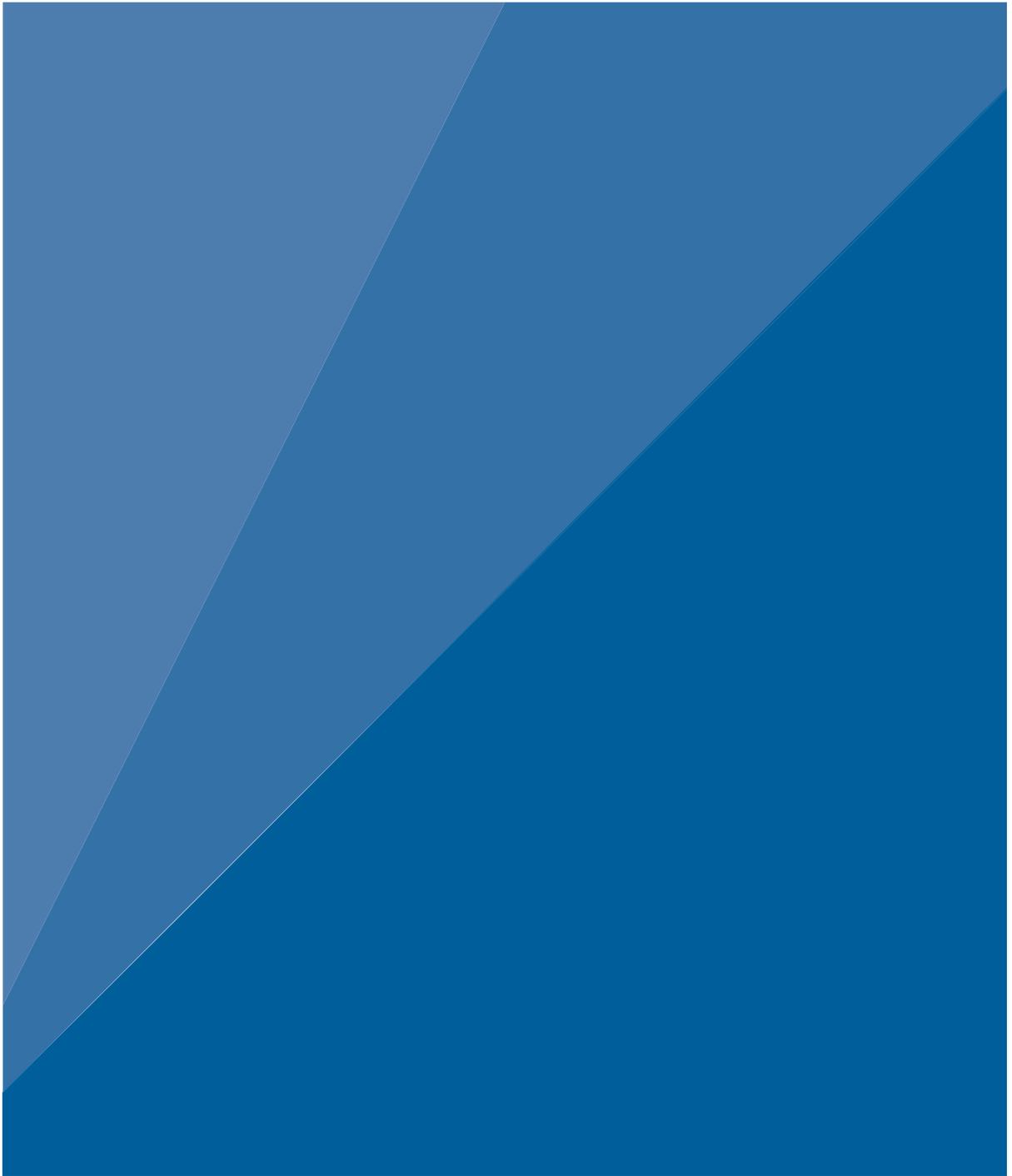




**METER**

## **HYPROP TENSIO METER SHAFTS APPLICATION GUIDE**



## INTRODUCTION

Using the air-entry value of the ceramic tensiometer cup as an additional measurement point can extend the range of the tensiometric measurements (Schindler et al., 2010b). The LABROS SoilView-Analysis includes this option for **Power Users**. The air-entry point occurs when the pressure of the tensions drops quickly to zero. This option is only viable if the sharp drop towards zero tension is recorded, i.e. if the measurement campaign was performed long enough to capture this data.

Clicking on the **Use Air Entry Point** button adds an extra measurement point for each tensiometer that has reached the point where air passes the tensiometer cup. At that point in time a tension that is specified in the **Information** register as HYPROP Parameters is used to measure tension of the respective tensiometer (see [Figure 3](#) below).

When the **Use Air Entry Point** option is active, dashed lines are shown that interpolate the tensiometric data between the last reliably measured points (stop point) and the air entry points of both tensiometers.

## DIFFERENTIATION

There are two kinds of tensiometer shafts that differ in the air entry point of the ceramics: 8.8-bars ceramic ([Figure 1A](#)) and 5-bars ceramic ([Figure 1B](#)). Shafts with a black color have an air entry point of 8.8 bars ([Figure 1A](#)) Shafts with a blue color have an air entry point of 5 bars ([Figure 1B](#)).



A) 8.8-bars ceramic



B) 5-bars ceramic

Figure 1 Tensiometer shafts (A) 8.8-bars ceramic (B) 5.5-bars ceramic

## SETTINGS IN LABROS SOILVIEW-ANALYSIS SOFTWARE FOR POWER USER

For evaluation, the correct **Air entry point** of the used tensiometer shaft must be selected in the Information tab. There are two ways to adapt the **Air entry point** value. The first option is to change the user mode to **Power User** (see [Figure 2](#)) and adapt the value manually to 5 bars (see [Figure 3](#)).

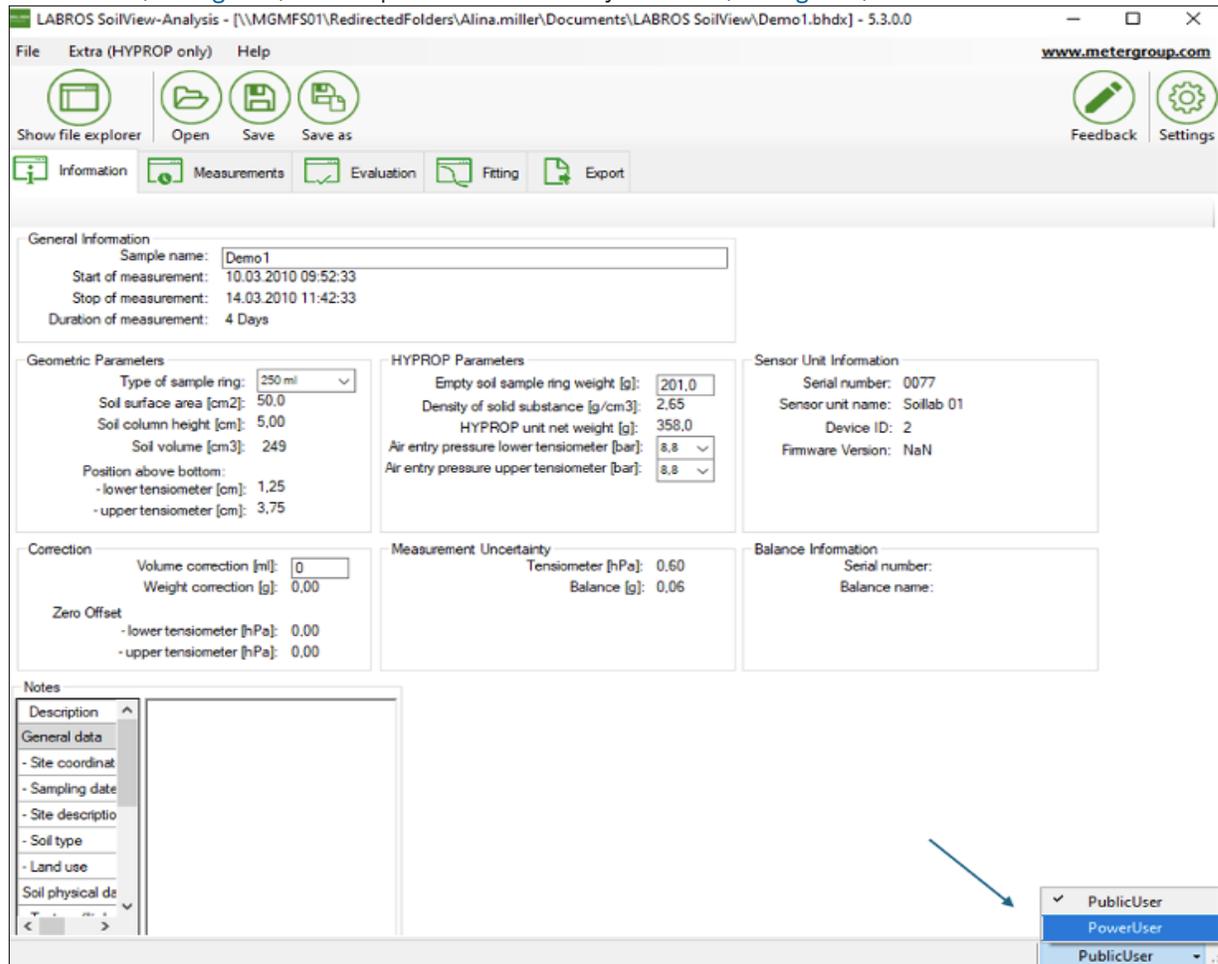


Figure 2 Change user mode

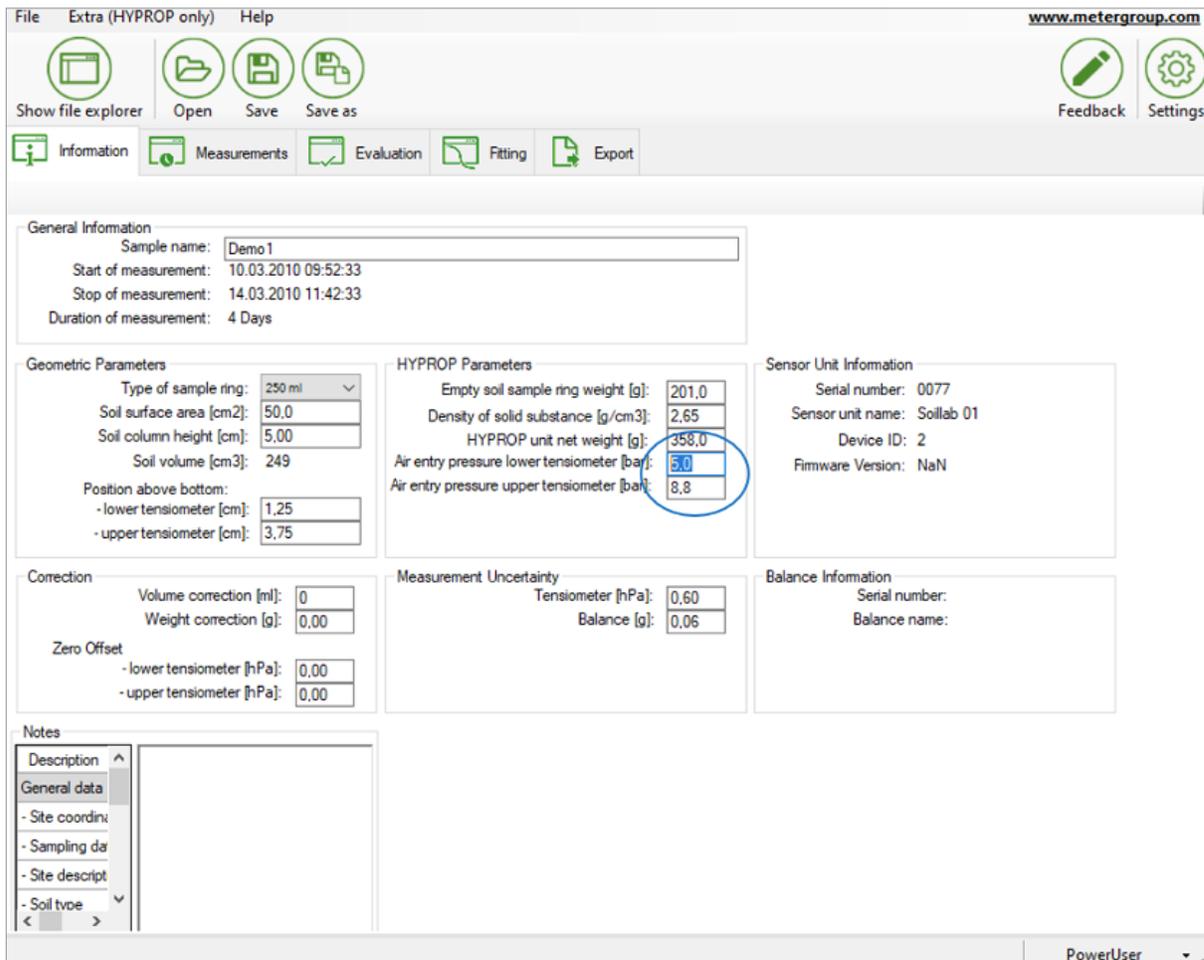


Figure 3 Change value manually

## SETTINGS IN LABROS SOILVIEW-ANALYSIS SOFTWARE FOR PUBLIC USER

The second option is to select the **Air entry point** value with the offered drop-down menu (see [Figure 4](#)) in **Public User** mode. This drop-down menu is available from software version 5.3.0 upwards. LABROS SoilView-Analysis can be downloaded [here](#).

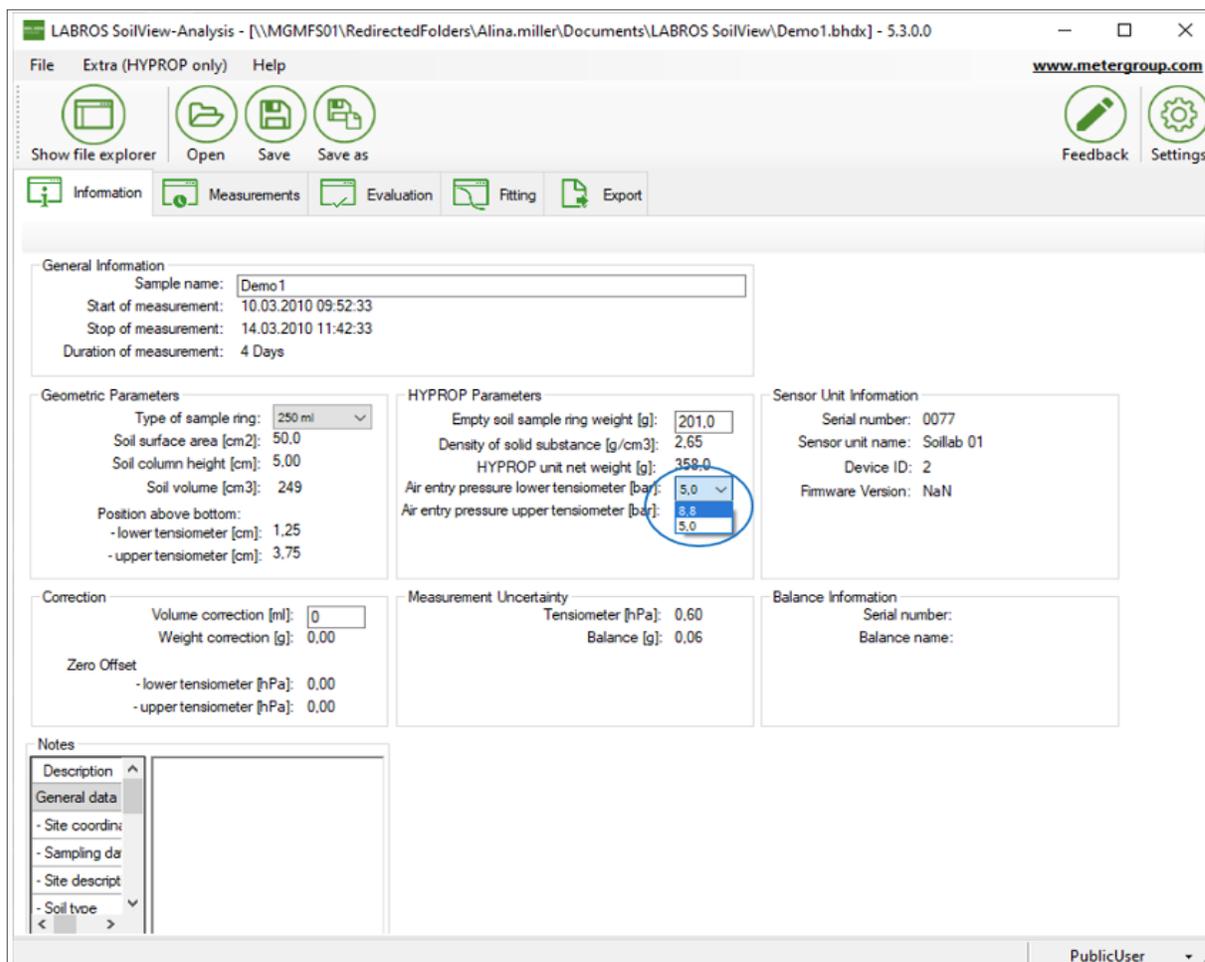


Figure 4 Using drop-down

The displayed default value can be defined in the **Settings** menu. Access the **Settings** menu by clicking the green gear in the upper right corner of the LABROS SoilView-Analysis software window.

## CONSEQUENCES FOR THE RESULTS AND POTENTIAL ERROR

Using a 5-bars ceramic, the measurement duration is shorter as the air entry point is reached faster. This causes a smaller measurement range. The time for refilling and degassing the 5-bars tensiometer shaft is approximately 20 % shorter than the 8.8-bar tensiometer shaft.

**NOTE:** Verify that the correct air entry point is selected for type of tensiometer shaft used. Selecting the wrong value will cause an error of +/- 3.8 bar at this base point. Interpolating further, e.g. up to the permanent wilting point of 15 bar, the error may be even higher.

## REFERENCES

Schindler, U., W. Durner, G. von Unold, and L. Muller. "Evaporation Method for Measuring Unsaturated Hydraulic Properties of Soils: Extending the Measurement Range." *Soil Science Society of America Journal, Soil Physics*, 74, no. 4 (July 2010): 1070–83. <https://doi.org/https://doi.org/10.2136/sssaj2008.0358>.