



We Measure the World

2365 NE Hopkins Court
Pullman, Washington 99163
phone 509-332-2756
website www.decagon.com

Attention: 5TM, 5TE, and GS3 calibrations

Dear Customer,

We're always trying to improve the accuracy of our soil moisture sensors. One of the ways that we do this is to calibrate the digital sensors (5TE, 5TM, and GS3) in several dielectric standards that most accurately represent typical ranges of dielectric values found in soils. In January of 2013, we changed our calibration process to include the dielectric values of two additional standards. However, since then we have recognized that variability in these two standards caused an unanticipated shift in the water content values output by the sensor. Therefore we have recently reverted back to our pre-2013 method of calibration, which excludes these two dielectric standards. This resulted in differences in the output of these sensors when compared to values from sensors purchased between 2012 and now. High and low water contents are not affected, but readings in the range of 12 – 25% water content can read lower on a 2013 sensor when compared to a 2012 sensor. Please refer to figures 1 and 2 for clarification of issue at hand. If you would like the sensors that you purchased in 2013 to be updated with our most recent method and read similar to sensors produced before we made the change, the firmware can be updated with a Pro-check using the latest updater at www.decagon.com/updaters. We can also help you adjust data collected in 2013 using a new equation that corrects the dielectric values appropriately.

Figure 1.

Apparent ϵ_b vs. Published ϵ_b

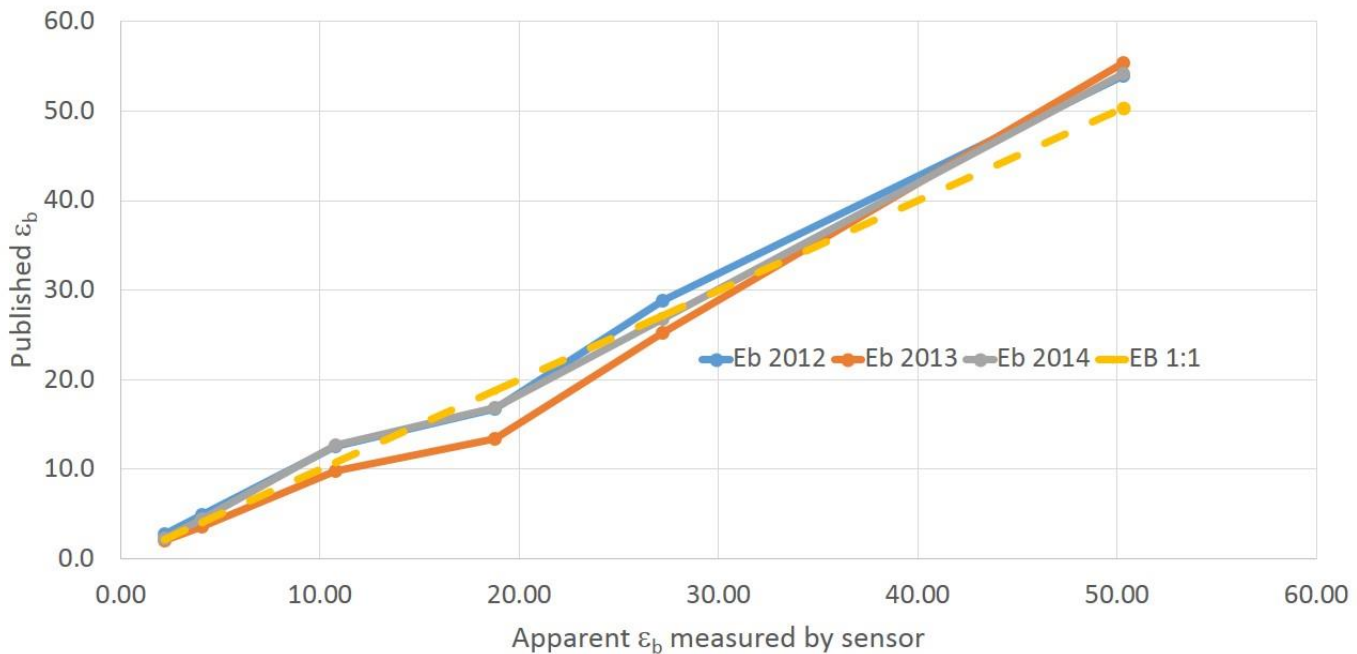


Figure 1. Note that the dielectric output by the probe is very close for 2012 (blue line), and our current sensors (gray line). Sensors produced in 2013 read lower in the region between a dielectric of 10 – 20. A “perfect sensor” should fall directly on the 1:1 line (yellow).



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Figure 2.

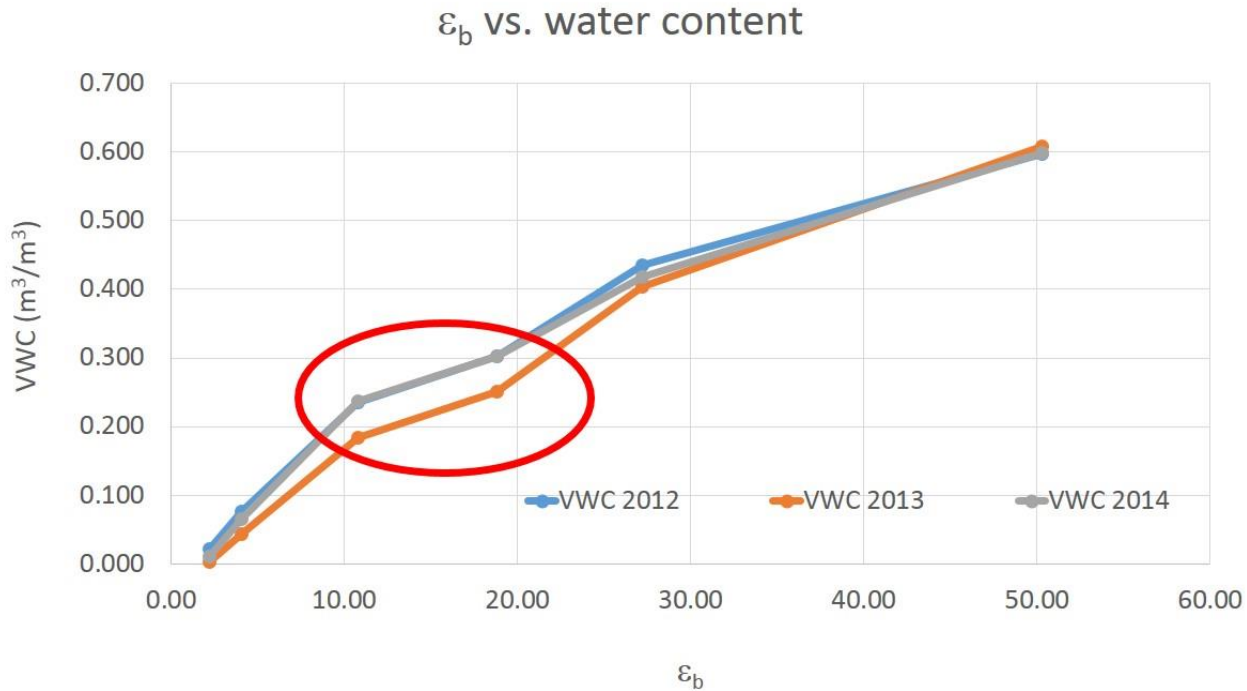


Figure 2. The Topp equation was used to assess the impact of the probe output on water content. The region circled in red highlights the area most greatly affected by the shift in output for the sensors.

We deeply regret any problems this may have caused you and we will do our utmost to minimize the impact this will have on your data. Sensors produced in 2013 that have custom calibrations will continue to provide superb data. Please do not hesitate to contact support@decagon.com or call us at 509-332-5600 if you would like to learn more about this change or discuss possible solutions.

Sincerely,

Chris Chambers
Customer Support Specialist

Lauren Crawford
Ech2o Product Manager



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