METER ENVIRONMENT How To Interpret Saturo Data Instructions

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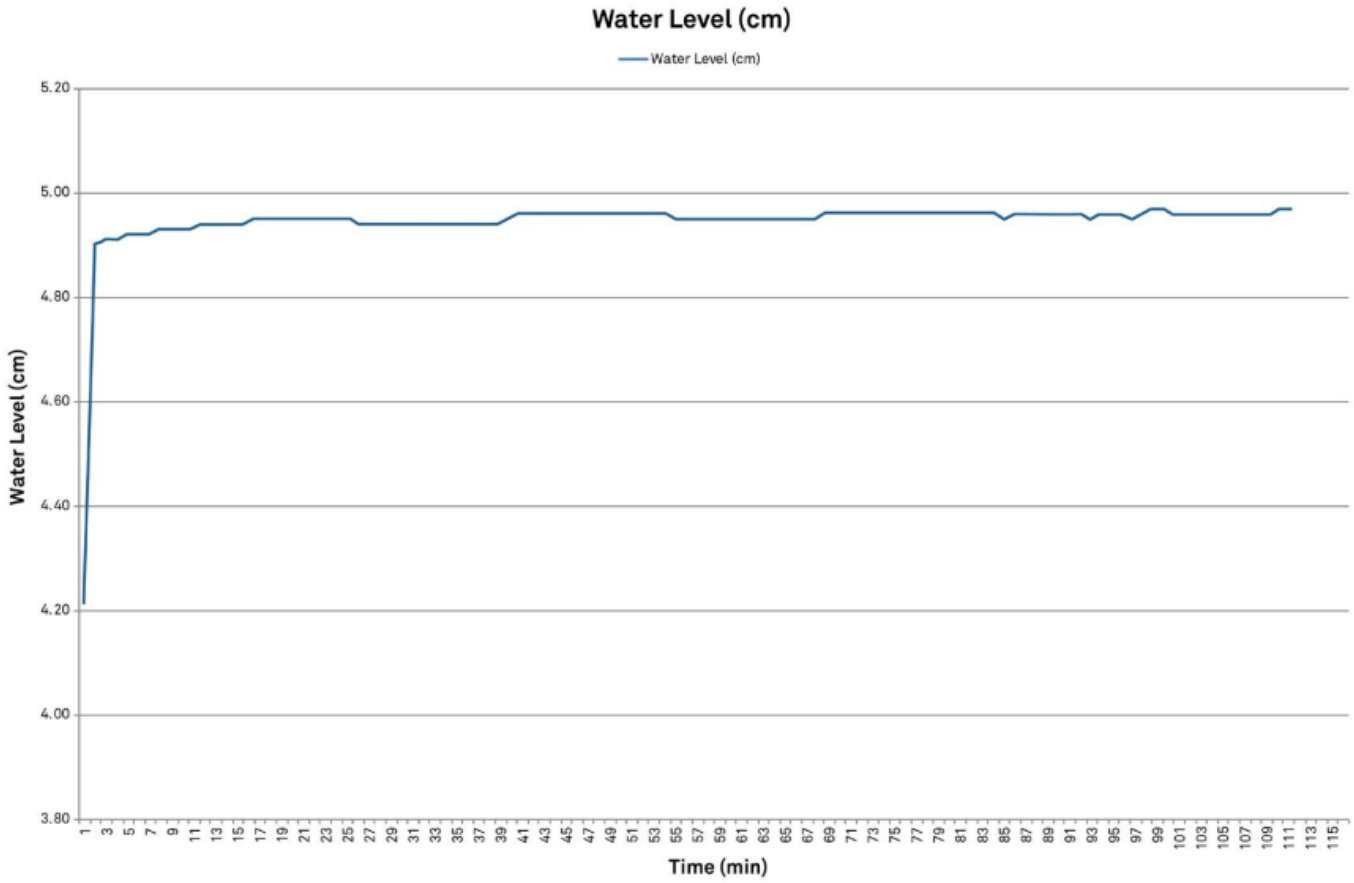
Contents

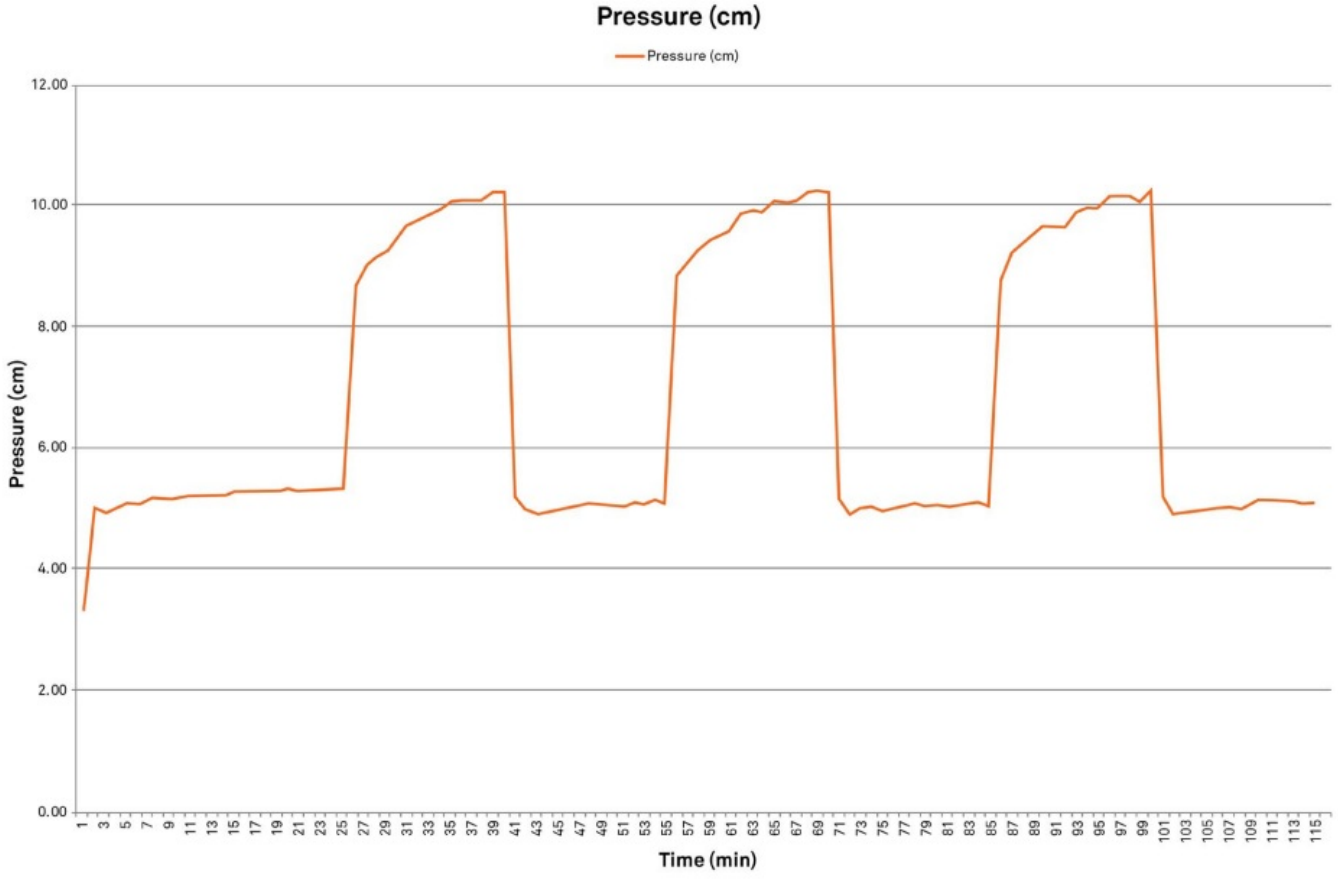
HOW TO INTERPRET SATURO DATA

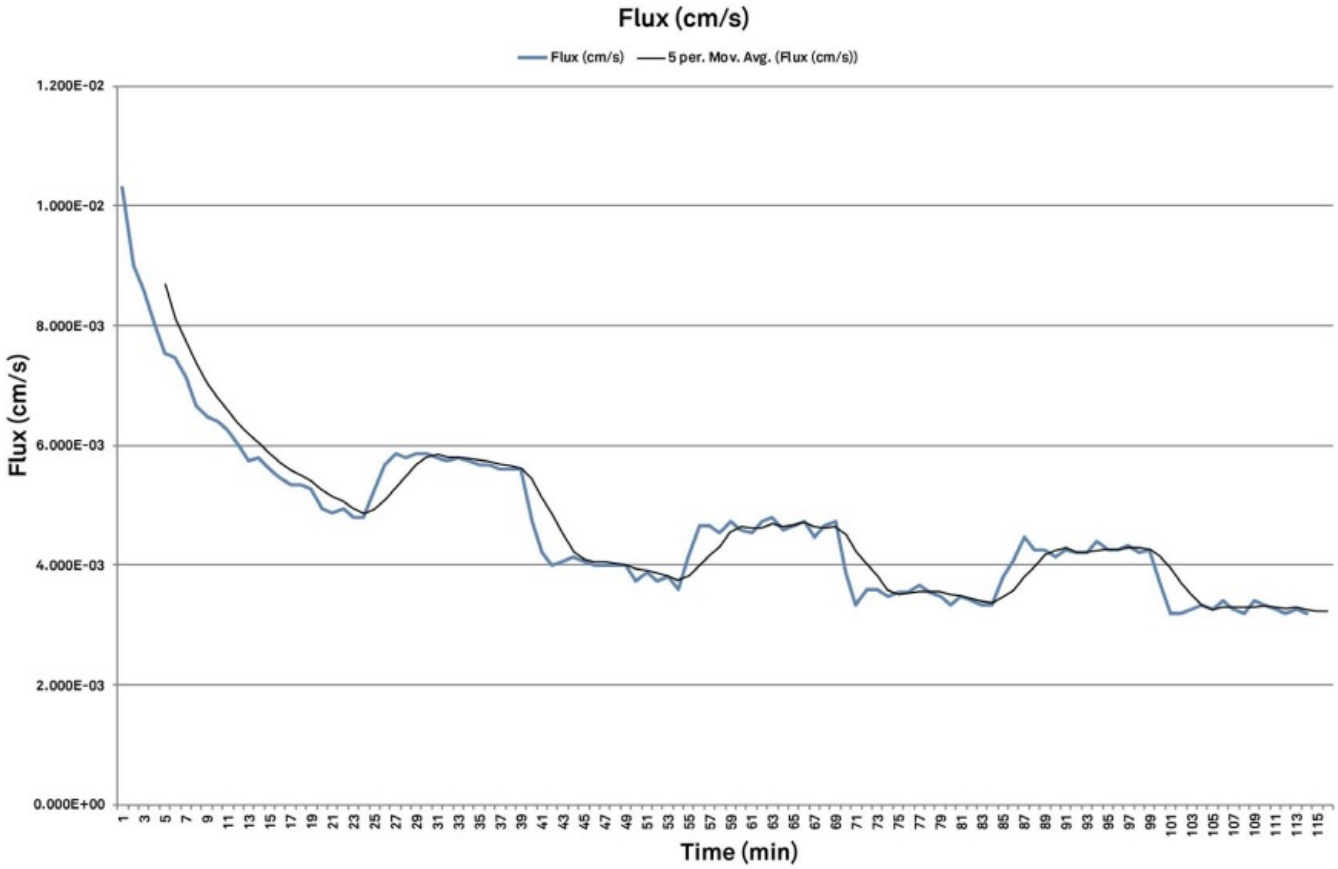
Review the SATURO data file and check that the water level is maintained (close to 5 cm), the low and high pressure are sustained and close to the set value, and the flux values for the last two pressure cycles are similar (comparing the same pressure head flux values). It is also a good idea to look at the averaged flux values, since the one-minute data are variable (which is why we provide the five minute moving average data). The SATURO

only uses the last pressure cycle to calculate Kfs and the standard error. The calculation also removes the first two minutes for each pressure head, since during the first two minutes the instrument is coming to the new pressure setting.

Refer to Figure 1 for an example of normal water level, pressure, and flux data.







	A	B	C	D
1	**Test Settings**			
2	Name			
3	Pressure Head 1 (cm)	5.0		
4	Pressure Head 2 (cm)	10.0		
5	Soak Time (min)	25		
6	Pressure Cycles	3		
7	Hold Time (min)	15		
8	Insertion Depth (cm)	5		
9	Run Time (min)	115		
10				
11	**Infiltrometer Settings**			
12	Firmware Version	DHI 1.03		
13	Hardware Version	1		
14	Battery	91%		
15				
16	**Test Results**			
17	Raw Records	115		
18	First Record ID	1694		
19	Start Time	19 May 2017 09:32 AM		
20	Stop Time	19 May 2017 11:27 AM		
21	Kfs (cm/s)	0.00191		
22	Kfs Error (cm/s)	0.000067		
23				
24				
25				
26				
27				
28				

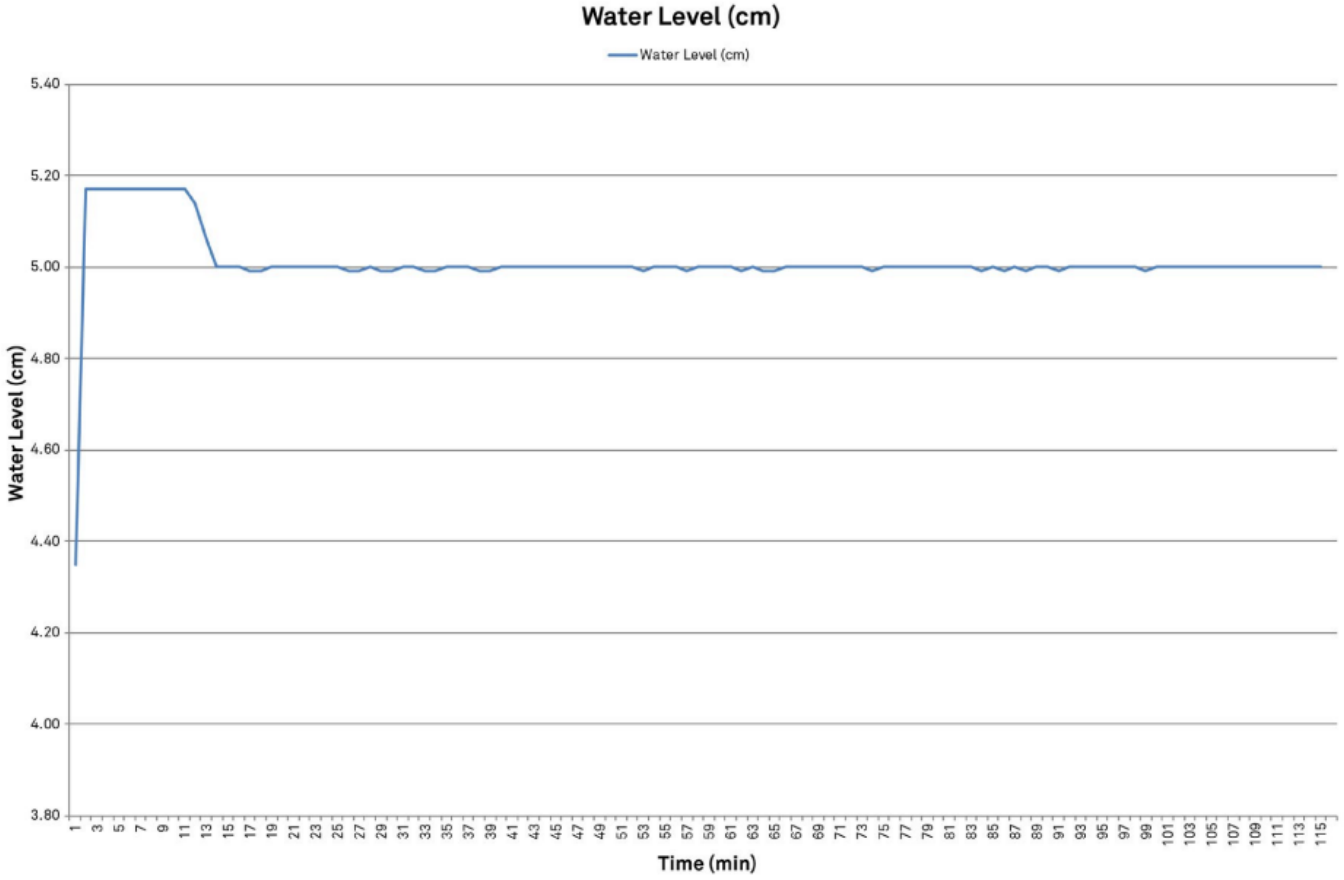
Summary | Water Level | Pressure | Flux | Raw Data

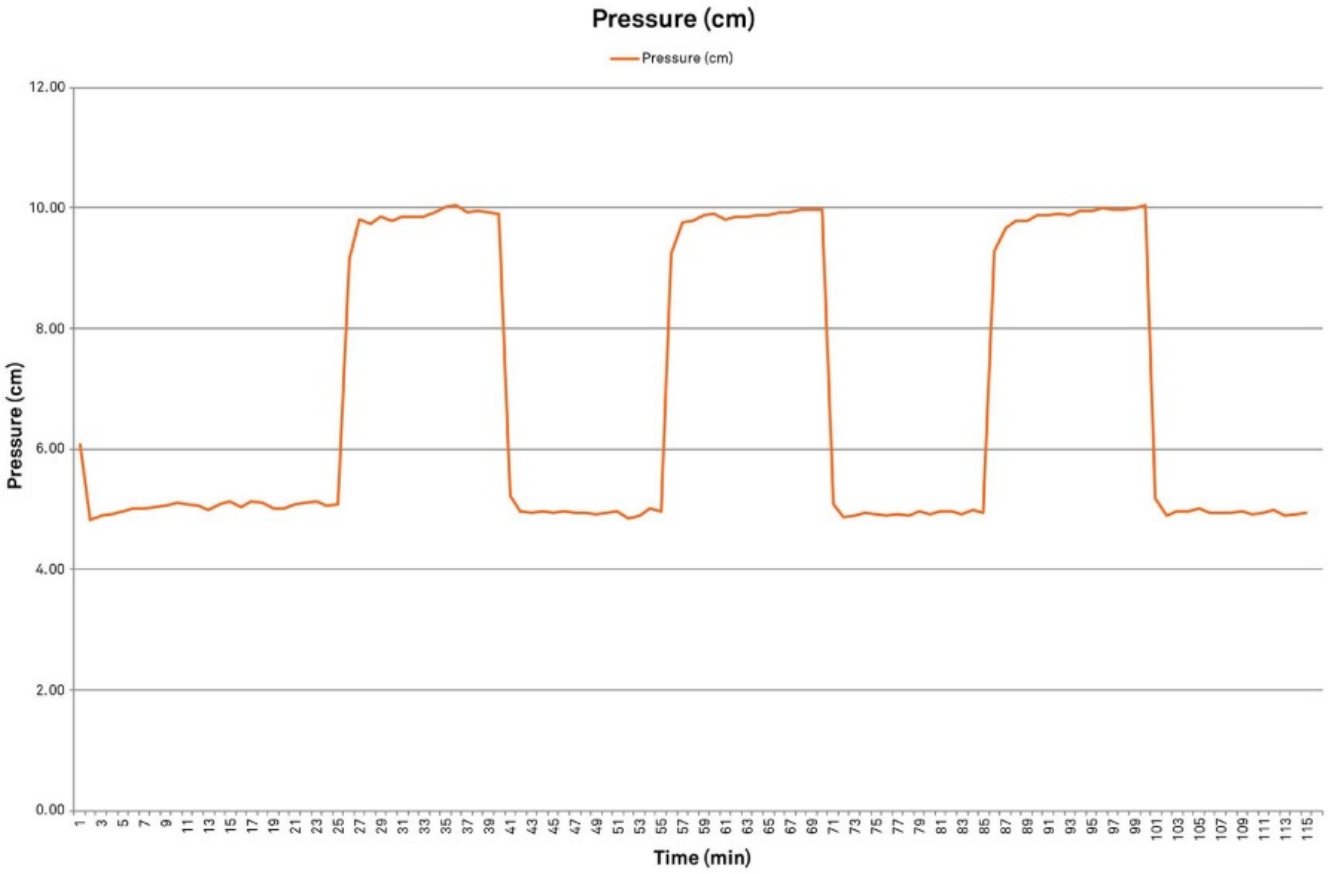
Ready

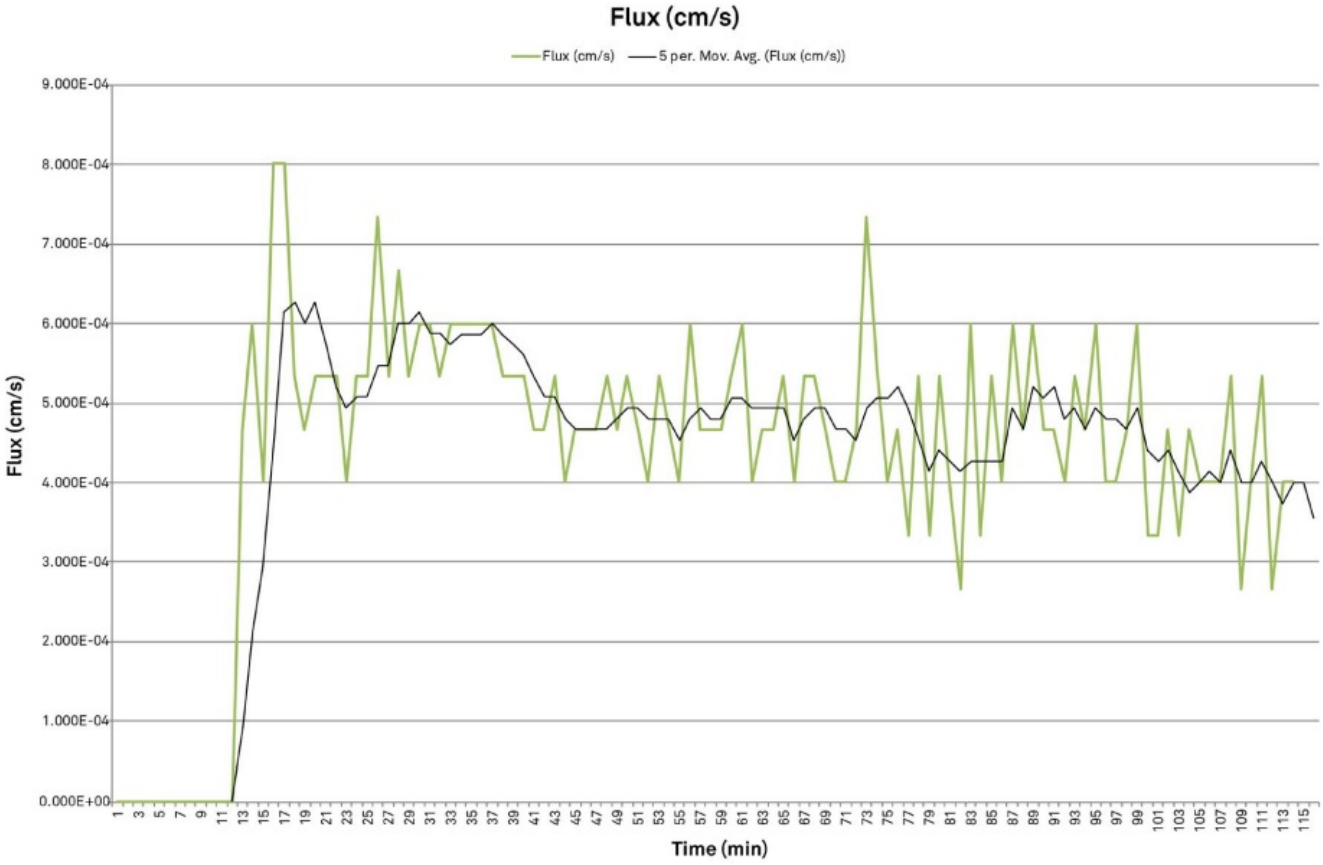
Figure 1. Normal water level, pressure, and flux data

Even though it looked like the instrument had a difficult time coming to the high pressure (Figure 1), this is not a

problem and is actually a result of the algorithm for maintaining the pressure heads. The clear differences in flux at the high and low pressures are ideal; however, if the infiltration error is low, then it is acceptable if the flux at the high and low pressure heads doesn't have this obvious of a difference (see Figure 2).







	A	B	C	D
1	**Test Settings**			
2	**Name**			
3	**Pressure Head 1 (cm)**	5.0		
4	**Pressure Head 2 (cm)**	10.0		
5	**Soak Time (min)**	25		
6	**Pressure Cycles**	3		
7	**Hold Time (min)**	15		
8	**Insertion Depth (cm)**	5		
9	**Run Time (min)**	115		
10				
11	**Infiltrometer Settings**			
12	**Firmware Version**	DHI 1.03		
13	**Hardware Version**	1		
14	**Battery**	91%		
15				
16	**Test Results**			
17	**Raw Records**	115		
18	**First Record ID**	265		
19	**Start Time**			
20	**Stop Time**			
21	**Kfs (cm/s)**	0.000173		
22	**Kfs Error (cm/s)**	0.0000477		
23				
24				

Summary | Water Level | Pressure | Flux | Raw Data

Ready

Figure 2. Example where increasing the high pressure head would be recommended, but Kfs data are still good

To increase the flux for the high-pressure setting, increase the high-pressure setting. In general for low-infiltration

soils, a 10 cm difference between high and low pressure head is needed. If the flux is too low or too high after the first cycle, then stop the measurement and modify the settings. It is unnecessary to move the infiltration ring unless the issue with the measurement is the location (too many macropores or disturbed soil).

Consider modifying the settings to use a 20-25 minute hold time, and only run two cycles. This may provide better flux data.

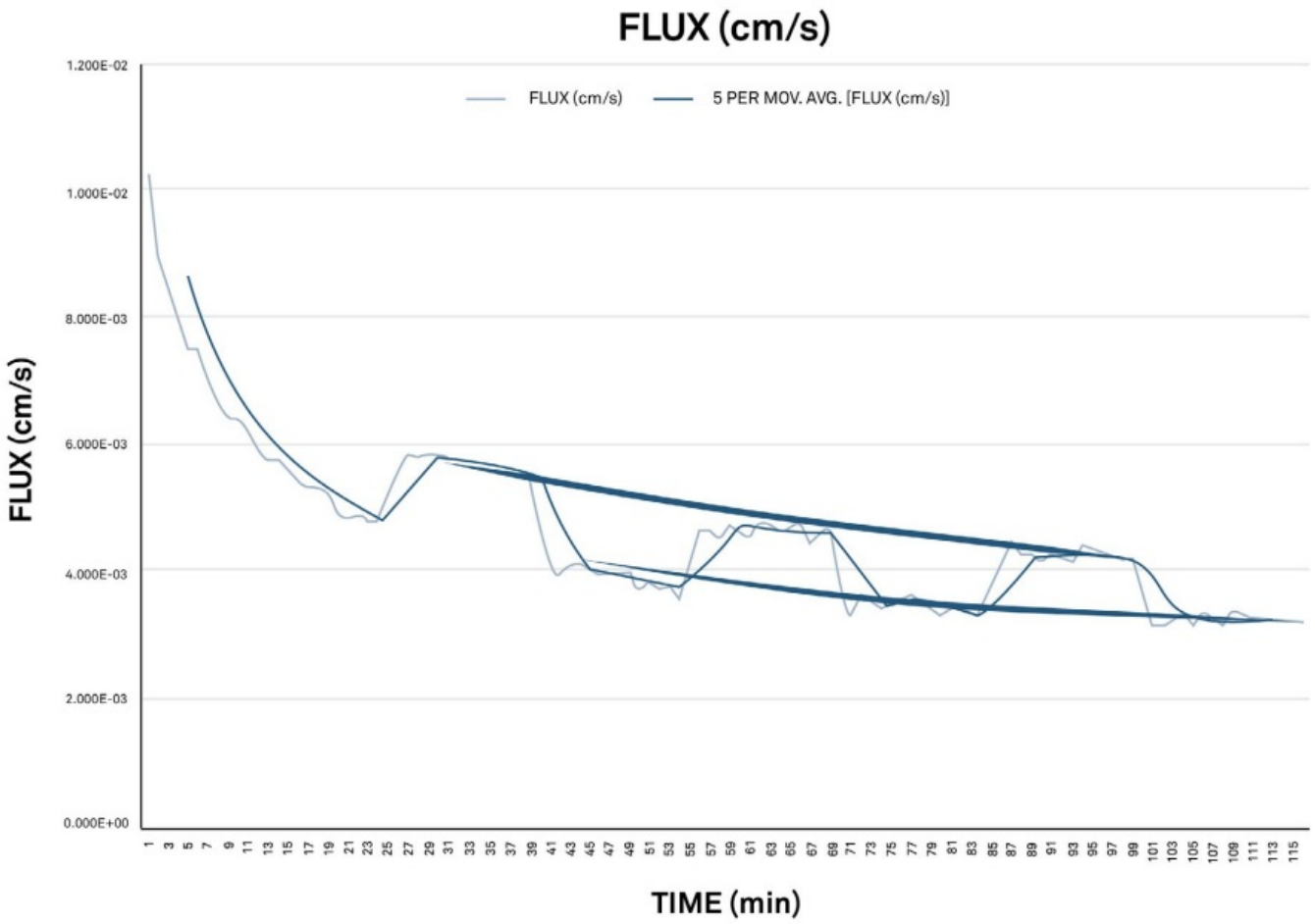


Figure 3. Example of quasi steady state equilibrium being reached after three pressure cycles

If you find that data for the second cycle is better than the third cycle, then you can manually calculate saturated hydraulic conductivity (Kfs). Contact METER support for assistance.

Documents / Resources

	METER ENVIRONMENT How To Interpret Saturo Data [pdf] Instructions How To Interpret Saturo Data, Saturo Data Interpret