

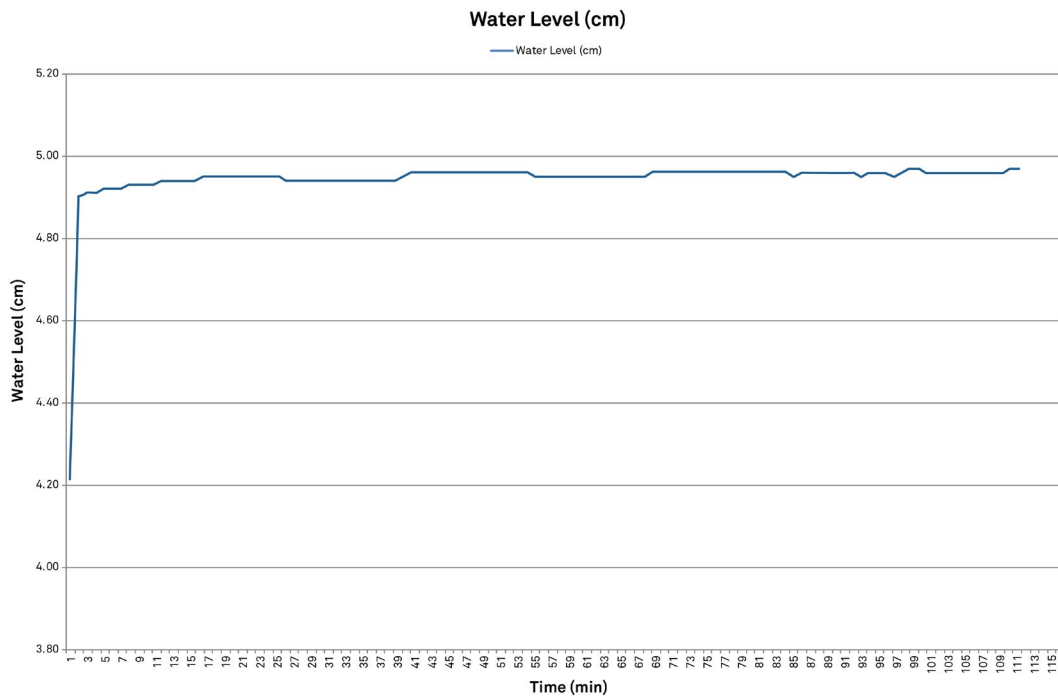


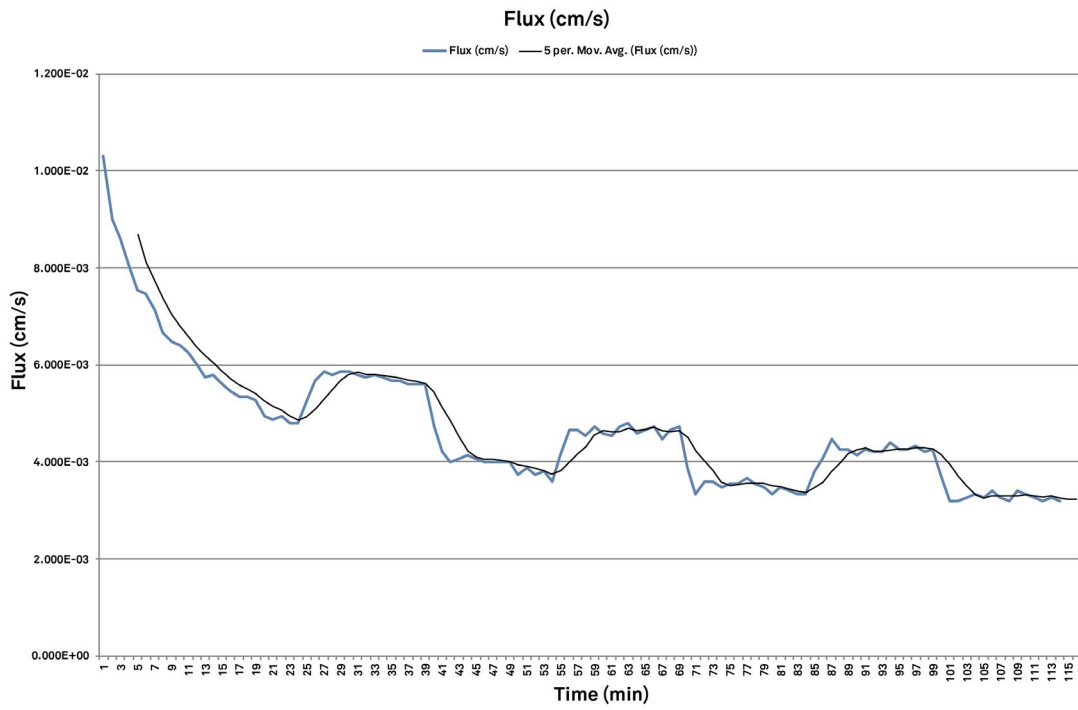
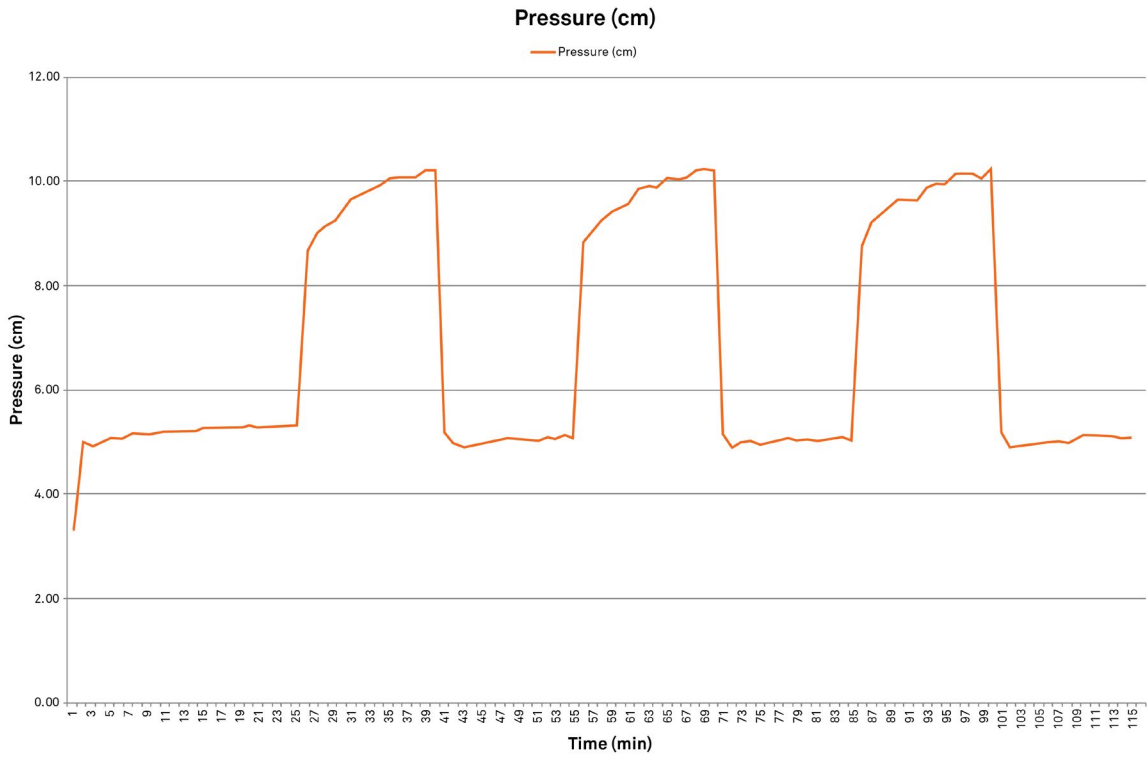
METER
ENVIRONMENT

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.



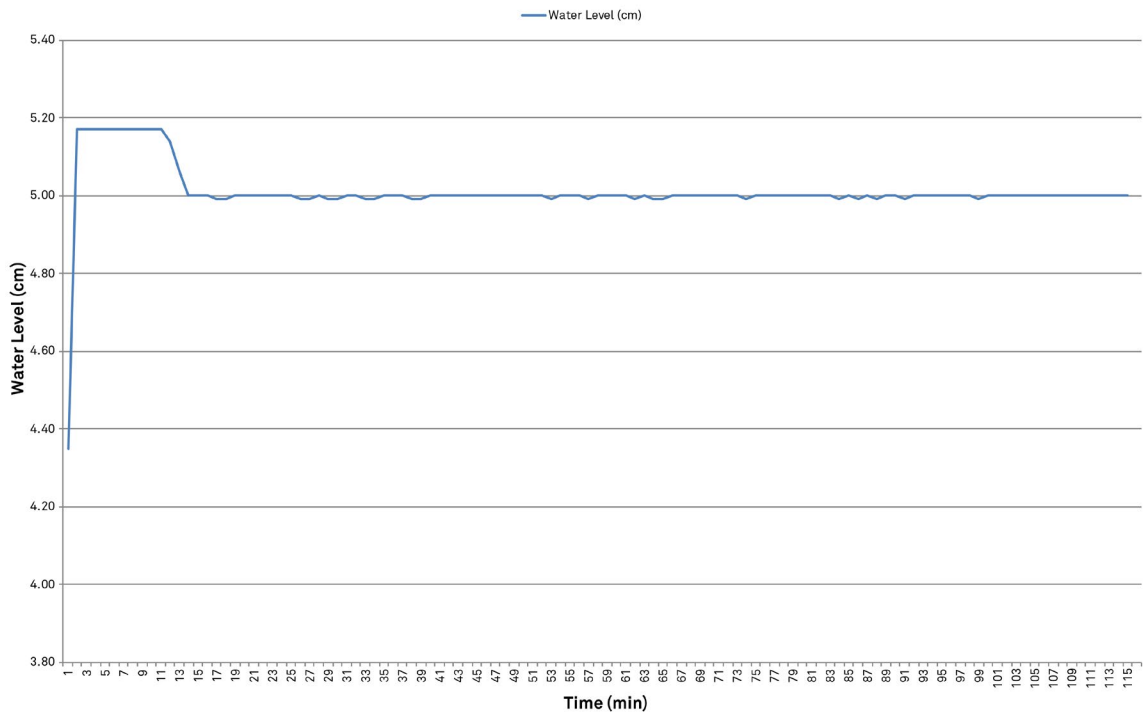


	A	B	C	D
1	Test Settings			
2	Name			
3	Pressure Head 1 (cm)		5.0	
4	Pressure Head 2 (cm)		10.0	
5	Soak Time (min)		25	
6	Pressure Cycles		3	
7	Hold Time (min)		15	
8	Insertion Depth (cm)		5	
9	Run Time (min)		115	
10				
11	Infiltrometer Settings			
12	Firmware Version	DHI 1.03		
13	Hardware Version	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				
<div style="display: flex; border: 1px solid gray; padding: 2px;"> ◀ ▶ Summary Water Level Pressure Flux Raw Data </div>				
Ready				

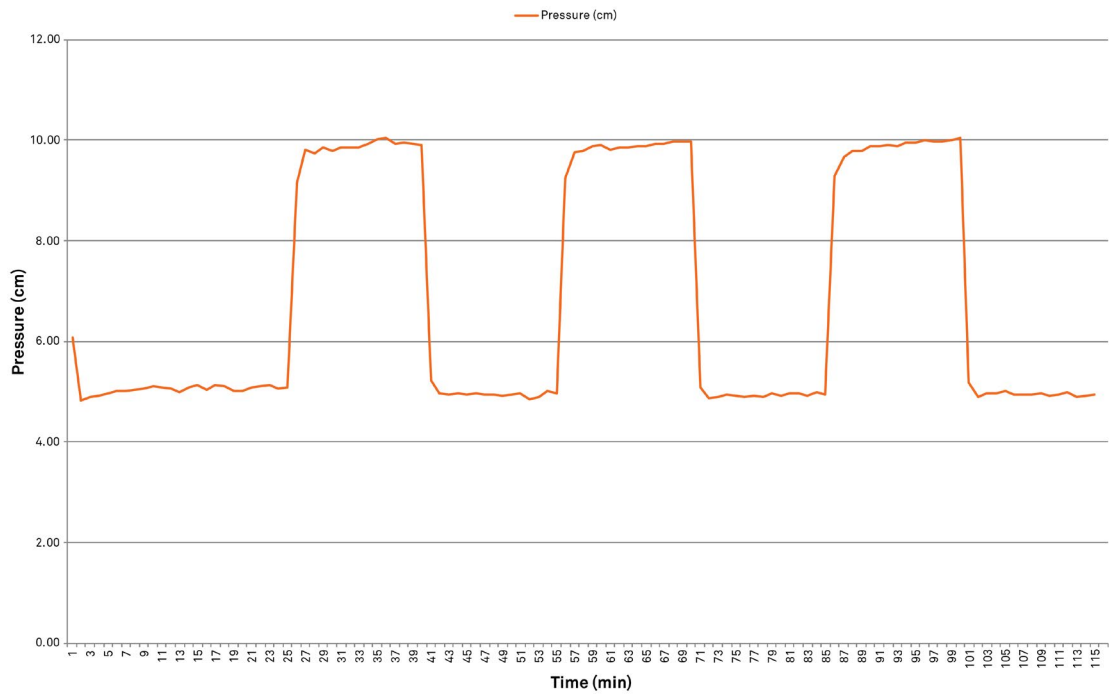
Figure 1. Normal water level, pressure, and flux data

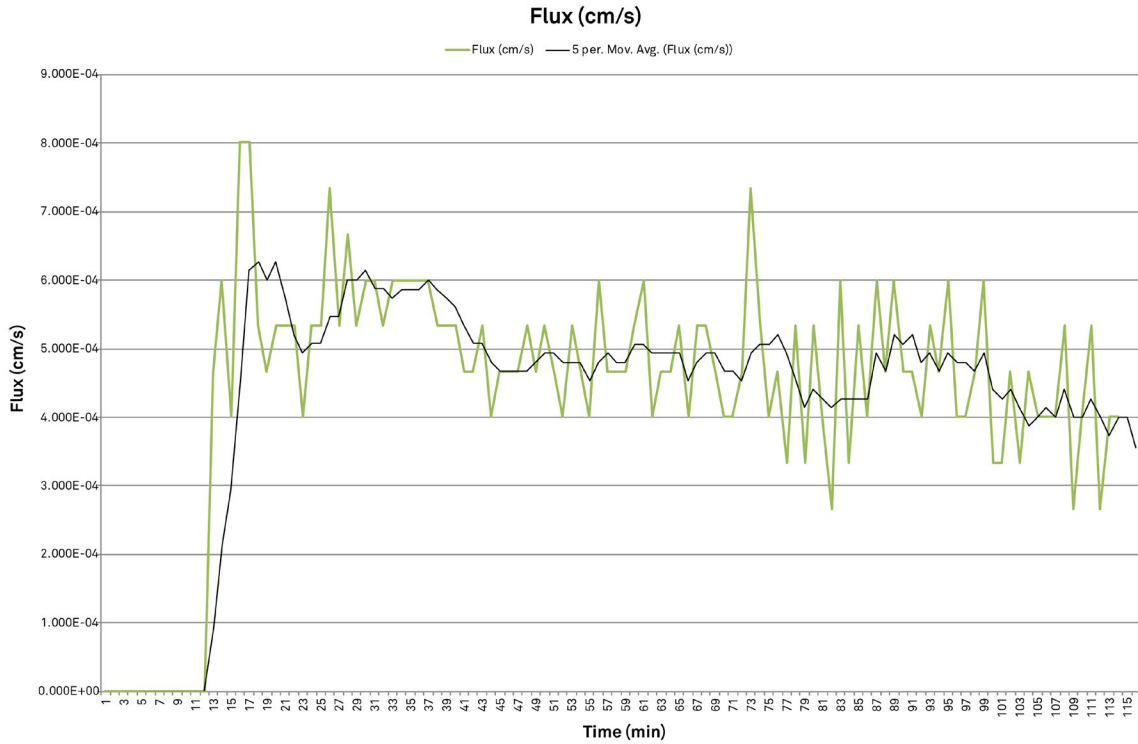
Even though it looked like the instrument had a difficult time coming to the high pressure (Figure 1), this is not a problem and is actually a result of the algorithm for maintaining the pressure heads. The clear differences in flux at the high and low pressures are ideal; however, if the infiltration 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).

Water Level (cm)



Pressure (cm)





	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.

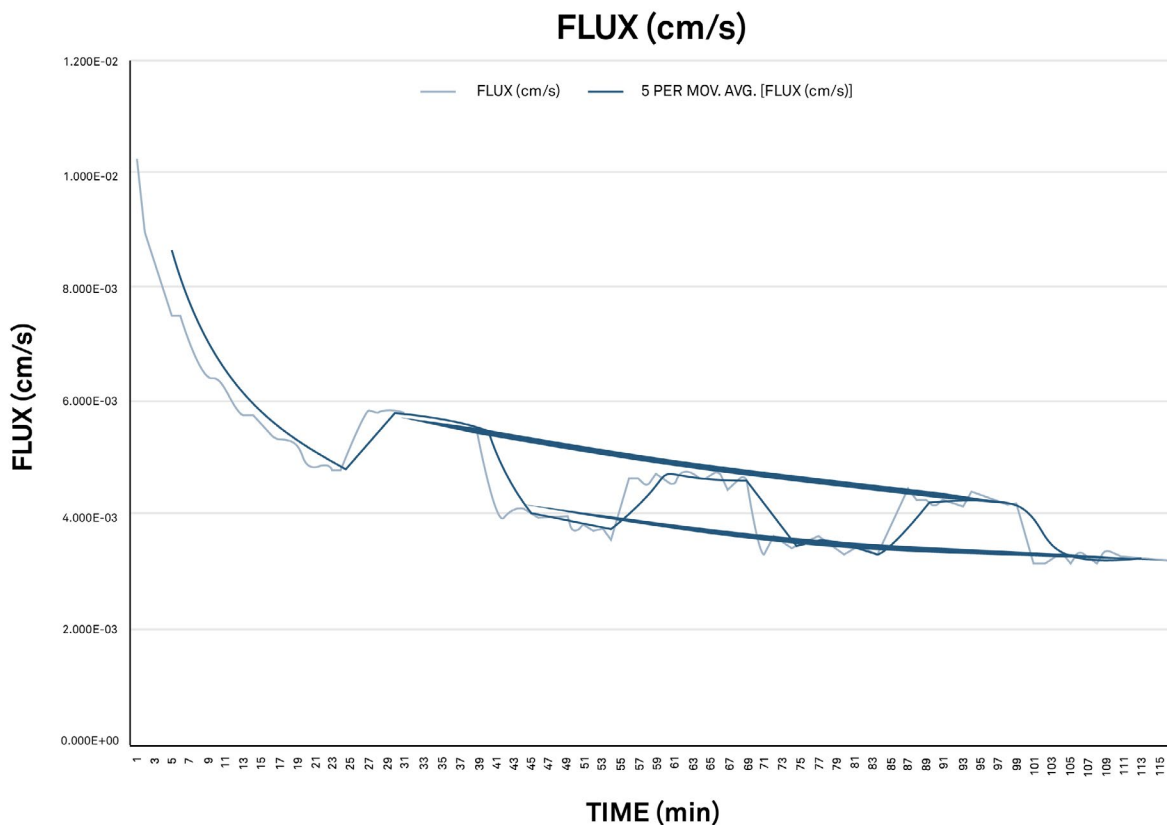


Figure 3. Example of quasi steady state equilibrium being reached after three pressure cycles

If you find that data for the second cycle is better than the third cycle, then you can manually calculate saturated hydraulic conductivity (K_{fs}). Contact [METER support](#) for assistance.