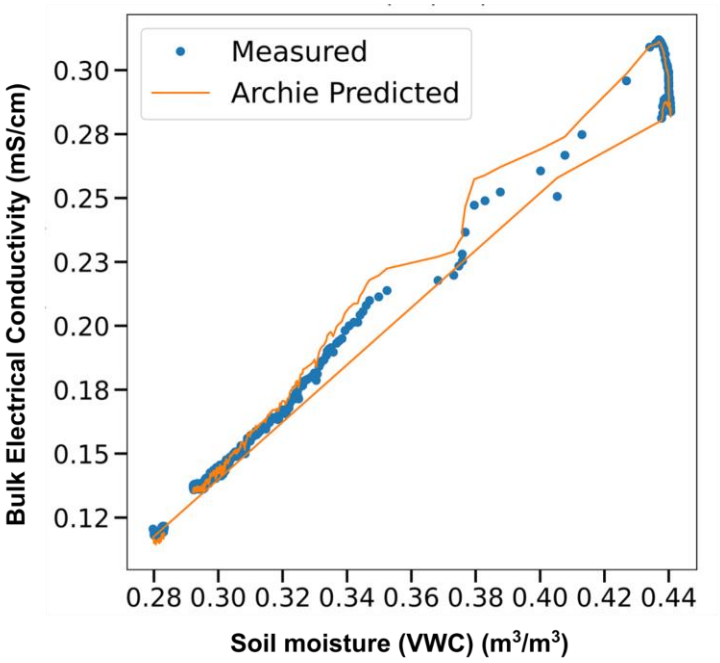

Figure S1. Example of the relationship between soil moisture and bulk electrical conductivity through a single storm event. The values predicted by Archie's law are superimposed.

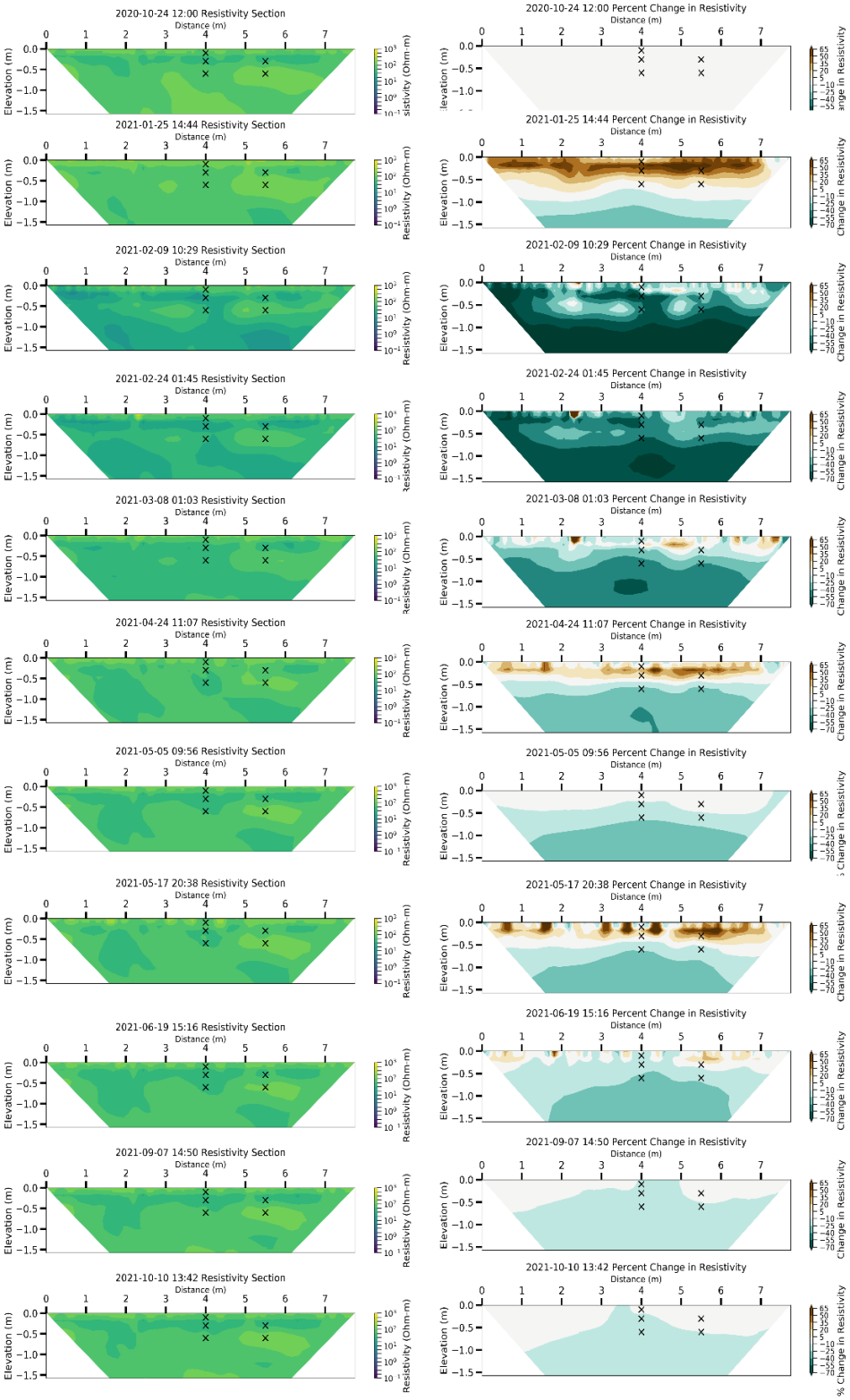

Figure S2. Selected regular inversions (left) and timelapse inversions (right) for Line 1. Soil sensor locations are denoted by X's. Dates are formatted as yyyy-mm-dd. Inversions start in 2020-10 and end in 2021-10.

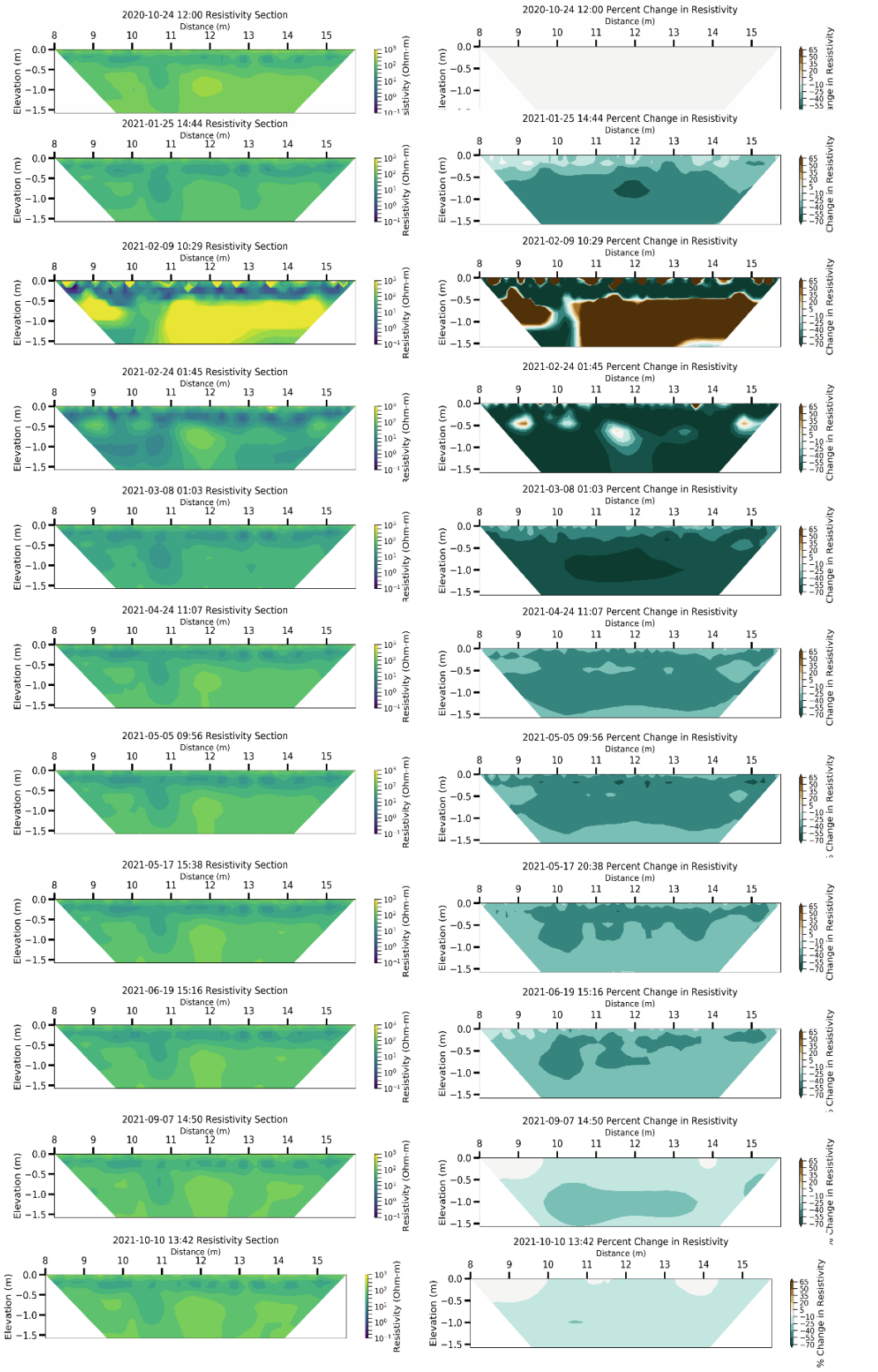

Figure S3. Selected regular inversions (left) and timelapse inversions (right) for Line 2. Soil sensor locations are denoted by X's. Dates are formatted as yyyy-mm-dd.Inversions start in 2020-10 and end in 2021-10.

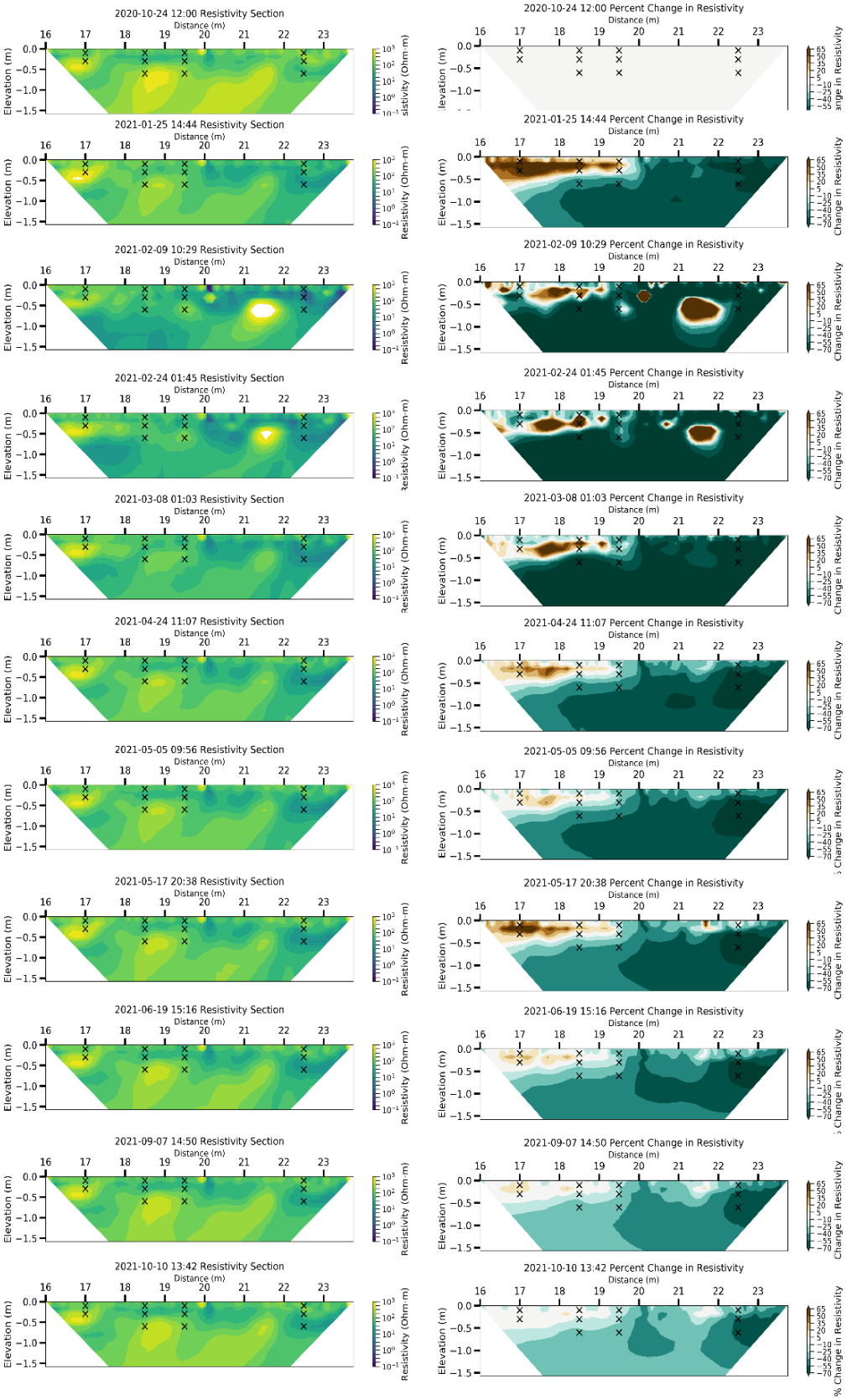

Figure S4. Selected regular inversions (left) and timelapse inversions (right) for Line 3. Soil sensor locations are denoted by X's. Dates are formatted as yyyy-mm-dd. Inversions start in 2020-10 and end in 2021-10.

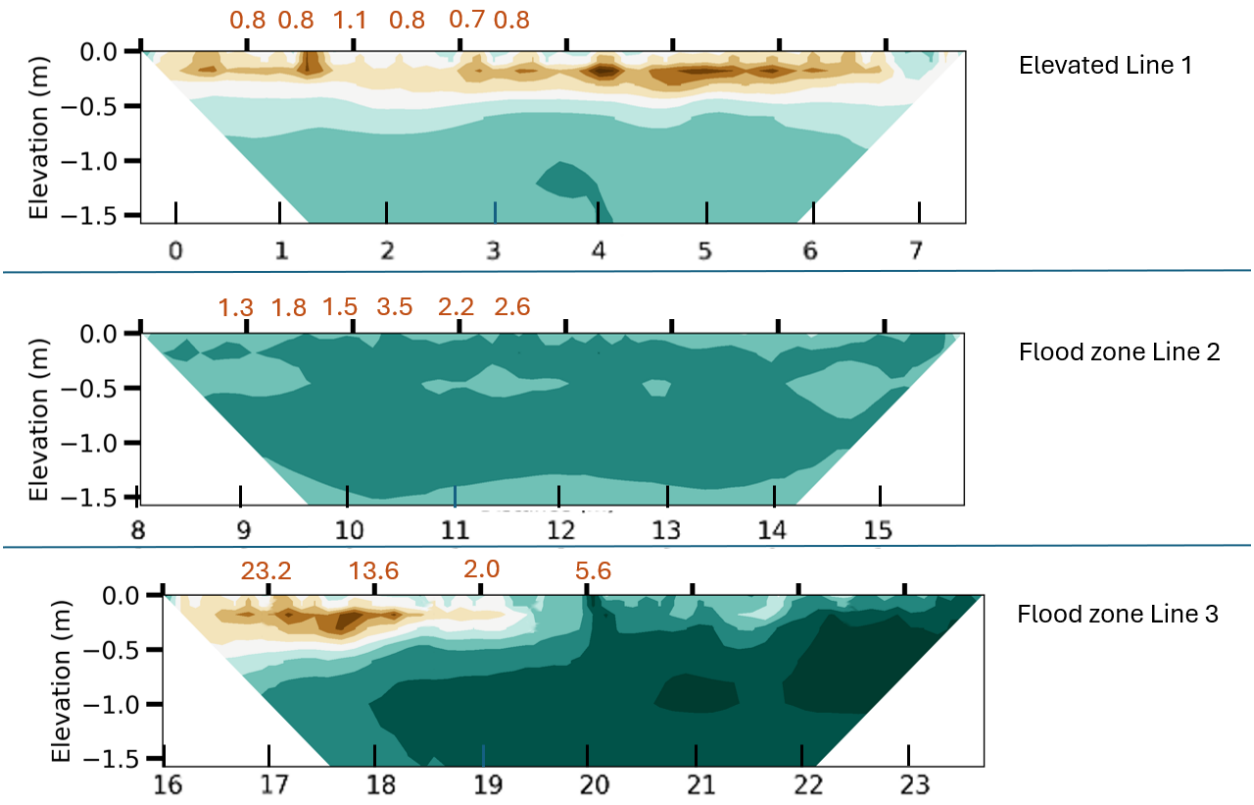

Figure S5. Similar to the plant root sodium data, the exchangeable sodium percentage in soil (brown numbers above the ERT lines) do not show the same spatial distribution as conductivity measured by time-lapse ERT. Comparing the lines, higher sodium was observed in the flood zone, but the dry end of the flood zone on Line 3 has higher sodium than the elevated Line 1.

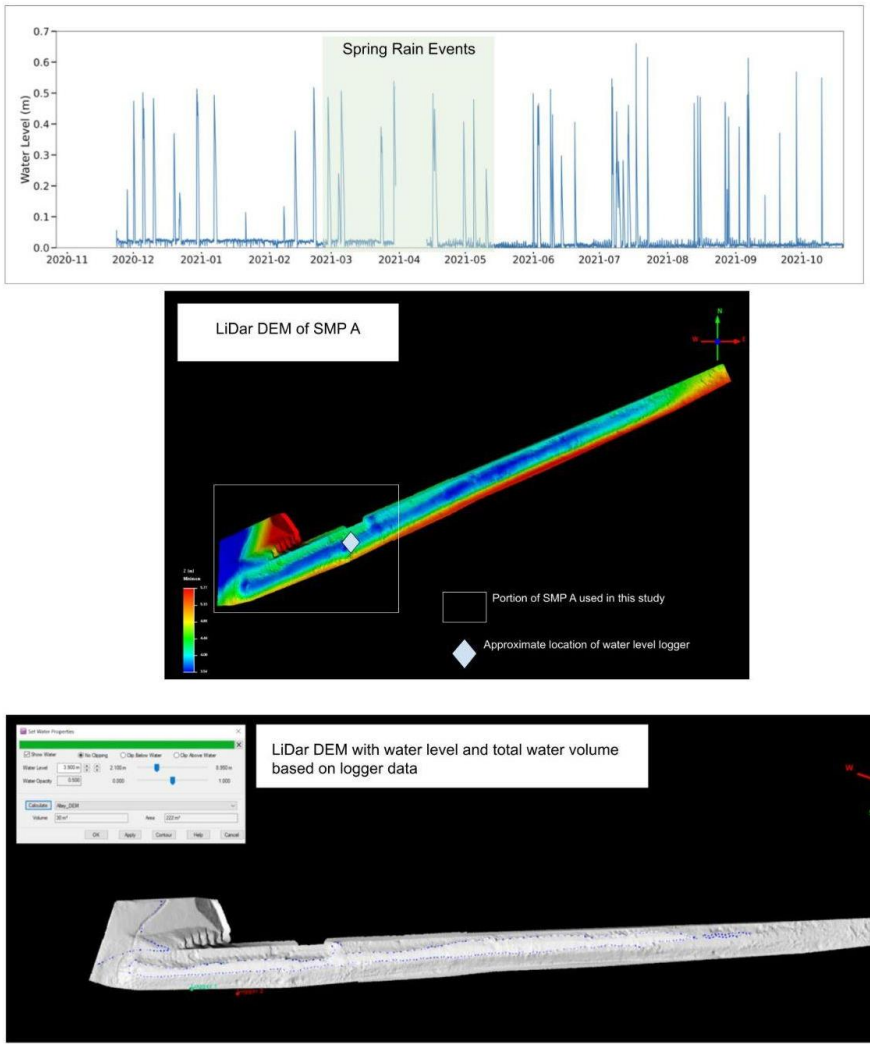

Figure S6. Schematic showing the water volume calculation for Spring rain events. Maximum water level for each rain event was used to calculate total water volume for each event. Total water volume was calculated using a LiDAR digital elevation model (DEM) in which the user can add water elevation.

Table S1. Locations and depths of the TEROS 12 sensors used to measure soil moisture and electrical conductivity

Sensor Location (m)	Depth (m)	ERT Line
4.0	0.6	1
4.0	0.3	1
4.0	0.1	1
5.5	0.6	1
17.0	0.3	3
17.0	0.1	3
18.5	0.6	3
18.5	0.3	3
18.5	0.1	3
19.5	0.6	3
19.5	0.3	3
19.5	0.1	3
22.5	0.6	3
22.5	0.1	3
22.5	0.3	3