

# Supplement of

## Snowmelt-mediated isotopic homogenization of shallow till soil

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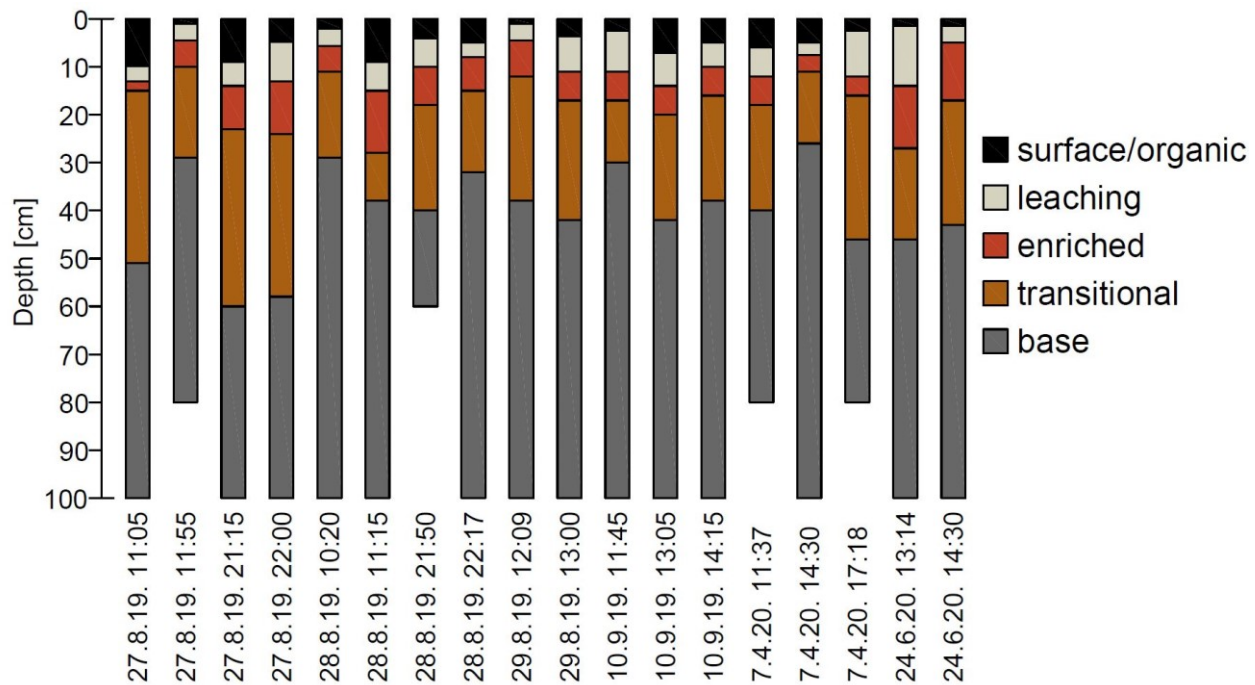
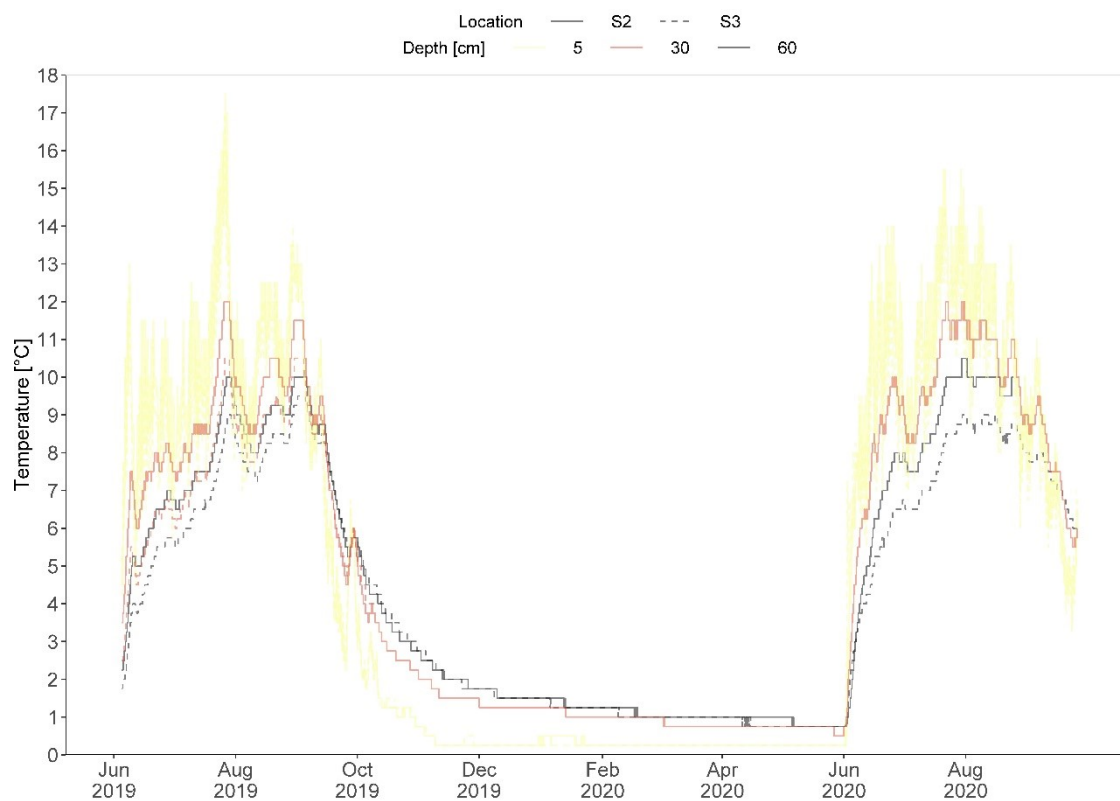
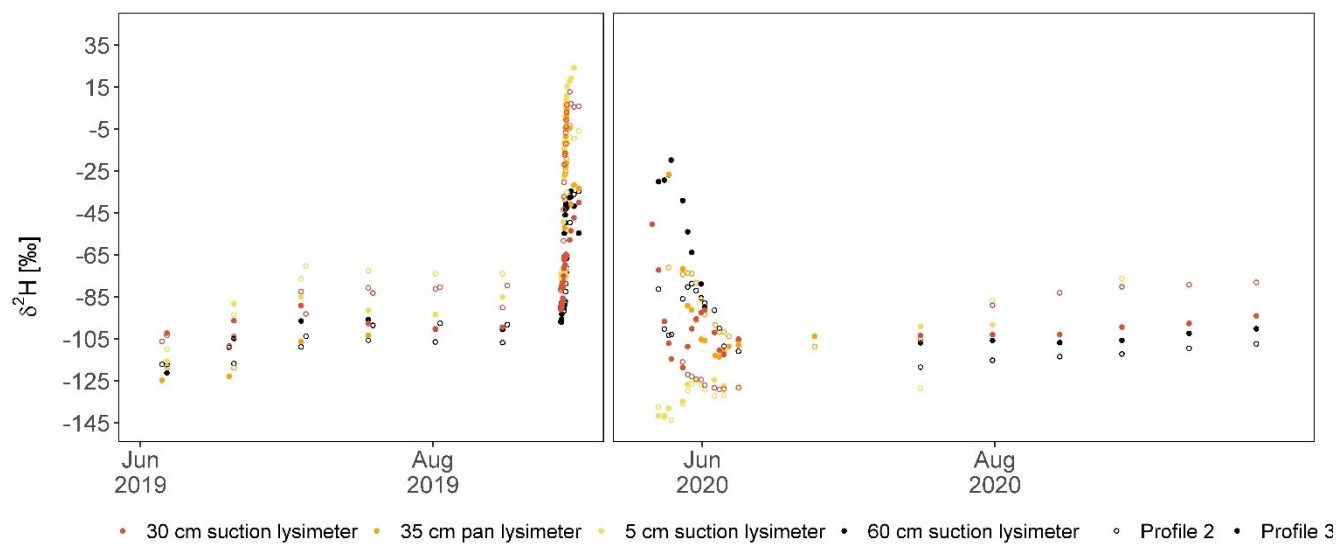


Figure S1. Soil horizons in soil cores sampled at the Kenttäröva hilltop.



**Figure S2. Soil temperatures in the EP during the whole observation period.**



**Figure S3. Seasonal dynamics of soil lysimeter  $\delta^2\text{H}$  signal in 2019 and 2020.**

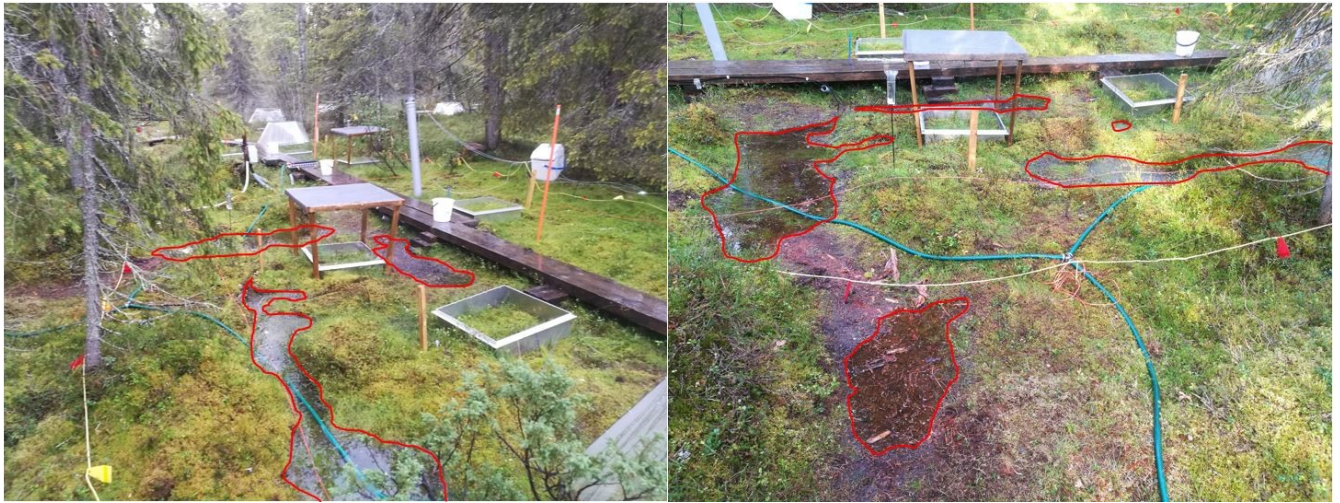


Figure S4. Surface ponding in the EP during irrigation.

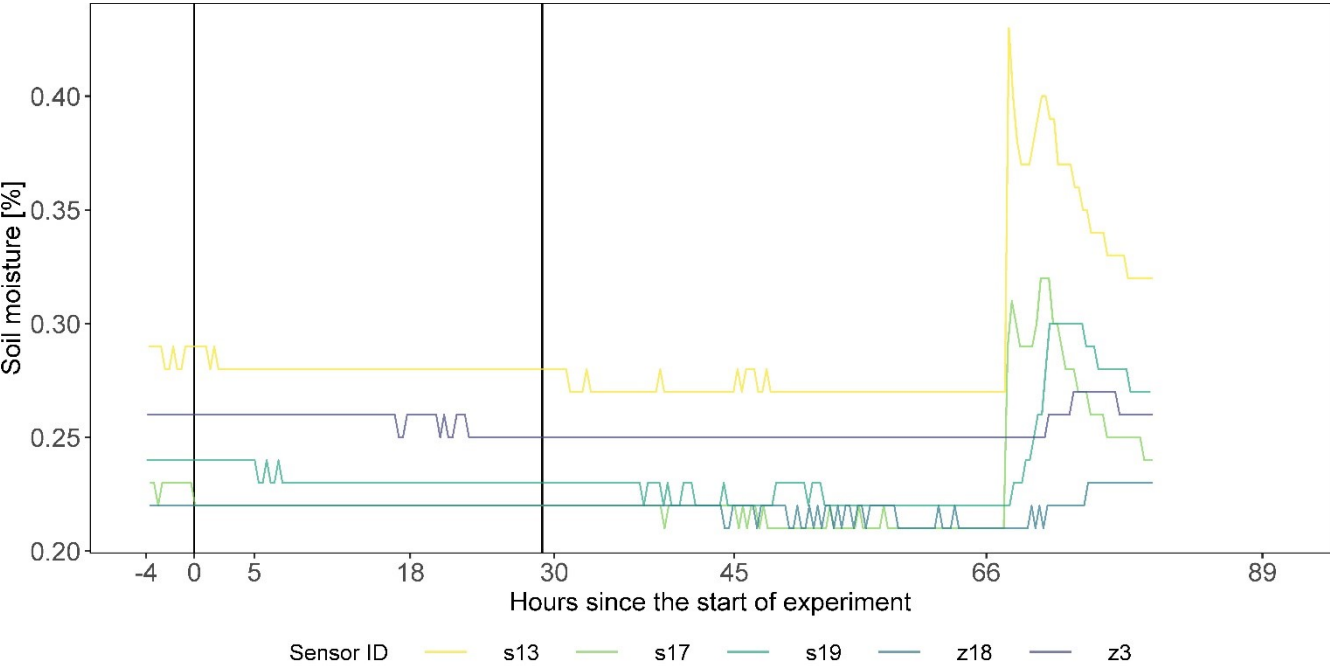


Figure S5. Soil moisture dynamics upslope of the EP during the irrigation period. Black vertical lines denote start and end time of irrigation

Soil property	Depth	Minimum	Maximum	Mean	Profile S2	Profile S3
Hydraulic conductivity [m/s]	5-10	1.40E-06	1.25E-05	4.25E-06	2.34E-06	6.16E-06
Hydraulic conductivity [m/s]	30-35	9.78E-07	8.92E-06	7.66E-06	9.78E-07	8.92E-06
Dry bulk density [g/cm <sup>3</sup> ]	5-10	0.69	1.39	0.90	0.74	1.39
Dry bulk density [g/cm <sup>3</sup> ]	30-35	1.32	1.46	1.44	1.45	1.43
Dry bulk density [g/cm <sup>3</sup> ]	60-65	1.78	1.91	1.89	1.89	1.91
Porosity [%]	5-10	45.48	69.19	53.10	45.48	48.10
Porosity [%]	30-35	43.35	45.48	44.32	44.83	43.35
Porosity [%]	60-65	25.54	29.98	26.62	26.62	25.54
Organic matter content [%]	5-10	4.21	14.60	7.48	8.18	5.58
Organic matter content [%]	30-35	1.55	4.32	2.49	3.82	1.89
Organic matter content [%]	60-65	0.68	1.02	0.77	0.77	1.02

**Table S1. Soil properties at the Kenttäröva hilltop.**