Supplement of Earth Syst. Sci. Data, 15, 1889–1910, 2023
https://doi.org/10.5194/essd-15-1889-2023-supplement

Open Access Earth System Science Data

Supplement of

Twelve years of profile soil moisture and temperature measurements in Twente, the Netherlands

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List of Tables

Table S1: Identification numbers, geographic and map projected coordinates of the DINOloket groundwater monitoring wells nearest to the soil moisture monitoring station.

		Geographic (datum: WGS84)		*Amersfoort/RD (New)*		*Distance to*
Well ID	*SM-site*	*Latitude* (degrees)	*Longitude* (degrees)	*x* (m)	*y* (m)	*SM-site* (m)
B29A0230	ITC_SM01	52.42101	6.9698	262652	493754	735
B28F0163	ITC_SM02	52.40017	6.85354	254791	491269	1131
B28H0680	ITC_SM03	52.35464	6.82868	253200	486170	2695
B29C0147	ITC_SM04	52.26337	6.94898	261614	476187	2106
B28G0409	ITC_SM05	52.28654	6.65395	241430	478371	3404
B28E0166	ITC_SM06	52.39649	6.65903	241562	490610	1724
B29C0291	ITC_SM07	52.36399	6.96889	262728	487410	1008
B34G0251	ITC_SM08	52.13267	6.75563	248690	461380	808
B34F1353	ITC_SM09	52.14655	6.85044	255150	463050	506
B34E0313	ITC_SM10	52.17773	6.68185	243550	466300	2405
B34E0290	ITC_SM10	52.17600	6.65143	241473	466071	2506
B34B0289	ITC_SM11	52.21861	6.54436	234074	470689	1203
B34B0348	ITC_SM11	52.22629	6.54834	234332	471548	857
B34D0266	ITC_SM12	52.13509	6.56536	235660	461420	696
B34A1006	ITC_SM13	52.18330	6.41403	225224	466627	1201
B34A0846	ITC_SM13	52.20495	6.41074	224965	469032	1314
B33F0166	ITC_SM14	52.18761	6.30936	217970	469280	1613
B28D0329	ITC_SM15	52.31243	6.60179	237823	481191	721
B28D0463	ITC_SM15	52.31243	6.60179	237823	481191	721
B28D0335	ITC_SM16	52.36833	6.54119	233592	487342	409
B28B0240	ITC_SM17	52.41524	6.53591	233150	492556	602
B28A0064	ITC_SM18	52.41251	6.39916	223851	492113	1537
B27H0220	ITC_SM19	52.33737	6.29663	216980	483660	2430
B27H0419	ITC_SM19	52.33737	6.29663	216980	483660	2430
B28C0193	ITC_SM20	52.32577	6.44809	227321	482510	766
B34G0363	Hupsel	52.06742	6.65474	241910	453995	139
B28H0694	Twenthe	52.26223	6.88298	257111	475965	1335

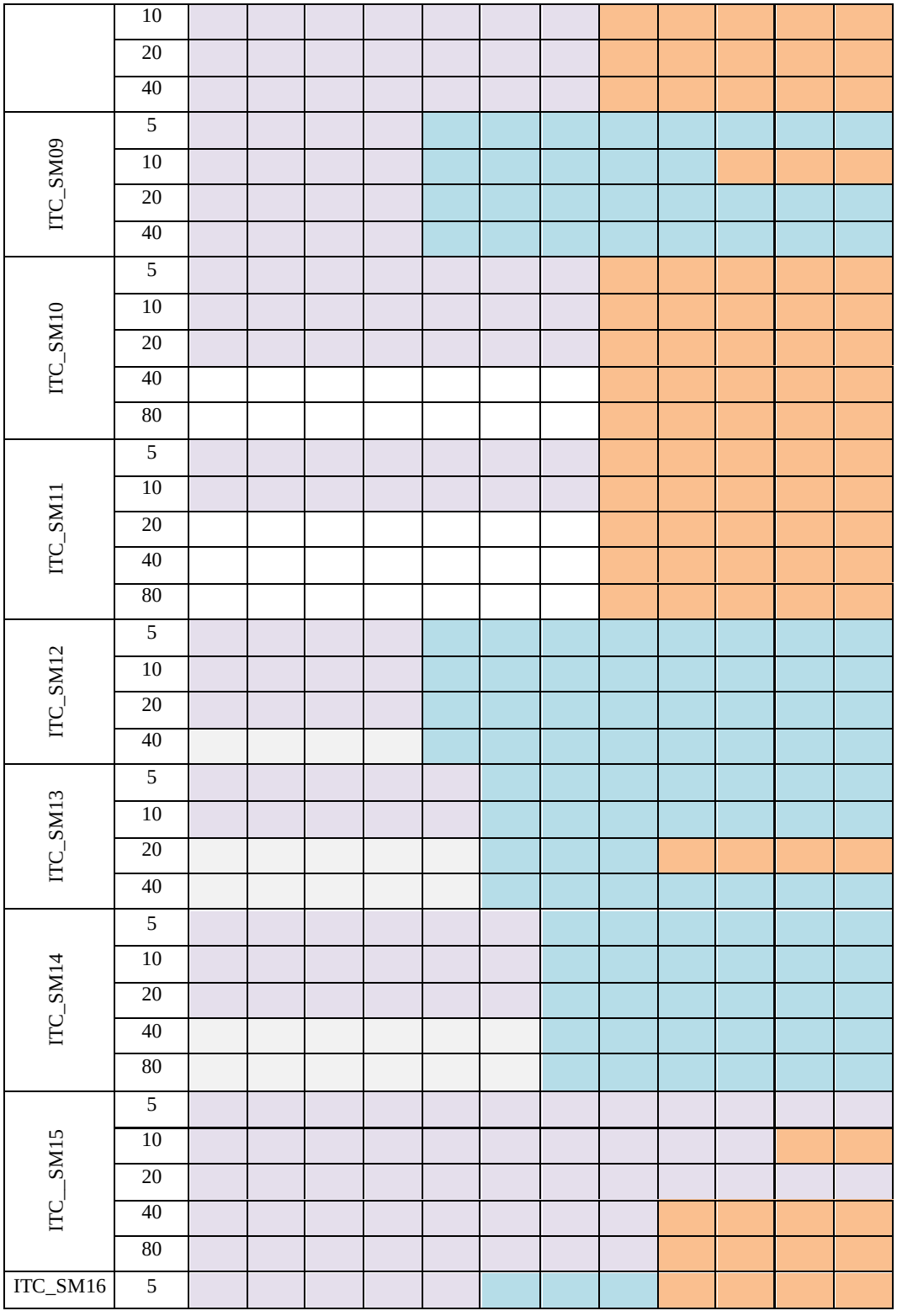
Table S2: Soil, land use and maintenance characteristics of the stations. The soil descriptions are from BOFEK2020 (Heinen et al., 2021). The land uses for 2009 – 2020 apply to adjacent fields and are from the crop parcel registry (Ministry of Economic Affairs and Climate Policy, 2021). Table classification: green stands for grass, orange stands for maize, red stands for potato, yellow stands for cereal, purple stands for other crops, brown stands for forest. Relocations of stations are noted by letters, which correspond to the locations in Fig. 1. Other maintenance practices are noted by asterisks and are specified in supplement Table S4.

Station	Texture class	Soil description translated from Dutch (BOFEK2020 classification code)	Missing data	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ITC_SM01	Sandy	Highly loamy sandy soil with clay cover (3002)	12.8 %	a					*	b					
ITC_SM02	Sandy	Highly loamy soil with man-made thick earth (3005)	9.2 %	a				b		*	*	* *			
ITC_SM03	Sandy	Highly loamy sand with clay cover (3002)	11.5 %	a					*			b			
ITC_SM04	Loamy	Tertiary clay (5003)	11.3 %	a							b *			*	
ITC_SM05	Sandy	Highly loamy soil with man-made thick earth (3005)	8.3 %	a							*	b	c		
ITC_SM06	Partly organic	Sandy cover on partly organic soil (2001)	27.4 %	a				*		*	b				
ITC_SM07	Sandy	Highly loamy sand with clay cover (3002)	4.0 %	a					*	b					
ITC_SM08	Sandy	Weakly loamy sand (3015)	7.0 %		*						*				
ITC_SM09	Sandy	Weakly loamy soil with man-made thick earth (3012)	8.8 %					* *		*			*		
ITC_SM10	Sandy	a & b: Highly loamy sand (3004) c: Highly loamy sand (3021)	20.6 %	a				*	b		c *				
ITC_SM11	Sandy	a & b: Weakly loamy soil with man-made thick earth (3012) c: Highly loamy sand (3004)	17.4 %	a			*			b*	c *				
ITC_SM12	Clayey	Clay on sand (4022)	13.9 %					*		*	*				
ITC_SM13	Sandy	Weakly loamy sand (3015)	2.6 %						*		*	*			
ITC_SM14	Sandy	Highly loamy sand (3021)	24.7 %	a	*	b		*	*		c	*			
ITC_SM15	Sandy	Highly loamy sand with clay cover (3002)	15.6 %	a							b*			*	

ITC_SM16	Partly organic	Sandy cover on partly organic soil (2001)	30.6 %			*	*		*			*	*		
ITC_SM17	Sandy	Weakly loamy sand (3015)	25.5 %	a		b				*	c				
ITC_SM18	Sandy	Highly loamy sand (3021)	10.1 %						*	*					*
ITC_SM19	Sandy	Highly loamy sand (3004)	9.3 %						*						
ITC_SM20	Sandy	Coarse sandy sand (3003)	14.4 %						*						
Hupsel	Sandy	Highly loamy sand (3004)	0.0 %												
Twenthe airport	Sandy	Weakly loamy sand (3014)	12.9 %										*	*	

Table S3: Type (EC-TM and 5TM), firmware and installation depth of decagon soil moisture probes at the monitoring stations of the Twente network.

Station	*Depth (cm)*	*Probe*											
		2009	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*
ITC_SM01	5	EC-TM					5TM 2013 calibration						
	10												
	20												
	40												
ITC_SM02	5												
	10								5TM firmware 4.0				
	20												
	40												
ITC_SM03	5												
	10												
	20												
	40												
	80												
ITC_SM04	5												
	10												
	20												
ITC_SM05	5												
	10												
	20												
	40												
	80												
ITC_SM06	5										Discontinued		
	10												
	20												
	40												
	80												
ITC_SM07	5												
	10												
	20												
	40												
I T C	5												


10
20
40
ITC_SM09
5
10
20
40
ITC_SM10
5
10
20
40
80
ITC_SM11
5
10
20
40
80
ITC_SM12
5
10
20
40
ITC_SM13
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ITC__SM15
5
10
20
40
80
ITC_SM16
5

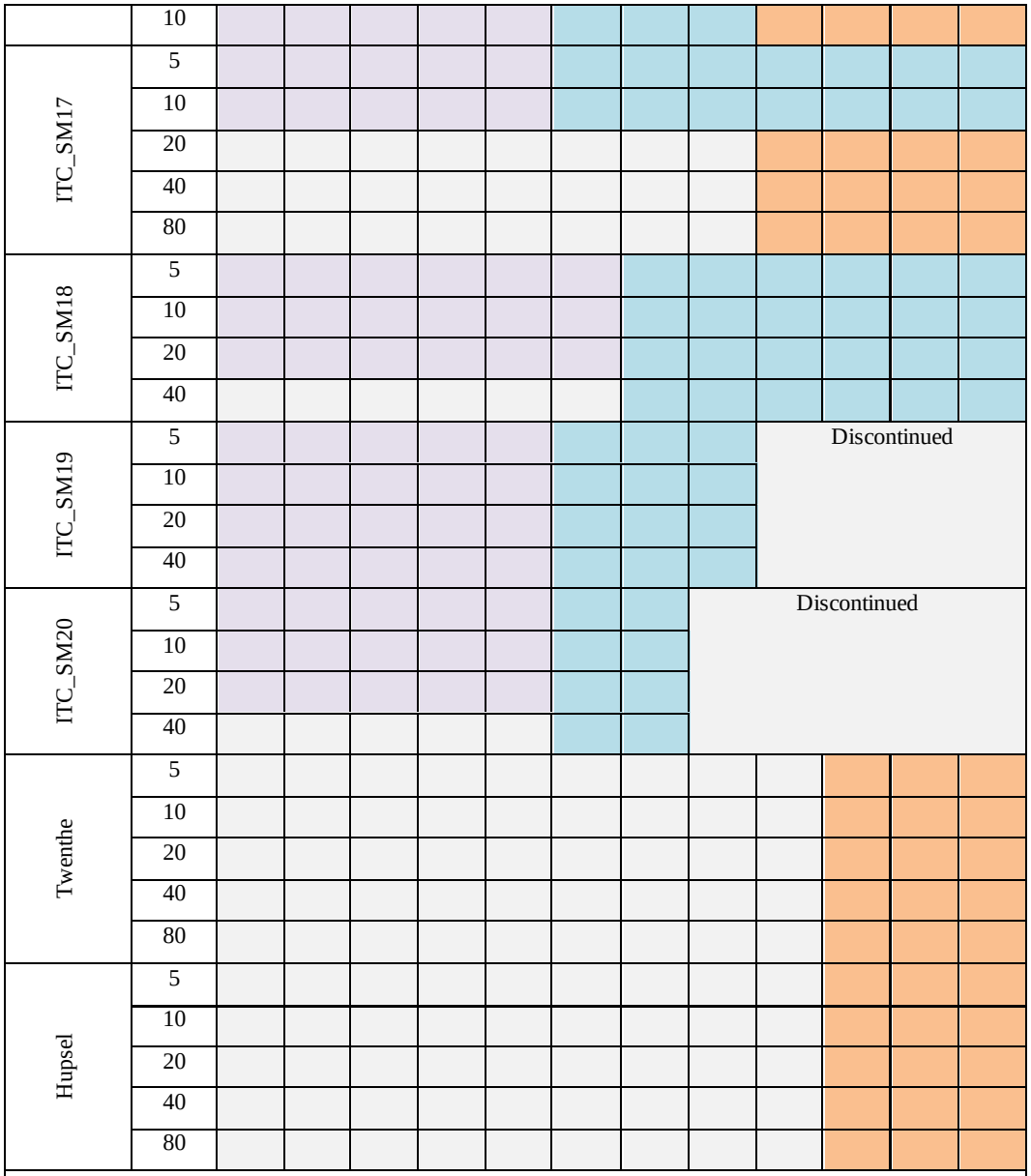
10
ITC_SM17
5
10
20
40
80
ITC_SM18
5
10
20
40
ITC_SM19
5
10
20
40
Discontinued
ITC_SM20
5
10
20
40
Discontinued
Twenthe
5
10
20
40
80
Hupsel
5
10
20
40
80
Legend
Measurements not yet started or discontinued
EC-TM
5TM firmware 2013
5TM firmware 4.0

Table S4: Change to instrumentation and measurement setups in the Twente monitoring network ordered by station.

ITC_SM01		**ITC_SM02**		**ITC_SM03**		**ITC_SM04**	
Date	*Activity*	*Date*	*Activity*	*Date*	*Activity*	*Date*	*Activity*
29/12/2008	Install	12/11/2008	Install	19/11/2008	Install	12/11/2008	Install
7/8/2014	Change to 5TM	5/6/2013	Relocate within field	27/3/2014	Changed to 5TM	9/3/2016	Relocate within field Change to 5TM
9/4/2015	Relocate within field	8/4/2015	P1: change to 5TM P4: add 5TM	2/5/2017	Relocate within field	22/11/2019	P3: Replace 5TM
		8/7/2016	P2: change to 5TM P5: add 5TM (5 cm)				
		1/2/2017	P3: change to 5TM				
		2/5/2017	P3: replace 5TM				
ITC_SM05		**ITC_SM06**		**ITC_SM07**		**ITC_SM08**	
Date	*Activity*	*Date*	*Activity*	*Date*	*Activity*	*Date*	*Activity*
27/5/2009	Install	19/11/2008	Install	12/11/2008	Install	19/8/2008	Install
22/4/2016	Change to 5TM	23/8/2012	Remove station	26/3/2014	Change to 5TM	17/11/2009	Reinstall
26/4/2017	Relocate	6/6/2013	Reinstall	3/11/2015	Relocate	22/4/2016	Change to 5TM
2/5/2017	Relocate	17/4/2015	Change to 5TM				
24/5/2018	Relocate within field	20/5/2016	Reinstall				
		29/08/2017	Remove station				
ITC_SM09		**ITC_SM10**		**ITC_SM11**		**ITC_SM12**	
Date	*Activity*	*Date*	*Activity*	*Date*	*Activity*	*Date*	*Activity*
19/12/2008	Install	12/12/2008	Install	12/12/2008	Install	27/5/2009	Install
2/5/2013	P2: Replace EC-TM	2/5/2013	Remove	11/5/2012	Relocate within field	2/5/2013	Relocate within field
20/12/2013	Change to 5TM	2/5/2014	Reinstall	9/10/2015	Relocate within field Change to 5TM	16/4/2015	Change to 5TM
21/12/2015	P2: replace 5TM P5: add 5TM (5 cm)	08/04/2015	Remove	29/6/2016	Remove	30/6/2016	P5: add 5TM (5 cm)
7/11/2018	P2: replace 5TM	20/5/2016	Reinstall (5TM)	18/10/2016	Reinstall		
ITC_SM13		**ITC_SM14**		**ITC_SM15**		**ITC_SM16**	
Date	*Activity*	*Date*	*Activity*	*Date*	*Activity*	*Date*	*Activity*
3/6/2009	Install	3/6/2009	Install	19/11/2008	Install	1/4/2009	Install
24/4/2014	Change to 5TM	24/11/2010	Remove	7/3/2016	Relocate within field	26/5/2011	Remove

					P4 & P5: add 5TM		
8/3/2016	P5: add 5TM (10 cm)	20/4/2011	Reinstall	22/11/2019	P2: change to 5TM	22/8/2012	Relocate within field
20/9/2017	P3: replace 5TM	6/4/2013	P1: Replace sensor			25/4/2014	Change to 5TM
		7/11/2014	Change to 5TM			20/9/2017	Reinstall
		1/4/2016	Relocate			7/11/2018	P2: replace 5TM
		1/2/2017	P2: Replace 5TM				
ITC_SM17		**ITC_SM18**		**ITC_SM19**		**ITC_SM20**	
Date	*Activity*	*Date*	*Activity*	*Date*	*Activity*	*Date*	*Activity*
1/4/2009	Install	1/4/2009	Install	3/6/2009	Install	11/9/2009	Install
20/4/2011	Relocate within field	25/4/2014	P3: replace EC-TM	2/5/2014	Change to 5TM	2/5/2014	Change to 5TM
17/4/2015	Change to 5TM	17/4/2015	Change to 5TM	20/9/2017	Remove	1/2017	Remove
1/4/2016	Relocate	29/4/2020	P2: replace 5TM				
Hupsel		**Twenthe**					
Date	*Activity*	*Date*	*Activity*				
20/12/2017	Install	20/12/2017	Install				
		9/11/2018	P2: replace 5TM				