



*Supplement of*

## **An improved global remote-sensing-based surface soil moisture (RSSSM) dataset covering 2003–2018**

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## **Supplementary texts**

Text S1. The reasons for excluding precipitation as a predictor of neural networks

Because it takes at least 3 days for a microwave sensor to cover the whole globe, for 11% of global land, there will be only 5 or less observations for random days within a 10-day period. Hence, our study took the average of these available data, which can generally indicate the mean soil moisture condition during that 10-day period. Then, to see how much can the incorporation of precipitation data improve the neural network training efficiency, we calculated 10-day averaged GPM Final-Run precipitation, which can well indicate the overall precipitation water availability in the 10-day period (for that reason, the antecedent precipitation index is not used, which must be calculated on daily scale, and the attenuation coefficient is hard to determine at global scale (Kohler and Linsley, 1951)). Taking the first independent neural network (NN1-1-1, a primary NN) as an example, we performed contribution tests on all the input features at the global scale (not for each separate zone), including 9 ‘quality impact factors’, four predictor soil moisture products and the probable ancillary soil moisture indicator- precipitation data. For each predictor, we added a random error that is controlled within the standard deviation of the predictor, and then the increased MSE in neural network training can indicate the relative contribution of that variable. The results (Figure S16a) show that precipitation will only contribute to 1.7% of the training efficiency, which is much lower than the contribution of any soil moisture product (the total contribution fraction of the four soil moisture products is 61.2%), and is also lower than that of most ‘quality impact factor’. This suggests that various microwave soil moisture datasets together with several ‘quality impact factors’ of microwave soil moisture retrieval are enough to predict the training target- SMAP soil moisture, and there is no need to add precipitation as another ancillary indicator of soil moisture.

‘Quality impact factors’ are defined in this study as the variables that will have a significant impact on the retrieval errors of soil moisture by microwave remote sensing (section 2.1.2). Although the relative performances of different soil moisture products is related to surface moisture condition (Kim et al., 2015), it is found mainly due to the less vegetation in arid areas. After all, no explicit mechanism can support the idea that the retrieval errors of soil moisture are significantly influenced by water availability. Even if this is true, the soil water availability can already be indicated by

the microwave soil moisture products. Therefore, it is unreasonable to incorporate the precipitation variable as a ‘quality impact factor’. On the other hand, LAI, water area fraction, LST, land use cover, tree cover fraction, non-tree vegetation fraction, topographic complexity, and soil sand/clay fractions all have direct impacts on the microwave soil moisture retrieval errors, with solid physical mechanisms (see section 2.1.2). Therefore, theoretically, these variables should be added to the neural network, even though the land use cover type and soil sand fraction data have been proven to have limited contributions to NN training efficiency.

One may argue that if NARX (nonlinear autoregressive with external input) is applied instead, in which the soil moisture in the previous 10-day period is also incorporated as a predictor, precipitation data can be very beneficial to neural network training. This result is true because precipitation directly contributes to increases in soil moisture. However, NARX is not suitable for global-scale long-term continuous soil moisture mapping because the base map (i.e., the soil moisture at the beginning of the simulation period) is difficult to determine. Moreover, in mid to high latitudes, the lack of soil moisture retrievals over frozen ground in winters will lead to missing data there in summers when soil moisture data are otherwise available. Therefore, if NARX is adopted, we can only estimate long-term soil moisture in the tropics and subtropics with air temperatures consistently higher than 0 °C. Finally, if the soil moisture in the previous phase and the current precipitation amount are both incorporated, they will largely conceal the role of satellite-observed signals. As shown in Figure S16b, the total contribution fraction of all four microwave soil moisture products is reduced to only 10.6%, while the roles of ASCAT, AMSR2-JAXA and AMSR2-LPRM are all negligible. Without taking full advantage of remote sensing, simulations based on previous soil moisture and current precipitation products will lead to errors in regions where soil moisture gains are mostly driven by glacier melting or in places with high levels of radiation-driven surface soil evaporation. The reliability of the derived soil moisture will be reduced in irrigated croplands and afforestation/deforestation areas as well.

On account of all above, precipitation data is neither included as an ancillary soil moisture indicator, nor added as a ‘quality impact factor’ in this study.

## Text S2. The screen and processing of ISMN sites' soil moisture records

It has been acknowledged that the scale difference between the records at ISMN sites and the 0.1 °pixel-scale soil moisture data may lead to incomparability, especially for pixels with open water and inundated land (Loew, 2008). If the measurement site is located on land, away from water, yet the corresponding pixel contains much water, the pixel-scale soil moisture can be significantly higher than the site-measured values. Conversely, if the site is in or close to the open water or inundated areas but land also exists in the pixel, the soil moisture measured at the station will be much higher than the average pixel value. The absolute values are unmatchable, and the temporal variations cannot be directly compared as well, because the moisture conditions of riverside (or wetland) soil and the land soil may change with precipitation differently. Therefore, the sites located in the pixels with an average annual maximal water area fraction greater than 5% according to SWAMPS data are excluded (for example, some sites in wetlands in Canada).

Some stations may have two or more sensors, producing multiple soil moisture values at the same time. On this condition, the obviously abnormal values retrieved by one out of the three or more sensors can be excluded by comparison.

Because the ISMN data are in hourly-scale, we first averaged them to daily scale and then to 10-day scale. To ensure data reliability, when calculating daily averages, the days with less than 12 hours with valid records are assigned no data while the soil moisture during a 10-day period can only be obtained by taking the mean value of at least 5 valid daily-averages.

The records outside the temporal span of the soil moisture product (2003~2018) or those at the stations covered by rainforests are not utilized as well. This resulted in a collection of more than 100,000 10-day scale surface soil moisture records obtained from 728 stations belonging to 29 networks. There are 19 dense networks (usually with multiple stations within one 0.1 °pixel (Dorigo et al., 2015)): **AMMA-CATCH** (Cappelaere et al., 2009; De Rosnay et al., 2009; Lebel et al., 2009; Mougin et al., 2009; Pellarin et al., 2009), **BIEBRZA\_S-1** (<http://www.igik.edu.pl/en>), **BNZ-LTER** (Van Cleve et al., 2015) (<http://www.lter.uaf.edu/>), **CTP\_SMTMN** (Yang et al., 2013), **FLUXNET-AMERIFLUX** (<http://ameriflux.lbl.gov/>), **FR\_Aqui** (Al-Yaari et al., 2018), **HiWATER\_EHWSN** (Jin et al., 2014; Kang et al., 2014), **HOBE** (Bircher et al., 2012), **HYDROL-NET\_PERUGIA** (Morbidelli et al., 2014), **iRON** (Osenga et

al., 2019), **MAQU** (Su et al., 2011), **OZNET** (Smith et al., 2012; Young et al., 2008), **REMEDHUS** (<http://campus.usal.es/~hidrus/>), **SASMAS** (Rüdiger et al., 2007), **SKKU** (Hyunglok et al., 2016), **SOILSCAPE** (Moghaddam et al., 2010; Moghaddam et al., 2016), **SWEX\_POLAND** (Marczewski et al., 2010), **VAS** (<http://nimbus.uv.es/>) and **WSMN** (<http://www.aber.ac.uk/wsnn>). The remaining 10 are sparse networks, including **ARM** (<http://www.arm.gov/>), **CARBOAFRICA** (Ardö, 2013), **COSMOS** (Zreda et al., 2008; Zreda et al., 2012), **DAHRA** (Tagesson et al., 2015), **RSMN** (<http://assimo.meteoromania.ro>), **SMOSMANIA** (Albergel et al., 2008; Calvet et al., 2007), **TERENO** (Zacharias et al., 2011), **UDC\_SMOS** (Loew et al., 2009; Schlenz et al., 2012), **USCRN** (Bell et al., 2013), **USDA-ARS** (Jackson et al., 2010). The detailed information on the stations of those ISMN networks are included in Table S16.

## Supplementary figures

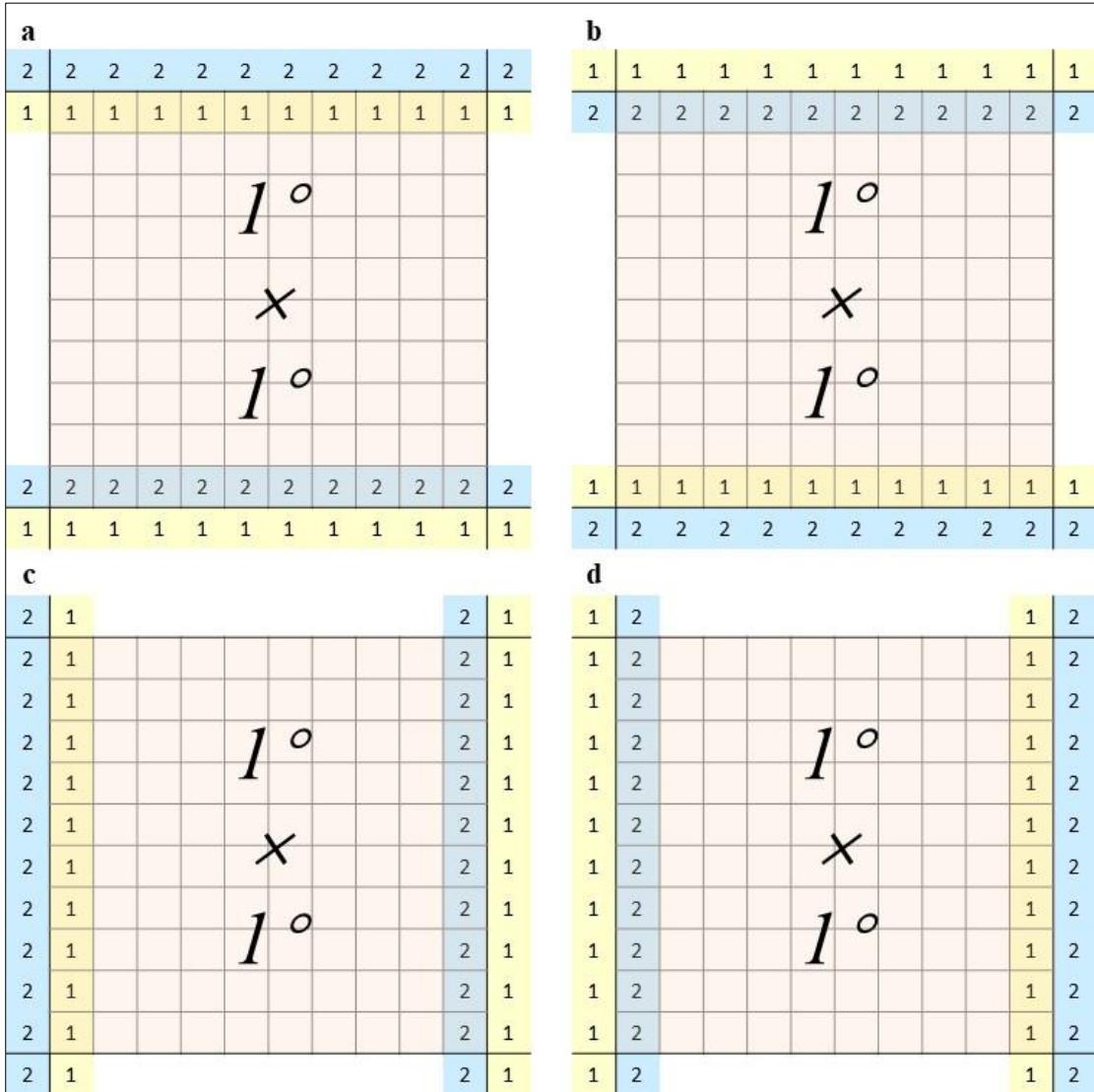


Figure S1. A sketch of the four substeps in boundary fuzzification. The  $1^\circ \times 1^\circ$  zones are separated by solid black lines (the  $0.1^\circ \times 0.1^\circ$  pixels in one zone are superimposed by light gray mesh). For each substep (subfigures a~d), the soil moisture value within each pixel that is colored in blue is recalculated as the average of its original surface soil moisture and the original soil moisture value in its most adjacent yellow color pixel, weighted by the corresponding numbers labeled (i.e., 2 and 1). In this way, every border of a  $1^\circ \times 1^\circ$  zone gets smoothed once (substeps ‘a~d’ are for four borders, respectively, where a~b are for the horizontal borders while c~d are for the vertical borders), but the four corners get smoothed twice (both horizontally and vertically).

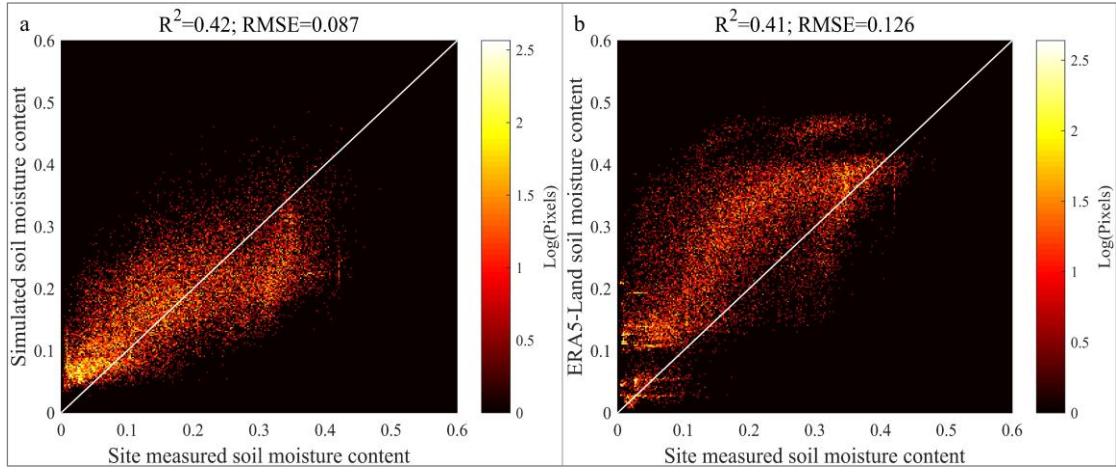


Figure S2. The overall data accuracy comparison between RSSSM and the surface soil moisture of ERA5-Land: (a) the scatter plot between RSSSM and the measured soil moisture; (b) the scatter plot between ERA5-Land soil moisture and the measured values. All plots are represented as the density of points in a logarithmic scale.

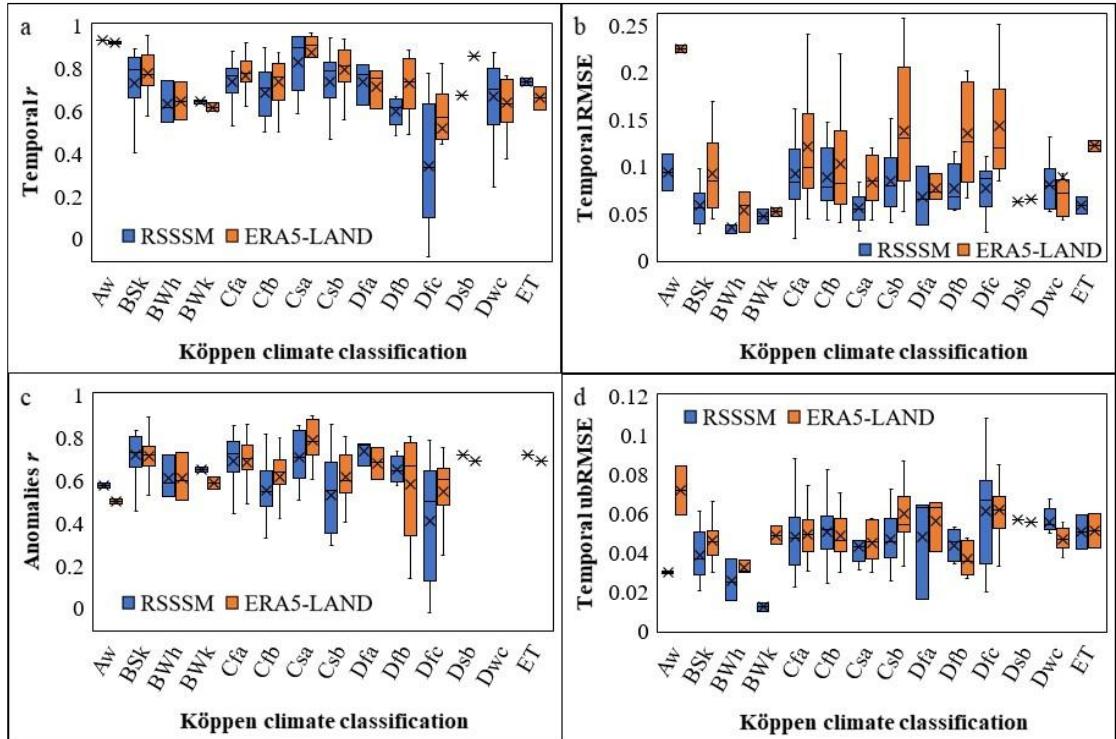


Figure S3. The comparison between the temporal pattern accuracy of RSSSM and ERA5-Land soil moisture in regions with different K öppen-Geiger climate types. The four evaluation indexes are: (a) correlation coefficient ( $r$ ); (b) RMSE; (c) ubRMSE; (d) Anomalies  $r$ . The lengths of error bars are 1.5 times of the interquartile range, while the upper, lower boundary and the central lines of the boxes indicate the 75th, 50th and 25th percentile values, with mean values marked by ‘ $\times$ ’ (the form of all the following boxplots are the same).

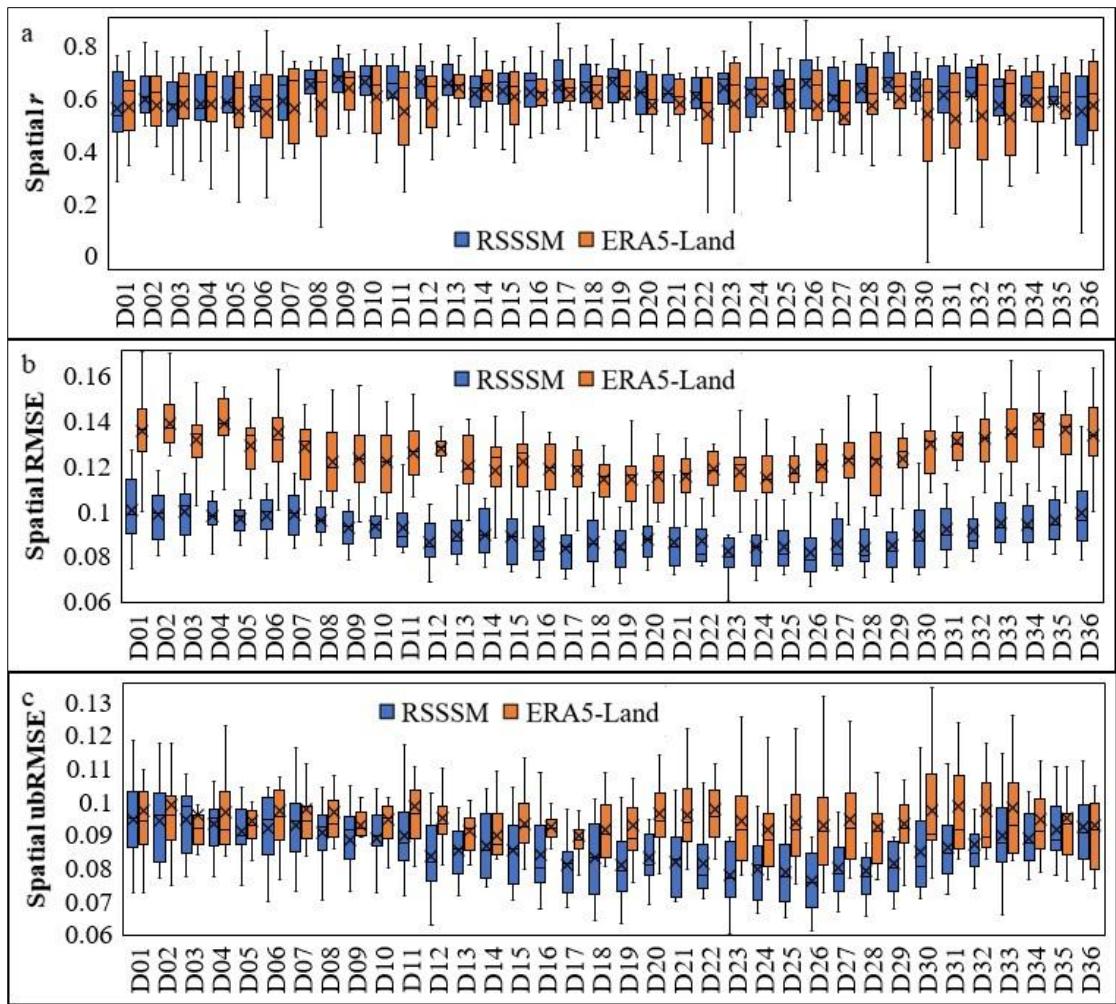


Figure S4. The comparison between the spatial accuracy of RSSSM and ERA5-Land surface soil moisture data in different 10-day periods of all years ('D' represents the ordinal of 10-day period in a year). The three evaluation indexes are: (a) correlation coefficient ( $r$ ); (b) RMSE and (c) ubRMSE.

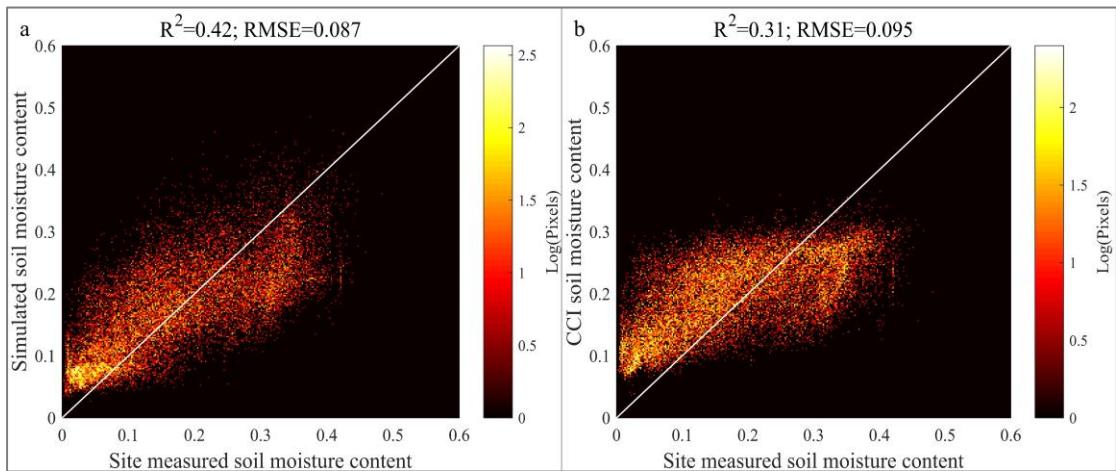


Figure S5. The overall data accuracy comparison between RSSSM and CCI surface soil moisture: the scatter plot between (a) RSSSM; (b) CCI and the measured values.

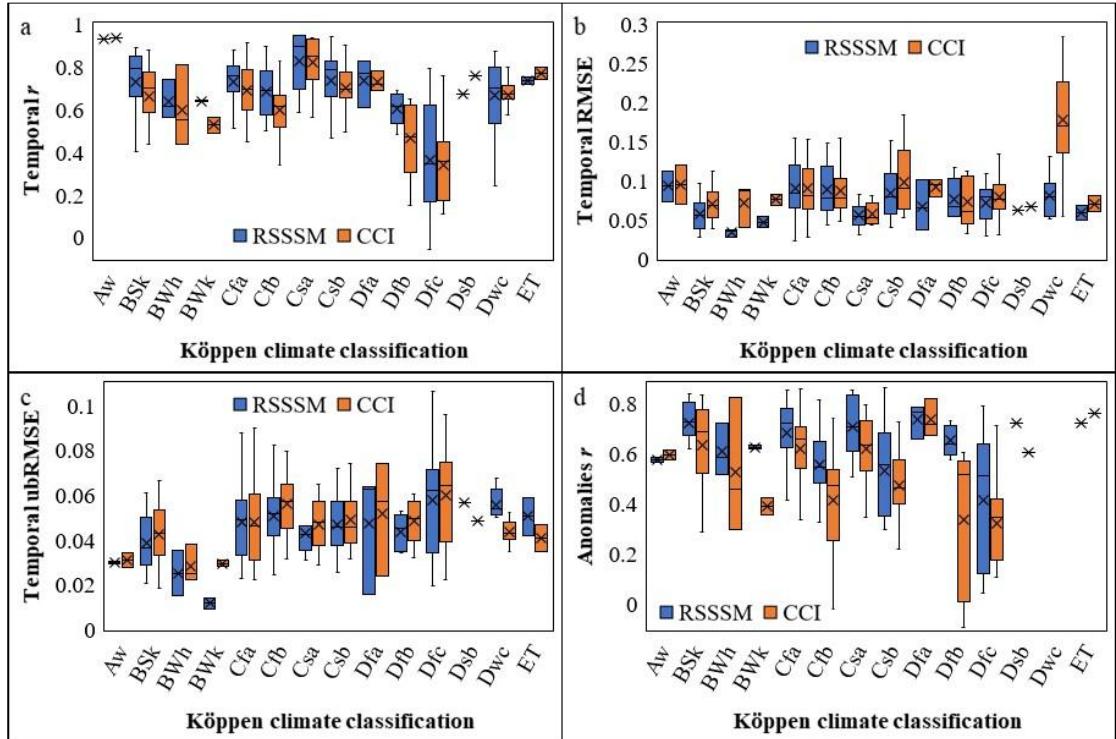


Figure S6. The comparison between the temporal accuracy of RSSSM and CCI soil moisture in regions with different Köppen-Geiger climate types. The four evaluation indexes are: (a)  $r$ ; (b) RMSE; (c) ubRMSE; (d) Anomalies  $r$ .

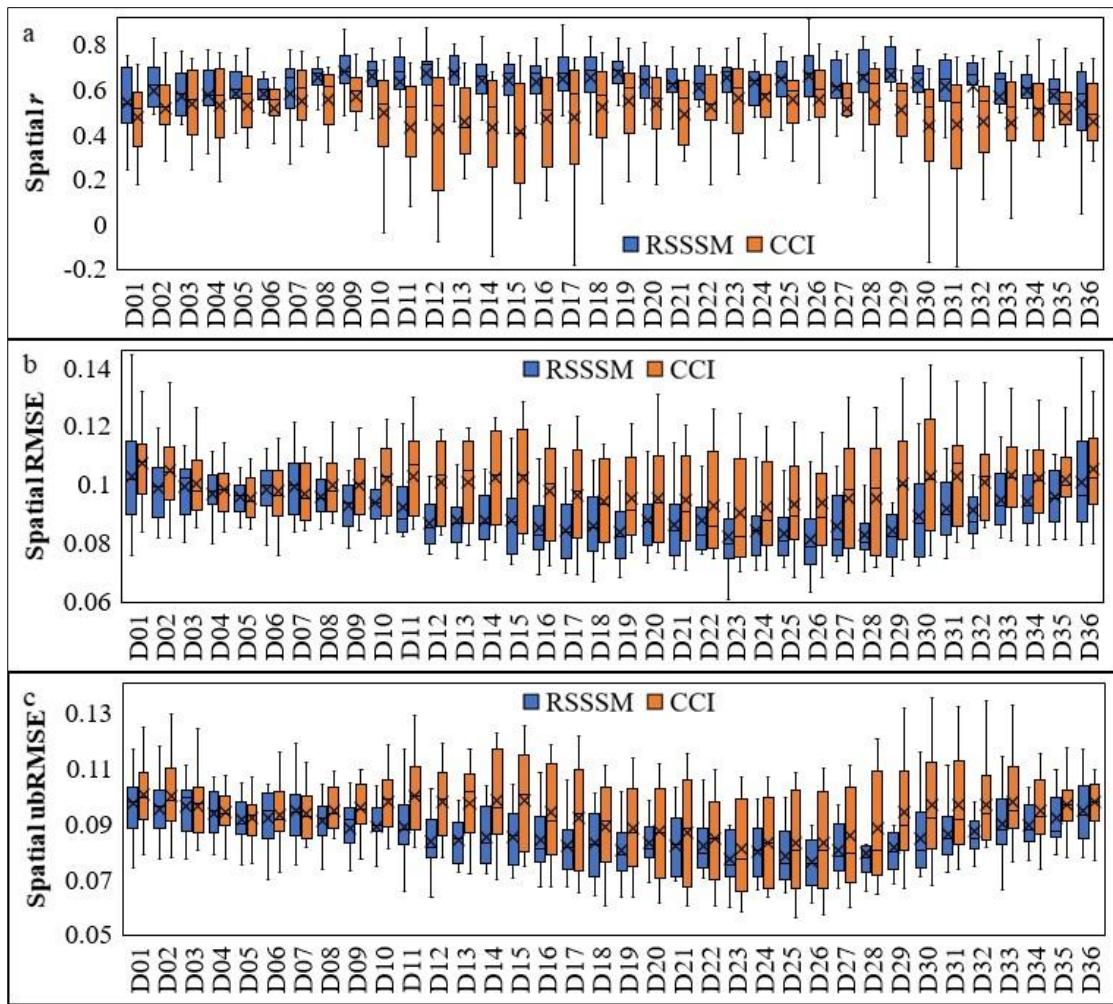


Figure S7. The comparison between the spatial accuracy of RSSSM and CCI soil moisture data in different 10-day periods of all years. The three indexes are: (a) correlation coefficient ( $r$ ); (b) RMSE; (c) ubRMSE.

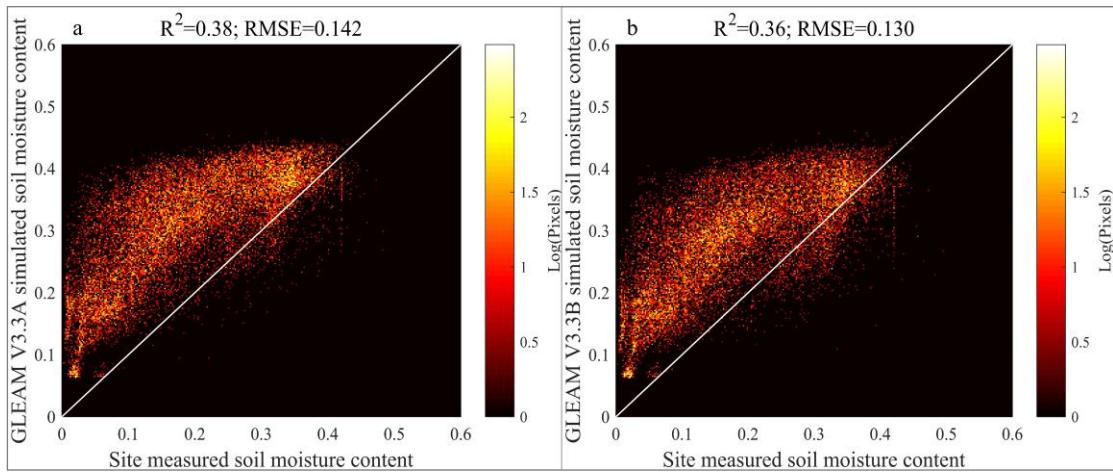


Figure S8. The overall data accuracy of (a) GLEAM v3.3a and (b) GLEAM v3.3b surface soil moisture products (validated against ISMN site measurements).

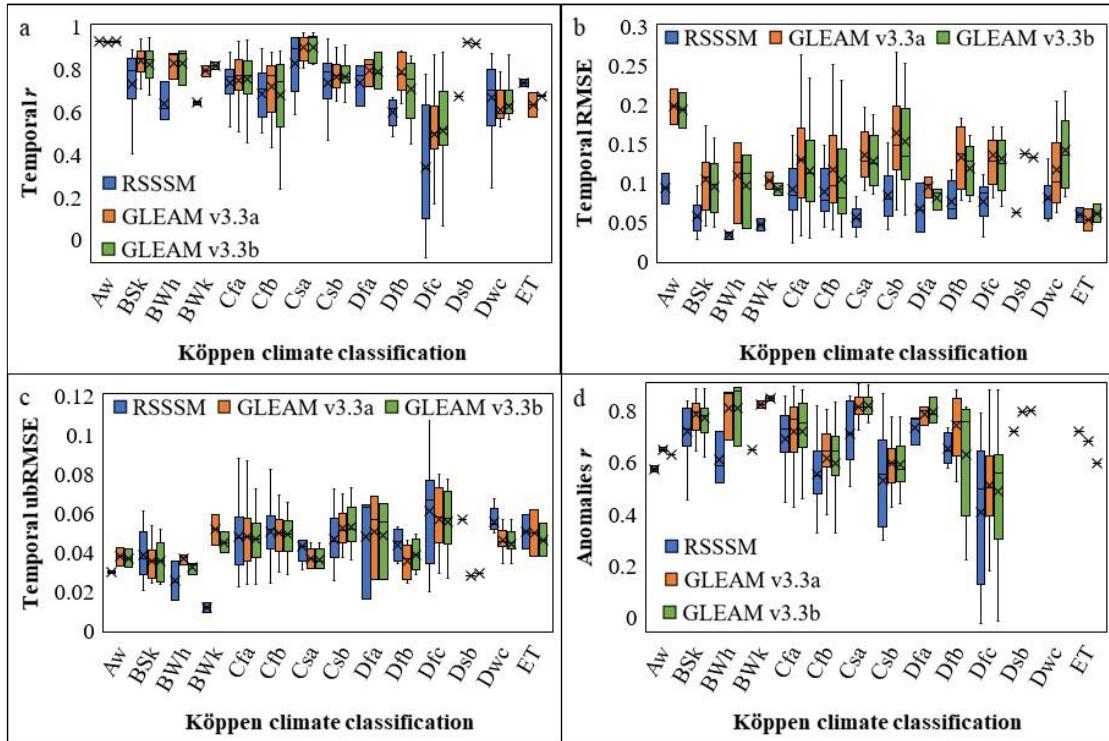


Figure S9. The comparison between the temporal accuracy of RSSSM and GLEAM soil moisture products (GLEAM v3.3a; GLEAM v3.3b) in different Köppen-Geiger climatic regions. The four evaluation indexes are: (a)  $r$  (correlation coefficient); (b) RMSE; (c) ubRMSE and (d) Anomalies  $r$ .

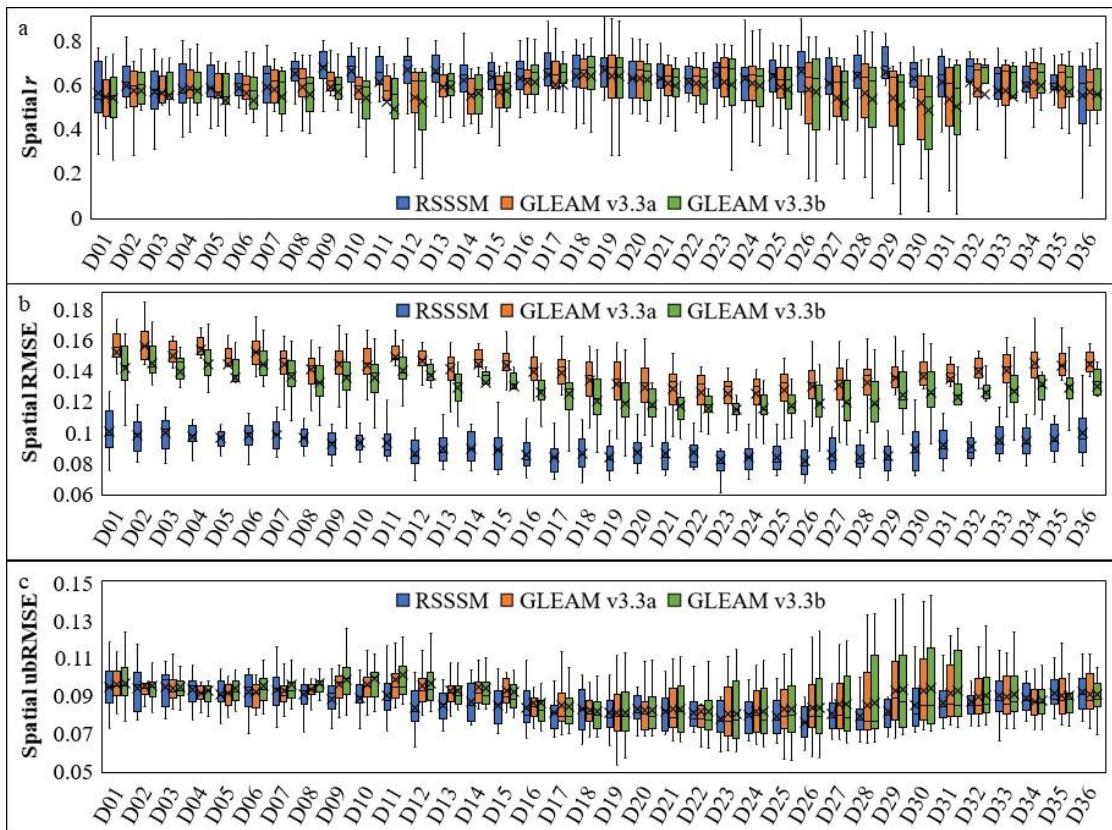


Figure S10. The comparison between the spatial accuracy of RSSSM and the GLEAM soil moisture products (GLEAM v3.3a, GLEAM v3.3b) in different 10-day periods of all years. The three indexes are: (a) correlation coefficient  $r$ ; (b) RMSE; (c) ubRMSE.

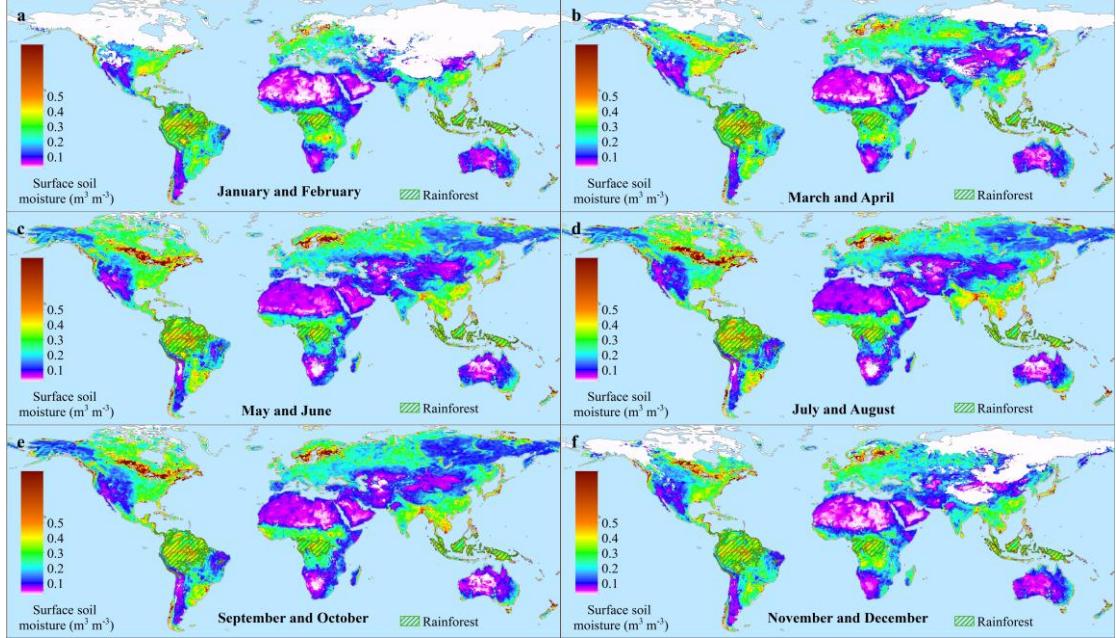


Figure S11. Monthly global spatial pattern of the neural network simulated surface soil moisture (RSSSM, averaged during 2003~2018): (a) for January and February; (b) for March and April; (c) for May and June; (d) for July and August; (e) for September and October; (f) for November and December.

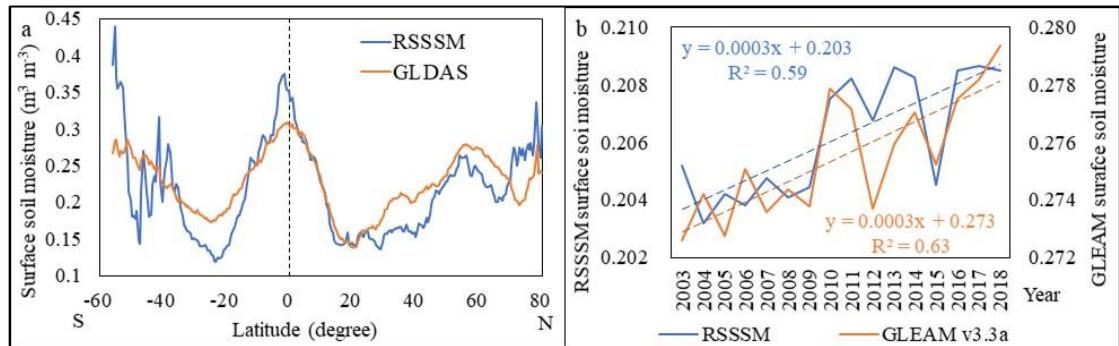


Figure S12. The spatial and temporal pattern comparison between the neural network simulated soil moisture in this study (RSSSM) and other well-acknowledged products: (a) the latitudinal patterns of RSSSM and GLDAS Noah V2.1 surface soil moisture (averaged during 2003~2018); (b) the interannual trends of global mean surface soil moisture derived from RSSSM and GLEAM v3.3a products during 2003~2018. Note that according our validation results, among previous well-known global long-term surface soil moisture products, GLDAS Noah V2.1 has the highest quality in terms of spatial pattern, whereas GLEAM v3.3a can best characterize the temporal variation.

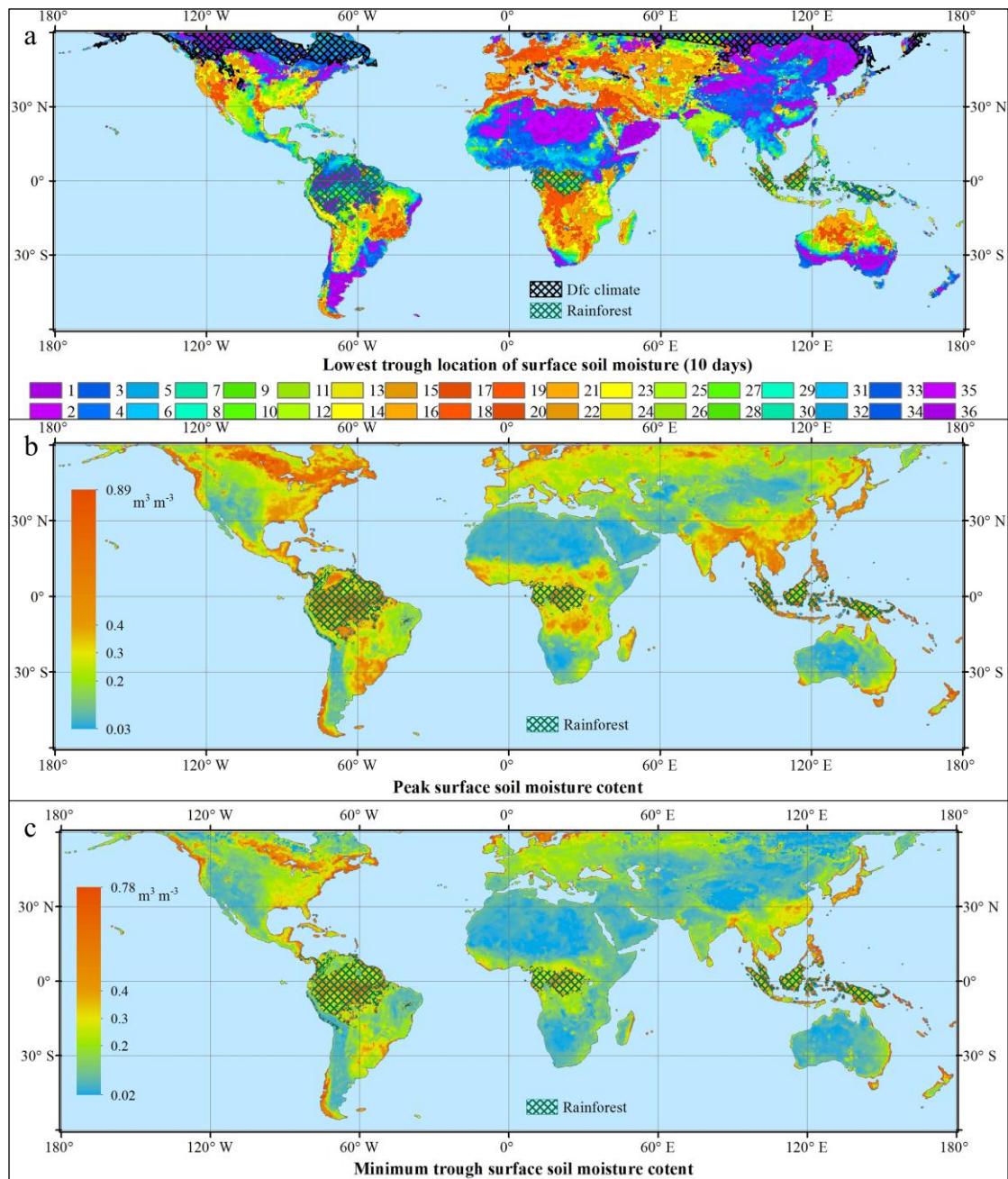


Figure S13. The intra-annual variation of surface soil moisture indicated by RSSSM data product. (a) the global spatial pattern of the lowest trough location in time of the calculated surface soil moisture (unit: 10 days); (b~c) the global spatial pattern of the (b) highest peak and (c) minimum trough surface soil moisture content within a year.

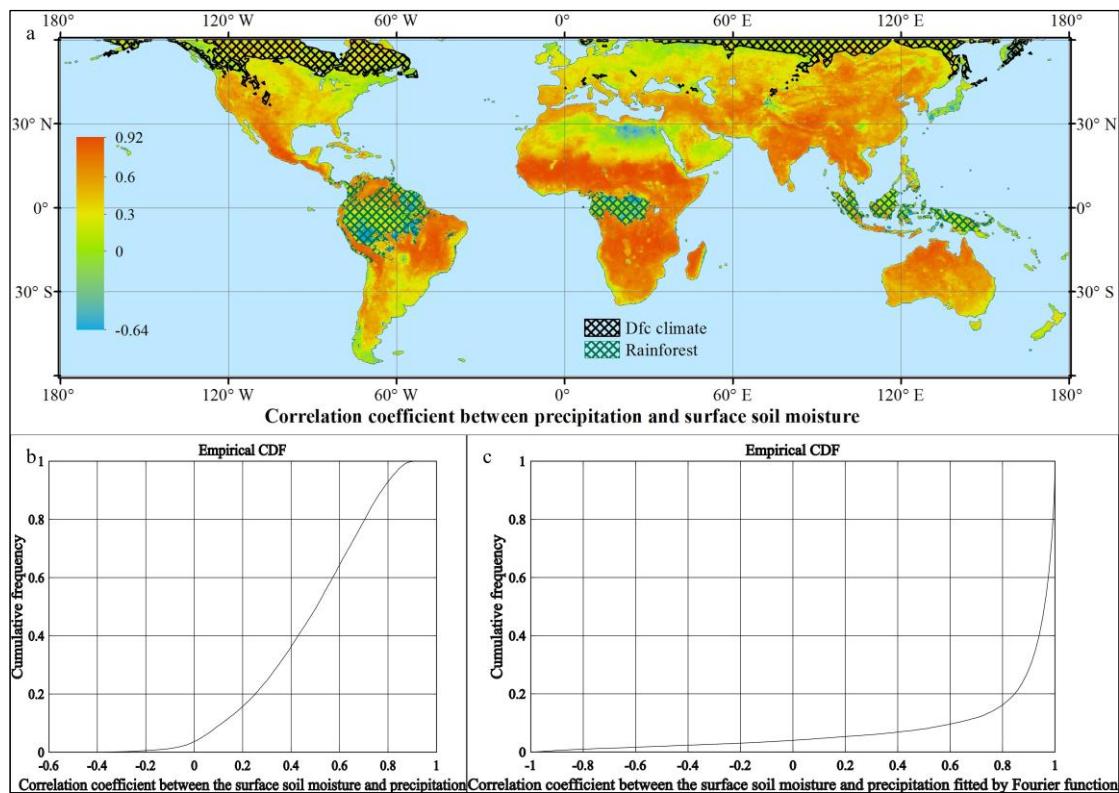


Figure S14. The relationship between precipitation and the calculated surface soil moisture (RSSSM). (a~b) the spatial map and the cumulative frequency curve of the correlation coefficient between the precipitation and the surface soil moisture during 2003~2018; (c) the cumulative frequency curve of the correlation coefficient between the intra-annual variations of precipitation and surface soil moisture fitted by Fourier functions.

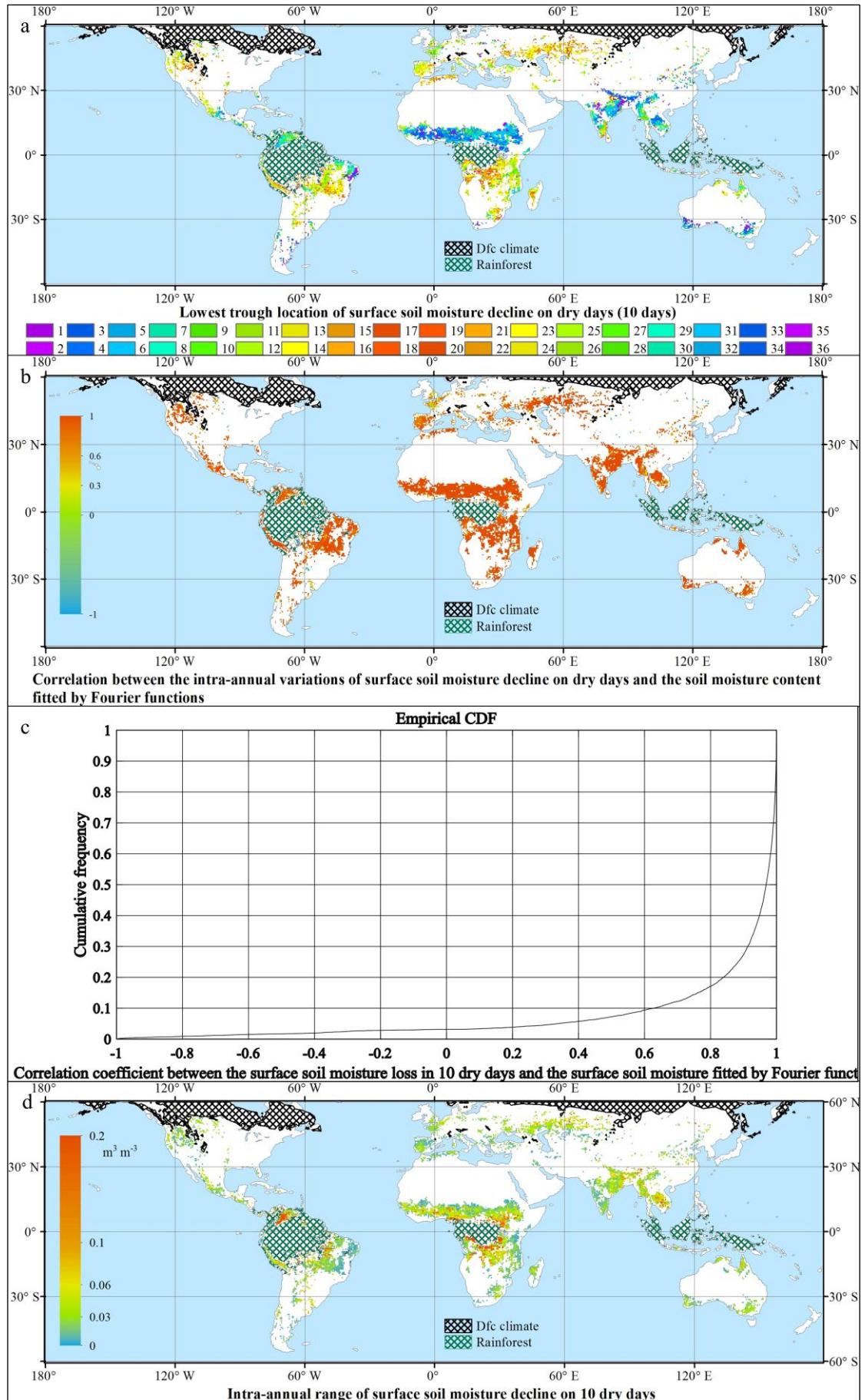


Figure S15. The intra-annual variation in the surface soil moisture (RSSSM) decline after 10 consecutive dry days and its relationship with surface soil moisture. (a) the global map of the lowest trough location of the surface soil moisture decline on dry days (unit: 10 days); (b) the correlation coefficient map between the intra-annual variations of surface soil moisture decline on dry days and the surface soil moisture content fitted by Fourier functions; (c) the cumulative frequency curve of the correlation coefficient values in subfigure (b); (d) the global spatial pattern of the intra-annual range of the surface soil moisture decline after 10 dry days.

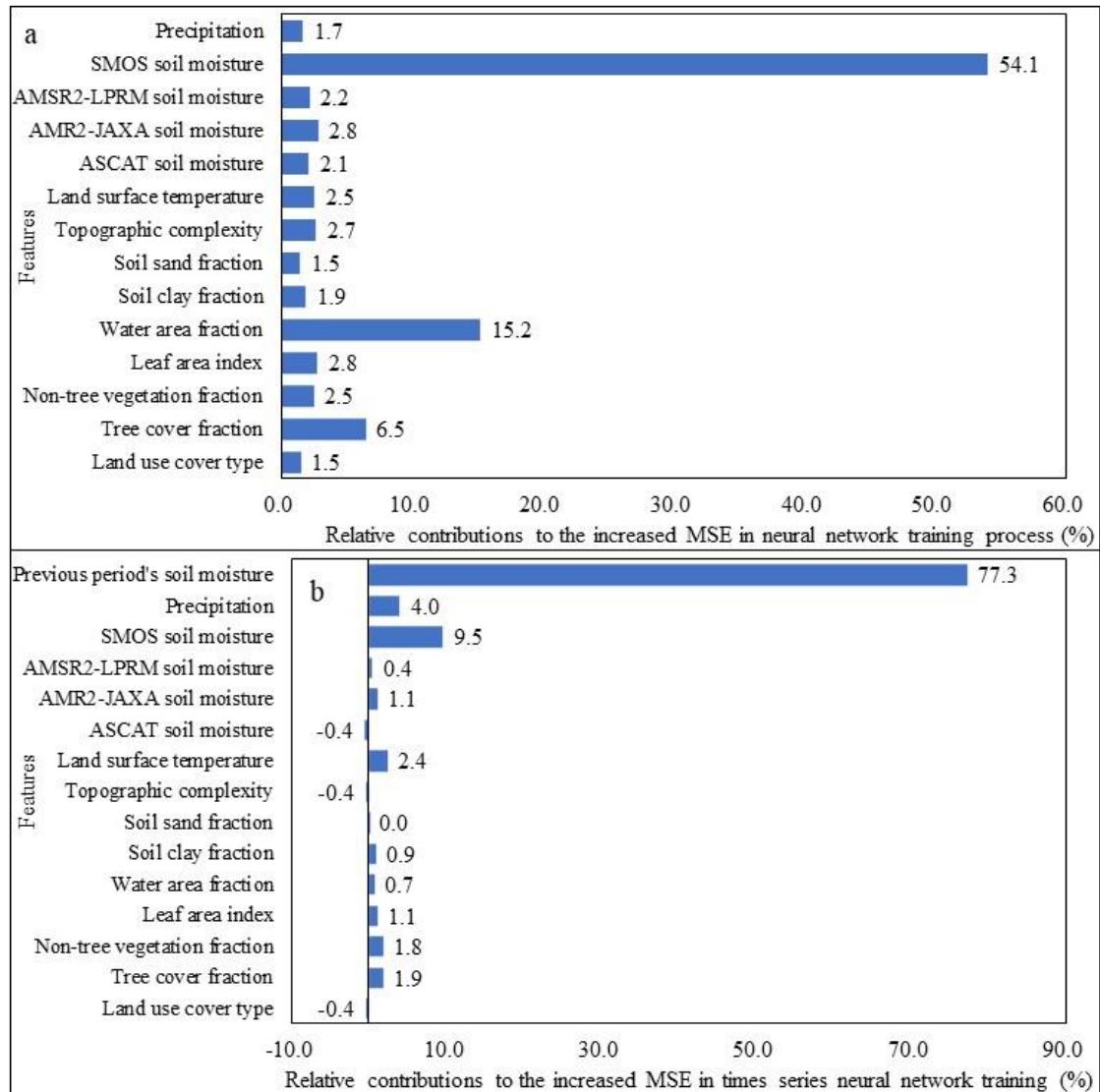


Figure S16. The role of precipitation data in the soil moisture simulations based on BP neural networks and NARX with microwave soil moisture products incorporated: (a) the contributions of different input features of a primary neural network: NN1-1-1, including 4 predictor soil moisture products, 9 quality impact factors of microwave soil moisture retrieval, plus 1 probable ancillary soil water indicator: 10-day averaged precipitation, to the neural network training efficiency indicated by the increased MSE; (b) the contributions of all the input features to the training efficiency, if NN1-1-1 is changed into a NARX (nonlinear autoregressive with external input), in which the SMAP soil moisture for the previous period is also applied as a predictor.

## Supplementary tables

Table S1. The basic information on the first round of neural network training (the substep 1 and 2).

Network code <sup>a</sup>	Training target soil moisture	Network input soil moisture products <sup>b</sup>	Input LAI product <sup>c</sup>	Input data's time period <sup>d</sup>	Number of 10 days' period
NN1-1(2)-1	SMAP	ASCAT; SMOS; AMSR2-JAXA; AMSR2-LPRM	1) PROBA-V; 2) GLASS	1) 2015D10~2018D36 2) 2015D10~2017D36 <sup>f</sup>	135
NN1-1(2)-2		ASCAT; SMOS; AMSR2-JAXA			
NN1-1(2)-3		ASCAT; SMOS; AMSR2-LPRM			
NN1-1(2)-4		ASCAT; AMSR2-JAXA; AMSR2-LPRM			
NN1-1(2)-5		ASCAT; SMOS			
NN1-1(2)-6		ASCAT; AMSR2-JAXA			
NN1-1(2)-7		ASCAT; AMSR2-LPRM			
NN1-1(2)-8 <sup>e</sup>		ASCAT			

<sup>a</sup> ‘NN’ represents neural network, the first number is the round number, the second one is the number of substep while the last one indicates the priority order of different networks.

<sup>b</sup> There is no order among different soil moisture products.

<sup>c</sup> For NN1-1-X (X=1, 2, ..., 8), the PROBA-V LAI is used whereas for NN1-2-X (X=1, 2, ..., 8), the GLASS LAI is used.

<sup>d</sup> For NN1-1-X (X=1, 2, ..., 8), the time period is 2015D10~2018D36 whereas for NN1-2-X (X=1, 2, ..., 8), the time period is 2015D10~2017D36.

<sup>e</sup> This neural network is optional because it cannot further increase the spatial coverage of simulation outputs.

<sup>f</sup> D represents the ordinal of ten days' period in a year. For example, 2015D10 stands for April 1st to April 10th in 2015 while 2018D36 is December 21st to December 31st in 2018.

Table S2. The basic information on the first round of surface soil moisture simulation using the trained neural network (the substep 1 and 2).

Available soil moisture products in the pixel <sup>a</sup>	Order of neural network preference <sup>b</sup>	Code of the simulated soil moisture product <sup>c</sup>	Temporal coverage of the simulated product <sup>d</sup>
ASCAT; SMOS; AMSR2-JAXA; AMSR2-LPRM	NN1-1(2)-1 <sup>f</sup> , NN1-1(2)-2, NN1-1(2)-3, NN1-1(2)-4, NN1-1(2)-5, NN1-1(2)-6, NN1-1(2)-7, NN1-1(2)-8 <sup>e</sup>		
ASCAT; SMOS; AMSR2-JAXA	NN1-1(2)-2, NN1-1(2)-5, NN1-1(2)-6, NN1-1(2)-8 <sup>e</sup>		
ASCAT; SMOS; AMSR2-LPRM	NN1-1(2)-3, NN1-1(2)-5, NN1-1(2)-7, NN1-1(2)-8 <sup>e</sup>		
ASCAT; AMSR2-JAXA; AMSR2-LPRM	NN1-1(2)-4, NN1-1(2)-6, NN1-1(2)-7, NN1-1(2)-8 <sup>e</sup>	SIM-1-1(2)	1) 2014D01~2018D36; 2) 2012D19~2013D36
ASCAT; SMOS	NN1-1(2)-5, NN1-1(2)-8 <sup>e</sup>		
ASCAT; AMSR2-JAXA	NN1-1(2)-6, NN1-1(2)-8 <sup>e</sup>		
ASCAT; AMSR2-LPRM	NN1-1(2)-7, NN1-1(2)-8 <sup>e</sup>		
ASCAT <sup>e</sup>	NN1-1(2)-8 <sup>e</sup>		

<sup>a</sup> This column indicates the missing soil moisture data in a pixel. For example, ‘ASCAT; SMOS; AMSR2-JAXA; AMSR2-LPRM’ means all data is available; ‘ASCAT; AMSR2-JAXA’ means SMOS and AMSR2-LPRM data are lacking in that specific pixel.

<sup>b</sup> Order of neural network preference means: if the first neural network (the most preferred one) is available in the zone where the pixel is located, it is applied for soil moisture simulation in that pixel; otherwise, the following neural network is applied if it is available, and so on.

<sup>c</sup> ‘SIM’ represents the neural network simulated soil moisture, the first number is the round of simulation while the second one indicates the substep.

<sup>d</sup> For SIM-1-1, the data temporal coverage is 2014D01~2018D36 whereas for SIM-1-2, the data period is 2012D19~2013D36.

<sup>e</sup> Optional because unhelpful to increasing the spatial coverage of simulation outputs.

<sup>f</sup> NN1-1-X (X=1, 2, ..., 8) are used for soil moisture simulation during substep 1 (the production of SIM-1-1) whereas the neural networks built in substep 2, that are labelled as NN1-2-X (X=1, 2, ..., 8), are applied for the calculation of SIM-1-2.

Table S3. The basic information on the second round of neural network training.

Network code <sup>a</sup>	Training target soil moisture	Network input soil moisture products	Input LAI product	Input data's time period	Number of 10 days' period
NN2-1	SIM-1T	ASCAT; SMOS; FY; TMI		2012D19~2015D10	100
NN2-2	SMAP	ASCAT; SMOS; FY		2015D10~2017D36	99
NN2-3	SIM-1T	ASCAT; SMOS; TMI		2012D19~2015D10	100
NN2-4	SIM-1T	ASCAT; FY; TMI		2012D19~2015D10	100
NN2-5	SMAP	ASCAT; SMOS	GLASS	2015D10~2017D36	99
NN2-6	SMAP	ASCAT; FY		2015D10~2017D36	99
NN2-7	SIM-1T	ASCAT; TMI		2012D19~2015D10	100
NN2-8	SMAP	ASCAT		2015D10~2017D36	99

<sup>a</sup>Because simulation- round 2 does not have multiple substeps, the second number indicating substep is deleted from the codes.

Table S4. The basic information on the second round of surface soil moisture simulation using the trained neural network

Available soil moisture products in the pixel	Order of neural network preference	The code of output soil moisture product and its temporal coverage
ASCAT; SMOS; FY; TMI	NN2-1, NN2-2, NN2-3, NN2-4, NN2-5, NN2-6, NN2-7, NN2-8	
ASCAT; SMOS; FY	NN2-2, NN2-5, NN2-6, NN2-8	
ASCAT; SMOS; TMI	NN2-3, NN2-5, NN2-6, NN2-8	
ASCAT; FY; TMI	NN2-4, NN2-6, NN2-7, NN2-8	
ASCAT; SMOS	NN2-5, NN2-8	SIM-2 (2011D20~2012D18)
ASCAT; FY	NN2-6, NN2-8	
ASCAT; TMI	NN2-7, NN2-8	
ASCAT	NN2-8	

Table S5. The basic information on the third round of neural network training (the substep 1).

Network code	Training target	Network input soil moisture products	Input LAI product	Input data's time period	Number of 10 days' period
NN3-1-1	SIM-1T	ASCAT; SMOS; TMI		2012D19~2015D10	100
NN3-1-2	SMAP	ASCAT; SMOS		2015D10~2017D36	99
NN3-1-3	SIM-1T	ASCAT; TMI	GLASS	2012D19~2015D10	100
NN3-1-4	SIM-2T+SIM-1T	ASCAT; WINDSAT		2011D20~2012D21	38
NN3-1-5	SMAP	ASCAT		2015D10~2017D36	99

Table S6. The basic information on the third round of surface soil moisture simulation using the trained neural network (the substep 1).

Available soil moisture products in the pixel	Order of neural network preference	The code of output soil moisture product and its temporal coverage
ASCAT; SMOS; TMI; WINDSAT	NN3-1-1, NN3-1-2, NN3-1-3, NN3-1-4, NN3-1-5	
ASCAT; SMOS; TMI	NN3-1-1, NN3-1-2, NN3-1-3, NN3-1-5	
ASCAT; SMOS; WINDSAT	NN3-1-2, NN3-1-4, NN3-1-5	
ASCAT; SMOS	NN3-1-2, NN3-1-5	
ASCAT; TMI; WINDSAT	NN3-1-3, NN3-1-4, NN3-1-5	SIM-3-1 (2010D16~2011D19)
ASCAT; TMI	NN3-1-3, NN3-1-5	
ASCAT; WINDSAT	NN3-1-4, NN3-1-5	
ASCAT	NN3-1-5	

Table S7. The basic information on the third round of neural network training (the substep2).

Network code	Training target	Network input soil moisture products	Input LAI product	Input data's time period	Number of 10 days' period
NN3-2-1	SIM-2T+SIM-1T	ASCAT; SMOS; TMI; WINDSAT		2011D20~2012D21	38
NN3-2-2	SIM-1T	ASCAT; SMOS; TMI		2012D19~2015D10	100
NN3-2-3	SIM-2T+SIM-1T	ASCAT; SMOS; WINDSAT		2011D20~2012D21	38
NN3-2-4	SIM-2T+SIM-1T	ASCAT; TMI; WINDSAT		2011D20~2012D21	38
NN3-2-5	SMAP	ASCAT; SMOS	GLASS	2015D10~2017D36	99
NN3-2-6 <sup>a</sup>	SIM-1T	ASCAT; TMI		2012D19~2015D10	100
NN3-2-7 <sup>a</sup>	SIM-2T+SIM-1T	ASCAT; WINDSAT		2011D20~2012D21	38
NN3-2-8 <sup>a</sup>	SMAP	ASCAT		2015D10~2017D36	99

<sup>a</sup> Optional because these neural networks has already been included in substep 1.

Table S8. The basic information on the third round of surface soil moisture simulation using the trained neural network (the substep2).

Available soil moisture products in the pixel	Order of neural network preference	The code of output soil moisture product and its temporal coverage
ASCAT; SMOS; TMI; WINDSAT	NN3-2-1, NN3-2-2, NN3-2-3, NN3-2-4, NN3-2-5, NN3-2-6 <sup>a</sup> , NN3-2-7 <sup>a</sup> , NN3-2-8 <sup>a</sup>	
ASCAT; SMOS; TMI	NN3-2-2, NN3-2-5, NN3-2-6 <sup>a</sup> , NN3-2-8 <sup>a</sup>	
ASCAT; SMOS; WINDSAT	NN3-2-3, NN3-2-5, NN3-2-7 <sup>a</sup> , NN3-2-8 <sup>a</sup>	
ASCAT; TMI; WINDSAT	NN3-2-4, NN3-2-6 <sup>a</sup> , NN3-2-7 <sup>a</sup> , NN3-2-8 <sup>a</sup>	SIM-3-2 (2010D16~2011D19)
ASCAT; SMOS	NN3-2-5, NN3-2-8 <sup>a</sup>	
ASCAT; TMI <sup>a</sup>	NN3-2-6 <sup>a</sup> , NN3-2-8 <sup>a</sup>	
ASCAT; WINDSAT <sup>a</sup>	NN3-2-7 <sup>a</sup> , NN3-2-8 <sup>a</sup>	
ASCAT <sup>a</sup>	NN3-2-8 <sup>a</sup>	

<sup>a</sup> Optional due to repetition.

Table S9. The method applied in combining SIM-3-1 and SIM-3-2 to produce SIM-3.

Data availability of SIM-3-1 and SIM-3-2 in a specific pixel	The expression for SIM-3
No data for SIM-3-2 (SIM-3-1 have data)	$\text{SIM-3}=\text{SIM-3-1}$
No data for SIM-3-1 (SIM-3-2 have data)	$\text{SIM-3}=\text{SIM-3-2}$
Both SIM-3-1 and SIM-3-2 have valid data	
SIM-3-1 within range; SIM-3-2 within range <sup>a</sup>	$\text{SIM-3}=(\text{SIM-3-1}+\text{SIM-3-2})/2$
SIM-3-1 within range; SIM-3-2 out of range	$\text{SIM-3}=\text{SIM-3-1}$
SIM-3-1 out of range; SIM-3-2 within range	$\text{SIM-3}=\text{SIM-3-2}$
$\text{SIM-3-1}>\text{SM}_{\text{max}}$ and $\text{SIM-3-2}>\text{SM}_{\text{max}}$ <sup>b</sup>	$\text{SIM-3}=\min(\text{SIM-3-1}, \text{SIM-3-2})$
$\text{SIM-3-1}<\text{SM}_{\text{min}}$ and $\text{SIM-3-2}<\text{SM}_{\text{min}}$ <sup>c</sup>	$\text{SIM-3}=\max(\text{SIM-3-1}, \text{SIM-3-2})$
Other conditions	$\text{SIM-3}=(\text{SIM-3-1}+\text{SIM-3-2})/2$

<sup>a</sup> ‘Range’ refers to the data range of SMAP\_E surface soil moisture in a specific pixel from April 2015 to 2018.

<sup>b</sup> ‘ $\text{SM}_{\text{max}}$ ’ is the maximum soil moisture value in a specific pixel reported by the SMAP\_E dataset.

<sup>c</sup> ‘ $\text{SM}_{\text{min}}$ ’ is the minimum soil moisture value in a specific pixel according to the SMAP\_E dataset.

Table S10. The basic information on the fourth round of neural network training (the substep1).

Network code	Training target	Network input soil moisture products	Input LAI product	Input data's time period	Number of 10 days' period
NN4-1-1		ASCAT; WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN4-1-2		ASCAT; WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM			
NN4-1-3		ASCAT; WINDSAT; TMI; AMSRE-JAXA; AMSRE-NSIDC			
NN4-1-4		ASCAT; WINDSAT; TMI; AMSRE-JAXA			
NN4-1-5		ASCAT; WINDSAT; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN4-1-6		ASCAT; WINDSAT; AMSRE-JAXA; AMSRE-LPRM			
NN4-1-7		ASCAT; WINDSAT; AMSRE-JAXA; AMSRE-NSIDC			
NN4-1-8	SIM-3T	ASCAT; WINDSAT; AMSRE-JAXA			
NN4-1-9	+ SIM-2T	ASCAT; TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC	SPOT-VGT	2010D16~2011D27	48
NN4-1-10		ASCAT; TMI; AMSRE-JAXA; AMSRE-LPRM			
NN4-1-11		ASCAT; TMI; AMSRE-JAXA; AMSRE-NSIDC			
NN4-1-12		ASCAT; TMI; AMSRE-JAXA			
NN4-1-13		ASCAT; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN4-1-14		ASCAT; AMSRE-JAXA; AMSRE-LPRM			
NN4-1-15		ASCAT; AMSRE-JAXA; AMSRE-NSIDC			
NN4-1-16		ASCAT; AMSRE-JAXA			

Table S11. The basic information on the fourth round of surface soil moisture simulation using the trained neural network (the substep1).

Available soil moisture products in the pixel	Order of neural network preference	The code of output soil moisture product and its temporal coverage
ASCAT; WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC	NN4-1-1, NN4-1-2, NN4-1-3, NN4-1-4, NN4-1-5, NN4-1-6, NN4-1-7, NN4-1-8, NN4-1-9, NN4-1-10, NN4-1-11, NN4-1-12, NN4-1-13, NN4-1-14, NN4-1-15, NN4-1-16	
ASCAT; WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM	NN4-1-2, NN4-1-4, NN4-1-6, NN4-1-8, NN4-1-10, NN4-1-12, NN4-1-14, NN4-1-16	
ASCAT; WINDSAT; TMI; AMSRE-JAXA; AMSRE-NSIDC  ASCAT; WINDSAT; TMI; AMSRE-JAXA	NN4-1-3, NN4-1-4, NN4-1-7, NN4-1-8, NN4-1-11, NN4-1-12, NN4-1-15, NN4-1-16	
ASCAT; WINDSAT; AMSRE-JAXA; AMSRE-LPRM;  ASCAT; WINDSAT; AMSRE-JAXA; AMSRE-NSIDC  ASCAT; WINDSAT; AMSRE-JAXA	NN4-1-4, NN4-1-8, NN4-1-12, NN4-1-16  NN4-1-5, NN4-1-6, NN4-1-7, NN4-1-8, NN4-1-13, NN4-1-14, NN4-1-15, NN4-1-16  NN4-1-6, NN4-1-8, NN4-1-14, NN4-1-16	SIM-4-1 (2007D01~2010D15)
ASCAT; WINDSAT; AMSRE-JAXA; AMSRE-NSIDC  ASCAT; TMI; AMSRE-JAXA; AMSRE-LPRM  ASCAT; TMI; AMSRE-JAXA; AMSRE-NSIDC  ASCAT; TMI; AMSRE-JAXA	NN4-1-7, NN4-1-8, NN4-1-15, NN4-1-16  NN4-1-8, NN4-1-16  NN4-1-9, NN4-1-10, NN4-1-11, NN4-1-12, NN4-1-13, NN4-1-14, NN4-1-15, NN4-1-16  NN4-1-10, NN4-1-12, NN4-1-14, NN4-1-16	
ASCAT; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC  ASCAT; AMSRE-JAXA; AMSRE-LPRM  ASCAT; AMSRE-JAXA; AMSRE-NSIDC  ASCAT; AMSRE-JAXA	NN4-1-11, NN4-1-12, NN4-1-15, NN4-1-16  NN4-1-12, NN4-1-16  NN4-1-13, NN4-1-14, NN4-1-15, NN4-1-16  NN4-1-14, NN4-1-16  NN4-1-15, NN4-1-16  NN4-1-16	

Table S12. The basic information on the fourth round of neural network training (the substep2).

Network code	Training target	Network input soil moisture products	Input LAI product	Input data's time period	Number of 10 days' period
NN4-2-1	SIM-1T	ASCAT; TMI		2012D19~2015D10	100
NN4-2-2	SIM-2T+SIM-1T	ASCAT; WINDSAT	GLASS	2011D20~2012D21	38
NN4-2-3 <sup>a</sup>	SIM-3T+SIM-2T	ASCAT; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN4-2-4 <sup>a</sup>	SIM-3T+SIM-2T	ASCAT; AMSRE-JAXA; AMSRE-LPRM			
NN4-2-5 <sup>a</sup>	SIM-3T+SIM-2T	ASCAT; AMSRE-JAXA; AMSRE-NSIDC	SPOT-VGT	2010D16~2011D27	48
NN4-2-6 <sup>a</sup>	SIM-3T+SIM-2T	ASCAT; AMSRE-JAXA			

<sup>a</sup>Optional because these neural networks have already been included in substep 1.

Table S13. The basic information on the fourth round of surface soil moisture simulation using the trained neural network (the substep2) <sup>a</sup>.

Available soil moisture products in the pixel	Order of neural network preference	The code of output soil moisture product and its temporal coverage
ASCAT; TMI; WINDSAT; (AMSRE-JAXA); (AMSRE-LPRM); (AMSRE-NSIDC) <sup>b</sup>	NN4-2-1, NN4-2-2	
ASCAT; TMI; (AMSRE-JAXA); (AMSRE-LPRM); (AMSRE-NSIDC) <sup>b</sup>	NN4-2-1	SIM-4-2 (2007D01~2010D15)
ASCAT; WINDSAT; (AMSRE-JAXA); (AMSRE-LPRM); (AMSRE-NSIDC) <sup>b</sup>	NN4-2-2	

<sup>a</sup>There are actually several optional conditions in this simulation, but are omitted in this table.

<sup>b</sup>The meaning of the parentheses is: whether the soil moisture products in the parentheses are available in the pixel or not does not make a difference.

Table S14. The basic information on the fifth round of neural network training <sup>a</sup>.

Network code	Training target	Network input soil moisture products	Input LAI product	Input data's time period	Number of 10 days' period
NN5-1		WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN5-2		WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM			
NN5-3		WINDSAT; TMI; AMSRE-JAXA; AMSRE-NSIDC			
NN5-4		WINDSAT; TMI; AMSRE-JAXA			
NN5-5		WINDSAT; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN5-6	SIM-4T	WINDSAT; AMSRE-JAXA; AMSRE-LPRM			
NN5-7	+	WINDSAT; AMSRE-JAXA; AMSRE-NSIDC			
NN5-8	SIM-3T	WINDSAT; AMSRE-JAXA	SPOT-VGT	2007D01~2011D27	171
NN5-9	+	TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN5-10	SIM-2T	TMI; AMSRE-JAXA; AMSRE-LPRM			
NN5-11		TMI; AMSRE-JAXA; AMSRE-NSIDC			
NN5-12		TMI; AMSRE-JAXA			
NN5-13		AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC			
NN5-14		AMSRE-JAXA; AMSRE-LPRM			
NN5-15		AMSRE-JAXA; AMSRE-NSIDC			

<sup>a</sup>Optional neural networks are excluded from this table for simplicity.

Table S15. The basic information on the fifth round of surface soil moisture simulation using the trained neural networks <sup>a</sup>.

Available soil moisture products in the pixel	Order of neural network preference	The code of output soil moisture product and its temporal coverage
WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC	NN5-1, NN5-2, NN5-3, NN5-4, NN5-5, NN5-6, NN5-7, NN5-8, NN5-9, NN5-10, NN5-11, NN5-12, NN5-13, NN5-14, NN5-15	
WINDSAT; TMI; AMSRE-JAXA; AMSRE-LPRM	NN5-2, NN5-4, NN5-6, NN5-8, NN5-10, NN5-12, NN5-14	
WINDSAT; TMI; AMSRE-JAXA; AMSRE-NSIDC	NN5-3, NN5-4, NN5-7, NN5-8, NN5-11, NN5-12, NN5-15	
WINDSAT; TMI; AMSRE-JAXA	NN5-4, NN5-8, NN5-12	
WINDSAT; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC	NN5-5, NN5-6, NN5-7, NN5-8, NN5-13, NN5-14, NN5-15	
WINDSAT; AMSRE-JAXA; AMSRE-LPRM	NN5-6, NN5-8, NN5-14	
WINDSAT; AMSRE-JAXA; AMSRE-NSIDC	NN5-7, NN5-8, NN5-15	SIM-5 (2003D01~2006D36)
WINDSAT; AMSRE-JAXA	NN5-8	
TMI; AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC	NN5-9, NN5-10, NN5-11, NN5-12, NN5-13, NN5-14, NN5-15	
TMI; AMSRE-JAXA; AMSRE-LPRM	NN5-10, NN5-12, NN5-14	
TMI; AMSRE-JAXA; AMSRE-NSIDC	NN5-11, NN5-12, NN5-15	
TMI; AMSRE-JAXA	NN5-12	
AMSRE-JAXA; AMSRE-LPRM; AMSRE-NSIDC	NN5-13, NN5-14, NN5-15	
AMSRE-JAXA; AMSRE-LPRM	NN5-14	
AMSRE-JAXA; AMSRE-NSIDC	NN5-15	

<sup>a</sup>Optional conditions are omitted in this table.

Table S16. The basic information of the ISMN stations and the temporal range of the data used for soil moisture data validation <sup>a</sup>.

Network	Station	Climate_Koppen	Sensor	Latitude	Longitude	Depth_min	Depth_max	Year_start	Year_end
AMMA-CATCH	Banizoumbou	BSh	CS616-1	13.533	2.660	0.05	0.05	2006	2014
AMMA-CATCH	Belefoungou-Mid	Aw	CS616	9.795	1.710	0.05	0.05	2006	2014
AMMA-CATCH	Belefoungou-Top	Aw	CS616	9.790	1.710	0.05	0.05	2006	2014
AMMA-CATCH	Nalohou-Mid	Aw	CS616	9.745	1.605	0.05	0.05	2006	2009
AMMA-CATCH	Nalohou-Top	Aw	CS616	9.744	1.606	0.05	0.05	2006	2014
AMMA-CATCH	Tondikiboro	BSh	CS616-1	13.548	2.696	0.05	0.05	2006	2014
AMMA-CATCH	Wankama	BSh	CS616-1	13.646	2.632	0.05	0.05	2006	2014
ARM	Anthony	Cfa	SMP1-A	37.213	-98.097	0.025	0.025	2012	2014
ARM	Ashton	Cfa	Water-Matric-Potential-Sensor-229L-E	37.133	-97.266	0.05	0.05	2003	2015
ARM	Byron	Cfa	Water-Matric-Potential-Sensor-229L-E	36.881	-98.285	0.05	0.05	2003	2015
ARM	Coldwater	Cfa	Water-Matric-Potential-Sensor-229L-E	37.333	-99.309	0.05	0.05	2003	2009
ARM	Cordell	Cfa	Water-Matric-Potential-Sensor-229L-E	35.354	-98.977	0.05	0.05	2003	2009
ARM	Cyril	Cfa	Water-Matric-Potential-Sensor-229L-E	34.883	-98.205	0.05	0.05	2003	2007
ARM	Earlsboro	Cfa	Water-Matric-Potential-Sensor-229L-E	35.269	-96.740	0.05	0.05	2004	2009
ARM	ElkFalls	Cfa	Water-Matric-Potential-Sensor-229L-E	37.383	-96.180	0.05	0.05	2003	2011
ARM	ElReno	Cfa	Water-Matric-Potential-Sensor-229L-E	35.557	-98.017	0.05	0.05	2003	2008
ARM	Halstead	Cfa	Water-Matric-Potential-Sensor-229L-E	38.114	-97.513	0.05	0.05	2003	2007
ARM	Hillsboro	Cfa	Water-Matric-Potential-Sensor-229L-E	38.306	-97.301	0.05	0.05	2003	2009
ARM	Lamont-CF1	Cfa	Water-Matric-Potential-Sensor-229L-E	36.605	-97.485	0.05	0.05	2003	2015
ARM	Lamont-CF2	Cfa	SMP1-A	36.607	-97.488	0.025	0.025	2010	2012
ARM	Larned	Cfa	Water-Matric-Potential-Sensor-229L-E	38.202	-99.316	0.05	0.05	2003	2009
ARM	LeRoy	Cfa	Water-Matric-Potential-Sensor-229L-E	38.201	-95.597	0.05	0.05	2003	2009
ARM	Meeker	Cfa	Water-Matric-Potential-Sensor-229L-E	35.564	-96.988	0.05	0.05	2003	2011

ARM	Morris	Cfa	Water-Matric-Potential-Sensor-229L-E	35.688	-95.856	0.05	0.05	2003	2003
ARM	Newkirk	Cfa	SMP1-A	36.926	-97.082	0.025	0.025	2011	2014
ARM	Oklmulgee	Cfa	SMP1-A	35.615	-96.065	0.025	0.025	2010	2014
ARM	Omega	Cfa	SMP1-A	35.880	-98.173	0.025	0.025	2011	2014
ARM	Pawhuska	Cfa	Water-Matric-Potential-Sensor-229L-E	36.841	-96.427	0.05	0.05	2003	2015
ARM	Plevna	Cfa	Water-Matric-Potential-Sensor-229L-E	37.953	-98.329	0.05	0.05	2003	2008
ARM	Ringwood	Cfa	Water-Matric-Potential-Sensor-229L-E	36.431	-98.284	0.05	0.05	2003	2013
ARM	Towanda	Cfa	Water-Matric-Potential-Sensor-229L-E	37.842	-97.020	0.05	0.05	2003	2011
ARM	Tyro	Cfa	Water-Matric-Potential-Sensor-229L-E	37.068	-95.788	0.05	0.05	2003	2011
ARM	ValleyFloor	Dfc	SMP1-A	40.462	-106.817	0.025	0.025	2010	2011
ARM	Vici	Cfa	Water-Matric-Potential-Sensor-229L-E	36.061	-99.134	0.05	0.05	2003	2011
ARM	Waukomis	Cfa	SMP1-A	36.311	-97.928	0.025	0.025	2011	2014
BIEBRZA_S-1	grassland-soil-1	Dfb	GS-3	53.635	22.981	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-2	Dfb	GS-3	53.634	22.981	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-3	Dfb	GS-3	53.633	22.982	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-4	Dfb	GS-3	53.632	22.982	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-5	Dfb	GS-3	53.631	22.982	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-6	Dfb	GS-3	53.635	22.979	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-7	Dfb	GS-3	53.634	22.980	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-8	Dfb	GS-3	53.633	22.980	0.05	0.05	2015	2018
BIEBRZA_S-1	grassland-soil-9	Dfb	GS-3	53.632	22.980	0.05	0.05	2015	2018
BNZ-LTER	CRREL-Met	Dfc	CS615	65.154	-147.490	0.05	0.05	2003	2012
BNZ-LTER	FP1A	Dfc	CS615	64.699	-148.258	0.05	0.05	2003	2012
BNZ-LTER	FP2A	Dfc	CS615	64.699	-148.252	0.05	0.05	2003	2012
BNZ-LTER	FP3A	Dfc	CS615	64.723	-148.151	0.05	0.05	2003	2012
BNZ-LTER	FP4A	Dfc	CS615	64.679	-148.237	0.05	0.05	2003	2012

BNZ-LTER	FP5A	Dfc	CS615	64.681	-148.249	0.05	0.05	2003	2012
BNZ-LTER	LTER1	Dfc	CS615	64.743	-148.316	0.05	0.05	2003	2012
BNZ-LTER	LTER2	Dfc	CS615	64.699	-148.255	0.05	0.05	2004	2012
BNZ-LTER	UP1A	Dfc	CS615	64.736	-148.303	0.05	0.05	2003	2012
BNZ-LTER	UP2A	Dfc	CS615	64.695	-148.356	0.05	0.05	2003	2012
BNZ-LTER	UP3A	Dfc	CS615	64.767	-148.280	0.05	0.05	2003	2008
CARBOAFRICA	SD-DEM	BWh	CS616	13.283	30.478	0.05	0.05	2005	2010
COSMOS	SantaFeWatershed-SF1	BSk	Cosmic-ray-Probe	35.679	-105.827	0	0.04	2010	2010
CTP_SMTMN	L01	ET	EC-TM	31.946	91.721	0	0.05	2010	2016
CTP_SMTMN	L02	ET	EC-TM	31.890	91.700	0	0.05	2010	2016
CTP_SMTMN	L03	ET	EC-TM	31.843	91.706	0	0.05	2010	2016
CTP_SMTMN	L04-M02	ET	5TM	31.806	91.750	0	0.05	2010	2016
CTP_SMTMN	L05-M06	ET	5TM	31.754	91.783	0	0.05	2010	2016
CTP_SMTMN	L06-M10	ET	5TM	31.722	91.811	0	0.05	2011	2016
CTP_SMTMN	L07-M13	ET	5TM	31.678	91.842	0	0.05	2010	2016
CTP_SMTMN	L08-M14	ET	5TM	31.662	91.795	0	0.05	2010	2016
CTP_SMTMN	L09-M16	ET	5TM	31.639	91.755	0	0.05	2010	2016
CTP_SMTMN	L10-M17	ET	5TM	31.614	91.740	0	0.05	2010	2016
CTP_SMTMN	L11-M21	ET	5TM	31.587	91.793	0	0.05	2010	2016
CTP_SMTMN	L12-M22	ET	5TM	31.574	91.913	0	0.05	2010	2016
CTP_SMTMN	L13	ET	EC-TM	31.546	91.985	0	0.05	2010	2016
CTP_SMTMN	L14	ET	EC-TM	31.527	92.050	0	0.05	2010	2016
CTP_SMTMN	L15	ET	EC-TM	31.463	92.017	0	0.05	2011	2016
CTP_SMTMN	L16	ET	5TM	31.410	91.971	0	0.05	2011	2016
CTP_SMTMN	L17	ET	5TM	31.373	91.976	0	0.05	2012	2016
CTP_SMTMN	L18	ET	EC-TM	31.332	92.041	0	0.05	2010	2016

CTP_SMTMN	L19	ET	EC-TM	31.274	92.109	0	0.05	2010	2013
CTP_SMTMN	L20	ET	5TM	31.232	92.164	0	0.05	2011	2016
CTP_SMTMN	L21	ET	EC-TM	31.172	92.197	0	0.05	2010	2016
CTP_SMTMN	L22	ET	EC-TM	31.128	92.250	0	0.05	2010	2016
CTP_SMTMN	L23	ET	EC-TM	31.107	92.309	0	0.05	2010	2016
CTP_SMTMN	L25	ET	EC-TM	31.713	92.458	0	0.05	2010	2012
CTP_SMTMN	L26	ET	EC-TM	31.683	92.405	0	0.05	2010	2016
CTP_SMTMN	L27	ET	EC-TM	31.664	92.342	0	0.05	2010	2016
CTP_SMTMN	L28	ET	5TM	31.640	92.331	0	0.05	2011	2012
CTP_SMTMN	L29	ET	5TM	31.587	92.241	0	0.05	2011	2016
CTP_SMTMN	L30	ET	EC-TM	31.541	92.206	0	0.05	2010	2015
CTP_SMTMN	L31	ET	5TM	31.496	92.133	0	0.05	2011	2011
CTP_SMTMN	L32	ET	EC-TM	31.369	91.899	0	0.05	2010	2016
CTP_SMTMN	L33	ET	EC-TM	31.301	91.848	0	0.05	2010	2016
CTP_SMTMN	L34	ET	EC-TM	31.259	91.799	0	0.05	2010	2016
CTP_SMTMN	L35	ET	EC-TM	31.175	91.760	0	0.05	2010	2016
CTP_SMTMN	L36	ET	EC-TM	31.129	91.726	0	0.05	2010	2016
CTP_SMTMN	L37	ET	EC-TM	31.089	91.688	0	0.05	2010	2016
CTP_SMTMN	L38	ET	EC-TM	31.033	91.679	0	0.05	2010	2016
CTP_SMTMN	M01	ET	5TM	31.782	91.730	0	0.05	2011	2016
CTP_SMTMN	M03	ET	5TM	31.816	91.796	0	0.05	2011	2016
CTP_SMTMN	M04	ET	5TM	31.808	91.846	0	0.05	2011	2016
CTP_SMTMN	M05	ET	5TM	31.743	91.725	0	0.05	2011	2016
CTP_SMTMN	M07-S01	ET	5TM	31.732	91.766	0	0.05	2011	2016
CTP_SMTMN	M08	ET	5TM	31.736	91.870	0	0.05	2011	2016
CTP_SMTMN	M09	ET	5TM	31.685	91.719	0	0.05	2011	2014

CTP_SMTMN	M11-S09	ET	5TM	31.683	91.771	0	0.05	2011	2016
CTP_SMTMN	M12-S08	ET	5TM	31.691	91.808	0	0.05	2011	2016
CTP_SMTMN	M15	ET	5TM	31.671	91.904	0	0.05	2011	2016
CTP_SMTMN	M18	ET	5TM	31.614	91.775	0	0.05	2011	2016
CTP_SMTMN	M19	ET	5TM	31.618	91.841	0	0.05	2011	2016
CTP_SMTMN	M20	ET	5TM	31.612	91.915	0	0.05	2011	2016
CTP_SMTMN	S02	ET	5TM	31.722	91.811	0	0.05	2011	2016
CTP_SMTMN	S03	ET	EC-TM	31.716	91.802	0	0.05	2012	2016
CTP_SMTMN	S04	ET	5TM	31.703	91.787	0	0.05	2012	2016
CTP_SMTMN	S05	ET	5TM	31.698	91.774	0	0.05	2012	2016
CTP_SMTMN	S06	ET	5TM	31.694	91.786	0	0.05	2012	2016
CTP_SMTMN	S07	ET	EC-TM	31.693	91.799	0	0.05	2012	2016
DAHRA	DAHRA	BSh	ThetaProbe-ML2X	15.404	-15.432	0.05	0.05	2004	2015
FLUXNET-AMERI FLUX	TonziRanch	Csa	ThetaProbe-ML2X	38.432	-120.966	0	0	2003	2012
FLUXNET-AMERI FLUX	VairaRanch	Csa	ThetaProbe-ML2X	38.413	-120.951	0	0	2003	2012
FR_Aqui	fraye	Cfb	ThetaProbe-ML2X	44.467	-0.727	0.05	0.05	2013	2017
FR_Aqui	grandcal	Cfb	ThetaProbe-ML2X	44.472	-0.768	0.05	0.05	2013	2017
FR_Aqui	hillan	Cfb	ThetaProbe-ML2X	44.491	-0.757	0.05	0.05	2013	2015
FR_Aqui	hillan2	Cfb	ThetaProbe-ML2X	44.491	-0.758	0.05	0.05	2015	2017
FR_Aqui	parcmeteo	Cfb	ThetaProbe-ML2X	44.790	-0.577	0.01	0.01	2012	2017
HiWATER_EHWSN	BD-0002	BSk	FM100	38.860	100.336	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0003	BSk	FM100	38.880	100.356	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0004	BSk	FM100	38.854	100.377	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0005	BSk	FM100	38.853	100.361	0.04	0.04	2012	2012

HiWATER_EHWSN	BD-0006	BSk	FM100	38.879	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0007	BSk	FM100	38.854	100.383	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0010	BSk	FM100	38.880	100.349	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0011	BSk	FM100	38.859	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0014	BSk	FM100	38.863	100.361	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0015	BSk	FM100	38.862	100.347	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0016	BSk	FM100	38.870	100.353	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0017	BSk	FM100	38.853	100.351	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0018	BSk	FM100	38.871	100.350	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0019	BSk	FM100	38.859	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0020	BSk	FM100	38.873	100.379	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0021	BSk	FM100	38.870	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0022	BSk	FM100	38.861	100.382	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0024	BSk	FM100	38.859	100.360	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0028	BSk	FM100	38.856	100.354	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0029	BSk	FM100	38.865	100.365	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0030	BSk	FM100	38.875	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0032	BSk	FM100	38.863	100.355	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0034	BSk	FM100	38.876	100.340	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0035	BSk	FM100	38.861	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0036	BSk	FM100	38.859	100.356	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0037	BSk	FM100	38.878	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0038	BSk	FM100	38.866	100.352	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0039	BSk	FM100	38.864	100.358	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0040	BSk	FM100	38.877	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0041	BSk	FM100	38.874	100.349	0.04	0.04	2012	2012

HiWATER_EHWSN	BD-0043	BSk	FM100	38.856	100.382	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0045	BSk	FM100	38.868	100.353	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0046	BSk	FM100	38.854	100.357	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0048	BSk	FM100	38.860	100.385	0.04	0.04	2012	2012
HiWATER_EHWSN	BD-0049	BSk	FM100	38.859	100.386	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0001	BSk	FM100	38.874	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0002	BSk	FM100	38.882	100.349	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0003	BSk	FM100	38.869	100.363	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0004	BSk	FM100	38.881	100.345	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0006	BSk	FM100	38.873	100.358	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0007	BSk	FM100	38.883	100.393	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0009	BSk	FM100	38.856	100.386	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0010	BSk	FM100	38.881	100.365	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0011	BSk	FM100	38.876	100.377	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0012	BSk	FM100	38.879	100.371	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0014	BSk	FM100	38.870	100.344	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0015	BSk	FM100	38.873	100.351	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0016	BSk	FM100	38.879	100.398	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0017	BSk	FM100	38.889	100.360	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0018	BSk	FM100	38.894	100.362	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0020	BSk	FM100	38.873	100.364	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0022	BSk	FM100	38.883	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0024	BSk	FM100	38.879	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0026	BSk	FM100	38.862	100.390	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0028	BSk	FM100	38.874	100.385	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0029	BSk	FM100	38.870	100.388	0.04	0.04	2012	2012

HiWATER_EHWSN	HD-0031	BSk	FM100	38.896	100.357	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0033	BSk	FM100	38.849	100.383	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0034	BSk	FM100	38.870	100.378	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0036	BSk	FM100	38.881	100.360	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0038	BSk	FM100	38.886	100.363	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0039	BSk	FM100	38.886	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0042	BSk	FM100	38.884	100.377	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0044	BSk	FM100	38.871	100.360	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0045	BSk	FM100	38.868	100.382	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0046	BSk	FM100	38.851	100.385	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0048	BSk	FM100	38.874	100.356	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0051	BSk	FM100	38.873	100.340	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0054	BSk	FM100	38.870	100.394	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0056	BSk	FM100	38.878	100.382	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0057	BSk	FM100	38.871	100.386	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0058	BSk	FM100	38.870	100.381	0.04	0.04	2012	2012
HiWATER_EHWSN	HD-0059	BSk	FM100	38.867	100.334	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-001	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.371	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-002	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.371	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-003	BSk	SPADE-Time-Domain-Transmissivity	38.852	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-004	BSk	SPADE-Time-Domain-Transmissivity	38.855	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-005	BSk	SPADE-Time-Domain-Transmissivity	38.855	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-006	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-007	BSk	SPADE-Time-Domain-Transmissivity	38.850	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-008	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoiINET-009	BSk	SPADE-Time-Domain-Transmissivity	38.854	100.373	0.04	0.04	2012	2012

HiWATER_EHWSN	SoilNET-010	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-011	BSk	SPADE-Time-Domain-Transmissivity	38.852	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-012	BSk	SPADE-Time-Domain-Transmissivity	38.855	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-013	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-014	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-015	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-016	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-017	BSk	SPADE-Time-Domain-Transmissivity	38.852	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-018	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-019	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-020	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-021	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-022	BSk	SPADE-Time-Domain-Transmissivity	38.852	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-023	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-024	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-025	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-026	BSk	SPADE-Time-Domain-Transmissivity	38.852	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-027	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-028	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-029	BSk	SPADE-Time-Domain-Transmissivity	38.855	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-030	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-031	BSk	SPADE-Time-Domain-Transmissivity	38.852	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-032	BSk	SPADE-Time-Domain-Transmissivity	38.853	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-033	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-034	BSk	SPADE-Time-Domain-Transmissivity	38.853	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-035	BSk	SPADE-Time-Domain-Transmissivity	38.853	100.374	0.04	0.04	2012	2012

HiWATER_EHWSN	SoilNET-036	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-037	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-038	BSk	SPADE-Time-Domain-Transmissivity	38.854	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-039	BSk	SPADE-Time-Domain-Transmissivity	38.854	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-040	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-041	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-042	BSk	SPADE-Time-Domain-Transmissivity	38.853	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-043	BSk	SPADE-Time-Domain-Transmissivity	38.855	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-044	BSk	SPADE-Time-Domain-Transmissivity	38.851	100.374	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-045	BSk	SPADE-Time-Domain-Transmissivity	38.853	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-046	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-047	BSk	SPADE-Time-Domain-Transmissivity	38.857	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-048	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.369	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-049	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-050	BSk	SPADE-Time-Domain-Transmissivity	38.855	100.375	0.04	0.04	2012	2012
HiWATER_EHWSN	SoilNET-051	BSk	SPADE-Time-Domain-Transmissivity	38.856	100.371	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-01	BSk	Hydaprobe-II	38.870	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-02	BSk	Hydaprobe-II	38.865	100.356	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-03	BSk	Hydaprobe-II	38.859	100.345	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-04	BSk	Hydaprobe-II	38.877	100.355	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-06	BSk	Hydaprobe-II	38.867	100.361	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-07	BSk	Hydaprobe-II	38.877	100.380	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-10	BSk	Hydaprobe-II	38.872	100.367	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-12	BSk	Hydaprobe-II	38.870	100.356	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-14	BSk	Hydaprobe-II	38.872	100.344	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-15	BSk	Hydaprobe-II	38.858	100.380	0.04	0.04	2012	2012

HiWATER_EHWSN	WATERNET-16	BSk	Hydraprobe-II	38.863	100.366	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-17	BSk	Hydraprobe-II	38.859	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-18	BSk	Hydraprobe-II	38.845	100.381	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-19	BSk	Hydraprobe-II	38.851	100.349	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-20	BSk	Hydraprobe-II	38.854	100.359	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-21	BSk	Hydraprobe-II	38.865	100.374	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-22	BSk	Hydraprobe-II	38.878	100.362	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-23	BSk	Hydraprobe-II	38.878	100.352	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-24	BSk	Hydraprobe-II	38.857	100.352	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-25	BSk	Hydraprobe-II	38.855	100.380	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-26	BSk	Hydraprobe-II	38.861	100.353	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-27	BSk	Hydraprobe-II	38.863	100.378	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-28	BSk	Hydraprobe-II	38.875	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-29	BSk	Hydraprobe-II	38.867	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-30	BSk	Hydraprobe-II	38.861	100.362	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-31	BSk	Hydraprobe-II	38.870	100.352	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-32	BSk	Hydraprobe-II	38.851	100.361	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-33	BSk	Hydraprobe-II	38.865	100.381	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-34	BSk	Hydraprobe-II	38.863	100.347	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-35	BSk	Hydraprobe-II	38.863	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-36	BSk	Hydraprobe-II	38.867	100.379	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-37	BSk	Hydraprobe-II	38.860	100.357	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-38	BSk	Hydraprobe-II	38.880	100.384	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-39	BSk	Hydraprobe-II	38.857	100.356	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-40	BSk	Hydraprobe-II	38.879	100.378	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-41	BSk	Hydraprobe-II	38.853	100.376	0.04	0.04	2012	2012

HiWATER_EHWSN	WATERNET-42	BSk	Hydraprobe-II	38.850	100.379	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-43	BSk	Hydraprobe-II	38.851	100.373	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-44	BSk	Hydraprobe-II	38.853	100.372	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-45	BSk	Hydraprobe-II	38.855	100.374	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-46	BSk	Hydraprobe-II	38.848	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-47	BSk	Hydraprobe-II	38.858	100.374	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-48	BSk	Hydraprobe-II	38.852	100.368	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-49	BSk	Hydraprobe-II	38.855	100.370	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-50	BSk	Hydraprobe-II	38.852	100.371	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-51	BSk	Hydraprobe-II	38.858	100.377	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-52	BSk	Hydraprobe-II	38.868	100.346	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-53	BSk	Hydraprobe-II	38.874	100.361	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-54	BSk	Hydraprobe-II	38.881	100.352	0.04	0.04	2012	2012
HiWATER_EHWSN	WATERNET-55	BSk	Hydraprobe-II	38.880	100.369	0.04	0.04	2012	2012
HOBE	S1.01	Cfb	Decagon-5TE-A	56.019	9.181	0	0.05	2009	2016
HOBE	S1.02	Cfb	Decagon-5TE-A	56.038	9.161	0	0.05	2009	2016
HOBE	S1.03	Cfb	Decagon-5TE-A	56.028	9.165	0	0.05	2009	2015
HOBE	S1.04	Cfb	Decagon-5TE-A	56.073	9.334	0	0.05	2009	2015
HOBE	S1.05	Cfb	Decagon-5TE-A	56.033	9.191	0	0.05	2009	2016
HOBE	S1.06	Cfb	Decagon-5TE-A	56.051	9.161	0	0.05	2009	2017
HOBE	S1.07	Cfb	Decagon-5TE-A	56.043	9.141	0	0.05	2009	2016
HOBE	S1.08	Cfb	Decagon-5TE-A	56.047	9.124	0	0.05	2009	2017
HOBE	S1.09	Cfb	Decagon-5TE-A	56.036	9.130	0	0.05	2009	2017
HOBE	S1.1	Cfb	Decagon-5TE-A	56.035	9.239	0	0.05	2009	2016
HOBE	S2.01	Cfb	Decagon-5TE-A	55.940	9.221	0	0.05	2009	2016
HOBE	S2.02	Cfb	Decagon-5TE-A	55.984	9.162	0	0.05	2009	2015

HOBE	S2.03	Cfb	Decagon-5TE-A	55.982	9.153	0	0.05	2009	2016
HOBE	S2.04	Cfb	Decagon-5TE-A	55.976	9.098	0	0.05	2010	2016
HOBE	S2.05	Cfb	Decagon-5TE-A	55.976	9.097	0	0.05	2009	2017
HOBE	S2.06	Cfb	Decagon-5TE	55.979	9.087	0	0.05	2009	2011
HOBE	S2.06b	Cfb	Decagon-5TE-A	55.980	9.082	0	0.05	2011	2017
HOBE	S2.07	Cfb	Decagon-5TE-A	55.948	9.034	0	0.05	2009	2017
HOBE	S2.08	Cfb	Decagon-5TE-A	55.940	9.034	0	0.05	2009	2012
HOBE	S2.08b	Cfb	Decagon-5TE-A	55.940	9.031	0	0.05	2012	2016
HOBE	S2.09	Cfb	Decagon-5TE-A	55.928	9.115	0	0.05	2009	2016
HOBE	S2.1	Cfb	Decagon-5TE-A	55.986	9.091	0	0.05	2010	2016
HOBE	S2.11	Cfb	Decagon-5TE-A	55.970	9.023	0	0.05	2009	2016
HOBE	S3.01	Cfb	Decagon-5TE-A	55.881	9.014	0	0.05	2009	2017
HOBE	S3.02	Cfb	Decagon-5TE-A	55.935	8.922	0	0.05	2009	2017
HOBE	S3.03	Cfb	Decagon-5TE-A	55.912	8.946	0	0.05	2009	2015
HOBE	S3.04	Cfb	Decagon-5TE-A	55.911	8.936	0	0.05	2009	2016
HOBE	S3.05	Cfb	Decagon-5TE-A	55.903	8.918	0	0.05	2009	2016
HOBE	S3.06	Cfb	Decagon-5TE-A	55.912	8.883	0	0.05	2009	2016
HOBE	S3.07	Cfb	Decagon-5TE-A	55.910	8.854	0	0.05	2009	2017
HOBE	S3.08	Cfb	Decagon-5TE-A	55.878	9.268	0	0.05	2009	2016
HOBE	S3.09	Cfb	Decagon-5TE-A	55.861	9.295	0	0.05	2009	2016
HYDROL-NET_PE RUGIA	Water-Engineering-Experimental-Field-1	Cfb	TDR-Soil-Moisture-Equipment-Corp.- TRASE-BE	43.117	12.352	0.05	0.05	2010	2013
HYDROL-NET_PE RUGIA	Water-Engineering-Experimental-Field-2	Cfb	TDR-Soil-Moisture-Equipment-Corp.- TRASE-BE	43.117	12.352	0.05	0.05	2012	2013
iRON	BrushCreek	Dfc	EC5-I	39.234	-106.908	0.05	0.05	2015	2018
iRON	GlassierRanch	Dfc	EC5	39.379	-107.090	0.05	0.05	2015	2018

iRON	GlenwoodSprings	Dfc	EC5	39.544	-107.341	0.05	0.05	2015	2018
iRON	IndependencePass	Dfc	EC5	39.107	-106.574	0.05	0.05	2017	2018
iRON	NorthstarAspenGrove	Dfc	EC5	39.170	-106.798	0.05	0.05	2015	2018
iRON	NorthstarTransitionZone	Dfc	EC5	39.171	-106.799	0.05	0.05	2015	2018
iRON	SkyMountain	Dfc	EC5	39.224	-106.908	0.05	0.05	2012	2018
iRON	SmugglerMountain	Dfc	EC5	39.204	-106.798	0.05	0.05	2013	2018
iRON	SpringValley	Dfc	EC5-I	39.472	-107.223	0.05	0.05	2016	2018
MAQU	CST-01	Dwc	ECH20-EC-TM	33.883	102.133	0.05	0.05	2008	2010
MAQU	CST-02	Dwc	ECH20-EC-TM	33.667	102.133	0.05	0.05	2008	2010
MAQU	CST-03	Dwc	ECH20-EC-TM	33.900	101.967	0.05	0.05	2008	2010
MAQU	CST-04	Dwc	ECH20-EC-TM	33.767	101.717	0.05	0.05	2008	2010
MAQU	CST-05	Dwc	ECH20-EC-TM	33.667	101.883	0.05	0.05	2008	2010
MAQU	NST-01	Dwc	ECH20-EC-TM	33.893	102.133	0.05	0.05	2008	2010
MAQU	NST-02	Dwc	ECH20-EC-TM	33.883	102.143	0.05	0.05	2008	2010
MAQU	NST-03	Dwc	ECH20-EC-TM	33.767	102.133	0.05	0.05	2008	2010
MAQU	NST-04	Dwc	ECH20-EC-TM	33.617	102.050	0.05	0.05	2008	2010
MAQU	NST-05	Dwc	ECH20-EC-TM	33.633	102.050	0.05	0.05	2008	2010
MAQU	NST-06	ET	ECH20-EC-TM	34.000	102.267	0.05	0.05	2008	2010
MAQU	NST-07	Dwc	ECH20-EC-TM	33.983	102.350	0.05	0.05	2008	2010
MAQU	NST-08	Dwc	ECH20-EC-TM	33.967	102.600	0.05	0.05	2008	2010
MAQU	NST-09	Dwc	ECH20-EC-TM	33.900	102.550	0.05	0.05	2008	2010
MAQU	NST-10	Dwc	ECH20-EC-TM	33.850	102.567	0.05	0.05	2008	2010
MAQU	NST-11	Dwc	ECH20-EC-TM	33.683	102.467	0.05	0.05	2008	2010
MAQU	NST-12	Dwc	ECH20-EC-TM	33.617	102.467	0.05	0.05	2008	2009
MAQU	NST-13	Dwc	ECH20-EC-TM	34.017	101.933	0.05	0.05	2008	2010

MAQU	NST-14	Dwc	ECH20-EC-TM	33.917	102.117	0.05	0.05	2008	2010
MAQU	NST-15	Dwc	ECH20-EC-TM	33.850	101.883	0.05	0.05	2010	2010
OZNET	Alabama	Cfa	Stevens-Hydra-Probe	-35.324	147.535	0	0.05	2006	2018
OZNET	Banandra	BSk	Stevens-Hydra-Probe	-34.655	146.110	0	0.05	2006	2016
OZNET	Benwerrin	Cfa	Stevens-Hydra-Probe	-35.316	147.344	0	0.05	2006	2013
OZNET	Bundure	BSk	Stevens-Hydra-Probe	-35.110	145.936	0	0.05	2006	2018
OZNET	Cheverelis	BSk	Stevens-Hydra-Probe	-35.005	146.310	0	0.05	2006	2018
OZNET	Cox	Cfa	Stevens-Hydra-Probe	-35.390	147.457	0	0.05	2006	2018
OZNET	Dry-Lake	BSk	Stevens-Hydra-Probe	-34.728	146.293	0	0.05	2006	2018
OZNET	Eulo	BSk	Stevens-Hydra-Probe	-34.719	146.020	0	0.05	2006	2018
OZNET	Evergreen	Cfa	Stevens-Hydra-Probe	-35.239	147.533	0	0.05	2006	2016
OZNET	Kyeamba-Mouth	Cfa	Stevens-Hydra-Probe	-35.125	147.497	0	0.05	2006	2018
OZNET	Samarra	Cfa	Stevens-Hydra-Probe	-35.228	147.485	0	0.05	2006	2018
OZNET	S-Coleambally	BSk	Stevens-Hydra-Probe	-34.843	145.867	0	0.05	2006	2018
OZNET	Silver-Springs	Cfa	Stevens-Hydra-Probe	-35.272	147.429	0	0.05	2006	2018
OZNET	Spring-Bank	BSk	Stevens-Hydra-Probe	-35.070	146.169	0	0.05	2006	2018
OZNET	Uri-Park	BSk	Stevens-Hydra-Probe	-34.629	145.849	0	0.05	2006	2018
OZNET	Widgiewa	BSk	Stevens-Hydra-Probe	-35.090	146.306	0	0.05	2006	2018
OZNET	Wollumbi	Cfa	Stevens-Hydra-Probe	-35.394	147.566	0	0.05	2006	2018
OZNET	Wynella	BSk	Stevens-Hydra-Probe	-34.847	146.414	0	0.05	2006	2018
OZNET	Yammacoona	BSk	Stevens-Hydra-Probe	-34.968	146.016	0	0.05	2006	2018
OZNET	Yamma-Road	BSk	Stevens-Hydra-Probe	-34.852	146.115	0	0.05	2006	2018
REMEDHUS	Canizal	Csb	Stevens-Hydra-Probe	41.196	-5.360	0	0.05	2007	2018
REMEDHUS	Carramedina	Csb	Stevens-Hydra-Probe	41.312	-5.161	0	0.05	2005	2010
REMEDHUS	Carretoro	Csb	Stevens-Hydra-Probe	41.265	-5.380	0	0.05	2005	2018
REMEDHUS	CasaGorizo	Csb	Stevens-Hydra-Probe	41.234	-5.472	0	0.05	2005	2007

REMEDHUS	CasaPeriles	Csb	Stevens-Hydra-Probe	41.394	-5.321	0	0.05	2005	2018
REMEDHUS	ConcejodelMonte	Csb	Stevens-Hydra-Probe	41.300	-5.247	0	0.05	2005	2018
REMEDHUS	ElCoto	Csb	Stevens-Hydra-Probe	41.381	-5.429	0	0.05	2005	2018
REMEDHUS	ElTomillar	Csb	Stevens-Hydra-Probe	41.349	-5.490	0	0.05	2009	2018
REMEDHUS	Granja-g	Csb	Stevens-Hydra-Probe	41.306	-5.376	0	0.05	2005	2018
REMEDHUS	GranjaToresana	Csb	Stevens-Hydra-Probe	41.464	-5.449	0	0.05	2005	2007
REMEDHUS	Guarena	Csb	Stevens-Hydra-Probe	41.200	-5.297	0	0.05	2005	2012
REMEDHUS	Guarrati	Csb	Stevens-Hydra-Probe	41.289	-5.467	0	0.05	2005	2018
REMEDHUS	LaAtalaya	Csb	Stevens-Hydra-Probe	41.149	-5.398	0	0.05	2005	2017
REMEDHUS	LaCruzdeElias	Csb	Stevens-Hydra-Probe	41.285	-5.300	0	0.05	2005	2018
REMEDHUS	LasArenas	Csb	Stevens-Hydra-Probe	41.373	-5.549	0	0.05	2005	2018
REMEDHUS	LasBodegas	Csb	Stevens-Hydra-Probe	41.183	-5.477	0	0.05	2005	2018
REMEDHUS	LasBrozas	Csb	Stevens-Hydra-Probe	41.446	-5.359	0	0.05	2005	2018
REMEDHUS	LasEritas	Csb	Stevens-Hydra-Probe	41.205	-5.416	0	0.05	2012	2018
REMEDHUS	LasTresRayas	Csb	Stevens-Hydra-Probe	41.275	-5.592	0	0.05	2011	2018
REMEDHUS	LasVacas	Csb	Stevens-Hydra-Probe	41.347	-5.225	0	0.05	2005	2018
REMEDHUS	LasVictorias	Csb	Stevens-Hydra-Probe	41.424	-5.374	0	0.05	2005	2018
REMEDHUS	LlanosdelaBoveda	Csb	Stevens-Hydra-Probe	41.358	-5.331	0	0.05	2005	2018
REMEDHUS	Paredinas	Csb	Stevens-Hydra-Probe	41.456	-5.411	0	0.05	2005	2018
REMEDHUS	Zamarron	Csb	Stevens-Hydra-Probe	41.239	-5.544	0	0.05	2005	2018
RSMN	Adamclisi	Cfa	5TM	44.088	27.966	0	0.05	2014	2015
RSMN	Alexandria	Cfa	5TM	43.978	25.353	0	0.05	2014	2018
RSMN	Bacles	Cfa	5TM	44.476	23.113	0	0.05	2014	2018
RSMN	Banloc	Cfb	5TM	45.383	21.136	0	0.05	2014	2018
RSMN	Barlad	Cfb	5TM	46.233	27.644	0	0.05	2014	2018
RSMN	Calarasi	Cfa	5TM	44.206	27.339	0	0.05	2014	2018

RSMN	ChisineuCris	Cfb	5TM	46.519	21.542	0	0.05	2015	2018
RSMN	Corugea	Cfa	5TM	44.734	28.342	0	0.05	2014	2018
RSMN	Cotnari	Dfb	5TM	47.358	26.925	0	0.05	2014	2018
RSMN	Darabani	Cfb	5TM	48.195	26.573	0	0.05	2015	2018
RSMN	Dej	Dfb	5TM	47.128	23.899	0	0.05	2014	2018
RSMN	Dumbraveni	Dfb	5TM	46.228	24.592	0	0.05	2014	2018
RSMN	Iasi	Dfb	5TM	47.163	27.625	0	0.05	2014	2018
RSMN	Oradea	Cfb	5TM	47.036	21.896	0	0.05	2014	2018
RSMN	RosioriideVede	Cfa	5TM	44.107	24.979	0	0.05	2014	2018
RSMN	SannicolauMare	Cfb	5TM	46.072	20.602	0	0.05	2015	2018
RSMN	SatuMare	Cfb	5TM	47.721	22.887	0	0.05	2014	2018
RSMN	Slatina	Cfa	5TM	44.442	24.354	0	0.05	2014	2018
RSMN	Slobozia	Cfa	5TM	44.553	27.384	0	0.05	2014	2017
RSMN	Tecuci	Cfb	5TM	45.842	27.409	0	0.05	2014	2018
SASMAS	BlueWrenPk	Cfa	CS616	-32.383	150.489	0	0.05	2006	2007
SASMAS	Brunbrae	Cfa	CS616	-31.933	150.134	0	0.05	2006	2007
SASMAS	Cullingral	Cfa	CS616	-32.158	150.334	0	0.05	2006	2007
SASMAS	Cumbo	Cfa	CS616	-32.406	149.882	0	0.05	2006	2007
SASMAS	Dales	Cfa	CS616	-31.947	150.432	0	0.05	2006	2007
SASMAS	Illogan	Cfa	CS616	-32.149	150.070	0	0.05	2006	2007
SASMAS	Kilwirrin	Cfa	CS616	-32.042	150.070	0	0.05	2006	2007
SASMAS	MaramPk	Cfa	CS616	-32.242	150.311	0	0.05	2006	2007
SASMAS	MerriwaPk	Cfa	CS616	-32.112	150.375	0	0.05	2006	2007
SASMAS	Midlothian	Cfa	CS616	-32.022	150.351	0	0.05	2006	2007
SASMAS	Nagoli	Cfa	CS616	-32.021	150.011	0	0.05	2006	2007
SASMAS	PembrokeSth	Cfa	CS616	-32.039	150.146	0	0.05	2006	2007

SASMAS	Roscommon	Cfa	CS616	-32.161	150.070	0	0.05	2006	2007
SASMAS	Widden	Cfb	CS616	-32.526	150.359	0	0.05	2006	2007
SKKU	SKKU-Jinwicheon-1	Cwa	5TM	37.292	126.973	0.05	0.05	2014	2014
SKKU	SKKU-Jinwicheon-2	Cwa	5TM	37.295	126.973	0.05	0.05	2014	2014
SKKU	SKKU-Jinwicheon-3	Cwa	5TM	37.290	126.967	0.05	0.05	2014	2014
SKKU	SKKU-Jinwicheon-4	Cwa	5TM	37.290	126.966	0.05	0.05	2014	2014
SKKU	SKKU-Jinwicheon-6	Cwa	5TM	37.293	126.966	0.05	0.05	2014	2014
SMOSMANIA	Barnas	Cfb	ThetaProbe-ML2X	44.666	4.160	0.05	0.05	2008	2016
SMOSMANIA	Berzeme	Cfb	ThetaProbe-ML2X	44.628	4.567	0.05	0.05	2008	2015
SMOSMANIA	CabrieresdAvignon	Csa	ThetaProbe-ML2X	43.884	5.165	0.05	0.05	2008	2017
SMOSMANIA	Condom	Cfb	ThetaProbe-ML2X	43.974	0.336	0.05	0.05	2007	2017
SMOSMANIA	CreondArmagnac	Cfb	ThetaProbe-ML2X	43.994	-0.047	0.05	0.05	2007	2017
SMOSMANIA	LaGrandCombe	Csb	ThetaProbe-ML2X	44.243	4.010	0.05	0.05	2008	2017
SMOSMANIA	Lahas	Cfb	ThetaProbe-ML2X	43.547	0.888	0.05	0.05	2007	2017
SMOSMANIA	LezignanCorbieres	Csb	ThetaProbe-ML2X	43.173	2.728	0.05	0.05	2007	2017
SMOSMANIA	Mazan-Abbaye	Cfb	ThetaProbe-ML2X	44.734	4.084	0.05	0.05	2008	2017
SMOSMANIA	Mejannes-le-Clap	Csb	ThetaProbe-ML2X	44.222	4.345	0.05	0.05	2008	2017
SMOSMANIA	Montaut	Cfb	ThetaProbe-ML2X	43.192	1.644	0.05	0.05	2007	2017
SMOSMANIA	Mouthoumet	Cfa	ThetaProbe-ML2X	42.960	2.530	0.05	0.05	2007	2016
SMOSMANIA	Narbonne	Csb	ThetaProbe-ML2X	43.150	2.957	0.05	0.05	2007	2017
SMOSMANIA	PeyrusseGrande	Cfb	ThetaProbe-ML2X	43.666	0.222	0.05	0.05	2007	2017
SMOSMANIA	Pezenas	Csa	ThetaProbe-ML3	43.437	3.400	0.05	0.05	2016	2017
SMOSMANIA	Pezenas-old	Csa	ThetaProbe-ML2X	43.438	3.403	0.05	0.05	2008	2016
SMOSMANIA	Prades-le-Lez	Csa	ThetaProbe-ML2X	43.717	3.858	0.05	0.05	2008	2015
SMOSMANIA	Sabres	Cfb	ThetaProbe-ML2X	44.148	-0.846	0.05	0.05	2007	2017
SMOSMANIA	SaintFelixdeLauragais	Cfb	ThetaProbe-ML2X	43.442	1.880	0.05	0.05	2007	2017

SMOSMANIA	Savenes	Cfb	ThetaProbe-ML2X	43.825	1.177	0.05	0.05	2007	2017
SMOSMANIA	Urgons	Cfb	ThetaProbe-ML2X	43.640	-0.435	0.05	0.05	2007	2017
SMOSMANIA	Villevieille	Csa	ThetaProbe-ML2X	43.795	4.091	0.05	0.05	2008	2017
SOILSCAPE	node101	Cfa	EC5	36.002	-98.631	0.04	0.04	2012	2016
SOILSCAPE	node1017	Csa	EC5	38.388	-120.906	0.05	0.05	2014	2016
SOILSCAPE	node1018	Csa	EC5	38.389	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node1019	Csa	EC5	38.387	-120.907	0.05	0.05	2013	2017
SOILSCAPE	node102	Cfa	EC5	36.002	-98.630	0.04	0.04	2012	2016
SOILSCAPE	node1020	Csa	EC5	38.388	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node1021	Csa	EC5	38.388	-120.906	0.05	0.05	2013	2016
SOILSCAPE	node1022	Csa	EC5	38.388	-120.905	0.05	0.05	2013	2016
SOILSCAPE	node1023	Csa	EC5	38.388	-120.906	0.05	0.05	2014	2017
SOILSCAPE	node1024	Csa	EC5	38.388	-120.906	0.05	0.05	2013	2015
SOILSCAPE	node1025	Csa	EC5	38.387	-120.905	0.05	0.05	2014	2017
SOILSCAPE	node1026	Csa	EC5	38.387	-120.906	0.05	0.05	2014	2014
SOILSCAPE	node1027	Csa	EC5	38.387	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node1028	Csa	EC5	38.387	-120.905	0.05	0.05	2013	2016
SOILSCAPE	node1029	Csa	EC5	38.387	-120.905	0.05	0.05	2014	2017
SOILSCAPE	node103	Cfa	EC5	36.002	-98.629	0.04	0.04	2012	2015
SOILSCAPE	node1030	Csa	EC5	38.387	-120.905	0.05	0.05	2014	2015
SOILSCAPE	node1031	Csa	EC5	38.387	-120.904	0.05	0.05	2013	2016
SOILSCAPE	node104	Cfa	EC5	36.002	-98.628	0.04	0.04	2012	2014
SOILSCAPE	node105	Cfa	EC5	36.001	-98.631	0.04	0.04	2012	2016
SOILSCAPE	node106	Cfa	EC5	36.002	-98.630	0.04	0.04	2012	2016
SOILSCAPE	node107	Cfa	EC5	36.002	-98.629	0.04	0.04	2012	2015
SOILSCAPE	node108	Cfa	EC5	36.001	-98.628	0.04	0.04	2012	2016

SOILSCAPE	node109	Cfa	EC5	36.001	-98.631	0.04	0.04	2012	2014
SOILSCAPE	node110	Cfa	EC5	36.001	-98.630	0.04	0.04	2012	2013
SOILSCAPE	node111	Cfa	EC5	36.001	-98.629	0.04	0.04	2012	2016
SOILSCAPE	node112	Cfa	EC5	36.001	-98.628	0.04	0.04	2012	2016
SOILSCAPE	node113	Cfa	EC5	36.001	-98.628	0.04	0.04	2012	2014
SOILSCAPE	node114	Cfa	EC5	36.001	-98.632	0.04	0.04	2012	2016
SOILSCAPE	node115	Cfa	EC5	36.001	-98.632	0.04	0.04	2012	2016
SOILSCAPE	node116	Cfa	EC5	36.000	-98.631	0.04	0.04	2012	2016
SOILSCAPE	node117	Cfa	EC5	36.000	-98.630	0.04	0.04	2012	2014
SOILSCAPE	node118	Cfa	EC5	36.000	-98.629	0.04	0.04	2012	2015
SOILSCAPE	node119	Cfa	EC5	36.000	-98.628	0.04	0.04	2013	2016
SOILSCAPE	node120	Cfa	EC5	36.000	-98.628	0.04	0.04	2012	2016
SOILSCAPE	node1201	Csa	EC5	38.471	-120.993	0.05	0.05	2015	2016
SOILSCAPE	node1202	Csa	EC5	38.471	-120.994	0.05	0.05	2016	2016
SOILSCAPE	node1205	Csa	EC5	38.472	-120.994	0.05	0.05	2015	2016
SOILSCAPE	node1206	Csa	EC5	38.472	-120.994	0.05	0.05	2016	2016
SOILSCAPE	node121	Cfa	EC5	36.000	-98.632	0.04	0.04	2012	2016
SOILSCAPE	node1400	BSk	EC5	31.736	-109.942	0.05	0.05	2015	2017
SOILSCAPE	node1401	BSk	EC5	31.737	-109.943	0.05	0.05	2015	2017
SOILSCAPE	node1402	BSk	EC5	31.737	-109.943	0.05	0.05	2015	2017
SOILSCAPE	node1403	BSk	EC5	31.737	-109.943	0.05	0.05	2015	2017
SOILSCAPE	node1404	BSk	EC5	31.736	-109.941	0.05	0.05	2016	2017
SOILSCAPE	node1405	BSk	EC5	31.736	-109.941	0.05	0.05	2015	2016
SOILSCAPE	node1406	BSk	EC5	31.737	-109.944	0.05	0.05	2015	2016
SOILSCAPE	node1407	BSk	EC5	31.737	-109.947	0.05	0.05	2015	2017
SOILSCAPE	node1408	BSk	EC5	31.737	-109.947	0.05	0.05	2015	2017

SOILSCAPE	node1409	BSk	EC5	31.738	-109.947	0.05	0.05	2015	2017
SOILSCAPE	node1500	BSk	EC5	31.744	-110.052	0.05	0.05	2015	2017
SOILSCAPE	node1501	BSk	EC5	31.742	-110.053	0.05	0.05	2015	2016
SOILSCAPE	node1502	BSk	EC5	31.743	-110.053	0.05	0.05	2016	2017
SOILSCAPE	node1503	BSk	EC5	31.743	-110.053	0.05	0.05	2015	2017
SOILSCAPE	node1504	BSk	EC5	31.743	-110.053	0.05	0.05	2016	2017
SOILSCAPE	node1505	BSk	EC5	31.744	-110.052	0.05	0.05	2015	2017
SOILSCAPE	node1506	BSk	EC5	31.744	-110.053	0.05	0.05	2015	2017
SOILSCAPE	node1507	BSk	EC5	31.743	-110.053	0.05	0.05	2015	2017
SOILSCAPE	node401	Csa	EC5	38.432	-120.965	0.05	0.05	2013	2017
SOILSCAPE	node402	Csa	EC5	38.432	-120.965	0.05	0.05	2012	2013
SOILSCAPE	node403	Csa	EC5	38.432	-120.965	0.05	0.05	2012	2017
SOILSCAPE	node404	Csa	EC5	38.432	-120.965	0.05	0.05	2012	2016
SOILSCAPE	node405	Csa	EC5	38.432	-120.964	0.05	0.05	2012	2017
SOILSCAPE	node406	Csa	EC5	38.433	-120.965	0.05	0.05	2012	2017
SOILSCAPE	node408	Csa	EC5	38.433	-120.967	0.05	0.05	2013	2017
SOILSCAPE	node409	Csa	EC5	38.433	-120.967	0.05	0.05	2012	2015
SOILSCAPE	node410	Csa	EC5	38.434	-120.967	0.05	0.05	2012	2016
SOILSCAPE	node411	Csa	EC5	38.431	-120.966	0.05	0.05	2012	2015
SOILSCAPE	node412	Csa	EC5	38.431	-120.967	0.05	0.05	2012	2017
SOILSCAPE	node413	Csa	EC5	38.431	-120.968	0.05	0.05	2012	2017
SOILSCAPE	node414	Csa	EC5	38.430	-120.968	0.05	0.05	2012	2016
SOILSCAPE	node415	Csa	EC5	38.431	-120.967	0.05	0.05	2012	2017
SOILSCAPE	node416	Csa	EC5	38.431	-120.967	0.05	0.05	2012	2017
SOILSCAPE	node417	Csa	EC5	38.431	-120.967	0.05	0.05	2012	2017
SOILSCAPE	node418	Csa	EC5	38.431	-120.968	0.05	0.05	2012	2017

SOILSCAPE	node419	Csa	EC5	38.430	-120.967	0.05	0.05	2012	2017
SOILSCAPE	node420	Csa	EC5	38.430	-120.968	0.05	0.05	2012	2017
SOILSCAPE	node501	Csa	EC5	38.150	-120.788	0.05	0.05	2013	2016
SOILSCAPE	node502	Csa	EC5	38.149	-120.787	0.05	0.05	2012	2015
SOILSCAPE	node503	Csa	EC5	38.149	-120.786	0.05	0.05	2012	2016
SOILSCAPE	node504	Csa	EC5	38.149	-120.786	0.05	0.05	2012	2016
SOILSCAPE	node505	Csa	EC5	38.150	-120.786	0.05	0.05	2013	2016
SOILSCAPE	node506	Csa	EC5	38.150	-120.785	0.05	0.05	2013	2016
SOILSCAPE	node507	Csa	EC5	38.149	-120.789	0.05	0.05	2013	2015
SOILSCAPE	node508	Csa	EC5	38.148	-120.787	0.05	0.05	2012	2015
SOILSCAPE	node509	Csa	EC5	38.148	-120.786	0.05	0.05	2013	2016
SOILSCAPE	node510	Csa	EC5	38.148	-120.785	0.05	0.05	2012	2016
SOILSCAPE	node511	Csa	EC5	38.149	-120.788	0.05	0.05	2013	2016
SOILSCAPE	node512	Csa	EC5	38.148	-120.786	0.05	0.05	2012	2016
SOILSCAPE	node513	Csa	EC5	38.148	-120.786	0.05	0.05	2012	2016
SOILSCAPE	node514	Csa	EC5	38.148	-120.789	0.05	0.05	2012	2016
SOILSCAPE	node515	Csa	EC5	38.148	-120.788	0.05	0.05	2012	2016
SOILSCAPE	node516	Csa	EC5	38.146	-120.788	0.05	0.05	2012	2015
SOILSCAPE	node517	Csa	EC5	38.147	-120.788	0.05	0.05	2012	2015
SOILSCAPE	node518	Csa	EC5	38.146	-120.787	0.05	0.05	2013	2016
SOILSCAPE	node701	Csa	EC5	38.172	-120.804	0.05	0.05	2013	2016
SOILSCAPE	node702	Csa	EC5	38.173	-120.807	0.05	0.05	2012	2014
SOILSCAPE	node703	Csa	EC5	38.174	-120.806	0.05	0.05	2012	2015
SOILSCAPE	node704	Csa	EC5	38.173	-120.807	0.05	0.05	2012	2015
SOILSCAPE	node705	Csa	EC5	38.173	-120.807	0.05	0.05	2012	2014
SOILSCAPE	node706	Csa	EC5	38.173	-120.805	0.05	0.05	2012	2015

SOILSCAPE	node707	Csa	EC5	38.172	-120.806	0.05	0.05	2013	2015
SOILSCAPE	node708	Csa	EC5	38.172	-120.806	0.05	0.05	2012	2017
SOILSCAPE	node709	Csa	EC5	38.172	-120.807	0.05	0.05	2012	2016
SOILSCAPE	node710	Csa	EC5	38.172	-120.805	0.05	0.05	2012	2017
SOILSCAPE	node711	Csa	EC5	38.173	-120.803	0.05	0.05	2012	2013
SOILSCAPE	node712	Csa	EC5	38.173	-120.804	0.05	0.05	2012	2017
SOILSCAPE	node713	Csa	EC5	38.172	-120.805	0.05	0.05	2013	2017
SOILSCAPE	node715	Csa	EC5	38.172	-120.802	0.05	0.05	2013	2014
SOILSCAPE	node900	Csa	EC5	38.393	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node901	Csa	EC5	38.393	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node902	Csa	EC5	38.394	-120.905	0.05	0.05	2013	2016
SOILSCAPE	node903	Csa	EC5	38.393	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node904	Csa	EC5	38.393	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node905	Csa	EC5	38.393	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node906	Csa	EC5	38.393	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node907	Csa	EC5	38.393	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node908	Csa	EC5	38.393	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node909	Csa	EC5	38.393	-120.904	0.05	0.05	2013	2016
SOILSCAPE	node910	Csa	EC5	38.392	-120.905	0.05	0.05	2013	2015
SOILSCAPE	node911	Csa	EC5	38.392	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node912	Csa	EC5	38.392	-120.905	0.05	0.05	2013	2017
SOILSCAPE	node913	Csa	EC5	38.392	-120.905	0.05	0.05	2015	2017
SOILSCAPE	node914	Csa	EC5	38.391	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node915	Csa	EC5	38.391	-120.906	0.05	0.05	2013	2017
SOILSCAPE	node916	Csa	EC5	38.391	-120.906	0.05	0.05	2013	2016
SWEX_POLAND	MarshBubnow,Polesie	Dfb	D-LOG-mpts	51.375	23.279	0	0.02	2006	2009

SWEX_POLAND	Trzebieszow,Podlasie	Dfb	D-LOG-mpts	51.987	22.565	0	0.02	2006	2009
TERENO	Gevenich	Cfb	Hydraprobe-II-Sdi-12-A	50.989	6.324	0.05	0.05	2011	2018
TERENO	Merzenhausen	Cfb	Hydraprobe-II-Sdi-12-A	50.930	6.297	0.05	0.05	2011	2018
TERENO	Schoeneseiffen	Cfb	Hydraprobe-II-Sdi-12-A	50.515	6.376	0.05	0.05	2010	2017
TERENO	Selhausen	Cfb	Hydraprobe-II-Sdi-12-A	50.869	6.450	0.05	0.05	2013	2017
TERENO	Wildenrath	Cfb	Hydraprobe-II-Sdi-12-A	51.133	6.169	0.05	0.05	2012	2018
UDC_SMOS	Engersdorf	Cfb	IMKO-TDR-1	48.453	12.635	0.05	0.05	2008	2011
UDC_SMOS	Erlbach	Cfb	EC5-I	48.307	12.828	0.05	0.05	2010	2011
UDC_SMOS	Frieding	Cfb	IMKO-TDR-1	48.337	12.833	0.05	0.05	2008	2011
UDC_SMOS	Harbach	Cfb	EC5-I	48.425	12.619	0.05	0.05	2010	2011
UDC_SMOS	Karolinenfeld	Cfb	EC5-I	47.865	12.078	0.05	0.05	2008	2010
UDC_SMOS	Lochheim	Cfb	IMKO-TDR-1	48.270	12.497	0.05	0.05	2008	2011
UDC_SMOS	Neusling	Cfb	IMKO-TDR-1	48.695	12.877	0.05	0.05	2007	2011
UDC_SMOS	Puch	Cfb	IMKO-TDR-1	48.187	11.217	0.05	0.05	2009	2010
UDC_SMOS	Rothenfeld	Cfb	EC5-I	47.971	11.224	0.05	0.05	2008	2010
UDC_SMOS	Steinbeissen	Cfb	IMKO-TDR-1	48.609	12.733	0.05	0.05	2008	2008
UDC_SMOS	Wettlkam	Cfb	EC5-I	47.913	11.649	0.05	0.05	2008	2008
USCRN	Aberdeen-35-WNW	Dfb	Stevens-Hydraprobe-II-Sdi-12	45.712	-99.130	0.05	0.05	2009	2018
USCRN	Arco-17-SW	Dsb	Stevens-Hydraprobe-II-Sdi-12	43.462	-113.556	0.05	0.05	2011	2018
USCRN	Asheville-13-S	Cfb	Stevens-Hydraprobe-II-Sdi-12	35.419	-82.557	0.05	0.05	2010	2018
USCRN	Asheville-8-SSW	Cfb	Stevens-Hydraprobe-II-Sdi-12	35.495	-82.614	0.05	0.05	2010	2016
USCRN	Austin-33-NW	Cfa	Stevens-Hydraprobe-II-Sdi-12	30.622	-98.085	0.05	0.05	2010	2018
USCRN	Avondale-2-N	Cfa	Stevens-Hydraprobe-II-Sdi-12	39.859	-75.786	0.05	0.05	2011	2018
USCRN	Baker-5-W	BSk	Stevens-Hydraprobe-II-Sdi-12	39.012	-114.209	0.05	0.05	2011	2018
USCRN	Batesville-8-WNW	Cfa	Stevens-Hydraprobe-II-Sdi-12	35.820	-91.781	0.05	0.05	2009	2018
USCRN	Bedford-5-WNW	Cfa	Stevens-Hydraprobe-II-Sdi-12	38.888	-86.571	0.05	0.05	2009	2018

USCRN	Blackville-3-W	Cfa	Stevens-Hydraprobe-II-Sdi-12	33.355	-81.328	0.05	0.05	2009	2018
USCRN	Bodega-6-WSW	Csb	Stevens-Hydraprobe-II-Sdi-12	38.321	-123.075	0.05	0.05	2011	2018
USCRN	Boulder-14-W	Dfc	Stevens-Hydraprobe-II-Sdi-12	40.035	-105.541	0.05	0.05	2011	2018
USCRN	Bowling-Green-21-NN E	Cfa	Stevens-Hydraprobe-II-Sdi-12	37.250	-86.233	0.05	0.05	2009	2018
USCRN	Brigham-City-28-WN W	BSk	Stevens-Hydraprobe-II-Sdi-12	41.616	-112.544	0.05	0.05	2011	2018
USCRN	Bronte-11-NNE	BSk	Stevens-Hydraprobe-II-Sdi-12	32.041	-100.250	0.05	0.05	2010	2018
USCRN	Brunswick-23-S	Cfa	Stevens-Hydraprobe-II-Sdi-12	30.808	-81.460	0.05	0.05	2010	2018
USCRN	Buffalo-13-ESE	BSk	Stevens-Hydraprobe-II-Sdi-12	45.516	-103.302	0.05	0.05	2010	2018
USCRN	Cape-Charles-5-ENE	Cfa	Stevens-Hydraprobe-II-Sdi-12	37.291	-75.927	0.05	0.05	2011	2018
USCRN	Champaign-9-SW	Dfa	Stevens-Hydraprobe-II-Sdi-12	40.053	-88.373	0.05	0.05	2009	2018
USCRN	Charlottesville-2-SSE	Cfa	Stevens-Hydraprobe-II-Sdi-12	37.998	-78.466	0.05	0.05	2011	2018
USCRN	Chatham-1-SE	Dfb	Stevens-Hydraprobe-II-Sdi-12	46.335	-86.920	0.05	0.05	2011	2018
USCRN	Chillicothe-22-ENE	Dfa	Stevens-Hydraprobe-II-Sdi-12	39.867	-93.147	0.05	0.05	2009	2018
USCRN	Cortez-8-SE	BSk	Stevens-Hydraprobe-II-Sdi-12	37.255	-108.504	0.05	0.05	2010	2018
USCRN	Corvallis-10-SSW	Csb	Stevens-Hydraprobe-II-Sdi-12	44.419	-123.326	0.05	0.05	2009	2018
USCRN	Coshcocton-8-NNE	Cfa	Stevens-Hydraprobe-II-Sdi-12	40.367	-81.783	0.05	0.05	2009	2016
USCRN	Crossville-7-NW	Cfa	Stevens-Hydraprobe-II-Sdi-12	36.014	-85.135	0.05	0.05	2009	2018
USCRN	Darrington-21-NNE	Dfc	Stevens-Hydraprobe-II-Sdi-12	48.541	-121.446	0.05	0.05	2011	2018
USCRN	Denio-52-WSW	Dsb	Stevens-Hydraprobe-II-Sdi-12	41.848	-119.636	0.05	0.05	2011	2018
USCRN	Des-Moines-17-E	Dfa	Stevens-Hydraprobe-II-Sdi-12	41.556	-93.286	0.05	0.05	2009	2018
USCRN	Dillon-18-WSW	BSk	Stevens-Hydraprobe-II-Sdi-12	45.158	-113.006	0.05	0.05	2011	2018
USCRN	Dinosaur-2-E	BSk	Stevens-Hydraprobe-II-Sdi-12	40.245	-108.968	0.05	0.05	2011	2018
USCRN	Durham-11-W	Cfa	Stevens-Hydraprobe-II-Sdi-12	35.971	-79.093	0.05	0.05	2010	2018
USCRN	Edinburg-17-NNE	Cfa	Stevens-Hydraprobe-II-Sdi-12	26.526	-98.063	0.05	0.05	2010	2018

USCRN	Elgin-5-S	BSk	Stevens-Hydraprobe-II-Sdi-12	31.591	-110.509	0.05	0.05	2010	2018
USCRN	Elkins-21-ENE	Cfb	Stevens-Hydraprobe-II-Sdi-12	39.013	-79.474	0.05	0.05	2011	2018
USCRN	Everglades-City-5-NE	Aw	Stevens-Hydraprobe-II-Sdi-12	25.900	-81.318	0.05	0.05	2010	2018
USCRN	Fairhope-3-NE	Cfa	Stevens-Hydraprobe-II-Sdi-12	30.549	-87.876	0.05	0.05	2009	2018
USCRN	Fallbrook-5-NE	Csa	Stevens-Hydraprobe-II-Sdi-12	33.439	-117.190	0.05	0.05	2010	2018
USCRN	Gadsden-19-N	Cfa	Stevens-Hydraprobe-II-Sdi-12	34.285	-85.962	0.05	0.05	2009	2018
USCRN	Gaylord-9-SSW	Dfb	Stevens-Hydraprobe-II-Sdi-12	44.908	-84.720	0.05	0.05	2011	2018
USCRN	Goodridge-12-NNW	Dfb	Stevens-Hydraprobe-II-Sdi-12	48.306	-95.874	0.05	0.05	2010	2018
USCRN	Goodwell-2-E	BSk	Stevens-Hydraprobe-II-Sdi-12	36.599	-101.595	0.05	0.05	2009	2018
USCRN	Goodwell-2-SE	BSk	Stevens-Hydraprobe-II-Sdi-12	36.568	-101.610	0.05	0.05	2011	2018
USCRN	Harrison-20-SSE	BSk	Stevens-Hydraprobe-II-Sdi-12	42.425	-103.736	0.05	0.05	2010	2018
USCRN	Holly-Springs-4-N	Cfa	Stevens-Hydraprobe-II-Sdi-12	34.822	-89.435	0.05	0.05	2009	2018
USCRN	Ithaca-13-E	Dfb	Stevens-Hydraprobe-II-Sdi-12	42.440	-76.246	0.05	0.05	2011	2018
USCRN	Jamestown-38-WSW	Dfb	Stevens-Hydraprobe-II-Sdi-12	46.770	-99.478	0.05	0.05	2010	2018
USCRN	John-Day-35-WNW	Csb	Stevens-Hydraprobe-II-Sdi-12	44.556	-119.646	0.05	0.05	2011	2018
USCRN	Joplin-24-N	Cfa	Stevens-Hydraprobe-II-Sdi-12	37.428	-94.583	0.05	0.05	2009	2018
USCRN	Kenai-29-ENE	Dfc	Stevens-Hydraprobe-II-Sdi-12	60.726	-150.451	0.05	0.05	2012	2018
USCRN	Kingston-1-NW	Cfb	Stevens-Hydraprobe-II-Sdi-12	41.491	-71.541	0.05	0.05	2010	2018
USCRN	Kingston-1-W	Cfb	Stevens-Hydraprobe-II-Sdi-12	41.478	-71.542	0.05	0.05	2010	2018
USCRN	Lafayette-13-SE	Cfa	Stevens-Hydraprobe-II-Sdi-12	30.092	-91.873	0.05	0.05	2009	2018
USCRN	La-Junta-17-WSW	BSk	Stevens-Hydraprobe-II-Sdi-12	37.864	-103.822	0.05	0.05	2010	2018
USCRN	Lander-11-SSE	BSk	Stevens-Hydraprobe-II-Sdi-12	42.675	-108.669	0.05	0.05	2011	2018
USCRN	Las-Cruces-20-N	BWk	Stevens-Hydraprobe-II-Sdi-12	32.614	-106.741	0.05	0.05	2010	2018
USCRN	Lewistown-42-WSW	BSk	Stevens-Hydraprobe-II-Sdi-12	46.885	-110.290	0.05	0.05	2011	2018
USCRN	Limestone-4-NNW	Dfb	Stevens-Hydraprobe-II-Sdi-12	46.960	-67.883	0.05	0.05	2010	2018
USCRN	Lincoln-11-SW	Dfa	Stevens-Hydraprobe-II-Sdi-12	40.695	-96.854	0.05	0.05	2009	2018

USCRN	Lincoln-8-ENE	Dfa	Stevens-Hydraprobe-II-Sdi-12	40.848	-96.565	0.05	0.05	2009	2018
USCRN	Los-Alamos-13-W	Cfb	Stevens-Hydraprobe-II-Sdi-12	35.858	-106.521	0.05	0.05	2010	2018
USCRN	Manhattan-6-SSW	Cfa	Stevens-Hydraprobe-II-Sdi-12	39.103	-96.610	0.05	0.05	2009	2018
USCRN	McClellanville-7-NE	Cfa	Stevens-Hydraprobe-II-Sdi-12	33.153	-79.364	0.05	0.05	2009	2018
USCRN	Medora-7-E	Dfb	Stevens-Hydraprobe-II-Sdi-12	46.895	-103.377	0.05	0.05	2010	2018
USCRN	Merced-23-WSW	BSk	Stevens-Hydraprobe-II-Sdi-12	37.238	-120.883	0.05	0.05	2011	2018
USCRN	Mercury-3-SSW	BWk	Stevens-Hydraprobe-II-Sdi-12	36.624	-116.023	0.05	0.05	2010	2018
USCRN	Monahans-6-ENE	BWh	Stevens-Hydraprobe-II-Sdi-12	31.622	-102.807	0.05	0.05	2010	2018
USCRN	Monroe-26-N	Cfa	Stevens-Hydraprobe-II-Sdi-12	32.883	-92.117	0.05	0.05	2009	2018
USCRN	Montrose-11-ENE	Dfb	Stevens-Hydraprobe-II-Sdi-12	38.544	-107.693	0.05	0.05	2010	2018
USCRN	Moose-1-NNE	Dfc	Stevens-Hydraprobe-II-Sdi-12	43.662	-110.712	0.05	0.05	2011	2018
USCRN	Muleshoe-19-S	BSk	Stevens-Hydraprobe-II-Sdi-12	33.956	-102.774	0.05	0.05	2010	2018
USCRN	Murphy-10-W	BSk	Stevens-Hydraprobe-II-Sdi-12	43.204	-116.751	0.05	0.05	2011	2018
USCRN	Necedah-5-WNW	Dfb	Stevens-Hydraprobe-II-Sdi-12	44.060	-90.174	0.05	0.05	2009	2018
USCRN	Newton-11-SW	Cfa	Stevens-Hydraprobe-II-Sdi-12	31.192	-84.447	0.05	0.05	2010	2017
USCRN	Newton-5-ENE	Cfa	Stevens-Hydraprobe-II-Sdi-12	32.338	-89.070	0.05	0.05	2009	2018
USCRN	Newton-8-W	Cfa	Stevens-Hydraprobe-II-Sdi-12	31.313	-84.471	0.05	0.05	2010	2018
USCRN	Northgate-5-ESE	Dfb	Stevens-Hydraprobe-II-Sdi-12	48.968	-102.170	0.05	0.05	2010	2018
USCRN	Nunn-7-NNE	BSk	Stevens-Hydraprobe-II-Sdi-12	40.807	-104.755	0.05	0.05	2011	2018
USCRN	Oakley-19-SSW	BSk	Stevens-Hydraprobe-II-Sdi-12	38.870	-100.963	0.05	0.05	2009	2018
USCRN	Old-Town-2-W	Dfb	Stevens-Hydraprobe-II-Sdi-12	44.928	-68.701	0.05	0.05	2010	2016
USCRN	Palestine-6-WNW	Cfa	Stevens-Hydraprobe-II-Sdi-12	31.780	-95.723	0.05	0.05	2009	2016
USCRN	Panther-Junction-2-N	BWh	Stevens-Hydraprobe-II-Sdi-12	29.348	-103.209	0.05	0.05	2010	2018
USCRN	Pierre-24-S	Dwa	Stevens-Hydraprobe-II-Sdi-12	44.019	-100.353	0.05	0.05	2010	2018
USCRN	Port-Aransas-32-NNE	Cfa	Stevens-Hydraprobe-II-Sdi-12	28.305	-96.823	0.05	0.05	2011	2017
USCRN	Quinault-4-NE	Cfb	Stevens-Hydraprobe-II-Sdi-12	47.514	-123.812	0.05	0.05	2011	2018

USCRN	Redding-12-WNW	Csb	Stevens-Hydraprobe-II-Sdi-12	40.651	-122.607	0.05	0.05	2011	2018
USCRN	Riley-10-WSW	BSk	Stevens-Hydraprobe-II-Sdi-12	43.471	-119.692	0.05	0.05	2010	2018
USCRN	Salem-10-W	Cfa	Stevens-Hydraprobe-II-Sdi-12	37.634	-91.723	0.05	0.05	2009	2018
USCRN	Sandstone-6-W	Dfb	Stevens-Hydraprobe-II-Sdi-12	46.114	-92.994	0.05	0.05	2011	2018
USCRN	Santa-Barbara-11-W	Csb	Stevens-Hydraprobe-II-Sdi-12	34.414	-119.880	0.05	0.05	2011	2018
USCRN	Sebring-23-SSE	Cfa	Stevens-Hydraprobe-II-Sdi-12	27.153	-81.369	0.05	0.05	2010	2017
USCRN	Selma-13-WNW	Cfa	Stevens-Hydraprobe-II-Sdi-12	32.457	-87.242	0.05	0.05	2009	2018
USCRN	Shabbona-5-NNE	Dfa	Stevens-Hydraprobe-II-Sdi-12	41.843	-88.851	0.05	0.05	2009	2018
USCRN	Sioux-Falls-14-NNE	Dfa	Stevens-Hydraprobe-II-Sdi-12	43.735	-96.622	0.05	0.05	2010	2017
USCRN	Socorro-20-N	BSk	Stevens-Hydraprobe-II-Sdi-12	34.356	-106.886	0.05	0.05	2010	2018
USCRN	Spokane-17-SSW	Csb	Stevens-Hydraprobe-II-Sdi-12	47.417	-117.526	0.05	0.05	2011	2018
USCRN	St.-Mary-1-SSW	Dfb	Stevens-Hydraprobe-II-Sdi-12	48.741	-113.433	0.05	0.05	2011	2018
USCRN	Stillwater-2-W	Cfa	Stevens-Hydraprobe-II-Sdi-12	36.118	-97.091	0.05	0.05	2009	2018
USCRN	Stillwater-5-WNW	Cfa	Stevens-Hydraprobe-II-Sdi-12	36.135	-97.108	0.05	0.05	2009	2018
USCRN	Stovepipe-Wells-1-SW	BWk	Stevens-Hydraprobe-II-Sdi-12	36.602	-117.145	0.05	0.05	2010	2018
USCRN	Sundance-8>NNW	BSk	Stevens-Hydraprobe-II-Sdi-12	44.517	-104.436	0.05	0.05	2011	2018
USCRN	Titusville-7-E	Cfa	Stevens-Hydraprobe-II-Sdi-12	28.616	-80.693	0.05	0.05	2011	2018
USCRN	Tucson-11-W	BSh	Stevens-Hydraprobe-II-Sdi-12	32.240	-111.170	0.05	0.05	2010	2018
USCRN	Versailles-3-NNW	Cfa	Stevens-Hydraprobe-II-Sdi-12	38.095	-84.747	0.05	0.05	2009	2018
USCRN	Watkinsville-5-SSE	Cfa	Stevens-Hydraprobe-II-Sdi-12	33.784	-83.390	0.05	0.05	2009	2018
USCRN	Whitman-5-ENE	Dfa	Stevens-Hydraprobe-II-Sdi-12	42.068	-101.445	0.05	0.05	2010	2018
USCRN	Williams-35-NNW	Csa	Stevens-Hydraprobe-II-Sdi-12	35.755	-112.337	0.05	0.05	2010	2018
USCRN	Wolf-Point-29-ENE	BSk	Stevens-Hydraprobe-II-Sdi-12	48.308	-105.102	0.05	0.05	2010	2018
USCRN	Wolf-Point-34-NE	BSk	Stevens-Hydraprobe-II-Sdi-12	48.489	-105.210	0.05	0.05	2010	2018
USCRN	Yosemite-Village-12-W	Csb	Stevens-Hydraprobe-II-Sdi-12	37.759	-119.821	0.05	0.05	2011	2018
USCRN	Yuma-27-ENE	BWh	Stevens-Hydraprobe-II-Sdi-12	32.835	-114.188	0.05	0.05	2011	2018

USDA-ARS	LittleRiver	Cfa	Hydraprobe-Analog-(2.5-Volt)---area-weighted-average	31.650	-83.610	0	0.05	2003	2009
USDA-ARS	LittleWashita	Cfa	Hydraprobe-Analog-(2.5-Volt)---area-weighted-average	34.950	-98.100	0	0.05	2003	2009
USDA-ARS	ReynoldsCreek	BSk	Hydraprobe-Analog-(2.5-Volt)---area-weighted-average	43.150	-116.775	0	0.05	2003	2009
USDA-ARS	WalnutGulch	BSk	Hydraprobe-Analog-(2.5-Volt)---area-weighted-average	31.722	-110.018	0	0.05	2003	2009
VAS	MelbexI	Csa	Stevens-Hydra-Probe	39.549	-1.276	0	0.05	2010	2011
VAS	MelbexII	Csa	ThetaProbe-ML2X	39.522	-1.292	0	0.05	2010	2011
WSMN	WSMN-1	Cfb	CS655	52.432	-4.021	0.05	0.05	2013	2016
WSMN	WSMN-2	Cfb	CS655	52.432	-4.022	0.05	0.05	2013	2015
WSMN	WSMN-3	Cfb	CS615	52.422	-4.068	0.025	0.025	2012	2015
WSMN	WSMN-4	Cfb	CS615	52.421	-4.071	0.025	0.025	2013	2016

<sup>a</sup> Climate\_Köppen is the Köppen-Geiger climate classification type; Depth\_min and Depth\_max are the minimum and maximum soil depth (unit: m); Year\_start and Year\_end indicate the temporal range of the data used for soil moisture validation.

## References

- Al-Yaari, A., Dayau, S., Chipeaux, C., Aluome, C., Kruszewski, A., Loustau, D., and Wigneron, J. P.: The AQUI Soil Moisture Network for Satellite Microwave Remote Sensing Validation in South-Western France, *Remote Sens.*, 10, <http://doi.org/10.3390/rs10111839>, 2018
- Albergel, C., Rüdiger, C., Pellarin, T., Calvet, J. C., Fritz, N., Froissard, F., Suquia, D., Petitpa, A., Piguet, B., and Martin, E.: From near-surface to root-zone soil moisture using an exponential filter: an assessment of the method based on in-situ observations and model simulations, *Hydrol. Earth Syst. Sci.*, 12, 1323-1337, <http://doi.org/10.5194/hess-12-1323-2008>, 2008
- Ardö, J.: A 10-Year Dataset of Basic Meteorology and Soil Properties in Central Sudan, *Dataset Papers in Geosciences*, 2013, 6, <http://doi.org/10.7167/2013/297973>, 2013
- Bell, J. E., Palecki, M. A., Baker, C. B., Collins, W. G., Lawrimore, J. H., Leeper, R. D., Hall, M. E., Kochendorfer, J., Meyers, T. P., Wilson, T., and Diamond, H. J.: U.S. Climate Reference Network Soil Moisture and Temperature Observations, *J. Hydrometeorol.*, 14, 977-988, <http://doi.org/10.1175/JHM-D-12-0146.1>, 2013
- Bircher, S., Skou, N., Jensen, K. H., Walker, J. P., and Rasmussen, L.: A soil moisture and temperature network for SMOS validation in Western Denmark, *Hydrol. Earth Syst. Sci.*, 16, 1445-1463, <http://doi.org/10.5194/hess-16-1445-2012>, 2012
- Calvet, J., Fritz, N., Froissard, F., Suquia, D., Petitpa, A., and Piguet, B.: In situ soil moisture observations for the CAL/VAL of SMOS: the SMOSMANIA network, 23-28 July 2007 2007, 1196-1199, <http://doi.org/10.1109/IGARSS.2007.4423019>.
- Cappelaere, B., Descroix, L., Lebel, T., Boulain, N., Ramier, D., Laurent, J. P., Favreau, G., Boubkraoui, S., Boucher, M., Bouzou Moussa, I., Chaffard, V., Hiernaux, P., Issoufou, H. B. A., Le Breton, E., Mamadou, I., Nazoumou, Y., Oi, M., Ottlé, C., and Quantin, G.: The AMMA-CATCH experiment in the cultivated Sahelian area of south-west Niger – Investigating water cycle response to a fluctuating climate and changing environment, *J. Hydrol.*, 375, 34-51, <https://doi.org/10.1016/j.jhydrol.2009.06.021>, 2009
- De Rosnay, P., Gruhier, C., Timouk, F., Baup, F., Mougin, E., Hiernaux, P., Kergoat, L., and LeDantec, V.: Multi-scale soil moisture measurements at the Gourma meso-scale site in Mali, *J. Hydrol.*, 375, 241-252, <https://doi.org/10.1016/j.jhydrol.2009.01.015>, 2009
- Dorigo, W. A., Gruber, A., De Jeu, R. A. M., Wagner, W., Stacke, T., Loew, A., Albergel, C., Brocca, L., Chung, D., Parinussa, R. M., and Kidd, R.: Evaluation of the ESA CCI soil moisture product using ground-based observations, *Remote Sens. Environ.*, 162, 380-395, <https://doi.org/10.1016/j.rse.2014.07.023>, 2015
- Hyunglok, K., Wooyeon, S., Seongkyun, K., and Minha, C.: Construction and estimation of soil moisture site with FDR and COSMIC-ray (SM-FC) sensors for calibration/validation of satellite-based and COSMIC-ray soil moisture products in Sungkyunkwan university, South Korea, *Journal of Korea Water Resources Association*, 49, 133-144, <http://doi.org/10.3741/JKWRA.2016.49.2.133>, 2016
- Jackson, T. J., Cosh, M. H., Bindlish, R., Starks, P. J., Bosch, D. D., Seyfried, M., Goodrich, D. C., Moran, M. S., and Du, J.: Validation of Advanced Microwave Scanning Radiometer Soil Moisture Products, *IEEE Trans. Geosci. Remote Sensing*, 48, 4256-4272, <https://doi.org/10.1109/TGRS.2010.2051035>, 2010
- Jin, R., Li, X., Yan, B., Li, X., Luo, W., Ma, M., Guo, J., Kang, J., Zhu, Z., and Zhao, S.: A Nested Ecohydrological Wireless Sensor Network for Capturing the Surface Heterogeneity in the Midstream Areas of the Heihe River Basin, China, *IEEE Geosci. Remote Sens. Lett.*, 11, 2015-2019,

<https://doi.org/10.1109/LGRS.2014.2319085>, 2014

Kang, J., Li, X., Jin, R., Ge, Y., Wang, J., and Wang, J.: Hybrid Optimal Design of the Eco-Hydrological Wireless Sensor Network in the Middle Reach of the Heihe River Basin, China, Sensors, 14, <https://doi.org/10.3390/s141019095>, 2014

Kim, S., Liu, Y. Y., Johnson, F. M., Parinussa, R. M., and Sharma, A.: A global comparison of alternate AMSR2 soil moisture products: Why do they differ?, Remote Sens. Environ., 161, 43-62, <https://doi.org/10.1016/j.rse.2015.02.002>, 2015

Kohler, M. A. and Linsley, R. K.: Predicting the runoff from storm rainfall, US Department of Commerce, Weather Bureau, 1951.

Lebel, T., Cappelaere, B., Galle, S., Hanan, N., Kergoat, L., Levis, S., Vieux, B., Descroix, L., Gosset, M., Mougin, E., Peugeot, C., and Seguis, L.: AMMA-CATCH studies in the Sahelian region of West-Africa: An overview, J. Hydrol., 375, 3-13, <https://doi.org/10.1016/j.jhydrol.2009.03.020>, 2009

Loew, A.: Impact of surface heterogeneity on surface soil moisture retrievals from passive microwave data at the regional scale: The Upper Danube case, Remote Sens. Environ., 112, 231-248, <https://doi.org/10.1016/j.rse.2007.04.009>, 2008

Loew, A., D'allAmico, J., Schlenz, F., and Mauser, W.: The Upper Danube soil moisture validation site: measurements and activities, Rome, 18 - 20 November 2009 2009.

Marczewski, W., Slominski, J., Slominska, E., Usowicz, B., Usowicz, J., Romanov, S., Maryskevych, O., Nastula, J., and Zawadzki, J.: Strategies for validating and directions for employing SMOS data, in the Cal-Val project SWEX (3275) for wetlands, Hydrol. Earth Syst. Sci., 2010, 7007-7057, <http://doi.org/10.5194/hessd-7-7007-2010>, 2010

Moghaddam, M., Entekhabi, D., Goykhman, Y., Li, K., Liu, M., Mahajan, A., Nayyar, A., Shuman, D., and Teneketzis, D.: A Wireless Soil Moisture Smart Sensor Web Using Physics-Based Optimal Control: Concept and Initial Demonstrations, IEEE J. Sel. Top. Appl. Earth Observ. Remote Sens., 3, 522-535, <https://doi.org/10.1109/JSTARS.2010.2052918>, 2010

Moghaddam, M., Silva, A. R., Clewley, D., Akbar, R., Hussaini, S. A., Whitcomb, J., Devarakonda, R., Shrestha, R., Cook, R. B., Prakash, G., Santhana Vannan, S. K., and Boyer, A. G.: Soil Moisture Profiles and Temperature Data from SoilSCAPE Sites, USA., ORNL DAAC, Oak Ridge, Tennessee, USA., <https://doi.org/10.3334/ORNLDaac/1339>, 2016

Morbidelli, R., Salitalippi, C., Flammini, A., Rossi, E., and Corradini, C.: Soil water content vertical profiles under natural conditions: matching of experiments and simulations by a conceptual model, Hydrol. Process., 28, 4732-4742, <https://doi.org/10.1002/hyp.9973>, 2014

Mougin, E., Hiernaux, P., Kergoat, L., Grippa, M., de Rosnay, P., Timouk, F., Le Dantec, V., Demarez, V., Lavenu, F., Arjounin, M., Lebel, T., Soumaguel, N., Ceschia, E., Mougenot, B., Baup, F., Frappart, F., Frison, P. L., Gardelle, J., Gruhier, C., Jarlan, L., Mangiarotti, S., Sanou, B., Tracol, Y., Guichard, F., Trichon, V., Diarra, L., Soumaré, A., Koité, M., Dembélé, F., Lloyd, C., Hanan, N. P., Damesin, C., Delon, C., Serqa, D., Galy-Lacaux, C., Seghieri, J., Becerra, S., Dia, H., Gangneron, F., and Mazzega, P.: The AMMA-CATCH Gourma observatory site in Mali: Relating climatic variations to changes in vegetation, surface hydrology, fluxes and natural resources, J. Hydrol., 375, 14-33, <https://doi.org/10.1016/j.jhydrol.2009.06.045>, 2009

Osenga, E. C., Arnott, J. C., Endsley, K. A., and Katzenberger, J. W.: Bioclimatic and Soil Moisture Monitoring Across Elevation in a Mountain Watershed: Opportunities for Research and Resource Management, Water Resour. Res., 55, 2493-2503, <https://doi.org/10.1029/2018WR023653>, 2019

Pellarin, T., Laurent, J. P., Cappelaere, B., Decharme, B., Descroix, L., and Ramier, D.: Hydrological

- modelling and associated microwave emission of a semi-arid region in South-western Niger, *J. Hydrol.*, 375, 262-272, <https://doi.org/10.1016/j.jhydrol.2008.12.003>, 2009
- Rüdiger, C., Hancock, G., Hemakumara, H. M., Jacobs, B., Kalma, J. D., Martinez, C., Thyer, M., Walker, J. P., Wells, T., and Willgoose, G. R.: Goulburn River experimental catchment data set, *Water Resour. Res.*, 43, <https://doi.org/10.1029/2006WR005837>, 2007
- Schlenz, F., dall'Amico, J. T., Loew, A., and Mauser, W.: Uncertainty Assessment of the SMOS Validation in the Upper Danube Catchment, *IEEE Trans. Geosci. Remote Sensing*, 50, 1517-1529, <https://doi.org/10.1109/TGRS.2011.2171694>, 2012
- Smith, A. B., Walker, J. P., Western, A. W., Young, R. I., Ellett, K. M., Pipunic, R. C., Grayson, R. B., Siriwardena, L., Chiew, F. H. S., and Richter, H.: The Murrumbidgee soil moisture monitoring network data set, *Water Resour. Res.*, 48, <https://doi.org/10.1029/2012WR011976>, 2012
- Su, Z., Wen, J., Dente, L., van der Velde, R., Wang, L., Ma, Y., Yang, K., and Hu, Z.: The Tibetan Plateau observatory of plateau scale soil moisture and soil temperature (Tibet-Obs) for quantifying uncertainties in coarse resolution satellite and model products, *Hydrol. Earth Syst. Sci.*, 15, 2303-2316, <https://doi.org/10.5194/hess-15-2303-2011>, 2011
- Tagesson, T., Fensholt, R., Guiro, I., Rasmussen, M. O., Huber, S., Mbow, C., Garcia, M., Horion, S., Sandholt, I., Holm-Rasmussen, B., Götsche, F. M., Ridler, M.-E., Olén, N., Lundegard Olsen, J., Ehamer, A., Madsen, M., Olesen, F. S., and Ardö, J.: Ecosystem properties of semiarid savanna grassland in West Africa and its relationship with environmental variability, *Glob. Change Biol.*, 21, 250-264, <https://doi.org/10.1111/gcb.12734>, 2015
- Van Cleve, K., Chapin, F. S. S., and Ruess, R. W.: Bonanza Creek Long Term Ecological Research Project Climate Database - University of Alaska Fairbanks., 2015
- Yang, K., Qin, J., Zhao, L., Chen, Y., Tang, W., Han, M., Lazhu, Chen, Z., Lv, N., Ding, B., Wu, H., and Lin, C.: A Multiscale Soil Moisture and Freeze–Thaw Monitoring Network on the Third Pole, *Bull. Amer. Meteorol. Soc.*, 94, 1907-1916, <https://doi.org/10.1175/BAMS-D-12-00203.1>, 2013
- Young, R., Walker, J., Yeoh, N., Smith, A., Ellett, K., Merlin, O., and Western, A.: Soil Moisture and Meteorological Observations From the Murrumbidgee Catchment, 2008.
- Zacharias, S., Bogena, H., Samaniego, L., Mauder, M., Fuß, R., Pütz, T., Frenzel, M., Schwank, M., Baessler, C., Butterbach-Bahl, K., Bens, O., Borg, E., Brauer, A., Dietrich, P., Hajnsek, I., Helle, G., Kiese, R., Kunstmann, H., Klotz, S., Munch, J. C., Papen, H., Priesack, E., Schmid, H. P., Steinbrecher, R., Rosenbaum, U., Teutsch, G., and Vereecken, H.: A Network of Terrestrial Environmental Observatories in Germany, *Vadose Zone J.*, 10, 955-973, <https://doi.org/10.2136/vzj2010.0139>, 2011
- Zreda, M., Desilets, D., Ferré, T. P. A., and Scott, R. L.: Measuring soil moisture content non-invasively at intermediate spatial scale using cosmic-ray neutrons, *Geophys. Res. Lett.*, 35, <https://doi.org/10.1029/2008GL035655>, 2008
- Zreda, M., Shuttleworth, W. J., Zeng, X., Zweck, C., Desilets, D., Franz, T., and Rosolem, R.: COSMOS: the COsmic-ray Soil Moisture Observing System, *Hydrol. Earth Syst. Sci.*, 16, 4079-4099, <https://doi.org/10.5194/hess-16-4079-2012>, 2012