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## Supplementary materials

### Machine learning-based estimation of daily cropland evapotranspiration in diverse climate zones

#### Supplementary Table Captions

**Table. S1.** Site codes and corresponding full names of the 15 crop flux tower sites used in this study.

**Table. S2.** Hyperparameters of Machine Learning Models Used in This Study.

**Table. S3.** The average and standard deviation of the Pearson correlation coefficients between input factors and evapotranspiration (ET). At each site, Pearson correlation coefficients were independently calculated.

## Supplemental tables

**Supplementary Table S1.** Site codes and corresponding full names of the 15 crop flux tower sites used in this study.

Site code	Site name	Latitude (°)	Longitude (°)	Country	Period
US-ARM	ARM Southern Great Plains site Lamout	36.6058	-97.4888	USA	2003-2012
US-CRT	Curtice walter-Berger cropland	41.6285	- 83.3471	USA	2011-2013
US-Ne1	Mead-irrigation continuos maize site	41.1651	-96.4766	USA	2001-2013
US-Ne2	Mead-irrigation maize-soybean rotation site	41.1649	- 96.4701	USA	2001-2013
US-Ne3	Mead-rained maize-soybean rotation site	41.1797	- 96.4397	USA	2001-2013
IT-BCi	Borgo Cioff	40.5238	14.9574	Italy	2004-2014
IT-CA2	Castel d'SSO 2	42.3772	12.0260	Italy	2011-2014
US-TW2	Twitchell Corn	38.1047	-121.6433	USA	2012-2013
US-TW3	Twitchell Alfalfa	38.1152	-121.6469	USA	2013-2014
US-TW	Twitchell Island	38.1087	-121.6531	USA	2009-2014
BE-Lon	Lonze	50.5516	4.7461	Belgium	2004-2014
CH-Oe2	Switzer-land	47.2863	7.7343	Switzerland	2004-2014
DE-Geb	Gebesee	51.1001	10.9143	Germany	2001-2014
DE-Kli	Klingenberg	50.8931	13.5224	Germany	2004-2014
FR-Gri	Grignon	48.8442	1.9519	France	2004-2014

**Supplementary Table S2.** Hyperparameters of Machine Learning Models Used in This Study.

Model	Hyperparameter	Value
RF	Number of variables sampled at each split (Mtry)	3
	Number of trees (Ntree)	500
SVM	Kernel type	Radial
	Gamma parameter	1/9
	Learning rate	0.3
XGB	Maximum tree depth	6
	Maximum number of boosting iterations	10
BP	Number of neurons in one layer	5
	Error threshold	10 <sup>-6</sup>
	Maximum iterations	1000

**Supplementary Table S3** The average and standard deviation of the Pearson correlation coefficients between input factors and evapotranspiration (ET). At each site, Pearson correlation coefficients were independently calculated.

Climate zone	Items	R <sub>n</sub>	PPFD	LAI	T <sub>a</sub>	EF	VPD	G	P	U
All sites	<i>r</i>	0.76	0.66	0.59	0.57	0.52	0.44	0.36	-0.23	-0.01
	$\pm std$	$\pm 0.12$	$\pm 0.13$	$\pm 0.25$	$\pm 0.17$	$\pm 0.15$	$\pm 0.17$	$\pm 0.18$	$\pm 0.20$	$\pm 0.27$
SMCZ	<i>r</i>	0.67	0.62	0.49	0.52	0.52	0.36	0.27	-0.41	0.23
	$\pm std$	$\pm 0.19$	$\pm 0.20$	$\pm 0.37$	$\pm 0.26$	$\pm 0.23$	$\pm 0.22$	$\pm 0.25$	$\pm 0.25$	$\pm 0.34$
TCZ	<i>r</i>	0.81	0.72	0.55	0.55	0.45	0.53	0.49	-0.08	-0.07
	$\pm std$	$\pm 0.04$	$\pm 0.11$	$\pm 0.10$	$\pm 0.13$	$\pm 0.09$	$\pm 0.17$	$\pm 0.12$	$\pm 0.08$	$\pm 0.09$
TCCZ	<i>r</i>	0.78	0.64	0.73	0.63	0.60	0.44	0.32	-0.19	-0.20
	$\pm std$	$\pm 0.05$	$\pm 0.03$	$\pm 0.17$	$\pm 0.07$	$\pm 0.10$	$\pm 0.07$	$\pm 0.07$	$\pm 0.07$	$\pm 0.12$