Table S1. Accuracy metrics relative to NASA POWER daily refence evapotranspiration without bias correction for all 14 locations.

Location	Method	b	R²	RMSE (mm d⁻¹)	NRMSE (%)	MBE (mm d⁻¹)	NMBE (%)	EF
Aljustrel	PM	1.12	0.88	0.93	19.74	0.57	12.17	0.69
	HS_Rs	1.04	0.84	0.74	15.66	0.29	6.13	0.81
	HS_S	0.97	0.81	0.74	15.66	−0.05	−1.15	0.81
	HS_M	0.94	0.80	0.77	16.46	−0.21	−4.54	0.79
	MaxTET	0.97	0.77	0.80	17.09	0.01	0.19	0.77
Alvalade	PM	1.09	0.86	0.88	18.27	0.44	9.11	0.72
	HS_Rs	1.02	0.85	0.68	14.00	0.16	3.37	0.83
	HS_S	0.95	0.82	0.72	14.96	−0.18	−3.68	0.81
	HS_M	0.94	0.82	0.75	15.52	−0.24	−5.06	0.80
	MaxTET	0.97	0.78	0.78	16.09	−0.02	−0.40	0.78
Beja	PM	1.08	0.89	0.83	16.60	0.36	7.28	0.79
	HS_Rs	0.98	0.88	0.65	13.00	−0.07	−1.46	0.87
	HS_S	1.02	0.83	0.76	15.27	0.18	3.65	0.82
	HS_M	1.02	0.83	0.76	15.19	0.17	3.50	0.82
	MaxTET	1.03	0.79	0.87	17.41	0.30	6.07	0.77
Castro Verde	PM	0.98	0.89	0.67	12.53	−0.08	−1.43	0.88
	HS_Rs	0.91	0.87	0.85	15.86	−0.38	−7.09	0.81
	HS_S	0.91	0.84	0.91	16.94	−0.38	−7.14	0.79
	HS_M	0.93	0.84	0.84	15.69	−0.25	−4.75	0.82
	MaxTET	0.97	0.80	0.90	16.74	0.02	0.44	0.79
Elvas	PM	1.08	0.88	0.88	17.95	0.38	7.86	0.76
	HS_Rs	0.99	0.86	0.68	14.01	−0.01	−0.20	0.85
	HS_S	0.96	0.82	0.77	15.71	−0.12	−2.46	0.81
	HS_M	0.93	0.81	0.82	16.80	−0.28	−5.77	0.79
	MaxTET	0.96	0.77	0.85	17.50	−0.09	−1.81	0.77
Estremoz	PM	1.26	0.83	1.41	33.81	1.08	26.01	0.13
	HS_Rs	1.16	0.87	0.96	23.14	0.73	17.56	0.59
	HS_S	0.98	0.81	0.66	15.74	0.02	0.45	0.81
	HS_M	1.02	0.81	0.68	16.32	0.17	4.20	0.80
	MaxTET	1.04	0.77	0.78	18.71	0.30	7.14	0.73
Évora	PM	1.15	0.87	1.03	22.73	0.66	14.59	0.61
	HS_Rs	1.06	0.87	0.72	15.89	0.31	6.88	0.81
	HS_S	0.96	0.80	0.73	16.24	−0.08	−1.80	0.80
	HS_M	0.96	0.80	0.74	16.42	−0.11	−2.48	0.80
	MaxTET	1.01	0.76	0.83	18.37	0.16	3.59	0.74
Ferreira do Alentejo	PM	1.15	0.88	1.01	22.41	0.67	14.77	0.58
	HS_Rs	1.07	0.86	0.72	16.01	0.35	7.68	0.79
	HS_S	0.96	0.81	0.70	15.41	−0.10	−2.20	0.80
	HS_M	0.96	0.81	0.70	15.63	−0.13	−2.87	0.80
	MaxTET	0.97	0.77	0.76	16.78	−0.01	−0.18	0.77

Moura	PM	1.22	0.88	1.30	29.40	0.96	21.61	0.30
	HS_Rs	1.11	0.85	0.88	19.83	0.51	11.56	0.68
	HS_S	0.95	0.82	0.68	15.35	−0.17	−3.87	0.81
	HS_M	0.92	0.81	0.74	16.68	−0.30	−6.75	0.77
	MaxTET	0.96	0.79	0.71	16.16	−0.06	−1.37	0.79
Odemira	PM	1.24	0.71	1.27	33.43	0.91	23.95	−0.32
	HS_Rs	1.27	0.70	1.34	35.19	1.06	27.81	−0.46
	HS_S	1.07	0.63	0.84	22.02	0.30	7.86	0.43
	HS_M	1.03	0.64	0.74	19.54	0.17	4.50	0.55
	MaxTET	1.06	0.60	0.79	20.90	0.35	9.26	0.48
Redondo	PM	1.03	0.89	0.71	14.04	0.13	2.66	0.86
	HS_Rs	0.95	0.86	0.75	14.76	−0.23	−4.47	0.84
	HS_S	0.97	0.79	0.85	16.80	−0.02	−0.33	0.79
	HS_M	0.96	0.80	0.86	16.91	−0.09	−1.86	0.79
	MaxTET	0.98	0.76	0.92	18.24	0.08	1.60	0.76
Serpa	PM	1.19	0.85	1.25	27.06	0.87	18.89	0.42
	HS_Rs	1.08	0.88	0.74	15.89	0.43	9.21	0.80
	HS_S	0.97	0.81	0.72	15.52	−0.03	−0.66	0.81
	HS_M	0.97	0.81	0.72	15.52	−0.03	−0.66	0.81
	MaxTET	0.99	0.77	0.80	17.20	0.07	1.52	0.77
Viana do Alentejo	PM	1.10	0.88	0.85	18.15	0.50	10.65	0.76
	HS_Rs	1.02	0.84	0.71	15.08	0.18	3.74	0.83
	HS_S	0.98	0.78	0.81	17.28	0.02	0.50	0.78
	HS_M	0.96	0.80	0.79	16.82	−0.06	−1.18	0.79
	MaxTET	1.00	0.75	0.90	19.07	0.19	4.01	0.73
Vidigueira	PM	1.13	0.87	1.02	21.41	0.63	13.22	0.64
	HS_Rs	1.04	0.89	0.61	12.89	0.21	4.38	0.87
	HS_S	0.94	0.80	0.77	16.25	−0.18	−3.75	0.79
	HS_M	0.95	0.80	0.77	16.15	−0.15	−3.09	0.80
	MaxTET	0.98	0.75	0.84	17.68	0.02	0.40	0.75

Table S2. Accuracy metrics relative to NASA POWER daily refence evapotranspiration with regional bias correction for all 14 locations.

Location	Method	b	R²	RMSE (mm d⁻¹)	NRMSE (%)	MBE (mm d⁻¹)	NMBE (%)	EF
Aljustrel	PM	0.95	0.88	0.63	13.38	−0.21	−4.47	0.86
	HS_Rs	1.00	0.84	0.69	14.57	0.08	1.78	0.83
	HS_S	1.01	0.80	0.76	16.19	0.17	3.68	0.79
	HS_M	0.98	0.80	0.75	15.93	0.00	0.11	0.80
	MaxTET	0.99	0.77	0.81	17.25	0.09	1.84	0.77
Alvalade	PM	0.93	0.87	0.71	14.59	−0.34	−7.09	0.82
	HS_Rs	0.98	0.84	0.66	13.65	−0.04	−0.87	0.84
	HS_S	0.99	0.82	0.71	14.70	0.05	1.03	0.82
	HS_M	0.98	0.81	0.72	14.87	−0.02	−0.44	0.81
	MaxTET	0.99	0.78	0.78	16.19	0.06	1.24	0.78
Beja	PM	0.90	0.89	0.77	15.40	−0.49	−9.87	0.82
	HS_Rs	0.94	0.87	0.70	13.99	−0.28	−5.60	0.85
	HS_S	1.06	0.83	0.85	17.13	0.41	8.20	0.77
	HS_M	1.05	0.83	0.85	16.98	0.40	8.03	0.78
	MaxTET	1.04	0.79	0.90	18.05	0.38	7.65	0.75
Castro Verde	PM	0.83	0.88	1.12	20.92	−0.86	−16.05	0.68
	HS_Rs	0.87	0.87	0.98	18.30	−0.58	−10.91	0.75
	HS_S	0.94	0.83	0.86	16.00	−0.14	−2.64	0.81
	HS_M	0.97	0.83	0.82	15.26	−0.01	−0.16	0.83
	MaxTET	0.98	0.80	0.91	17.04	0.11	2.08	0.79
Elvas	PM	0.91	0.90	0.73	15.07	−0.47	−9.68	0.83
	HS_Rs	0.95	0.86	0.71	14.46	−0.22	−4.42	0.84
	HS_S	1.00	0.82	0.77	15.80	0.09	1.89	0.81
	HS_M	0.96	0.81	0.78	15.98	−0.08	−1.60	0.81
	MaxTET	0.97	0.77	0.85	17.38	−0.02	−0.32	0.77
Estremoz	PM	1.06	0.87	0.68	16.33	0.28	6.64	0.80
	HS_Rs	1.12	0.87	0.80	19.14	0.53	12.69	0.72
	HS_S	1.02	0.81	0.69	16.63	0.21	4.93	0.79
	HS_M	1.06	0.81	0.76	18.25	0.37	8.87	0.75
	MaxTET	1.05	0.77	0.81	19.43	0.37	8.86	0.71
Évora	PM	0.97	0.89	0.58	12.91	−0.14	−3.20	0.87
	HS_Rs	1.02	0.87	0.64	14.12	0.11	2.45	0.85
	HS_S	1.00	0.80	0.75	16.58	0.12	2.63	0.79
	HS_M	0.99	0.80	0.75	16.57	0.09	1.90	0.79
	MaxTET	1.02	0.76	0.85	18.73	0.24	5.26	0.73
Ferreira do Alentejo	PM	0.98	0.89	0.56	12.33	−0.12	−2.62	0.87
	HS_Rs	1.02	0.86	0.63	14.06	0.14	3.20	0.84
	HS_S	1.00	0.80	0.70	15.60	0.11	2.42	0.80
	HS_M	1.00	0.80	0.70	15.60	0.08	1.70	0.80
	MaxTET	0.98	0.77	0.76	16.91	0.07	1.46	0.76

Moura	PM	1.02	0.90	0.58	13.13	0.07	1.52	0.86
	HS_Rs	1.07	0.85	0.74	16.84	0.30	6.86	0.77
	HS_S	0.98	0.82	0.66	14.91	0.02	0.38	0.82
	HS_M	0.96	0.81	0.68	15.48	−0.12	−2.63	0.80
	MaxTET	0.97	0.79	0.71	16.08	0.00	0.09	0.79
Odemira	PM	1.08	0.71	0.80	21.10	0.33	8.80	0.47
	HS_Rs	1.22	0.70	1.17	30.76	0.86	22.64	−0.12
	HS_S	1.14	0.63	1.00	26.19	0.62	16.38	0.19
	HS_M	1.11	0.64	0.86	22.72	0.49	12.80	0.39
	MaxTET	1.09	0.61	0.84	22.03	0.45	11.77	0.43
Redondo	PM	0.87	0.90	0.90	17.83	−0.68	−13.34	0.77
	HS_Rs	0.91	0.86	0.83	16.43	−0.43	−8.44	0.80
	HS_S	1.01	0.79	0.89	17.53	0.21	4.15	0.78
	HS_M	0.99	0.79	0.87	17.13	0.13	2.55	0.79
	MaxTET	1.00	0.76	0.94	18.50	0.16	3.23	0.75
Serpa	PM	1.00	0.88	0.61	13.23	−0.01	−0.18	0.86
	HS_Rs	1.03	0.88	0.62	13.42	0.22	4.65	0.86
	HS_S	1.01	0.81	0.74	16.02	0.17	3.65	0.80
	HS_M	1.01	0.81	0.74	16.02	0.17	3.65	0.80
	MaxTET	1.00	0.77	0.80	17.35	0.14	2.96	0.76
Viana do Alentejo	PM	0.93	0.87	0.69	14.75	−0.29	−6.12	0.84
	HS_Rs	0.98	0.84	0.69	14.69	−0.03	−0.57	0.84
	HS_S	1.02	0.77	0.87	18.45	0.24	5.21	0.75
	HS_M	1.00	0.79	0.82	17.41	0.16	3.45	0.78
	MaxTET	1.01	0.75	0.92	19.61	0.27	5.68	0.72
Vidigueira	PM	0.95	0.89	0.61	12.88	−0.23	−4.93	0.87
	HS_Rs	0.99	0.89	0.56	11.78	0.00	0.01	0.89
	HS_S	0.98	0.80	0.76	16.03	0.02	0.43	0.80
	HS_M	0.98	0.80	0.77	16.16	0.05	1.14	0.80
	MaxTET	0.99	0.75	0.84	17.79	0.09	1.89	0.75

Table S3. Accuracy metrics relative to NASA POWER daily refence evapotranspiration with local bias correction for all 14 locations.

Location	Method	b	R²	RMSE (mm d⁻¹)	NRMSE (%)	MBE (mm d⁻¹)	NMBE (%)	EF
Aljustrel	PM	0.91	0.88	0.72	15.24	−0.41	−8.64	0.82
	HS_Rs	0.95	0.83	0.70	14.78	−0.14	−2.89	0.83
	HS_S	1.03	0.80	0.79	16.79	0.27	5.65	0.78
	HS_M	1.00	0.80	0.76	16.07	0.09	2.00	0.80
	MaxTET	1.00	0.77	0.82	17.47	0.16	3.33	0.76
Alvalade	PM	0.92	0.88	0.71	14.68	−0.39	−8.15	0.82
	HS_Rs	0.97	0.84	0.67	13.85	−0.07	−1.36	0.84
	HS_S	1.01	0.82	0.73	15.02	0.14	2.99	0.81
	HS_M	1.00	0.81	0.73	15.00	0.07	1.49	0.81
	MaxTET	1.00	0.78	0.80	16.52	0.16	3.30	0.77
Beja	PM	0.95	0.91	0.61	12.32	−0.26	−5.26	0.88
	HS_Rs	1.01	0.87	0.66	13.22	0.08	1.51	0.87
	HS_S	1.02	0.83	0.78	15.60	0.22	4.50	0.81
	HS_M	1.02	0.83	0.77	15.51	0.22	4.35	0.81
	MaxTET	1.02	0.79	0.86	17.19	0.26	5.25	0.77
Castro Verde	PM	0.92	0.90	0.77	14.32	−0.44	−8.15	0.85
	HS_Rs	0.89	0.87	0.89	16.57	−0.46	−8.59	0.80
	HS_S	0.96	0.83	0.83	15.56	−0.08	−1.59	0.82
	HS_M	0.98	0.83	0.81	15.13	0.05	0.94	0.83
	MaxTET	0.99	0.80	0.91	16.95	0.15	2.80	0.79
Elvas	PM	0.95	0.90	0.64	13.02	−0.27	−5.64	0.87
	HS_Rs	0.97	0.86	0.68	14.02	−0.11	−2.35	0.85
	HS_S	1.02	0.81	0.80	16.46	0.24	4.83	0.80
	HS_M	0.99	0.81	0.78	15.98	0.06	1.24	0.81
	MaxTET	0.99	0.77	0.85	17.50	0.11	2.22	0.77
Estremoz	PM	0.97	0.88	0.55	13.14	−0.12	−2.98	0.87
	HS_Rs	1.11	0.88	0.76	18.36	0.46	11.16	0.74
	HS_S	0.96	0.81	0.66	15.97	−0.07	−1.59	0.81
	HS_M	1.00	0.81	0.67	16.00	0.09	2.08	0.80
	MaxTET	1.00	0.77	0.73	17.55	0.12	2.98	0.76
Évora	PM	0.96	0.88	0.61	13.43	−0.20	−4.32	0.86
	HS_Rs	0.96	0.87	0.63	13.83	−0.15	−3.31	0.86
	HS_S	1.00	0.80	0.75	16.60	0.11	2.36	0.79
	HS_M	0.99	0.79	0.75	16.58	0.07	1.63	0.79
	MaxTET	1.01	0.76	0.84	18.53	0.20	4.50	0.74
Ferreira do Alentejo	PM	0.92	0.89	0.64	14.16	−0.37	−8.27	0.83
	HS_Rs	1.03	0.86	0.63	14.00	0.16	3.52	0.84
	HS_S	1.02	0.80	0.72	16.04	0.20	4.41	0.79
	HS_M	1.01	0.80	0.72	15.91	0.16	3.66	0.79
	MaxTET	1.00	0.77	0.78	17.19	0.15	3.28	0.75

Moura	**PM**	0.92	0.89	0.63	14.18	−0.37	−8.42	0.84
	HS_Rs	1.04	0.85	0.67	15.09	0.17	3.96	0.81
	HS_S	1.02	0.82	0.69	15.54	0.19	4.19	0.80
	HS_M	0.99	0.81	0.67	15.26	0.05	1.03	0.81
	MaxTET	0.99	0.79	0.72	16.19	0.09	1.97	0.79
Odemira	**PM**	1.00	0.70	0.67	17.57	0.05	1.23	0.63
	HS_Rs	1.20	0.70	1.11	29.14	0.81	21.20	0.00
	HS_S	1.04	0.63	0.73	19.16	0.22	5.74	0.57
	HS_M	1.00	0.64	0.67	17.71	0.10	2.54	0.63
	MaxTET	1.00	0.60	0.71	18.56	0.12	3.20	0.59
Redondo	**PM**	0.97	0.89	0.67	13.28	−0.15	−2.89	0.87
	HS_Rs	0.91	0.86	0.82	16.11	−0.40	−7.81	0.81
	HS_S	1.01	0.79	0.87	17.28	0.18	3.46	0.78
	HS_M	0.99	0.79	0.86	16.95	0.09	1.88	0.79
	MaxTET	1.01	0.76	0.95	18.73	0.22	4.43	0.74
Serpa	**PM**	0.94	0.89	0.62	13.30	−0.29	−6.29	0.86
	HS_Rs	1.04	0.88	0.63	13.58	0.22	4.70	0.85
	HS_S	1.01	0.81	0.74	16.05	0.17	3.65	0.80
	HS_M	1.01	0.81	0.74	16.05	0.17	3.65	0.80
	MaxTET	1.00	0.77	0.81	17.41	0.15	3.30	0.76
Viana do Alentejo	**PM**	0.95	0.88	0.63	13.49	−0.22	−4.61	0.87
	HS_Rs	0.96	0.84	0.69	14.72	−0.09	−1.97	0.84
	HS_S	1.00	0.78	0.83	17.72	0.15	3.10	0.77
	HS_M	0.98	0.79	0.80	16.99	0.07	1.39	0.79
	MaxTET	1.00	0.75	0.89	18.97	0.17	3.62	0.74
Vidigueira	**PM**	0.95	0.90	0.60	12.63	−0.25	−5.27	0.87
	HS_Rs	1.03	0.89	0.60	12.74	0.20	4.29	0.87
	HS_S	0.99	0.80	0.76	16.06	0.06	1.23	0.80
	HS_M	0.99	0.80	0.77	16.24	0.09	1.94	0.79
	MaxTET	1.00	0.75	0.85	17.96	0.14	3.02	0.75