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Carbon–water flux coupling under progressive drought

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1 Time-Series of Evapotranspiration During Dry-Down Events

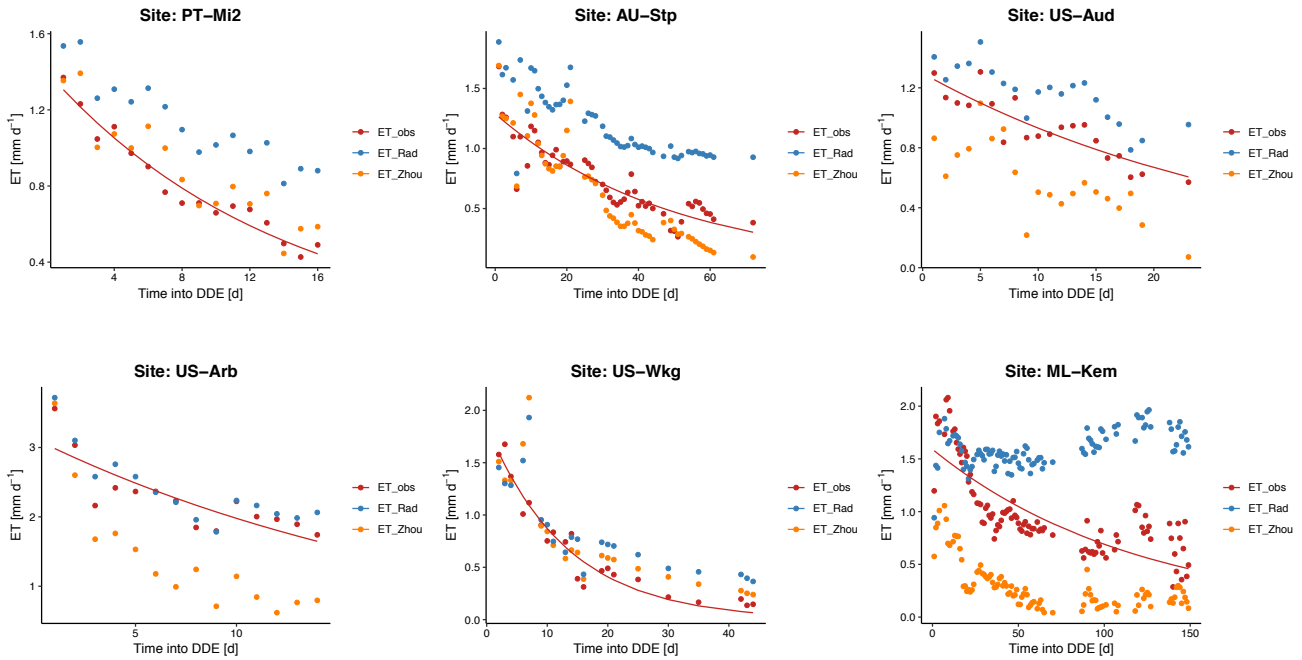

Figure 1. Observed evapotranspiration (ET) compared to predicted ET from the Zhou and Rad models for six different dry-down events and sites. The lines denote an exponential fit to the observed ET.

2 List of Sites and Estimated Parameters

3 List of Detected Dry-Down Events

Table 1. List of site properties and estimated parameters.

	Site	Vegetation type	Climate type	i	r	q	k	$\mathrm{WAI}_{\mathrm{amplitude}}$
1	AU-DaP	short	Savanna	0.203	0.073	0.572	0.051	0.938
2	AU-DaS	mixed	Savanna	0.153	0.067	0.471	0.013	0.942
3	AU-Dry	mixed	Savanna	0.373	0.005	0.163	0.011	0.755
4	AU-Gin	mixed	Medit.	0.254	0.012	1.082	0.025	0.862
5	AU-How	mixed	Savanna	0.324	0.032	0.922	0.004	0.944
6	AU-Stp	short	(Semi-)Arid	0.292	0.041	0.894	0.020	0.667
7	IT-Ro2	tall	Medit.	0.193	0.018	0.060	0.044	0.668
8	SD-Dem	mixed	Savanna	0.281	0.019	0.408	0.027	0.712
9	US-Blo	tall	Medit.	0.164	0.073	0.419	0.023	0.894
10	US-SRG	short	(Semi-)Arid	0.288	0.020	0.150	0.049	0.417
11	US-SRM	mixed	(Semi-)Arid	0.304	0.013	0.119	0.040	0.342
12	US-Ton	mixed	Medit.	0.253	0.029	0.507	0.018	0.864
13	US-Whs	tall	(Semi-)Arid	0.344	0.015	0.000	0.041	0.455
14	US-Wkg	short	(Semi-)Arid	0.312	0.010	0.097	0.077	0.295
15	BW-Ghg	mixed	(Semi-)Arid	0.302	0.058	0.631	0.076	0.550
16	BW-Ghm	mixed	(Semi-)Arid	0.247	0.063	0.726	0.065	0.582
17	BW-Ma1	mixed	(Semi-)Arid	0.291	0.015	0.101	0.025	0.515
18	DE-Meh	short	C/T humid	0.201	0.036	0.000	0.081	0.571
19	ES-ES1	tall	Medit.	0.219	0.044	0.056	0.049	0.629
20	IL-Yat	tall	(Semi-)Arid	0.244	0.011	0.312	0.009	0.816
21	IT-Amp	short	C/T humid	0.135	0.077	0.000	0.033	0.668
22	IT-LMa	short	C/T humid	0.269	0.034	0.328	0.061	0.498
23	ML-Kem	tall	(Semi-)Arid	0.114	0.045	0.394	0.017	0.799
24	PT-Esp	tall	Medit.	0.275	0.000	0.421	0.022	0.765
25	PT-Mi2	short	Medit.	0.306	0.012	0.455	0.072	0.727
26	US-Arb	short	C/T humid	0.198	0.059	0.000	0.046	0.305
27	US-Arc	short	C/T humid	0.257	0.056	0.141	0.065	0.279
28	US-Aud	short	(Semi-)Arid	0.184	0.027	0.000	0.047	0.557
29	US-Bo1	short	C/T humid	0.107	0.082	0.048	0.074	0.438
30	US-FR2	mixed	C/T humid	0.252	0.038	0.436	0.077	0.070
31	US-Fuf	tall	Medit.	0.415	0.014	0.362	0.028	0.510

Table 2. List of all detected dry-down events used in this study. The columns a, b and k contain the parameter values used in the detection of the events (see Section *Detection of Dry-Down Events*)

	Site	Start date	End date	a	b	k
1	AU-DaP	2009-4-8	2009-6-17	0.514	-8.683	0.048
2	AU-DaS	2011-4-28	2011-6-30	0.098	0.601	0.010
3	AU-Dry	2013-4-13	2013-6-9	0.133	0.859	0.014
4	AU-Dry	2014-5-23	2014-10-31	0.089	0.496	0.007
5	AU-Gin	2012-3-4	2012-3-28	0.005	1.328	0.024
6	AU-How	2014-6-7	2014-10-13	0.215	-1.003	0.004
7	AU-Stp	2012-5-24	2012-8-3	0.079	0.004	0.017
8	IT-Ro2	2011-8-8	2011-9-13	0.177	-1.027	0.024
9	IT-Ro2	2011-10-14	2011-12-19	0.107	0.206	0.025
10	SD-Dem	2007-10-6	2008-4-17	0.392	-6.922	0.025
11	US-Blo	2004-7-19	2004-9-18	0.125	0.349	0.021
12	US-SRG	2008-9-21	2008-10-9	0.076	0.555	0.062
13	US-SRG	2012-9-23	2012-11-7	0.133	-0.018	0.052
14	US-SRG	2014-3-16	2014-4-17	0.025	0.852	0.031
15	US-SRM	2008-9-21	2008-11-25	0.285	-4.308	0.044
16	US-SRM	2011-10-2	2011-11-4	0.069	0.457	0.027
17	US-Ton	2002-6-6	2002-10-22	0.059	0.637	0.019
18	US-Ton	2005-6-26	2005-9-22	0.224	-4.782	0.018
19	US-Ton	2006-5-27	2006-10-1	0.054	1.425	0.015
20	US-Whs	2014-10-26	2014-12-2	-0.058	2.577	0.042
21	US-Wkg	2004-10-3	2004-10-20	-0.019	1.551	0.077
22	US-Wkg	2011-9-22	2011-11-4	0.073	0.571	0.064
23	BW-Ghg	2003-3-16	2003-4-7	0.105	0.524	0.075
24	BW-Ghm	2003-3-15	2003-4-7	0.100	0.682	0.068
25	BW-Ma1	2000-6-12	2000-9-14	0.003	1.388	0.008
26	BW-Ma1	2000-12-31	2001-1-31	0.018	1.128	0.050
27	DE-Meh	2006-7-18	2006-7-29	0.115	0.312	0.090
28	ES-ES1	2003-7-2	2003-8-9	0.164	-1.229	0.010
29	ES-ES1	2004-8-9	2004-8-29	0.109	-0.511	0.071
30	ES-ES1	2005-12-5	2005-12-17	0.105	0.553	0.056
31	IL-Yat	2001-5-6	2001-11-12	0.001	1.153	0.009
32	IT-Amp	2003-7-18	2003-7-30	0.091	0.643	0.033
33	IT-LMa	2004-9-21	2004-10-3	0.138	-0.156	0.066
34	ML-Kem	2007-12-2	2008-4-28	0.193	-0.470	0.009
35	ML-Kem	2008-11-17	2008-12-29	0.027	2.033	0.027
36	PT-Esp	2003-7-23	2003-8-26	-0.024	2.829	0.024
37	PT-Mi2	2006-7-31	2006-8-15	0.074	-0.816	0.069
38	US-Arb	2006-7-20	2006-8-2	0.335	-4.265	0.033
39	US-Arc	2006-7-16	2006-8-2	0.189	0.850	0.063
40	US-Aud	2003-10-15	2003-11-7	0.115	-0.578	0.073
41	US-Aud	2004-4-21	2004-5-13	0.030	0.390	0.031
42	US-Bo1	1998-9-2	1998-9-11	0.183	0.056	0.030
43	US-Bo1	1999-9-3	1999-9-11	0.160	-0.113	0.095
44	US-Bo1	2000-8-30	2000-9-9	0.176	-0.012	0.109
45	US-Bo1	2005-9-2	2005-9-13	0.055	0.954	0.045
46	US-FR2	2005-9-17	2005-10-2	0.095	1.044	0.079
47	US-Fuf	2005-10-18	2006-1-17	0.003	0.434	0.033