Supplement of Earth Syst. Sci. Data, 13, 281–298, 2021
https://doi.org/10.5194/essd-13-281-2021-supplement

Open Access Earth System Science Data

Supplement of

A daily, 250 m and real-time gross primary productivity product (2000–present) covering the contiguous United States

Chongya Jiang et al.

Correspondence to: Chongya Jiang (chongya.jiang@email.com) and Kaiyu Guan (kaiyuguan@gmail.com)

Table S1. SURFRAD sites used for the modeling and evaluation of PAR.

Code	Name	Latitude	Longitude	For PAR modeling	For PAR evaluation
BON	Bondville	40.0519	-88.3731	2000 – 2018	2019
TBL	Table Mountain	40.1250	-105.2368	2000 – 2018	2019
DRA	Desert Rock	36.6237	-116.0195	2000 – 2018	2019
FPK	Fort Peck	48.3078	-105.1017	2000 – 2018	2019
GWN	Goodwin Creek	34.2547	-89.8729	2000 – 2018	2019
PSU	Penn. State Univ.	40.7201	-77.9309	2000 – 2018	2019
SXF	Sioux Falls	43.7340	-96.6233	2003 – 2018	2019

Table S2. AmeriFlux sites used for the evaluation of PAR.

Site	Land cover	Latitude	Longitude	For PAR evaluation
US-AR1	GRA	36.4267	-99.4200	2009 – 2012
US-AR2	GRA	36.6358	-99.5975	2009 – 2012
US-ARb	GRA	35.5497	-98.0402	2005 – 2006
US-ARc	GRA	35.5465	-98.0400	2005 – 2006
US-ARM	CRO	36.6058	-97.4888	2003 – 2012
US-Blo	ENF	38.8953	-120.6328	2002 – 2007
US-GBT	ENF	41.3658	-106.2397	2002 – 2003, 2005 – 2006
US-GLE	ENF	41.3665	-106.2399	2005 – 2014
US-Ha1	DBF	42.5378	-72.1715	2002 – 2012
US-KS2	CSH	28.6086	-80.6715	2003 – 2006
US-Los	WET	46.0827	-89.9792	2002 – 2008, 2010, 2014
US-Me1	ENF	44.5794	-121.5000	2004 – 2005
US-Me2	ENF	44.4523	-121.5574	2013 – 2014
US-Me6	ENF	44.3233	-121.6078	2011 – 2014
US-MMS	DBF	39.3232	-86.4131	2002 – 2014
US-Myb	WET	38.0498	-121.7651	2011 – 2014
US-Ne1	CRO	41.1651	-96.4766	2002 – 2013
US-Ne2	CRO	41.1649	-96.4701	2002 – 2013
US-Ne3	CRO	41.1797	-96.4397	2002 – 2013
US-NR1	ENF	40.0329	-105.5464	2002 – 2014
US-PFa	MF	45.9459	-90.2723	2002 – 2014
US-SRG	GRA	31.7894	-110.8277	2008 – 2014
US-SRM	WSA	31.8214	-110.8661	2004 – 2014
US-Syv	MF	46.2420	-89.3477	2002 – 2008, 2012 – 2014
US-Ton	WSA	38.4316	-120.9660	2002 – 2014
US-Tw1	WET	38.1074	-121.6469	2012 – 2014
US-Tw2	CRO	38.1047	-121.6433	2012 – 2013
US-Tw3	CRO	38.1159	-121.6467	2013 – 2014
US-Tw4	WET	38.1030	-121.6414	2014
US-Twt	CRO	38.1087	-121.6530	2009 – 2014
US-UMB	DBF	45.5598	-84.7138	2002 – 2014
US-UMd	DBF	45.5625	-84.6975	2007 – 2014
US-Var	GRA	38.4133	-120.9507	2002 – 2014
US-WCr	DBF	45.8059	-90.0799	2002 – 2006, 2008 – 2014
US-Whs	OSH	31.7438	-110.0522	2007 – 2014
US-Wi0	ENF	46.6188	-91.0814	2002
US-Wi3	DBF	46.6347	-91.0987	2002, 2004
US-Wi4	ENF	46.7393	-91.1663	2002, 2004 – 2005
US-Wi6	OSH	46.6249	-91.2982	2002
US-Wi9	ENF	46.6188	-91.0814	2004 – 2005
US-Wkg	GRA	31.7365	-109.9419	2004 – 2014

Table S3. AmeriFlux sites used for the modeling and evaluation of PUE and GPP.

Site	Land cover	Latitude	Longitude	For PUE and GPP modeling and evaluation
US-AR1	GRA	36.4267	-99.4200	2009 – 2012
US-AR2	GRA	36.6358	-99.5975	2009 – 2012
US-ARb	GRA	35.5497	-98.0402	2005 – 2006
US-ARc	GRA	35.5465	-98.0400	2005 – 2006
US-ARM	CRO	36.6058	-97.4888	2003 – 2012
US-Blo	ENF	38.8953	-120.6328	2000 – 2007
US-Cop	GRA	38.0900	-109.3900	2001 – 2003, 2006 – 2007
US-GBT	ENF	41.3658	-106.2397	2002 – 2003
US-GLE	ENF	41.3665	-106.2399	2005 – 2014
US-Ha1	DBF	42.5378	-72.1715	2000 – 2012
US-KS2	CSH	28.6086	-80.6715	2003 – 2006
US-Los	WET	46.0827	-89.9792	2000 – 2008, 2010, 2014
US-Me1	ENF	44.5794	-121.5000	2004 – 2005
US-Me2	ENF	44.4523	-121.5574	2002 – 2014
US-Me6	ENF	44.3233	-121.6078	2010 – 2014
US-MMS	DBF	39.3232	-86.4131	2000 – 2014
US-Myb	WET	38.0498	-121.7651	2011 – 2014
US-Ne1	CRO	41.1651	-96.4766	2001 – 2012
US-Ne2	CRO	41.1649	-96.4701	2001 – 2012
US-Ne3	CRO	41.1797	-96.4397	2001 – 2012
US-NR1	ENF	40.0329	-105.5464	2000 – 2014
US-ORv	WET	40.0201	-83.0183	2011
US-PFa	MF	45.9459	-90.2723	2000 – 2014
US-SRG	GRA	31.7894	-110.8277	2008 – 2014
US-SRM	WSA	31.8214	-110.8661	2004 – 2014
US-Syv	MF	46.2420	-89.3477	2001 – 2007, 2012 – 2014
US-Ton	WSA	38.4316	-120.9660	2001 – 2014
US-Tw1	WET	38.1074	-121.6469	2012 – 2014
US-Tw2	CRO	38.1047	-121.6433	2012
US-Tw3	CRO	38.1159	-121.6467	2013 – 2014
US-Tw4	WET	38.1030	-121.6414	2014
US-Twt	CRO	38.1087	-121.6530	2009 – 2014
US-UMB	DBF	45.5598	-84.7138	2000 – 2014
US-UMd	DBF	45.5625	-84.6975	2007 – 2014
US-Var	GRA	38.4133	-120.9507	2001 – 2014
US-WCr	DBF	45.8059	-90.0799	2000 – 2006, 2011 – 2014
US-Whs	OSH	31.7438	-110.0522	2007 – 2014
US-Wi0	ENF	46.6188	-91.0814	2002
US-Wi3	DBF	46.6347	-91.0987	2002, 2004
US-Wi4	ENF	46.7393	-91.1663	2002, 2004 – 2005
US-Wi6	OSH	46.6249	-91.2982	2002
US-Wi9	ENF	46.6188	-91.0814	2004 – 2005
US-Wkg	GRA	31.7365	-109.9419	2004 – 2014
US-Bo1	CRO	40.0062	-88.2904	2000 – 2007
US-Ha2	ENF	42.5393	-72.1779	2004
US-Ho2	ENF	45.2091	-68.7470	2000 – 2004
US-NC2	ENF	35.8030	-76.6685	2005 – 2006
US-Ro1	CRO	44.7143	-93.0898	2004 – 2006
US-Ro3	CRO	44.7217	-93.0893	2004 – 2006

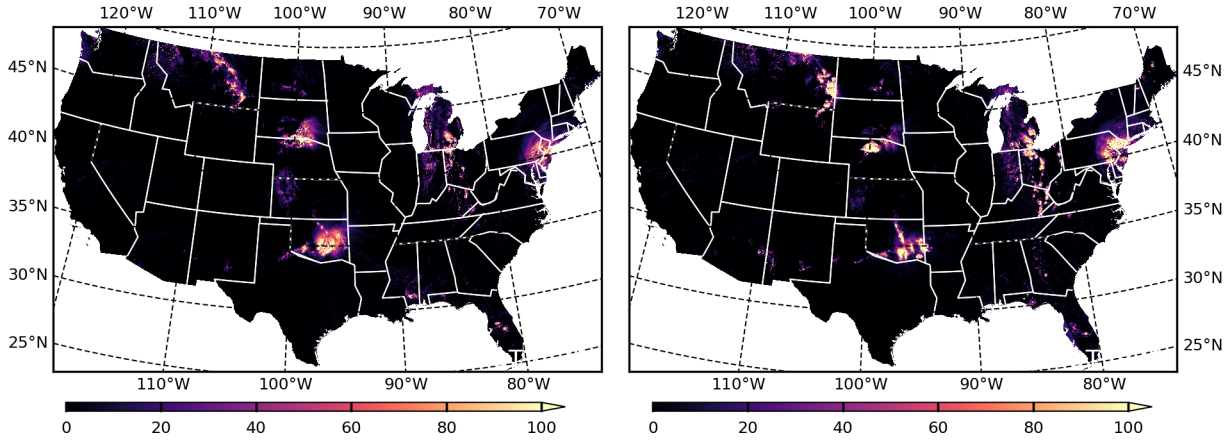

Figure S1. Spatial distribution of cloud optical thickness in (a) A.M. and (b) P.M. on Jul 10, 2020.

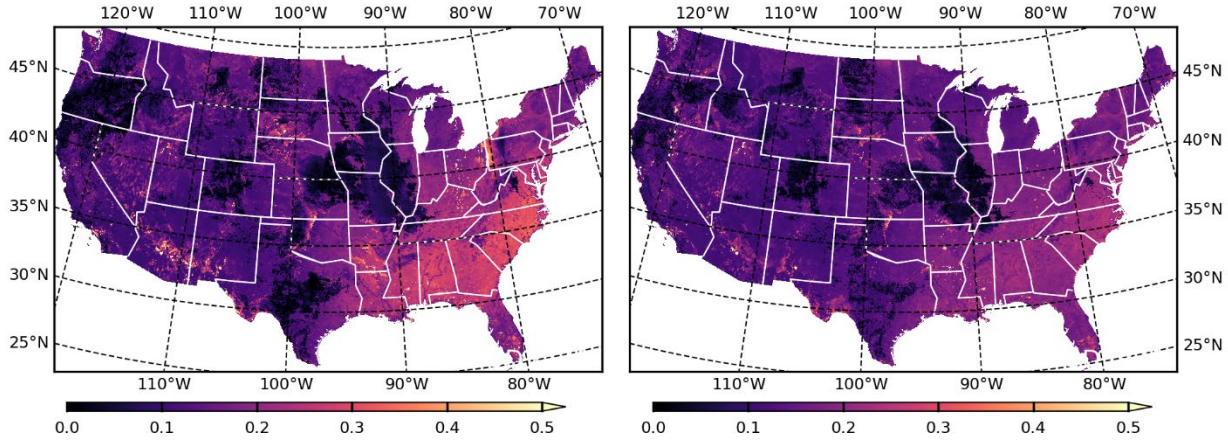

Figure S2. Spatial distribution of aerosol optical depth in (a) A.M. and (b) P.M. on Jul 10, 2020.

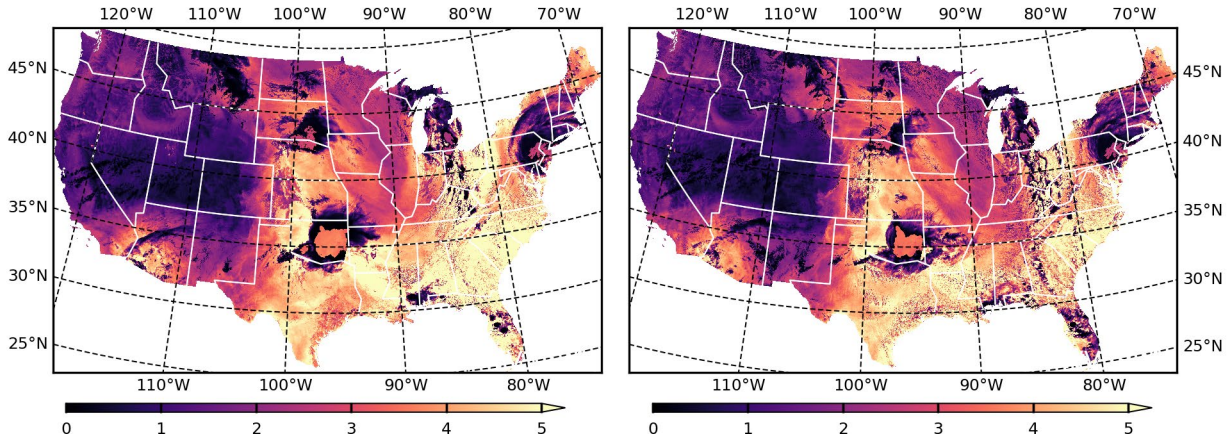

Figure S3. Spatial distribution of water vapor in (a) A.M. and (b) P.M. on Jul 10, 2020.

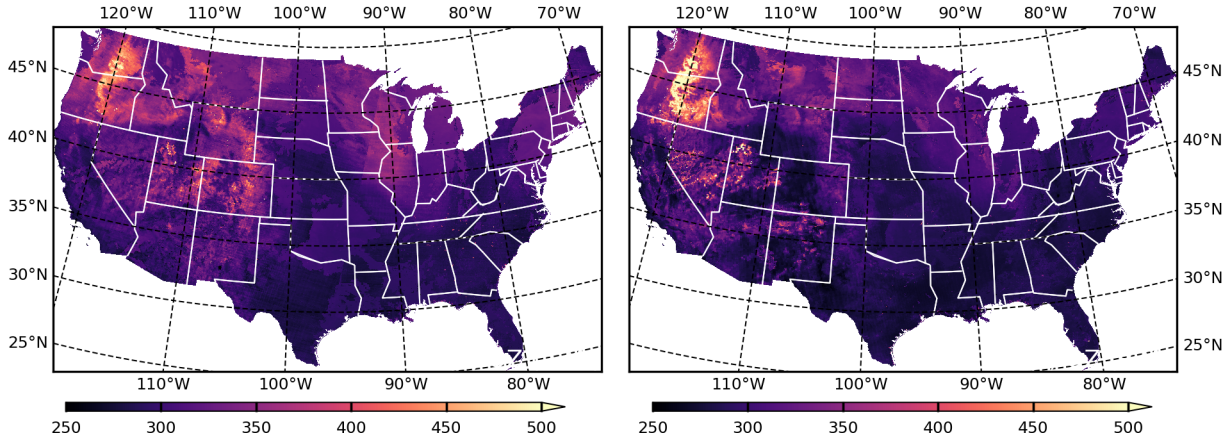

Figure S4. Spatial distribution of total ozone burden in (a) A.M. and (b) P.M. on Jul 10, 2020.

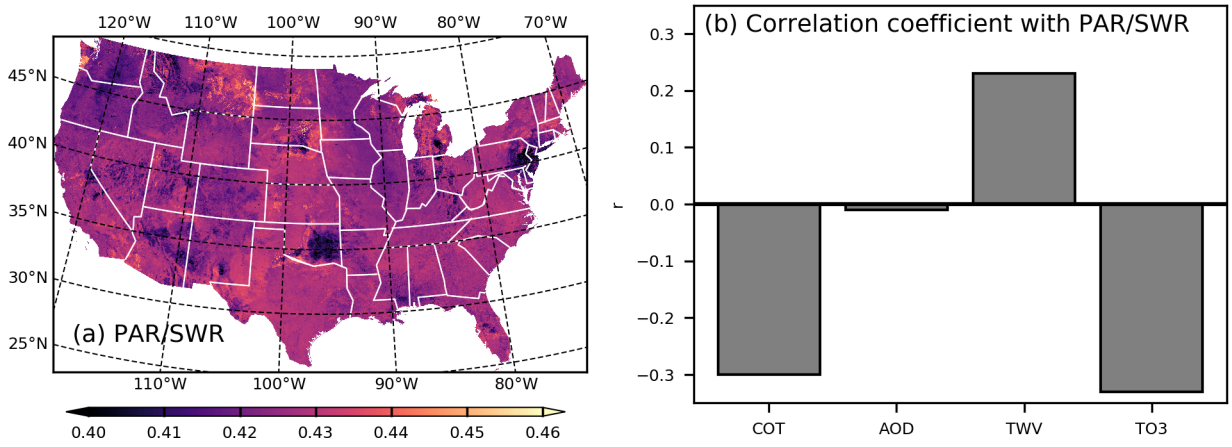

Figure S5. Spatial distribution of PAR/SWR on Jul 10, 2020, and its spatial relationship with COT, AOD, TWV and TO3.

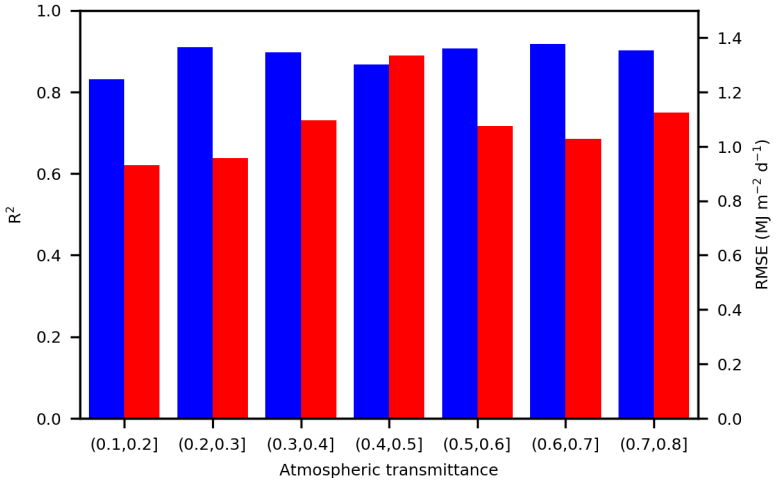

Figure S6. R^2 and RMSE of SLOPE PAR as a function of atmospheric transmittance (SWR/SWR_{TOA}) across seven SURFRAD sites in 2019.

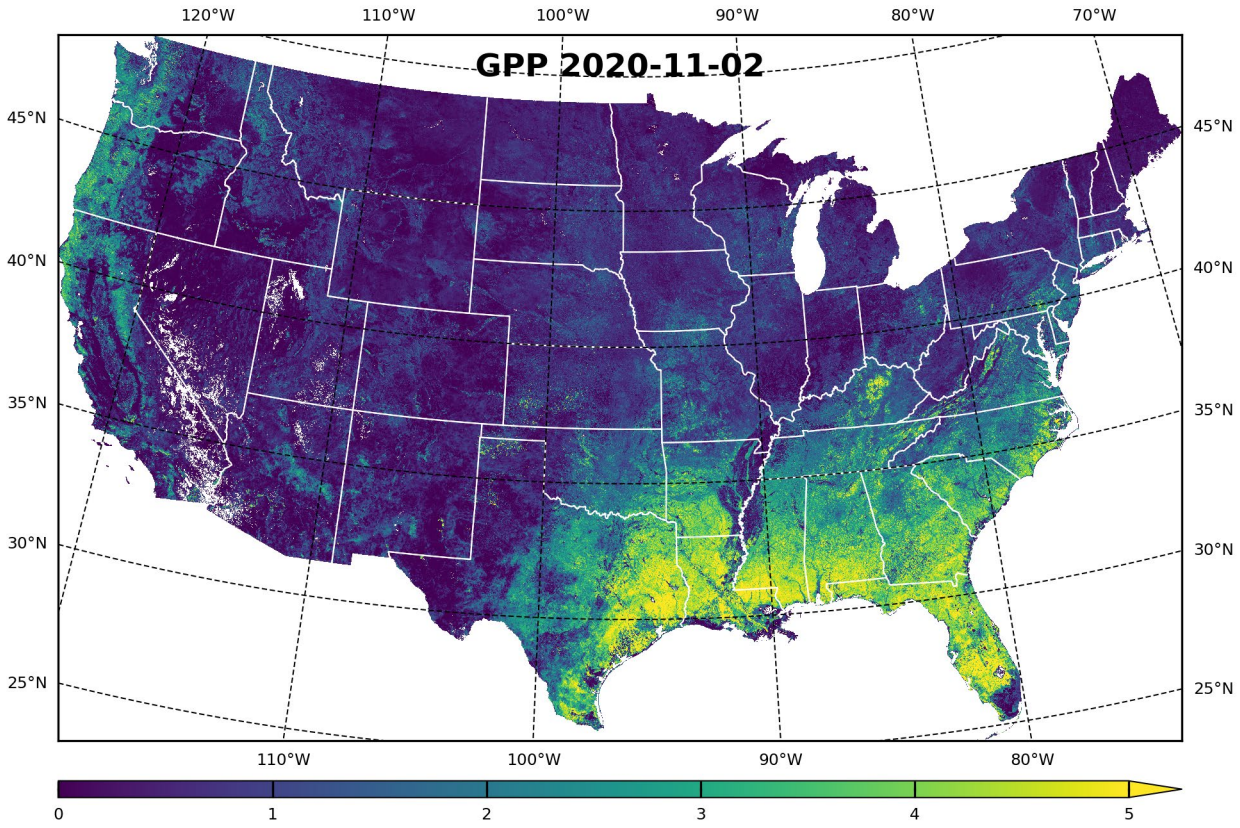

Figure S7. SLOPE GPP (gC m^{-2} d^{-1}) on Nov 2, 2020, two days before the revision.