Supplement of Earth Syst. Sci. Data, 12, 2209–2221, 2020
https://doi.org/10.5194/essd-12-2209-2020-supplement
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Supplement of

DSCOVR/EPIC-derived global hourly and daily downward shortwave and photosynthetically active radiation data at $0.1^\circ \times 0.1^\circ$ resolution

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Table S1. Ground-based stations used in this study, with designated abbreviations, geographical locations, elevations above sea level, and associated sponsoring projects and programs.

Station name	Abbreviation	Location	Latitude (°)	Longitude (°)	Altitude (m)	Project
Ny Alesund, Norway	NYA	Polar, Island/Coast	78.93	11.93	11	BSRN
Tiksi, Russia	TIK	Polar, Tundra	71.59	128.92	48	BSRN
N Slope Alaska	NSA	Polar, Alaska, US	71.32	-156.61	8	DOE Atmospheric Research Measurement (ARM) Program
Barrow, AK	BAR	Polar, Alaska, US	71.32	-156.61	8	BSRN
Toravere, Estonia	TOR	Rural, Grassland	58.25	26.46	70	BSRN
Lindenberg, Germany	LIN	Rural, Cropland	52.22	14.12	125	BSRN
Cabau, Netherlands	CAB	Northern Europe	51.97	4.93	0	BSRN
Fort Peck, MT	FPK	Rural, Grassland	48.31	-105.1	634	SURFRAD
Carpentras, France	CAR	Central Europe	44.08	5.06	100	BSRN
Sioux Falls, SD	SXF	Rural, Cropland	43.73	-96.62	473	SURFRAD
Sapporo, Japan	SAP	Urban	43.06	141.33	17	BSRN
CENER, Spain	CNR	Pamplona, Spain	42.82	-1.6	471	BSRN
Penn State, PA	PSU	Rural, Hilly	40.72	-77.93	376	SURFRAD
Boulder, CO (Table Mountain)	BOS	Rural, Mountains	40.13	-105.24	1689	SURFRAD
Boulder Tower, Colorado, USA	BOU	High Plains, Central US	40.05	-105.01	1584	BSRN
Bondville, IL	BON	Rural, Cropland	40.05	-88.37	230	SURFRAD
Xiang, China	XIA	Desert, Rural	39.75	116.96	32	BSRN
Ashton, Kansas, USA	E09	Great Plains, Central US	37.13	-97.27	386	DOE (ARM) Program
Byron, Oklahoma, USA	E11	Great Plains, Central US	36.88	-98.28	360	DOE (ARM) Program
Pawhuska, Oklahoma, USA	E12	Great Plains, Central US	36.84	-96.43	331	DOE (ARM) Program
Desert Rock, NV	DRA	Desert, Hilly	36.63	-116.02	1007	SURFRAD

ARM/SGP Central Facility (Best Est. Flux)	BEF	Great Plains, Central US	36.61	-97.48	318	DOE (ARM) Program
ARM/SGP Central Facility C01	C01	Great Plains, Central US	36.61	-97.48	318	DOE (ARM) Program
ARM/SGP Central Facility Lamont, OK	E13	Great Plains, Central US	36.61	-97.48	318	DOE (ARM) Program
Ringwood, Oklahoma, USA	E15	Great Plains, Central US	36.43	-98.28	418	DOE (ARM) Program
Tateno, Japan	TAT	Urban	36.05	140.13	25	BSRN
Meeker, Oklahoma, USA	E20	Great Plains, Central US	35.56	-96.99	309	DOE (ARM) Program
Goodwin Creek, MS	GCR	Rural, Cropland	34.25	-89.87	98	SURFRAD
Fukuoka, Japan	FUA	Urban Landscape	33.58	130.38	3	BSRN
Bermuda	BER	N Atlantic Ocean, Island	32.3	-64.77	60	BSRN
Izana, Tenerife Island Spain	IZA	Mountain Top, E Atlantic	28.31	-16.5	2373	BSRN
Ishigakijima, Japan	ISH	Rural Japan	24.34	124.16	6	BSRN
Tamanrasset, Algeria	TAM	Desert, Hilly	22.79	5.53	1385	BSRN
Kwajalein Island	KWA	Island Atoll, Tropical Pacific	8.72	167.72	10	BSRN
Petrolina, Brazil	PTR	Rural	-9.07	-40.32	387	BSRN
Cocos Island	COC	Tropical Indian Ocean	-12.15	96.83	0	BSRN
Darwin, Australia	DWN	Tropical West Pacific	-12.43	130.89	30	BSRN
Gobabeb Namib Desert	GOB	Namibia	-23.56	15.04	407	BSRN
Alice Springs, Australia	ASP	Desert, Central Australia	-23.8	133.89	547	BSRN
Sao Martinho da Serra, Brazil	SMS	Rural	-29.44	-53.82	489	BSRN
De Aar, South Africa	DAA	Grassland, S Africa	-30.67	24	1311	BSRN
Lauder, New Zealand	LAU	Rural, Cropland	-45.03	169.68	370	BSRN
Dome C, Antarctica	DOM	Antarctic Plateau	-75.1	123.38	3233	BSRN

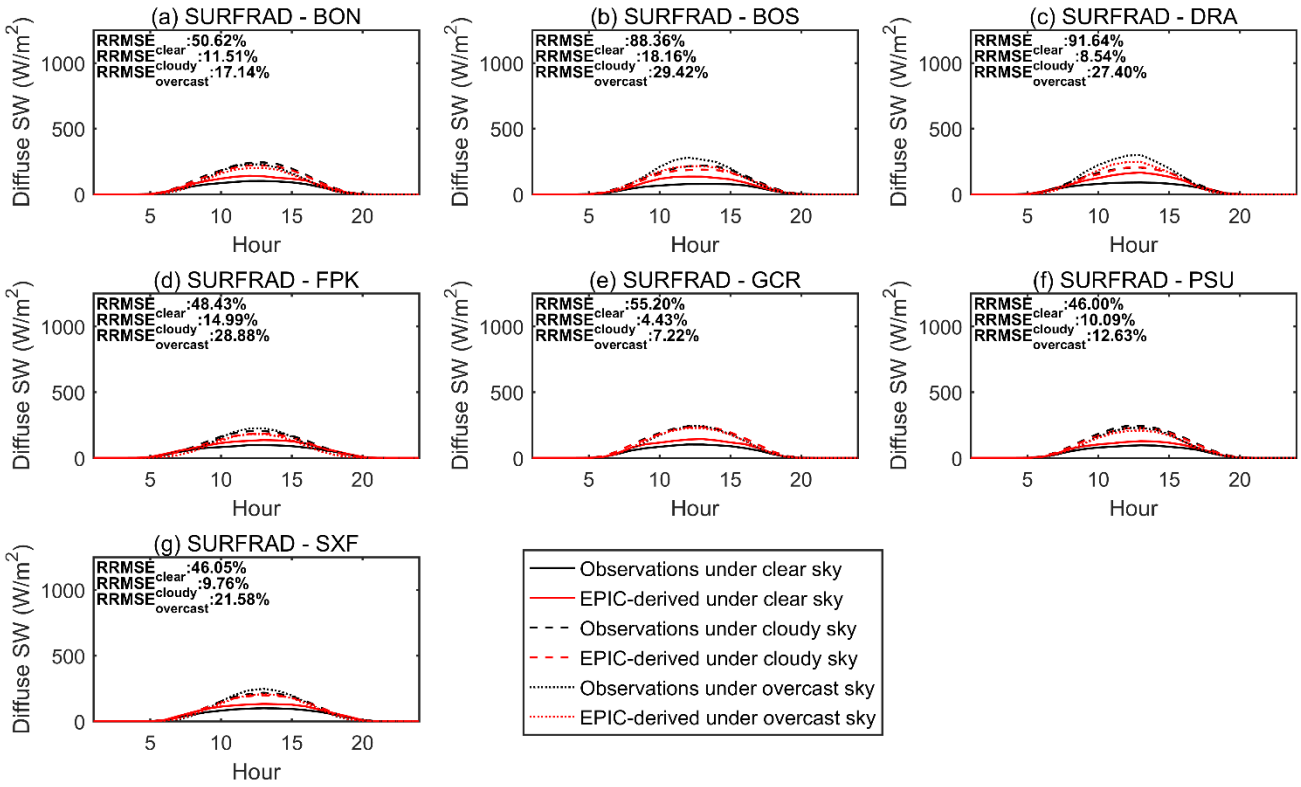

Fig. S1. Averaged diurnal variations of EPIC- and ground-based diffuse SW radiation flux (W/m^2) under different sky conditions at 7 SURFRAD sites.

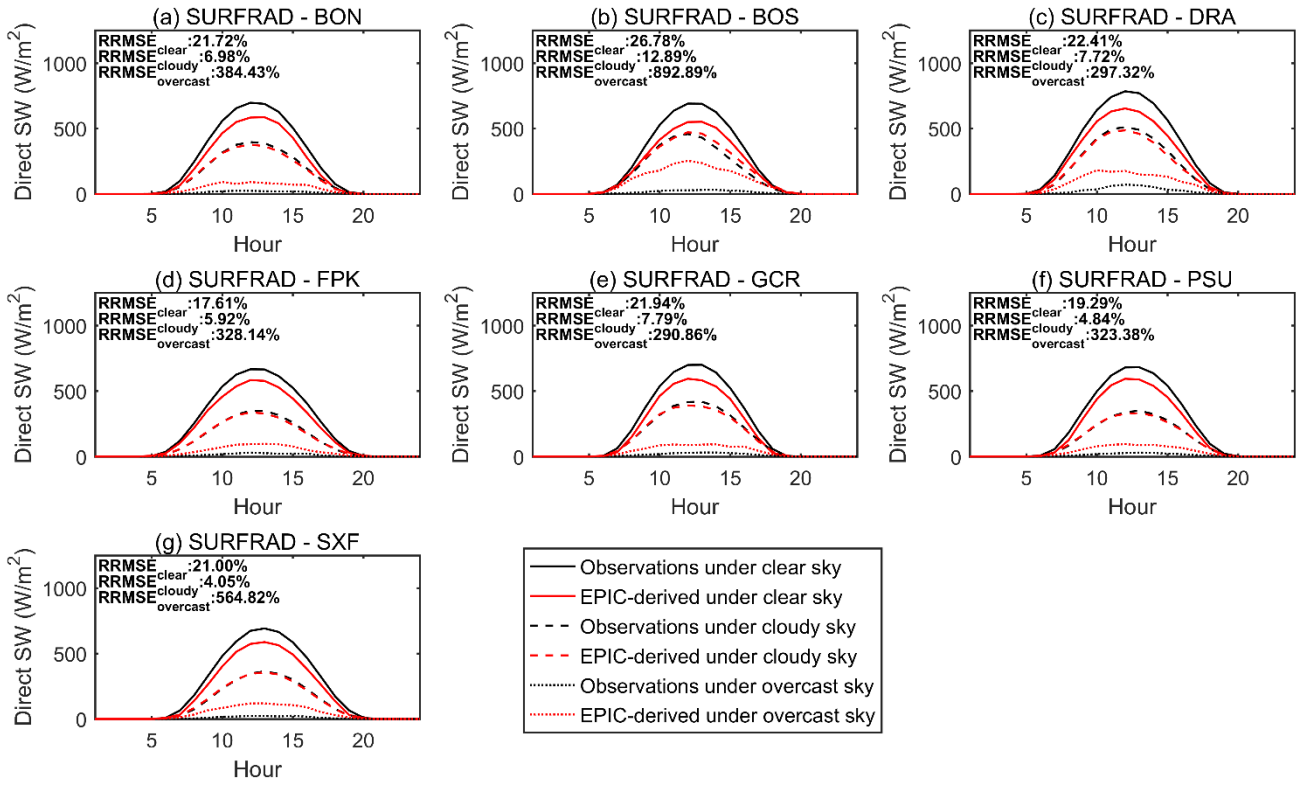

Fig. S2. Averaged diurnal variations of EPIC- and ground-based direct SW radiation flux (W/m^2) under different sky conditions at 7 SURFRAD sites.

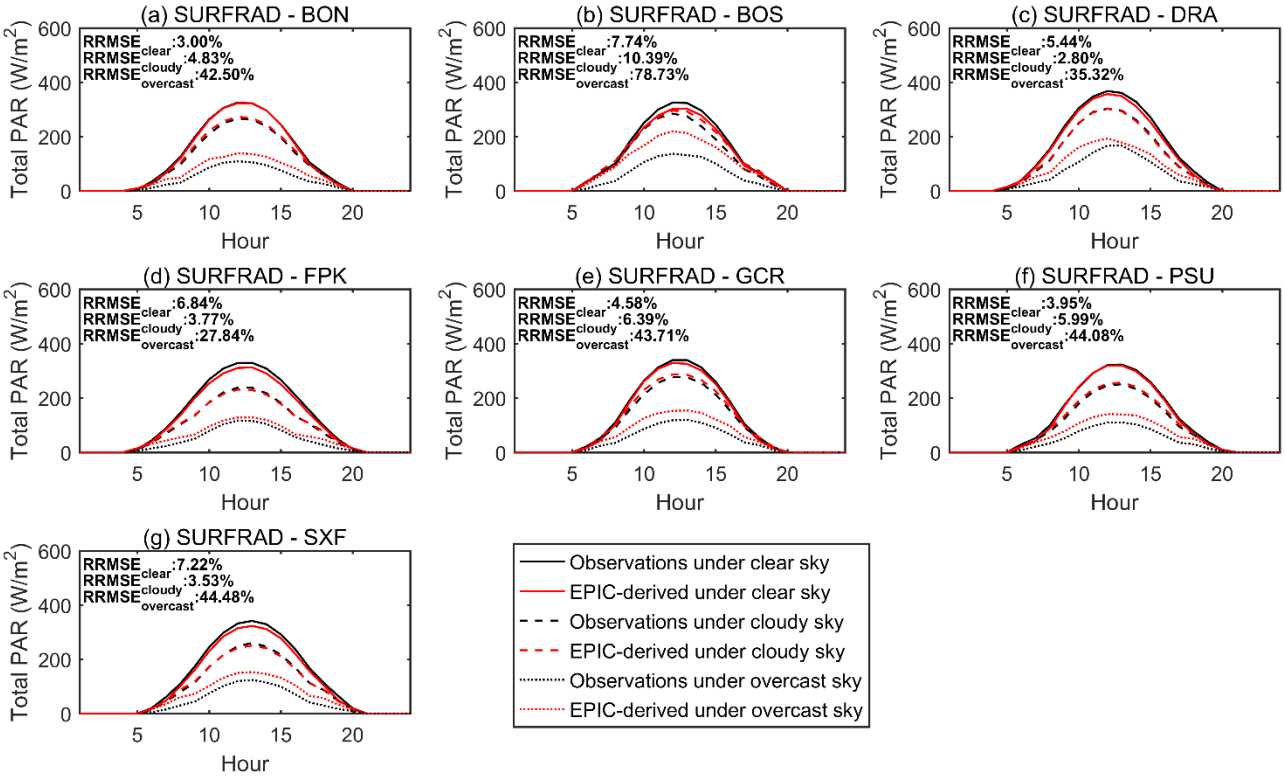

Fig. S3. Averaged diurnal variations of EPIC- and ground-based total PAR flux (W/m^2) under different sky conditions at 7 SURFRAD sites.

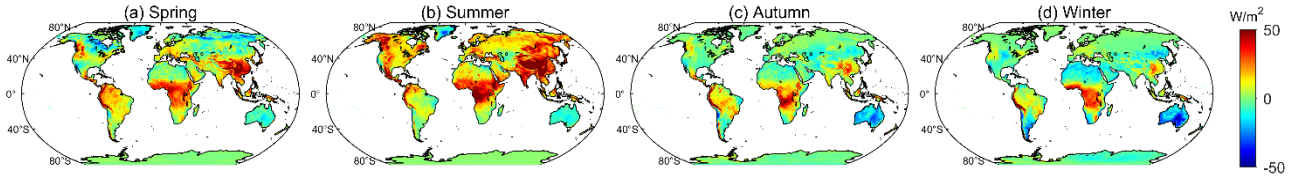

Fig. S4. Global distributions of the differences between EPIC- and CERES-based total SW radiation flux (W/m^2) for different seasons during the study period (2016-2018).

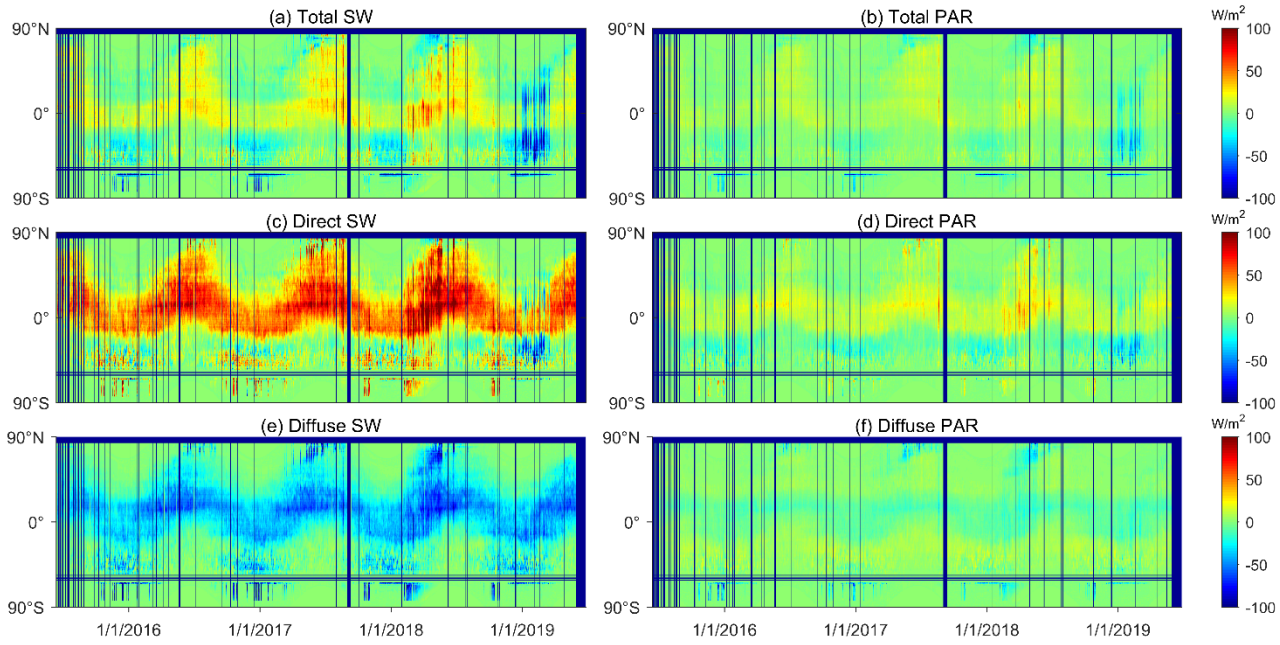

Fig. S5. Temporal variations of the differences between EPIC- and CERES-based zonally-averaged daily SW/PAR fluxes (W/m^2) over global land areas.