Supplement of

DSCOVR/EPIC-derived global hourly and daily downward shortwave and photosynthetically active radiation data at 0.1° × 0.1° resolution

Dalei Hao et al.

Correspondence to: Min Chen (min.chen@pnnl.gov)

The copyright of individual parts of the supplement might differ from the CC BY 4.0 License.
Table S1. Ground-based stations used in this study, with designated abbreviations, geographical locations, elevations above sea level, and associated sponsoring projects and programs.

<table>
<thead>
<tr>
<th>Station name</th>
<th>Abbreviation</th>
<th>Location</th>
<th>Latitude (°)</th>
<th>Longitude (°)</th>
<th>Altitude (m)</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ny Alesund, Norway</td>
<td>NYA</td>
<td>Polar, Island/Coast</td>
<td>78.93</td>
<td>11.93</td>
<td>11</td>
<td>BSRN</td>
</tr>
<tr>
<td>Tiksi, Russia</td>
<td>TIK</td>
<td>Polar, Tundra</td>
<td>71.59</td>
<td>128.92</td>
<td>48</td>
<td>BSRN, DOE Atmospheric Research Measurement Program</td>
</tr>
<tr>
<td>N Slope Alaska</td>
<td>NSA</td>
<td>Polar, Alaska, US</td>
<td>71.32</td>
<td>-156.61</td>
<td>8</td>
<td>BSRN</td>
</tr>
<tr>
<td>Barrow, AK</td>
<td>BAR</td>
<td>Polar, Alaska, US</td>
<td>71.32</td>
<td>-156.61</td>
<td>8</td>
<td>BSRN</td>
</tr>
<tr>
<td>Toravere, Estonia</td>
<td>TOR</td>
<td>Rural, Grassland</td>
<td>58.25</td>
<td>26.46</td>
<td>70</td>
<td>BSRN</td>
</tr>
<tr>
<td>Lindenberg, Germany</td>
<td>LIN</td>
<td>Rural, Cropland</td>
<td>52.22</td>
<td>14.12</td>
<td>125</td>
<td>BSRN</td>
</tr>
<tr>
<td>Cabau, Netherlands</td>
<td>CAB</td>
<td>Northern Europe, Rural, Cropland</td>
<td>51.97</td>
<td>4.93</td>
<td>0</td>
<td>BSRN</td>
</tr>
<tr>
<td>Fort Peck, MT</td>
<td>FPK</td>
<td>Rural, Grassland</td>
<td>48.31</td>
<td>-105.1</td>
<td>634</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Carpentras, France</td>
<td>CAR</td>
<td>Central Europe</td>
<td>44.08</td>
<td>5.06</td>
<td>100</td>
<td>BSRN</td>
</tr>
<tr>
<td>Sioux Falls, SD</td>
<td>SXF</td>
<td>Rural, Cropland</td>
<td>43.73</td>
<td>-96.62</td>
<td>473</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Sapporo, Japan</td>
<td>SAP</td>
<td>Urban</td>
<td>43.06</td>
<td>141.33</td>
<td>17</td>
<td>BSRN</td>
</tr>
<tr>
<td>CENER, Spain</td>
<td>CNR</td>
<td>Pamplona, Spain</td>
<td>42.82</td>
<td>-1.6</td>
<td>471</td>
<td>BSRN</td>
</tr>
<tr>
<td>Penn State, PA</td>
<td>PSU</td>
<td>Rural, Hilly</td>
<td>40.72</td>
<td>-77.93</td>
<td>376</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Boulder, CO (Table Mountain)</td>
<td>BOS</td>
<td>Rural, Mountains</td>
<td>40.13</td>
<td>-105.24</td>
<td>1689</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Boulder Tower, Colorado, USA</td>
<td>BOU</td>
<td>High Plains, Central US</td>
<td>40.05</td>
<td>-105.01</td>
<td>1584</td>
<td>BSRN</td>
</tr>
<tr>
<td>Bondville, IL</td>
<td>BON</td>
<td>Rural, Cropland</td>
<td>40.05</td>
<td>-88.37</td>
<td>230</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Xiang, China</td>
<td>XIA</td>
<td>Desert, Rural</td>
<td>39.75</td>
<td>116.96</td>
<td>32</td>
<td>BSRN</td>
</tr>
<tr>
<td>Ashton, Kansas, USA</td>
<td>E09</td>
<td>Great Plains, Central US</td>
<td>37.13</td>
<td>-97.27</td>
<td>386</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>Byron, Oklahoma, USA</td>
<td>E11</td>
<td>Great Plains, Central US</td>
<td>36.88</td>
<td>-98.28</td>
<td>360</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>Pawhuska, Oklahoma, USA</td>
<td>E12</td>
<td>Great Plains, Central US</td>
<td>36.84</td>
<td>-96.43</td>
<td>331</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>Desert Rock, NV</td>
<td>DRA</td>
<td>Desert, Hilly</td>
<td>36.63</td>
<td>-116.02</td>
<td>1007</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Location</td>
<td>Code</td>
<td>Region</td>
<td>Latitude</td>
<td>Longitude</td>
<td>Flux</td>
<td>Program</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------</td>
<td>-------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>------</td>
<td>---------------</td>
</tr>
<tr>
<td>ARM/SGP Central Facility (Best Est. Flux)</td>
<td>BEF</td>
<td>Great Plains, Central US</td>
<td>36.61</td>
<td>-97.48</td>
<td>318</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>ARM/SGP Central Facility C01</td>
<td>C01</td>
<td>Great Plains, Central US</td>
<td>36.61</td>
<td>-97.48</td>
<td>318</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>ARM/SGP Central Facility Lamont, OK</td>
<td>E13</td>
<td>Great Plains, Central US</td>
<td>36.61</td>
<td>-97.48</td>
<td>318</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>Ringwood, Oklahoma, USA</td>
<td>E15</td>
<td>Great Plains, Central US</td>
<td>36.43</td>
<td>-98.28</td>
<td>418</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>Tateno, Japan</td>
<td>TAT</td>
<td>Urban</td>
<td>36.05</td>
<td>140.13</td>
<td>25</td>
<td>BSRN</td>
</tr>
<tr>
<td>Meeker, Oklahoma, USA</td>
<td>E20</td>
<td>Great Plains, Central US</td>
<td>35.56</td>
<td>-96.99</td>
<td>309</td>
<td>DOE (ARM) Program</td>
</tr>
<tr>
<td>Goodwin Creek, MS</td>
<td>GCR</td>
<td>Rural, Cropland</td>
<td>34.25</td>
<td>-89.87</td>
<td>98</td>
<td>SURFRAD</td>
</tr>
<tr>
<td>Fukuoka, Japan</td>
<td>FUA</td>
<td>Urban Landscape</td>
<td>33.58</td>
<td>130.38</td>
<td>3</td>
<td>BSRN</td>
</tr>
<tr>
<td>Bermuda</td>
<td>BER</td>
<td>N Atlantic Ocean, Island</td>
<td>32.3</td>
<td>-64.77</td>
<td>60</td>
<td>BSRN</td>
</tr>
<tr>
<td>Izana, Tenerife Island Spain</td>
<td>IZA</td>
<td>Mountain Top, E Atlantic</td>
<td>28.31</td>
<td>-16.5</td>
<td>2373</td>
<td>BSRN</td>
</tr>
<tr>
<td>Ishigakijima, Japan</td>
<td>ISH</td>
<td>Rural Japan</td>
<td>24.34</td>
<td>124.16</td>
<td>6</td>
<td>BSRN</td>
</tr>
<tr>
<td>Tamanrasset, Algeria</td>
<td>TAM</td>
<td>Desert, Hilly</td>
<td>22.79</td>
<td>5.53</td>
<td>1385</td>
<td>BSRN</td>
</tr>
<tr>
<td>Kwajalein Island</td>
<td>KWA</td>
<td>Island Atoll, Tropical Pacific</td>
<td>8.72</td>
<td>167.72</td>
<td>10</td>
<td>BSRN</td>
</tr>
<tr>
<td>Petrolina, Brazil</td>
<td>PTR</td>
<td>Rural</td>
<td>-9.07</td>
<td>-40.32</td>
<td>387</td>
<td>BSRN</td>
</tr>
<tr>
<td>Cocos Island</td>
<td>COC</td>
<td>Tropical Indian Ocean</td>
<td>-12.15</td>
<td>96.83</td>
<td>0</td>
<td>BSRN</td>
</tr>
<tr>
<td>Darwin, Australia</td>
<td>DWN</td>
<td>Tropical West Pacific</td>
<td>-12.43</td>
<td>130.89</td>
<td>30</td>
<td>BSRN</td>
</tr>
<tr>
<td>Gobabeb Namib Desert</td>
<td>GOB</td>
<td>Namibia</td>
<td>-23.56</td>
<td>15.04</td>
<td>407</td>
<td>BSRN</td>
</tr>
<tr>
<td>Alice Springs, Australia</td>
<td>ASP</td>
<td>Desert, Central Australia</td>
<td>-23.8</td>
<td>133.89</td>
<td>547</td>
<td>BSRN</td>
</tr>
<tr>
<td>Sao Martinho da Serra, Brazil</td>
<td>SMS</td>
<td>Rural</td>
<td>-29.44</td>
<td>-53.82</td>
<td>489</td>
<td>BSRN</td>
</tr>
<tr>
<td>De Aar, South Africa</td>
<td>DAA</td>
<td>Grassland, S Africa</td>
<td>-30.67</td>
<td>24</td>
<td>1311</td>
<td>BSRN</td>
</tr>
<tr>
<td>Lauder, New Zealand</td>
<td>LAU</td>
<td>Rural, Cropland</td>
<td>-45.03</td>
<td>169.68</td>
<td>370</td>
<td>BSRN</td>
</tr>
<tr>
<td>Dome C, Antarctica</td>
<td>DOM</td>
<td>Antarctic Plateau</td>
<td>-75.1</td>
<td>123.38</td>
<td>3233</td>
<td>BSRN</td>
</tr>
</tbody>
</table>
Fig. S1. Averaged diurnal variations of EPIC- and ground-based diffuse SW radiation flux (W/m²) under different sky conditions at 7 SURFRAD sites.
**Fig. S2.** Averaged diurnal variations of EPIC- and ground-based direct SW radiation flux (W/m²) under different sky conditions at 7 SURFRAD sites.
Fig. S3. Averaged diurnal variations of EPIC- and ground-based total PAR flux (W/m²) 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/m²) 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.