***Supporting information for:***

No evidence for a negative effect of growing season photosynthesis on leaf senescence timing

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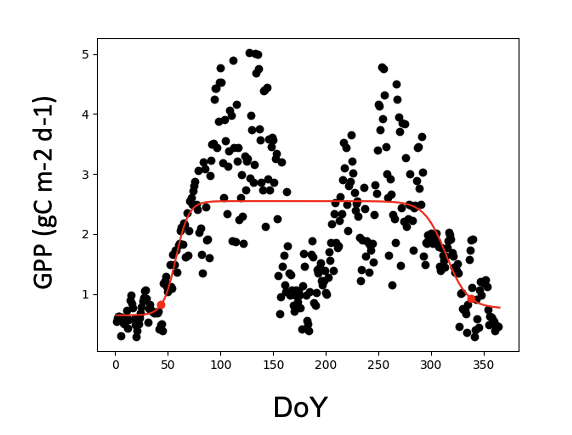
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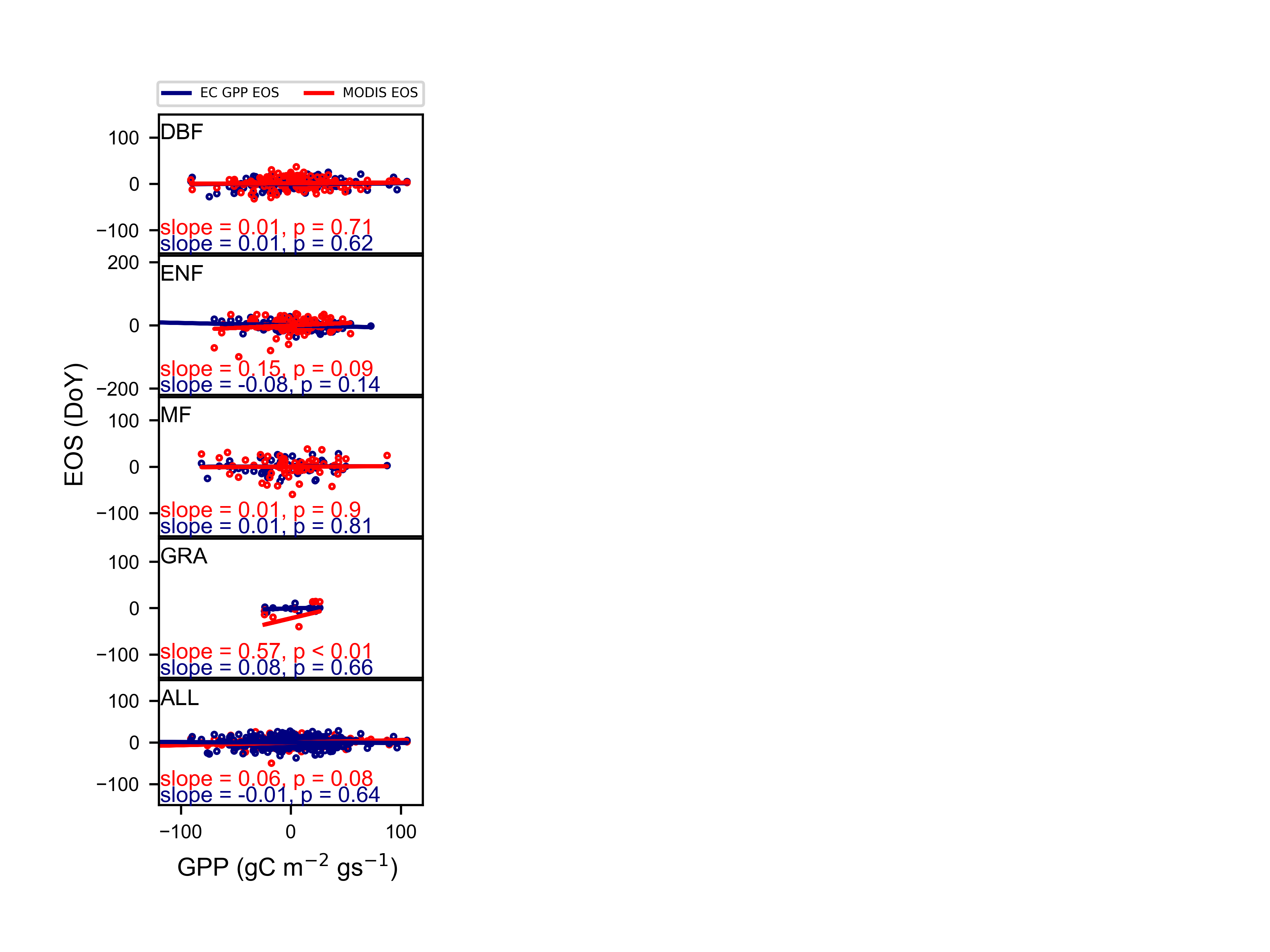
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**Table S1.** Description for the sites used in this study. Lat, Lon indicated the latitude and longitude of the site respectively; and FY and LY presented the first and last year of observations available. Here, we used the International Geosphere-Biosphere Program (IGBP) scheme to identify the biome types of different sites: evergreen needleleaf forest (ENF), grassland (GRA), deciduous broadleaf forest (DBF), open shrubland (OSH), mixed forest (MF), woody savanna (SVA), wetland (WET) and evergreen broadleaf forest (EBF) sites.

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| --- | --- | --- | --- | --- | --- | --- |
| Site | IGBP | Lat | Lon | FY | LY | DOI |
| FI-Hyy | ENF | 61.85 | 61.85 | 1996 | 2014 | 10.18140/FLX/1440158 |
| CA-Obs | ENF | 53.99 | 53.99 | 1997 | 2010 | 10.18140/FLX/1440044 |
| CA-Let | GRA | 49.71 | 49.71 | 1998 | 2008 | 10.17190/AMF/1436318 |
| US-MMS | DBF | 39.32 | 39.32 | 1999 | 2014 | 10.18140/FLX/1440083 |
| US-NC2 | ENF | 35.80 | 35.80 | 2005 | 2017 | 10.17190/AMF/1246083 |
| CA-Ojp | ENF | 53.92 | 53.92 | 1996 | 2010 | 10.17190/AMF/1375199 |
| IT-MBo | GRA | 46.01 | 46.01 | 2003 | 2013 | 10.18140/FLX/1440170 |
| US-EML | OSH | 63.88 | 63.88 | 2008 | 2017 | 10.17190/AMF/1418678 |
| BE-Vie | MF | 50.30 | 50.30 | 1996 | 2014 | 10.18140/FLX/1440130 |
| CA-Oas | DBF | 53.63 | 53.63 | 1996 | 2010 | 10.18140/FLX/1440043 |
| US-Syv | MF | 46.24 | 46.24 | 2001 | 2017 | 10.18140/FLX/1440091 |
| US-Vcm | ENF | 35.89 | 35.89 | 2007 | 2017 | 10.17190/AMF/1246121 |
| NL-Loo | ENF | 52.17 | 52.17 | 1996 | 2014 | 10.18140/FLX/1440178 |
| DE-Hai | DBF | 51.08 | 51.08 | 2000 | 2012 | 10.18140/FLX/1440148 |
| CA-Cbo | DBF | 44.32 | 44.32 | 1994 | 2014 | 10.17190/AMF/1498755 |
| CA-Ca1 | ENF | 49.87 | 49.87 | 1996 | 2010 | 10.17190/AMF/1480300 |
| CA-Gro | MF | 48.22 | 48.22 | 2003 | 2014 | 10.18140/FLX/1440034 |
| US-UMB | DBF | 45.56 | 45.56 | 2007 | 2017 | 10.18140/FLX/1440093 |
| CA-Man | ENF | 55.88 | 55.88 | 1994 | 2008 | 10.18140/FLX/1440035 |
| US-Ha1 | DBF | 42.54 | 42.54 | 1991 | 2012 | 10.18140/FLX/1440071 |
| CA-Ca3 | ENF | 49.53 | 49.53 | 2000 | 2010 | 10.17190/AMF/1480302 |
| US-UMd | DBF | 45.56 | 45.56 | 2007 | 2017 | 10.18140/FLX/1440101 |
| IT-Col | DBF | 41.85 | 41.85 | 1996 | 2014 | 10.18140/FLX/1440167 |
| US-NR1 | ENF | 40.03 | 40.03 | 1998 | 2017 | 10.18140/FLX/1440087 |
| BE-Bra | MF | 51.31 | 51.31 | 1996 | 2014 | 10.18140/FLX/1440128 |
| DE-Tha | ENF | 50.96 | 50.96 | 1996 | 2014 | 10.18140/FLX/1440152 |
| US-Blo | ENF | 38.90 | 38.90 | 1997 | 2007 | 10.18140/FLX/1440068 |
| US-Wjs | SAV | 34.43 | 34.43 | 2007 | 2017 | 10.17190/AMF/1246120 |
| US-SRG | GRA | 31.79 | 31.79 | 2008 | 2017 | 10.18140/FLX/1440114 |
| US-Wkg | GRA | 31.74 | 31.74 | 2004 | 2017 | 10.18140/FLX/1440096 |
| DE-Lnf | DBF | 51.33 | 51.33 | 2002 | 2012 | 10.18140/FLX/1440150 |
| US-Me2 | ENF | 44.45 | 44.45 | 2002 | 2017 | 10.18140/FLX/1440079 |
| US-GLE | ENF | 41.37 | 41.37 | 1999 | 2017 | 10.18140/FLX/1440069 |
| US-Los | WET | 46.08 | 46.08 | 2000 | 2017 | 10.18140/FLX/1440076 |
| US-Ho1 | ENF | 45.20 | 45.20 | 1996 | 2017 | 10.17190/AMF/1246061 |
| DK-Sor | DBF | 55.49 | 55.49 | 1996 | 2014 | 10.18140/FLX/1440155 |
| IT-Cpz | EBF | 41.71 | 41.71 | 1997 | 2009 | 10.18140/FLX/1440168 |
| CH-Lae | MF | 47.48 | 47.48 | 2004 | 2014 | 10.18140/FLX/1440134 |
| US-WCr | DBF | 45.81 | 45.81 | 1999 | 2014 | 10.18140/FLX/1440095 |

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**Fig. S1.** The time series of gross primary productivity (GPP) at the site of US-Vcp in the year of 2007, indicating a double-peaked growing season. We excluded such double-peaked sites.



**Fig. S2.** Similar to Fig.1., but using the daytime partitioning method.

Diagram

Description automatically generated

**Fig. S3**. The comparison between end of season (EOS) dates estimated from flux tower derived gross primary productivity (GPP) and MODIS EOS in different ecosystems.

Chart, scatter chart

Description automatically generated

**Fig. 4.** The relationship between growing season photosynthesis (GPP) and ground observed leaf senescence or remotely sensed end of season (EOS).