

Supporting Information for

Climate Warming Benefits Plant Growth but Not Net Carbon Uptake: Simulation of Alaska Tundra and Needle Leaf Forest Using LPJ-GUESS

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Contents of this file

Text S1

Text S2

Text S3

Introduction

The supporting information contains detailed information of FLUXNET data (Text S1).

The supporting information contains detailed information of CMIP6 data (Text S2).

The supporting information contains detailed information of Supplementary data (Text S3).

Text S1.

The FLUXNET data including:

ATQ and PRR sites[dataset] (<https://fluxnet.org/data/fluxnet2015-dataset/>)(Pastorello et al., 2020).

Text S2.

The CMIP6 temperature data including:

SSP1-2.6[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.MOHC.UKESM1-0-LL.ssp126.r1i1p1f2.CFmon.ta.gn.v20210426>, <https://doi.org/10.22033/ESGF/CMIP6.6333>)(Good et al., 2019a).

SSP2-4.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.MOHC.UKESM1-0-LL.ssp245.r1i1p1f2.CFmon.ta.gn.v20210428>, <https://doi.org/10.22033/ESGF/CMIP6.6339>)(Good et al., 2019b).

SSP5-8.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.MOHC.UKESM1-0-LL.ssp585.r1i1p1f2.CFmon.ta.gn.v20210426> , <https://doi.org/10.22033/ESGF/CMIP6.6405>)(Good et al., 2019c).

The CMIP6 precipitation data including :

SSP1-2.6[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.MOHC.UKESM1-0-LL.ssp126.r1i1p1f2.Amon.pr.gn.v20190503> , <https://doi.org/10.22033/ESGF/CMIP6.6333>)(Good et al., 2019a).

SSP2-4.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.MOHC.UKESM1-0-LL.ssp245.r1i1p1f2.Amon.pr.gn.v20190510> , <https://doi.org/10.22033/ESGF/CMIP6.6339>)(Good et al., 2019b).

SSP5-8.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.MOHC.UKESM1-0-LL.ssp585.r1i1p1f2.Amon.pr.gn.v20190507> , <https://doi.org/10.22033/ESGF/CMIP6.6405>)(Good et al., 2019c).

The CMIP6 solar radiation data including:

SSP1-2.6[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp126.r1i1p1f1.Emon.rss.gn.v20210318> , <http://doi.org/10.22033/ESGF/CMIP6.4320>)(Ziehn et al., 2019a).

SSP2-4.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp245.r1i1p1fl.Emon.rss.gn.v20191115> , <https://doi.org/10.22033/ESGF/CMIP6.4322>)(Ziehn et al., 2019b).

SSP5-8.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp585.r1i1p1fl.Emon.rss.gn.v20210318> , <http://doi.org/10.22033/ESGF/CMIP6.4333>)(Ziehn et al., 2019c).

The CMIP6 carbon dioxide data including:

SSP1-2.6[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.NCC.NorESM2-LM.ssp126.r1i1p1fl.AERmon.co2.gn.v20191108> , <https://doi.org/10.22033/ESGF/CMIP6.8248>)(Seland et al., 2019).

SSP2-4.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.NCC.NorESM2-MM.ssp245.r1i1p1fl.AERmon.co2.gn.v20191108>, <https://doi.org/10.22033/ESGF/CMIP6.8255>)(Bentsen et al., 2019a).

SSP5-8.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.NCC.NorESM2-MM.ssp585.r1i1p1fl.AERmon.co2.gn.v20191108> , <https://doi.org/10.22033/ESGF/CMIP6.8321>)(Bentsen et al., 2019b).

The CMIP6 gross primary production data including:

SSP1-2.6[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp126.r1i1p1fl.Lmon.gpp.gn.v20210318> , <http://doi.org/10.22033/ESGF/CMIP6.4320>)(Ziehn et al., 2019a).

SSP2-4.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp245.r1i1p1fl.Lmon.gpp.gn.v20191115> , <http://doi.org/10.22033/ESGF/CMIP6.4322>)(Ziehn et al., 2019b).

SSP5-8.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp585.r1i1p1fl.Lmon.gpp.gn.v20210318> . <http://doi.org/10.22033/ESGF/CMIP6.4333>)(Ziehn et al., 2019c).

The CMIP6 land area index data including:

SSP1-2.6[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp126.r1i1p1fl.Lmon.lai.gn.v20210318> , <http://doi.org/10.22033/ESGF/CMIP6.4320>)(Ziehn et al., 2019a).

SSP2-4.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp245.r1i1p1f1.Lmon.lai.gn.v20191115>, <http://doi.org/10.22033/ESGF/CMIP6.4322>)(Ziehn et al., 2019b).

SSP5-8.5[dataset] (<https://www.wdc-climate.de/ui/cmip6?input=CMIP6.ScenarioMIP.CSIRO.ACCESS-ESM1-5.ssp585.r1i1p1f1.Lmon.lai.gn.v20210318>, <http://doi.org/10.22033/ESGF/CMIP6.4333>)(Ziehn et al., 2019c).

Text S3.

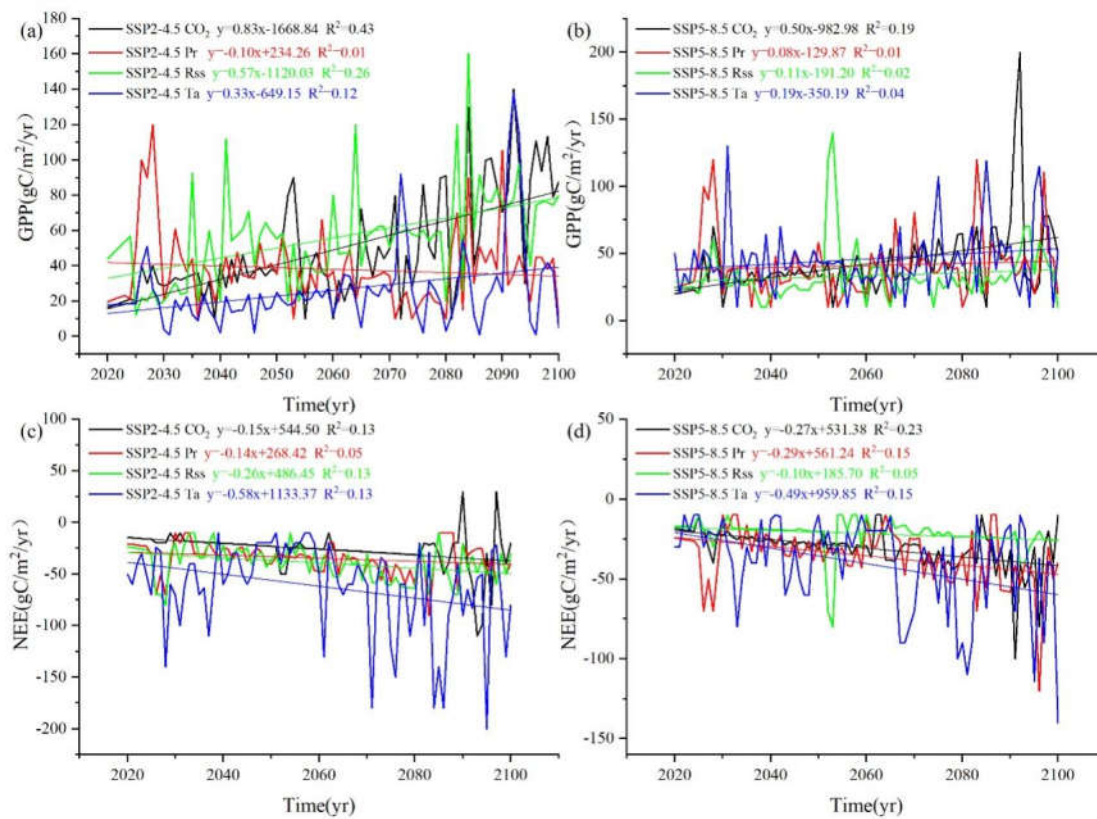


Figure S1. Relationships among GPP, NEE and CO₂ concentration, Precipitation, Solar radiation, and air temperature for ATQ tundra site under SSP2-4.5 (a, c) and SSP 5-8.5 (b, d)

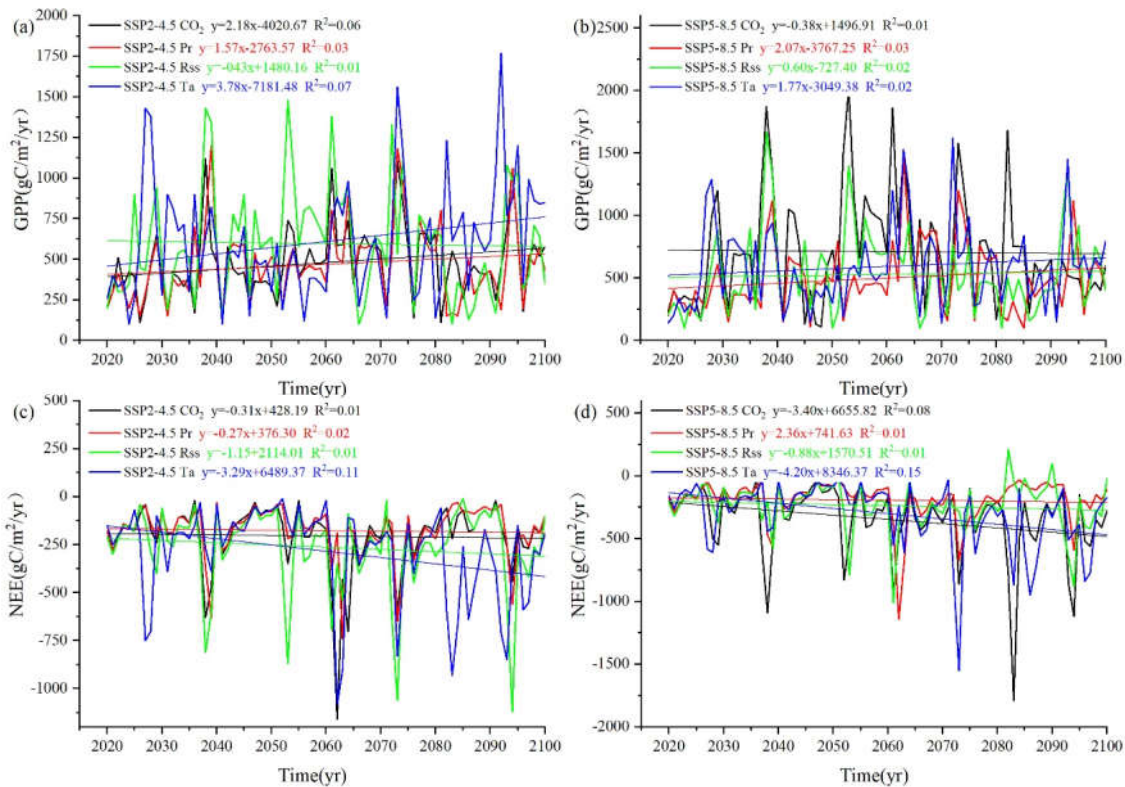


Figure S2 Relationships among GPP, NEE and CO₂ concentration, Precipitation, Solar radiation, and air temperature for PRR needle leaf forest site under SSP2-4.5 (a, c) and SSP 5-8.5 (b, d)

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