

SUPPLEMENT DOCUMENT

Terrestrial carbon cycle: A tipping edge of climate change between atmosphere and biosphere ecosystems

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Acronyms

AGC	Above Ground Carbon	Mha	Million hectares
ALOS - 4	Advanced Land Observing Satellite - 4	MODIS	MODerate resolution Imaging Spectroradiometer
APAR	Absorbed Photosynthetically Active Radiation	MOLI	Multi-footprint Observation Lidar and Imager
ATLAS	Advanced Topographic Laser Altimeter System	N	Nitrogen
AVHRR	Advanced Very High-Resolution Radiometer	NBE	Net Biome Production
BGC	Below Ground carbon	NDVI	Normalized Difference Vegetation Index
C	Carbon	NEE	Net Ecosystem Exchange
CH ₄	Methane	NEP	Net Ecosystem Production
CO ₂	Carbon dioxide	NISAR	NASA - ISRO Synthetic Aperture Radar
DBC	Dead Biomass Component	NPP	Net Primary Production
DBH	Diameter at Breast Height	Nr	reactive N
DGVM	Dynamic Global Vegetation Model	OLS	Ordinary Least Square
DOM	Dead Organic matter	PAR	Photosynthetically Active Radiation
DVI	Difference Vegetation Index	PFTs	Plant Functioning Types
Eh	Redox potential	Pg C	Petagram of Carbon
ER	Ecosystem Respiration	ppm	parts per million
ET	EvapoTranspiration	Ra	Autotrophic Respiration
FOTO	Fourier Transform Textural Ordination	Raa	Aboveground Autotrophic Respiration
fPAR	Fraction of Photosynthetically Active Radiation	Rab	Belowground Autotrophic Respiration
GEDI	Global Ecosystem Dynamics Investigation	RADAR	RADio Detection And Ranging
GLCM	Grey Level Co-occurrence Matrix	RAR	Real Aperture Radar
GLO - PEM	GLObal Production Efficiency Model	Rh	Heterotrophic Respiration
GPP	Gross Primary Production	RS	Remote Sensing
Gt C	Gigaton of Carbon	SAOCOM	Satélite Argentino de Observación CON Microondas
GWR	Geographically Weighted Regression	SAR	Synthetic Aperture Radar
ISAM	Integrated Science Assessment Model	SIF	Solar-Induced chlorophyll Fluorescence
LAI	Leaf Area Index	SMLR	Stepwise Multiple Linear Regression
LiDAR	Light Detection And Ranging	SOC	Soil Organic Carbon
LST	Land Surface Temperature	TanDEM - X	TerraSAR - X Add - oN for Digital Elevation Measurement
LUC	Land Use Conversions	TBM	Terrestrial Biosphere Model
LUE	Light Use Efficiency model	VIs	Vegetation Indices

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Fig. S1

Spatial distribution of global flux measurement networks and their availability (red dots), superimposed over GPP for the year 2020, produced from MODIS, <https://lpdaac.usgs.gov/products/mod17a2hv006/>. The length of the flux network data record is further presented on continental scale. Green section indicates data record for 2+ years, grey section is for 5+ years, blue section is for 10+ years and red section represents data record for 15+ years.

