



Medium Resolution Net Primary Production (NPP, raster 196m) version 1, Nov. 2023

This metadata refers to the medium resolution yearly Net Primary Production (NPP) dataset

Net Primary Production (NPP) quantifies the the total amount of carbon dioxide used for plant growth per unit time.

The NPP dataset is made available as raster files with 196 x 196m resolution, in European LAEA (EPSG: 3035) projection that cover the EEA38 countries and the United Kingdom and for the period from January 2000 until today, in a yearly interval.

Unit: g C/m²/year (warning, a scaling factor of 100 was applied to the data and values should be divided by 100 to get the correct unit).

Simple

Date (Publication)	2023-12-15				
Date (Creation)	2023-12-01				
Edition	01.00				
Citation identifier	eea_r_3035_196_m_modis-npp_p_2000-2022_v01_r00				
Code	10.2909/28d6b823-e2fd-4bf4-a6aa-cb6a359c52da				
Point of contact	Organisation name	Individual name	Electronic mail address	Website	Role
	European Environment Agency		copernicus@eea.europa.eu	https://land.copernicus.eu	Distributor
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Point of contact

No information provided.

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No information provided.

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No information provided.

Maintenance and update frequency	Not planned
GEMET - INSPIRE themes, version 1.0	Orthoimagery Land cover Land use
Keywords	
Keywords	
GEMET	- photosynthesis - plant production

	• vegetation • plant ecology • remote sensing • natural resource • land
Spatial scope	• European
Temporal resolution	• Annually
Continents, countries, sea regions of the world.	• EEA38 (from 2020) • United Kingdom
EEA topics	• Agriculture and food • Land use • Biodiversity
Access constraints	Other restrictions
Other constraints	no limitations to public access
Use constraints	Other restrictions
Other constraints	EEA standard re-use policy: unless otherwise indicated, re-use of content on the EEA website for commercial or non-commercial purposes is permitted free of charge, provided that the source is acknowledged (https://www.eea.europa.eu/legal/copyright). Copyright holder: European Commission, European Environment Agency (EEA).
Aggregate Datasetidentifier	copernicus_r_utm-wgs84_10_m_hrvpp-vi-qflag2_p_2017-ongoing_v01_r01
Association Type	Cross reference
Aggregate Datasetidentifier	copernicus_r_utm-wgs84_10_m_hrvpp-vi-ndvi_p_2017-ongoing_v01_r01
Association Type	Cross reference
Aggregate Datasetidentifier	copernicus_r_utm-wgs84_10_m_hrvpp-vi-fapar_p_2017-ongoing_v01_r01
Association Type	Cross reference
Aggregate Datasetidentifier	copernicus_r_utm-wgs84_10_m_hrvpp-vi-lai_p_2017-ongoing_v01_r01
Association Type	Cross reference
Spatial representation type	Grid
Distance	196 m
Language of dataset	English
Character set	UTF8
Topic category	• Environment • Imagery base maps earth cover • Climatology, meteorology, atmosphere • Geoscientific information

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Begin date	2000-01-01		
End date	2022-12-31 Now		
Coordinate reference system identifier	EPSG:3035		
Distribution format	GeoTIFF (1.0)		
OnLine resource	Protocol EEA:FOLDERPATH WWW:URL WWW:LINK-1.0-http--link	Linkage https://sdi.eea.europa.eu/webdav/datastore/public/eea_r_3035_196_m_modis-npp_p_2000-2022_v01_r00/ https://sdi.eea.europa.eu/data/28d6b823-e2fd-4bf4-a6aa-cb6a359c52da https://land.copernicus.eu/en/technical-library/algorithm-theoretical-basis-document-dry-and-gross-dry-matter-productivity-version-1-1/@/download/file	Name Direct download Copernicus Dry Matter Production Algorithm Theoretical Basis Document

OnLine resource

No information provided.

OnLine resource	Protocol DOI	Linkage https://doi.org/10.2909/28d6b823-e2fd-4bf4-a6aa-cb6a359c52da	Name
Hierarchy level	Dataset		

Conformance result

Title	Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services
Date (Publication)	2010-12-08
Explanation	See the referenced specification
Statement	The basic input data for the GPP calculation are the Terra (MOD) and Aqua (MYD) Moderate Resolution Imaging Spectroradiometer (MODIS) Normalized Difference Vegetation Index (NDVI) (MOD13Q1* / MYD13Q1**) Version 6.1 data. These level 3 data are generated every 16 days at 250 meter (m) spatial. Pre-processing was done by implementing the MODIS pixel reliability layer. Pixels classified as good data and marginal data were retained. The remaining data were further smoothed and gap filled using a Whitakker

smoother to daily data. The smoothed and gap filled NDVI is used to calculate fAPAR (Fraction of Absorbed Photosynthetically Active Radiation).

Meteo data were obtained from the Copernicus Climate Change Service AgERA5*** dataset hosted on the VITO TerraScope platform. These data are inferred from the ECMWF ERA5 dataset and improved in terms of spatial resolution and re-gridding. The gridded data is available daily at 0.1° resolution. Details of the dataset can be found here: Agrometeorological indicators from 1979 to present derived from reanalysis (AgERA5). From these data, the “Solar radiation flux [J m-2 day-1]”, “2m temperature” – both daily minimum and maximum were extracted as model driving forces data for the GPP modelling.

GPP is calculated using the the Copernicus Dry Matter Production algorithm (DMP - Swinnen, Tote & Van Hoolst (2021)). This DMP model expresses GPP as the product of the incoming photosynthetically active radiation (PAR), the fraction of PAR absorbed by plants (fAPAR), the maximum LUE, and environmental stress factors (temperature and atmospheric carbon dioxide). For this dataset, the LUE parameter is calibrated on ICOS sites specifically for Europe. GPP is calculated at a decadal scale. Yearly GPP values are retrieved by summing the decadal GPP values and assuming 10 days in each decade.

The yearly NPP product (g C/m²/year) is calculated from yearly GPP product multiplied with a Carbon Use Efficiency (CUE) factor of 0.5.

Raster content: The physical values (PV, expressed in g C/m²/year) are derived from the digital number (DN) using the relation: PV = Scaling * DN, with scaling equal to 0.01

*) MOD13Q1: <https://lpdaac.usgs.gov/products/mod13q1v061/>

**) MYD13Q1: <https://lpdaac.usgs.gov/products/myd13q1v061/>

***) AgERA5: <https://cds.climate.copernicus.eu/cdsapp#!/dataset/sis-agrometeorological-indicators?tab=overview>

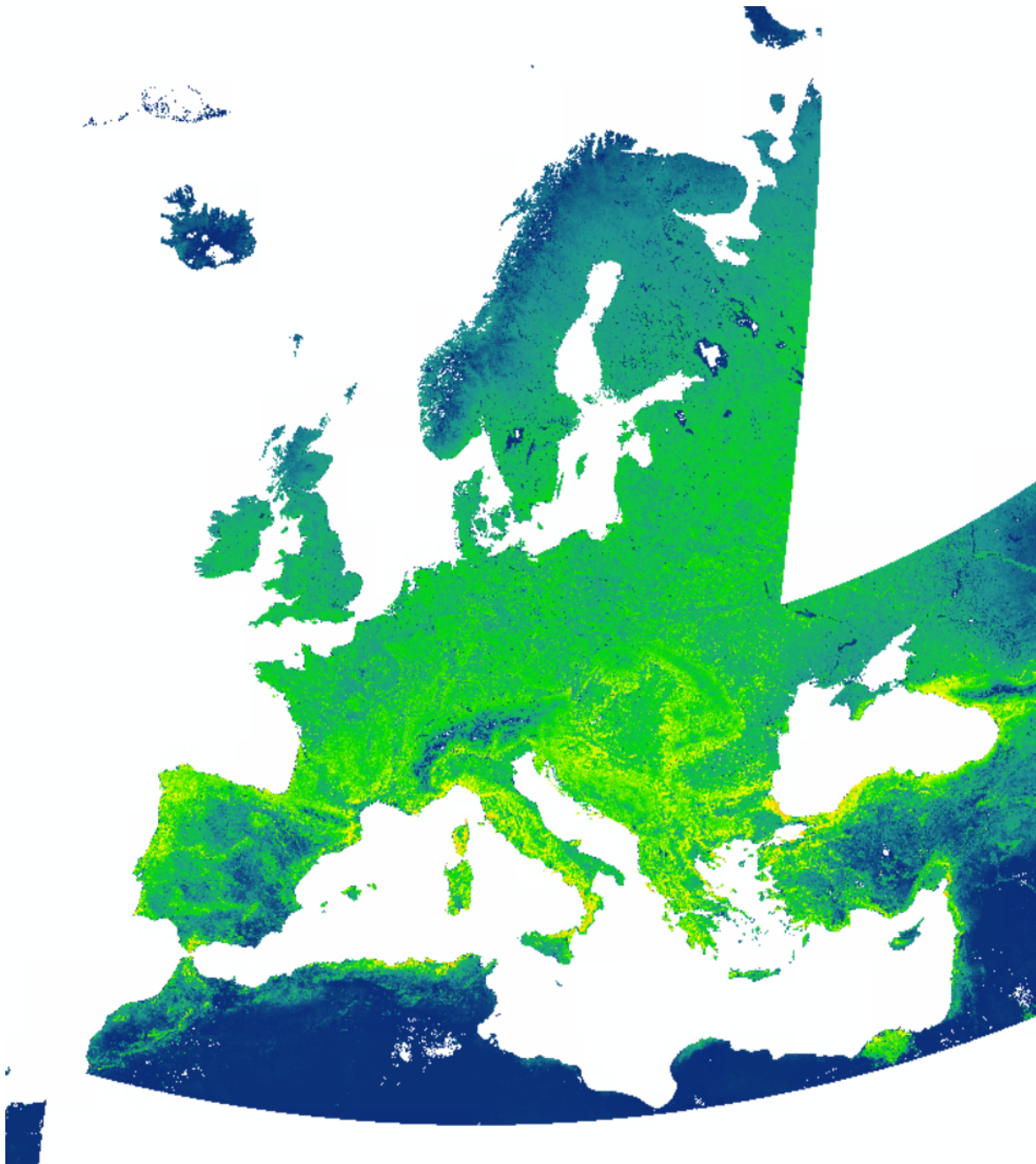
Due to the large differences between the GPPmax and fAPAR resolutions, an initial smoothing process of the GPPmax layer has been performed to avoid stripe artifacts. A convolutional smoothing process with 30x30 kernel size has been applied.

Swinnen, E., Toté, C. Van Hoolst, R. 2023. Copernicus Global Land Operations "Vegetation and Energy". Algorithm Theoretical Basis Document. Dry Matter Production (DMP). Gross Dry Matter Production (GDMP). Net Primary Production (NPP). Gross Primary Production (GPP). Collection 300M. Version 1.1.

Metadata

File identifier	28d6b823-e2fd-4bf4-a6aa-cb6a359c52da XML		
Metadata language	English		
Character set	UTF8		
Hierarchy level	Dataset		
Date stamp	2024-08-07T09:20:26.695467Z		
Metadata standard name	ISO 19115/19139		
Metadata standard version	1.0		
Metadata author	Organisation name	Individual name	Electronic mail addressWebsite Role
	European Environment Agency		sdi@eea.europa.euPoint of contact

Overviews



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