


Map of potential rate of photosynthesis of woody plants

1. IDENTIFICATION INFORMATION

Name	Map of potential rate of photosynthesis of woody plants
Edition	1.0
Metadata Identifier	GRENE_ei_EcoBiodiv_ESMap_Japan_Photo20230727091701-en

2. CONTACT

2.1 CONTACT on DATASET

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2.2 CONTACT on PROJECT

3. DOCUMENT AUTHOR

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4. DATASET CREATOR

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5. DATE OF THIS DOCUMENT

2023-07-27

6. DATE OF DATASET

creation : 2015-10-15

7. DATASET OVERVIEW

7.1 Abstract

Potential photosynthesis rate (Amass) of woody plants map of Japan. For the details of data provision and term of use, please contact us by e-mail.

7.2 Topic Category(IS019139)

environment

biota

7.3 Temporal Extent

Begin Date	1993-01-01
End Date	1999-01-01
Temporal Characteristics	Duration in which source vegetation map was created.

7.4 Geographic Bounding Box

North latitude	bound	45.55722
West longitude	bound	122.9336
Eastbound longitude		153.9864
South latitude	bound	20.42528

7.5 Grid

7.6 Geographic Description

7.7 Keywords

7.7.1 Keywords on Dataset

Keyword Type	Keyword	Keyword thesaurus Name
theme	Ecosystems, Biodiversity	GEOSS
theme	Biosphere > Terrestrial Ecosystems > Forests, Biosphere > Terrestrial Ecosystems > Agricultural Lands, Biosphere > Terrestrial Ecosystems > Alpine/Tundra, Biosphere > Terrestrial Ecosystems > Grasslands, Biosphere > Terrestrial Ecosystems > Montane Habitats, Biosphere > Terrestrial Ecosystems > Shrubland/Scrub, Biosphere > Terrestrial Ecosystems > Urban Lands, Biosphere > Terrestrial Ecosystems > Wetlands, Biosphere > Ecological Dynamics > Community Dynamics > Biodiversity Functions, Land Surface > Land Use/Land Cover > Land Resources	GCMD_science
theme	BIOGEOSCIENCES > Ecosystems, structure and dynamics, BIOGEOSCIENCES > Biodiversity	AGU
theme	Biodiversity, Ecosystem Function/Dynamics	GEO_COP
place	Asia > Eastern Asia > Japan	Country
theme	Ecosystem Services	No_Dictionary

7.7.2 Keywords on Project

7.8 Online Resource

7.9 Data Environmental Information

Species richness map in which estimation was done for all polygons of vegetation map and the map in which estimation was done for each 1km grid are available.

7.10 Distribution Information

name	version	specification
ESRI GeoDataBase	ArcGIS 10.3	

8. DATA PROCESSING

8.1 Data Processing (1)

8.1.1 General Explanation of the data producer's knowledge about the lineage of a dataset

Using the 6th and 7th Natural Environment Conservation Fundamental Observation data (Ministry of the Environment Government of Japan) and functional traits database of woody plants (Kurokawa et al. in preparation), we calculated community weighted mean (CWM) of leaf mass per area (LMA) for each observation unit. Also, climate data (Mesh climate data in National Numerical Information by Ministry of Land, Infrastructure, Transport and Tourism of Japan; East Anglia University Climate Research Unit CRU_TS 2.1 Dataset) and elevation (10m digital elevation model in Fundamental Map Information by Geospatial Information Authority of Japan) were assigned based on coordinates of the observation units by GIS. By applying CWM of LMA and climate information to the photosynthesis model by Reich et al. (2007), maximum photosynthetic rate (A_{max}, $\mu\text{mol/s/leaf g}$) was calculated for each observation unit. Then the values of photosynthetic rate was modeled by climate, elevation

and vegetation of the observation units. Using this model and vegetation map at ca. 1996 (The 5th Natural Environment Conservation Fundamental Observation vegetation map), photosynthetic rate was spatially interpolated all over the Japan.

8.1.2 Data Source

Data Source Citation Name	Description of derived parameters and processing techniques used
Mesh climate data of National Numerical Information	Mesh climate data of National Numerical Information by Ministry of Land, Infrastructure, Transport and Tourism of Japan
CRU_TS 2.1	East Anglia University Climate Research Unit Time Series Dataset
10m digital elevation model in Fundamental Map Information	10m digital elevation model in Fundamental Map Information by Geospatial Information Authority of Japan
The 6th and 7th Natural Environment Conservation Fundamental Observation	Vegetation data from the 6th and 7th Natural Environment Conservation Fundamental Observation data by Ministry of the Environment Government of Japan
The 5th Natural Environment Conservation Fundamental Observation	Vegetation map from the 5th Natural Environment Conservation Fundamental Observation by Ministry of the Environment Government of Japan

9. DATA REMARKS

10. DATA POLICY

10.1 Data Policy by the Data Provider

10.2 Data Policy by the Project

11. LICENSE

12. DATA SOURCE ACKNOWLEDGEMENT

12.1 Acknowledge the Data Provider

12.2 Acknowledge the Project

13. REFERENCES

Oguro, Aiba, and Nakashizuka (2016). Observation of forest ecosystem and mapping ecosystem services visualizing ecosystem services by combining several data sets (in Japanese). *Biological Science, Heredity*, 70(1), 22-27.

Reich, P. B., Wright, I. J., &&&& Lusk, C. H. (2007). Predicting leaf physiology from simple plant and climate attributes: A global GLOPNET analysis. *Ecological Applications*, 17(7), 1982-1988. doi:Doi 10.1890/06-1803.1