



Global map of interannual response of normalized difference vegetation index (NDVI) for air temperature, precipitation, and photosynthetically active radiation (PAR)

1. IDENTIFICATION INFORMATION

Name	Global map of interannual response of normalized difference vegetation index (NDVI) for air temperature, precipitation, and photosynthetically active radiation (PAR)
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2. CONTACT

2.1 CONTACT on DATASET

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2.2.1 Data Integration and Analysis System

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5. DATE OF THIS DOCUMENT

2022-03-04

6. DATE OF DATASET

revision : 2009-09-01

7. DATASET OVERVIEW

7.1 Abstract

Precipitation, air temperature, and radiation are the most dominant meteorological factor for the vegetation distribution and its interannual change. For example, lack of precipitation precludes vegetation in desert in mid-latitude, while lack of temperature constrains the vegetation in high-latitude tundra zones. The cloud cover disturbs the potential photosynthetic activity of the vegetation by reducing the Photosynthetically Active Radiation (PAR; (0.4 - 0.7 μm)) from the sun. This vegetation-atmosphere relationship was examined by using satellite-derived Normalized Difference Vegetation Index (NDVI) data and meteorological data. The interannual correlation coefficients between NDVI and temperature; NDVI and precipitation; and NDVI and PAR from 1986 to 1995 are globally mapped.

7.2 Topic Category(ISO19139)

biota

7.3 Temporal Extent

Begin Date	1986-01-01
End Date	1996-12-31

7.4 Geographic Bounding Box

North latitude bound	81
West longitude bound	-180

Eastbound longitude	180
South bound latitude	-55

7.5 Grid

Dimension Name	Dimension Size (slice number of the dimension)	Resolution Unit
row	180	2 (deg)
column	90	2 (deg)

7.6 Geographic Description

7.7 Keywords

7.7.1 Keywords on Dataset

Keyword Type	Keyword	Keyword thesaurus Name
theme	Ecosystems	GEOSS

7.7.2 Keywords on Project

7.7.2.1 Data Integration and Analysis System

Keyword Type	Keyword	Keyword thesaurus Name
theme	DIAS > Data Integration and Analysis System	No_Dictionary

7.8 Online Resource

: http://www.godac.jamstec.go.jp/catalog/data_catalog/gd_metaview_e.php?data_name=&lang=en

file download : <https://data.diasjp.net/dl/storages/filelist/dataset:39>

7.9 Data Environmental Information

7.10 Distribution Information

name	version	specification
text	no information	

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

We examined the 10-year (1986 - 1995) time series of yearly precipitation, temperature, PAR and NDVI in 1 x 1 degree grid cells over the global terrestrial area. As for precipitation, temperature, and PAR, seasonal mean values over the growing season (April to August in the Northern Hemisphere; October to February in the Southern Hemisphere) of each year were calculated based on monthly values obtained from the International Satellite Land Surface Climatology Project (ISLSCP) Initiative II dataset. As for NDVI the seasonal mean value in the growing season of each year was calculated from the monthly NDVI of a global 20-year NOAA/AVHRR dataset with 4-minute resolution produced by Chiba University, Japan (CEReS, 2001). This 4-minutes NDVI value was resampled into 1 x 1 degree grid system to match other meteorological values from ISLSCP Initiative II dataset.

The 10-year interannual correlations between NDVI and precipitation, NDVI and temperature, and NDVI and PAR was calculated. To improve the statistical significance level, those correlations were calculated base on 40 samples by aggregating 4 grid cells (i.e. 10 years x 4 grid cells). By this process the horizontal resolution was reduced to 2 x 2 degrees.

8.1.2 Data Source

Data Source Citation Name	Description of derived parameters and processing techniques used
Global vegetation index data: Twenty-year Global 4-minute AVHRR NDVI Dataset of Chiba University (in Japanese)	http://dbx.cr.chiba-u.jp/geobase/index.html
Global meteorological data: Air temperature, precipitation, photosynthetically active radiation (International Satellite Land Surface Climatology Project (ISLSCP) Initiative II)	http://islsdp2.sesda.com/ISLSCP2_1/html_pages/islsdp2_home.html

9. DATA REMARKS

10. DATA POLICY

10.1 Data Policy by the Data Provider

The content of this dataset should not be redistributed without permission, and should not be used for commercial purposes.

The source should be properly acknowledged in any work obtained with this dataset.

The creators of this dataset are not responsible for any loss or damage caused by using this dataset.

[Reference Requirement]This dataset should be referenced as the following statement. "Suzuki, R. (2007): Global map of interannual response of normalized difference vegetation index (NDVI) for air temperature, precipitation, and photosynthetically active radiation (PAR). Data Integration and Analysis System in Japan Agency for Marine-Earth Science and Technology, Yokohama, Japan"

10.2 Data Policy by the Project

10.2.1 Data Integration and Analysis System

If data provider does not have data policy, DIAS Terms of Service (<https://diasjp.net/en/policy/>) and DIAS Privacy Policy (<https://diasjp.net/en/privacypolicy/>) apply.

If there is a conflict between DIAS Terms of Service and data provider's policy, the data provider's policy shall prevail.

11. LICENSE

12. DATA SOURCE ACKNOWLEDGEMENT

12.1 Acknowledge the Data Provider

12.2 Acknowledge the Project

12.2.1 Data Integration and Analysis System

If you plan to use this dataset for a conference presentation, paper, journal article, or report etc., please include acknowledgments referred to following examples. If the data provider describes examples of acknowledgments, include them as well.

” In this study, [Name of Dataset] provided by [Name of Data Provider] was utilized. This dataset was also collected and provided under the Data Integration and Analysis System (DIAS), which was developed and operated by a project supported by the Ministry of Education, Culture, Sports, Science and Technology. ”

13. REFERENCES

R. Suzuki (2007) Preliminary analysis on interannual response of global NDVI for precipitation, temperature, and radiation. Proceedings of the Seventh International Conference on Global Change: Connection to the Arctic (GCCA-7), 293-296. (Fairbanks, USA, February 19-20, 2007)

R. Suzuki (2007) Interannual response of global NDVI for precipitation, temperature, and radiation. 32th International Symposium on Remote Sensing of Environment "Sustainable Development through Global Earth Observations." (San Jose, Costa Rica, June 25 - 29, 2007)

CEReS, Chiba University (2001) Twenty-year global 4-minute AVHRR NDVI dataset. Chiba University, Chiba, Japan.

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