high-resolution (10 km) Reanalysis downscaled data over Japan

1. IDENTIFICATION INFORMATION

Name	high-resolution (10 km) Reanalysis downscaled data over Japan
Edition	v1.0
Abbreviation	JP10
DOI	doi:10.20783/DIAS.139 [http://dx.doi.org/10.20783/DIAS.139]
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2. CONTACT

2.1 CONTACT on DATASET

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2.2 CONTACT on PROJECT

2.2.1 Data Integration and Analysis System

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5. DATE OF THIS DOCUMENT

2020-09-01

6. DATE OF DATASET

creation : 2009-01-01

7. DATASET OVERVIEW

7.1 Abstract

A 10-km and hourly dynamically downscaling simulation dataset from NCEP/NCAR Reanalysis over Japan for 1948-2006. The data includes most of 3-dimensional atmospheric state (temperature, wind speed, omega, height, humidity), and various surface fields (precipitation, evaporation, PBL height, surface air condition, radiation, etc.). The data is particularly useful for high resolution analysis of meteorology, and application for other fields such as agriculture or hydrology.

7.2 Topic Category(ISO19139)

climatologyMeteorologyAtmosphere

7.3 Temporal Extent

Begin Date	1948-01-01
End Date	2006-12-31
Temporal Characteristics	Hourly

7.4 Geographic Bounding Box

North bound latitude	49.163
West bound longitude	119.96
Eastbound longitude	151.577
South bound latitude	22.123

7.5 Grid

7.6 Geographic Description

Japan, Korea and surrounding oceans

7.7 Keywords

7.7.1 Keywords on Dataset

Keyword Type	Keyword	Keyword thesaurus Name
theme	ATMOSPHERIC PROCESSES > Regional modeling, HYDROLOGY > Hydrometeorology	AGU
theme	Climate	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

Similar products of reanalysis downscaling are available. : http://cec.sdsc.edu/

file download : https://data.diasjp.net/dl/storages/filelist/dataset:139

7.9 Data Environmental Information

The data was produced in Earth Simulator Center with the Earth Simulator.

7.10 Distribution Information

name	version	specification
GRIB	Version 1	The contents of the data is writen in Data Remarks.

8. DATA PROCESSING

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

The Scripps version of Regional Spectral Model (RSM; Kanamitsu et al. 2005) is used. The RSM utilizes a spectral method (with sine and cosine series) in two dimensions. The model configuration

and the downscaling method in this study are basically the same as that of CaRD10 (10 km California Reanalysis Downscaling; Kanamitsu and Kanamaru, 2007) but for a domain covering Japan Islands (22.123 49.163N and 119.960 151.577E) and for narrower lateral boundary nudging zones that extends only 2.5% of the total width in each of four lateral boundaries instead of 11.5% in CaRD10 to increase the usable domain.

As same as CaRD10, a spectral nudging scheme, i.e., scale selective bias correction (SSBC, Kanamaru and Kanamitsu 2007), is applied to the Reanalysis large scale thermodynamic fields for a 10 km horizontal resolution downscaling simulation, to reduce the growth of large-scale error spanning the regional domain. The scheme consists of three components: 1) dampening the large-scale (more than 1000 km scale) part of the wind perturbation toward zero, with dampening coefficient of 0.9, 2) removing the area average perturbation of temperature and moisture at every model level, and 3) adjusting the area mean perturbation logarithm of surface pressure to the corresponding difference of logarithm of surface pressure due to the area mean difference in the global and regional topography.

8.2 Data Processing

Data Source Citation Name	Description of derived parameters and processing techniques used

9. DATA REMARKS

Each file contains all variables listed below.

[Variable Code] [# of Layer] [GRIB ID] ** [Description of variable]

===

HGTprs 25 7,100,0 ** Geopotential height [gpm]

RHprs 25 52,100,0 ** Relative humidity [%]

SPFHprs 25 51,100,0 ** Specific humidity [kg/kg]

TMPprs 25 11,100,0 ** Temp. [K]

UGRDprs 25 33,100,0 ** u wind [m/s]

VGRDprs 25 34,100,0 ** v wind [m/s]

VVELprs 25 39,100,0 ** Pressure vertical velocity [Pa/s]

ALBDOsfc 0 84,1,0 ** surface Albedo [%]

ALHTFsfc 0 236,1,0 ** Adjusted latent heat [W/m^2]

BGRUNsfc 0 234,1,0 ** surface Baseflow-groundwater runoff [kg/m^2]

CNWATsfc 0 223,1,0 ** surface Plant canopy surface water [kg/m^2]

CPRATsfc 0 214,1,0 ** surface Convective precip. rate [kg/m^2/s]

DLWRFsfc 0 205,1,0 ** surface Downward long wave flux [W/m^2]

DSWRFsfc 0 204,1,0 ** surface Downward short wave flux [W/m^2]

DSWRFtoa 0 204,8,0 ** top of atmos Downward short wave flux [W/m^2]

ECPYsfc 0 180,1,0 ** canopy reevaporation [W/m^2]

GFLUXsfc 0 155,1,0 ** surface Ground heat flux [W/m^2]

HGTsfc 0 7,1,0 ** surface Geopotential height [gpm]

HPBLsfc 0 221,1,0 ** surface Planetary boundary layer height [m]

ICECsfc 0 91,1,0 ** surface Ice concentration (ice=1;no ice=0) [fraction]

LANDsfc 0 81,1,0 ** surface Land cover (land=1;sea=0) [fraction]

LFTX4sfc 0 132,1,0 ** surface Best (4-layer) lifted index [K]

LFTXsfc 0 131,1,0 ** surface Surface lifted index [K]

LHTFLsfc 0 121,1,0 ** surface Latent heat flux [W/m^2]

PEVPRsfc 0 145,1,0 ** surface Potential evaporation rate [W/m^2]

PRATEsfc 0 59,1,0 ** surface Precipitation rate [kg/m^2/s]

PRESsfc 0 1,1,0 ** surface Pressure [Pa]

PRMSLmsl 0 2,102,0 ** Pressure reduced to MSL [Pa]

PTENDsfc 0 3,1,0 ** surface Pressure tendency [Pa/s]

PWATclm 0 54,200,0 ** atmos column Precipitable water [kg/m^2]

QUFLXclm 0 202,200,0 ** Vertical integrated moisture flux zonal [kg/m/s]

QVFLXclm 0 203,200,0 ** Vertical integrated moisture flux meridional [kg/m/s]

SFCRsfc 0 83,1,0 ** surface Surface roughness [m]

SHTFLsfc 0 122,1,0 ** surface Sensible heat flux [W/m^2]

SLTYPsfc 0 154,1,0 ** Soil type [ND]

SNOEVsfc 0 230,1,0 ** snow sublimation [W/m^2]

SNOHFsfc 0 229,1,0 ** surface Snow phase-change heat flux [W/m^2]

SOILW1 0 144,112,10 ** 0-10 cm undergnd Volumetric soil moisture [fraction]

SOILW2 0 144,112,2760 ** 10-200 cm undergnd Volumetric soil moisture [fraction]

SPFH2m 0 51,105,2 ** 2 m Specific humidity [kg/kg]

SRWEQsfc 0 64,1,0 ** surface Snowfall rate water equiv. [kg/m^2/s]

TCDCclm 0 71,200,0 ** atmos column Total cloud cover [%]

TCDClcl 0 71,214,0 ** low cloud level Total cloud cover [%]

TCDCmcl 0 71,224,0 ** mid-cloud level Total cloud cover [%]

TCDChcl 0 71,234,0 ** high cloud level Total cloud cover [%]

TMAX2m 0 15,105,2 ** 2 m Max. temp. [K]

TMIN2m 0 16,105,2 ** 2 m Min. temp. [K]

TMPsfc 0 11,1,0 ** surface Temp. [K]

TMP2m 0 11,105,2 ** 2 m Temp. [K]

TMPSoil1 0 11,112,10 ** 0-10 cm undergnd Temp. [K]

TMPSoil2 0 11,112,2760 ** 10-200 cm undergnd Temp. [K]

UGWDsfc 0 147,1,0 ** surface Zonal gravity wave stress [N/m^2]

UFLXsfc 0 124,1,0 ** surface Zonal momentum flux [N/m^2]

UGRD10m 0 33,105,10 ** 10 m u wind [m/s]

ULWRFsfc 0 212,1,0 ** surface Upward long wave flux [W/m^2]

ULWRFtoa 0 212,8,0 ** top of atmos Upward long wave flux [W/m^2]

USWRFsfc 0 211,1,0 ** surface Upward short wave flux [W/m^2]

USWRFtoa 0 211,8,0 ** top of atmos Upward short wave flux [W/m^2]

VGWDsfc 0 148,1,0 ** surface Meridional gravity wave stress [N/m^2]

VEGsfc 0 87,1,0 ** surface Vegetation [%]

VFLXsfc 0 125,1,0 ** surface Meridional momentum flux [N/m^2]

VGRD10m 0 34,105,10 ** 10 m v wind [m/s]

VGTYPsfc 0 225,1,0 ** surface Vegetation type (as in SiB) [0..13]

WATRsfc 0 90,1,0 ** surface Water runoff [kg/m^2]

WEASDsfc 0 65,1,0 ** surface Accum. snow [kg/m^2]

10. LICENSE

10.1 Data Policy by the Data Provider

The data (JP10 data hereafter) are made freely available to the public and the scientific community in the belief that their wide dissemination will lead to greater understanding and new scientific insights. The user should follow the data policy and constraints of DIAS in addition to the constraints written here. The availability of JP10 data does not constitute publication of the data. We rely on the ethics and integrity of the user to assure that the Experimental Climate Prediction Center in Scripps Institution of Oceanography (ECPC hereafter) receives fair credit for the work. If JP10 data are obtained for potential use in a publication or presentation, ECPC should be informed at the outset of the nature of this work. Manuscripts using JP10 data should be sent to ECPC for review before they are submitted for publication so that it can be insured that the quality and limitations of JP10 data are accurately represented.

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. DATA SOURCE ACKNOWLEDGEMENT

11.1 Acknowledge the Data Provider

11.2 Acknowledge the Project

11.2.1 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.

"We used the [name of dataset] provided by [name of data provider] in this study. This dataset was collected and provided under the Data Integration and Analysis System (DIAS, Project No. JPMXD0716808999), which has been developed and operated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT)."

12. DISCLAIMER

12.1 Disclaimer of Project

12.1.1 Data Integration and Analysis System

If data provider does not have data policy, disclaimer of DIAS Terms of Service (https://diasjp.net/en/policy/) apply.

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

13. REFERENCES

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