



Typhoon DDS for changing climate by a regional a o coupled model

1. IDENTIFICATION INFORMATION

Name	Typhoon DDS for changing climate by a regional a o coupled model
DOI	doi:10.20783/DIAS.666 [https://doi.org/10.20783/DIAS.666]
Metadata Identifier	4TYs_PGW_CReSS_NHOES20240422101118-DIAS20221121113753-en

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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3. DOCUMENT AUTHOR

Name	Sachie Kanada
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4. DATASET CREATOR

Name	Sachie Kanada
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5. DATE OF THIS DOCUMENT

2024-04-22

6. DATE OF DATASET

creation : 2023-12-27

7. DATASET OVERVIEW

7.1 Abstract

The pseudo global warming (PGW) experiments on four historical intense typhoons under four different warming conditions were conducted using a regional high-resolution three-dimensional atmosphere ocean coupled model, CReSS-NHOES (Aiki et al., 2015). Four historical intense typhoons that traveled northward and affected Japan, Typhoons Trami (2018), Faxai (2019), Hagibis (2019), and Haishen (2020), were selected. The PGW increments were made from the Database for Policy Decision-Making for Future Climate Change (d4PDF), which includes 100 ensembles of pre-industrial, historical, and 2 K and 4 K warmer climate experiments with a 60-km-mesh atmospheric global circulation model (Mizuta et al. 2017). See Figure S1 and Tables S1 and S2 of Kanada and Aiki (2024) for more information about the experiments and the initial and boundary conditions used. This dataset includes hourly outputs from the atmospheric and oceanic parts.

7.2 Topic Category(ISO19139)

climatologyMeteorologyAtmosphere

7.3 Temporal Extent

Begin Date	2018-09-26
End Date	2020-09-06
Temporal Characteristics	Hourly

7.4 Geographic Bounding Box

North latitude bound	43
West longitude bound	124
Eastbound longitude	154
South latitude bound	14

7.5 Grid

Dimension Name	Dimension Size (slice number of the dimension)	Resolution Unit
row		0.01/0.02 (deg)
column		0.01/0.02 (deg)
vertical		10-2000 (m)

7.6 Geographic Description

7.7 Keywords

7.7.1 Keywords on Dataset

Keyword Type	Keyword	Keyword thesaurus Name
theme	Atmosphere > Atmospheric Phenomena > Typhoons, Human Dimensions > Natural Hazards > Tropical Cyclones > Typhoons	GCMD_science
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

file download : <https://data.diasjp.net/dl/storages/filelist/dataset:666>

7.9 Data Environmental Information

The datasets contain the following files and variables. out_cress (CRESS outputs): 1) Two dimensional surface data (EXID_CLIMID.sfc_YYYY_MO_DD_HHMMUTC.z56.bin) [hourly; sea level pressure, velocity in lon and lat-directions at 10m, soil and sea surface temperature, rain fall rate, accumulated rain fall] 2) Three dimensional atmospheric data1 (EXID_CLIMID.dmp_YYYY_MO_DD_HHMMUTC.z56.bin) [hourly; zonal, meridional and z components of velocities, pressure, potential temperature, water vapor mixing ratio] 3) Three dimensional atmospheric data2 (EXID_CLIMID.cld_YYYY_MO_DD_HHMMUTC.z56.bin) [hourly; cloud, rain water, cloud ice, snow, graupel mixing ratio] 4) User namelist (".user.conf") out_nhoes (NHOES outputs): 5) Three dimensional oceanic data (nhoes_EXID_CLIMID.YYYY_MO_DD_HHMMUTC.z80.bin) [hourly; u, v, w, temperature, salinity, density] 1)-3)and 5) are 4byte binary (big endian) data files with corresponding Grads ctl files. The extension ".bin" is for the data file and ".ctl" is for the Grads ctl file. Trami (Directory: TRAMI2018, EXID: T1824_2606_1km), Faxai (FAXAI2019, T1915_0700_1km), Hagibis (HAGIBIS2019, T1919_1018_1km), Haishen (HAISHEN2020, T2010_0112_2km). Control (CLIMID: CNTL), pre-industrial (NAT), and 2 K (2K) and 4 K (4K) warmer climate experiments. EXID: Experiment ID, CLIMID: Climate ID, YYYY: Year MO: Month DD_HHMM: Day, hour, and minutes.

7.10 Distribution Information

name	version	specification
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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

8.1.2 Data Source

Data Source Citation Name	Description of derived parameters and processing techniques used
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9. DATA REMARKS

10. DATA POLICY

10.1 Data Policy by the Data Provider

Data Policy:

1. Individual users should not redistribute the data to any third party.
2. The source of the database should be acknowledged in scientific and technical papers, publications, press releases and other communications in case of using the data.

Disclaimer:

The intellectual property rights of the dataset belong exclusively to Nagoya university. Nagoya university and anyone, including the creator (and all individuals and organizations involved in the creation of this dataset), are not responsible for any damage that may result from the use of this dataset.

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/terms/>) and DIAS Privacy Policy (<https://diasjp.net/en/privacy/>) 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



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[<https://creativecommons.org/licenses/by-nc/4.0/>]

12. DATA SOURCE ACKNOWLEDGEMENT

12.1 Acknowledge the Data Provider

The computation was carried out on the supercomputer "Flow" at Information Technology Center, Nagoya University. This work was partially supported by Japan Society for the Promotion of Science KAKENHI Grants 20H05166 and 19H05696.

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

PGW experiment:

Kanada, S., and H. Aiki, 2024: Buffering effect of atmosphere-ocean coupling on intensity changes of tropical cyclones under a changing climate. *Geophysical Research Letters*, 51, e2023GL105659. <https://doi.org/10.1029/2023GL105659>

CRSS-NHOES:

Aiki, H., M. Yoshioka, M. Kato, A. Morimoto, T. Shinoda, and K. Tsuboki, 2015: A coupled atmosphere-ocean-surface-wave modeling system for understanding air-sea interactions under tropical cyclone conditions, *Bull. Coastal Oceanogr.*, 52, 139–148.

d4PDF:

Mizuta, R., and co-authors, 2017: Over 5000 Years of Ensemble Future Climate Simulations by 60 km Global and 20 km Regional Atmospheric Models. *Bull. Amer. Meteor. Soc.*, 1383–1398, doi:10.1175/BAMS-D-16-0099.1.