

WATERLINE

Version 0

Funder

CHIST-ERA||CHIST-ERA

Grant

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Researchers

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Organizations

Digital Innovations SA, AGH University of Science and Technology, TU Wien, University of Oulu, University of Neuchâtel

Datasets

Title: [DOWNSCALED GRACE TWSA](#)

Template: [CHIST-ERA](#)

A downscaling framework for coarse resolution Gravity Recovery and Climate Experiment (GRACE) Total Water Storage Anomaly (TWSA) data is described, exploiting the observations of precipitation from the Global Precipitation Measurement (GPM) mission, using the Integrated Multisatellite Retrievals for GPM (IMERG). Considering that the major driving force for changes in TWS is precipitation, we tested our hypothesis that coarse resolution, i.e., 1° , GRACE TWSA can be effectively downscaled to 0.1° using GPM IMERG data. The algorithm for the downscaling process comprises the development of a regression equation at the coarse resolution between the GRACE and GPM IMERG data, which is then applied at the finer resolution with a subsequent residual correction procedure. An ensemble of GRACE data from three processing centers, i.e., GFZ, JPL and CSR, was used for the time period from June 2018 until March 2021. To verify our downscaling methodology, we applied it with GRACE data from 2005 to 2015, and we compared it against modeled TWSA from two independent datasets in the Thrace and Thessaly regions in Greece for the same period and found a high performance in all examined metrics. Our research indicates that the downscaled GRACE observations are comparable to the TWSA estimated with hydrological modeling, thus highlighting the potential of GRACE data to contribute to the improvement of hydrological model performance, especially in ungauged basins.

Dataset Description

1.1 What data (for example the kind, formats, and volumes), will be collected or produced?

1.1.1 Give details on the kind of data

- Observational (e.g.
- sensor data
- data from surveys)

1.1.2 Give details on the data format

Geographic Tagged Image File Format (GeoTIFF)

1.1.3 Justify the use of certain formats

widely supported format across disciplines

1.1.4 Give details on the volumes

KB (kilobyte)

1.2 How will new data be collected or produced?

1.2.1 Explain which methodologies or software will be used if new data are collected or produced or if third party data are used

SeaDataNet European Directory of the Initial Ocean-Observing Systems (EDIOS)

10.17632/wrb45vfgf3.1

<https://doi.org/10.3390/rs13245149>

1.2.2 Explain how data provenance will be documented

Citing the dataset

2.1.1 What metadata and documentation will accompany the data?

2.1.1.1 Indicate which metadata will be provided to help others identify and discover the data

Descriptive

2.1.1.2 Indicate which metadata standards will be used

CERIF (Common European Research Information Format)

Any GIS software

2.1.1.3 Indicate how the data will be organised during the project

The article with the methodology of dataset production is found here

<https://doi.org/10.3390/rs13245149>

2.1.1.4 Consider what other documentation is needed to enable re-use

All information can be found here <https://doi.org/10.3390/rs13245149>

Data should be cited as follows:

Gemitzi, Alexandra (2022), "Downscaled GRACE-FO TWSA for Greece",
Mendeley Data, V1, doi: 10.17632/wrb45vfgf3.1

2.1.1.5 Consider how this information will be captured and where it will be recorded

Microsoft Azure Services through the OCRE Framework

2.1.2 What data quality control measures will be used?

2.1.2.1 Explain how the consistency and quality of data collection will be controlled and documented

- Calibration
- Peer review of data

3.1 Reused Data

3.1.1 How will existing data be re-used?

- To compare and combine with other data
- To develop new products/ services

doi: 10.17632/wrb45vfgf3.1

3.1.2 Where can re-used data be found?

Mendeley Data

3.1.3 Which data will be re-used?

Mendeley dataset

doi: 10.17632/wrb45vfgf3.1

3.1.4 State any constraints on re-use of existing data if there are any

No

3.1.5 Briefly state the reasons if the re-use of any existing data sources has been considered but discarded

No such information

4.1.1 How will data and metadata be stored and backed up during the research?

4.1.1.1 Describe where the data will be stored and backed up during research activities and how often the backup will be performed

FAIRsharing

per Month

4.1.2 How will data security and protection of sensitive data be taken care of during the research?

4.1.2.1 Explain how the data will be recovered in the event of an incident

<https://doi.org/10.3390/rs13245149>

4.1.2.2 Explain who will have access to the data during the research and how access to data is controlled, especially in collaborative partnerships

Stavros Stathopoulos (orcid:0000-0001-8685-328X)

4.1.2.3 Describe the main risks and how these will be managed

<https://doi.org/10.3390/rs13245149>

4.1.2.4 Explain which institutional data protection policies are in place

None,

5.1.1 Personal data

5.1.1.1 Are there any personal data to be formulated?

No

5.1.1.2 Explain whether there is a managed access procedure in place for authorised users of personal data

No such procedure

5.1.2.1 Data ownership and accessibility

5.1.2.1.1 Who will be the owner(s) of the data?

Democritus University of Thrace

Alexandra Gemitzi (orcid:0000-0002-8479-7955)

5.1.2.1.2 Explain what access will apply to the data?

Open

<https://doi.org/10.3390/rs13245149>

5.1.2.2 Intellectual property rights

5.1.2.2.1 Explain which intellectual property and how will they be dealt with

Copyright

<https://doi.org/10.3390/rs13245149>

5.1.2.3 Third-party data restrictions

5.1.2.3.1 Are there any restrictions on the re-use of third-party data?

No

5.1.3 Ethical issues

5.1.3.1 What ethical issues and codes of conduct are there, and how will they be taken into account?

Legal issues such as IP rights

<https://doi.org/10.3390/rs13245149>

6.1.1 How and when will data be shared? Are there possible restrictions to data sharing or embargo reasons?

6.1.1.1 Explain how the data will be discoverable and shared

Use of a secure data service

6.1.1.2 Outline the plan for data preservation and give information on how long the data will be retained

<https://doi.org/10.3390/rs13245149>

6.1.1.3 Explain when the data will be made available

<https://doi.org/10.3390/rs13245149>

6.1.1.5 Will exclusive use of the data be claimed?

No

6.1.1.7 Indicate whether data sharing will be embargoed or restricted

No restriction or embargo period

6.1.1.8 Indicate who will be able to use the data

- Researchers
- Research communities
- Decision makers
- Education
- Industry

6.1.1.9 Is it necessary to restrict access to certain communities or to apply a data sharing agreement?

No

6.1.2 How will data for preservation be selected, and where data will be preserved long-term?

6.1.2.1 Indicate what data must be retained or destroyed for contractual, legal, or regulatory purposes

Key parameters of the sensor test experimental data

Retained

6.1.2.2 Indicate how it will be decided what data to keep

<https://doi.org/10.3390/rs13245149>

6.1.2.3 Describe the data to be preserved long-term

- Observational (e.g.
- sensor data
- data from surveys)

6.1.2.5 Indicate where the data will be deposited

Mendeley Data

6.1.3 What methods or software tools are needed to access and use data?

6.1.3.1 Indicate how the data will be shared

Repository

6.1.3.2 Indicate whether potential users need specific tools to access and (re-)use the data.

Any GIS software

6.1.4 How will the application of a unique and persistent identifier to each data set be ensured?

6.1.4.1 Select how the data might be re-used in other contexts

- To obtain information
- To share information
- To make informed decisions
- To develop a product
- To improve a product
- To combine with other data

6.1.4.2 What type of persistent identifier (PID) will be used?

DOI

7.1.1 Who will be responsible for data management?

7.1.1.1 Outline the roles and responsibilities for data management/stewardship activities

Alexandra Gemitzi (orcid:0000-0002-8479-7955)

Author

7.1.1.2 Explain the co-ordination of data management responsibilities across partners

<https://doi.org/10.3390/rs13245149>

7.1.2 What resources will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

7.1.2.1 Explain how the necessary resources to prepare the data for sharing/preservation have been costed in

Use of institution infrastructure

7.1.2.2 Indicate whether additional resources will be needed to prepare data for deposit or to meet any charges from data repositories

No

7.1.2.3 Explain how much cost provisionally is needed

No cost

Information can be found here <https://doi.org/10.3390/rs13245149>

Title: Downscaled IMERG precipitation for Rhodope area Greece

Template: CHIST-ERA

Downscaled at 1km of the IMERG daily precipitation for Rhodope area - Greece

Dataset Description

1.1 What data (for example the kind, formats, and volumes), will be collected or produced?

1.1.1 Give details on the kind of data

- Derived or compiled (e.g.
- text mining
- 3D models)

1.1.2 Give details on the data format

netCDF-3 Classic

1.1.3 Justify the use of certain formats

widely supported format across disciplines

1.1.4 Give details on the volumes

MB (megabyte)

1.2 How will new data be collected or produced?

1.2.1 Explain which methodologies or software will be used if new data are collected or produced or if third party data are used

All the important info will be published to a peer reviewed journal

1.2.2 Explain how data provenance will be documented

Through citing (DOI:10.17632/52kyrcfjxc.1)

2.1.1 What metadata and documentation will accompany the data?

2.1.1.1 Indicate which metadata will be provided to help others identify and discover the data

Descriptive

2.1.1.2 Indicate which metadata standards will be used

CF (Climate and Forecast) Metadata Conventions

2.1.1.3 Indicate how the data will be organised during the project

Through published paper.

2.1.1.4 Consider what other documentation is needed to enable re-use

By citing

Stathopoulos, Stavros; Gemitzi, Alexandra (2023), "Downscaled IMERG precipitation for Rhodope area Greece", Mendeley Data, V1, doi: 10.17632/52kyrcfjxc.1

2.1.2 What data quality control measures will be used?

2.1.2.1 Explain how the consistency and quality of data collection will be controlled and documented

Peer review of data

3.1 Reused Data

3.1.1 How will existing data be re-used?

- To reproduce and validate findings
- To compare and combine with other data
- To follow-up research on a specific area
- To develop new products/ services
- To contribute to the wider community (researchers
- public authorities
- citizen scientists)

3.1.2 Where can re-used data be found?

Mendeley Data

3.1.3 Which data will be re-used?

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per Month

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4.1.2.3 Describe the main risks and how these will be managed

Data can be recovered here:

doi: 10.17632/52kyrcfjxc.1

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CC by 4.0

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They are uploaded to Mendeley Data (doi: 10.17632/52kyrcfjxc.1)

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No restriction or embargo period

6.1.1.8 Indicate who will be able to use the data

- Researchers
- Research communities
- Decision makers
- Education
- The public
- Industry

6.1.2 How will data for preservation be selected, and where data will be preserved long-term?

6.1.2.1 Indicate what data must be retained or destroyed for contractual, legal, or regulatory purposes

All or none

Retained

6.1.2.2 Indicate how it will be decided what data to keep

Depends on data version.

6.1.2.3 Describe the data to be preserved long-term

- Derived or compiled (e.g.
- text mining
- 3D models)

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