

INVENIQ RDM

Sotirios TSEPELAKIS

Reminder: What are the FAIR principles?

- **Findable**
 - The object should easily be found in searches
- **Accessible**
 - The conditions for access to the object must be clear
- **Interoperable**
 - The object's (meta-)data must be interpretable by others
- **Reusable**
 - The license for reusing the object (once accessed) must be clear

Reminder: What are research data repositories?

Basically just virtual places where researchers can deposit their data to share it with others, in a controlled fashion

For example

The logo for Zenodo is centered on the slide. It features the word 'zenodo' in a bold, black, lowercase, sans-serif font.

<https://about.zenodo.org/>

Why do we want a repository?

Imagine you're working on a paper for scheduling optimization and want to see how good your approach performs on data already used in the literature.

Get your datasets from e.g.
<http://schedulingresearch.com/>

What is the problem here?

“He’s dead, Jim.”

- Have you ever wanted to reproduce a paper’s results, but couldn’t find the input data anywhere?
- Have you ever followed a link in a paper just to find that it’s dead?
- Will you remember the path on the server where you put your data in half a year?

Isn't this nicer?

The normalised Sentinel-1 Global Backscatter Model, mapping Earth's land surface with C-band microwaves

<https://doi.org/10.1038/s41597-021-01059-7>

The referenced dataset

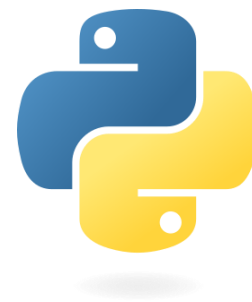
The Sentinel-1 Global Backscatter Model (S1GBM) - Mapping Earth's Land Surface with C-Band Microwaves

<https://doi.org/10.48436/r9fn3-nyd51>

What was that just now?

A customized instance of InvenioRDM, which is...

- a free and open-source research data repository
- based on Flask and Python
- currently under development by CERN and partners
- documented on <https://inveniordm.docs.cern.ch/>



INVENIO  RDM

But does it help with FAIRness?

...



But does it help with FAIRness?

Yes.

F	F1: (Meta) data are assigned globally unique and persistent identifiers	A DOI is issued to every published record on InvenioRDM.
	F2: Data are described with rich metadata	InvenioRDM's metadata is compliant with DataCite's Metadata Schema minimum and recommended terms, with a few additional enrichments.
	F3: Metadata clearly and explicitly include the identifier of the data they describe	The DOI is a top-level and a mandatory field in the metadata of each record.
	F4: (Meta)data are registered or indexed in a searchable resource	(1) Metadata of each record is indexed and searchable directly in InvenioRDM's search engine immediately after publishing. (2) Metadata of each record is sent to DataCite servers during DOI registration and indexed there.
A	A1: (meta)data are retrievable by their identifier using a standardized communications protocol	Metadata for individual records as well as record collections are harvestable using the OAI-PMH protocol by the record identifier and the collection name. Metadata is also retrievable through the public REST API.
	A1.1: The protocol is open, free and universally implementable	See point A1. OAI-PMH and REST are open, free and universal protocols for information retrieval on the web.
	A1.2: The protocol allows for an authentication and authorisation where necessary	Metadata are publicly accessible and licensed under public domain. No authorization is ever necessary to retrieve it.
	A2: Metadata should be accessible even when the data is no longer available	(1) Data and metadata will be retained for the lifetime of the repository. (2) Metadata are stored in high-availability database servers which are separate to the data itself. (note: recommendations for local implementations should be communicated here)
I	I1: (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation	InvenioRDM uses JSON Schema as internal representation of metadata and offers export to other popular formats such as Dublin Core or MARC-XML.
	I2: (Meta)data use vocabularies that follow the FAIR principles	For certain terms we refer to open, external vocabularies, e.g.: license (Open Definition), funders (FundRef) and grants (OpenAIRE).
	I3: (Meta)data include qualified references to other (meta)data	Each referenced external piece of metadata is qualified by a resolvable URL.
R	R1: (Meta)data are richly described with a plurality of accurate and relevant attributes	Each record contains a minimum of DataCite's mandatory terms, with optionally additional DataCite recommended terms and InvenioRDM's enrichments.
	R1.1: (Meta)data are released with a clear and accessible data usage license	(1) License is one of the mandatory terms in InvenioRDM's metadata, and is referring to an Open Definition license. (2) Data downloaded by the users is subject to the license specified in the metadata by the uploader.
	R1.2: (Meta)data are associated with detailed provenance	(1) All data and metadata uploaded is traceable to a registered InvenioRDM user. (2) Metadata can optionally describe the original authors of the published work.
	R1.3: (Meta)data meet domain-relevant community standards	InvenioRDM is not a domain-specific repository, yet through compliance with DataCite's Metadata Schema, metadata meets one of the broadest cross-domain standards available.

Demo Time!



<https://test.researchdata.tuwien.ac.at/>

Frontpage



The screenshot shows the frontpage of the TU Data Repository. At the top, there is a navigation bar with links for 'Log out', 'HOME', 'MY DASHBOARD', and 'SETTINGS'. A search bar is also present. Below the navigation bar, a welcome message states: 'Welcome to TU Data Repository. TU Data Repository is an institutional service of TU Wien to enable storing, sharing and publishing of digital objects, in particular research data. It facilitates the broader requirements for open access to research data and the FAIR principles by making research output findable, accessible, interoperable and re-usable. This service is developed by the TU Wien Center for Research Data Management and hosted by TUGraz. Please note that this service is still under development and has limited functionality. We will add more functionality as development progresses.' Below this, there are four icons representing 'Deposit', 'Search', 'FAQ', and 'Contact'. The 'Recent Uploads' section lists four datasets: 'ORCAS', 'FAIR for Sensitive Data', 'RT-Percent Sun Temple', and 'RT-Percent Silebnik Cathedral'. Each dataset entry includes a brief description, a list of authors, and a 'Download' button. The footer contains logos for 'INTECHROM' and 'FAIR DATA ACTION', along with links for 'POLICIES', 'TERMS OF USE', 'DATA PROTECTION DECLARATION', and 'CONTACT'.

<https://researchdata.tuwien.ac.at>

Search



Hi Log out

HOME MY DASHBOARD SETTINGS

TU WIEN

clef

results found

Best match

Versions

View all versions

Access status

Open

Resource types

Dataset

Help

Search guide

Version 0.001-001

Dataset

+

-

The CLEF-IP 2009 Test Collection

Prof. Florian Rada, Giovanni Zanz, Veronika

CLEF-IP: Cross-Language Evaluation Forum - Intellectual Property The CLEF-IP track was launched in 2009 to investigate IR techniques for patent retrieval and it is part of the CLEF 2009 evaluation campaign. The track utilizes a collection of more than 1M patent documents derived from EPO (European Patent Office) sources. The collection contains d...

Updated on November 01, 2021

Version 0.001-001

Dataset

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The CLEF-IP 2011 Test Collection

Prof. Florian Rada, Veronika Zanz

CLEF-IP: Cross-Language Evaluation Forum - Intellectual Property The CLEF-IP track ran from 2009 to 2013 and aimed to investigate IR techniques for patent retrieval. The track utilizes a collection of more than 1.3M patent documents (1-2.6 million files) derived from EPO (European Patent Office) sources and EurPCT Applications (more than 400K doc...

Updated on November 01, 2021

Version 0.001-001

Dataset

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The CLEF-IP 2010 Test Collection

Prof. Florian Rada, John

CLEF-IP: Cross-Language Evaluation Forum - Intellectual Property The CLEF-IP track was launched in 2009 to investigate IR techniques for patent retrieval and it is part of the CLEF 2010 evaluation campaign. The track utilizes a collection of more than 1.3M patent documents (1-2.6 million files) derived from EPO (European Patent Office) sources, wh...

Updated on November 01, 2021

Version 0.001-001

Dataset

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The CLEF-IP 2013 Test Collection

Prof. Florian Rada, Veronika Zanz, Ljiljana

CLEF-IP: Cross-Language Evaluation Forum - Intellectual Property The CLEF-IP track ran from 2009 to 2013 and aimed to investigate IR techniques for patent retrieval. The track utilizes a collection of more than 1.3M patent documents (1-2.6 million files) derived from EPO (European Patent Office) sources and EurPCT Applications (more than 400K doc...

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Version 0.001-001

Dataset

+

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The CLEF-IP 2012 Test Collection

Prof. Florian Rada, Veronika Zanz, Ljiljana Mihov

CLEF-IP: Cross-Language Evaluation Forum - Intellectual Property The CLEF-IP track ran from 2009 to 2013 and aimed to investigate IR techniques for patent retrieval. The track utilizes a collection of more than 1.3M patent documents (1-2.6 million files) derived from EPO (European Patent Office) sources and EurPCT Applications (more than 400K doc...

Updated on November 01, 2021

Version 0.001-001

Dataset

+

-

The MAREC/REC data set

Prof. Florian Rada

MAREC/REC: The MAREC/REC Collection / The Information Retrieval Conference Collection MAREC/REC is a static collection of over 10 million patent applications and granted patents in a unified file format normalized from EP, WO, US, and JP sources, spanning a range from 1976 to June 2008. MAREC/REC is intended as raw material for rese...

Updated on November 01, 2021

powered by INVENIO

enabled by FAIR DATA AUSTRIA

POLICIES TERMS OF USE DATA PROTECTION DECLARATION CONTACT

Search (External: DataCite)

DataCite Search
Works
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2 Works

The Sentinel-1 Global Backscatter Model (S1GBM) - Polar Extension

Bernhard Bauer-Marschallinger, Senmao Cao, Claudio Navacchi, Vahid Freeman, Felix Reuß, Dirk Gaudtner, Björn Rommen, Francisco Ceba Vega, Paul Snoei, Evert Attema, Christoph Reimer & Wolfgang Wagner
Dataset published via TU Wien

This dataset was generated by the Remote Sensing Group of the TU Wien Department of Geodesy and Geoinformation (<https://mrs.geo.tuwien.ac.at/>), within a dedicated project by the European Space Agency (ESA). Rights are reserved with ESA. Open use is granted under the CC BY 4.0 license. With the recently published Sentinel-1 Global Backscatter Model (S1GBM) Version 1.0, we provide a new perspective on Earth's land surface through normalised microwave backscatter maps from Sentinel-1's Synthetic Aperture Radar (SAR)...

0 No citations were reported. No usage information was reported.

<https://doi.org/10.48436/19fng-nyd51> [Cite](#)

The Sentinel-1 Global Backscatter Model (S1GBM) - Mapping Earth's Land Surface with C-Band Microwaves

Bernhard Bauer-Marschallinger, Senmao Cao, Claudio Navacchi, Vahid Freeman, Felix Reuß, Dirk Gaudtner, Björn Rommen, Francisco Ceba Vega, Paul Snoei, Evert Attema, Christoph Reimer & Wolfgang Wagner
Dataset published via TU Wien

This dataset was generated by the Remote Sensing Group of the TU Wien Department of Geodesy and Geoinformation (<https://mrs.geo.tuwien.ac.at/>), within a dedicated project by the European Space Agency (ESA). Rights are reserved with ESA. Open use is granted under the CC BY 4.0 license. With this dataset publication, we open up a new perspective on Earth's land surface, providing a normalised microwave backscatter map from spaceborne Synthetic Aperture Radar (SAR) observations. The Sentinel-1 Global Backscatter...

0 No citations were reported. No usage information was reported.

<https://doi.org/10.48436/n2dzy-gqbg1> [Cite](#)

Registration Year

☐ 2022	1
☐ 2020	1

Resource Types

☐ Dataset	2
----------------------------------	---

Affiliations

☐ European Space Agency	2
☐ TU Wien	2

About DataCite

- What we do
- Governance
- Members
- Steering groups
- Staff
- Job opportunities

Services

- Assign DOIs
- Metadata search
- Event data
- Profiles
- regdata
- Citation formatter
- Statistics
- Service status
- Content negotiation
- OAI-PMH
- Test environment

Resources

- Metadata schema
- Support
- Fee Model

Community

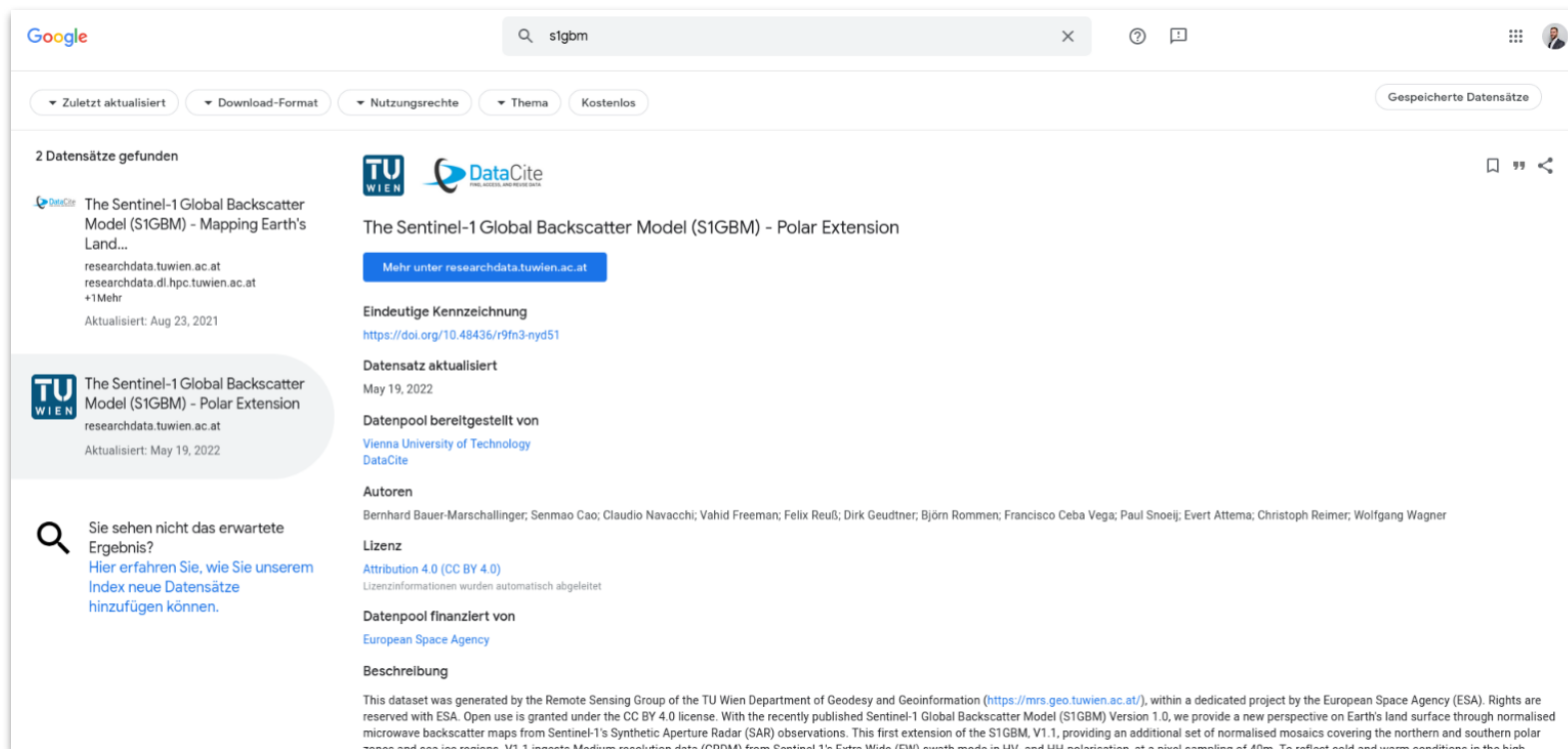
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Imprint
Terms and conditions
Privacy policy

● All Systems Operational

Search (External: Google)



Google search results for "s1gbm". The search bar shows "s1gbm" with a magnifying glass icon and a close button. Below the search bar are filters: "Zuletzt aktualisiert", "Download-Format", "Nutzungsrechte", "Thema", and "Kostenlos". A button "Gespeicherte Datensätze" is on the right.

2 Datensätze gefunden

 The Sentinel-1 Global Backscatter Model (S1GBM) - Mapping Earth's Land...
researchdata.tuwien.ac.at
researchdata.dl.hpc.tuwien.ac.at
+1Mehr
Aktualisiert: Aug 23, 2021

 The Sentinel-1 Global Backscatter Model (S1GBM) - Polar Extension
researchdata.tuwien.ac.at
Aktualisiert: May 19, 2022

 Sie sehen nicht das erwartete Ergebnis?
[Hier erfahren Sie, wie Sie unserem Index neue Datensätze hinzufügen können.](#)

  The Sentinel-1 Global Backscatter Model (S1GBM) - Polar Extension
[Mehr unter researchdata.tuwien.ac.at](#)

Eindeutige Kennzeichnung
<https://doi.org/10.48436/r9fn3-nyd51>

Datensatz aktualisiert
May 19, 2022

Datenpool bereitgestellt von
[Vienna University of Technology](#)
[DataCite](#)

Autoren
Bernhard Bauer-Marschallinger; Senmao Cao; Claudio Navacchi; Vahid Freeman; Felix Reuß; Dirk Geudtner; Björn Rommen; Francisco Ceba Vega; Paul Snoei; Evert Attema; Christoph Reimer; Wolfgang Wagner

Lizenz
[Attribution 4.0 \(CC BY 4.0\)](#)
Lizenzinformationen wurden automatisch abgeleitet

Datenpool finanziert von
[European Space Agency](#)

Beschreibung
This dataset was generated by the Remote Sensing Group of the TU Wien Department of Geodesy and Geoinformation (<https://mrs.geo.tuwien.ac.at/>), within a dedicated project by the European Space Agency (ESA). Rights are reserved with ESA. Open use is granted under the CC BY 4.0 license. With the recently published Sentinel-1 Global Backscatter Model (S1GBM) Version 1.0, we provide a new perspective on Earth's land surface through normalised microwave backscatter maps from Sentinel-1's Synthetic Aperture Radar (SAR) observations. This first extension of the S1GBM, V1.1, providing an additional set of normalised mosaics covering the northern and southern polar zones and sea ice regions. V1.1 ingests Medium-resolution data (GRDM) from Sentinel-1's Extra Wide (EW) swath mode in HV- and HH-polarisation at a pixel sampling of 40m. To reflect cold and warm conditions in the high

Record Landing Page

[illegible]

Record Landing Page

Published January 19, 2021 | Version 1.0

European Sentinel-1 Forest Type and Tree Cover Density Maps

Dostalova, Alena¹; Cao, Senmao^{1,2}; Wagner, Wolfgang^{1,2}

Citation Style APA

Dostalova, A., Cao, S., & Wagner, W. (2021). European Sentinel-1 Forest Type and Tree Cover Density Maps (1.0) [Data set]. TU Wien. <https://doi.org/10.48436/9b6f5-11b75>

Description

This dataset was generated by the TU Wien Department of Geodesy and Geoinformation.

European Sentinel-1 forest type and tree cover density maps represent first continental-scale forest layers based on Sentinel-1 C-Band Synthetic Aperture Radar (SAR) backscatter data. For the year 2017 they cover the majority of European continent with 10 m and 100 m sampling for forest type and tree cover density, respectively. The maps were derived using the method described in <https://www.tandfonline.com/doi/full/10.1080/01431161.2018.1479788>.

The forest type map shows the dominant forest type class (coniferous, broadleaf). Tree cover density map shows the percentage of forest canopy cover within the 100 m pixel.

Please be referred to our peer-reviewed article at <https://doi.org/10.3390/rs13030337> for details and accuracy assessment across Europe.

Dataset Record

The forest type and tree cover density maps are sampled at 10 m and 100 m pixel spacing respectively, georeferenced to the EquiGrid and divided into square tiles of 100km extent ("T1"-tiles). With this setup, the forest maps consist of 728 tiles over the European continent, with data volumes of 3.12 GB and 378.3 MB.

The tiles' file-format is a LZW-compressed GeoTIFF holding 16-bit integer values, with tagged metadata on encoding and georeference. Compatibility with common geographic information systems as QGIS or ArcGIS, and geodata libraries as GDAL is given.

In this repository, we provide each forest map as tiles, whereas two zipped dataset-collections are available for download below.

Code Availability

For the usage of the EquiGrid we provide data and tools via the python package available on GitHub at <https://github.com/TUW-GEO/EquiGrid>. More details on the grid reference can be found in <https://www.sciencedirect.com/science/article/pii/S0098300414001629>.

Acknowledgements

The computational results presented have been achieved using the Vienna Scientific Cluster (VSC).

Record

Published January 19, 2021 | Version 1.0

European Sentinel-1 Forest Type and Tree Cover Density Maps

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Files

File	Size
ForestType	3.12 GB
TreeCoverDensity	378.3 MB

Additional details

Metadata

File: EuropeanSentinel1ForestTypeAndTreeCoverDensityMaps.zip

Created: 2021-01-19

Modified: 2021-01-19

Record Landing Page



Published January 19, 2021 | Version 1.0

European Sentinel-1 Forest Type and Tree Cover Density Maps

Dostalova, Alena^{1,2}; Cao, Senmao^{1,2}; Wagner, Wolfgang^{1,2}

Citation Style APA

Dostalova, A., Cao, S., & Wagner, W. (2021). European Sentinel-1 Forest Type and Tree Cover Density Maps [1.0] [Data set]. TU Wien. <https://doi.org/10.48369/86f6-11b75>

Description

This dataset was generated by the TU Wien Department of Geodesy and Geoinformation.

European Sentinel-1 forest type and tree cover density maps represent first continental-scale forest layers based on Sentinel-1 C-Band Synthetic Aperture Radar (SAR) backscatter data. For the year 2017 they cover the majority of European continent with 10 m and 100 m sampling for forest type and tree cover density, respectively. The maps were derived using the method described in <https://www.tandfonline.com/doi/full/10.1080/01431161.2018.1479788>.

The forest type map shows the dominant forest type class (coniferous, broadleaf). Tree cover density map shows the percentage of forest canopy cover within the 100 m pixel.

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Files

File	Size
ForestType.zip	3.1 GB
TreeCoverDensity.zip	378.3 MB

Files

ForestType.zip

ForestType

File	Size
2017_FOREST-CLASSES_EU010M_E029N009T1.tif	1.0 MB
2017_FOREST-CLASSES_EU010M_E029N010T1.tif	670.2 kB
2017_FOREST-CLASSES_EU010M_E030N009T1.tif	4.4 MB
2017_FOREST-CLASSES_EU010M_E030N010T1.tif	7.5 MB
2017_FOREST-CLASSES_EU010M_E030N011T1.tif	8.0 MB

Files (3.5 GB)

Name	Size
ForestType.zip	3.1 GB
TreeCoverDensity.zip	378.3 MB

Record Landing Page



Published January 19, 2021 | Version 1.0

European Sentinel-1 Forest Type and Tree Cover Density Maps

Dostalova, Alena¹; Cao, Senmao^{1,2}; Wagner, Wolfgang^{1,2}

Citation Style APA

Dostalova, A., Cao, S., & Wagner, W. (2021). European Sentinel-1 Forest Type and Tree Cover Density Maps (1.0) [Data set]. TU Wien. <https://doi.org/10.48436/9k4ts-11b75>

Description

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European Sentinel-1 Forest Type and Tree Cover Density Maps

Version 1.0

DOI: [10.48436/9k4ts-11b75](https://doi.org/10.48436/9k4ts-11b75)

Resource type: Dataset

Publisher: TU Wien

Formats: application/x-geotiff

Rights: Creative Commons Attribution Share Alike 4.0 International

Export: JSON

Dataset Record

The forest type and tree cover density maps are sampled at 10 m and 100 m pixel spacing respectively, georeferenced to the EquiGrid and divided into square tiles of 100km extent ("T1"-tiles). With this setup, the forest maps consist of 728 tiles over the European continent, with data volumes of 3.12 GB and 378.3 MB.

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Acknowledgements

The computational results presented have been achieved using the Vienna Scientific Cluster (VSC).

Files

File	Size
ForestType.zip	3.1 GB
TreeCoverDensity.zip	378.3 MB

Additional details

Keywords: forest, sentinel-1, forest type, tree cover density, europe, geotiff, gdal, qgis, arcgis, python, equigrd

Published January 19, 2021 | Modified December 31, 2021

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Files

ForestType.zip

ForestType

File	Size
2017_FOREST-CLASSES_EU010M_E029N009T1.tif	1.0 MB
2017_FOREST-CLASSES_EU010M_E029N101T1.tif	670.2 kB
2017_FOREST-CLASSES_EU010M_E030N009T1.tif	4.4 MB
2017_FOREST-CLASSES_EU010M_E030N101T1.tif	7.5 MB
2017_FOREST-CLASSES_EU010M_E030N111T1.tif	8.0 MB

Files (3.5 GB)

Name	Size
ForestType.zip	3.1 GB
TreeCoverDensity.zip	378.3 MB

[Preview](#) [Download](#)

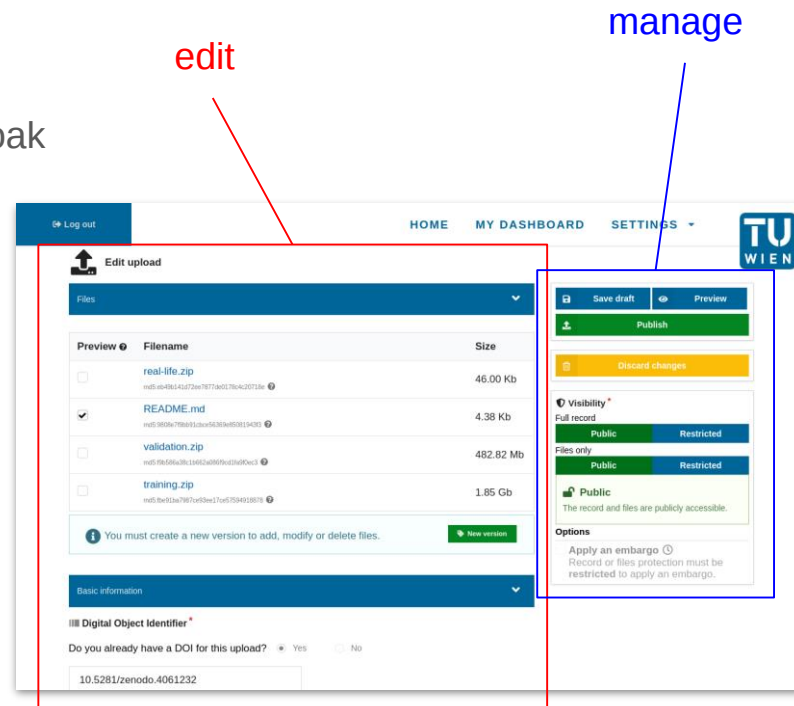
Access Restrictions

- Authentication

- Local login vs OAuth2 (resp. OpenID Connect)
 - Get other services integrated, e.g. Keycloak
=> integrates TU SSO
- Sessions for browsers, tokens for cURL

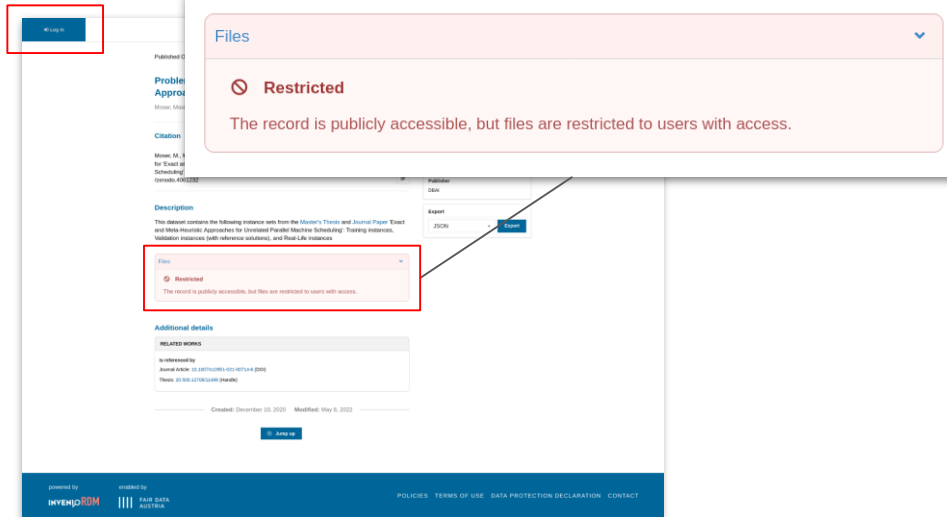
- Authorization

- Different permissions for different actions
 - **read**, **read_files**, **create**, **edit**, **manage**, ...
- Role-based access (e.g. role “trusted-user”)
- Share-by-Link (like Google Docs)

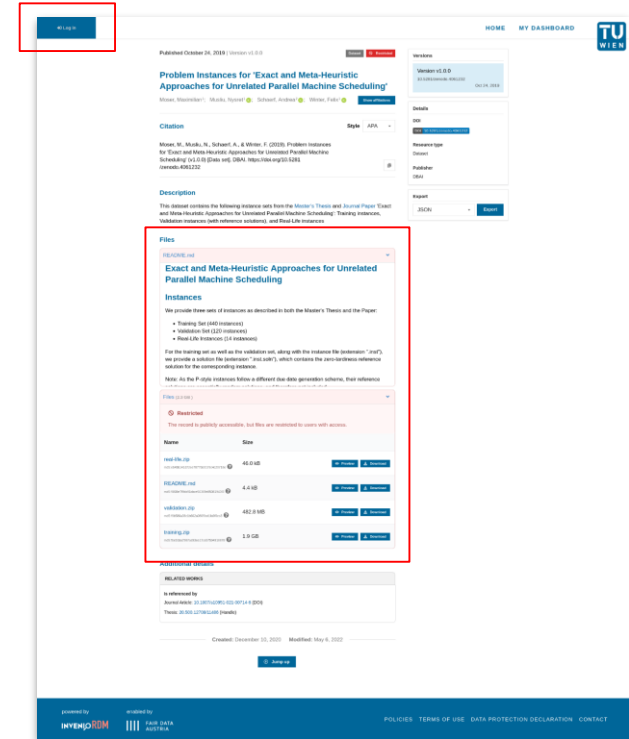


Share by Link

Can be used to share access to restricted datasets:



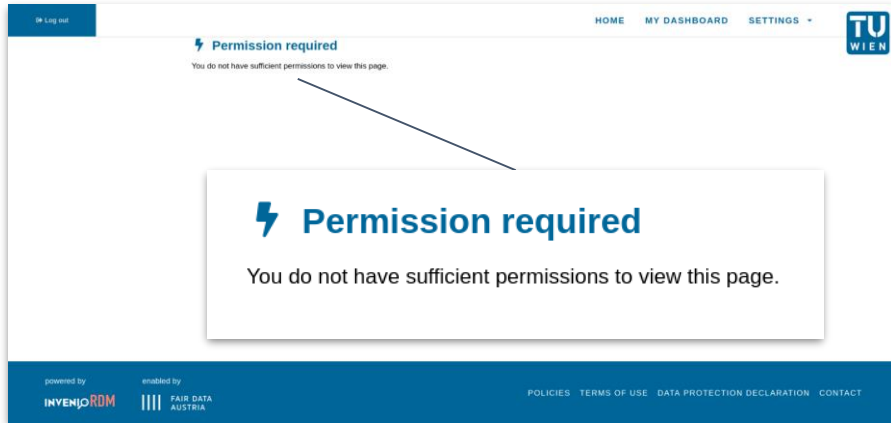
Normal Access



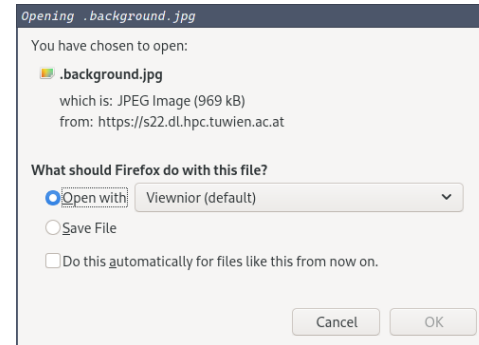
Access via Secret Link

Share by Link

Can also be used to enable double-blind peer reviews:



Metadata cannot be accessed...



... but files can be downloaded

TUW Research Data vs InvenioRDM

Customized with our own modules: <https://gitlab.tuwien.ac.at/fairdata>

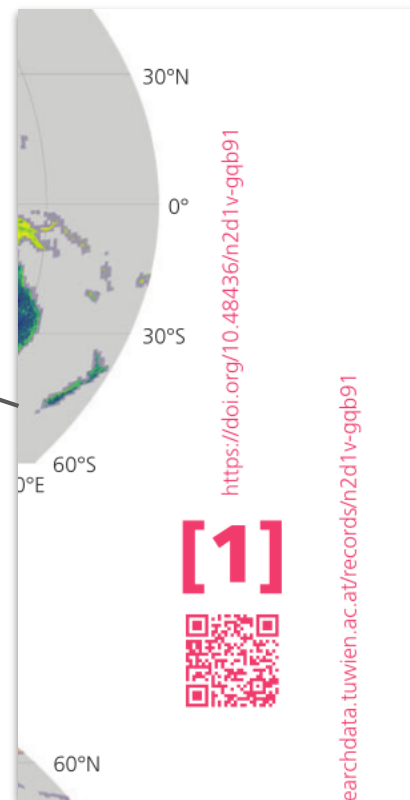
- [Invenio-Theme-TUW](#)
 - TU Wien corporate design, and extra pages
- [Invenio-Config-TUW](#)
 - TU Wien SSO for authentication
 - customized permissions
 - tweaked inner workings
- [Invenio-Utilities-TUW](#)
 - additional CLI commands for administration

Summary: Core InvenioRDM features

- Record Management
 - Metadata based on [DataCite kernel 4.3](#)
 - File deposit
 - DOI minting on publication
 - Record Versioning
 - Export of metadata in other formats (e.g. Dublin Core, OAI-PMH, ...)
 - Access sharing (e.g. via secret link, similar to Google Docs)
- Communities
- Modularity and customizability
- Growing developer community (on [Discord](#))

Bonus tips for depositing data

- **Rights:** Make sure you have the rights to upload the data
 - check back with all involved creators
 - agree on that before even creating the dataset
- **Longevity:** Choose proper file formats for your uploads
 - simple and open standards over proprietary niche formats
 - c.f. [Library of Congress recommendations](#)
- **FAIRness:** Test your record's FAIRness with tools
 - e.g. [F-UJI](#)



Future work

- Integration with our other services, e.g.
 - the DBRepo
 - our CRIS system
 - our maDMP tool: <https://damap.org/>
- Account creation workflow for externals
- Virus scanning on upload
- Preservation/archival of suitable uploaded files
- Factor in the uploaded files' contents for search
- Etc. – see also <https://inveniosoftware.org/products/rdm/roadmap/>

Thank you for your attention!

Questions?

