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14:00  Intro about the EGI and the EGI infrastructure  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  14:00 - 14:20

15:00  EGI VO for AP  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  14:20 - 14:50

15:00  DEMO - How to use the EGI Cloud  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  14:50 - 15:10

15:00  DEMO - Getting started with the EGI Notebooks  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  15:10 - 15:30

16:00  Hands-on with the EGI Notebooks and Replay services  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  16:00 - 16:30

16:00  Approach to reproducible data science with EGI and EOSC  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  16:30 - 16:45

16:00  Overview of the hands-on - Full data lifecycle  Giuseppe La Rocca
Auditorium, BHSS, Academia Sinica  16:45 - 17:30
Introduction about the EGI and the EGI Infrastructure

TLP: GREEN Limited disclosure
The EGI Federation is an international e-infrastructure

We provide advanced computing and data analytics for research and innovation

2010
From the high-energy physics compute grid (WLCG)

2022
To a multi-disciplinary, multi-technology infrastructure
Vision
All researchers have seamless access to services, resources and expertise to collaborate and conduct world-class research and innovation

Mission of the EGI Federation
Deliver open solutions for advanced computing and data analytics in research and innovation

Mission of the EGI Foundation
Enable the EGI Federation to serve international research and innovation together
International Partnerships

- GEANT Association
- RENAM (Moldova)
- GRENA (Georgia)
- IMCS UL (Latvia)

- Open Science Grid (USA)
- CLAF (Latin America) Compute Canada

- CSIR Meraka Institute (South Africa)

- SSTIR (China)
- CNIC (China)
- IHEP (China)
- ASGC (Taiwan)
The EGI Infrastructure

**EIGI Internal services**
- Service registry
- Monitoring
- Accounting
- Helpdesk
- Single sign-in
- Security oversight
- Capacity management
- etc.

**Platform and community specific services built on top:**
Scientific gateways, Virtual Research Environments, Application portals, etc.

- **High Performance Compute** (since 2022)
- **Cloud Compute** (based on OpenStack. Since 2013)
- **Data** (based on OneData)

Platform and services:
- High-Throughput Compute (ARC-CE, HTCondorCE, SRM, webdav, XrootD)
EGI Value Propositions

**Services for Research**
Our large-scale computing and data analytics services are helping scientists to accelerate their research.

**Services for Federation**
Our internal services provide tools for coordination of the EGI Federation, improving how we work together.

**Services for Business**
We help companies to exploit and provide services and resources for compute- and data-intensive research and innovation.
<table>
<thead>
<tr>
<th><strong>Wide access</strong></th>
<th><strong>Policy-based</strong></th>
<th><strong>Market-driven</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Users can freely access scientific data and digital services provided by EGI resource providers.</td>
<td>Users are granted access based on policies defined by the EGI resource providers or by the EGI Foundation.</td>
<td>Users can negotiate a fee to access services either directly with EGI resource providers or indirectly with the EGI Foundation.</td>
</tr>
</tbody>
</table>

**Example:**
- EGI Notebooks open instance
- EGI Cloud pool for application piloting

**Example:**
- Biomed HTC VO pool for life sciences
- INFN-Bari (IT), IN2P3–IRES (FR), ULAKBIM (TR) provide Clouds for the National Bioinformatics Infrastructure of Sweden

**Example:**
- FitSM training by EGI Foundation
- 4 EGI Cloud providers deliver to Exprivia
Allocating services and resources

**Users’ representative**

Type, number, size, cost, availability, etc.

**Instance requirements**

**Negotiator**

**Foundation**

**Conditions**

Ensure satisfaction, capture achievements, record feedback

Regular satisfaction interviews

Service Level Agreement

Operation Level Agreement

Ensuring that agreed targets are met

Regular service delivery reports

**Federation**

Applic. provider

Storage provider

HTC provider

Support

Cloud provider

Training
An SLA example

Read the full story: https://www.egi.eu/case-study/emso-eric/

Check the SLA-OLA documents and reports: https://documents.egi.eu/document/3539

EGI VO
VICE LEVEL AGREEMENT

2 Service hours and exceptions
The services operate during the following hours: Monday to Friday, 10:00 AM to 6:00 PM (8 hours a day, overtime or 7 days a week). Other hours only during official holidays.

The following exceptions apply:
- "EMOPE, MYPA, etc." (i.e., "Ufficio, Dipartimento", etc.): 24 hours a day, 7 days a week.
- "EMOPE, NART, etc." (i.e., "Ufficio, Dipartimento", etc.): 8 hours a day, 7 days a week.

Online Storage (category: Storage)
Description: https://www.egi.eu/vocabulary/cloud-storage/

- Resource Centre: CESGA (Country: Spain)
  - Online Storage
    - Guaranteed storage capacity (TB): 0.048
    - Opportunistic storage capacity (TB)
EGI allocations for the Asian Pacific (AP)

TLP: GREEN Limited disclosure
EGI resource pool for Asia Pacific

• A Virtual Organisation (alias resource pool) in the EGI cloud federation
• With a community specific Notebooks installation
• With a community specific Replay installation

• Purposes:
  o To facilitate open science in the region → IN THE SCOPE OF THE TUTORIAL TODAY
  o To enable sharing of cloud resources from the region
  o To facilitate application sharing from the region
  o To facilitate data sharing related to environmental sciences from the region
Disaster Mitigation and Agriculture

EGI infrastructure for the Disaster Mitigation and Agriculture community

This is the documentation to support the Disaster Mitigation and Agriculture community in the Asian Pacific region.

About the community

Hazard risk estimation and prediction by numerical simulation is crucial to disaster mitigation studies and applications. The Disaster Mitigation and Agriculture community investigates in-depth the mechanisms of the selected disaster events and develops the appropriate simulation models to reproduce the processes by case studies. The collaboration framework aims at becoming an open science platform of disaster mitigation so that all the tools, data, resources and simulation facilities are sharable, and the simulations are reproducible.

This knowledge base is enriched by the simulation models, portals, data and visualisation facilities that are contributed to by the members:

- Academia Sinica, Taiwan (Leading Partner, represented by Academia Sinica Grid Computing Centre (ASGC))
- Institute of Earth Science, Academia Sinica, Taiwan
- Research Centre of Environmental Changes, Academia Sinica, Taiwan
Demo: How to use the EGI Cloud resources pool for Asia Pacific
The EGI Cloud Federation

- Operational since 2013
- 28 Cloud Providers (OpenStack)
- Providing different functionalities and more dynamic platforms for scientists
- 69,863,034 Cloud CPU/h consumed in 2022
- 105 Virtual Organisations supported (Virtual Organisation = Resource pool)
- Access via GUI, CLI, OpenStack native and libcloud APIs, Terraform

>1.2 Million computing cores
>1 EB disk & tape
816 service endpoints
Kubernetes (Containers) in the EGI Cloud

Self-deployed by users
- Spin up some VMs and deploy kubernetes (works with existing tooling targeting OpenStack)

Automated deployment with Infrastructure Manager (IM)
- Select site, size of VMs and go

Rancher-based access to managed clusters (under development)
- Rancher integrated with EGI Check-in
- Access to pre-configured clusters managed by expert operators
Federation services for Cloud

Infrastructure Manager orchestrates deployment of Virtual Infrastructures

• Multi-cloud following Infrastructure as a Code (IaC) paradigm
• Rely on Ansible and Helm to manage definition of complex infrastructure
• Manages whole life-cycle: deployment, monitoring, reconfiguration (such as scaling-up or down) and removal.
• Support for TOSCA
AppDB: an application store for EGI Cloud

Common registry for Virtual Appliances (VA)
- VM image + metadata

Available for running at the EGI cloud or on any hypervisor

Community-level management of VAs
- Automatic distribution to providers
EGI Notebooks in the Asia Pacific VO

TLP: GREEN Limited disclosure

ISGC 2023
The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text.
Jupyter

Documentation
Text formatted using Markdown/LaTeX

Code
Use your favourite language

Interactive
browser based environment

Output
Results of the code execution (e.g., plots)
Jupyter is single user by design

**JupyterHub** is a multi-user version designed for companies, classrooms and research labs:

- Manages Authentication
- Spawns single-users notebooks servers on-demand
- Gives each user a complete Jupyter server
JupyterHub hosted in the EGI Cloud
▪ Offers Jupyter notebooks ‘as Service’
▪ One-click solution: login and start using

Main Features:
▪ Easy access: Login with the EGI AAI Check-In service
▪ Persistent storage for notebooks
▪ Use EGI computing and storage resources from your notebooks
EGI Notebooks integrations

1. Runs on EGI Cloud providers (Cloud Compute / Online Storage)
2. Uses Check-in for authentication + access to other services
3. Makes user-level software available from CVMFS
   • DIRAC client for submission of jobs to Workload Manager / High Throughput Compute
   • Fedcloudclient for interaction with Cloud Compute
4. Transparent access to Datahub spaces
5. Access to 3rd party services: B2DROP
Starting your server

EGI Notebooks offers different computing environments:

- **Default**: Python, R, Julia, Octave and a wide range of data science libraries
- **MATLAB (Basic/Full)**: Run MATLAB on EGI resources (requires a license!)

### Server Options

- **Default EGI environment** - 6 GB RAM / 2 core
  The Default notebook environment includes Python, R, Julia and Octave kernels

- **MATLAB Environment (Basic)** - 4GB RAM / 4 cores
  The MATLAB environment (requires a valid license), includes Python and MATLAB kernels

- **MATLAB Environment (Full)** - 4GB RAM / 4 cores
  The MATLAB environment (requires a valid license), includes Python, MATLAB kernels and additional MATLAB packages

B2DROP connection

Start
JupyterLab interface

[Image of the JupyterLab interface showing files and environments]
(Most) software in the environment is managed with conda (**mamba**)

- Adding packages can be done at any time with **mamba** or **pip**
- This is installed in /opt/conda which is wiped out for every new server session!
  - Include a installation cell on your notebooks to avoid not having the needed libraries
  - Ask us for adding them to the environment!
Accessing your data and code

- **Persistent home**
  - Can be used to store data (10GB limit)
  - Files will be kept even if the notebook server dies

- **nbgitpuller**
  - Get code from any git repository from a single URL
  - [https://hub.jupyter.org/nbgitpuller/link.html](https://hub.jupyter.org/nbgitpuller/link.html)

- **CMVFS**
  - Selected CVMFS repositories available
  - Easy to add community specific ones

- **DataHub**
  - Access to your accessible spaces in datahub
  - Share data and assign PIDs to shared spaces

- **B2DROP**
  - Access data stored in EUDAT’s B2DROP service

- **External web server**
  - ....
Easily clone GitHub repositories into your home with a shareable link.

Try it: https://go.egi.eu/x8oui
CernVM-FS

- CernVM-FS (CVMFS) is implemented as a POSIX read-only file system in user space (a FUSE module).
- Files and directories are hosted on standard web servers and mounted in the universal namespace /cvmfs.

Main features
- Allows centrally managed software distribution across federated environments.
- Allows to make content available as a read-only file system that efficiently downloads and caches files on demand

Documentation
- https://docs.egi.eu/users/compute/software-distribution/
EGI DataHub

Service based on Onedata technology

It allows **transparent data access** under a common namespace regardless of the location open access

Access restricted to members of a Virtual Organization (VO)

Data can be accessed via a **GUI** or **APIs**

Allows **replication** of data from data providers for **resiliency** and **availability** purposes. Replication may take place either **on demand** or **automatically**.

Easy integration with other EGI components thanks to integration with EGI **Check-in** service, the EGI Authentication and Authorization Infrastructure (AAI)
EGI DataHub – Architecture

Credits: Bartosz Kryza
B2DROP is EUDAT Sync & Share solution

- Based on NextCloud
- WebDav interface that can be accessed remotely

If you want to access your space from the EGI Notebooks:
- Go to B2DROP security configuration
- Create an app password
- Copy credentials into the EGI Notebooks
- Tick the “Remember B2DROP credentials” box to not keep these credentials in your settings
Getting access with the EGI Notebooks in the Asia Pacific VO

TLP: GREEN Limited disclosure

ISGC 2023
1. **Sign-up** ([https://aai.egi.eu/signup](https://aai.egi.eu/signup)) for an EGI Check-In account

2. **Subscribe** the `vo.environmental.egi.eu` Virtual Organisation (VO) by visiting the enrollment URL ([https://go.egi.eu/8Hspz](https://go.egi.eu/8Hspz)) with your EGI Check-In account.
   - The subscription requires approval from the VO Manager.
Hands-on: Running your first notebooks
A very simple notebook

Your first notebook

This is a markdown cell, you can format text using Markdown.

In [1]:

```
a = 5
b = 6
a + b
```

Out[1]:

```
11
```

Variables

The variables defined in previous cells are available in following cells

In [2]:

```
a = a + 1
print(b)
a
```

Out[2]:

```
6
```

Plotting

Output of cells can be more than just text

Code taken from Matplotlib tutorial subplot example

In [3]:

```
import matplotlib.pyplot as plt
import numpy as np
np.random.seed(19888880)
data = np.random.randn(2, 100)
fig, axs = plt.subplots(2, 2, figsize=(5, 5))
axs[0, 0].hist(data[0])
axs[0, 1].scatter(data[0], data[1])
axs[1, 0].plot(data[0], data[1])
axs[1, 1].hist2d(data[0], data[1])
plt.show()
```

To launch the notebook ⇒ go.egi.eu/xABiu

00-first-notebook.ipynb

- GitHub repo for this notebook
- Notebook fetched with the nbgitpuller

HandsOn

21 March 2023 | ISGC2023

www.egi.eu |
Climate Change Knowledge Portal (CCKP)

**cckp_historical_rainfall.ipynb**
- Values are in millimeters (mm).
- Datasets are stored in **CVMFS**

To launch the notebook ⇒ [https://go.egi.eu/KWIsA](https://go.egi.eu/KWIsA)

See: “How to make datasets and application in CVMFS”
Coffee break
Check-in provides authentication, authorization and user management for the EOSC Compute Platform

**Standards based:**
- SAML 2.0 / OpenID Connect 1.0 / OAuth 2.0 / LDAP

**Interoperable:**
- AARC and EOSC AAI compliant
- Support for legacy X.509 services via MasterPortal

**Community management:**
- Comanage and Perun supported
- Other Community AAls pluggable
Where to found the token in the EGI Notebooks

jovyan@jupyter-b10d032648d03b75a24a7795533376e2376f9de61508522bce083ed8:~$ cd /var/run/secrets/egi.eu

jovyan@jupyter-b10d032648d03b75a24a7795533376e2376f9de61508522bce083ed8:~$ cd /var/run/secrets/egi.eu

access_token

jovyan@jupyter-b10d032648d03b75a24a7795533376e2376f9de61508522bce083ed8:~$ cat /var/run/secrets/egi.eu

access_token
Get info about yourself

Interacting with the infrastructure with your own credentials

In this example we use the token to get our own information from Check-in

```
[9]: import requests

[10]: with open("/var/run/secrets/egi.eu/access_token") as f:
    access_token = f.read()

    print("Got an check-in access token: %s..." % access_token[:10])

Got an check-in access token: eyJhbGciOi...


r = requests.get(userinfo_url,
    headers={"Authorization": 'Bearer %s' % access_token})

userinfo = r.json()

print("My user info:")
print("Name: %s" % userinfo['name'])
print("email: %s" % userinfo['email'])

My user info:
Name: Enol Fernandez
email: enol.fernandez@egi.eu
```
Sentinel image processing and analysis

HandsOn
Approach to reproducible Open Science with EGI and EOSC
Reproducibility: beyond sharing code and data

Reproducibility Spectrum

Publication only

Publication +

Code

Code and data

Linked and executable code and data

Full replication

Not reproducible

Gold standard

Peng, Science, 2011
Reproducible Open Science in EGI/EOSC
Binder: reproducing execution environments

An open-source web application to turn repositories in interactive notebooks

It uses modern technology in cloud orchestration (Kubernetes), interactive computing (Jupyter), scientific computing (the open-science ecosystem)
BinderHub hosted by EGI

- Offered ‘as Service’
- Same access conditions as EGI Notebooks

Main Features:

- Use any binder-compatible repository
- Reproduce your notebooks with access to EGI resources (e.g. DataHub)
- No hard limits on sessions duration, customisable resource limits for users/communities
Example: Number of Summer Days in Taipei with EGI Replay

From [https://github.com/enolfc/isgc-2023-enes](https://github.com/enolfc/isgc-2023-enes)

QuickStart_GeoPy

- Calculate the number of summer days in the specific location
- From the ENES Data Spaces
- Datasets are stored in DataHub

See: “How to make your datasets available in DataHub”
How to make notebooks Reproducible and Shareable
1. Create your first sharable notebook

Download your first notebook in your laptop (*.ipynb)
2. Getting a GitHub account

Sign-up if you don’t have an account already
3. Creating a new GitHub repository

Create a new repository
A repository contains all project files, including the revision history. Already have a project repository elsewhere? Import a repository.

Repository template
Start your repository with a template repository's contents.
No template

Repository name
isgc2013_rainfall

Description (optional)

Public
Anyone on the internet can see this repository. You choose who can commit.

Private
You choose who can see and commit to this repository.

Initialize this repository with:
Skip this step if you’re importing an existing repository.

Add a README file
This is where you can write a long description for your project. Learn more.
4. Adding dependencies

Create the ‘requirements.txt’ file in your repo

```
- pandas
- matplotlib
- xlrd
```

Import necessary libraries

```python
import pandas as pd
from pandas import DataFrame
import matplotlib.pyplot as plt
```

Provide the ISO_3DIGIT of the country you are interested to analyse

```python
ISO_3DIGIT = "ITA"
```

Load historical datasets from local and create a DataFrame object

```python
raw_data = pd.read_excel('/cvmfs/notebooks.egi.eu/isgc-2023/cckp/cckp_historical_data_0.xls', sheet_name='Country_precipitationCRU')
```
5. Executing Notebooks in Replay

https://replay.notebooks.egi.eu/

Build and launch a repository

GitHub repository name or URL

GitHub 

https://github.com/glarocca/ISGC2013_rainfall.git

Git ref (branch, tag, or commit)

HEAD

Path to a notebook file (optional)

File

Launch

Copy the URL below and share your Binder with others:

https://replay.notebooks.egi.eu/v2/gh/glarocca/isgc2013_rainfall.git/HEAD

Expand to see the text below, paste it into your README to show a binder badge:


.. image:: https://replay.notebooks.egi.eu/badge_logo.svg
Unable to launch the server

https://replay.notebooks.egi.eu/

Only 1 server per user is allowed!
Stop server at: https://replay.notebooks.egi.eu/hub/hub/home
6. Adding Binder badge in the GitHub repository

```markdown
# isgc2013_rainfall

This is my first shared notebook

[[Binder]](https://replay.notebooks.egi.eu/v2/gh/glarocca/ISGC2023_rainfall.git/HEAD)
```
7. Create a new Release for the repository
8. Making repository citable

https://zenodo.org/
9. Synch Zenodo with repository

- **GitHub Repositories**
  - **Get started**
  - **Flip the switch**
    - Select the repository you want to preserve, and toggle the switch below to turn on automatic preservation of your software.
  - **Create a release**
    - Go to GitHub and create a release. Zenodo will automatically download a .zip-ball of each new release and register a DOI.
  - **Get the badge**
    - After your first release, a DOI badge that you can include in GitHub README will appear next to your repository below.

**Enabled Repositories**
- glarocca/isgc2013_rainfall
10. Get Zenodo DOI

Click on the Enabled Repository

1. Flip the switch
Select the repository you want to preserve, and toggle the switch below to turn on automatic preservation of your software.

2. Create a release
Go to GitHub and create a release. Zenodo will automatically download a zip-ball of each new release and register a DOI.

3. Get the badge
After your first release, a DOI badge that you can include in GitHub README will appear next to your repository below.

Enabled Repositories

- glarocca/isgc2013_rainfall
11. Add Zenodo badge in repository

Click on the DOI icon to view details

```
glarocca/isgc2013_rainfall

DOI: 10.5281/zenodo.7729979
```

```
glarocca/isgc2013_rainfall

isgc2013_rainfall / README.md
```

```
# isgc2013_rainfall
This is my first shared notebook
[[[DOI](https://zenodo.org/badge/613453962.svg)](https://zenodo.org/badge/latestdoi/613453962)]
```
12. Check if the DOI is valid

https://www.doi.org/

TRY RESOLVING A DOI NAME

Type or paste a known DOI name exactly—including its prefix and suffix—into the text box below and then ‘submit’ to resolve it.

10.5281/zenodo.7729979
13. Use the DOI to reproduce the repository

https://replay.notebooks.egi.eu/

Have a repository full of Jupyter notebooks? With Binder, open those notebooks in an executable environment, making your code immediately reproducible by anyone, anywhere.

New to Binder? Get started with a Zero-to-Binder tutorial in Julia, Python, or R.
14. About CITATION files to your GitHub repository

Add a CITATION.cff file to the root of a repository

```cpp
1  cff-version: 1.2.0
2  message: "If you use this software, please cite it as below."
3  authors:
4    - family-names: "La Rocca"
5       given-names: "Giuseppe"
6  orcid: "https://orcid.org/0000-0002-8011-1458"
7  title: "EGI Notebook example"
8  version: 2.0.4
9  doi: 0.5281/zenodo.7729979
10 date-released: 2023-03-13
11 url: "https://github.com/github/linguist"
```
Future outlook:
How to access and process data from the European Open Science Cloud

TLP: GREEN Limited disclosure
European Open Science Cloud

https://eosc.eu/

The European Open Science Cloud (EOSC) is an environment for hosting and processing research data to support EU science.

The ambition of the European Open Science Cloud (EOSC) is to provide European researchers, innovators, companies and citizens with a federated and open multi-disciplinary environment where they can publish, find and re-use data, tools and services for research, innovation and educational purposes.

This environment will operate under well-defined conditions to ensure trust and safeguard the public interest.

EOSC ultimately aims to develop a Web of FAIR Data and services for science in Europe upon which a wide range of value-added services can be built. These range from visualisation and analytics to long-term information preservation or the monitoring of the uptake of open science practices.
EOSC Architecture

EOSC Multi-Annual Roadmap 2023-2024 (May 2022)

- Processing services (incl. OpenStack, Notebooks)
- EOSC Data Transfer service (currently prototype level)
- Portal, Marketplace, Rules of Participation, Order Management, Helpdesk, Monitoring, etc.
EOSC Data Transfer

What we will see in this demo:

1.) Use the EOSC Marketplace to find a dataset
2.) Get the DOI of the dataset to be transferred
3.) Click on the dataset and open the EOSC Explore interface
4.) Select the settings for the data transfer (using the dev instance!)
5.) Initiate the data transfer
6.) Use the AWS CLI to check the files transferred to the destination
EOSC Data Transfer

1.) Find the dataset in the EOSC Marketplace
   • Select Data as “Category”
2.) Get the dataset to be transferred (e.g.: Trialstreamer)

**Trialstreamer** data

**Author names:** Marshall Iain Nye Benjamin Kuiper Joël Marshall Rachel Soboczenski Frank Nenkova Ani Noel Storr Anna Thomas James Wallace Byron

**DOI:** 10.5281/zenodo.5734208

DOI: 10.5281/zenodo.5734208
3.) Click on the dataset to access the file in the EOSC Explorer

WARNING
- Datasets must be stored in Zenodo!
- S3 support in EOSC Data Transfer portal is not fully working. It will be available in production in April 2023.
4.) Start the data transfer using the dev instance

5.) Click on “Transfer” to initiate the data transfer
6.) Use the AWS client to check the files transferred in the S3 bucket

```
larocca@aktarus:~$ aws s3 --endpoint-url https://s3.cl2.du.cesnet.cz ls s3://enolfc-test-bucket
2023-03-10 11:36:02 1146 ENESDS_CMIIP6.csv
2023-03-14 14:39:42 10280772 emojis.zip
2023-03-13 18:02:58 1152716971 tasmax_day_CMCC-ESM2_ssp585_r1i1p1f1_gn_20150101-20391231.nc
2023-03-13 18:07:42 1150771873 tasmax_day_CMCC-ESM2_ssp585_r1i1p1f1_gn_20400101-20641231.nc
2023-03-14 07:52:41 1148226564 tasmax_day_CMCC-ESM2_ssp585_r1i1p1f1_gn_20650101-20891231.nc
2023-03-14 07:55:09 504796434 tasmax_day_CMCC-ESM2_ssp585_r1i1p1f1_gn_20900101-21001231.nc
2023-03-16 11:03:27 179 trialstreamer-update-pubmed-2021-01-04.csv
2023-03-16 11:03:29 25688160 trialstreamer-update-pubmed-2021-08-23.csv
2023-03-16 11:00:24 23538134 trialstreamer-update-pubmed-2021-11-22.csv
2023-03-16 11:01:17 179 trialstreamer-update-pubmed-2022-01-31.csv
2023-03-16 11:03:35 154835212 trialstreamer-update-pubmed-2022-02-07.csv
2023-03-16 11:00:22 37251724 trialstreamer-update-pubmed-2022-03-21.csv
2023-03-16 11:00:30 92992913 trialstreamer-update-pubmed-2022-04-18.csv
2023-03-16 11:00:21 46631156 trialstreamer-update-pubmed-2022-05-02.csv
2023-03-14 14:39:42 20608411 trialstreamer.csv
```
Take-away message and next steps
• EGI established a cloud + Notebooks + Replay services to facilitate big data science in the Asia Pacific region
  ● Current provider: CESNET
  ● Documentation: [https://docs.egi.eu/users/getting-started/communities/dmcc/](https://docs.egi.eu/users/getting-started/communities/dmcc/)
• Use the EGI Notebooks and the EGI Replay services to facilitate applications sharing and reproducible
• Use the EGI DataHub, B2DROP, CVMFS services to store and share datasets
• Open to scientists to run simulations
• Open for application developers to share big data applications
• Open for data providers to share data
• Open for OpenStack providers to share compute/storage
Upcoming EGI Conference

https://indico.egi.eu/event/6071/abstracts/

Call for Contributions is open!
Thank you!

Q & A

Feedback form: https://survey.egi.eu/576676

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