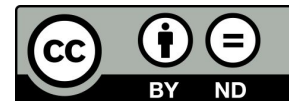


Enhancing Research through EOSC: A Comparative Perspective

ANCA HIENOLA
FINNISH METEOROLOGICAL INSTITUTE
HELSINKI, FINLAND

The EOSC Future project is co-funded by the
European Union Horizon Programme call
INFRAEOSC-03-2020, Grant Agreement 101017536





The research landscape

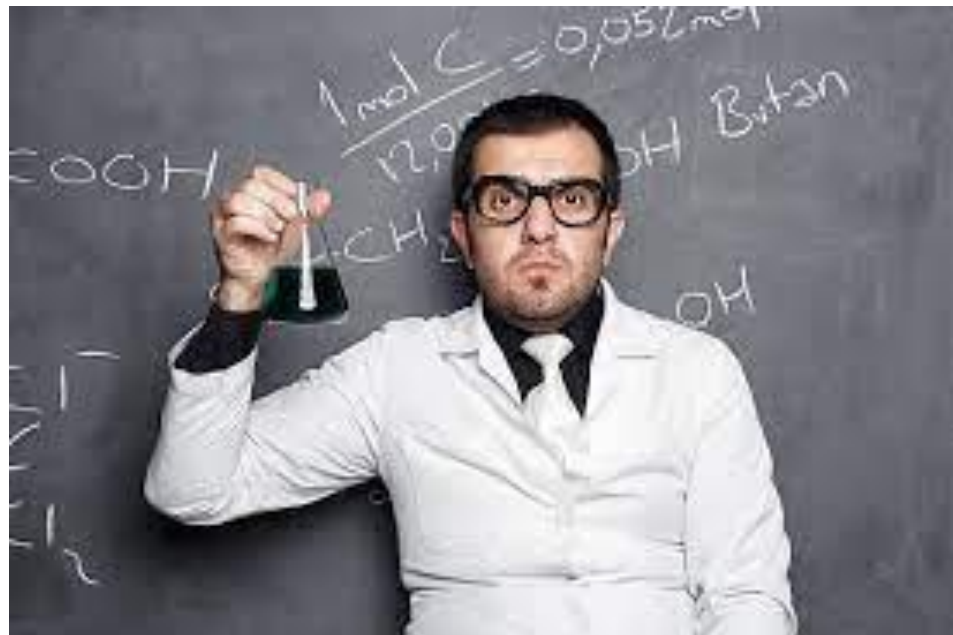
- ❑ Research drives breakthroughs in medicine, technology, and social sciences.
- ❑ Research holds the key to our most pressing issues.
- ❑ Data has become the lifeblood of research.
- ❑ Collaboration has become essential.





Meet the researchers

Dr. Socone



Dr. Seco





Meet the researchers

Dr. Socone

- The traditional research experience
- Climate scientist, dedicated, nerd
- Challenges: data management difficulties, constrained resources, isolated work, no girlfriend etc.



Dr. Seco



Meet the researchers

Dr. Socone

- The traditional research experience
- Climate scientist, dedicated, nerd
- Challenges: data management difficulties, constrained resources, isolated work, no girlfriend etc.



Dr. Seco



- Research with EOSC
- Climate scientist, cutting-edge, uber-nerd.
- EOSC has transformed his research journey, providing streamlined data access, collaboration opportunities, and more resources.
- Challenges: two girlfriends



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Let's find some data, boys!

Dr. Socone (Cecil)



Needs measurement data from Europe



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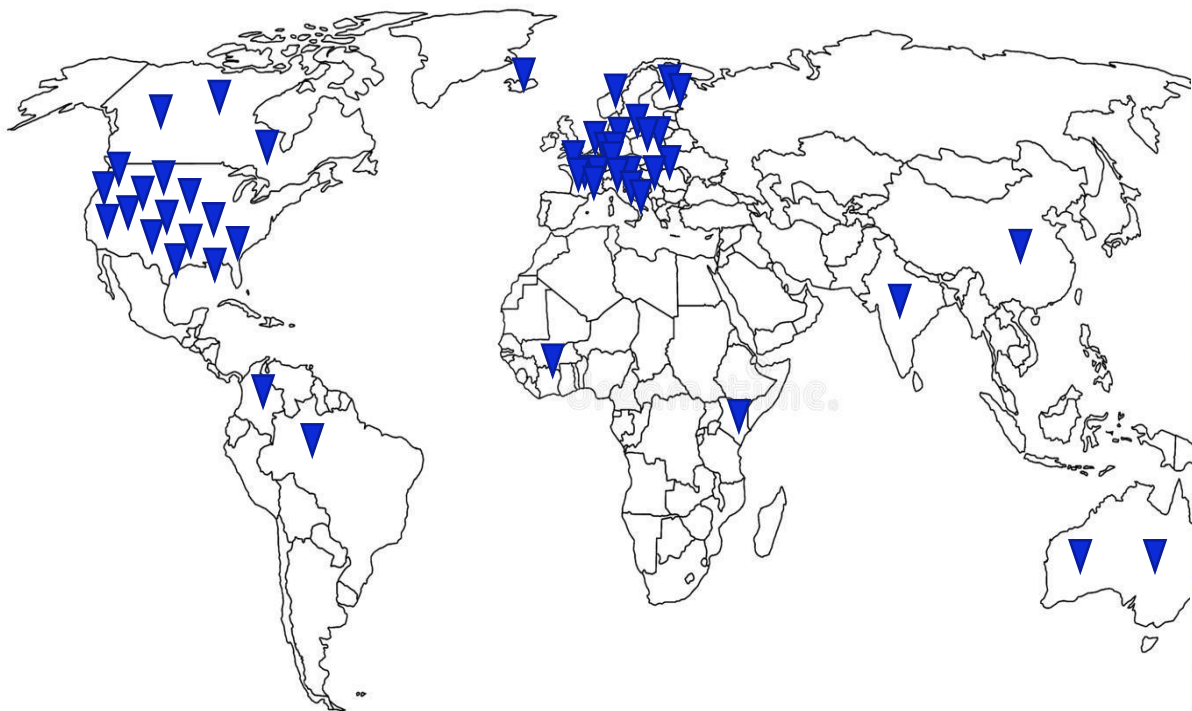


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Climate data repositories around the world

1. International climate data repositories - 38



- Australia (2)
- Belgium (2)
- Brazil (1)
- Canada (3)
- China (1)
- Colombia (1)
- European Union (7)
- Fiji (1)
- Finland (2)
- France (6)
- Germany (11)
- Ghana (1)
- Iceland (1)
- India (1)

- Italy (3)
- Kenya (1)
- Netherlands (1)
- New Caledonia (1)
- Norway (1)
- Switzerland (3)
- United Kingdom (1)
- United States (14)

Based on re3data.org

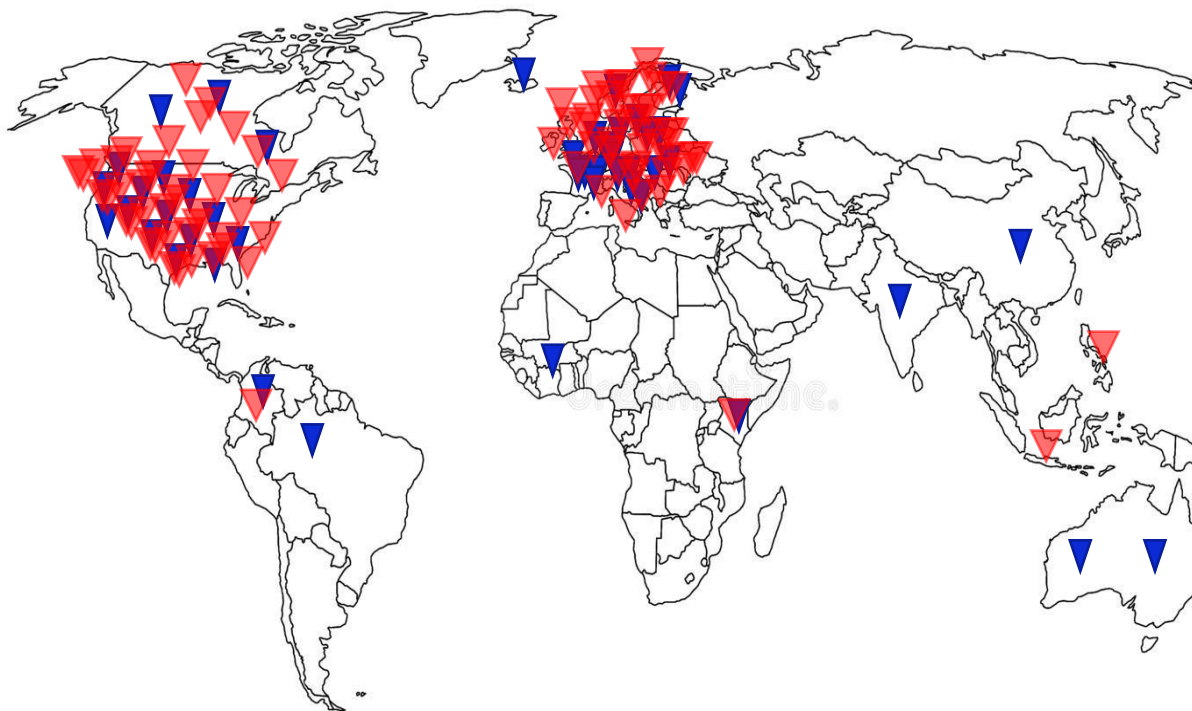


ature



Climate data repositories around the world

1. Institutional climate data repositories - 101



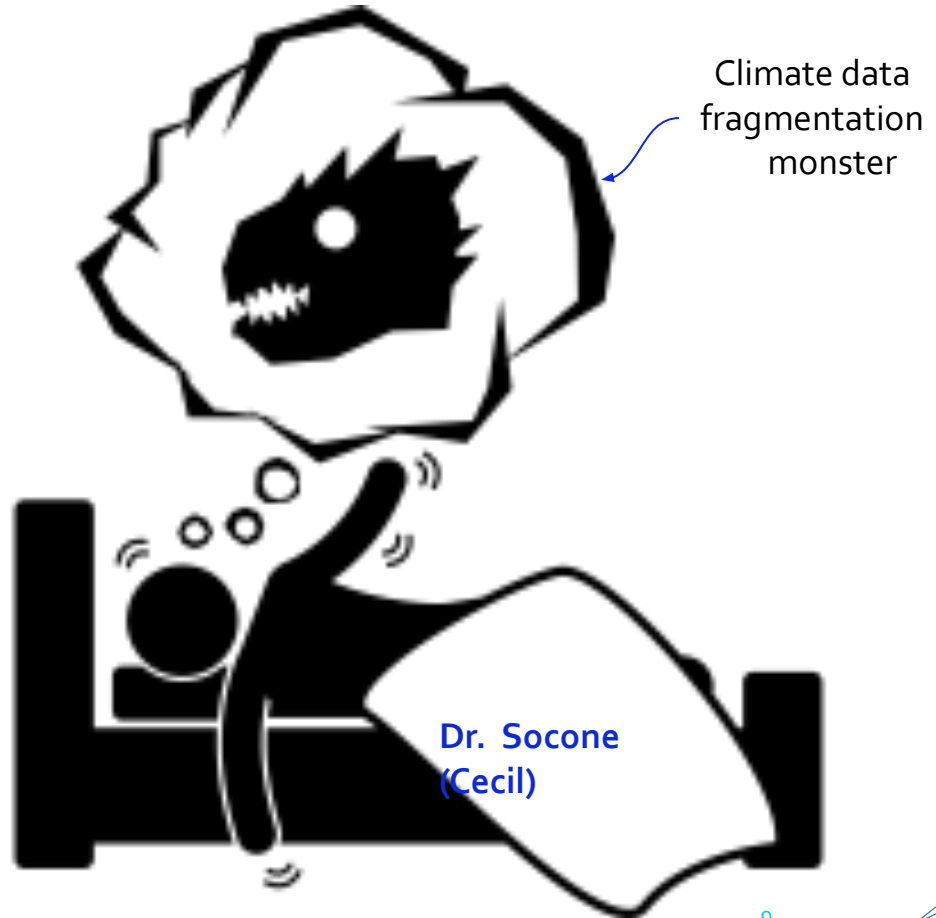
- Australia (5)
- Belgium (2)
- Canada (6)
- Colombia (1)
- Cyprus (1)
- European Union (8)
- Finland (1)
- France (1)
- Germany (18)
- Ghana (1)
- India (1)
- Indonesia (1)
- International (8)
- Japan (1)
- Kenya (1)
- Luxembourg (1)
- Netherlands (4)
- Norway (1)
- Slovenia (1)
- Spain (2)
- Switzerland (1)
- United Kingdom (1)
- United States (34)

Based on re3data.org

1



Fragmented access

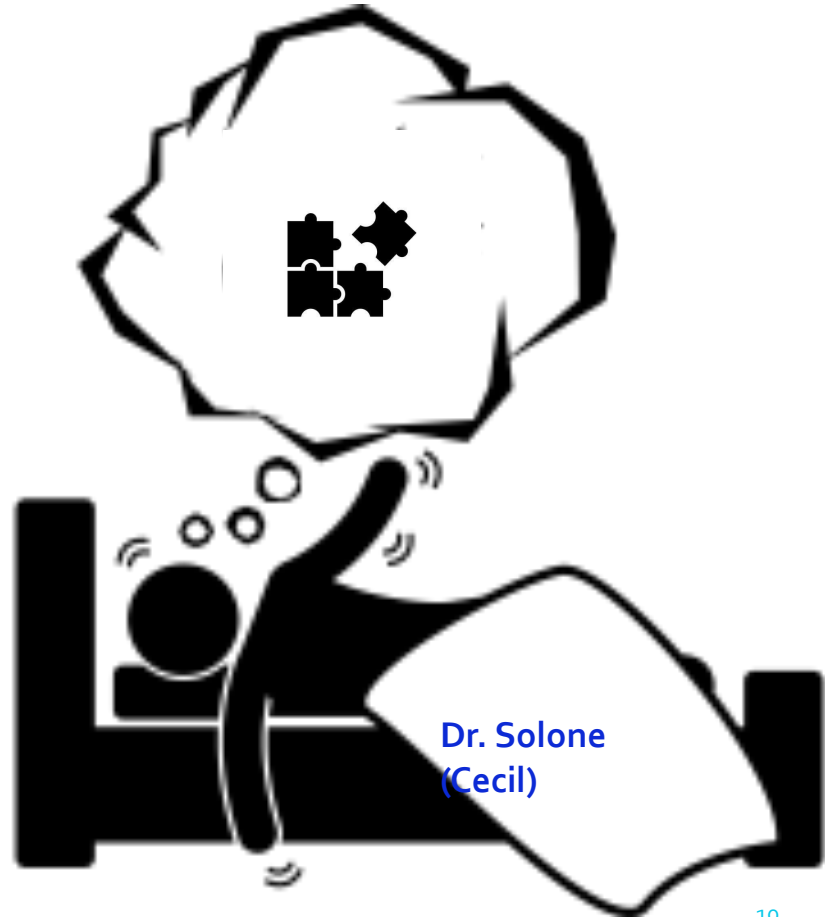


Climate data
fragmentation
monster

Dr. Socone
(Cecil)



Non-interoperable data and services





Let's find some data, boys!

Needs measurement data from
Europe

Dr. Seco (Maximus)





Browse EOSC Marketplace Resources

atmospheric aerosol concentrations

Clear x

Data

Show Advanced Search



ALL CATALOGS



PUBLICATIONS



DATA



SOFTWARE



SERVICES



DATA SOURCES



TRAININGS



INTEROPERABILITY
GUIDELINES

Copernicus

GEO

Others

Openaire explore

Zenodo

Some inst. reps

Some National reps

Pangea

Some ENVRI's

Mendeley

etc



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Time spent on finding data

Dr. Socone



Dr. Seco



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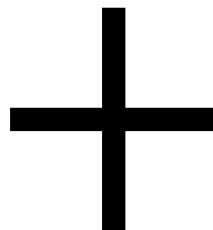
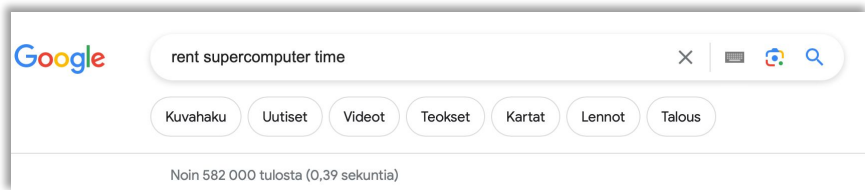
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Computing resources

Dr. Socone



Computing resources



Dr.

The screenshot shows a web interface for a research catalog. At the top, there are navigation tabs: ALL CATALOGS (selected), PUBLICATIONS, DATA, and SOFTWARE. Below this is a 'Filters' section with two main categories: 'Research step' and 'Type of research product'. Under 'Research step', several options are listed with checkboxes, including 'Discover Research Outputs (5363075)', 'Process and Analyse (83)', 'Manage Research Data (49)', 'Access Training Material (36)', 'Access Computing and Storage Resources (32)' (which is checked), 'Access Research Infrastructures (24)', 'Publish Research Outputs (21)', 'Find Bundles (8)', and 'Find Instruments & Equipment (1)'. Under 'Type of research product', there is one option: 'service (28)'. To the right of the filters, it says '32 search results All catalogs'. Below this is a pagination bar with a blue button 'Clear all filters' and a search input field. The main content area shows the start of a search result for 'EGI Cloud Compute'.

Run virtual machines on-demand with attached online storage

This bundle gives you the ability to deploy and scale virtual machines on-demand, that can also store data in attached online storage. This way the services you build can not only process but also store data in a reliable and high-quality environment and share it across distributed teams. Your data can be accessed through different storage protocols and can be replicated across different providers to increase fault-tolerance.

The screenshot shows the details of a bundle named 'EGI Cloud Compute'. It is provided by the EGI Foundation. The bundle is described as 'General purpose' and 'Service'. It has a 'Service' icon and a 'Service' button. The bundle is available in English. The organization is 'EGI Foundation' and the scientific domain is 'General purpose'. The bundle description states: 'Cloud Compute gives you guaranteed computational resources and access without the overhead of physical infrastructure. It includes pre-configured virtual applications and storage.' The bundle specifications are as follows:

Property	Value
Number of CPU Cores	1 - 100
Amount of RAM per CPU core	1 - 4 GiB
Local disk	10 - 40 GiB
Number of VM instances	1 - 50
Access type	opportunistic - reserved
Start of service	data
Number of days	1 - 730
Storage capacity	integer GiB
Technology	DPM - Other: reserved
Access type	opportunistic - reserved
Special requirements	string
Start of service	data
Number of days	integer

[Contact bundle support](#)

[Helpdesk](#)

Select bundle

Provide feedback

Process and analysis

Dr Socone

- Coding for days and days (and nights too)
- Sweating
- No success in finding other researchers scripts
- Sweating even more

Dr. Seco

The screenshot shows a search results page for 'EGI Notebooks'. On the left, there are filter sections: 'Research step' (with 'Process and Analyse' selected), 'Type of research product' (with 'service' selected), 'Access right' (with 'Order required' selected), and 'Scientific Domains' (with 'Generic', 'Natural Sciences', and 'Engineering & Technology' selected). The main content area shows '3 search results All catalogs' and a 'Sort By' dropdown set to 'Default'. Below the filters, there are several filter tags: 'Clear all filters', 'Research step: Process and Analyse X', 'Scientific Domains: Natural Sciences X', 'Scientific Domains: Earth & Related Environmental Sciences X', 'Scientific Domains: Physical Sciences X', 'Scientific Domains: Other Natural Sciences X', 'Scientific Domains: Generic X', and 'Scientific Domains: Generic X'. A pagination bar shows '<<' '<' '1' '>' '>>'. The main result is for 'EGI Notebooks', which is a 'Service' that is 'ORDER REQUIRED' and a 'Horizontal Service'. It is in 'English' and provided by the 'EGI Foundation' in the 'Generic' domain. The description states: 'notebooks is a browser-based tool for interactive analysis of data using EGI storage and compute services. notebooks are based on JupyterHub technology. This service can combine text mathematics computations and their rich media output using Jupyter t... Show more'. Below the description, there are links: 'EOSC:: Jupyter Notebook combine text computations and their rich media output e-INFRA EGI interactive analysis of data Jupyter mathematics'.



In the pursuit of knowledge,
the researcher
is the torchbearer, but sometimes,
they need a brighter torch.
Is that EOSC?



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Some sort of famous last words

1. EOSC as a functional(ish) tool
2. Future is dynamic for EOSC
 - a. Enhance infrastructure
 - b. New services
 - c. Technological advancement (AI, blockchain technology, quantum computing)
 - d. Expanding community engagement efforts
3. Researchers to transition to EOSC
4. As stakeholders in the world of research, we all have a role to play in shaping the future of EOSC.



The big reveal

SOC ONE

SECO



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