

Open-Earth-Monitor project

Tom Hengl

(OpenGeoHub)

Open Geo HUB



Learn more here:



ATHENS 7-9 DECEMBER 2022









Open-Earth-Monitor Cyberinfrastructure (OEMC)









This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No.101059548



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About 80+ participants from 21 organization, 15+ countries



We are building upon existing solutions (connecting them / extending them)







Main objectives (simplified)





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5 OPEN EARTH

Key usability problems

Wageman et al. recognize 5 key challenges to finding, accessing and interoperating with Big Earth Data:

- (1) limited processing capacity on user side,
- (2) growing data volumes,
- (3) non-standardised data formats and dissemination workflows,
- (4) <mark>too many data portals</mark>,
- (5) difficult data discovery.



Computers & Geosciences Volume 157, December 2021, 104916



Users of open Big Earth data – An analysis of the current state

Julia Wagemann ^{a, b} A 🖾, Stephan Siemen ^b, Bernhard Seeger ^c, Jörg Bendix ^a

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https://doi.org/10.1016/j.cageo.2021.104916

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Highlights

- User requirements are a driving force of the development of emerging cloud-based systems for Big Earth data.
- Growing data volume and limited processing capacity top Big Earth data challenges.
- Cloud-based data systems are not broadly used but attract user's interest and are preferred over 'user-centric' platforms.
- The formation of a global cloud consortium can help to make the Big Earth data landscape more FAIR in the future.







PUBLIC WORKSHOP

INNOVATIVE GOVERNANCE, ENVIRONMENTAL OBSERVATIONS AND DIGITAL SOLUTIONS IN SUPPORT OF THE EUROPEAN GREEN DEAL







This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No.101059548

Register by 1 June on earthmonitor.org Project start: 1 June 2022

WAGENINGEN · ONLINE



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Earth Observation and Machine Learning as the key technologies to track implementation of the **Green Deal: 10 main takeaways**

Prepared by: Tom Hengl (OpenGeoHub), Carson Ross (OpenGeoHub) and Valentina Delconte (OpenGeoHub)

One of the key objectives of the largest government-run Earth Observation missions such as Copernicus Europe, Landsat and similar is to provide reference scientific information to enable monitoring of our changing environment across borders (and beyond visible light!). EO-based products are becoming crucial for spatial planning but also for the econometric assessment of the social benefits, taxation and political decisions in general. We have invited a number of keynote speakers and asked them to share their opinions on the general question "How can Earth Observation (EO) and Machine Learning technology help deliver the green (new) deal and what could potentially be a win-win-win situation?" By win-win-win here we imply: (1) environmental data users (businesses and organizations) win, (2) data producers win, and (3) society wins. Each of the talks was video recorded and is available here. These are the main takeaways.



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Artificial Intelligence for **Geospatial Analysis with** Pytorch's TorchGeo (Part 1)

Jim Clyde Monge in MLearning.ai



eDiff-I Is NVidia's NEW AI Image Generator. Is It Better Than Dall-E2 And Stable Diffusion?

What is the most important aspect to work on during a project to ensure that results are used after the project?





Anything here on this list that surprises you?





How would you like to see the European EO platform landscape to evolve in the near future?



32 %

Federated ecosystem based on proven key technologies (e.g. STAC, openEO, Pangeo).

68 %

Continue towards an EO Platform "jungle" with redundancies and fragmentation.

• 0%







At the moment 38 use cases

from global to regional, national and local

Final implementation plan to be released in March 2023



Earth Engine Data Catalog

Earth Engine's public data catalog includes a variety of standard Earth science raster datasets. You can import these datasets into your script environment with a single click. You can also upload your own raster data or vector data for private use or sharing in your scripts.

Looking for another dataset not in Earth Engine yet? Let us know by suggesting a dataset.

Filter list of datasets

Canada AAFC Annual Crop Inventory

Allen Coral Atlas (ACA) -Geomorphic Zonation and Benthic Habitat - v1.0

AHN Netherlands 0.5m DEM. Interpolated

AHN Netherlands 0.5m DEM. Non-Interpolated

AHN Netherlands 0.5m Raw Samples





Starting in 2009, the Earth Observation Team of the Science and Technology Branch (STB) at Agriculture and Agri-Food Canada (AAFC) began the process of generating annual crop type digital maps. Focusing on the Prairie Provinces in 2009 and 2010, a Decision Tree (DT) based methodology ...

landcover

canada



The Allen Coral Atlas dataset maps the geomorphic zonation and benthic habitat for the world's shallow coral reefs at 5m pixel resolution. The underlying satellite image data are temporal composites of PlanetScope satellite imagery spanning 2018-2020. The habitat maps are created via a machine learning ...

ocean planet



The AHN DEM is a 0.5m DEM covering the Netherlands. It was generated from LIDAR data taken in the spring between 2007 and 2012. It contains ground level samples with all other items above ground (such as buildings, bridges, trees etc.) removed. This version is ...

elevation

dem

geophysical

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geophysica

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LIDAR data taken in the spring between
2007 and 2012. This version contains
both ground level samples and items
above ground level (such as buildings,
bridges, trees etc). The point cloud

elevation

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awesome-gee-community-catalog

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Introduction

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Global Land Use and Land Cover	>
Regional Land Use and Land Cover	>
Hydrology	>
Oceans and Shorelines	>
Agriculture, Vegetation and Forestry	>
Global Utilities, Assets and Amenities Layers	>
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The awesome-gee-community-catalog consists of community sourced geospatial datasets made available for use by the larger Google Earth Engine community and shared publicly as Earth Engine assets. The project was started with the idea that a lot of research datasets are often unavailable for direct use and require preprocessing before use. This catalog lives and serves alongside the Google Earth Engine data catalog and also houses datasets that are often requested by the community and under a variety of open license.

You can read about the history and how this project started in the Medium Post article here



Community Datasets added by users and made available for use at large

Like, share and support the Github project. And you can now cite it too

Citation

Samapriya Roy, Erin Trochim, Tyson Swetnam, Kurt Schwehr, & Valerie Pasquarella. ((1.0.2). Zenodo. https://doi.org/10.5281/zenodo.7387484

We need more open tools / infrastructures that enable champions of geospatial data

Samapriya Roy



Customer and Researcher Engagement & Senior Solutions Engineer, Planet Labs



Q Search

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Could a decentralized approach to Earth system simulation work?

Can not-for-profit based decentralized initiative be used to reach serious goals?



Can Mastodon be the first big social network 'Made in Europe'?

By MICHAEL MEYER-RESENDE

STEN TO ARTICLE		
▶ 0:00 / 7:21	•	:

Twitter is in turmoil. This matters for democracy. The platform is a political superpower. Despite all of its problems, in many countries it is the most important platform for political debate, used by politicians, journalists and commentators.

When Elon Musk expressed his desire to buy Twitter, it felt like Donald Trump descending on the golden escalator to enter the presidential campaign. As well as becoming the CEO of Twitter, with a stream of tweets, Musk has also made himself the centre of debate on the platform.

Musk is the bull in the china shop of complex discussions on free speech.

One day he claims "I am a free speech absolutist", the next, under pressure from advertisers, he says Twitter will not become a "hellscape where anything can be said". He has no plan where to position Twitter in terms of freedom of speech and its legitimate limitations.

There may be business method in his madness, but it is unlikely that Twitter can restore credibility when its owner uses it variously as his political megaphone, psychologist's couch and an ad site for his other companies, twisting and bending rules as he sees fit.

If there is a moment when Twitter could be unseated as the primary platform for political discussion, it is now.

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platform for developing geospatial inform...

C++ port of the Java Topology Su.

to manage spatially referenced resources. It ...

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Source: https://euobserver.com/opinion/156395

STAC Index / open code repositories



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In summary our general strategy is to:



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- 1. Connect Open Source development communities (OSGeo, R, Python, GeoJulia, georust), build bridges between dev platforms (seamless integration of code) and robust API's for EO/Env data (software agnostic users).
- Develop standards and procedures to help communities register their data and workflows (zenodo, pangeo, <u>Geo knowledge Hub</u>) and make them more FAIR.
- 3. Harmonize EO-data products (e.g. ensemble land cover map of EU), make data more analysis- and decision-ready and easier to access.
- Connect developments in EU and other parts of the world (especially USA, Brazil, Australia, China...): Land & Carbon Lab, Digital Earth Australia, EarthCube.org, etc.



https://earthmonitor.org/gw2023/



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4-8 September 2023 Bolzano, Italy

OEMCGLOBAL WORKSHOP 2023

Open Earth Observation and Machine Learning technology to support European Green Deal



Funded by

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