Environmental Data Publication with EnviDat: Open Research Data, Metadata Standards and Open Science

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Open Environmental Research Data
WSL: Research for People and Environment

Research for people and environment

Image courtesy of www.wsl.ch
WSL’s Environmental Data Treasure

- **Wide range of research areas**: forests, terrestrial ecosystems, biodiversity, landscapes, natural hazards, snow and ice
- **From long-term measurements to large-scale monitoring**: some data sets covering over 100 years

(Map source: Rigling & Schaffer 2015: Swiss Forest Report 2015)
Making Research Data Accessible

WSL acknowledges the responsibility to make research data accessible. WSL is committed to ensure long-term availability of our research data.

- Making data*, methods and code available! (* with the exception of sensitive data protected by law, e.g. endangered species’ locations or National Forest Inventory sample locations)
- Ongoing cultural evolution in research towards
  - Openness
  - Shared data and
  - Opportunities for distant collaboration
- Irreproducibility crisis (Baker, 2016; open reuse of this Nature article figures prohibited, please refer to www.nature.com)
EnviDat is a Repository for Environmental Research Data Management and Publication
G-TREE: Global Treeline Range Expansion Experiment Davos, Switzerland

Description

G-TREE is a global research network composed of 40 arctic and alpine researchers from around the world. This summer, our field experiment will be established at numerous sites across Canada, France, Norway, Spain, the United States, and Venezuela. Other sites are being developed in Russia, Scotland, and Sweden.

The Zilliberg research area is located in the Eastern Swiss Alps near Davos, Switzerland. The site has been used for several long-term monitoring as well as experimental studies for the last few decades. Our G-TREE experiment consists of a lowest site located in a subalpine larch-spruce forest (Larix-Piceum) dominated by Larch (Larix decidua and Picea abies (1590 m a.s.l.)), a transition zone site dominated by alpine shrubs (1390 m a.s.l.), and an uppermost site in an alpine meadow with some dwarf shrubs (2590 m a.s.l.).

Citation


Data and resources

GTREE Website

Further Information

Title

G-TREE: Global Treeline Range Expansion Experiment Davos, Switzerland

Authors

Esther R. Frei; Peter Bebi; Melissa A. Dawes; Christian Rixen

Prefix: 10.16904/envidat.42

Postfix: 10.16904/envidat.42
Giving Credit where Credit is Due!

Data Authorship Contributor Roles Taxonomy

DataCRedit
Metadata Standards
(in Environmental Data Publication)
G-TREE: Global Treeline Range Expansion Experiment Davos, Switzerland

Description

G-TREE is a global research network composed of 40 arctic and alpine researchers from around the world. This summer, our field experiment will be established at numerous sites across Canada, France, Norway, Spain, the United States, and Venezuela. Other sites are being developed in Russia, Scotland, and Sweden.

The Stilberg research area is located in the Eastern Swiss Alps near Davos, Switzerland. The site has been used for several long-term monitoring as well as experimental studies for the last four decades. Our G-TREE experiment consists of a lowest site located in a subalpine Larch–Spruce forest (Larix–Picea dominated by Larix decidua and Picea abies (990 m a.s.l.), a transition zone site dominated by alpine shrubs (1290 m a.s.l.), and an uppermost site in an alpine meadow with some dwarf shrubs (2350 m a.s.l.).

Further Information

Title
G-TREE: Global Treeline Range Expansion Experiment Davos, Switzerland

Authors
Esther R. Frei; Peter Bebi; Melissa A. Dawes; Christian Rixen

doi:10.16904/envidat.42
## DataCite Standard

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Image courtesy of [https://project-thor.readme.io/](https://project-thor.readme.io/)
Vs. ISO/TC 211 Metadata Standards


ISPRS Int. J. Geo-Inf. 2019, 8(6), 280; https://doi.org/10.3390/ijgi8060280
Antagonistic Data Providers‘ Requirements

I want to write as little metadata as possible!

I want you to support additional metadata fields!

Image courtesy of: https://www.pexels.com/@co-sch-48159
Solution: Flexible Metadata Schema Model

https://doi.org/10.5334/dsj-2018-028
For Flexible Metadata Standard Support

Images courtesy of the corresponding portals and organizations
More Information

Open Science
(an EnviDat Point of View)
Open Science @ WSL

- Universities, Massive Online Open Courses

- Open Access Journals, Lib4RI / DORA

- EnviDat & WSL IT

“Open science is the idea that scientific knowledge of all kinds should be openly shared as early as is practical in the discovery process.”  - Michael Nielsen

Open Science image courtesy of Andreas E. Neuhold
Specific to Academic Research Publication: Open Science Easier with FOSS4G

Logos courtesy of the corresponding softwares and organizations
Software Publication with Metadata/DOI

Seilaplan

Description

Cable-based technologies have been a backbone for harvesting on steep slopes. The layout of a single cable road is challenging because one must identify intermediate supporter locations and heights that guarantee structural safety and operational efficiency while minimizing set-up and dismantling costs. Seilaplan optimizes the layout of a cable road by Seilaplan stands for Cable Road Layout Planner. Seilaplan is able to calculate the optimal rope line layout (position and height of the supporter) between defined start and end coordinates on the basis of a digital elevation model (DEM).

The program is designed for Central European conditions and is designed on the basis of a fixed suspension rope anchored at both ends. For the calculation of the properties of the load path curve an iterative method is used, which was described by Zwiefel (1989) and was developed especially for standing skylines. When testing the feasibility of the cable line, care is taken that 1) the maximum permissible...

Data and resources

Seilaplan QGis Plugin v2.0

Format: Zip
Size: 0.71 MB
Date: 2018-11-22 12:18:30

Further Information

Title:
Seilaplan

Authors:
Leo Gallus Bont, Patricia Edith Moll

DOI:
10.16904/envidat.software.1
Data + Code + Documentation (Together)
More Details at FOSS4G 2019
Outlook and Conclusions
Following European Open Science Cloud through EOSC-Hub

Image courtesy of EOSC-hub

The two-fold benefit of collaborating with EOSC-hub: the EnviDat story

Ionut Ionutescu Enescu explains why and how EnviDat is collaborating with EOSC-hub and the results achieved so far.

How would you describe EnviDat to someone who is not very familiar with it?

EnviDat is the environmental data portal of the Swiss Federal Institute for Forest, Snow and Landscape Research WSL. EnviDat provides a range of services in the area of research data management with particular focus on (1) data publication with provision of metadata and Document Object Identifiers (DOIs), (2) maintenance of an efficient data repository for validated, quality-controlled and properly documented, thus reusable data sets and (3) supporting and providing options to researchers for sharing the curated data sets. As a repository, EnviDat actively implements the FAIR (Findability, Accessibility, Interoperability and Reusability) principles by ensuring that the published research outputs have licenses that are as open as possible, and as protected as necessary.

Why EnviDat approached EOSC-hub?

EnviDat aims to disseminate its data sets as broadly as possible in order to foster international research cooperation in the field of environmental science and contribute to the ongoing cultural evolution in research towards openness, shared data and opportunities for collaboration. Becoming an EOSC-hub integrated thematic service provider means leveraging on an important platform for making our datasets discoverable.

How is EOSC-hub supporting EnviDat?

The collaboration with EOSC-hub is two-fold:

1. Using EOSC-hub services to make the EnviDat records visible for EOSC/EOSC-hub users, thus enabling an easier discovery of valuable environmental data sets that are owned by WSL. Currently 165 EnviDat datasets are already discoverable via B2FIND (link: /2EPJ/pU).
2. Promoting the EnviDat portal in the EOSC-hub Marketplace and the EOSC Portal to increase our visibility as a portal. Furthermore, we hope that this step would increase our recognition as a professional institutional repository and portal at Swiss and European levels.

What are your first impressions?

EnviDat is delighted with the professionalism of the EOSC-hub team and the fruitful integration process, especially regarding the technical interoperability. Furthermore, the feedback related to the integration in EOSC Portal motivated us to start the process for further professionalizing the EnviDat portal on several fronts.

What are the plans for the near future?

We welcome the exchange of know-how and best practices with any members of EOSC-hub community that are interested in our initiative. We are looking at the future developments of EOSC to see how EnviDat can better align to it.

Ionut Ionutescu Enescu is Technical Coordinator of EnviDat at the Swiss Federal Research Institute WSL
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Future: Data Repository and SDI Convergence (e.g. EnviDat + the Geoportal of ETH Zurich)

Image courtesy of geovite.ethz.ch
Enhancing EnviDat with basic SDI Architecture

Sources:

https://doi.org/10.5334/dsj-2018-028

https://doi.org/10.3390/ijgi6070192
Questions are Welcome!

www.envdat.ch
envidat@wsl.ch