

Collecting and sharing permafrost data in the European Alps: the Alpine permafrost database

E. Cremonese¹, U. Morra di Cella¹, P. Pogliotti¹

¹Environmental Protection Agency of Aosta Valley, ARPA Valle d'Aosta, Italy

`e.cremonese@arpa.vda.it`

Second International Conference on Cryosphere of the Hindu Kush
Himalaya, Kathmandu Nepal, 13–16 May 2014

- 1 Background
- 2 Alpine Permafrost Database
- 3 Current and upcoming challenges

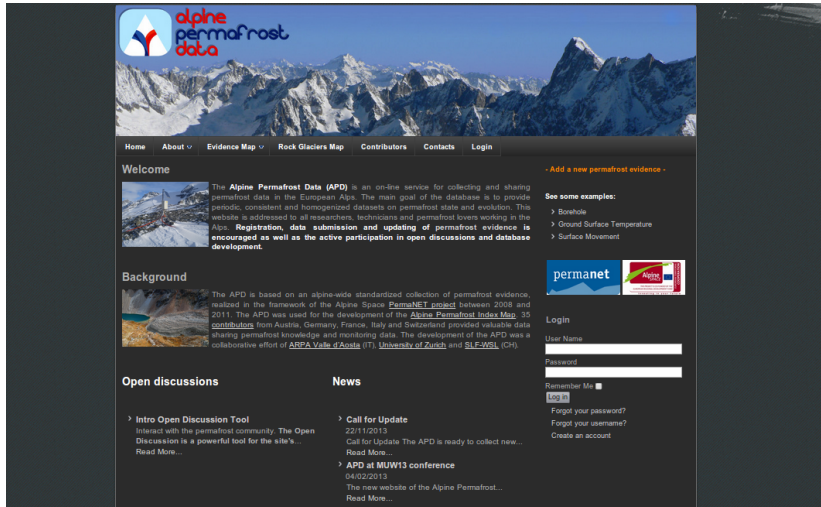


Background



- The Alpine Permafrost Database (APD) is an initiative started in 2009 mainly by the University of Zurich (S. Gruber) and ARPA Valle d'Aosta in the framework of the Alpine Space project PermaNET

www.alpine-permafrostdata.eu



alpine permafrost data

Home About Evidence Map Rock Glaciers Map Contributors Contacts Login

Welcome

The **Alpine Permafrost Data (APD)** is an on-line service for collecting and sharing permafrost data in the European Alps. The main goal of the database is to provide periodic, consistent and homogenized datasets on permafrost state and evolution. This website is addressed to all researchers, technicians and permafrost lovers working in the Alps. **Registration, data submission and updating of permafrost evidence is encouraged as well as the active participation in open discussions and database development.**

Background

The APD is based on an alpine-wide standardized collection of permafrost evidence, realized in the framework of the Alpine Space [PermaNET project](#) between 2008 and 2011. The APD was used for the development of the [Alpine Permafrost Index Map](#), 35 contributors from Austria, Germany, France, Italy and Switzerland provided valuable data sharing permafrost knowledge and monitoring data. The development of the APD was a collaborative effort of [ARPA Valle d'Aosta](#) (IT), [University of Zurich](#) and [SLF-WSL](#) (CH).

Open discussions

- Intro Open Discussion Tool
Interact with the permafrost community. The Open Discussion is a powerful tool for the site's...
Read More...


News

- Call for Update
22/11/2013
Call for Update The APD is ready to collect new...
Read More...
- APD at MUW13 conference
04/02/2013
The new website of the Alpine Permafrost...
Read More...

- Add a new permafrost evidence -

See some examples:

- Borehole
- Ground Surface Temperature
- Surface Movement

permanet 

Login

User Name

Password


Remember Me

[Log in](#)

[Forgot your password?](#)

[Forgot your username?](#)

[Create an account](#)



Background



- it's a standardized collection of permafrost evidence in the European Alps



www.alpine-permafrostdata.eu

The screenshot displays the website's header and main content area. At the top left is the logo for 'alpine permafrost data', which consists of a stylized mountain peak icon in blue, white, and red, followed by the text 'alpine permafrost data' in a blue, lowercase, sans-serif font. Below the logo is a wide banner image of a snow-capped mountain range under a clear blue sky. A dark navigation bar contains the following menu items: 'Home', 'About', 'Evidence Map', 'Rock Glaciers Map', 'Contributors', 'Contacts', and 'Login'. The main content area features a satellite map of Europe and the Mediterranean region. A red circular marker with the number '428' is positioned over the Alps. The map includes standard interactive elements: a compass rose, a vertical scale bar, and a 'Map/Satellite' toggle in the top right corner. A small red logo is visible in the bottom right corner of the map area.

What's a Permafrost Evidence?



A permafrost evidence is a direct or indirect proof of permafrost presence or absence in a specific location obtained by field measures and observations

APD contains the following types of data



- borehole temperature (BH)



- borehole temperature (BH)
- ground surface temperature (GST)



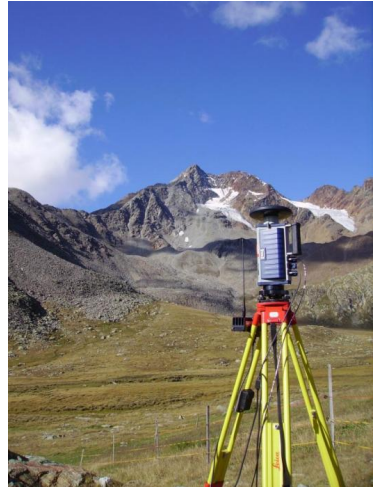
- borehole temperature (BH)
- ground surface temperature (GST)
- rock fall scars (SC)



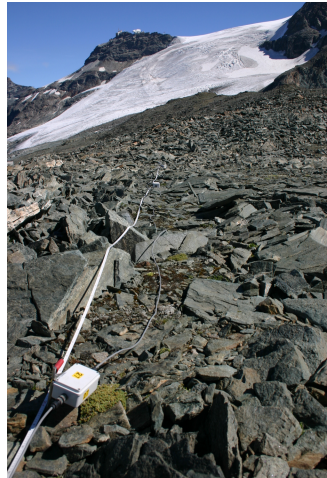
- borehole temperature (BH)
- ground surface temperature (GST)
- rock fall scars (SC)
- trenches or construction sites (TR)



- borehole temperature (BH)
- ground surface temperature (GST)
- rock fall scars (SC)
- trench or construction sites (TR)
- surface movement (SM)



- borehole temperature (BH)
- ground surface temperature (GST)
- rock fall scars (SC)
- trench or construction sites (TR)
- surface movement (SM)
- geophysical prospecting (GP)



- borehole temperature (BH)
- ground surface temperature (GST)
- rock fall scars (SC)
- trench or construction sites (TR)
- surface movement (SM)
- geophysical prospecting (GP)
- rock glaciers (RG)



RG inventories are supplied as a collection of polygons. Individual RG are classified as intact (i.e. active or inactive landform with permafrost) or relict (i.e. without permafrost)



APD design is based on the following principles:

- 1 the database has to be **simple** in structure
- 2 the number of requested variables must be kept **small** in order to allow data provider to register their existing and upcoming data in a **user-friendly and fast** way
- 3 the APD includes both single observation (e.g. SC, TR, ...) and monitoring data (i.e. BH, GST, SM) yearly updated

APD design is based on the following principles:

- ① the database has to be **simple** in structure
- ② the number of requested variables must be kept **small** in order to allow data provider to register their existing and upcoming data in a **user-friendly and fast** way
- ③ the APD includes both single observation (e.g. SC, TR, ...) and monitoring data (i.e. BH, GST, SM) yearly updated

APD design is based on the following principles:

- 1 the database has to be **simple** in structure
- 2 the number of requested variables must be kept **small** in order to allow data provider to register their existing and upcoming data in a **user-friendly and fast** way
- 3 the APD includes both single observation (e.g. SC, TR, ...) and monitoring data (i.e. BH, GST, SM) yearly updated



Basic metadata:

- evidence type
- country
- evidence ID
- site name
- responsible
- lat/lon
- elevation/aspect/slope
- vegetation/surface type/terrain
- **permafrost occurrence**
- **permafrost certainty**
- presence of ice
- source of information
- **periodic update**
- **data policy**



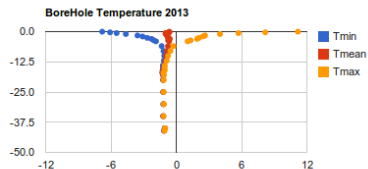
Boreholes monitoring data

- BH depth
- min-mean-max annual ground temperature (MAGT) at each depth
- yearly max Active Layer Depth (ALT) and date

Temperature Data

Choose the year to plot:

2013 ▾



Active Layer Data

Year	ALT (m)	Date
2008	3.94	2008-09-25
2009	4.93	2009-10-20
2010	3.86	2010-10-08
2011	5.13	2011-10-23
2012	5.42	2012-10-04
2013	4.6	2013-10-13

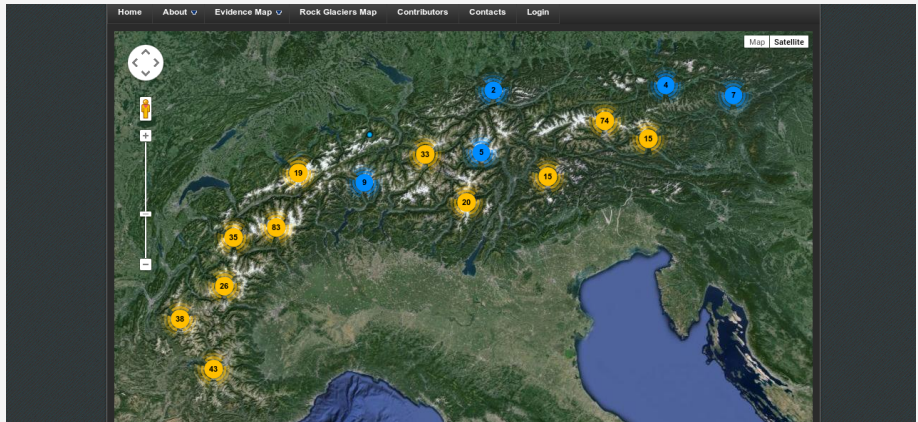
Data provider

- Many researchers and national or regional monitoring programmes from Alpine countries (35 institutions) contributes to the APD with observations and monitoring data



current dataset

APD consists now of more than 400 point evidence and 7 regional rock glacier inventories (4795 rock glaciers)



Database administration

- ① data upload
 - data upload by registered data provider
 - easy to use compilation forms
 - data template for monitoring data
- ② data verification and publication + yearly updates



Database administration

- ① data upload
 - data upload by registered data provider
 - easy to use compilation forms
 - data template for monitoring data
- ② data verification and publication + yearly updates



Data access and data policy

- APD data provider can choose between 2 data policy
 - ① free
 - ② inform when download occurs
- download is allowed only to registered users providing the intended use of the data and publication plans
- data provider willing to be included as authors in publications, need to contact data user and is assumed that an agreement on such matter will be reached



Data access and data policy

- APD data provider can choose between 2 data policy
 - ① free
 - ② inform when download occurs
- download is allowed only to registered users providing the intended use of the data and publication plans
- data provider willing to be included as authors in publications, need to contact data user and is assumed that an agreement on such matter will be reached



Data access and data policy

- APD data provider can choose between 2 data policy
 - ① free
 - ② inform when download occurs
- download is allowed only to registered users providing the intended use of the data and publication plans
- data provider willing to be included as authors in publications, need to contact data user and is assumed that an agreement on such matter will be reached



Current and upcoming challenges

- 1 keep people motivated and engage others
- 2 homogenise data and permafrost presence assessment criteria
- 3 webtool for standardised data processing
- 4 data policy
- 5 promote data use/analysis (e.g. meta-analysis, model validations, rock glacier, ...)
- 6 alpine permafrost state report



Current and upcoming challenges

- ① keep people motivated and engage others
- ② homogenise data and permafrost presence assessment criteria
- ③ webtool for standardised data processing
- ④ data policy
- ⑤ promote data use/analysis (e.g. meta-analysis, model validations, rock glacier, ...)
- ⑥ alpine permafrost state report



Current and upcoming challenges

- 1 keep people motivated and engage others
- 2 homogenise data and permafrost presence assessment criteria
- 3 webtool for standardised data processing
- 4 data policy
- 5 promote data use/analysis (e.g. meta-analysis, model validations, rock glacier, ...)
- 6 alpine permafrost state report



Current and upcoming challenges

- ① keep people motivated and engage others
- ② homogenise data and permafrost presence assessment criteria
- ③ webtool for standardised data processing
- ④ data policy
- ⑤ promote data use/analysis (e.g. meta-analysis, model validations, rock glacier, ...)
- ⑥ alpine permafrost state report



Current and upcoming challenges

- ① keep people motivated and engage others
- ② homogenise data and permafrost presence assessment criteria
- ③ webtool for standardised data processing
- ④ data policy
- ⑤ promote data use/analysis (e.g. meta-analysis, model validations, rock glacier, ...)
- ⑥ alpine permafrost state report



Current and upcoming challenges

- ① keep people motivated and engage others
- ② homogenise data and permafrost presence assessment criteria
- ③ webtool for standardised data processing
- ④ data policy
- ⑤ promote data use/analysis (e.g. meta-analysis, model validations, rock glacier, ...)
- ⑥ alpine permafrost state report



Thank you!

