

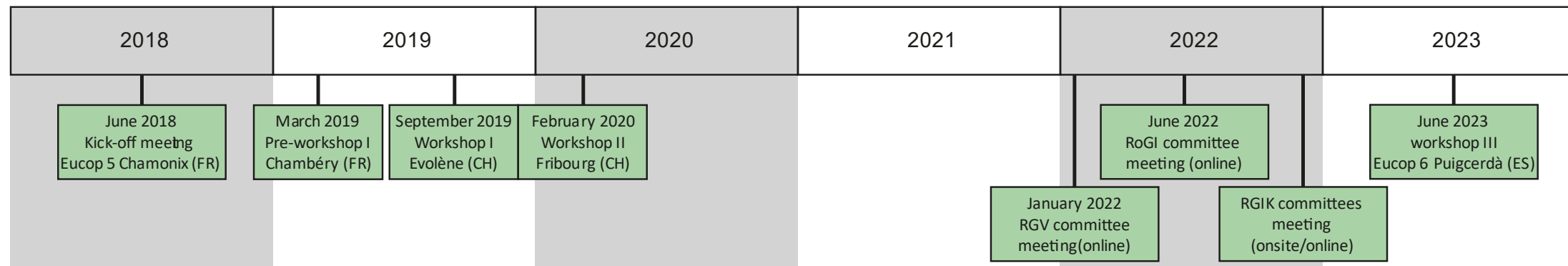


# Concrete outcomes of the RGIK Action Group since 2018

Sebastián Vivero and Cécile Pellet



# IPA Action Group Timeline



The Action Group currently consists of a network of 200 people from 28 countries.

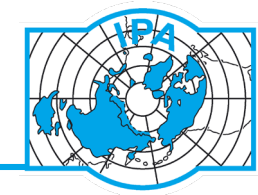
# RoGI – Rock Glacier Inventory

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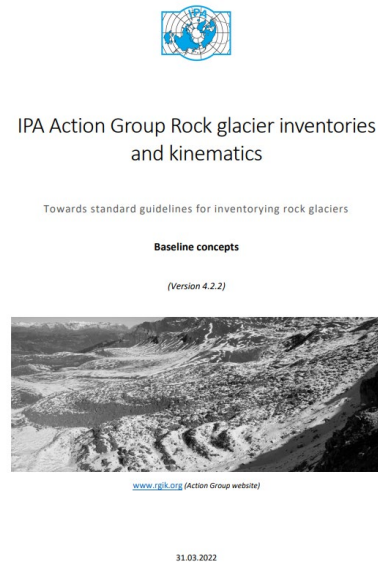
**Task 1: Define widely accepted standard guidelines for the inventory (mapping) of rock glaciers, including indications of activity rate.**

- *Agreement on a “working” definition of rock glaciers*
- *Standards for inventorying (definition of key attributes)*
- *Practical guidelines for inventorying rock glaciers (e.g. also including the use of kinematics)*



# RoGI Documents: 1. Baseline Concepts

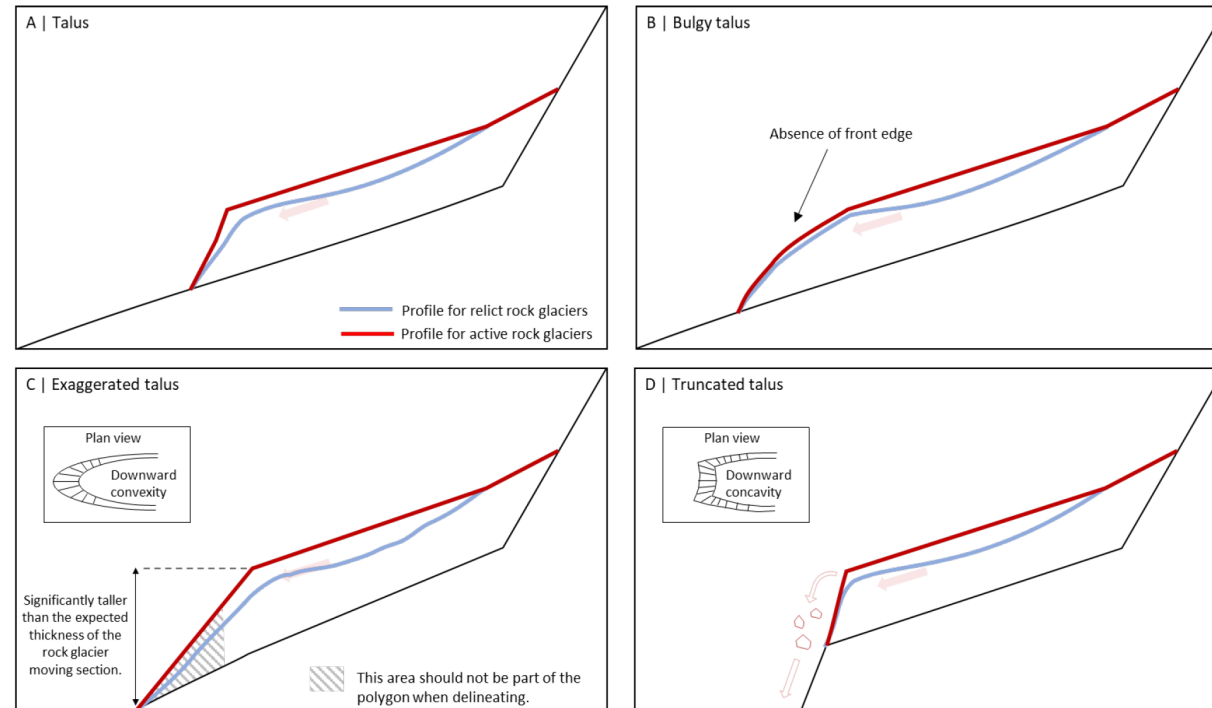
- RGIK (2022). Towards standard guidelines for inventorying rock glaciers: baseline concepts (version 4.2.2). IPA Action Group Rock glacier inventories and kinematics, 13 pp.



# RoGI Documents: 2. Practical Concepts



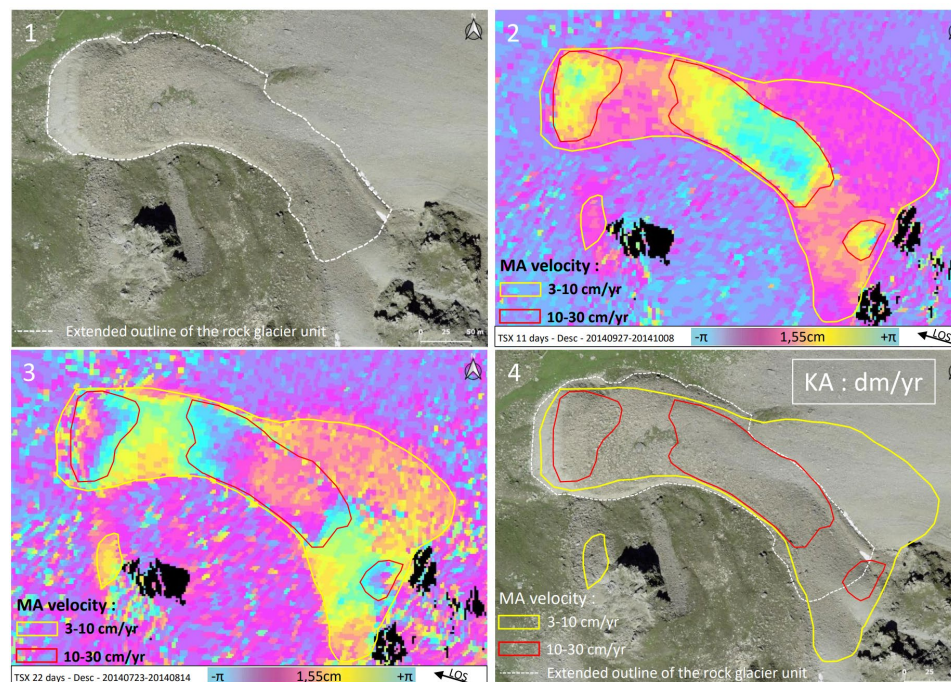
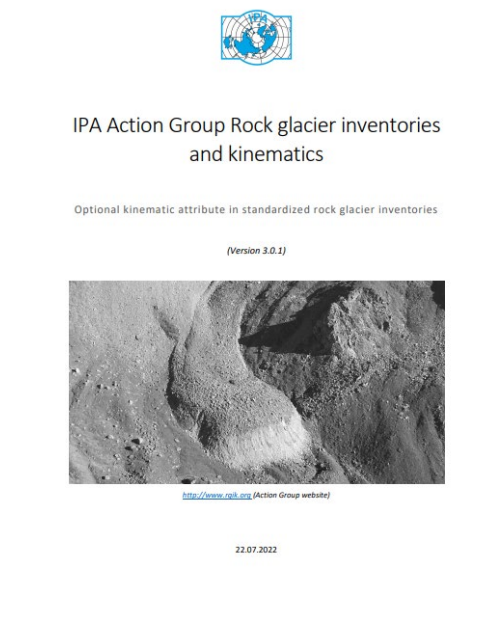
- RGIK (2022). Towards standard guidelines for inventorying rock glaciers: practical concepts (version 2.0). IPA Action Group Rock glacier inventories and kinematics, 10 pp





# RoGI Documents: 3. Kinematic attribute

- RGIK (2022). Optional kinematic attribute in standardized rock glacier inventories (version 3.0.1). IPA Action Group Rock glacier inventories and kinematics, 8 pp



# RoGI Documents: Merging



IPA .

IPA

IPA Action Group Rock glacier inventories and kinematics

Optional kinematic attribute in standardized rock glacier inventories

(Version 3.0.1)



<http://www.rgik.org> (Action Group website)

22.07.2022

New merged document

RGIK 2023. Guidelines for inventorying rock glaciers: baseline and practical concepts (soon available)



# RoGI exercise

- GIS exercise to practice rock glacier inventory according to RoGI guidelines
- Developed for QGIS software (free and open-source GIS)
- Results are provided within the dataset
- First version based on an example region in the Goms Valley, Switzerland

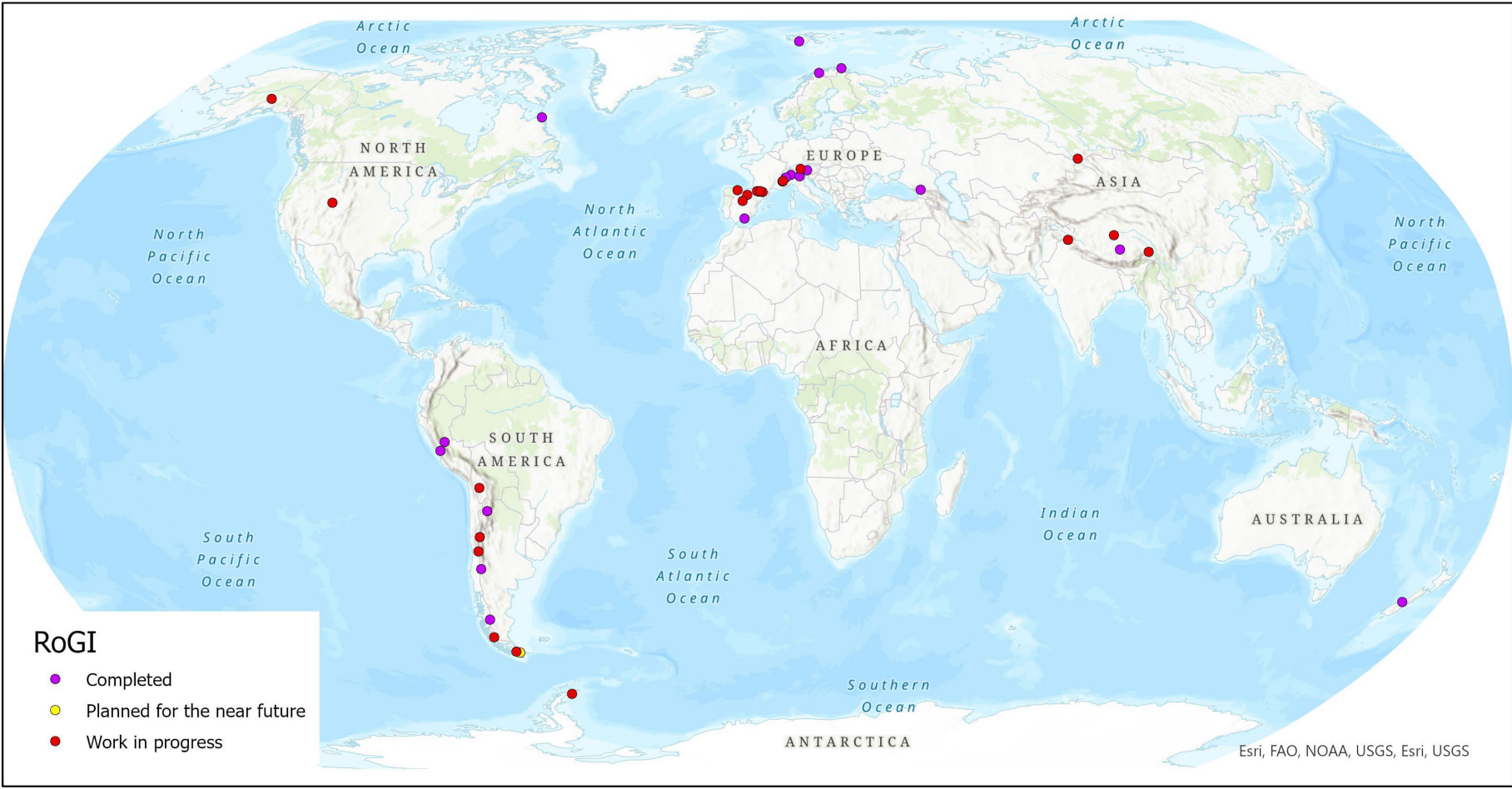


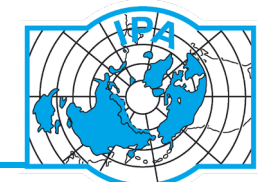
For more information, visit the poster of Echelard et al., (Rock Glacier Session) on Monday.





# RoGI Inventory of existing data

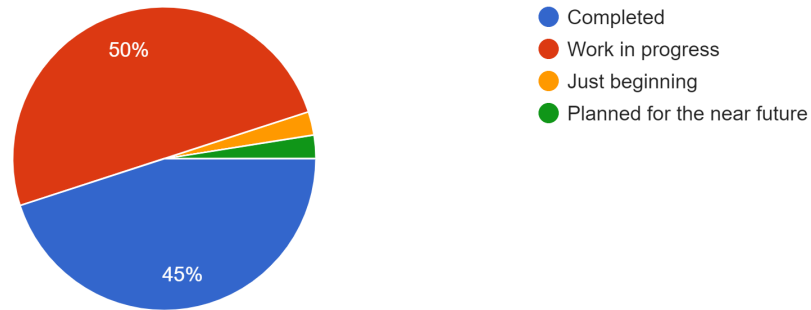




# RoGI Inventory of existing data

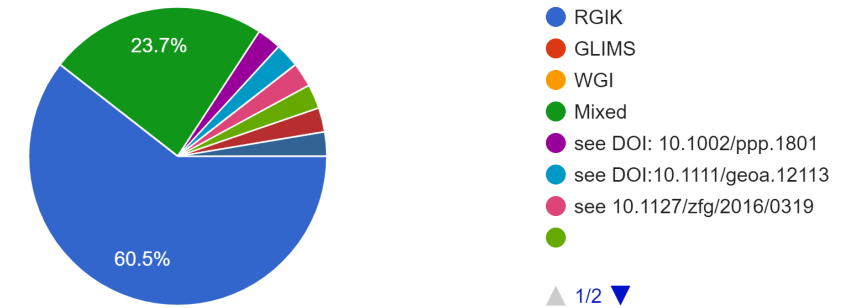
What is the current status of the RoGI?

40 responses



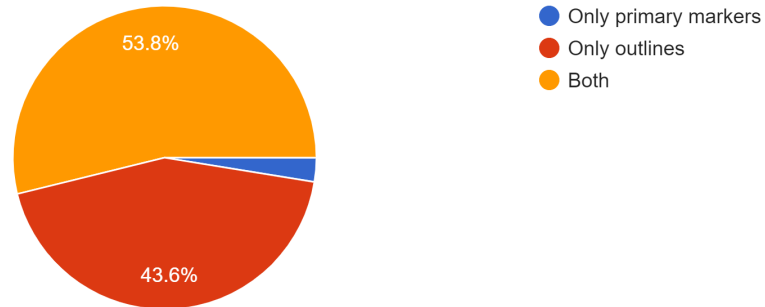
Which kind of guidelines are employed in the RoGI compilation?

38 responses



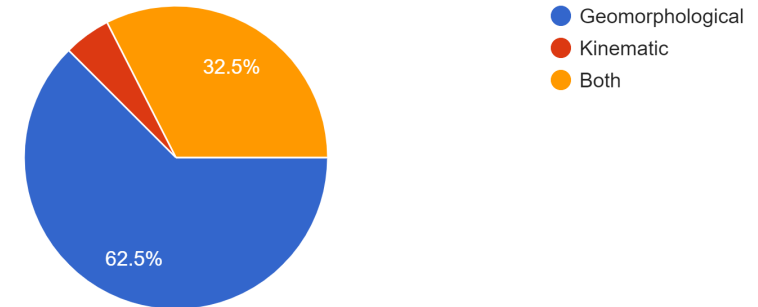
What type of RoGI database is included?

39 responses

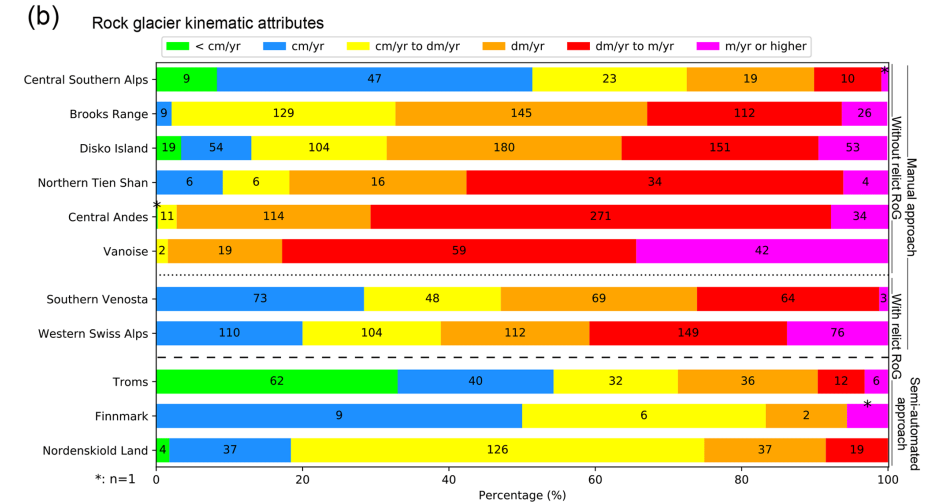
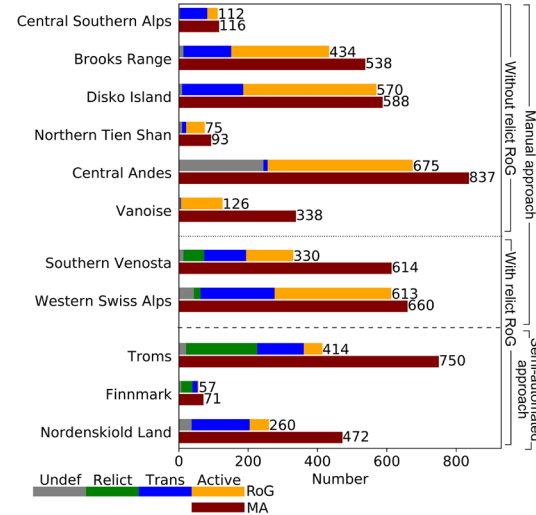
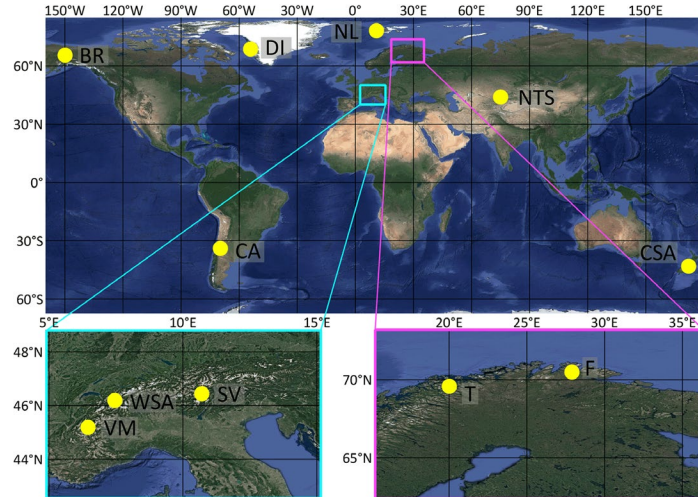


What approach is used during RoGI compilation?

40 responses



# RoGI Implementation via CCI Permafrost



- As part of the European Space Agency CCI Permafrost project: Inventory of >3600 rock glaciers in 12 regions around the world according to RGIK guidelines, summarized in *Bertone et al., 2022*.
- In the new phase of CCI Permafrost (2023-2025), multi-operator consensus-based procedure will be applied in the 12 initial regions > to be disseminated as standardized GIS-based exercises.
- RGV will also be produced on selected landforms.



# RGV – Rock Glacier Velocity

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**Task 2 : aims at standardize the generation of RGV time series in a climate-oriented perspective.**

*→ long-term rock glacier velocity evolution to the new product of the GCOS Essential Climate Variable (ECV) Permafrost.*

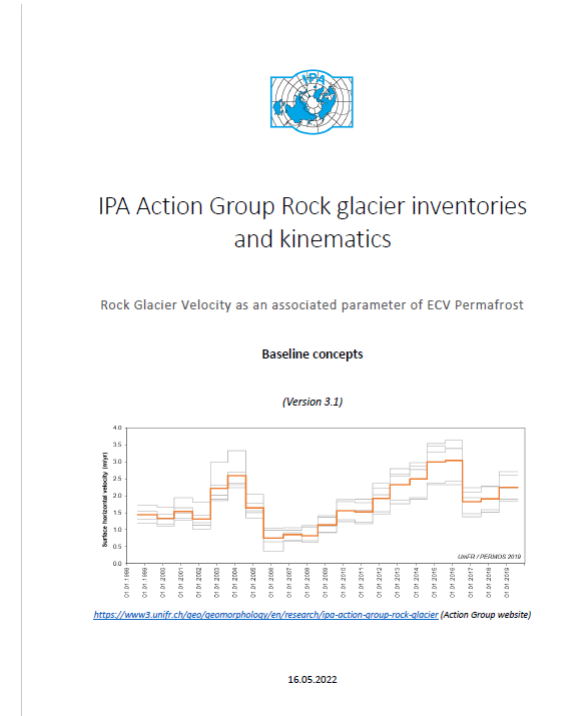


# RGV Documents: 1. Baseline Concepts

Serve as a **baseline** for the **establishment** of **practical guidelines** permitting the **standardized generation** of RGV.

Start in February 2020  
Workshop II

BC V3.1 : May 2022





# RGV Documents: 2. Practical Concepts

Provide practical concepts permitting the standardized generation of RGV

Start in February 2020  
Workshop II

BC V3.1 : May 2022

PC V1.0 : Nov. 2022  
Committee Workshop





# RGV Documents: 3. Factsheets

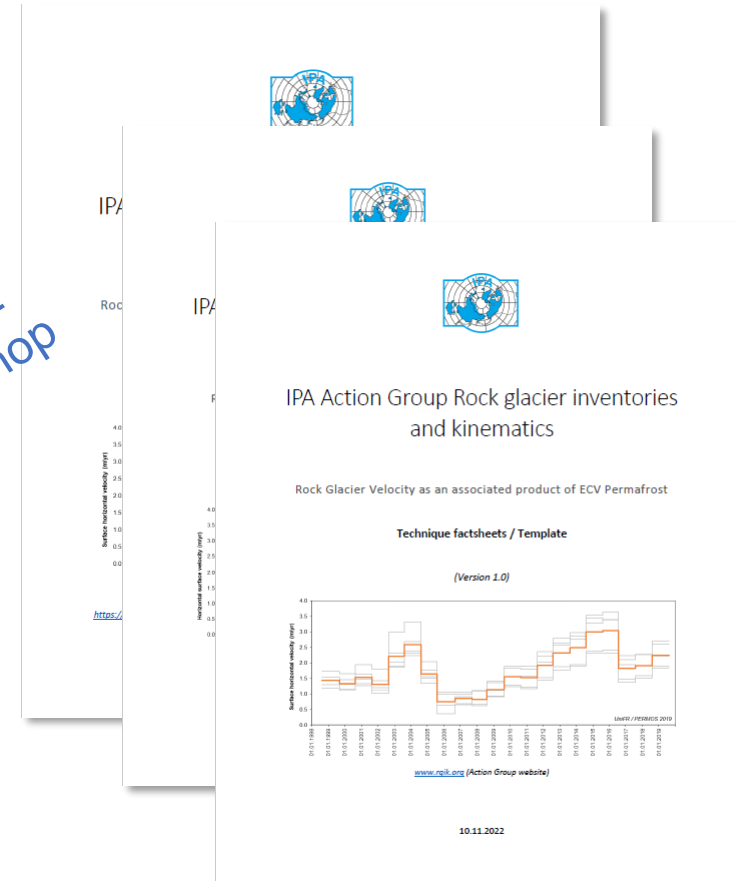
Provide practical concepts permitting the standardized generation of RGV with a dedicated technique

→ Complementary to the RGV\_PC

Start in February 2020  
Workshop II

BC V3.1 : May 2022

PC V1.0 : Nov. 2022  
Committee Workshop





# RGV Documents: Current state

*RGIK (2023). Rock Glacier Velocity as an associated parameter of ECV Permafrost: Baseline concepts (Version 3.2). IPA Action Group Rock glacier inventories and kinematics, 12 pp.*

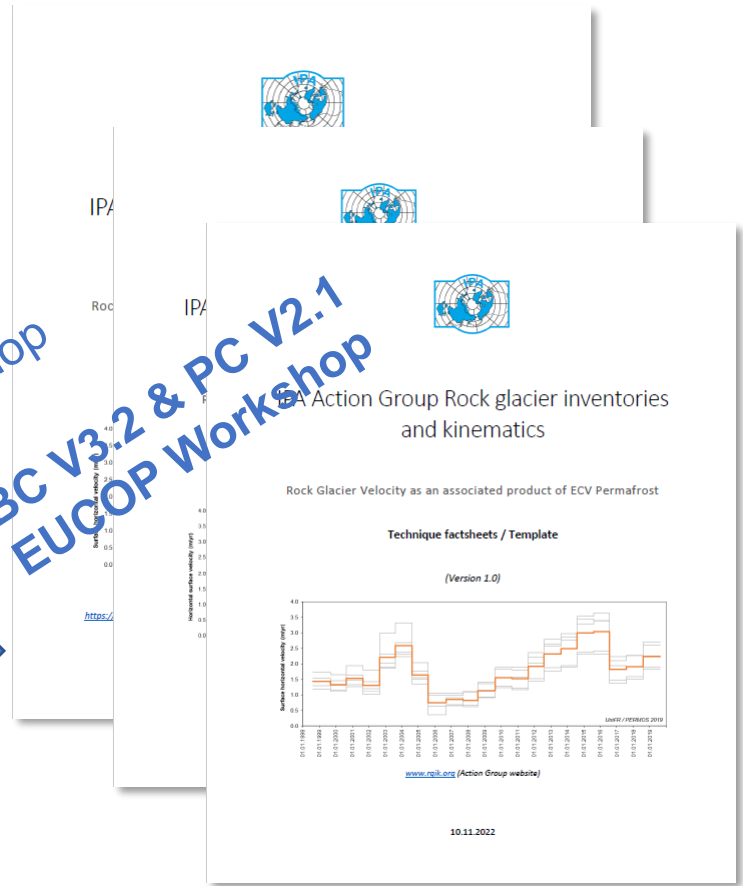
*RGIK (2023). Rock Glacier Velocity as an associated parameter of ECV Permafrost: Practical Concepts (Version 2.1). IPA Action Group Rock glacier inventories and kinematics, 12 pp.*

Start in February 2020  
Workshop II

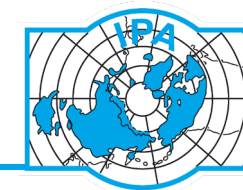
BC V3.1 : May 2022

PC V1.0 : Nov. 2022  
Committee Workshop

BC V3.2 & PC V2.1  
EUCOP Workshop

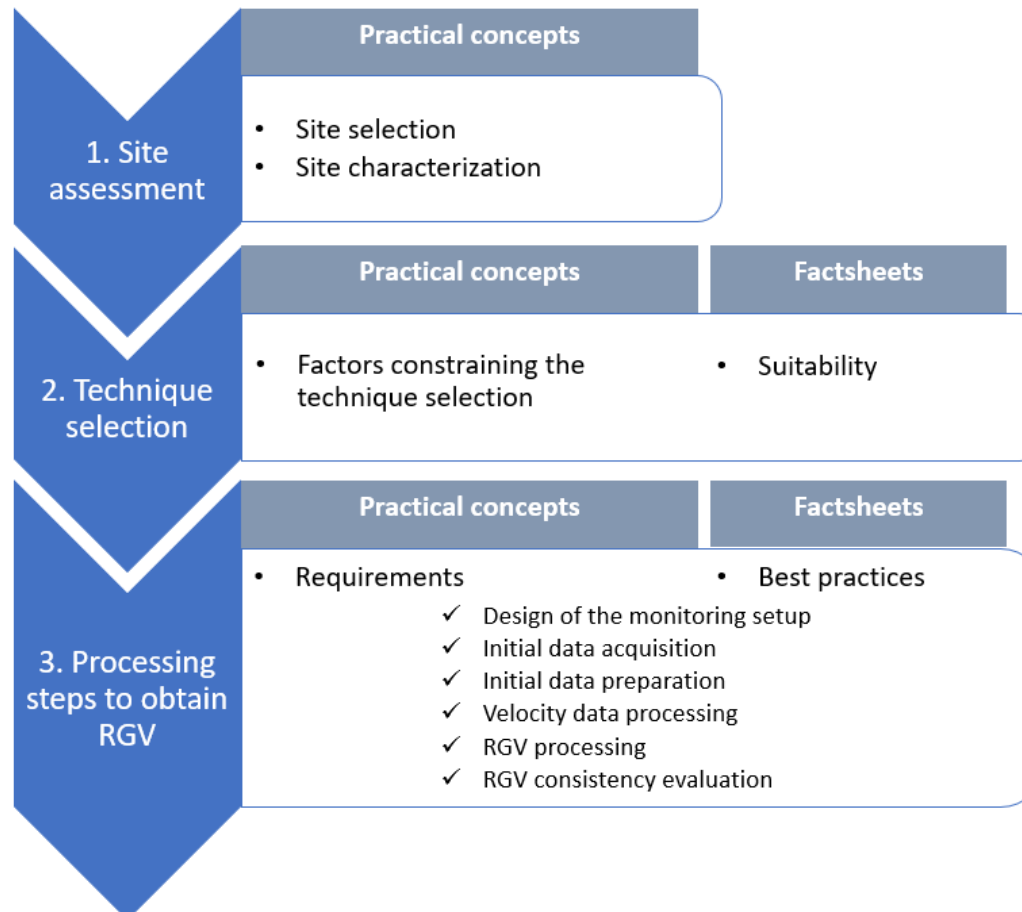






# RGV: Main concepts

## RGV monitoring strategy – Practical concepts & Factsheets

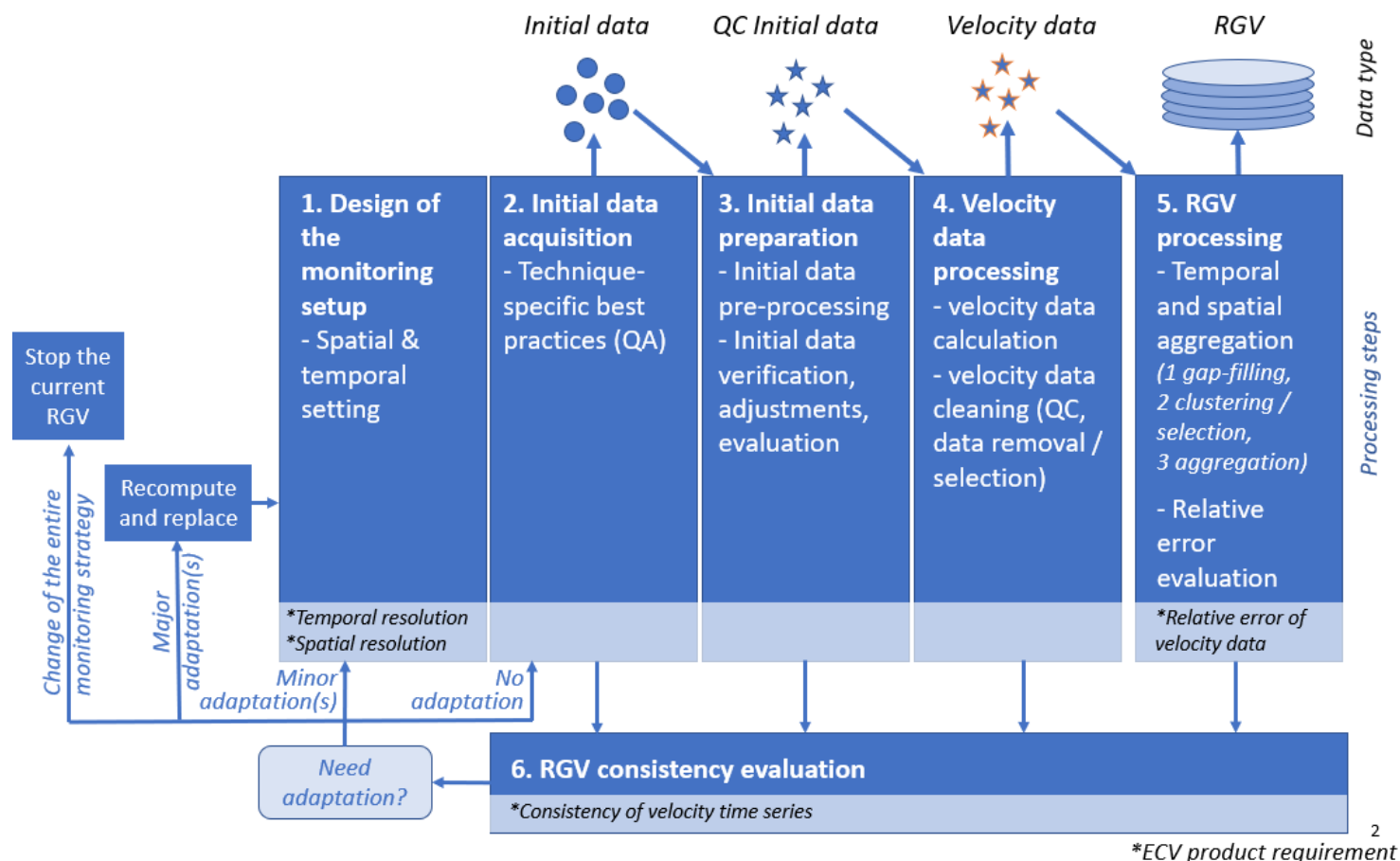


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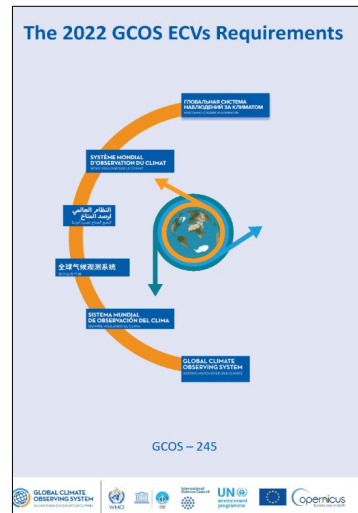
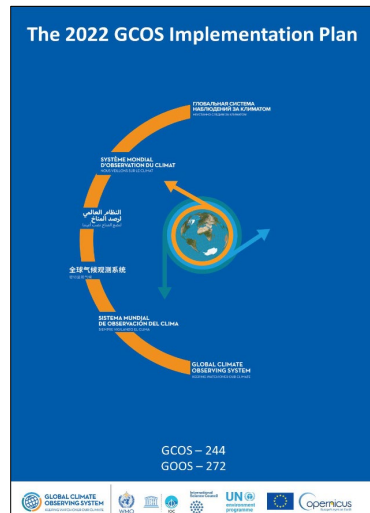
# RGV: Main concepts

## Processing steps to produce RGV

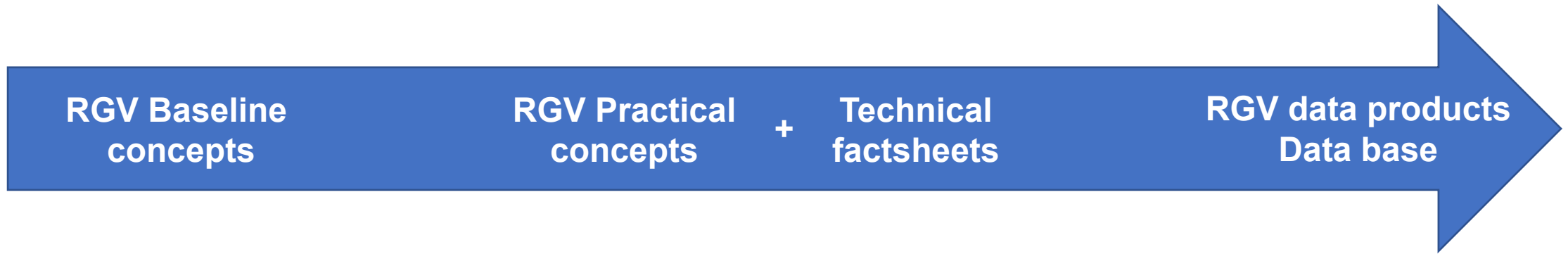
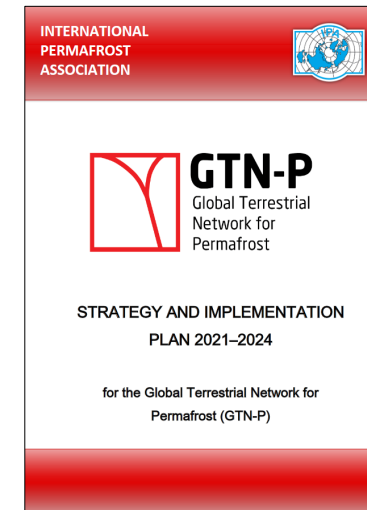


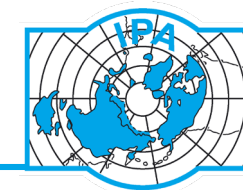


# RGV Documents synergies



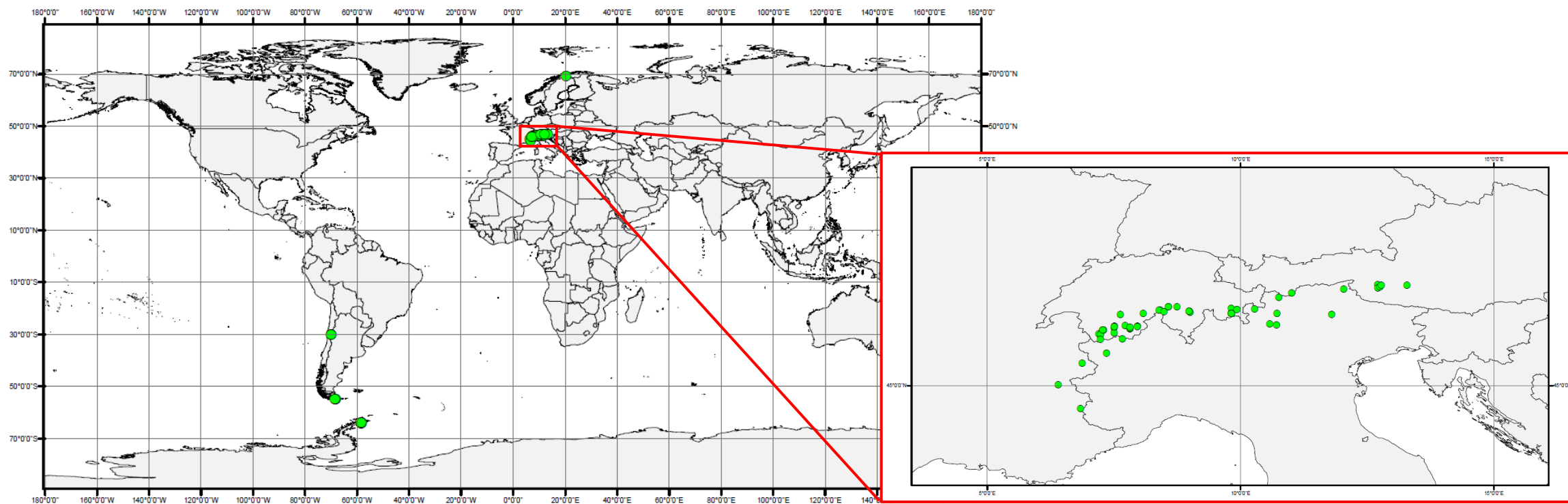
## WMO Guide No 8 Permafrost measurement best practices





# RGV Inventory of existing data

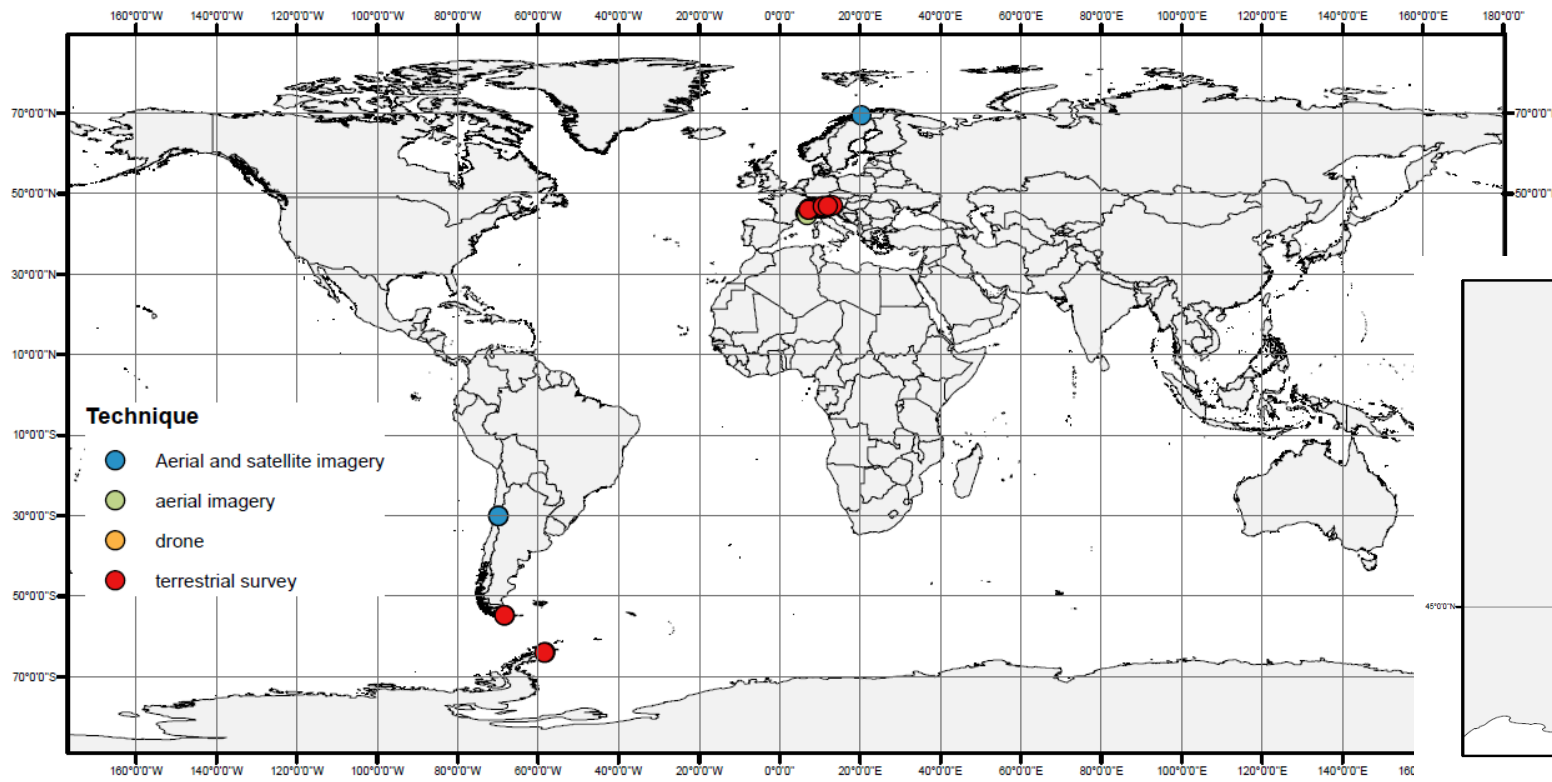
- **Inventory of existing rock glacier velocity time series**
  - Survey sent to the Action Group in February 2023
  - 19 answers, 64 rock glacier velocity series



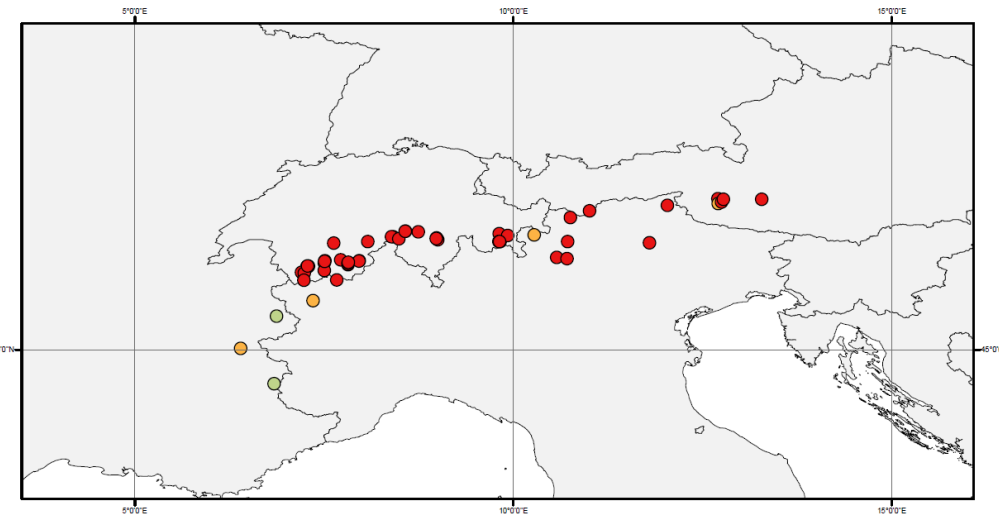


# RGV Inventory of existing data

- 4 main techniques



Aerial and satellite imagery: 2 time series  
Aerial imagery: 2 time series  
Drone: 5 time series  
Terrestrial survey: 53 time series

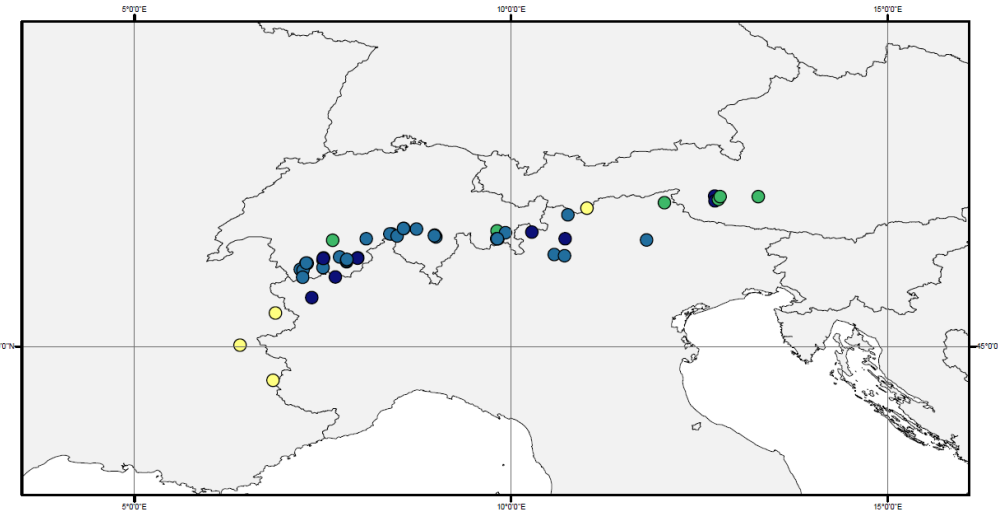
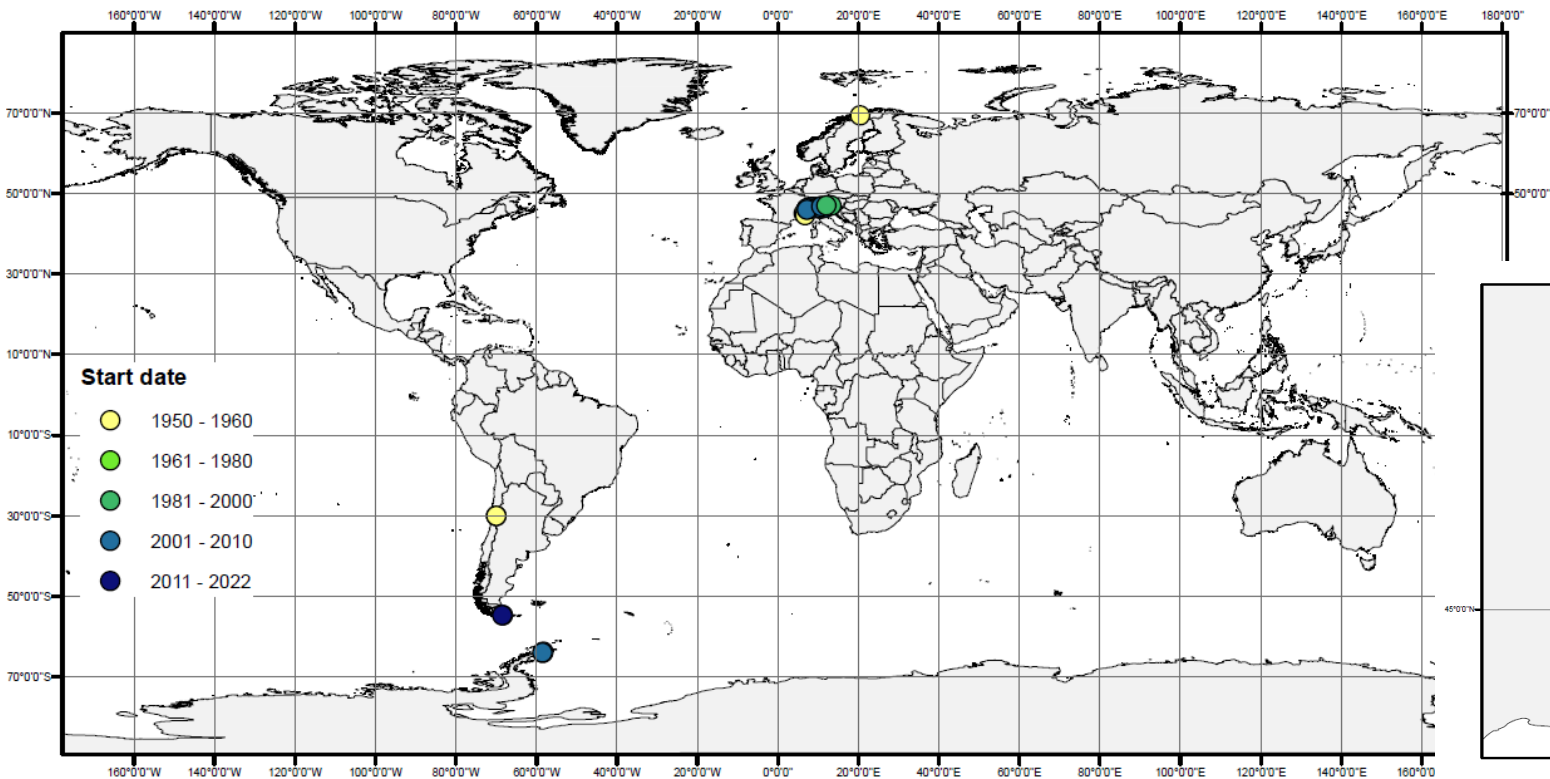




# RGV Inventory of existing data

- Earliest start 1950's

1950-1960: 7 time series  
1961-1980: 2 time series  
1981-2000: 8 time series  
2001-2010: 32 time series  
2011-2022: 14 time series



# Communication and publication of RGV



- **BAMS special issue on the state of climate**
  - Yearly publication on the annual value of the ECV associated products
  - RGV included since 2021
- Standard RGV products once available
- **RGV review paper**
  - Hu et al. in prep.
  - Rock Glacier Velocity as a new product of Essential Climate Variable for Permafrost

For more information, visit the poster of Hu et al., (Rock Glacier Session) on Monday.

