

# OPEN DATA & OPEN KNOWLEDGE Workshop

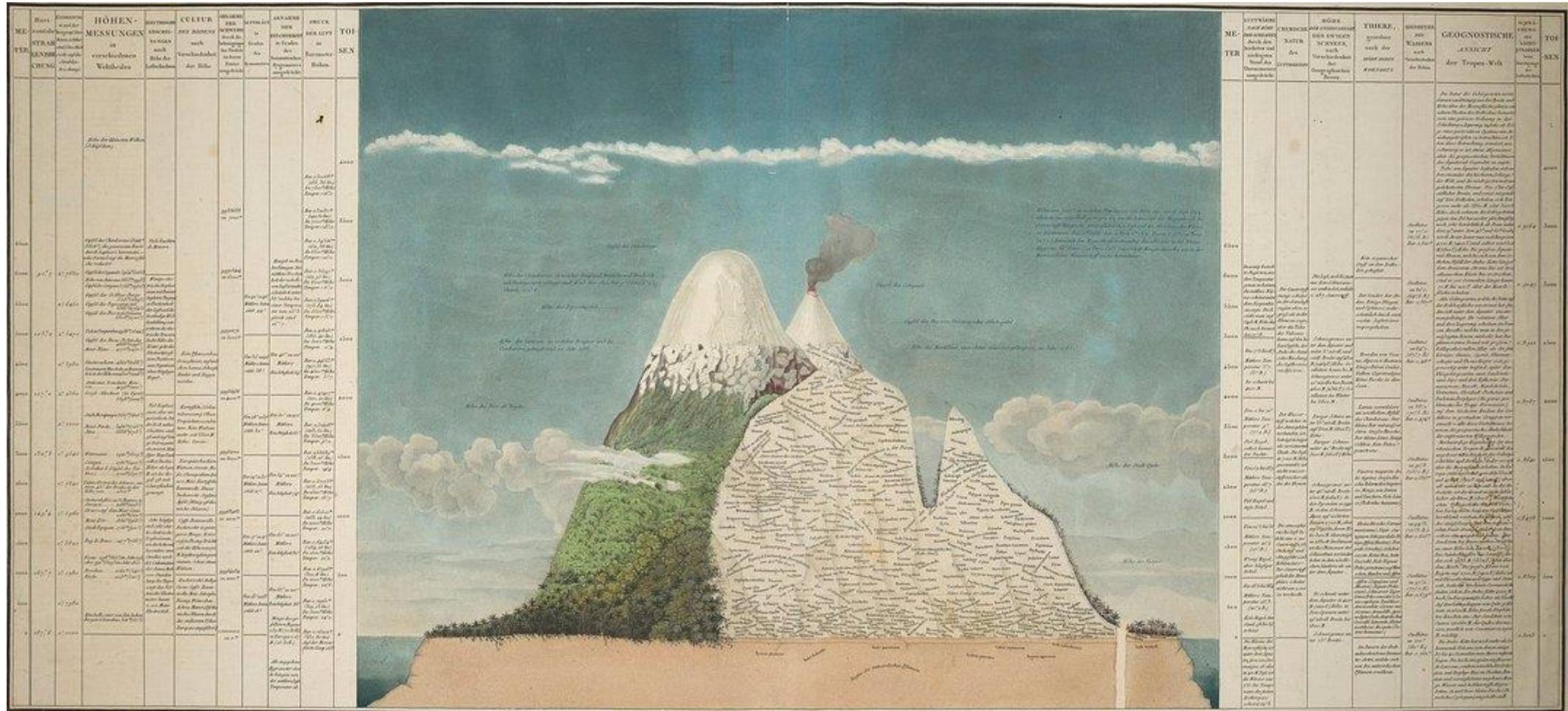


Never Enough:  
the never ending need  
for actionable data  
in the Mountains

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# The long journey of Mountain ECVs



Alexander von Humboldt – NaturGemälde 1807

# The long journey of Mountain ECVs



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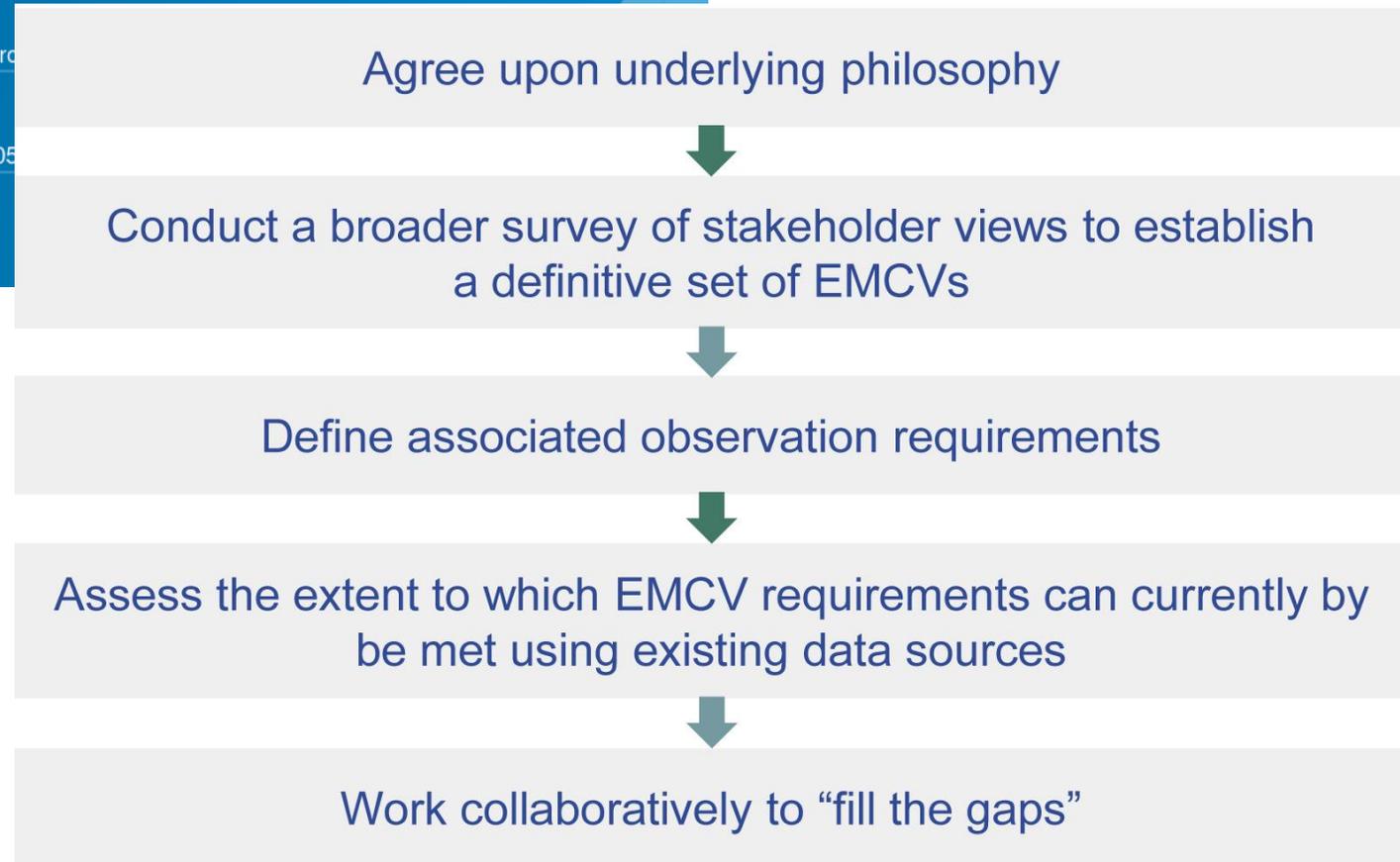
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## Toward a definition of Essential Mountain Climate Variables

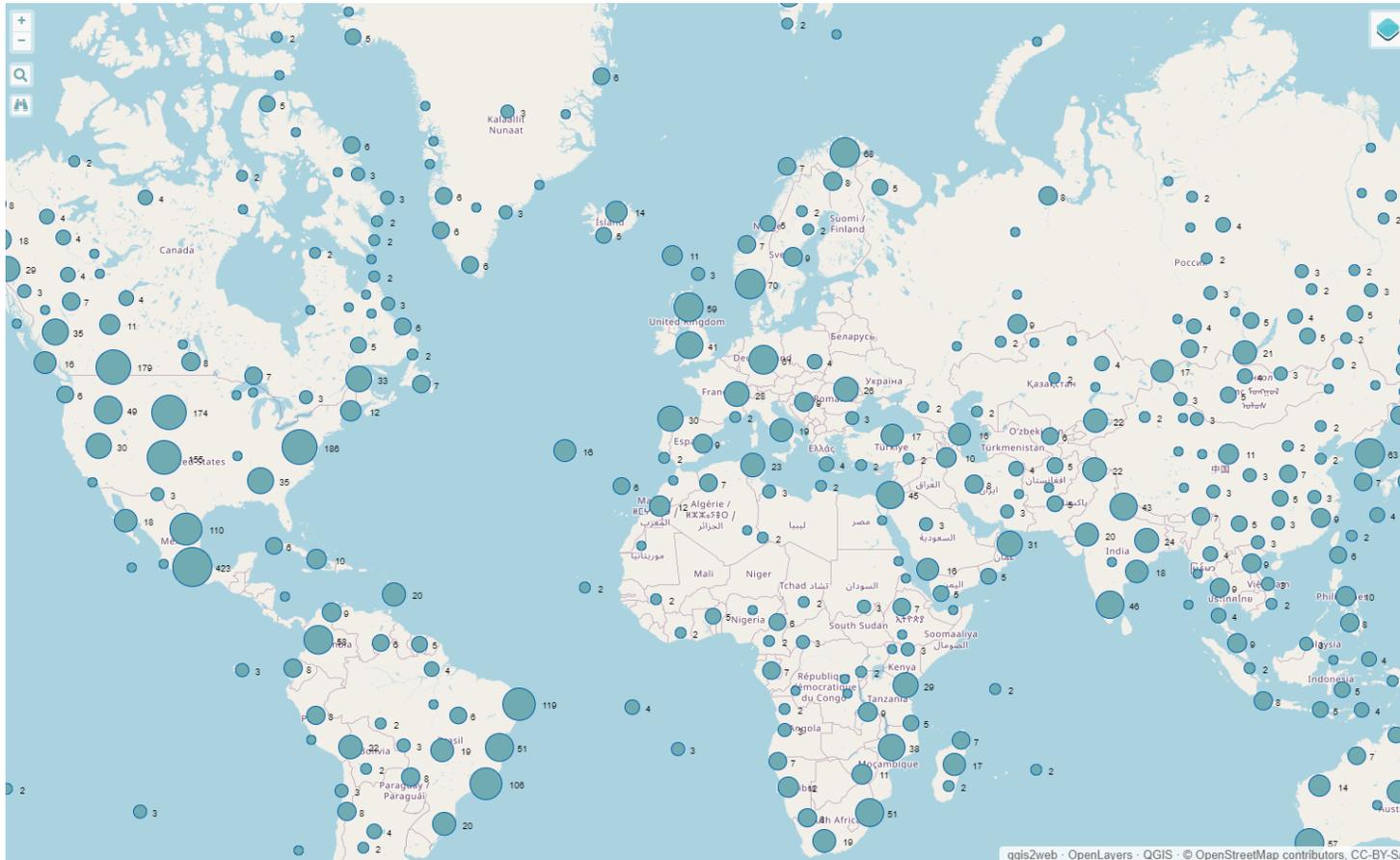
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# The long journey of Mountain ECVs



- Aims to provide a comprehensive, multi-disciplinary overview of who is measuring what, where, when, how
- Web-mapping application and table available for download
- 51,000 stations, networks, experimental basins, etc.
- Work still needed to complete metadata for many sites and ensure access / sharing to actual underlying data (e.g. time series)
- Could eventually provide the basis for a comprehensive gap analysis

<https://www.geomountains.org/resources/resources-surveys/inventory-of-in-situ-observational-infrastructure>

## What we understood so far ...

- **Mountains matter:** 12/30% of the land surface, 0.9/1.2 billion people (90% in developing and transitional countries), climate change and biodiversity hot spots, key ecosystem, essential water, energy, food, and other resources goods and services, directly linked to downstream regions through natural pathways and human infrastructures, water towers for the world's major rivers (Shahgedanova et al. 2022)
- **we don't manage what we don't measure:** we need to track and report ongoing changes, better understand processes, and support global assessments (e.g. IPCC reports) and evidence based local policy cycle
- **system complexity:** highly diverse socio-ecological environmental systems
- ***in situ* data collection** is often a question driven process or project based endeavor
- **challenging** conditions (installation, maintenance of *in situ* infrastructures, data transmission, ...) / spatial and temporal scales / representativeness, ...
- **earth observation** is cool but not enough, at least in the mountains → we need to **integrate** *in situ* data, eo data and models
- heterogenous “**data ecosystem**”: lack of data consistency/standardization, inter-comparability and inter-operability
- weak “**data culture**”: different disciplines, metadata, open policies, data sharing, data access, ...
- good examples of thematic data sharing **successful initiatives**

## What we still need ...

- Build **interdisciplinary consensus**, around the Mountains ECVs framework, on what to measure and why (priorities) and how to measure
- identify existing **ready to use datasets**
- highlight thematic and spatial **gaps** → pave the way for **further work** by the community
- **Technicalities**: open and accessible geo-database, digital twins, data-hubs, metadata, web interfaces, standardization and interoperability, minimum requirements, ...
- facilitate **data-access**, improve interdisciplinary **collaboration** around existing sites
- build a **community** of researchers and practitioners under the umbrella of Group on Earth Observations (GEO) Mountains
- Essential Climate / Biodiversity / Social variables → **Essential Mountain Variables**

Where we can learn something ...

## The European Research Infrastructures

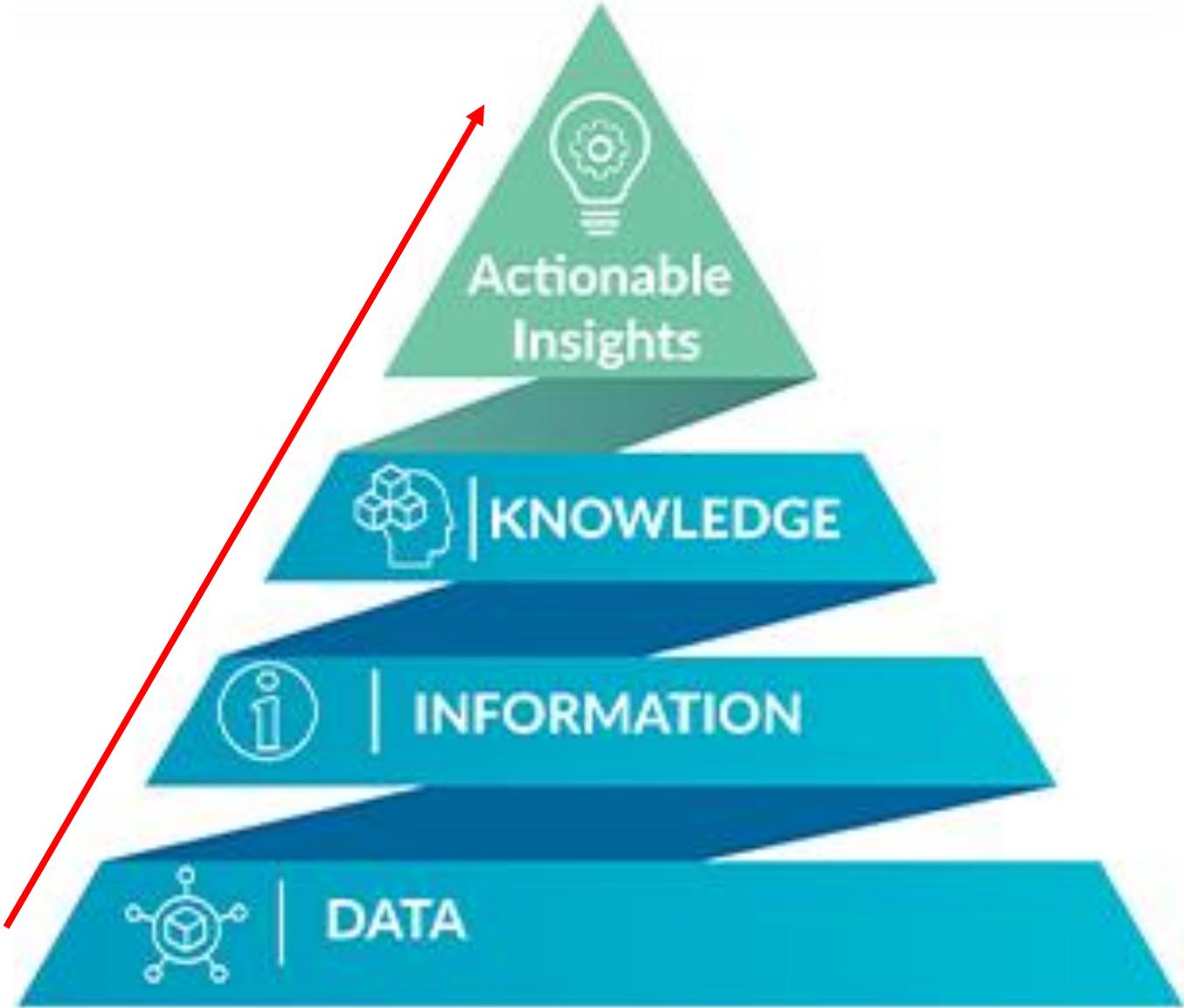


- ICOS is a stable, long term and **sustained** research infrastructure that can ensure timely, high quality and open access data to the scientific communities
- **Standardized** data collection: protocols, instructions, metadata, ...
- Thematic centers: **centralized data quality check and processing**
- **Assistance and training**
- **data products release** targeted to the needs of specific communities / eo validation activities
- **data distributed** with permanent identifier (PID) and under the Creative Common license, timely and also NRT



# What we better remember ...

We need to climb the information pyramid and work on the data value chain



What we better remember ...

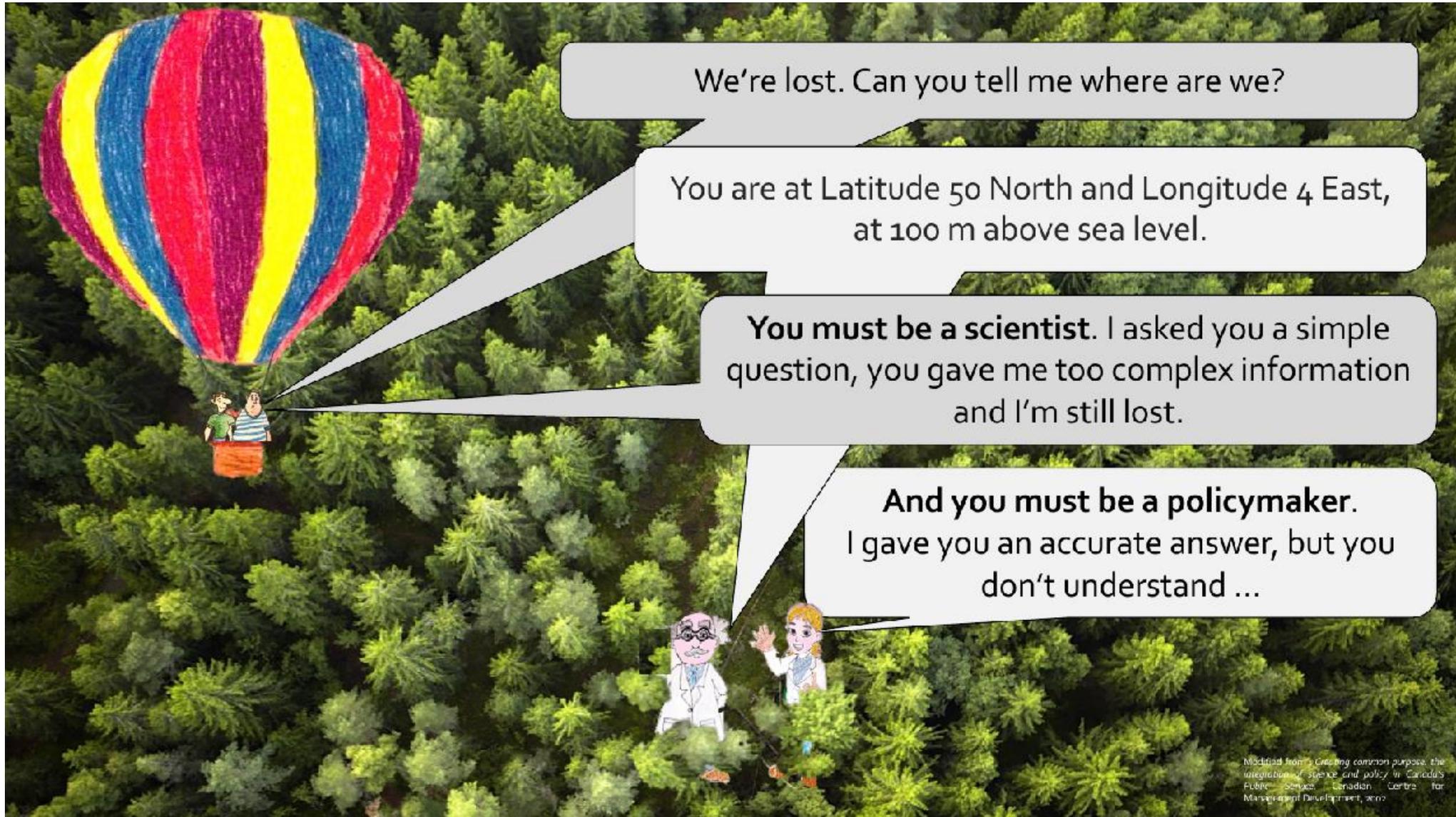
# Overburdening decision makers with data



## How can we pursue our never ending quest for actionable data in the Mountains?

.. my two cents ...

- get engaged in the **dialogue** between *in situ* and earth observation communities
- day by day advocacy of the **data sharing mindset**
- **resources**: we will fail if we count only on in-kind or voluntary contributions
- **embrace epistemic trespassing**
- find a **balance**: we'd love to have huge amount of FAIR data but we need to provide answers today (mountain ECVs for evidence based policy cycle)
- hands on the **science-policy interface ecosystem** (time, commitment, language, values, ...)



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