

COMMON CHALLENGES ACROSS REGIONS

Shared barriers to effective mountain data systems

1 Data Access Barriers

Data often exists — but is difficult to access, share, and use.



- Hydrological data frequently restricted
- Cross-border sharing limited by policy and geopolitics
- Poor metadata and lack of standardisation

2 Funding & Sustainability Constraints

Monitoring systems are difficult to maintain over time.



- Limited long-term funding
- High costs of remote mountain stations
- Short project cycles and brain drain
- Institutional competition limits collaboration

3 Critical Data Gaps

Key datasets are missing or underdeveloped.



- Socio-economic and biodiversity data lacking
- Climate data stronger than other domains
- Large volumes of analog data not digitised
- Limited technical capacity for data processing

Across all regions, challenges are systemic—requiring coordinated solutions in data, funding, and governance.

SOLUTIONS & OPPORTUNITIES

Emerging pathways to strengthen mountain data systems

1 Enhanced Data Infrastructure

Strong support for open data is driving improvements in data systems.



- Growing adoption of open data principles (>90% support)
- Frameworks such as the WMO Unified Data Policy
- Emerging regional data platforms (e.g. ICIMOD RDS, SAEON)
- Increasing use of standardised protocols and networks

2 Network Development

Regional and global collaboration is expanding.



- Development of Mountain Observatory networks
- Integrated, long-term, multi-disciplinary monitoring
- Existing models (e.g. CAMON, ROSA)
- Strengthening North-South and South-South cooperation

3 Capacity Building

Investment in skills and institutions is a key priority.



- Demand for training programmes and field schools
- Support for Early Career Researchers (ECRs)
- Strengthening university–observatory partnerships
- Practical training through national agency collaborations

4 Community Engagement

Local participation is improving data relevance and sustainability.



- Growth of citizen science approaches
- Use of mobile technologies for data collection
- Integration of Indigenous and local knowledge
- Participatory monitoring strengthening long-term impact

Solutions are already emerging—scaling them requires coordination, investment, and sustained collaboration.

MRI REGIONAL CONSULTATIONS (2021–2024)

Understanding Data Challenges Across Mountain Regions

Between 2021 and 2024, GEO Mountains, with support from **Adaptation at Altitude**, conducted comprehensive regional consultations across five mountain regions.

WHAT WAS DONE?



Virtual Surveys
2021–2022



In-Person Workshops
2023–2024

WHO WAS INVOLVED?

300+ STAKEHOLDERS ENGAGED

- Researchers
- National Meteorological & Hydrological Services
- Local & Regional Institutions



WHERE? 5 MAJOR MOUNTAIN REGIONS



ANDES



EAST AFRICA



CAUCASUS



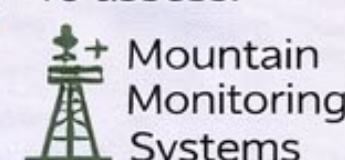
CENTRAL ASIA



HINDU KUSH
HIMALAYA

WHAT WAS THE GOAL?

To assess:



Mountain
Monitoring
Systems



Data Sharing
Practices



Capacity
Gap &
Needs

WHY IT MATTERS



Revealed Common
Challenges Across
Regions



Built Shared
Understanding of
Data Barriers



Informed Regional
Collaboration &
Open Data Policies



Enabled Targeted
Funding Opportunities
(e.g. Small Grants)

Global challenges in mountain data are widely shared—solutions must also be collaborative.



HOW IS DATA SHARING WORKING IN YOUR REGION?

Let's discuss and learn from each other

1



How accessible is environmental or climate data in your country or region?

2



Are there policies or initiatives supporting open data or data sharing?

3



What are the main barriers to sharing data? (e.g. technical, institutional, political, financial)

4



What concerns exist around making data more open? (e.g. sensitivity, misuse, ownership, security)

5



What would most help improve data sharing in your context?



Your experience matters — let's work together for better mountain data!

