

A SWISS POLAR INSTITUTE FLAGSHIP PROGRAMME: PAMIR

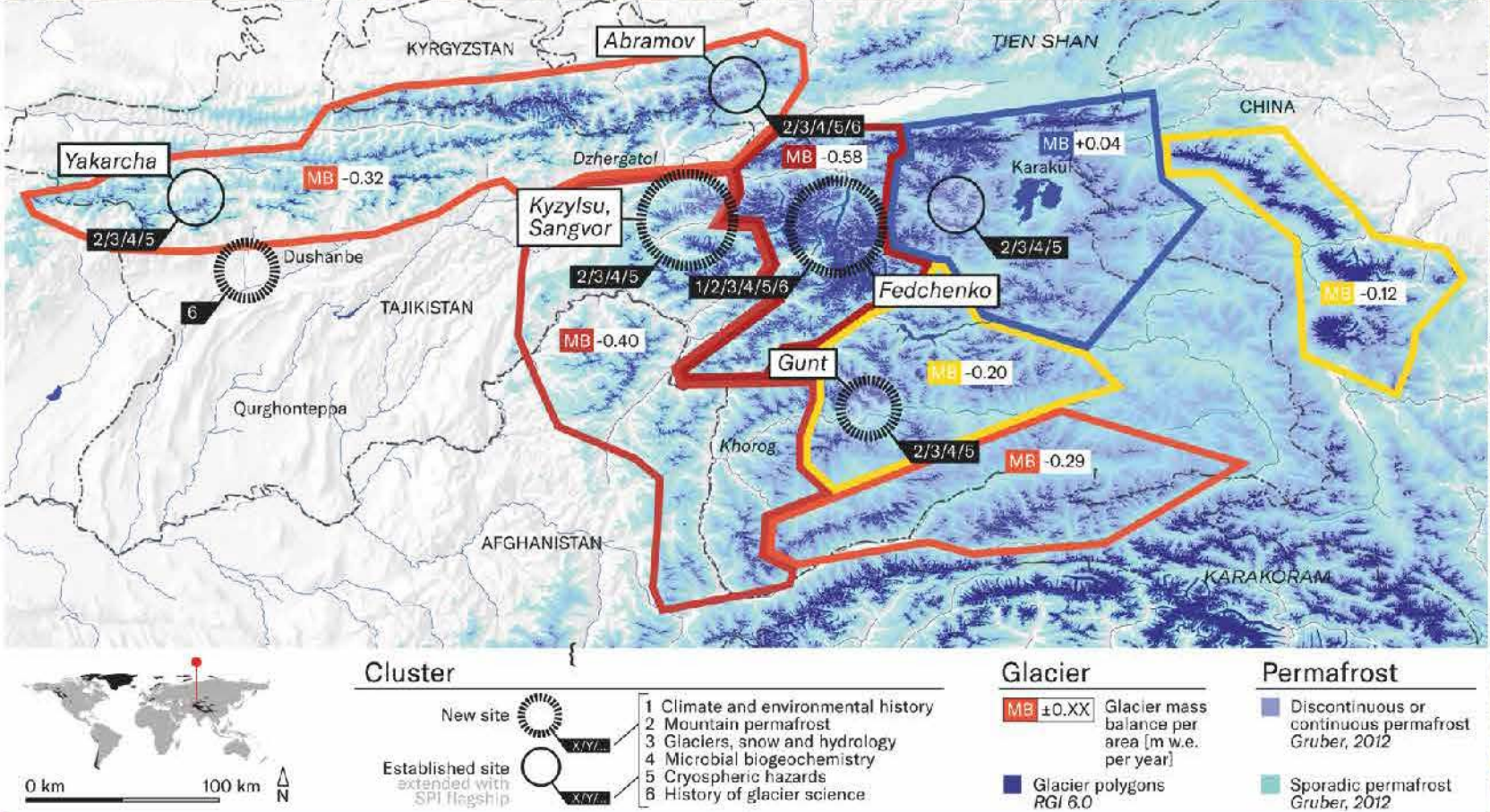
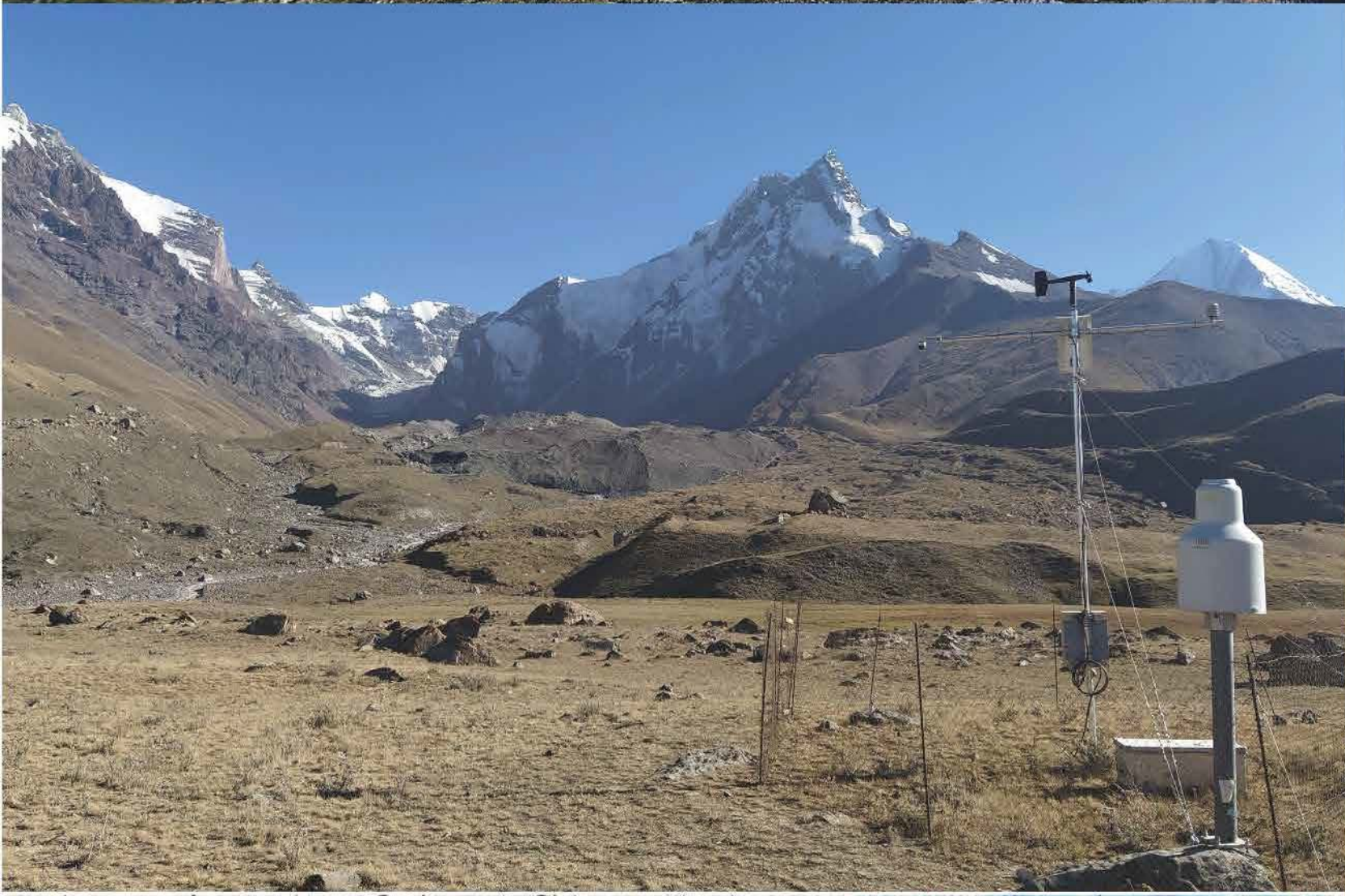
Toward interdisciplinary understanding of climate change impacts

Climate-induced environmental change is ubiquitous in mountain regions worldwide. Among the most iconic mountain ranges are the Pamir Mountains, which buffer seasonal water shortage with snow, glacier and permafrost thaw. The Pamir cryosphere is thus of key importance, but its complexity and remoteness hinder our understanding of its ongoing changes and the consequences for hazards, water and ecosystems.

Funded by the Swiss Polar Institute, the interdisciplinary PAMIR Flagship Programme (2022-2026) is a collaboration between Swiss and Tajik scientific groups to leverage this unique field laboratory of diverse cryospheric elements. We conduct unique field and satellite measurements of glaciers, snow and permafrost and links their changes to hazards, microbes and water resources.

Science achievements thus far:

- Successful reconnaissance of an ice coring site.
- Sampled and dated landforms constraining past glacier extents spanning past millenia.
- Conducted the first geophysical characterizations of permafrost and supported installation of the first permafrost borehole in the region.
- Complemented systematic monitoring of glaciers and glacierized catchments in coordination with CROMO-ADAPT.
- Characterized microbial communities in high-mountain streams, yielding key insights into how glacier melt will affect ecosystems.
- Collected ice thickness measurements at eight glaciers, informing the future development of glacial lakes. Previous measurements only existed for two glaciers.



Science objectives for 2025:

- Extraction of a high-elevation, deep ice core near Karakul.
- Installation of a second permafrost borehole.
- Continued systematic monitoring of glacierized catchments with CROMO-ADAPT.
- Helicopter surveys of ice thickness at 10s of glaciers.
- Re-establishing a historic high-elevation meteorological station
- Surveys of numerous potentially-hazardous proglacial lakes.

