

A challenge to the notion that mountains are “poorly monitored” environments?

A Global, Cross-Disciplinary Inventory of Mountain Monitoring Infrastructure

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Motivation

- ❑ Earth's extensive mountain regions are crucial for human societies and ecosystems
- ❑ Multi-variate in situ mountain observations contribute to numerous important applications (e.g., ground truthing remotely sensed data and downscaling climate model outputs)
- ❑ Inhospitable conditions and remoteness pose problems to **systematic, long-term, and spatially dense in situ monitoring** in mountains
- ❑ Moreover, the **highly fragmented nature** of cross-disciplinary mountain monitoring makes it **extremely difficult to gain an overview of who is measuring what, where, when, how, and why**

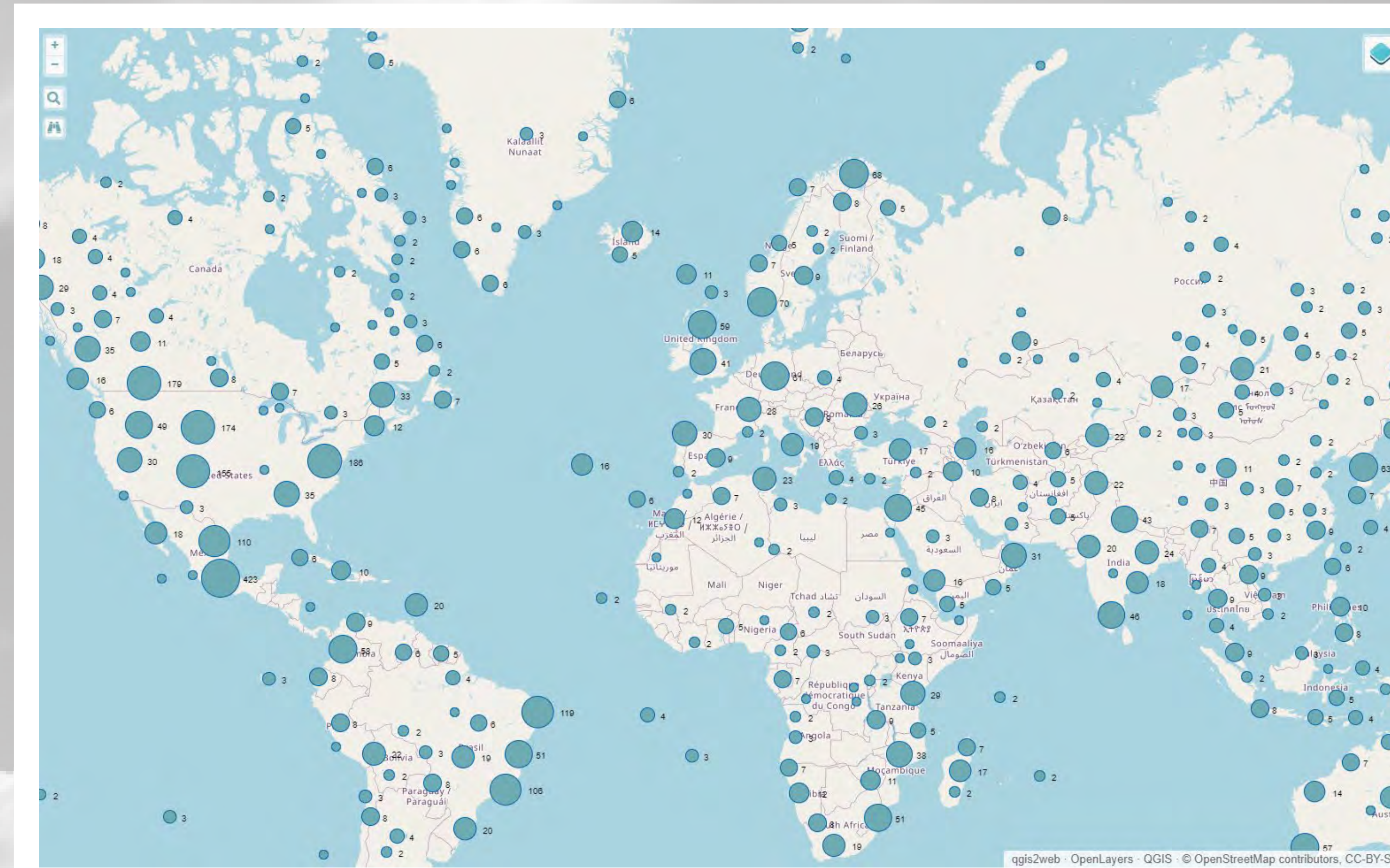


Figure 1. Global overview of the web mapping interface.

Conclusions & Outlook

- ❑ Despite known difficulties associated with in situ mountain measurements, **the sheer number of stations represented somewhat challenges the notion that these regions are poorly monitored**
- ❑ However, obtaining **comprehensive metadata for all sites** remains a **work in progress**
- ❑ At present, it is also **not always straightforward** for users to **access the actual measurement data** from all sites
- ❑ GEO Mountains intends to **continue to develop the inventory** iteratively, **in collaboration with the community**
- ❑ This effort should **expedite access to the corresponding observations**, **reduce infrastructural redundancy**, and **improve interdisciplinary collaboration** around existing sites
- ❑ Once further expanded, the inventory may also facilitate **more extensive and thematically broad data coverage analyses**, which in turn could **inform infrastructure installation and maintenance investment decisions**

The Inventory

- ❑ GEO Mountains' In Situ Inventory of Observational Infrastructure seeks to represent **all known current and historic mountain sites with sustained observations spanning a range of disciplines and objectives**
- ❑ The **latest version (v2)** contains **over 51,000** monitoring stations, station networks, experimental basins, or other monitoring locations
- ❑ The inventory can be viewed using a **web mapping application** (Figures 1 & 2), and the full dataset is also **freely available for download**
- ❑ A system has been established that enables individuals or institutions to **propose additional sites** and/or **improve the metadata pertaining to existing sites**

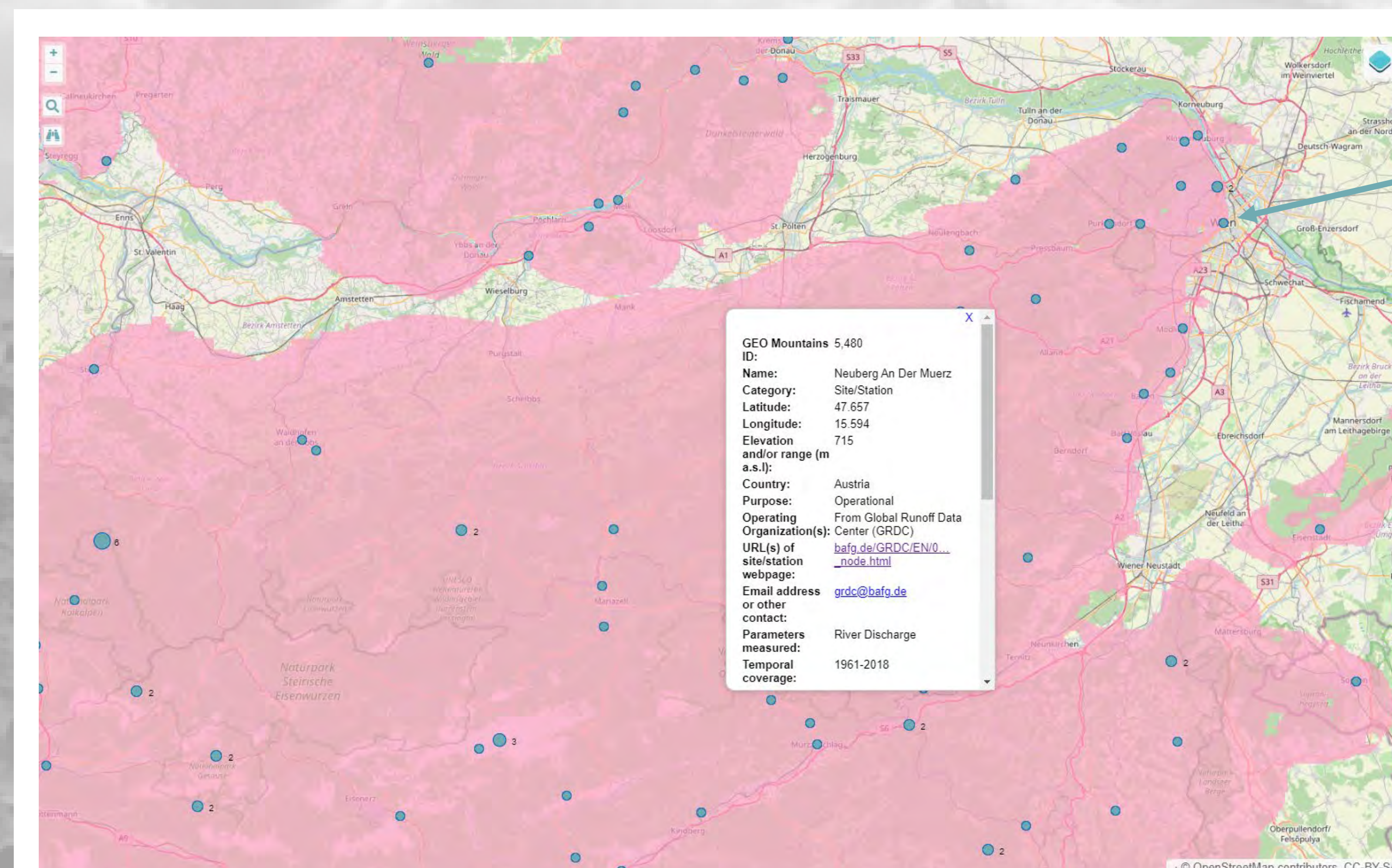


Figure 2. Zoomed in view showing the region to the south-west of Vienna, Austria, the extent of “mountainous terrain” (pink), and some of the metadata that can be retrieved by clicking on a site.



Reference & Further Reading

GEO Mountains (2022). Inventory of in situ mountain observational infrastructure, v2.0. <https://www.geomountains.org/resources/resources-surveys/inventory-of-in-situ-observational-infrastructure>. doi: 10.6084/m9.figshare.14899845.v2

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