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The Polar Rock Repository: an invaluable geochemical resource for Antarctic & Southern Ocean Studies

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The Polar Rock Repository (PRR) contains sample collections and media relevant to understanding changes in the Antarctic Ice Sheet and Southern Ocean. By making terrestrial and marine geological materials available to the geochemical community, the PRR represents an invaluable resource to help answer key questions involving glacier and ice sheet processes, climate reconstructions and the future of Earth's cryosphere.

The PRR is a National Science Foundation funded facility that provides online access to >61,000 rock samples, glacial deposits, terrestrial drill cores, and dredge samples from Antarctica and surrounding regions. PRR samples can be ordered from the website for research. The PRR has also created a media archive of >6000 images (with some dating back >60 years) that can provide glaciological, geological, and logistical information as well as provide a record of temporal change associated with surface features (snow cover, ponds, icebergs, streams, etc.).

Prr.osu.edu provides easy-to-use map view searching and multi-field searchable criteria including subglacial precipitates, pedogenic calcite and weathering salts, coral/marine invertebrates on dredge clasts, lichen, moss, soil residues, Fe-Mn nodules, Fe-Oxide coatings, glacially striated surfaces, glacial erratics, and photos/videos of outcrops and landscapes.

Currently, cryosphere related questions being addressed using PRR samples/metadata include:

- Millennial scale climate cycles since the Pleistocene using U-series methods on subglacial precipitates from beneath the East Antarctic Ice Sheet.
- Provenance studies suggesting early Neogene sea-level oscillations from a large WAIS.
- Paleotemperature proxies from dredge samples in the Ross Sea and Southern Ocean.
- Glacial reconstructions using cosmogenic nuclides & optically stimulated luminescence.
- Studies on CO2 fluxing and magma transport using volcanic rocks from Mt. Erebus.
- Use of Fe-Mn nodules to assess influxes from the Antarctic Ice Sheet.
- Landscape evolution studies related to onset of glaciation.