

Utah State University

DigitalCommons@USU

Funded Research Records

Data Services

3-6-2020

Collaborative Research: Quantifying crustal hydration effects in the Colorado Plateau from xenoliths

Dennis Newell

Utah State University, dennis.newell@usu.edu

Follow this and additional works at: https://digitalcommons.usu.edu/funded_research_data



Part of the [Geology Commons](#)

Recommended Citation

Newell, D. L. (2020). Collaborative Research: Quantifying crustal hydration effects in the Colorado Plateau from xenoliths. Utah State University. <https://doi.org/10.26078/RJBA-FN08>

This Grant Record is brought to you for free and open access by the Data Services at DigitalCommons@USU. It has been accepted for inclusion in Funded Research Records by an authorized administrator of DigitalCommons@USU. For more information, please contact digitalcommons@usu.edu.



J. Data Management Plan

1. Types of Samples and Data

We will work closely with D. Smith at UT-Austin in order to select samples from the xenolith collection housed there. Additional xenolith samples will be collected during field work in Colorado. Information collected at the time of sample collection will include for all sample types a location (GPS coordinates), field photographs of the location/sample, and field description in a field notebook and in a digital record using the recently developed StraboSpot field application (NSF-funded development). The primary sample material that Mahan and CU personnel will work with will be thin section billets and thin sections, whereas Newell's group will work with separated material as well as thin sections.

Analytical results from these samples will be processed and tabulated using instrument-specific software and Microsoft Excel. Data sets that will be produced include geochemical, geochronological, and stable isotope ratios. Stable isotope ratio measurements of H, C, and O will be reported in delta notation ($\delta^2\text{H}$, $\delta^{13}\text{C}$, $\delta^{18}\text{O}$) and referenced to international standard scales (VPDB, VSMOW). Electron microprobe data will include digital X-ray maps and backscatter electron images, and quantitative data (oxide weight percents, standard information, detection limits, electron beam column conditions). Geochronological data recording and reporting will be follow the established protocols for the LASS laboratory at UC-Santa Barbara, and QEMSCAN map data recording and reporting will follow those protocols established Automated Mineralogy Lab at the Colorado School of Mines.

2. Data and Metadata standards

Data will be compiled and stored in Microsoft Excel or ASCII format. Location information (GPS coordinates) will be compiled in decimal degrees using the World Geodetic System (WGS) 1984 datum. Key samples will be registered with the SESAR system for obtaining international geo sample numbers.

Table 1. Quantitative data and Metadata for each analytical suite collected at USU and CU

Analysis	Categories
Every sample type or analytical suite	Project name Project scientist Unique sample ID (from SESAR system) Sample type Location (UTM or Lat, Long: using WGS 1984 datum), elevation (m) Laboratory and instrumentation if applicable Analytical method if applicable Comments
Stable isotopes	Delta values ($\delta^2\text{H}$, $\delta^{13}\text{C}$, $\delta^{18}\text{O}$) in ‰ vs. international standards (NBS, USGS) Uncertainty (1 sigma)

EMPA mineral compositions	Major and minor oxide concentrations (weight percent) Detection limits (1 sigma) Beam conditions Standards used for calibration
---------------------------	--

3. Policies for Data Access and Sharing

The data generated from this project will be published in peer-reviewed, widely available scientific journals. New analytical data, including chemical and isotopic data, will be preserved on computers with routine backup procedures, and published data will also be incorporated into the relevant IEDA open access database, such as the EarthChem Library or Geochron. Examples of geochemical data associated with publications and recently submitted to the EarthChem database by Mahan include Condit et al. (2019) and Ault et al. (2019). Data generated by Newell will also be made available to users, free of charge, using the Utah State University open access Digital Commons website: <http://digitalcommons.usu.edu/>. Digital Commons is managed through the USU Merrill-Cazier Library.

4. Policies for Data Re-use and Redistribution

We will publish new results in a timely manner with associated data tables in peer-reviewed journals. Other results (e.g., more raw format data tables) that are not available as electronic supplements from peer-reviewed journals or in online databases such as those stated above will be available upon request from the PIs. Results not published within 5 years of the end of the project will be made publicly available.

5. Plans for Archiving and Preservation of Samples

Xenoliths from the UT-Austin collection and any other sample material will be kept in secure storage locations at one of the two institutions for the duration of the project, and returned to the UT collection at the end of the project.