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EAGER - Mantle fluid contribution to springs along the Denali Fault System: Constraints on the crustal scale nature of the main strand and splays

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J. Data Management Plan

This data management plan is developed to meet the requirements described in the NSF EAR Data Policy.

1. Types of Data and Samples

During this project field samples for laboratory analysis will be collected and will include water and gas. 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. For water and gas samples, field parameters will be measured and recorded in a field book, including the temperature, specific conductivity, pH, and dissolved oxygen content. All samples will be assigned a unique sample ID for reporting.

Analytical data sets derived from water and gas samples (Table 1) will include elemental chemistry for water samples reported in ppm or ppb, noble gas composition in cc/gH₂O STP, noble gas isotope ratios, helium isotope ratios (³He/⁴He) reported relative to air (R_A), and stable isotopes of C, H, O reported in delta notation (δ¹³C, δ²H, δ¹⁸O) referenced to international standards (SMOW, PDB).

2. Data and Metadata standards

Data will be compiled in Microsoft Excel or ASCII format. Location information (GPS coordinates) will be compiled in decimal degrees using the World Geodetic System (WGS) 1984 datum. Unique sample IDs will be used for each sample location and sample type. A summary table will be generated that includes the unique Sample ID, the GPS location and information on the sample type (e.g., water sample for elemental analysis, helium isotope gas sample), the types of analytical results available for these samples, and the laboratory where analysis was conducted.

Table 1. Data and Metadata for each analytical suite

Analysis	Categories
Every sample type or analytical suite	Project name Project scientist Unique sample ID Sample type Location (UTM or Lat, Long: using WGS 1984 datum), elevation (m) Laboratory and instrumentation Analytical method if applicable Comments
Stable isotopes	Delta values (δ ¹³ C, δ ¹⁸ O, δ ² H) in ‰ vs. international standards (NBS, USGS) Uncertainty (1 sigma)
Water chemistry via ICPMS, Ion Chromatography	Concentration ppm or ppb (ICPMS and Ion Chromatography) Uncertainties (1 sigma)
Noble Gas concentration and ratios	He, Ne, Kr, Ar, Xe concentration (cc/ccSTP or cc/g H ₂ O STP) ³ He/ ⁴ He, ²⁰ Ne/ ²² Ne, ²¹ Ne/ ²² Ne, ³⁸ Ar/ ³⁶ Ar, ⁴⁰ Ar/ ³⁶ Ar, ⁸⁶ Kr/ ⁸⁴ Kr, ¹³⁰ Xe/ ¹³² Xe R _A (³ He/ ⁴ He relative to the ratio in air, 1.4E-06) Uncertainties (1 sigma)

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 IEDA open access database, EarthChem (earthchem.org). Data generated 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

Publication of data in peer-reviewed scientific journals will occur during the project and at the end of the project. Data will be made available once submitted manuscripts are accepted for publication. Data not published within 5 years of the end of the project will be made publicly available.

5. Plans for Archiving and Preservation of Samples

Water and gas samples collected will not be archived for the long term since they will either be consumed completely during analysis or because they have a limited holding time for data quality.