Plan Overview

A Data Management Plan created using DMPonline

Title: Ages and mantle signatures of kimberlites from the Amazonian Craton: implications for diamond genesis and large-scale processes in supercontinents

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Project abstract:

The project aims to investigate the kimberlite magmatism of the southwestern Amazonian Craton in terms of intrusion ages and mantle signatures in xenocrysts. Several periods of kimberlite magmatism, from the Permian to the Upper Cretaceous, have been identified in the area. All of them represent a temporal link with the Pangea supercontinent cycle, from the initial rifting (~240 Ma) to the breakup with the opening of the South Atlantic Ocean (<130 Ma). The study will perform three main approaches: (a) Characterization of the major and trace element content of kimberlite indicator minerals to identify the regional nature of the lithospheric mantle beneath the southwestern Amazonian Craton; (b) In situ dating (U-Pb and Rb-Sr) and Hf-O-Pb isotope systematics of minerals for intrusion ages of kimberlites, identification of mantle sources and ages of tectono-thermal events in lithospheric mantle; (c) Characterization of inclusions (fluid and mineral) in megacrystic zircon using microthermometry, Raman spectroscopy and Synchrotron radiation in order to study its origin and relationship with the ultrabasic magma. The application of these methods will improve the knowledge on the geodynamic meaning of the magmatism and the nature of the lithospheric mantle sampled by the kimberlites at the time of the magmatic events, with implications for the potential of related mineral resources (e.g., diamond deposits in primary sources) and to the understanding of the tectonomagmatic evolution of the southwestern Amazonian Craton.

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imply that the creator(s) endorse, or have any relationship to, your project or proposal

Ages and mantle signatures of kimberlites from the Amazonian Craton: implications for diamond genesis and large-scale processes in supercontinents

Data Collection

What data will you collect or create?

The project will generate the following data: i) primary geological data, consisting on field observations, lithological descriptions and information regarding the occurrence of kimberlite indicator minerals in alluvial deposits and in kimberlite weathering profiles. These data will be recorded in spreadsheets; ii) sample metadata, with information about collected rock samples from outcrops and drill cores, heavy mineral concentrates from kimberlites and alluvial deposits, including location (GPS coordinates) and depth in the case of drill cores; iii) laboratory data, like major and trace element composition of minerals, *in situ* isotopic analyses (e.g., U-Pb, Rb-Sr, Hf-O-Pb), fluid inclusion microthermometric data and spectroscopic data of minerals. These will be stored as tabular datasets; iv) derived and geospatial data such as maps and GIS layers showing sample locations; v) supporting data from previously published studies, properly referenced and integrated into new analyses; vi) metadata, including methods, standards, and quality assurance procedures.

How will the data be collected or created?

Field data concerning the description of lithotypes from outcrops, weathering profiles of kimberlites and alluvial deposits with kimberlite indicator minerals will be recorded. Data will initially be documented in field notebooks and subsequently digitized into spreadsheets for archiving. Rock samples and heavy mineral concentrate samples will be collected from field sites, and metadata such as GPS coordinates will be recorded.
The chemical and isotopic analyses will be performed in specialized laboratories with analytical protocols that follow standardized methods to ensure reproducibility and precision. The derived data will be created by processing raw analytical outputs using appropriate software (e.g., Isoplot R). Quality checks will be applied at each step. Geospatial data will be generated by integrating informations from field site and sample metadata into GIS software.

Documentation and Metadata

What documentation and metadata will accompany the data?

The dataset will include descriptive metadata, with details about sample collection methods, instruments used, processing workflow, and geospatial metadata that will include georeferencing information. Laboratory procedures, calibration settings and error estimates will be included in publications.

Ethics and Legal Compliance

How will you manage any ethical issues?

No ethical issues are anticipated.

How will you manage copyright and Intellectual Property Rights (IPR) issues?

The primary data generated during this project will be owned by the researchers and the hosting institution, in compliance with institutional policies. All external data sources will be properly cited and used in accordance with their licensing terms. Where required, permissions will be sought for data reuse. Data and outputs will be published in open-access repositories whenever possible, ensuring compliance with copyright and IPR regulations. Any restricted-use data will be accompanied by clear terms of access.

Storage and Backup

How will the data be stored and backed up during the research?

All data (field notes, sample metadata, laboratory results and derived datasets) will be stored at the host institution; at least one additional backup will be maintained on a cloud storage service. Data files will be organized using a consistent naming convention and directory structure to minimize errors and facilitate access.

How will you manage access and security?

Access to the data will be restricted to the research team and relevant collaborators. A secure file-sharing platform will be used for data sharing among team members.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

The primary geological data, sample metadata, laboratory data and geospatial data are of long-term value and will be retained in open-access repositories.

What is the long-term preservation plan for the dataset?

The published data will be hosted in the repository of Geological Survey of Brazil at https://rigeo.sgb.gov.br/.

Data Sharing

How will you share the data?

Primary datasets from this project will be shared through scientific publications.

Are any restrictions on data sharing required?

No restrictions are anticipated.

Responsibilities and Resources

Who will be responsible for data management?

The principal investigator and the associated research team will be responsible for data management.

What resources will you require to deliver your plan?

Access to secure institutional servers for storing primary datasets, backup systems, and cloud-based storage services.