Plan Overview

A Data Management Plan created using DMPonline

Title: Sedimentary provenance and dispersion in the Ediacaran-Cambrian interval of the Southern Ribeira Belt

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Project abstract:

The Ribeira Belt is traditionally interpreted as a Neoproterozoic-Cambrian orogen that evolved from an accretionary to a collisional system. In its southern portion (south and southwest of Brazil), the Ribeira Belt encompasses units from distinct basin cycles within an orogenic stack formed during the Brasiliano-Pan African orogeny (630-540 Ma), in which several basement blocks were amalgamated in a continental collision setting.

The main goal of this research project is developing a paleogeomorphological model of the syn- to post-collisional interval of the Southern Ribeira Belt, based on stratigraphic, geophysical, and provenance data. The primary hypothesis is that certain units within the belt have paleogeographic and paleotectonic connections that represent different stages of orogen evolution. This correlation has the potential to provide insights into the paleogeomorphology of the orogenic stack, highlighting the main sedimentary pathways during the formation of a suture between the Paranapanema and Curitiba-Angola continents.

Understanding this paleogeomorphology is crucial because it influenced the onset of the Gondwanic basin-cycle, which currently represents a gap in our understanding of the geological evolution of the region. In this sense, the interval in question has the potential to shed light on the key paleogeomorphological and paleotectonic controls governing the basins that developed atop of the suture between these continents.

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Sedimentary provenance and dispersion in the Ediacaran-Cambrian interval of the Southern Ribeira Belt

Data Collection

What data will you collect or create?

The project will generate the following data: i) primary geological data, consisting on field observations including stratigraphic logs, structural measurements, and lithological descriptions. These will be recorded in field notebooks and digitally transcribed into spreadsheets; ii) sample metadata, with information about collected rock samples, including location (GPS coordinates), stratigraphic position, and associated observations; iii) laboratory data, with results from isotopic analyses (e.g., U-Th-Pb dating, detrital zircon geochronology, and trace element concentrations). These will be stored as tabular datasets; iv) geophysical data measurements; v) derived and geospatial data such as maps, cross-sections, and GIS layers showing geological features, sample locations, and spatial analyses; vi) supporting data from previously published studies, properly referenced and integrated into new analyses; vii) metadata, including methods, standards, and quality assurance procedures.

How will the data be collected or created?

Field data collection such as stratigraphic logs, lithological descriptions, and structural measurements will be recorded during fieldwork. Data will initially be documented in field notebooks and subsequently digitized into spreadsheets for analysis and archiving. Rock samples will be collected from field sites, and metadata such as GPS coordinates, stratigraphic position, and relevant field observations will be recorded.

Isotopic Analyses: techniques such as U - Pb geochronology and detrital zircon analysis will be performed in specialized laboratories. Analytical protocols will follow standardized methods to ensure reproducibility and precision.

Derived data (e.g., calculated ages, geochemical ratios) will be created by processing raw analytical outputs using appropriate software (e.g., Isoplot, R, or Python). Quality checks will be applied at each step.

Geospatial data will be generated by integrating sample metadata and geological interpretations into GIS software. This will allow for the creation of maps, cross-sections, and other spatial representations.

Documentation and Metadata

What documentation and metadata will accompany the data?

Each dataset will include descriptive and provenance metadata, with details about collection methods, instruments used, processing workflow, and geospatial metadata that will include coordinate systems, spatial resolution, and georeferencing information.

Laboratory procedures, such as isotopic analysis protocols, calibration settings, and error estimates,

will be included.
A versioning system will track changes to datasets over time, documenting updates, corrections, or transformations.

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.
Open-access datasets and publications will be prioritized to minimize IPR conflicts. 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 primary data (e.g., 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 project will identify and prioritize datasets of long-term value for retention, sharing, and preservation based on their reusability, and potential for further research. Data of long-term value (laboratory and geospatial data) will be deposited in open-access repositories.

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

The published data will be hosted in the Institutional Repository of the University of São Paulo (USP) at https://repositorio.usp.br. The geospatial dataset will be hosted at https://doi.org/10.17632/mywdxyfkwr.1.

Data Sharing

How will you share the data?

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

The geospatial dataset, including maps, GIS layers, and other spatial data derived from the project, will be hosted at https://doi.org/10.17632/mywdxyfkwr.1. This DOI ensures the dataset's long-term preservation and makes it citable for future research.

Additionally, data from previous publications that are relevant to the project will be compiled, integrated, and made available with appropriate references to encourage data reuse and further exploration in related studies.

Are any restrictions on data sharing required?

No restrictions are anticipated.

Responsibilities and Resources

Who will be responsible for data management?

Both researchers linked to this project 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.