

CEFA VELA

CENTRO DE
ESTUDOS
DA FAVELA

Call for Applications
CEFAVELA 01/2026

POSTDOCTORAL
FELLOWSHIP
OPPORTUNITY
AT CEFAVELA

Call for Applications:
from 03/03 to 04/03



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POSTDOCTORAL FELLOWSHIP OPPORTUNITY AT CEFAVELA

São Bernardo do Campo, March 3, 2026.

The Center for Favela Studies (CEFAVELA) is a Research, Innovation, and Dissemination Center (CEPID) of the São Paulo Research Foundation (Fapesp) based at the Federal University of ABC (UFABC) whose research object is the favela. It brings together national and international researchers from different academic fields and research institutions, aiming to expand the links between these institutions and government agencies and civil society organizations working on the issue. It seeks to develop theoretical, methodological, and empirical approaches, both quantitative and qualitative, on the multifaceted and complex nature of favelas, as well as to understand the limits and potential of state interventions in favela territories.

CEFAVELA has one (1) postdoctoral position available for a period of 24 months to work on a research project at the Center. Brazilian and foreign nationals are eligible to apply. The scholarship is R\$ 12,570.00 per month and technical reserve funds of 10% of the annual scholarship amount, to be implemented in accordance with general requirements: hold a doctorate or equivalent (PhD) for up to seven (07) years, be fluent in Portuguese, be able to fully dedicate to research, be available to work on-site; and specific requirements according to the research project detailed in this call for applications. The guidelines for FAPESP postdoctoral fellowships can be found on the foundation's official website: <https://fapesp.br/bolsas/pd>.

It is the sole responsibility of the candidate to monitor the publication of all acts, stages, and communications related to this selection process, which will be posted on the CEFAVELA website <https://cefavela.ufabc.edu.br>.

DOCUMENTATION

To apply for the position,

the following documentation must be sent to

chamadas.cefavela@ufabc.edu.br until April 3, 2026. Please

include the following in the subject line of the email:

CEFAVELA Notice 01/2026, LAST NAME (example:

CEFAVELA_01_2026_SANTOS). The documents listed below must be compiled into a single PDF file with the same title as the email subject line.

1. **Cover page** with: Full name, email, contact phone number, and indication of the research project for which you are submitting your application.
2. Updated **Curriculum Vitae** - Lattes Platform (<https://lattes.cnpq.br/>) for Brazilian researchers and Orcid for international applicants (<https://orcid.org/>).
3. **Graduate academic transcript** (doctorate only).
4. **Motivation Letter** of up to 2,000 words relating your academic and professional experience to the specific requirements of the research project and the reasons why you are applying for the scholarship.
5. **Copy of a publication** authored by the candidate related to the research project of this call for applications. The publication may be: an article submitted or under review in a journal, a chapter of a published or forthcoming book, or a complete work published in conference proceedings.



POSTDOCTORAL PROJECT
**BDC-FAVELAS: DATA CUBE FOR
FAVELAS**



RESEARCH PROJECT

BDC-FAVELAS

DATA CUBE FOR FAVELAS

The BDC-Favelas project seeks to address the challenges of producing and organizing reliable information about Brazilian favelas, using Remote Sensing (RS) data for Earth observation as its main source, based on orbital (satellite) and suborbital (drone¹) platforms. This data is made available through the BDC-Favelas Explorer platform², which employs technological solutions developed under the Brazil Data Cube (BDC) project of the National Institute for Space Research (INPE).

The platform functions as an interactive viewer (front-end), through which it is possible to explore Earth observation data. The project contemplates future expansion, with complementary information about the territory and adjacent areas. This information may include mapping of environmental risks (floods, landslides, and heat islands), urban infrastructure, and land use and land cover in favelas, as well as other indicators of public interest prioritized by this call for proposals.

1 - The term drone is commonly used in place of the terms Remotely Piloted Aircraft (RPA) and Unmanned Aircraft (UA), officially designated by the International Civil Aviation Organization (ICAO).

2 - The reference article for the platform is available at <https://zenodo.org/records/17186759>.

BDC-FAVELAS DATA CUBE FOR FAVELAS

Analysis Ready Data (ARD)—such as images, mosaics, vegetation indices, and other analytical inputs—are organized into “data cubes.” The term refers to a structure that organizes large volumes of RS images in a standardized and temporally continuous manner, allowing for the analysis of changes, comparison of information from different periods, and extraction of indicators with greater efficiency.

BDC-Favelas has contributed to the creation of technological innovations both in the back-end structures of the base platform and in the functionalities and interfaces of its front-end. This includes the development of a customized version of the viewer, which facilitates access to and dissemination of geographic information about favelas, allowing for a broader understanding of their dimensions, location, and evolution over time.

In this context, this research aims to develop a technological solution to support the definition of Land Use and Land Cover (LULC) typologies, with a specific focus on identifying risk landscapes in favelas. The central strategy is based on the evolution of the Brazil Data Cube (BDC) infrastructure to create a customized module that allows the integrated representation of drone and satellite images, aligning their respective spectral bands. This innovation will allow the stacking of this data to generate combined “data cubes” in areas of interest, enabling detailed analysis of territories susceptible to socio-environmental risks.

BDC-FAVELAS DATA CUBE FOR FAVELAS

To ensure the scalability and governance of this data, the work proposes the customization and documentation of environments dedicated to the ingestion of drone missions by different research groups. This software engineering effort aims to establish a standardized flow that assists in the creation of usage and coverage typologies adapted to the morphological diversity of favelas in different Brazilian biomes. By providing an organizational infrastructure based on interoperable standards recognized by the remote sensing community, such as the SpatioTemporal Asset Catalog (STAC), the research enables the details obtained by drones to inform the interpretation of orbital data on a national scale, strengthening the accuracy of territorial diagnoses.

The analytical dimension of the research focuses on developing methodological and operational support integrated into the platform for the supervised automatic classification of these images in these cubes, using advanced machine learning methods. This analytical support will enable the extraction of patterns of landscapes in favelas associated with the production of socio-environmental risks.

Specific research objectives for the call for proposals include:

- Develop multispectral integration and visualization modules: Customize the back-end and front-end infrastructure of the BDC-Favelas platform to enable the integrated representation and stacking of spectral bands from orbital and suborbital sensors (drones), enabling the creation of combined data cubes;
- Establish data governance and ingestion flows via STAC: Implement and document standardized environments for the ingestion of drone missions by multiple research groups, using the Spatio Temporal Asset Catalog (STAC) standard to ensure database interoperability and scalability;
- Systematize Land Use and Land Cover classification for different territories: Perform Land Use and Land Cover (LULC) classification in areas of favelas based on centimeter-resolution drone images, use this classification to support the interpretation of classifications performed with orbital data in different geographic contexts and favelas in different biomes;
- Implement methodological support for Assisted Classification of Risk Landscapes: Develop routines based on Machine Learning associated with explanatory methods in AI for the semi-automatic and supervised classification and characterization of images, aiming at the identification and characterization of risk landscapes in favelas;
- Assess mapping accuracy: Validate the performance of classification models by establishing accuracy parameters that support risk assessment and guide adaptation interventions in vulnerable territories.

DATA CUBE FOR FAVELAS

The ideal candidate for this postdoctoral fellowship should have **solid knowledge and experience** in the following areas:

- Computer Science, Geoinformatics, Geoprocessing, or related fields, with specialization in Remote Sensing and advanced techniques for image and spatial data analysis in general;
- Proficiency in programming languages, with proven experience in R and in the development of Python packages for geospatial analysis;
- Experience in standardization and management of large databases, specifically with the STAC (SpatioTemporal Asset Catalog) standard and the manipulation of Analysis Ready Data (ARD);
- Experience in digital image processing and integration of satellite and drone data for publication via online map servers (e.g., GeoServer);
- Experience with Machine Learning Methods;
- Experience in developing products for disaster risk monitoring and early warning;
- Experience in applied research and teamwork in development environments, demonstrating the ability to translate complex territorial challenges into technological solutions and data models;
- Interdisciplinary work in the field of geotechnologies applied to the needs of risk-prone communities, preferably with experience in public institutions or civil society organizations that use geotechnologies for territorial management.

The selected candidate **will be responsible for:**

- Developing technological solutions for data infrastructure, ensuring the standardization, ingestion, and publication of spatial data and drone missions in the BDC-Favelas Explorer platform, using the STAC standard to ensure interoperability;
- Designing and implementing customized back-end and front-end modules for multispectral visualization and stacking of orbital and suborbital images, enabling the creation of combined data cubes for areas of interest;
- Integrating data from orbital sensors, drones, and meteorological databases, focusing on the accurate characterization of socio-environmental vulnerabilities (risk landscapes) across different territories;
- Implementing methodological support for automated Land Use and Land Cover (LULC) classification, using Machine Learning algorithms to identify risk-prone landscapes such as flood- and landslide-susceptible areas;
- Producing specialized thematic cartography and Analysis Ready Data (ARD) products to support the understanding of socio-spatial dynamics;
- Collaborating with interdisciplinary teams in the research development and fieldwork activities, integrating geotechnology expertise with the social demands of communities;
- Publishing scientific results and technical documentation (including code repositories and research artifacts) in high-impact journals and dissemination channels, ensuring methodological transparency and reproducibility;
- Contributing to the organization of scientific events and outreach activities, supporting the transfer of research results and technological solutions to public managers and civil society stakeholders.

SELECTION PROCESS SCHEDULE

THE SELECTION PROCESS WILL BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING STAGES, ALL OF WHICH ARE ELIMINATORY IN NATURE:

STAGE 1 – ANNOUNCEMENT OF THE CALL FOR APPLICATIONS FROM MARCH 3, 2026 TO APRIL 3, 2026.

SUBMISSION OF DOCUMENTATION BY CANDIDATES.

STAGE 2 – FROM APRIL 3, 2026 TO APRIL 17, 2026 (RESULTS ANNOUNCED BY APRIL 17, 2026)

REVIEW OF DOCUMENTATION.

STAGE 3 – FROM APRIL 20, 2026 TO MAY 4, 2026

INTERVIEWS WITH THE SELECTION COMMITTEE.

RESULTS ANNOUNCEMENT: MAY 7, 2026

IF YOU HAVE ANY QUESTIONS,
SEND AN EMAIL TO

CHAMADAS.CEFAVELA@UFABC.EDU.BR



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