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Geological map of Brazil - 2025 (scale 1:5,000,000): Methodology and main geological compartments

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Abstract

The Geological Map of Brazil at the 1:5,000,000 scale was recently updated by the Geological Survey of Brazil (SGB-CPRM), in view of the availability of several geological maps and datasets released after the previous version, published in 2001. In this context, the methodology applied to the preparation of the map is presented here, together with a proposed framework for representing the Brazilian territory in terms of geological compartments. The work began with the acquisition of vector datasets available from SGB-CPRM at multiple scales, followed by the definition of a set of guiding assumptions, including the minimum mappable area, the lowest stratigraphic hierarchies to be adopted (Formation, Group, Complex, and Suite), the tectonic structures to be represented, the prioritization of the most recent geological cartography, and the con-sistent application of a unified methodology across the entire country. Following the compilation of vector files at the 1:5,000,000 scale, it became possible to apply a con-sistent proposal for the geological compartmentalization of Brazil, based on the characterization of the main geological, geochronological, and structural units mapped and exposed in the country, as well as on previous conceptual frameworks. This approach allowed Brazil to be initially subdivided into cratons (23% of the national territory) and mobile belts and cratonic covers (17% of the territory) associated with the Brasiliano Orogeny (Neoproterozoic), in addition to the Phanerozoic covers and basins (60% of the territory). The cratons are represented by the Rio de La Plata, Luiz Alves, São Francisco, São Luís, and Amazon cratons, whereas the mobile belts correspond to the Borborema, Tocantins, and Mantiqueira provin-ces, as well as marginal belts and Neoproterozoic cratonic covers. The main representatives of the Phanerozoic covers and basins include the Amazonas, Parnaíba, Paraná, and Coastal provinces, in addition to the Parecis, Bananal, Pantanal, Sanfranciscana, Recôncavo–Tucano–Jatobá, Araripe, and Guaporé basins.

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1. Introduction

The Geological Map of Brazil at the 1:5,000,000 scale (Medeiros et al. 2025a, b) was prepared by the Geological Survey of Brazil (SGB-CPRM) as part of the Geology for Sustainable Mining initiative, within the Safe and Sustainable Mining Program, which encompasses the largest country in South America, representing 46% of the continent's territory (Figure 1).

The preparation of the map was conceived in response to the availability of hundreds of geological maps released since the publication of the last Geological Map of Brazil at the 1:5,000,000 scale in 2001.

Considering the importance of systematization and the main results achieved, this study emphasizes the methodology applied and the key assumptions adopted in the preparation of the vector files (shapefile) and the layout in PDF format, as well as the characteristics of the proposed geological compartmentalization of Brazil into cratons, mobile belts and cratonic covers, and Phanerozoic covers and basins.

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FIGURE 1. Cartographic representation of Brazil in the context of South America.

2. Materials and Methods

The development of the Geological Map of Brazil at the 1:2,500,000 and 1:5,000,000 scales was conducted following a systematic approach structured into four main stages: (a) survey and acquisition of geological cartographic data available in GeoSGB, the SGB-CPRM database, along with the definition of methodological assumptions; (b) insertion, organization, and standardization of vector files within a Geographic Information System (GIS) environment using ArcGIS Pro software; (c) cartographic generalization of the vector files to the 1:2,500,000 scale; and (d) preparation of the final layout and generation of the map at the 1:5,000,000 scale.

2.1. Survey and acquisition of geoscientific data and methodological assumptions

Vector datasets (shapefile format) from geological maps available in the GeoSGB database were selected, with scales finer than 1:100,000 and available up to June 2024. These data supported the preparation of the Geological Map of Brazil (GMB) at the 1:2,500,000 scale (shapefile format) and the 1:5,000,000 scale (PDF format).

In addition to preexisting geological maps representing the country at the 1:2,500,000 (Bizzi et al. 2003) and 1:5,000,000 (Schobbenhaus Filho 2001) scales, several other maps (124) at more detailed scales were also used, along with scientific articles, books, dissertations, and graduate theses, as listed in Medeiros et al. (2025b).

Based on a preliminary analysis of the available data at different scales, the following methodological assumptions were established:

a) Avoid lithostratigraphic polygons overlapping or encroaching upon drainage networks and water bodies:

b) Do not represent polygons with an area smaller than 156.25 km², equivalent to a square of 12.5 km by 12.5 km at the 1:2,500,000 scale, in accordance with the Minimum Mappable Area methodology (IBGE 2006);

c) Whenever possible, use Formation as the lowest hierarchical unit in Phanerozoic basins;

d) Whenever possible, use Group, Complex, and Suite as the lowest hierarchical units in basement and crystalline units (Archean to Cambrian);

e) Represent only the most significant tectonic structures;

f) Prioritize the compilation and integration of existing maps, avoiding new interpretations;

g) Prioritize information and cartography from the most recent maps over older ones, and favor geological maps over geological-geophysical maps;

h) Use only products published in GeoSGB, preferably up to the year 2024;

i) Apply the methodology consistently across the entire country.

2.2. Datasets standardization in the ArcGIS Pro platform

After the acquisition of the shapefiles, a geodatabase was structured in ArcGIS Pro, in which the data were organized (Figure 2) according to the procedures described below:

a) Polygon Area Calculation: A field was added to the attribute table of the lithostratigraphic layer to calculate polygon areas, using the Polyconic cartographic projection and the SIRGAS 2000 Brazil Polyconic datum.

b) Polygon Filtering by Area: Polygons with an area smaller than 156.25 km², equivalent to a square of 12.5 km by 12.5 km, that is, 0.5 cm by 0.5 cm at the 1:2,500,000 scale, were selected and individually evaluated for removal, based on the Minimum Mappable Area methodology (IBGE 2006).

c) Polygon Filtering by Width: Polygons that passed the area filtering were subsequently evaluated for width. Even if their area exceeded 156.25 km², they would not be visible at the 1:2,500,000 scale unless they had a minimum width greater than 10 kilometers. This threshold was also derived from the Minimum Mappable Area methodology (IBGE 2006).

d) Preliminary Editing of Sedimentary Covers: Due to their physical nature, sedimentary covers commonly exhibit highly irregular shapes and complex geometries. Given their intricate outlines and numerous reentrants, automated processing generates outputs that require extensive editing. Therefore,

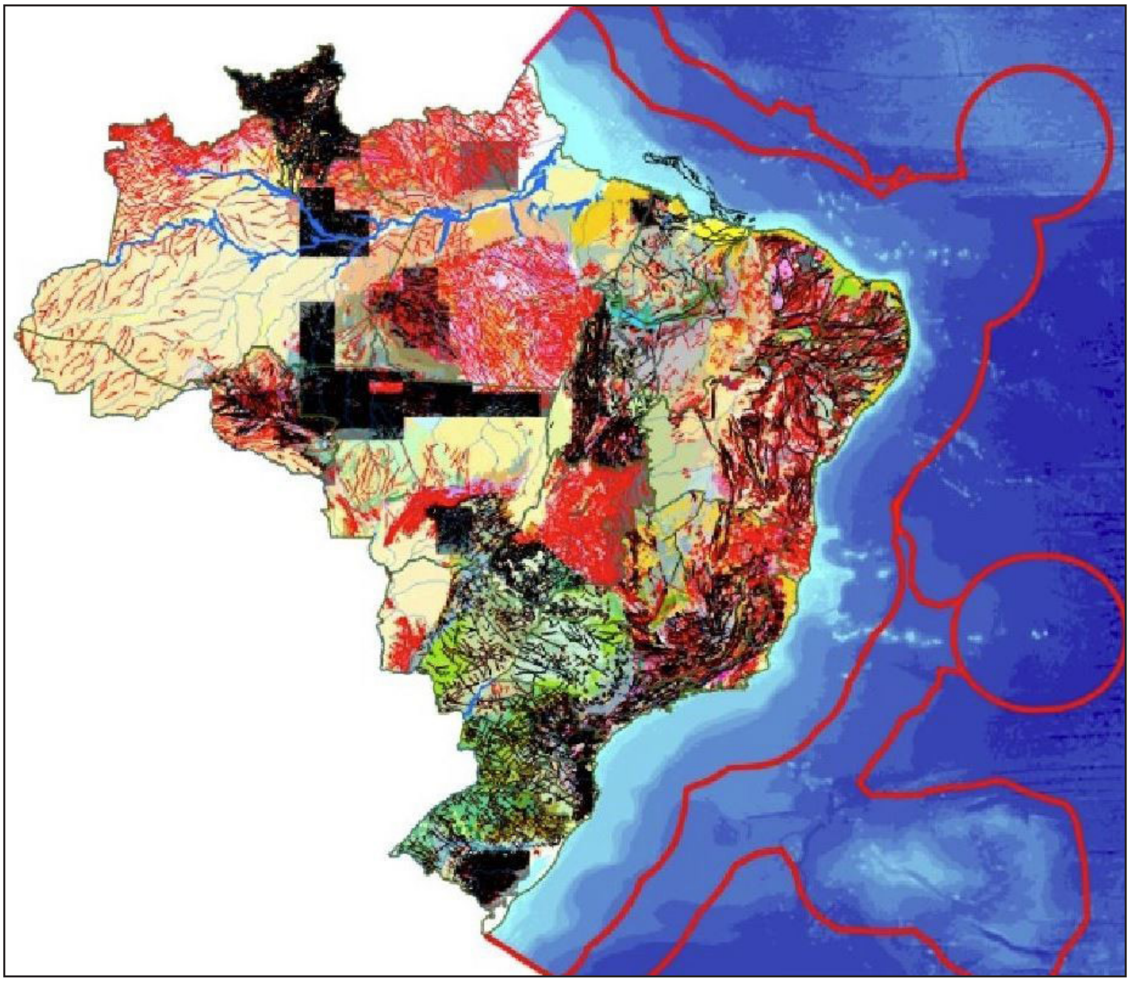

FIGURE 2. Example of the densification of lithostratigraphic polygons and geological structure line features processed in the ArcGIS Pro platform during the initial phase of the project

the generalization process began with alluvial polygons that did not meet the area and width criteria.

e) Automated Process: Since the vector datasets used contained more detail than required for the target product, polygons smaller than the threshold defined by the methodology were removed through aggregation with adjacent polygons, taking geological attributes into account.

f) Edge Smoothing: For the shapefile at the 1:2,500,000 scale, the polygon edges were intentionally not smoothed following the previously described procedures. However, for the generation of the map in PDF format at the 1:5,000,000 scale, geometric simplification of polygon boundaries was applied selectively to improve visualization and to prevent line overlap in more densely represented areas.

2.3. Generalization of vector datasets (shapefiles) to the 1:2,500,000 scale

The procedures described in the previous section were applied to four individualized segments of the country for generalization, adjustment, and compatibility among the represented elements (lithostratigraphic units, structures, planimetry, mineral resources, and oceanic features), as shown in Figure 3.

After the completion of activities in each segment, the regions were integrated into a single file, which was then subjected to technical review, standardized, and subsequently made available on the SGB-CPRM portal (Figure 4).

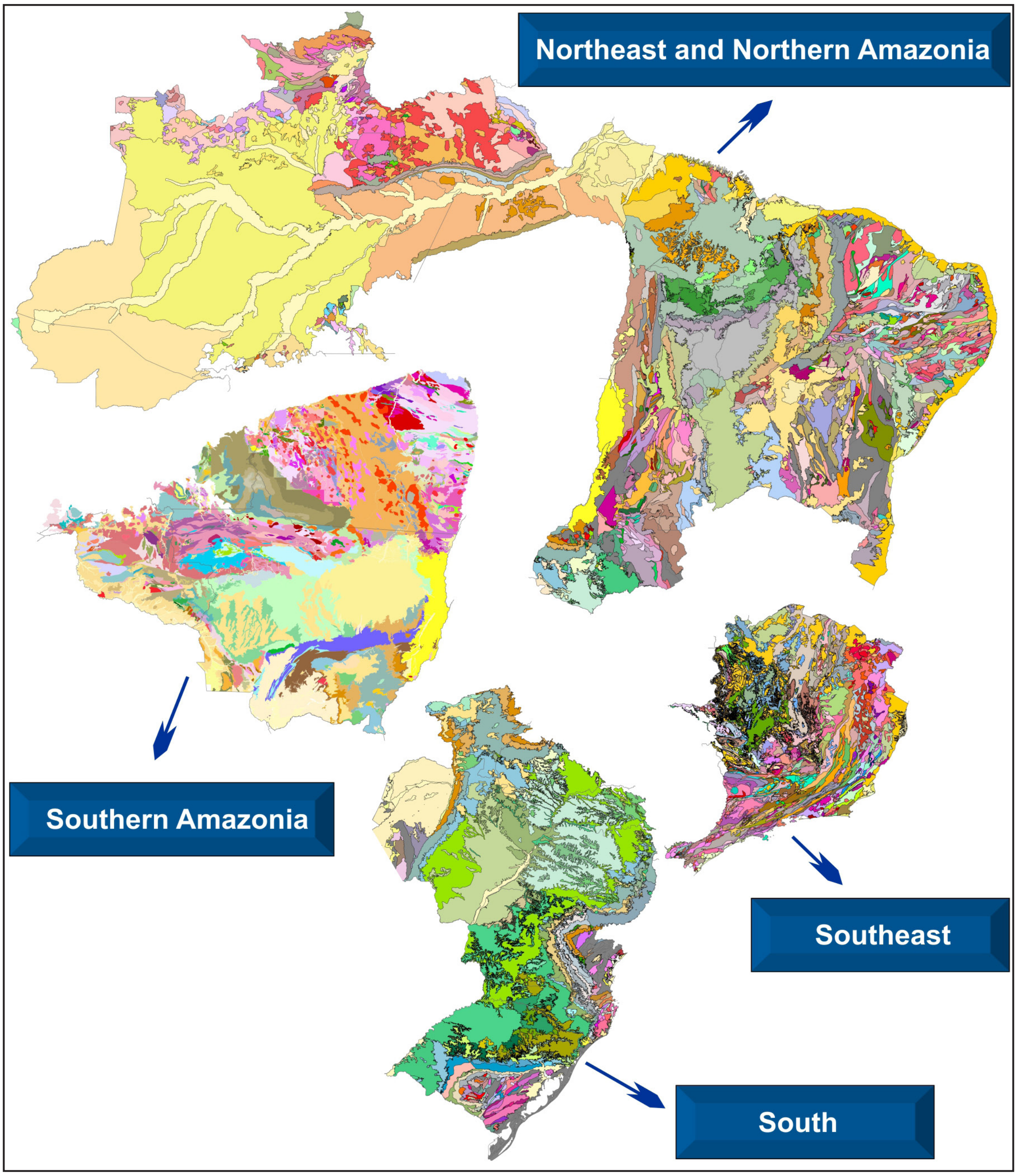

FIGURE 3. Segmentation of Brazil into blocks (Northeast and Northern Amazonia, Southern Amazonia, South, and Southeast) for editing and consistency of geological and cartographic elements.

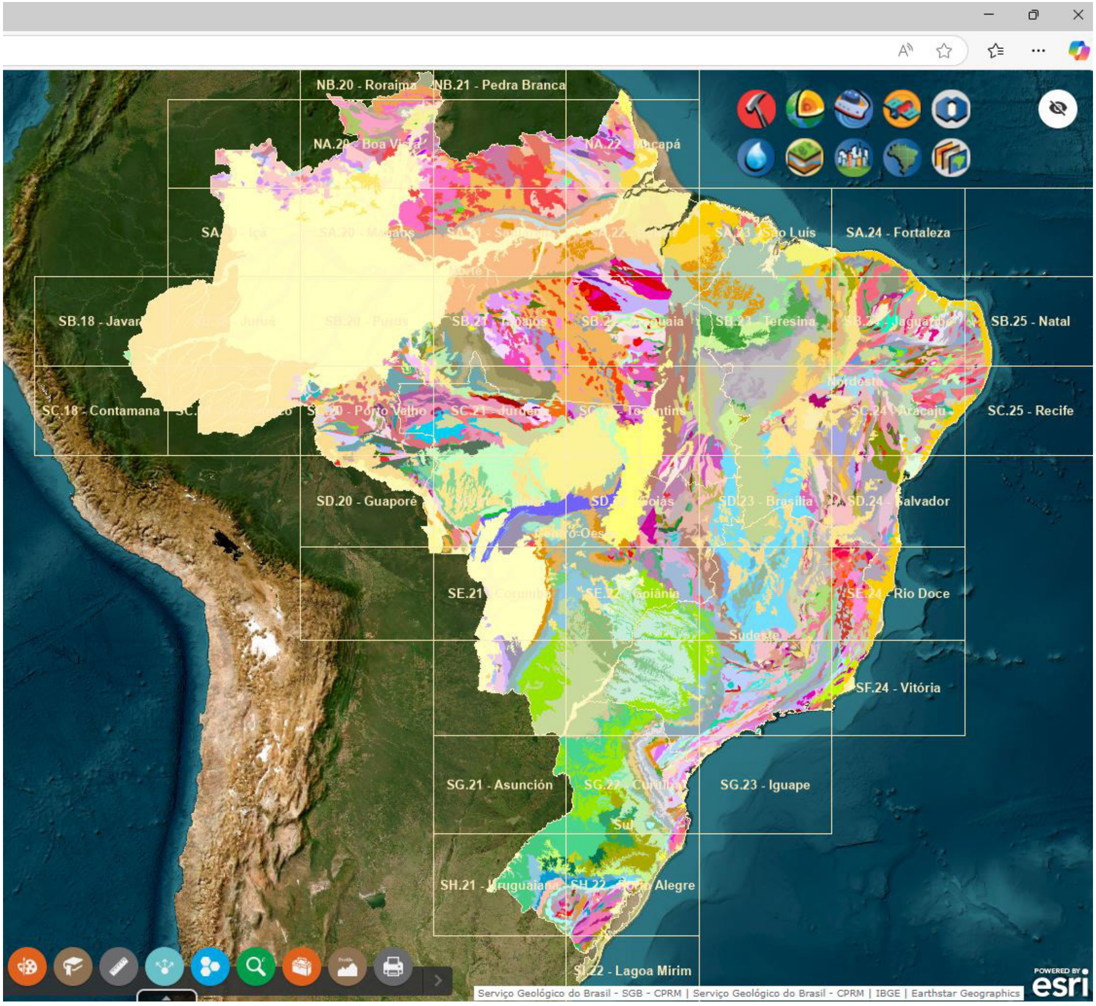

FIGURE 4. Shapefile of the geology/lithostratigraphy of Brazil at the 1:2,500,000 scale, available on the SGB-CPRM website (https://geosgb.sgb.gov.br/) in 2025.

2.4. Preparation of the map layout at the 1:5,000,000 scale

The geological map in GeoPDF format at the 1:5,000,000 scale was generated from the shapefiles prepared at the 1:2,500,000 scale. To adapt the data to the new scale, additional generalization was applied to the mapped elements, as well as the grouping of certain units into higher hierarchical levels (Table 1).

The premise of not emphasizing boundary lines between lithostratigraphic unit polygons was also adopted, with these units instead identified within the map by corresponding numerical codes. Under this approach, the layout of the Geological Map of Brazil at the 1:5,000,000 scale is presented in Figure 5.

3. Geological Compartments

The geological compartmentalization of Brazil into cratons, provinces, belts, covers, and related units has been presented in the literature for several decades, with particular emphasis on the proposals of Almeida et al. (1981) and Bizzi et al. (2003).

Using geological cartography of the outcropping units at the 1:5,000,000 scale and the frameworks available in the literature, Medeiros et al. (2025a, b) proposed a compartmentalization of the country based on two approaches.

The first compartmentalization (Figure 6) comprises cratons (23% of the Brazilian territory) and mobile belts and cratonic covers (17% of the territory) associated with the Brasiliano Orogeny (Neoproterozoic), in addition to Phanerozoic covers and basins (60% of the territory). The second proposal corresponds to a more detailed subdivision of the previous configuration, as highlighted in Figure 7.

3.1. Amazon Craton

The Amazon Craton (AC) constitutes one of the most prominent Precambrian geotectonic entities in South America, with approximately 1.6 million km² of outcropping area in Brazilian territory (Figure 7). It extends across the states of Pará, Amapá, Roraima, Rondônia, and Acre, as well as parts of Mato Grosso and Mato Grosso do Sul, continuing beyond national borders into Bolivia, the Guianas, Suriname, Venezuela, Colombia, Peru, and Paraguay. Within Brazil, the AC is tectonically bounded to the east and south by the Tocantins and Paraná provinces, respectively, and is overlain by sedimentary rocks of the Amazonas and Parnaíba provinces, as well as by the Pantanal, Guaporé, and Parecis basins (Figure 8).

TABLE 1. List of units grouped into higher hierarchical levels than those represented at the 1:2,500,000 scale.

Unit	Unit	Unit
Cenozoic covers	Tonian–Cryogenian granitoids	Mesoarchean granitoids
Cretaceous–Paleogene alkaline complexes	Tonian granitoids	Ediacaran–Cambrian mafic–ultramafic rocks
Cryogenian alkaline rocks	Stenian granitoids	Ediacaran mafic–ultramafic rocks
Ectasian alkaline rocks	Ectasian granitoids	Cryogenian mafic–ultramafic rocks
Rhyacian–Orosirian alkaline rocks	Calymmian granitoids	Tonian mafic–ultramafic rocks
Rhyacian alkaline rocks	Statherian granitoids	Stenian mafic–ultramafic rocks
Neoarchean alkaline rocks	Orosirian–Statherian granitoids	Ectasian mafic–ultramafic rocks
Cambrian granitoids	Orosirian granitoids	Calymmian–Ectasian mafic–ultramafic rocks
Ediacaran–Cambrian granitoids	Rhyacian–Orosirian granitoids	Statherian mafic–ultramafic rocks
Ediacaran granitoids	Rhyacian granitoids	Orosirian–Statherian mafic–ultramafic rocks
Cryogenian–Ediacaran granitoids	Siderian–Rhyacian granitoids	Orosirian mafic–ultramafic rocks
Cryogenian granitoids	Neoarchean granitoids	Rhyacian mafic–ultramafic rocks

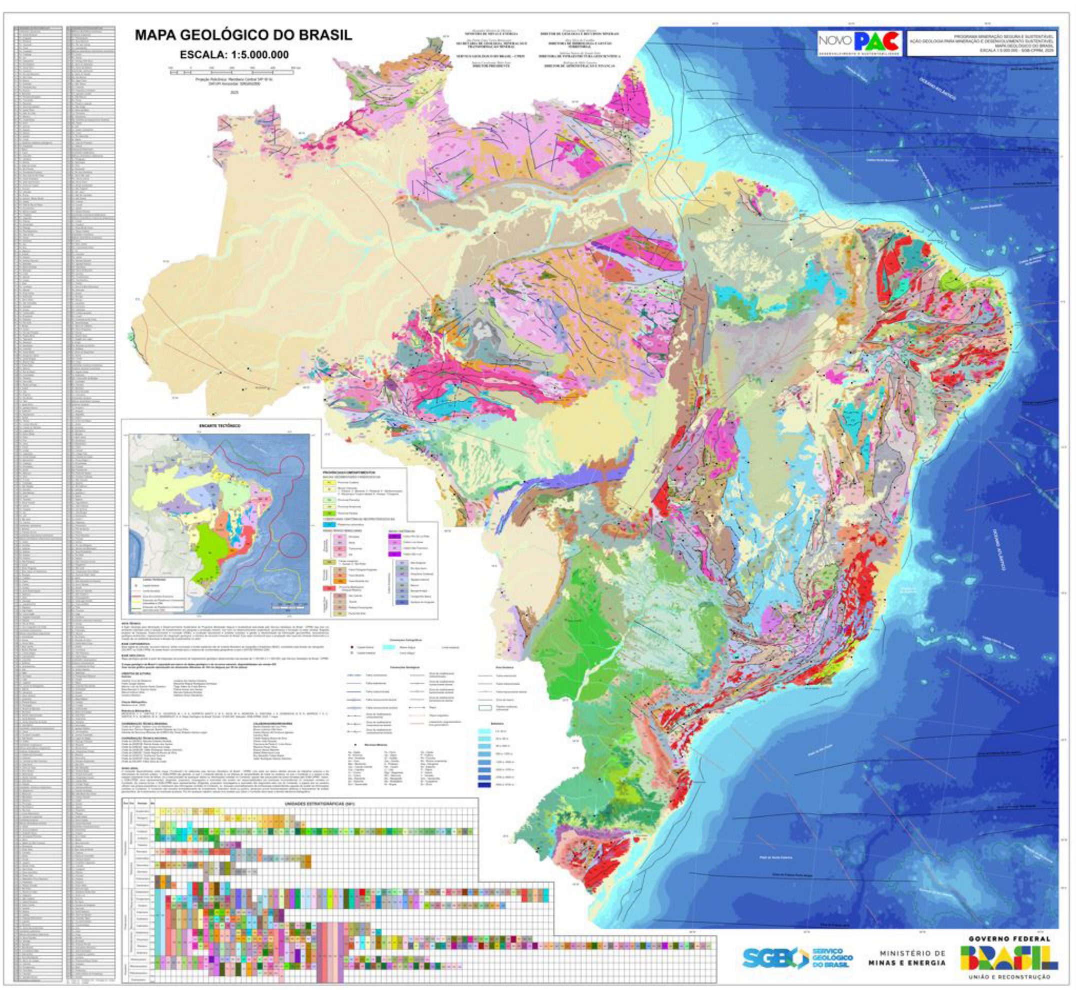

FIGURE 5. Layout of the Geological Map of Brazil prepared at the 1:5,000,000 scale. For improved visualization, access: https://rigeo.sgb.gov.br/handle/doc/2560.

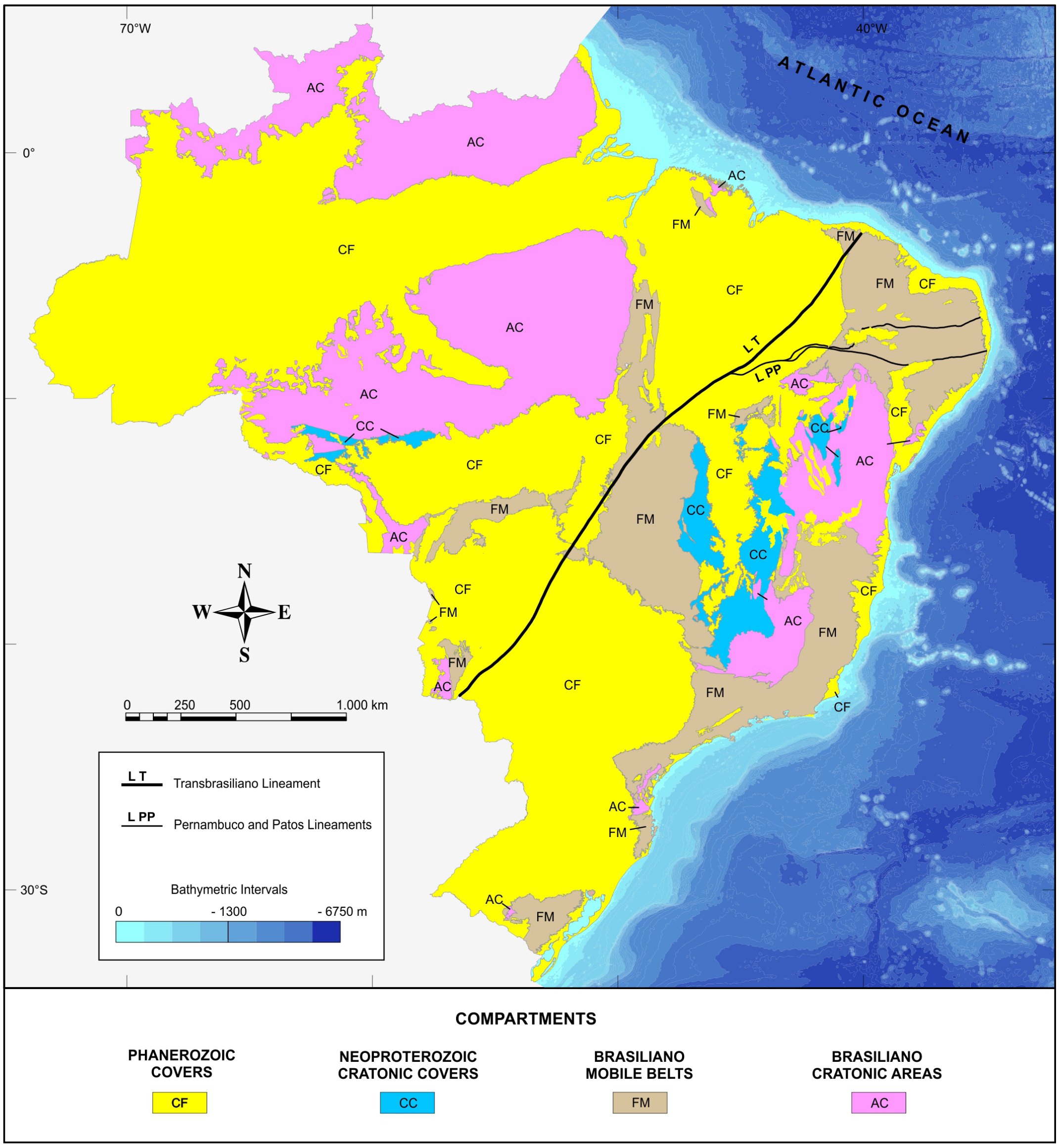

FIGURE 6. Compartmentalization of Brazil into cratons, Neoproterozoic mobile belts and cratonic covers, and Phanerozoic covers (basins).

Initial proposals for the subdivision of the Amazon Craton were based on the concept of shields and on geochronological data (Amaral 1974; Almeida et al. 1981), resulting in divisions such as the Central Brazil Shield and the Guiana Shield, or alternatively into the Eastern, Central, and Western Amazon provinces. Subsequently, several other compartmentalizations were proposed based on geochronological, geophysical, and structural data (Cordani et al. 1979; Hasui et al. 1984; Teixeira et al. 1989; Costa and Hasui 1991; Tassinari and Macambira 1999; Santos 2003, among others). In this study, the Amazon Craton is subdivided into the Carajás–Rio Maria (CM), Santana do Araguaia (SA), Bacajá–Amapá (BA), Tapajós–Uatumã (TU), Macuxi (MA), Western Amazonia (AO), Rio Apa–Jauru (AJ), and Alto Guaporé (AG) compartments, as proposed by Medeiros et al. (2025a, b), integrating geological mapping, structural, geophysical, and geochronological data (Figure 7).

The Carajás–Rio Maria compartment (Figure 8) exhibits a complex geological evolution, with the formation of Mesoarchean rocks (3.00 to 2.82 Ga) represented by TTG-type plutonic suites, greenstone belts, granitoids (including sanukitoids), and layered mafic–ultramafic plutonic rocks, with high-grade metamorphic events and migmatization occurring toward the end of this interval. The Neoarchean (2.74 to 2.55 Ga), more prominent in the northern portion, comprises volcanosedimentary rocks, felsic plutonic suites, and layered mafic to mafic–ultramafic bodies. The Paleoproterozoic (ca. 1.88 Ga) is marked by sedimentary covers, A-type intraplate granites, and associated mafic rocks (Vasquez and Rosa-Costa 2008).

The Santana do Araguaia compartment (Figure 8), still poorly studied, is interpreted as a crustal segment dominated by migmatitic orthogneisses and granitoids (2.85 to 1.88 Ga) reworked during the Transamazonian Orogeny, in addition to Paleoproterozoic granitoids (Corrêa and Macambira 2014; Scandolara et al. 2024).

The Bacajá–Amapá compartment (3.34 to 2.08 Ga) occupies the eastern to northeastern portion of the Amazon Craton (Figure 8) and comprises supracrustal rocks, felsic

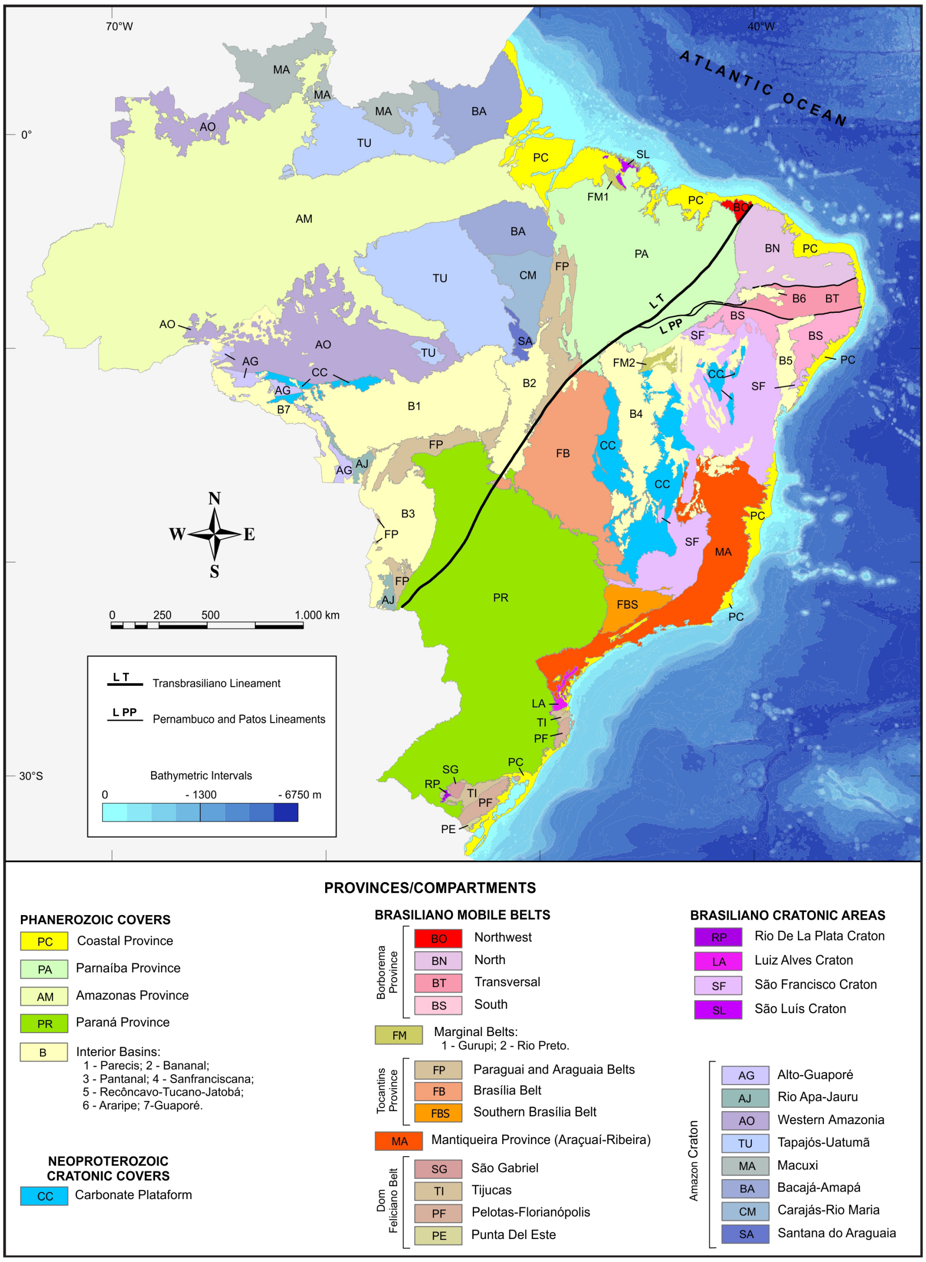

FIGURE 7. Detailed compartmentalization of Brazil into cratons, Neoproterozoic (Brasiliano) mobile belts and cratonic covers, as well as Phanerozoic covers (basins).

granulites, paragneisses, charnockites, and Archean orthogneisses (Vasquez and Rosa-Costa 2008). The metavolcanosedimentary and metamafic rocks are interpreted as a greenstone belt-type sequence (Macambira et al. 2004). Several deformed granitoids record ages between 2.22 and 2.07 Ga (Jorge João et al. 1987; Santos et al. 1988; Santos 2003; Vasquez 2006). In the northernmost sector, the Paleo- to Neoarchean basement (3.34 to 2.60 Ga) was extensively reworked during the Transamazonian Orogeny, comprising high-grade metamorphic terrains, granitoids, and mafic–ultramafic bodies (Rosa-Costa et al. 2006; Rosa-Costa et al. 2014; Milhomem Neto and Lafon 2019; Gorayeb et al. 2021). During the Paleoproterozoic, migmatitic gneisses, felsic and mafic granulites, orthogneisses, metavolcanosedimentary successions, and multiple generations of granitoids associated with the evolution of magmatic arcs are recorded (Rosa-Costa et al. 2014).

The Tapajós–Uatumã compartment (2.03 to 1.78 Ga), located in the central portion of the Amazon Craton (Figure 8), corresponds to a system associated with a magmatic arc setting, comprising calc-alkaline plutonic rocks, volcanic sequences, and back-arc sedimentary deposits dated between 2.03 and 2.00 Ga. Orosirian felsic volcano-plutonic events include several granitic and volcanic suites (Vasquez et al. 2002). Paleoproterozoic volcanism (2.00 to 1.87 Ga) is represented by felsic to intermediate volcanic successions. Mafic and intermediate magmatism (1.89 to 1.78 Ga) involves plutonic suites, lamprophyres, and mafic dikes. Paleoproterozoic sedimentary covers and intraplate felsic magmatism complete the evolutionary history (Vasquez et al. 2002).

The Macuxi compartment (2.03 to 1.92 Ga), located in the northern Amazon Craton (Figure 8), comprises Paleoproterozoic belts with sinuous geometry, interpreted as magmatic arcs related to the Akawai Orogeny, representing the final stages of the Transamazonian Orogeny (Faria et al. 2002; Almeida et al. 2007; Fraga et al. 2024). These belts consist of high-grade supracrustal rocks, as well as medium- to high-K calc-alkaline granitoids and A-type subalkaline granitoids (Faria et al. 2002; Almeida et al. 2007; Fraga et al. 2024).

The Western Amazonia compartment (1.84 to 1.54 Ga; Figure 8) is composed of migmatitic orthogneisses, high-grade paragneisses, granulites, metagranitoids, and several generations of Orosirian and Statherian granitoids, as well as Statherian volcanosedimentary sequences. In the western sector, Calymmian granites (ca. 1.55 Ga) occur, associated with AMCG-type intraplate magmatism. In the southwestern sector, Stenian and Tonian felsic granites represent A-type intraplate magmatism and are correlated with post-orogenic sedimentation related to the Sunsás/Grenvillian events (Bettencourt et al. 2010; Rizzotto et al. 2013, 2014; Scandolara et al. 2013a, b).

The Rio Apa–Jauru compartment (1.80 to 1.55 Ga) encompasses the southern to southwestern extremity of the Amazon Craton (Figure 8). In the southwestern sector, Paleoproterozoic to Mesoproterozoic crustal fragments are partially covered by extensive sedimentary sequences. In the southern sector, migmatitic orthogneisses, amphibolites, felsic and metasedimentary rocks, as well as metamafic rocks, predominate. Magmatism is represented by granitoids and by felsic volcanic and pyroclastic rocks.

The Alto Guaporé compartment includes Ectasian to Stenian units (1.45 to 1.0 Ga) in the southwestern portion of the Amazon Craton (Figure 8), composed of orthogneisses, metavolcanosedimentary sequences, metamafic and metaultramafic rocks, as well as multiple generations of syn- to post-orogenic and anorogenic granites. It represents an

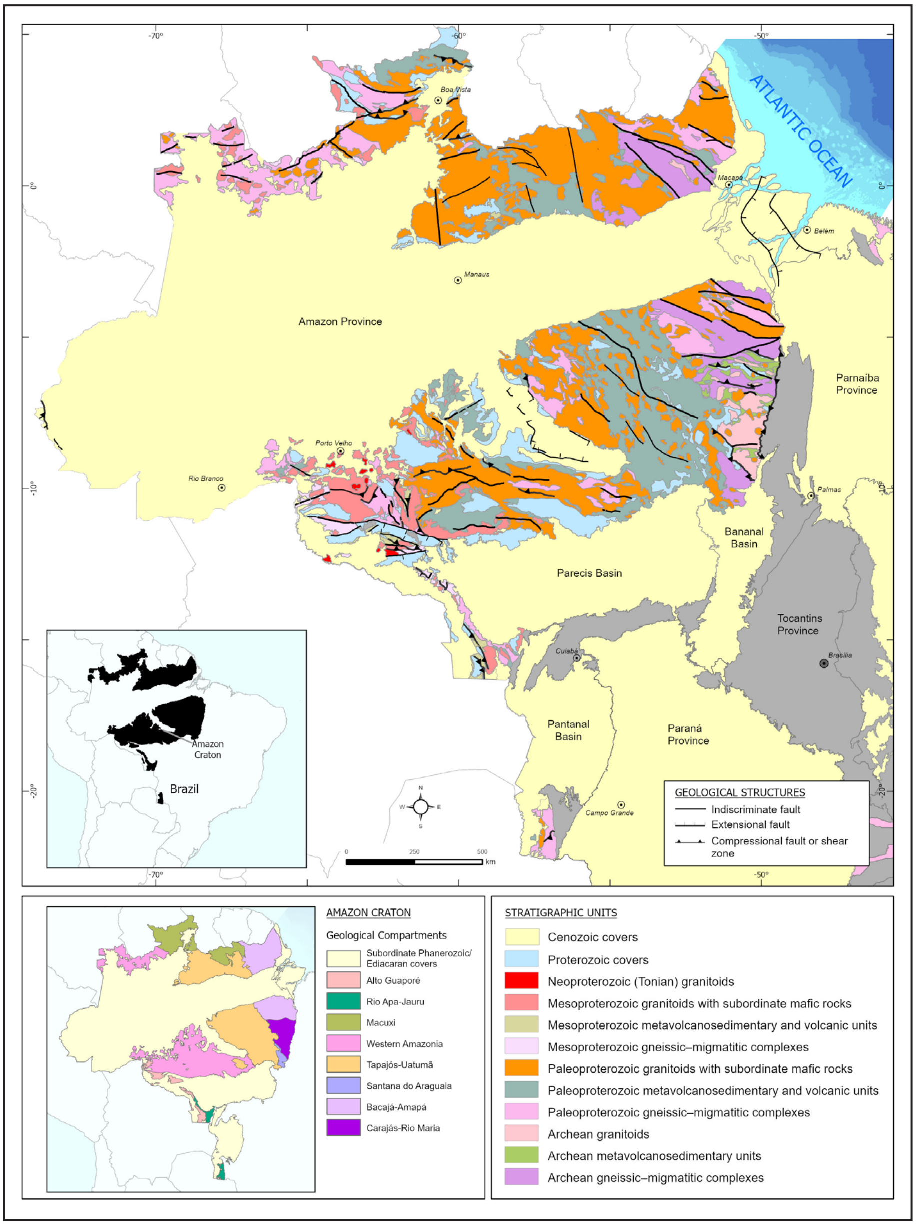

FIGURE 8. – Geological framework of the Amazon Craton.

accretionary-collisional setting, with fragments of island arcs, ophiolites, and suture-related markers associated with the juxtaposition of allochthonous terranes (Litherland et al. 1986; Geraldes et al. 2001; Ruiz 2005; Scandolara 2006; Vargas-Mattos 2006; Quadros and Rizzotto 2007; Bettencourt et al. 2010; Rizzotto et al. 2013, 2014; Quadros et al. 2020, 2021).

3.2. São Francisco Craton

The São Francisco Craton (SFC) covers an outcropping area of approximately 353,000 km² within Brazilian territory, encompassing parts of the states of Minas Gerais, Bahia, and Sergipe. It is externally bounded by fold belts and fault zones associated with the Mantiqueira, Borborema, and Tocantins orogenic systems (Figure 9). Its internal region is covered by Precambrian and Phanerozoic units, whereas the crystalline basement is exposed in restricted areas, mainly located in the southern extremity and in the eastern portion of the craton.

Defined as a tectonic entity of the Brasiliano Orogeny, the São Francisco Craton corresponds to a crustal segment that was spared from Neoproterozoic deformation, with its boundaries established by the Brasiliano orogenic fronts (Almeida 1977). The history of its geometric and tectonic definition has been extensively documented by several authors (Barbosa 1966; Almeida 1967, 1977, 1981; Alkmim et al. 1993; Heilbron et al. 2017). According to Alkmim (2004), the basement of the São Francisco Craton attained stability by the end of the Paleoproterozoic and is predominantly composed of rocks and structures older than 1.8 Ga. This framework allows the distinction of two major tectonic features: a Rhyacian–Orosirian Paleoproterozoic orogen and its corresponding foreland.

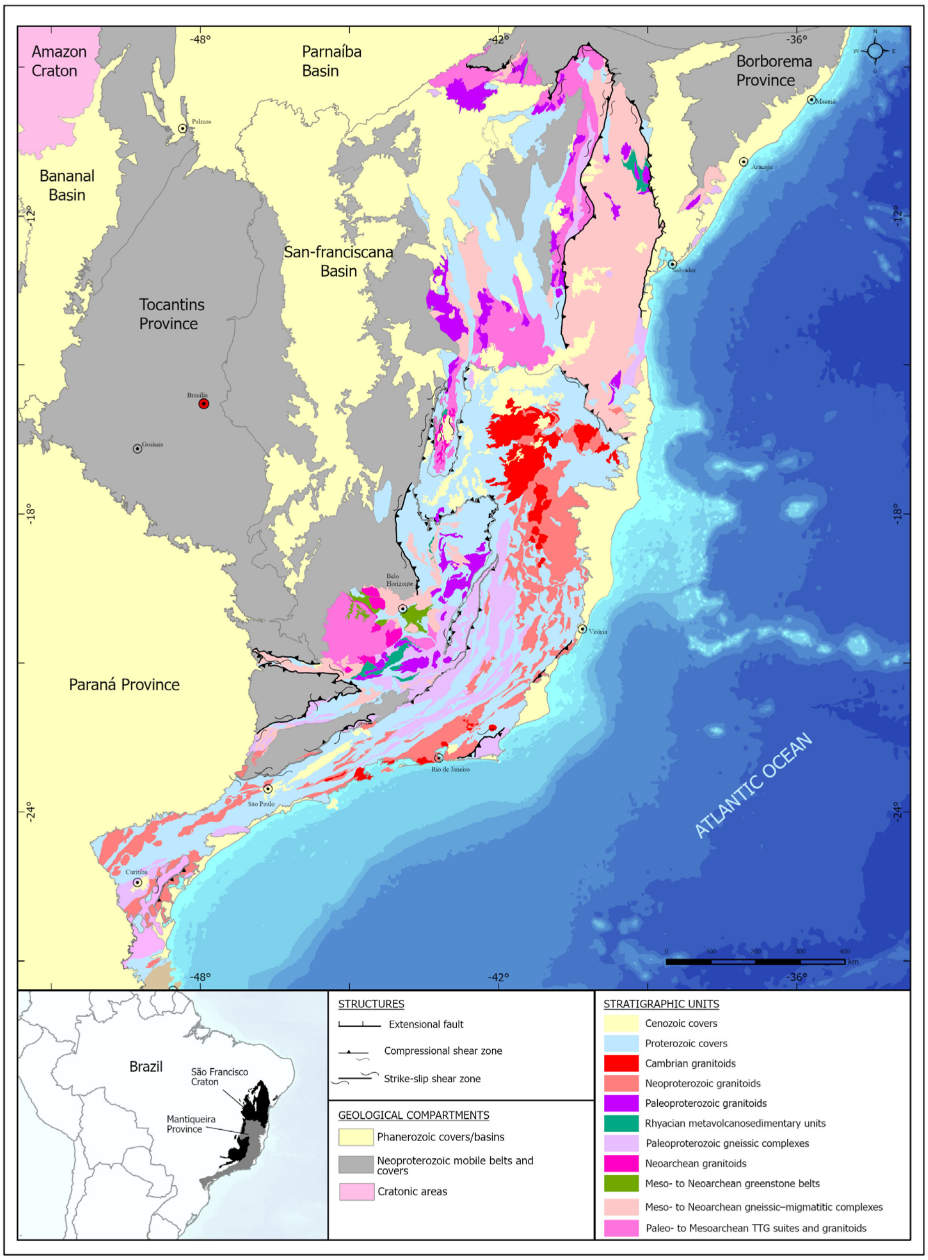

FIGURE 9. – Geological framework of the São Francisco Craton and the Mantiqueira Province.

The exposed margins of the São Francisco Craton in southeastern and northeastern Brazil rank among the most thoroughly studied Precambrian areas of the South American continent, preserving a geological record that spans from the Paleoarchean to the Cenozoic. The region hosts numerous Precambrian sedimentary successions that record globally significant events, constituting, together with its marginal belts, a true "continent within a continent" (Heilbron et al. 2017).

The cratonic basement is composed of Archean metamorphic complexes dominated by TTG-type gneisses (3.50 to 2.68 Ga), intruded by voluminous calc-alkaline and potassium-rich granitoid plutons, as well as Meso- to Neoarchean greenstone belts (3.30 to 2.70 Ga) (Alkmim and Reis 2021). Paleoproterozoic rocks include metasedimentary successions dated between 2.60 and 2.00 Ga and juvenile arcs between 2.47 and 2.10 Ga.

The Quadrilátero Ferrífero Mineral Province, located in the southern portion of the São Francisco Craton, constitutes the second largest mineral province in Brazil, hosting world-class gold and iron ore deposits within Neoarchean greenstone belts and Siderian banded iron formations, respectively. The cratonic cover comprises units younger than 1.8 Ga, including the infill of the Paramirim aulacogen system and the São Francisco Basin.

3.3. São Luís, Rio de La Plata, and Luiz Alves cratons

The São Luís Craton (SLC), with approximately 4,850 km² of outcropping area in the states of Maranhão and Pará, occurs as a broad tectonic window exposed through the Phanerozoic sedimentary cover (Figure 7). It is composed of Paleoproterozoic rocks (2.24 to 2.07 Ga), including metavolcanosedimentary successions such as schists, quartzites, acidic to basic metavolcanic rocks, and metacherts, as well as tonalitic to granitic granitoids, granodiorites, and unmetamorphosed acidic volcanic rocks. These assemblages are part of a polyphasic Rhyacian orogen marked by accretionary, collisional, and post-orogenic stages (Klein 2014).

The Rio de la Plata Craton is a cratonic fragment exposed in Uruguay, eastern Argentina, and southern Brazil. In Brazilian territory, where it has an outcropping area of approximately 1,280 km², its boundaries are mainly defined by the Dom Feliciano Belt, with a small margin facing the Paraná Basin (Figure 10). It is predominantly composed of tonalitic to granodioritic orthogneisses with TTG affinity, as well as

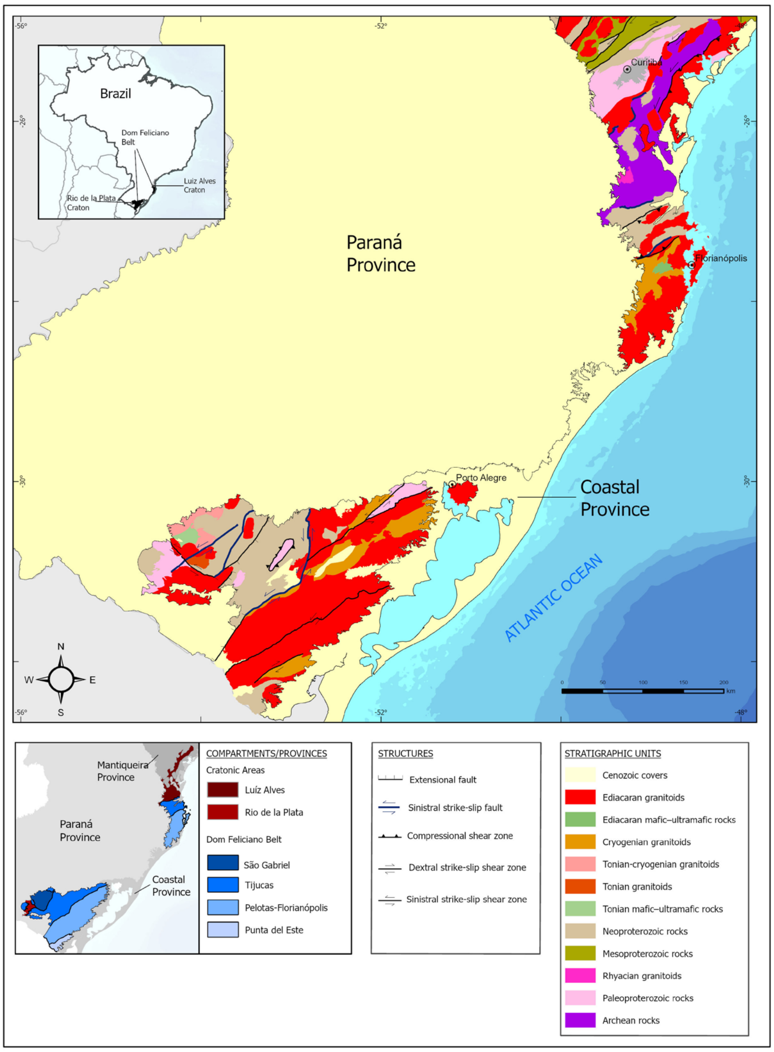

FIGURE 10. – Geological framework of the Rio de la Plata and Luiz Alves cratons, and the Dom Feliciano Belt.

paragneisses, quartzites, and intercalations of amphibolites and mafic–ultramafic rocks, recording metamorphism from amphibolite to granulite facies.

The Luiz Alves Craton (Figure 10), with approximately 7,580 km² of outcropping area in the states of Paraná and Santa Catarina, is bounded to the north by the Mantiqueira Province and to the south by the Dom Feliciano Belt (Basei et al. 2010). It is composed mainly of felsic granulitic orthogneisses and, subordinately, mafic rocks, as well as lenses of quartzite and banded iron formations. Intercalations of granulitized amphibolites, pyroxenites, and mafic–ultramafic rocks are also present. It represents a preserved Paleoproterozoic crustal fragment that was subsequently reworked during Neoproterozoic events (Hartmann et al. 2008; Oyhantçabal et al. 2011).

3.4. Dom Feliciano Belt

The Dom Feliciano Belt (DFB), located in the southernmost region of Brazil (states of Santa Catarina and Rio Grande do Sul), covers an outcropping area of approximately 53,200 km² and is bounded by the Paraná Basin, the Coastal Province, and the Luiz Alves Craton (Figure 10). In previous proposals for the geological compartmentalization of Brazil (Almeida et al. 1981; Bizzi et al. 2003), this region was included within the Mantiqueira Province. However, in accordance with the current Geological Map of Brazil (Medeiros et al. 2025a), it is considered here as a distinct entity, given that the Mantiqueira does not form a continuous belt due to the exposure of the Luiz Alves Craton between them (Figures 6 and 7). The DFB formed at approximately 600 Ma within the context of the Brasiliano–Pan-African Orogeny (Babinski et al. 1997; Basei et al. 2005; Philipp et al. 2016).

Over recent decades, several tectonostratigraphic subdivision schemes have been proposed based on structural, metamorphic, and geochronological criteria (Fragoso-Cesar 1991; Basei et al. 2000; Oriolo et al. 2019). In this study, based on the integration of regional geological mapping (Medeiros et al. 2025a, b) and considering structural and isotopic data, the belt is subdivided into four compartments: São Gabriel, Tijucas, Pelotas–Florianópolis, and Punta del Este (Figure 10).

The São Gabriel compartment is located in the western portion of the Dom Feliciano Belt (Figure 10) and is essentially composed of Neoproterozoic volcanosedimentary sequences. Tonian and Ediacaran granitoids are abundant in the region and record significant magmatic episodes.

The Tijucas compartment, situated in the central portion of the Dom Feliciano Belt (Figure 10), comprises extensive Neoproterozoic metasedimentary and metavolcanic packages, including schists, quartzites, phyllites, paragneisses, and intercalations of mafic and felsic rocks. Subordinate fragments of Paleoproterozoic orthoderived rocks are also present.

The Pelotas–Florianópolis compartment (Figure 10), which extends from southern Rio Grande do Sul to eastern Santa Catarina, is characterized by large Neoproterozoic granitic batholiths, as well as metamorphic assemblages composed of gneisses, migmatites, and medium- to high-grade schists.

The Punta del Este compartment, located in the southernmost part of Rio Grande do Sul, comprises two-mica leucogranites and mylonitic garnet-bearing granitoids, garnet-bearing schists, banded paragneisses, protomylonitic leucogranitoids metamorphosed under greenschist to amphibolite facies, as well as granodiorites to syenogranites with microdioritic enclaves and porphyroclastic biotite monzogranites, locally mylonitic.

3.5. Mantiqueira Province (Araçuaí-Ribeira)

The Mantiqueira Province (MP) covers approximately 273,600 km² in the eastern portion of the Brazilian territory (Figure 9). Initially designated as the Mantiqueira Structural Province (Almeida et al. 1981), the Ribeira Belt (Hasui et al. 1975) and the Araçuaí Belt (Almeida 1981) were defined during the same period. Its constitution is predominantly Neoproterozoic, comprising sedimentary and volcanosedimentary units, as well as significant Ediacaran to Cambrian magmatism (Hasui et al. 1975; Almeida 1981).

The MP represents a geotectonic entity considered by Medeiros et al. (2025a, b) to have developed to the east of the São Francisco Craton, the Paraná Province, and the southern Brasília Belt, and to the north of the Luiz Alves Craton, during the late Neoproterozoic and early Paleozoic, recording a long and complex evolution between 900 and 520 Ma (Delgado et al. 2003). The province also preserves reworked Archean remnants, as well as Paleoproterozoic and Mesoproterozoic units associated with the pre-Brasiliano basement.

Associated with the southern portion of the Tocantins Province, the Mantiqueira Province forms part of the Precambrian framework of southeastern Brazil, developed in response to the Brasiliano Orogeny (Almeida 1967). Accretionary and collisional processes involving Neoproterozoic belts and the São Francisco, Congo, Luiz Alves, and Paranapanema cratons generated orogens that were subsequently subjected to erosion, leading to the adoption of the term Mantiqueira Orogenic System and the designations Araçuaí–West Congo, Ribeira, and Dom Feliciano for the respective segments. The Ribeira and Araçuaí–West Congo orogens are interpreted as accretionary systems resulting from orogenic collage during the Brasiliano Orogeny.

3.6. Tocantins Province

The Tocantins Province (TP) is located predominantly in the central portion of Brazil, covering approximately 517,300 km² of outcropping area. It lies between the Amazon Craton, the Mantiqueira Province, the São Francisco Craton, and cratonic covers, and is partially overlain by Phanerozoic basins (Figure 11). In the literature, it is recognized as an extensive Neoproterozoic mobile belt associated with the Brasiliano–Pan-African Orogeny (Almeida et al. 1981; Bizzi et al. 2003).

The province is subdivided into the Paraguay Belt (PB) and the Araguaia Belt (AB), located to the west and north of the Transbrasiliano Lineament, a dextral transcurrent shear zone, and into the Brasília Belt, immediately to the south, whose southern extension corresponds to the Southern Brasília Belt (Figure 11).

The Araguaia Belt forms a north–south trending outcropping segment marked by shear zones that record east–west compression, particularly along its interface with the Amazon Craton. Its basement comprises Archean gneisses, orthogneisses, and Paleoproterozoic metasedimentary rocks, as well as calc-alkaline granitoids. Neoproterozoic units include metasedimentary and metavolcanosedimentary rocks, gneisses derived from granitic protoliths and Ediacaran to

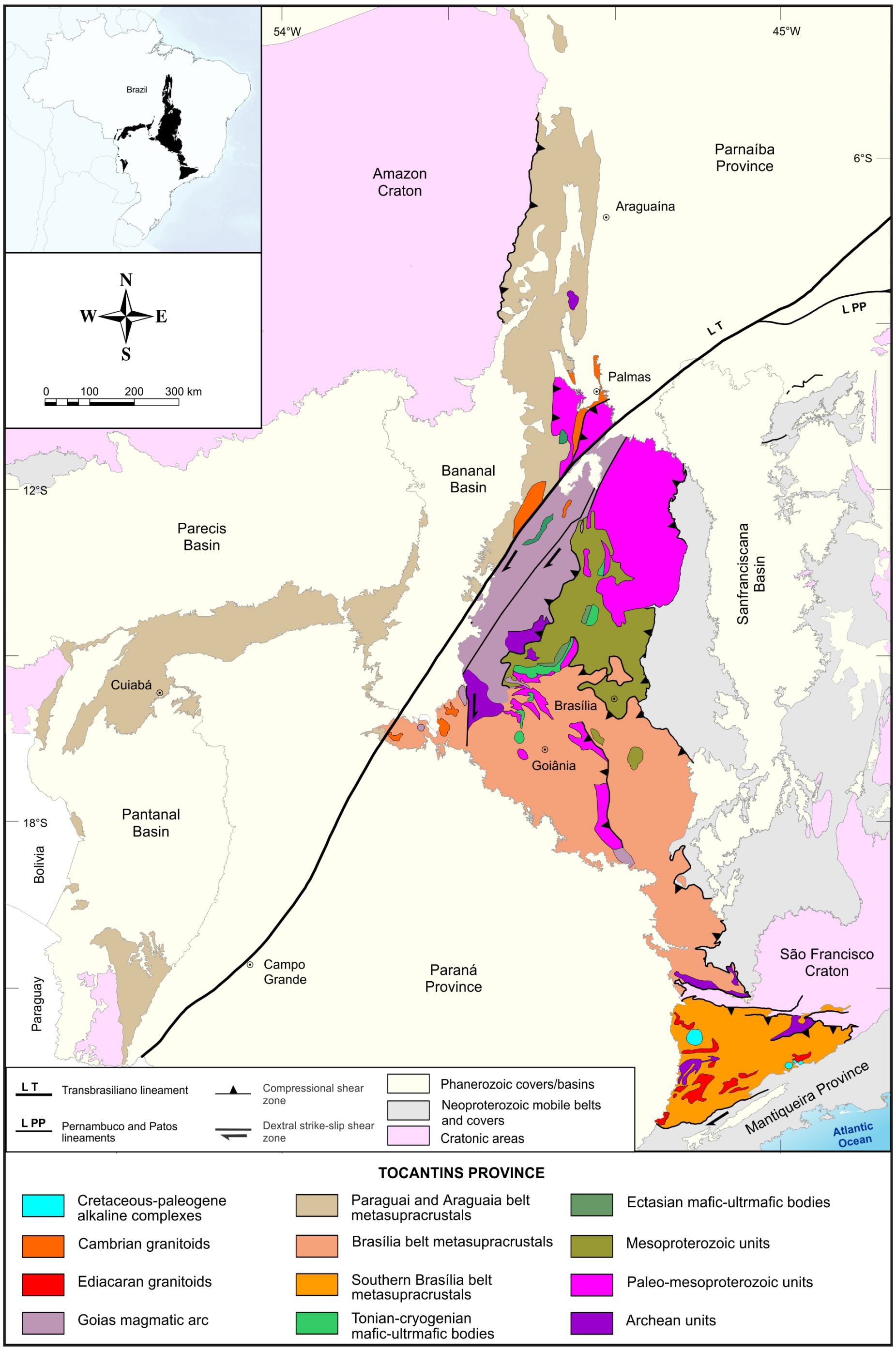

FIGURE 11. – Geological framework of the Tocantins Province.

Ediacaran–Cambrian granitoids. In the northernmost sector, metasedimentary and volcanosedimentary rocks crop out in the municipalities of Goianésia do Pará and Tucuruí, both in the state of Pará (Medeiros et al. 2025a).

The Paraguay Belt dominates the central and southern portions of the Tocantins Province and is essentially composed of Neoproterozoic successions of metasedimentary rocks, including carbonates, pelites, and psammites, as well as volcanosedimentary rocks and Cambrian granitoids (Lacerda Filho et al. 2004, 2006; Moreton et al. 2008; Ribeiro et al. 2022; Medeiros et al. 2025a). The metasupracrustal sequences of the Araguaia and Paraguay belts record sedimentation linked to Neoproterozoic tectonic evolution (Hodel et al. 2019; Silva et al. 2021).

The northern portion of the Brasília Belt is characterized by calc-alkaline plutonic and metavolcanic rocks related to the Goiás Magmatic Arc. The southern portion is dominated by pelitic, psammitic, and carbonate metasedimentary rocks, as well as high-grade gneisses and ultrahigh-temperature granulites. Between these sectors occur Archean remnants composed of TTG orthogneisses and greenstone belt sequences; Paleo- to Mesoproterozoic units consisting of banded gneisses, metasedimentary rocks, and granitoids; and Mesoproterozoic successions formed by fine clastic and carbonate metasedimentary rocks. As noted by Medeiros et al. (2025a, b), the belt also contains Meso- to Neoproterozoic mafic–ultramafic bodies and significant Ediacaran to Cambrian magmatism concentrated near the Transbrasiliano Lineament (Figure 11).

The Southern Brasília Belt comprises Neoproterozoic metasedimentary successions, predominantly pelitic, psammitic, and carbonate, as well as high-grade gneisses. It also includes Archean occurrences composed of gneisses, amphibolites, and quartzites, and Rhyacian units consisting of gneisses and plutonic rocks. Additionally, it records Ediacaran granitoids and Cretaceous–Paleogene alkaline complexes represented by syenitic and phonolitic bodies (Silva et al. 2025).

3.7. Borborema Province

The Borborema Province (BP) is located in the northeasternmost region of Brazil, encompassing approximately 347,600 km² of outcropping area. It is bounded by the Parnaíba and Coastal provinces and by the São Francisco Craton (Figure 12). Its consolidation occurred around 600 Ma during the Brasiliano–Pan-African Orogeny (Almeida et al. 1981; Van Schmus et al. 1995; Brito Neves et al. 2000; Jardim de Sá 1994; Vauchez et al. 1995). Over recent decades, several compartmentalization models have been proposed, generally using major shear zones as the primary criterion for subdivision (Jardim de Sá et al. 1994; Caby et al. 1991; Brito Neves et al. 2000; Vauchez et al. 1995; Delgado et al. 2003). In accordance with the proposal of Medeiros et al. (2025a, b), this study adopts a subdivision into four subprovinces: Northwest, North, Transversal, and South (Figure 12).

The Northwest Subprovince is located northwest of the Sobral–Pedro II Shear Zone, which corresponds to the local segment of the Transbrasiliano Lineament, and is bounded by the Parnaíba Province to the south and west, the Coastal Province to the north, and the North Subprovince to the east. The North Subprovince lies north of the Patos Shear Zone, bounded to the north and east by the Coastal Province and to the west by the Parnaíba Province. The Central Subprovince

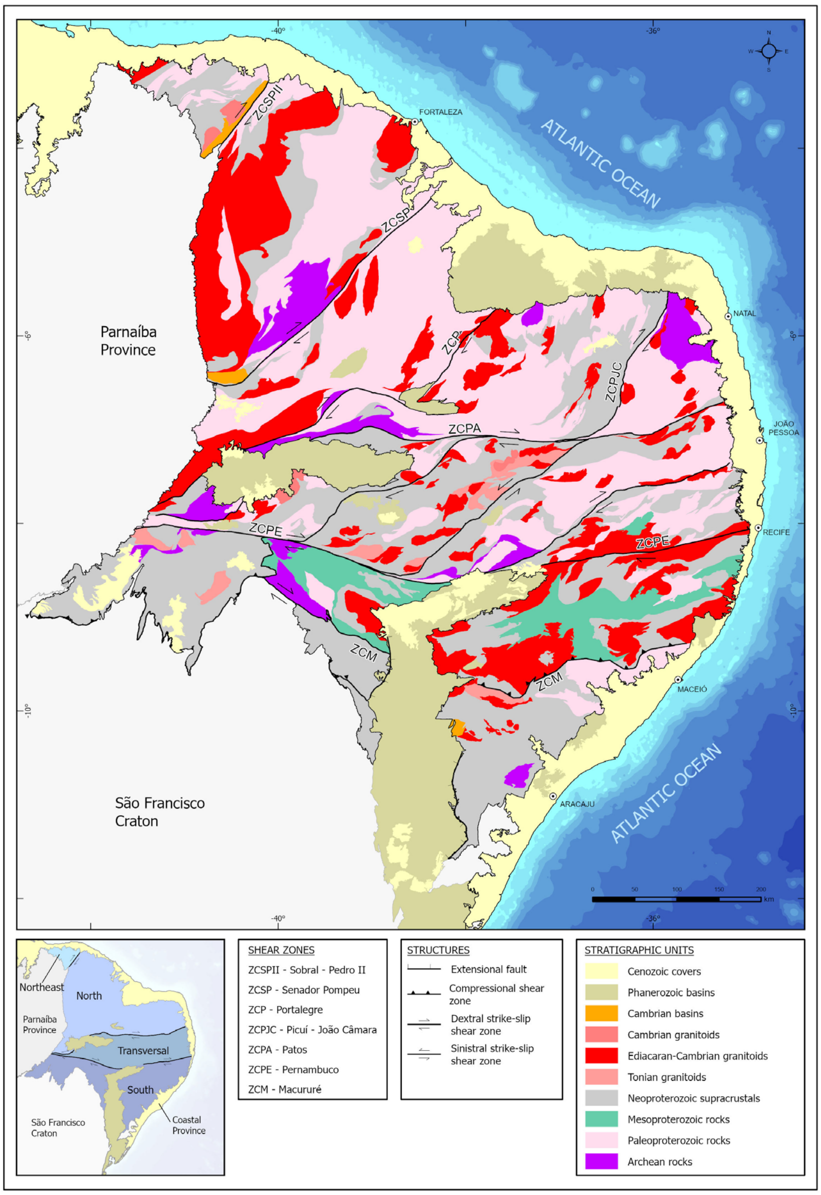

FIGURE 12. – Geological framework of the Borborema Province.

is bounded to the north by the Patos Lineament, to the south by the Pernambuco Lineament, to the west by the Parnaíba Basin, and to the east by sediments of the Coastal Province. The South Subprovince is bounded to the north by the Pernambuco Shear Zone, to the south by the São Francisco Craton, to the east by the Coastal Province, and to the west by the Parnaíba Province (Medeiros et al. 2025a, b).

The Borborema Province is composed of a Paleoproterozoic gneiss–migmatite basement with intercalations of Archean blocks. This basement includes orthogneisses, paragneisses, migmatites, metamafic and metaultramafic rocks, as well as metavolcanosedimentary successions, all intensely deformed by NE–SW and E–W shear zones. Regional metamorphism ranges from medium to high grade, reaching amphibolite facies and locally granulite facies. Isotopic ages are concentrated in the Rhyacian–Orosirian interval (2.2 to 2.0 Ga), Meso- to Neoarchean (3.2 to 2.7 Ga), and more rarely Eo- to Paleoarchean (3.7 to 3.2 Ga), reflecting multiple episodes of accretion, crustal reworking, and migmatization (Dantas et al. 2004; Souza et al. 2007; Pinéo et al. 2023; Santos et al. 2023; Santana et al. 2024).

Stenian to Tonian metasedimentary rocks and metagranitoids, related to the Cariris Velhos event (ca. 1100 to 900 Ma), occur mainly in the Transversal and South subprovinces (Santos et al. 2023; Santana et al. 2024).

Overlying the basement, phyllites, schists, quartzites, marbles, amphibolites, metabasalts, and acidic to intermediate metavolcanic rocks are exposed, along with ultramafic lenses and mafic bodies interpreted as remnants of magmatic arcs, continental rifts, oceanic basins, and accretionary prisms. These metavolcanosedimentary packages, distributed in extensive deformed and metamorphosed belts, record tectonic stacking and regional metamorphism under greenschist to amphibolite facies conditions (Jardim de Sá 1994; Pinéo et al. 2023; Santos et al. 2023; Santana et al. 2024).

Associated with the final stages of the Brasiliano–Pan-African Orogeny (ca. 650 to 500 Ma), an extensive Ediacaran to Cambrian intrusive magmatic event occurred, characterized by a wide compositional range, including granites, tonalites, granodiorites, syenites, diorites, gabbros, and related rocks, and by broad spatial distribution throughout the province. This magmatism marks the transition from the compressional phase to post-orogenic stages, reflecting crustal thickening followed by delamination, collapse, and lithospheric reorganization (Ferreira et al. 2004; Guimarães et al. 2004; Nascimento et al. 2015).

3.8. Marginal belts (Rio Preto and Gurupi)

The Rio Preto Belt is located along the northwestern margin of the São Francisco Craton (Figure 7), covering approximately 5,800 km² of outcropping area. It is composed of a crystalline basement predominantly formed by biotite gneisses and amphibolites of Neoarchean (ca. 2.8 Ga) to Paleoproterozoic (ca. 2.0 Ga) age, overlain by Proterozoic metasedimentary sequences (ca. 0.85 Ga) consisting of mica schists (± garnet), quartzites, phyllites, metacherts, metagreywackes, metaturbidites, and metadiamictites (Egydio-Silva 1987; Egydio-Silva et al. 1989; Caxito et al. 2012a, b). All these units underwent greenschist facies metamorphism and polyphase deformation associated with the Brasiliano Orogeny, resulting in tectonic stacking and the development of asymmetric fan-shaped structures with double vergence.

Along the southern boundary of the São Luís Craton occurs the Gurupi Belt (Figure 7), with approximately 5,100 km² of outcropping area. It is an orogen composed of metamorphic complexes including metatonalites, metabasites, and gneisses, as well as extensive metavolcanosedimentary sequences formed by schists, phyllites, and acidic to basic volcanic rocks. These units are intruded by multiple generations of plutonic rocks with wide compositional variation, including syenites, peraluminous granites, and alkaline rocks (Klein et al. 2005; Klein and Lopes 2011; Klein et al. 2020). This continental fragment shared the accretionary orogenic phase of the São Luís Craton during the Paleoproterozoic and subsequently evolved into a stable platform that gave rise to a marginal basin, culminating in the Neoproterozoic with intrusions related to extensional events and metamorphism between 624 and 549 Ma.

3.9. Neoproterozoic cratonic covers

Neoproterozoic cratonic covers crop out mainly in two segments: the Southeast–Northeast region of Brazil and the western portion of the country (Figure 7).

In the Southeast–Northeast segment, they cover approximately 185,900 km² of the São Francisco Craton and consist of thick carbonate, siliciclastic, diamictite, and related successions. Locally, they display only mild deformation, as observed in parts of Minas Gerais State, whereas in other areas, they exhibit more intense and well-developed structural features, such as those observed in the Irecê Basin, Bahia State (Barbosa et al. 2021; Silva et al. 2020).

In the western segment (Rondônia and Mato Grosso states), they extend over approximately 27,000 km² and are composed of Ediacaran shales, sandstones - occasionally calcareous - siltstones, diamictites, carbonates, and evaporites, deposited over the Amazon Craton from the northwestern margin of the Parecis Basin (Lacerda-Filho et al. 2006; Oliveira and Silva 2023), including the Neoproterozoic Pimenta Bueno Formation).

3.10. Phanerozoic Covers and Basins

Phanerozoic basins and covers occupy approximately 60% of the Brazilian territory and include the Amazonas Province, encompassing the Acre, Solimões, and Amazonas–Alto Tapajós basins, as well as the Parnaíba and Paraná provinces. They also comprise several interior basins, such as Parecis, Bananal, Pantanal, Sanfranciscana, Recôncavo–Tucano–Jatobá, Araripe, and Guaporé, in addition to the basins of the Coastal Province (Figure 13).

Phanerozoic sedimentation and volcanism began with the Paleozoic syneclise, preserved in the Amazonas, Parnaíba, and Paraná provinces. The subsequent phase, marked by Meso- to Cenozoic extension associated with the breakup of Pangea and the opening of the South Atlantic, led to the development of sedimentary basins filled with clastic and carbonate successions, with evaporitic intercalations in some sectors (Szatmari et al. 1984; Milani et al. 2007; Matos et al. 2021). This extensional setting also records significant magmatism, represented by mafic dyke and sill swarms and extensive volcanic flows related to ocean opening (Matos 1992; Pessoa Neto et al. 2007; Silva et al. 2014).

The Amazonas Province covers approximately 1.86 million km², encompassing the Amazonas, Solimões, Acre, and Alto Tapajós basins, deposited over the Precambrian basement of the Amazon Craton (Figure 13). Its main exposed successions include sandstones, shales, pelites, siltstones, carbonates, fine siliciclastic deposits, as well as Cenozoic covers (Figure 13).

The Solimões Basin contains pelites and sandstones overlain by Cenozoic deposits. The Acre Basin, integrated into the Andean retroarc basin system (Oliveira 1994; Cunha 2007), is composed of clayey, sandy, and conglomeratic successions covered by alluvial sediments. The Alto Tapajós Basin supports the Serra do Cachimbo (Pará and Mato Grosso states) and presents Paleozoic sequences formed by sandstones, siltstones, shales, and diamictites, as well as Mesozoic deposits predominantly composed of sandstones.

The Parnaíba Province, with approximately 672,000 km² of outcropping area, includes the Parnaíba, Alpercatas, Grajaú/São Luís, and Espigão-Mestre basins (Figure 13). The Parnaíba Basin presents Paleozoic and Mesozoic siliciclastic and carbonate successions, including sandstones, shales, siltstones, diamictites, carbonates, and subordinate evaporite levels. The Alpercatas Basin is composed of Mesozoic deposits consisting of sandstones, siltstones, and shales, as well as basalts and tuffs (Silva et al. 2003). The Grajaú/São Luís Basin comprises carbonates, evaporites, shales, sandstones, and various siliciclastic deposits. The Espigão-Mestre Basin contains Cretaceous sandstones that extend at the surface into the Sanfranciscana Basin (Dias et al. 2024; Medeiros et al. 2025a).

The Paraná Province, covering about 1.12 million km², is predominantly located in southern Brazil (Figure 13). It is an intracratonic volcano-sedimentary basin hosted on the Luiz Alves and Rio de la Plata cratons (exposed), the Paranapanema block (non-exposed), and the Brasiliano mobile belts (Dom Feliciano, Tocantins, and Mantiqueira). Its stratigraphic succession includes sandstones, diamictites, shales, siltstones, carbonates, acidic to intermediate volcanic rocks, as well as significant mafic magmatism related to Early Cretaceous volcanism and Upper Cretaceous sedimentary deposits (Horn et al. 2022).

The Interior Basins represent approximately 1.0 million km² of outcropping area within Brazilian territory, with emphasis here on the Parecis, Recôncavo–Tucano–Jatobá,

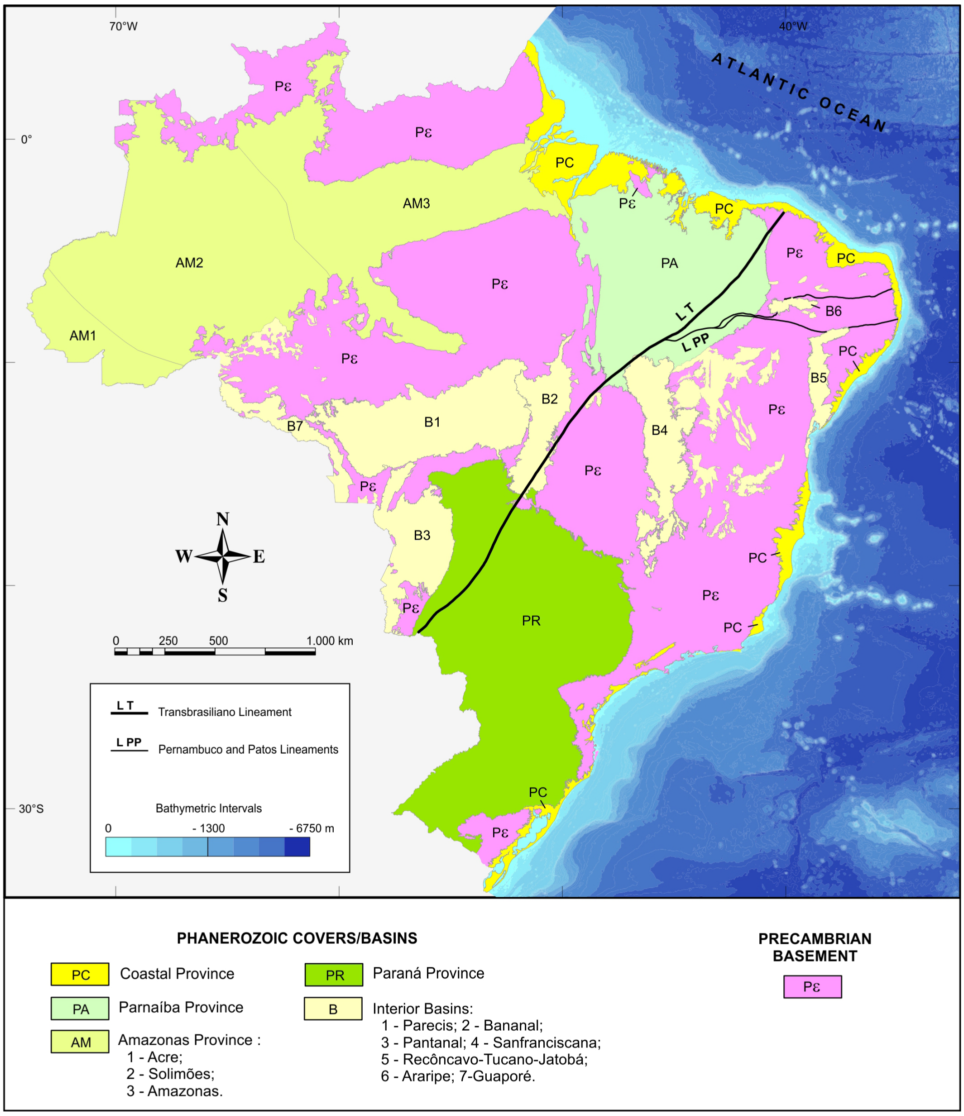

FIGURE 13. – Geological framework of Brazil, highlighting the Phanerozoic covers and basins.

Araripe, Bananal, Guaporé, and Pantanal basins (Figure 13). The Parecis Basin, with approximately 329,000 km², presents Mesozoic sandstones, conglomerates, siltstones, and shales, overlain by Cenozoic sandy and clayey deposits (Medeiros et al. 2025a). The Recôncavo–Tucano–Jatobá Basin, covering 44,800 km², hosts Paleozoic to Cretaceous siliciclastic and carbonate successions composed of sandstones, shales, siltstones, limestones, marls, and evaporitic levels. The Araripe Basin, with about 11,500 km², contains Paleozoic to Cretaceous successions formed by sandstones, shales, limestones, marls, and evaporites. The Bananal Basin, occupying approximately 114,200 km², is composed of Cenozoic deposits characterized by a basal conglomeratic sequence overlain by sandstones and siltstones, partially lateritized (Araújo and Carneiro 1977). The Guaporé Basin, with 72,900 km², includes sandstones, claystones, conglomerates, and recent covers. Finally, the Pantanal Basin, with approximately 164,700 km², is composed of Cenozoic deposits, including sandstones, clays, muds, gravels, and alluvial sediments that fill its extensive plain (Lacerda-Filho et al. 2006).

The Coastal Province encompasses the marginal basins along the boundary of the Brazilian continental shelf, including both onshore and offshore sectors covered by thick Cenozoic deposits (Almeida et al. 1981; Mohriak 2003; Milani et al. 2007). During the Cenozoic, post-rift tectonic regimes and eustatic fluctuations favored the accumulation of siliciclastic, carbonate, and evaporitic successions associated with marginal basins and coastal plains (Arai 2006).

4. Final considerations

The preparation of the new Geological Map of Brazil represents a significant advancement in the integration and updating of national geoscientific knowledge. The adopted methodology, based on the consolidation of cartographic, structural, geophysical, and geochronological data, enabled the revision of lithostratigraphic boundaries, the refinement of regional interpretations, and the standardization of different mapping scales, and may serve as a reference for maps at similar scales. The result is a more accurate geological synthesis that is consistent with the current state of geoscientific research in the country.

The new proposal for tectonic compartmentalization stems directly from the updated cartography, allowing the redefinition of boundaries and the internal reorganization of the main cratons and orogenic provinces under a truly integrated perspective, considering the initial, more generalized concept, followed by more detailed compartmentalization. The refinement of structural compartments and metamorphic domains enhances the understanding of lithospheric reorganization processes that have operated from the Archean to the Cenozoic. This refinement also improves the interpretation of sedimentary basins and their structural controls, increasing the map's applicability for territorial planning and for the exploration of mineral, energy, and water resources.

The new map and the proposed tectonic compartmentalization establish an essential reference framework for future research in regional geology, tectonics, and metallogeny. By integrating different lines of evidence into a coherent structure, this work strengthens the role of the Geological Survey of Brazil in producing strategic knowledge and becomes a fundamental tool for natural resource management and for the scientific and economic development of the country.

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Authorship credits

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EBSES	■	■	■	■		
MAS	■	■	■	■		
GM	■	■	■	■		
TSCB	■	■				

A - Study design/ Conceptualization **B** - Investigation/ Data acquisition
C - Data Interpretation/ Validation **D** - Writing
E - Review/Editing **F** - Supervision/Project administration

References

Alkmim F.F. 2004. O que faz de cráton um cráton? O cráton do São Francisco e as revelações Almeidianas ao delimitá-lo. In: Mantesso-Neto V., Bartorelli A., Carneiro C.D.R., Brito Neves B.B. (orgs.). Geologia do continente sul-americano: evolução da obra de Fernando Flávio Marques Almeida, São Paulo, Editora Beca. p. 17-36. Available online at: https://geologia.ufc.br/wp-content/uploads/2016/02/geologia-do-continente.pdf / (accessed on 3 February 2026).

Alkmim F.F., Brito Neves B.B., Alves J.A.C. 1993. Arcabouço tectônico do cráton do São Francisco - uma revisão. In: Dominguez J.M.L., Misi A. (eds.). O cráton do São Francisco. Salvador, SBG/Núcleo BA/SE, SGM/BA. p. 45-62. Available online at: https://repositorio.usp.br/item/000852307 / (accessed on 3 February 2026).

Alkmim F.F., Reis H. 2021. Brazil and the Guianas. In: Alderton D., Elias S.A. (eds.). Encyclopedia of Geology: regional geology, 2nd ed., Elsevier. 4, p. 27-46. https://doi.org/10.1016/B978-0-12-409548-9.12484-4

Almeida F.F.M. 1967. Origem e evolução da Plataforma Brasileira. Boletim, 241, Rio de Janeiro, DNPM-DGM, 36 p.

Almeida F.F.M. 1977. O cráton do São Francisco. Revista Brasileira de Geociências, 7(4), 349-364. https://doi.org/10.25249/0375-7536.1977349364

Almeida F.F.M. 1981. O cráton do Paramirim e suas relações com o do São Francisco. In: Simpósio sobre o cráton do São Francisco e suas faixas marginais, 1-9. Available online at: https://www.sbgeo.org.br/anais_digitalizados/simposiocratonsaofrancisco/I%20SCSF.1981.pdf / (accessed on 3 February 2026).

Almeida F.F.M., Hasui Y., Brito Neves B.B., Fuck R.A. 1981. Brazilian structural provinces: an introduction. Earth-Science Reviews, 17(1-2), 1-29. https://doi.org/10.1016/0012-8252(81)90003-9

Almeida M.E., Macambira M.J.B., Oliveira E.C. 2007. Geochemistry and zircon geochronology of the I-type high-K calc-alkaline and S-type granitoid rocks from southeastern Roraima, Brazil: Orosirian collisional magmatism evidence (1.97–1.96 Ga) in central portion of Guiana Shield. Precambrian Research, 155(1-2), 69–97. https://doi.org/10.1016/j.precamres.2007.01.004

Amaral G. 1974. Geologia pré-cambriana da região amazônica. Habilitation thesis, Instituto de Geociências, Universidade de São Paulo, São Paulo, 212 p. https://doi.org/10.11606/T.44.2016.tde-24062016-160651

Arai M. 2006. A grande elevação eustática do Mioceno e sua influência na origem do Grupo Barreiras. Geologia USP, Série Científica, 6(2), 1-6. https://doi.org/10.5327/S1519-874X2006000300002
Araújo J.B., Carneiro R.G. 1977. Planície do Araguaia, reconhecimento geológico-geofísico. Belém, Petrobrás/RENOR, 11 p.
Babinski M., Chemale Jr. F., Van Schmus W., Hartmann L.A., Silva L.C. 1997. U-Pb and Sm-Nd geochronology of the Neoproterozoic granitic-gneissic Dom Feliciano Belt, Southern Brazil. Journal of South American Earth Sciences, 10(3-4), 263-274. https://doi.org/10.1016/s0895-9811(97)00021-7
Barbosa A.L.M. 1966. Síntese da evolução geológica da América do Sul. Boletim do Instituto de Geologia, Escola de Minas de Ouro Preto, 1(2), 91-111.
Barbosa J.S.F., Luciano R.L., Cruz Filho B.E., Santana J.S., Moraes A.M.V. 2021. Mapa tectônico-geocronológico do estado da Bahia: implicações metalogenéticas. Salvador, CBPM, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/21804 / (accessed on 12 February 2026).
Basei M.A.S, Nutman A.P., Siga Jr. O., Passarelli C.R., Drukas C.O. 2010. The evolution and tectonic setting of the Luis Alves microplate of southeastern Brazil: an exotic terrane during the assembly of Western Gondwana. In: Sterne A. (ed.). Neoproterozoic–Cambrian tectonics, global change and evolution: a focus on southwestern Gondwana. Amsterdam, Elsevier. p. 273-291. https://doi.org/10.1016/s0166-2635(09)01620-x
Basei M.A.S., Frimmel H.E., Nutman A.P., Preciozzi F., Jacob J. 2005. A connection between the Neoproterozoic Dom Feliciano (Brazil/Uruguay) and Gariep (Namibia/South Africa) orogenic belts: evidence from a reconnaissance provenance study. Precambrian Research, 139(3-4), 195-221. https://doi.org/10.1016/j.precamres.2005.06.005
Basei M.A.S., Siga Jr. O., Masquelin H., Harara O.M.M., Reis Neto J.M., Preciozzi F. 2000. The Dom Feliciano belt of Brazil and Uruguay and its foreland domain, the Rio de La Plata craton: framework, tectonic evolution and correlation with similar provinces of southwestern Africa. In: Cordani U., Milani E.J., Thomaz Filho A., Campos D.A. (eds.). Tectonic evolution of South America. Rio de Janeiro, 31st International Geological Congress. p. 311-334. Available online at: https://rigeo.sgb.gov.br/handle/doc/19419 / (accessed on 5 March 2026).
Bettencourt J.S., Leite Jr. W.B., Ruiz A.S., Matos R., Payolla B.L., Tosdal R.M. 2010. The Rondonian-San Ignacio Province in the SW Amazonian Craton: An overview. Journal of South American Earth Sciences, 29(1), 28-46. https://doi.org/10.1016/j.jsames.2009.08.006
Bizzi L.A., Schobbenhaus Filho C., Vidotti R.M., Gonçalves J.H. (eds.). 2003. Geologia, tectônica e recursos minerais do Brasil: texto, mapas e SIG. Brasília, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/5006 / (accessed on 9 September 2025).
Brito Neves B.B., Santos E.J., Van Schmus W.R. 2000. Tectonic history of the Borborema Province, Northeastern Brazil. In: Cordani U., Milani E.J., Thomaz Filho A., Campos D.A. (eds.). Tectonic evolution of South America. Rio de Janeiro, 31st International Geological Congress. p. 151–182. Available online at: https://rigeo.sgb.gov.br/handle/doc/19419 / (accessed on 5 March 2026).
Caxito F.A, Halverson G.P., Uhlein A., Stevenson R., Dias T.G., Uhlein G.J. 2012b. Marinoan glaciation in east central Brazil. Precambrian Research, 200-203, 38-58. http://dx.doi.org/10.1016/j.precamres.2012.01.005
Caxito F.A., Uhlein A., Sanglard J.C.D., Gonçalves Dias T., Mendes M.C.O. 2012a. Depositional systems and stratigraphic review proposal of the Rio Preto fold belt, northwestern Bahia / southern Piauí. Revista Brasileira de Geociências 42(3), 523-538. Available online at: https://ppegeo.igc.usp.br/portal/index.php/rbg/depositional-systems-and-stratigraphic-review-proposal-of-the-rio-preto-fold-belt-northwestern-bahia-southern-piaui/ / (accessed on 5 March 2026).
Cordani U.G., Tassinari C.C.G., Teixeira W., Basei M.A.S., Kawashita K. 1979 Evolução tectônica da Amazônia com base nos dados geocronológicos. In: Congresso Geologico Chileno, 2, 137-148. Available online at: https://repositorio.usp.br/item/001457566 / (accessed on 5 March 2026).
Corrêa L.W.C., Macambira M.J.B. 2014. Evolução da região de Santana do Araguaia (PA) com base na geologia e geocronologia Pb-Pb em zircão de granitoides. Geologia USP, Série Científica, 14(2), 45-66. https://doi.org/10.5327/Z1519-874X201400020003
Costa J.B.S., Hasui Y. 1991. O quadro geral da evolução tectônica da Amazônia. In: Simpósio Nacional de Estudos Tectonicos, 3, 142-145.
Cunha P.R.C. 2007. Bacia do Acre. Boletim de Geociências da Petrobras, 15(2), 207-215. Available online at: https://bgp.petrobras.com.br/bgp/article/download/304/228/421 / (accessed on 5 March 2026).
Dantas E.L., Van Schmus W.R., Hackspacher P.C., Fetter A.H., Brito Neves B.B., Cordani U., Nutman A.P., Williams I.S. 2004. The 3.4-3.5 Ga São José do Campestre massif, NE Brazil: remnants of the oldest crust in South America. Precambrian Research, 130(1-4), 113-127. http://dx.doi.org/10.1016/j.precamres.2003.11.002
Delgado I.M., Souza J.D., Silva L.C., Silveira Filho N.C., Santos R.A., Pedreira A.J., Guimarães J.T., Angelim L.A.A., Vasconcelos A.M., Gomes I.P., Lacerda Filho J.V., Valente C.R., Perrotta M.M., Heineck C.A. 2003. Geotectônica do Escudo Atlântico. In: Bizzi L.A., Schobbenhaus C., Vidotti R.M., Gonçalves J.H. (eds.). Geologia, tectônica e recursos minerais do Brasil: texto, mapas e SIG. Brasília, CPRM. p. 227-334. Available online at: https://rigeo.sgb.gov.br/handle/doc/5006 / (accessed on 5 March 2026).
Dias P.H.A., Brito D.C., Silva M.A., Barros R.A., Matos C.A., Reis C., Meira M.M.M., Silva W.S. 2024. Mapa geológico da bacia do São Francisco, Escala 1:750.000. Programa de Estudos Geotectônicos e Geodinâmicos da Bacia do São Francisco, Neoproterozoico do Cráton São Francisco, Belo Horizonte, Serviço Geológico do Brasil. Available online at: https://rigeo.sgb.gov.br/handle/doc/23348 / (accessed on 5 March 2026).
Egydio-Silva M. 1987. O sistema de dobramentos Rio Preto e suas relações com o Cráton São Francisco. PhD Thesis, IGC, Universidade de São Paulo, São Paulo, 95 p. https://doi.org/10.11606/T.44.1987.tde-11022014-150431
Egydio-Silva M., Karmann I., Trompette R.R. 1989. Litoestratigrafia do supergrupo Espinhaço e grupo Bambuí no NW do estado da Bahia. Revista Brasileira de Geociências 19(2), 101-112. Available online at: https://ppegeo.igc.usp.br/portal/index.php/rbg/litoestratigrafia-do-supergrupo-espinhaco-e-grupo-bambui-no-noroeste-do-estado-da-bahia/ / (accessed on 5 March 2026).
Faria M.S.G., Santos J.O.S., Luzardo R., Hartmann L.A. 2002. The oldest island arc of Roraima State, Brazil - 2,03 Ga: zircon SHRIMP U-P geochronology of Anauá Complex. In: Congresso Brasileiro de Geologia, 41, 306. Available online at: http://www.sbgeo.org.br/home/pages/44#Anais / (accessed on 5 March 2026).
Ferreira V.P., Sial A.N., Pimentel M.M., Moura C.A.V. 2004. Intermediate to acidic magmatism and crustal evolution in the Transversal Zone, Northeastern Brazil. In: Mantesso-Neto V., Bartorelli A., Carneiro C.D.R., Brito Neves B.B. (eds.). Geologia do continente Sul-Americano: evolução da obra de Fernando Flávio Marques de Almeida. Beca, São Paulo. p. 189-201. Available online at: https://geologia.ufc.br/wp-content/uploads/2016/02/geologia-do-continente.pdf / (accessed on 6 March 2026).
Fraga L.M., Cordani U., Dreher A.M., Sato K., Reis N.J., Nadeau S., De Roever E., Kroonenberg S., Maurer V.C. 2024. Early Orosirian belts of the central Guiana Shield, northern Amazonian Craton: U-Pb geochronology and tectonic implications. Precambrian Research, 407, 107362. https://doi.org/10.1016/j.precamres.2024.107362
Fragoso-César A.R.S. 1991. Tectônica de placas no ciclo brasiliano: as orogenias dos cinturões Dom Feliciano e Ribeira no Rio Grande do Sul. PhD Thesis, Universidade de São Paulo, São Paulo, 367 p. https://doi.org/10.11606/T.44.1991.tde-23042013-162133
Geraldes M.C., Van Schmus W.R., Condie K.C., Bell S., Teixeira W., Babinski M. 2001. Proterozoic geologic evolution of the SW part of the Amazonian Craton in Mato Grosso State, Brazil. Precambrian Research 111(1-4), 91-108. https://doi.org/10.1016/S0301-9268(01)00158-9
Gorayeb P.S.S., Paiva H.P.S., Lafon J.M., Rosa-Costa L.T., Dantas E.L. 2021. Petrology and crustal evolution of the Tartarugal Grande Granulitic Complex - Northeastern Amazonian Craton. Journal of South American Earth Sciences, 112, 103549. https://doi.org/10.1016/j.jsames.2021.103549
Guimarães I.P., Silva Filho A.F., Almeida C.N., Van Schmus W.R., Araújo J.M.M., Melo S.C., Melo E.B. 2004. Brasiliano (Pan-African) granitic magmatism in the Pajeú-Paraíba belt, Northeast Brazil: an isotopic and geochronological approach. Precambrian Research, 135(1-2), 23-53. https://doi.org/10.1016/j.precamres.2004.07.004
Hartmann L.A., Liu D., Wang Y., Massonne H.J., Santos J.O. 2008. Protolith age of Santa Maria Chico granulites dated on zircons from an associated amphibolite-facies granodiorite in southernmost Brazil. Anais da Academia Brasileira de Ciências, 80(3), 543-551. https://doi.org/10.1590/S0001-37652008000300014
Hasui Y., Carneiro C.D.R., Coimbra A.M. 1975. The Ribeira folded belt. Revista Brasileira de Geociências, 5(4), 257-266. Available online

at: https://ppegeo.igc.usp.br/portal/index.php/rbg/the-ribeira-folded-belt/ / (accessed on 9 March 2026).

Hasui Y., Haralyi N.L.E., Schobbenhaus C. 1984. Elementos geofísicos e geológicos da região amazônica: subsídios para o modelo geotectônico. In: Symposium Amazônico, 2, 129-148.

Heilbron M., Cordani U.G., Alkmim F.F., Reis H.L.S. 2017. Tectonic genealogy of a miniature continent. In: Heilbron M., Cordani U., Alkmim F. (eds.). The São Francisco Craton and its margins: tectonic genealogy of a miniature continent. Regional Geological Reviews, Switzerland, Springer. 17, p. 321-331. https://doi.org/10.1007/978-3-319-01715-0_17

Hodel F., Trindade R.I.F., Macouin M., Meira V.T., Dantas E.L., Paixão M.A.P., Rospabé M., Castro M.P., Queiroga G.N., Alkmim A.R., Lana C.C. 2019. Neoproterozoic hyper-extended margin associated with Rodinia's demise and Gondwana's build-up: The Araguaia belt, central Brazil. Gondwana Research, 66, 43-62. https://doi.org/10.1016/j.gr.2018.08.010

Horn B.L.D., Oliveira A.A., Simões M.S., Besser M.L., Araújo L.L. 2022. Mapa geológico da Bacia do Paraná, Escala 1:1.000.000. Porto Alegre, SGB-CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/23037 / (accessed on 12 February 2026).

Instituto Brasileiro de Geografia e Estatística (IBGE). 2006. Manual técnico de uso da terra. 2. ed. Manuais Técnicos em Geociências, 7, Rio de Janeiro, IBGE, 91 p.

Jardim de Sá E. 1994. A faixa Seridó (província Borborema, NE do Brasil) e seu significado geodinâmico na cadeia brasiliana/pan-africana. PhD Thesis, Instituto de Geociências, Universidade de Brasília, Brasília, 804 p.

Jorge João X.S., Vale A.G., Lobato T.A.M. 1987. Altamira: folha SA.22-Y-D, estado do Pará. Programa Levantamentos Geológicos Básicos do Brasil (PLGB), Brasília, DNPM, 31 p. Available online at: https://rigeo.sgb.gov.br/handle/doc/2973 / (accessed on 9 March 2026).

Klein E. 2014. Metalogênese do Cráton São Luís e do Cinturão Gurupi. In. Silva M.G., Rocha Neto M.B., Jost H., Kuyumjian R.M. Metalogênese das províncias tectônicas brasileiras. Belo Horizonte, CPRM, 589 p. https://doi.org/10.13140/2.1.1117.3446

Klein E., Moura C.A.V., Krymsky R., Griffin W.L. 2005. The Gurupi belt in northern Brazil: lithostratigraphy, geochronology, and geodynamic evolution. Precambrian Research, 141(3-4), 83-105. https://doi.org/10.1016/j.precamres.2005.08.003

Klein E.L., Lopes E.C.S. 2011. Geologia e recursos minerais da folha Centro Novo do Maranhão – SA.23-Y-B-I, estados do Maranhão e Pará, Escala 1:100.000. Belém, CPRM, 131 p. Available online at: https://rigeo.sgb.gov.br/handle/doc/11429 / (accessed on 9 March 2026).

Klein E.L., Rodrigues J.B., Lopes E.C., Oliveira R.G., Souza-Gaia S.M., Oliveira L.B.T. 2020. Age, provenance and tectonic setting of metasedimentary sequences of the Gurupi Belt and São Luís cratonic fragment, northern Brazil: broadening the understanding of the Proterozoic-Early Cambrian tectonic evolution. Precambrian Research, 351, 105950. https://doi.org/10.1016/j.precamres.2020.105950

Lacerda Filho J.V., Abreu Filho W., Valente C., Albuquerque M.C., Lopes R.C., Rizzotto G.J., Jesus J.D.A., Quadros M.L.E.S., Oliveira C.C., Abram M.B., Moreton L.C., Borges F.R., Souza N.B., Rubert R.R., Silva J.A. 2004. Mapa geológico do estado do Mato Grosso, Escala 1:1.000.000. Goiânia, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/4871 / (accessed on 11 February 2026).

Lacerda Filho J.V., Oliveira C.C., Valente C., Lopes R.C., Moreton L.C., Martins E.G., Larizzatti J.H., Lima T.M., Monteiro M.A.S., Brito M.A., Godoy W.P.K., Oliveira E.S. 2006. Mapa geológico do estado de Mato Grosso do Sul, Escala: 1:1.000.000. Goiânia, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/10217 / (accessed on 11 February 2026).

Litherland M., Annells R.N., Appleton J.D., Berrange J.P., Bloomfield K., Burton C.C.J., Darbyshire D.P.F., Fletcher C.J.N., Hawkins M.P., Klinck B.A., Llands A., Mitchell W.I., O'Connor E.A., Pitfield P.E.J., Power G., Weeb B.C. 1986. The Geology and mineral resources of the Bolivian Precambrian shield. Overseas Memoir 9, London, British Geological Survet, 153 p.

Macambira M.J.B., Silva D.C.C., Vasquez M.L., Barros C.E.M. 2004. Investigação do limite Arqueano-Paleoproterozóico ao norte da Província de Carajás, Amazônia Oriental. In: Congresso Brasileiro de Geologia, 42, 1170. Available online at: http://www.sbgeo.org.br/home/pages/44#Anais / (accessed on 9 March 2026).

Matos R.M.D. 1992. The Northeast Brazilian rift system. Tectonics, 11(4), 766-791. https://doi.org/10.1029/91TC03092

Matos R.M.D., Krueger A., Norton I., Casey K. 2021. The fundamental role of the Borborema and Benin–Nigeria provinces of NE Brazil and NW Africa during the development of the South Atlantic Cretaceous Rift system. Marine and Petroleum Geology, 127, 104872. https://doi.org/10.1016/j.marpetgeo.2020.104872

Medeiros V.C., Quadros M.L.E.S, Santos F.G., Santo E.B.S.E., Moreira G., Silva M.A., Barros T.S.C. 2025b. Mapa geológico do Brasil: escala 1:2.500.000/1:5.000.000. Salvador, SGB-CPRM, 32 p. Available online at: https://rigeo.sgb.gov.br/handle/doc/25704 / (accessed on 9 March 2026).

Medeiros V.C., Santos F.G., Quadros M.L.E.S., Santo E.B.S.E., Silva M.A., Moreira G., Santana J.S., Domingos N.R.R., Barros T.S.C., Santos P.A., Almeida M.E., Wanderley A.A. 2025a. Mapa geológico do Brasil, escala 1:5.000.000. Salvador, SGB-CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/25601 / (accessed on 9 March 2026).

Milani E.D., Rangel H.D., Bueno G.V., Stica J.M., Winter W.R., Caixeta J.M., Pessoa Neto O.C. 2007. Bacias sedimentares brasileiras - cartas estratigráficas. Boletim de Geociências da Petrobras, 15(2), 183-205. Available online at: https://bgp.petrobras.com.br/bgp/article/view/303 / (accessed on 9 March 2026).

Milhomem Neto J.M., Lafon J.M. 2019. Zircon U-Pb and Lu-Hf isotope constraints on Archean crustal evolution in Southeastern Guyana Shield. Geoscience Frontiers, 10(4), 1477-1506. https://doi.org/10.1016/j.gsf.2018.09.012

Mohriak U.W. 2003. Bacias sedimentares da margem continental brasileira. In: Bizzi L.A., Schobbenhaus C., Vidotti R.M., Gonçalves J.H. Geologia, tectônica e recursos minerais do Brasil: texto, mapas e SIG. Brasília, CPRM. p. 87-165. Available online at: https://rigeo.sgb.gov.br/handle/doc/5006 / (accessed on 9 March 2026).

Moreton L.C., Lacerda Filho J.V., Borges A.J., Frasca A.A.S., Melo L.C., Bispo P.S., Dias N. 2008. Mapa geológico do estado de Goiás e Distrito Federal, Escala 1:500.000. Programa Geologia do Brasil (PGB), Programa Geologia e Mineração do Estado de Goiás, Goiânia, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/10512 / (accessed on 11 February 2026).

Nascimento M.A.L., Medeiros V.C., Galindo A.C. 2015. Ediacaran to Cambrian magmatic suites in the Rio Grande do Norte domain, extreme Northeastern Borborema Province (NE of Brazil): Current knowledge. Journal of South American Earth Sciences, 58, 281-299. https://doi.org/10.1016/j.jsames.2014.09.008

Oliveira C.E.S., Silva D.R.V. 2023. Mapa geológico e de recursos minerais do estado de Rondônia, Escala 1:500.000. Ação Levantamentos Geológicos e Integração Geológica Regional, Porto Velho, SGB-CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/24291 / (accessed on 11 February 2026).

Oliveira C.M.M. 1994. Estilos estruturais e evolução tectônica da bacia do Acre. 1994. MSc Dissertation, Universidade Federal de Ouro Preto, Ouro Preto, 206 p. Available online at: http://www.repositorio.ufop.br/handle/123456789/6989 / (accessed on 9 March 2026).

Oriolo S., Oyhantçabal P., Hueck M., Basei M.A.S., Siegesmund S. 2019. Kinematic evolution of transpressional orogens and its relation to Gondwana assembly: insights from the Dom Feliciano Belt. Precambrian Research, 320, 248–263.

Oyhantçabal P., Siegesmund S., Wemmer K. 2011. The Río de la Plata Craton: a review of units, boundaries, ages and isotopic signature. International Journal of Earth Sciences, 100, 201-220. https://doi.org/10.1007/s00531-010-0580-8

Pessoa Neto O.C., Soares U.M., Silva J.G.F., Roesner E.H., Florencio C.P., Souza C.A.V. 2007. Bacia Potiguar. Boletim de Geociências da Petrobras, 15(2), 357-369. Available online at: https://bgp.petrobras.com.br/bgp/article/view/326 / (accessed on 10 March 2026).

Philipp R.P., Pimentel M.M., Chemale Jr. F. 2016. Tectonic evolution of the Dom Feliciano Belt in Southern Brazil: Geological relationships and U-Pb geochronology. Brazilian Journal of Geology, 46, 83-104. https://doi.org/10.1590/2317-4889201620150016

Pinéo T.R.C., Costa F.G., Basto C.F., Rodrigues J.B, Medeiros V.C., Palheta E.S.M., Calado B.O., Cacalcante R., Mesquita R.B., Santos F.G., Brasilino R.G., Dantas A.R., Morais D.M.F., Santana J.S. 2023. New zircon U-Pb dating and review of geological and geochronological data with implications for lithostratigraphy and crustal evolution of North Borborema Province, northeastern Brazil. Journal of the Geological Survey of Brazil, 6(1), 23-41. https://doi.org/10.29396/jgsb.2023.v6.n1.3

Quadros M.L.E.S., Giustina M.E.S.D., Rodrigues J.B.R., Souza V.S. 2021.

Geology and LAICP-MS U-Pb geochronology of the Nova Brasilândia belt, Southwest Amazonian Craton: new ages, re-evaluation of existing geochronological data and implications for the evolution of the Sunsás orogen. Journal of South American Earth Sciences, 109, 103220. https://doi.org/10.1016/j.jsames.2021.103220

Quadros M.L.E.S., Giustina M.E.S.D., Souza V.S., Scandolara J.E. 2020. Geology, geochemistry and Sr-Nd isotopes of the Rio Branco suite, Nova Brasilândia belt in southwest of the Amazon Craton: evidence of a Rodinia pre-assembly accretionary phase (ca. 1137 and 1106 Ma) during the evolution of the Nova Brasilândia orogeny. Lithos, 372–373, 105651. https://doi.org/10.1016/j.lithos.2020.105651

Quadros M.L.E.S., Rizzotto G.J. (orgs.). 2007. Geologia e recursos minerais do estado de Rondônia: texto explicativo do mapa geológico e de recursos minerais do estado de Rondônia. Porto Velho, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/10277 / (accessed on 10 March 2026).

Ribeiro P.S.E., Frasca A.A.S., Carneiro J.S.M., Hattingh K., Rezende E.S., Martins F.R. 2022. Mapa geológico e de recursos minerais do estado do Tocantins, Escala 1:500.000. Goiânia, SGB-CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/22530 / (accessed on 11 February 2026).

Rizzotto G.J., Hartmann L.A., Santos J.O.S., Mcnaughton N.J. 2014. Tectonic evolution of the southern margin of the Amazonian craton in the late Mesoproterozoic based on field relationships and zircon U-Pb geochronology. Anais da Academia Brasileira de Ciências, 86(1), 57–84. https://doi.org/10.1590/0001-37652014104212

Rizzotto G.J., Santos J.O.S., Hartmann L.A., Tohver E., Pimentel M.M., Mcnaughton N.J. 2013. The Mesoproterozoic Guaporé suture in the SW Amazonian craton: geotectonic implications based on field geology, zircon geochronology and Nd-Sr isotopic geochemistry. Journal of South American Earth Sciences, 48, 271-295. https://doi.org/10.1016/j.jsames.2013.10.001

Rosa-Costa L.T., Chaves C.L., Klein E.L. 2014. Geologia e recursos minerais da Folha Rio Araguari NA.22-Y-B, estado do Amapá, escala 1:250.000. Programa Geologia do Brasil, Belém, CPRM, 159 p. Available online at: https://rigeo.sgb.gov.br/handle/doc/20623 / (accessed on 10 March 2026).

Rosa-Costa L.T., Lafon J.M., Delor C. 2006. Zircon geochronology and Sm-Nd isotopic study: further constraints for the Archean and Paleoproterozoic geodynamical evolution of the southeastern Guiana Shield, north of Amazonian Craton, Brazil. Gondwana Research, 10(3-4), 277-300. https://doi.org/10.1016/j.gr.2006.02.012

Ruiz A.S. 2005. Evolução geológica do sudoeste do Cráton Amazônico, região limítrofe Brasil-Bolívia, Mato Grosso. PhD Thesis, Universidade Estadual Paulista, Rio Claro, 260 f. Available online at: http://hdl.handle.net/11449/103015 / (accessed on 10 March 2026).

Santana J.S., Santos R.A., Cruz Filho B.E., Santos F.G., Bastos C.F., Vale J.A.R., Medeiros V.C., Pinéo T.R.G, Morais D.M.F. 2024. Pernambuco-Alagoas, Riacho do Pontal, and Sergipano domains of the Borborema Province, Northeastern Brazil: a geological and geochronological synthesis. Journal of the Geological Survey of Brazil, 7(3), 237-261. https://doi.org/10.29396/jgsb.2024.v7.n3.1

Santos F.G., Basto C.F., Lima F.J.C., Brasilino R.G., Medeiros V.C., Morais D.M.F., Pinéo T.R.C., Santana J.S. 2023. The Zona Transversal Domain of the Borborema Province, northeastern Brazil: Synthesis of the Archean to Cambrian evolution, and new tectonostratigraphic interpretation. Journal of the Geological Survey of Brazil, 6(1), 67-89. https://doi.org/10.29396/jgsb.2023.v6.n1.4

Santos J.OS. 2003. Geotectônica do Escudo das Guianas e Brasil-Central. In: Bizzi L.A., Schobbenhaus C., Vidotti R.M., Gonçalves J.H. Geologia, tectônica e recursos minerais do Brasil: texto, mapas e SIG. Brasília, CPRM. p. 169-226. Available online at: https://rigeo.sgb.gov.br/handle/doc/5006 / (accessed on 10 March 2026).

Santos M.V., Souza Filho E.E., Tassinari C.C.G., Teixeira W., Ribeiro A.C.O., Payolla B.L, Vasconi A.V. 1988. Litoestratigrafia das rochas pré-cambrianas na bacia do médio Rio Xingu - Altamira-PA. In: Congresso Latino-Americano de Geologia, 7, 363-377. Available online at: http://www.sbgeo.org.br/home/pages/44#Anais / (accessed on 10 March 2026).

Scandolara J.E. 2006. Geologia e evolução do terreno Jamari, embasamento da faixa Sunsás/Aguapeí, centro-leste de Rondônia, sudoeste do cráton Amazônico. PhD Thesis, Instituto de Geociências, Universidade de Brasília, Brasília, 383 p. Available online at: https://rigeo.sgb.gov.br/handle/doc/169 / (accessed on 10 March 2026).

Scandolara J.E., Fuck R.A., Dall'Agnol R., Dantas E.L. 2013a. Geochemistry and origin of the early Mesoproterozoic mangerite–charnockite–rapakivi granite association of the Serra da Providência suite and associated gabbros, central–eastern Rondônia, SW Amazonian Craton, Brazil. Journal of South American Earth Sciences, 45, 166-193. https://doi.org/10.1016/j.jsames.2013.03.003

Scandolara J.E., Fuck R.A., Dantas E.L., Souza V.S. 2013b. Geochemistry of Jamari complex, central-eastern Rondônia: Andean-type magmatic arc and Paleoproterozoic crustal growth of the southwestern Amazonian Craton, Brazil. Journal of South American Earth Sciences, 46, 35-62. https://doi.org/10.1016/j.jsames.2013.04.002

Scandolara J.E., Saboia A.M., Fuck R.A., Corrêa R.T., Rodrigues J.B., Alves C.L. 2024. Insights into the late Archean evolution of the Carajás Province: Geochemical and geochronological constraints from the Santana do Araguaia complex, Amazonian craton, Brazil. Journal of South American Earth Sciences, 143, 104978. https://doi.org/10.1016/j.jsames.2024.104978

Schobbenhaus Filho C. 2001. Mapa geológico do Brasil, Escala 1:5.000.000. Programa Levantamentos Geológicos Básicos do Brasil (PLGB), Belo Horizonte, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/8627 / (accessed on 10 March 2026).

Silva A.J.P., Lopes R.C., Vasconcelos A.M., Bahia R.B.C. 2003. Bacias sedimentares Paleozóicas e Meso-Cenozóicas interiores. In: Bizzi L.A., Schobbenhaus C., Vidotti R.M., Gonçalves J.H. Geologia, tectônica e recursos minerais do Brasil: texto, mapas e SIG. Brasília, CPRM. p. 55-85. Available online at: https://rigeo.sgb.gov.br/handle/doc/5006 / (accessed on 10 March 2026).

Silva J.G.F., Córdoba V.C., Caldas L.H.O. 2014. Proposta de novas unidades litoestratigráficas para o Devoniano da Bacia do Rio do Peixe, Nordeste do Brasil. Brazilian Journal of Geology, 44(4), 561-578. https://doi.org/10.5327/Z23174889201400040004

Silva M.A., Medeiros V.C., Moreira G., Santo E.B.S.E., Santos F.G., Barros T.S.C., Quadros M.L.E.S., Domingos N.R.R., Santos P.A., Almeida M.E., Wanderley A.A. 2025. Mapa geológico da região sudeste do Brasil, Escala 1:2.500.000. Salvador, SGB-CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/25624 / (accessed on 11 February 2026).

Silva M.A., Pinto C.P., Pinheiro M.A.P., Marinho M.S., Lombello J.C., Pinho J.M.P., Goulart L.E.A., Magalhães J.R. 2020. Mapa geológico do estado de Minas Gerais, Escala 1:1.000.000. Belo Horizonte, CPRM. Available online at: https://rigeo.sgb.gov.br/handle/doc/21828 / (accessed on 12 February 2026).

Silva M.F., Dantas E.L., Vidotti R.M. 2021. Shortening history of the Neoproterozoic oroclinal bending in Paraguay belt, Central Brazil, based on structural interpretation of field work and high resolution aerogeophysical data. Journal of South American Earth Sciences, 107, 103043. https://doi.org/10.1016/j.jsames.2020.103043

Souza Z.S., Martin H., Peucat J-J., Jardim de Sá E.F., Macedo M.H.F. 2007. Calc-alkaline magmatism at the archean e proterozoic transition: the Caicó complex basement (NE Brazil). Journal of Petrology, 48(11), 2149-2185. https://doi.org/10.1093/petrology/egm055

Szatmari P., Milani E.J., Lana M.C., Conceição J.C.J., Lobo A.P. 1984. How South Atlantic rifting affects brazilian oil reserves distribution. Oil&Gas Journal, 83, 107-113.

Tassinari C.C.G., Macambira M.J.B. 1999. Geochronological provinces of the Amazonian Craton. Episodes, 22(3), 174-182. https://doi.org/10.18814/epiiugs/1999/v22i3/004

Teixeira W., Tassinari C.C.G., Cordani U.G., Kawashita K. 1989. A review of the geochronology of the Amazonian Craton: tectonic implications. Precambrian Research, 42(3-4), 213-227. https://doi.org/10.1016/0301-9268(89)90012-0

Van Schmus W.R., Brito Neves B.B., Hackspacher P.C., Babinsky M. 1995. U/Pb and Sm/Nd geochronologic studies of the eastern Borborema Province, NE Brazil: initial conclusions. Journal of South American Earth Sciences, 8(3-4), 267-288. https://doi.org/10.1016/0895-9811(95)00013-6

Vargas-Mattos G.L. 2006. Geocronologia U/Pb en granitos post y sin-tectónicos de la Orogenia Sunsás en el Cratón Amazonico de Bolivia. Msc. Dissertation, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, 107 p.

Vasquez M.L. 2006. Geocronologia em zircão, monazita e granada e isótopos de Nd das associações litológicas da porção oeste do Domínio Bacajá: evolução crustal da porção meridional da província Maroni-Itacaiúnas, sudeste do Cráton Amazônico. PhD Thesis, Universidade Federal do Pará, Belém, 212 p. Available online at: https://repositorio.ufpa.br/handle/2011/8285 / (accessed on 10 March 2026).

Vasquez M.L., Klein E.L., Ricci P. 2002. Granitóides pós-colisionais da porção leste da Província Tapajós. In: Klein E.L., Vasquez M.L., Rosa-Costa L.T. (eds.). Contribuições à geologia da Amazônia. Belém, SBG. 3, p. 67-84. Available online at: https://sbg-no.org.br/arquivos/BASES/CGA%203.pdf / (accessed on 10 March 2026).

Vasquez M.L., Rosa-Costa L.T.R. 2008. Geologia e recursos minerais do Pará: texto explicativo dos mapas geológico, tectônico e de recursos minerais do estado do Pará. Belém, CPRM, 328 p. Available online at: https://rigeo.sgb.gov.br/handle/doc/10443 / (accessed on 10 March 2026).

Vauchez A., Neves S., Caby R., Corsini M., Egydio-Silva M., Arthaud M., Amaro V. 1995. The Borborema shear zone system, NE Brazil. Journal of South American Earth Sciences, 8(3-4), 247-266. https://doi.org/10.1016/0895-9811(95)00012-5