

THEMATIC MAP ON GRANITOGENESIS OF BAHIA VITÓRIA DA CONQUISTA SHEET, 1/250,000

¹ Pierre Sabaté, ² Luiz César Corrêa Gomes, ² José Angelo S. Araújo dos Anjos, ² Juracy de Freitas Mascarenhas

¹ ORSTOM, France and IG-UFBA Salvador (SGM-SME/UFBA Convention)

² SGM – SME – Bahia

The VITÓRIA DA CONQUISTA sheet (SD-24-4-A) chosen for the first 1/250.000 thematic map on granitogenesis in Bahia state is concluded. It constitutes a pilot document in the attempt to produce a cartographic synthesis of the Precambrian Granites and migmatites of the São Francisco Craton. It follows the publication of the metamorphic map of the same sheet (Sampaio, 1985).

The document unites the data of the Bahia (1976), Contendas-Mirante (1979), Umburanas (1980), Brumado-Caetitê (1980), Anagé-Caldeirão (1980), Aracatu (1981) projects, that represents about 10.000 file sheets of outcrop descriptions and 15.000 petrographic descriptions. It is supported by specific studies, undertaken by the granite studies group of the UFBA in the Contendas-Mirante region while ground checks and control were complemented by works including new observations by the authors.

MAP'S CONCEPTIONS

On this theme, few published maps have yet been produced. Among the best known, we cite the Nigeria Younger Granites sheet (Bowden *et al.*, 1978); the Aïr sheet (Black *et al.*, 1967); the Kerguelen Islands sheet (Giret, 1980) and, more recently, the cartographic synthesis of Peru Andean magmatism (Pitcher *et al.*, 1985). They refer to recent plutonic objects, geometrically well individualized, undeformed and with the well-characterized petrography of the alkaline ring complexes or of the calc-alkaline intrusive suites in supracrustal terrains. The originality of the Vitória da Conquista sheet lies in the complex association of deep metamorphic terrains, generally polycyclic, Archaean and Proterozoic, having old plutonic terms, transformed and deformed and including anatectic terms related to deforma-

tions. It became necessary to avoid dissociating the plutonism and the anatexis from the lithologic context and the structural evolution and consequently, to conceive a cartographic representation allowing an analysis in this way.

1 – Lithologic background

In the medium to high grade metamorphic assemblages an attempt was made to define the origin of the foliated formations emphasizing:

– the para – derived character, indicated when the existence of characteristic elements (monotonous packets with alternating clearly sedimentary layers, grain-classified minisequences, fine recrystallized microtextures, typical aluminous mineralogical associations, etc.) permitted this.

– the ortho-derived character is indicated by the presence of metavolcanics on metaplutonites recognizable in the field or identified by the rock's microtextural character.

In numerous cases, a decision cannot be made, either we are in the presence of finely alternating volcanic and sedimentary suites or of vulcano-sedimentary terms inferred to be such by the convergence of facies recognized in other areas, or when none of the observation criteria allow such a discrimination. Such terrains have been distinguished by a single simbology which groups the genetic lithotypes as mixed or undetermined.

A sketch of the cartographic distribution has been outlined "back-drop", in all the areas where the anatexis has not become sufficiently strong to mask the metamorphic traces.

2 – Structural weave

Apart from the limits between the great lithostructural units, the trajectories of the principal foliation, measured in the field and interpolated in aerophotos have been drawn.

This foliation corresponds essentially to the superposition of

S_0 and S_1 . In some areas a posterior foliation S_2 can transpose $S_0 + S_1$ and became the main one in the scale of outcrop. In every case where field control has been possible, this posterior foliation has been distinguished on the map.

Within the migmatitic terms of the diatexite type and within the granitic bodies, the foliated structures corresponding respectively to the deformation and the magmatic fabrics are traced.

Faults and shears complete the structural framework and movement direction indicators were taken into account for the interpolation of the traced limits.

3 – Migmatites

The use of the Mehnert classification to define migmatites was discarded because of its essentially descriptive character, that does not take the structures into consideration and because of the non-cartographic character of each migmatitic type. It has been substituted by quantitative idea of the migmatization which can be expressed in two ways:

a) By the degree of homogenization or anatexis:

It represents the proportion of autochthonous, mobilizes (or, much rigorously speaking, paraautochthonous) in gneissic rocks. The limits of 20, 40, and 60% have been chosen to follow the distribution of partial "in situ" fusion gradation (Anatexis Migmatites).

b) By the proportion and the kind of allochthonous mobilizes (Migmatites *Sensu stricto*):

(1) concordant or subconcordant with the foliation, as veins or lamellas of variable importance, they situate the syn-tectonic anatectic or magmatic related activity in relation to the deformations;

(2) cross-cutting, clearly subordinated, late to post-tectonic, generally controlled by the last movements in the ductile to rigid regime, conditioned by tension fractures or gashes.

The small dimensions of these mobilizes force the adoption of a symbolic representation, in conformity with the structural features for the concordant ones and according to its principal direction for the discordant ones. The relative proportion of mobilizes relative to host rocks is respected in the symbolic graphic representation.

The textural nature, aplitic, haplogranitic or pegmatitic is also indicated. It supplies an approximate control of the fluids regime in relation to anatectic melts in the different areas. It allows an estimate of the level corresponding to the critical passage between the saturated fluid terms and the degassed terms.

4 – Typology

a) In the migmatitic areas, the only typologic indicator retained was the superposition of a color, the intensity of which is representative of the anatexis degree;

b) For the anatectic terms whose degree of homogenization is > 60% (diatexites) the color used corresponds to the quantitative mineralogical composition in the same way as used

for the plutonic bodies.

c) For the plutonic bodies, the nomenclature is based on the IUGS recommended classification (Strecheisen, 1976) but the colour gradations used take into account the notion of plutonic suites (Lameyre and Bowden 1982) or the crustal character of leucogranites (Didier *et al.*, 1982).

5 – Chronology

In the light of radiometric data (Mascarenhas *et al.*, 1984; Cordani *et al.*, 1985) and of the structural control, the tectonic complexes which belong, or which are attributed, to the orogenic cycles: Archaean (Guriense and Jequié): 3.3 G.a. and 2.7 G.a. respectively; Transamazônico 2.0 G.a.; Espinhaço 1.2 G.a. and Brasileiro: 0.7 G.a. have been distinguished.

A specific color for each cycle has been used on the structural symbology overprinted on the color representative of the typology.

6 – Other data

Informations relative to petrography, eventual deuteritic transformations and associated metallogenesis, are indicated with an alphanumeric symbology.

MAIN MAP OUTLINES

The following structural units are featured:

– Cenozoic cover

– Cover of Espinhaço age without plutonic relationship

– Supracrustal terrains deposited on deformed during the Transamazônico (Contendas-Mirante, Guajerú-Bate Pé, etc) are represented only with their specific structures and their particular granitogenesis, without distinction of the lithologies of the epimetamorphic sequences.

– Basement: the two blocks, Gavião and Jequié are distinguished. The Gavião block includes gneissic and migmatitic features and involves numerous granodioritic orthogneiss massifs or bodies.

It is cut by intrusions after the tectono-metamorphic events of the lower Proterozoic.

The Jequié block groups together lithotypes, including granitoids, which were affected by a granulitic metamorphism. It constitutes a separated entity that is object of detailed research (Barbosa 1986, unpublished; Marinho, in preparation).

The interface of these two blocks corresponds with the mechanic "mise en place" of mantle domes and imbricated slices of the Gavião block associated with a magmatic activity, synchronous to the "mise en place".

Tectonic traces and plutonic associations can be used as a support to discuss the dynamic evolution (Sabaté and Marinho, in preparation).