

Geochemical modelling of magmatic evolution processes: the case of the rocks of Prainha – Grumari region, southwest of Rio de Janeiro county

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Prainha-Grumari region is located in the southwest portion of Rio de Janeiro county. It comprises a great variety of granitic and gneissic rocks which display distinctive structures. Models such as magma mixing and partial melting are in dispute in order to explain the observed lithological and structural relations.

Statistical analysis of available geochemical data indicates that polynomial correlations are more significant than linear ones, favouring processes such as fractional crystallization and partial melting.

Geochemical modelling, based on the content and behaviour of the Rare Earth Elements, was also carried out in order to test the hypotheses of magma mixing and bulk assimilation. Obtained results corroborate neither hypothesis, since the produced hybrid models do not correspond to any lithotype identified in the region.

The presented approach supports the partial melting model which is considered as the most adequate to explain the magmatic evolution of the granitic rocks of the study area.