PRECISE ZIRCON U-Pb (TIMS) DATING OF DIORITIC ROCKS AND IMPLICATIONS FOR THE AGE OF THE GRACIOSA PROVINCE OF A-TYPE GRANITES AND SYENITES, SOUTHERN BRAZIL

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The Neoproterozoic Graciosa Province of A-type granites and syenites (S-SE Brazil) comprises a large number of plutons with subcircular to irregular map outlines along the SSW-NNE direction, emplaced at shallow crustal levels, and related bimodal volcanic rocks. The plutons intruded Archaean and Neoproterozoic rocks of the Luis Alves and Curitiba microplates during the waning stages of the Brazilian-Pan-African Cycle, in an inferred post-collisional environment. Two contrasting petrographic associations can be recognized: an *alkaline association* composed by metaluminous to peralkaline alkali-feldspar syenites and granites and an *aluminous association* made of metaluminous to weakly peraluminous ("subalkaline") sieno- and monzogranites. Coeval dioritic rocks are relatively rare within the province.

There is a great number of dating results concerning emplacement, crystallization and/or cooling ages for several plutonic and volcanic occurrences within the province, obtained by different isotopic methods. However, data analysis show that most of them are subject to large deviations and the available results cover a large age interval, between 565 and 605 Ma, with some concentration between 575 and 590 Ma. Granites were the most common selected samples for dating and probably a significant part of the results reflects late- to post-magmatic phenomena affecting minerals and rocks. Taking into account that any good geodynamic model must be based on precise isotopic data and in order to avoid those problems we select the coeval dioritic rather than granitic or syenitic rocks for zircon U/Pb (TIMS) dating.

Two samples of coarse- to medium-grained biotite-hornblende quartz monzodiorites were selected. The first one comes from the Corupá Pluton (SC), the southernmost occurrence in the province, while the second comes from the Serra da Graciosa (PR) region, located in the northeast. In both occurrences the dioritic rocks are closely associated with rocks from the *alkaline association* and field relations suggest mingling and local mixing between basic and intermediate-acid magmas. We had success to obtain at least one concordant zircon fraction in each sample. Taking a 95 % confidence level, the first sample gives 583 ± 3 Ma (MSWD = 0.01, Prob. = 0.92) and the second 580 ± 3 Ma (MSWD = 0.50, Prob. 0.50), λ errors included in both cases.

These two results may be considered identical within the quoted errors. Taking them as a guide and considering also some similar data from the literature we suggest that the interval between 580 and 583 Ma should be taken as the best reference age for the Graciosa Province as a whole.