



PROVENANCE OF THE MARICÁ FORMATION, CAMAQUÃ BASIN, SOUTHERN BRASIL. BASED ON U-Pb DATA OF SANDSTONE AND CLASTS

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The Maricá Formation is the basal unit of the Camaquã Basin and comprises mainly fluvial deposits and shallow marine beds. Provenance studies of the Maricá Formation are crucial to understanding the initial development of the Camaquã Basin. Thus, this study aims to provide new LA-ICP-MS U-Pb data from one sandstone (MA-3) sample and two clasts (MC-1, MC-4) collected in the Cerro Formoso, Lavras do Sul town and one clast (MC-2-4) in the Cerro do Perau, Caçapava do Sul town. The studied outcrops comprise sandstones and conglomeratic levels. The zircon grains were carefully studied using backscattered electron methods at Superscan SSX-550 SEM-EDX, Shimadzu Japan at Nanotecnologia Novonano, Universidade Federal de Pelotas. U-Pb data were obtained at Laboratório de Geoquímica Isotópica, Universidade Federal de Ouro Preto. The sample MA-3 is a brownish coarse to very coarse-grained sandstone, classified as subarkose. The grains are subrounded-to-subangular and moderately sorted. The zircon grains are 50-250 μm mostly anhedral and rounded. A total of 65 concordant ages from 78 analyzed zircon grains yields an array of ages from 599 ± 11 to 2818 ± 32 Ma. Results are mostly Paleoproterozoic (78%) with minor Neoproterozoic (11%) and Archean (11%) grains. The main age peak on the cumulative curve is 2422 Ma, with minor peaks at 621, 1749, 2040, 2212, 2506, 2642 and 2823. The Neoproterozoic grains are Cryogenian (638 Ma) and Ediacaran (628-599 Ma). The sample MC-1 is a rounded cobble reddish of metasyenogranite. The zircon crystals are 40-220 μm long, mostly are subhedral to euhedral. A Concordia age at 2166 ± 9.3 Ma was calculated based on 8 of 16 analyzed zircons. The sample MC-4 is a rounded cobble brownish of medium-grained sandstone, classified as subarkose. The grains are subrounded in general and well sorted. A total of 31 concordant ages of 42 analyzed zircon grains display an array of ages from 619 ± 11 to 3025 ± 31 Ma. The data indicate mostly Paleoproterozoic (68%), with subordinate Archean (22%), and Neoproterozoic (10%) sources. The Neoproterozoic sources are Ediacaran of 635, 625 and 619 Ma. The main peak on the cumulative curve is 624 Ma, with minor peaks at 1668, 1802, 2091, 2210, 2464, 2595 and 3032 Ma. The sample MC-2-4 is a rounded cobble pinkish of mylonitic syenogranite. The zircon grains are 80-250 μm long, mostly subhedral with magmatic zoning. A Concordia age at 2086 ± 8.9 Ma was calculated based on 7 of 16 zircon analyses. Inheritance of 2.6 Ga was recognized. The provenance data of sandstone sample (MA-3) and sandstone clast (MC-4) are similar and shows equivalent peaks. The age patterns are consistent with southwestern sources of south-southwestern of the Camaquã Basin as Santa Maria Chico Granulitic Complex (~ 2.5 Ga) and Vigia Dome gneiss and Batovi Complex (1.7 Ga). The younger sources are probably related to Ediacaran granites, that are spread along the Dom Feliciano Belt or Bagé Region. The two Concordia ages of igneous clasts reveal ages comparable of the Paleoproterozoic basement. This is the first integrated provenance study of sandstone and clasts ages and leads to a new perspective of Maricá Formation Evolution.