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Serra Geral Formation: new Lower Cretaceous Paleomagnetic Pole for Gondwana

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The basalts of Serra Geral Formation belong to one of the largest volumes of continental volcanic flows in the world. These basalts are the product of the huge volcanism that affected the Paraná Basin in the Lower Cretaceous, and they have been associated with the South America-Africa break-up. Radiometric ages (133 Ma to 130 Ma) suggest that these basalts required for their extrusion only a few millions of years. These tholeitics basalts cover part of central and southern Brazil, Paraguay and northeast Argentina.

The results of the new paleomagnetic studies carried out on 25 basalt flows on kilometer thickness outcrops in El Dorado and Bernardo de Irigoyen (26.4˚S, 54.3˚W, Argentina) are presented. Samples were analyzed using detailed thermal and alternating field (AF) demagnetization techniques. After destroying of weak viscous components, characteristic remanent magnetizations (ChRM) were obtained. The magnetic behavior from demagnetización proceedings and IRM studies suggest that the remanence is carried by low Ti magnetite. The lower flows exhibit magnetic directions with normal polarity, while that the upper flows show reverse polarity and the central ones intermediate polarities. Also Geomagnetic Virtual Poles for 25 sites were calculated. The associated paleomagnetic pole (PP) is located at 79.5˚E, 86.9˚S, (A_{95}=5.2˚, N=19,k=49), being this position consistent with previous coeval PPs obtained from Serra Geral Formation in Brazil and from basalts and red beds outcropping in Córdoba, Argentina.