Highly felsic peraluminous granitoids in the Borborema province, northeastern Brazil

V.P. FERREIRA[1], A.N. SIAL[1], M.A. PARADA[2] AND A.J. TOSELLI[3]

[1]NEG-LABISE, Dept. Geol. UFPE, Recife, Brazil (*correspondence valderez@ufpe.br)
[2] University of Chile, Santiago, Chile
[3]University of Tucuman, Tucuman, Argentina

Only few Neoproterozoic peraluminous granitoids occur in the oriental Borborema province, northeastern Brazil. Among these peraluminous granitoids are the two-mica Chã Grande (CHG), the two-mica Mamanguape (MAMA) that locally presents almandine, and the Ouro Branco (OBR) with three facies (two mica, tourmaline muscovite, and garnet muscovite) granitoids. The granitoids present A/CNK > 1.1, are silica-rich (70-76%, with narrower variation within individual pluton), have Rb/Sr >>2 and their chemistry form overlapping trends in most major oxide variation diagrams. Chondrite-normalized REE patterns are fractionated with variable negative Eu anomaly, both increasing from the CHG through OBR and MAMA. In a normative Qz-Or-Ab diagram, CHG compositions cluster about a minimum-melt composition typical of water-saturated granite system. Compositions of the other plutons form a spread suggestive of variable water activity, and distinct source compositions, with a trend from the field of orthoclase to the quartz-orthoclase cotectic for the MAMA, and a trend next to the albite-orthoclase cotectic to the minimum melt point for the OBR. Major- and trace-element compositions suggest that the OBR and MAMA granitoids formed by vapor-absent muscovite melting of felsic pelites and greywackes, respectively. The CHG granitoid was produced by vapor-saturated muscovite melting of greywackes. The granitoids present strongly negative $\varepsilon Nd_{0.6Ga}$ values (-12.8 – 16.6), and very high initial $^{87}Sr/^{86}Sr$ ratios (0.720-0.729), and Nd model ages Archean to Paleoproterozoic (3.1 to 2.3 Ga), the oldest T_{DM} already found in the Borborema province. These granitoids resemble Himalayan-type peraluminous collision-related leucogranites.

Atmospheric lead deposition in ombrotrophic peat bogs of Southern Poland

BARBARA FIAŁKIEWICZ-KOZIEŁ[1]*, NADINE MATTIELLI[2] AND NATHALIE FAGEL[3]

[1]Department of Biogeography and Paleoecology, Institute of Geoinformation and Geoecology, Adam Mickiewicz University, Poznań, Poland. (*basiafk@amu.edu.pl)
[2]Unité de recherche: "Isotopes : Pétrologie et Environnement", Département des Sciences de la Terre et de l'Environnement, CP 160/02, Université Libre de Bruxelles, Avenue FD. Roosevelt 50, 1050 Bruxelles, Belgium
[3]Department of Geology, AGEs Argiles, Géochimie et Environnements sédimentaires, Université de Liège, Allée du 6 août, B18, 4000 Liège, Belgium

The aim of this study was to differentiate anthropogenic *vs*. natural sources of lead in cores from two ombrotrophic peat bogs, located in Southern Poland. Total lead concentrations were measured by (ICP-AES) after HF-HNO_3-HCl digestion. Stable lead isotopes were measured by (MC-ICP-MS). A detailed age model was constructed using both ^{210}Pb and ^{14}C measurements.

The main results show a record of *ca*. 2000 years of variations in lead concentration and isotopic compositions. In the lowest part of the cores (IIthBC to IVth AD) the $^{206}Pb/^{207}Pb$ ratio equals 1.187. Historically it is a period of Celts and Przeworska culture. Lead isotope ratios point to possible impact of both cultures on the peat bogs. From Vth to VIth century AD, the $^{206}Pb/^{207}Pb$ ratio averages 1.192, reflecting that the Pb supplied to the bog is mainly originated from natural sources (*i.e*. erosion). Then, from the IXth to the XVIIth century AD, the $^{206}Pb/^{207}Pb$ ratio ranges from 1.176 to 1.179, which is in good agreement with Polish galena and coal from Eastern countries. A dramatic increase in lead accumulation rates during the 1920-1930's, it may reflect the higher metal demand for the armament industry, the influence of coal combustion and the latter use of leaded gasoline.