

Chemostratigraphy of Late Cretaceous Bauru Basin (SE Brazil) and implications for source-area, paleoweathering and provenance.

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Geochemical and mineralogical studies of mudstones and claystones of Bauru Basin (Late Cretaceous), located at Minas Gerais State (SE Brazil) were undertaken in order to investigate sedimentary provenance, palaeoenvironmental conditions and to test the feasibility of the chemostratigraphic method at this sedimentary setting, which is represented by aeolian, lacustrine, fluvial and alluvial deposits.

Data used in this work were acquired by X-Ray Fluorescence (XRF), Inductively Couple Plasma Mass Spectrometry (ICP-MS) and X-Ray Diffraction (XRD). The elemental distribution of major elements normalized to UCC [1] and PASS [2] values. Based on Cluster Hierarchical Analysis and Principal Components Analysis it was possible to determine the mineralogical affinities of elements [3]. Analysis of the geochemical profiles for the studied interval with variations recognized from major, trace and rare earth elements and elemental ratios led to the definition of eight chemostratigraphic units.

The analysed mineral assemblage consists of quartz, microcline, albite, dolomite, hematite and the clay minerals palygorskite, illite and montmorillonite. The occurrence of these clay minerals throughout the study area and the calculated CIA [4] values of sandstones and mudstones varying from 61,9 to 95,9 with an average of 73,5, indicates a moderate to intense level of weathering in the study area. Post-depositional enrichment in CaO is also noted. Regarding the provenance of the analyzed rocks, Discriminant Function Analysis [5], elemental concentrations and geochemical ratios point towards two different source areas: felsic rocks and sediments of mature continental provenance.

[1] Rudnick & Gao (2003). *Treatise on Geochemistry* Volume 3, 683p [2] McLennan (1989). *Rev. Mineral. Geochm.* **21**, 169-200 [3] Pearce *et al* (2005). *YGS Occ. Publ.* **7**, 165-182 [4] Nesbitt & Young (1982) *Nature*, **299**, 715-717 [5] Roser & Korsch (1988) *Chemical Geology*, **67**, 119-139