

Dating kaolinites from laterites with electron paramagnetic resonance spectroscopy

The laterites, arising from surface weathering of rocks in tropical context, cover 20% of lands and constitute a record of ancient climates. It is necessary to be able to date them to constrain the understanding of evolution of continental surface. There is no general method of laterite dating. However, some methods are relevant, like the spectrometry of electron paramagnetic resonance of kaolinite, because it concerns stable radiation-induced defects of a ubiquitous, secondary clay mineral.

Here, we will try to reveal different kaolinite generations in reference profiles, because our understanding of laterite formation and evolution (potentially under contrasting paleoclimates) largely depends on our ability to separate generations of a same secondary mineral. The selected methodology will rely on granulometric sorting and also progressive dissolution. Both structural iron (related to the degree of crystalline disorder) and radiation-induced defects (related to the age) will be measured to characterize the obtained kaolinite populations. The samples will belong to profiles from Amazonia, Brazil, that were selected in current international programs.

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