

## **The first finding of super-high concentration of REE enriched bed in carbonate rock weathering crusts**

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Although REE enriched beds occurred at certain depth in the weathering profiles of different kinds of rocks were reported previously, the REE enriched beds in the Pingba soil profile in Central Guizhou, higher than 3% and further higher than those of the most enriched bed in granite weathering ion-adsorptive type of REE deposits widely existed in South China, was the first one in carbonate rock weathering profiles reported in the literature until now and was unusual also in the weathering profiles of the other kinds of rocks. REE concentration was increased slowly with the weathering and pedogenetic progress. The maximum REE concentration occurred at 1cm thickness of soil above the boundary between the parent rock and soil was larger than 3%. If 1000ppm was considered as the lowest REE concentration limit to define REE enriched bed, the thickness of REE enriched bed varied in the range of 10 ~ 50cm and the average thickness was 30cm. Not only super-high concentration of REE enriched bed was found in the Pingba soil profile, but also in the other four dolomitite weathering soil profiles in Central Guizhou, where the maximum REE concentrations were 2.6%, 0.89%, 0.84% and 0.38% respectively. The finding of super-high concentration of REE enriched bed provides an extreme case for researches on geochemical processes which control the mobilization, transportation and precipitation of trace elements during supergene weathering and pedogenetic processes.