

## Laterite Karst

K. Grimes<sup>1</sup> & A. Spate<sup>2</sup>

1, Regolith Mapping, 2, Optimal Karst Management

*Laterite karst* refers to karst-like landforms formed in deep weathering profiles (especially laterites, but also in bauxite and silcrete profiles) by a combination of silicate solution (*parakarst*) and other processes (*pseudokarst*).

Deep weathering involves the intensive chemical weathering of the minerals in a rock over a long period of time. The minerals are converted to new forms which may be soluble, and can be removed in solution; or may be softer, such as clay minerals; or crumbly, such as residual sand grains, and can be washed out of the rock by flowing water, or removed by wind or gravity – producing cavities and other karst-like forms. Localised precipitation of the dissolved material forms duricrusts – these generate mesas and scarps (occasionally runiform), and provide a solid roof beneath which caves can form.

Laterite karst is most common in tropical regions but examples can also occur in temperate climates if deep weathering profiles exist.

Laterite karst shows a particularly strong analogy with the syngenetic karsts (in soft porous calcarenites) as both have simultaneous solution and cementation of the "rock" and show the influence of caprocks (duricrusts) on cave development.

The karst-like landforms range through all scales: Broad-scale features include fields of shallow dolines, or "pans", up to 2 km across, which may grade into dambos; together with rarer collapse dolines. Care is needed to distinguish the laterite hollows from other types formed by deflation or by subjacent karst subsidence. Meso-scale features include caves (mostly small rock shelters, but some longer tunnels and complex mazes), and fields of solution pipes and pinnacles, and irregular "epikarst" surfaces. At the smallest scale one finds centimetric tubelets and vughs, and breccias in pipes, pockets or horizontal bands.

The vuggy and conduit porosity can host significant shallow aquifers, which might exhibit problems similar to karst aquifers.