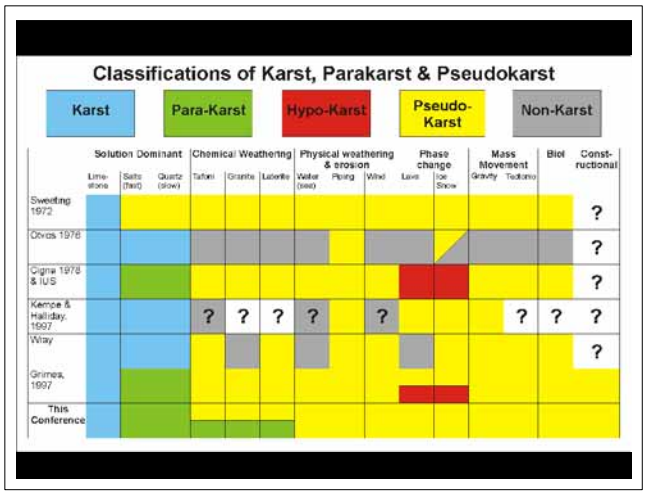
Pseudokarst - introduction



A talk to ASF conference, Chillagoe, April 2011

These are the speaker's prompt notes... but may be useful to interested people also.

Table of Terms
Showing the varied usages over time. There is still not a full consensus.

Bottom row = my suggested usage

The main Types

PARAKARST
* **SilicateKarst**
  * Laterite karst
  * Quartz Sandstone karst
  * Other rocks (eg Granite karren, "volcanokarst", ...)
  * Chemical weathering (more than just solution) = tafoni, granite, ...

PSEUDOKARST
* **Hypokarst**
  * Lava caves (and other volc cavities)
  * Glacier Caves (and ablation of snow)
  * Thermokarst
* Sea caves
* Piping
* Wind erosion
* Mass movement (& tectonic movement)
* Biogenic (Burrowing & mining)
* Constructional Caves

POLYGENETIC
* Boulder caves (solution, weathering, mass movement, piping, ...)
* Tafoni (solution, chemical weathering, wind, gravity)

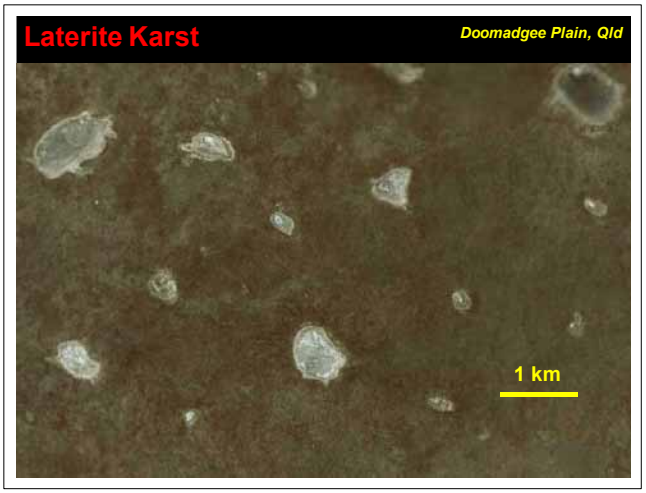
RUINIFORMTerrain
* Is NOT "karst-like".

Parakarst in Australia is mainly Silicate karsts
  * NB Distinction between Laterite K & Qtz Sstn K
    Qtz sst is nearly monomineralic (SiO_2) and so only depauperate DWPs form
  * Chemical Weathering includes a broad range of reactions & products, more than simple solution.

Pseudokarst
  NB: difficult to classify the **Polygenetic** forms (eg Granite boulders)

Parakarst
= Solution is a significant (but not necessarily dominant) process.

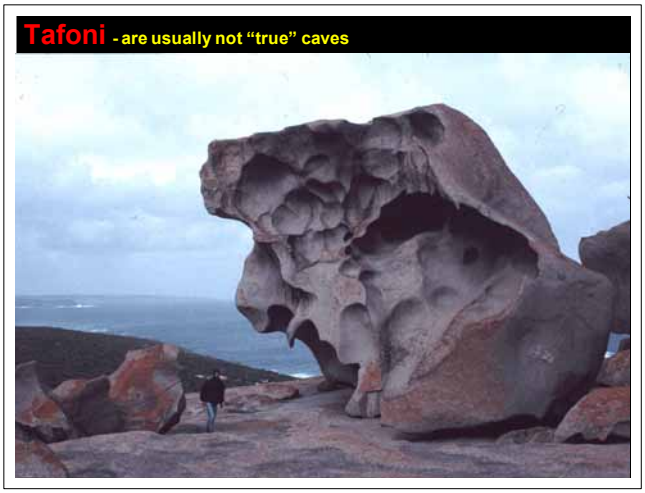
For Australia the **Surface** forms are perhaps more important than the caves ?
Q: What do we do with isolated surface features (eg a group of Pinnacles)?
Q: How much solution influence do we insist on to qualify?



Laterite karst
Deep Weathering profiles (DWP)
= solution + other weathering processes and removal of soft material.
Various features at all scales ....
Caves are under the duricrust, and are generally small shelters, but a few complex ones occur.

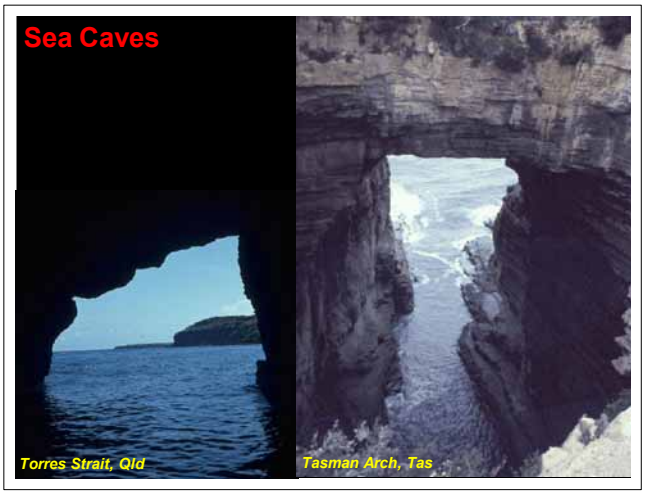
Lava Tubes
=Draining of liquid lava from beneath a solidified crust
A range of sizes and styles
Also other volcanic caves (eg open vents)

Glacier Caves
= Melting of Ice, plus sublimation.
Not in Australia, but Antarctica etc...



Tafoni:
=Weathering behind a case-hardened surface.
Almost always small "shelters" but a few "true" caves can occur.

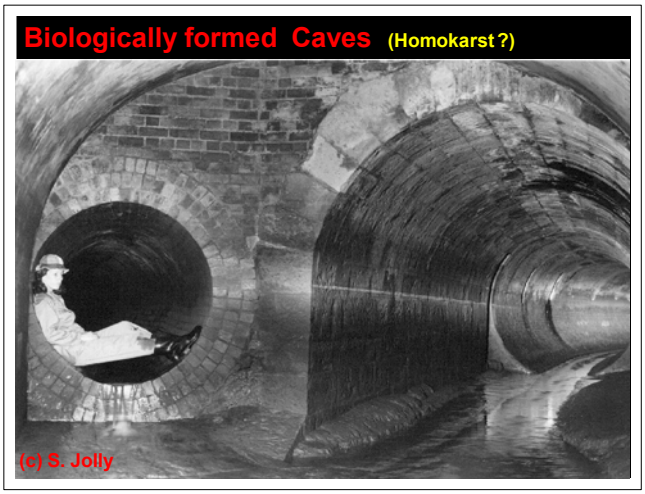
Granite Boulder Caves
= polygenetic !!!
= chem weathering (including Solution), piping and other mechanical removal of soft material.
= ALSO mass movement varieties (Talus caves)



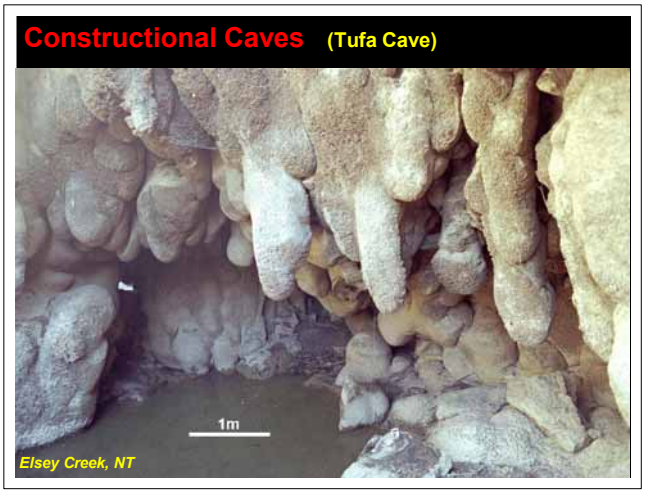
Sea Caves
= Wave energy, possibly aided by chemical weathering
Most are small
Some have associated UG drainage, dolines etc.

Piping Caves
= Groundwater carries fine clays etc
Also Spring sapping
Mostly small tunnels, but some larger ones. May have assoc UG drainage, dolines etc.

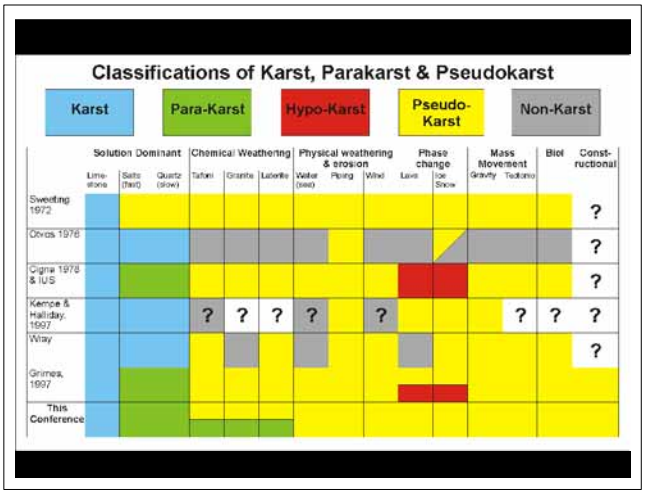
Mass Movement
= Fissures opened up by block sliding etc.
= Also Tectonic movements
= Talus caves are a type of "boulder" cave.



BioKarst (?)
Animals: digging, eating, ...
Humans: Mining, Drains, Military, etc.
May produce major subsidence to form sinkholes etc on surface.
Old mines can have oddball speleothems.



Constructional Caves
= Build up of material encloses a space to form a cave
eg Tufa Caves (behind watefalls or in ponds)



The main diagram again
... for discussion ...