Cave monitoring: an overview and pragmatic suggestions

Pauline Treble[1,2]

[1]ANSTO, Sydney NSW, Australia

[2]UNSW Sydney, NSW, Australia

An understanding of the processes that control the speleothem geochemical record is essential for the development of climate and other environmental proxies. This is particularly important for locations where processes may be site specific. Cave monitoring is one approach that enables direct measurement of the environmental parameters controlling stable isotope, radiogenic and trace elements in cave waters and farmed calcites. This approach has previously revealed the impacts of cave microclimate and karst hydrology on the speleothem record. More recently, cave monitoring studies have also contributed to our understanding of the role of aerosols and soils, and the impacts of vegetation and fire on the speleothem record. However, long-running programs require regular access and ongoing funding which often makes monitoring caves impractical. This lecture will draw on my fourteen years of experience in monitoring Golgotha Cave, Western Australia, to suggest pragmatic approaches for early career researchers to consider when visiting caves in order to better understand the site-specific processes that influence a particular speleothem record and why it is important to do so.

For example, at the end of the lecture you should be able to identify which of the below stalactite patterns represents diffuse versus fracture flow and the relevance for understanding this type of information for the interpretation of a stalagmite taken from either location.