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Exploring the potential of speleothem palaeoclimate records from S.E. Australia

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Despite intense interest in the Earth's climate since the last glacial termination, there remain large uncertainties regarding the exact causes, timing and spatial extent of the key events of this period. Many of the millennial scale climatic fluctuations characterising the last deglaciation are well established in records from the Northern Hemisphere, and to some extent from the high latitudes of the Southern Hemisphere. However, deciphering the global response to these events has been hampered by the coverage of existing proxy records and the accuracy of their associated chronologies. High resolution, radiometrically dated records from the Southern Hemisphere are urgently required to resolve this issue.

Stalagmites from Buchan Caves in South Eastern Australia, provisionally dated to late Pleistocene to early Holocene, will provide valuable incites into climate variability of this under represented region. Five stalagmites from Royal Cave have been dated using U-Th dating methods, alongside high resolution analysis of stable isotopes and trace elements. These analyses will be utilised alongside detailed drip site monitoring to assess the relationship between precipitation, recharge, drip rates and solute chemistry and will also include continuous measurement of the temperature and humidity of the deepest chamber. Initial results point to interesting variations in both oxygen and carbon isotopes documenting climatic changes over the past 4000 years and dating of a previously analysed sample provides a significant revelation regarding the Younger Dryas millennial scale climatic event.