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Preliminary results of the SISAL database

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Speleothems (cave carbonates) provide highly resolved records with the potential to reconstruct past changes in mean regional climate and climate variability on annual to millennial timescales. Some climate models now explicitly include isotopic tracers, and thus the isotopic records from speleothems can be used directly for model evaluation. There are 500+ published speleothem records covering part or all of the last 21,000 years and beyond. However, only 7 speleothems are included in the standard Paleoclimate Modelling Intercomparison Project (PMIP) benchmark dataset.

To address this issue, the SISAL (Speleothem Isotopes Synthesis and Analysis) PAGES working group is creating a data synthesis product compiling the 500+ speleothem records available globally. Such a database (the first for speleothems) can also be used to refine our understanding of regional changes in climate forcings through time, which is crucial in model evaluation. This database, to be published in 2018, will be the first global database of speleothem data containing a comprehensive array of metadata to allow quality control and reliability assessment of the records.

This presentation will showcase the preliminary results of the SISAL database, such as the major changes in isotope signatures for the key periods included in the CMIP6/PMIP4 simulations (Last Glacial Maximum (21 ka), mid-Holocene (6 ka) and Last Millennium (850-1850 CE)) taking into account estimates of measurement or uncertainty.