

Lecture Abstract:

“Construction of speleothem age models incl. workshop”

By Denis Scholz¹

In the framework of the lecture, I will

- shortly present the currently used methods for reconstruction of speleothem age model based on available ²³⁰Th/U-ages (i.e., linear interpolation, splines, etc.).
- critically discuss the reliability of speleothem ²³⁰Th/U-ages and the potential implications for the age model
- show and explain how to include additional (stratigraphic) information using Bayesian statistics in order to improve the age model (Spötl et al., 2008).
- in detail, present StalAge (Scholz and Hoffmann, 2011), an algorithm particularly designed for construction of speleothem age models.
- compare and critically discuss the results of the different approaches and illustrate their advantages/disadvantages using some examples (Scholz et al., 2012).

In the framework of the workshop, I will

- briefly introduce the statistical software R to the students.
- show them how to construct simple age models (linear interpolation, splines) using R.
- show them how to construct age models using StalAge.

Hint by the lecturer: Students should bring their own laptops with the latest version of R installed.

Recommended reading:

Scholz, D. and Hoffmann, D. L., 2011. StalAge – an algorithm designed for construction of speleothem age models. *Quaternary Geochronology* **6**, 369-382.

Scholz, D., Hoffmann, D. L., Hellstrom, J., and Bronk Ramsey, C., 2012. A comparison of Different methods for speleothem age modelling. *Quaternary Geochronology* **14**, 94-104.

Spötl, C., Scholz, D., and Mangini, A., 2008. A terrestrial U/Th-dated stable isotope record of The Penultimate Interglacial. *Earth and Planetary Science Letters* **276**, 283-292.

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