

Using Earth system model output to simulate DCF variability in speleothems

Implications for atmospheric ^{14}C calibration

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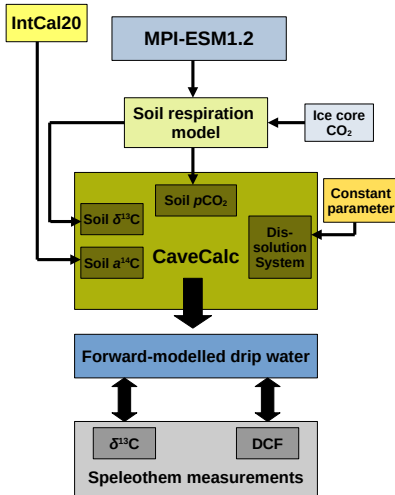
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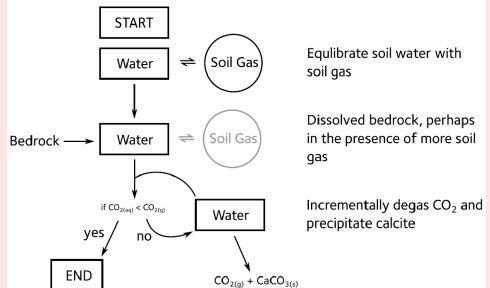
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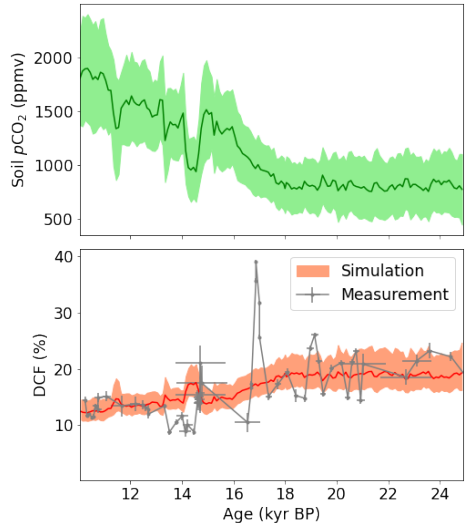
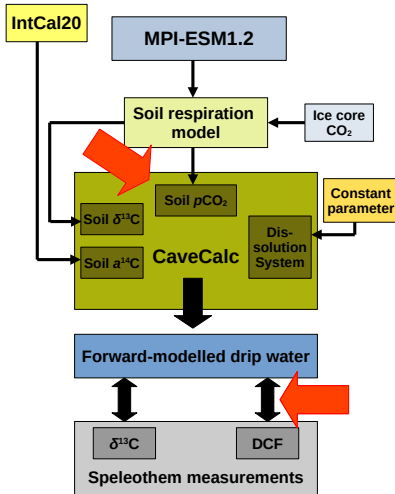
Model framework around CaveCalc



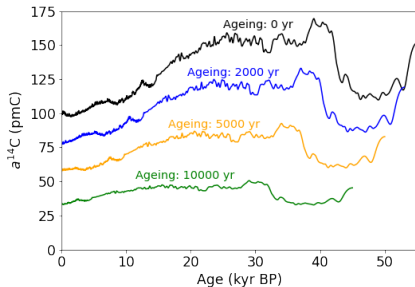
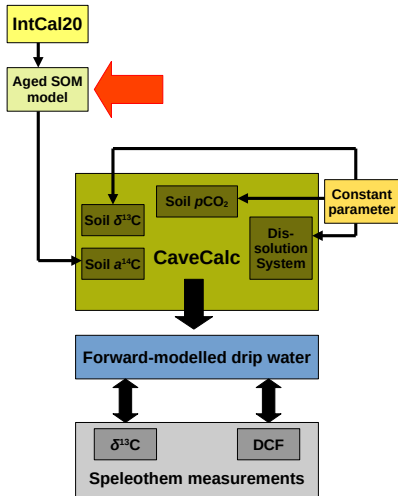
CaveCalc (*Owen et al., 2018*):



Results for Sofular Cave (Northern Turkey)

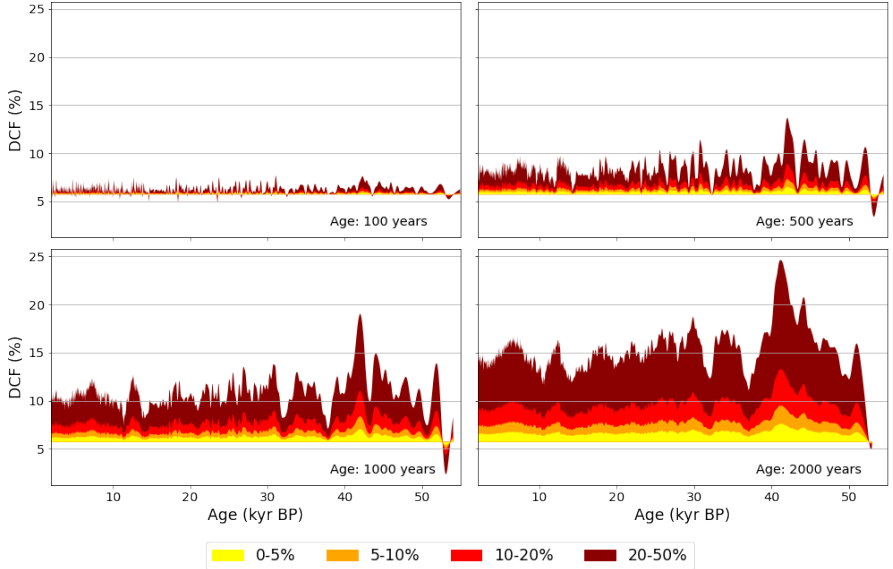


Virtual ageing of soil organic matter (SOM)



- ▶ **Old carbon age:**
100 yr, 500 yr, 1000 yr, 2000 yr
- ▶ **Fraction of old carbon:**
5 %, 10 %, 20 %, 50 %

Results of aged SOM contribution



Summary

- ▶ Sofular Cave DCF controlled by soil dynamics from 25 to 10 kyr BP
- ▶ Variability of Hulu Cave DCF potentially underestimated in case of aged SOM contribution