

# Reconstruct Past Climate

Data Source, Proxies

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## 1 Parameter and Resolution

The follow-up weather parameters normally could reconstruct:

- temperature
- precipitation
- wind

The Resolution depends on the data source.

## 2 Data Source

Descriptive documentary data such as:

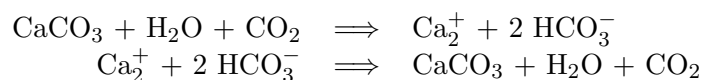
- reports from chronicles
- daily weather reports
- travel diaries
- ship logbooks

Documentary proxy data are more indirect evidence that reflects weather or climate conditions.

### 2.1 Speleothem

Speleothems are secondary cave deposits such as stalactites and stalagmites (Stalagmites grow from the **g**round, stalactites grow from the **c**eiling).

#### 2.1.1 Development of Speleothems

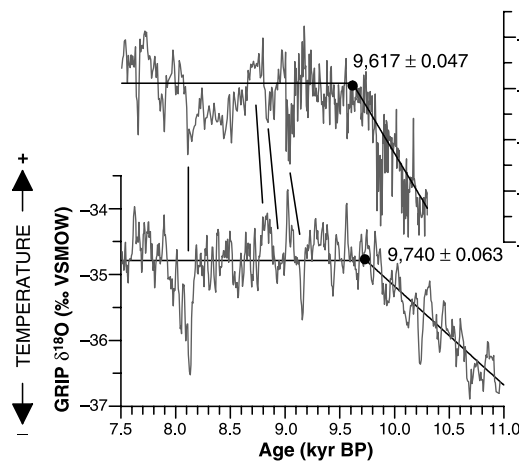


### 2.1.2 Age

Thorium-Uran method

### 2.1.3 Precipitation

The  $\delta^{18}\text{O}$  depends on the precipitation. The  $\delta^{18}\text{O}$  is more negativ in periods with more precipitation.



**Fig. 2.** Comparison of the Q5  $\delta^{18}\text{O}$  record with the smoothed (five-point running average) GRIP  $\delta^{18}\text{O}$  ice core record (15). Lower monsoon precipitation correlates with colder North Atlantic air temperatures (visualized by vertical tie-lines). The heavy black line shows "ramp" function trends (34). Change-point times are given with their statistical errors ( $1\sigma$ ), which are estimated from bootstrap simulations. Taking dating uncertainties for both the Q5 and GRIP records into account (1 to 2%) shows that the changes occurred simultaneously.

## 3 Discussion

- Different proxies and their pros and cons
- The  $\delta^{18}\text{O}$  dependence on precipitation

## References

- [1] P. Lionello et. al. The Mediterranean Climate: An Overview of the Main Characteristics and Issues. *Developments in Earth & Environmental Sciences*, 4:27–148, 2006.
- [2] D. Fleitmann et. al. Holocene Forcing of the Indian Monsoon Recorded in a Stalagmite from Southern Oman. *Science*, 300:1737–1739, 2003.