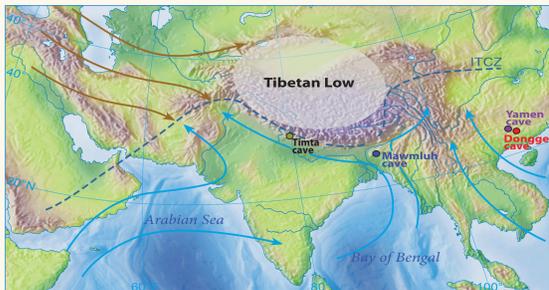


## Introduction

The Indian Summer Monsoon (ISM) is a major climate pattern on the planet, with global scale influences and teleconnections.

- >80% of the annual rainfall during ISM to Bangladesh and N-India
- Floods and droughts challenge the local population
- Preinstrumental data help understanding long-term ISM variability

## Study area



### Summer climate:

- N-ward ITCZ migration
- Tibetan Low
- Orographic forcing of Meghalaya Plateau

### Excessive rainfall in NE India

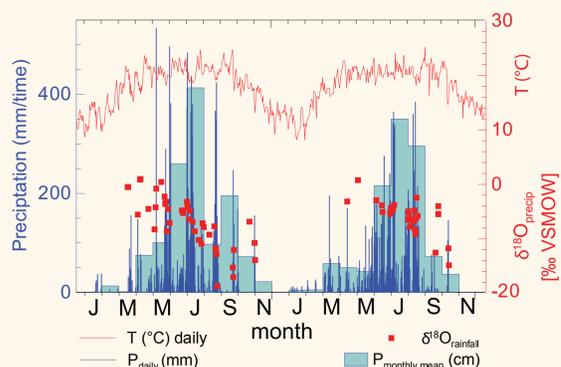


### Winter climate:

- S-ward ITCZ migration
- Siberian-Tibetan High
- Dry winds to NE India
- Influence from Westerlies

### Dry conditions in NE India

Precipitation  $\delta^{18}\text{O}$  shows an annual trend with maximal depletion during late summer:



### Influences on $\delta^{18}\text{O}$ :

- Precipitation source
- Transport path length
- BoB river plume effect

(Breitenbach et al., 2010)

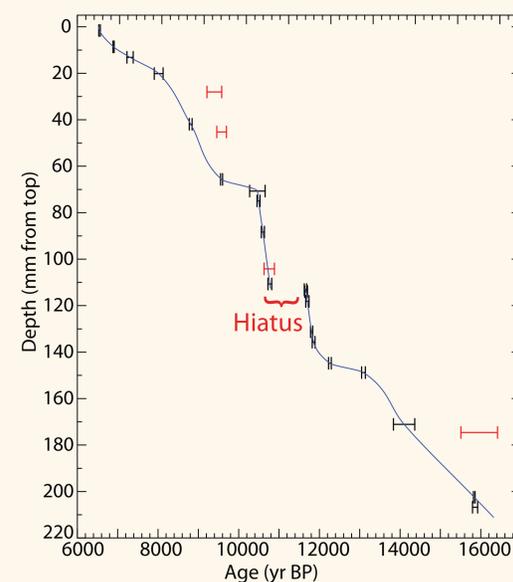
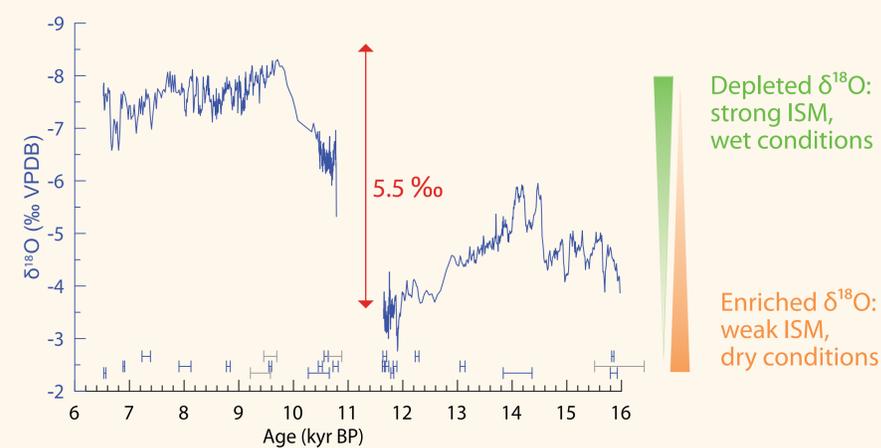
## Results

Stalagmite MAW-6 has been analyzed for  $\delta^{18}\text{O}$ :

- Resolution of 0.2 mm/sample
- Average temporal resolution: 9.3 years
- Range of values ca. 5.5‰

The  $\delta^{18}\text{O}$  record covers the period of the last deglaciation:

- Cold phases  $\rightarrow$  glacial, YD: heavier values
- Warm phases  $\rightarrow$  B-A, Holocene: lower values



### Dating results:

- 20 U/Th ages
- growth between 16-6.3 kyr
- 860-year long hiatus

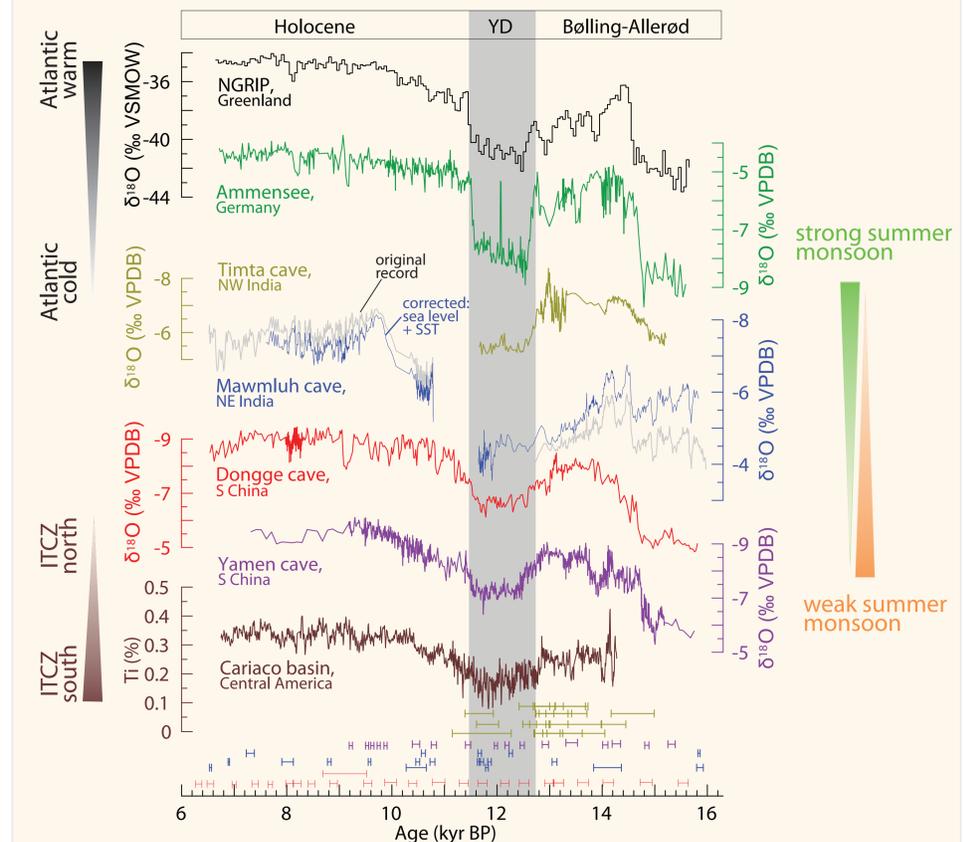
## Interpretation

Synchronous climatic shifts during NH Termination I between North Atlantic and monsoonal realm:

- Atmospheric link
- Via Arctic Oscillation, Siberian-Tibetan High
- Strong during cold phases (YD)

Atlantic-Asian teleconnection weakened during warm intervals (Holocene, B-A):

- Stronger tropical weather systems
- Stronger influence from the South, with insolation, ITCZ, ENSO, IOD



## Conclusion

- Our results show a strong link during cold phases between the North Atlantic and NE India
- Statistical analysis of the record is necessary to infer the strength of the teleconnection