

# Two million years of Indian Monsoon history

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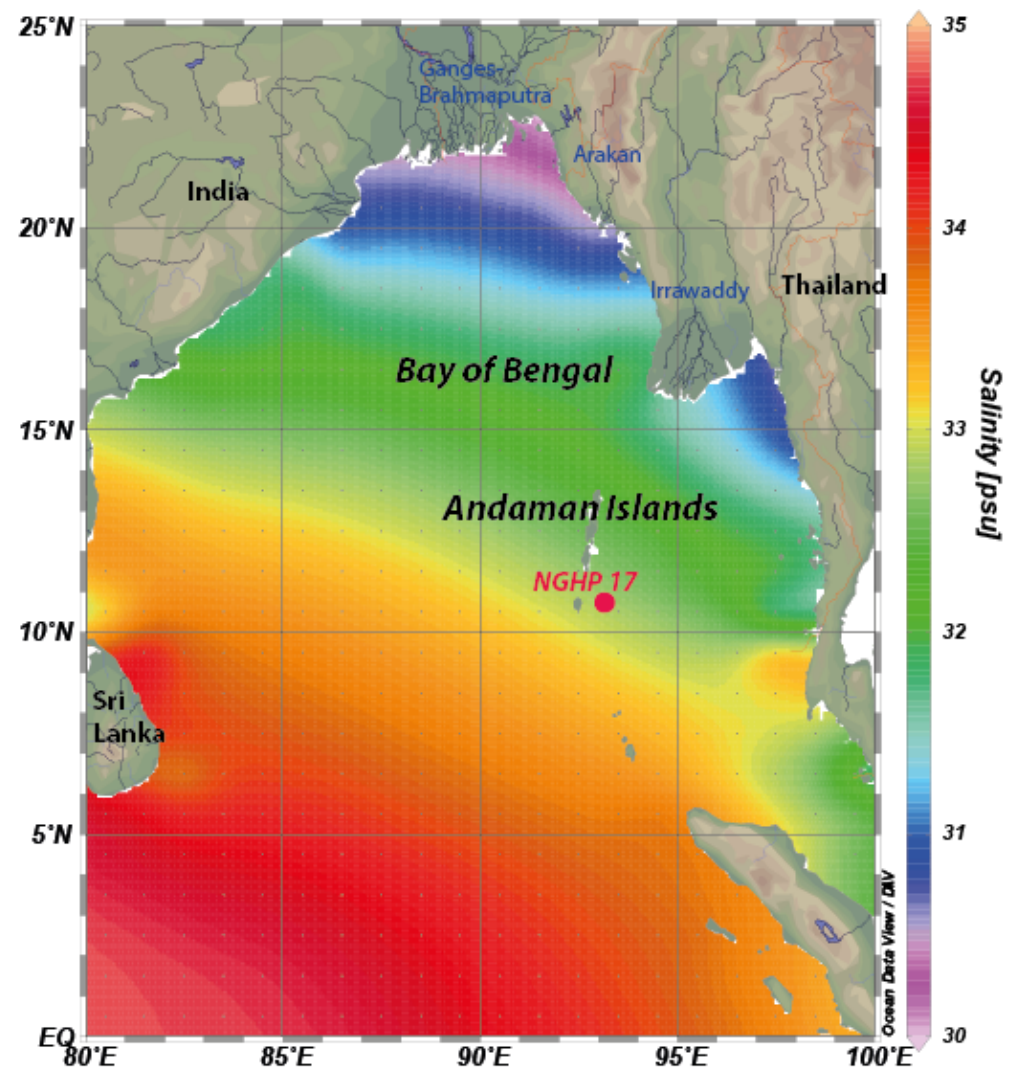
## Summary

The Asian monsoon is vitally important to billions of people while also posing a risk to human life through flooding. Despite the importance to so many the monsoon is difficult to predict and model while its evolution is not fully understood, making its future development in a changing global climate uncertain. To help improve models and predictions, histories of monsoon variability beyond the instrumental record are required. Records of the East Asian monsoon have been generated from China and the South China Sea while past variability of the Indian monsoon is mainly known from records of monsoon wind strength over the Arabian Sea. This project uses a 120 m sediment core from the Andaman Sea to provide the first record of Indian monsoon runoff and precipitation for the last 2 million years.

We utilize the depth habitat of different foraminifera species, mixed layer dwelling *G. sacculifer* and thermocline dwelling *N. dutertrei*, to investigate the freshwater-induced stratification. Combining Mg/Ca for temperature and oxygen isotopes for temperature and salinity, we reconstruct a seawater  $\delta^{18}\text{O}$  ( $\delta^{18}\text{O}_{\text{sw}}$ ) record. In addition, Ba/Ca ratios from *G. sacculifer* are generated to infer changes in riverine runoff caused by the monsoon.

## References

Zweng et al., (2013). World Ocean Atlas 2013, vol. 2, Salinity, NOAA Atlas NESDIS, vol. 74..



**Figure 1.** Mean annual surface water salinity for the Bay of Bengal from the World Ocean Atlas '13 climatology (Zweng et al., 2013). Major rivers are labeled in dark blue. The location of the drill site is labeled in red.