



Morphological variability of stromatolites and their cyclicity as an indicator of biogenicity - example from a Proterozoic carbonate platform of Vindhyan Supergroup, India

Adrita Choudhuri^[1], **Devyani Jambhule^[2]**, Sudakshina Sinha^[3], Shilpa Srimani^[3]



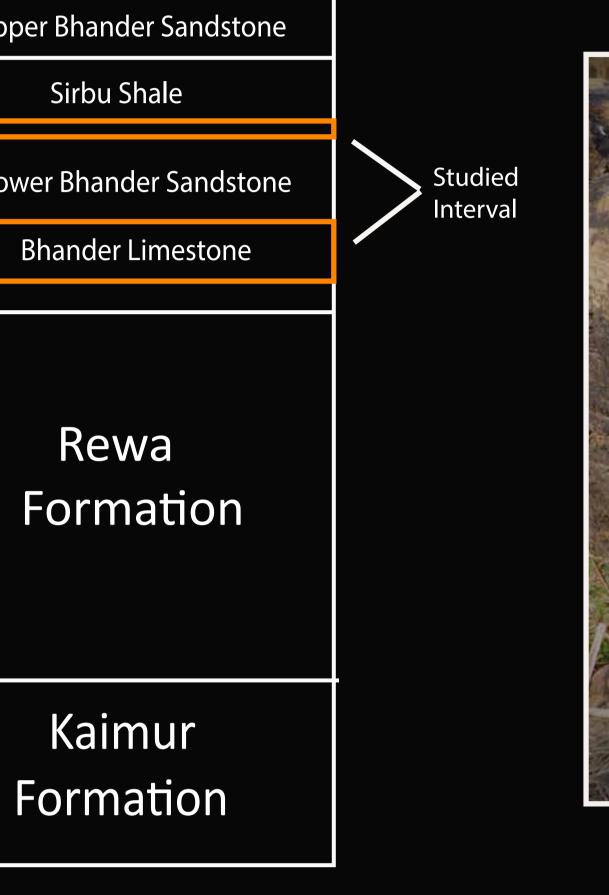
[1]Birbal Sahni Institute of Palaeosciences, Lucknow-226007, India, [2] Department of Earth Science, Indian Institute of Science Education and Research Pune, India, [3]Department of Geological Sciences, Jadavpur University, Kolkata-700032, India

Background

- Stromatolites are often used as a reference point for investigating how microbial communities interacted with their environment on early life on Earth is called into question.
- Our research focuses on evaluating the biogenicity of the relatively unexplored stromatolitic facies from Upper Vindhyan, Central India

Study Area

Fig. Geological map and Stratigraohic litholog of Vindhyan basin (Study site)



Cabbage Shaped Domal (biohermal type) Stromatolites



Small-headed bulbous Stromatolites

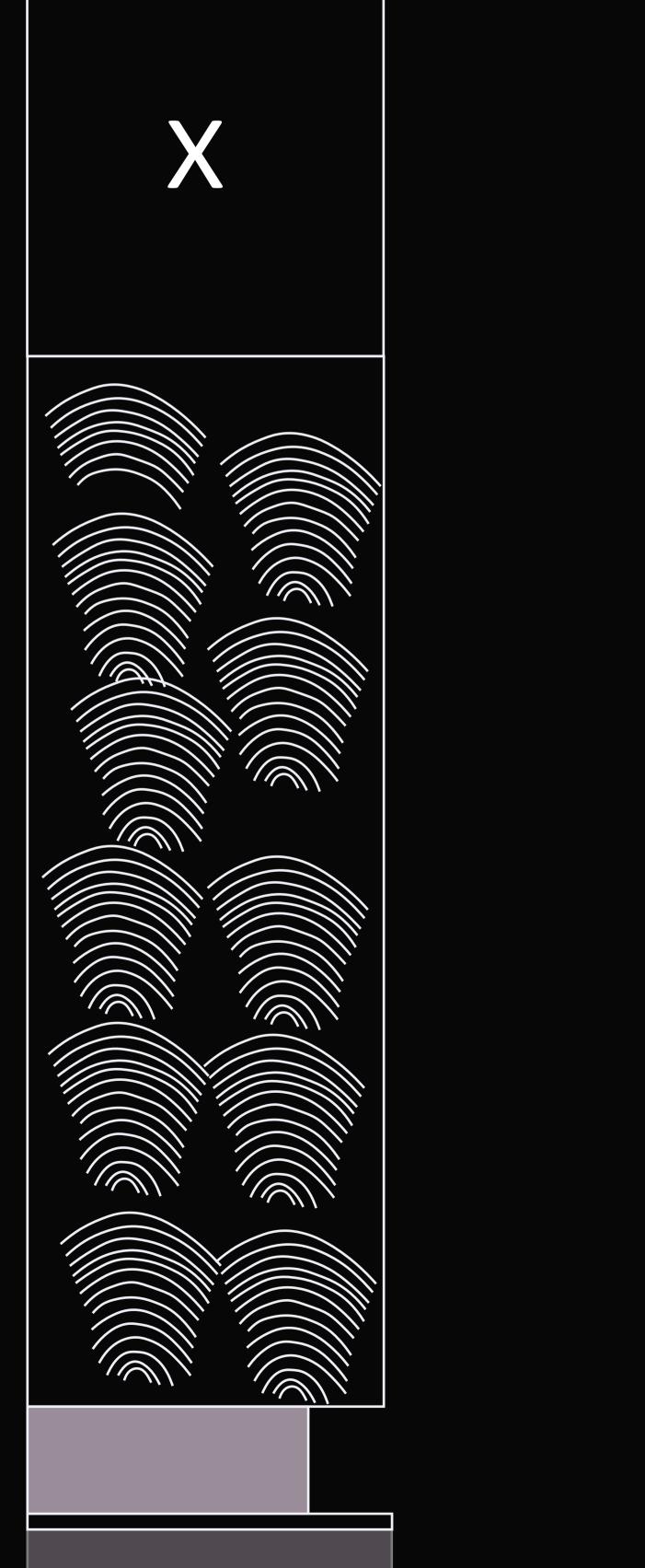


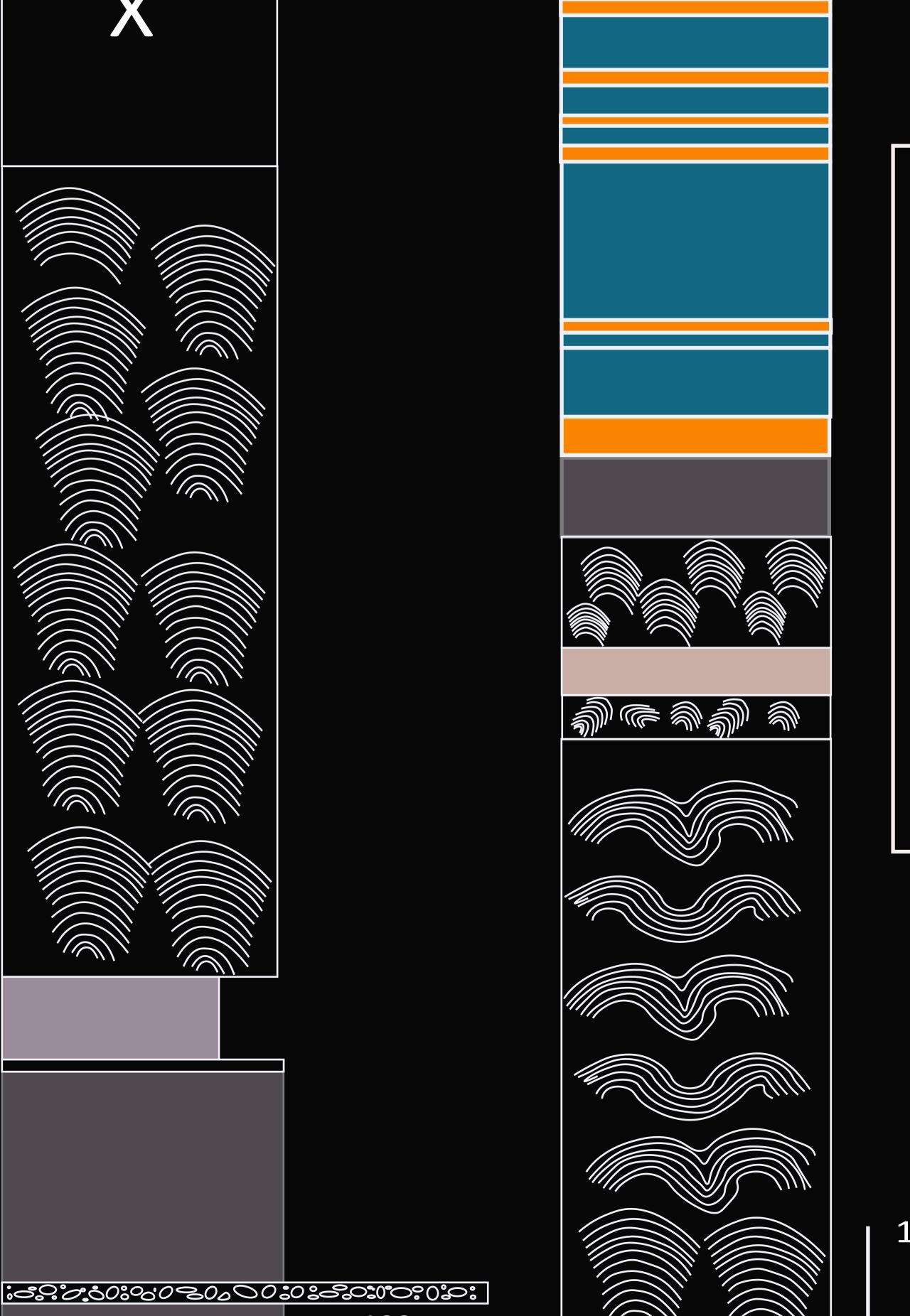
Columnar Stromatolites (Biostrome type)

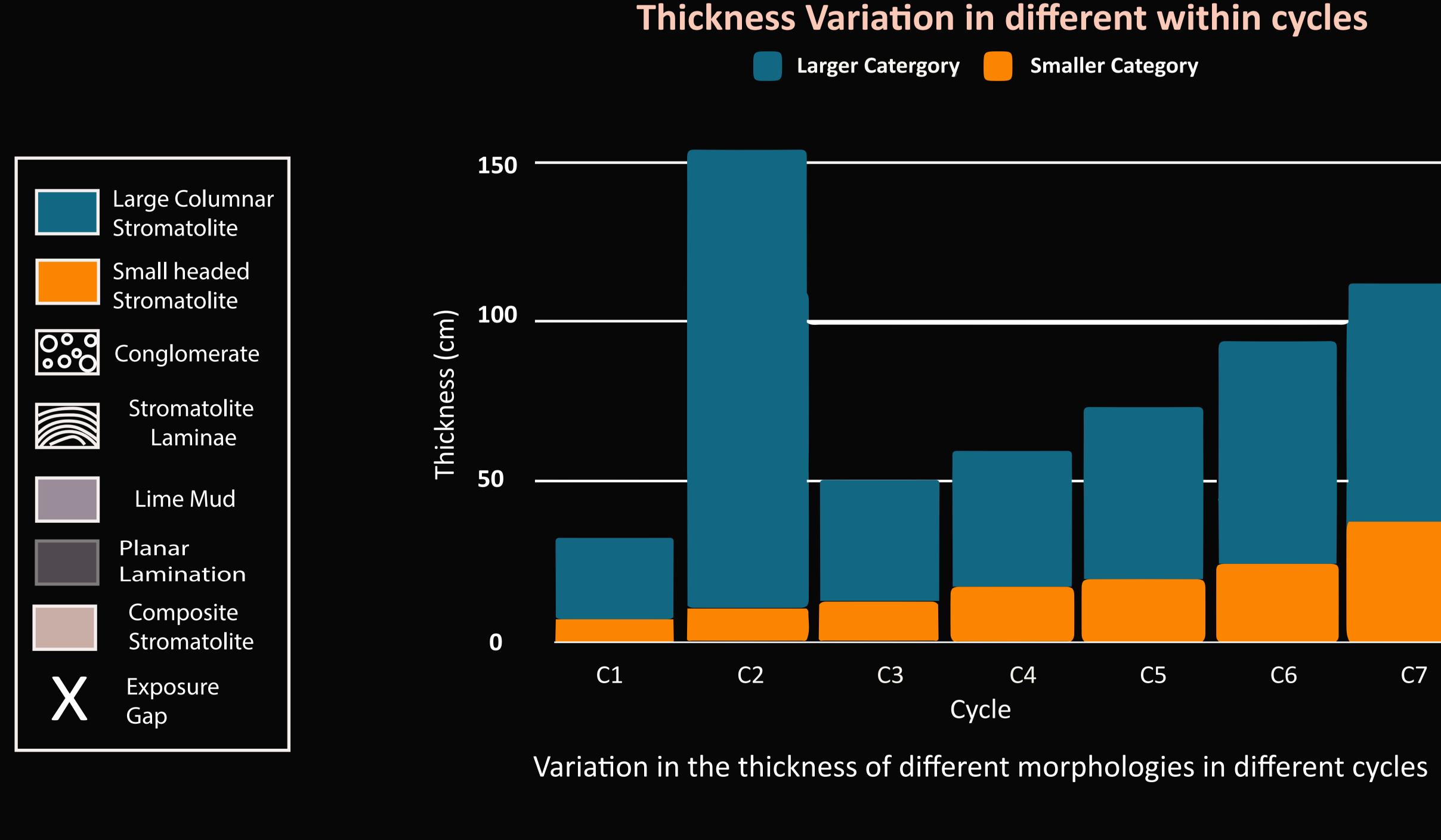
Columnar Stromatolites (Bioherm type)



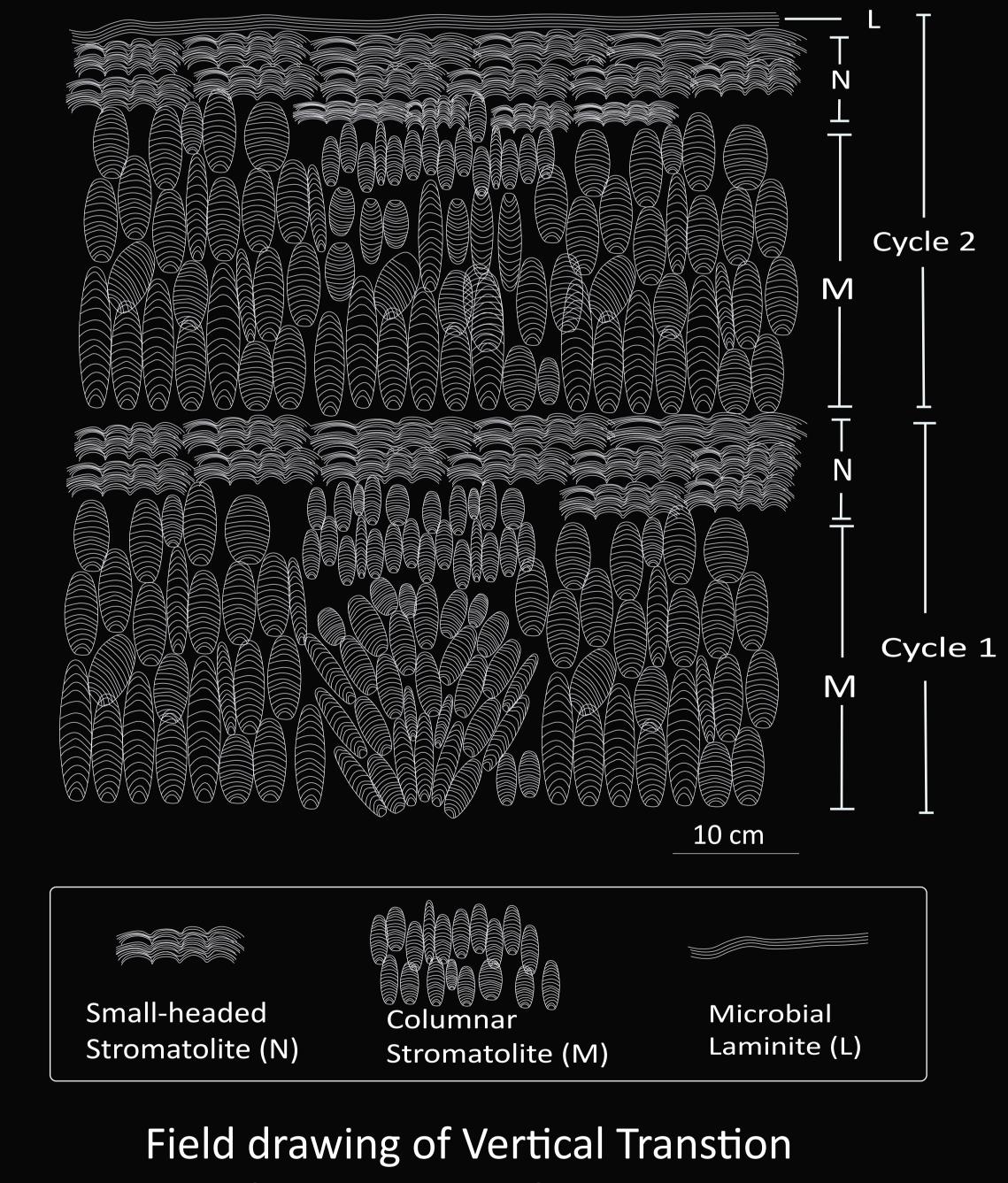
Laterally Linked Domal Stromatolites



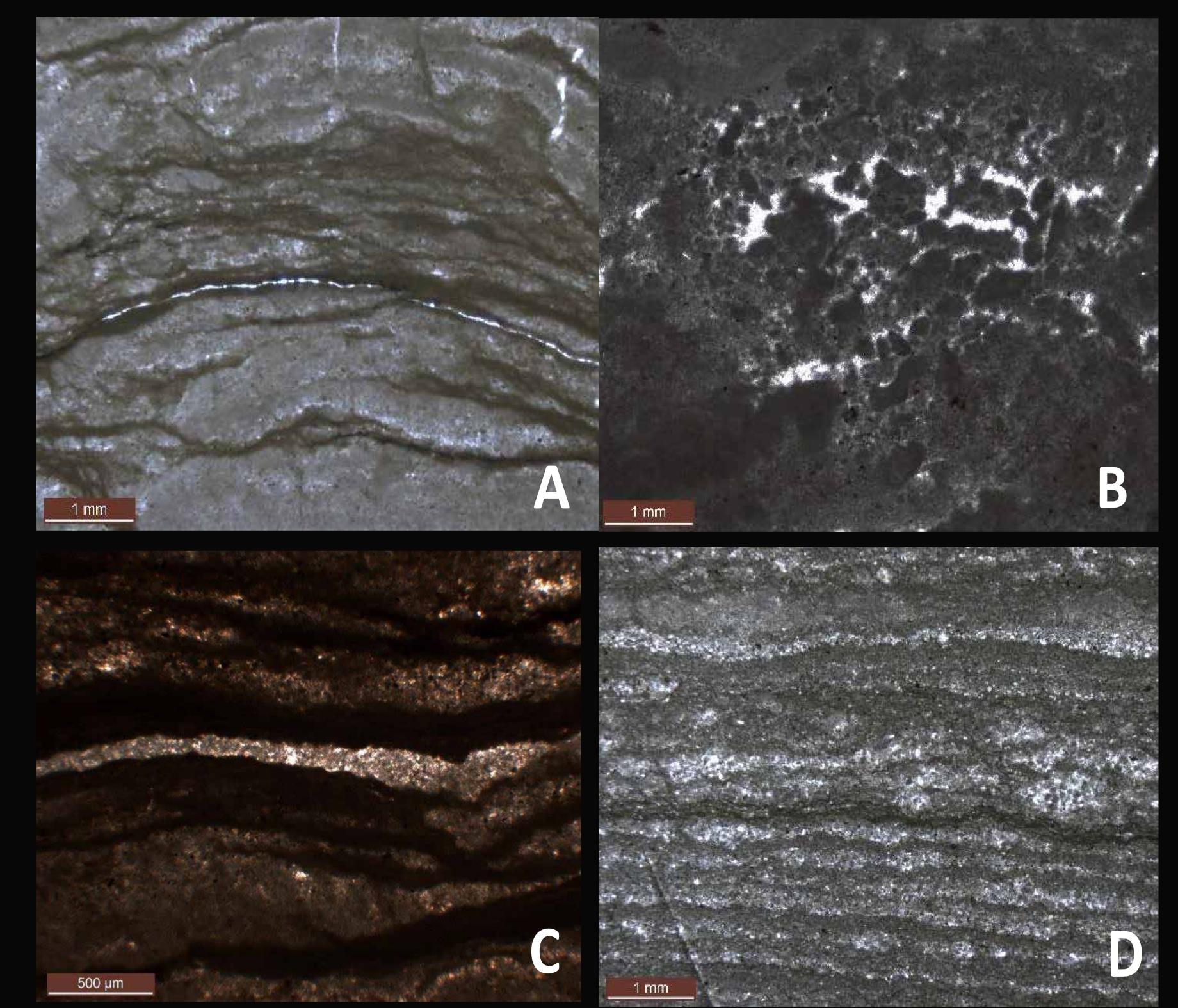








between morphotypes.



Microscopic images of different types of stromatolites. A-Columnar stromatolite, B- intercolumnar areas, C-Small headed stromatolites, D- Domal stromatolites.

Conclusions

- Cyclic variation from Large to small headed to microbiallites indiacte variation in water depth which may be caused by repetitive change in sea-level at a local scale due to tectonic subsidence/upliftment/ or may be in response to water depth variation during tidal cyclicity (spring tide maximum rise of water level and during neap tide maximum fall in sea level).
- Variation in stromatolite morphotypes are the indicators of biological behaviour of the stromatolite forming micro-organisms.

Acknowledgements

- This work is supported by the research Grant available under the DST INSPIRE Faculty Project (IFA-17/EAS-62), sponsored by Department of Science and Technology, Govt. of India
- We extend our gratitude to the Dept. of Earth Science at IISER Pune and the Director of BSIP for this opportunity.

