



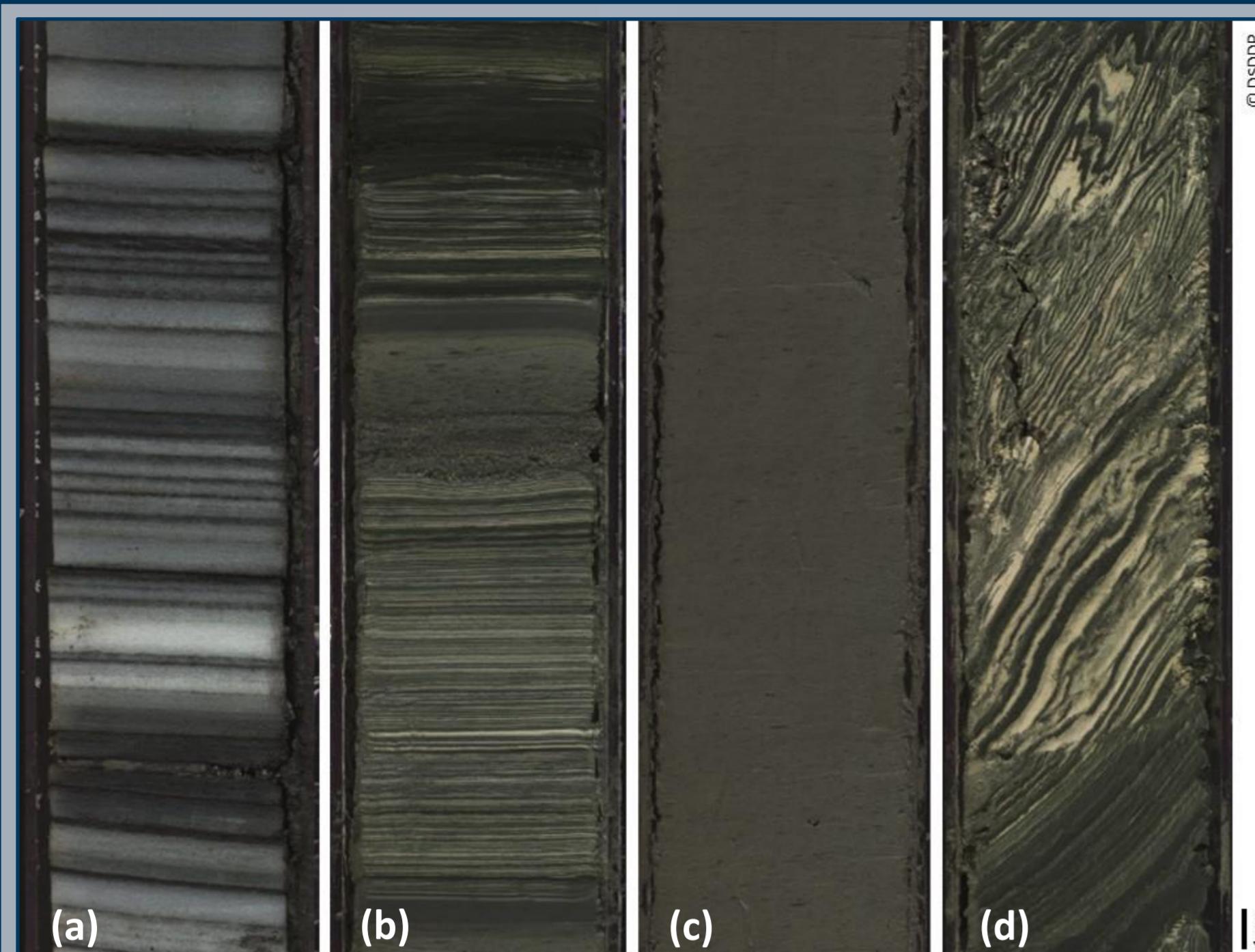
# The diatom flora of Lake Lisan (Israel): a preliminary investigation

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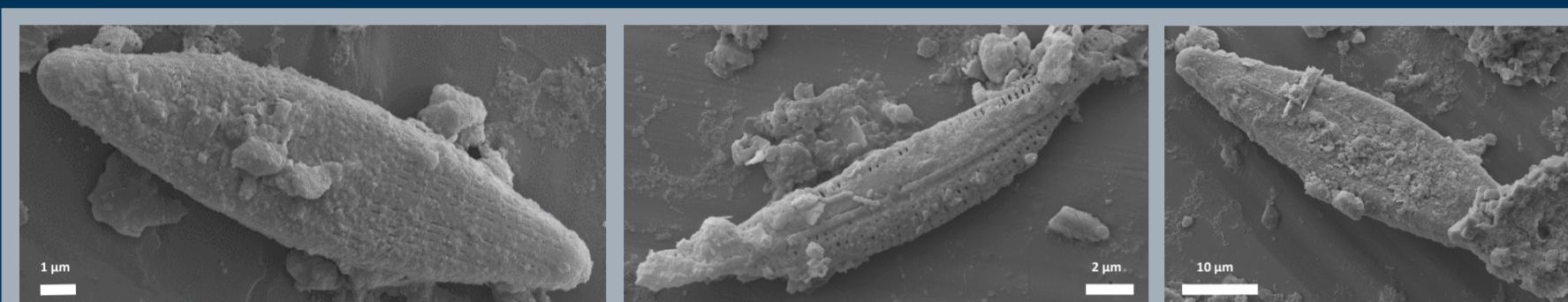
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## SEDIMENTS OF LAKE LISAN



- Sedimentary facies:**
- a) **Ih facies:** layered halite deposits
  - b) **aad facies:** alternating aragonite and detritus  
→ predominant aad facies characterizes shallow & deep-water environments
- Mass transported deposits:**  
(not sampled)
- c) homogenous detritus
  - d) slumped and folded sediments

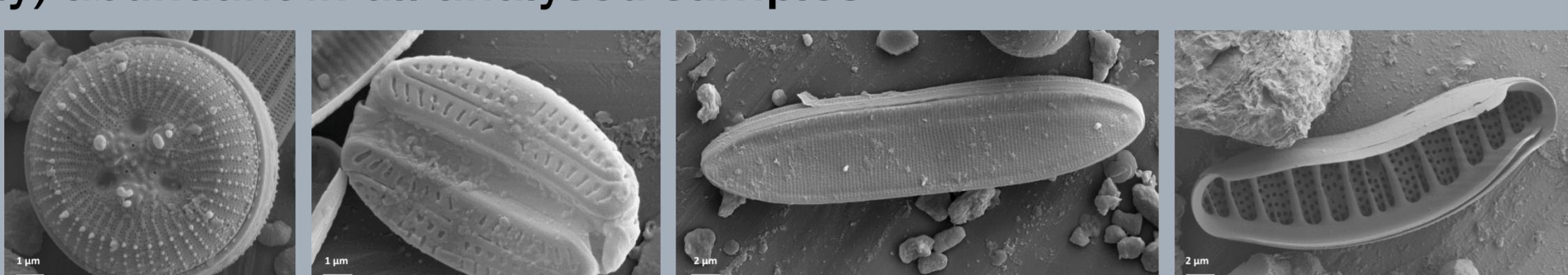
## DIATOM PRESERVATION



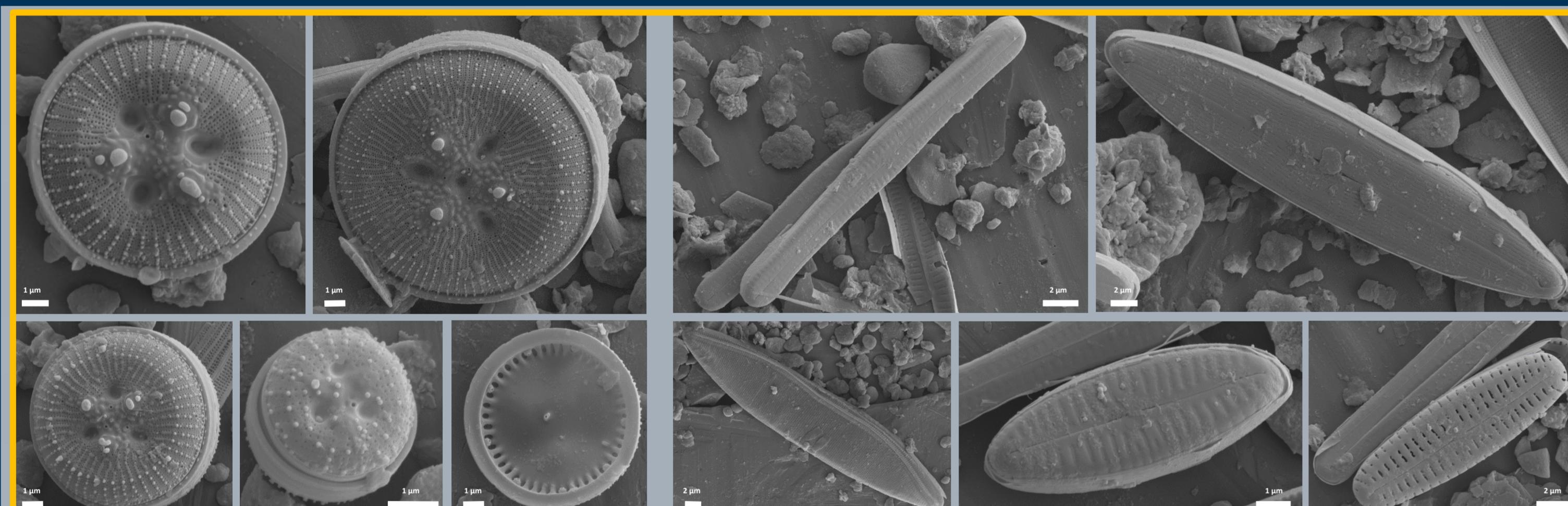
### Halite deposits

- Exceptionally good preservation in all evaporitic deposits (contradictory to literature)
- Diatoms are (highly) abundant in all analysed samples

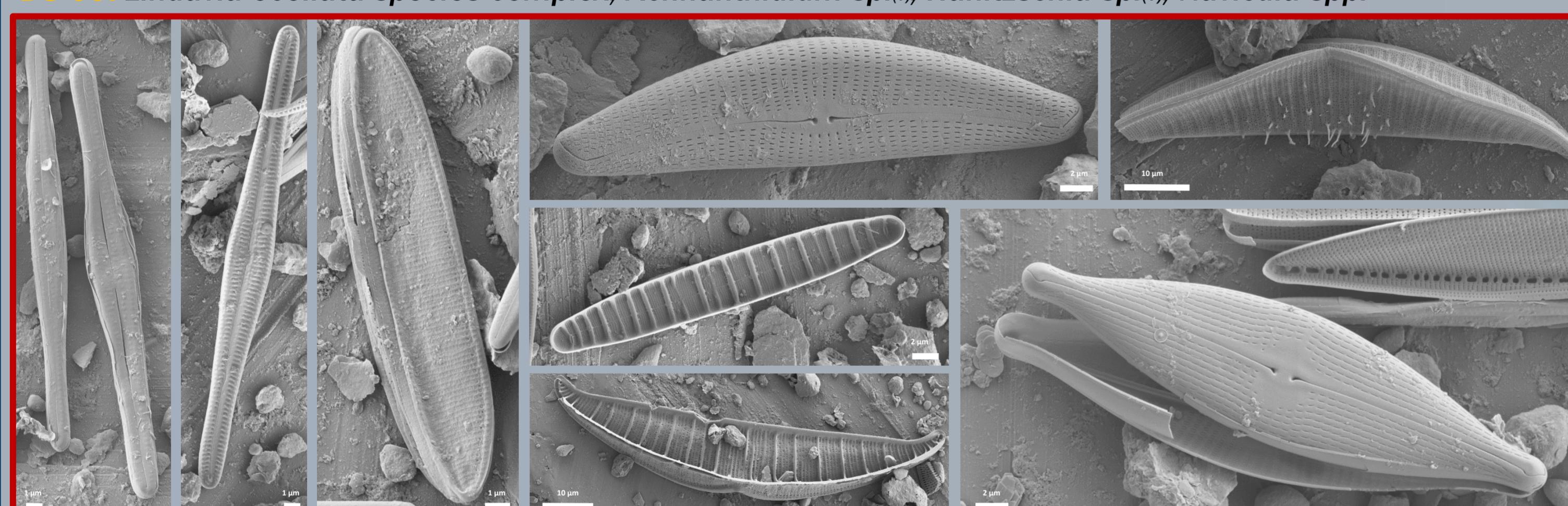
### Aragonite & detrital deposits



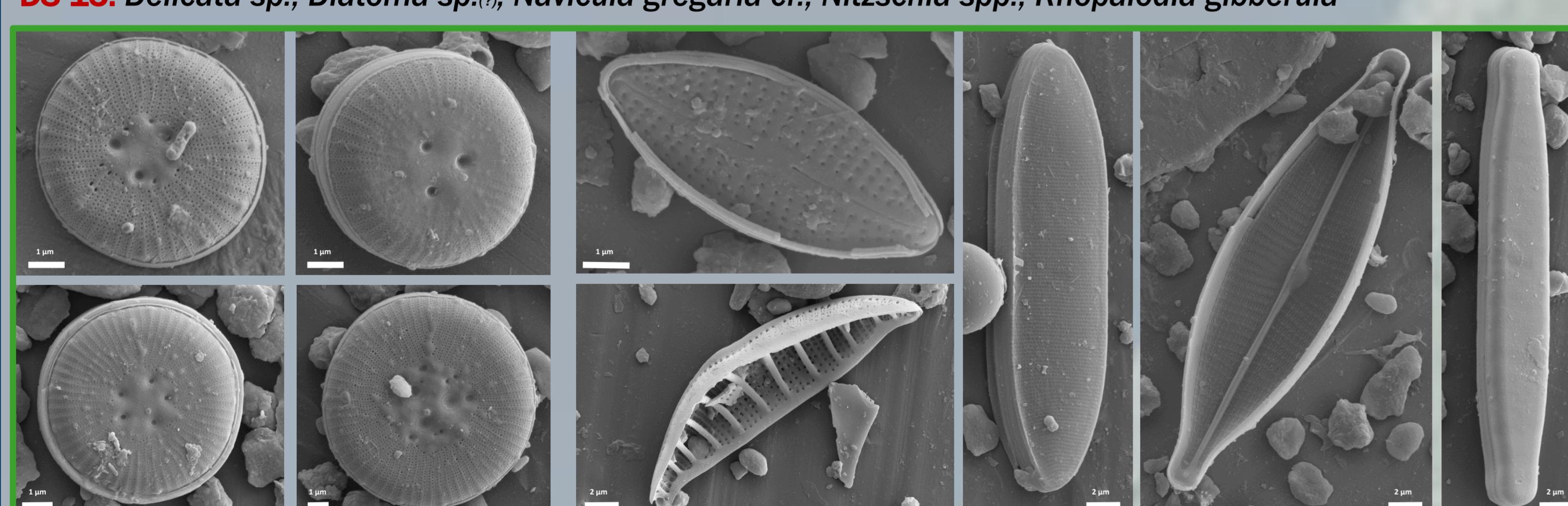
## DIATOM SPECIES COMPOSITION



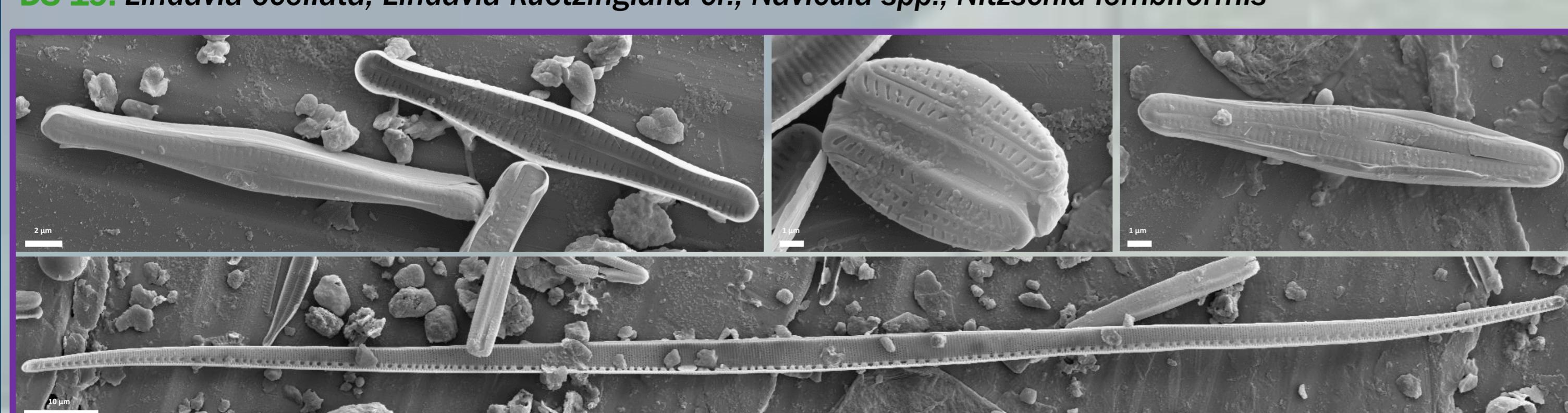
DS 09: *Lindavia ocellata* species complex, *Achmanthidium* sp., *Hanitzschia* sp., *Navicula* spp.



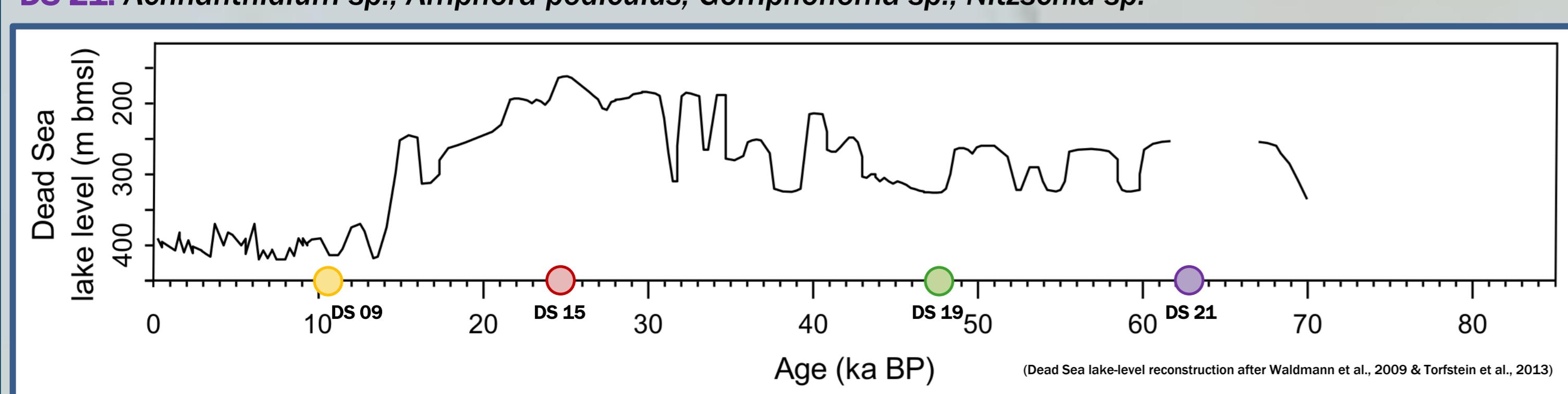
DS 15: *Delicata* sp., *Diatoma* sp., *Navicula gregaria* cf., *Nitzschia* spp., *Rhopalodia gibberula*



DS 19: *Lindavia ocellata*, *Lindavia kuetzingiana* cf., *Navicula* spp., *Nitzschia lembiformis*



DS 21: *Achnanthidium* sp., *Amphora pediculus*, *Gomphonema* sp., *Nitzschia* sp.

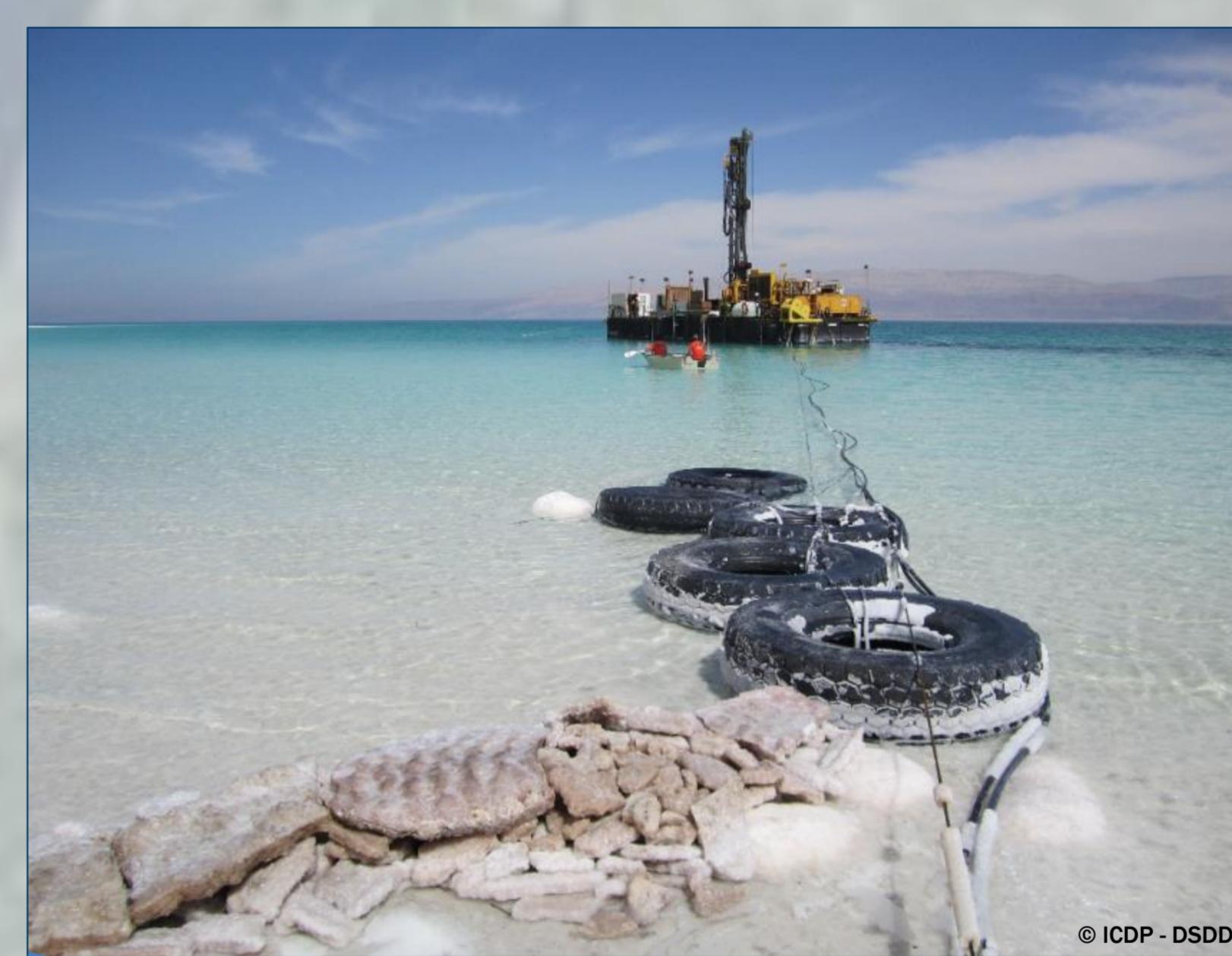


## RESEARCH MOTIVATION

- Little knowledge about
  - (a) aquatic life in Dead Sea and former waterbodies
  - (b) distribution of diatoms within Lake Lisan/Dead Sea
- Literature postulate very bad – no diatom preservation in southern basin & sediment deposits of Lake Lisan
- Diatoms of Lake Lisan never investigated from sediment cores – only outcrops
- Check diatom preservation in different evaporitic deposits

## DRILLING CAMPAIGN 2010/11

- 3 drilling sites with total recovered core length of 721.2 m
- Deepest borehole with 455 m sediment recovery at site 5017-1 close to the deepest point of the basin
- Lisan Fm: core 5017\_1\_88-200 m blf (14-70 ka)
- Sediment core sequence provides a good framework to correlate DS stratigraphic units and surrounding outcrops (Neugebauer et al., 2014)



## OUTLOOK

- Taxonomical investigation & identification of diatom flora
- Quantitative analysis (counting)  
→ reconstruction of palaeo-environmental setting during Last Glacial period
- Comparison of sediment cores with outcrops  
→ preservation & diatom abundance
- Is diatom-based lake-level reconstruction possible?

Lake Lisan

References:  
Neugebauer, I., Brauer, A., Schwab, M.J., Waldmann, N.D., Enzel, Y., Kitagawa, H., Torfstein, A., Frank, U., Dulski, P., Agnon, A., Ariztegui, D., Ben-Avraham, Z., Goldstein, S.L., Stein, M., 2014. Lithology of the long sediment record recovered by the ICDP Dead Sea deep drilling project (DSDDP). Quat. Sci. Rev. 102, 149e165.  
Torfstein, A., Goldstein, S.L., Stein, M., Enzel, Y., 2013b. Impacts of abrupt climate changes in the levant from last glacial Dead Sea levels. Quat. Sci. Rev. 69, 1e7.

Waldmann, N., Stein, M., Ariztegui, D., Starinsky, A., 2009. Stratigraphy, depositional environments and level reconstruction of the last interglacial Lake Samra in the Dead Sea basin. Quat. Res. 72, 1e15.

[https://www.icdp-online.org](http://www.icdp-online.org)

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