### **Diatom method**

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- **Diatoms** are unicellar algae with golden-brown photosynthetic pigments. Their cell wall is silicified to form a <u>frustule</u>, comprising two valves, one overlapping the other like the lid of a box.
- Diatoms are the dominant marine primary producers and play a particularly important role in the carbon, silica and nutrient budgets of the modern ocean.



# **Diatoms distribution**



Diatoms are autotrophic and form the basis of food chains in many aquatic ecosystems. **Different species occupy** benthic and planktonic niches in ponds, lakes, rivers, salt marshes, lagoons, seas and oceanic waters, while some thrive in the soil, in ice, or attached to trees and rocks.



### **Reconstructable parameters**

#### **Physical factors:**

- Temperature
- Luminance
- Mixing properties
- Ice cover duration

#### **Chemical factors:**

- pH
- Nutrients
- Salinity
- Organic carbon

#### **Biological factors:**

- Mutualism
- Parasitism



### The formation of diatom-rich deposits



## Salinity Reconstructions from Continental Lakes

Aulacoseira ambigua Aula coseira granulata Fragilaria capucina var. mesolepta Navicula capitata Stephanodiscus niagarae Fragilaria brevistriata var. inflata Fragilaria brevistriata Stephanodiscus hantzschii Nitzschia amphibia Stephanodiscus minutula Cyclostephanos dubius Nitzschia frustulum Stephanodiscus parvus Cocconeis placentula Fragilaria construens var. venter Navicula oblonga Fragilaria vaucheriae Surirella ovata Nitzschia palea Amphora ovalis var. affinis Mastogloia smithii var. lacustris Surirella peisonis Cyclotella meneghiniana Rhopalodia gibba Anomoeoneis costata Navicula capitata var. hungarica Rhoicosphenia curvata Campylodiscus clypeus Navicula veneta Cocconeis placentula var. lineata Cocconeis diminuta Navicula halophila Anomoeoneis [sp. a] Synedra fasciculata Surirella ovata var. crumena Amphora veneta Opephora [cf. olsenii] Diatoma tenue var. elongatum Amphora coffeaeformis Cymbella pusilla Cocconeis placentula var. euglypta Navicula cincta Nitzschia hungarica Synedra pulchella Gyrosigma spencerii var. curvula Nitzschia punctata var. apiculata Navicula viridula Chaetoceros [elmorei/muelleri cysts] Mastogloia elliptica var. dansei Nitzschia [cf. fonticola] Nitzschia inconspicua Cocconeis pediculus Cyclotella quillensis Cyclotella caspia Navicula bulnheimii 1.0 0.1 Salinity (g-L-1)

10

100



Figure: Lake-level record from the Willandra Lakes, Murray Basin, southwestern New South Wales. Modified from Bowler JM (1998) Willandra Lakes revisited: Environmental framework for human occupation.

# References

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# Thank you for your attention!