

Reconstructing the Evolution of the Buena Vista Lagoon by Analyzing Coastal Sediments

Department: Earth Science

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What is Sediment?



Why look at coastal environments? ²



- Give us a perception of the terrestrial and marine changes
- Much of our knowledge of sea levels comes from lagoons and estuaries

Interpreting the Sediment



What can it tell us?

Long term events such as:

- Changes in sea level
- Changes in climate

Short term events such as:

- Floods
- Storms
- Fires

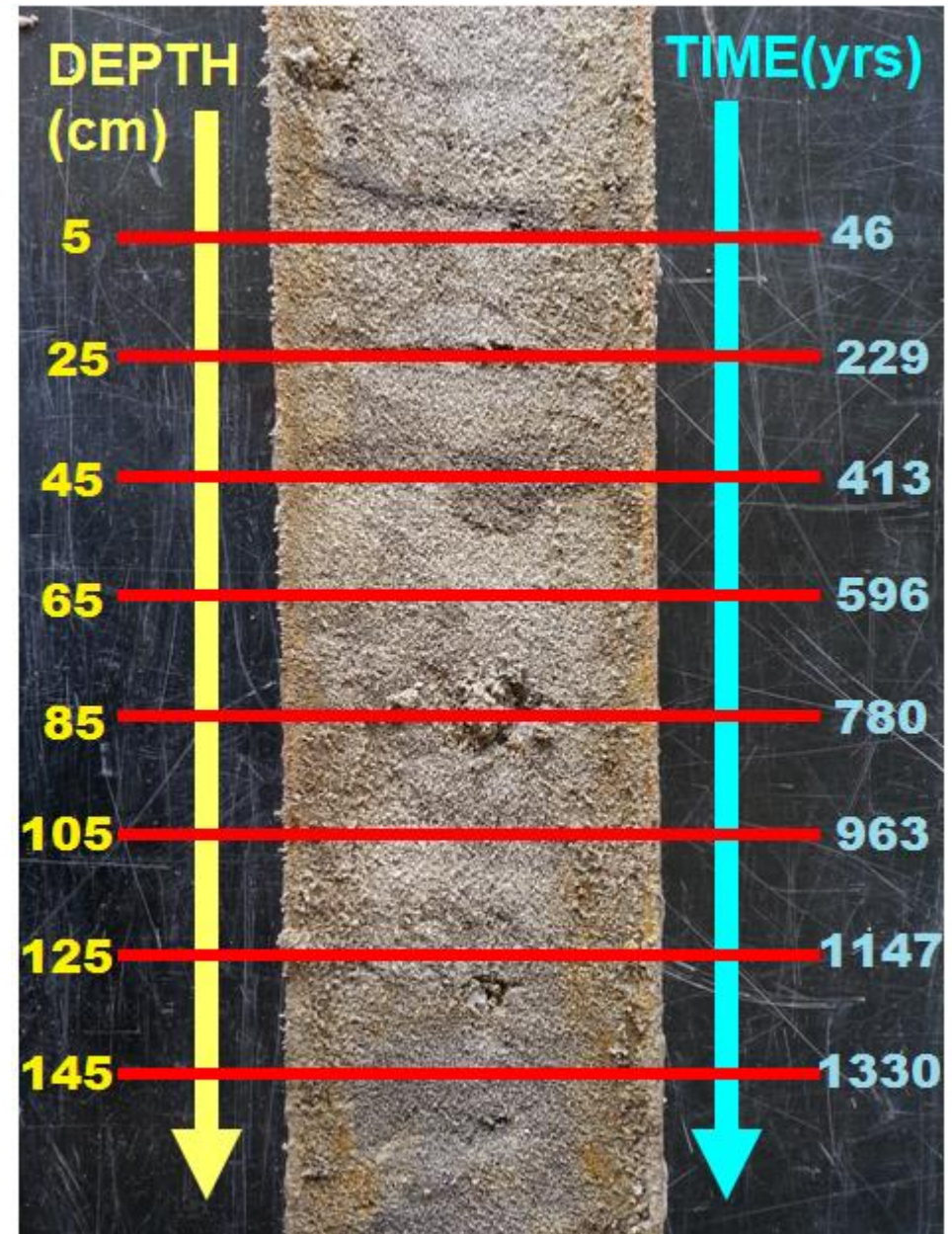


Sediment forms in Layers

Layers consisting of a mix of particle sizes:

- Sand
- Silt
- Clay

Requires analysis to identify



Main Goals

Reconstruct the **evolution** of the Buena Vista Lagoon by analyzing sediment

- Determine changes in the environment
- Find patterns in the sediment
- Keep a log of California's geological history

We obtained our samples from a Sediment Core

6



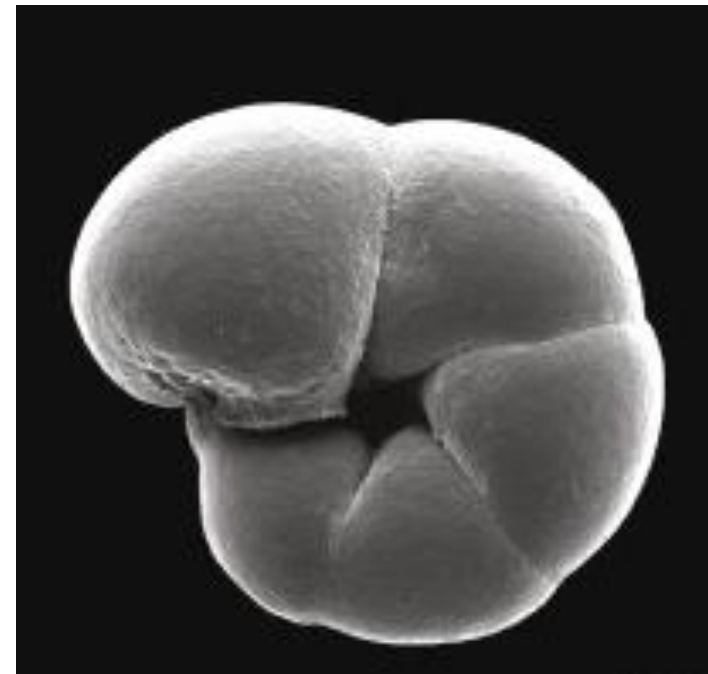
Microscope Analysis



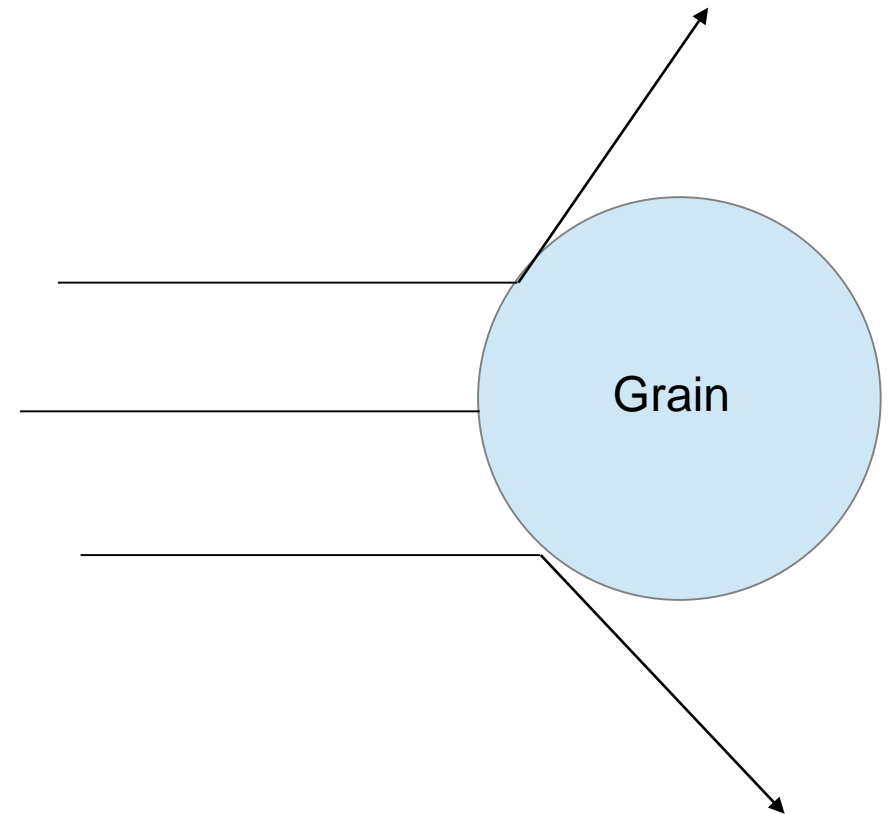
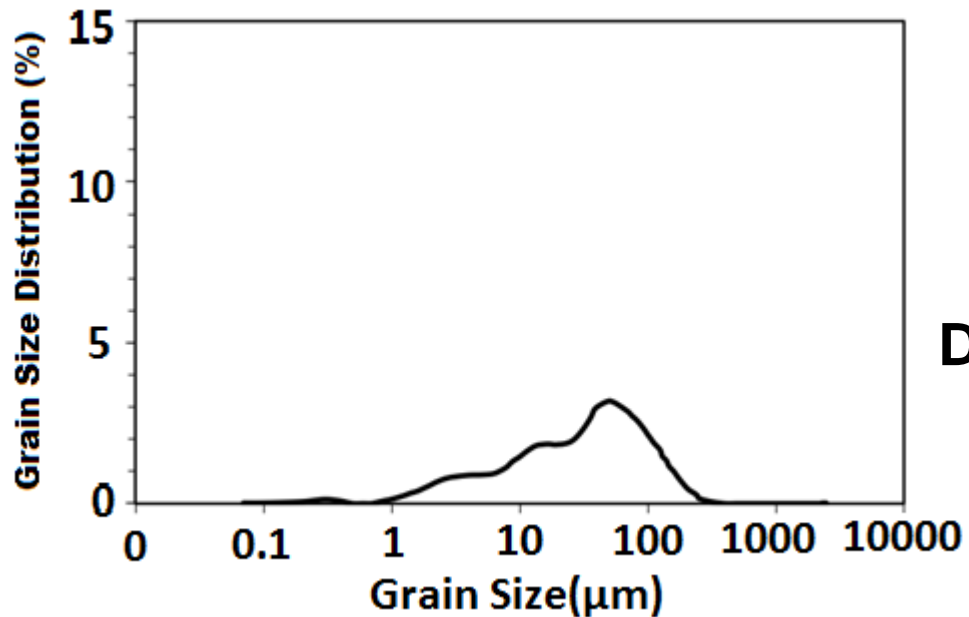
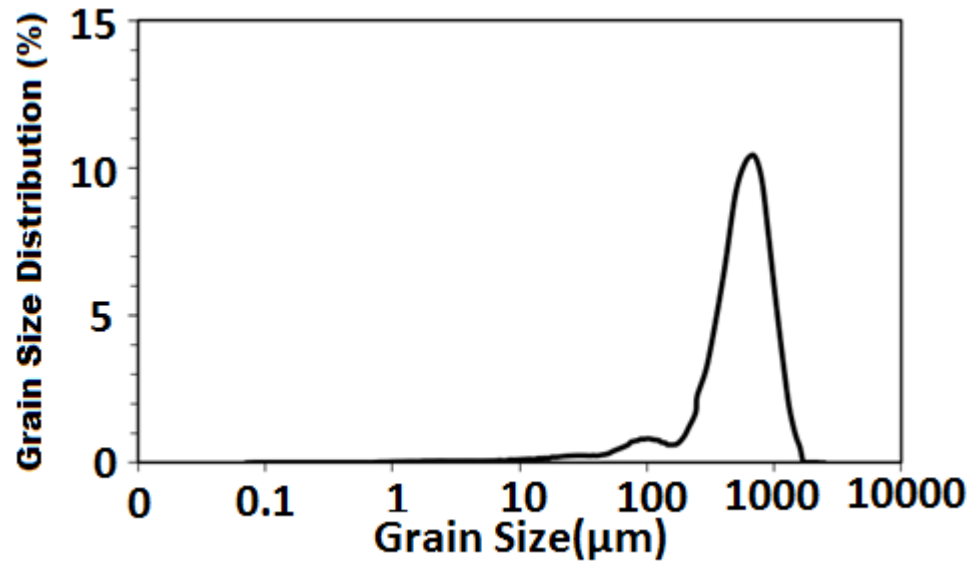
Charcoal ~ Fires

**In the order of hundreds of
microns**

Micro-fossil ~ age identifier



Particle Size Analysis



Distribution(%) vs. Size (diameter (μm))

Los Penasquitos Lagoon



Depth (cm)

0

460

Years

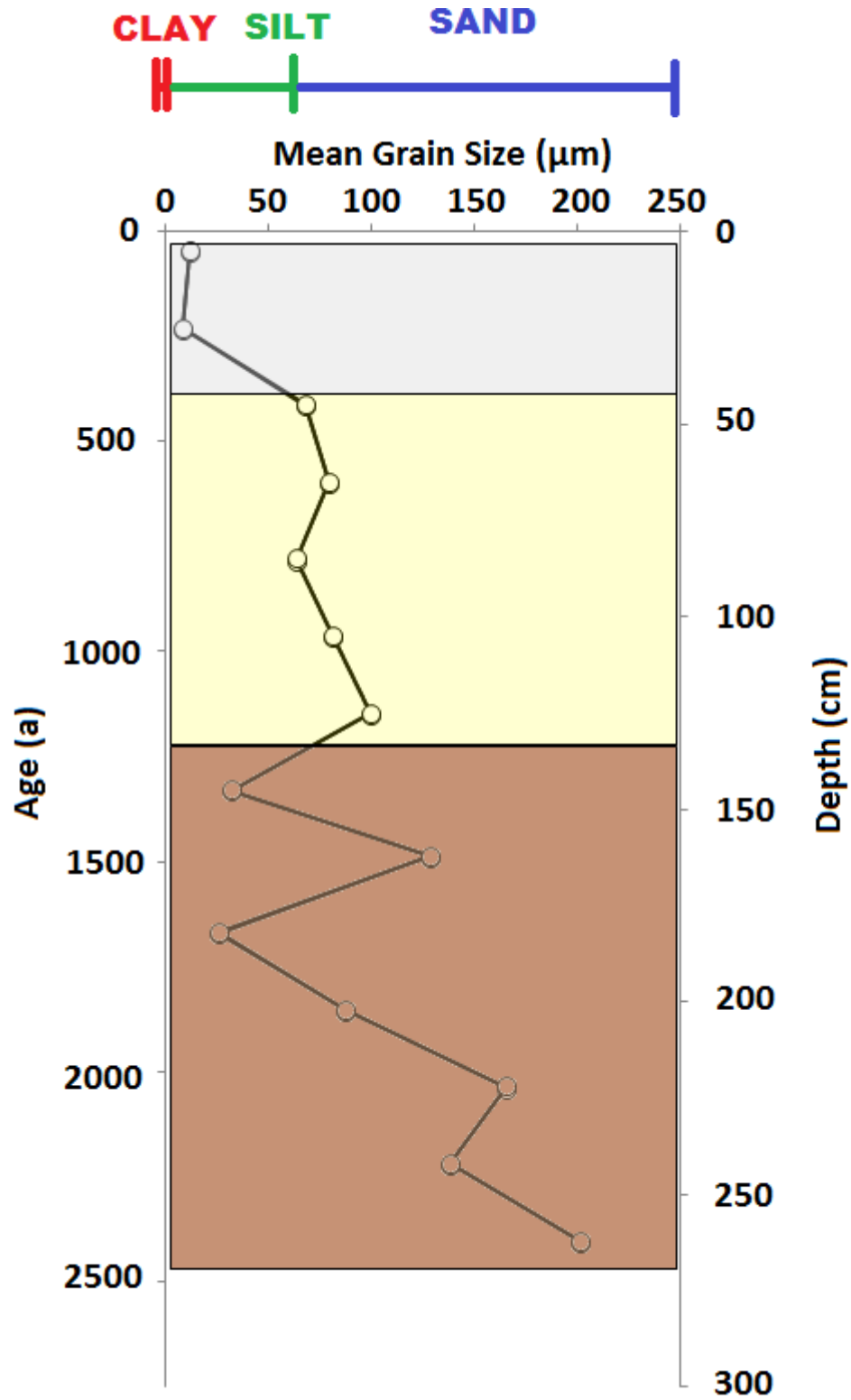
0

4250

Sedimentation rate = change in depth / change in age

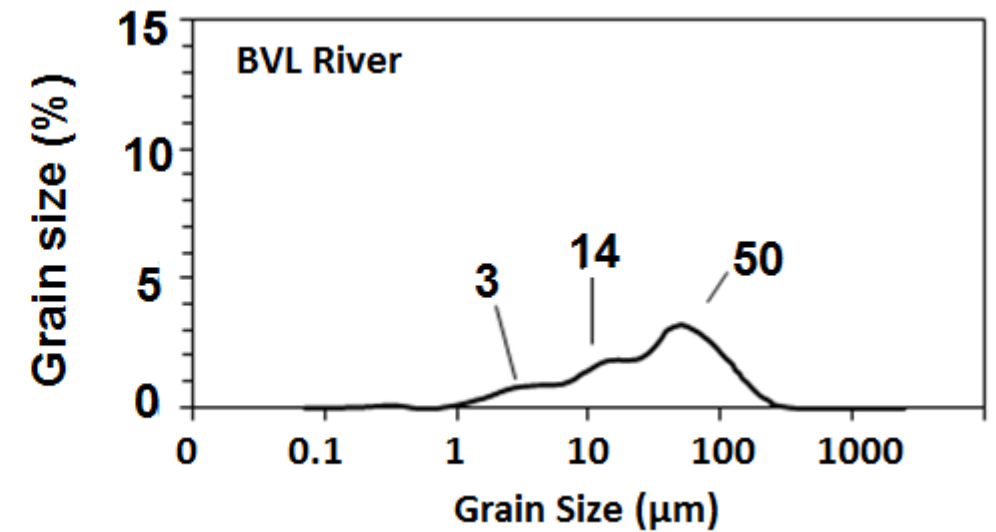
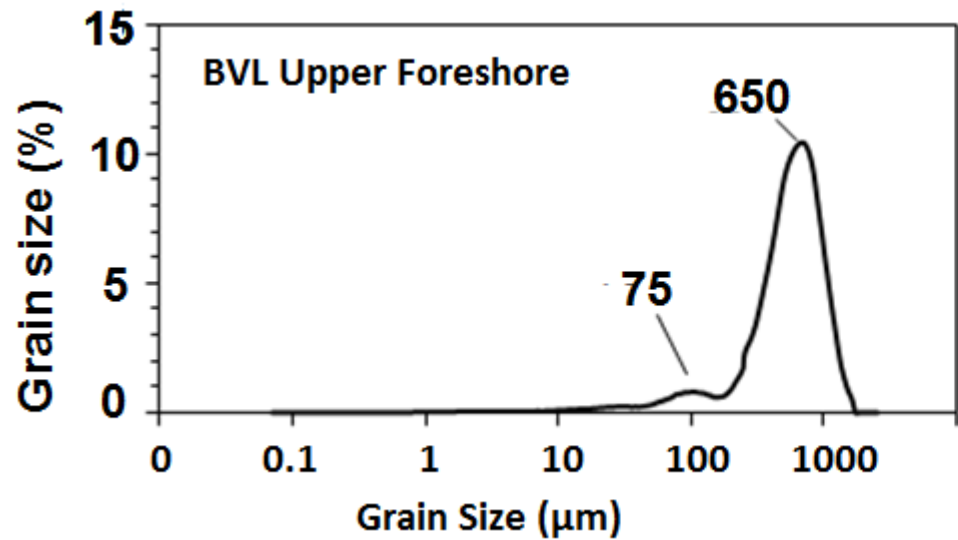
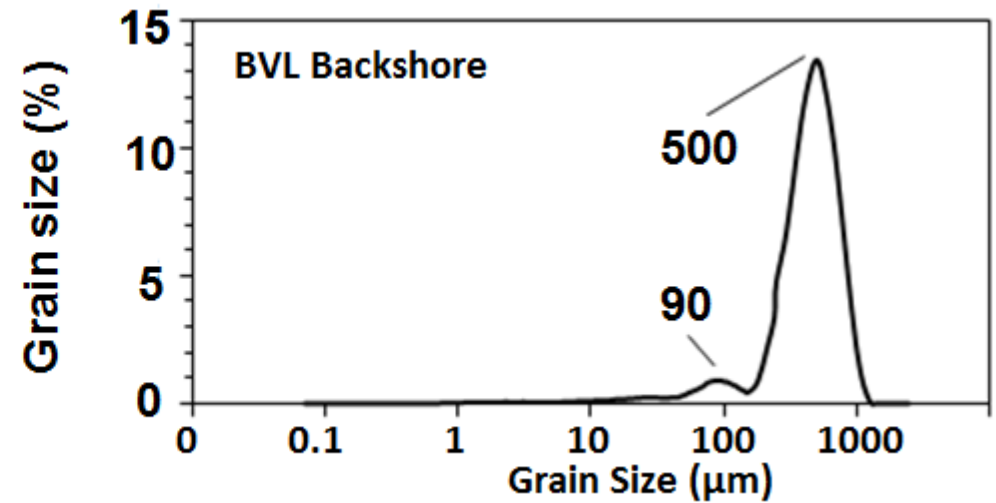
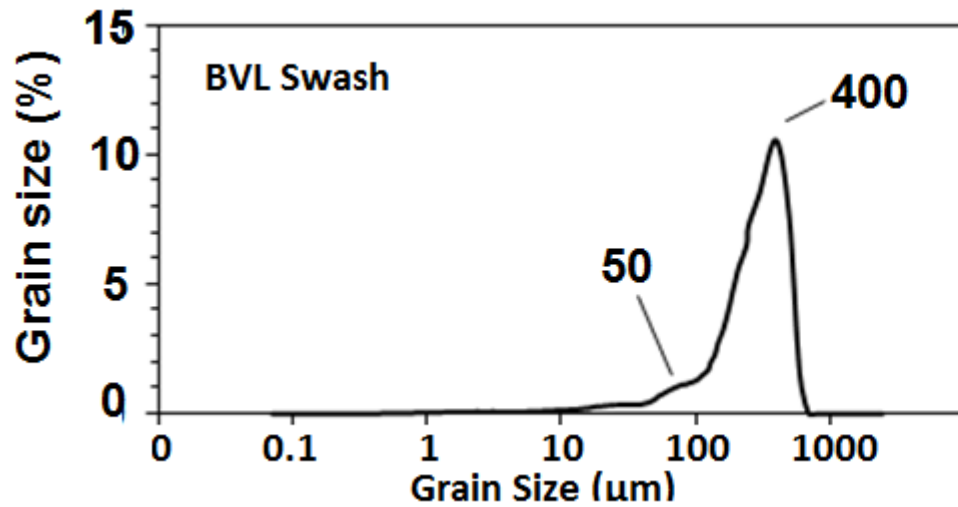
Convert depth to age:

Age = depth / sedimentation rate



Depth (cm)	Mean diameter (μm)
5	12
25	8
45	68
65	79
85	64
105	81
125	99
145	32
165	128
185	25
205	87
225	164
245	138
265	200

Control Samples

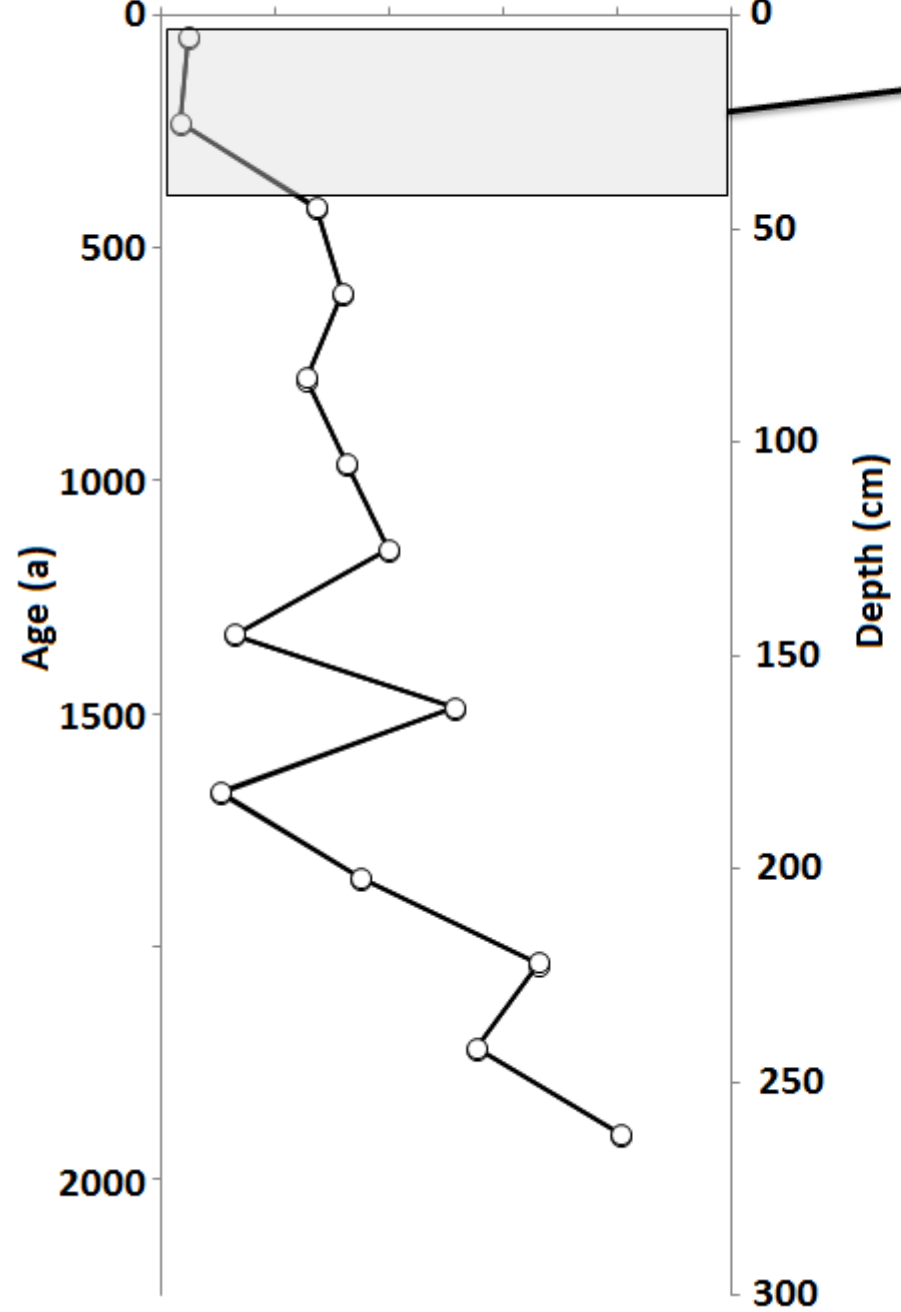


CLAY **SILT** **SAND**

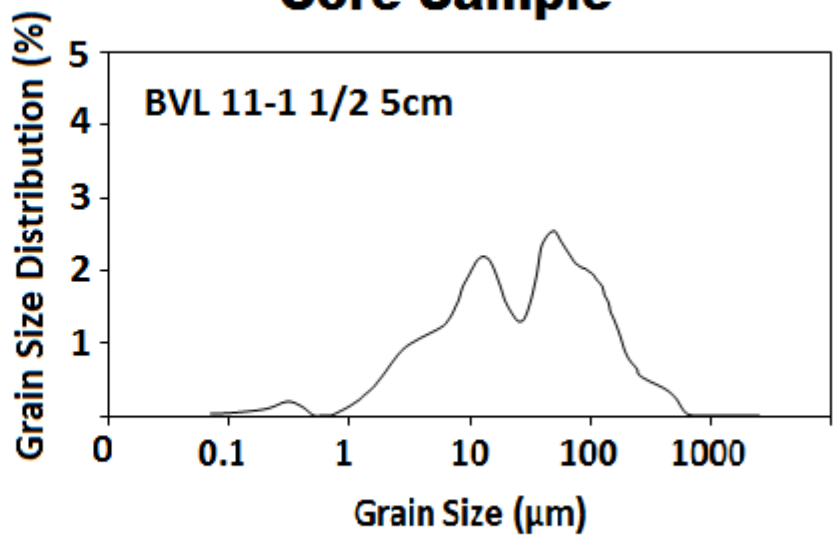


Mean Grain Size (μm)

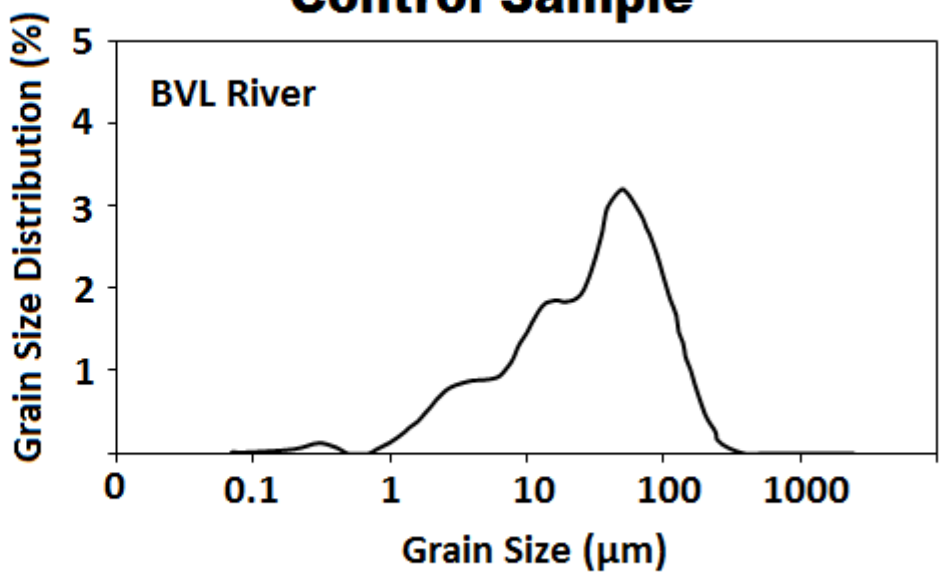
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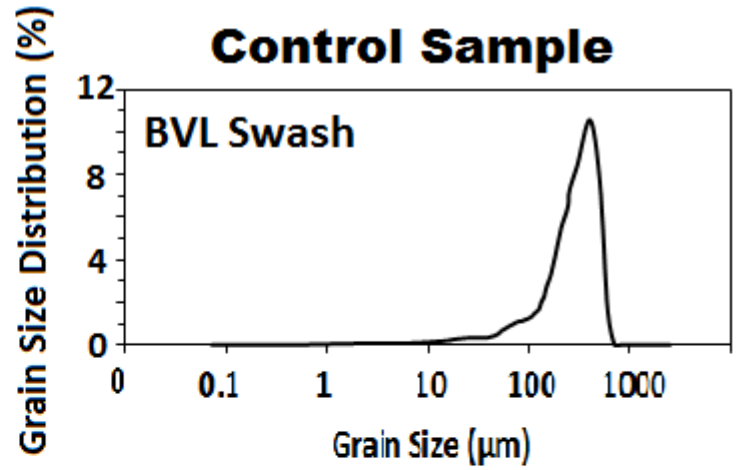
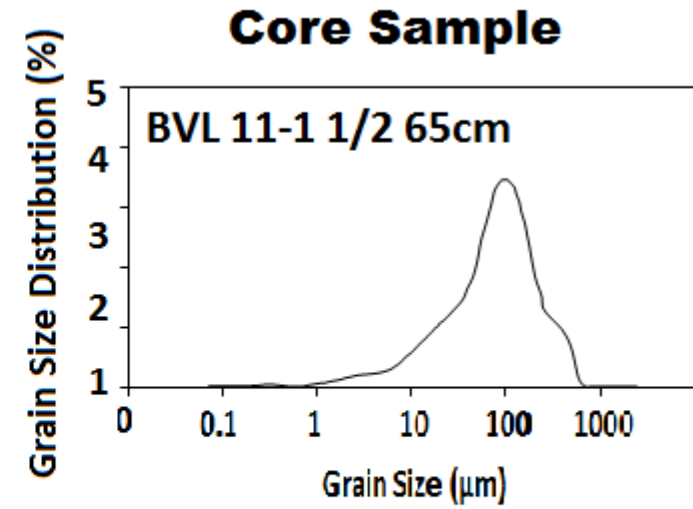
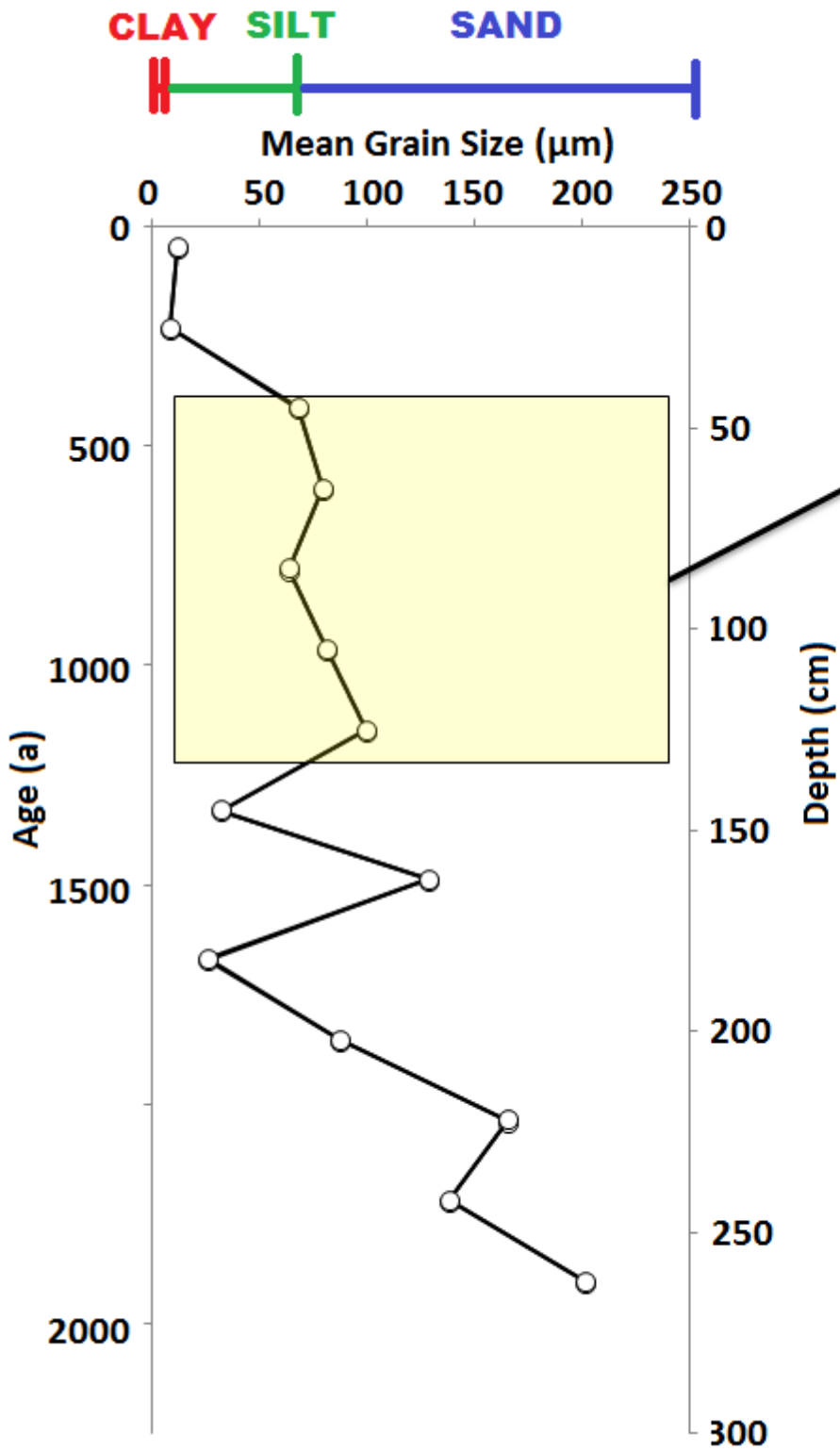


Core Sample



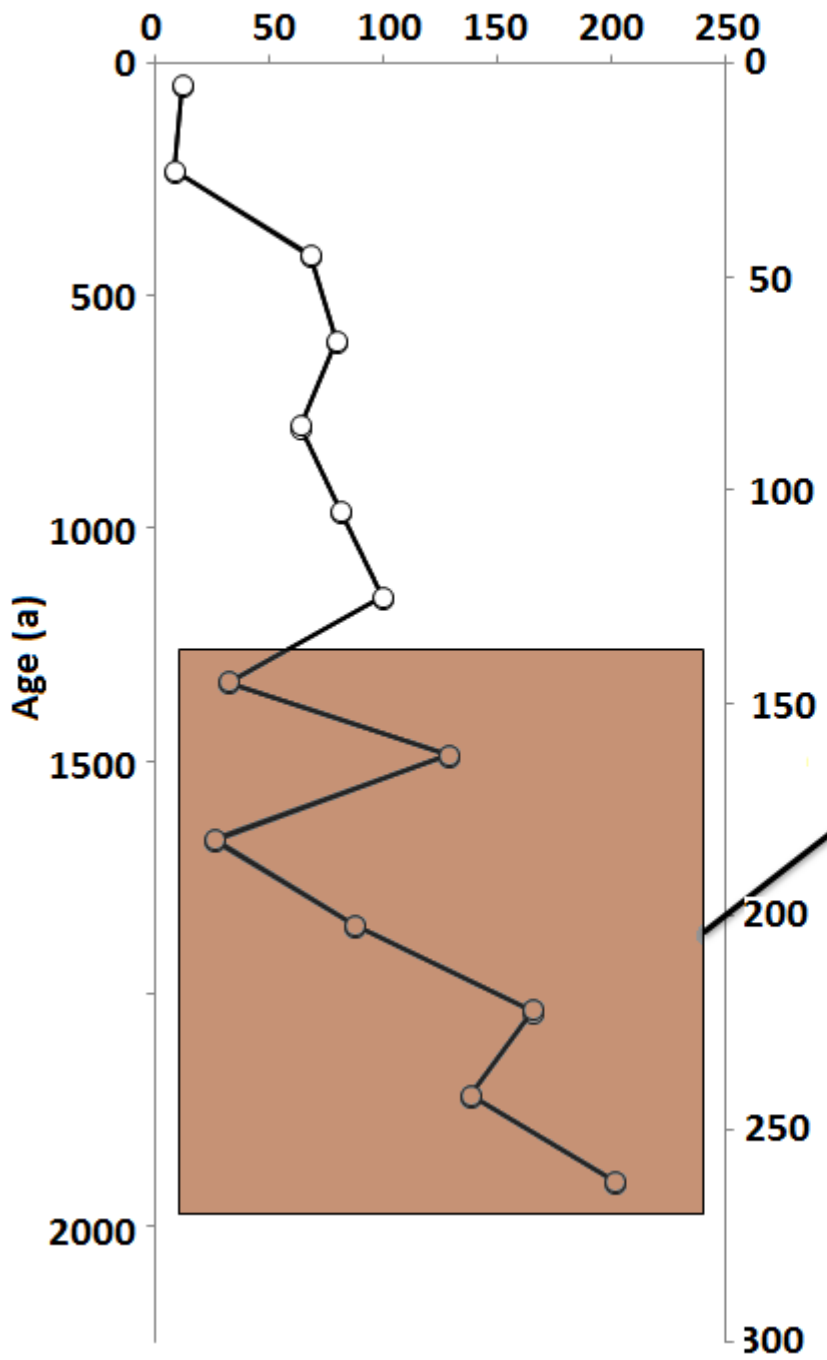
Control Sample



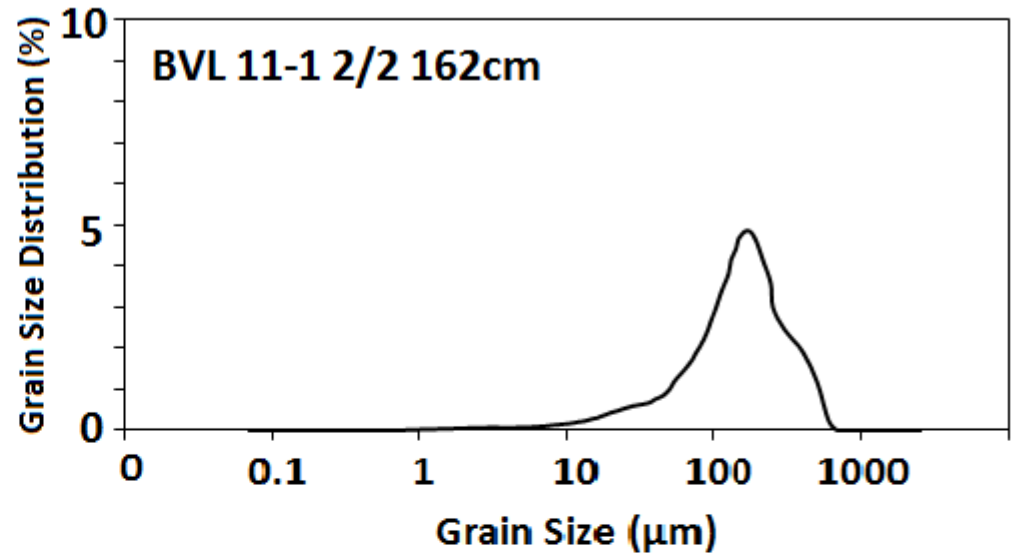


CLAY SILT SAND

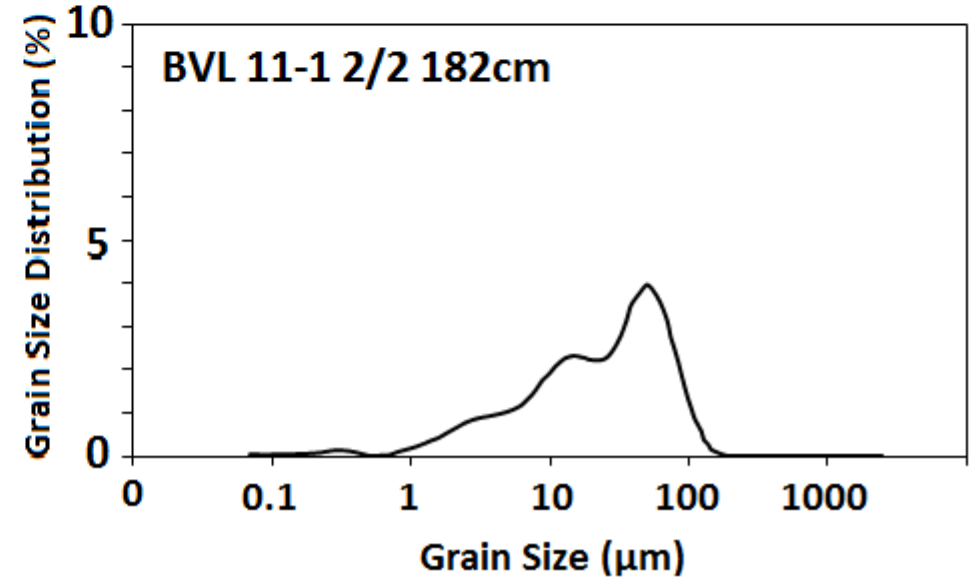
Mean Grain Size (μm)

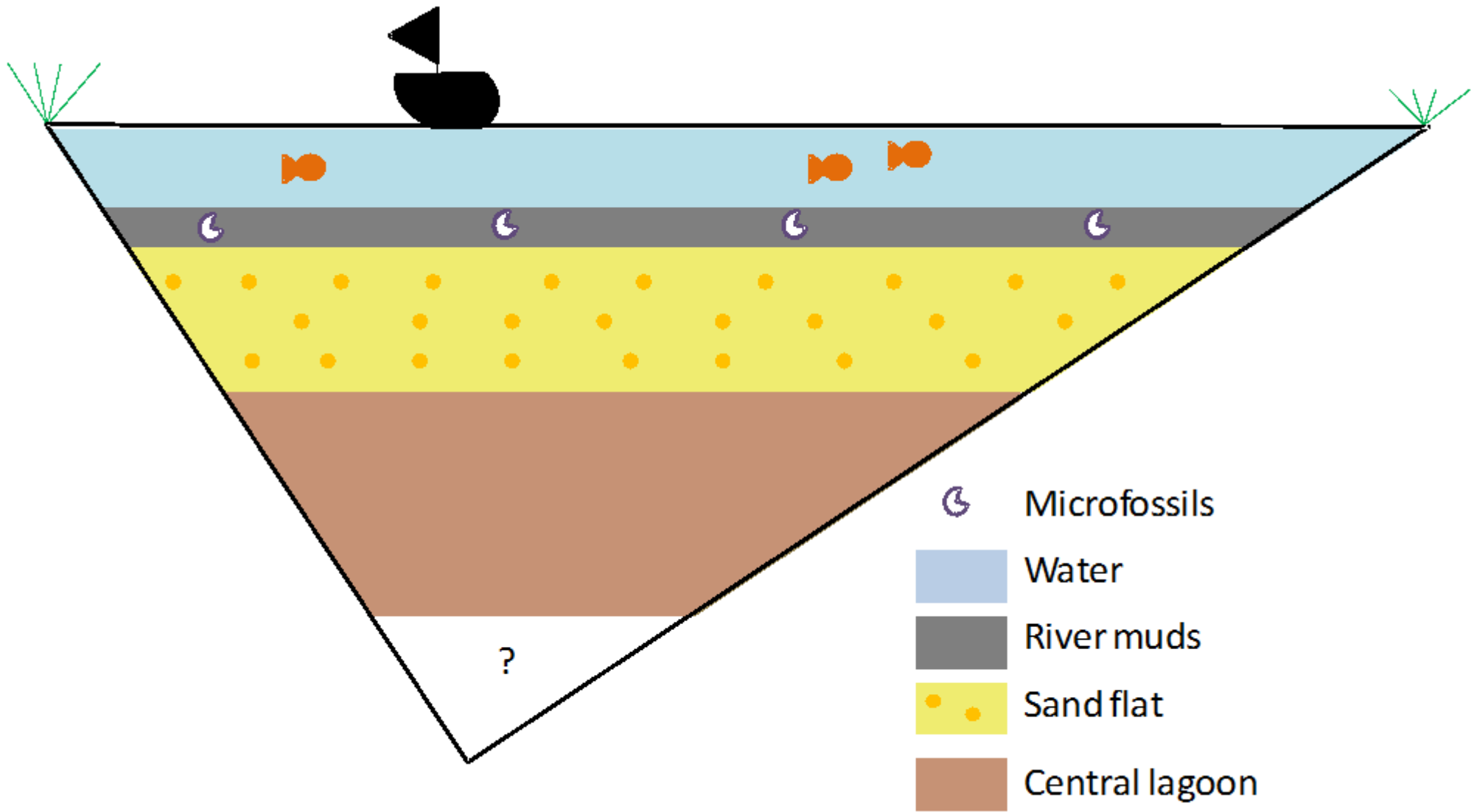


Core Sample



Core Sample





Further Research

- More sediment cores to analyze
- Continue checking for leads of environmental changes
- Improve accuracy of sediment layer ages

Thank You

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