Subaqueous Soil Horizonation and Description

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Hundreds of years ago (maybe more!) this was a freshwater wetland

Cg horizon

Oeb horizon

Oab horizon

SUBAQUEOUS SOILS IN ESTUARIES


1
2


Vibracore
Tube
Vibracore
Sample

McCauley Peat Sampler

Excellent tool to sample organic horizons and high n-value mineral materials


RI 4071H
RP4071H

Describe what is there first!

Horizon Depth

Measure depth from soil surface.

Be a splitter.

Measure the depth of the water over the soil surface.

Provide an estimate of the range in water depth.

A comment on the water clarity in the notes section is also useful.

Horizon Boundary

Boundary distinctness class is usually abrupt or clear because horizons tend to be thin and materials were deposited in layers.

Topography is impossible to discern from a vibracore sample. Multiple McCauley samples can offer a picture of the boundary topography or if horizons are discontinuous.

Particle Size Distribution

Coarse Fragment Content

Most of the soils found on the coastal plain will only have minimal coarse fragments. Our soils in southern New England are chock-full of coarse fragments because many of the subaqueous soils have formed in glacial parent materials. Coarse fragment content is an easy way to distinguish coastal deposits from glacial deposits.

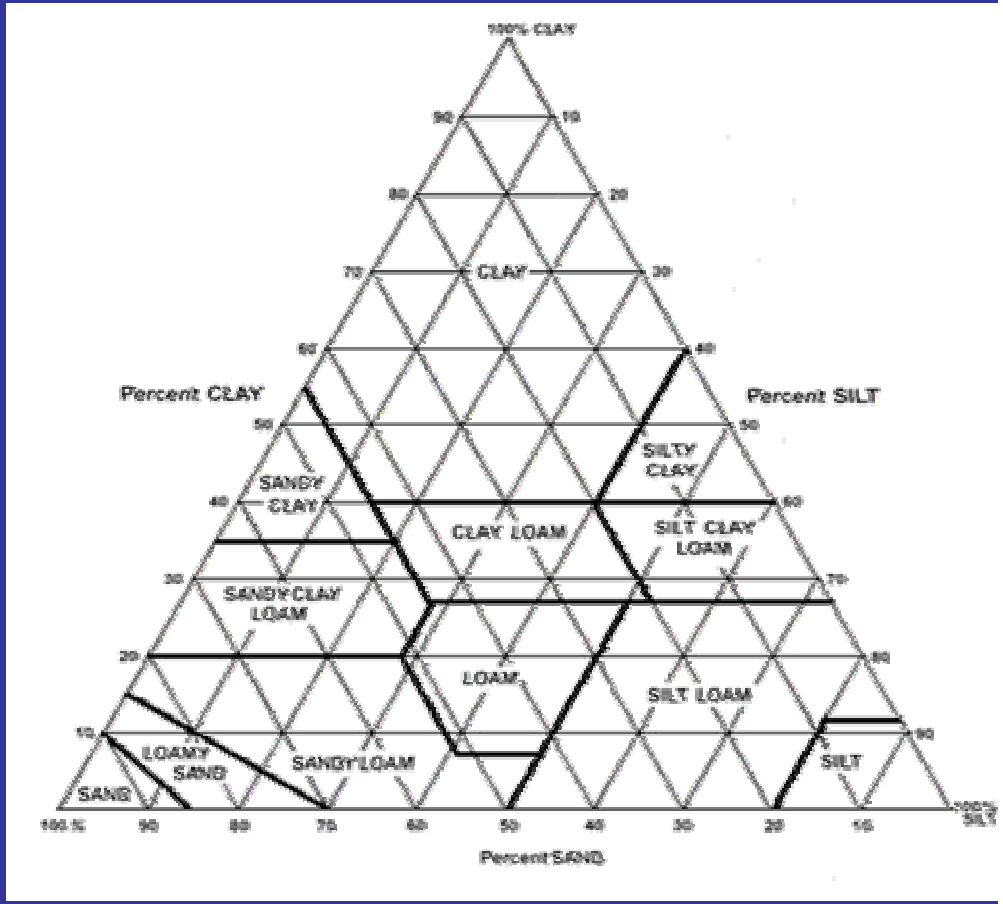
Particle-Size Distribution

Textural Class

Most texture classes range from sand to silt loam with as much as 20% clay (I saw a SiCL in one of George Demas' pedons).

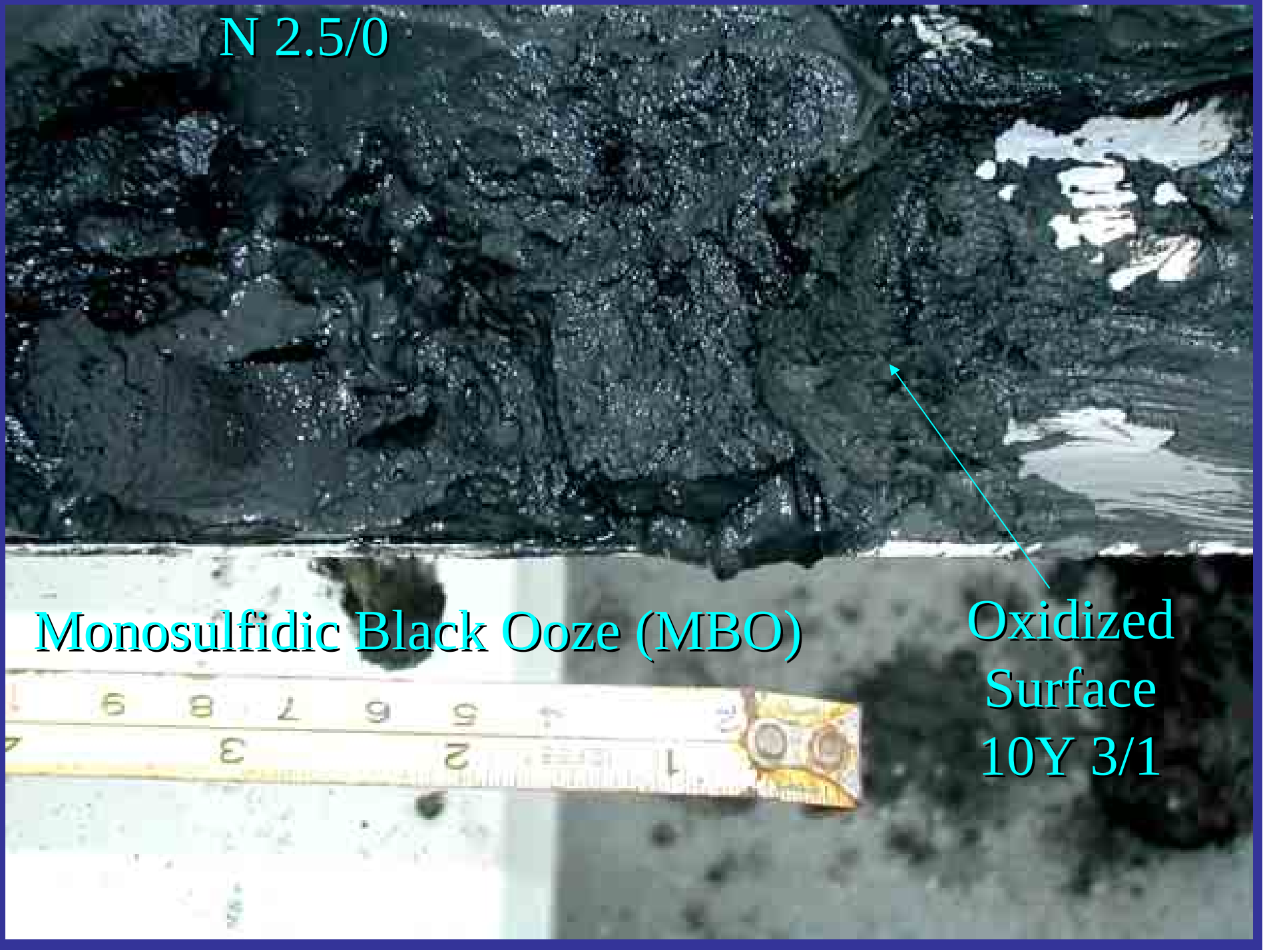
Some practice or sense of sand size modifiers (ie. loamy fine sand) is important.

Samples with high n-value or considerable organic carbon both tend to be difficult to estimate clay or sometimes silt contents. Most of these samples are silt loam.



Matrix Color

Most of the colors can be found on the 2.5Y, 5Y, or gleyed pages; values can run the gamut and chromas are usually 3 or less; though there are exceptions.


N 2.5/0
Monosulfidic Black Ooze (MBO)
Oxidized
Surface
10Y 3/1

Oxidized Soil Surface


6/2
Coarse Horizons:
Chromas 3-7
Redoximorphic features
in submerged profile

Redoximorphic Features

Most redoximorphic features in subaqueous soils are relict features

Soil Structure

Structureless

Massive

Structureless

Single Grain

Soil Consistence

- All the classes are used
- Loose, very friable, and friable are the most common.

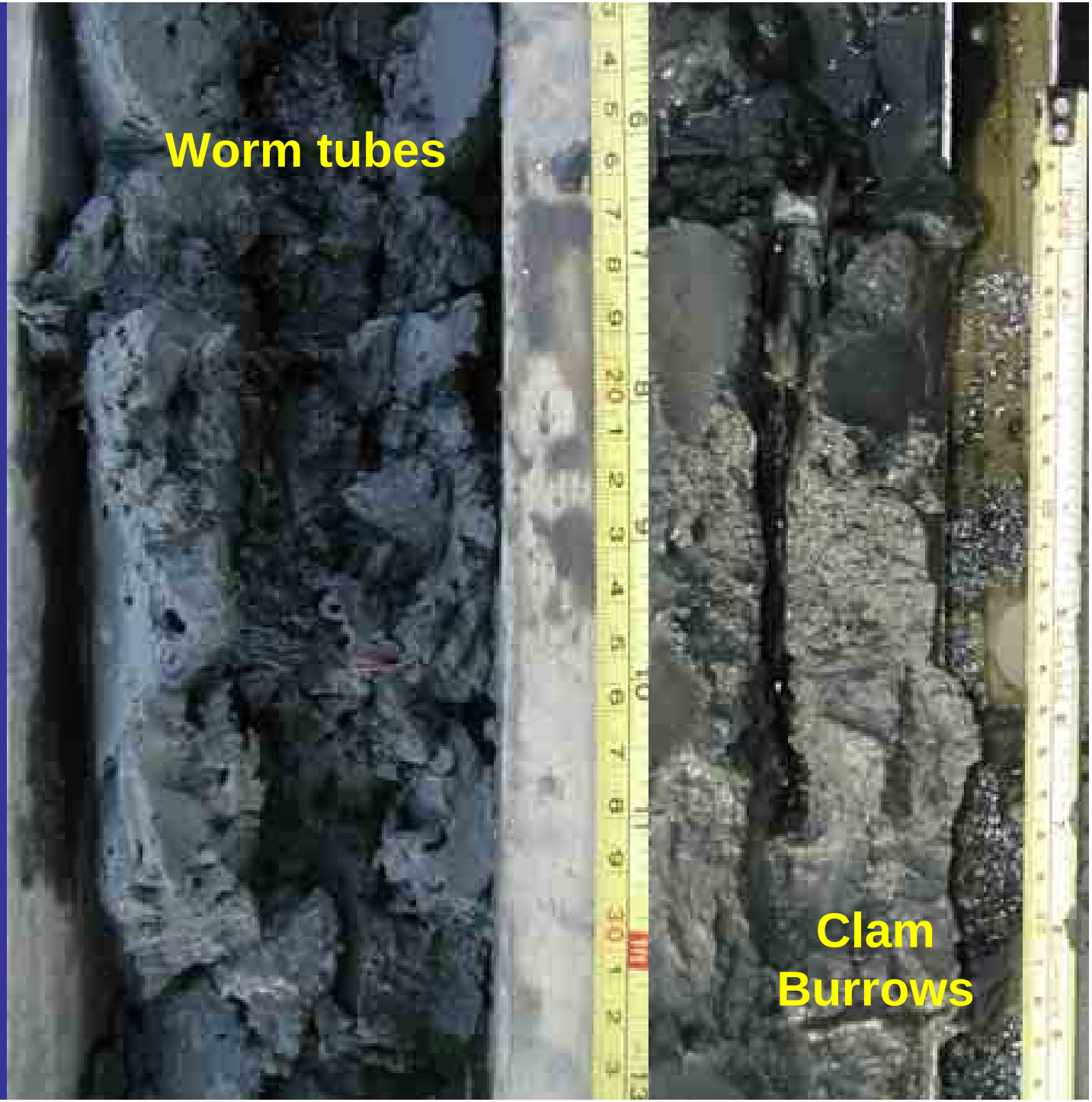

Roots

Shell Fragments

Record the type, abundance, and size of all the shell fragments.

Pores

Mostly the result of animal activity



N-Value

<0.7

0.7-1.0

>1.0

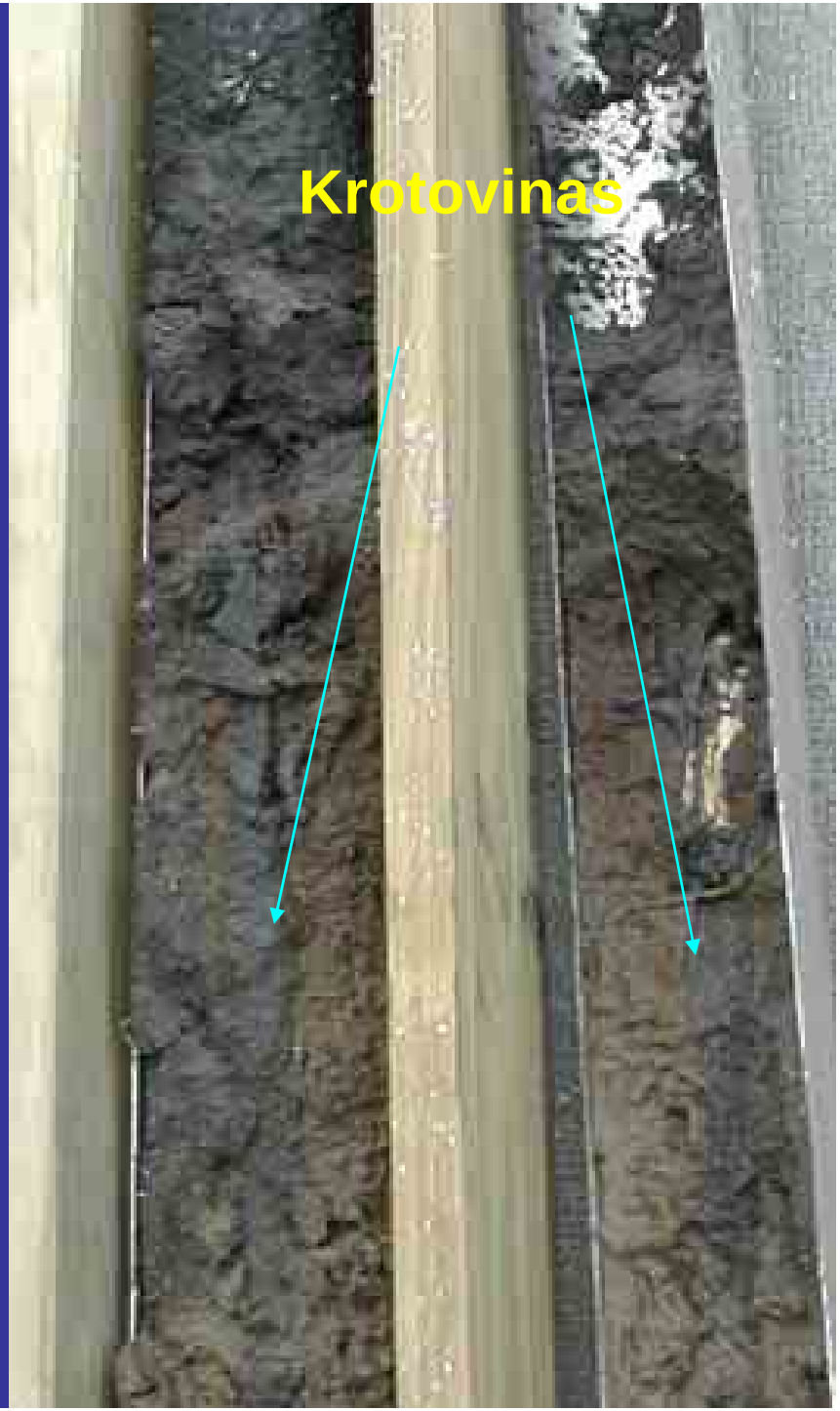
>>>>1.0

Sulfides

Jet Black Color (N 2/0)

Passes Whiff Test

Other Features

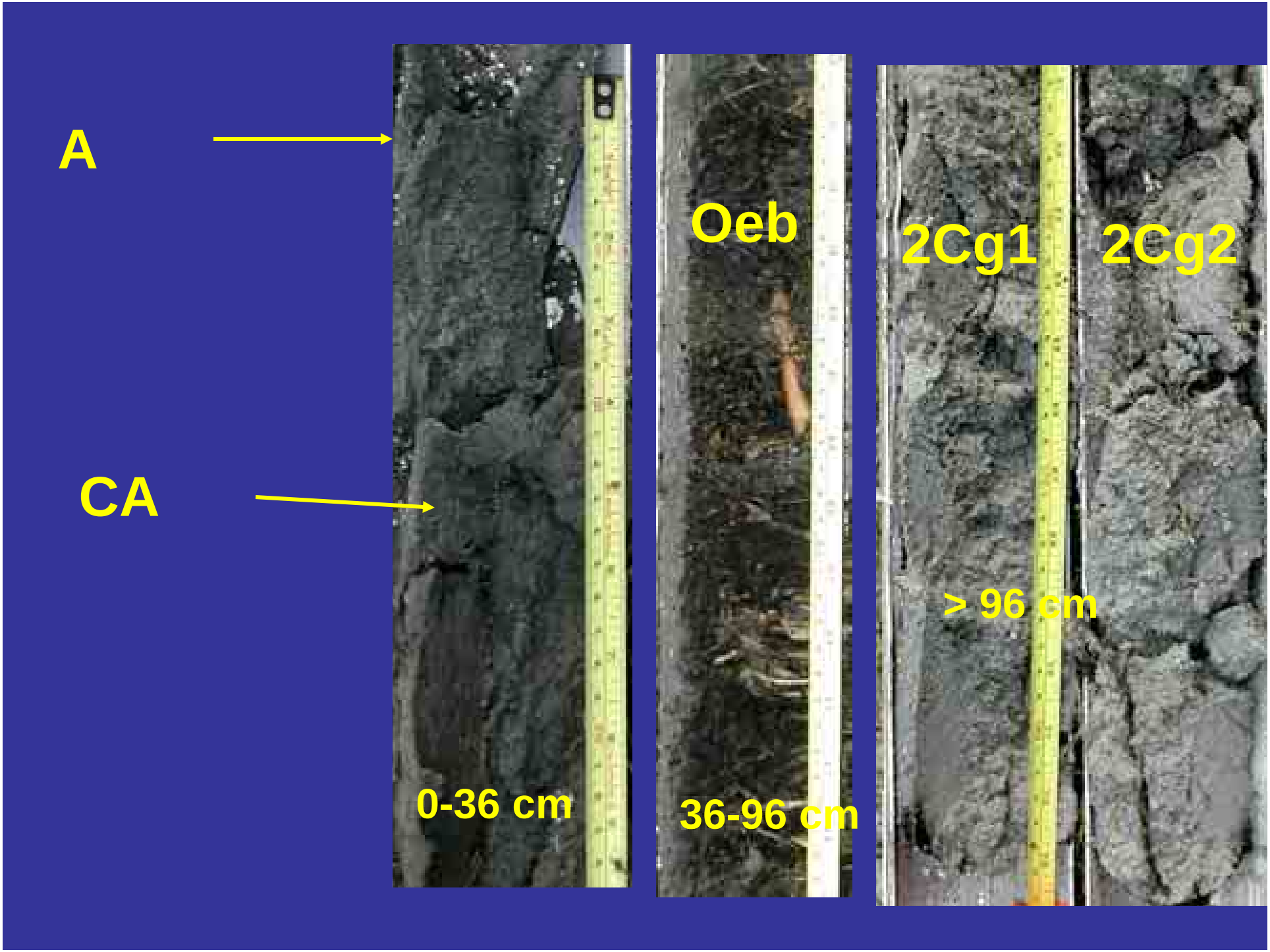


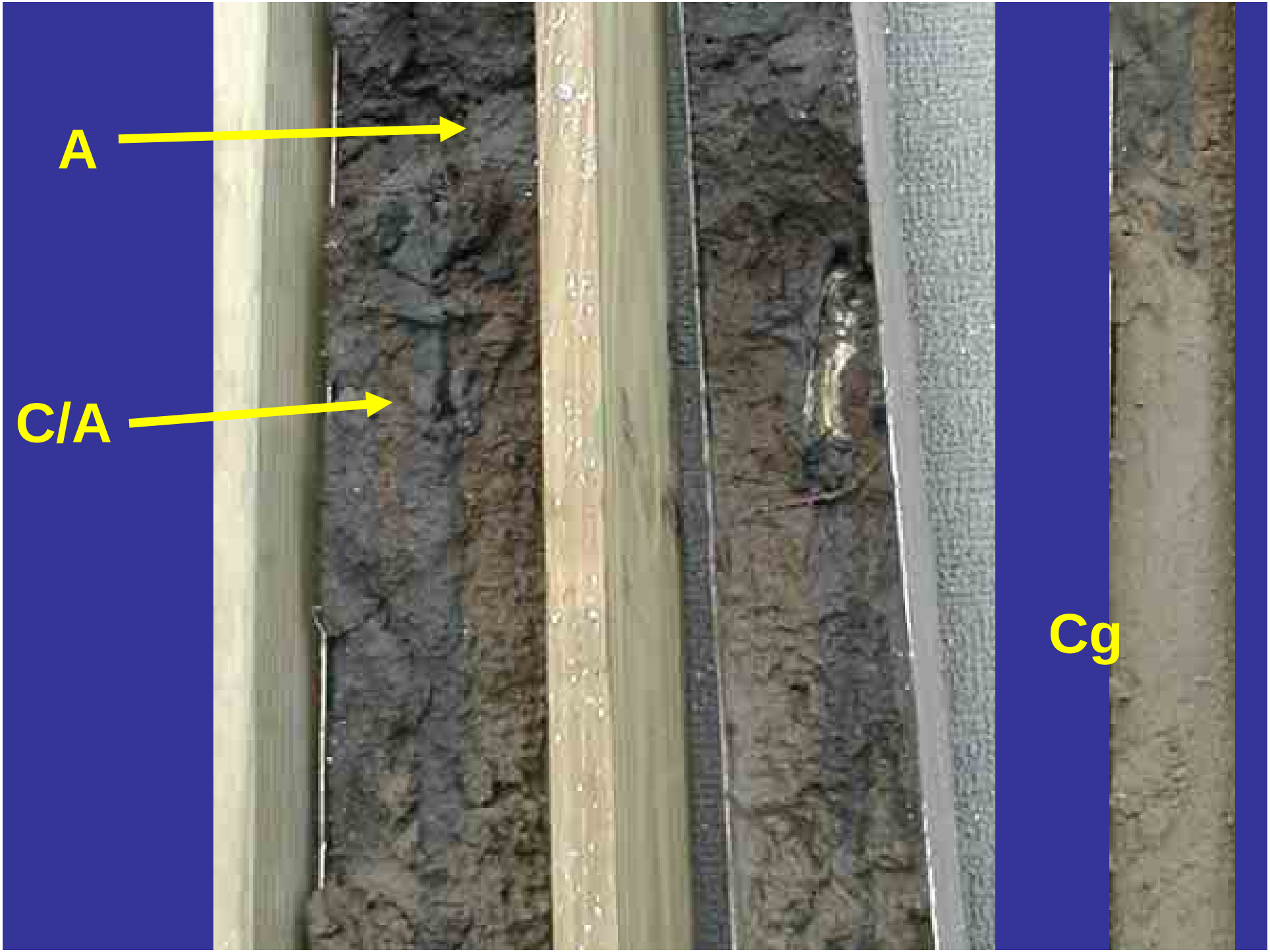
Horizonation

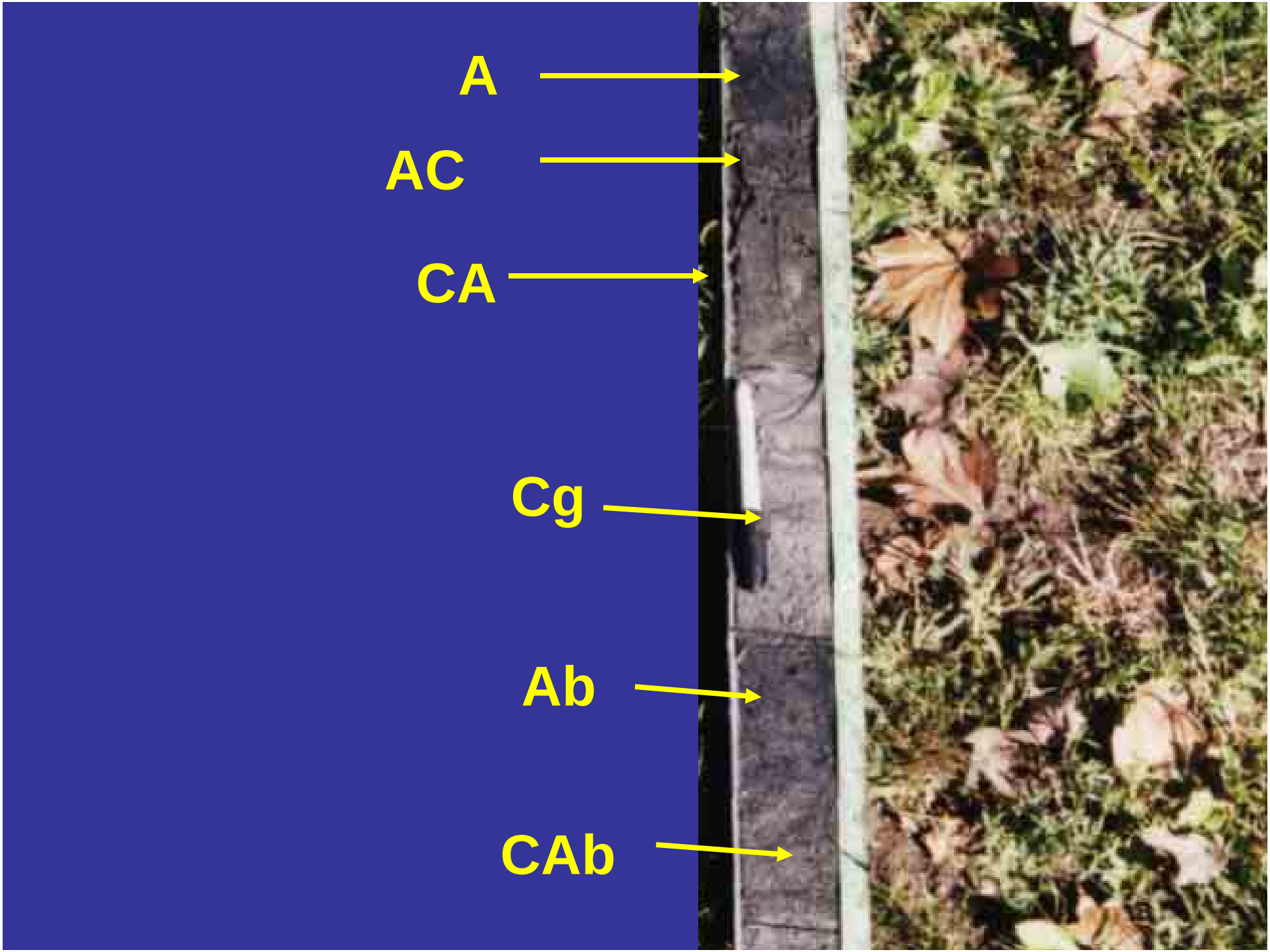
- Oa, Oe, and Oi - buried organic horizons
- A and Ab – most common horizon
- Ag – value 4 or more
- Ap? – some of these soils have been worked over extensively by folks looking for clams

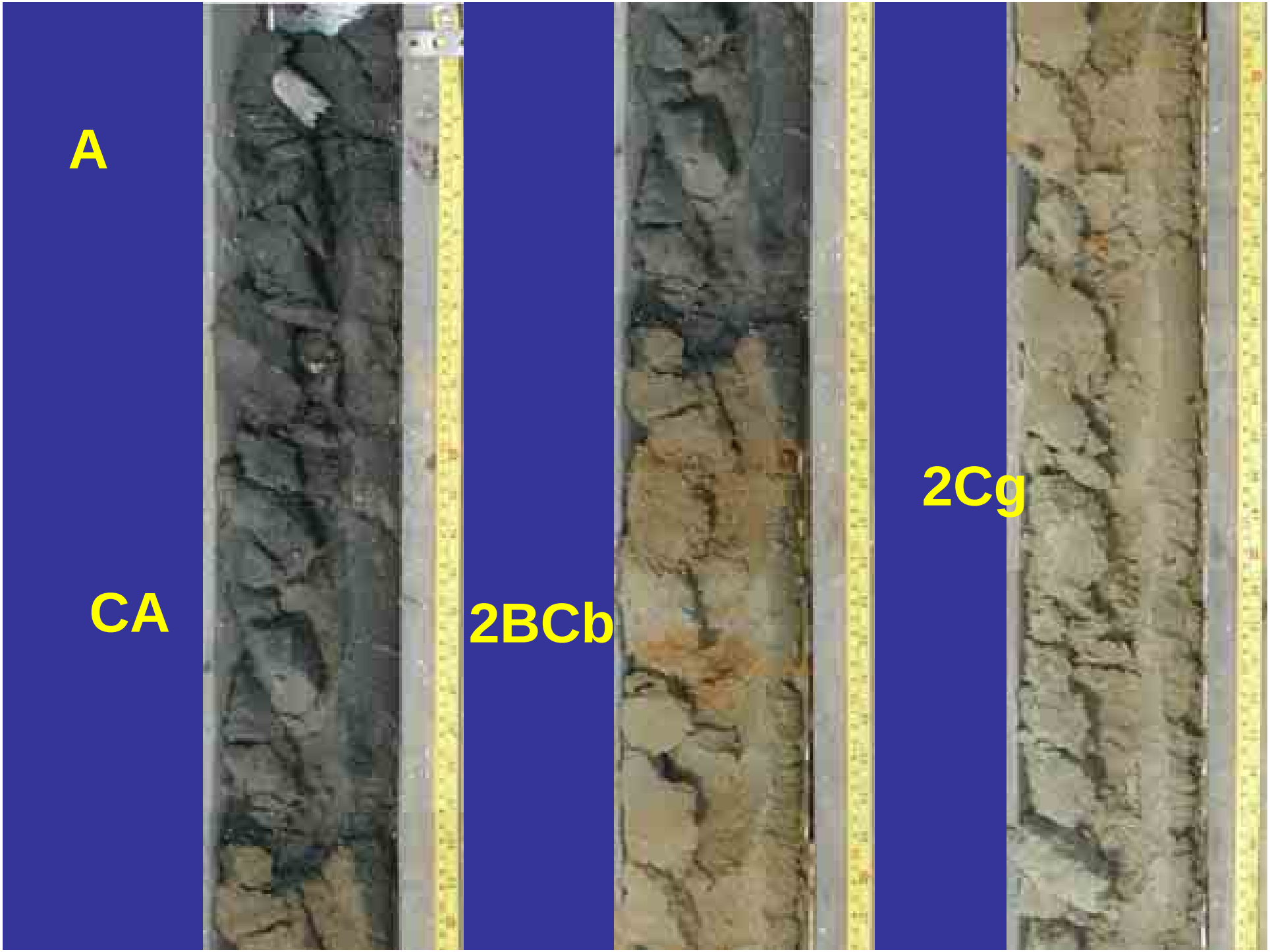
Horizonation

- Buried and relict Bw, Bg, or Btg horizons
- Bw – location of freshwater inputs containing significant ferrous Fe
- C and Cg
- Transitional and Combination Horizons (AC, CA, A/C, C/A)
- There are many discontinuities


A
CA
0-36 cm
Oeb
36-96 cm
2Cg1
2Cg2
> 96 cm


A
C/A
Cg


A
AC
CA
Cg
Ab
CAb


A
CA
2BCb
2Cg