



Ocean Science Data Based Lesson

A Guide to Construction of Materials
for Sea 3D

This guide is intended to be used in conjunction with the lesson plan for this lesson.

This document is not a lesson plan. It is intended only to provide instruction for creating the custom models the Sea 3D lesson requires.

Once built, the models can be reused. This lesson is intended for use in informal education settings.

Lesson Goals

- Introduce students to real time data
- Provide students with a visual aid when first teaching about data.
- Leave students with skills to interpret real time data and false color images.

Needed Construction Materials

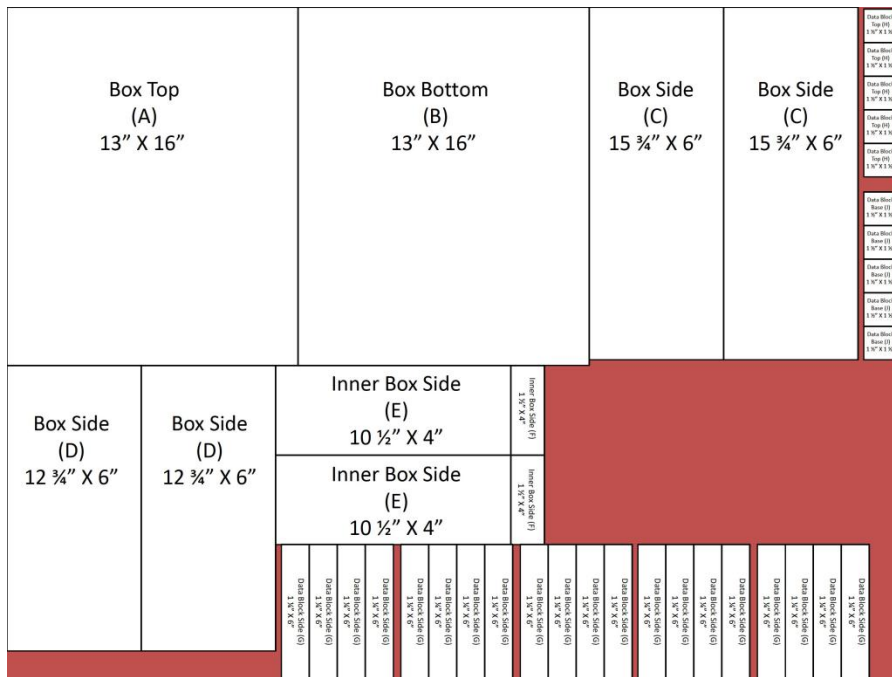
For a class of 30 students make six of models

- 6 pieces of $\frac{1}{4}$ " thick foam board
30" X 40"
- Metal straight-edge ruler
- Razor knife and replacement blades
- Hot glue gun with plenty of glue sticks
- Large format color printer for images
- 30 small pull tabs or knobs
- (optional) 24 raised feet
- Color Coastal Map printed to match size of box top (16" X 13")
- Bathymetric Profile scaled to size of map on box top and side of box.
- Cross-sectional data sets along your bathymetric profile
- Color key for data sets
- White glue to adhere images to box

Sea 3D

Use the Sea 3D layout guide (separate document) to sketch out all the pieces needed on a sheet of foam board.

Once laid out, carefully cut each piece out using the metal straight edge, and razor knife.



List and Measurements of Pieces

<u>Piece Symbol</u>	<u>Piece Location</u>	<u>Piece Dimensions</u>	<u>Total to Cut</u>
A	Box Top	16" X 13"	1
B	Box Bottom	16" X 13"	1
C	Box Side	15 ¾" X 6"	2
D	Box Side	12 ¾" X 6"	2
E	Inner Box	10 ½" X 4"	2
F	Inner Box	1 ½" X 4"	2
G	Data Block Side	1 ¼" X 6"	20
H	Data Block Top	1 ½" X 1 ½"	5
J	Data Block Bottom	1 ½" X 1 ½"	5

Note: There is no (I).

This layout produces one box. We use one box per 4-5 students so several will need to be created.

Sea 3D

Large Box

Position the side pieces (C) and (D) flush over the box bottom(B) to assure fit.

Hot Glue together into place.



Side pieces are $\frac{1}{4}$ " shorter than the full dimension of the boxes to account for the foam board thickness. Overlap the sides to get it flush and provide more stability to the form.

Inner Box

Position the inner box sides (E) and (F) together to assure fit. These pieces should overlap in a way to build a box of dimensions $10 \frac{3}{4}$ " X $1 \frac{3}{4}$ " X 4"

Hot Glue the inner box sides together

Data Block

Position four of piece (G) flush over the bottom piece (J) to assure fit.

Hot Glue together into place.

Hot Glue top piece (H) on.

Repeat four more times.

Sea 3D

Use white glue to adhere a color map the size of the box to the top piece (A).

Carefully cut five evenly spaced 1 ½" X 1 ½" holes along the profile line that corresponds to the map.

Trim your holes just a hair larger, so the data blocks slide through them easily.



The cut outs in this image are along the Rutgers University "Endurance Line".

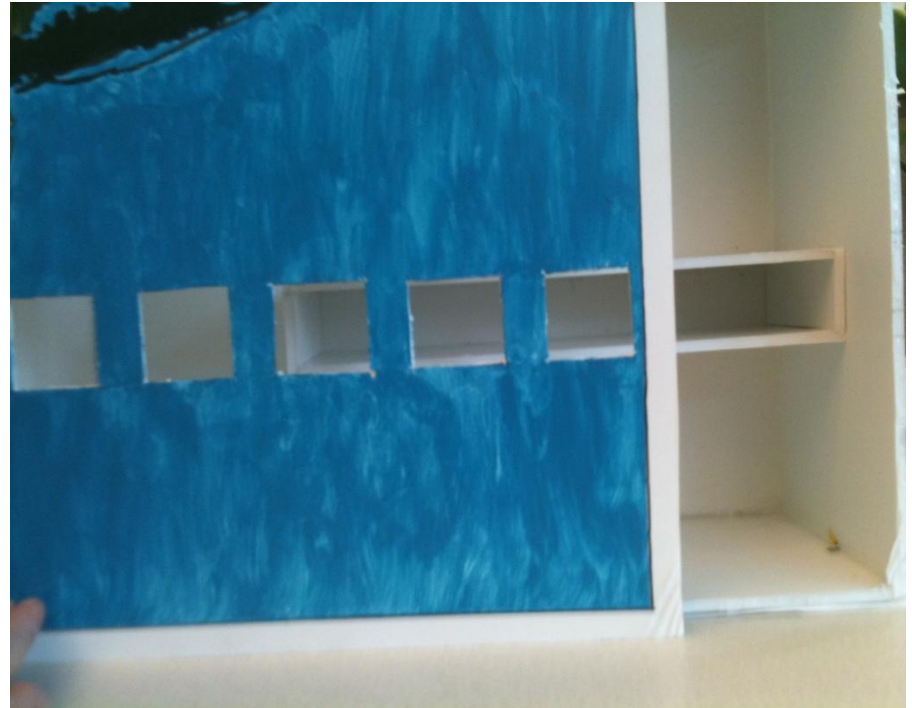
Sea 3D

Place the inner box into the large box.

Position the inner box so it lines up with the cut outs in the box lid (A)

Hot Glue inner box into place when you are certain of the alignment.

Hot Glue box lid (A) onto the top of the box.

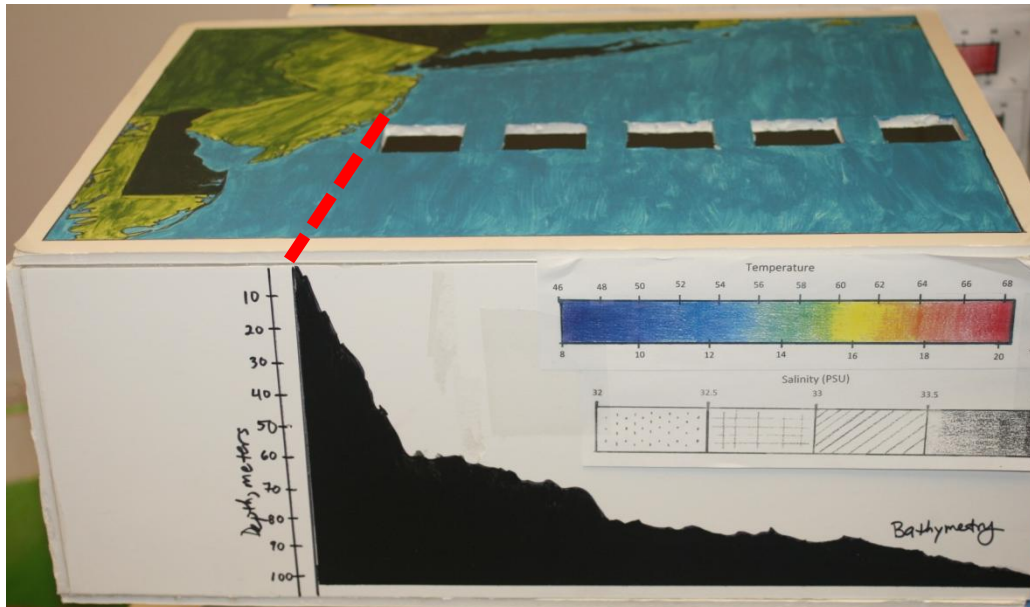


The inner box serves to keep the data blocks vertical, and prevent them from falling and getting stuck inside the box.

Sea 3D

Affix a blank bathymetric profile to the front of the box with white glue

Find the point on the coastline your transect extends from. Align the depth profile on the front of the box such that the beginning of the transect (depth = 0) matches that point on the coastline (see dotted line).



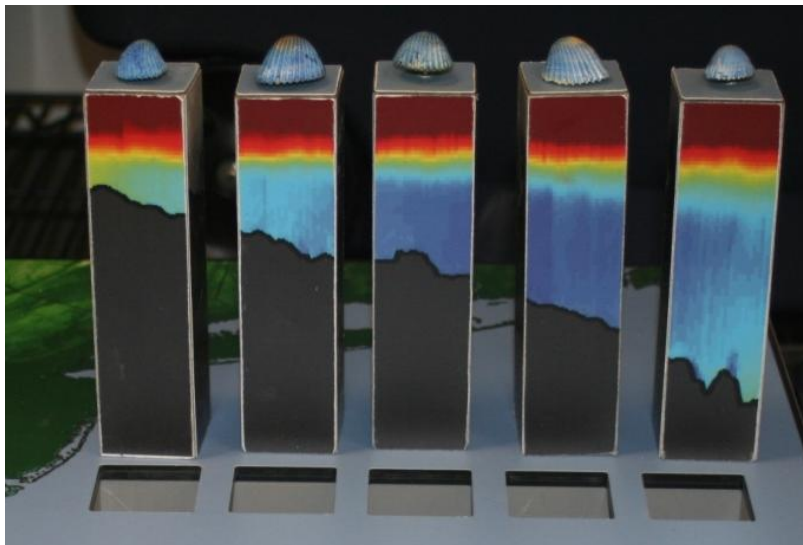
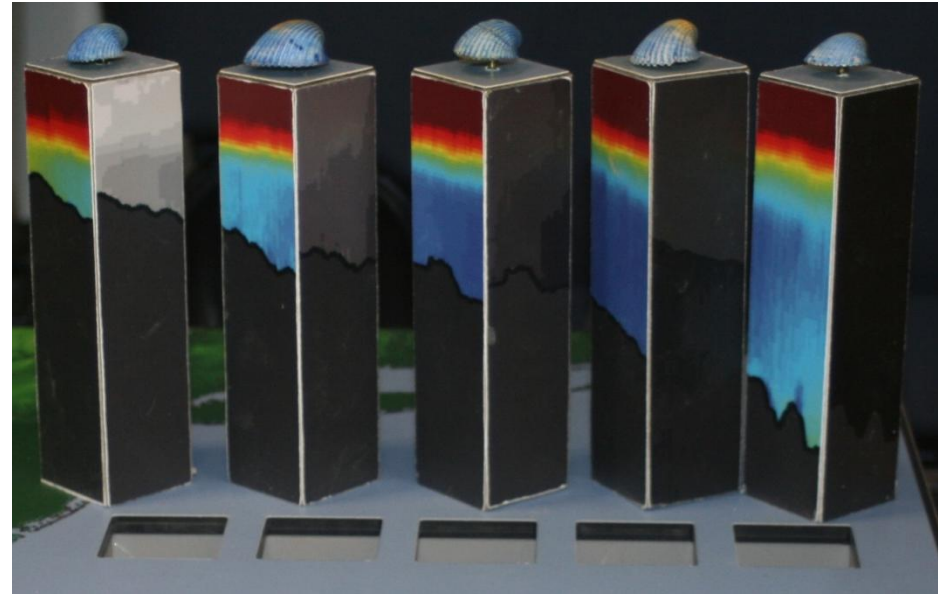
Place any color or symbol keys on the side of the box.

Sea 3D

Print data depth profiles 6" height and the width of your blank profile adhered to the side of the box.

Trim the profiles into strips that align with the bathymetric profile on the side of the box, and the cut-outs in the top of the box. (There will be discarded data from the spaces between the blocks.)

Use white glue to adhere each data profile strip to a data block (see image below).



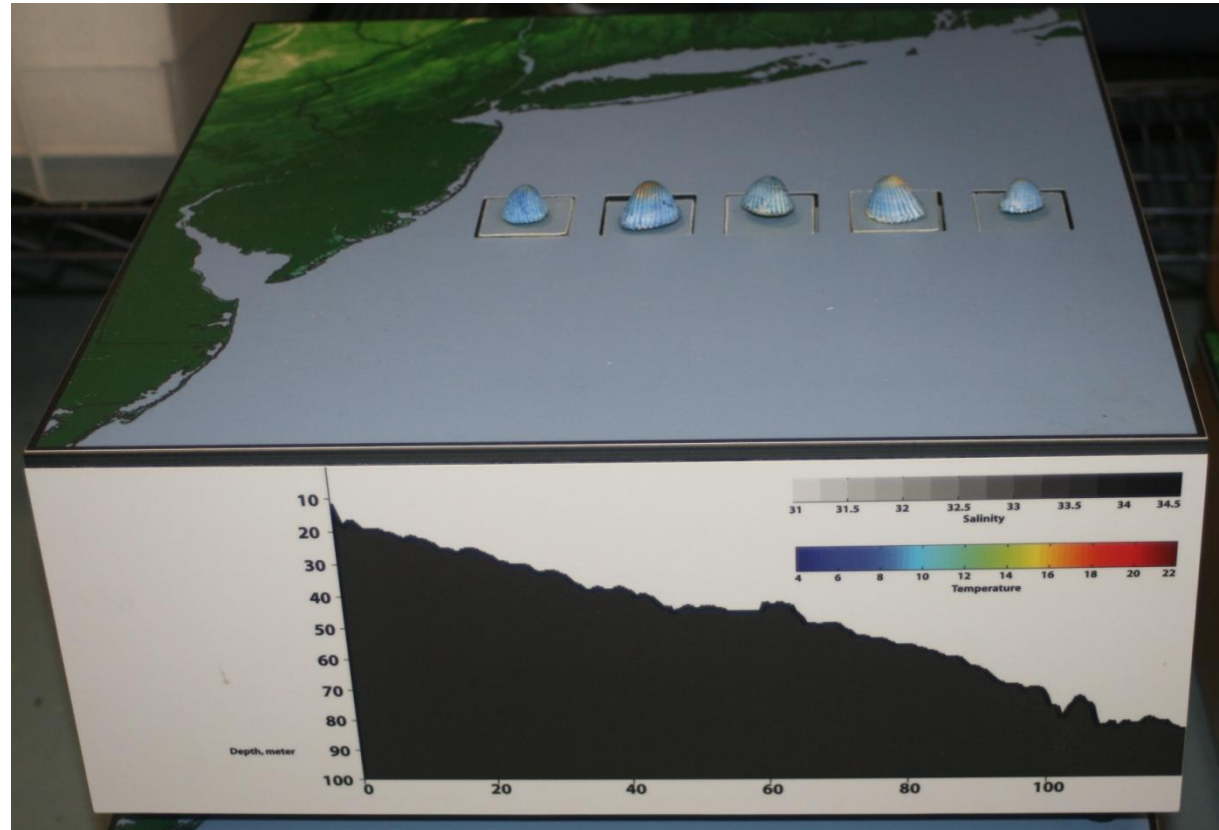
A total of 4 depth profiles could be used with the data blocks. One is adhered to each side in the same method described (shown above is summer water temperature composite on the left and summer salinity composite on the right side of the blocks).

Glue a knob or pull tab to each data block to make lifting easier.

Sea 3D

Insert the completed data blocks into the box; they should be flush with the top, and easy to take in and out.

If you need to stack these for storage, attach feet on the bottom of each model to accommodate the height of the pull knobs.



Sea 3D

Print a blank bathymetric profile that can be printed as a worksheet for students.

Students will use the worksheet to generate their own data cross section during the lesson.

