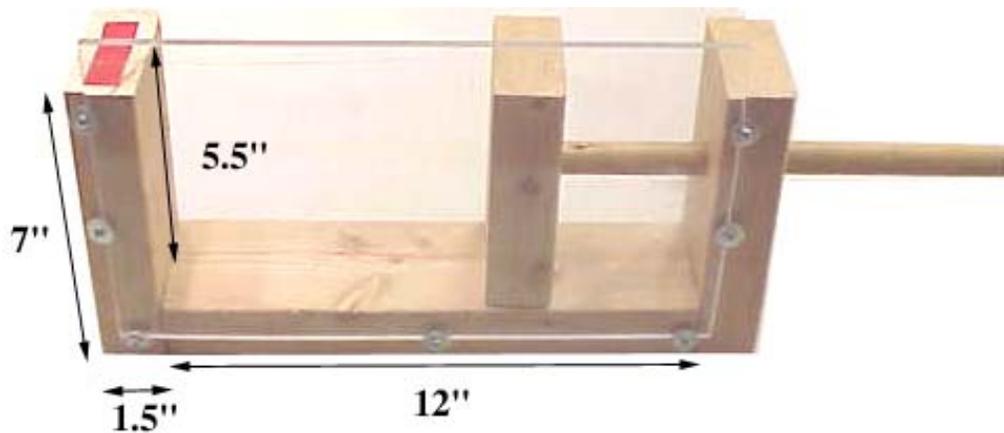


# The Squeeze Box

## Or how to respond to pushing and shoving



By compressing layers of sediments, you can see how folding and faulting occur.

### Materials:

#### For squeeze box construction:

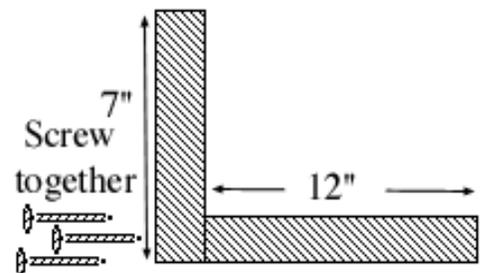
- A 2x4 about a 1 yard long
- 3/4" Wooden Dowel or 3/4" PVC pipe
- 2 pieces of clear plastic sheet 1/4" thick or less.  
Pieces should be roughly 13" x 6 1/2" (you may want to have these pieces cut by your plastics dealer).
- 14 to 22 3/4" wood screws with washers
- 6 wood screws at least 2 1/2" long

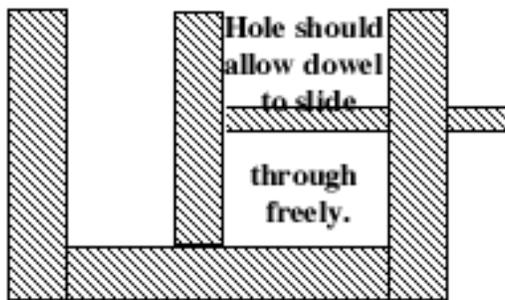
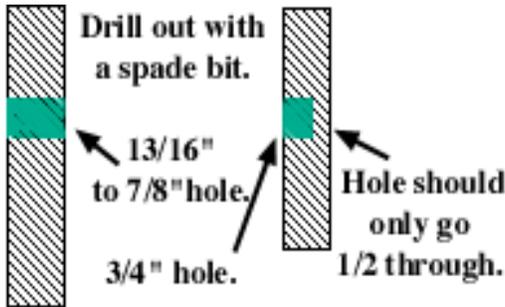
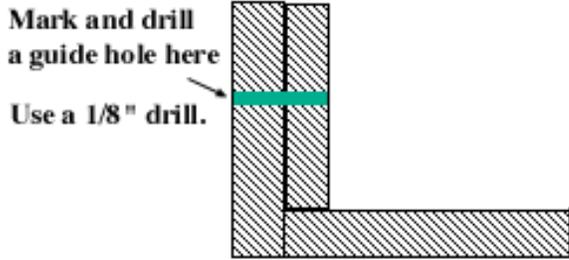
#### Ingredients for squeeze box:

- A bucket of sand
- A 5 lbs. bag of flour or salt or any other granular material that is not the same color as the sand
- You should experiment with various types of materials including wet and dry material (i.e. gelatin, bread, soil, baby powder...)

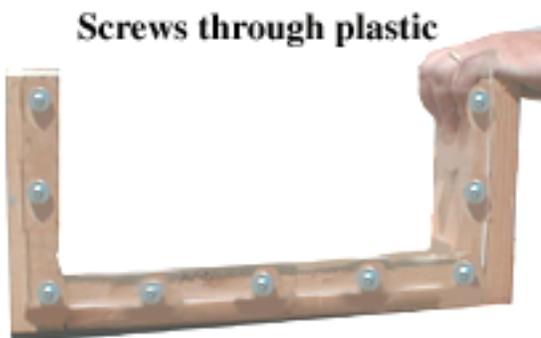
### Assembly:

1. Cut the 2x4 into the following lengths (note! A 2x4 is really 3.5" by 1.5"):
  - Two 7" pieces
  - One 12" piece
  - One 5 1/2" piece
2. Join one of the 7" 2x4 pieces to the 12" 2x4 piece (see diagram to right). Use 2 1/2" long wood screws. You may need to pre-drill holes for the screws. This is the beginning of the deformation box frame (see diagram to the right).





This hole is for the dowel to slide back and forth so the hole should pass all the way through this piece. Use the small hole you drilled in step 3 as a guide for your spade bit.



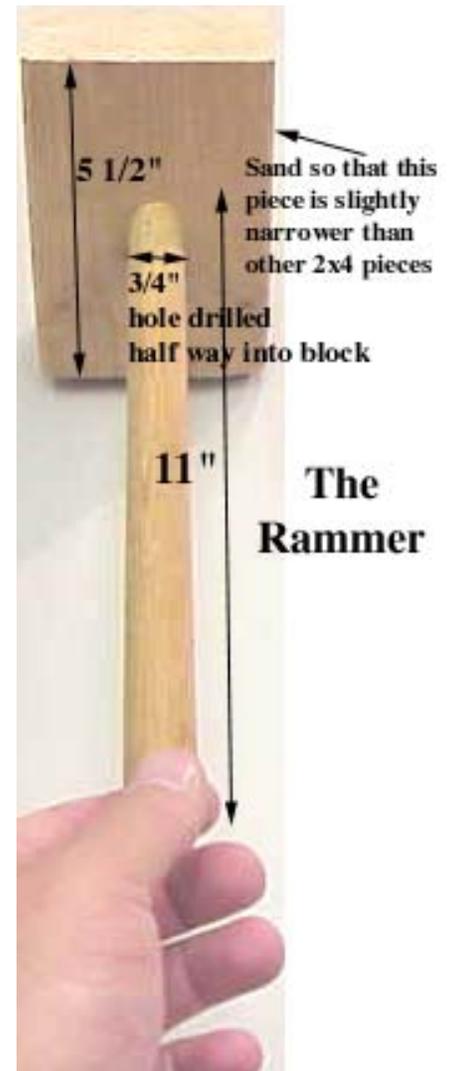
**Screws through plastic**

designed for drilling plastic, drill 7 or more holes around the perimeter of the plastic about 1/4" to 1/2" from the edge. Then center and secure the "window" on to the 2x4 frame with 3/4" wood screws and washers.



**Screws around edge**

3. Place the 5 1/2" piece next to the 7" piece as shown in the figure to the left (you may need to use a vise). Drill a 1/8" hole through the center of both pieces.
4. Pull pieces apart.
5. Drill a hole half way through the 5 1/2" piece with a 3/4" spade bit. Use the small hole you drilled in step 3 as a guide for your spade bit  
*(if you use 3/4" PVC, use a spade bit that works with the PVC's diameter. Remember that the outer-diameter of 3/4" PVC is larger than 3/4").*
6. Cut the 3/4" dowel about 11" long.
7. Sand the sides of the 5 1/2" 2x4 piece (See diagram below). It only needs to be about 1/16" narrower than the other 2x4 pieces.
8. Insert 11" dowel into the hole you drilled in step 5. Use a hammer or mallet to secure the dowel into this piece.  
This component of your squeeze box is your rammer.
9. The hole in the 7" piece should be drilled slightly wider than 3/4" (like 13/16" or 7/8").
10. Join the other 7" 2x4 piece to the other side of the 12" 2x4 piece.
11. Mount the plastic side "windows." These "windows" can be mounted in two ways:
  - A. If you have a bit



*Drilling into plastic without a plastic drill bit may cause the plastic to crack.*

- B. If you don't have a plastic drill bit, center the plastic window and screw the 3/4" wood screws and washers into the wooden frame, positioning the screws as close to the edge of the plastic as possible. As you screw, make sure that the screws and washers pinch down on the plastic and hold it in-place.

12. Insert the rammer ...this is your Squeeze Box.



**To Do and notice:**

1. Pull the rammer back to the end of the box.
2. Pour in a layer of sand and a layer of some other granular material. Pour the materials in so they form a minimum of two flat visible layers. The layers should not exceed 1/2 the height of the container.
3. Gently and slowly push the rammer into the layers.
4. Watch what happens to the layers as you push.



**What's Going On:**

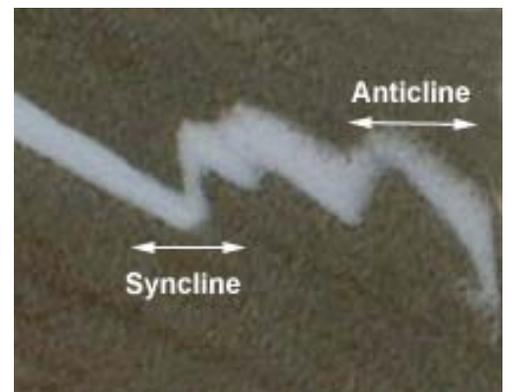
As you push the rammer, you compress the sediments. Most material responds in two ways to these types of forces. They either **break** or **bend**. If you make an analogy of your layers in the box to layers of rock, then you can refer to the breaking as faulting and the bending as folding.

Using this device usually creates a type of faulting known as thrust or reverse faulting. This means that one block of material is thrust over an adjacent block of material.

When a layer bends it forms wavy patterns. When it bends with a "U" shape, that is called a syncline and the upside down "U" portion is called an anticline.



If the ram is retracted and the layers are squeezed again, then recumbent folds (or folded folds) can be created.



Credit: Our first introduction to a Squeeze Box was at the Museum of the Rockies in Bozeman, MT.