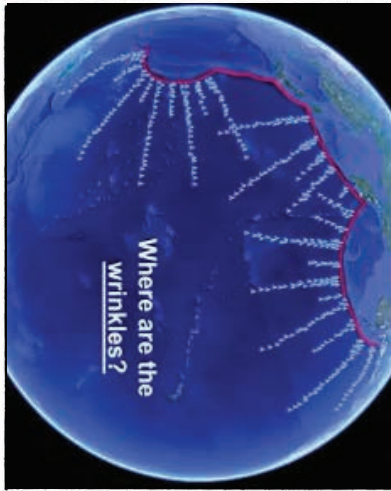


PATTERN CAN BE DOWNLOADED AT:  
<https://ellenjmchenry.com/store/wp-content/uploads/2021/03/subduction-problems-model.pdf>  
 No special permission needed to copy and distribute.



**PROBLEM #1** Flat plates can't subduct under arc shapes without wrinkling or tearing.

↑ fold line

## 12 PROBLEMS WITH SUBDUCTION

Plate tectonic theory relies on subduction to explain the movement of continental plates.

For a video explanation, search YouTube for "Hydroplate Theory overview part 6 Bryan Nickel."

**PROBLEM #2** There is a mass deficit over trench areas. If rock is being pushed down into trenches, we should sense more mass, not less.

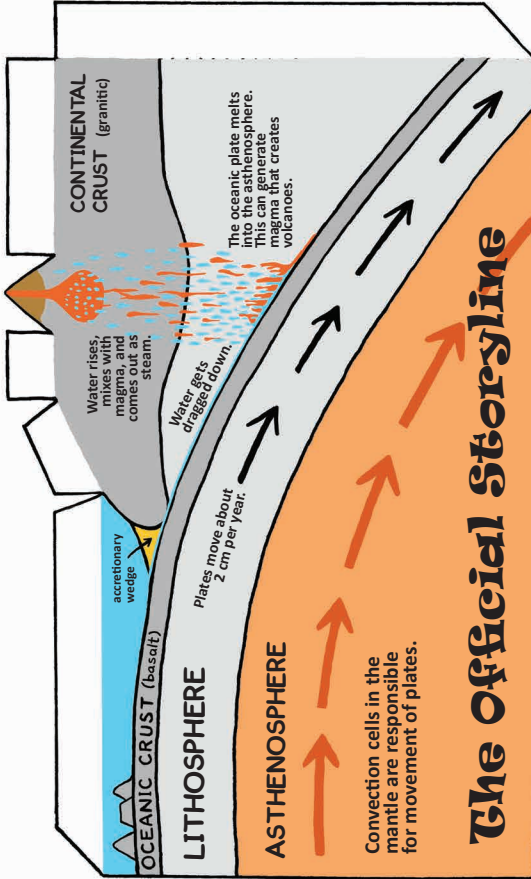
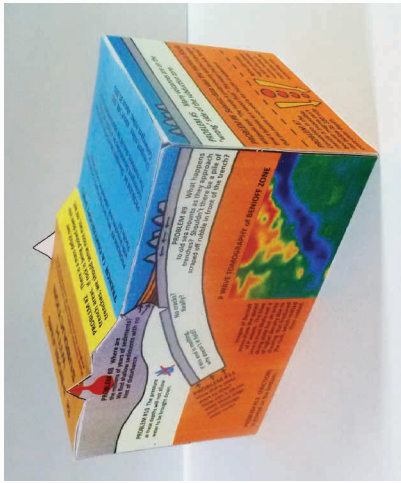
### TRENCH (A CONVERGENT ZONE)

**PROBLEM #3** Why isn't the Atlantic Ocean lined with trenches and subduction zones like the Pacific is?

**PROBLEM #4** Divergent boundaries outnumber convergent boundaries by a factor of 5 to 1. The numbers should be approximately equal.

Divergent miles: about 148,000  
 Convergent miles: about 30,000

↑ fold lines



**PROBLEM #5** Many volcanoes are on the "wrong" side of the subduction zone.

**PROBLEM #6** Seismic data says the mantle is SOLID. Wikipedia says: "The mantle is predominantly solid but in geological time it behaves as a viscous fluid." This means that the only "proof" that the mantle is not solid is the THEORY of subduction!

**PROBLEM #7** Convection in the mantle is impossible because magma can't rise below its 220 mile cross-over depth. Below 220 miles, magma compresses to half of its original volume, making it more dense than the surrounding rock.

**PROBLEM #12** Friction is too great

Add the Subductive Forces =  $F_{max} + F_{sink}$   
 $\rho_{max} \cdot Area + W_p \cdot \sin\theta$   
 $\rho_{max} \cdot (L_p \cdot W) + [(d_p - d_m) \cdot g \cdot (L \cdot W) \cdot \sin\theta]$   
 = 515 billion Newtons  
 = 116 billion lb-force

Add the Friction Forces =  $f_{above} + f_{below}$   
 $\mu \cdot (P \cdot Area) + \mu \cdot (P \cdot Area + N)$   
 $\mu \cdot [(d_m \cdot g \cdot h_p / 2) \cdot (L_p \cdot W)] + \mu \cdot [(d_m \cdot g \cdot h_p / 2) \cdot (L_p \cdot W)] + [d_m \cdot g \cdot (L_p \cdot W) \cdot \cos\theta]$   
 = 16,500 trillion Newtons  
 = 3.7 trillion lbs-force

**3710E<sup>9</sup> lbf**

Frictional forces will prevent subduction.

**PROBLEM #8** Where are the millions of years of sediments? We find shallow sediments with no hint of disturbance.

**PROBLEM #9** What happens to old sea mounts as they approach trenches? Shouldn't there be a pile of scraped off rubble in front of the trench?

**PROBLEM #10** The pressure at these depths will not allow water to be brought down.

**PROBLEM #11** How did a plate start to dive? How can a 20-mi. wide blunt edge push through solid rock?

**PROBLEM #12 (FRICTION)** Images of Benioff zones show the speed of P waves. The blue area is most likely not a diving plate but an area of higher density due to shearing that fractured the rock, which melted then cooled.

**PROBLEM #13** If this end is melting, why doesn't it fold?

**NO CRACKS?**

**P WAVE TOMOGRAPHY of BENIOFF ZONE**

### PRINT ONTO 110 lb CARD STOCK

- 1) Cut around outside edges.
- 2) Consider scoring along all the fold lines before folding. This will give you very crisp, straight folds and will make assembly MUCH easier and give you a nicer finished product.
- 3) Fold all tabs and fold lines.
- 4) Use high-quality glue. (If liquid glue, try wood glue instead of white glue, and don't use too much. If glue leaks out of joint, you've used too much.)
- 5) Start by gluing the end that has 5, 6, 7.
- 6) Then glue end with blue globe.
- 7) Fold top over, and glue.