

Earth models: Crust and Mantle (training)

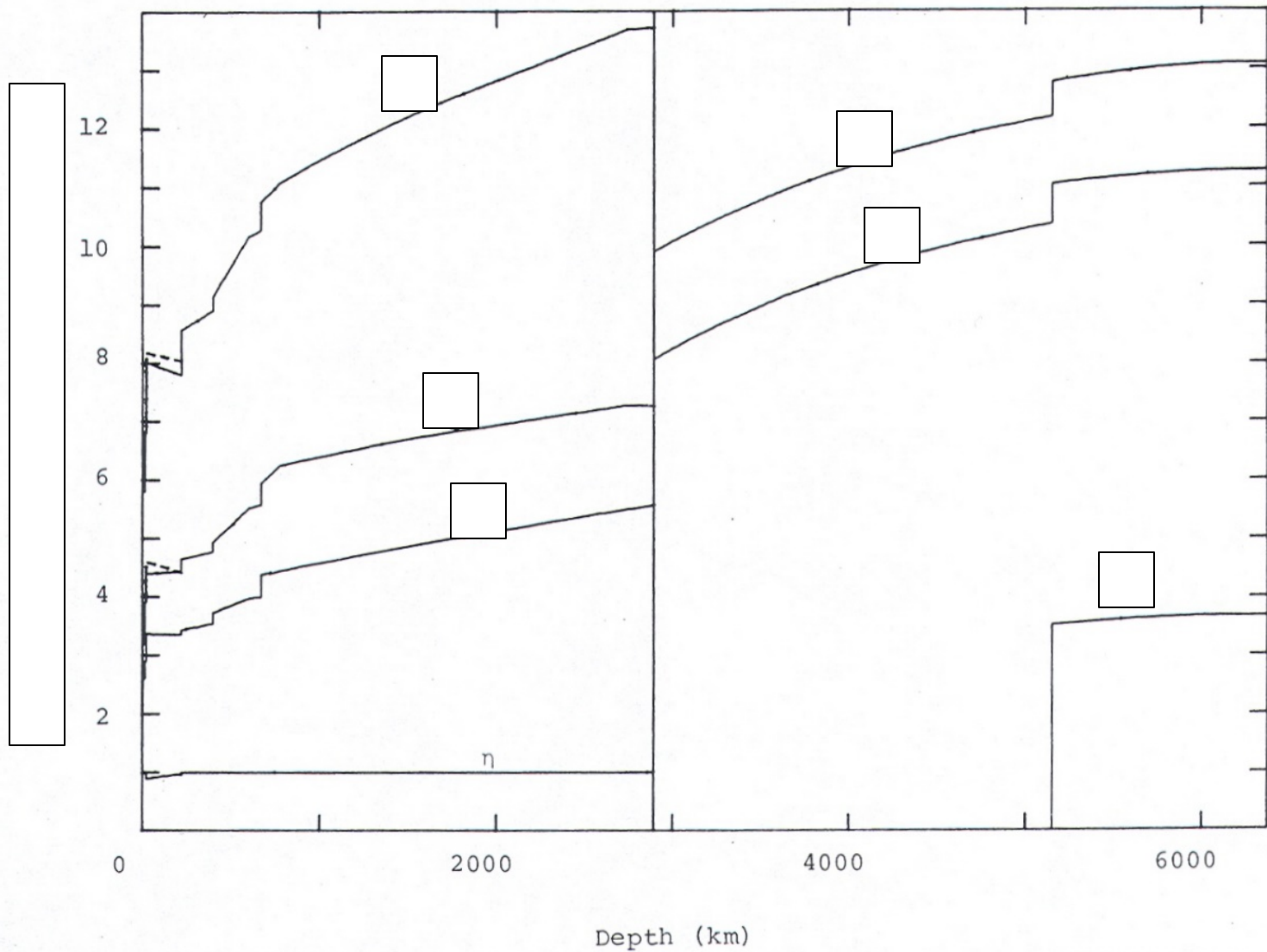


Fig. 8. The PREM model. Dashed lines are the horizontal components of velocity. Where η is 1 the model is isotropic. The core isotropic.

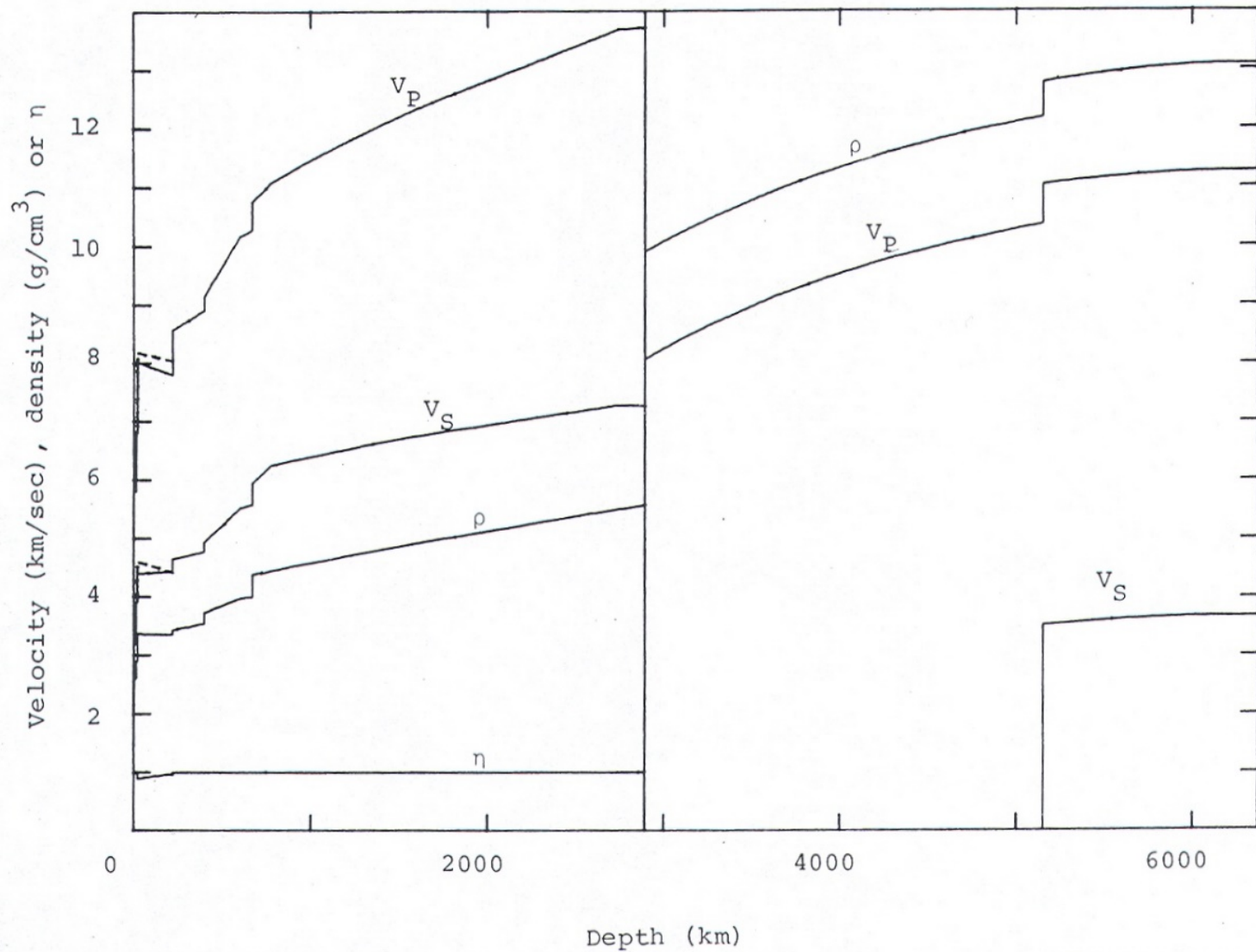
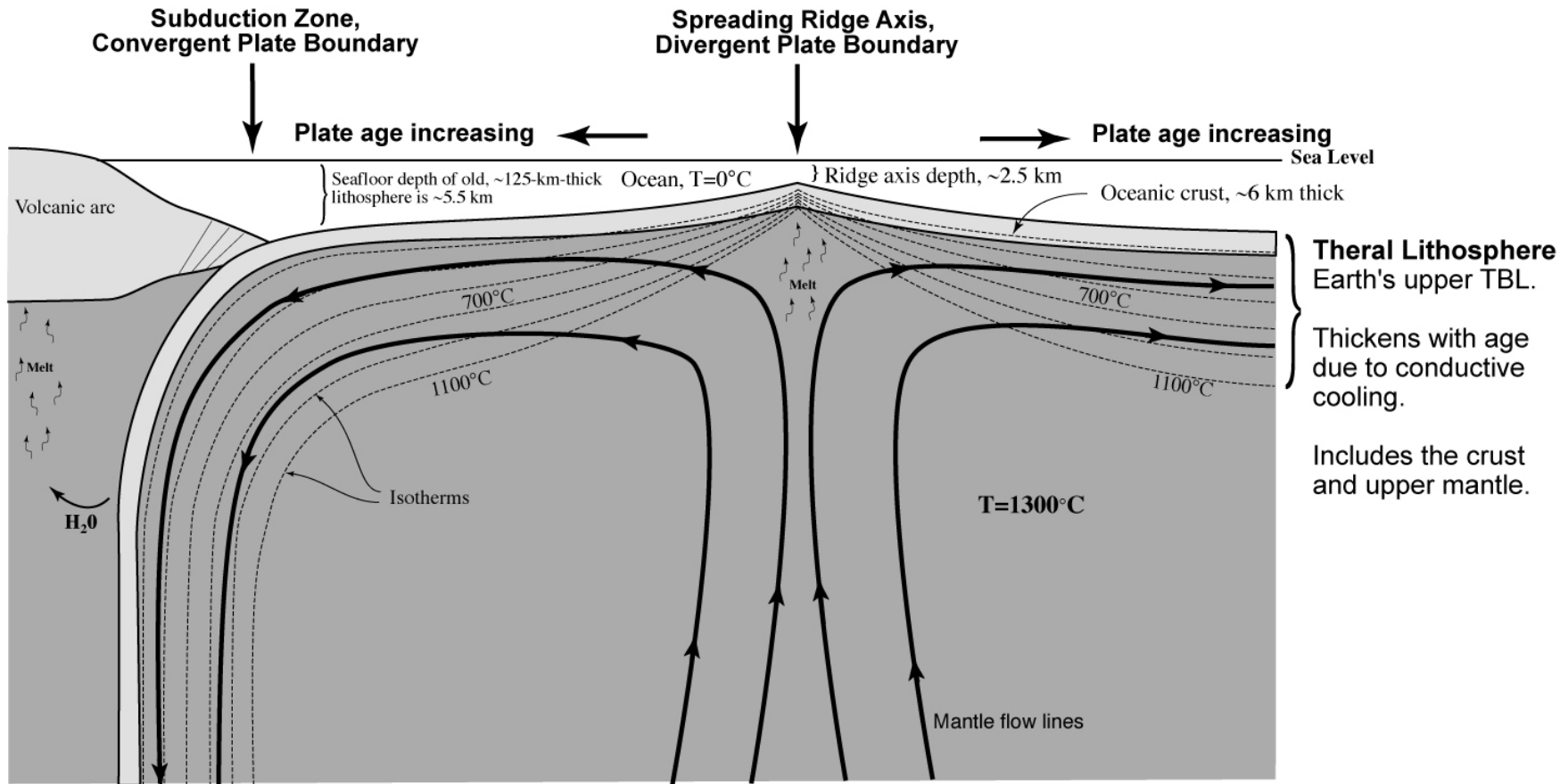


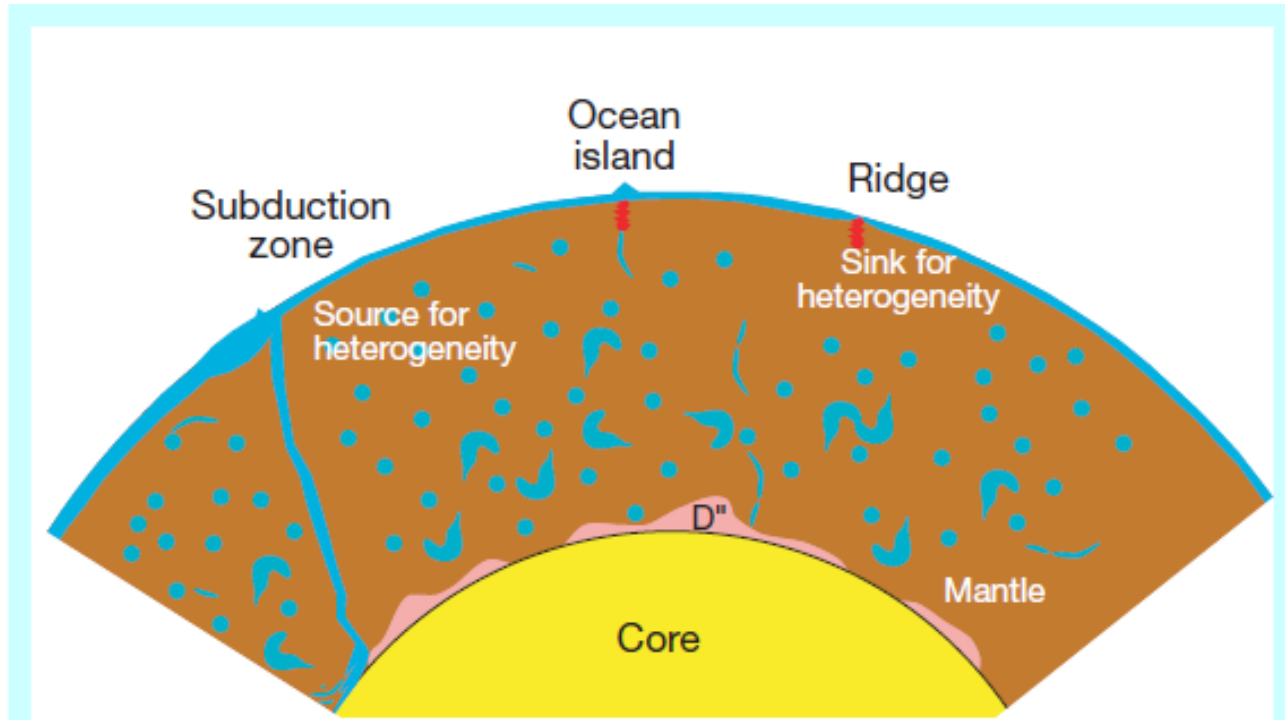
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Tutorial

The Lithosphere



Task



Helfrich and Wood, Nature 2003

Task

Estimate how much of recycled oceanic crust may be mixed in the Earth's mantle

Assumptions:

1. Subduction runs since 3 Ga.
2. Oceanic crust is 7 km thick and occupies 70% of the Earth's surface.
3. Average age of the oceanic crust is always 150 Ma.

Consider two cases:

1. The entire oceanic crust is homogeneously mixed with the mantle.
2. Half of the oceanic crust is mixed with the mantle and half is accumulated in a layer at CMB. Determine thickness of this layer.