**3D attenuation and velocity structure of the Cocos subduction zone in Mexico**

Ting Chen, Robert W. Clayton  
Email: tchen@gps.caltech.edu  
California Institute of Technology, Seismological Laboratory 252-21, Caltech, Pasadena, CA 91125

**Background**

MASE line: 01/2005 - 07/2007, consists of 100 broadband sensors.  

The slab contours are determined based on the combination of seismicity, velocity tomography and receiver functions along MASE and VEOX line based on receiver functions (Kim and Clayton) are shown as magenta dashed lines for reference.

**Data and analysis**

718 local events (3.1 ≤ M ≤ 6.0) with depths larger than 50 km, recorded by MASe and VEOX station.

**Attenuation and velocity tomography results**

Attenuation and velocity tomography results show high-attenuation region in the crust correlates with low Vp, low Vs, and high Vp/Vs, and low resistivity; it might be related to dehydration and melting process.

**Toward building 3D model for Mexico**

A 3D model for Mexico can be built combining different study results, including Q, 3D tomography, receiver functions, and velocity structure from local teleseismic body wave surface wave and noise tomography; attenuation structure from local tomography etc.

**Comparison with resistivity**

The highest attenuation for both P and S wave is observed in the crust and mantle wedge in the backarc close to the VEOX line. This high-attenuation region in the crust correlates with low Vp, low Vs, and high Vp/Vs, and low resistivity; it might be related to dehydration and melting process.

The Cocos slab is imaged as low attenuation and high velocity. The top of the oceanic crust along MASe and VEOX line based on receiver functions (Kim and Clayton) are shown as magenta dashed lines for reference.

**USP91** is used as reference model for velocity tomography Vp/Vs, for this reference model increases with depth.

**Acknowledgement:** Gordon and Betty Moore Foundation