



Crust and upper mantle structure above a retreating subduction zone: receiver function images from the CAT/SCAN project in southern Italy

J. Armbruster, C. Wilson, M. Steckler, L. Seeber, A. Lerner-Lam

Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY 10964, USA
(lerner@ldeo.columbia.edu / Fax: 1-845-365-8150 / Phone: 1-845-365-8356)

We show results from a teleseismic, converted wave imaging study using data collected during the NSF-funded CAT/SCAN project. The primary target of the study was to answer questions regarding the nature of the transition from continental collision to active trench rollback in the southern Apennines and Calabrian arc. We use common conversion point stacking methods to depth migrate teleseismic converted phases and create converted wave volumes of the transition from collision to subduction. Our images reveal a primarily flat Moho near 35-40 km depth with a slight thinning of the crust to the east of the thrust belt. Additionally, the crust appears to thicken by 5 km in a localized region at the southern edge of the Apennines near the northern border of Calabria, consistent with the observed local increase in surface topography. Another prominent feature is a mid-crustal negative polarity conversion seen primarily in the central part of the study area. This feature dips to the southwest and has an expected surface projection near the surface trace of the major Apennine thrust system. We believe this feature represents the downward continuation of this thrust system and may have accommodated a large portion of the previous convergent motion across the region. The depth of this interface is consistent with earthquake depths from recent earthquakes and aftershock sequences in northern Calabria suggesting the structure remains an important mechanism for strain accommodation in the region.