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TITLE: Crustal structure of the Eratosthenes Seamount, Cyprus and S. Turkey from an amphibian wide-angle seismic profile

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ABSTRACT BODY: In March 2010, the project CoCoCo (incipient COntinent-COntinent COllision) recorded a 650 km long amphibian N-S wide-angle seismic profile, extending from the Eratosthenes Seamount (ESM) across Cyprus and southern Turkey to the Anatolian plateau. The aim of the project is to reveal the impact of the transition from subduction to continent-continent collision of the African plate with the Cyprus-Anatolian plate. A visual quality check, frequency analysis and filtering were applied to the seismic data and reveal a good data quality. Subsequent first break picking, finite-differences ray tracing and inversion of the offshore wide-angle data leads to a first-arrival tomographic model. This model reveals (1) P-wave velocities lower than 6.5 km/s in the crust, (2) a crustal thickness of about 25-30 km and (3) an upper crustal reflection at 5 km depth beneath the ESM. Two landshots on Turkey, also recorded on Cyprus, air gun shots south of Cyprus and geological (Mackenzie et al., 2006) and previous seismic information provide the data to derive a layered velocity model beneath the Anatolian plateau and for the ophiolite complex on Cyprus. Reflections provide evidence for a north-dipping plate subducting beneath Cyprus. The main features of this model are (1) an upper and lower crust with large lateral changes in velocity structure and thickness, (2) a Moho depth of about 45-50 km beneath the Anatolian plateau, (3) a shallow north-dipping subducting plate below Cyprus with an increasing dip and (4) a typical ophiolite sequence on Cyprus with a total thickness of about 14km. The offshore-onshore seismic data complete and improve the information about the velocity structure beneath Cyprus and the deeper part of the offshore tomographic model. Thus, the wide-angle seismic data provide detailed insights into the 2D-geometry and velocity structures of the uplifted and overriding Cyprus-Anatolian plate. Subsequent gravity modeling will be used to check and improve the velocity model. Finally, an integrated interpretation of the geophysical and geological information will allow a comprehensive interpretation of the related collision processes and their impact on the structure and evolution of the region.

KEYWORDS: 8120 TECTONOPHYSICS Dynamics of lithosphere and mantle: general, 8104 TECTONOPHYSICS Continental margins: convergent, 7240 SEISMOLOGY Subduction zones, 8140 TECTONOPHYSICS Ophiolites.

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