



## **New insights into the D'' layer beneath the central Pacific**

Jesus Casal Berbel and Christine Thomas

Universität Münster, Institut für Geophysik, Münster, Germany (tine@earth.uni-muenster.de)

The D'' layer, located just above the core-mantle boundary region, can provide insights into mantle processes such as plume formation and deep subduction. The recently discovered post-perovskite phase transition has provided further possibility to explain structures found in the lowest 200-400 km of the mantle. Here we use events from Tonga Fiji region recorded at stations in North America to investigate the Pacific low velocity region with several array methods. For this study both P- and S-waves are processed and the results are compared. We find reflectors in both P- and S-wave recordings, in some cases two reflections are visible. The same region has been studied previously with S-waves and 4 reflectors had been found. Here we do not find evidence for four reflectors but we find very long delays of the core reflected phases ScS in a small region, and none of the published models for ulvz, phase transitions in mid-ocean ridge basalt or pyrolite, and realistic velocity changes in D'' can explain these delays. For all other events no obvious trend in reflector depth can be found, neither in P- nor S-waves and polarities and amplitudes differ strongly between different events. This behaviour is inconsistent with post-perovskite lens in the Pacific but could possibly be explained by scattering at small-scale heterogeneities.