Geophysical Research Abstracts, Vol. 9, 05861, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-05861

Western Australia seismic wave speeds tomography

C. Sinadinovski (1), A. Abdulah (1) and B.L.N. Kennett (1)

(1) Research School of Earth Sciences, (2) Australian National University, cvetan@rses.anu.edu.au

The Australian seismic stations are uniquely positioned for investigation of the crustal and deeper structure of the southern hemisphere specially by using the teleseismics from the active belts extending through Indonesia, Papua New Guinea and South-west Pacific. The extensive deployment of portable broadband seismic stations across the continent since 1993 allowed many new data for tomographic analysis.

In this study we discuss just the project which deals with the main geological features on the territory of Western Australia (WA) with special consideration of the Pilbara region. The geology of that part of WA is very interesting because the younger Capricorn basin separates the older Pilbra craton in the north and the Yilgarn craton in the south while its deeper structure is not yet well defined.

We utilised the traveltimes from about 45 seismic stations across WA which recorded some 300 local and distant earthquakes in order to image the 3D structure of the geological features. Our model was discretised into cells of various sizes and finer (1 x 1 degree) grid in the area of interest and depth ranges of finer (a few kilometers) increments up to the Moho discontinuity, and 50 to 100km layers afterwards.

These new seismic wave speeds tomography results are more detailed than any of the previous ones and will contribute towards better understanding of the processes which shape the crust in the northwest Australia and can be also used in geophysical investigations and scientific studies of cratons in other parts of the world with similar tectonic regimes.