



AuSREM – Australian Seismological Reference Earth Model

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Seismic data coverage of Australia has greatly increased over the last 10 years, providing us with an opportunity to update the seismological model of the continent. Good seismological models of the Earth's crust and upper mantle are critical for many tasks, such as the calculation of earthquake source parameters, regional hazard modelling and imaging of lithospheric dynamic processes.

The AuSREM project aims to produce a seismological model of the Australian continent with a 0.5 degree resolution down to 1500 km depth. It will include a detailed crustal model of P wave speed, S wave speed, density and depth to major boundaries. The mantle component of the model is likely to be less detailed but will also include P wave speed, S wave speed and density. Ultimately this model will be publicly available and will provide a base model for other research.

The AuSREM model will be a collaborative effort relying on the integration of a wide variety of data sources. For the crustal component data sources include refraction surveys, receiver function studies, reflection surveys, crustal tomography, gravity interpretation and sediment thickness databases. This should improve upon the Crust 2.0 model (Bassin et al. 2000) for the region, as there has been a large amount of data collected since this model was compiled. The mantle component will rely mainly on tomography. Where there is insufficient data to provide 0.5 degree resolution data interpolation methods will be used to fill the gaps.

AuSREM is an extension of the nearly completed AusMoho project, which maps the depth to Moho in Australia. The new Moho map includes over 5000 km of deep seismic reflection profiles and 400 data points from permanent seismic stations, 3-component broadband and short period stations deployed over the last 10 years. The Moho map produced provides us with our first fundamental boundary for the AuSREM model.