



AuSREM - Australian Seismological Reference Earth Model

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The AuSREM project aims to produce a fully interpolable seismological model of the Australian continent with a 0.5-degree resolution down to 350 km depth. We present the current progress of the two components of this project. The crustal component consists of a detailed crustal model of P-wave speed, S-wave speed, density and depth to major boundaries. The mantle component of the model is less detailed but will also include P-wave speed, S-wave speed and density.

This project is 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. Major boundaries currently included are the depth to basement and the recently completed depth to Moho (AusMoho). The detail of AuSREM provides an improvement on the Crust 2.0 model for the region, as there has been a large amount of data collected since Crust 2.0 was compiled.

The mantle component relies mainly on tomographic information. The initial model is based on a combining the results from a number of recent regional surface wave studies, with the aim of producing a representative structure. These results will be supplemented with information from body wave studies, including those from the dense regional networks in eastern Australia. A challenge remains to provide a satisfactory representation for the Lithosphere-Asthenosphere boundary.

Seismic data coverage of Australia has greatly increased over the last 10 years, which has provided us with this 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 model will be made publicly available and will then provide a base model for other research.