



## BACKGROUND

### INTEGRATED APPROACH BUILDS THE BIG PICTURE

Understanding more about the Australian continent is critical to our nation's economic, environmental and social future. Not only is it the platform for all plant and animal life, but the soils that agriculture relies on are derived from the continent's rock base, future water resources lie below the surface as groundwater and potential sources of clean energy, minerals and petroleum are also stored within it.

The AuScope initiative is made up of six integrated components which support the gathering and collation of new and more in-depth geoscience data, and together these components are building a more complete picture of Australia than has ever been built before.

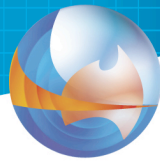
The **earth composition and evolution** component focuses on providing the geochemical infrastructure needed to learn more about the chemical and mineral composition of Australia. This infrastructure not only allows researchers to gain new insights into how Australia was formed and over what time period, but is also critical for mineral exploration and the identification of new sites for resource extraction.

AuScope's **National Virtual Core Library** component involves the establishment of an electronic library of borehole core samples taken from the top two kilometres of Australia's crust. The core library draws on a rich collection of core samples collected through mineral exploration over recent decades, and AuScope will continue to build on this collection into the future. Establishing this library will give researchers a vast bank of existing data to draw on as a starting point for further research.

The **earth imaging and structure** component uses state-of-the-art seismic equipment to support a range of experiments into Australia's geologic structure and the shifting plates which form the very basis of this continent. The research carried out through this component has important applications for areas such as natural hazard management as AuScope is unlocking greater knowledge about the stresses at work on Australia's foundations.

The **simulation, analysis and modelling** component unites AuScope's wealth of geological data with innovative software and specialist technology to create simulations and models of the processes at work in the Australian continent under different conditions. Through this component, researchers can simulate natural hazards such as earthquakes and tsunamis, generate models of mineral and geothermal energy resources, and develop other useful geological models to support decision-making in both the public and private sectors.

The **geospatial framework and earth dynamics** component is supporting a major upgrade of national geodetic infrastructure that will allow more accurate spatial positioning across the nation for a range of commercial applications like precision agriculture and mining. It will also



# AuScope

AN ORGANISATION FOR A NATIONAL  
EARTH SCIENCE INFRASTRUCTURE PROGRAM

allow researchers to monitor movements in the dynamic Australian continent. Using satellite laser ranging, very long baseline interferometry and global navigation satellite systems, the geospatial component is supporting Australian research on critical topics such as natural hazard planning and sea level variation.

The AuScope **grid and interoperability** component connects all of the other elements together by creating web based services that form a network for seamless access to information and data across Australia. Significantly, AuScope's grid links the data stores of key government agencies such as Geoscience Australia, CSIRO, and the state government geological survey departments, and makes these more readily available to academic and research institutions for the first time, giving researchers access to a new wealth of valuable data.

Together, AuScope's six components form an integrated blend of hardware, data streams, software systems and technical capability on a scale and at a quality that places Australia in a leading position internationally in earth and geospatial research.