

The Monash Earth Sciences Garden: a field lab at our doorstep

James Driscoll, Julie Boyce, and Vanessa Wong

Monash University, School of Earth, Atmosphere and Environment, Clayton, Australia (vanessa.wong@monash.edu)

The Monash Earth Sciences Garden (MESG) is a new and innovative outdoors teaching space that allows undergraduates from Monash University's School of Earth, Atmosphere and Environment (SEAE) to hone their field measurement and mapping techniques, and rock and mineral recognition skills before being sent into the field. This enables students to be fieldwork-ready and thus significantly reduces time spent on these basic geological skills during external fieldwork activities where cost remains an important consideration.

The MESG, measuring 120 m by 30 m, represents a complex and unique plan that is inspired by the geology and geomorphology of Victoria, Australia. The project, located in the heart of the Science Precinct of the Clayton Campus, was designed and delivered by a small team of Earth scientists from the SEAE, in collaboration with landscape architects rush\wright.

The design incorporates over 500 different large rock samples weighing up to 14 tonnes each, representing 20 different types of sedimentary, igneous and metamorphic rocks. Nearly all rock samples were sourced from Victoria, and all quarries were identified and visited to ensure that the correct rock was being quarried, and that the best samples of rocks were chosen in terms of their fabric, structures and mineralogy.

The MESG can be viewed as a number of small study areas that independently relate particular Earth sciences concepts. For example, the central northern 'Highlands' area of the MESG comprises large blocks of Harcourt Granite, with excellent examples of enclaves and xenoliths, that have intruded an older, folded sequence resulting in contact metamorphism of mudstones to schist. This allows more detailed studies on ore geology, structural geology, engineering concepts, and metamorphic and igneous petrology to be taught. Likewise, the southeastern portion of the MESG represents the Gippsland and Otway coasts where Miocene-aged Point Addis Limestone is juxtaposed against Early Cretaceous Eumeralla Formation sandstone, allowing the concept of plate tectonics, palaeontology, planetary impact geology and climate change to be examined.

Since each rock sample has its own specific spatial location and orientation (strike and dip) in the garden, the individual rock areas can be used in an integrated manner to allow students to effectively map a 'geological province' and interpret a multi-phase, geological history narrative that spans hundreds of millions of years.

Plantings associated with the different rock areas are sympathetic to their geographical area in Victoria to reflect more of what Earth scientists see during the course of fieldwork, and, of course, to allow the study of biogeography and soil types.

As part of the SEAE Outreach Strategy for secondary schools, we have fully integrated the MESG into the 'Earth and Space Sciences' and 'Geography' subject areas of the Australian National Curriculum for Year 8–10 students.

Future plans for the MESG include the addition of large Perspex soil horizons in some of the rock type areas, the construction of a weather station, and the placement of a geocache.