

# PROGRAM 5

## EDUCATION AND TRAINING

### PROVIDING HIGH-QUALITY REGOLITH SCIENCE-BASED EDUCATION AND TRAINING FOR THOSE ENTERING OR WORKING IN THE MINERALS EXPLORATION AND ENVIRONMENTAL INDUSTRIES

The Cooperative Research Centre for Landscape Environments and Mineral Exploration (CRC LEME) is recognised as a world class provider of quality geoscience graduates and researchers to the scientific community and the mineral exploration and environmental management industries. The Centre has one of the highest graduate outputs and employment uptake by industry of any CRC.

#### Focus:

CRC LEME's Program 5 oversees the Centre's education and training responsibilities with its Core Parties, Adelaide University, the Australian National University and Curtin University of Technology, but also through interaction and collaboration with all Core Parties and industry stakeholders. In particular, the Minerals Council of Australia (MCA) is a major sponsor of the Centre's Regolith Shortcourse Program.

Program 5 provides:

- Funding, scientific supervision and institutional support to graduates by granting, on a competitive basis, scholarships in regolith geosciences at BSc(Hons) and PhD levels. By the end of Centre's lifespan, CRC LEME will have produced more than 60 PhD and over 100 Honours Graduates.
- Workshops, seminars and training courses on regolith geoscience and related disciplines, directed at students, industry, government and geoscience professionals.
- In cooperation with industry and other agencies, contributions to the regolith content of university courses.

#### Post-graduate students

CRC LEME post-graduate students have made important contributions to regolith geoscience research with many going on to become leaders in their chosen field of expertise.

CRC LEME post-graduate students are highly sought after and have quickly gained employment in industry, government or academia.

#### Honours students

The Centre's Honours Program delivers a large number of 'industry ready' graduates.

The popularity of CRC LEME Honours Graduates amongst employers is testimony to the quality and relevance of the training they receive. In 2005, all Honour Graduates gained employment within a month of completing their research studies.

#### Contribution to research outputs

CRC LEME students have made significant and ongoing contributions to the Centre's research outputs which have resulted in major regolith geoscience breakthroughs and discoveries.



Undergraduate geoscience students gain an appreciation of regolith geophysics near Broken Hill, NSW.

Students are actively involved in the Centre's research work in:

- Regolith geophysics.
- Understanding the landscape evolution and geochemistry of the Thomson Orogen and Curnamona Regions of New South Wales and South Australia respectively, and the Tanami Region of Northern Territory and Western Australia.
- Metal mobility in regolith.
- Acid Sulfate Soils (ASS) and acid drainage processes.
- Salinity mapping and hazard assessment in the floodplains of the Lower Darling-Murray.



*CRC LEME PhD student Nathan Reid samples the leaves of an inland teatree in the Tanami Desert, WA.*

A focus of CRC LEME student research has been the potential use of trees, grasses and animals as biochemical indicators of buried mineralisation in the Tanami and Broken Hill regions of Australia. The results have been used by mining companies to make exploration more efficient and improve success rates in these study areas.

Through its Natural Resource Management (NRM) research stream, CRC LEME students have undertaken regolith case studies of the Loveday Basin, located on the floodplains of the Lower Murray River. The results of these studies have greatly assisted the creation of environmental management strategies for inland wetland areas prone to ASS formation and salinity.



*A CRC LEME student digs up an acid sulfate soil section for sampling.*

### **Undergraduate teaching**

CRC LEME's undergraduate teaching program allows emerging geoscientists and environmental scientists to gain insights into the importance of regolith. Undergraduate regolith courses are now in place at all Core Party Universities. A highlight of CRC LEME undergraduate teaching has been a joint regolith field school between Adelaide University and Australian National University, held at Fowlers Gap, New South Wales.

From 2007, CRC LEME will oversee the Master of Regolith Geoscience Coursework Program at ANU. This full fee coursework degree is designed specifically for postgraduates and professionals in the mineral exploration and groundwater industries, with students being able to choose regolith mineral exploration or hydro-regolith streams.



*Geoscience students learn more about regolith at a CRC LEME sponsored visit to Fowlers Gap, NSW.*





*150 Geoscience students take part in the 2006 CRC LEME sponsored regolith field school visit to Fowlers Gap, NSW.*

### **Mineral Council of Australia Courses (MTEC Program)**

The Mineral Council of Australia, through its Mineral Tertiary Education Council (MTEC), provides regolith geoscience course material and staff to CRC LEME. MTEC is a network of tertiary learning and research institutions linked to and delivering minerals education of high relevance to the Australian Minerals Industry. MTEC assists CRC LEME through salary contributions and the operating costs for selected short courses.

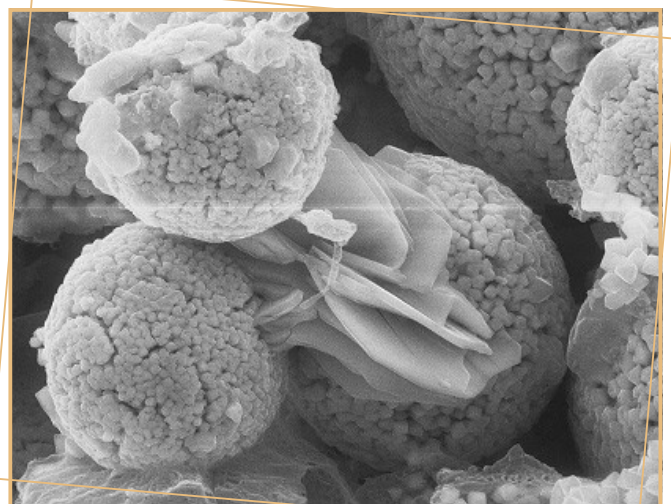
- PhD Student Nathan Reid won the Best Presentation Prize at the 2006 Student-Industry-CRC Symposium.
- Undergraduate regolith courses are now in place at Core Party Universities with increasing student numbers.
- PhD student Anna Petts won the Best Student Poster at the 2006 Australian Earth Science Convention.

### **Access to technology**

CRC LEME students, through its Core Parties, have access to state of art technologies that assist in high-quality science research such as Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM), X-Ray Fluorescence Spectroscopy (XRF) and the Proton Miniprobe (PIXI).

### **Milestones**

- CRC LEME is ranked as having one of the highest postgraduate outputs of any CRC.
- CRC LEME PhD students have been awarded the Eric Rudd Memorial Prize for Economic Geology at the University of Adelaide for two consecutive years. The winners being Karen Hulme (2004) and Anna Petts (2005).



*Scanning Electron Microscope (SEM) image shows the mineral pyrite common in acid sulfate soils.*

**CRC LEME operates out of three key nodes:  
Perth, Adelaide and Canberra.**

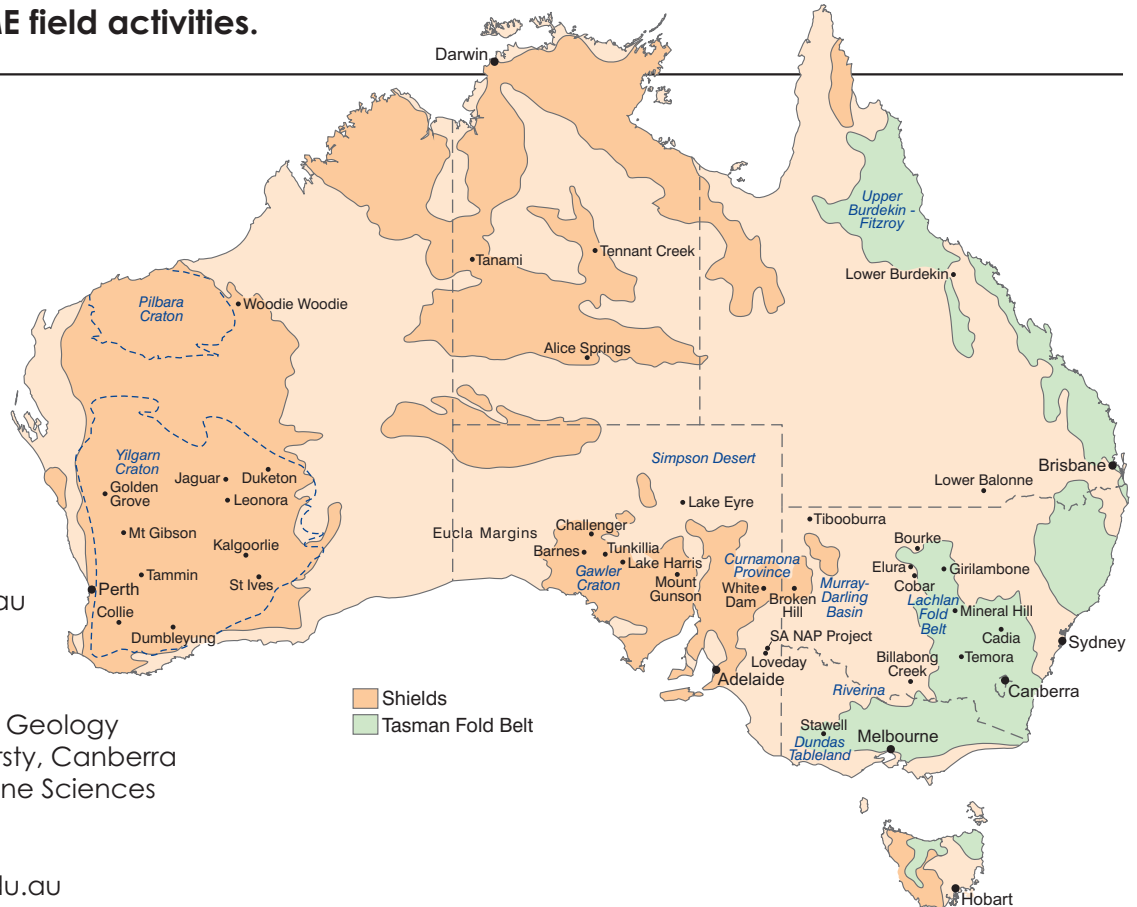
**Location of CRC LEME field activities.**

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CRC LEME is the cooperative research centre for regolith geoscience with some 130 contributing researchers from eight Core Parties around Australia. We generate and apply regolith knowledge for mineral exploration and environmental management.



**Your organisation can benefit from CRC LEME expertise.**

<http://crcleme.org.au>