AGOS Progress Quarter 3 2012

At the conclusion of Quarter 3 2012 (31 March 2012), most planned milestones had been reached in line with the AGOS Agreement.

The Earth Sounding Network

Progress has been excellent at both ANU and Adelaide nodes. The decision regarding purchase or build of OBSs has been made. All 20 units have now been ordered from ES&S, Guralp's sole distributor in Australia, with the first shipment of completed instruments due to arrive in the next 6-9 months.

Five prototypes of the new generation ANU recorders have been built and are currently undergoing rigorous testing. The new pick and place machine required to facilitate local manufacture has now been delivered. All parts to build the fleet of 200 units have now been ordered, and manufacturing will begin by mid-2012.

Construction of the first batch of 80 electric field loggers continues on schedule at Adelaide University.

The Geohistory Laboratory

The remaining work required to establish the Geohistory facility at Curtin University is close to completion with JDLC/Curtin Laboratory refurbishment completed on schedule at end of March. In relation to procurement, the Agilent 7700 ICP-MS arrived at Curtin at end of March 2012 with installation, commissioning and training to commence by second week of April 2012. Delivery of the Laser/Helium Mass Spectrometer is expected by end of May 2012. Although manufacture of helium subsystem was completed by Australian Scientific Instruments at end of March 2012, the manufacture of laser subsystem by Resonetics is still underway with completion anticipated by end of April 2012.

At the Melbourne Geohistory Laboratory, all laboratory refurbishments were completed and major instrument facilities installed resulting in this project entering a phase of calibration and

familiarization/training for the personnel involved. Emphasis of the project in Q3 has been on continuing software development which is crucial for integration of the facility and to enhance the overall capabilities of the Thermochronology Laboratories to take full advantage of the new capabilities. No delays were encountered and the project is now moving forward rapidly with development of analytical protocols and routine operation

The Subsurface Observatory

Progress on the Subsurface Observatory at Melbourne University has been on track this quarter with the Petrophysics laboratory is now compete and fully functioning. A number of logging projects have been commenced in collaboration with the Victorian DPI and other groups. Two additional natural gamma collectors have also been ordered to speed up throughput on the Multi-Sensor Core Logging instrument.

Part of the Petrophysics Laboratory at The University of Melbourne

The 10 surface after-shock seismometer kits have been delivered from Environmental Systems & Services Pty Ltd. One instrument is undergoing testing and the others are being prepared for deployment. The 7 borehole seismometers ordered from Institute of Earth Science and Engineering in NZ are under construction with expected completion before the end of FY 2012. Delivery has been held up slightly by a delay in supply of the critical components from Guralp in the UK.

Several submissions have been received by the Access Committee and at this stage one has been funded. This project is undertaking acoustic tele-viewer analysis for borehole breakout in a series of deep minerals holes that broadly follow the same traverse as AuScope funded seismic profiles.

The Inversion Laboratory

Terrawulf upgrade is making intermittent progress. Major delivery of IBM servers arrived early in the New Year but had to be returned to IBM for component installation. Seasonal delays pushed this process back and the servers finally returned fully assembled in mid- March. Changes in form factor and mounting configuration between TII and TIII servers required special tailoring of rack brackets and spacers to install the new servers in the existing rack space. This has been configured and is on order from Precision Metals. Engineering approval of the air-conditioning upgrade was obtained in January but the cost level incurred further delays for central financial approval. The new air-conditioning unit has been ordered and is scheduled for installation in May.

Development of the ILab software suite has progressed well with release of the C Library to beta testers from University of Tasmanian. An R interface and a tutorial for the 1D transdimensional codes was developed to evaluate code developments to date.

A Python wrapper is being developed to enable use within the UQ eScript system. The library has been given to geomagnetic researchers from the University of Leeds (UK) and they have expressed interest in the Python interface as well.

At UQ a prototype for running an inversion for gravity data has been implemented and tested using the symbolic tools. An importer for surface raster data has been implemented.

The Geospatial Observatory

Components of the Geospatial Observatory at Geoscience Australia made good progress in the Quarter. The first tranche of the mobile GNSS equipment pool of 60 instruments is currently being used for major surveys. To date the pool has been deployed on the Gippsland/Otway networks in Victoria, the Finders Ranges Seismic zone and will be soon deployed to networks in Southwest of WA and the Perth Basin.

Construction of the Remote Sensing data portal continues with negotiations to incorporate a large volume of scenes from European Space Data almost complete.

The radar corner cube reflector design work is in progress and the Robotic Antenna Calibration System is currently functional with training completed in early April in Germany in preparation for permanent delivery and installation at GA in Q4 2012.

Geodetic calibration system for GNSS antenna measurement system

The Geophysical Education Laboratory

The pilot program is nearing completion. Two schools within the ACT have had seismometers successfully installed and data has been sent to ANU. A third school is yet to be chosen and is hoped to be a school in rural/regional NSW. Two other seismometers have been operating over this period, including one at RSES, ANU and one at Mt Stromlo.

The highlight for this quarter has been the positive response and high quality of recordings from Melrose High School. The students have been very enthusiastic about recording data from local and distant earthquakes. Some of the students are using the seismometer to study noise at the school as part of the ACE Science program their teacher runs. The quality of the data has been surprisingly high. Small local earthquakes (magnitude 1) have been recorded near Canberra, large regional earthquakes (Ernabella earthquake, South Australia, magnitude 5.8) and large distant earthquakes (magnitude > 5).

Promotions:

ABC666 ran a news story on Seismometers in Schools and the ACE science program that aired on 04/04/2012. The story featured interviews with Natalie Balfour (ANU), Geoff McNamara (Melrose High School Teacher) and some students. Details of the article and the associated audio can be found on the abc website http://www.abc.net.au/local/stories/2012/04/04/3471284.htm

Natalie Balfour attended the Australian Science Communicators conference to promote AuScope activities at the Research Infrastructure booth. She mostly focused on AuSIS and had lots of positive response to the program.

A facebook page for the program has been created. The page features interesting seismology related stories, updates on the program and screen shots of recordings from stations on the network. The page has over 40 “likes” and on average reaches 100-300 people per week. The two main spikes in activity occurred over the anniversaries of the Christchurch and Honshu earthquakes and when the ABC story was aired.

Project Milestones

The status of project milestones is shown in the table below.

No.	Milestone	Projected completion Date	Status
Milestones to 31 December 2011			
19	Geohistory Laboratory: Mass spectrometers installed	31 December 2011	80% (Curtin Instrument installed by May 2012)
21	Geospatial Observatory: Purchase equipment for the 4 new permanent GNSS CORS stations	31 December 2011	Delayed by procurement specification changes(order sent mid May) completion expected end June 2012
22	Inversion Laboratory: Inversion software portal established and prototype inversion software suites released	31 December 2011	85%
26	Geophysical Education Observatory: First batch of GNSS pool purchased and installations begun	31 December 2011	TRC approved for purchase by end March 2012.Order now combined with Tranche Two to expedite. Full order placed late May. Consultations with States and relevant schools commenced in Quarter 3
Milestones to 31 March 2012			
28	Geospatial Observatory: Geodetic calibration system (GNSS robot component) purchased	31 March 2012	Complete with delivery expected in June2012
29	Subsurface Observatory: First stage logging pool procured	31 March 2012	85% Complete
30	Subsurface Observatory: Petrophysics lab established	31 March 2012	Complete
31	Geohistory Laboratory: Laser installed	31 March 2012	Curtin instrument delivery delayed to end May 2012 awaiting completion of refurbishment
32	Earth Sounding Network: Decision made regarding purchase or fabrication of ocean-bottom seismometers	31 March 2012	Complete Supplier is Guralp
33	Milestone Report 5(removed from Commonwealth Agreement)	31 March 2012	Complete May 2012 (internal)