Geo-soundings

NEWSLETTER - MARCH 2004

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WELCOME

Welcome to our first quarterly edition of Geosoundings for 2004. We are pleased to welcome a new staff member, **Ms Nicole Judge,** who will be carrying out the duties of Research Secretary/ Receptionist and taking over amongst other things, the editorship of Geosoundings. Nicole worked for 2 years at Monash University in the School of Geosciences prior to her move to WA.

ENROLMENTS - 2004

We are very pleased to advise that enrolments for 2004 in the BSc Geophysics degree have continued to improve, with 29 new students being admitted to the course. This year saw the first intake of students into the newly created double degree BSc Geophysics/ BSc Computer Science course, which is shared with UWA's Computer Science Department. After a few lean years, we are now confident that enrolment numbers are on the upward trend.

TOTAL ENROLMENTS FOR 2004 ARE:

BSc (Geophysics) Undergraduate and Honours	54 + 5
BSc (Geophysics)/BSc (Computer Science)	3
Graduate Diploma	4
Postgraduate Diploma	0
MSc (Geophysics) – Coursework	0
MSc (Geophysics) – Research	1
MSc (Geoscience Exploration) – Coursework	2
PhD	23

2003 GRADUATES WERE:

Doctor of Philosophy

Damian Leslie
Mu Luo
Ruiping Li

Master of Science Geoscience Exploration (by Coursework)

Sioni Sioni

Graduate Diploma in Geophysics

Joshua Newman

BSc (Geophysics) Honours

Kimberley Bone
Nigel Cantwell
Kurt Chambers
Brendan Corscadden
Timothy Cox
Amanda Davies
Benjamin Hardy
Claire Robertson
Michael Salundi
Leigh Scoby-Smith
Benjamin Tredrea
Andrew Watts

BSc (Geophysics)

Martin Burke
Victoria Iasky
Jill Slater

Bachelor of Science (General Degree)

Ashley Ezzy

AWARDS/PRIZES/SCHOLARSHIPS/GRANTS

Awards & Prizes:

At the CRCLEME 2003 Western Regolith Symposium Series, held 27-28 November 2003, the following prizes were awarded to -

Ms Kirsty Beckett was awarded the **'Editor's Prize for Best Paper'** for her paper entitled ***"Airborne geophysics applied to groundwater modelling"*** and
Ms Anousha Hashemi was awarded the **'Glossary Prize for Excellence'** for her paper entitled ***"HOISTEM EM for Exploring Under Regolith Cover"***.

Mr Owen Davis was nominated for the **Vice-Chancellor's List** after again achieving excellent grades at the end of Semester 2, 2003.

Mr Martin Burke was nominated as the 2003 Best 3rd Year Student for the **PESA Undergraduate Student Prize**. He was also nominated for the **AIP Prize**.

Congratulations to **Dr Fanmin Zhang** who recently graduated with his Doctorate, earning a **Chancellor's Commendation** for his research entitled ***"Explicit anisotropic P-wave ray velocity functions, anisotropic semblance analysis and NMO corrections for long offset data"***. Fanmin and his family recently migrated to Canada, where he hopes to find suitable employment.

Scholarships:

The following scholarships have been awarded at the commencement of 2004:

Robert Galvin, PhD Student, **Australian Postgraduate Award (APA)**.

Simon Abbott, new PhD Student, **Curtin University Postgraduate Scholarship (CUPS)**. Simon has also been awarded a **CRCLEME PhD Top-up Scholarship** with additional funds for operating expenses.

Michael Whitford, Minerals Honours Student, awarded a **CRCLEME Honours Scholarship** with additional operating expenses.

Grants:

A grant for one year from **Curtin Strategic Research (CSR) Grant Scheme 2004**, valued at **$10,000** has been awarded to **Prof. Brian Evans** for the project ***"Improvements to and track record development of a pressure chamber for use in dynamic fluid movement modelling"***.

CRC NEWS

CRC for Plant-Based Management of Dryland Salinity

CRC LEME PhD students **Kirsty Beckett** and **Simon Abbott** have been invited to join the CRC for Plant-based Management of Dryland Salinity (aka CRC Salinity) as associate PhD Students. The invitation was extended as a means of uniting students within the CRCs with common interests and goals and will enable them to attend all CRC Salinity student functions, including the CRC Salinity Annual Meeting to be held in Bendigo in early August.

SHORT COURSE

The second ***Information from Geospatial data for Natural Resource Management Course*** was held from 23rd to 25th March at the ARRC. Students **Kirsty Beckett** and **Simon Abbott** joined facilitator **Greg Street** and other CSIRO, CRCLEME and CRC Salinity personnel in presenting theory and case studies on the application of geospatial data, including magnetics, radiometrics and electromagnetics, for natural resource management. Course participants agreed the course was of great benefit to their current work, and were eager to apply their newly acquired knowledge. The next course will be run in NSW in 2nd Semester of 2004.

CONFERENCE PRESENTATIONS

Gerhardt, A., 2004, *Recent Advances in Volume Rendering of 3D Seismic Data*: Invited talk at the VRGeo Consortium of the Fraunhofer Institut Medienkommunikation (IMK), Sankt Augustin, Germany, 22-23 March 2004.

Meyers, J., Neawsuparp, K. and Charusiri, P., 2004, *Reprocessing of aerogeophysical data and GIS intergration for mapping continuity of geotectonic features in the Loei area, Northeast Thailand*: Presented at the Int. Symp on Geological Evolution of East and Southeast Asia, Bangkok, Thailand, 8-14 February.

Rosid, M. and **Kepic, A.**, 2004, *Using the Seismoelectric Method for Hydro-geological Investigations*: Presented at the SAGEEP Conference, Colorado Springs, USA, 22-26 February. This paper was delivered in the session: Seismic and 'Seismoelectric Methods - Advances and Application' and was very well attended.

EXTERNAL ACTIVITIES

Boris Gurevich:

- Attended **AGU (American Geophysical Union)** Fall Meeting, 8-11 December 2003, San Francisco, California, *(no papers presented)*.
- **Special Seminar** at **Stanford University**: *Seismic Wave Attenuation and Dispersion in Heterogeneous Porous Rocks*, 12 December, 2003, Stanford, California.
- Course *Fundamentals of Rock Physics* at **University of Houston**, 15-16 December 2003, Houston, Texas.
- **Joint Schlumberger-WesternGeco Seminar** *Seismic Wave Attenuation and Dispersion in Heterogeneous Porous Rocks*, 17 December 2003, Houston, Texas.
- **Seminar at BHP-Billiton** *Seismic Wave Attenuation and Dispersion in Heterogeneous Porous Rocks*, 18 December 2003, Houston, Texas.
- Lecture at the rock physics section of the **Geophysical Society of Houston**, Hosted by Veritas DGC: *Fluid Substitution, Frequency Dependent Anisotropy, and Attenuation in Porous Fractured Reservoirs*, 18 December 2003, Houston, Texas.

John McDonald:

- Attended the **Tropical Futures Forum** in Darwin, held 4-5 March 2004 *(no papers presented)*. Some points of note from this forum were:
- On the 6th March 2004 the Chief Minister of the Northern Territory and the Premiers of Queensland and Western Australia signed a Cooperative Framework on Tropical Science, Knowledge and Innovation. Tropics is defined as that area of land and sea north of the Tropic of Capricorn. The objective of the framework is to enhance cooperation within the three jurisdictions in tropical SKI for everyone's mutual benefit.
- Of the fifteen areas addressed by the forum in Darwin, several are of interest to our Department. These include, natural resource management, environmental management, water resource planning and use, remote sensing, mining and mine-site rehabilitation, and energy production.
- Those driving from the WA perspective are Bruce Hobbs and Linda Penny from DoIR.

Andre Gerhart:

- Participated in the **European Research Conference on Geovisualisation**, European Research Foundation, Kolymbari, Greece, 13-18 March 2004.

INNOVATIVE SCIENCE

Curtin Investigates Seismic Methods For Gold Exploration

[Adapted in part from the latest edition of CurtinLINK *Plus*]

Curtin's Department of Exploration Geophysics is undertaking a comprehensive research to assess the feasibility of using high-resolution seismic methods for gold exploration in WA. With funding from the Minerals and Energy Research Institute of WA (MERIWA) and four gold mining companies totalling more than $900,000, **Dr Milovan Urosevic** and **Prof Brian Evans** have embarked on the largest MERIWA project ever conducted.

The research team is using an innovative combination of high-resolution surface and three-component borehole seismic techniques supported by full waveform logging data to improve the imaging accuracy of typically highly complex gold-bearing structures. The research will also address an improved time to depth conversion through the use of RVSP data and identification of various lithological units via offset-dependent reflectivity analysis.

The operation is funded by the **Minerals and Energy Research Institute of WA (MERIWA)** and mining industry partners **Goldfields**, **Sons of Gwalia**, **Placer Dome** and **AngloGold**.

Executive Dean of the Division of Resources and Environment, Professor Graham Lodwick, said the project demonstrated Curtin's commitment to creating meaningful links between the University and industry. "This project has the potential for very real industry benefits and it is pleasing to see the strong partnership between Curtin and the mining community to find better, more effective ways of operating".

EM Torch Project

In 2003, a portable 3 component EM system known as the EM torch was prototyped by **Lightning Nickel** and **Curtin Exploration Geophysics** as part of **Kim Bone's** honours project. The system is designed to find pods of ore that were missed during initial mining activities. These pods can be up to 30-50m away from existing drives. An advantage of this system is the ability to collect data in traditionally noisy environments. The photo shows Kim using the system inside a drive with mesh and rock bolts present.

Curtin's own in-house receivers contribute greatly to the collection of high quality data. On the outside they look like 6 sided stop signs, but inside there is carefully wound copper coils and a high quality preamplifier. These receivers have been developed by **Dr.Anton Kepic** to collect high quality EM data on the surface. The trailer system was assembled and built by Kim and **Dominic Howman**. Although the initial Torch system was a prototype, it has already found considerable ore reserves.

Induction Coil Sensors and Transmitter Instrumentation for the TEM Method

DEG has developed **induction coil sensors and transmitter instrumentation for the TEM method**. Some of these developments are now available for commercial use with Independence Group and Anglo American now owners and users of Curtin instruments (eg see Torch article).

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