

# Geo-soundings

NEWSLETTER – SEPTEMBER 2011

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## WELCOME

Welcome to the 3<sup>rd</sup> edition of Geosoundings for 2011. The past 3 months have been very productive, with a journal publication, conference presentations and research activities, along with the appointment of two new staff members. Also during this past quarter the third year field trip was held and proved to be an educating experience for both staff and students. We hope that you enjoy the contents of our latest newsletter.

## JOURNAL/BOOK PUBLICATIONS

**Caspari, E., T. Muller, and B. Gurevich**, 2011, *Time-lapse sonic logs reveal patchy CO2 saturation in-situ*. Published in Geophysical Research Letters, 38, L13301, doi:10.1029/2011GL046959.

## CONFERENCE PRESENTATIONS

**Pevzner, R.**, Presented at the Society of Petroleum Engineers Applied Technology Workshop on “Carbon Capture and Sequestration” Queensland, June, 2011.

**Gurevich, B., V. Mikhaltsevitch, and M. Lebedev**. A low-frequency laboratory apparatus for characterizing mechanical properties of rocks. Presented at XXV IUGG General Assembly, Melbourne, June, 2011.

**Gurevich, B.**, and M. Pervukhina. A simple theoretical model for stress-induced anisotropy of rocks. Presented at XXV IUGG General Assembly, Melbourne, June, 2011.

**Gurevich, B., M. Lebedev, A. Bona, and R. Pevzner**. Elastic anisotropy estimation based on laboratory measurements of velocity and polarization of quasi P-waves. Presented at XXV IUGG General Assembly, Melbourne, June, 2011.

**Gurevich, B., D. Makarynska, O. de Paula, and M. Pervukhina**. Squirt-flow attenuation and dispersion in fluid-saturated rocks: estimates and bounds. Presented at 1<sup>st</sup> International Workshop on Rock Physics, Denver, August, 2011.

**Mikhaltsevitch, V., M. Lebedev, and B. Gurevich**. An experimental study of low-frequency wave dispersion and attenuation in water saturated sandstone. Poster presented at 1<sup>st</sup> International Workshop on Rock Physics, Denver, August, 2011.

**Lopes, S., and M. Lebedev**. *Laboratory study of the influence of changing the injection rate on p-wave velocities and water saturation in a limestone*. Poster presented at the New Technology Forum & Topical Conference, Perth, September, 2011.

## RESEARCH VISITS

### GPR hunt for remains of Yagan's father

On Monday 15<sup>th</sup> August, **Dominic Howman** led a team in ground probing radar to help Nyoongar elders find the final resting place of Midgegooroo, father of Nyoongar warrior Yagan. It was accepted that Midgegooroo, who was executed in 1833 by firing squad at the former Perth Jail was buried at the site, which is now the St George's Cathedral precinct in Perth. The team used equipment to probe up to 5m below the surface which would reflect off any sub-surface objects. See more details as published in The West Australian at -

<http://au.news.yahoo.com/thewest/a/-/news/10045380/hunt-for-remains-of-yagans-father/>

PhD students **Andrew Greenwood, Konstantin Tertyshnikov** and **Bai Chun Sun** travelled to Adelaide from 31<sup>st</sup> July to 5<sup>th</sup> August for **DET Project 3.1: Hillside Survey at REX Minerals**. They conducted field trials to simulate a towed array Multi-channel Analysis of Surface Waves (MASW) in conjunction with high resolution refraction and reflection imaging. The trials were part of a technology review and feasibility analysis of shallow high resolution seismic techniques for mineral exploration. The field trials proved to be successful, obtaining good quality data despite high wind noise coming onshore and all acquisition goals were achieved.

From the 5<sup>th</sup> – 9<sup>th</sup> September **Dr Mark Lwin** and PhD students **Andrew Greenwood** and **Elmar Strobach** visited Mandalong NSW to conduct **ACARP Research**. They acquired VSP data with a down hole geophone over a coal seam at 260 m. 2D seismic data was also obtained. Gas content measurements were provided by Centennial Coal and the mine and core samples will be studied in our Rock Physics Laboratory. The data will be used to simulate the sensitivity of seismic as a function of fluid content.

## THIRD YEAR FIELD TRIP

The 3<sup>rd</sup> year fieldwork project was hosted and sponsored by Abra Mining Limited at their mine site, 180km's North East of Meekatharra from the 27<sup>th</sup> August to 4<sup>th</sup> September. Staff Members **Jayson Meyers**, **Christian Dupuis** and **Dominic Howman** supervised the 27 students in a number of field activities. All the students and staff had an excellent time in the field and at the Abra camp and returned safely. Resource Potentials and Atlas Geophysics donated their staff time and state of the art magnetic and gravity survey equipment. HiSeis assisted with supplying equipment for acquisition of a 3km long seismic line across the Abra ore body using an array of 700 channels. The field work was a logistical challenge with getting so many people and so much equipment and supplies to and from a remote area in such a short time frame. It worked well due to excellent planning by Curtin staff and support from Abra Mining and we thank all those involved for their support to make this Field Trip possible.



*The collective group of 2011 Third Year, Grad Dip students and staff, taken at Abra Mine.*

## NEW STAFF



### **Dr Mahyar Madadi**

Dr Madadi commenced his employment with the Department on the 1<sup>st</sup> August. He has an MSc and PhD in Physics from the Institute for Advanced Studies in Basic Sciences, Zanjan, Iran, completing these degrees in 1997 and 2002 respectively. From 2006 he was employed as

a Postdoctoral Fellow in the Department of Applied Mathematics, Research School of Physical Sciences at the Australian National University in Canberra and since 2003 he has authored or been a co-author on 24 publications. His main area of research and study has been associated with numerical simulations of physical properties of rocks from their digital images. During his appointment at Curtin, Dr Madadi will be working with the CO2CRC research group under the guidance of Professor Boris Gurevich.

### **Dr Robert Galvin**

Dr Galvin has been appointed as a Research Fellow on a limited term contract to assist with R&D activities associated with forward modelling, processing, analysis and quantitative interpretation of geophysical data. Robert is well known to members of the Department, having been a Curtin geophysics graduate,

completing his PhD degree in 2006. From 2007-2010, he was employed as a Post-doctoral Researcher by CSIRO, undertaking research into the geophysical properties of shales and fractured reservoirs. Since 2000 to the present, Robert has authored or co-authored 20 publications/presentations.

## EXPOS & SCHOOL VISITS

On 11<sup>th</sup> July a group of Year 12 students visited the Department as part of the *Focus on Mining* program which was organised by WASM Marketing. The program includes a 5 day camp for the students who are studying TEE Maths and Science and are considering studying mining related courses at university. The tours include visits to both the Bentley and the Kalgoorlie Campuses and visits to mine sites. **Dominic Howman** gave a presentation on what geophysics is and how to gain entry into our course and a short tour of the facilities within the department.

On the 21<sup>st</sup> August the annual *Curtin Open Day* was held. Staff Members **Maxim Lebedev**, **Andrew Squelch**, **Dominic Howman** and PhD student, **Andrew Pethick** volunteered and assisted with the geophysics activities on the day.



*Andrew Squelch, Dominic Howman and Andrew Pethick discuss Geophysics with prospective students during Open Day*

## HONOURS/AWARDS

PhD student **Sofia Lopes** attended the **New Technology Forum & Topical Conference, Perth** from the 13<sup>th</sup> – 15<sup>th</sup> September and was awarded the prize for the **Best Poster**. Congratulations to Sofia and her co-author/supervisor **Maxim Lebedev** on this achievement.

## UPCOMING EVENTS

### **9th Euroconference on Rock Physics and Geomechanics**

**17<sup>th</sup> – 21<sup>st</sup> October**, Trondheim, Norway

### **DET CRC's First Annual Conference**

**21<sup>st</sup> – 23<sup>rd</sup> November**, Hahndorf, South Australia

### **CO2CRC Research Symposium**

**29<sup>th</sup> November – 1<sup>st</sup> December**, Glenelg, Adelaide

### **Curtin Reservoir Geophysics Consortium (CRGC) Annual Meeting**

**8<sup>th</sup> - 9<sup>th</sup> December**, Rottnest Island