Geo-soundings

NEWSLETTER – SEPTEMBER 2008

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WELCOME

We welcome you to our 3rd edition of Geosoundings for 2008. The past 3 months have been very productive with 7 journal and 7 conference presentations. Two new academic staff arrived and some brief information is provided on each in this edition.

JOURNAL PUBLICATIONS

Bóna, A., Bucataru, I. and Slawinski, M.A. (2008) *Space of S O (3)-orbits of elasticity tensors*. Archives of Mechanics: 60 (2), 123-138.

Barnes, S.J., Fiorentini, M.L., Austin, P., Gessner, K., Hough, R.M., & **Squelch, A.P**.: *Three-dimensional morphology of magmatic sulfides sheds light on ore formation and sulfide melt migration.* Geology, August 2008; 36: 655 - 658.

Grochau, **M**., **& B**. **Gurevich**, *Testing Gassmann fluid substitution: sonic logs versus ultrasonic core measurements* Published Online, Geophysical Prospecting Journal, Jul 9 2008.

Gurevich, B., Osypov, K., Ciz, R., & **D. Makarynska**, 2008. *Modeling elastic wave velocities and attenuation in rocks saturated with heavy oil*: Geophysics, 73, p. E115-E122.

Karpfinger, **F**., **Gurevich, B**., & A. Bakulin, 2008, *Modeling of wave dispersion along cylindrical structures using the spectral method*: J.Acoust.Soc.Amer. 124, 859-865.

Makarynska, D., Gurevich, B., Ciz, R., Arns, C., & M. Knackstedt, 2008, *Finite element modelling of the effective elastic properties of partially saturated rocks*: Comp. & Geosci., 34, 647-657.

Pervukhina, M., Dewhurst, D., **Gurevich, B**., Kuila, U., Siggins, T., Raven, M., & H.M. Hordgard Bolas, 2008, *Stress-dependent elastic properties of shales: Measurement and modeling*: The Leading Edge, 27(6), 772-779.

CONFERENCE PRESENTATIONS

Oral Presentations:

Bona, Andrej: *Characterization of elasticity symmetries by eigenvalues*. SEG 2008 Summer Research Workshop, Galway, Ireland.

Bona, Andrej: *Symmetry characterization of measurement errors*. 13th International Workshop on Seismic Anisotropy, Winter Park, Colorado USA.

Worden, S., & **A. Squelch,** *Arts and science collaborations for mineralogy and cultural heritage: the social aspects of mineralogical visualisation and representation as knowledge creation connecting physical and virtual worlds*. ISEA2008, 25 July-3 August 2008, Singapore.

Squelch, A., *Volume visualisation. CSIRO Exploration and Mining* Science Forum, 25 June 2008, Rottnest Lodge, Rottnest Island. (invited speaker).

Worden, S., & **A. Squelch**. *Arts and science collaborations for mineralogy and cultural heritage*. CREATEC Lunchtime Seminar Series, 6 August 2008, ECU, Mt Lawley. (invited speaker).

Al-Jabri Y., Urosevic M., Evans B. and Sherlock D., 2008, *Understanding seismic repeatability in the presence of irregular near surface conditions (karst)*, CO2CRC Otway Project, Victoria, Australia; SEG & EAGE Summer Research Workshop 2008 - Vancouver, Canada, 7-12 September 2008.

Poster:

Nadri, D, Bona, B. & B. Hartley: *Fracture orientation estimation in TI media using nonlinear inversion of traveltimes.* 13th International Workshop on Seismic Anisotropy, Winter Park, Colorado USA

PUBLIC PROMOTIONS

On Sunday 17 August, **Dr Andrew Squelch, Mr. Dominic Howman and Miss. Hayley Anderson** represented the Department at the **Curtin University Open Day**. The public was treated to a spectacular display of magnetic demonstration equipment organised by Dominic. The weather was perfect and we even saw Jeanette Hacket meeting with the booth volunteers and trying out some demonstrations. Many thanks to the 3 volunteers who gave up their Sunday.

(Hayley Anderson and Andrew Squelch)

On Monday August 18th **Paul Wilkes** and **Dominic Howman** represented Curtin Exploration Geophysics at the **ARRC School Teachers Showcase Night**. The participants were treated to displays from the various tenants of ARRC as well as talks from industry and an IVEC display. Although time was limited, a dozen teachers were given a tour through our facilities.

NEW STAFF

As a result of a long international recruitment campaign commenced late 2007, two new academic staff finally arrived to eagerly commence working with colleagues involved with the Centre of Excellence in High Definition Geophysics (CHDG). Both will work closely with Anton Kepic, Milovan Urosevic and Brett Harris as well as undertake and assist with some teaching duties.

Christian Dupuis - Research Fellow.

Christian commenced a 3 year contract on the 11th August. Christian's specific interests are in ***geophysical and biomedical instrumentation, seismoelectricity, borehole logging techniques and signal processing, education and environmental sustainability.*** He has completed the degrees BScE and MScE at the University of New Brunswick and is currently preparing to defend his PhD thesis entitled: ***"Field measurements and analysis of electrokinetic seismoelectric signals generated in sedimentary environments"*** also at UNB in Canada. He has been a co-author on 3 refereed journal papers, 4 expanded abstracts and 5 conference presentations. 2 posters, 5 seminars, 1 provisional patent and 1 US patent. In addition he has acquired more than 5 years teaching experience.

Roman Pevzner - Associate Professor.

Roman Pevzner commenced his 3 year contract on the 1st September. Roman's job brief expects him to lead a vigorous seismic research program, involving the development and application of algorithms relevant to the needs of the Australian industry. Roman's specific research interests have been in the areas of ***borehole seismic and acoustic investigations***, the ***development of software for both acoustic and elastic 2D/3D modelling***, he's been involved in the **CURE research project** (with Karmanos Cancer Institute) in which he developed the computing engine of the data processing software which included tomography and Kirchhoff migration. Since 2002, Roman has headed a software development department for a Russian geophysical company, where he developed a seismic data processing software package - ***RadExPro Plus*** - used for 2D/3D seismic data QC and processing, and VSP data processing. Another software package developed is **RadExplorer** (used in GPR data processing).

Roman has completed the degrees BSc (Honours) in Geology, a MSc in Geology, and a PhD in Geophysics, all obtained at the Moscow State University. Since 1997 Roman has been a co-author on **29 published works**, from 1997-2002 he was awarded **7 grants to support his studies**, and from 2004-2007 he has been involved with research groups who have been awarded **3 grants from Russian national and industry agencies**. Since 2004 Roman held the position of Assistant Chair in the Geology Faculty of the Moscow State University and has been actively involved in teaching mathematical data processing and has supervised MSc and BSc research programs.

AWARDS/PRIZES/SCHOLARSHIPS/GRANTS

PhD student **Marcos Grochau** has been awarded an **SEG 'Award of Merit'** for his presentation at the 2007 SEG Conference in San Antonio, entitled ***"Investigation of core data reliability to support time-lapse interpretation in Campos Basin"***, co-authored by Marcos and Boris Gurevich. It is planned to present Marcos with his award at the 78th Annual Meeting of the SEG International Exposition in Las Vegas on the 9th November 2008.

Congratulations to PhD student **Yousuf Al-Jabri** who has initiated an **American Association of Petroleum Geologists (AAPG) Student Chapter in Australia**. Yousuf has been appointed as the President of the chapter for 2008/2009, which commenced on the 20th August. Approximately 30 students have applied for membership.

STUDENT ACTIVITIES

This year the third year field project was conducted in the Gnangarra area north east of Yanchep. The project was designed to assist in water related geophysical studies for the WA Department of Water and the Water Corporation, adding more data and understanding to a larger ongoing project which is being conducted by Curtin's Exploration Geophysics Department.

Five staff and twenty nine students formed the third year project group. The fieldwork ran from 3-7 September. Activities covered on the trip included; helping with a 2D seismic survey; vertical seismic profiling; gravity; ground penetrating radar; borehole logging; transient electro-magnetic soundings; vertical electrical soundings; and GPS surveying. After a productive field project, the group is now busy with the analysis and interpretation of the new datasets.

(The entire 2008 3rd Year Student Group and Staff)

UPCOMING EVENTS

EAGE/SEG CONFERENCE
Belgrade, Serbia, 5-8 October

SEG 78TH ANNUAL MEETING
Las Vegas, USA, 9-14 November

CRGC ANNUAL GENERAL MEETING
Rottnest Island, 27-28 November