

Department of Exploration Geophysics Geo-soundings

NEWSLETTER | DECEMBER 2016



PhD student Julia Correa with new vibroseis



Anton Kepic (left) and Brett Harris (right) at the NGL facilities opening

WELCOME

We welcome our readers to the December issue of Geo-Soundings, our final edition for 2016.

This academic year has moved quickly by and the department has been involved in many engagements.

This issue will report on the conferences our staff and senior research students have been involved in; events such as our third year student field trip and the DET CRC meeting; our research activities and some staffing changes and news that the department has seen this quarter.

EVENTS

Geophysics Project Field Trip



Staff and students in Gidgee, WA

Gidgee mine, Panoramic Resources

The Department organised a 3rd year student field trip for our Geophysics Project unit, which ran from the 5th to the 12th of October and took place at the Gidgee gold mine.

The Gidgee mine site is owned by Panoramic Resources and located approximately 100 km north of Sandstone, WA. The Department's staff and students were hosted at the mine site for the duration of the trip.

The main objectives of the trip were to demonstrate acquisition methodology of multiple geophysical

techniques to students and to carry out an exploration survey over perspective targets at the Gidgee mine site using these methods.

The field trip involved the efforts of staff members **Anton Kepic, Dominic Howman, Murray Hehir, and Konstantin Tertyshnikov** with assistance from two volunteers, Mike Whitford (Independence Group NL) and Jacob Paggi. 16 students enrolled in the unit participated in the field survey.

Several small scale surveys were conducted in the vicinity of the mine site such as magnetic, time-domain

electromagnetic (TEM) and seismic.

Magnetic data were acquired over an area to the south of the main pit to determine whether a strong magnetic feature cross cutting stratigraphy is purely related to drainage or whether this could be a cross cutting bedrock feature.

TEM survey area was located to the east of the camp to follow up on two basement conductors identified by an aero EM survey previously.

A seismic 2D line (5.4 km long) was completed across the Gidgee shear zone south of the camp.

Students were encouraged to actively participate in acquisition of every geophysical technique that was deployed for the survey.

The Department is very grateful to Panoramic Resources for the opportunity to organise the real scale geophysical experiment for students and for their support and hospitality during the survey. Many thanks to Mike and Jacob for their time and help.

NGL Deep Well Facilities Opening

by Rob Ross

On the 25th of October, the Department hosted the opening of the National Geosequestration Laboratory Deep Well Training Research and Calibration Facility as part of the 2016 DET CRC Annual Conference.

Around 40 staff, students and guests attended the event at Curtin's main Bentley Campus, where a unique 900 m deep research well has been drilled. The well was drilled vertically to nearly a kilometre below surface.

The well passes through over 150 million years of formation sediments



Anton with guests at NGL open day



NGL Deep Well Facilities Opening— Continued from page 1

from recent Holocene times at the surface to the Jurassic Yarragadee formation at a depth of 900 m.

Visitors were invited to look down the well, experience being inside an active seismic recording truck and enjoy lunch at the site. Several examples of data were shown, including for vertical seismic profiling (VSP), subsurface geology stratigraphy and temperature data.

Associate Professor **Brett Harris** and Professor **Anton Kepic** conducted a tour of the well, the accompanying workshops, the seismic systems and the geophysical equipment stores while Dr Linda Stalker provided a brief outline of the research. The tour gave the visiting group an insight into key aspects of the research:

- The 900 m deep electromagnetically transparent well, with logs showing geology to 900 m below the surface;
- The subsurface optical cable system, which consists of over 2.4 km of specifically designed fibre optic cable extending 900 m below surface on the outside of the well's fibreglass casing;
- The 20,000 lb UniVib seismic trucks that generate the seismic signal;
- Seismic acquisition truck for recording seismic signals;

- Seismic recording systems (cabled and wireless recording systems), which can be used for mineral, hydrocarbon and groundwater research and monitoring;
- Electromagnetic equipment for recovering conductivity distributions to tens of km below the surface.

“in a few minutes, they are able to achieve what would traditionally take all day with conventional downhole geophone recording systems”

The system consists of downhole distributed acoustic sensing (DAS) using optical fibres. The researchers have tested the DAS system as an alternate downhole sensor for vertical seismic profiling (VSP) with very encouraging results.

As Brett Harris explained, the great advantage of this technology is that in a few minutes, they are able to achieve what would traditionally take all day with conventional downhole geophone recording

systems.

Full information content is available for first arrivals down the 900 m length of the hole. Both direct and reflected P-waves are clearly imaged using the DAS, with tube wave noise reduced in comparison to a hydrophone array. In angled holes, where the DAS would sit in contact with the dipping borehole wall, the DAS would also have the potential to record S-waves from offset sources. DAS could thus provide a suite of high quality data at a fraction of the cost and time investment, paving the way for the collection of seismic data in every drill hole.

Optical fibre cables are cheap, can be deployed rapidly by drilling crews and are suitable for low energy controlled sources. Since the NGL optical fibre distributed acoustic sensor systems are a more cost-effective technology, they can be left in place for later repeat measurements rather than continually redeploying the more expensive geophones each time.

The National Geosequestration Laboratory is a collaboration between CSIRO, Curtin University and the University of Western Australia. Australian Government funding was awarded as an Education Investment Fund grant to provide \$48.4m capital equipment to aid in uncertainty reduction in carbon storage.

RESEARCH ACTIVITIES



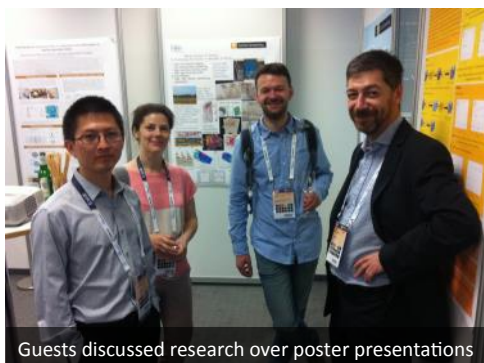
Prominent Presence at the EAGE 2016 in Vienna, Austria

In mid-2016, the Curtin Reservoir Geophysics Consortium (CRGC) maintained a prominent presence in the university exhibition area at the EAGE 2016 Annual Meeting in Vienna, Austria. The Curtin booth displayed rolling PowerPoint presentations and posters highlighting the research activities of the Department and CRGC. The booth proved to be very popular with visitors, industry, academia and professionals. All staff and PhD students attending took turns to assist with booth duties in between the presentation of their research papers and posters while at the conference.

Pictured: Andrej Bóna and Rob Ross man the Curtin booth at EAGE

CRGC Hosts Geophysics Research at EAGE

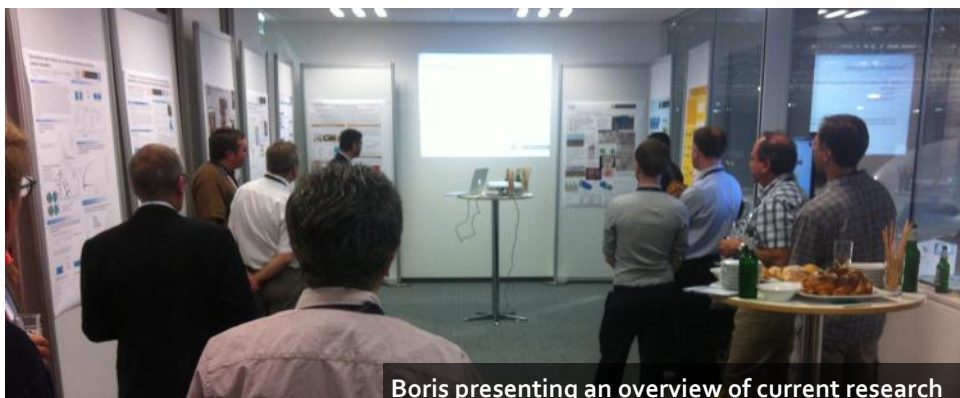
CRGC hosted a pre-icebreaker social networking research function in conjunction with the 78th EAGE Conference and Exhibition in Vienna. Around 40 leading geophysicists, researchers, oil industry executives and trade and investment managers attended the function at the Messe Wien Exhibition and Congress Centre. The function was aimed at promoting Curtin's Exploration Geophysics research.



Guests discussed research over poster presentations



Staff and students networking at the event



Boris presenting an overview of current research

DEG staff and PhD students provided the attendees with brief presentations to highlight recent advances in geophysics research at Curtin. Four workstations continuously provided interactive research presentations and 14 poster boards were used to discuss the research topics with attendees. Key research topics were discussed: theoretical and experimental rock physics; borehole seismics; diffraction imaging; acquisition, processing, modelling and analysis of time-lapse seismic data; and, geophysical inversion. The meeting was also attended by management from Government of Western Australia's European office based in London. Attendees enjoyed traditional Austrian refreshments.

CONFERENCES

The Department of Exploration Geophysics was well represented at the ASEG-PESA-AIG 2016 25th International Geophysical Conference and Exhibition held in Adelaide, Australia on the 21st to the 24th of August, with 15 of our staff and students presenting.

The conference was jointly hosted by ASEG, PESA and AIG and took place at the Adelaide Convention centre in the city centre of Adelaide. The theme for the conference was *Interpreting the Past, Discovering the Future*.

The Department also had a strong presence at the Near Surface Geoscience 2016 event hosted by EAGE, which took place on the 4th to the 8th of September in Barcelona.

The event incorporated several conferences running parallel to each other at the Palau de Congressos de Catalunya congress centre in Barcelona. Eight staff members and students presented their work at the First Conference on Geophysics for Mineral Exploration and Mining.

Below is a summary of the research topics that were presented.



Oral Presentations

Kieu, D. T., A. Kepic, and A. M. Pethick, 2016, Inversion of magnetotelluric data with fuzzy cluster petrophysical and boundary constraints: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/pdf/ASEG2016ab220>

Khoshnavaz, M. J., A. Bóna, M. S. Hossain, and M. Urosevic, 2016, Interpretation of hard rock seismic data using 3D prestack diffraction imaging: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/pdf/ASEG2016ab172>

Yurikov, A., M. Lebedev, and M. Pervukhina, 2016, Ultrasonic measurements on thin samples: numerical modelling: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/ASEG2016ab157>

Featured abstract

Dzunic, A. M., P. Ahmadi, M. Madadi, and A. Bóna, 2016, Introducing 3rd Dimension into 2D Reflective Seismic Exploration in the Complex Hard Rock Environment: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/pdf/ASEG2016ab227>

SUMMARY

In this paper, we are proposing a new methodology of 2D seismic acquisition and processing that aims to improve imaging of complex 3D geological environments. The method requires a simultaneous acquisition along two parallel receiver lines. The adapted processing highlights locations of the reflectors that are out of vertical plane by filtering the data by the apparent angle of incidence. This filtering also produces static and residual corrections as a function of this angle. Another benefit of the proposed pre-stack plane filtering is producing 3D velocity model as well as set of individually filtered and migrated sections that can be distributed in 3D volume for the visualisation proposes and interpretation free of conflicting events that would be present in conventional 2D imaging.

Le, C. V. A., B. D. Harris, and A. M. Pethick, 2016, Magnetotelluric Inversion, Carbonaceous Phyllites and an Ore Zone: Kevitsa, Finland: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/pdf/ASEG2016ab241>

Poster Presentations

Costall, A. R., B. Harris, A. Pethick, and R. Schaa, 2016, Electric Bipole Antenna Model Study of a Basin Scale Fault System: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/pdf/ASEG2016ab324>

Ahmed, Z., M. Lebedev, M. Madadi, and Y. Uvarova, 2016, Inverting dynamic elastic moduli of a granular pack to get shear modulus of the grain: Presented at the 25th Geophysical Conference and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/EX/pdf/ASEG2016ab269>

Nourifard, N., M. Lebedev, M. Sarmadivaleh, and A. Bóna, 2016, True-Triaxial-cell set up to estimate the stress induced anisotropy: Uniformity study: Presented at the 25th Geophysical Conferences and Exhibition, ASEG-PESA-AIG. <http://www.publish.csiro.au/ex/ASEG2016ab266>

EAGE Near Surface Geoscience 2016, 4th–8th of September, Barcelona, First Conference on Geophysics for Mineral Exploration and Mining

Oral Presentations

Ung, K., and A. Bóna, 2016, Comparison on Finite-difference and Common Focusing Point Redatuming Technique for Hard Rock Seismic: Presented at the First Conference on Geophysics for Mineral

Exploration and Mining, EAGE Near Surface Geoscience. <http://www.earthdoc.org/publication/publicationdetails/?publication=86500>

Kitzig, M. C., and A. Kepic, 2016, Automatic Classification of Iron Ore Lithologies Using Petrophysical and Geochemical Data: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594200_Automatic_Classification_of_Iron_Ore_Lithologies_Using_Petrophysical_and_Geochemical_Data

Le, C. V. A., B. Harris, and A. Pethick, 2016, Unconstrained 2D and 3D Magnetotelluric Inversion - Detection of a Ni-Cu-PGE Ore Zone and Carbonaceous Phyllites - Kevitsa: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. <http://www.earthdoc.org/publication/publicationdetails/?publication=86485>

Carson, M., and A. Kepic, 2016, Novel Scintillators for Logging while Drilling: Presented at the First Conference on

Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594621_Novel_Scintillators_for_Logging_while_Drilling

Urosevic, M., S. Ziramov, and X. Moreau, 2016, The First Experimental Seismic Investigation over Prospective Uranium Deposits at Mulga Rock, Western Australia: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594530_The_First_Experimental_Seismic_Investigation_over_Prospective_Uranium_Deposits_at_Mulga_Rock_Western_Australia

Kieu, D. T., A. Kepic, and V. A. C. Le, 2016, Fuzzy Clustering Constrained Magnetotelluric Inversion - Case Study over the Kevitsa Ultramafic Intrusion, Northern Finland: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594382_Fuzzy_Clustering_Constrained_Magnetotelluric_Inversion_-_Case_Study_over_the_Kevitsa_Ultramafic_Intrusion_Northern_Finland

Featured abstract

Kieu, D. T., M. C. Kitizig, and A. Kepic, 2016, Estimation of P-wave Velocity from Other Borehole Data: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594190_Estimation_of_P-wave_Velocity_from_Other_Borehole_Data

P-wave velocities are a key parameter for seismic processing and the absence of this parameter reduces the robustness of the images from very expensive seismic surveys. The P-wave velocities in an area are particular to the area, as the P-wave velocity depends on many factors and varies with geological conditions. Hence, using a localized model predicts P-wave velocity better than the application of a generic model for the entire dataset. In this work, we utilized fuzzy c-means (FCM) clustering to build a “fuzzy” relationship that estimates Vp. Our method was tested on a dataset from the Kevitsa Ni-Cu-PGE deposit in northern Finland. The borehole data comprises P-wave velocity, density, natural gamma, magnetic susceptibility, resistivity and assay data of Ni of six boreholes. In this area, there are many boreholes, but very few have P-wave velocity logged or the data is corrupted by tool limitations. Therefore, it is beneficial to predict the velocity from other data to help seismic processing. In order to demonstrate the robustness of our program, we used the data from five holes for training and one hole for Vp testing. The results show that our method can reasonably estimate P-wave velocity from other borehole data

Poster Presentations

Menu, F., A. Greenwood, and A. Kepic, 2016, Comparative Study of Crosshole Seismic Reflection and VSP Imaging: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594291_Comparative_Study_of_Crosshole_Seismic_Reflection_and_VSP_Imaging

Hooshyari-Far, I., A. Kepic, and M. Carson, 2016, Novel Gamma Ray Spectral Analysis for Logging-while-drilling: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594438_Novel_Gamma_Ray_Spectral_Analysis_for_Logging-while-drilling

Urosevic, M., S. Ziramov, J. Kinkela, J. Dwyer, and D. Pridmore, 2016, Seismic Exploration of Mineral Resources - An Australian Perspective: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594439_Seismic_Exploration_of_Mineral_Resources_-_An_Australian_Perspective

Kepic, A., and E. Okan, 2016, A Case for Camp-scale Seismic for IOCG Exploration: Presented at the First Conference on Geophysics for Mineral Exploration and Mining, EAGE Near Surface Geoscience. https://www.researchgate.net/publication/307594290_A_Case_for_Camp-scale_Seismic_for_IOCG_Exploration

SEG 2016, 28th–30th of August, Beijing, Rock Physics & Borehole Geophysics Workshop

Ahmed, Z., M. Lebedev, and Y. Uvarova, 2016, Extended Walton model to find the elastic moduli of the individual grains in granular media from the ultrasonic measurement: Presented at the Rock Physics & Borehole Geophysics Workshop, SEG.

17IWSA 2016, 18th–23th of September, Austin, 17th International Workshop on Seismic Anisotropy

Khoshnavaz, M. J., and A. Bona, 2016, Oriented inversion of non-hyperbolic moveout attributes in VTI media: Presented at the 17th International Workshop on Seismic Anisotropy, 17IWSA.

PUBLICATIONS

Published since our last newsletter:

Dean, T., T. Cuny, and A. H. Hartog, 2016, The effect of gauge length on axially incident P-waves measured using fibre optic distributed vibration sensing: Geophysical Prospecting (online). <http://onlinelibrary.wiley.com/doi/10.1111/1365-2478.12419/full>

Dean, T., J. Tulett, and D. Lane, 2016, The effects of inter-vibrator interference on vibrator performance: Geophysical Prospecting, **64**, 1516–1523. <http://onlinelibrary.wiley.com/doi/10.1111/1365-2478.12364/full>

Dean, T., T. Brice, A. Hartog, E. Kragh, D. Molteni, and K. O'Connell, 2016, Distributed vibration sensing for seismic acquisition: The Leading Edge, **35**, 600–604. <http://library.seg.org/doi/full/10.1190/tle35070600.1>

Dean, T., J. Quigley, S. MacDonald, and C. Readman, 2016, The design of optimized broadband vibroseis sweeps: The Leading Edge, **35**, 684–688. <http://library.seg.org/doi/full/10.1190/tle35080684.1>

Le, C. V. A., B. D. Harris, A. M. Pethick, E. M. Takam Takougang, and Brendan Howe, 2016, Semiautomatic and automatic cooperative inversion of seismic and magnetotelluric data: Surveys in Geophysics, **37**, 845–896. <http://link.springer.com/article/10.1007/s10712-016-9377-z>

Khoshnavaz, M. J., A. Bóna, and M. Urosevic, 2016, Velocity-independent estimation of kinematic attributes in vertical transverse isotropy media using local slopes and predictive painting: Geophysics, **81**, 73–85. <http://geophysics.geoscienceworld.org/content/81/5/U73.full>

Khoshnavaz, M. J., A. Bóna, M. S. Hossain, M. Urosevic, and K. Chambers, 2016, Diffractivity - another attribute for the interpretation of seismic data in hard-rock environment, a case study: Interpretation, **4**. <http://interpretation.geoscienceworld.org/content/4/4/B23.full>

Mikhaltsevitch, V., M. Lebedev, and B. Gurevich, 2016, Laboratory measurements of the effect of fluid saturation on elastic properties of carbonates at seismic frequencies: *Geophysical Prospecting*, **64**, 799–809. <http://onlinelibrary.wiley.com/doi/10.1111/1365-2478.12404/full>

Saenger, E. H., **S. Vialle, M. Lebedev**, D. Uribe, M. Osorno, M. Duda, and H. Steeb, 2016, Digital carbonate rock physics: *Solid Earth*, **7**, 1185–1197. <http://www.solid-earth.net/7/1185/2016/se-7-1185-2016.pdf>

Beloborodov, R., M. Pervukhina, V. Luzin, and **M. Lebedev**, 2016, Compaction of quartz-kaolinite mixtures: The influence of the pore fluid composition on the development of their microstructure and elastic anisotropy: *Marine and Petroleum Geology* (online). https://www.researchgate.net/publication/308797421_Compaction_of_quartz-kaolinite_mixtures_The_influence_of_the_pore_fluid_composition_on_the_development_of_their_microstructure_and_elastic_anisotropy

Khoshnavaz, J., A. Bona, A. Dzunic, K. Ung, and M. Urosevic, 2016, Oriented prestack time migration using local slopes and predictive painting in the common-source domain for planar reflectors: *Geophysics*, **81**, 409–418. <http://geophysics.geoscienceworld.org/content/gsgpy/81/6/S409.full.pdf>

Kitzig, C., A. Kepic, and D. T. Kieu, 2016, Testing cluster analysis on combined petrophysical and geochemical data for rock mass classification: *Exploration Geophysics* (online). <http://www.publish.csiro.au/eg/Fulltext/EG15117>

Featured paper:

Guo, J., J. G. Rubino, S. Glubokovskikh, and B. Gurevich, 2016, Effects of fracture intersections on seismic dispersion: theoretical predictions versus numerical simulations: *Geophysical Prospecting*, (online). https://www.researchgate.net/publication/309423220_Effects_of_fracture_intersections_on_seismic_dispersion_theoretical_predictions_versus_numerical_simulations



The detection and characterization of domains of intersecting fractures are important goals in several disciplines of current interest, including exploration and production of unconventional reservoirs, nuclear waste storage, CO₂ sequestration, and groundwater hydrology, among others. The objective of this study is to propose a theoretical framework for quantifying the effects of fracture intersections on the frequency-dependent elastic properties of fluid-saturated porous and fractured rocks. Three characteristic frequency regimes for fluid pressure communication are identified. In the low frequency limit, fractures are in full pressure communication with the embedding porous matrix and with other fractures. Conversely, in the high frequency limit, fractures are hydraulically isolated from the matrix and from other fractures. At intermediate frequencies, fractures are hydraulically isolated from the matrix porosity, but can be in hydraulic communication with each other, depending on whether fracture sets are intersecting. For each frequency regime the effective

stiffness coefficients are derived using the linear-slip theory and anisotropic Gassmann equations. Explicit mathematical expressions for the two characteristic frequencies that separate the three frequency regimes are also determined. The theoretical predictions are then applied to two synthetic 2D samples each containing two orthogonal fracture sets, one with and the other without intersections. The resulting stiffness coefficients, Thomsen-style anisotropy parameters as well as the transition frequencies show good agreement with corresponding numerical simulations. The theoretical results are applicable not only to 2D but also to 3D fracture systems and are amenable to being employed in inversion schemes designed to characterize fracture systems.

Extracted from *Geophysical Prospecting*

STAFF NEWS

Farewell

Deirdre Hollingsworth



Goodbye Deirdre

The Department wished Ms. **Deirdre Hollingsworth** a fond farewell on the 29th of July. Deirdre officially retired from her position as Administrative Officer after over 45 years of service at the Department of Exploration Geophysics.

Deirdre's knowledge and expertise will be greatly missed. Her enormous contributions were acknowledged with speeches by former and current colleagues, including an address from Professor Norm Uren, inaugural head of the Department of Exploration Geophysics.

The occasion was marked by a small and intimate morning tea catered by PhD student **Conny Kitzig**, with about 40 close colleagues and students in attendance.

The department thanks Deirdre for her service over the years and wishes her the best in all future plans.



Welcome!

Tim Dean

Appointed as a Curtin Research Fellow, Dr. **Tim Dean** commenced his appointment with us on the 19th of July.

Working closely with **Anton Kepic**, **Michael Carson** and **Nghia Nguyen** as part of the Boart Longyear funded group, Tim works on research related to logging-while-drilling instrumentation for slimline drilling, developing new instruments and techniques in geophysical measurement and undertaking teaching activities.

Tim completed his BSc and Honours in Geophysics at Curtin in 1997 and



Tim on site in Saudi Arabia

1999 respectively. He obtained his PhD in Physics from the University of New South Wales in 2004.

Tim brings with him a wide range of skills covering scientific research, geophysical algorithm development and implementation, Vibroseis, numerical programming in MATLAB, C++ and C#; graphical user interface development, seismic data processing for both surface and borehole data, land seismic survey planning, QHSE management, project management for both software development and research projects, radar engineering, postgraduate supervision, and undergraduate teaching.

Tim is the lead author for five peer-reviewed journal papers and five magazine articles, eight patents and over the past five years has been either the lead author or a co-author on 54 abstracts.



Lynda Bergey

Ms. **Lynda Bergey** commenced her appointment as our new administrative officer on the 20th of July. Her previously-held position was at Monash University as Executive Assistant to the Dean and Faculty Manager in the Faculty of Pharmacy and Pharmaceutical Sciences. She has many years of experience working in industry as an executive assistant as well as in senior management and marketing and is fluent in French, Italian and German.

Lynda is originally from Switzerland and lived and worked in America for 17 years before moving to Melbourne for four years. She and her family moved to Western Australia only weeks before commencing her position with us.

Rafael Lopez Chavez

Rafael joined the Department as an occupational trainee, commencing his position with us on the 9th of November.

Rafael is a graduate of Geological Engineering at the National University of Saint Augustine, Peru. He holds a Master's degree in Geotechnics and is currently completing his PhD in Geotechnics at the Pontifical Catholic University of Rio de Janeiro, Brazil.

As part of his research, Rafael is undertaking training on low-frequency measurements of rocks in the laboratory.



Giorgos Papageorgiou

Dr. Giorgos Papageorgiou visits our department this quarter as a collaborative researcher.

Commencing his visit at Curtin on the 2nd of November, Giorgos is working primarily on a project with Dr. **Stanislav Glubokovskikh**.

Giorgos is a post-doctoral research associate at the PDRA School of Geosciences at the University of Edinburgh, UK and holds a PhD in Mathematical Physics.



Congratulations!

Congratulations to Gazel and **Mahyar Madadi** on the addition of baby girl Sophia to their family!

Sophia was born on the 18th of October weighing a healthy 3.55 kg and measuring 54 cm in height.

HONOURS/GRANTS/AWARDS

PAUL WILKES PHD AWARD



Paul Wilkes has received confirmation that his PhD has been accepted and conferred by Curtin University. Paul's research was on the use of geophysics in the search for diamonds in the Kimberley region of Western Australia. The research was supported by Striker Resources (now North Australian Diamonds) who paid for new airborne and ground geophysical surveys and also provided valuable experience for four honours students who they co-supervised with Paul. Paul's PhD supervisors were Dr Jayson Meyers for most of the project and latterly, Assoc. Prof **Brett Harris**.

The thesis explores new ways of using airborne and ground geophysical methods for diamond exploration in the Kimberley region of Western Australia. Four test areas were used to compare geophysical results with known kimberlite and diamond occurrences. The thesis includes a review of diamond exploration models and geophysical methods used worldwide over

the last 50 years. It shows how geophysics can provide exploration guidelines and strategies for improved exploration.

The thesis is available online through Curtin University library at: http://espace.library.curtin.edu.au/R?func=dbin-jump-full&local_base=gen01-era02&object_id=246121

DR. ROSID AWARDED PHD

We congratulate **Dr Mohammad Syamsu Rosid** on being awarded his PhD which was officially approved on the 22nd of July.

Mohammad lives and works in Indonesia with his family. The title of his thesis is *Groundwater Investigation Using the Seismoelectric Method*.

DEG offer its congratulations to Mohammad and his supervisor **Anton Kepic** and all panel members on this achievement.



KAREN CLAY NOMINATED FOR VC AWARD

DEG extends its congratulations to WASM school business manager Karen Clay for her nomination for a Vice Chancellor's Excellence Award for Professional Staff.

Karen was nominated by Daniela Roberts for Excellence in Leadership. The nomination video is available at http://staffnews.curtin.edu.au/2016-vc-award-nominee-spotlights-2/?utm_campaign=um-corp-curtinweekly&utm_source=curtinweekly&utm_medium=email

ASEG GRANT AWARDED TO MARKO ZEGARAC

Third year student **Marko Zegarac**, who is currently completing a double degree in Geophysics and Applied Geology was one of two recipients of a \$2000 ASEG WA Branch Student Grant. The grants, which student members can apply for, are awarded by taking into consideration the projects that students are working on, their involvement in ASEG and the needs of their respective projects.

UPCOMING EVENTS

[AGU Fall Meeting](#), 12th–16th of December 2016, San Francisco, USA.

[Australasian Oil & Gas exhibition and conference 2017](#), 22nd–24th of February 2017, Perth, Australia.

[Prospectors & Developers Association of Canada \(PDAC\)](#), 5th–8th of March 2017, Toronto, Canada.

[First EAGE Workshop on Pore Pressure Prediction](#), 20th–21st of March 2017, Pau, France.

[EGU General Assembly](#), 23rd–28th April 2017, Vienna, Austria.

[Fourth EAGE Exploration Workshop](#), 2nd–4th of May 2017, Muscat, Oman.

[4th International Workshop on Rock Physics \(4IWRP\)](#), 29th of May–2nd of June 2017, Trondheim, Norway

[79th EAGE Conference & Exhibition 2017](#), 12th–16th of June 2017, Paris, France.

The Geo-soundings team would like to wish our readers a Merry Christmas and Happy New Year!



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