TELL US WHAT YOU WANT

ASSOCIATE PROFESSOR PETER COWELL
Head of School

Welcome to the first edition of the newsletter, GEO.news, from the School of the Geosciences: geology, geography and geophysics. We have initiated the newsletter primarily to connect keep our Alumni connected and informed.

The new home for the School of the Geosciences (geology, geography and geophysics) in the refurbished Madsen Building, shown here framed by the walkway at the main City Rd entrance to the Campus, gives tangible and symbolic prominence to the school within this world-class University, currently ranked 37 on the QS World University Rankings.

Many will recall former homes in the Edgeworth David Building and the Institute Building; but the University has been engaged in a major program of reconstruction over the past few years. And it’s not just splendid new buildings and piazzas. The School of Geosciences itself has been reconstructed from the Department of Geography and the Department of Geology and Geophysics.

Both these departments began under the Headships of the good friends and colleagues, Edgeworth David (below) and Griffith Taylor, who shared scholarly interests and a common vision. Their vision especially included maintaining strong links between geology and geography to develop a deep understanding of the dependence of society on the Earth and its natural resources. The importance of the resources industries to the Australian society as well as our regional neighbours in the 21st Century attests to the David and Taylor vision. Now facing the challenges of climate change and population pressures, this vision is more relevant than ever because the challenges span continents on time scales best understood by those trained to think big. The geo sub disciplines at Sydney are today back together under the one roof where they can lead the University in its understanding of the Earth and society and their interaction, now a primary driver of our changing environment.

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The rebuilding program has been over a decade long, has entailed arduous pilgrimages into temporary accommodation, and myriad disruptions involving noise, dust and breakages.

One of the worst breakages has been the connections with our geography and geology alumni. Both the old departments had strong bonds with their alumni, quite a few of whom majored in both geology and geography... some even married! Now the dust has settled on the building program, 2010 brings the first opportunity for over a decade to get on with the job free of the distractions that have so consumed us during recent years.

There have been significant successes in the research and teaching programs of the school despite it all, and we have gained fabulous new infrastructure. The icing on the cake for our building program involves the best and most import of all our assets: the school’s relationship with its students and its alumni.

This year the student society has been reborn as geo.soc. They have regularly held big BBQs, gone paintballing, re-initiated the great tradition of the annual harbour cruise, and run professional events liaising with industry. As always, the students are full of energy and enthusiasm, and as smart as ever.

Now it’s time to rebuild the strong alumni programs of former years. These of course were orientated around our sub disciplines in geography and geology. Some of our older alumni will feel most comfortable with a relationship projected along similar lines. Our more recent alumni will think more in terms of the geo sciences reunited. The school is happy to accommodate whatever works best, but most of all, we are burning with curiosity to find out what you, our alumni, want from the school and how we can best serve you. This may be through professional development, networking events or just social get-togethers with your classmates; whatever it is, we want to know how we can support you.

On the rear page of this newsletter you will find contact details for the school. We would welcome any feedback or suggestions that you have regarding how we can better build a School of Geosciences community.

NEW EDGEWORTH DAVID CHAIR AND HEAD OF SCHOOL APPOINTED

BY ASSOCIATE PROFESSOR PETER COWELL

The school will soon be undergoing further development with Professor Jonathan Aitchison joining us in the new year.

Professor Aitchison was recruited from a stellar field of candidates from around the world who applied for the professorship to serve as our Head of School. More than 20 of the applicants currently hold professorial appointments at leading universities around the world, including more than a dozen with extensive experience as Heads of Schools.

From this wealth of talent, Jonathan shone through his capacity to maintain an extremely strong research record while growing his School at the University of Hong Kong from small beginnings to a highly competitive powerhouse during the six years he has been Head of School there.

Jonathan’s research expertise and enthusiasm in the Asia region is natural fit with the strong program in studies of the Asian and Indian region at Sydney.

His experience in the Antediluvian Tethyan Ocean that was wiped out when India slammed into Asia also adds valuable strength to the thriving marine geoscience program in the school. He’s a marine scientist that focuses much of his fieldwork thousands of metres above sea level!

Our keen anticipation for Jonathan’s taking over management of the School is matched only by our appreciation for Professor Dietmar Müller for making it possible. It is because of Dietmar’s wonderful but well-deserved success in becoming an ARC Laureate in 2009 that allowed the School to fund the Chair.
The EarthByte Group led by Professor Dietmar Müller is pushing the boundaries of e-research.

EarthByte have recently released a new version of the open-source GPlates software that offers a novel combination of interactive plate-tectonic reconstructions, geographic information system (GIS) functionality and raster data visualisation.

“The new version of GPlates is a huge advance over anything we have had before,” says Professor Müller, “it has been an instant success, with user interest ranging from the exploration industry, students and last but not least from the President of the American Geophysical Union, Dr. Carol Finn, who wrote via email: “I am excited about GPlates. I was able to easily use the existing files to reconstruct continents and will try importing my own raster files. The tutorials are good by the way!”

The fact that a senior science administrator like Carol was able to install and use GPlates with ease is a compliment to everyone involved in EarthByte software, data, tutorial and user documentation development.

This is a huge team effort that’s worked amazingly well and harmoniously. It shows that work in academia doesn’t have to be akin to herding cats.

The new software was demonstrated at a Think Tank on the future of resource exploration at the Australian Academy of Sciences, leading to ABC television news publicity and widespread industry interest, including a potential ARC Linkage project on copper/gold exploration.

Recently, GPlates was also linked to the High-Performance Computing code Terra, for modeling the mantle convection and plate tectonic history of planet Earth at a resolution down to 10km.

This effort was initiated via a German Science Foundation-funded Mercator visiting professor fellowship to Dietmar Müller to work with Professor Hans-Peter Bunge’s geodynamics group at the Ludwig-Maximilians University, Munich.

The coupling of the two softwares further illustrates the value of e-collaboration. It builds upon software that was initially developed to link GPlates to the CitcomS mantle convection code which was developed by the US NSF-funded Computational Infrastructure For Geodynamics, another collaborative project

GPlates is available as a free download from www.earthbyte.org

Far left: Global Time Dependant P-wave Tomography slices can provide insight into past plate positions. In this example (at 22Ma, depth 768km), the subduction systems under South East Asia can be clearly seen in the tomography, providing constraints for enhanced resource exploration.

Left: 3D representation of the mantle’s temperature field through time generated by Terra.

LOST ALUMNI - WHERE ARE THEY NOW?

ARE YOU STILL IN CONTACT WITH YOUR OLD GEOSCIENCES CLASSMATES?

As part of the School of Geosciences revitalisation, we are searching for our lost alumni. If you are still in contact with anybody from your time here we would love to hear from you, or from them!

Please contact Lucie Reynolds on +61 2 9351 2886 or lucie.reynolds@sydney.edu.au

One of the most interesting aspects of the report is the assessment of the relative impacts of Australian scientific publications in the period 2004-2008 (see figure below).

Not surprisingly, this index (which is a measure of ISI citations per publication) places geosciences second, following closely behind physics. Environmental science also ranks very highly.

For those involved in research in the fields of geosciences and environmental science it may not come as a surprise to see these areas doing so well but it is gratifying to see this quantified and recognised.

Through our faculty’s executive partnership with the Australian Museum; Powerhouse Museum; University of Technology, Sydney; and the Office of Science and Medical Research for Science in the City an additional 10,000 students attended events across the state.

Teacher training has also featured in the outreach calendar with the school continuing its relationship with PESA and its wonderful teacher professional development division, TESEP.

If you would like to know more about the outreach activities being run within the Faculty of Science you can join Science Alliance. It’s free to register and will keep you up to date with all of our school and public programs, as well as what’s happening with our research, though our quarterly newsletter and calendar of events.

Just head to sydney.edu.au/science and follow the links to join Science Alliance.

GEO SCIENCES RESEARCH RECOGNISED FOR ITS IMPACT


Engagement with the school community is important to us. Over the past 18 months over 20,000 students have been a part of programs Through Science Alliance we’ve seen over 10,000 students come and visit the university. Our hands-on workshops have definitely been the favourite feature, with activities ranging from an ‘Amazing Race’ style ‘Race around the Campus’ to building and erupting clay volcanoes.

The School of Geosciences is also especially proud to have been involved in the University’s Compass Social Inclusion Program which aims to introduce school aged children from lower socio-economic backgrounds to university life.

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Chart 12: Relative impacts of Australian scientific publications – by field, 2004-08

Note: The relative impact of Australian publications is calculated as the number of citations per Australian publication divided by the number of citations per world publication by field over the period 2004-08.
DHI JOINS THE SCHOOL

Opportunities for research collaboration have prompted The Danish Hydraulic Institute (DHI) and the School of Geosciences to join forces.

In May of this year, DHI moved into newly refurbished and purpose built office space within the Madsen Building. Growing from a single office at the Danish Academy of Technical Sciences in the 1960’s, DHI has grown to be a world leader in research and innovation in water related issues with offices in 26 countries worldwide.

DHI are globally recognized as leaders in the field of water modeling and technical solutions related to marine and coastal water resources, as well as urban situations. Software developed by DHI is used in water management around the globe.

The move to our campus is timely as DHI is keen to foster collaborative research with scientists at the School of Geosciences and other institutions.

Gary de Leeuw, the NSW state manager, agrees: “We have always been involved in theoretical research which has ultimately led to the development of many applications. For us it is important to engage in both research and the application of that research in various disciplines. I am particularly excited about being based at Sydney University as it gives us the chance to closely work with researchers here on new and exciting projects.”

The School of Geosciences is equally excited about the new presence of DHI in the building. “The presence of DHI at the School of Geosciences offers many new opportunities for academics and students at the university. The expertise DHI members bring to the university will be extremely valuable to staff and students”, says acting Head of School, Associate Professor Peter Cowell.

The School of Geosciences wishes to warmly welcome the DHI staff and we look forward to a future of productive and exciting collaboration.

STAFF & STUDENT ACHIEVEMENTS

PROF JOHN CONNELL AWARDED INTERNATIONAL MEDAL OF THE IAG
Professor John Connell has been awarded the International Medal of the Institute of Australian Geographers. He is only the fifth recipient of this prestigious award, which recognises the contribution of geographers in Australia and overseas to Australian geography in the international sphere. The award was bestowed at the IAG annual conference in Cairns 28-30 September 2009. The previous recipient of the IAG International Award was Harold Brookfield.

BRUCE THOM AND ANDY SHORT HONOURED IN AUSTRALIA DAY LIST
The School of Geosciences is proud to congratulate Bruce Thom and Andy Short who have both received honours in the Australia Day list. Hon Prof Bruce Thom was awarded the Member of the Order of Australia (AM) and Prof Andy Short was awarded the Medal of the Order of Australia (OAM).

OLIVIA DUN AND KEVIN DAVIES AWARDED ENDEAVOUR RESEARCH FELLOWSHIPS
Congratulations to Olivia Dun and Kevin Davies who have both been awarded a 6 month Endeavour Research Fellowship. Both Fellowships are worth $23,500.

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EARTH RESOURCES FOUNDATION RECOGNISES TALENTED STUDENTS

The School of Geosciences is proud to be home to students achieving extraordinary things, and along with the ERF, we enjoyed celebrating these remarkable achievements earlier this year.

Each year the Earth Resources Foundation (ERF) holds a prizes evening to honour the achievements of the hard-working students from the School of Geosciences and each year the quality of the prize-winning students is astounding. This year was no different.

Students, parents, friends, industry sponsors, alumni, academics and general staff all arrived at the beautiful Nicholson Museum on the evening of May 18th to pay tribute to the outstanding achievements of our students. Former Acting Dean of Science, Professor Mitchell Guss was a special guest.

The vast array of talents for which the prize-winning students were awarded represented the breadth of options available to students in the School of Geosciences; ranging from field studies in the rural villages of Vanuatu to state of the art computer modelling of plate tectonic processes.

Both undergraduates and postgraduates were awarded prizes on the night and a new award, the Geo Service Award was inaugurated in recognition of the hard work done by several students in creating a new student society, Geo.Soc (read more about this in the article above).

The new Geosciences Alumni Organisation was also launched at the prizes evening and it was pleasing to see some of our alumni return for the event.

All in all, the evening was a relaxed and fun event enjoyed by all who attended.

We hope to see you there next year!

Geo.Soc has held a range of successful events ranging from the social to the serious, including a Sydney harbour cruise, many BBQs and several careers related seminars which have all been very well attended.

Geo.Soc has hosted geoscientists from the AIG, SMEDG and looks forward to hosting BHP Billiton Iron Ore on the 29th September for a look into the increasing value of geoscience in today’s world.

Geo.Soc is open to collaborations with industry/research bodies and hopes to forge links with those involved in the world of geosciences, especially alumni, in order to better the experience of those studying geosciences as the University of Sydney.

Search ‘USYD Geoscience Society’ on facebook to find us

Dr Derek Wyman presents Tom Harvey with the Earth Resources Foundation Second Year Scholarship in Geology

Mr Paran Moyes of Coffey Geotechnics presents Sophia Cazarov with the Coffey Geosciences Scholarship
RESEARCH DEGREES CONFERRED

THE SCHOOL OF GEO SCIENCES WISHES TO CONGRATULATE THE FOLLOWING CANDIDATES WHO HAVE BEEN AWARDED POSTGRADUATE RESEARCH DEGREES IN 2009-2010

ROWENA BUTLAND (PHD)
Perceptions of place in the management of heritage space (Bruce, E.)

BRETT DAVIS (PHD)
Primary sources of stormwater contaminants in a highly urbanised catchment of Sydney Harbour, Australia (Birch, G.)

DANIEL MONTOYA (PHD)
Water management in the Murrumbidgee: community-government relations (McManus, P.)

JOSEPHINE GILLESPIE (PHD)
World heritage obligations and local communities: land law and justice at Angkor, Cambodia (Bruce, E.)

JAMES DANIELL (PHD)
Sediment dynamics on a tide-dominated inner shelf, Torres Strait (Cowell, P.)

NICOLAS FLAMENT (PHD, COTUTELLE)
Freeboard evolution, crustal evolution and the 2.7Ga late-Archean geological and biological crisis (Rey, P.)

SUNIL BAJPAI (MSC)
Erosion of access tracks in Royal National Park: the Coast Walk, its Condition and Use (Dragovich, D.)

DARAVY KHIEV (MSC)
Institutional arrangements for water governance in the context of catchments in Cambodia (Hirsch, P.)

UNLOCKING THE SECRETS OF THE GREAT BARRIER REEF

Battling tropical cyclones is all in a day’s work for Dr Jody Webster.

2010 has been a year to remember for Jody. From February to April he was co-chief scientist aboard the IODP (Integrated Ocean Drilling Program) expedition to the Great Barrier Reef. This was the first expedition ever undertaken by the IODP in Australian waters and has been several years in the planning. However, all planning was almost undone when Tropical Cyclone Ului hit and the ship was buffeted for several days, jeopardising the carefully planned drilling schedule.

Fortunately, the drilling was able to resume once the cyclone had passed. The purpose of the expedition was to take drill cores from fossilized sections of the Great Barrier Reef in order to gather data relating to past sea-level rise, climate change and the response of the Great Barrier Reef to these environmental changes.

The team was successful in recovering a total of 34 excellent cores and these are currently being processed in the IODP Bremen Core Repository by scientists from nine different countries. Early results have been encouraging, “Initial observations of the cores confirm the presence of the shallow fossil reef biota needed to construct a new and robust sea level curve”, says Dr Webster.

Because the Great Barrier Reef is on a tectonically stable portion of the Earth’s crust, and is far from the confounding influence of vast ice sheets that existed in the northern hemisphere during the last ice age, this region represents a prime location to investigate global sea-level changes over the last 20,000 years including the final phase of the last ice age.

Dr Webster and his co-chief scientist, Dr Yusuke Yokoyama are optimistic that their research will lead to a deeper understanding of how today’s coral reefs will respond to climate change.

As well as his work with the IODP this year, Jody has been successful in a proposal to NOAA to undertake a submersible dive program in the North-Western Hawaiian Islands as part of the Hawaii Undersea Research Laboratory. The project, titled ‘Evidence for Miocene and Younger Glacial/Deglacial Climate Variability from Drowned Coral Reefs around Gardner Pinnacles’ aims to recover evidence from drowned coral reefs that may shed light on the behaviour of coral reefs during periods of climate instability.

Despite these outstanding achievements, Jody says that by far the most exciting event of his year was the birth of his daughter, Lily, who was born happy and healthy on the 27th July.

Congratulations to Jody on a busy and productive year!
ALUMNI PROFILE: DR GUILLAUME DUCLAUX

Spending several months in Antarctica is not your everyday field trip, but for Dr Guillaume Duclaux, it was all part of his PhD research.

Dr Guillaume Duclaux is an excellent example of the benefits gained from the international education offered by the cotutelle program. Guillaume began his training in earth sciences at the Ecole Normale Supérieure de Lyon (France). During his study there, he became interested in Precambrian geodynamics so it was a natural progression for him to take on a Masters project focusing on the geochemical and metamorphic evolution of two Pan-African granulitic massifs in Togo (West Africa).

With this fascinating masters completed, he began a cotutelle Ph.D. in tectonics at the University of Saint-Etienne (France) and the University of Sydney under the supervision of Associate Professor Patrice Rey.

Guillaume’s doctoral research focused on the thermo-mechanical behaviour of the Precambrian continental crust in the Late Archaean and Paleoproterozoic periods (~2.55-1.6 Ga). As with many geological projects, time in the field was an integral and exciting part of Guillaume’s research. He spent about 6 months in the field, studying Archaean high grade terrains in the South Australian Gawler Craton and the Terre Adélie Craton in Antarctica (pictured above). “Once I got back to uni, Patrice and I coupled numerical experiments with my field observations. This has led us to propose a new model for the late tectonic evolution of hot orogens,” Guillaume said.

After completing his PhD, Guillaume headed over to Western Australia to work for the CSIRO. He now occupies a Research Team leader position in the Computational Geoscience group. Working in this group has given Guillaume the chance to use the skills he gained through his PhD in a real world setting, working on information modelling, numerical modelling and structural geology, he says “Comparing and integrating field data with numerical simulations helps geologists to make their model more robust and push their science forward.”

The School of Geosciences is proud of all its alumni and it is great to see them working in such fascinating fields.