

ORE SOLUTIONS

NEWSLETTER OF **CODES** CENTRE FOR ORE DEPOSIT AND EARTH SCIENCES

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CODES RRC PROJECT ATTRACTS GLOBAL INTEREST

'Environmentally Sustainable Production of Critical Metals'



Some of the participants in the post-SEG conference field trip to western Tasmania led by the RRC project team at CODES are pictured here at the Renison Bell core shed.

Dr Owen Missen, who has played a pivotal role in the running of the Australian Government-funded Regional Research Collaboration (RRC) project, brings you up to date with the latest research outcomes from this major undertaking. He also summarises the successful October RRC field trip, which attracted national and international industry, government and academic participants.

CODES PhD students and researchers working within the RRC project are finalising the significant body of

research they have conducted over the past three years. This project brought together a large UTAS team of over 20 researchers and 11 PhD students (ten at CODES, one at the School of Education), all focusing on the varying aspects of critical metals, from exploration to education. The project has facilitated the linking of a sustainable critical metals industry in regional Tasmania with understanding challenges faced by rural and regional communities in accessing STEM education and careers – despite the significant role of the minerals industry in the local community.

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FROM THE DIRECTOR

Professor David Cooke welcomes new staff and students to CODES, highlights the increased numbers for the Master of Economic Geology program this year, and outlines planned initiatives for growth into the future at CODES.

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The innovative collaboration between CODES and the School of Education, and the involvement of local communities, academic, industry and government partners, has identified the need to address low community engagement with the Tasmanian minerals industry, whilst also enhancing research capability and capacity at UTAS, and growing long-term strategic research and industry partnerships.

GLOBAL INTEREST

In October 2025, Professor David Cooke, PhD student Emrekan Yurdakul and Owen led a post-SEG conference field trip, showcasing Tasmanian geology and our RRC research results. Our trip began with a visit to the Mineral Resources Tasmania core shed to review core from the few sites we were unable to visit during the trip. We then visited Bluestone Bay on the east coast to see outcropping granites at Freycinet including their magmatic-hydrothermal textures. A night in Launceston enabled us to meet with our School of Education colleagues and discuss regional barriers to students getting into STEM, followed by a visit to the ABx rare-earth element (REE) clay project core shed at Western Junction. We spent the remainder of the trip on the northwest and west

coasts, visiting Kara mine, Rosebery mine, Renison Bell mine, Granville Harbour, Trial Harbour, Avebury core shed and finally Mt Lyell. At all sites we provided the Tasmanian geology context, and researchers from each site provided short talks and assistance for our international guests when reviewing core. Participants travelled from Canada, the USA, Indonesia, Japan and the UK for this seven-day event, highlighting the global interest in, and significance of, these Tasmanian research outcomes.

COMMUNITY COLLABORATION

The new collaboration networks developed by the RRC project have resulted in shared benefits, including conference papers by CODES and School of Education researchers that share collaborative research outcomes with the wider community.

Public and community events were held in Zeehan, Tullah and Burnie. Project highlights included two one-day workshops open to the public and showcasing our research outputs. These involved research team members and students from the project, as well as invited industry partners and external stakeholders, delivering oral presentations to audiences of ~50 participants from the western Tasmania minerals industry, local community, academia and government.



With a stunning misty backdrop of Mt Lyell (distance) and the old Prince Lyell open cut (mid ground), Katrina Young from Sibanye Stillwater discusses the geology of the site with participants.



PhD student Emmanuel Musa (right) and Professor David Cooke (second from right) with field trip participants at Kara mine processing plant, examining a shaking table which separates minerals by their density.

Public workshops have enabled CODES, the School of Education and UTAS Central Science Laboratory researchers, as well as government representatives and mining company geologists and metallurgists, to collaboratively explore, discuss and define pathways to the discovery, recovery and environmentally sustainable management of critical metals production from Tasmanian mining and mineral processing operations.

Research presentations outlined why Tasmania has great potential for critical metals production and highlighted major research highlights of relevance to the local industry that can enable environmentally sustainable critical metals extraction and processing. Interactive sessions involving all workshop participants led by School of Education researchers Professor Sharon Fraser, Dr Kim Beasy and PhD candidate Jane Hall-Dadson explored the formative science experiences of all participants to identify the enablers that influenced them to engage with STEM at school, university, and/or in their

professional careers. The insights gained helped the research team to establish the drivers and motivators for STEM-enabled professionals in Tasmania and were used to design and implement key research strands of the project.

PRACTICAL OUTCOMES

Outcomes of the research include – and extend beyond – the traditional metric of papers (already ten published, a further ten under review or near submission, >30 total outputs expected). Alfredtina Appiah's PhD research on the metallurgy of magnesite at the Arthur River prospect in northwestern Tasmania is regularly cited in her sponsor company GWR's company reports. Emmanuel Musa's research has led to the installation of new equipment and the re-design of metallurgy circuit pathways for scheelite production at Kara mine. Chris Allen's research on waste rock is informing mine waste storage knowledge. Ore deposit characterisation PhD students have worked with their industry partners on identifying exploration targets, domaining secondary commodity resources within existing deposits and linking microscale mineralogy with deposit scale mining.

The project has provided novel tools for the characterisation of critical metals deportment, devised new workflows for critical metals processing and delivered innovative community education, training, and outreach strategies that build a skilled jobs-ready local workforce for regional industry.

2026 is a year of celebration for the project as many students will be submitting their PhD theses. It will also be a time of sadness as we farewell team members who move on to their first post-PhD jobs, or to new employment. Large projects bring great uncertainty and excitement as they begin, and celebration and reflection as they finish. No research is ever truly finished though, with many exciting outcomes from the RRC to be submitted for publication over the next two years – watch this space!



HIGH PRAISE FROM WORKING GEOLOGISTS FOR CODES' FLAGSHIP POSTGRAD ECONOMIC GEOLOGY DEGREE

Several students undertaking the Master of Economic Geology degree have recently finished their studies and are back to full-time work as geologists. Here, some of them reflect on their participation in the course and what it has meant for their careers. And course coordinator Dr Robert Scott outlines some changes to how courses are delivered.

The Master of Economic Geology program has got off to a busy start in 2026, with our largest ever enrolments in both Advanced Field Skills in Economic Geology (delivered in February) and Fundamentals of Economic Geology (delivered online in March–April). CODES staff members Martin Jutzeler and Lejun Zhang are currently leading the Volcanology and Mineralisation in Volcanic Terrains field-based unit in New Zealand. Continued growth in student numbers in 2025–2026 has seen the total number of active students in the MEconGeol program climb to over 100 for the first time, and 2026 is expected to deliver a record number of completions and graduations from the degree program.

This year UTAS has adopted a new and greatly simplified structure for the academic year, but the reduction in number, and in some cases duration, of teaching periods has had implications for delivery of several of the Masters units. Key changes are: Fundamentals of Economic Geology transitions to a mix of self-paced asynchronous (five-week block) and interactive learning (live-online in an intensive six-day block). Units previously delivered in blended mode (either online or in-person) in Winter Semester – i.e., Ore Deposit Models and Exploration Strategies (even-numbered years) and Ore Deposit Geochemistry, Hydrology and Geochronology (odd-numbered years) will move to Spring Semester, while online units previously delivered in Spring (i.e., Exploration in Brownfield Terrains, Geometallurgy) will move to Semester 2.



JAMES BRESNAHAN

Senior Exploration Geologist, Fortescue

The CODES Masters degree in Economic Geology taught me to think rigorously about ore deposits and equipped me with new approaches to the technical challenges of mineral exploration. The course links fundamental geochemical processes of metal transport and deposition with larger-scale controls to understand diverse ore deposit models. This theoretical framework is reinforced through application to field observations and analytical datasets.

The field-based units provide invaluable exposure to world-class deposits in diverse terranes, guided by expert presenters. Examining porphyry and epithermal deposits in the Andes helped me grasp the scale and surface expression of these systems. Visiting

the Taupō Volcanic Zone provided me with modern analogues for interpreting magmatic-hydrothermal processes in the geological record. These units created an intense and collaborative learning environment, where interpretations of daily field observations were debated well into the evening.

I most appreciated the opportunity to step outside my exploration experience during the geometallurgy, brownfields, and data analytics units. Combined with discussions among peers from production backgrounds, these units bridged the gap between discovery and extraction. Crucially, I gained an awareness of how technical risks in mine development can be identified at early stages through effective data collection and analysis.

"It has been a pleasure making connections with highly motivated professionals from around the world while gaining a deeper understanding of economic geology. I sincerely thank the teaching and support staff from CODES, along with the external presenters and teams who hosted us, for making this remarkable course possible."



James Bresnahan, Senior Exploration Geologist at Fortescue, pictured examining tourmaline breccias at the Soledad Copper Project, Peru, during the 2019 Ores in Magmatic Arcs field trip to South America.



MARK CHAMBERLAIN

Principal, Rift Geoscience Advisors

I graduated from the CODES Master of Economic Geology program in December 2025, concluding an intense but thoroughly enjoyable two-and-a-half-year journey.

Returning to university towards the end of my career was a major decision and significant commitment. However, I wasn't ready to be put out to pasture and always felt there was another geological chapter to write through new learning experiences. The UTAS Master of Economic Geology degree allowed me to reconnect with my geological roots, undertaking fieldwork and examining drill cores from world-class ore deposits in Chile, Peru, Indonesia, South Africa (with partner university, UWA), New Zealand and Tasmania.

Notably, several course units enabled me to upskill in geodata analysis, geochemistry and geophysics utilising industry software applications and techniques to solve real exploration problems. For example, I completed the challenging KEA-710 Brownfields Exploration unit, working on both district- and mine-scale deposit projects, utilising QGIS mapping, prospect analysis, and Leapfrog Geo 3-D modelling. I found these courses both rewarding and beneficial to my geological consulting work.

"I gained a great deal of knowledge through lively discussions with my student cohort and the teaching staff at UTAS. Going forward, the course materials will prove invaluable as references and learning tools. In conclusion, the Master of Economic Geology degree is exceptionally well taught, well organised, and structured to meet the needs of industry and academic geologists at different career stages. I consider myself both fortunate and privileged to have experienced this opportunity."



Mark Chamberlain, who has just completed the Master of Economic Geology at CODES, is standing on an undeveloped IOCG deposit in the Mantoverde-Santo Domingo district, Atacama Desert, Chile, during the CODES 2023 Masters trip to South America.



JONATHAN DAVIS

Senior Project Geologist, CopperCorp

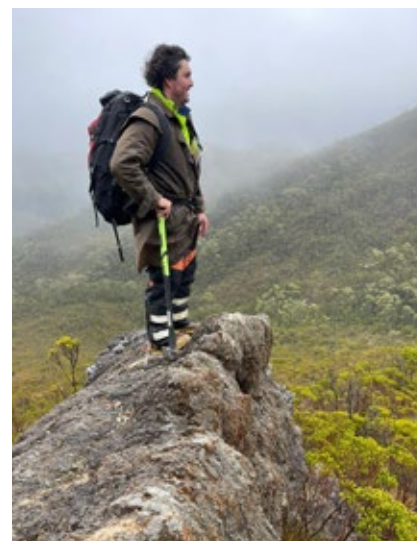
Completing the Master of Economic Geology through CODES at UTAS has been an incredibly rewarding experience and an important step in my development as a geologist. I decided to undertake the program to upskill, become more efficient in my work, gain exposure to a wide range of rocks and ore deposit types, and network with the broader geological community.

While completing the Masters, I was working in regional greenfields exploration in western Tasmania and initially enrolled to broaden my understanding of mineral systems and strengthen the theoretical foundations that underpin exploration.

One of the greatest advantages of the program was its flexibility. Completing the degree via coursework, with intensive teaching blocks, allowed me to balance study alongside a busy work schedule and family life. This format made it possible to immerse myself in the course material and then apply skills learned during the program directly to my work.

A highlight of the program was the field trip to Indonesia, where we visited world-class porphyry deposits. Standing on the edge of the Batu Hijau open pit and seeing such a large-scale mine in operation was an unforgettable experience. Opportunities like this to see major deposits up close reinforced many of the concepts covered throughout the course.

I particularly enjoyed units such as KEA709 – Ore Deposit Geochemistry, Hydrology and Geochronology, which provided valuable knowledge of the processes that form mineral systems. The course material, combined with exposure to experienced researchers



Jonathan Davis, Senior Project Geologist, standing near South Darwin in the West Coast Range of western Tasmania whilst completing fieldwork for CopperCorp during early 2025.

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and industry professionals, helped bring together many geological ideas and exploration strategies.

I now have a toolkit of resources to tackle complex geological problems. The Masters has strengthened my ability to evaluate exploration potential across a wide range of deposit types and geological environments around the world.

Ultimately, I am driven by the goal of making a discovery, and this course is perfectly tailored towards that pursuit.

"Firstly, I would like to thank my wife, who supported me on this journey over the last three years. I couldn't have done it without her support and encouragement. I would also like to thank all the CODES supervisors, professors and administration staff who work so hard to maintain the high standard of this program while allowing the flexibility for students to complete it alongside work and family commitments. Programs like this are critical for training the next generation of geologists who will discover the deposits society depends on."



SANTIAGO DUQUE PALACIO

Exploration Geologist at B2Gold Corp

In 2024, after thinking about the idea for a couple of years, I finally decided to pursue the Master of Economic Geology at CODES. It wasn't an easy choice, but after researching different schools and programs, CODES stood out as one of the best exploration-focused options available. The program combines excellent professors with a highly practical, industry-oriented approach across all courses.

My friend and mentor, Claudia Gordillo, Chief Geologist at B2Gold, also recommended the program after taking many of the courses as an industry participant. Her experience gave me confidence that



Santiago Duque Palacio, Exploration Geologist at B2Gold Corp, pictured at the Tujuh Bukit Gold-Copper Mine overlooking the open pit and the south coast of Banyuwangi during the Ores in Magmatic Arcs: Indonesia field trip, March 2025.

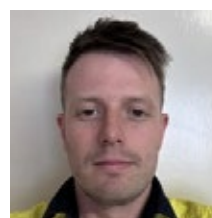
the knowledge, skills and connections I would gain at CODES would be extremely valuable for my future career and I can say with certainty that this has been true.

Even with the challenges of working full-time while essentially doing a nearly full-time master's program across multiple time zones (Colombia, Canada and Finland) the experience has brought me nothing but joy. I'm genuinely happy with the decision I made.

The most enriching courses were definitely the ones involving field trips. Visiting Indonesia and Tasmania were major highlights of the program. There's nothing like seeing rocks and deposits firsthand, and finally getting to meet everyone at CODES in person during the last course was incredible.

I truly recommend this program, and I encourage future students to take as many courses in person as possible. Direct interaction with the amazing people at CODES and with the rocks themselves gives you an even richer learning experience on top of an already excellent online program.

"Thank you very much to everyone involved along the way for your hard work and dedication to this program. I'll definitely keep in touch, as I'd love to attend the field trips to New Zealand and South America. And who knows... maybe one day I'll even come back to CODES as a PhD student."



MICHAEL HARRIS

Exploration Superintendent, Newmont

After several years of working in mineral exploration, I completed the Master of Economic Geology, a long-held goal that I was keen to pursue. Balancing full-time work with study was demanding, but the program's applied focus meant concepts moved quickly from theory to field observation and into decision-making.

Motivated by a desire to strengthen my technical grounding and ensure the decisions I make are well-reasoned and firmly rooted in geological context, I enrolled following encouragement from senior explorers at Newmont. I was promised a degree that had world-class teaching, an international cohort, and topics that genuinely link mineral systems theory with real exploration workflows, and CODES delivered.

The multidisciplinary curriculum sharpened how I interrogate data and recognise ore-forming ingredients. This translated into greater confidence applying reasoned, economically focused targeting and, importantly,

knowing when a target is worth advancing and when it's best left alone.

Fieldwork was a standout. I observed modern active hydrothermal systems in New Zealand's Taupō Volcanic Zone alongside the fossilised low-sulphidation epithermal system at Waihi; visited some of the world's largest copper deposits including El Teniente and Los Bronces in Chile; and undertook Anaconda and structural mapping in western Tasmania, reinforcing that seeing the system in the field answers questions far faster than debating them indoors.

The highlight of the Masters was Valeriano, Chile, where I observed the transition from a high-sulphidation epithermal system into the underlying porphyry environment. Seeing this vertical continuity firsthand clarified how key indicators change within the system and what conditions are required for economic ore development.

Back at work, the Masters has helped clarify target priorities and strengthened confidence when advancing or shelving ideas. I strongly recommend the program to geologists seeking practical, integrated approaches to high-quality, well-reasoned targeting.

"This Masters delivered the technical growth I was seeking and provided the tools to more effectively interrogate data, integrate multidisciplinary inputs, and make decisions that directly advance exploration towards discovery. It has strengthened my ability to prioritise targets based on the critical geological ingredients required for economic mineralisation, rather than chasing AI black box outputs or isolated geophysical anomalies. Completing the degree while working full-time through the COVID years, navigating multiple role changes, and raising a young family

made the process demanding, but it reinforced the real world value of the skills gained. Thank you to the CODES team for a fantastic experience, and to Newmont Exploration Leadership for their consistent support, flexibility, and encouragement throughout."



ALEX RICHARDS

Principal Geoscientist at Rio Tinto Exploration

Completing the Master of Economic Geology at CODES was an incredibly rewarding experience, both academically and professionally. The program offered exposure to world-class ore systems that most industry geoscientists wouldn't normally get the chance to visit in their careers.

I started the course during the COVID-19 pandemic, and CODES did a fantastic job adapting to a blended online and in-person format with excellent guest lectures from across the industry. The field trips were by far the highlight of the program, with immersive experiences across Tasmania, New Zealand, Indonesia, and South America. Standout moments for me were visiting major Andean epithermal and porphyry districts in Peru and Chile, which provided invaluable firsthand insight into some of the world's most important endowed systems. Island hopping down the Indonesian Eastern Sunda Arc on buses, taxis, boats, aeroplanes and tuk-tuks was certainly an experience.



Alex Richards, Principal Geoscientist at Rio Tinto Exploration, pictured at the Tarawera Volcanic Complex in New Zealand during the KEA708 Volcanology Masters course in 2024.

I completed the degree with a thesis project titled *Exploration Strategies for High-Sulphidation Epithermal Deposits in Cajamarca, Northern Peru*. The project focused on exploration vectoring tools, alteration zonation, structural controls, and trace-element geochemistry to improve early-stage targeting in the prolific Cajamarca copper-gold belt, home to the giant Yanacocha deposit and similar high-sulphidation systems. The work was designed to bridge theory and practice, drawing heavily on field observations and modern, industry-relevant exploration techniques in an Andean setting.

The program was led by the outstanding mentors at CODES, particularly David Cooke, Lejun Zhang, Rebecca Carey, and Martin Jutzeler whose knowledge, enthusiasm, and support made a huge difference throughout the course. Their guidance was complemented by local experts in each region we visited. Just as importantly, I formed strong friendships and professional connections with a diverse cohort of like-minded industry geoscientists and academics. These connections, along with site visits to major deposits and open (often candid) technical discussions with peers at similar career stages, have significantly bolstered my experience as an explorer and left me motivated to discover the next generation mineral deposits.

"I'd like to sincerely thank the CODES team for delivering what I believe is the best Masters program in Economic Geology on offer. A special thanks to Helen Scott and David Cooke for their ongoing work in coordinating the program and for the enormous effort involved in making these logistically complex international field trips such a success."



Exploration Superintendent at Newmont, Michael Harris, seen here at the Tongariro National Park, New Zealand, completed the Master of Economic Geology via coursework.

SKILLING UP IN TASMANIA'S BEAUTIFUL OUTDOORS

The first two weeks of February saw a large group of students head out to the east and west of Tasmania for the Advanced Field Skills in Economic Geology Masters unit; they were joined by Honours and VIEPS students for the Exploration Field Skills mapping course, which runs in parallel for part of the unit. These pictures were taken by Dr Robert Scott, one of the course leaders and photographer extraordinaire.



In the thick of it: Participants in the 2026 Advanced Field Skills in Economic Geology/ Exploration Field Skills mapping exercise along the Hall Rivulet canal, near the Henty gold mine in western Tasmania. Here, students (anticlockwise from top) Zheyu Zhang, Jia Zhang, Veronica Choi (all from the University of Melbourne), Amy Cruickshank and Kymren Bolling-McDougall (MEconGeol) get a taste of west coast geological mapping conditions, with the obligatory thick scrub and slippery, moss- and lichen-covered rocks.



Rock formations: Master of Economic Geology students engrossed in mapping magmatic-hydrothermal transition textures developed in a fine-grained alkali feldspar granite (pale orange) close to its contact with an older granodiorite (grey, principally in the foreground). This 'Anaconda-style' mapping exercise is conducted at Bluestone Bay, Freycinet Peninsula, on the east coast of Tasmania, and forms part of the Advanced Field Skills in Economic Geology unit.

Done and dusted!: Participants in the Master of Economic Geology unit Advanced Field Skills in Economic Geology are all smiles after completing the final mapping exercise of the two-week field camp. The last mapping exercise, at Bluestone Bay (Freycinet Peninsula) on the east coast of Tasmania, was led by Associate Professor Lejun Zhang (left) and Dr Michael Baker (right), both in red mapping vests. Four of the students: Michael Harris (centre, dark blue vest), Kymren Bolling-McDougall (behind and right of Michael Harris), Jonathan Davis (behind and right of Kymren) and Santiago Duque Palacio (far right, light blue shirt) earned the right to extra wide smiles, having just completed the final unit of their Masters degrees.



A LOVE OF TASSIE LURES TOP GEOSCIENTIST TO CODES/ES

Associate Professor Juan Carlos Afonso (who likes to be known as 'JC') joined CODES and the Discipline of Earth Sciences in early February, and will be working with both groups as a computational geoscientist and geodata integrator. Read about his geophysics background and his roles in Europe and at Macquarie University, as well as what he hopes to achieve here in Tasmania.

Juan Carlos Afonso completed his initial training in Argentina, receiving both a Bachelor's degree and a *Licenciatura* from the University of Patagonia. He then pursued postgraduate research abroad, graduating with a PhD in theoretical geophysics from Carleton University in Canada in late 2006. Following his doctorate, he undertook postdoctoral research at the Institute of Earth Sciences Jaume Almera (CSIC, Barcelona), where he focused on developing new approaches to investigating the thermal and compositional structure of the lithospheric and sublithospheric upper mantle.

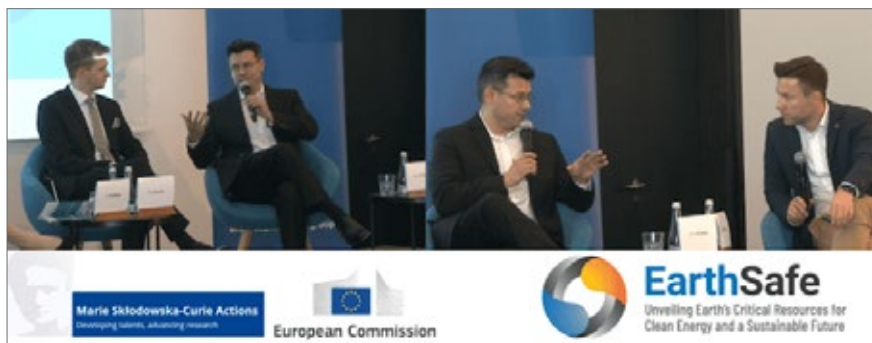
Before joining CODES, Juan built a career across research leadership, academic governance and international program development. In 2009 he joined Macquarie University through the CoRE (Concentration of Research Excellence) recruitment



Hands on: Installing seismometers in remote Patagonia.



'JC' discusses the importance of geophysics in securing critical minerals for the energy transition at the SEG Conference in London in 2023.



Juan Carlos Afonso speaks at the international geothermal conference 'Unlocking Geothermal Energy Potential in the EU' organised by the European Parliament in April 2024.

program, remaining there for 13 years. During that period, he held several senior roles, including Head of Department, member of the Dean's Advisory Committee, Coordinator of the Geophysics and Geodynamics Group, and Director of Research for the Department of Earth and Environmental Science. In 2022 he moved to the Netherlands to take up a full-time staff position at ITC (the Faculty of Geo-Information Science and Earth Observation) at the University of Twente. At ITC, he led the MSCA Doctoral Network *EarthSafe*, served on the ITC Academic Board, contributed to departmental advisory structures, and acted as Research Strategy Advisor. He has also advised the Dutch Ministry of Foreign Affairs in the Critical Minerals and Energy portfolios, and continues as a Visiting Professor at SUSTech University (Shenzhen, China) and at ITC.

At CODES, Juan will be working as a computational geoscientist and geodata integrator, with research centred on combining probabilistic inverse theory, thermodynamic modelling, geophysical methods, numerical simulation, machine learning and decision-making theory to tackle core questions about lithospheric structure and evolution. Through this work, he aims to strengthen CODES' capability in simulating complex geological processes, integrating diverse datasets for robust decision-making, and advancing multiscale geophysics in support of accelerating the energy transition.

Tasmania is already feeling like home: after falling in love with 'Tassie' on his first visit more than 15 years ago, he's looking forward to exploring much more of it...now that he has a car!

PROGRESS AND KEY ACHIEVEMENTS HIGHLIGHTS



The Amira P1249 team pictured at CODES last year: a successful sponsors' review meeting for this project was held on 3–4 December 2025, and progress to date received strong endorsement from the companies involved.

Dr Mike Baker reports on a successful sponsors' review meeting for the Amira P1249 project, and outlines what the final year of the project will look like.

The Amira P1249 project *Exploring, characterising, and optimising complex orebodies – Integrated deposit knowledge to add value across the Mining Value Chain* continues to make impressive headway, as demonstrated by the positive feedback from industry sponsors during the December 2025 sponsors' review meeting (SRM). The project, which is focused on developing and advancing innovative mineral exploration and resource characterisation techniques, remains firmly on track to deliver on these objectives. The December SRM served as a key opportunity for the research team to showcase their latest achievements, share technical

advancements, and discuss the final phase of the project with sponsors and research collaborators.

During the two-day meeting, members of the research team presented a comprehensive overview of the year's progress for each of the project Modules, including the development of new mineral chemical screening, fertility and vectoring tools and workflows for mineralogical characterisation. Significant presentations on day one included the interrogation of detrital mineral chemistry for fertility assessment in the Galore Creek region of western Canada, an overview of green and white rock mineralogy and chemistry from the Potrerillos district of northern Chile, and geometallurgical characterisation through unsupervised textural clustering and mineralogical modelling from the Nautanen IOCG deposit in northern Sweden.

Day two included several presentations on study sites in North and South America, including an overview of the workflow developed for inferring the location of high-grade Cu-Mo ore from mineralogical and textural classification from the Ocelot porphyry deposit in Arizona, updates from the Ventana and Wagen study sites, textural domaining for the purposes of rock classification from the Sandsloot Ni-Cu-PGE deposit in the Platreef, South Africa, and an overview of new

analytical developments from the CODES Analytical Laboratories (CAL). The meeting concluded with a half-day technology transfer workshop on the geology and alteration of the Valeriano Cu-Au deposit in northern Chile, as an example of a porphyry–high-sulfidation system with a moderate degree of telescoping.

Feedback from sponsors at the meeting was overwhelmingly positive.

Many expressed satisfaction with the project's direction and the tangible value being delivered to their organisations. The meeting's open discussion forum enabled sponsors to provide input and raise questions, with the project team addressing issues constructively and outlining how this feedback will be incorporated into future work. The strong engagement and endorsement from sponsors have reinforced confidence in the project's trajectory and the research team's ability to deliver impactful outcomes.

As we enter the final year of the Amira P1249 project, we will continue to focus on meeting the project's key objectives and presenting timely results and deliverables to sponsors. The ongoing support and enthusiasm from our industry sponsors remain a cornerstone of the project's success, ensuring it continues to contribute meaningfully to the global resources sector.



Industry sponsors and CODES staff on the Amira P1249 Yerington field trip in the Buckskin Range, Nevada, during May 2025.

VOLCANOLOGY PARADISE



Participants examine the submarine volcanic succession of the Devonian Boyd Volcanics at Mimosa Rocks, Merimbula, New South Wales.

Associate Professor Rebecca Carey (CODES) and Dr Pat Hayman (QUT) ran another iteration of their successful volcanology course late last year visiting Eden and Merimbula in NSW, and were pleased with both the large turnout – and the weather!

In December 2025, the *Volcanic Processes, Deposits, Geology and Resources* training program was held in the Merimbula region of southern New South Wales. This five-day program brought together 18 participants, including practising geologists from government and industry.

The program, which is run in conjunction with QUT, combined lectures, practical sessions using an extensive teaching collection of volcanic rocks, and two field days. The course-specific rock collection spans a wide range of tectonic settings and

geological ages, including modern pyroclastic and epiclastic deposits, subaerial and submarine lavas, Archean pillow lavas from Canada and Greenland, komatiites from Canada and Western Australia, kimberlites, and VMS-associated volcanic rocks from Tasmania, Japan, Canada and Greenland. These samples were used to develop practical criteria for recognising textures, facies relationships and volcanic processes across different environments.

Fieldwork included one day around Eden and a second at Mimosa Rocks National Park. The coastal exposures provide excellent three-dimensional sections through Devonian volcanic and sedimentary successions. At Eden, the focus was on subaerial volcanic facies, including lavas and pyroclastic deposits. Participants examined textures in detail and worked

through interpretations of eruptive style, transport mechanisms and depositional processes.

At Mimosa Rocks, attention shifted to submarine environments. Lavas, hyaloclastite, peperite, marine mass-flow deposits and turbidite sequences were examined in coastal outcrop. The close association of volcanic and sedimentary facies allowed comparison of subaerial and submarine eruption and transport processes, and discussion of how paleoenvironments evolved through time.

The Merimbula–Eden coastline provides an accessible and well-exposed example of subaerial to submarine volcanic transitions, making it a practical setting for developing interpretation skills that are directly applicable to mapping, exploration and basin analysis. This program runs annually in late November and early December.

WHERE ARE THEY NOW?

Now based in Perth, Western Australia, Dr Richelle Awid-Pascual is a very busy person working two roles within the field of data management for the mining industry. She says her PhD at CODES, on zinc, lead and iron in western Tasmania, built her resilience, adaptability and structured problem-solving abilities, and was a hugely supportive environment for someone who, in her own words, likes to work 'behind the scenes'.

DATA-DRIVEN GEOSCIENTIST IN A FAST-PACED ENVIRONMENT



DR RICHELLE AWID-PASCUAL

Senior Consultant – Data Management at Expedio, and Geoscience Data Consultant at Entech

PhD completed at CODES in 2017 titled 'Characteristics and genesis of Zn-Pb-Fe-bearing minerals in the Grieves Siding peat, western Tasmania', supervised by Vadim Kamenetsky, Garry Davidson, Karsten Goemann, Taryn Noble, David Cooke

What is your current job/employment and your work responsibilities?

I currently consult across multiple Perth-based firms, giving me an end-to-end view of geoscience data, from field capture to decisions. At Expedio, I am a Senior Consultant – Data Management, focusing on the upstream foundations, which includes designing and building customised geological databases and ensuring datasets are structurally sound, consistent, load-ready, and validated. In parallel, I support Entech as a Geoscience Data Consultant, where the emphasis shifts downstream to data validation and quality control supporting interpretation, geological and numerical modelling, and MRE, ensuring the data meets industry expectations.

Across both roles, I build and migrate datasets into various enterprise-grade database platforms to keep them consistent, auditable and fit-for-purpose. I run audits covering schema design, constraints and relationships, backup and security protocols, and data wrangling to standardise fields and codes, map legacy data into target schema, and maintain traceable error registers. Where useful, I collaborate with developers to automate data ingestion and reporting. I also conduct geochemical and assay QAQC reviews. The overarching objective is to deliver clean and industry-ready outputs that technical teams use.

What are the things you enjoy most about this role? Describe a typical day for you.

I enjoy the pace of consultancy, it is often fast-moving work with high expectations, and allows opportunities to contribute and add value to diverse projects.

It also means collaborating with a wide range of stakeholders, from IT and software specialists to field teams, exploration and resource geologists, geotechnical and mining engineers, and corporate decision-makers, which has deepened my understanding of the mining value chain and strengthened my ability to translate between technical requirements and practical outcomes. I also like how my two roles complement each other, where one focuses on the systems and structure behind geoscience data including how databases are designed, populated, and governed. Whereas the other shows the downstream impact of data quality as datasets move through resource workflows and are tested against industry expectations. Together, they give me a clear understanding from raw field inputs, through a validated database, to trusted outputs that directly influence geological and mining decisions.

I have been juggling this dual setup for a year now, and no two days are the same as each client brings new challenges and priorities. But the constant motivation is delivering timely, efficient, and practical data solutions that turn uncertainty to clarity allowing teams to move forward with confidence.

How did you get there/your past roles and how they shaped your path?

My career has evolved at the intersection of geology, technology, and operational realities, shaped by roles across government, industry, and academia in both the Philippines and Australia. After completing my geology degree at Adamson University, I worked with the Mines and Geosciences Bureau as a Research Specialist and later Senior Geologist, building a foundation in applied geoscience and technical reporting. I then joined Sagittarius Mines Inc-Xstrata Cu Philippines as an Exploration and Spectral Geologist on the Tampakan Cu-Au Deposit, integrating complex datasets, applying spectral tools, and turning interpretation into decisions. Leading the GIS and Database section was pivotal, showing how robust data systems underpin reliable geology and resource workflows. These experiences led to a PhD at CODES. Since then, I have worked with Grange Resources (Tasmania) and Perth consultancies as a Database and Consultant Geologist, combining data governance with geochemical and mineralogical vectoring to guide exploration targeting and drilling.

These experiences moulded the niche I work in today, and with an introverted personality, I am comfortable *behind the scenes*, championing colleagues and clients as they achieve their goals.

Your career highpoint/greatest achievement to date/source of greatest satisfaction as a geologist?

One of the clear highpoints of my career was completing my PhD at CODES. It was not just the degree, but what it represented, a rare period where my full-time job was to learn deeply, think rigorously, and explore ideas with real freedom, and that intellectual space was demanding but energising. CODES encouraged expansive, out-of-the-box, evidence-driven thinking leading and shaping the research into a coherent, original contribution. Being surrounded by exceptional geoscientists raised my standards and sharpened how I approach problems. A challenging



Dr Richelle Awid-Pascual pictured at Cradle Mountain with her husband Jose and daughter Frankie during a break from her PhD research.

journey but ultimately rewarding to see a complex research project come together when the data, interpretation, and writing aligned into something original, defensible and complete.

A different but equally meaningful highlight was building my first geological database. I enjoyed learning the software from scratch, translating geology into digital infrastructure and workflows, and seeing the system adopted for exploration, grade control, and resource work.

What did you specialise in at CODES and how did CODES help you to get where you are? What did you enjoy most about CODES?

At CODES, my PhD research focused on the Zn-Pb-Fe-rich Grieves Siding peat in western Tasmania. It investigated the controls on zinc, lead and iron enrichment in peat underscoring the role of colloids and microorganisms in metal enrichment and mineral formation. A key component was understanding the evolutionary stages of the development of non-stoichiometric Zn-rich phases formed through biomineralisation, linking micro- to nano-scale mineralogical and geochemical characterisation to broader implications for metal cycling and ore-forming processes.

CODES was instrumental in building my career in Australia by strengthening both my technical and professional skills. It developed my resilience, adaptability, and structured problem solving through a strong scientific method mindset, and gave me transferable capabilities in project planning, workflow design, and cross-disciplinary collaboration alongside a habit of continuous learning.

What I found invaluable at CODES was the culture. People were approachable and generous with their time, and collaboration across the university was actively encouraged. Since my project was multidisciplinary, I worked closely with groups beyond CODES, including the Central Science Laboratory and teams in Chemistry and Molecular Genetics. The broader support network, especially UTAS Student Services and the Library staff, also made a lasting impression.

How has the industry changed since you were at CODES? And how do you see it developing in the future?

Since my time at CODES, the minerals industry has become noticeably more practical, data-driven, and outcome-focused. The pace also varies by region. Tasmania is generally slower with fewer roles but more long-term stability, while Perth is fast, competitive,

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and constantly shifting requiring adaptability as a core career skill.

One of the biggest shifts is the rising reliance on geoscience data. As projects grow more complex and companies push for faster, more confident decisions, the ability to manage and trust data has become a real competitive advantage. AI, machine learning, automation, and integrated digital workflows are accelerating this by streamlining tasks faster than traditional approaches. However, these tools also amplify poor inputs, making strong data governance and QA/QC more important than ever. Looking ahead, I expect more analytics-enabled decision-making, tighter data lineage and stronger compliance. As technology evolves, solid geological fundamentals and scientific judgement will remain essential. Tools change quickly, but good geology, good data, and sound judgement are what keep the industry moving in the right direction.

Words of wisdom for up-and-coming geologists graduating from CODES?

Start thinking of a direction early, then refine it. Follow what geology field genuinely interests you, scan job postings, and build the skills they ask for. You will not always get your ideal first role, hence take the best opportunity at hand, learn fast, and work towards where you want to be.

Grow your network steadily and genuinely. Attend talks and short courses, join SEG, AIG, AusIMM, go on site visits, and ask people what their work looks like and which skills matter. Mentoring programs are valuable too.

CODES is highly regarded in the industry, giving you a strong head start.

Be patient and celebrate small wins. Most days will feel ordinary but keep moving towards your goals and learn something new. Use free learning consistently.

Most importantly, trust yourself. You are far more capable than you think, and the minerals ecosystem is vast and there is absolutely a place for you!

Little-known facts about you?

My family and I have always been coastal people at heart. During my PhD in Hobart, my husband Jose and our daughter Frankie spent every spare moment exploring Tasmania especially the southern coastal drives. Later, when we moved to Wynyard while I worked at Savage River, weekends became a mix of beaches, snow-dusted hills, tulips, and unplanned drives that turned into memorable days around the northwest.

Now in Perth, we have kept the tradition going which includes long coastal drives, long beach walks, and plenty of sea-air therapy. Same feel, just sunnier and warmer.

STAFF FOCUS: DR ALICE MACDONALD

A U-turn from physics into geology has taken Dr Alice MacDonald from looking out at the stars to looking down into the Earth. Alice joined CODES in late 2024 as a Laboratory Analyst and has become one of the mainstays of the CODES Analytical Laboratories, spending much of her time running the sulfide LA-ICP-MS laboratory, assisting both external companies and internal users.

IN THE LAB AND IN THE (CRYSTAL) ZONE



My journey in geology began during my undergraduate studies at ANU. I was originally intending to major in physics (with the ultimate goal of studying astrophysics) until I took a geology course and realised that I was more interested in volcanoes than the stars. I ended up taking a range of undergraduate geology courses, but igneous petrology quickly became my favourite topic.

For my Honours research project, I investigated the partitioning of rare earth elements between garnet and clinopyroxene in the upper mantle using high-pressure piston cylinder experiments, in conjunction with natural peridotite samples from the Pali Aike volcanic field (under the supervision of Professor Greg Yaxley). Learning the techniques involved in conducting high-pressure experiments was particularly

challenging at the time, but seeing the final product (with the SEM – experiments are tiny) was worth it. It was during this project that I was first exposed to a range of analytical techniques, including LA-ICP-MS.

After graduating, I knew I wanted to continue research, but I was interested in working on active volcanic systems. This led to my move to Brisbane to undertake a PhD at the University of Queensland with Associate Professor Teresa Ubide. My research focused on the influence of magmatic conditions (such as magma undercooling) on trace element partitioning and sector zoning in clinopyroxene. I used a series of undercooling experiments in conjunction with samples from Mt Etna to explore trace element partitioning and crystal growth mechanisms in addition to the complexities of clinopyroxene thermobarometry.

This project gave me the opportunity to work on a closely monitored and highly active volcano and, although COVID 19 impeded any fieldwork, I was fortunate to have collaborators in Italy who I worked closely with throughout the project. Post-lockdowns, I had the opportunity to visit the National Institute of Geophysics and Volcanology (INGV) in Rome to analyse some samples with the assistance of an EXCITE funding grant.

Much of my data was collected using LA-ICP-MS, as I used trace element maps to extract compositions from specific crystal zones. During my time in the labs, I gained experience in not only setting up my own analyses, but also in instrument maintenance and R&D. I was involved in developing and testing a method to rapidly collect groundmass compositions using LA-ICP-MS, as well as in exploring new techniques in trace element mapping. These experiences made me realise that I enjoy lab work more than I originally thought I would, which ultimately led to my post-PhD career path.

After finishing my PhD, I worked for a short period of time in the UQ Radiogenic Isotope Facility, before moving to Hobart to commence my position here as a Laboratory Analyst in the CODES Analytical Laboratories. Since starting here, I've been involved in running the sulfide LA-ICP-MS laboratory, where I run routine analyses for external work and assist with internal users. The last time I thought about sulfide minerals was back during my undergraduate studies, so I've learned a lot in the past year. I've also had the opportunity to learn how to use the time-of-flight (ToF) mass spectrometer, which produces some amazing compositional maps.

My research interests now aren't too different to what they were during my PhD – I'm still very interested in deciphering complex crystal zoning to unravel magmatic histories. However, I'd say that since then, this has expanded to minerals beyond those found in active volcanoes. I've also learned a lot about method development, and aspects of LA-ICP-MS that I hadn't previously considered, such as ablation properties of different minerals.



Here, Alice is seen at a shrine in Japan during an undergraduate course on geological hazards. Obviously, the shrine wasn't a hazard – just a visit between stops on the course!



Dr Alice MacDonald pictured outside the Richards Building, which houses the Geology and Geophysics Department, following her PhD graduation at the University of Queensland in 2024.

Outside of geology, I have quite a few other interests. Surprisingly (for a geologist), I'm not much of an outdoors person. I do enjoy swimming and the ocean (but not boats), but I'm not much of a hiker. I really enjoy reading; my favourite genres

are murder mysteries and fantasy, although I haven't read much of the latter recently.

I also like sewing, board games, video games and hanging out with my cat, which my partner and I adopted when we moved here.

RESEARCH FINDINGS AND LEARNING OPPORTUNITIES

In this issue, we include some conferences and workshops that happened at the end of 2025 along with several that have taken place this year, including the country's preeminent Earth sciences gathering – the Australian Earth Sciences Convention. This was attended by a large contingent of CODES staff and students.

SEG-SGA-UNESCO STRUCTURAL GEOLOGY AND ORE DEPOSITS METALLOGENY COURSE

3–10 November 2025, Valdivia, Chile

CODES PhD students Angela Costa and Takeshy Coaquira attended the SEG-SGA-UNESCO-IGCP Latin American Metallogeny Course titled 'Structural geology and ore deposits', which included three field trips, and was hosted in Chile by the Universidad Austral de Chile. Both Angela and Takeshy received student funding to attend this course. See:

<https://ciencias.uach.cl/latinometal/>.

EXTRACTION 2025

16–20 November 2025, Phoenix, Arizona, USA

CODES PhD student Emmanuel Musa reports on his trip to Arizona:

"Last year I attended the Extraction 2025 Conference, held in Phoenix, Arizona, USA. This major international event brought together researchers and industry professionals in extractive metallurgy, mineral processing and critical minerals, featuring sessions on flotation, hydrometallurgy, sustainability and emerging technologies. I presented on 'Optimising scheelite processing at Kara mine, Tasmania: a case study of a novel flotation collector and depressant', sharing research on improving recovery and processing approaches for critical minerals. The conference provided excellent networking opportunities and insights into future directions in mineral processing."



CODES PhD students Angela Costa (third from right) and Takeshy Coaquira (front left with cap) took part in a short course run by Universidad Austral de Chile in early November 2025 and are pictured here at the Maipo river transect near Santiago on one of three field trips linked to the course.

FLOTATION '25

17–20 November 2025, Cape Town, South Africa

Late last year CODES PhD student Alfredtina Appiah flew to South Africa to attend this conference, which was organised by MEI in Cape Town. Alfie is working within the RRC project on magnesite deposits at Prospect Ridge in northwest Tasmania.

Alfie gave two presentations. Her oral presentation was titled 'Reverse flotation of silicate minerals from magnesite: Adsorption mechanism of alkyl ether amine (Flotigam™)'. And her poster presentation was: 'Selective depression of dolomite in magnesite flotation: A comparative study of citric acid and sodium hexametaphosphate under alkaline conditions'.

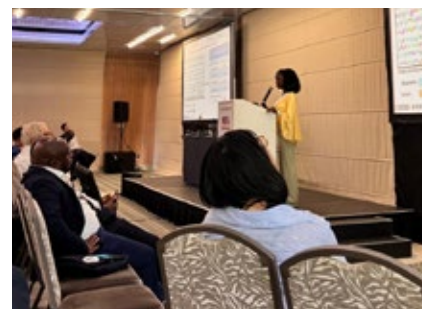
AUSCOPE CURTIN IONPROBE WORKSHOP

24–28 November 2025, Perth

CODES PhD students Emrecan Yurdakul and Jaime Osorio both took part in the AusScope Curtin Ionprobe Workshop at the John de Laeter Centre, Curtin University. Five days of training at the Curtin lab plus accommodation was provided to both students.



Emmanuel Musa, a PhD student at CODES working within the RRC project, pictured at the Extraction 2025 conference in Phoenix, Arizona, where he presented a paper on his research into scheelite processing at the Kara mine in Tasmania.



CODES PhD student Alfredtina Appiah working on the RRC project is seen here presenting a paper on reverse flotation of silicate minerals from magnesite at Flotation '25 in Cape Town during November 2025.

Emrecaan said:

"I would like to express my deepest thanks for the workshop; it was a big honour for me to learn from and meet [the Curtin team], one of the best in the world for SIMS and SHRIMP. It was also a great pleasure to see how big the Curtin Lab is and its capabilities extending from Raman to Re-Os, Ar-Ar geochronology and more. Hopefully, we can collaborate in one of my steps in my slowly growing career".

Both students would like to thank Dr Martin Jutzeler, who encouraged them to apply for the workshop and associated funding.

PACIFIC TELECOM CONFERENCE 2026

**18–21 January 2026, Honolulu,
Hawai'i, USA**

At this conference run by the Pacific Telecommunications Council in Hawai'i in January, Associate Professor Rebecca Carey from CODES and Emeritus Professor Peter Harris from IMAS presented new research on submarine cable resilience following the 2022 Hunga volcanic eruption. Their poster highlighted how volcanic eruptions, earthquakes and sediment flows pose long-term hazards to seafloor telecommunications infrastructure across the Southwest Pacific. Data collected during the 2025 RV *Investigator* voyage by Rebecca and colleagues are now revealing how volcanic deposits continue to remobilise along the Tonga arc, including sediment flows capable of damaging cables months to years after eruptions. These datasets provide the foundation for improved hazard maps and engineering models

to support more resilient submarine cable routing and infrastructure planning across the Pacific.

ISC2026 INTERNATIONAL SEDIMENTOLOGICAL CONGRESS

**25–30 January 2026, Wellington,
New Zealand**

In January, Dr Martin Jutzeler attended the International Sedimentological Congress in Wellington, New Zealand. This was an opportunity for him to present ongoing research being undertaken by the Volcanology Group on Macauley Island, which is the focus of the group's Discovery Project (Program 4). Martin presented a poster on his research, and also presented a talk on the sediment transport of sediment waves at Macauley, in place of PhD student Shannon Frey, who could not make it to the conference. Martin also presented a talk on the initial results of his project on the giant continental shelf landslide offshore SW Tasmania (Program 3).

The conference was a fantastic setting for developing and strengthening collaboration and networking, and Martin took the opportunity to present his projects at an impromptu ANZIC (Australian & New Zealand International Scientific Drilling Consortium) workshop for future coring in the SW Pacific.

AUSTRALIAN EARTH SCIENCES CONVENTION 2026 (AESC)

3–6 February 2026, Melbourne

The Australian Earth Sciences Convention 2026 was well-attended by CODES and UTAS, with delegates



Emrecaan Yurdakul and Jaime Osorio – both CODES PhD students – pictured at Curtin University, Perth, while taking part in the AuScope Curtin Ionprobe Workshop 2025.

spanning the full spectrum from Honours students to adjuncts. The conference theme of 'Geosciences: Solutions for the Future' was well-represented by talks presented by CODES researchers, including Dr Ivan Belousov's talk on using inclusion data within ICP-MS analysis to extract more information from each laser spot than previously possible, and CODES PhD student Emrecaan Yurdakul and Dr Owen Missen's talks on copper and cobalt potential in different stages of operation at Mt Lyell. Jane Hall-Dadson from Education, a PhD student in the RRC program, presented a talk on her work examining barriers to young people developing an interest in science, technology, engineering and maths (STEM), even though they may live in communities built on science-based industries like mining.

Geological Society of Australia scholarships supported six students to attend the convention. A highlight of the conference was Dr Sheree Armistead being awarded the E.S. Hills Medal, awarded for 'outstanding contributions by a geoscientist under age 45' (see page 22). Dr Owen Missen co-led a post-conference field trip, 'Interplay of regolith and city fringe landscapes', with Anna Petts from the Geological Society of South Australia. The field trip examined landscapes and their link to geology and regolith (material between hard rock and the air, not the same as soil!) at Cranbourne Botanic Gardens and, in the Dandenong Ranges, remnants of past volcanism.

The conference was particularly inspiring for Honours students Gabrielle O'Toole and Will Sinclair as it was their first national conference, a fitting finish to the Honours year in which students dive into a bigger research project for the first time.



AESC 2026: Pictured here are (L–R): James Trihey (IMAS PhD student), Emrecaan Yurdakul (CODES PhD student), Jack Mulder (CODES PhD graduate), Ivan Belousov (CODES staff), Gabrielle O'Toole (CODES Honours student at front), Owen Missen (CODES staff behind Gabrielle), Sheree Armistead, (CODES staff) and Willam Sinclair (CODES Honours student)

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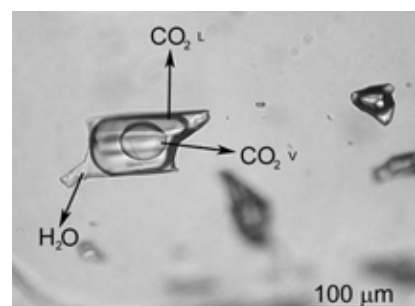
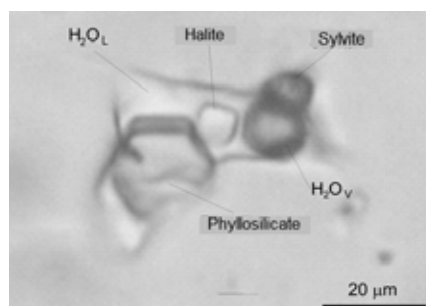
FACELIFT FOR THE FLUID INCLUSION LAB

The fluid inclusion laboratory at CODES has recently undergone infrastructure upgrades, and a new system for fluid inclusion work was procured. The new kit includes a Linkam MDSG600 heating and freezing stage with a temperature range of -195°C to 600°C, mass flow controllers, and a new control PC. Funding for the equipment came primarily from UTAS Research Infrastructure Capital Expenditure Funds with supplementary contributions from CODES Analytical Laboratories and Associate Professor Rebecca Carey's ARC Future Fellow grant.

Dr Paula Montoya and Dr Francisco Testa are leading the development of the new equipment, which will be used for determining entrapment temperatures and salinities of fluid inclusions in transparent minerals such as quartz, calcite, alunite, tourmaline, topaz and anhydrite, reviving and expanding CODES' research on ore-forming fluids. The microthermometric data obtained using this equipment will provide the foundation for subsequent identification of fluid phases (e.g., CO₂, CH₄, N₂, H₂S) by Raman spectroscopy and for measuring trace element concentrations, including Cl, Br and I, by LA-ICP-MS.



Dr Francisco Testa locating CO₂-rich fluid inclusions in quartz prior to microthermometric measurements.



Microphotographs of fluid inclusions taken by Francisco Testa. They show: (left) Polyphase inclusion with halite, sylvite and phyllosilicate daughter crystals hosted in quartz from the San Francisco de los Andes breccia complex, San Juan, Argentina; (right) Three-phase CO₂ inclusions hosted in quartz from the Pailémán pegmatite, Patagonia, Argentina.

For further information about collaboration, please email CODES.info@utas.edu.au

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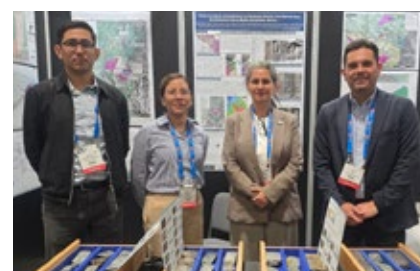
THE PROSPECTORS & DEVELOPERS ASSOCIATION OF CANADA (PDAC)

1–4 March 2026, Toronto, Canada

CODES Director Professor David Cooke, Dr Paula Montoya and PhD students Jessica Askew and Victor Torres attended this large gathering at the Convention Centre in Toronto. PDAC is one of the biggest mining conferences and brought together more than 32,000 attendees from over 125 countries, reflecting growing momentum for mineral exploration and development. This conference is a great opportunity for networking, business, review of new discoveries and development of new technologies

related to mineral exploration and mining, or just catching up with industry partners and alumni.

Over the course of the four-day meeting, David met with most of CODES' current industry partners to discuss our major plans for CODES' long-term sustainability. He also met with numerous companies to promote several exciting new industry research opportunities at CODES, and to discuss potential new student research and training opportunities. Paula promoted her new Amira initiative, LAXI, with potential sponsors, presented posters, and talked a lot about rocks and minerals. Jessica spent a considerable amount of time representing her industry sponsor Waratah Minerals, where she was run off her feet at



Javier Villegas, Marlen Salgado, Paula Montoya and Luis Coto at the GR Silver Mining core shack at PDAC. This company is funding a one-on-one research project at CODES.

the Waratah core shack display, highlighting the exciting discoveries being made at the Spur project. Jessica and Victor also did a great job in highlighting the great research and training opportunities available at CODES to potential future students.

CODES GEOMETALLURGY LAB: PROGRESS UPDATE

Dr Mohammad Fathi outlines the capabilities and scope of the new geometallurgy lab at CODES, which will open up potential opportunities for collaborating with the mineral processing industry.

CODES OFFERS A 'ROCKS FIRST' APPROACH TO MINERAL PROCESSING

You can't change your rocks, but you can characterise them effectively and maximise opportunities for success. At CODES we provide world-class facilities and specialist expertise to deliver applied metallurgical research and testwork across the full mineral processing value chain, supporting beneficiation and recovery of base, precious (Au–Ag), and critical metals from both primary ores and secondary resources. Our capability to develop bespoke flowsheets presents significant opportunities for collaboration across diverse projects and investigations.

Facilities and capabilities

- Integrated comminution studies to assess grind size, liberation and processing response
- Gravity and magnetic pre-concentration to upgrade mineralised fractions and reduce gangue prior to flotation
- Flotation testwork for selective separation of complex polymetallic systems
- Integrated laboratory infrastructure supporting flowsheet development and optimisation

Geometallurgy and ore variability

- Integrated ore, waste and tailings characterisation to support geometallurgical modelling
- Detailed analysis of ore texture, mineral liberation and modal mineralogy



Dr Mohammad Fathi, shown here developing flotation protocols for complex ores, has championed the establishment of expanded metallurgical facilities at CODES.



- Assessment of ore variability to understand mineralogical impacts on processing performance

Process optimisation and innovation

- Design and optimisation of flowsheets integrating gravity, magnetic and flotation circuits
- Troubleshooting and optimisation of complex processing circuits
- Strategies to minimise fines and slimes during comminution of brittle ores
- Enhanced flotation performance in fine and low-grade mineral systems
- Evaluation of novel reagents and flotation conditions to improve recovery and selectivity
- Selective pre-flotation desulfurisation targeting pyrite and arsenopyrite

Hydrometallurgy and leaching

- Integrated leach–purification flowsheets for complex ores and tailings
- Kinetic leaching studies under controlled pH, redox, temperature and lixiviant systems
- Purification and selective recovery of base, critical (e.g., Cu, Zn, Ni,

Co, REEs), and precious (Au, Ag) metals using solvent extraction, ion exchange, and precipitation

- Assessment of environmentally friendly lixiviants and process intensification approaches

Tailings reprocessing and circular economy

- End-to-end tailings characterisation, from systematic field sampling through advanced mineralogical and geochemical analysis to support reprocessing flowsheet design
- Recovery of valuable base, precious, and critical metals from historical and current tailings
- Flowsheet development targeting REEs, PGEs, and base metals in legacy residues
- Supporting circular economy outcomes through value recovery from mine wastes, processing residues and secondary resources
- Evaluation of environmental performance, including acid generation potential

For further information or to enquire about collaboration, please email CODES.info@utas.edu.au

BY SEA AND AIR

A variety of transport options have been used for recent fieldwork trips by CODES staff and students in the past few months. Here are just a few examples of the far-flung spots to which our geologists have ventured.

WESTERN TASMANIA MINE SITES

7–13 November 2025

As part of the initial phase of the 'Tasmanian aquatic plants as a new critical mineral tool' project, which focuses on analysing chemical signatures and plant biodiversity, Dr Tatiana Lobato de Magalhães (UTAS Adjunct senior researcher) and Dr Paula Montoya conducted a second field trip to western Tasmania during November. They aimed to visit mine sites where aquatic plants naturally colonise the tailings and ponds, as well as natural wetlands, within the West Coast Range landscape. They revisited the Hellyer, Mt Lyell and Renison mine sites, Lake Selina and the King River Delta, which they had sampled in June 2025, and visited new sites such as the Mt Bischoff mine site and Lakes Dora and Rolleston.



Three men in a boat (L–R): Sebastien Meffre, Mike Hall (Monash) and James Driscoll (Monash) pictured at Walker Island offshore of northwest Tasmania while undertaking fieldwork. (Photo: Duncan Spinks)

The 79 samples collected included sediment, plant parts (above- and below-ground tissues), and botanical specimens to be herborised and deposited at the Tasmanian Herbarium. They took nearly 1,000 photographs of plant species and wetland vegetation in tailings, ponds and lakes, a selection of which will be used for the upcoming book, *Tasmanian aquatic plants and mining*, in the Springer Nature book series 'Wetlands: Ecology, Management and Conservation'. They observed

more than 30 aquatic plant species thriving in challenging environments with pH levels ranging from 2 to 12. Phytoremediation and biodiversity outcomes were shared with academics and mining companies at the CODES and Earth Sciences Annual Review. The outcomes have already received strong, positive feedback from industry representatives and those who hosted the researchers at the mine sites visited. Dr Owen Missen is also a co-leader of the project.

NORTHERN TASMANIA

December 2025

In late 2025, Dr Robert Scott and student Will Dullard completed two short field trips to Forth on Tasmania's north coast for Will's third-year research project. The project investigated the origin and metamorphic history of rocks from the Forth Metamorphic Complex, among the most deeply exhumed rocks exposed in Tasmania. Will's work links these rocks to the Mesoproterozoic Lower Rocky Cape Group and provides new insights into their metamorphic history during the Cambrian Tyennan Orogeny, including a new peak metamorphic age of 513.9 ± 2.7 Ma.



Free samples: Brad Schuurung (from Hellyer Gold) and Dr Tatiana Lobato de Magalhães (visiting researcher) collecting plant samples and botanical specimens of *Eleocharis sphacelata* R.Br. (Cyperaceae) in tailings, Hellyer Mine Site. (Photo: Paula Montoya)

FIELDWORK

NORTHWESTERN TASMANIA

December 2025

Dr Sheree Armistead joined geologists from Mineral Resources Tasmania (MRT) late last year on a visit by helicopter to remote sites in northwestern Tasmania with the aim of improving the geological map of this area. Sheree has previously published research dating the copper mineralisation here, showing it is significantly older than previously recognised and providing further evidence that Tasmania was once connected to North America (<https://lnkd.in/gqp9QxRS>). This fieldwork formed part of her DECRA-funded research project and was a great demonstration of collaboration in action between CODES and MRT.

BASS STRAIT ISLANDS

January 2026

In January Professor Sebastien Meffre undertook fieldwork to the Rocky Cape Group of islands off northwest Tasmania to improve stratigraphic correlations. The trip was organised by Professor Mike Hall from Monash University; Dr James Driscoll, also from Monash, was part of the team.

TUMBARUMBA DISTRICT, NEW SOUTH WALES

14–25 February 2026

During February fieldwork was conducted across the Tumbarumba District to undertake regional sampling of target areas and better understand the contrasting styles of mineralisation across the district. The trip was led by Dr Francisco Testa and Professor David Cooke, with invaluable support from the Right Resources team in the field.

The program also marked the commencement of a new Honours project, with Jaida Flynn beginning her field investigations at the Pilot Gold Project. During the visit, she logged and sampled some of the first drill holes completed in the district, establishing a strong foundation for her Honours research.



Working at heights: Dr Sheree Armistead and Ralph Bottrill (MRT) flying over a remote section of northwest Tasmania on an MRT mapping field trip in December.



Third-year Earth Sciences student Will Dullard pictured during fieldwork to the Forth Metamorphic Complex last year.



Exploration at Tumbarumba, NSW: New Honours student Jaida Flynn (right) undertook her first fieldwork trip with Dr Francisco Testa (left) and Professor David Cooke during February.

CODES GEOLOGIST HONoured AT AESC 2026

Dr Sheree Armistead recently received a medal at a major geology conference in Melbourne. Here she gives her take on having been presented with the 2026 medal for 'outstanding contributions to any branch of the Earth sciences'.

"It was a huge honour to receive the E.S. Hills Medal at the Australian Earth Sciences Convention held in Melbourne in February this year. This is one of seven medals or awards named after men, according to the GSA website's national awards page at the time of writing this. There is one award named after a woman – Beryl Scott Nashar who undertook her PhD at the University of Tasmania.

"To be recognised by my peers for my scientific contributions to Earth sciences, but also for my service to the geological community, is something that I'm very proud of. The privilege of receiving such an award is not lost on me. In fact, a lunchtime committee meeting of the Geological Society of Australia Tasmanian Division left me reflecting significantly on that privilege. Dr Peter McGoldrick regaled us with the story of how, in 1954, Professor E. Sherbon Hills actively opposed and was successful at preventing Professor Sam Carey being admitted as a Fellow for the newly formed Australian Academy of Science. As a fellow tectonicist and University of Tasmania geologist, I was shocked to hear that Carey was prevented from joining because of his lectures about Wegener and continental drift – ideas that we now consider fundamental to understanding all aspects of the Earth system. In a time when we're repeatedly told to keep politics out of science, it was a timely reminder that who gets to do science, who gets celebrated in science, and who gets big fancy medals named after them is inherently political."



Dr Sheree Armistead with the 2026 E.S. Hills Medal presented to her for 'outstanding contributions to any branch of the Earth sciences'. Sheree is an Australian Research Council DECRA fellow at CODES.



Presentation of the E.S. Hills Medal to Dr Sheree Armistead (left) at the AESC, which took place at Pullman Albert Park in Melbourne.

LONG-TIME CODES COLLABORATOR ANNOUNCED AS HOLDER OF NEW CHAIR IN MINERAL EXPLORATION

Professor Peter Hollings from Lakehead University in Canada has collaborated with CODES and the Amira footprints research team for 25 years after working here as a research fellow on Amira P511. Pete is one of our most active adjuncts, and has recently been announced as the new Lakehead-NOHFC Industrial Research Chair in Mineral Exploration.

The announcement was made at the recent Prospectors & Developers Association of Canada (PDAC) meeting in Toronto (1–4 March) to a large audience of industry, government, academic and community members.

The funding for this five-year appointment has been made possible by the Northern Ontario Heritage Fund Corporation (NOHFC), FedNor and Kinross Gold Corporation, and reflects the important role that Lakehead and,

in particular, Professor Hollings have played in the mining and exploration research space.

The combined funding of more than \$2 million will enable Pete and his team to better understand the gold resources at the Great Bear Project, develop new tools for identifying gold deposits and train the next generation of geologists including two postdoctoral fellows and five MSc students. In addition, the funding will support a new state-of-the-art microanalytical research lab including a micro-XRF, Raman microscope and CL system.

CODES Director, Professor David Cooke, was present at this event, and said: "This recognition of Pete's contributions to exploration and mining in northern Ontario and globally through his sustained excellence in research and training is very well deserved – Pete has



Professor Peter Hollings at the announcement of the new Lakehead-NOHFC Industrial Research Chair in Mineral Exploration pictured with the Honourable Patty Hajdu, Minister of Jobs and Families and Minister responsible for the Federal Economic Development Agency for Northern Ontario.

made a real difference to his university, the mining and exploration industry, and the province of Ontario. Pete is a joy to work with, and so we are thrilled that he has maintained our long-term collaboration as an adjunct at CODES. Well done and congratulations, Pete!"

UNLOCKING HIDDEN MINERAL RESOURCES IN THE TUMBARUMBA DISTRICT

Dr Francisco Testa is leading a collaborative research project with Right Resources to investigate the potential for mineralisation of various styles across the Tumbarumba District. The research is conducted in collaboration with Professor David Cooke and Dr Yamila Cajal, who contribute their expertise in supporting roles.

This collaboration between CODES and industry partner Right Resources is advancing understanding of the hydrothermal history behind newly discovered Au and associated Cu systems across the Tumbarumba district in NSW; one of Australia's most promising emerging mineral provinces. By combining field investigations with advanced geochemistry, geochronology and mineral studies, the project is delivering new insights into how mineralisation formed and

where future discoveries are most likely to occur. The work aims to refine exploration targeting, improve geological models and accelerate decision-making in the field, reducing exploration risk while increasing the likelihood of discovery. The research integrates academic expertise with active industry exploration programs, ensuring scientific insight translates into practical outcomes that guide drilling and development strategies in real time.

Beyond supporting exploration, the project aims to build critical orebody knowledge and advance geometallurgical understanding of the mineral systems, clarifying how gold and copper are hosted and how mineral characteristics may influence future processing and resource development strategies. By mapping alteration and mineralisation patterns



in conjunction with mineral chemistry, the research will provide exploration vectors applicable across the broader district, helping the exploration team work more efficiently and with greater confidence. The program also supports training and research development, including a recently commenced Honours project investigating the Pilot Gold Project and contributing to the development of the next generation of geoscientists. In brief, this project applies world-class science to deliver tangible exploration and development value, helping unlock new opportunities while reinforcing Australia's position at the forefront of mineral discovery and innovation.

SPECTRA-X: OPTIMISING OREBODY KNOWLEDGE AND MINERAL EXPLORATION

Professor David Cooke outlines how CODES' new three-year Spectra-X research project will help drive a revolution in the use of spectral data to generate orebody knowledge.

Across the mining value chain, early decisions rely on rapid but mostly qualitative data. Quantitative mineralogy and geochemistry typically arrive later from laboratory analyses (e.g., whole rock assay, mineral chemistry) and can be too late to focus current field exploration and drill targeting, or to optimise orebody knowledge to define mineralogical domains for mining, mineral processing and geotechnical engineering in the active mine environment.

Our new three-year Spectra-X research project, led by Associate Professor Lejun Zhang, is designed to optimise the capacity, impact and industry applications of the newly established ScopeIR platform at CODES. This project will provide a step-change in generating orebody knowledge from spectral data, by unlocking the potential and robustly testing the integration of emerging, high spectral-resolution FT-NIR and FT-IR spectroscopy (portable and laboratory instruments) with state-of-the-art micro-analytical calibration and data-fusion modelling. The project will deliver advanced field tools (hardware plus quantitative vectoring) to guide exploration and real-time decisions,

and laboratory techniques and workflows to build high-resolution quantitative mineralogy and chemistry models that are supported by the world-class facilities and datasets at CODES to deliver consistent, decision-ready workflows for field sampling, exploration targeting, and mineralogical and geochemical domaining.

Please contact Associate Professor Lejun Zhang (lejun.zhang@utas.edu.au), Professor David Cooke (d.cooke@utas.edu.au) or Dr Adele Seymon at Deep Green R&D Solutions (adele@deepgreensolutions.com.au) for more details or to arrange a meeting to discuss this exciting and transformational new research opportunity.

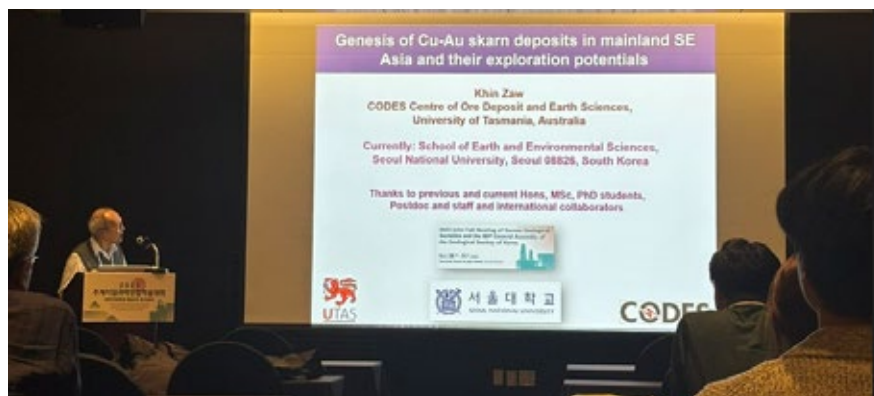
ARC MAGMATISM MEETS KIMCHI: THE ADVENTURES OF HONORARY PROF KHIN ZAW IN SOUTH KOREA

Honorary Professor Khin Zaw recounts some of the highlights from his nine-month fellowship at Seoul National University – including a Mw 7.7 earthquake and collaboration on scheelite-bearing skarns at a time when demand for tungsten is increasing.

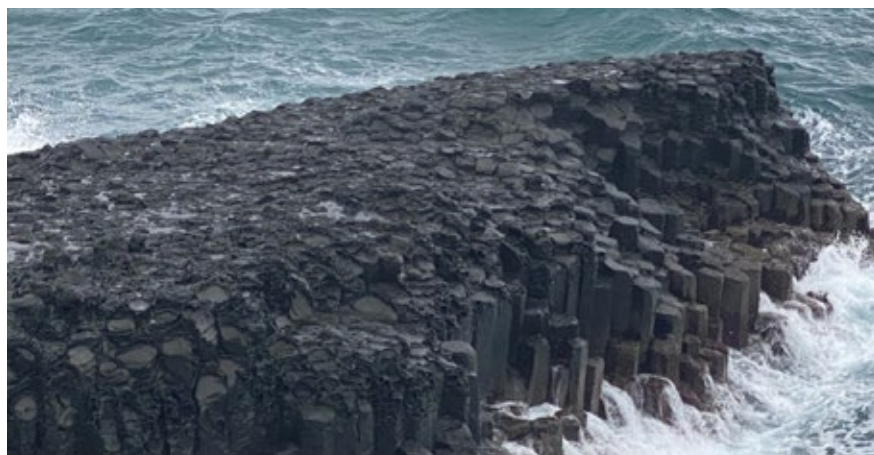
Honorary Professor Khin Zaw from CODES spent nine months in 2025 at the School of Earth and Environmental Sciences (SEES), Seoul National University (SNU), under the prestigious Brain Pool (BP) Fellowship awarded by the National Research Foundation of Korea. This highly competitive fellowship recognises his contributions to economic geology and research efforts in Asia and SE Asia.

During the fellowship, Professor Khin Zaw collaborated with leading Korean geoscientist Professor Jung-Woo Park to advance the understanding of chalcophile and critical mineral resources within global tectonic and sustainability frameworks. The core project examined arc magmatism and related ore deposits, including Myanmar's central volcanic belt. He also delivered lectures and seminars, and mentored dedicated, energetic students and postdoctoral researchers who were kind, helpful and respectful.

During Professor Khin Zaw's BP Fellowship, a Mw 7.7 earthquake struck near Mandalay, Myanmar, on 28 March 2025, causing severe destruction, ~6,000 casualties, and major infrastructure damage. At SEES's request, he delivered a public lecture on the Sagaing Fault and Myanmar tectonics, and co-published a geodynamic perspective paper with Professor Jung-Woo Park (Habitable Planet, <https://doi.org/10.63335/j.hp.2025.0009>). During the tenure, he also presented 'Exploring critical metals in volcanic-hosted massive sulphide (VHMS) deposits of Southeast Asia' at AOGS (Asia Oceania Geosciences



Khin Zaw delivering a presentation on the importance of critical metal Cu-bearing skarn deposits in SE Asia at the 2025 Joint Fall Meeting of the Korean Geological Societies, which was held on Jeju Island, south of the mainland.



Spectacular columnar jointing of recent basalt at Jeju Island, comparable to our Organ Pipe Jurassic dolerite jointing at Mt Wellington, Tasmania.

Society Annual Meeting, 27 July–1 August) in Singapore, sponsored and funded by the BP Fellowship program.

At a time when tungsten has emerged as an increasingly important critical metal, Professor Khin Zaw was able to collaborate with Professor Jung Hun Seo of SNU on scheelite-bearing skarns, sharing insights from the Sandong scheelite deposit (Korea) and other deposits including Cantung (Canada; his MSc), Kara and King Island (Tasmania), and Kanbauk (Myanmar). Professor Khin Zaw also presented a talk on Mogok gem deposits.

In addition, he had an opportunity to present 'Genesis of Cu-Au skarn deposits in mainland SE Asia and their

exploration potentials' at the 2025 Joint Fall Meeting of Korean Geological Societies and 80th General Assembly of the Geological Society of Korea at Jeju Island (28–31 November). This talk was well-received, particularly by Korean resource geologists from KIGAM (Korea Institute of Geoscience and Mineral Resources), which is equivalent to Geoscience Australia and focuses on strategic and critical minerals and overseas resource development, including in Southeast Asia.

Overall, the visit was highly enjoyable and rewarding – with its combination of stunning geological landscapes and plenty of Kimchi, Bibimbap and Gimhap (Korean Sushi).

HANDS-ON SPECTROSCOPY LEARNING

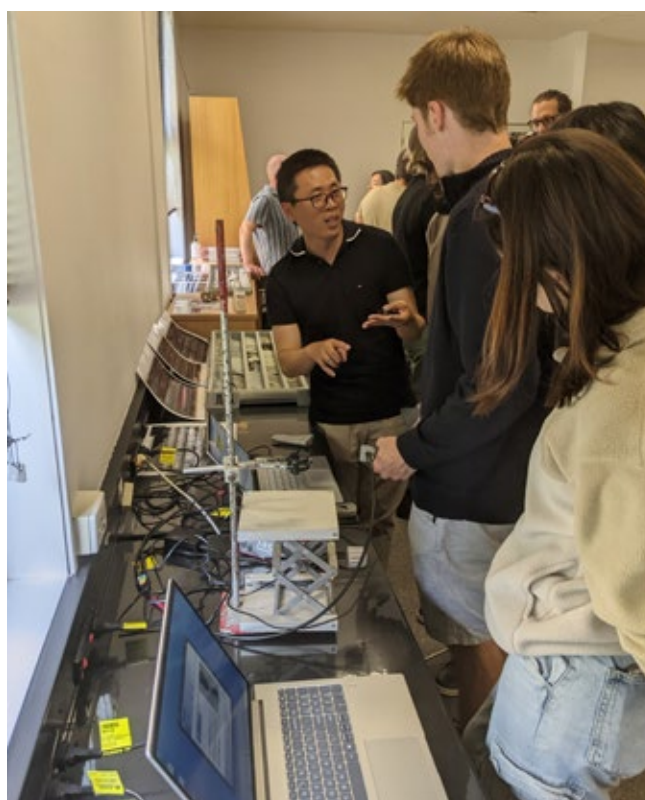


Some of the participants of the AuScope NVCL Spectral Workshop, held in February at CODES; they include presenters Jessica Stromberg, Jake Moltzen and Lejun Zhang (fifth, fourth and third from right).

The AuScope NVCL Spectral Workshop, hosted by CODES at UTAS on 18–19 February, was a very successful event that brought together around 20 participants interested in the growing application of spectroscopy in Earth sciences and mineral systems. The workshop was presented collaboratively by Jessica Stromberg (CSIRO), Jake Moltzen (MRT) and Lejun Zhang (CODES) and provided a valuable combination of theory, demonstration and hands-on training.

Over the two days, the program covered the fundamentals of spectroscopy, the use of a variety of handheld spectral instruments, the introduction of the MRT HyLogger system, and practical training in The Spectral Geologist (TSG) software. Participants had the opportunity to work directly with real datasets and drill core examples, progressing from data collection and mineral identification through to more advanced spectral processing and interpretation using TSG.

It was particularly pleasing to see such strong engagement from attendees throughout the workshop. The hands-on exercises, case study discussions, and direct interaction with both instruments and datasets made the training highly practical and relevant. Overall, the workshop highlighted the value of spectral mineralogy as a powerful tool for research, mineral exploration, and broader geoscience applications, and it was great to see this capability showcased through collaboration between CODES, AuScope, MRT and CSIRO.



Participants had the opportunity to use the handheld spectral instruments during the practical sessions throughout the two days of the workshop.

CHANGING FACES

It's been a busy start to the year with two new staff members joining us as well as three new PhD students, a new full-time Masters student, and six Honours students starting out on their research journeys – and two new babies born to staff members! Dr Wei Hong will be leaving us this month after two separate stints working for CODES. Farewell and good luck, Wei!

PhD STUDENT	START DATE	PROGRAM	PROJECT TITLE
 Verity Kameniar-Sandery	28 January 2026	Program 1 supervised by Lejun Zhang, Robert Scott, Thomas Rodemann, Jessica Stromberg	Mount Lindsay tin – tungsten – magnetite deposit, Tasmania: Hyperspectral mineral mapping, paragenesis and geochemical characterisation
 Maëlys Moulin	16 February 2026	Program 4, supervised by Martin Jutzeler, Rebecca Carey	Modelling submarine explosive eruptions
 Giulia Sorrente	16 March 2026	Program 3, supervised by Sheree Armistead, Robert Scott, Jeff Oalman	Tectonics sediment-hosted ore deposits

HONOURS STUDENTS

Six new Honours students have commenced their research projects in early 2026:



Kaitlyn Ainscow
Uncovering Tasmania's Ancient Ice Age: New insights into Neoproterozoic global glaciations and mineralisation potential



Jaida Flynn
Characterising the geology, alteration and gold mineralisation at Pilot, Tumbarumba, NSW.



Finn McCallum-Packham
Geology, alteration and mineralisation characteristics of the Kinzan prospect, Grenfell, NSW: An active exploration study



Angelika Schouten
Epidote strontium isotopes: A novel vectoring tool for complex ore systems



Jason Sze
Deposit characterisation of the Tiger and Inevitable prospects, Mangaroon project, Western Australia



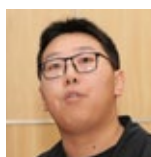
Ariann Washbourne
Tectonic and stratigraphic evolution of the Fishtie Cu-Co Deposit, Zambia

NEW FULL-TIME MASTERS STUDENT



Eric Koon
Carbon sequestration potentiality in western Tasmanian ultramafics

VISITING PhD STUDENT



Junfeng Zhao is a PhD candidate at the Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, supervised by Professor Huayong Chen. His research combines detailed drill-core logging and alteration mapping with short-wave infrared spectroscopy and alteration-mineral chemistry. While at CODES (late March to January 2027), he will work under the supervision of Professor David Cooke.

ARRIVALS



Associate Professor Juan Carlos Afonso joined CODES/ES in early February to take up the role of Associate Professor in Geoscience and will be working across both CODES and Earth Sciences. He arrives from the University of Twente in the Netherlands (see page 9 for more background).



Dr Allan Silva Gomes has taken on the role of Postdoctoral Research Fellow, Earthbank, in Earth Sciences in collaboration with the CODES Analytical Laboratories. His research supports the development of shared analytical practices across a national network of university laboratories. Before joining UTAS, Allan worked as a Project Geologist with the NTGS.

NEW KIDS ON THE BLOCK

Dr Jeff Steadman and his wife Dr Subira Steadman welcomed **Zoe Danielle Steadman**, a sister for Olivia, on 11 November 2025. And Dr Wei Hong and his wife Lina Ma welcomed their beautiful baby **Austin Hong** on 6 February.

DEPARTURES



Dr Wei Hong is leaving CODES and will join the Geological Survey of New South Wales as a Senior Geoscientist in March 2026. His new role will involve coordinating drill core facilities at the W B Clarke Geoscience Centre in Western Sydney, and conducting mineral systems studies.

NEW CODES ADJUNCTS



Dr Malai Ila'ava, who recently completed his PhD at CODES, has been appointed as a CODES Adjunct Researcher.



Dr Tatiana Lobato de Magalhães, who is a long-term visitor from Universidad Autónoma de Querétaro in Mexico, has been appointed as a CODES Adjunct Researcher.

NEW TEACHING DELIVERY METHOD SCORES POSITIVE FEEDBACK

Professor Sebastien Meffre reports on Earth Sciences' new block teaching system and concludes that it has big benefits for student/staff interaction and enables students to become more immersed in the topic. But some students find it a challenge and further iterations of this form of delivery will be modified to take this on board.

We are transforming how we teach Earth Sciences in the Bachelor of Science at UTAS. Earlier this year, we trialled delivering the first half of the second-year content in an intensive three-week block. Our aim was to better engage current students and make the units more accessible for students from northern and regional Tasmania, as well as from interstate, and to better prepare graduates for the evolving needs of the resources, environmental and geoscience sectors.

The three-week program began with theory and practical classes in Hobart, followed by a week-long field excursion to eastern Tasmania. A final week combined further fieldwork around Hobart with integrated practical and theoretical learning. Student feedback indicated that the format improved their interaction with staff and peers and provided a more immersive learning experience; however, many found the fast pace challenging. We will use these insights to refine the delivery of two more second-year Earth Sciences units this year. One will be centred around an overseas field trip to New Caledonia in June–July, and the other will include a northern Tasmanian field excursion in November with additional intensive teaching in Hobart. Based on the initial interest and positive feedback, we are also planning to offer several third-



Second-year Bachelor of Science students at Bluestone Bay on Tasmania's east coast pictured during early February 2026. They were taking part in a trial of the new intensive teaching mode that included a week-long field trip to eastern Tasmania.

year units in intensive mode next year to further engage regional students and allow them to undertake extended fieldwork and applied learning.

Encouragingly, enrolments in the Earth Sciences major have grown significantly this year, reversing a long-term decline. The student numbers in all units from first year to fourth year have all increased by 10–50% over the lows from a few years ago. This renewed interest by students likely reflects several factors: improved accessibility of the program for regional students, increasing national discussion around the importance of critical minerals, and extensive outreach activities across Tasmania and Australia.



**A MESSAGE
FROM THE
CODES
DIRECTOR,
PROFESSOR
DAVID COOKE**

2026 has kicked off with a bang at CODES! As outlined elsewhere in this newsletter, we are very pleased to see so many new arrivals, with new staff JC Afonso and Allan Silva Gomes joining our staff, and six Honours students joining the team. And we have a new on-site Masters student, Eric Koon – so many new additions certainly creates a buzz of excitement amongst our group.

We were thrilled with the news that Wei Hong and his wife Lina Ma welcomed baby Austin into the world in February but at the same time are sad to see them departing CODES in mid-March. Wei, who has moved on to a Senior Geoscientist role with the Geological Survey of New South Wales, made many great impacts during his two stints as a postdoctoral research fellow at CODES, and during his time as a PhD student. We will miss him but look forward to strengthening our collaborations with Wei and the GSNSW over the coming years.

On the Masters teaching and industry training front, we've had the largest enrolments ever in our Advanced Field Skills unit, which ran in early February.

We've revamped the Fundamentals of Economic Geology unit to be structured like Geodata Analytics, with a six-week period of self-directed learning followed by one week of intensive delivery. This unit commenced in early March, simultaneous with our Volcanology and Mineralisation in Volcanic Terrains field unit. Delivering three Masters units in the space of four weeks for the first time has created some interesting challenges for our teaching and admin staff but I'm pleased to see that the units are progressing well and the students are strongly engaged.

Our affiliated Discipline of Earth Sciences is pleased to see undergraduate enrolments are up across the board this year. Perhaps the current +\$5,000 per ounce gold price had some impact on the increased first-year student numbers. I have no doubt, however, that the hard work of our teaching staff contributed markedly to improved student retention into second and third year, and an amazing passion amongst the student cohort for their future careers in geology. Sebastien Meffre has championed transitioning our second-year units into intensive block-mode delivery with a significant field component. February has seen our first attempt at block-mode undergraduate teaching, and early signs are that the students found this a positive and enriching teaching experience.

In February, Vice-Chancellor Rufus Black met with the CODES Advisory Board, where he challenged CODES to be ambitious and

aim high to achieve growth and financial sustainability, and to maintain and grow our global impact in research and training. The strong vote of confidence expressed by the Vice-Chancellor has created significant optimism, motivation and hope for the future amongst our team. My subsequent meetings with industry partners and sponsors at PDAC in Toronto provided the first opportunity to socialise various aspects of our multi-faceted strategy for growth with key stakeholders. As part of those discussions, it was clear that our sediment-hosted Cu project, led by Sheree Armistead, which will be the first new project to commence in 2026, continues to attract significant enthusiasm and support. This project will be the first step in our revamped CODES research program as we bring our current major projects to completion.

Our new Spectra-X project proposal, led by Lejun Zhang, is attracting widespread interest. I am optimistic that this project will progress rapidly towards startup throughout 2026 and will be our next major research initiative. Regarding our medium- and long-term strategies for achieving sustainable and stable long-term funding of CODES, I'll be meeting with our current and potential future industry partners throughout 2026 to continue to socialise our larger plans and seeking their support. I'll be updating you of our progress in subsequent issues of the newsletter this year.

UPCOMING MASTERS UNITS

EXPLORATION IN BROWNFIELD TERRAINS (KEA710)

13–18 JUL and 10–14 AUG

The compilation of large datasets that are common in areas of significant previous exploration can present a challenge for any geologist. This unit is a lab-based unit that looks at exploration in and around mine sites where there is often abundant data. This unit will cover GIS applications, and the interpretation of geochemical and geophysical data at various scales. This information will be enhanced by practical exercises involving the integration of multiple datasets from world-class mineralised districts.

Unit leader: Dr Robert Scott

Delivery mode/location: Online

ORE DEPOSIT MODELS AND EXPLORATION STRATEGIES (KEA712)

2–7 NOV and 30 NOV–4 DEC

Ore Deposit Models and Exploration Strategies is an up-to-date synopsis of key ore deposit types including porphyry, epithermal and skarn deposits, IOCG deposits, magmatic sulfide deposits, orogenic and Carlin-type gold deposits, volcanic-hosted massive sulfide and sea-floor hydrothermal deposits, sediment-hosted-Cu, Zn-Pb and Broken Hill-type deposits. Most deposit types receive the equivalent of a full day of lectures and practical exercises, addressing the location, characteristics, genesis and exploration strategies.

Unit leaders: Professor David Cooke, Dr Robert Scott

Delivery mode/location:

Blended delivery (face-to-face and online)

For further information about the Masters and Graduate Certificate programs, please email:
CODES.Info@utas.edu.au
OR Master of Economic Geology Program Co-ordinator, Dr Robert Scott:
Robert.Scott@utas.edu.au