Geological Society of Australia Tasmanian Division

June 2024

# The Tasmanian Geologist

Next Meeting: 13th June 2024 presentation by David Huston on The Mount Isa mineral province.



### IN THIS ISSUE

Our Next Meeting is Thursday 13th of June when Dr David Huston with present The Mount Isa mineral province – architecture, regional metallic isotopes and metal sources at 6PM. Geology Lecture Theatre Room 211. Join us for nibbles from 5:30PM 25th of July Movie Night details TBA



#### Inside this issue

This mont	hs meeting2	
Past meet	tings4	
Students	Prizes11	

#### Future Meetings 2024

13th of June Dave Huston

The Mount Isa mineral province – architecture, regional metallic isotopes and metal sources University of Tasmania

**25th of July Movie Night** University of Tasmania

#### 28th of November

14th Tasmanian Geoscience Forum, Tullah

### The Mount Isa mineral province – architecture, regional metallic isotopes and metal sources presented by David Huston

The Mount Isa mineral province in northwestern Queensland and it extension into southeastern Northern Territory is one of the richest mineral provinces in the world. Most workers interpret that the Zn-Pb deposits formed early during basin development, whereas the Cu (Au) deposits formed much later, during and after the Isan Orogeny. Regional geological, geophysical, geochemical and isotopic data acquired over the last 20 years by Geoscience Australia (GA) and its collaborators has been used to: map major architectural features that controlled mineralisation at the regional scale; provide evidence of province-scale metal (Zn, Cu and Co) leaching that likely provided the metals to the ores; suggest that the mineralogy and temperature of alteration had a strong control on zinc leaching; and provide evidence of regional variations in Cu, Fe and Zn isotopes possibly related to regional fluid flow events.

A range of regional datasets have been used to identify crustal boundaries that have a strong control on the regional location of ore deposits. The Gidyea Suture, marks the eastern margin of the province and is spatially associated with iron oxide-copper gold (IOCG) deposits of the Clon-

curry district. This IOCG district is also spatially associated with a conductive zone defined from MT data. The Rufus Fault and associated faults mark the western margin of the province and are associated with gradients in radiogenic isotope and upwardcontinued gravity data, a gradient in the depth of the lithosphere-asthenosphere boundary and a resistive zone in MT data. McArthur-type zinc-lead de-



Geologists (you might recognise a few of them) including D. Huston (lower left) visit the famous Snake Creek outcrop of turbidites from the Soldiers Cap Group, Mt Isa area 2023 (Photo supplied by D. Huston)

posits are strongly associated with this major crustal boundary. The Gidyea Suture and Rufus structure probably formed prior to the initiation of the North Australian Basin system, served as buttresses as the basin system evolved, and acted as foci for deformation and fluid flow. Following up on work by CODES in the 1990s, regional geochemical studies have identified significant changes in basinal rocks due to regional and pervasive fluids flow. Although most obvious in mafic volcanic rocks, this alteration has affected all rock types, changing not only the chemical composition of the rocks, but also their isotopic composition. Metal released from the mafic rocks is an order of magnitude or more greater than the metal known to be present in the ore deposits. Regional copper, iron and zinc isotope analyses of the basalts identify regional isotopic anomalies. Isotopes can show the likely size of the mineral system that produced the Mt Isa copper orebody and are potentially useful during regional- or province-scale exploration. Our results highlight the power of integrating data from a range of sources to develop regional understanding of mineral systems from the province- to the deposit-scale.



Dr David Huston has had a long association with CODES. He completed his PhD at UTAS in 1988 as Ross Large's first PhD student. David has just retired from GA where he has spent nearly 30 years investigating the metallogenesis of Australia's mineral deposits. He has worked throughout Australia and other countries on deposits that range in age from Paleoarchean to Tertiary, with experience with many different deposit types. Over the past ten years he has had a special interest between metallogenesis, tectonics and the evolution of Earth's hydrosphere/atmosphere.

I want to ZOOM into David's presentation

### Past Meetings 23rd May AGM

Chairman Karin Orth ran the AGM commencing around 6 PM on Thursday 23rd of May, hot on the heals of the Federal AGM. Minutes of 2023 AGM were accepted and reports from the Treasurer and Chairman were summarised and tabled. Special mention was made of the contributions of members Phil Sansom and Clive Calver for their long term volunteering, organising many of our field trips. They were presented with a bottle of wine each. Student prizes were announced and student awardees attending were congratulated. Office holders and the committee for the Tasmanian Division of the GSA were elected. Claire Kain was thanked for her work as outgoing Treasurer and Owen Missen was welcomed to this role. The new committee and office bearers are listed at the end of the newsletter.



Above: A bottle of merlot was presented as a thank you to Phil Sansom. Photo G. Cumming



Above: William Grant inaugural awardee of the Jean McClenaghan Mapping Prize (3rd year level) inspects his piece of fossilised wood. Issi Port (pictured in a yellow kayak in the field behind K. Orth) was online to accept the SW Carey Prize for best Honours thesis. Photo G. Cumming

If you would like a copy of the treasurer and/or chairman's reports please contact Ron.Berry@utas.edu.au

### 23rd May Jacqueline Halpin Geology of the Denman Glacier region: a deep field dive

Jacqui Halpin was part of an Australian expedition that headed to the Denman Glacier area over the summer of 2023-2024. She spent 2 months in the Edgeworth David Field Camp about 450 kms from Casey Station. Her work involved helicopter transport to distant locations collecting rocks with other expeditioners of the ACEAS team Jack Mulder and Kate Selway. Over a tonne of samples were shipped back to Australia including Archean and Proterozoic basement samples as well as fresh samples of moraine which represent the eroded sedimentary basins on top of the basement. Jacqui outlined the likely ties of the Denman Glacier region with southern Australian Cratons and Fold Belts as well as India and submerged continental crust, such as the Kerguelen Plateau. The newly collected rocks should help to clarify these connections and provide improved data for heat flow



Jacqui Halpin beginning her presentation showing some of the terrain and the field camp she called home last summer in Antarctica. Photo G. Cumming

calculations that are critical to more accurate icesheet/glacier melting models. As well as the geology Jacqui provided insights and stories about logistics and living conditions of the field camp which housedsome 27 scientists and 15+ support staff. Jacqui was

#### thanked appropriately with a bottle of Tasmanian Iced Riesling.



If you are interested in learning more the video is available through Karin.Orth@utas.edu and there are also many other online resources including interviews and podcasts:

Jacqui pointing out some the spectacular basement outcrops she visited during her expedition. Photo G. Cumming

https://antarctic.org.au/

https://www.antarctica.gov.au/science/climate-processes-and-change/antarctic-palaeoclimate/denmanterrestrial-campaign/

https://www.abc.net.au/news/2024-02-26/australian-antarctic-programs-denman-terrestrial/103512204 https://www.skynews.com.au/business/science/scientists-study-antarcticas-denman-glacier-system-as-itmelts-relatively-fast/video/a0202559964ced440b532676ecf905ee

https://www.abc.net.au/news/science/2024-02-04/east-antarctica-denman-glacier-melting-australianclimate-change/103353980

https://blogs.egu.eu/divisions/gd/2024/01/24/the-denman-terrestrial-campaign/

https://www.smh.com.au/environment/climate-change/could-you-survive-an-antarctic-blizzard-looking-for -mud-these-scientists-had-no-choice-20240207-p5f34g.html

https://podcasts.apple.com/au/podcast/wonder-by-the-geo-co/id1698639571

### Geology shines at Hobart and Devonport Gemshows

The Hobart show went well having moved from longstanding venue at the Showgrounds across to the Elwick Racetrack buildings. Sales started noon on Saturday and that afternoon it was a stampede and very hard to move around the hall. Peter Manchester was selling his fossil book and both he and MRT staff, selling maps and books and fielding questions at their stall were kept on their toes with brisk business. Sunday was still busy, and a longer day, with lots of people wanting to talk rocks as well as buying. Good to see lots of kids and young people coming through. Hopefully we inspired some to become geologists! The new fossicking and gemstone books were popular, as was the new fossicking map, plus the basic Tasmanian geology map, which seems to be inspiring and artistic to many people. Nice that we geologists have a good science/art balance!

The Devonport show was a little slower but business was steady all weekend and a lot of people bought stacks of geology maps. Sales, surprising-



Members of the public pan for gems at Devonport Gemshow (Supplied by R. Bottrill)

ly, ended up similar to Hobart. Some people seem, again, to think the maps were decorative, to brighten their homes, but many seemed very keen to head out to do some exploring. Some were keen on getting on the geotrails - so it would be good to do more of these. Anyway we hope they all go out and find something of interest, whether its gold, gems or just enjoying the geology and landscapes (and not get lost).

Ralph Bottrill

### Rock Rescue

When Phil Sansom, our secondary education specialist, heard of another college reducing their rock collection, he embarked on a mission to rescue some of the specimens from Launceston College.

The Tas. Division's Education rock, mineral and fossil collection held at the MRT Core Library has grown recently with the addition of new specimens from Launceston College's extensive redundant collection and Hobart's Collegiate School. As with many schools these days, the storage of geological collections occupies valuable space that can't be justified in terms of the small amount of class time that is spent on Earth Science in the curriculum. Having heard of the plan to dispose of their collections a van was hired to bring back to Hobart hundreds of specimens that now need their identification checked and for the specimens to be appropriately stored. This task is too big for one person so there will be a call in the near future for members to assist with this process.

Phil Sansom

### **Obituary Dr Neil Robert Allen**

#### 7.7.1942 - 22.4.2024

Neil Allen graduated from the University of Tasmania in 1978 with a Bachelor of Science degree. He worked as a science teacher for many years, whilst developing an interest in mining and mineral exploration. He took up an old alluvial tin mining lease near Pioneer in NE Tasmania, and being an inveterate tinkerer, became intrigued with accumulating and constructing machinery and testing various methods of recovery of cassiterite and other



heavy minerals in the placer deposits. This interest led him back to university to do further studies in geology on this problem, which was conferred on 28 May 1994 as a Graduate Diploma of Science with 1st Class Honours. The thesis title was: "Electron spin relaxation and its applications to geology". He was undeterred by the fact that few other people in the geology department had much idea of what he was doing, except that he was developing new equipment that seemed effective at mineral separation.

He decided to proceed with a PhD on the same subject. This was supervised by Dr Jan van Moort and conferred on 14 Aug 1999 – with the thesis Title: "Magnetic mineral processing, employing rotating magnetic fields." This involved rotating drums with magnetic fields that separated different minerals by their paramagnetism.

After graduation he became very busy marketing the new mineral separation technique, especially to diamond explorers around Australia. He also took samples of alluvial sediments around Tasmania to see what he could find. During this time, he became very skilled in mineral separation and I helped with mineral identification. Sometimes I scratched my head trying to figure out the provenance of some of the odd minerals he found.

He became fascinated with his discoveries of native metals in the tin deposits on his lease, including tin, lead, and copper, and was unphased by the scepticism of most of us, noting that apparently they could be recovered only in specific quartz veins with plastic tools.

He was drawn to the late Dr Jan van Moort who also had an interest in novel analytical methods and the origin of tin in granites. Between us we undertook a number of field trips around NE Tasmania and gave some presentations and short papers on granites, tin and native metals in Tasmania. Neil did a lot of work plotting geochemical data and maps, and some of this remains to be published by me and Chris Allen (his son now working on a PhD).

Besides geology, Neil was devoted to his family and had other passions including music and dragon boats, of which he built a number.

Loving husband of Heather Mary Allen (dec.) and father of Kathryn, Paul, Kim, Mark and Christopher.

### Garry Davidson Memorial Touch Football Match 27th May

It was a sunny May afternoon when the students and staff with friends of Earth Sciences faced off for the Garry Davidson Memorial touch football match. With a hiatus last year, the match was back with both teams vying to win. The staff (8) were outnumbered by an enthusiastic



Staff ready to start play. Photo K. Orth

student team (10) keen to learn the game and get on the field. The staff began well pushing the ball to their goal area but students held a strong defence. There was tooing and froing across the field until eventually staff broke through with a goal. Students answered and managed a goal before the break for half time. One all was the

score as teams broke from play. In the second half, a new ploy was instigated with kicks from Owen Missen for staff and Colin Smith for students. In both cases the ball was touched by their opponents before they reached the ball, but this element of play added to the excitement of the match. Staff wrangled a second goal to cheering from staff fans on the bleachers. The final minutes of the match increased in intensity and although the ball finished near the staff end no more

goals were realised. The staff won the unicorn prize again in 2024 with the final score of 2 to 1. Players, observers and friends joined in a post-match BBQ provided by the student chapter of the SEG.



Players gather at the end of the touch footy match. Unicorn prize went to staff. Photo. C. Mordaunt

### Student Prizes

Congratulations to the winners of our GSA Tasmanian Division Prizes recognised during the University of Tasmania, School of Natural Sciences Student Recognition Evening held in the Medical Precinct in mid May.

- Inaugural winner of the Geological Society of Australia Tasmania Division Mapping Prize at first year level is Carl Gammelin
- Maxwell Banks Award winner 2023 is Angelica Matusewicz for best performance in second year (UTAS ES).
- Inaugural winner of the Jean McClenaghan Mapping Award for excellence in mapping at third year level is William Grant

Will Grant attended our AGM to receive our congratulations.

### Congratulations to Issi Port winner of the SW Carey Prize





Field work in the Lake Pedder area. (Supplied by I. Port)

Well done Issi Port who has received the SW Carey Prize for the best Honours thesis in an Earth Science topic at the University of Tasmania. Issi headed into the field in the wilds of

Tasmania to produce his thesis titled 'The Structural and Metamorphic History of the Eastern Tyennan Region, Lake Pedder, Tasmania' Issi was online for our AGM where he thanked the GSA.

### **Student Recognition Evening**

As well as our prize recipients many other Earth Sciences students were recognised for outstanding results in their studies during the University of Tasmania, School of Natural Sciences Student Recognition Evening.



Above: Head of School of Natural Sciences, Julianne O'Reilly-Wapstra congratulating high achieving Earth Science students left Gabrielle O'Toole, middle Anthony Tai and right Thomas McAuley. Photos P. McGoldrick. Below: Will Grant presents his talk on his journey to Earth Sciences. Photo P. McGoldrick

Congratulations to those pictured above Gabrielle O'Toole, Anthony Tai and Thomas McAuley all third years students now. Other high achievers were Eva Baukes, William Grant, Molly Robinson, Saffron McKinnon, Mark Hana, Maya Koisumi-Smith and Angelica Matusewicz. 2022-23 Honours students listed were Harrison Keeble, Maddison Mulder, Issi Port and Millicent Young. Other notable awardees aside from our GSA prize winners (see previous page) were Gabriel Matuszak who won the Ramsey Ford 1st year prize, Angelica Matusewicz awarded the IBI Smith book stipend and Albert Wilmot who received



the third year mineralogy prize. Alexander Ferrar was recognised for his outstanding performance during his PhD candidature in CODES.

### PhD Scholarship 2023 awardees

The School of Natural Sciences Recognition Evening also showcased PhD scholarship awardees in the 2022-23 period which included many of the new PhD students at CODES. Most of these students are from overseas and have been already been at CODES for a year.

Listed were Damian Braize, Fuseini Atanga, Giovanna Oliveira Pimentel, Isaac Evinemi, Nanda Mrabawanbi, Nelao Natukondje, Pratichee Mondal, Poliana Vidal Salgado, Olive Lucas Ponyaglou.

### Endowment Fund Grants for Tasmanian students

Will Grant was congratulated at the AGM for his successful bid at the \$1000 GSAs Endowment Fund grant for a Tasmanian Honours or Masters student. Will is working on his honours project looking at the archi-



A less sartorial Will Grant at the AGM thanking GSA for the Endowment Grant. Photo. G. Cumming

tecture of the dolerite sill on north Bruny Island. He is using various geophysical techniques and this money will go towards more field data collection. We were also informed that one our PhD students has succeeded in being in the mix for the national \$5000 grant won by Acacia Clark in 2022.

#### What is the GSA Endowment Fund?

The Geological Society of Australia (GSA) Endowment Fund was set up in 2007 to support students undertaking graduate studies in the Earth Sciences. The fund was set up as a separate entity to the GSA and the Australian Tax Office imposed elements that restricted this support to Australian students at Australian educational institutions. Financial assistance in the form of awards can be granted to Australian students by the GSA Endowment Fund Committee and the awards are not restricted to GSA members. Honours/ Masters student from each state are eligible for a \$1000 grant and PhD students compete nationally for a \$5000 grant.

The Geological Society of Australia Endowment Fund is a charity and all donations are tax deductible. (from GSA website)

### Save the date and think about accommodation for the 14th Tasmanian Geoscience Forum

Tullah Lodge has been chosen as the venue for the 14th Geoscience Forum on the 28th of November 2024. The Lodge will be undergoing some renovations which will impact on the availability of accommodation. Please think about this if you are intending to come and book early there or nearby.



Above Tullah Lodge from https://www.tullahlakesidelodge.com.au/

### **Student Members**

Semester is winding up and it is a busy time. Congratulations to those of you who have won student prizes and been mentioned in the School of Natural Sciences University of Tasmania recognition afternoon ceremony. Maybe you have your photo or name on the previous pages Maybe you can squeeze in the GSA meeting next week or ZOOM in if you cannot make it in person (see page 3 for link)

## **GSA Tas Div provide a bursary for a graduate student to attend the SGTSG field conference**

If you are an Honours, Masters of PhD student and member of the GSA and giving a presentation at the Structural Geology and Tectonics Specialist Group field meeting in Armidale between the 18th and 22nd of November 2024 you can apply for \$500s of funding towards your travel expenses.

Send your email application to Ron.Berry@utas.edu.au More details at https://www.sgtsg.org/bursaries

### Membership

FORGOT TO RENEW? Don't worry. The late renewal fee is waived for 2024. So renew now. For detailed renewal instructions see first page of the flyers at the end of the newsletter. Also there may be free undergraduate membership in 2025! Watch this space.

Don't forget there are special rates for graduate membership so no need to miss out once you have graduated. We would love to keep in touch! Any queries about your membership contact our membership officer Rebecca.Carey@utas.edu.au (Rebecca.Carey@utas.edu.au)

I want to become a Member



### Olivia Wilson on being a GSA student member

'Being a student member of the Geological Society of Australia enriched my experience of studying geology. Especially important to me were the opportunities to make connections and learn about the research of other society members. As a student, it is also invaluable to have an environment in which you can interact with geoscientists from all career stages - hearing their experiences allows you to develop your own career aspirations. GSA membership also demonstrates that you have a level of passion and commitment to your field beyond '

#### Other Events coming up

10**-**12 July

CODES Critical and Strategic Metals Symposium 2024, Hobart, Australia

https://www.utas.edu.au/ codes/codes-critical-andstrategic-metalssymposium

15-18 October 1st AESG Discover Symposium Wrest Point, Hobart ASEG 2024 (asegdiscover.com.au)

18-22 November SGTSG field trip New England area NSW Check their website for details. Early bird registration closes soon on the 15th of April.

https://www.sgtsg.org/

28 November Tasmanian Geoscience Forum, Tullah on the West Coast.

### The Geological Evolution of Tasmania

The flagship publication of the Tasmanian Division of the GSA, 'The Geological Evolution of Tasmania' (Special Publication 24 of the GSA) is available for ordering.

#### I want to know more about the book

You can purchase them personally from Caroline Mordant publications@CODES.utas.edu.au or phone on +61 3 6226 7537.

Members	\$99
Non Members	\$113
Students	\$75



edited by Keth O. Colbell, Patrix G. Quity and Chiel R. Calver

#### Last word from Noel



Noel is on holidays in Micronesia and sent us this image of himself at the ruins of the UN World Heritage Site of Nan Madol, constructed between 500 – 1500 CE on the island of Pohnpei. The "building blocks" are basalt columns transported from a volcanic plug on the other side of the island. Did you know that GSA has a YouTube Channel? You can peruse it's contents by clicking the red arrow (YouTube logo) at the top of the GSA homepage Or click on the symbol here



#### Our details

Geological Society of Australia website: <u>www.gsa.org.au</u> And our own website: <u>http://</u> www.gsatasmania.org

#### GSA Tasmania Division Committee 2024-2025

Chairman: Karin Orth Secretary: Ron Berry <u>Ron.Berry</u>@utas.edu.au Treasurer: Owen Missen

Committee Members: Sheree Armistead Jeremy Asimus (Student Rep) Rebecca Carey (Membership) Acacia Clark (Student Rep) Grace Cumming Barbara Frankel Jacqueline Halpin Claire Kain (Geotourism) Peter McGoldrick Sebastien Meffre Phil Sansom (Education) ANY NEWS, ANNOUNCEMENTS OR INTERESTING PHOTOGRAPHS OF TASMANIAN GEOLOGY YOU WOULD LIKE TO INCLUDE IN THE NEXT NEWSLETTER, PLEASE

SEND IT THROUGH VIA EMAIL TO karin.orth@utas.edu.au



### How to renew online

- 1. Go to gsa.org.au
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### **Peter Manchester's new book**

### Peter Manchester's GUIDE TO TASMANIAN FOSSILS



How Tasmanian fossils guided aspects of the geological history of the formation of Tasmania "Peter Manchester is well known throughout Tasmania for his work and teachings around Geo-Tourism, with a keen interest in Fossils since childhood. For many decades Peter has worked tirelessly to educate like-minded people about our abundant and unique Geology.

After his highly coveted 2010 book 'Created from Chaos', Peter's unwavering enthusiasm found that Tasmanians needed a definitive resource that would help identify the prehistoric world around us.

Peter's latest publication showcases Tasmanian's diverse and eclectic range of marine, land, and plant Fossils, their localities and historical interpretations. With 392 pages, and over 900 photos, his work is the first book ever published on Tasmanian fossils and will sure to become a collector's item in the future.

This new soft cover book is a must for every paleontology collector and at the moment can be bought from Peter Manchester (milingandi@vision.net.au) by personal contact for \$85.00. *Book is available for purchase at all good book shops (price determined by the book shop).* 





### Mountains are memories ...

The stories of mountains may be set in stone but they reveal change we can scarcely imagine. Extinctions, volcanoes, dinosaurs ... we all know they existed but how are ancient worlds and their inhabitants connected to us today? Take a journey through deep time, to a place long ago where the bones of kunany/Wellington were formed from the remains of a frozen sea. Not all that is ancient is lost ...

Before the Mountain had a Name is a picture book made for childen but designed to function on many levels. Moving episodically through time, it traces the story of a mountain from its beginnings beneath a frozen sea to human arrival and modern times. Take the challenge to search for silhouttes representing the unknown, trace the stratigraphic code that runs through the book or use the end papers to identify the animals and plants present in each time period. Additional material including illustration keys, information about animals, plants, fossils and geological processes as well as links, references, resources and activities are available in the resource section of the accompanying web page at *fionalevings.com.au*.

Before the Mountain had a Name is available in store and online from the Forty South Publishing store.

Themes: Earth history, geology, landscape formation, extinction, evolution and human impact



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