



International Symposium on Mafic– Ultramafic Mineral Systems

29 June – 03 July 2026
Perth, Western Australia

CONFERENCE PROGRAM



International Symposium on Mafic-Ultramafic Mineral Systems

29 June – 03 July 2026 – Perth, Western Australia

The International Symposium on Mafic-Ultramafic Mineral Systems 2026 (ISMUMS 2026) is being held in Perth, Western Australia, from 29 June to 3 July 2026. The symposium represents the latest evolution of a distinguished international conference series dedicated to the geology, petrology, geochemistry, and mineralisation of mafic-ultramafic magmatic systems.

Historically, the community met through two complementary conference series: the International Nickel (Ni-Cu-PGE) Symposia, focused on magmatic sulfide deposits, and the International Platinum Symposia, centred on platinum-group element (PGE) mineralisation in layered intrusions. These meetings were traditionally held on an alternating biennial basis and have taken place across North America, Europe, Africa, Asia, and Australia, fostering international collaboration and many of the major advances in understanding magmatic ore-forming processes. More than thirty meetings have been organised worldwide, reflecting the enduring importance of these mineral systems to both scientific research and mineral exploration.

Over time, the scientific themes of the Nickel and Platinum symposia increasingly converged as researchers recognised the strong genetic links between magmatic sulfide deposits, layered intrusions, conduit systems, and associated critical-metal resources. ISMUMS 2026 formally brings these traditions together under a single conference framework, providing a comprehensive forum for all aspects of mafic-ultramafic mineral systems while maintaining a strong emphasis on PGE-bearing and Ni-Cu-Co sulfide deposits.

The symposium brings together researchers, students, government agencies, and industry professionals to discuss the origin, evolution, exploration, and sustainable development of mineral systems associated with mafic and ultramafic rocks. Topics encompass magmatic and magmatic-hydrothermal processes, experimental and numerical studies, mineral exploration, critical mineral resources, and the geological controls on the formation of deposits containing nickel, copper, cobalt, platinum-group elements, chromium, vanadium, and titanium. The scientific program combines technical sessions, Wager and Brown workshop, and field excursions, providing a unique opportunity for knowledge exchange and collaboration across the global geoscience community.

Perth, Western Australia
2026

ORGANISING COMMITTEE



CHAIR

Dr Margaux Le Vaillant
CSIRO
Margaux.LeVaillant@csiro.au



TREASURER, WEBSITE & COMMUNICATION

Dr Louise Schoneveld
CSIRO
Louise.Schoneveld@csiro.au



SECRETARY & VENUE MANAGER

Dr Stefano Caruso
CSIRO
Stefano.Caruso@csiro.au



SCIENTIFIC PROGRAM

Dr Katy Evans
Curtin University
k.evans@curtin.edu.au



SCIENTIFIC PROGRAM

Dr Steve Barnes
CSIRO
Steve.Barnes@csiro.au



SPONSORSHIP

Dr Valentina Taranovich
Fortescue Metals
valentina.taranovic@fmgl.com.au



SPONSORSHIP

Dr Steve Beresford
Power Metallic
swberesford@gmail.com



SOCIAL PROGRAM & GRAPHIC DESIGN

Dr Maria Cherdantseva
University of Western Australia
maria.cherdantseva@uwa.edu.au



FIELD TRIPS

Dr Will Smith
CSIRO
Will.Smith@csiro.au



CONFERENCE ADVISOR

Dr John Simmonds
Nyici Pty Ltd
simmonjr@iinet.net.au



CONFERENCE ADVISOR

Dr Jon Hronsky
Western Mining Services
jon.hronsky@wesminllc.com

CONFERENCE PROGRAM

Sunday, June 28

8:30	16:20	WAGER AND BROWN WORKSHOP, CSIRO, 26 Dick Perry Av, Kensington, Western Australia CONVENORS: Rais Latypov (University of the Witwatersrand) and Steve Barnes (CSIRO)
17:30	22:00	ICE-BREAKER: The Lucky Shag Rooftop Bar, 1 Barrack Square, Perth CBD

Monday, June 29

8:00	8:30	REGISTRATION	
8:30	9:00	WELCOME TO COUNTRY	
9:00	9:15	Pengjie Cai	Origin of mantle heterogeneous magma conduit model in podiform chromitite
9:15	9:30	Qing Xiong	Formation of mantle dunitic channels in oceanic spreading centers: implications for complexity of melt extraction and Cr enrichment
9:30	9:45	Rachel Jones	Mantle metasomatism beneath eastern Australia and its role in mineral systems
9:45	10:00	Dongyang Lian	Two types of chromitites in Madagascar
10:00	10:30	MORNING BREAK	
10:30	11:00	Jung-Woo Park	KEYNOTE: Mechanisms and conditions for PGE enrichment in porphyry deposits
11:00	11:15	Chen Chen	Origin of high-Pd pentlandite and multiple platinum-group minerals in the disseminated sulfide ores of the J-M Reef, Stillwater Complex
11:15	11:30	Inna Badanina	Platinum-group mineral assemblages from magnetite clinopyroxenites and detrital Pd-bearing gold nuggets of the Guli massif (Polar Siberia)
11:30	11:45	Kreshimir Malitch	Re-Os isotope and platinum-group element abundance systematics of the Guli ultramafic massif, Polar Siberia
11:45	12:45	LUNCH BREAK	
12:45	13:15	Giada Iacono-Marziano	KEYNOTE: The mineral system of komatiite-related magmatic sulfide deposits in the Central Lapland Greenstone Belt (Finland): the contribution of models and experiments
13:15	13:30	Matthew Demmer	The boninite-like geochemistry of PGE-Ni-Cu parental magmas records anatexis and assimilation of hydrous lower crust
13:30	13:45	Ya-Jing Mao	Silica-rich hydrous magma characteristics and three fractionation pathways of orogenic Ni-Cu deposits
13:45	14:00	Zhuosen Yao	Transport of sulfide and metals through dense-packing crystal mush via viscous fingering
14:00	14:15	Margaux Le Vaillant	Infiltration of non-wetting sulfide liquid into an unconsolidated silicate mush: Analogue models
14:15	14:30	Alan Boudreau	Constitutional zone refining in layered intrusions
14:30	15:00	AFTERNOON BREAK	
15:00	15:15	Alana Mina	Refractory sperrylite and subsolidus mobile palladium in Te-As-Bi-Sb-sulfide magmatic systems
15:15	15:30	Stefano Caruso	Experimental evidence for volatiles and alkalis dissolved in sulfide melt
15:30	15:45	Stefano Tenuta	Laurite desulfidation during early-stage serpentinization: experimental evidence
15:45	16:00	Mark Gabbitus	INVITED: Muon tomography: Advancing resource confidence and geotechnical insight in mafic-ultramafic mineral systems
16:00	16:15	Lu Li	Understanding mafic-ultramafic systems in Australia through multi-geophysical imaging
16:15	16:30	Stephan Thiel	Magmatic Ni-Cu mineral system footprints: crustal insights from joint magnetotelluric and gravity data in southern Australia
16:30	16:45	Tim Ivanic	Terrane-scale tectonic alignment of suites of giant, Archean layered intrusions in the western Yilgarn Craton, Western Australia
16:45	17:00	Stephen Prevec	Reconsidering the effective graphical presentation of PGE data for mineral exploration
17:00	19:00	POSTER SESSION	

MAGMATIC PROCESSES:
Mantle Processes and Chromitite Formation

CONVENER:

Wolf Maier (Cardiff University)

MAGMATIC PROCESSES:
PGE Mineralisation in Mafic-Ultramafic Mineral Systems

CONVENER:

Wolf Maier (Cardiff University)

SIMULATING MAFIC AND ULTRAMAFIC SYSTEMS:
Models and Experiments

CONVENORS:

Isra Ezad (University of Western Australia)

Pedro Jugo (Laurentian University)

Zhuo-sen Yao (Carleton University)

NOVEL ANALYTICAL AND EXPLORATION APPROACHES

CONVENORS:

Louise Schoneveld (CSIRO)

Stephan Thiel (CSIRO)



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CONFERENCE FIELD TRIPS

Tuesday, June 30 and Thursday, July 2

Conference excursions will be held on Tuesday and Thursday for alternating groups. Delegates selected their preferred excursion day at registration and will participate in visits to both the Gonneville PGE-Cu discovery and the Perth Core Library on their allocated day. Participants are asked to assemble at the designated departure point in the conference venue foyer at least 15 minutes before departure. Transport between venues is provided; however, participants are asked to bring their own lunch.

GONNEVILLE PGE-Cu DEPOSIT CORE VIEWING

Discovered in 2020, Gonneville-Julimar is Australia's largest PGE resource to date (13 Moz Pd, 2.9 Moz Pt, 0.5 Moz Au, 960 kt Ni, 540 kt Cu¹), located 70 km northeast of Perth. Delegates will visit the discovery site to hear Chalice Mining geologists present the geological setting, mineralisation styles, and exploration history of the deposit while guiding participants through selected drill-core intervals that highlight key aspects of the mineral system.

¹Chalice Mining Limited, 2024, Gonneville Resource remodelled to support selective mining: ASX announcement, <https://chalicemining.com/wp-content/uploads/2024/04/61203922.pdf>.

AUSTRALIAN ORTHOMAGMATIC DEPOSITS AT THE PERTH CORE LIBRARY

Hosted by the Geological Survey of Western Australia, this excursion will be held at the Perth Core Library in Carlisle, one of Australia's premier geological repositories. Delegates will examine drill core from a range of important Australian orthomagmatic mineral systems, including Ti-V-bearing layered intrusions from the Musgrave Province and Youanmi Terrane, magmatic sulfide occurrences from the Kimberley region, and emerging PGE prospects from the Western Yilgarn Province. CSIRO's Magmatic Sulphide collection, curated by Stephen Barnes, will also be on display, which has magmatic sulphide samples from around the world.

MEETING POINT: Conference Venue, Fraser's Kings Park

DEPARTURE TIME: 8:00 AM

RETURN TIME: 16:30-17:00

NOTES: Please bring your own lunch, closed shoes, long pants, and a long-sleeved shirt. Please do not bring suitcases.

[OPTIONAL] THE PERTH MINT

An option for your free day is The Perth Mint Gold Tour, which includes a fascinating live gold pour, the world's largest gold coin and a guided walk through the Perth Mint's world-class exhibition. Enter code [ISMUMS2026](#) when booking online or provide the code at Reception for 50% off entry. Terms and conditions: Valid from 26 June 2026 to 6 July 2026 (inclusive) for adult tickets only. Book online at perthmint.com/visit.



CONFERENCE PROGRAM

Wednesday, July 1

MAGMATIC PROCESSES:

Ore Formation in the Bushveld Complex

CONVENORS:

Will Smith (CSIRO)

Maria Cherdantseva
(University of Western Australia)

8:45	9:00	Rais Latypov	Deep-sourced crystal slurries did not control the formation of platinum and chromite reefs in the Bushveld Complex
9:00	9:15	Wolfgang Maier	Lateral geochemical variation in the Bushveld Complex: proxies towards the feeder conduits?
9:15	9:30	Anton Kuttyrev	Mottled anorthosites and discordant ultramafic bodies in the Critical Zone of the Bushveld Complex: genetic links or parallel evolution?
9:30	9:45	Justine Magson	Nature of the Lower Critical - Upper Critical Zone transition in the Clapham Trough area, Eastern Bushveld Complex: Evidence for the introduction of crustal fluids in response to plagioclase stabilisation?
9:45	10:00	Vishnu Kuleri	Iron-rich ultramafic pegmatites in the Rustenburg Layered Suite: Field observations and a review of competing petrogenetic models

10:00 10:30 MORNING BREAK

MAGMATIC PROCESSES:

Ore Formation in Magmatic Sulfide Systems

CONVENORS:

Will Smith (CSIRO)

Maria Cherdantseva
(University of Western Australia)

10:30	11:00	Paul Polito	KEYNOTE: Magnetite-hosted Cu-PGE and Fe-sulfide mineralization in 1078 Ma layered mafic intrusions in the west Musgraves region of Western Australia
11:00	11:15	Ben Hayes	Enigmatic copper-rich magmatic sulfide mineralization at Okiep, South Africa
11:15	11:30	Matebello Mokoena	Paragenesis of copper-enriched sulphides in the Okiep deposits, South Africa
11:30	11:45	Pete Hollings	Constraining the origin and nature of the Eagle's Nest intrusion, McFaulds Lake Greenstone Belt, Ontario, Canada
11:45	12:00	KeZhang Qin	Magmatic Ni-Cu deposits in the Central Asian Orogenic Belt driven by the Permian Tarim Plume

12:00 12:45 LUNCH BREAK

MAGMATIC PROCESSES:

Controls on Ni-Cu-PGE fertility and prospectivity

CONVENORS:

Will Smith (CSIRO)

Maria Cherdantseva
(University of Western Australia)

12:45	13:00	Louisa Stokes	Formation of high-temperature pyrite in intrusions of the Ni-Cu-Co-prospective Fraser Zone, Western Australia
13:00	13:15	Jennifer Smith	New constraints on the timing and controls of Ni-Cu-PGE Mineralization in the Midcontinent Rift
13:15	13:30	Lisa Zieman	Evaluating the potential for magmatic sulfide mineralization in the Bradley Peak komatiitic basalt lava flows, Wyoming Province
13:30	13:45	Chloe Gemmell	Mineral prospectivity of the Ordovician mafic-ultramafic intrusions of Northeast Scotland
13:45	14:10	Matthew Roper	Controls on newly discovered Cu-Ni-Co sulfide mineralisation within the Stendalen mafic intrusion, South Greenland

BELOW THE SOLIDUS:

Secondary Enrichment and More

CONVENORS:

Yoram Teitler (CSIRO)

Katy Evans (Curtin University)

14:00	14:30	Marina Yudovskaya	KEYNOTE: Place and time of assimilation of wallrock in the Norilsk ore-bearing intrusions
14:30	15:00	AFTERNOON BREAK	
15:00	15:15	Fedor Sandalov	High-temperature contact aureole of Norilsk type intrusions: mineral assemblages and implications for contact ore formation
15:15	15:30	Stephen Prevec	Evidence for post-emplacement hydrochromatographic PGE mobility in the Merensky Reef, Bushveld Complex, South Africa, as a primary concentration mechanism
15:30	15:45	Grant Osborne	INVITED: Characterization of the Giant Jaguar hydrothermal Ni-sulfide deposit, Carajás Mineral Province, Brazil
15:45	16:00	Jose Barillas-Dias	Mobilizing the immobile: The Avebury Ni-Co Deposit, Western Tasmania

18:00 22:00 GALA DINNER: The Boatshed Restaurant, 1L Coode St, South Perth



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CONFERENCE PROGRAM

Friday, July 3

MAGMATIC PROCESSES: Analytical Tracers of Ore-Forming Processes CONVENORS: Wolf Maier (Cardiff University) Maria Cherdantseva (University of Western Australia)	8:30	8:45	Lie-Meng Chen	Ni and Cu isotope ratios as novel tracers of sulfide-silicate liquid immiscibility
	8:45	9:00	Valeriya Brovchenko	The dual role of S assimilation in Norilsk sulfide magma conduits
	9:00	9:15	Marie A. Kieffer	Application of apatite geochronology in mafic layered intrusions: Apatite reveals multistage emplacement of the Sept-Iles Intrusive Suite (Grenville Province, Canada) during two distinct magmatic episodes related to plume-rifting
	9:15	9:30	Xuyang Zheng	In situ apatite compositional constraints on volatile evolution in orogenic Ni-Cu systems as exemplified by the Xiarihamu deposit
	9:30	9:45	William D Smith	Nickel, cobalt, and manganese distributions in olivine and orthopyroxene as indicators of sulfide-rich mafic-ultramafic systems: a case study from the Nova-Bollinger Ni-Cu-Co Deposit in Western Australia
	9:45	10:00	Jian Kang	Wetting of olivine by sulfide liquid: an example from the Central Asian Orogenic belt in NW China
	10:00	10:30	MORNING BREAK	
MAGMATIC PROCESSES: Structural and Magmatic Controls on Ore Formation CONVENORS: Wolf Maier (Cardiff University) Will Smith (CSIRO)	10:30	10:45	Alexander Cruden	An assessment of chonolith emplacement mechanisms
	10:45	11:00	Bo Wei	Magmatic plumbing system of the Xiarihamu Ni-Cu sulfide deposit, China: Constraints from zonation, chemistry, and in-situ oxygen isotopes of poikilitic and cumulus orthopyroxene
	11:00	11:15	Shuang-Qing Li	Ni-Co-fertile magmatism linked to tectonic switching during the Tethyan orogenic cycle
	11:15	11:30	Olga Blay	Precambrian mafic dyke samples compilation – a new online GSWA dataset
	11:30	11:45	Wolfgang Maier	Honoring the memory of Alan Wilson and Lew Ashwal
	11:45	12:30	LUNCH BREAK	
FROM EXPLORATION TO DISCOVERY TO RECOVERY CONVENORS: Valentina Taranovic (Fortescue Metals) Jon Hronsky (Western Mining Services)	12:30	12:45	Emmi Annanulli	INVITED: From mine to district: The current state of near mine exploration at Kevitsa
	12:45	13:00	Barbara M. Duggan	Updated stratigraphy and structural evolution of the Panton Complex, East Kimberley
	13:00	13:15	M. Christopher Jenkins	Geology and metal endowment of the Port Snettisham Ultramafic Complex, Southeast Alaska
	13:15	13:45	Nicholas Hayward	KEYNOTE: Targeting large magmatic Ni-Cu discoveries from lithospheric fault controls
	13:45	14:00	Benoit Saumur	Late faults & Ni-Cu deposits: Is your chonolith fake?
	14:00	14:15	Louise Schoneveld	Delineating new targets in a komatiite-hosted magmatic nickel sulfide prospect - Emu Lake, Kalpini, Western Australia
	14:15	14:30	Allan Kelly	The Bangemall – a new mafic-hosted Cu-Ni-PGE Province
	14:30	15:00	AFTERNOON BREAK	
	15:00	15:15	Yi Li	Petrophysical properties of rocks from the Kalatongke Deposit and implications for exploration of magmatic sulfide systems
15:15	15:30	John Simmonds	Multi-mineral system investigation of the newly-defined Mons Greenstone Belt in the Youanmi Terrane, Yilgarn Craton	
15:30	15:45	GENERAL DISCUSSION		
15:45	16:00	CLOSING REMARKS		



CONFERENCE PROGRAM

POSTER SESSION

Monday, June 29, 17:00-19:00

BELOW THE SOLIDUS Secondary Enrichment and More	Poster #1	Yoram Tietler	Supergene redistribution of critical metals (Ni, Co, Cr, Sc, PGE) in the Sukinda chromitite-ultramafic complex, Odisha, India
	Poster #2	Anton Kutylev	Formation of natural IrO ₂ through Os-Ir-Ru alloy oxidation
FROM EXPLORATION TO DISCOVERY TO RECOVERY	Poster #3	John Simmonds	Validation of crustally-interpreted translithospheric faults as a proxy on prospectivity for discovery of intrusion-hosted Ni-Cu-PGE mineral systems in the West Yilgarn Magmatic Province, Yilgarn Craton
	Poster #4	Nur Anbiyak	Ni-Co enrichment in the laterite deposits developed over ultramafic rocks in Indonesia
MAGMATIC PROCESSES	Poster #5	Adam Abersteiner	Noble metal transport by anatectic metalloid nano-melts
	Poster #6	Alex Eves	Reactivation of metasomatised continental lithospheric mantle during post-orogenic extension: implications from the Hart Dolerite and Speewah Ti-V deposits, North Australian Craton
	Poster #7	David Machado	Facies characterization of sulfide Cu ore and its hosts along a core from the Caraíba Complex, Vale do Curaçá, Brazil
	Poster #8	Jianping Zheng	Research progress on the mantle recycling and its links to Cr-PGE-Ni mineralization
	Poster #9	Marie A. Kieffer	Apatite provides direct age and source constraints in anorthosite-hosted Fe-Ti-P mineralisation of the Grenville Province (Quebec, Canada)
	Poster #10	Nthatsi Sandra Makhoba	Paragenesis of magmatic sulphide mineralisation in the mafic-ultramafic phase of the Kunene Complex, Angola
	Poster #11	Raphael J. Baumgartner	Chromite control on IPGE and Rh in layered chromitites: Evidence from PGE fractionation in Cr-saturated magmas, Archean Sukinda Massif, India
	Poster #12	Shengchao Xue	Synergistic Magma Recharge and Crustal Contamination in the Formation of the Giant Xiarihamu Ni-Co Deposit, Northern Tibet
	Poster #13	Shengxuan Cao	Sulfide drainback in magmatic conduit system: insights from the Tulaergen Ni-Cu deposit, southern margin of Central Asian Orogenic belt, China
	Poster #14	Joyashish Thakurta	Studies on cobalt-content in olivine as a tool for crystallization conditions of magmas
	Poster #15	Yawen Bao	Metallogenic implications of the Xiarihamu No. II ultramafic intrusion-hosted Ni-Co sulfide deposit, East Kunlun Orogen
NOVEL ANALYTICAL AND EXPLORATION APPROACHES	Poster #16	Inna Badanina	A combined compositional and Cu-isotope study of gold mineralization from carbonatites and placer deposits of the Guli massif (Polar Siberia)
	Poster #17	Jennifer Smith	Precompetitive geophysical datasets for improved ore body detection
	Poster #18	Vera Abramova	Matrix-matched sulfide reference materials for high-precision LA-ICP-MS trace element analysis
SIMULATING MAFIC AND ULTRAMAFIC SYSTEMS: Models and Experiments	Poster #19	Hong-Kun Dai	Control of mantle pyroxenite on the formation of Cu-Ni sulfide deposit: a thermodynamic numerical modeling perspective
	Poster #20	William D. Smith	Thermodynamic modelling of mafic-ultramafic systems: A new workflow



PRE- AND POSTCONFERENCE FIELD TRIPS

Three field trips have been arranged for conference delegates. Together, they offer visits to komatiite formations, conduit-hosted Ni-Cu-PGE systems, and magnetite-bearing layered mafic-ultramafic intrusions across Western Australia.

LAYERED INTRUSIONS OF THE YOUANMI TERRANE

Field Trip Leader: Tim Ivanic (GSWA)

The Meeline Suite of the Youanmi Terrane in the Yilgarn Craton contains several layered mafic-ultramafic intrusions, with the Windimurra Intrusion rivalling the Bushveld Complex in size. This trip will explore the geology and Fe-Ti-V mineralisation of the giant Windimurra Intrusion, facilitated by Atlantic Vanadium, as well as the Narndee Igneous Complex of the Boodanoo Suite, one of the few layered intrusions globally to host primary amphiboles. The excursion will also include a visit to the Boogardie Orbicular Granite outcrop.

THE WESTERN PILBARA MAFIC-ULTRAMAFIC INTRUSIONS

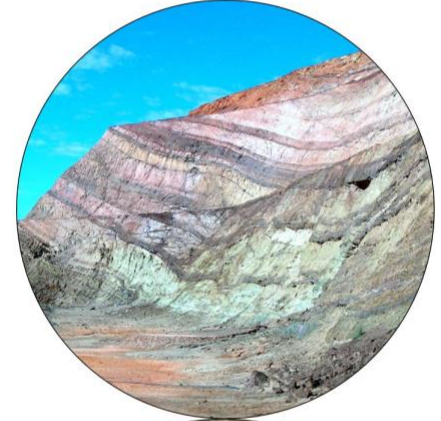
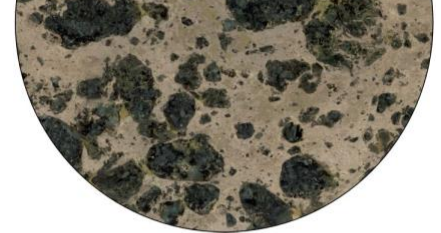
Field Trip Leaders: Steve Barnes (CSIRO), Katy Evans (Curtin University)

The mafic-ultramafic intrusions of the Western Pilbara Craton have been explored for nickel-sulfide and platinum-group element occurrences for several decades. On this trip, participants will visit the nickel-sulfide occurrence at the taxitic Andover Intrusion, facilitated by Josh Combs (Azure Minerals), and explore the geology and mineralisation of the layered Munni Munni Intrusion, as well as the komatiite occurrence at Ruth Well. Time will also be set aside to visit local rock art sites and learn about Country through the eyes of local Traditional Owners.

KOMATIITES OF THE EASTERN GOLDFIELDS SUPERTERRANE

Field Trip Leaders: Margaux Le Vaillant (CSIRO), William Smith (CSIRO)

Most economic komatiite-hosted nickel sulfide deposits in the Eastern Goldfields Superterrane of the Yilgarn Craton occur within the Kalgoorlie Terrane. This excursion will introduce participants to the geology of the Eastern Goldfields at the Kalgoorlie Core Library, facilitated by Alicia Verbeeten (GSWA), before continuing to the komatiitic occurrence at Mount Hunt, widely regarded as the type-section of the Kalgoorlie Terrane. Participants will also visit komatiite and turbidite outcrops in the Kanowna Region, the Mount Clifford area, and the Walter Williams Formation at Ghost Rocks. The trip will conclude with an opportunity to visit the Gwalia Ghost Town and learn about the mining heritage of the Leonora area.





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