Drilling into Victoria's Lithium Potential

Preliminary Insights from Diamond Drilling the Dorchap Dyke Swarm

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OREAS Victoria Minerals Roundup
Ballarat 2023

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AUSTRALIAN INSTITUTE OF GEOSCIENTISTS

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GEOLOGICAL SURVEY OF VICTORIA

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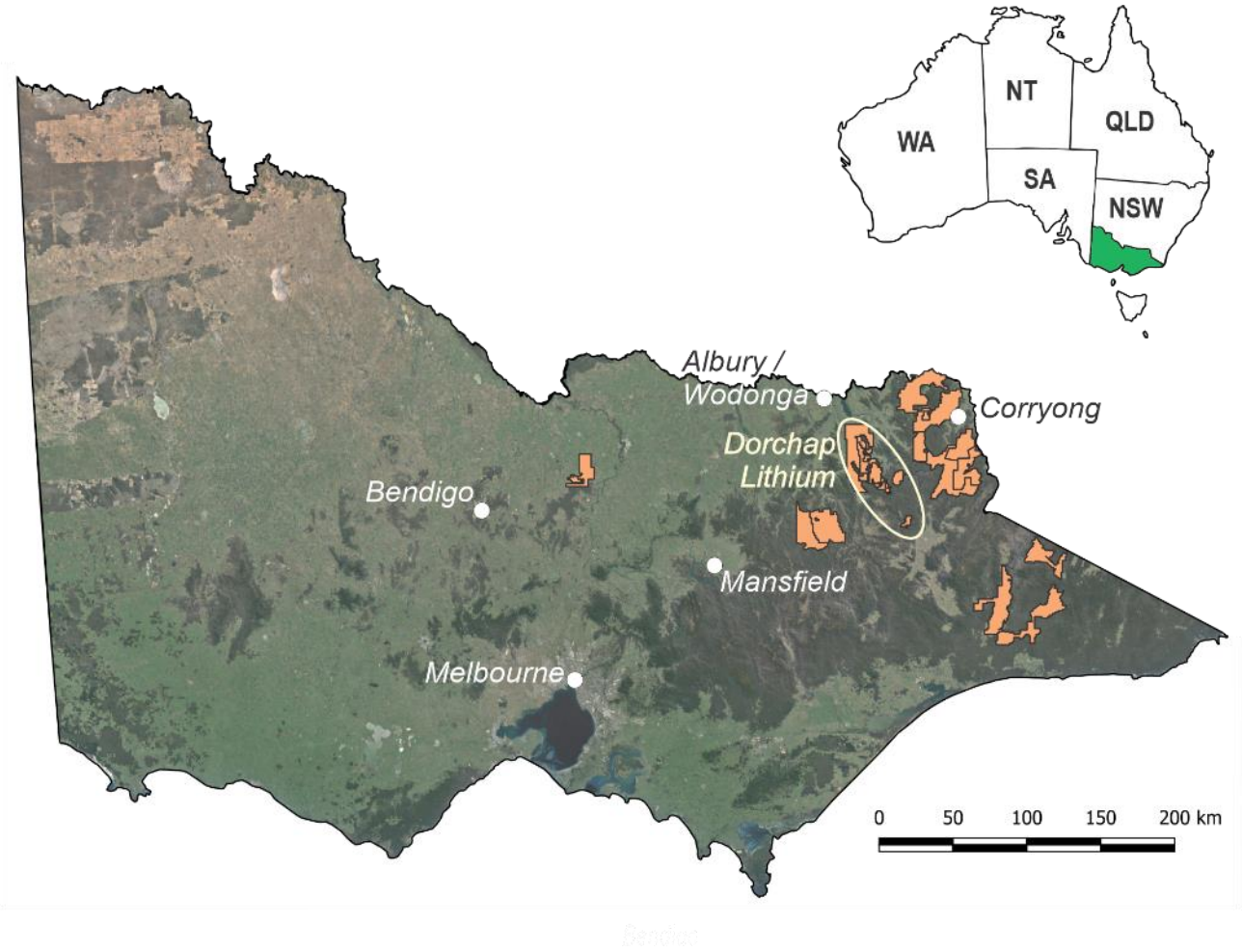
Geology & Site Setting

- Northeast Victoria focus
- Central Lachlan Fold Belt
  - *Silurian to Devonian magmatism*
  - *S- & I-type granites*
  - *Three orogenic events*
- Diverse geological setting
  - *Orogenic Au*
  - *Porphyry Cu-Au, Mo-Cu-Ag*
  - *Li-Cs-Ta Pegmatites*



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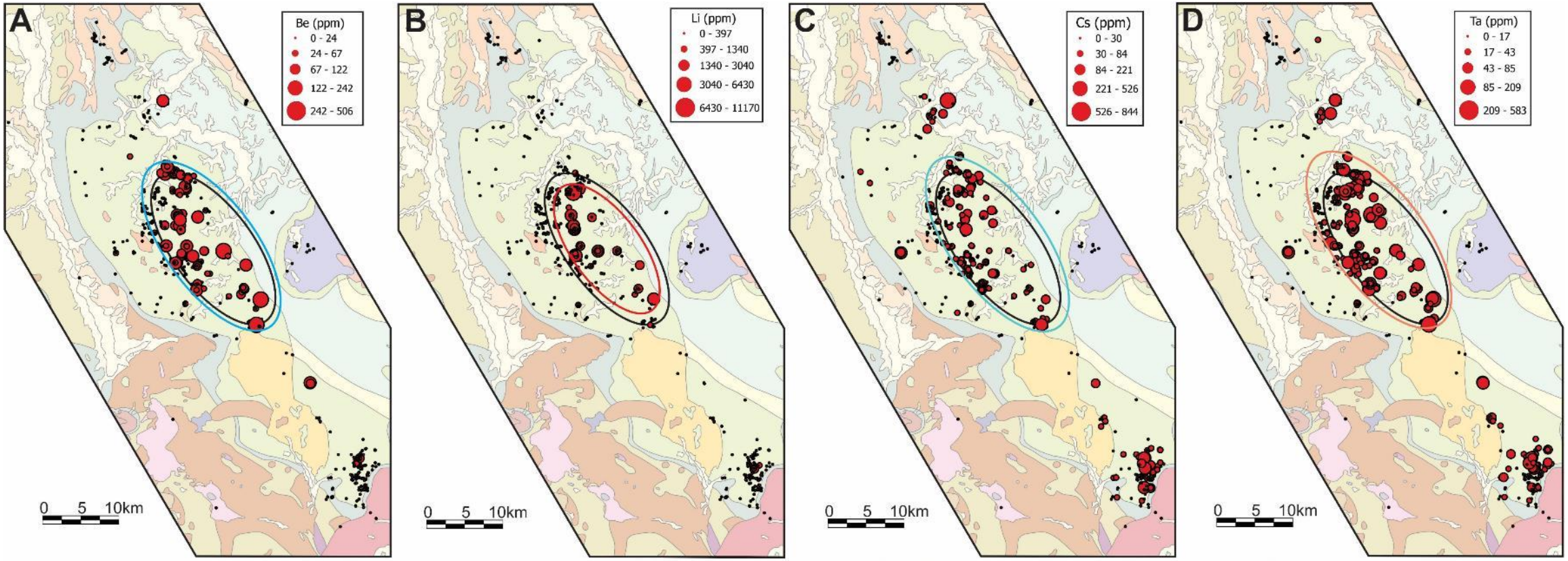
GEOCHEMICAL TRENDS



LCT Fractionation zone well defined by chip sample geochemistry

Hines *et al*. (2023) *Australian Journal of Earth Sciences*

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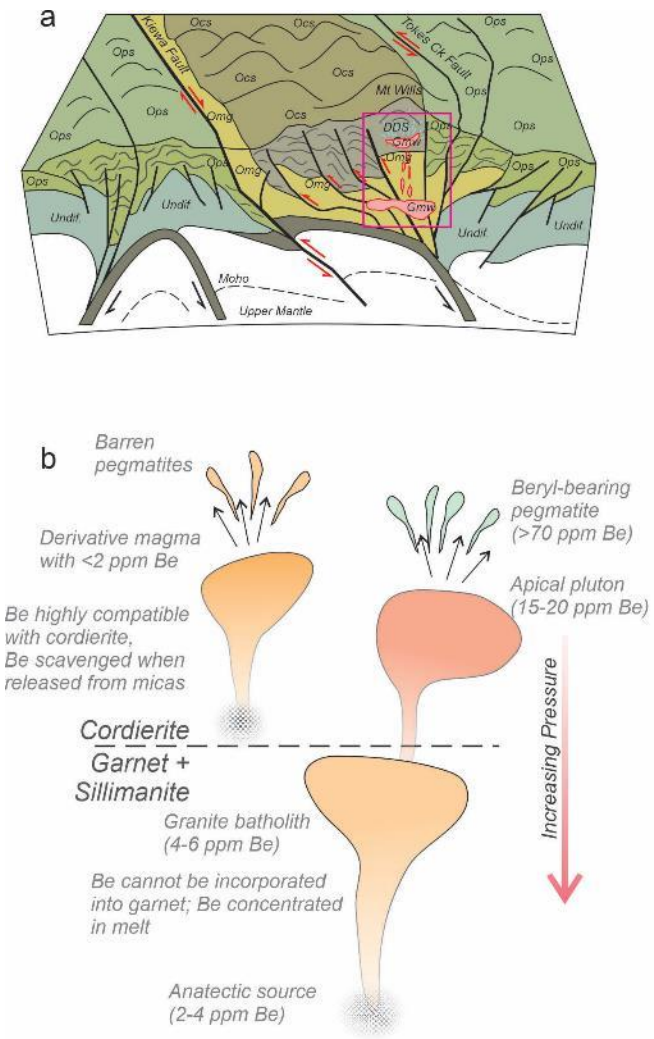
Mineralisation Model

- Clearly defined fractionation trend
  - P>Cs>Be>Nb≥Ta>Li>Sn
- Specific composition of primary magma required
- Timing & tectonic control integral to emplacement
- Depth of emplacement & distance from host pluton also key factors



Hines *et al*. (2023) *Australian Journal of Earth Sciences*

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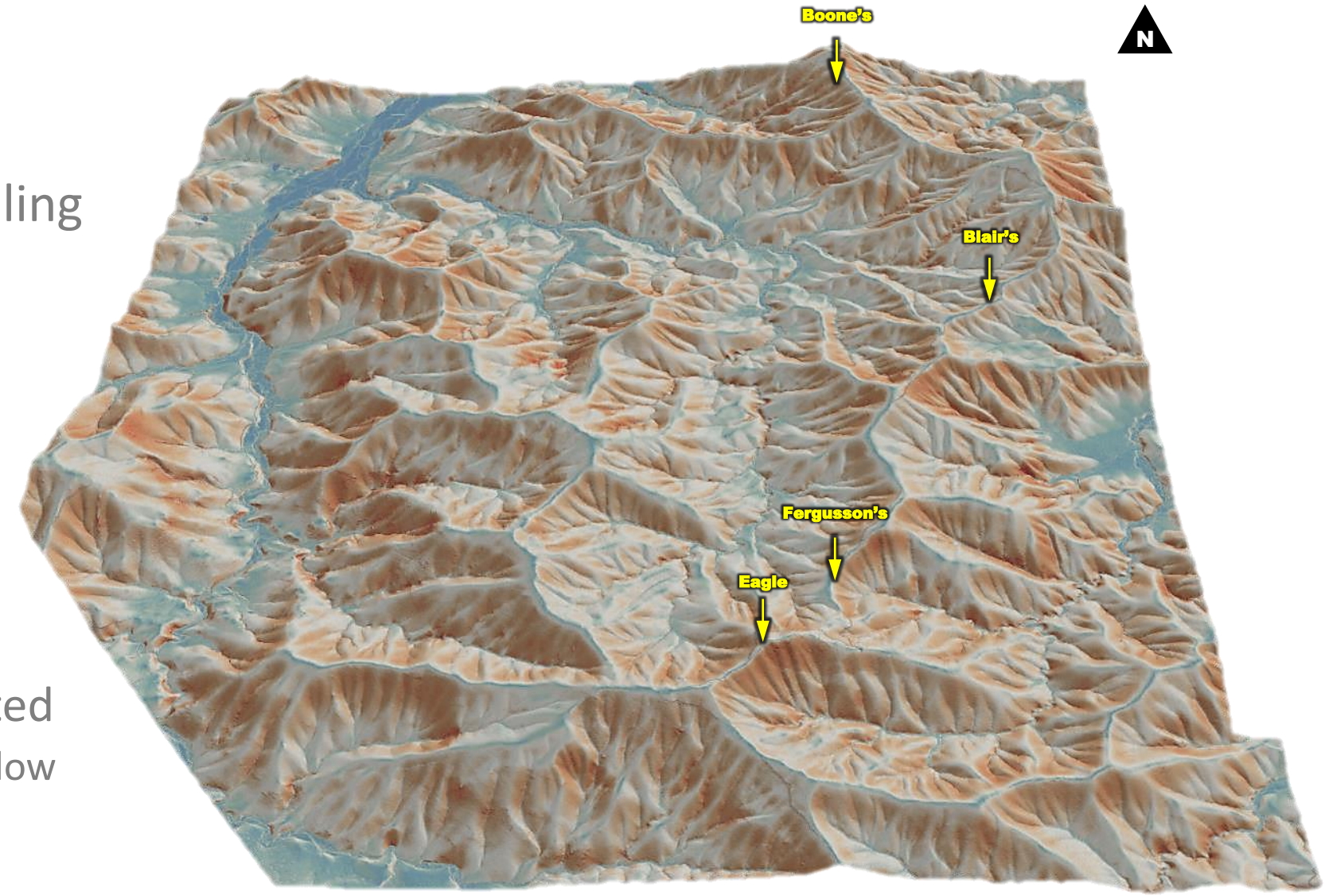
Drill Testing

Drill Targets

- Five dykes targeted for preliminary diamond drilling
  - Eagle
  - Fergusson’s
  - Blair’s
  - Boone’s
  - Rhodda Creek
- All returned Li in surface sampling
- 3000m HQ drilling completed
  - Holes from 125 to 400m below surface
  - Tight access



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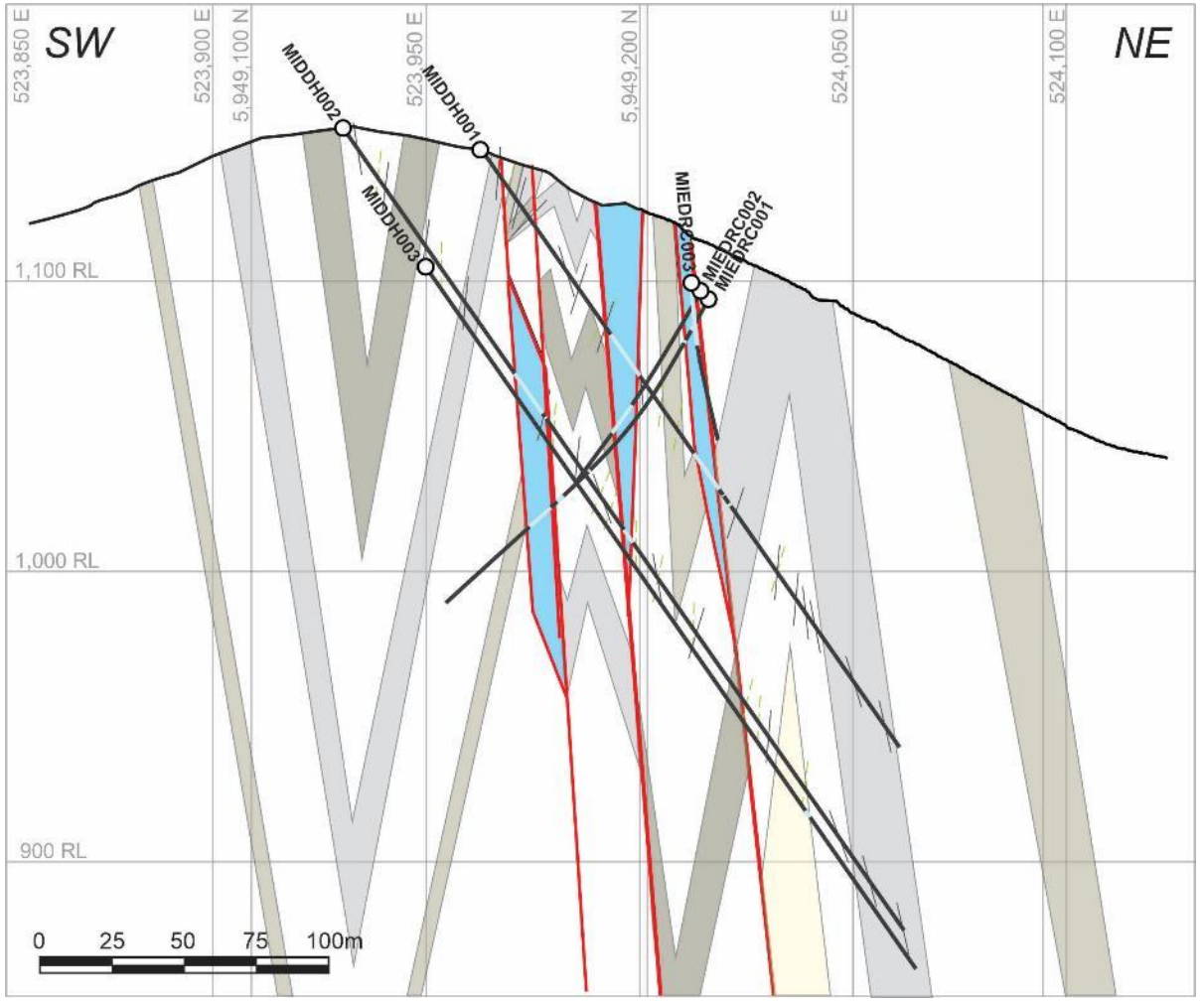
Drill Hole Data - Eagle

- Multiple dykes encountered
- Dip steeply to northeast
- Form pods that plunge at 35-45° to northwest
- Zones of recrystallisation evident
- Reactivation of contacts apparent
- Brittle host to late-stage sulphide mineralisation



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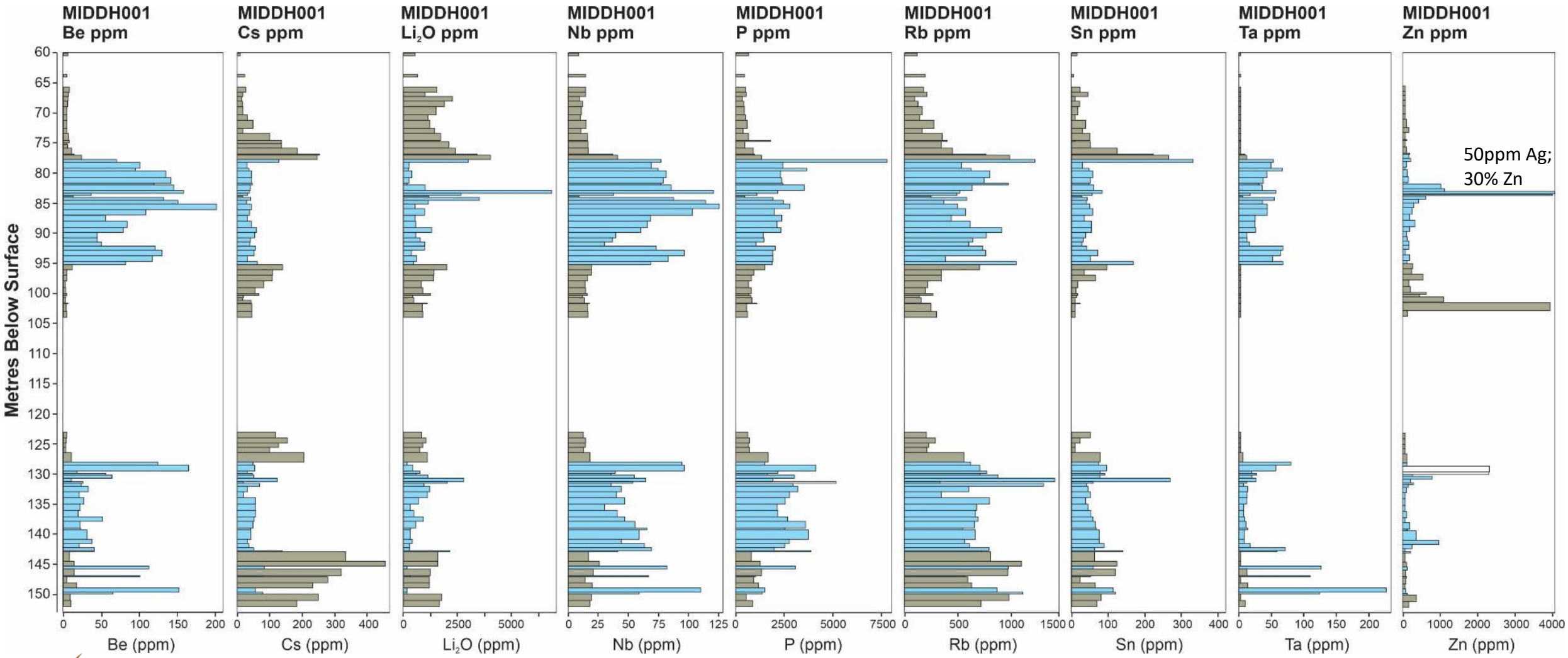
DRILL HOLE DATA – EAGLE DYKE GEOCHEMISTRY



- 17.77m @ 0.16% Li_2O (exomorphic halo)
- 12.66m @ 0.10% Li_2O (pegmatite dyke)
- 5.2m @ 0.11% Li_2O (exomorphic halo)
- 4.92m @ 0.10% Li_2O (exomorphic halo)
- 8.76m @ 0.08% Li_2O (pegmatite dyke)
- 7.9m @ 0.11% Li_2O (exomorphic halo)

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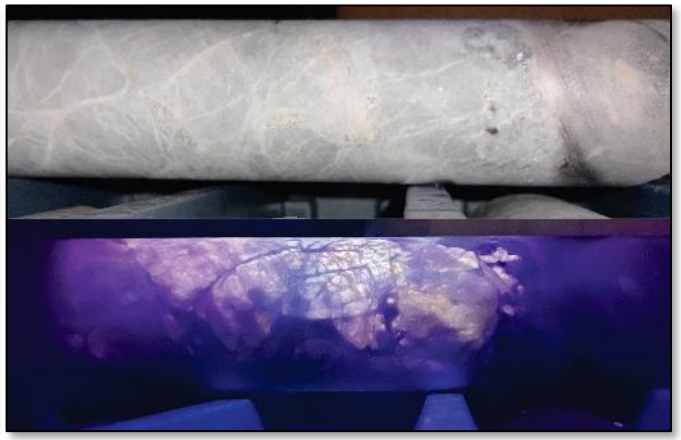
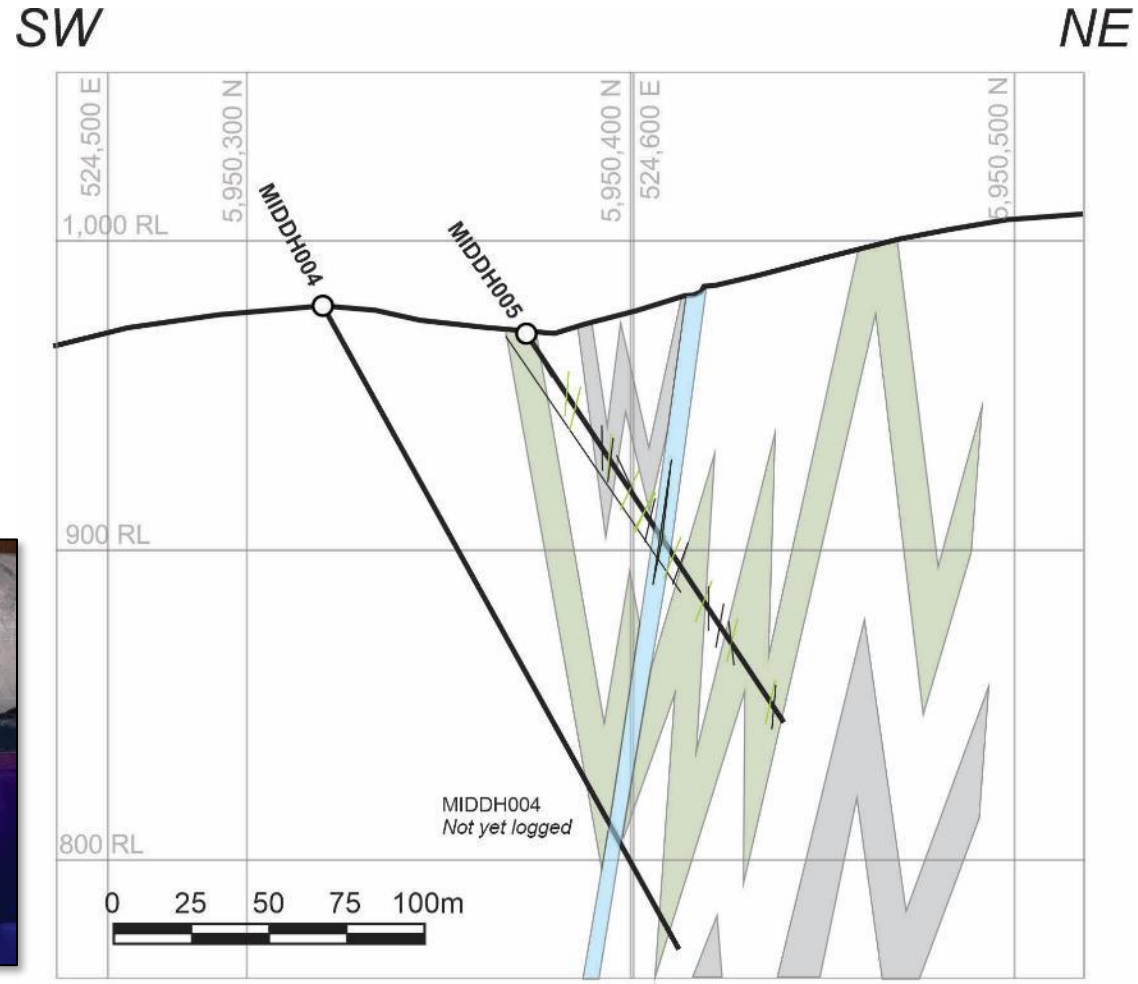
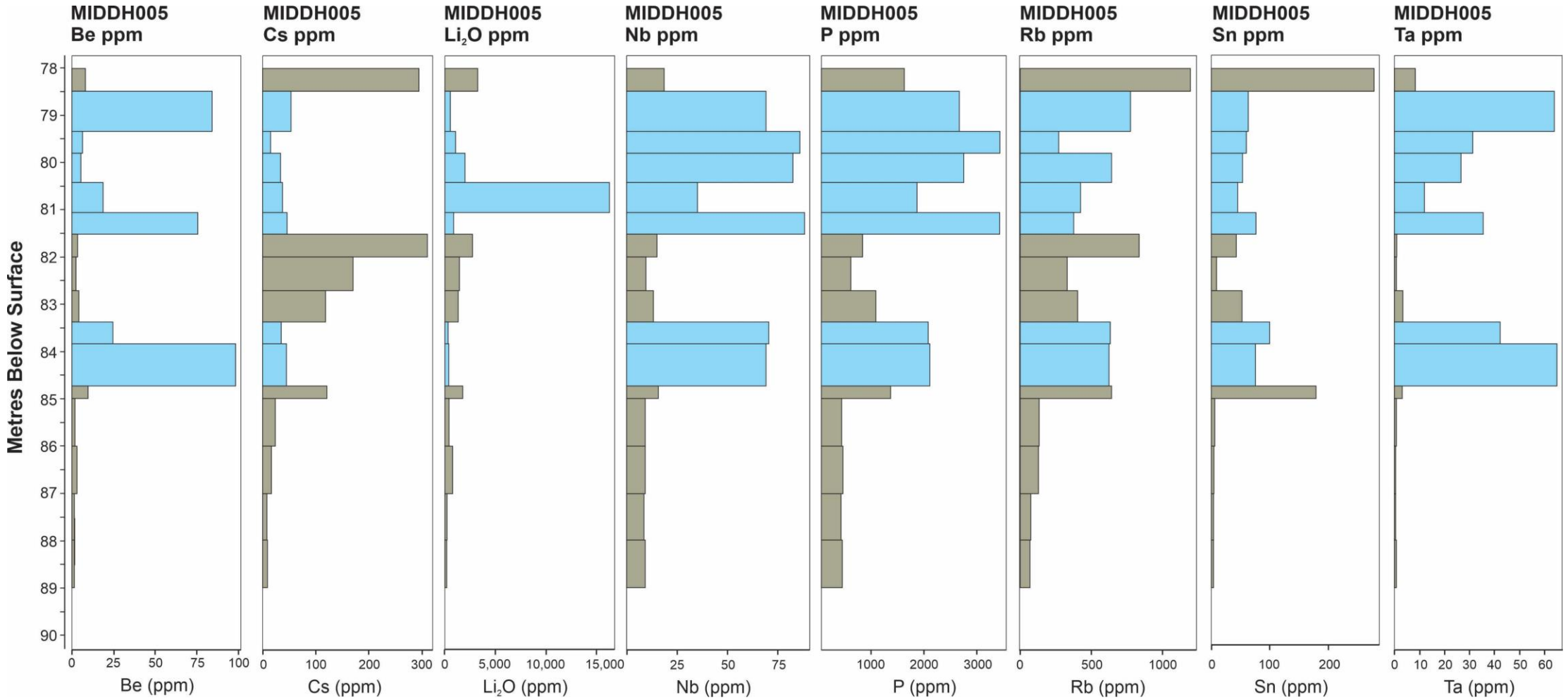
Drill Hole Data – Fergusson's

- Single dyke steeply dipping southwest
- Reactivation of contacts
- Coarse spodumene present
- Solution banding highlighted by secondary phosphates





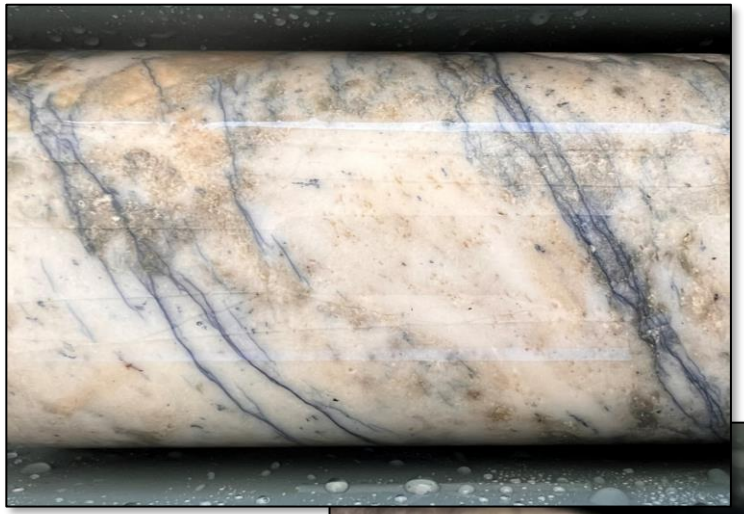
DRILL HOLE DATA – FERGUSSON'S DYKE GEOCHEMISTRY

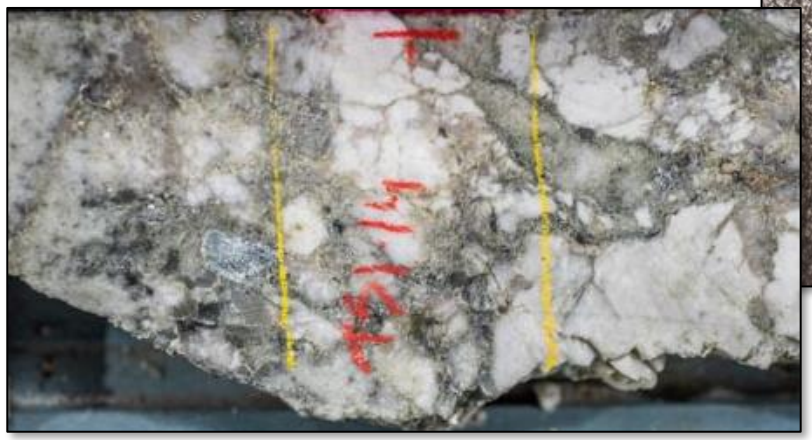


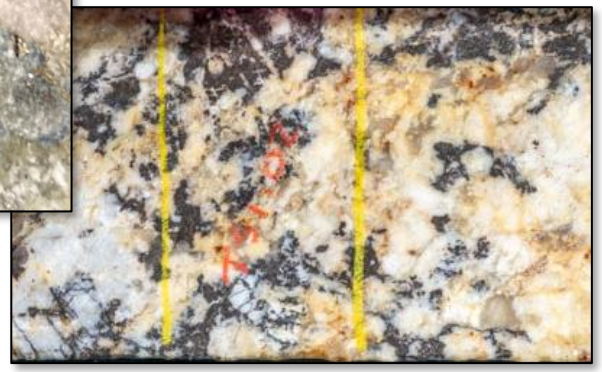
- 0.49m @ 0.17% Li_2O (exomorphic halo)
- 3.01m @ 0.26% Li_2O (pegmatite dyke), *inc*. **0.62m @ 1.63% LiO_2**
- 1.88m @ 0.11% Li_2O (exomorphic halo)

ALTERATION

- Reasonably common eucryptite alteration rims and replacement
- Strong sericite alteration
  - Particularly on contacts
- Despite enriched Li, Cs & Rb, no strong wallrock alteration apparent
- Secondary phosphates present in some core







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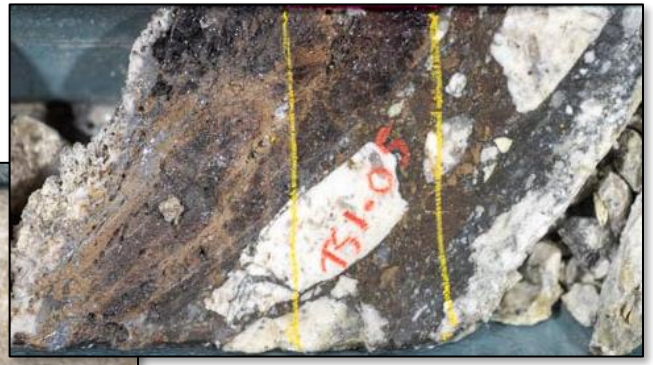
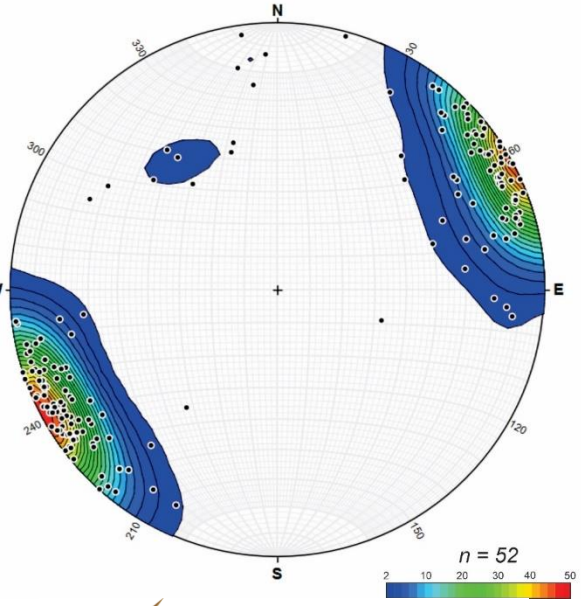
Structural Data – Drilling

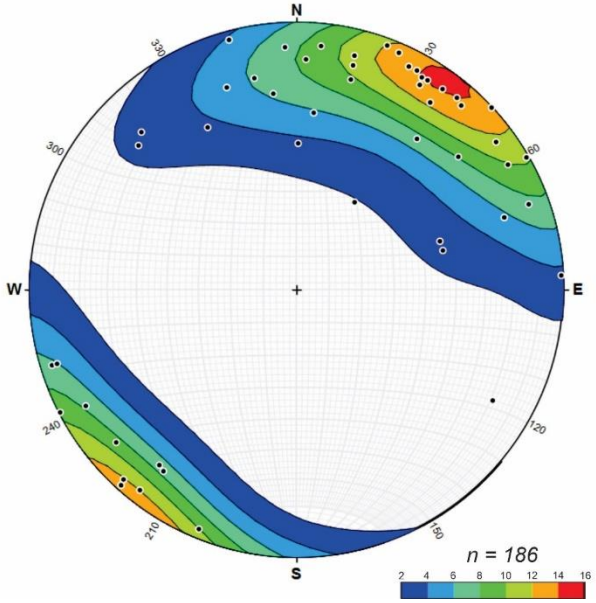
- Data across all holes logged to date
- Consistent with surface mapping



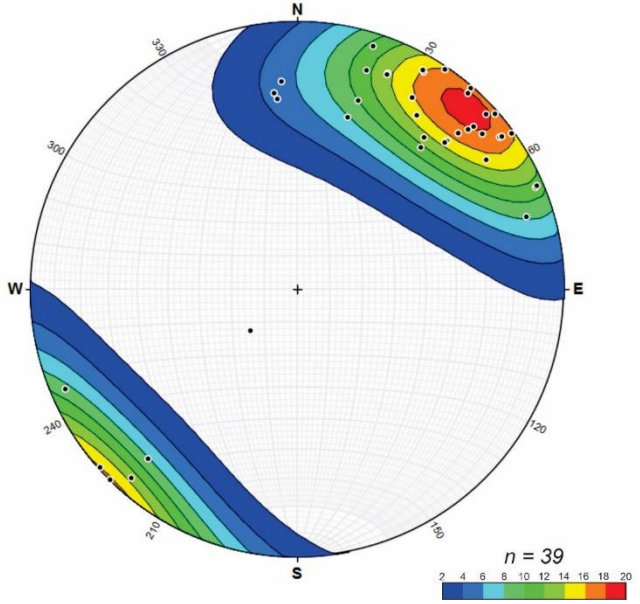
A) *Bedding*



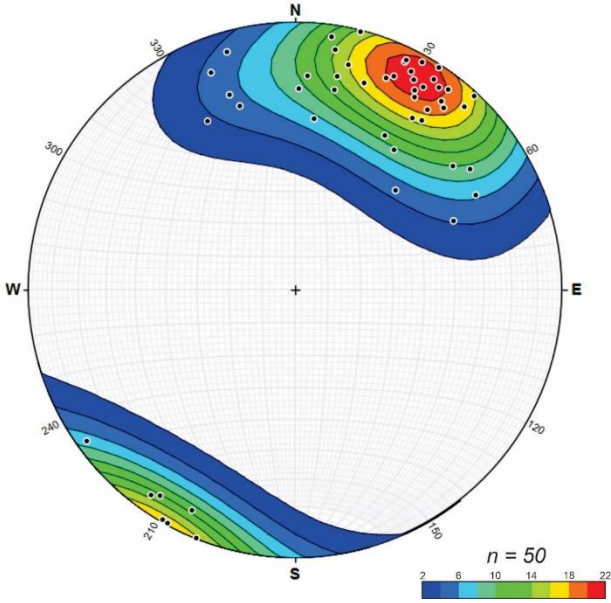
B) *Pegmatite contacts*



C) *Foliation*



D) *Cleavage*



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Summary & Preliminary Insights

- Exomorphic dispersion seems to be a significant characteristic of Li mineralisation
- Lithium grade in pegmatite variable
  - ‘nugget’ effect
  - alteration
- Metamorphic and Hydrothermal alteration variable & requires further consideration
- Good understanding of structural controls
  - Steeply dipping, NW-plunging pods
  - Intruded into shear zone; reactivated structures
  - Multiple deformation events identified

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ACKNOWLEDGEMENTS

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- *Local suppliers*
- *Sociedad Química y Minera (SQM)*
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- *DDH1 Drilling*
- *ALS Laboratories*
- *Geocloud Analytics*
- *Munro Geological Services*

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QUESTIONS?

Mineral Identification

- Back to basics – mineral properties
- UV light instructive in core logging of LCT pegmatites

Natural Light | Mixed UV | Shortwave UV (254 nm) | Longwave UV (365 nm)

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