**I2+3 Mt Isa Eastern Succession Program**

### Project Objectives

- Establish a tectonothermal history for the Eastern Succession including all igneous and metasomatic events.
- Characterise the spectrum of fluid compositions produced by crystallizing magmas and compare/contrast this with ore deposits.
- Develop a preliminary tectonostratigraphic model at the supersequence level, with an emphasis on basin-bounding structures that may have influenced magmatism and fluid transfer.
- Identify, and rank the importance of, all necessary ingredients for the spectrum of IOCG deposits in the district.
- Generate an advanced prospectivity analysis with ranking of targets at different scales.

### Module 1
**Structural Framework**

- Perspective view of magnetic Worms coloured by Wmax values for the northern part of the Mount Isa Inlier. Highest Worms correspond to deepest structures. Y is due North, X due East.

### Module 2
**Key Ingredients: IOCG’s**

- IOC are body, Osborne Mine
  - Mineralised (pyrrhotite rich) ironstone. The ironstone has been overprinted by quartz-magnetite-biotite-pyrrhotite-chalcopyrite.

  The source of fluids responsible for alteration-mineralisation and the role of intrusions is a controversial issue. There are three main models:
  - Magmatic fluids
    - High salinity fluids
    - Albitisation and/or potassic alteration
    - Proximity to coeval magnetite-bearing intrusions
  - Evaporite-derived fluids
    - Sulphide deposition associated with redox and pH variation
    - Fluids from coeval intrusions are not crucial
  - Fluid mixing
    - Fluids from multiple sources (M/ic, magmatic, meteoric fluids)
    - Magmatic sulphur +/- metals
    - Ligand-forming components from evaporite-rich rocks

### Module 3
**Tectonothermal Evolution**

- Major crustal features interpreted from worms in the Cloncurry area

### Module 4
**Tectonostratigraphy**

- Alteration simulation for regional albitisation. Numerical models like this will help us to make links between alteration and mineralising systems

### Module 5
**Numerical modelling**

### Module 6
**Prospectivity analysis**

- Magnetic worms for part of the Isa inlier, with copper deposits (green) and Copper-gold deposits (yellow). Worms may provide a key new element in prospectivity analysis

I2+3 will contribute to a fundamental shift in exploration practice by:

- Utilisation of major new data sets (from wavelet analysis of geophysical data) to understand the three dimensional architecture of the Eastern succession of the Mount Isa Inlier.
- A ground-breaking analysis by fractal geometry of the spatial distribution of known mineralization.
- The first comprehensive prospectivity analysis of the whole of the Eastern Succession.
- Specific predictions about the possibility of blind mineral deposits under cover adjacent to the exposed inlier.