

Mt Isa Inlier Cu Fluids

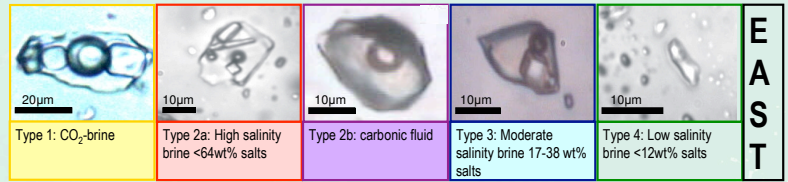


WEST	Type 1: Moderate salinity liquid-vapour brine; Ca-rich	Type 2: low salinity liquid-vapour brine, CO ₂ rich	Type 3: Moderate salinity liquid-vapour brine; Na-rich
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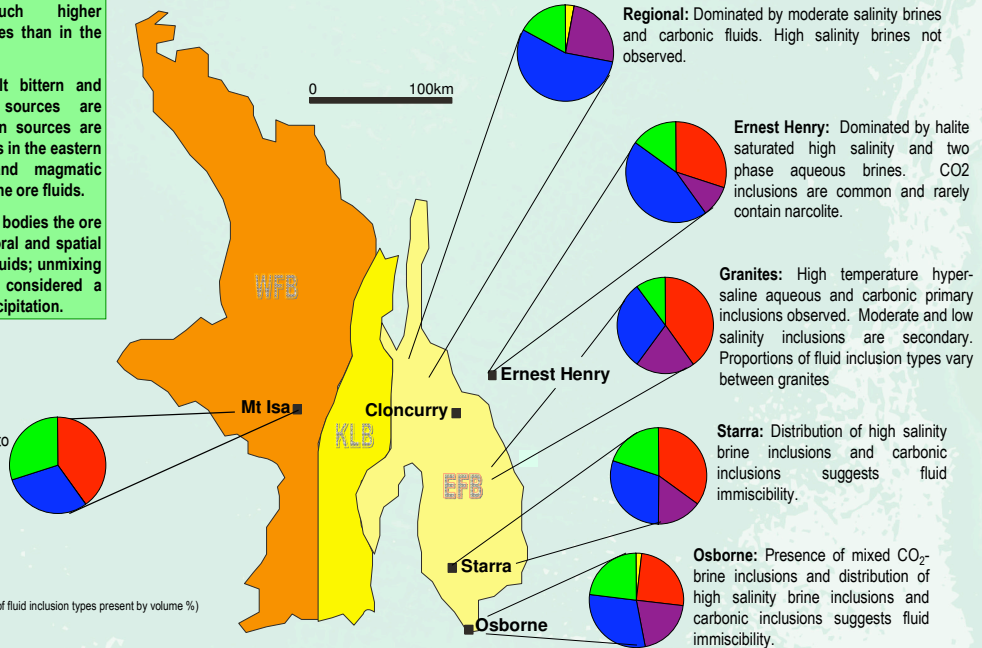
Eastern Fluids vs. Western Fluids

The fluids responsible for deposition of the Mt Isa Copper differ from those linked to IOCG mineralisation in the Eastern fold belt in a number of ways:

1. The fluids in the eastern fold belt Cu deposits reach much higher temperatures and salinities than in the western fold belt
2. In the western fold belt bittern and metamorphic halogen sources are invoked and while bittern sources are identified in regional fluids in the eastern fold belt, evaporitic and magmatic sources are dominant in the ore fluids.
3. In eastern succession ore bodies the ore fluid brines have a temporal and spatial relationship to carbonic fluids; unmixing of a CO₂-brine fluid is considered a potential cause of ore precipitation.



Mt Isa: Dominated by moderate to low salinity fluids.

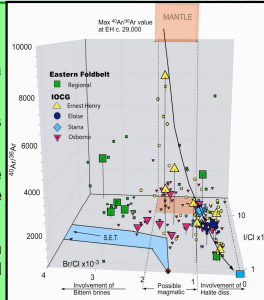


Ore Fluids vs Regional Fluids in the EFB

In a comparison of ore forming fluids with regional fluids in the Eastern fold belt of the Mt Isa Inlier two key observations can be made:

1. Rare CO₂-brine inclusions are found in both environments suggesting this 'parent' fluid was circulating across the region.
2. The high salinity 'type 2a' inclusions which are thought to have formed from phase separation of the parent fluid are not found in regional settings. Their abundance in the IOCG environment suggests they are a critical ingredient in the formation of these deposits.

Halogen and noble gas studies also identify distinctions between regional and ore-system fluids. While ore related fluids plot on a mixing line between halite dissolution waters and magmatic fluids the regional fluids have a bittern brine signature.



Granitic Fluids

The documented fluid inclusion assemblages within granitic intrusions in the eastern fold belt contain the same fluid inclusion types observed in the IOCG deposits, including the high salinity (type 2a) inclusions that are not seen in the regional studies. These inclusions have been found to be rich in Cu.

	Halogen sources	Temperature range	Depth estimate	Salinity (wt% NaCl)
		0 100 200 300 400 500 600...+		0 10 20 30 40 50 60 70+
Mt Isa				
Regional EFB			-	
EFB Granites	?		-	
IOCG's			>7km	

KEY: ■ Bittern ■ Halite Dissolution ■ Crustal/metamorphic ■ Magmatic

predictive mineral discovery
Cooperative Research Centre

A collaboration between the I7, H6 and F6 projects.

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