

METALLOTECTONIC MAPS: THE ECONOMIC POTENTIAL OF TERRANE ANALYSIS

*J. Duncan Keppie
 Nova Scotia Department of Mines and Energy
 P.O. Box 1087
 Halifax, Nova Scotia, B3J 2X1*

Metallogenic and metallotectonic maps attempt to relate mineral deposits to tectonic setting, initially within the framework of geosynclinal theory, but now replaced by plate tectonic theory. These maps are interpretive in contrast to the more factual mineral occurrence and metal province maps. In the same way, a tectonic map illustrates the evolution of the outer part of the Earth through time and is interpretive, whereas geological and

structural maps are more factual. A Tectonic Element is defined as a specific, tectonic environment characterized by a distinct tectono-stratigraphic or tectono-plutonic rock unit. A metallotect is defined as a genetically related group of metals which is cogenetic with a Tectonic Element. Tectonic Elements and Metallotects may be grouped into several Tectonic Stages, e.g.:

STAGE	METALLOTECT	TECTONIC ELEMENT
Stable	stratabound Fe-Mn conglomerate U-Au	in epicontinental basin
Collision	Sn-W-U-F-Mo-Au pegmatitic Nb-Ta	in intracontinental basin in collision plutons in collision plutons

STAGE	METALLOTECT		TECTONIC ELEMENT
Subduction	Au-Zn-Mn veins	in	collision structures
	sandstone U-Cu-V	in	foreland, hinterland and
	stratabound Pb-Zn-Cu	in	intramontane basins
	U-Fe-Th-REE-Sr-Ba	in	alkalic volcanic rift
	alluvial Au-Sn	in	retroarc compressive basin
	Au-Hg-F-Sb volcanics	in	retroarc extensional basin
	P black shale	in	backarc basin
	Cu-Fe-Zn basalts	in	backarc basin
	Cr ultramafics	in	backarc upper mantle
	Besshi-type Cu-Zn	in	backarc basin seamount
	Hg-Au-Te andesites	in	volcanic arc
	Sb-W-Hg basalts	in	volcanic arc
	Fe-apatite rhyolites	in	volcanic arc
	Kuroko-type Zn-Pb-Cu	in	volcanic arc rift
	Cu-Au-Mo porphyry	in	magmatic arc
	placer Au	in	forearc basin
	Hg-Sb-W flysch	in	forearc basin
	Au veins	in	trench complex
Spreading	Mn-Ni-Co nodules	in	oceanic crust layer 1
	Cu-Fe-Zn basalts	in	ocean crust layer 2
	Cu-Ti gabbro	in	ocean crust layer 3
	Ni-Cr-Pt ultramafics	in	upper mantle
	Cyprus-type Cu-Fe-Zn	in	ocean transform
	placer Ti-Zr	in	continental shelf
	Pb-Zn carbonates	in	continental shelf
	banded iron formation	in	continental shelf
Rift	Cu-U-REE carbonatite	in	within-plate pluton
	alkaline U-Sn-Nb	in	within-plate pluton
	sandstone U	in	rift valley
	Sullivan Ag-Pb-Zn	in	rift valley