

Gold in Ophiolites

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Ophiolites, as a class, have been currently under-estimated as potential gold targets, although they have been the subject of major scientific research. Their resources have also attracted investors producing Cr, Cu (massive sulphides), Co, Ni (laterites), industrial rocks and minerals (serpentinites, emeralds), etc. They are also potential PGE sources.

Gold is won from gossan (Oman: 603 kg, 2002) or as by-product of Cu in ophiolites, but these are not usually mentioned as important gold exploration targets. This may be partly due to the scarce information available about gold production in ophiolites, but also to their difficult geology and recognition. Nevertheless, an analysis of their actual potential as gold metallotects and of data available in the literature, both for obducted ophiolites and for their present seafloor analogues, shows that they may contain important gold resources.

The gold potential of ophiolites relates to their various lithologies and to the successive stages of their complex history, including the primeval sub-sea stage, the obduction / orogenic stages, in which the ophiolite is accreted to the continent, and the supergene or post-exhumation stage (TABLE 1). *Primordial* concentrations form prior to the obduction of the ophiolite, and include well known VMS deposits (Cyprus, Cu-Zn or mafic type, usually Au bearing), and also potential magmatic concentrations (usually related to sulfides in ultramafites or gabbros), as well as possible concentrations related to recently defined sub-sea processes (types 1.3, 1.4). *Exotic* concentrations form by processes occurring as or after the ophiolite is stacked onto the continental crust, usually in a cordilleran or collisional belt environment: the metamorphic (listwaenites, birbirites), orogenic, and epithermal types are presently productive. *Supergene* processes can produce gold-rich gossan bodies, as well as laterite and placer concentrations.

Group:	1.- Primordial concentrations	2.- Exotic concentrations	3.- Supergene concentrations
Stage:	Sub-oceanic (ocean-floor or intra-lithospheric), pre-obduction	Continental (formed in the continental crust), sin-post obduction	Supergene (due to weathering / erosion after unroofing of the belt)
Types:	1.1.- Magmatic	2.1.- Metamorphic*	3.1.- Ox. Zone / gossan*
	1.2.- In VMS deps./ Stw.*	2.2.- Orogenic*	3.2.- Lateritic
	1.3.- Porphyry related	2.3.- Intrusion related	3.3.- Detrital
	1.4.- Epithermal	2.4.- Epithermal *	
	1.5.- Other	2.5.- Other	
Explanation:	(*) Presently active mines known (Cyprus, Turkey, Russia, Morocco, Canada, USA, Oman, a.o.). VMS = Volcanogenic Massive Sulphide Deposits. Stw = Stockwork or feeder zone to VMS dep.		