Magmatic and Metallogenic Belts in the Central Andes: Implications for Mineral Exploration

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The Historic and Holocene volcanoes of the Central Volcanic Zone form a belt that is about 1,500 kms long and 50 kms wide. It is followed to the N and S by non-volcanic zones. There are three Holocene volcanoes 125-225 kms E of the main volcanic belt.
The present non-volcanic zones formed mostly during the past 5 m.y. During the past 570 m.y. there were generally two distinct parallel magmatic-hydrothermal belts, separated 125-400 kms. Both had non-magmatic stretches during some time intervals. Historic and Holocene volcanism suggests that magmatic activity may have alternated between these belts over periods of less than 10,000 years.
South of 18°S the magmatic belts moved mainly from E to W between 570 and 115 m.y., and from W to E thereafter. North of 18°S these belts moved mainly from W to E during the past 570 m.y., but there were temporary reversals of these trends.
A vast majority of the igneous rock types occurs in both magmatic belts, but in different proportions.
The Central Andes had a single mega-metallogenic epoch (Cembrian to Present) with two mega-metallogenic provinces corresponding to the two magmatic belts. Each mega-metallogenic province consists of sub-provinces defined by major ore-forming environments. Ore deposits are more common where the magmatic belts resided most of the time.