Introduction
La Bodega and La Mascota deposits (inferred resources in 2010 of 3.47 Moz Au, 19.2 Moz Ag and 84.4 Mlbs Cu at 2 g/t Au cut off) are located in the California-Vetas Mining District, in the Northern Andes of Colombia. Mineralization exhibits NE-trending, NW-dipping structural control associated with the right lateral strike-slip La Baja fault. Mineralization at La Bodega is composed of vein networks and tectonic-hydrothermal breccias while at La Mascota is largely contained in hydrothermal breccias. Mineralization is hosted in Proterozoic rocks from the Bucaramanga (gneiss) Complex and Triassic-Jurassic granites from the Santander Plutonic Group.

Hydrothermal alteration and mineralization
Alteration and mineralization at La Bodega-La Mascota is structurally and lithologically controlled and occurs in six different stages. Early stages are of porphyry style mineralization and alteration and late stages of high-sulfidation epithermal style.

Porphyry style alteration and mineralization
Stage 1 is characterized by propylitic alteration: with epidote (epi), chlorite (cli), carbonate (cb), specularite veins (sp), minor pyrite (pyr) and chalcopyrite (cpy). Stage 1 is probably associated with porphyry style molybdenite veins at El Cuatro Re/Os dated at ~10.14 Ma (Bissig et al., 2012).

Stage 2 is characterized by phyllic alteration (muscovite-sericite - illite, quartz, pyrite) associated with quartz+pyrite veins. According to 40Ar/39Ar geochronology on muscovite Stage 2 took place ~3.4 Ma.

High-sulfidation epithermal alteration and mineralization
Advanced argillic alteration: Alunite-quartz alteration, silicification, quartz cement in hydrothermal breccias. According to 40Ar/39Ar geochronology on alunite and based on vein/breccia cross-cutting relationships, the epithermal phase took place in four stages between ~2.6 and ~1.3 Ma.

Paragenetic Sequence of La Bodega-La Mascota deposit
Gold-silver mineralization took place mostly in stages 2 through 5 (red box) associated with sulfides. Gold occurs as electrum, native gold and tellurides. Silver occurs as electrum silver and sulfosalts. Pyrite is common in all stages. Hydrothermal events were followed by near surface supergene alteration and fault reactivation.

Fluid Inclusions and Microthermometry
At La Mascota, stages 4-5 zoned quartz primary fluid inclusions assemblages indicate boiling with homogenization temperatures of ~143-238°C and salinities of 0.5-5.6 wt% NaCl eqv.

Stable Isotopes: nature and origin of the mineralizing fluids
Based on δ18O and δD data, alunite was precipitated from magmatic fluids. Pyrite δ34S signatures range from -16.5% to 11.3% at La Mascota and -8.3% to -6.1% at La Bodega.

Conclusions
Alteration and mineralization took place episodically in distinct hydrothermal pulses over 8-9 Ma from the Late Miocene to the Pleistocene. Pleistocene-Pleistocene epithermal high-sulfidation alteration/mineralization cross-cuts and superimposes on porphyry style alteration/mineralization and it was deposited from fluids of magmatic origin undergoing boiling/cooling.

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