

Mineral deposits

- **Magmatic ore deposits**
- **Hydrothermal ore deposits**
- **Metamorphic ore deposits**
- **Sedimentary ore deposits**
- **Residual ore deposits**

Mineral deposits

- **Magmatic ore deposits**
- **Hydrothermal ore deposits**

1. Porphyry copper deposits

Cu (50-60%), Mo (95%), Au (10%), Ag, and Sn

They are large, low-grade ore bodies of copper, molybdenum, gold, and silver, formed from hydrothermal fluids originating from a deep magma chamber. These fluids move through fractures in the surrounding rock, depositing minerals and creating a stockwork of veins and disseminations. They are a primary source of global copper, often found along convergent plate margins, and their large scale allows for low-cost mining.

Mineral deposits

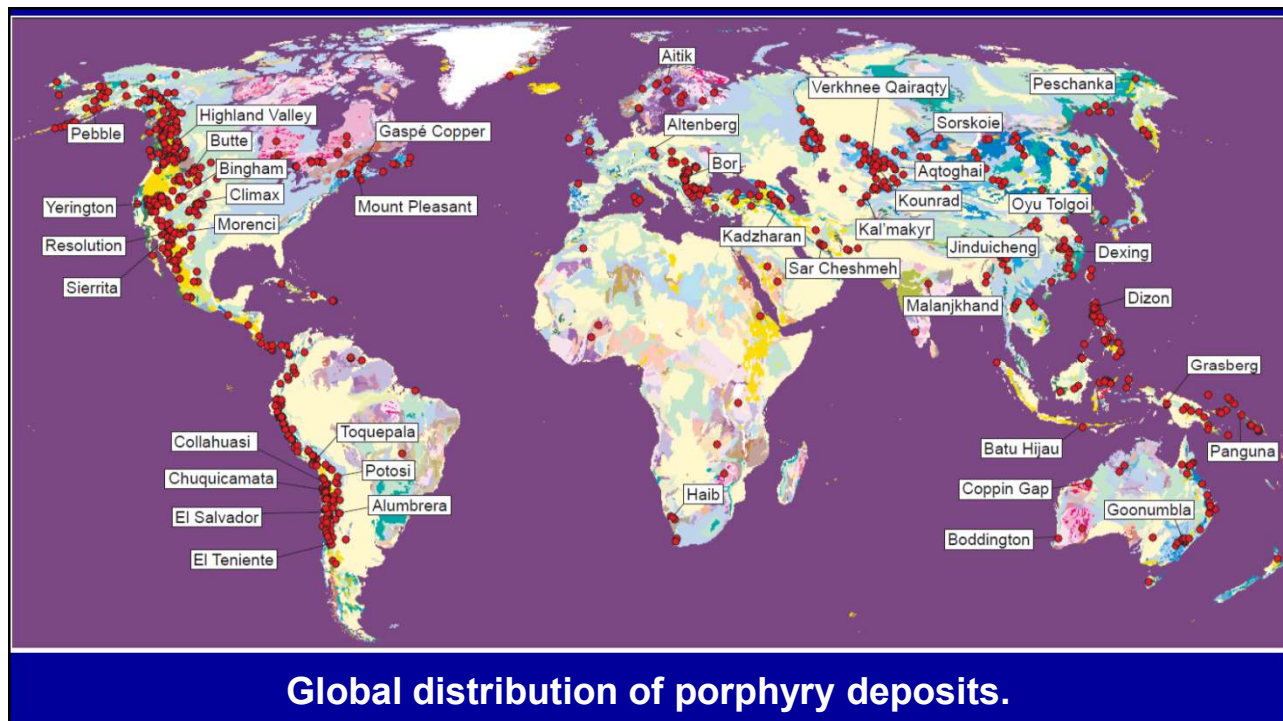
- Magmatic ore deposits
- Hydrothermal ore deposits

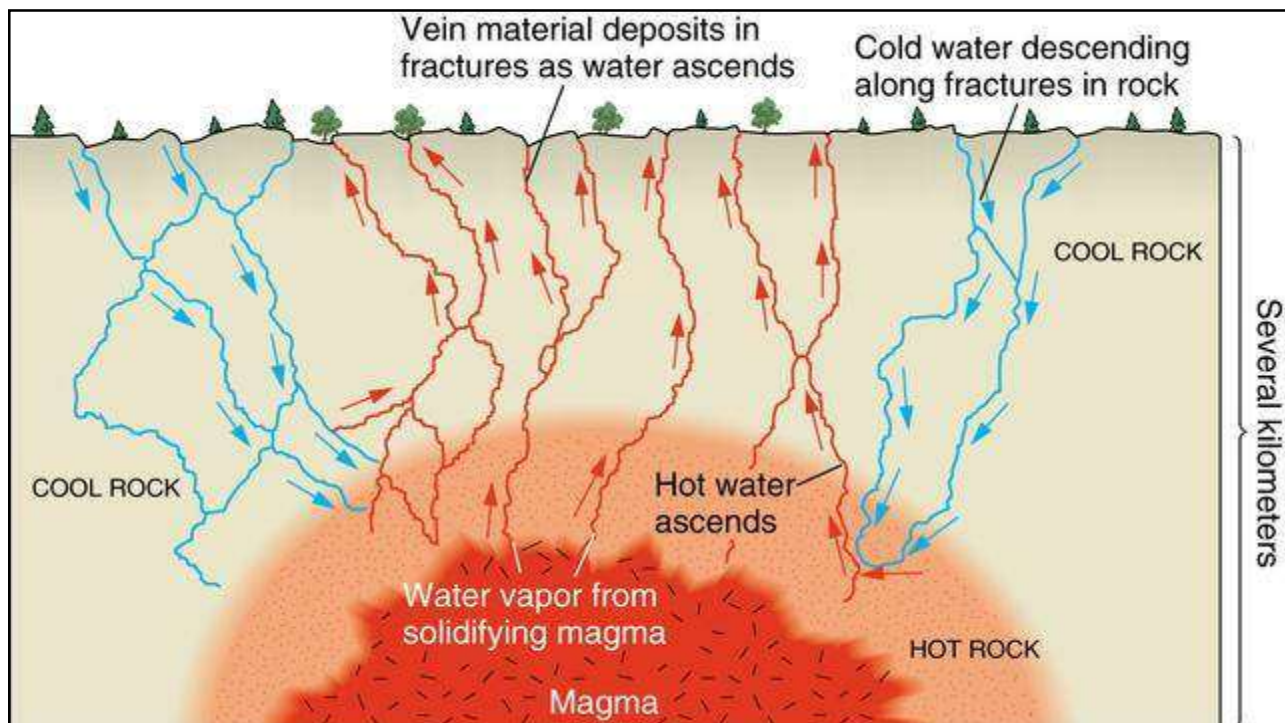
1. Porphyry copper deposits

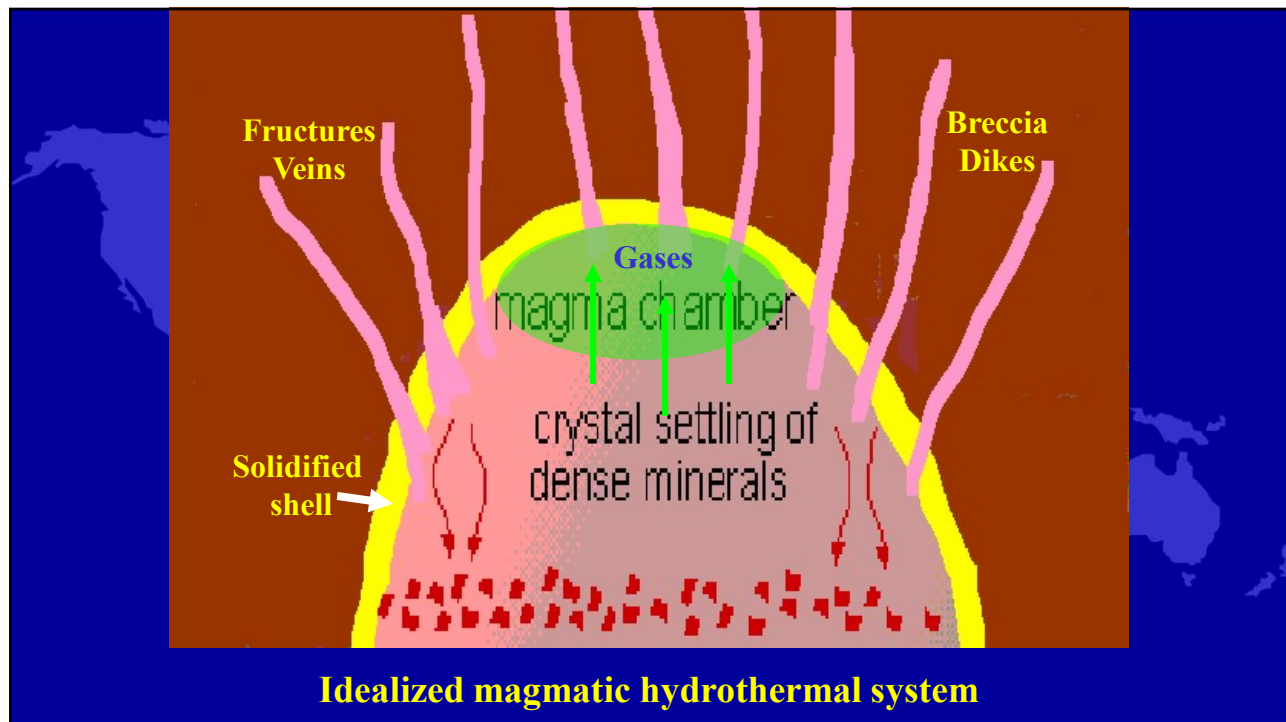
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2. Epithermal deposits

Base metals (Cu, Pb, and Zn), Au, Te, Ag, F, U, Li, Be, Sn, Hg (Cinnabar HgS), W



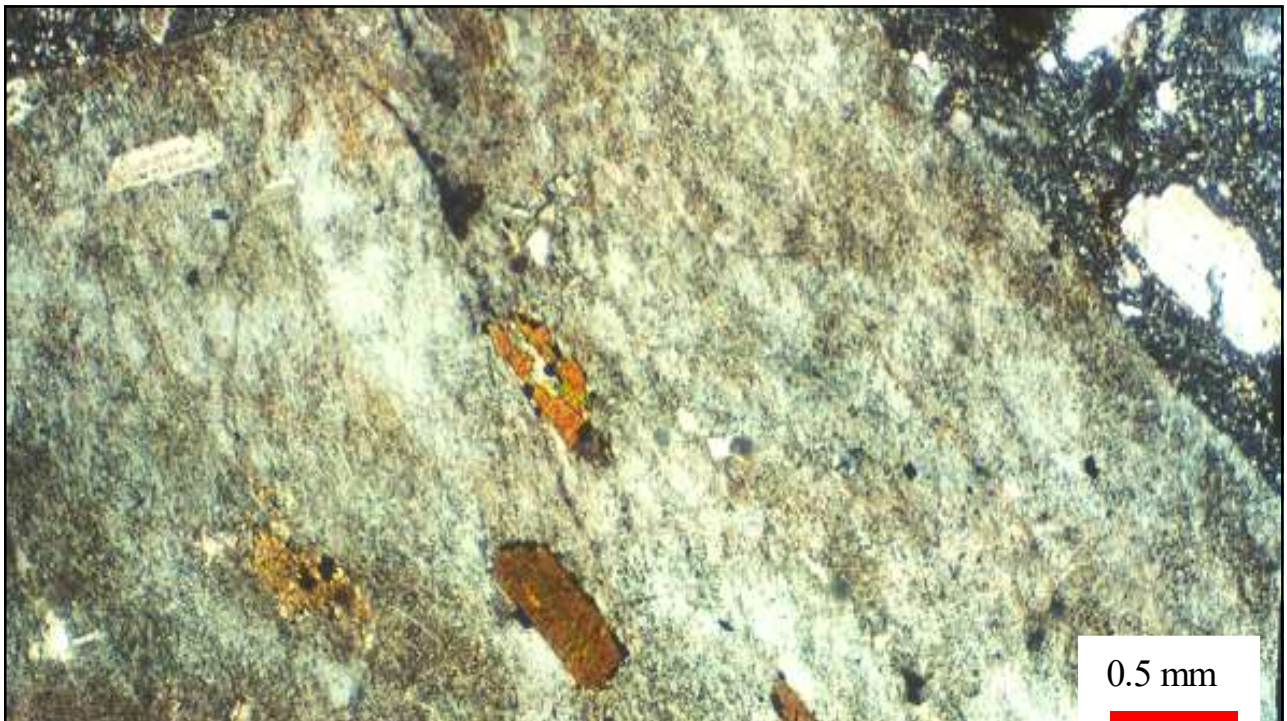




Hydrothermal Alteration

- Pervasive
- Selectively pervasive
 - Biotite → chlorite
 - mica → sericite
 - plagioclase → clay
- Non-pervasive



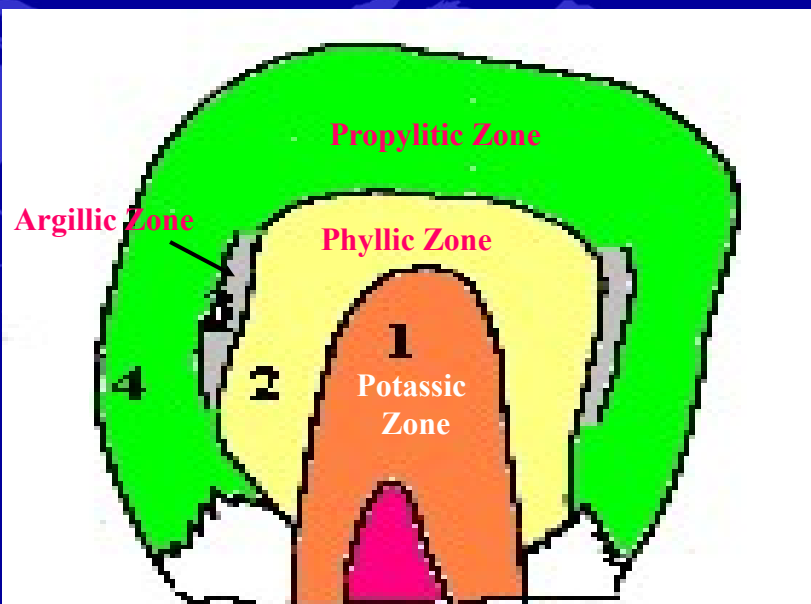


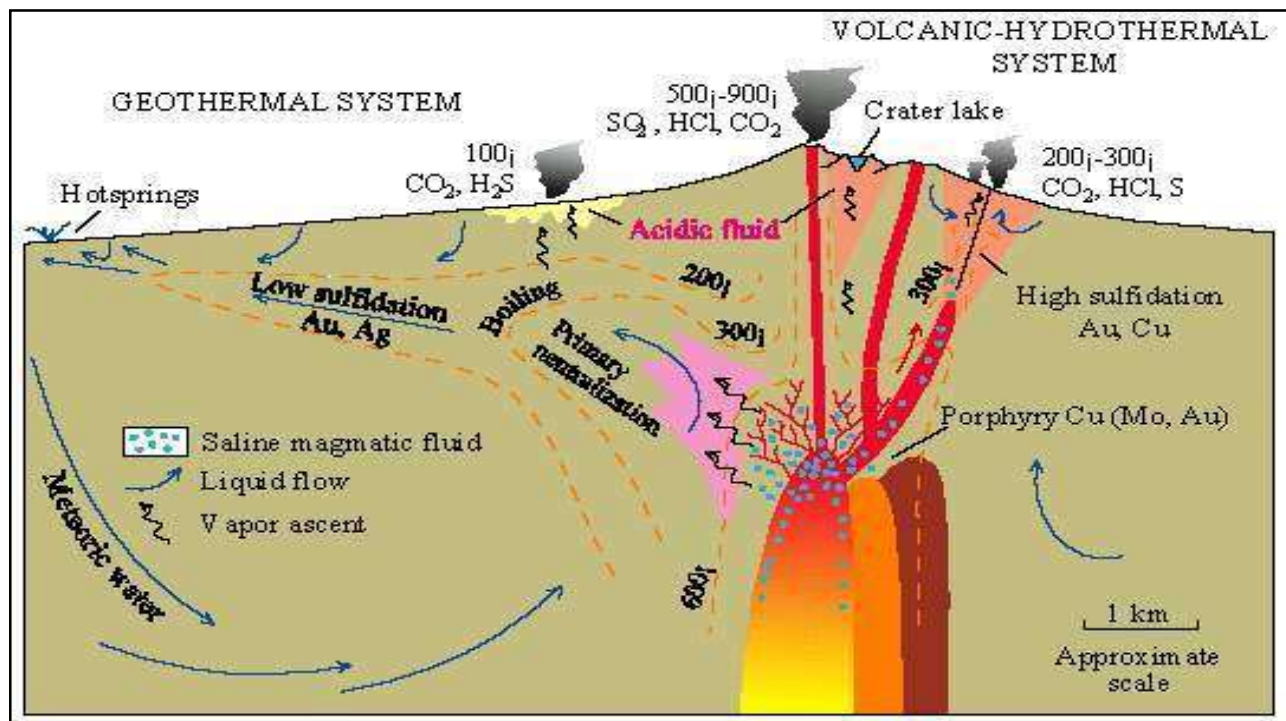
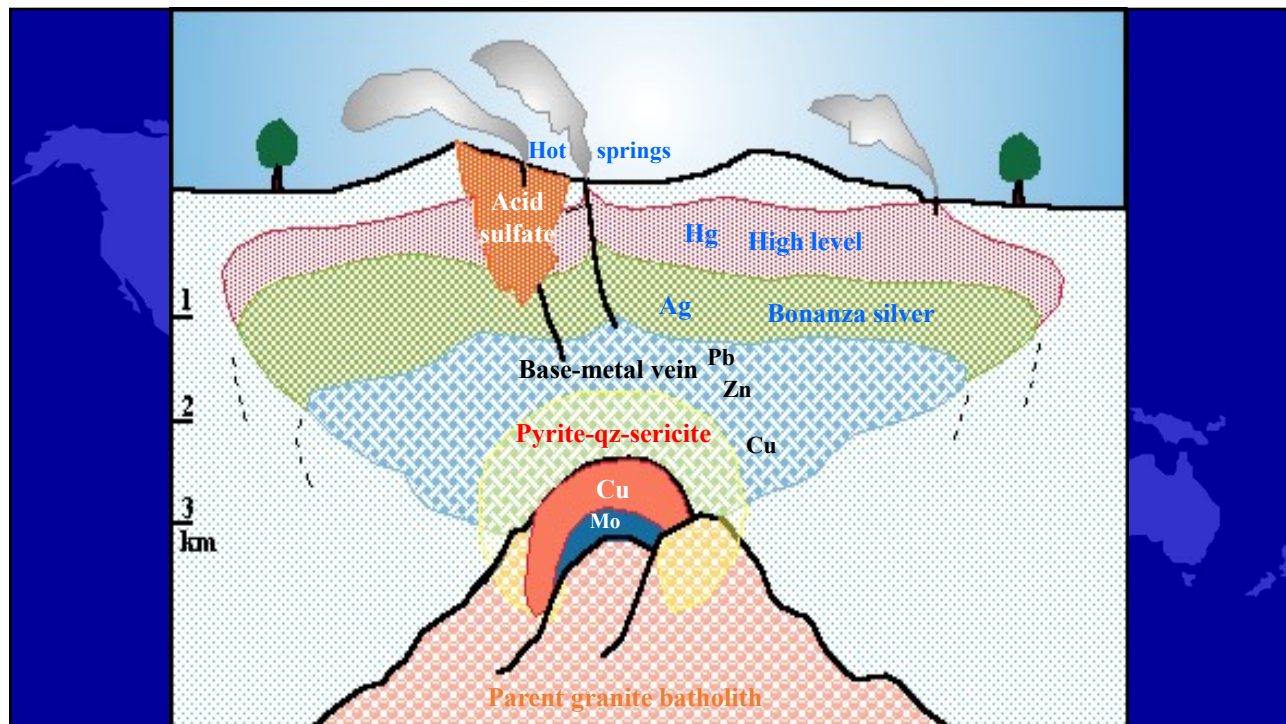
Types of Alteration

- Propylitic Zone
- Argillic Zone
- Phyllic Zone
- Potassic Zone



Hydrothermal Alteration Zones





Types of epithermal deposits

1. Low sulfidation (LS)

mixtures (rain + magma water)

2. High sulfidation (HS)

mainly magmatic water + SO_2





