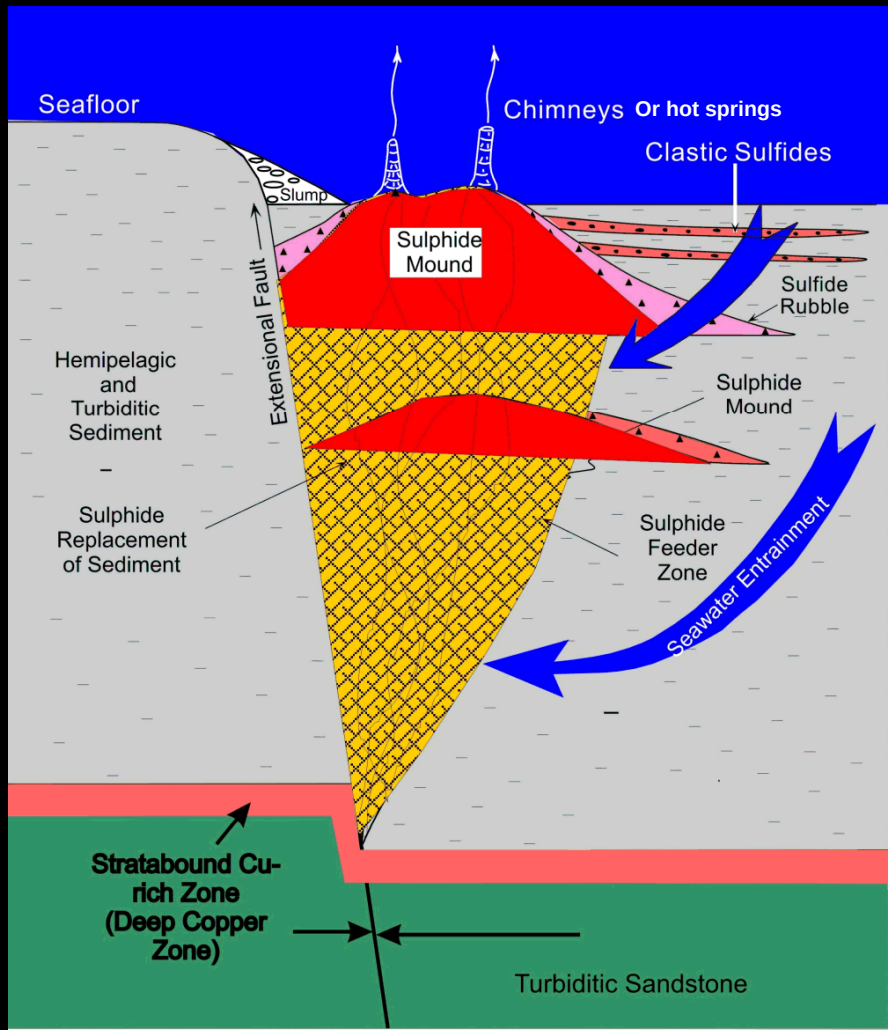
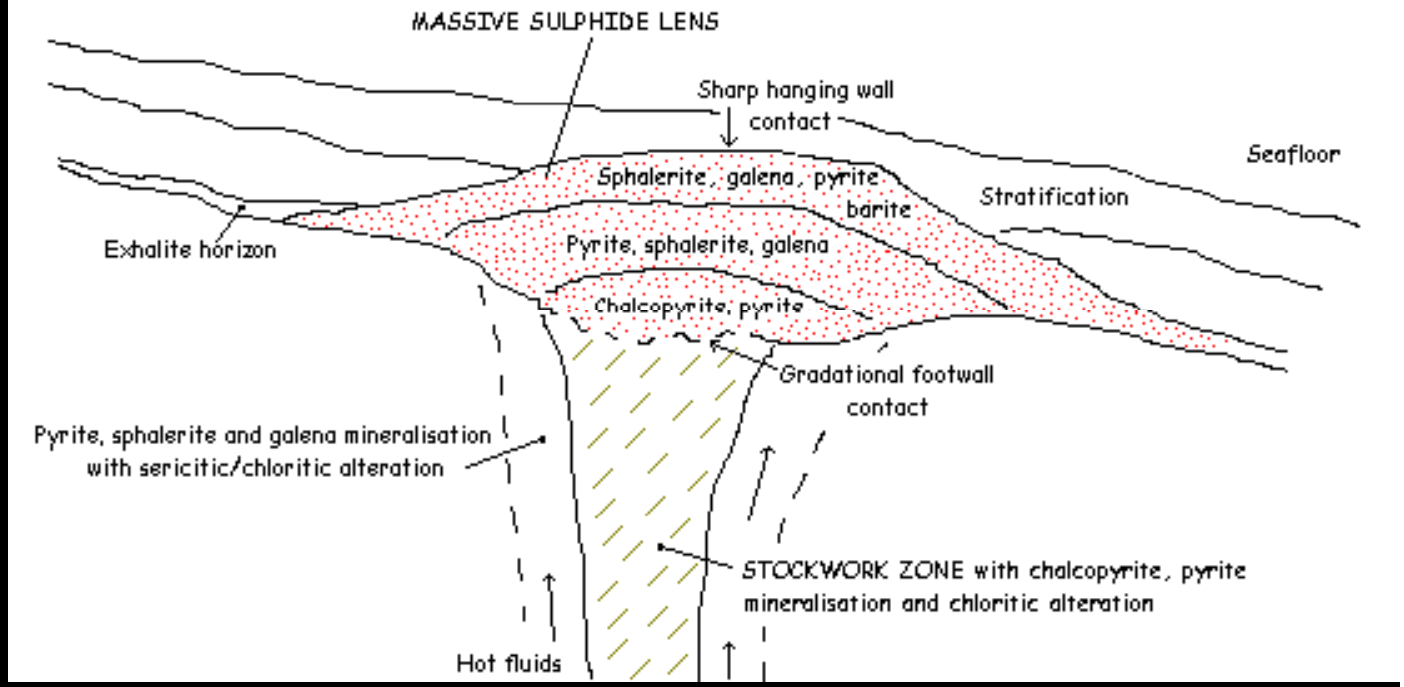
Volcanogenic Massive Sulfide Deposits (VMS)

- Volcanogenic massive sulfide ore deposits (VMS) are a type of Cu-Zn ore deposit associated with hydrothermal events. They are predominantly stratiform accumulations of sulfide minerals that precipitate from hydrothermal fluids in a wide range of ancient and modern geological settings (especially the seafloor but also land-based volcanics).
- VMS represent a significant source of the world's Cu, Zn, Pb, Au, and Ag ores, with Co, Sn, Ba, S, Se, Mn, Cd, In, Bi, Te, Ga and Ge as co- or by-products.
- VMS deposits consists of over 90% iron sulfide!
- Pyrite, Chalcopyrite, Galena, Sphalerite, Barite

Simplified MVS Deposit- Bent Hill



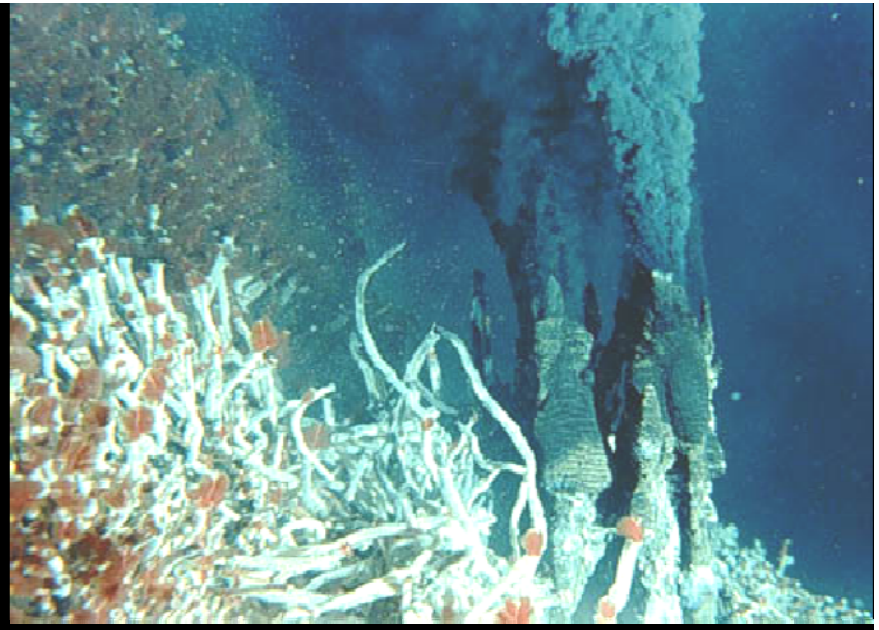
VMS



- Most VMS deposits show metal zonation, caused by the changing physical and chemical environments of the circulating hydrothermal fluid. Ideally, this forms a core of massive pyrite and chalcopyrite around the throat of the vent system, with a halo of chalcopyrite-sphalerite-pyrite grading into a distal sphalerite-galena and galena-manganese and finally a chert-managanese-hematite facies.

VMS Today

- VMS deposits are forming today on the seafloor around undersea volcanoes along many mid ocean ridges, and within back-arc basins and forearc rifts (regions of extension and crustal thinning).



Black Smoker

White Island, New Zealand