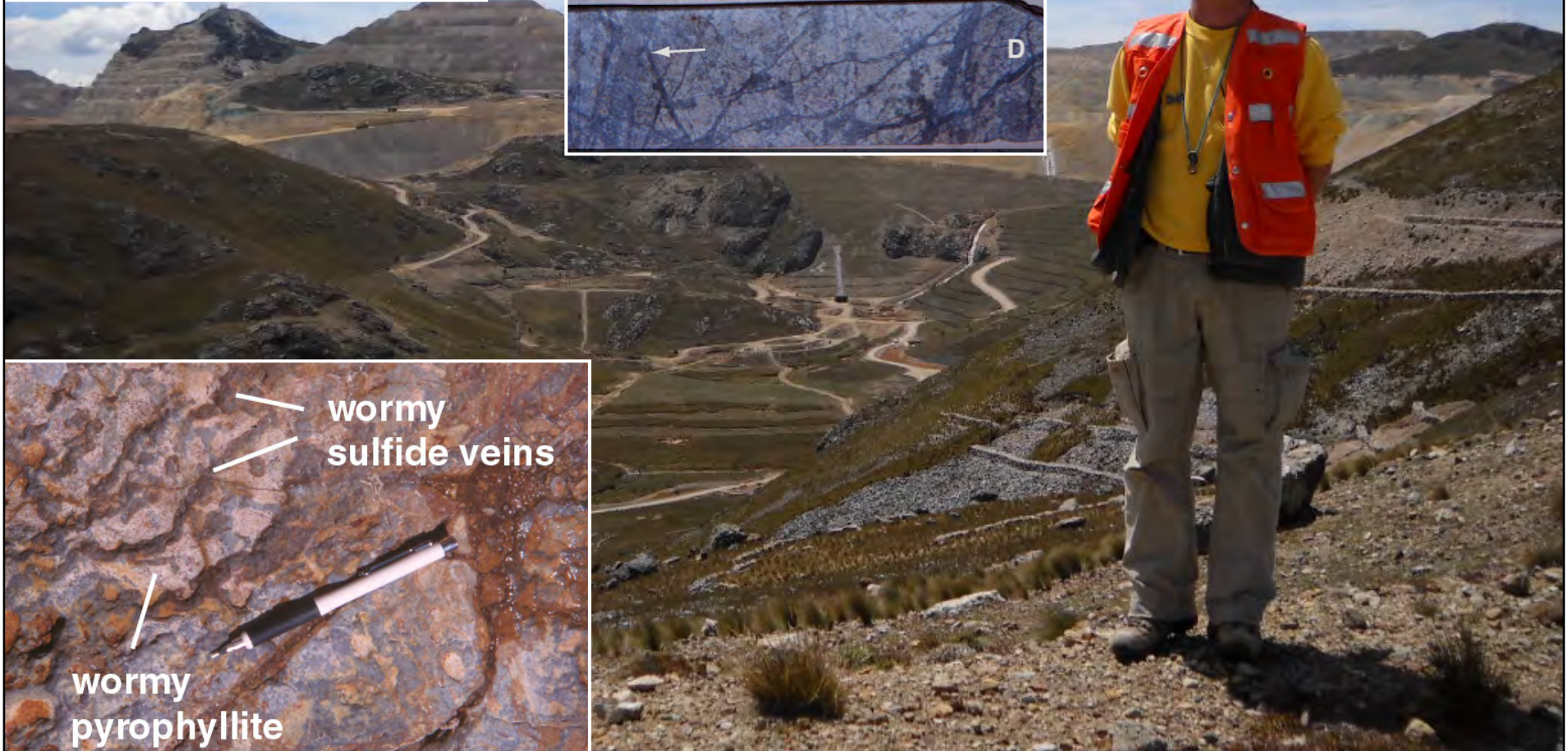
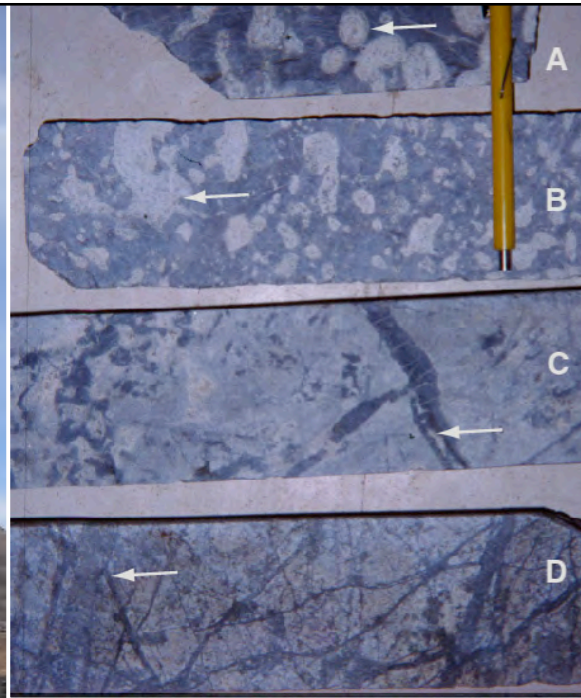
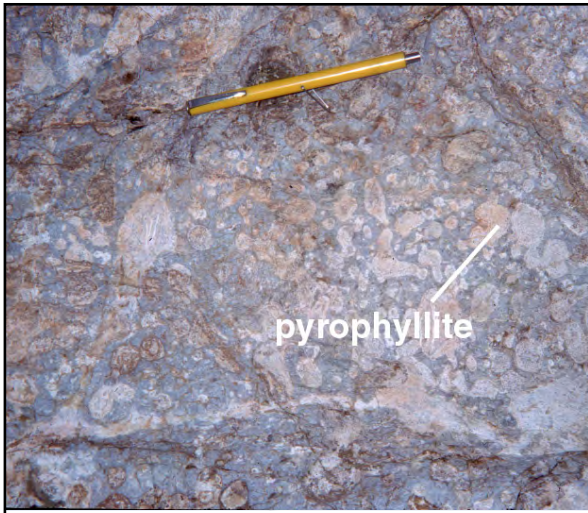


**Yanacocha district,  
Kupfertal valley:  
High-sulfidation and  
porphyry deposits !  
~10-11 Ma**





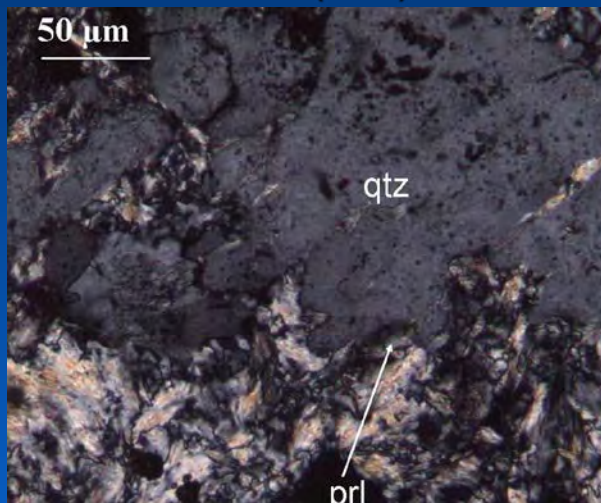
## Two origins (environments) of hypogene *pyrophyllite*:

### 1) Vapor condensation

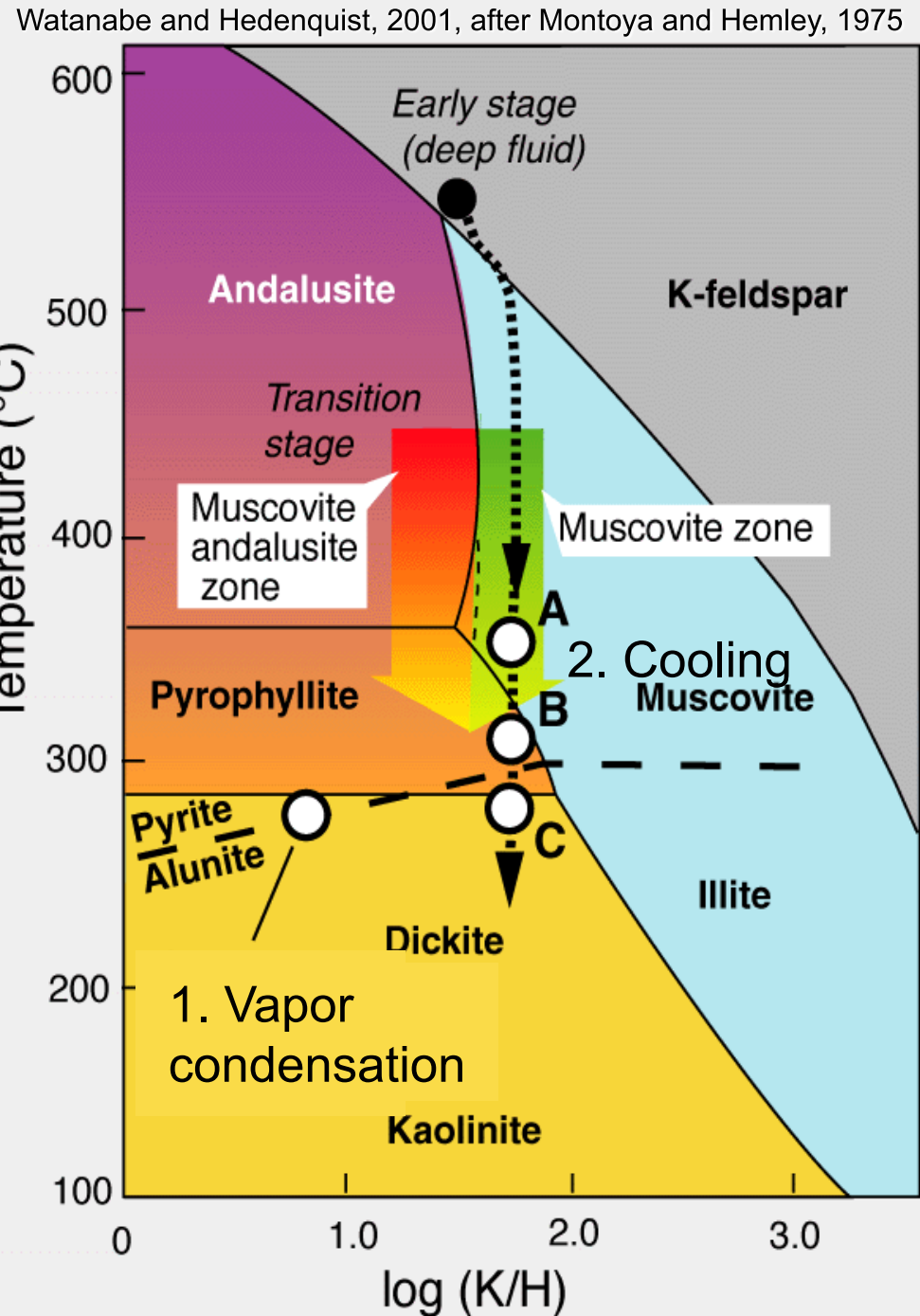
Lithocap environment (roots)  
Silicic (vuggy), alunite halo,  
hotter pyrophyllite (below)

### 2) Simple fluid cooling

Cooling: muscovite (A) to  
pyrophyllite (B) (gusano  
replacement of silicic) to  
dickite (C)

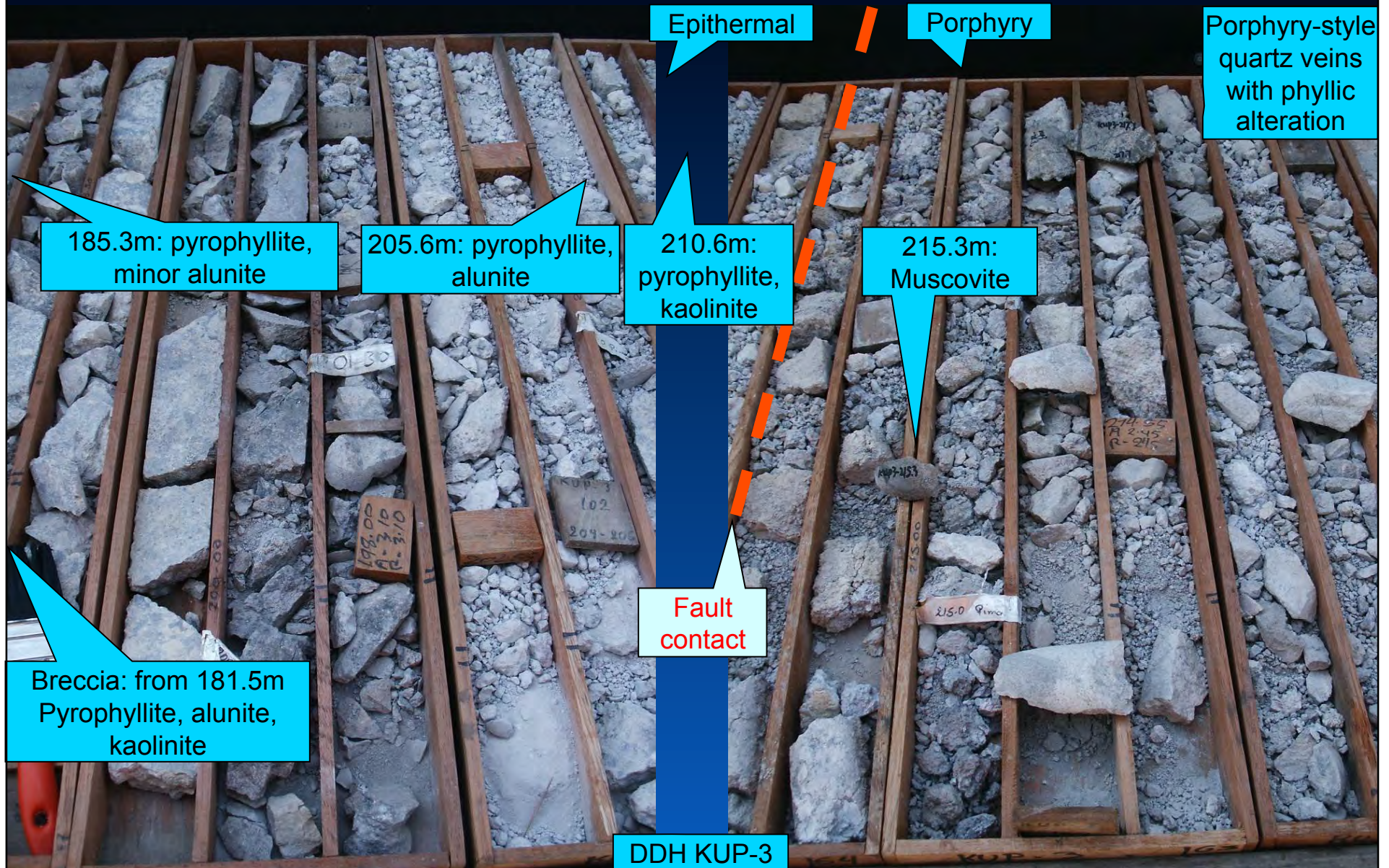


Milagros:  
Garcia,  
2009





# Fault contact between epithermal and porphyry alteration at Kupfertal





# Milagros porphyry prospect, Alto Chicama, Peru

