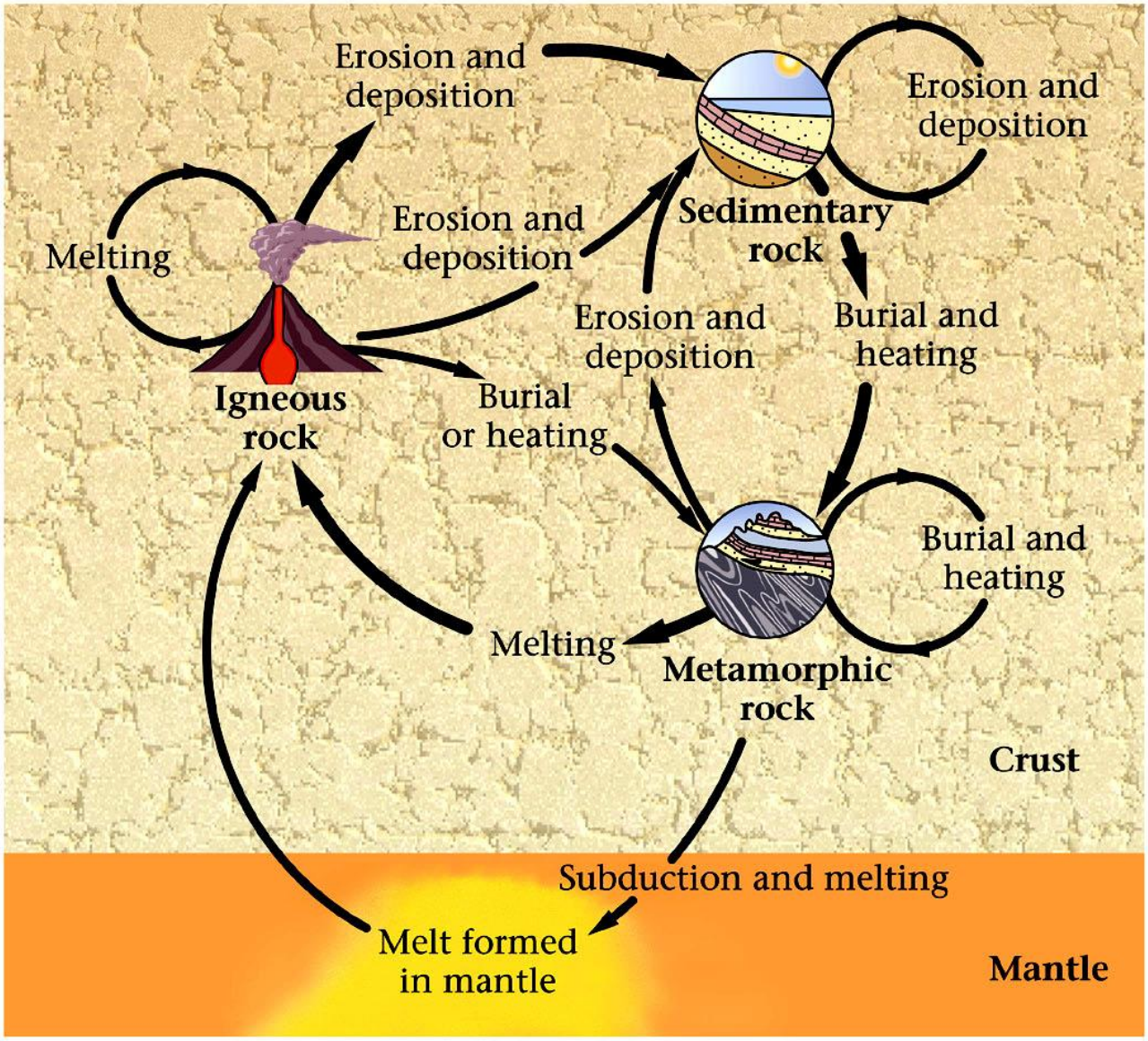
The Rock Cycle

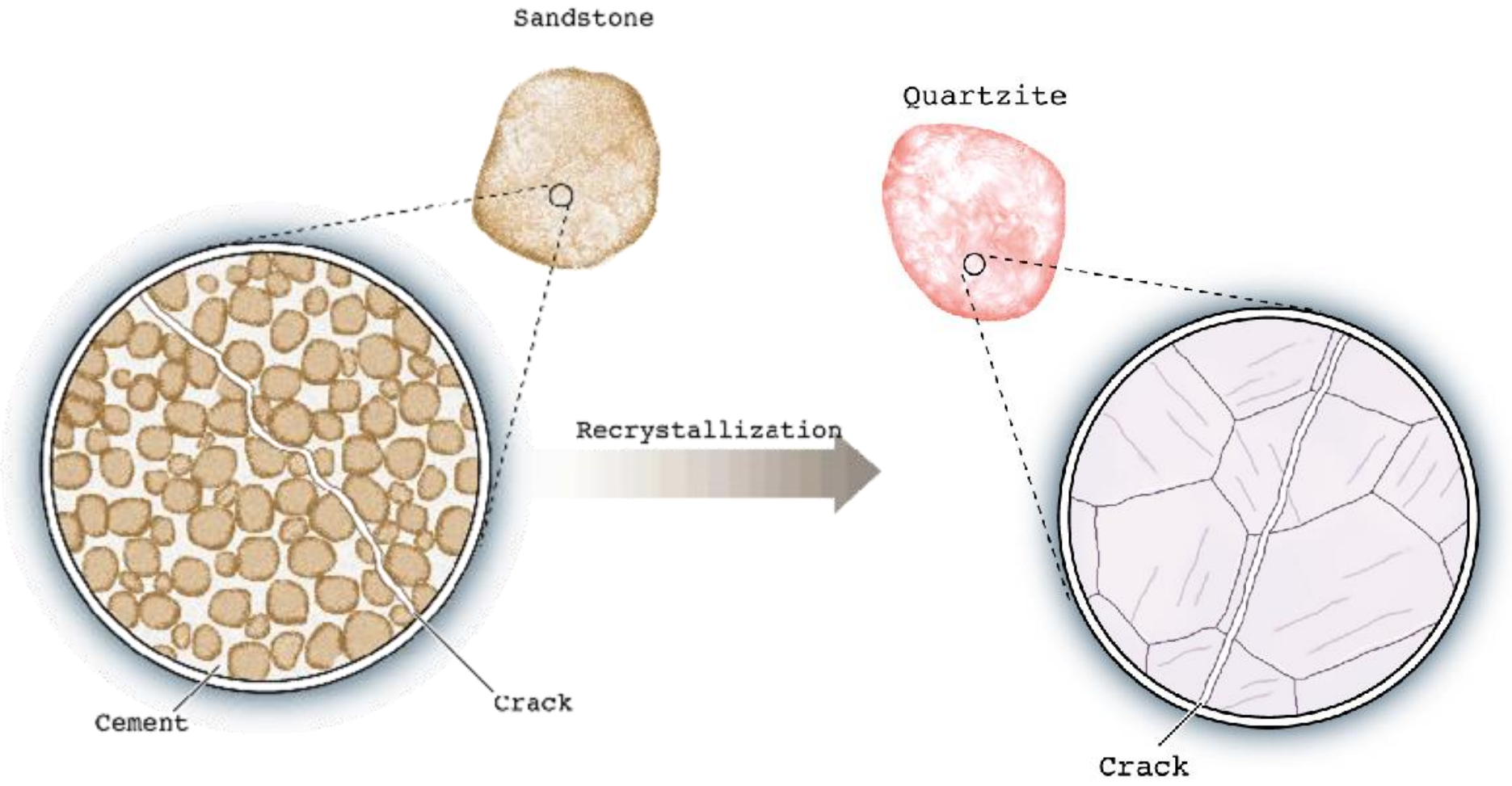


Metamorphosed Sedimentary Rock

Formation of new minerals

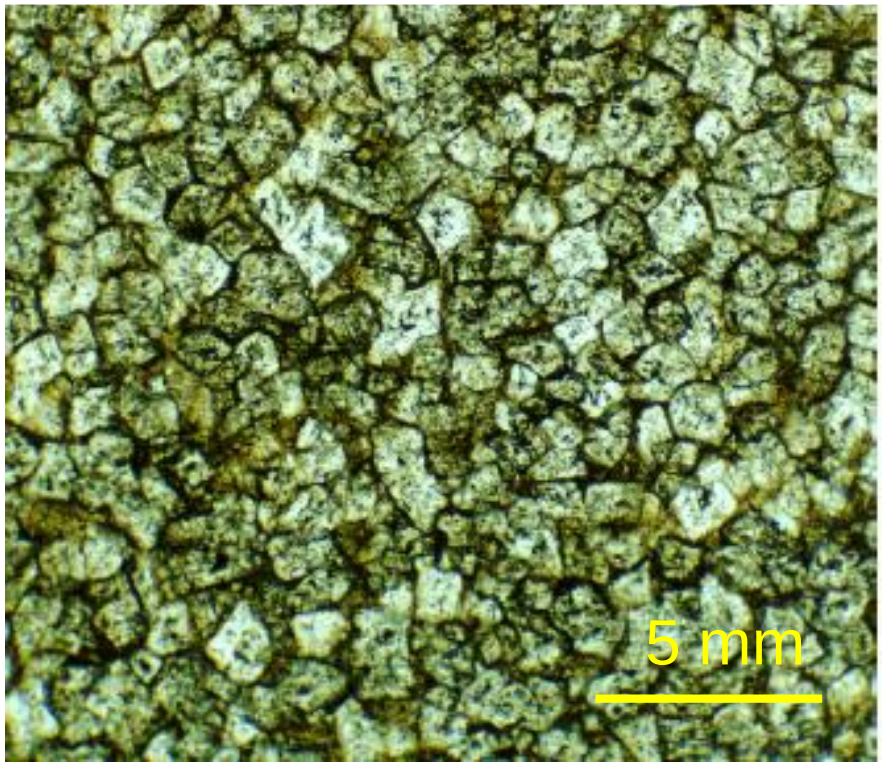
Recrystallization/deformation

Recrystallization

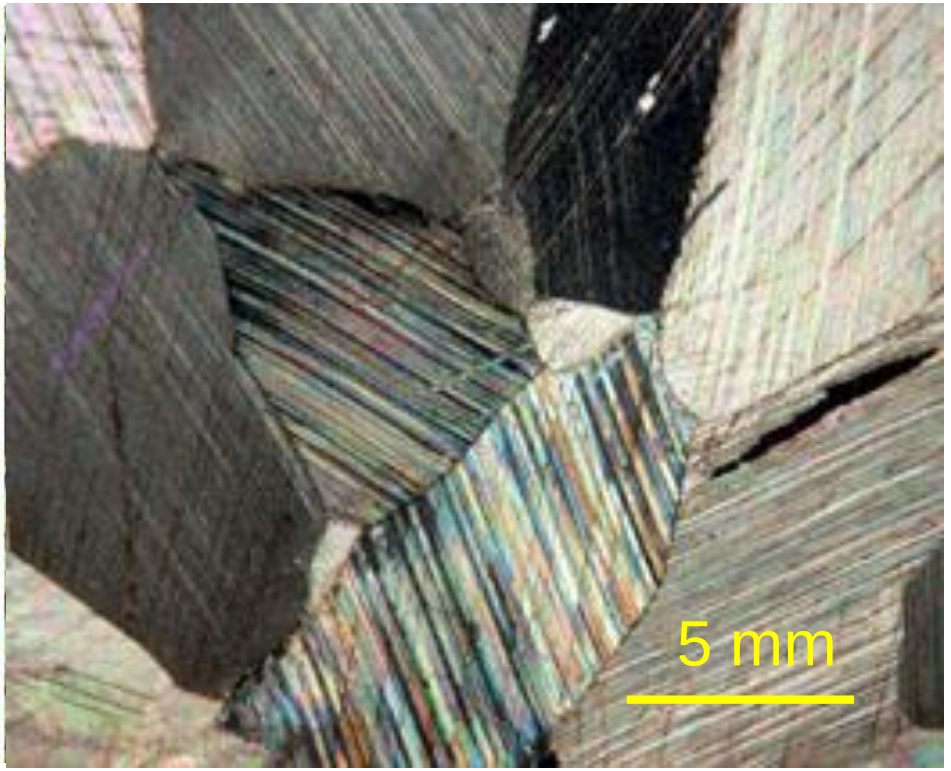


Recrystallization

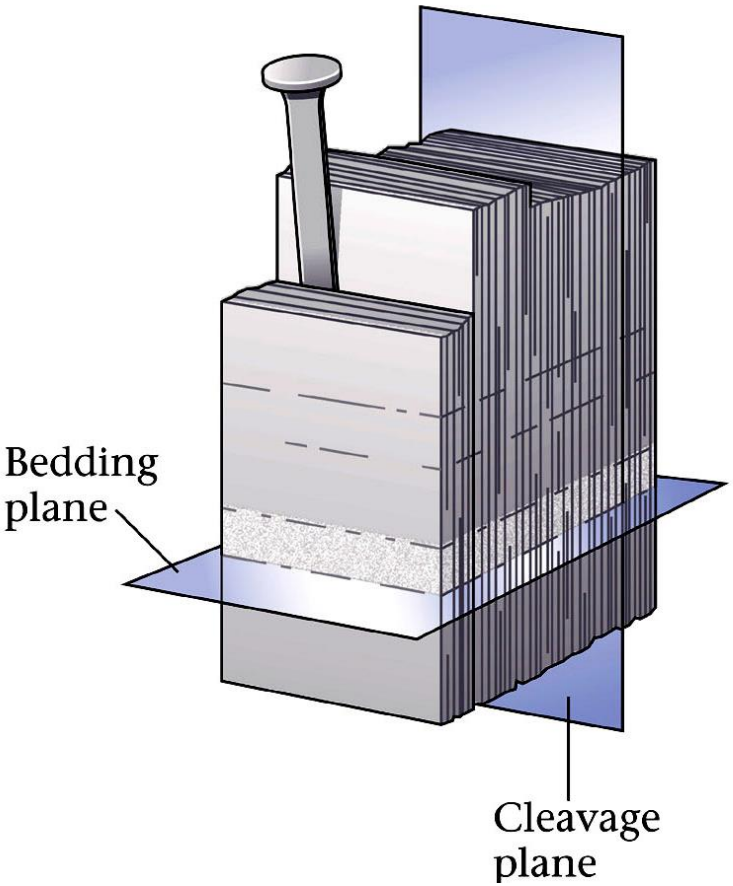
Limestone under microscope

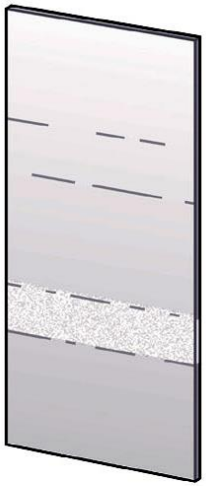


Marble under microscope



Differential stress and the development of Slate

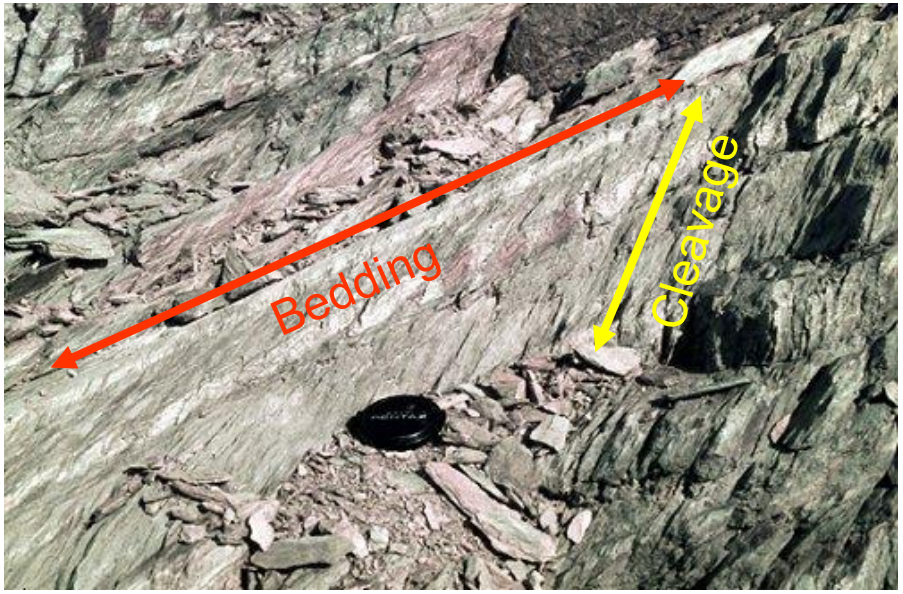


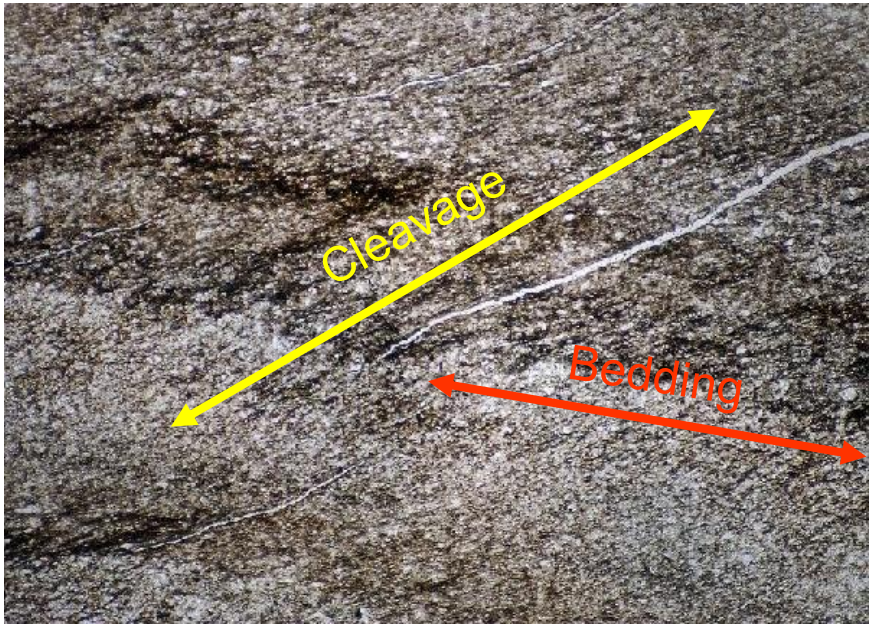


Slate and Slaty cleavage

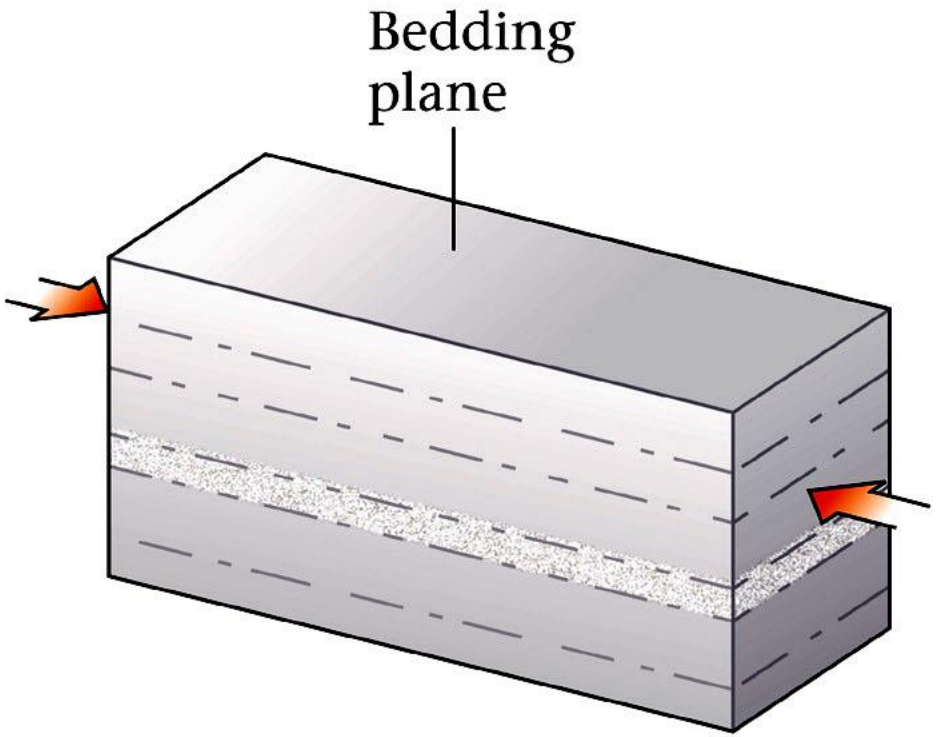
Product of differential stress at low metamorphic grade

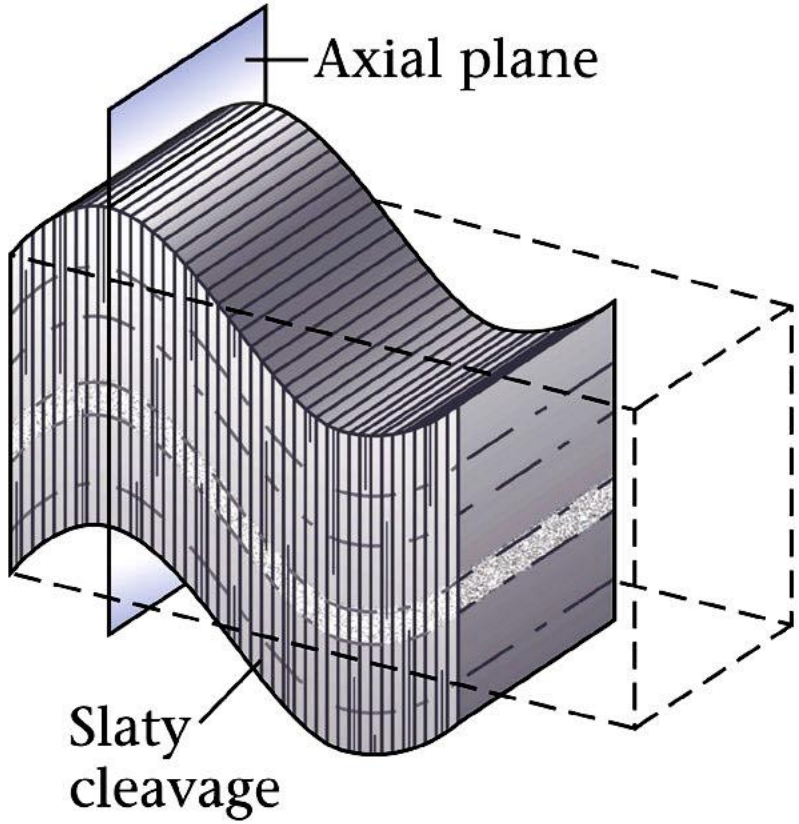
Slate under the microscope

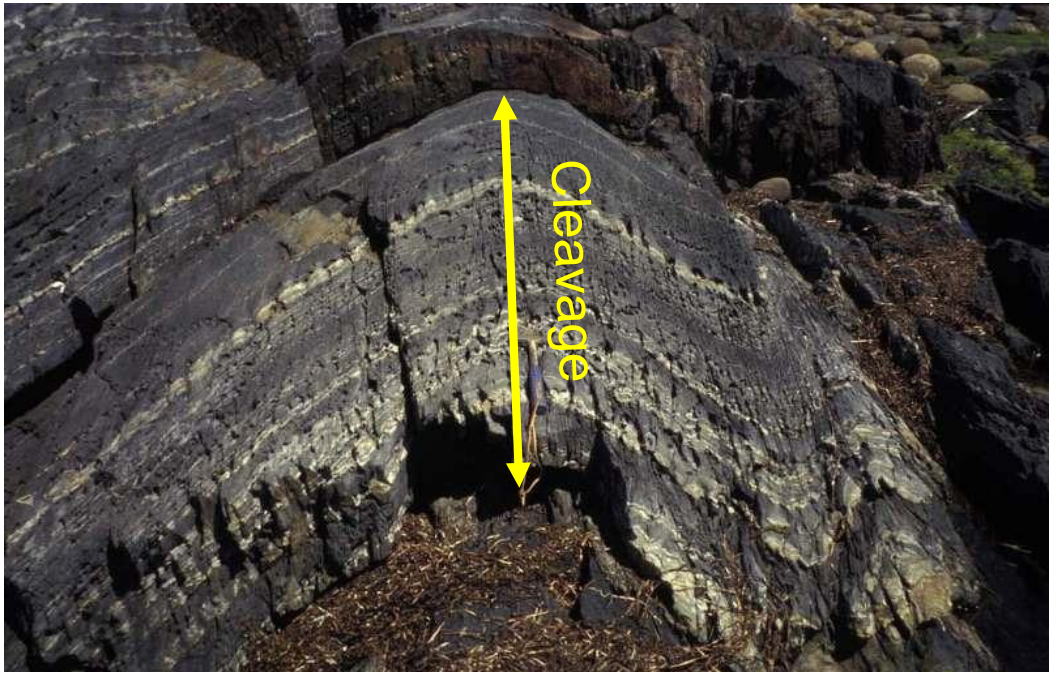




Differential Stress and Folding

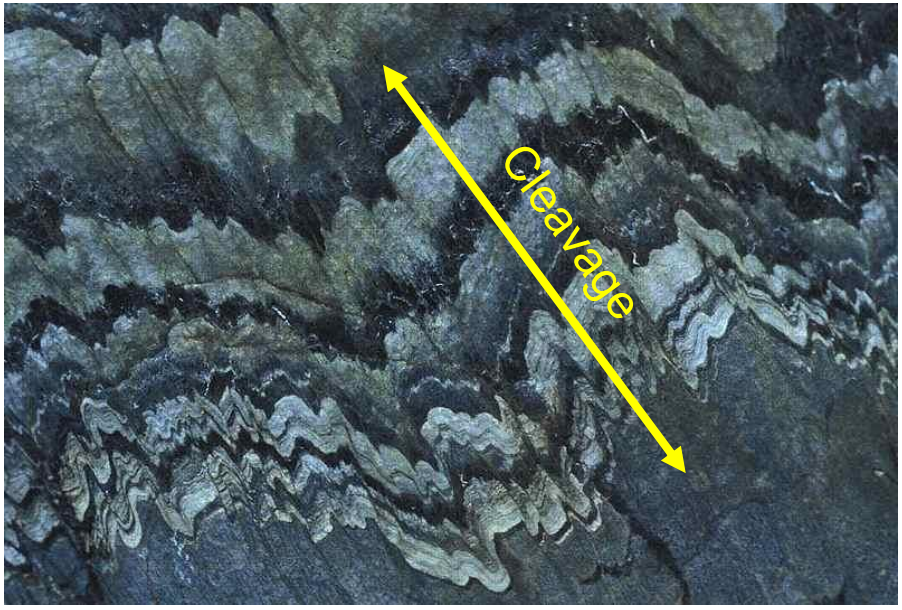






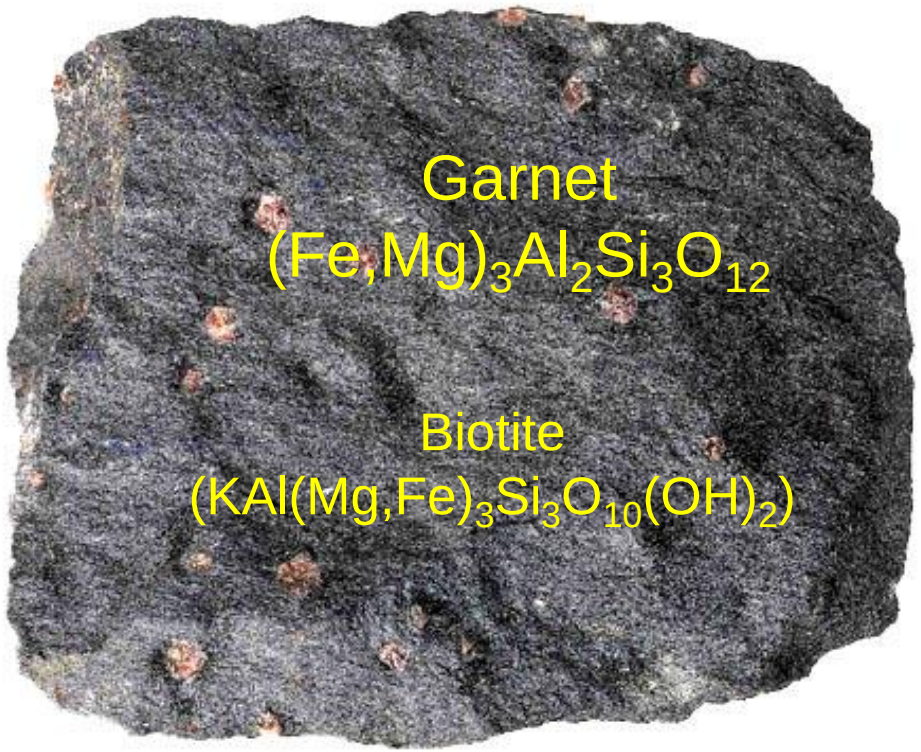
Slaty cleavage and folding

Fold under the microscope



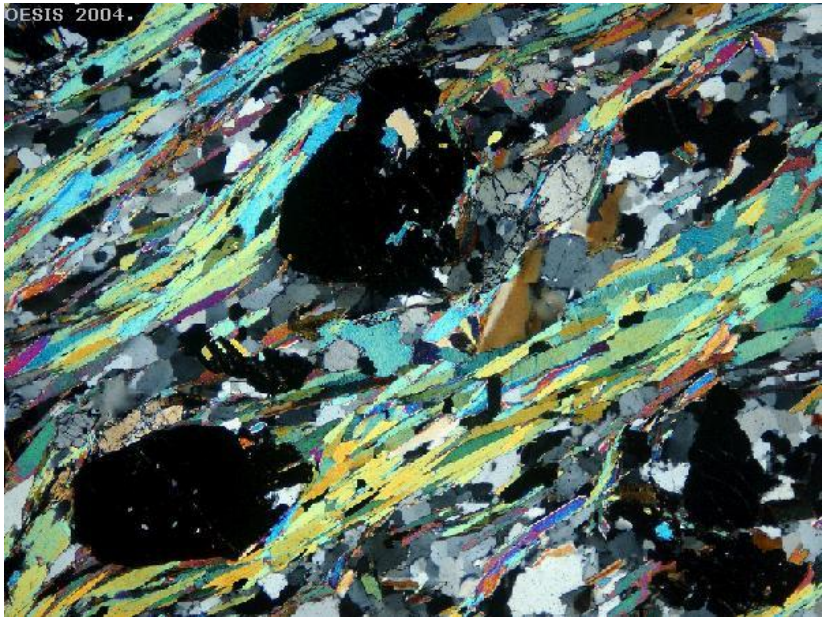
Metamorphism and the formation of new minerals

Chlorite + muscovite = garnet + biotite + H_2O



Schist

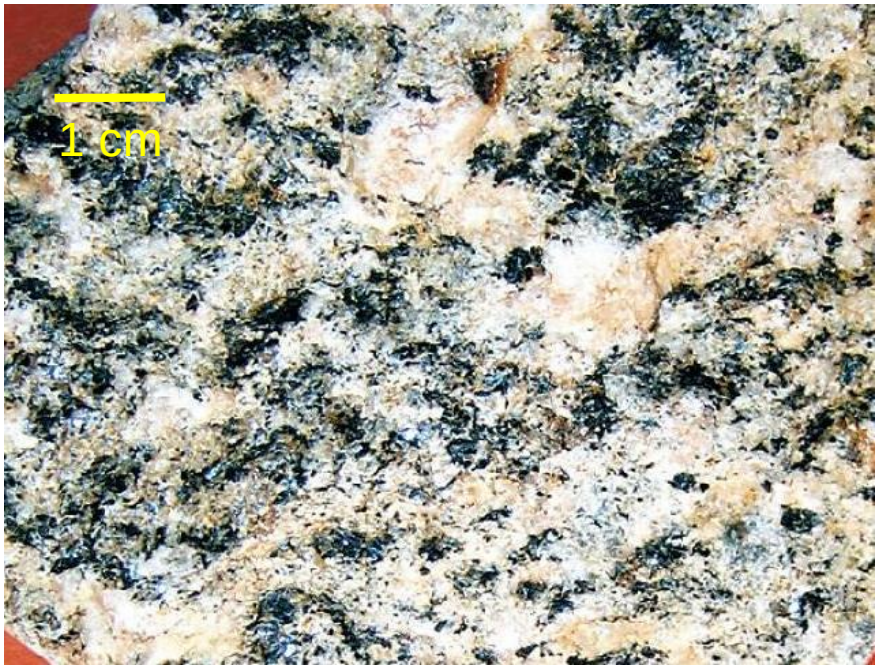
Shistosity defined by muscovite

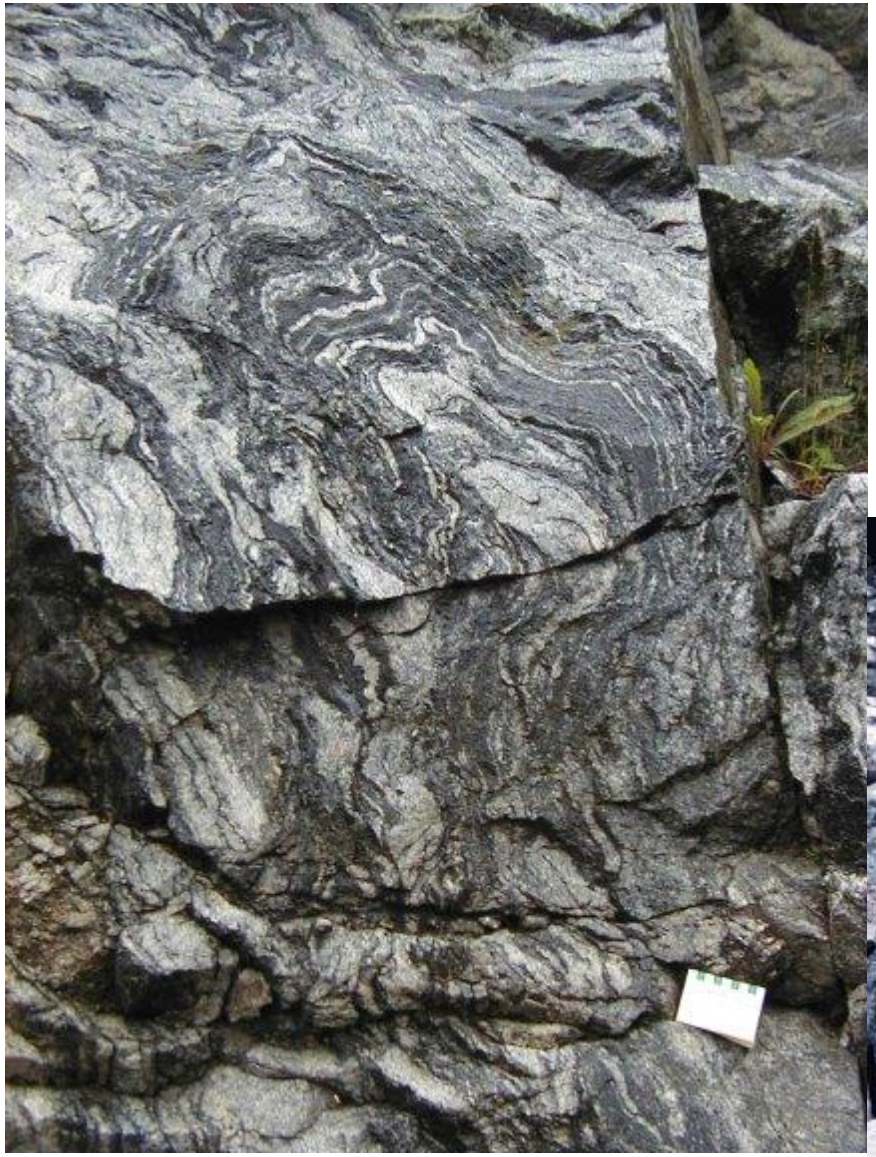


Gneiss

Highest metamorphic grade

Muscovite converted to feldspar

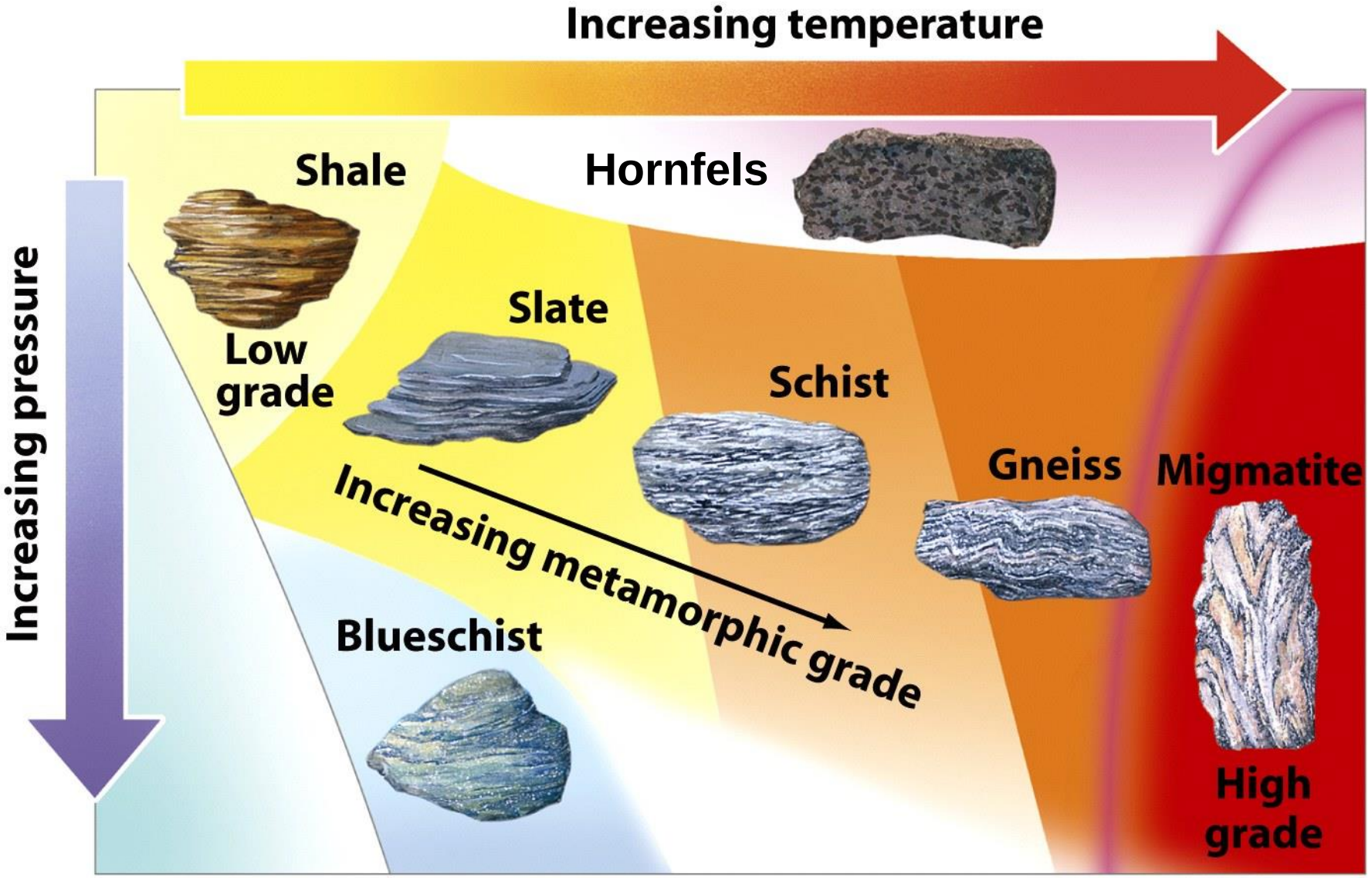




Partial melting

Formation of migmatites

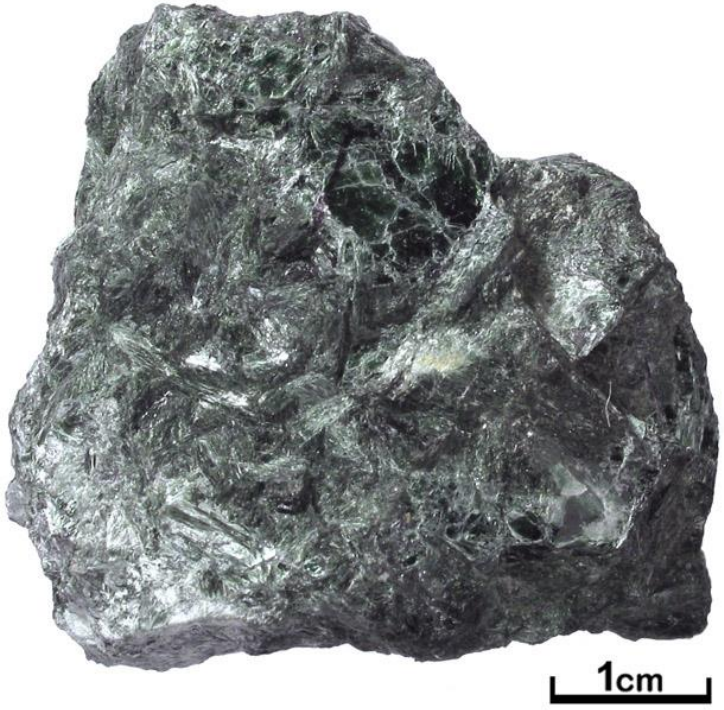
Metamorphism of Shale



Sheet silicates in Metamorphism

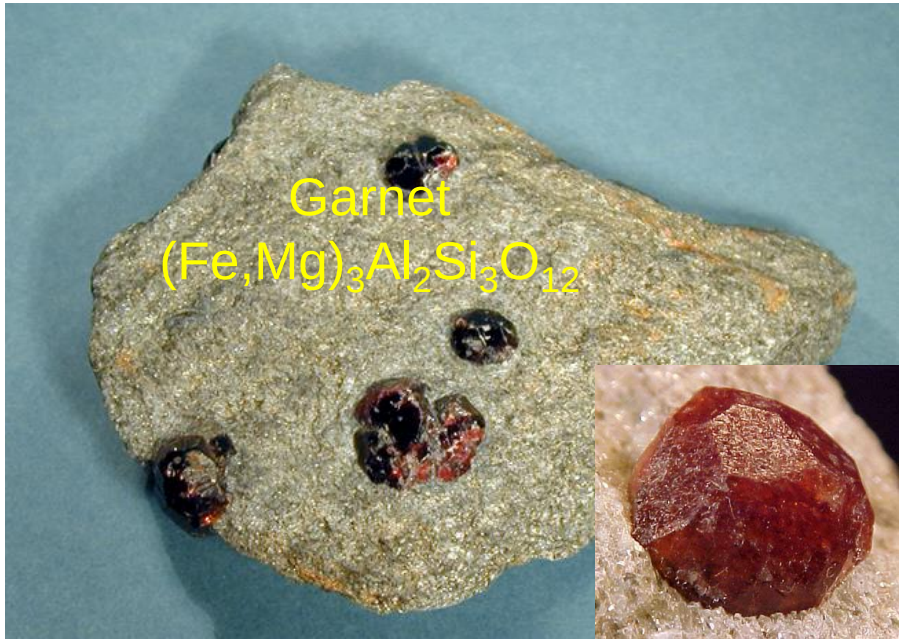
Muscovite
$(KAl_3Si_3O_{10}(OH)_2)$

Chlorite
$(Mg,Fe)_6(Si,Al)_4O_{10}(OH)_8$

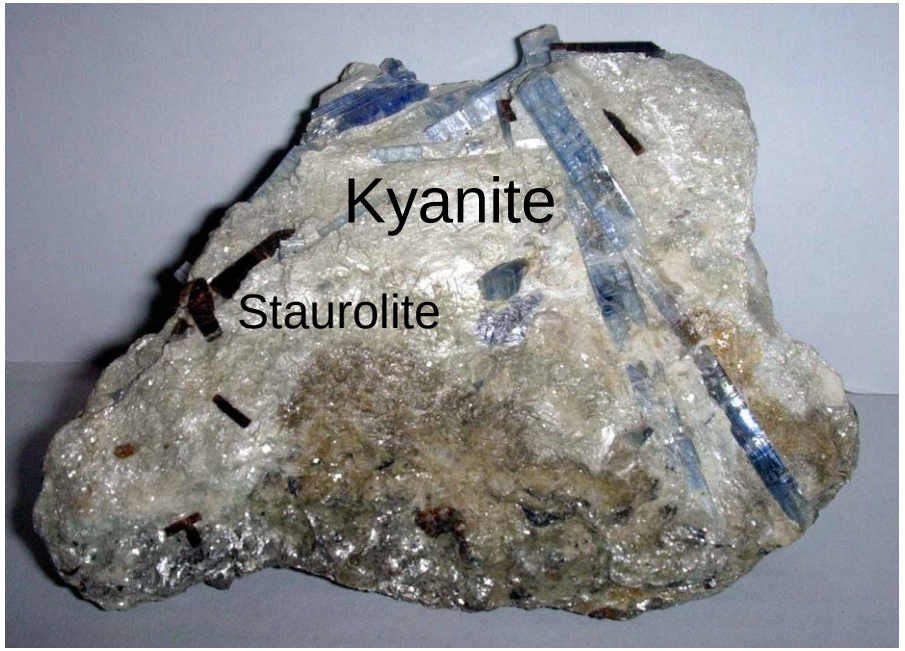


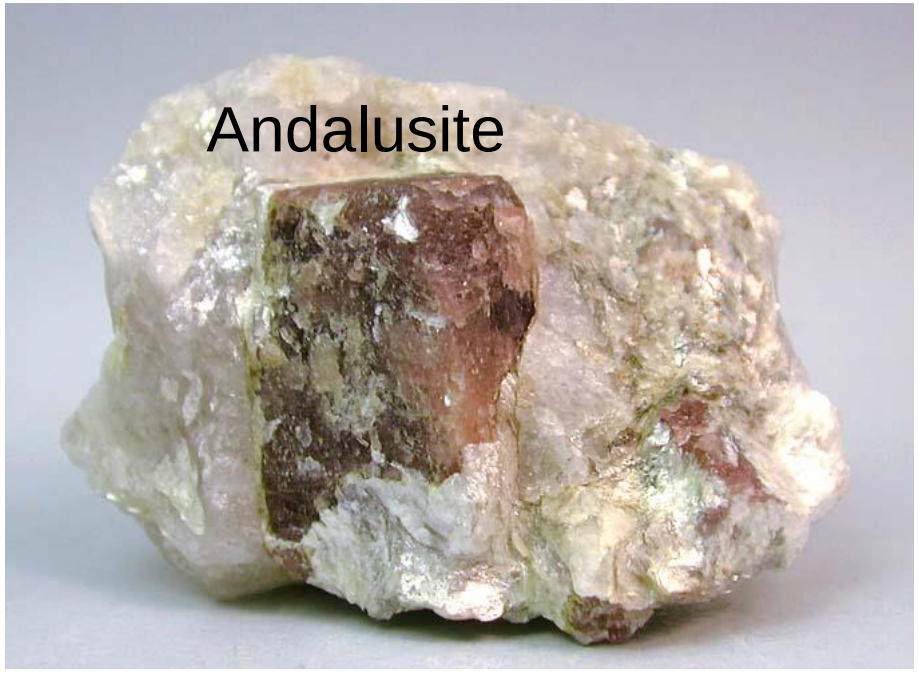
Biotite
$(KAl(Mg,Fe)_3Si_3O_{10}(OH)_2)$

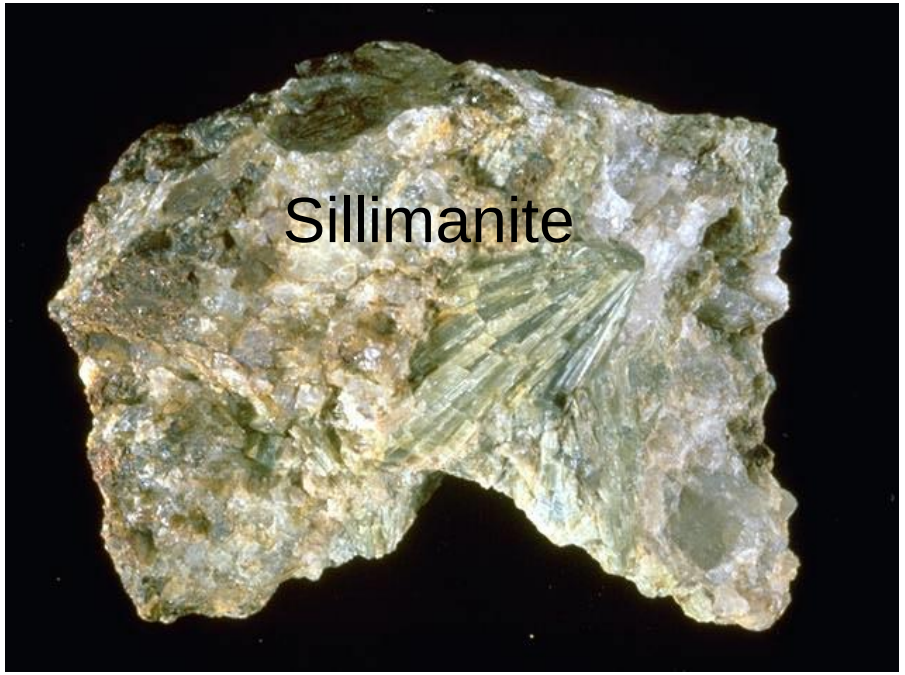
Metamorphic Index Minerals



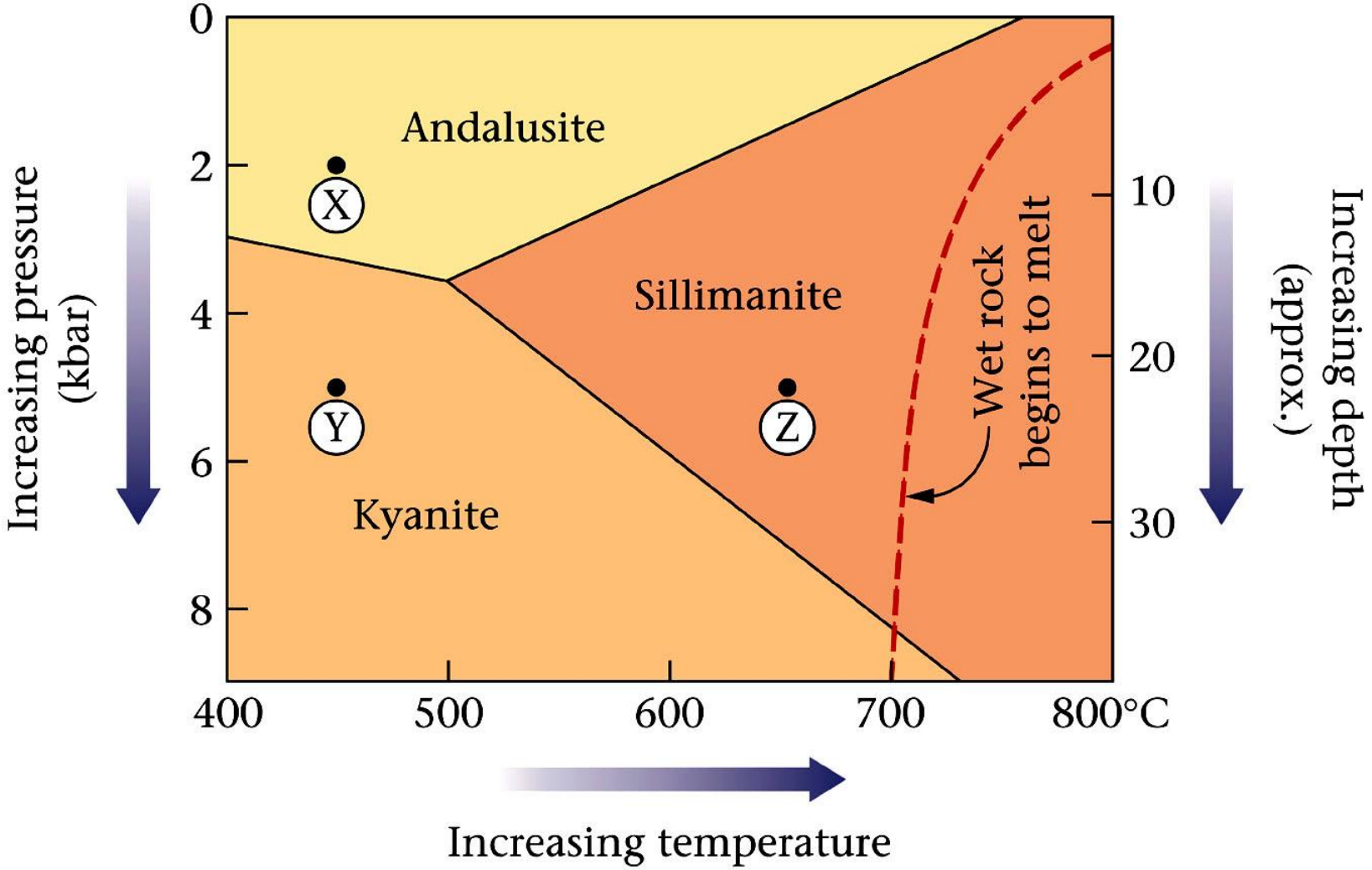
The Aluminosilicate minerals (Al_2SiO_5) and metamorphic grade





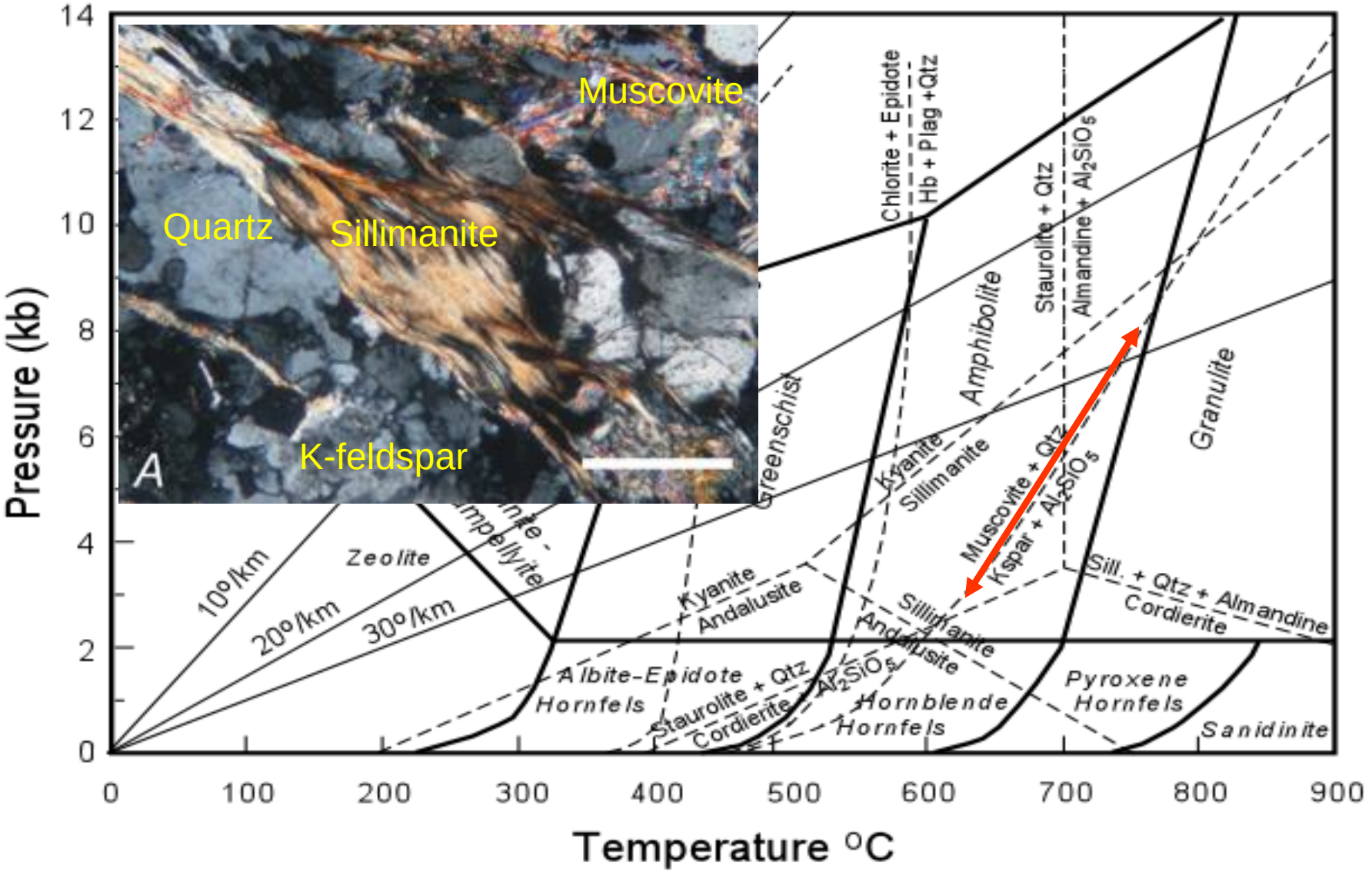


The Aluminosilicate minerals and metamorphic grade

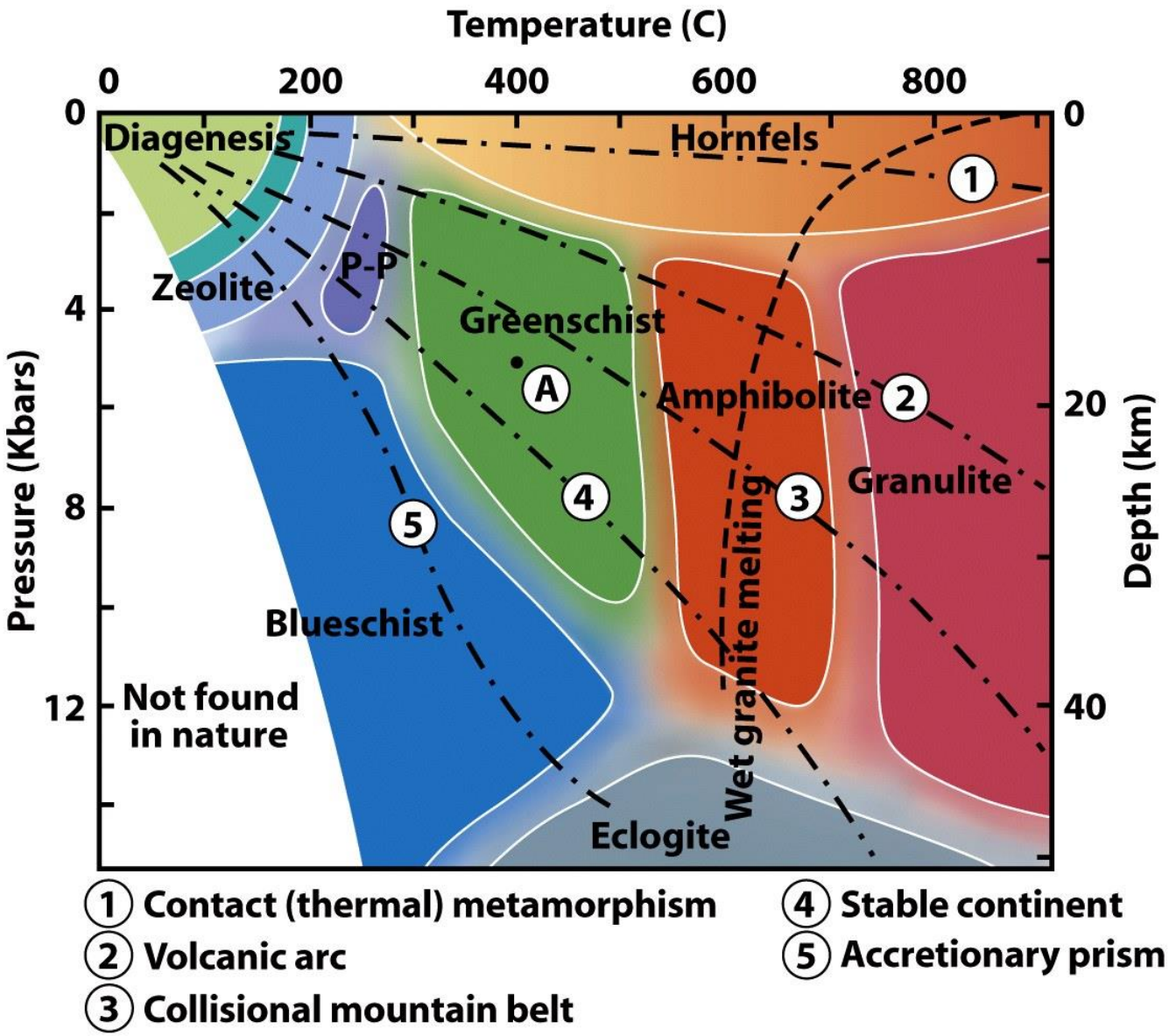


Metamorphic reactions and metamorphic grade

Muscovite + Quartz = K-feldspar + sillimanite + H_2O



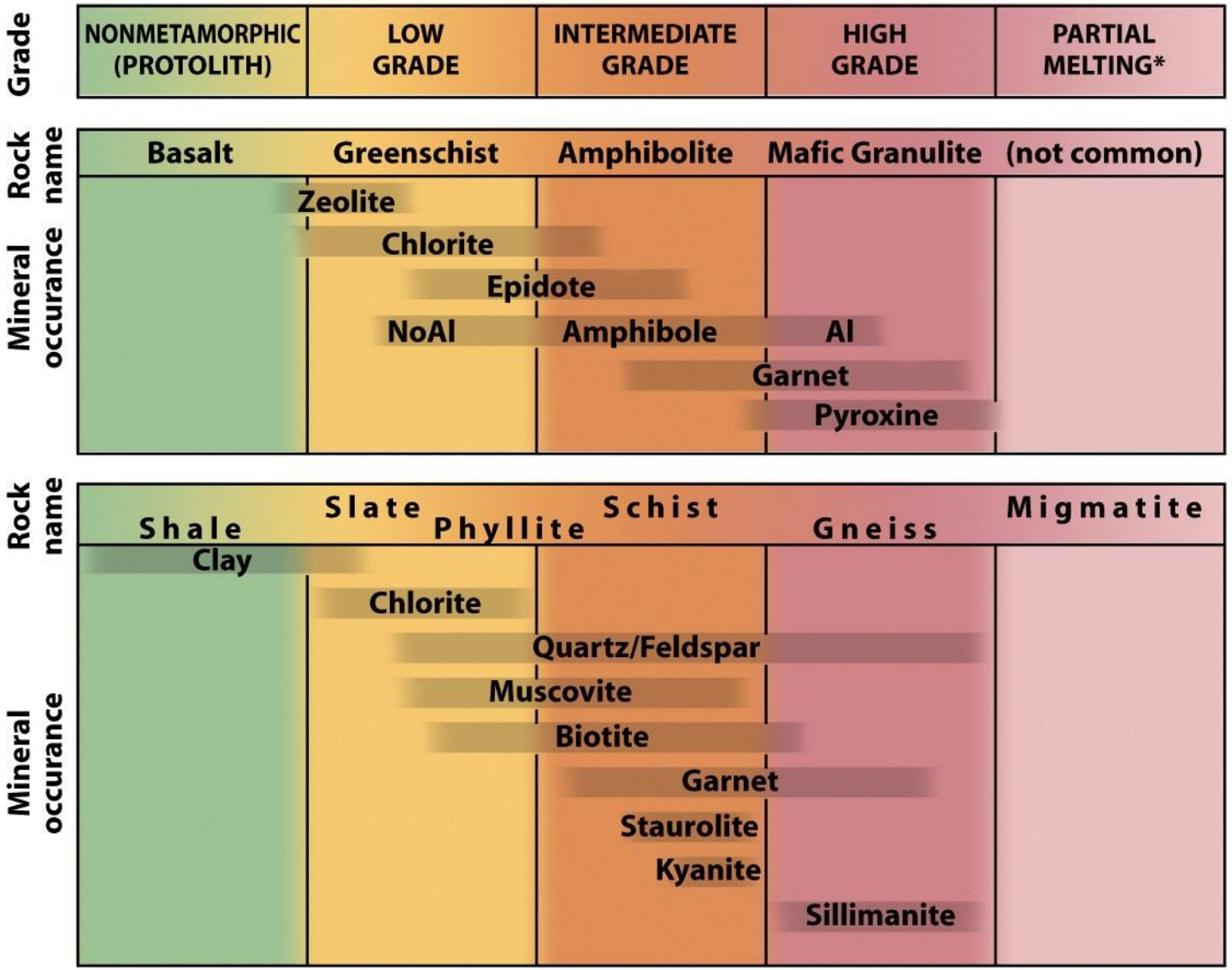
Metamorphic Facies



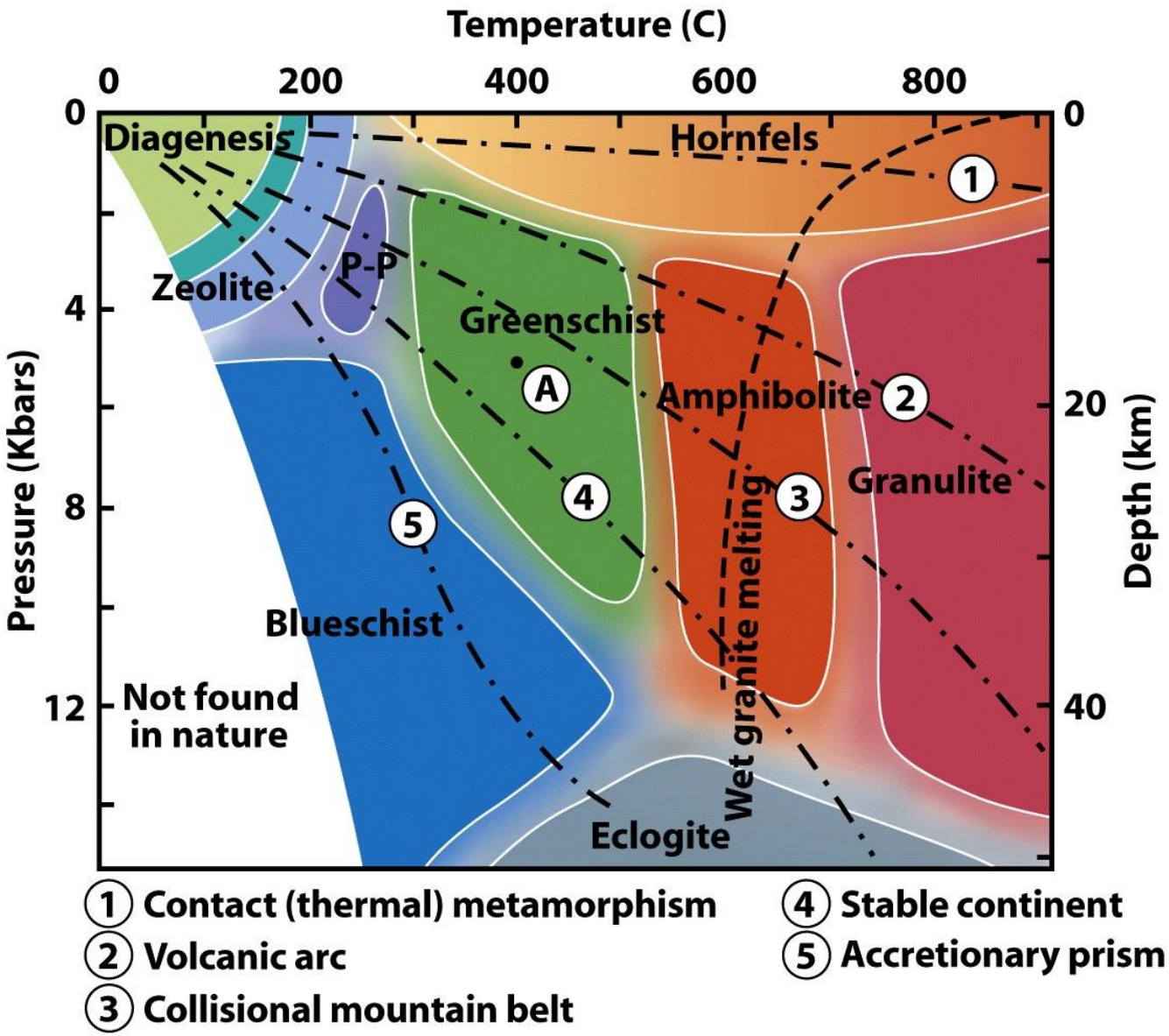
Basalt metamorphosed to different facies

Basalt at very high metamorphic grade

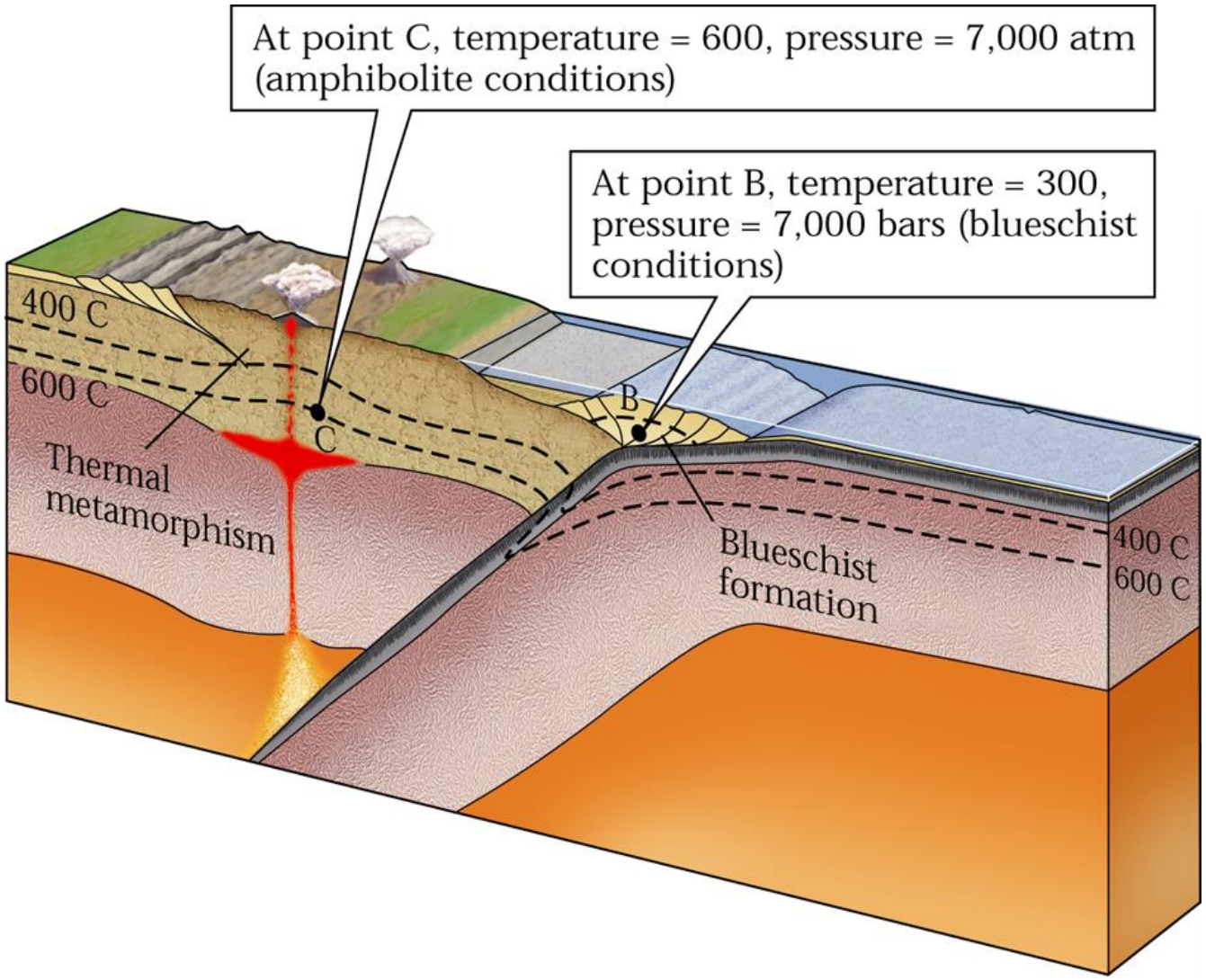
Mineralogy and Metamorphic Facies



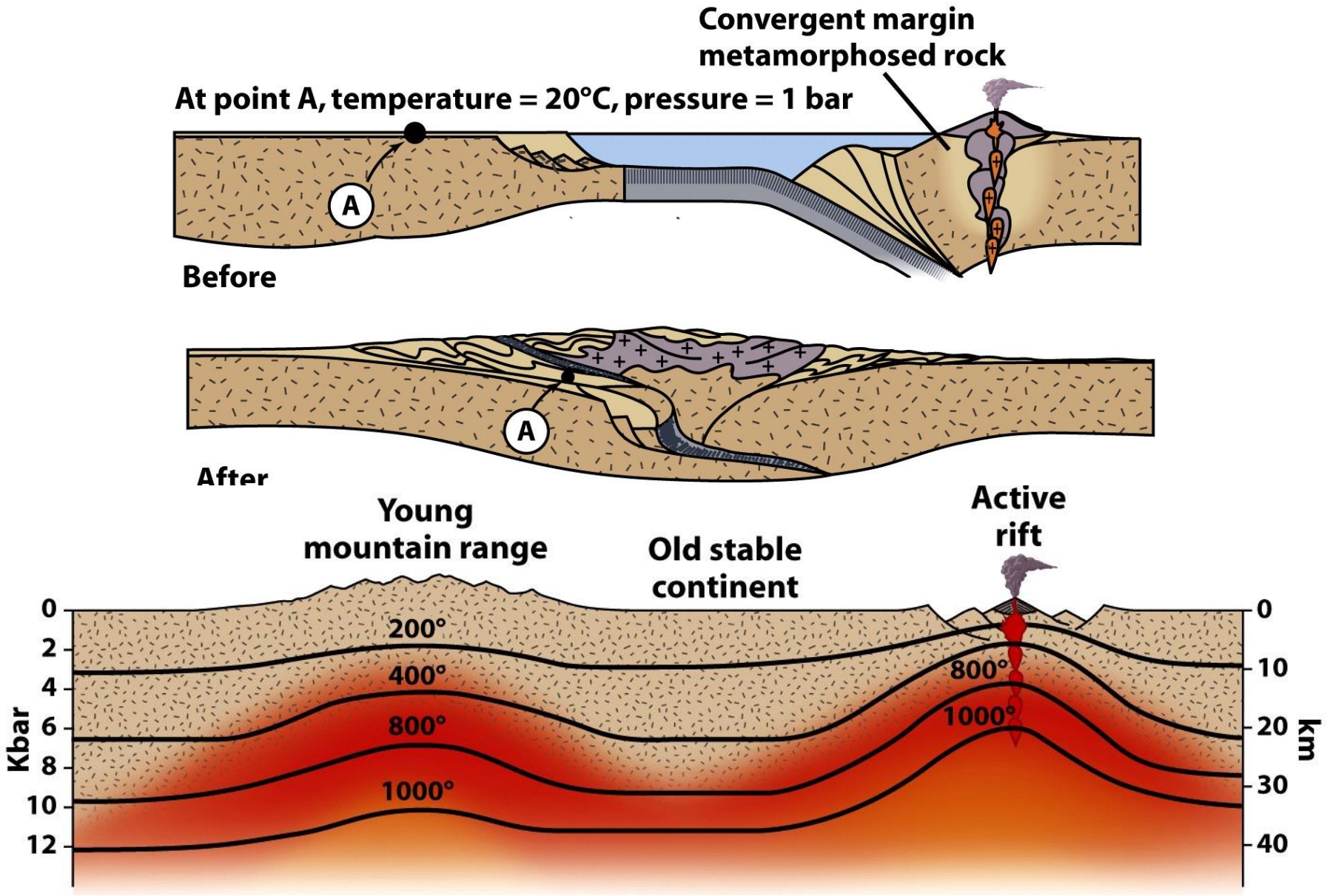
Metamorphic Facies and P-T Paths



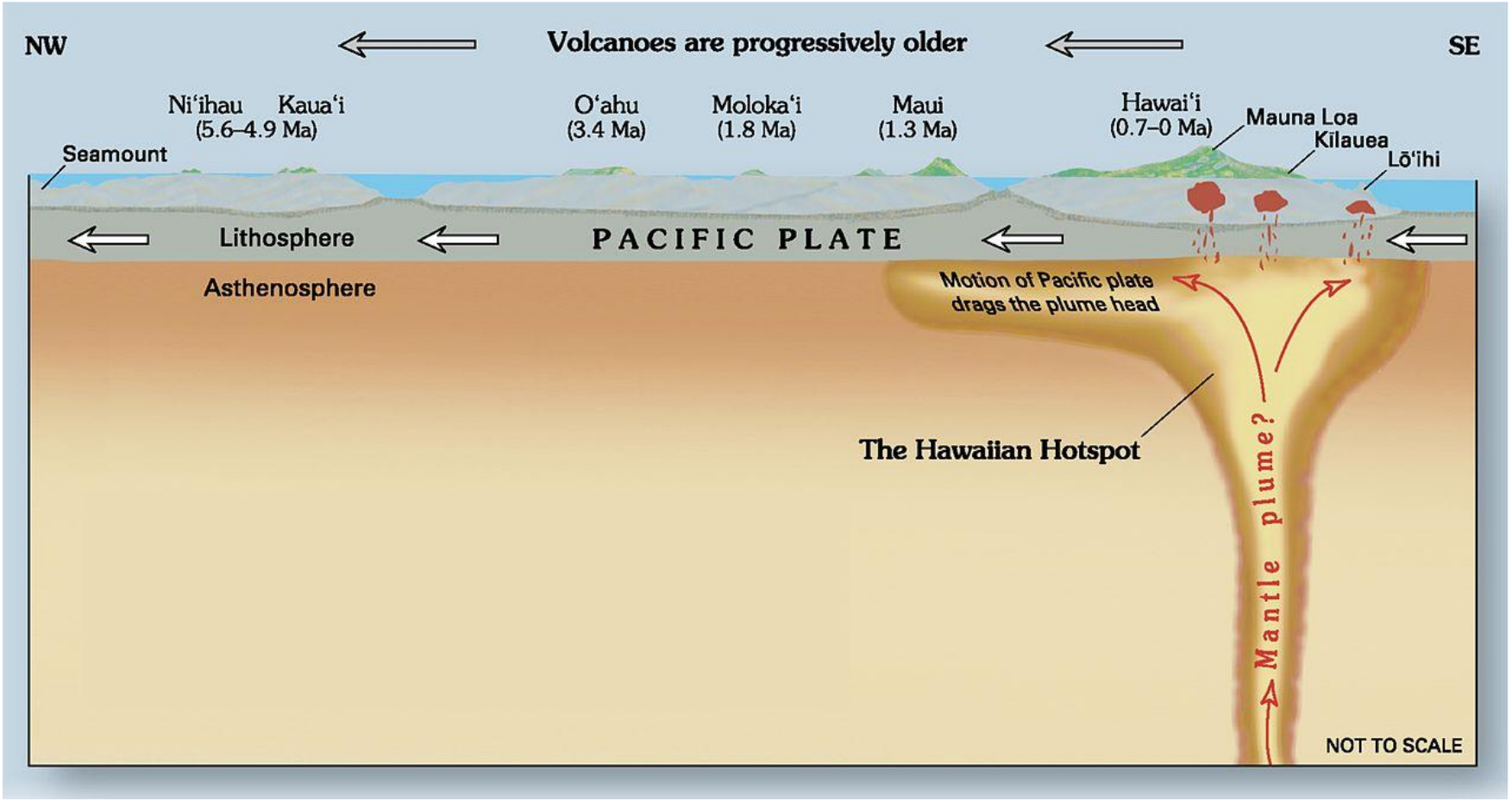
Metamorphic path during subduction



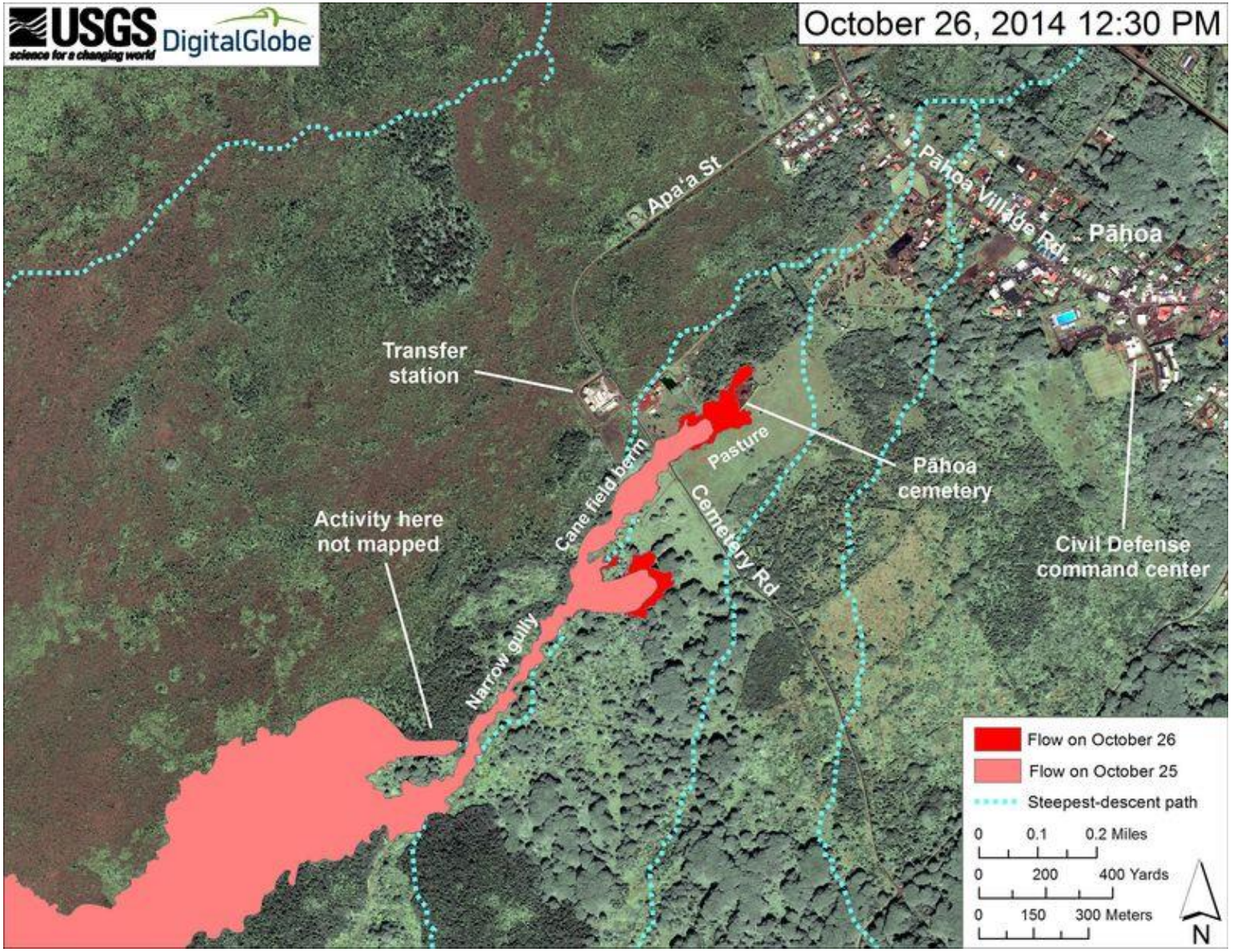
Metamorphic path during continental collision



Kilauea eruption of 2014



Kilauea 2014 eruption in late October



Kilauea eruption in late October 2014

Kilauea eruption in late October 2014

Kilauea eruption in late October 2014

Measuring the temperature of the Kilauea lava flow

Metamorphic Map