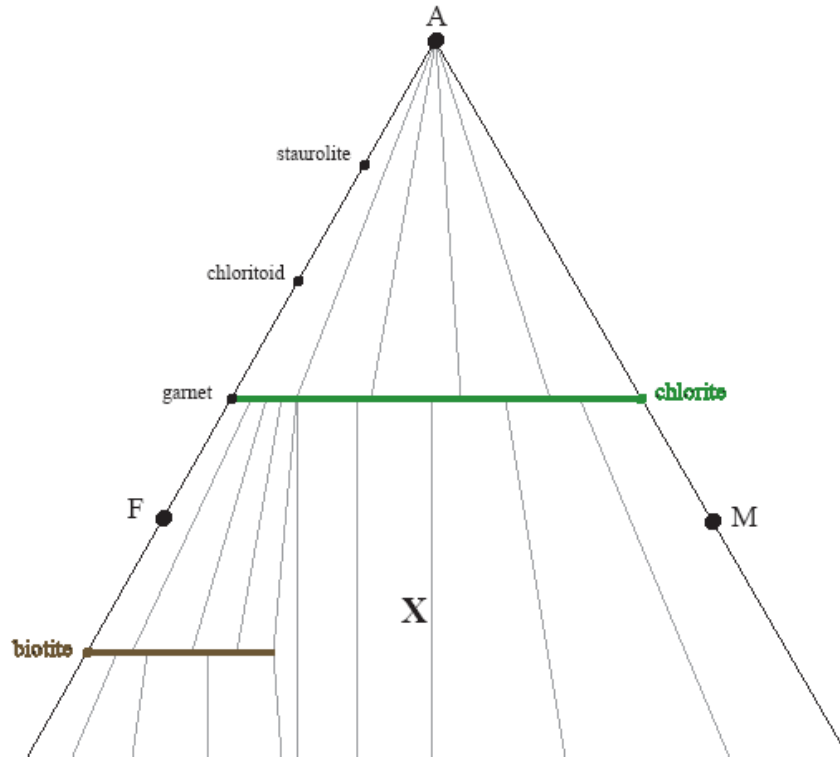


November 22, 2005

AFM Diagram – represents metamorphic reactions in pelites, JBT
Assumes muscovite always present. Projects from aluminosilicate (Al_2O_3) through FeO and MgO

Isograds in pelites depend on the bulk composition of the rock!

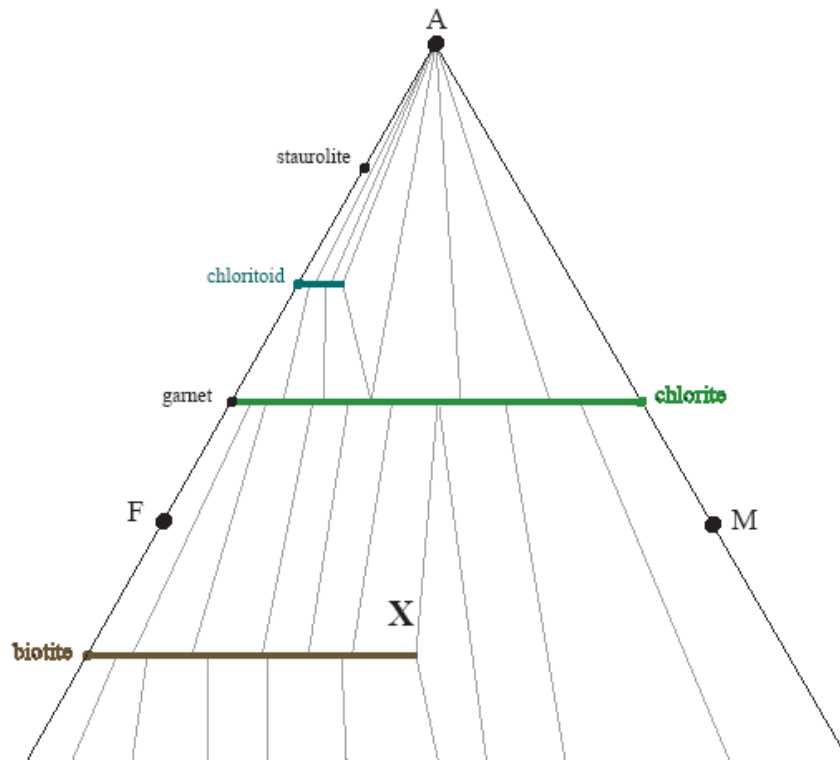
Scotland – Barrovian metamorphism – chlorite, biotite, garnet, staurolite



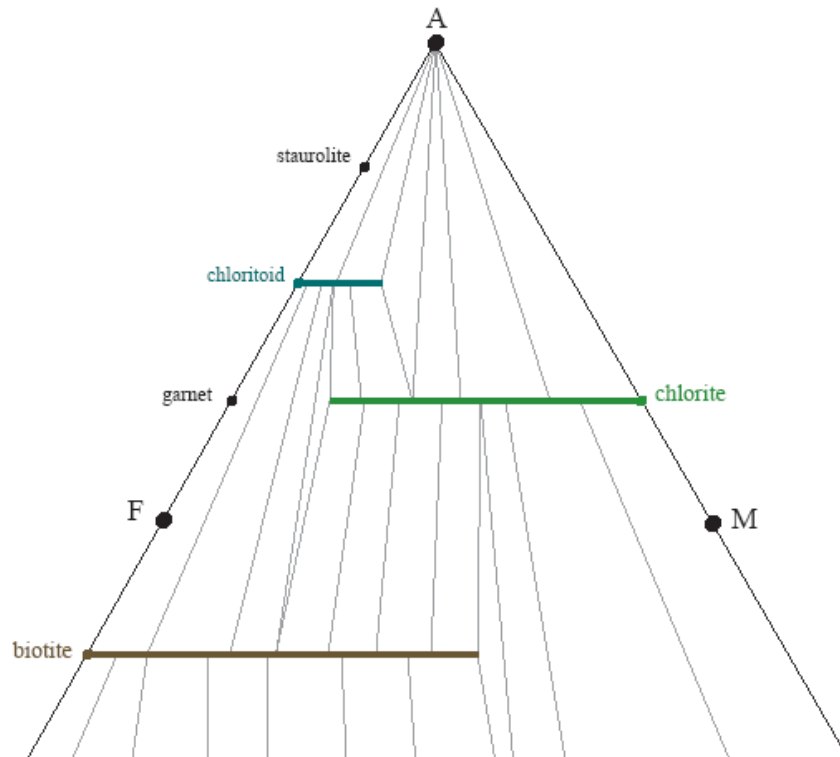
X marks typical pelite composition

2 important minerals, chloritoid and staurolite, only coexist in very aluminous bulk rock compositions

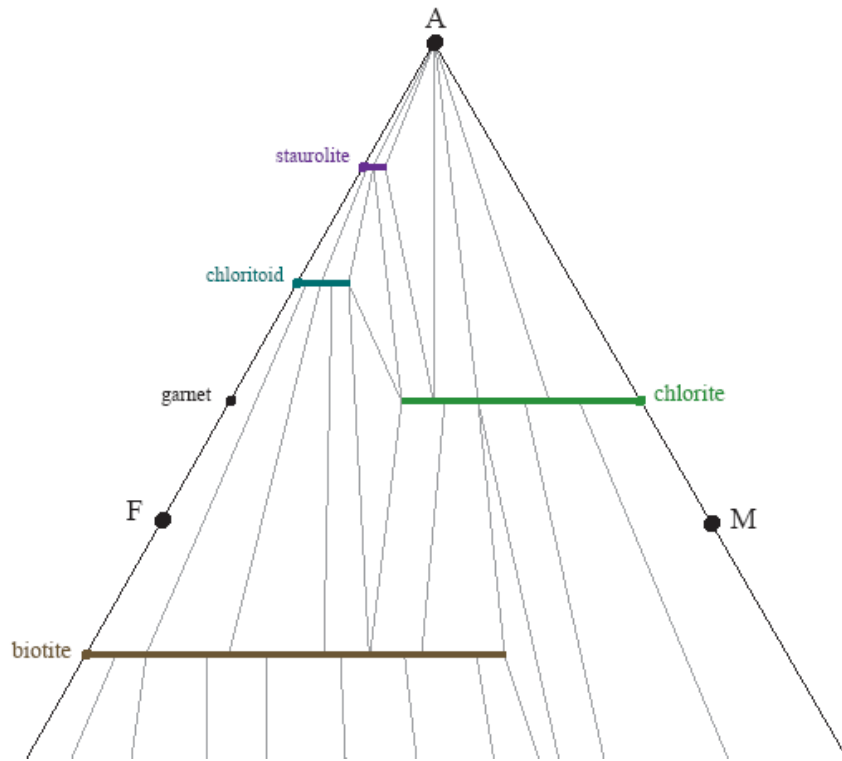
1. Chloritoid appears



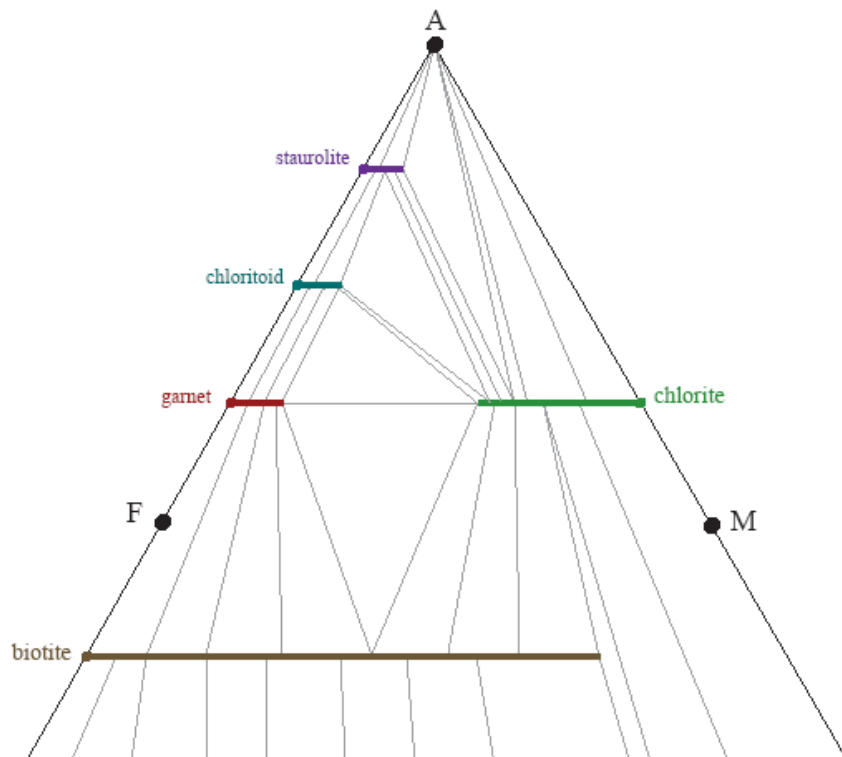
2. Chlorite stability decreases



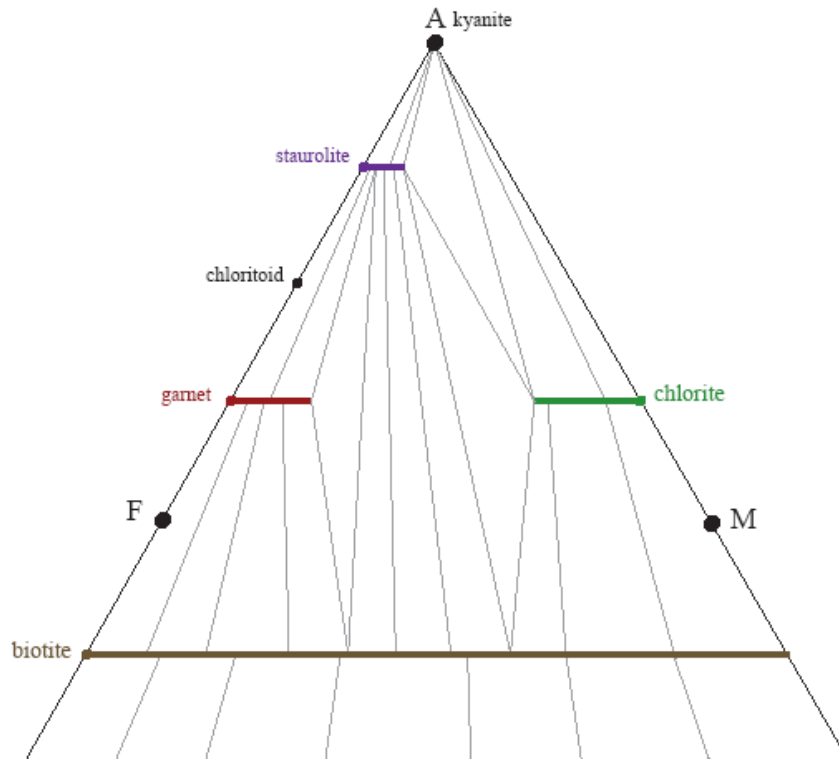
3. Staurolite appears



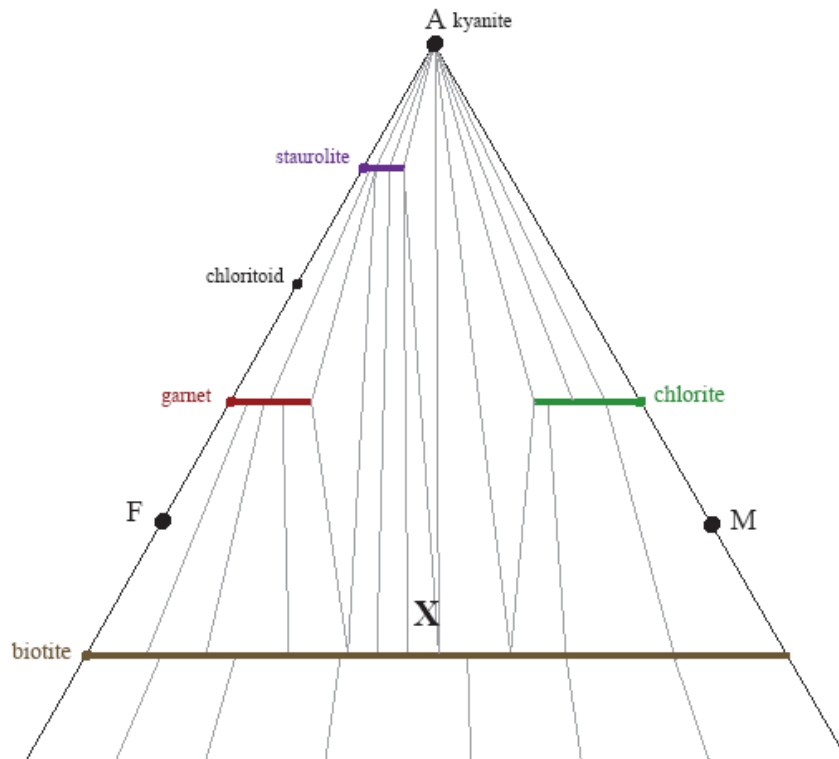
4. Garnet appears (ctd + bio + H₂O = gt + chl) ... see how compositions change mineral assemblage!



5. Chloritoid disappears, biotite full solid solution
6. Tie line switch ($gt + chl = str + bt$)



7. Tie line switch ($str + chl = ky + bt$) brings out kyanite



Complication:

MnO is an additional component in many pelites

Spessartine garnet $\text{Mn}_3\text{Al}_2\text{Si}_3\text{O}_{12}$