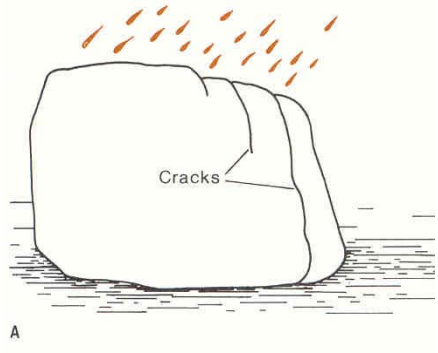
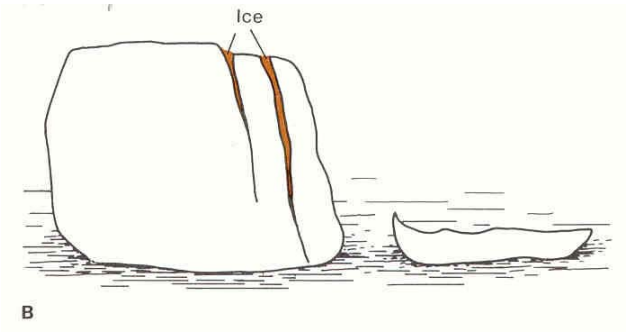
VI. AYRIŞMA / BOZUNMA / ÇÖZÜNME (WEATHERING)

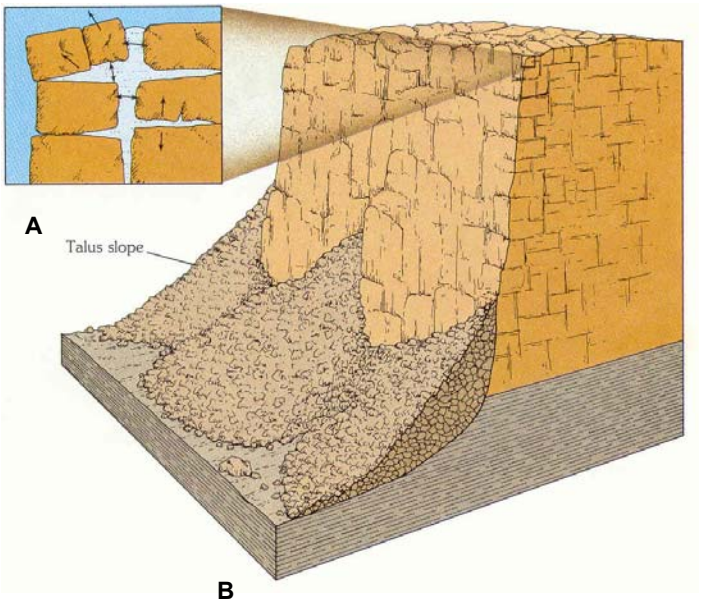
VI. 1. Fiziksel ayrışma





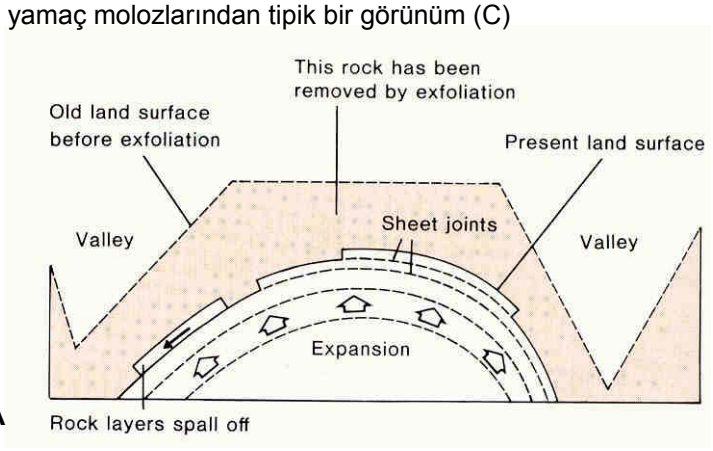

C

Şekil VI.1. Donmaya bağlı olarak gelişen buz kamasının yarattığı fiziksel ayrışma (A,B), buz kaması ile parçalanmış bir blok (C)

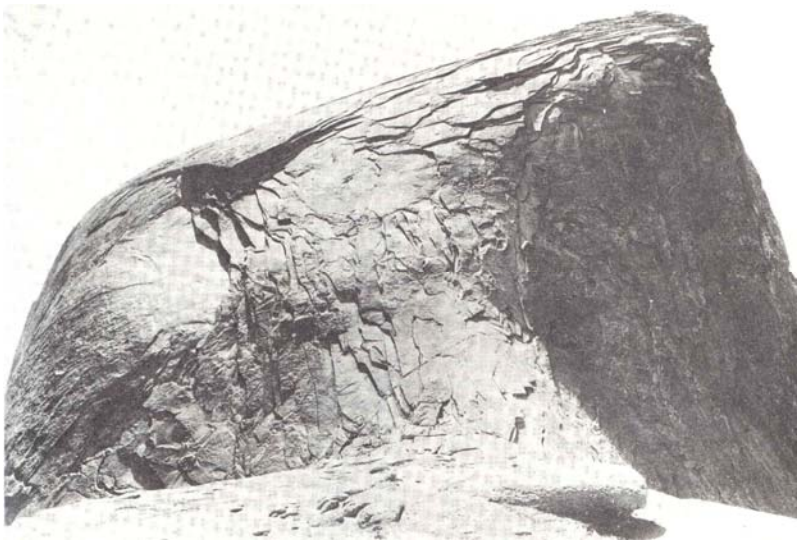



C

Şekil VI.2. Buz kamasının bir kayaç üzerindeki etkisi (A), kopan kaya parçalarıının yamaç dibinde talus (yamaç molozu) oluşturması (B), yamaç molozlarından tipik bir görünüm (C)



A

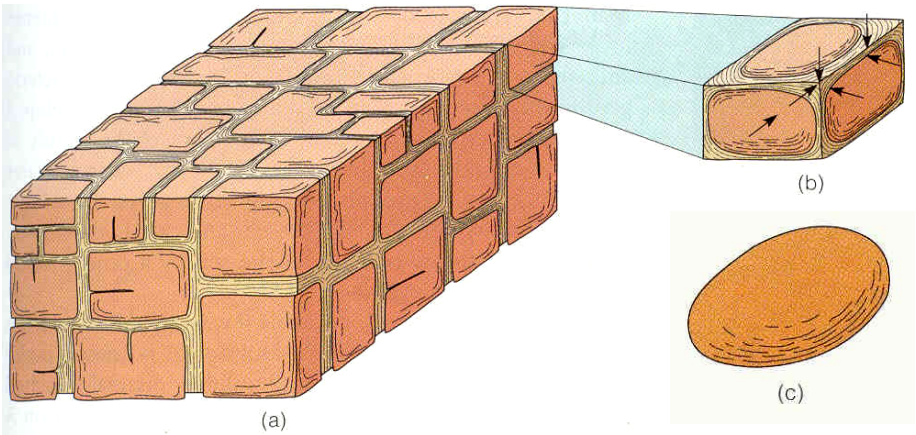


B



C

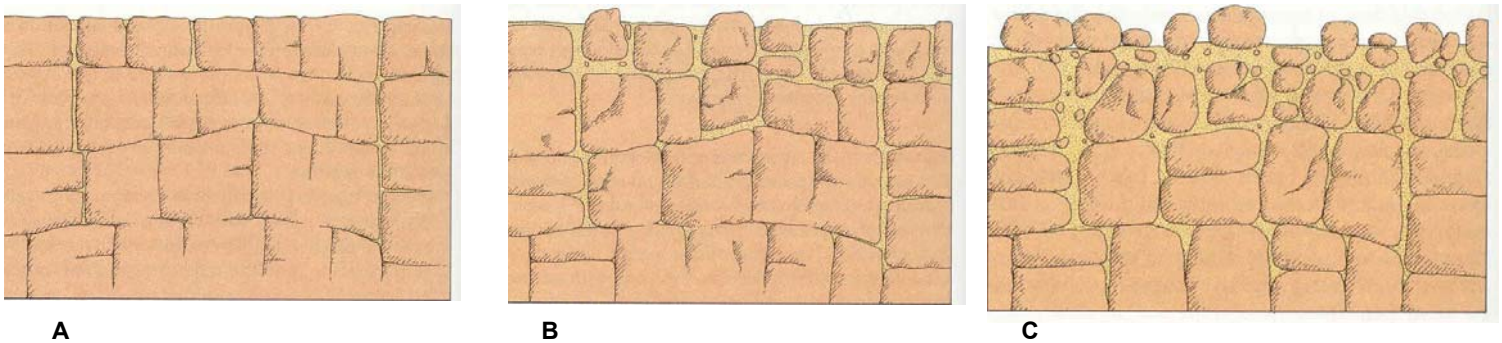
Şekil VI.3. Basınç serbestlenmesi sonucunda eksfoliasyon yapısının gelişmesi (A), eksfoliayon yapısı gösteren bir granit kütlesi (B) ve aynı kütleden yakın görünüm (C).



d)

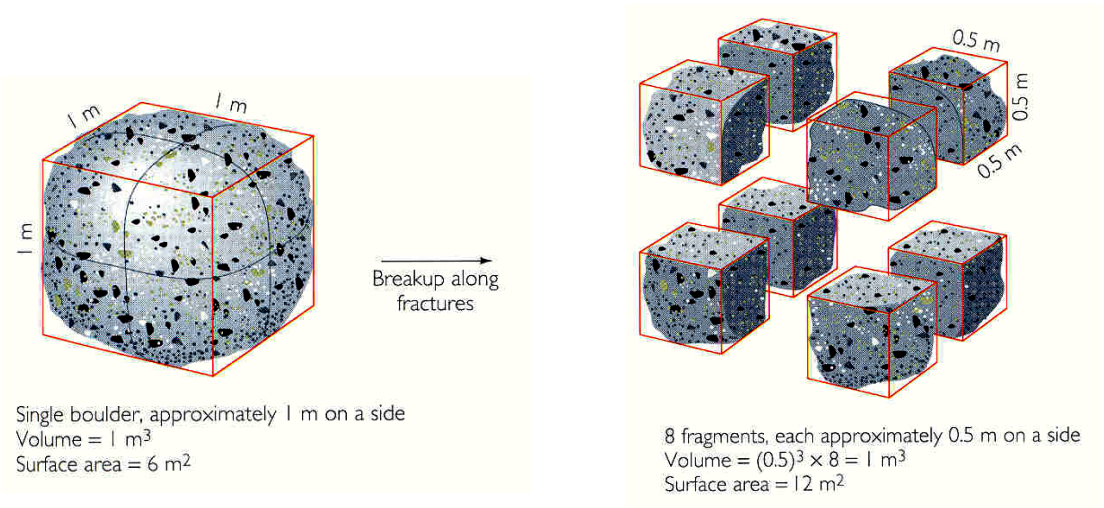


Şekil VI.4. Hem kimyasal hem de mekanik ayrışma nedeniyle köşeli yüzeylerin kaybolarak soğan yapısının oluşumu



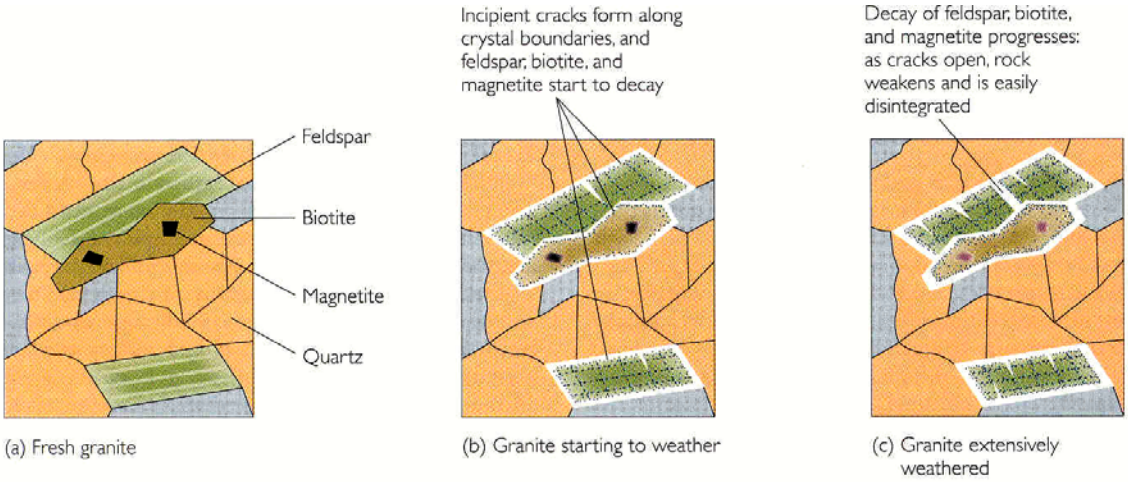
A B C

Şekil VI.5. Bir kayaç kütlesinin fiziksel ayrışmayla parçalanması (A) ve kimyasal ayrışma yardımı ile köşelerin yuvarlaklaşması (B,C)

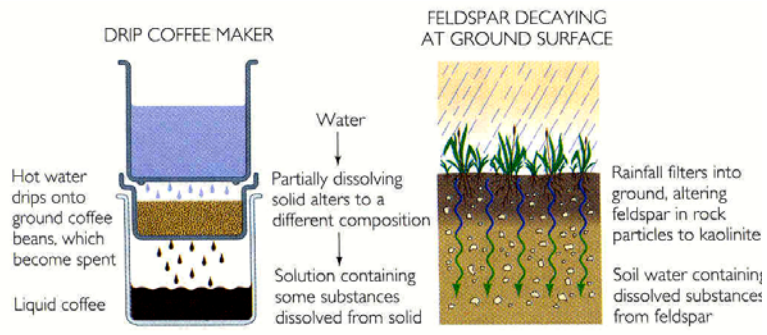


Şekil VI.6. Fiziksel ayrışma sonucunda ayrışmaya açık yüzeyin artması.

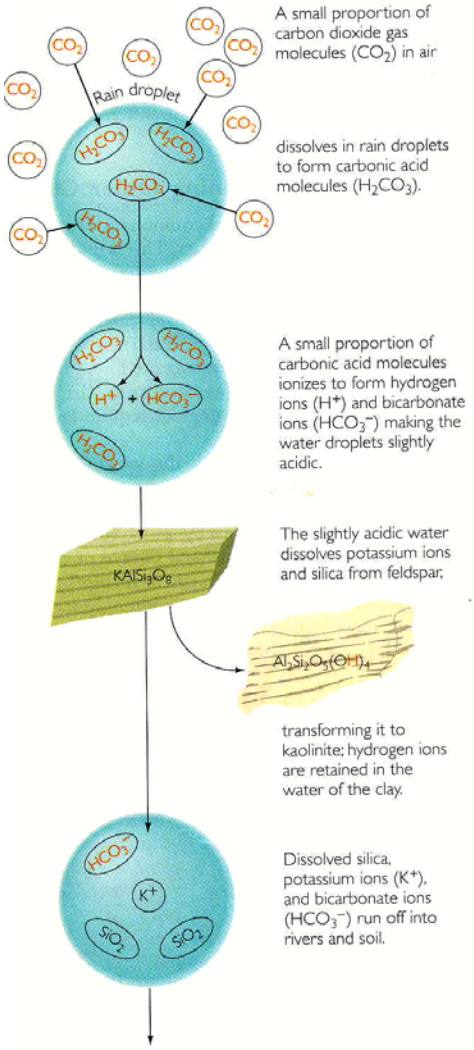
VI.2. Kimyasal Ayrışma



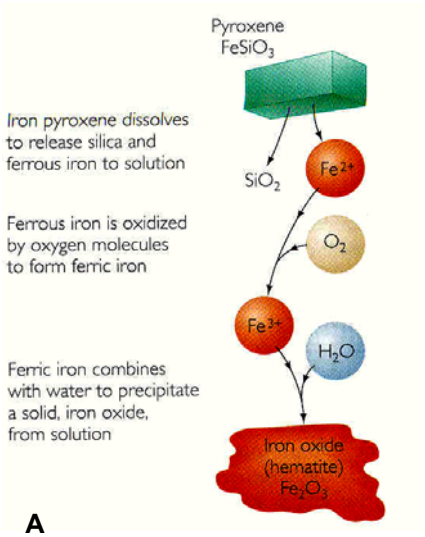
Şekil VI.7. Granitin ayrışma sırasında geçirdiği safhalar

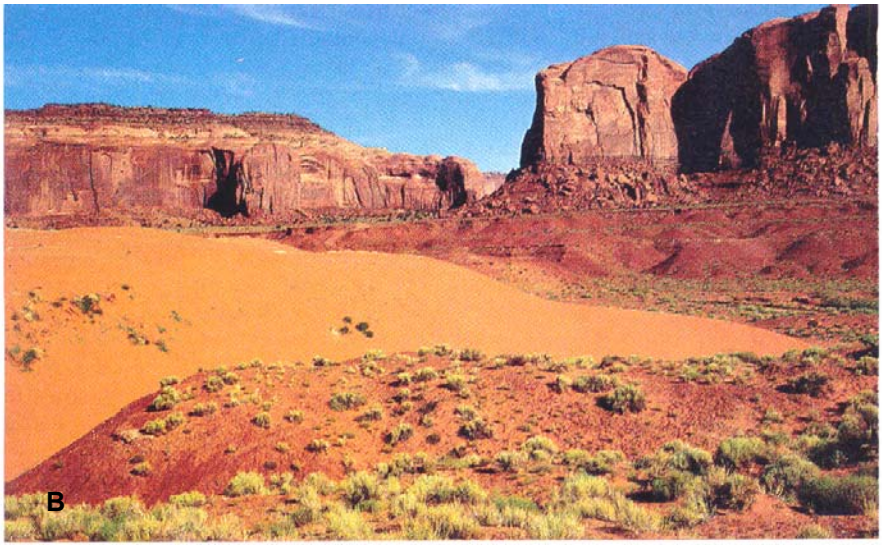


Şekil VI.8. Feldsparın çözünme süreçleri kahve makinasındaki sisteme benzer. Heriki süreçte de su katı haldeki maddenin bir kısmını ayrıştırır, geride bozunmuş madde kalır, içinde çözelti halde orijinal madde bulunan sıvı aşağı doğru süzülür



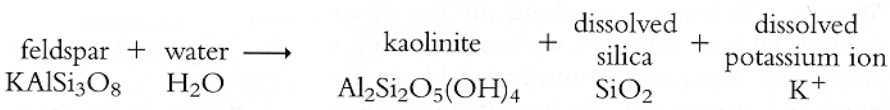
Şekil VI.9. Karbondioksitin reaksiyonu hızlandırmadaki rolü



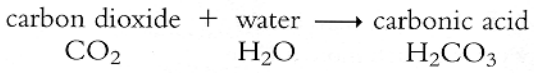


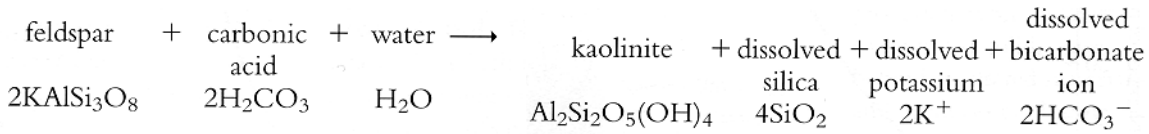
Şekil VI.10. Oksidasyondaki aşamalar (A), ve olay sonucunda oluşan kırmızı renkli çökeller (B)

Granit içindeki feldsparın hidroliz sonucunda ayrışması (Hidroliz):

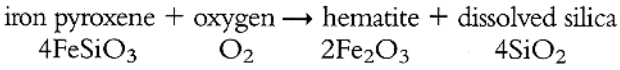


Karbondioksitin reaksiyonu hızlandırmadaki rolü:

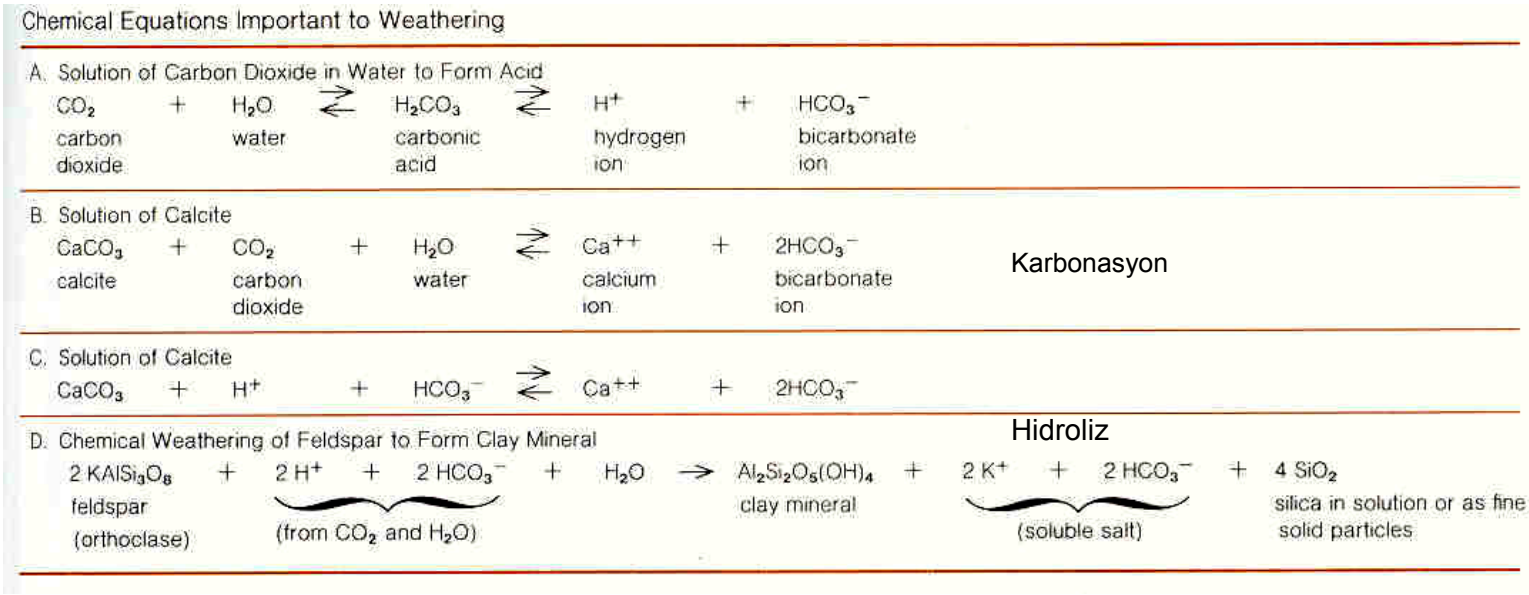




Oksidasyon:



Tablo VI.1. Ayrışma sırasında gerçekleşen önemli kimyasal denklemler



Tablo VI.2. Önemli bazı minerallerin ayrışma ürünleri

Weathering Products of Common Minerals

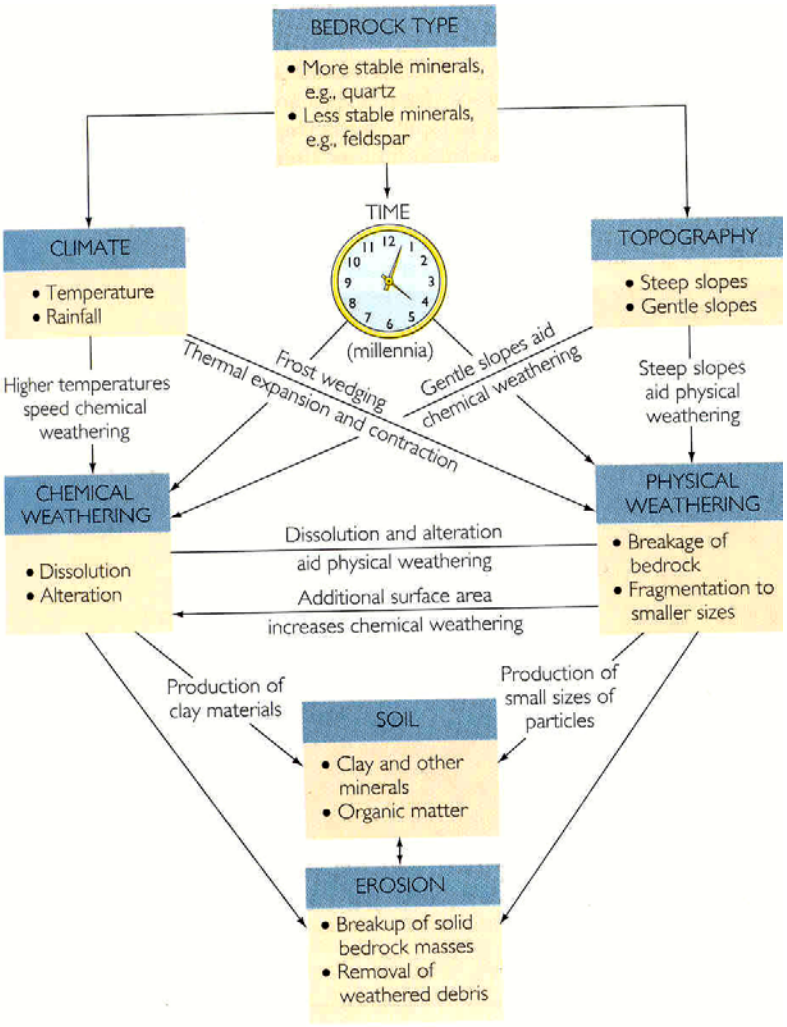
Original Mineral	Under Influence of CO_2 and H_2O	Main Solid Product		Other Products (Mostly Soluble)
Feldspar	→	Clay mineral	+	Salts, SiO_2
Ferromagnesian minerals (including biotite mica)	→	Clay mineral	+	Salts, SiO_2, Fe oxides
Muscovite mica	→	Clay mineral	+	Salts, SiO_2
Quartz	→	Quartz grains (sand)		
Calcite	→	—		Salts

Stability of Common Minerals Under Weathering Conditions Compared with Bowen's Reaction Series

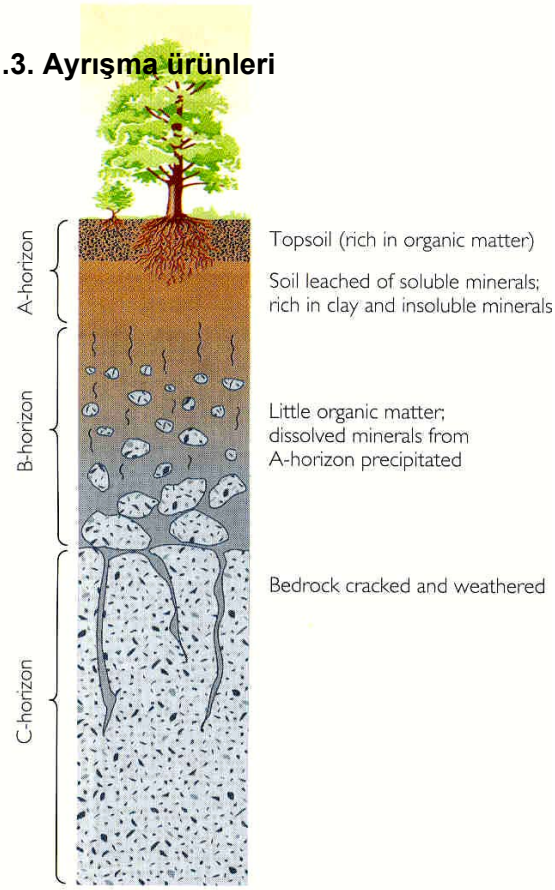
Stability of Minerals	Rate of Weathering	Bowen's Reaction Series
Most stable	**Slowest**	
Iron oxides (hematite)		
Aluminum hydroxides (gibbsite)		**Last to crystallize**
Quartz		Quartz
Clay minerals		
Muscovite mica		Muscovite
Potassium feldspar (orthoclase)		Orthoclase
Biotite mica		Biotite
Sodium-rich feldspar (albite)		Albite
Amphiboles		Amphibole
Pyroxene		Pyroxene
Calcium-rich feldspar (anorthite)		Anorthite
Olivine		Olivine
Calcite		
Halite		
Least stable	**Fastest**	**First to crystallize**

Mafic minerals (discontinuous crystallization series)

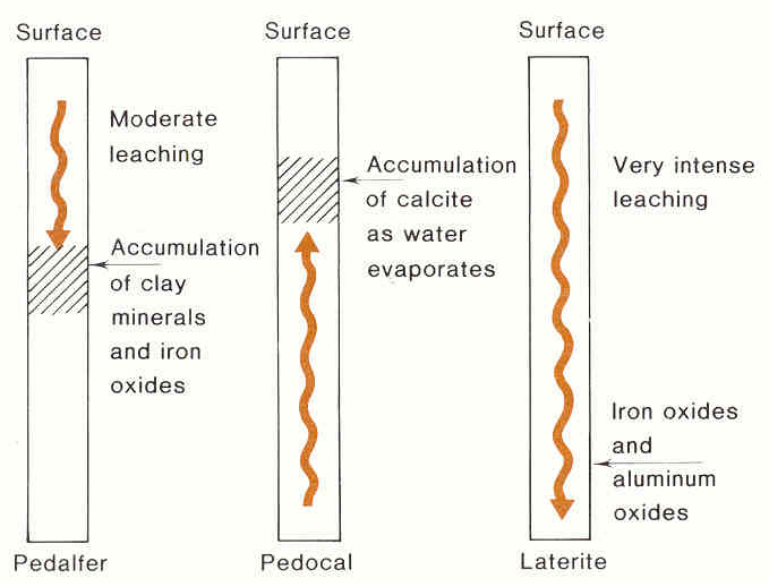
Plagioclase feldspars (continuous crystallization series)



VI.3. Ayrışma ürünleri

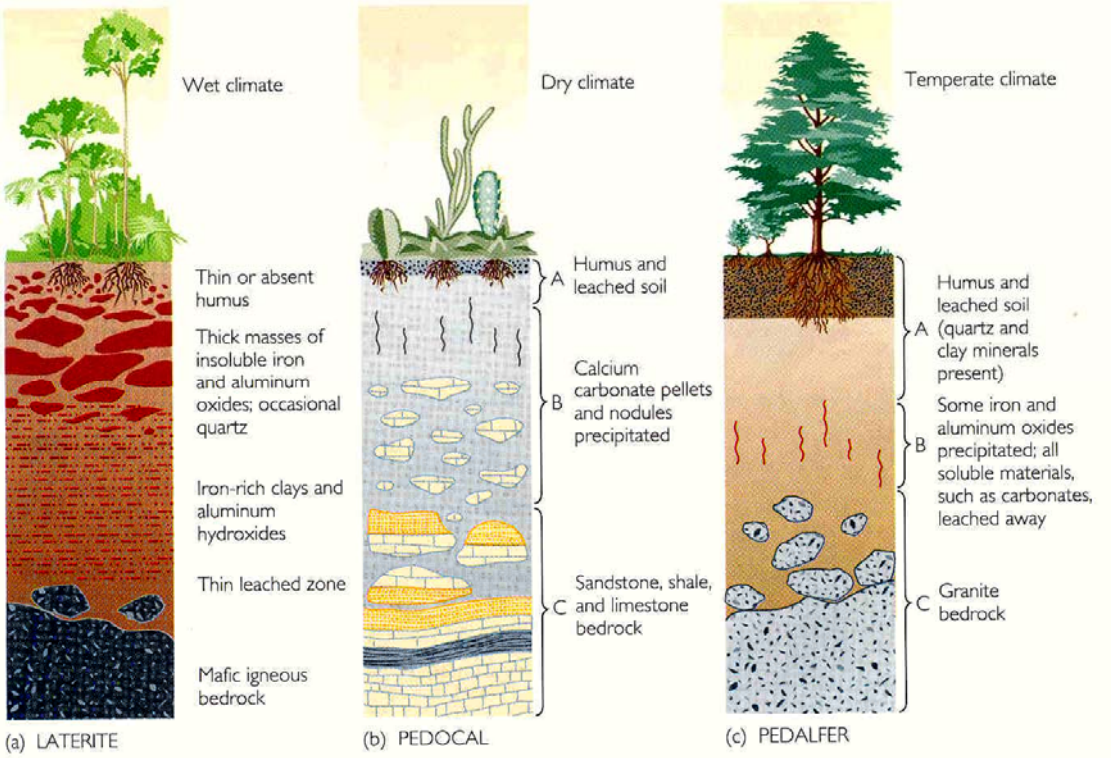


Şekil VI.11. Toprak/Zemin profili (Soil profile)

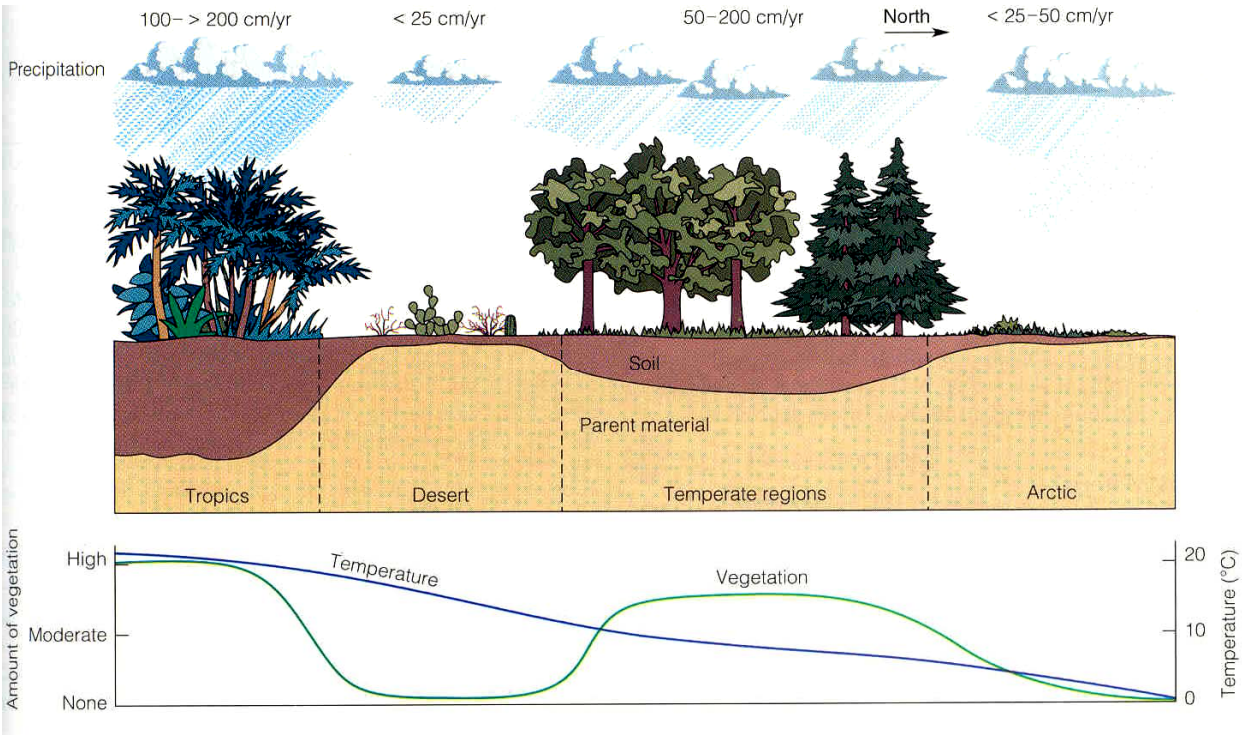


Şekil VI.12. Üç değişik toprak/zemin türünde suyun hareketi

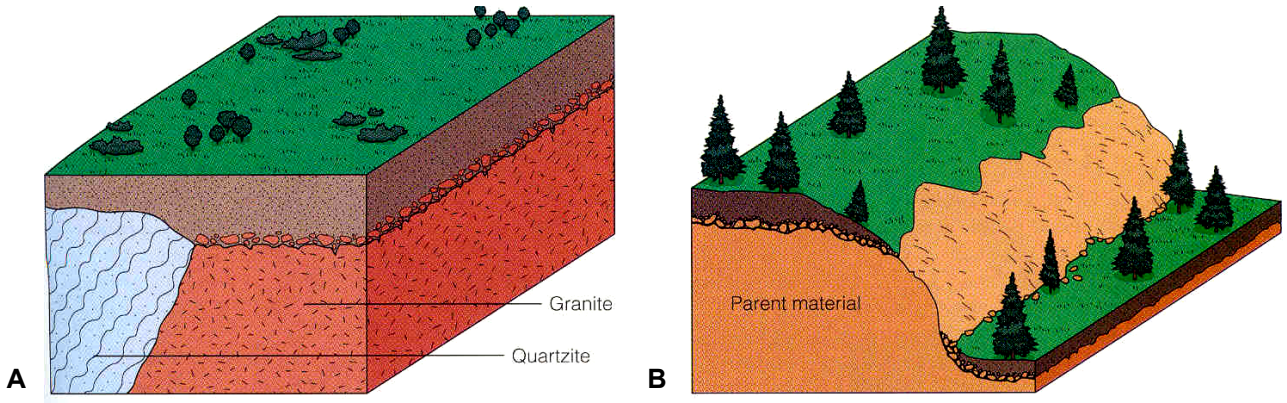
VI.4. Ayrışmayı ve toprak/zemin türünü kontrol eden faktörler



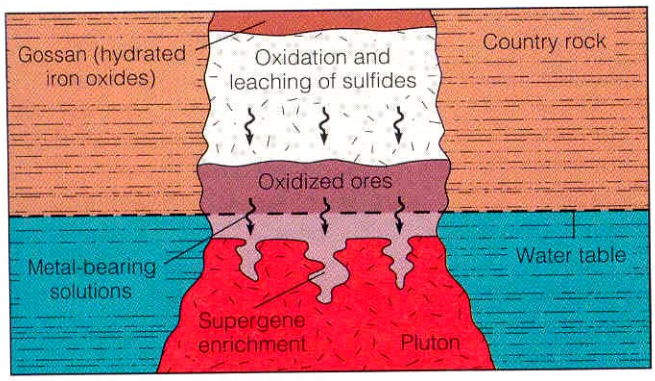
Şekil VI.13. İklim ve ana kayaca bağlı olarak oluşan üç değişik toprak/zemin profili



Şekil VI.14. Toprak/Zemin kalınlığının iklime bağlı olarak değişmesi



Şekil VI.15. Toprak/Zemin kalınlığının litoloji (A) ve yamaç eğimi (B) tarafından kontrol edilmesi



Şekil VI.16. Maden yatakları üzerinde Gossan gelişimi