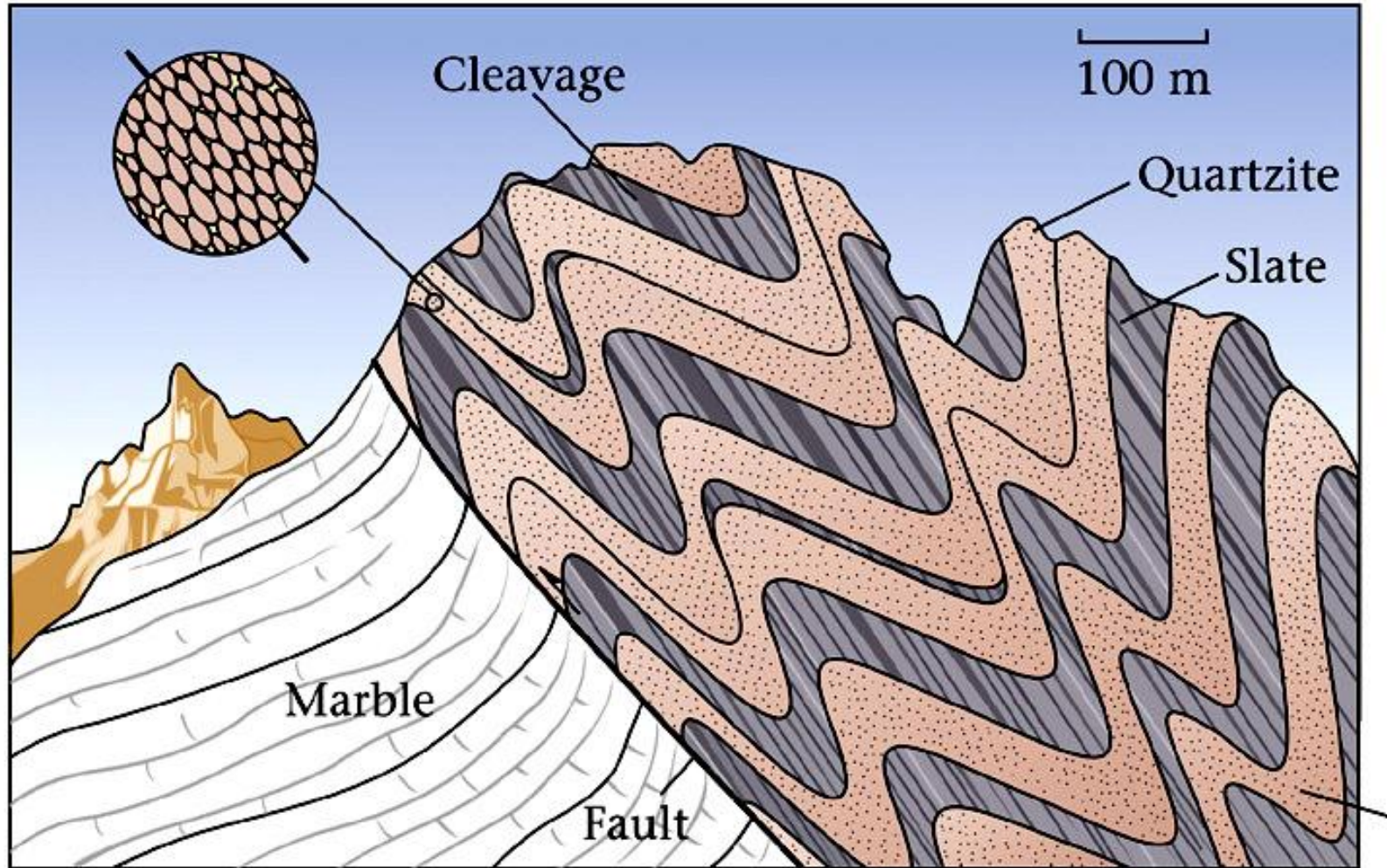


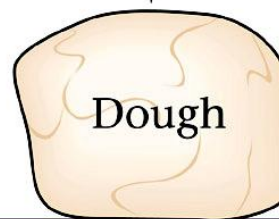
# Deformation and Mountain Building

(Brittle - ductile; stress and strain; faults and folds)



# Brittle and ductile deformation

Before



After



(a)

Brittle  
deformation

(b)

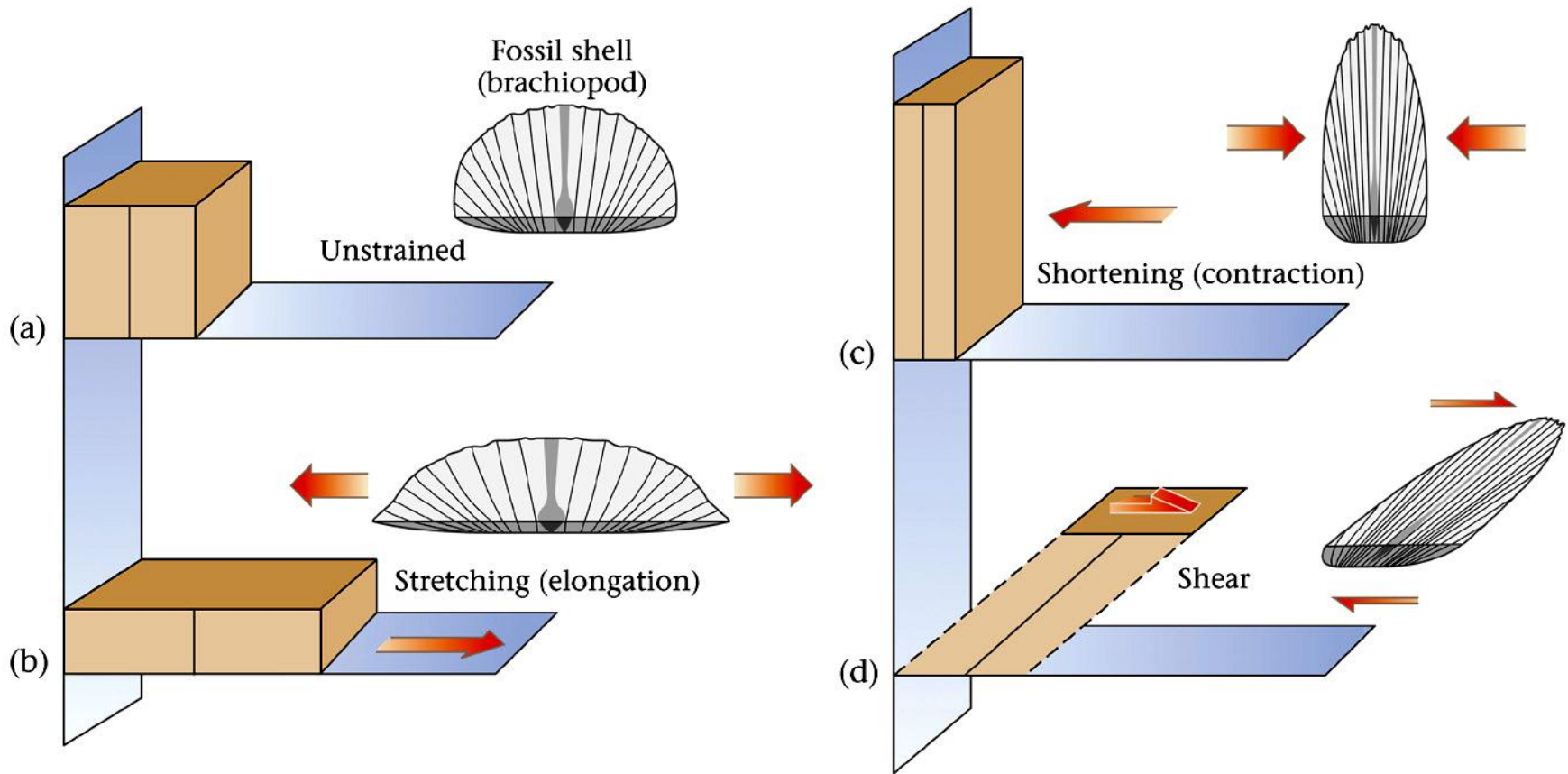
Ductile  
deformation

# Stress (force/area) and strain

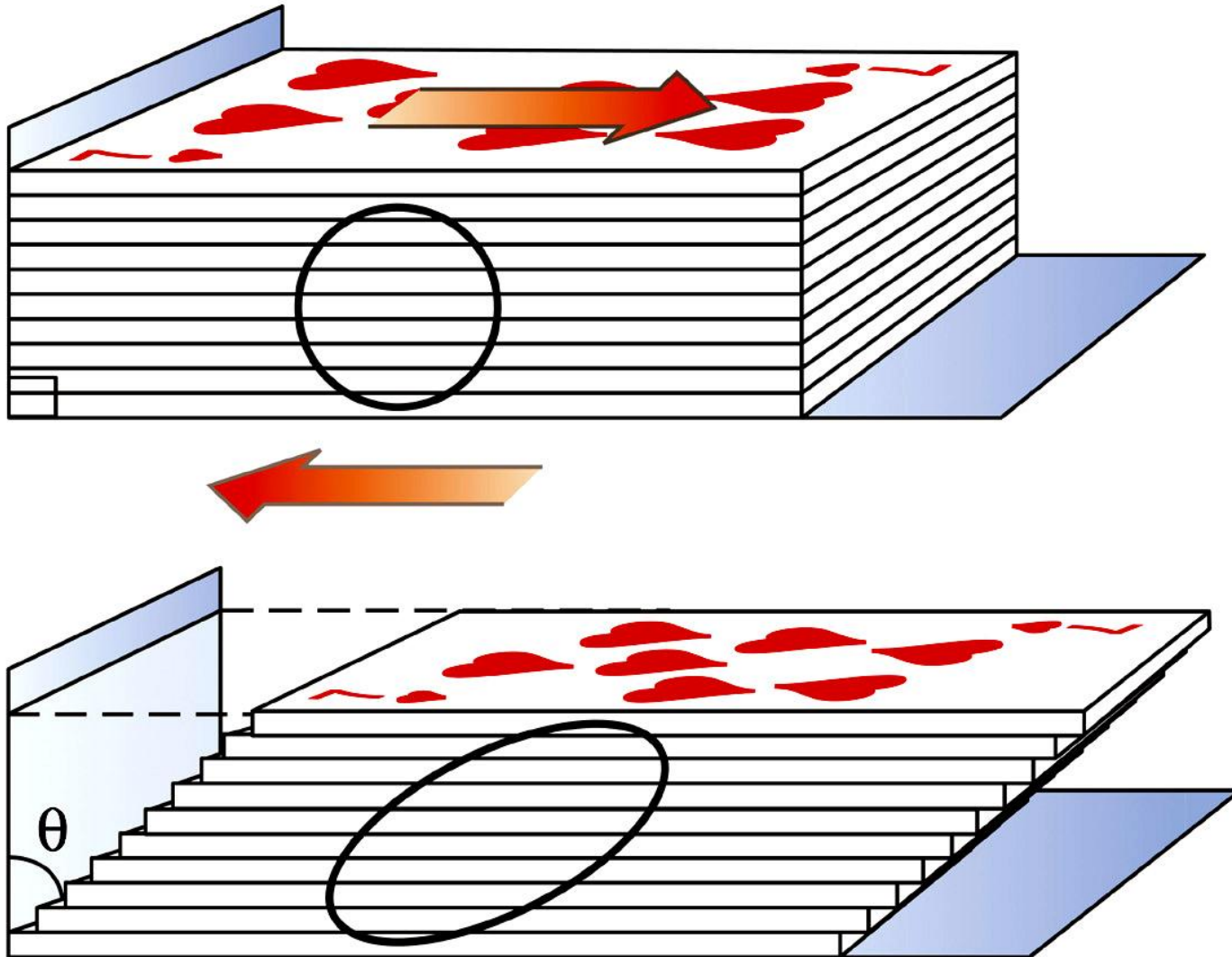
Types of stress

Extension → Stretching

Compression → Shortening

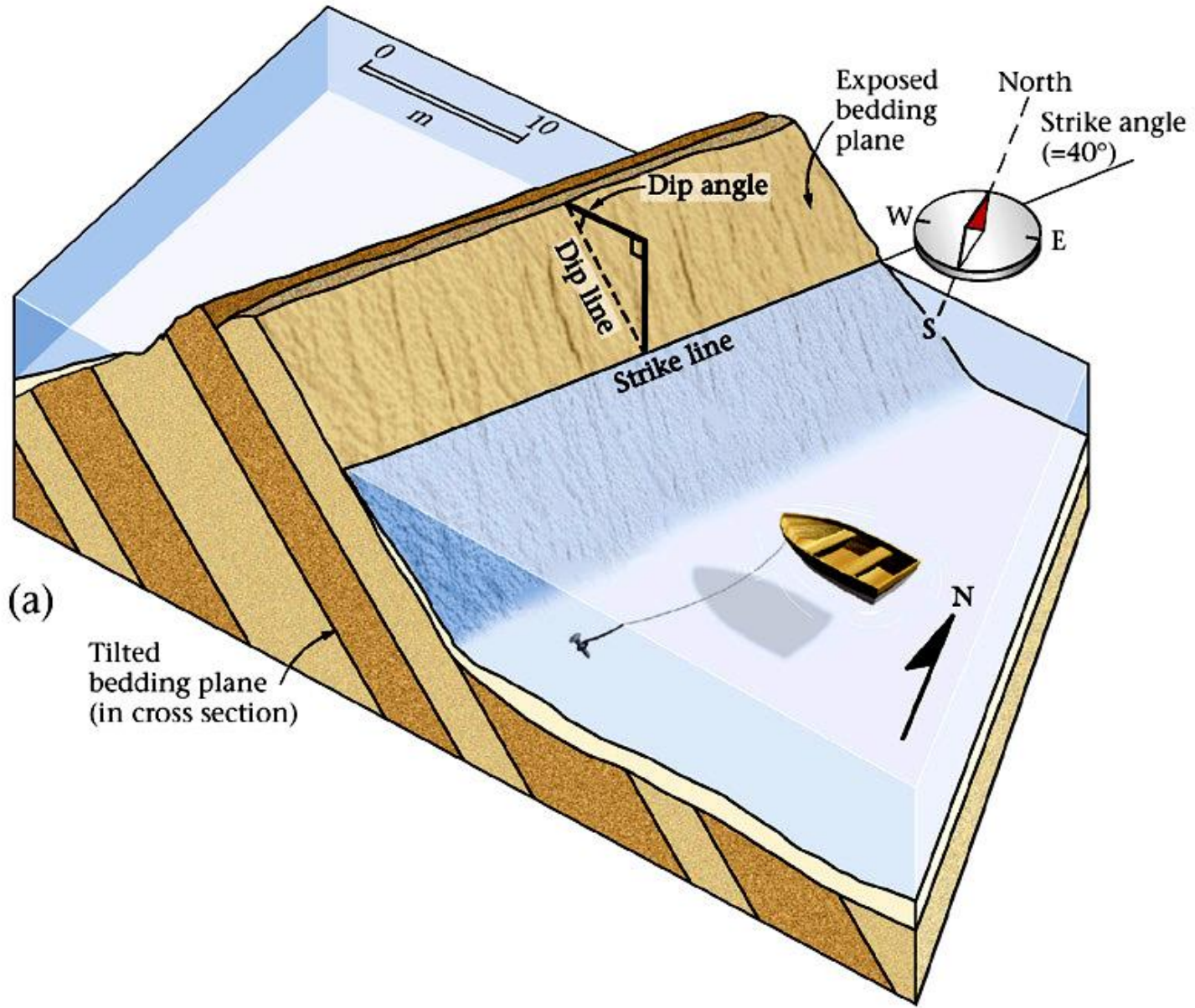


# Shear stress and strain

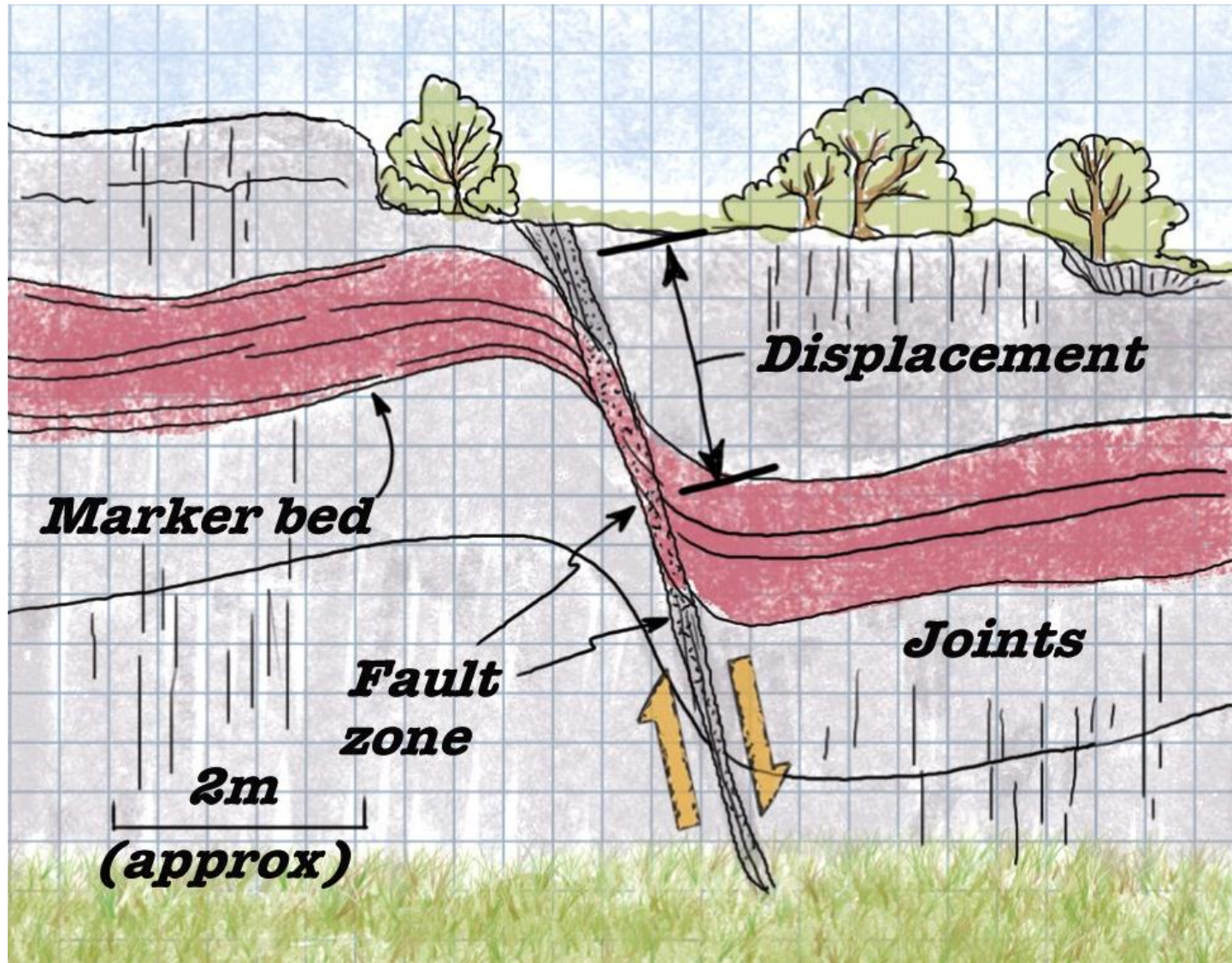




# Dip and Strike



# Dip-slip Fault



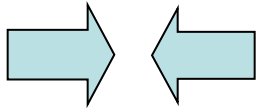


# Dip slip faults

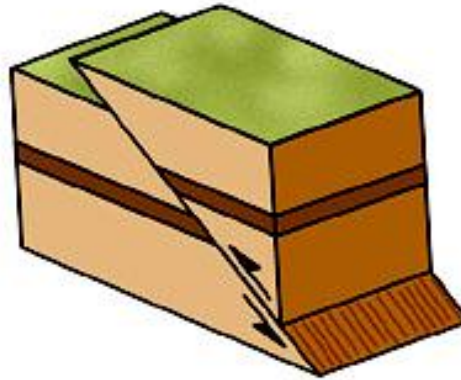
## Dip-slip faults



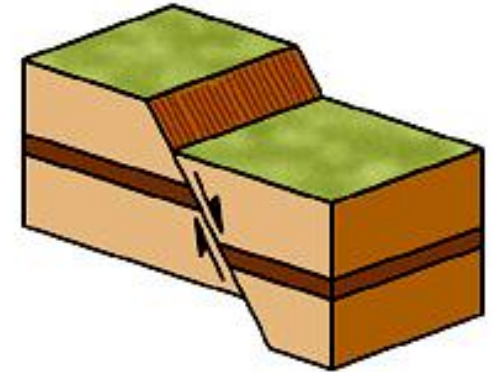
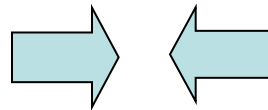
(b) Reverse



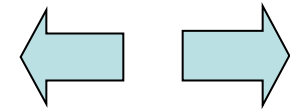
Compression  
Shortening



Thrust



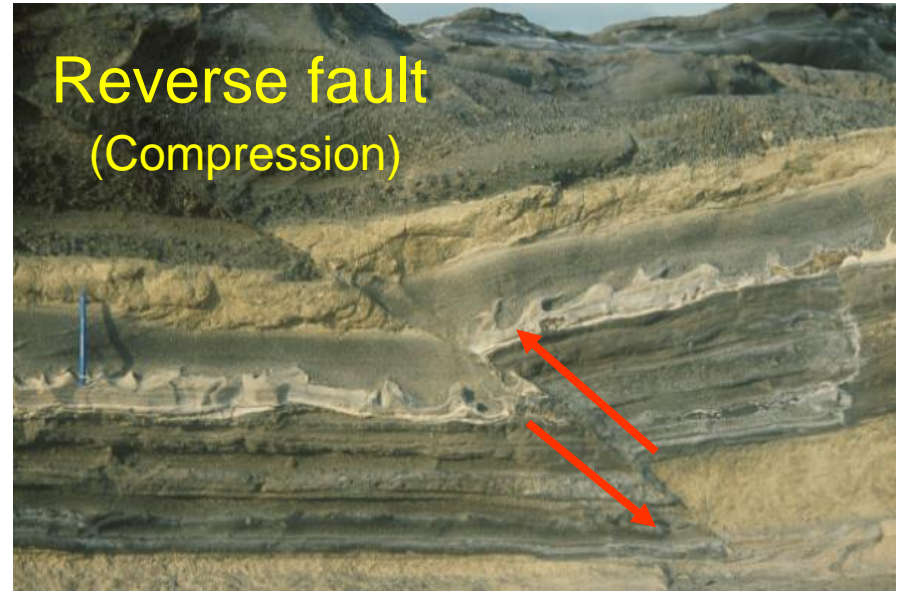
Normal



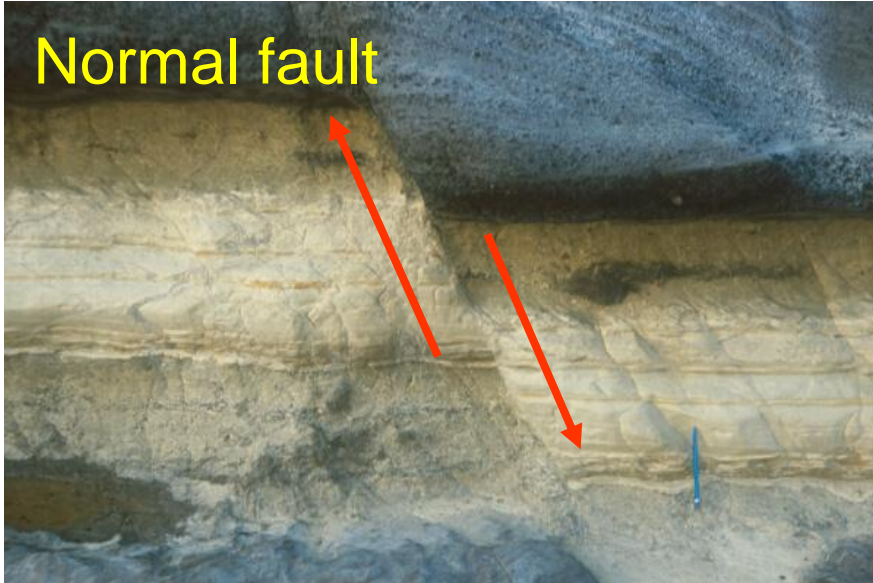
Extension  
Stretching

# Dip-slip faults

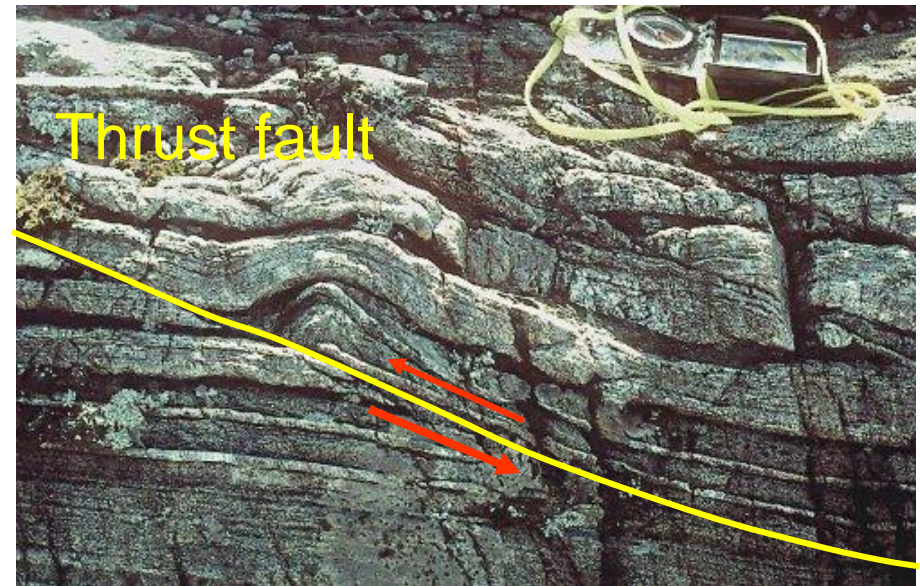
Reverse fault  
(Compression)



Normal fault

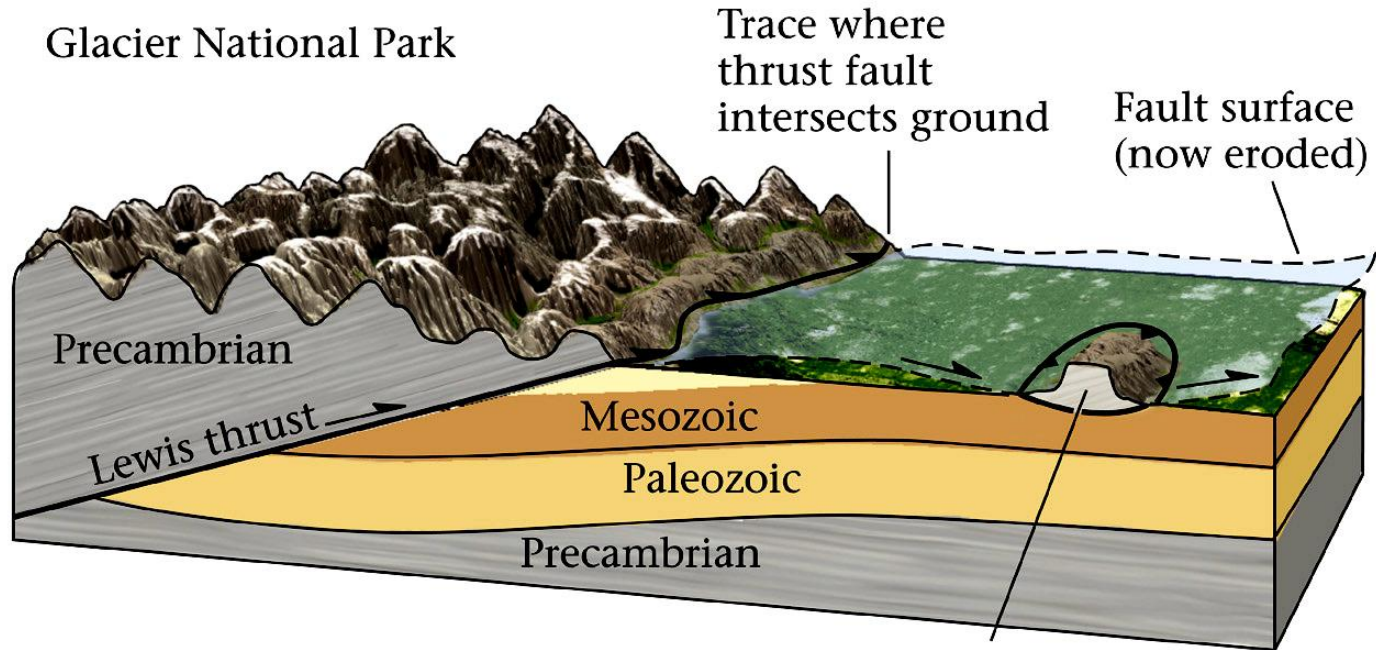


Thrust fault

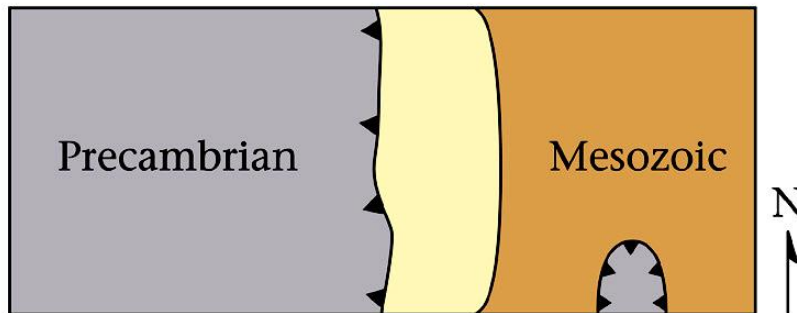




# Thrust fault



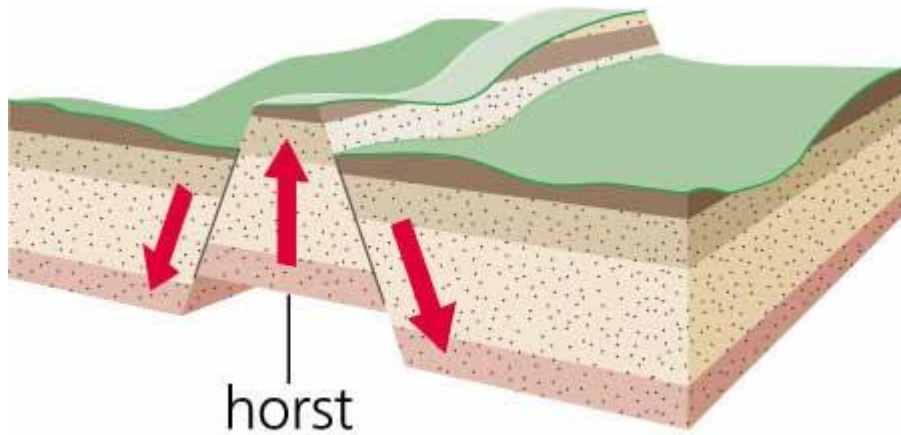
Map



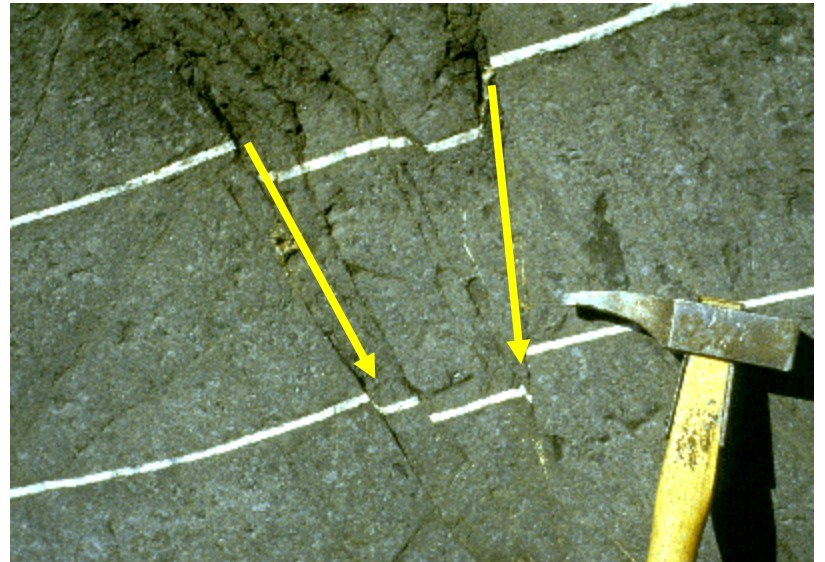
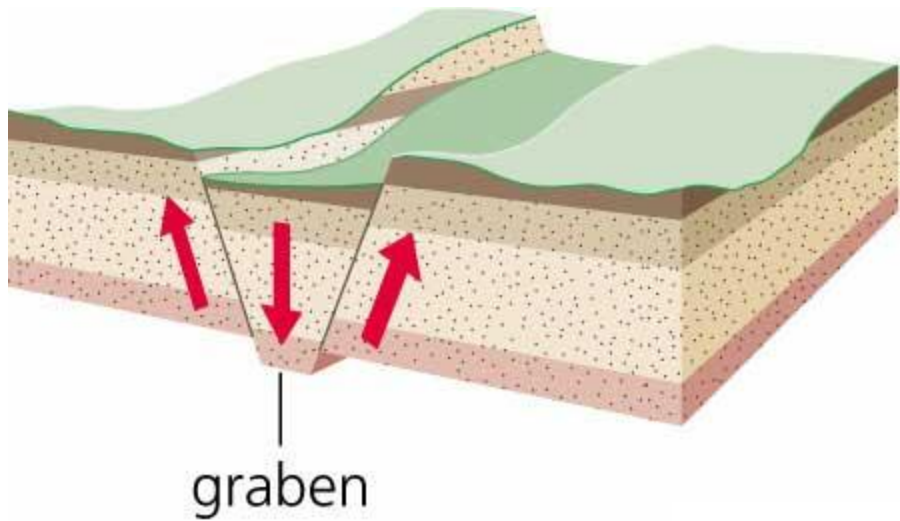
Chief Mt.  
(remnant of  
hanging-wall block)

Fault trace  
on ground

# Horst and Graben



Precision Graphics





# Strike-slip faults and the bicycle rule

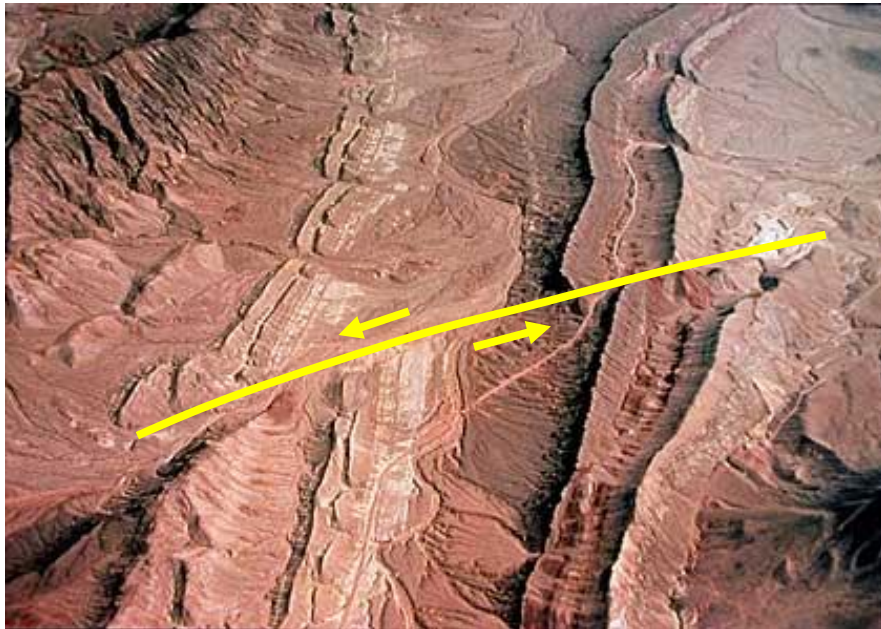
Strike-slip faults



Left-lateral



Right-lateral



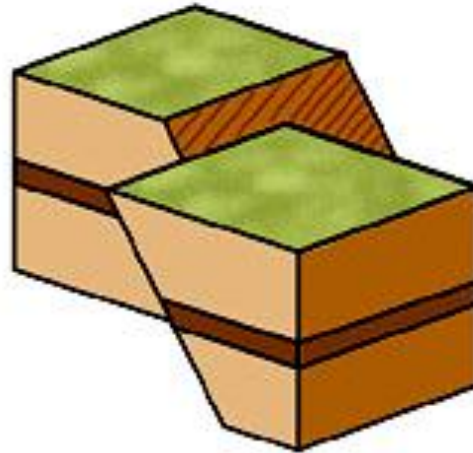


# Oblique-slip faults

Oblique-slip faults

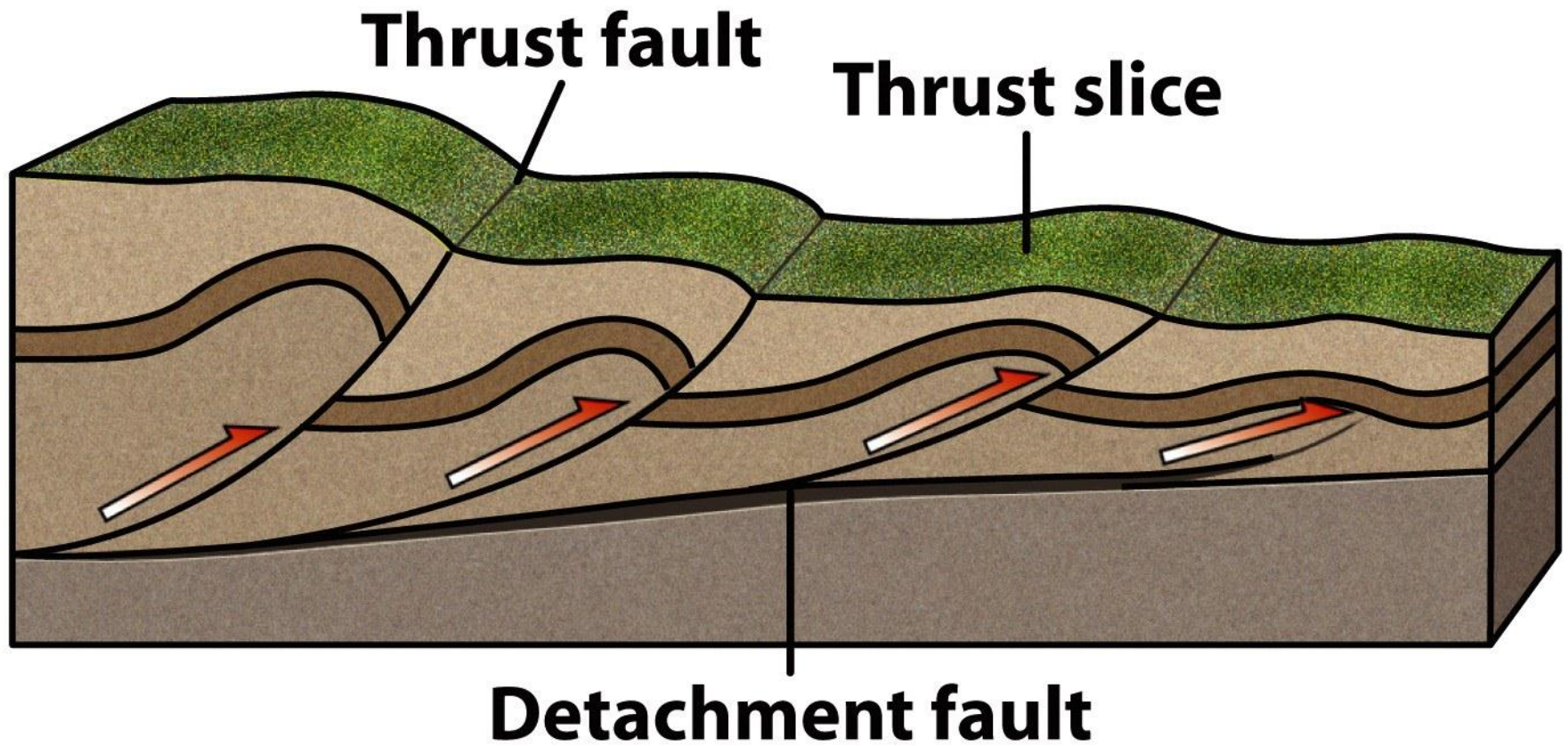


Reverse plus left-lateral



Normal plus right-lateral

# Thrust faults, Detachment fault and Mountain Building





# Transform Fault

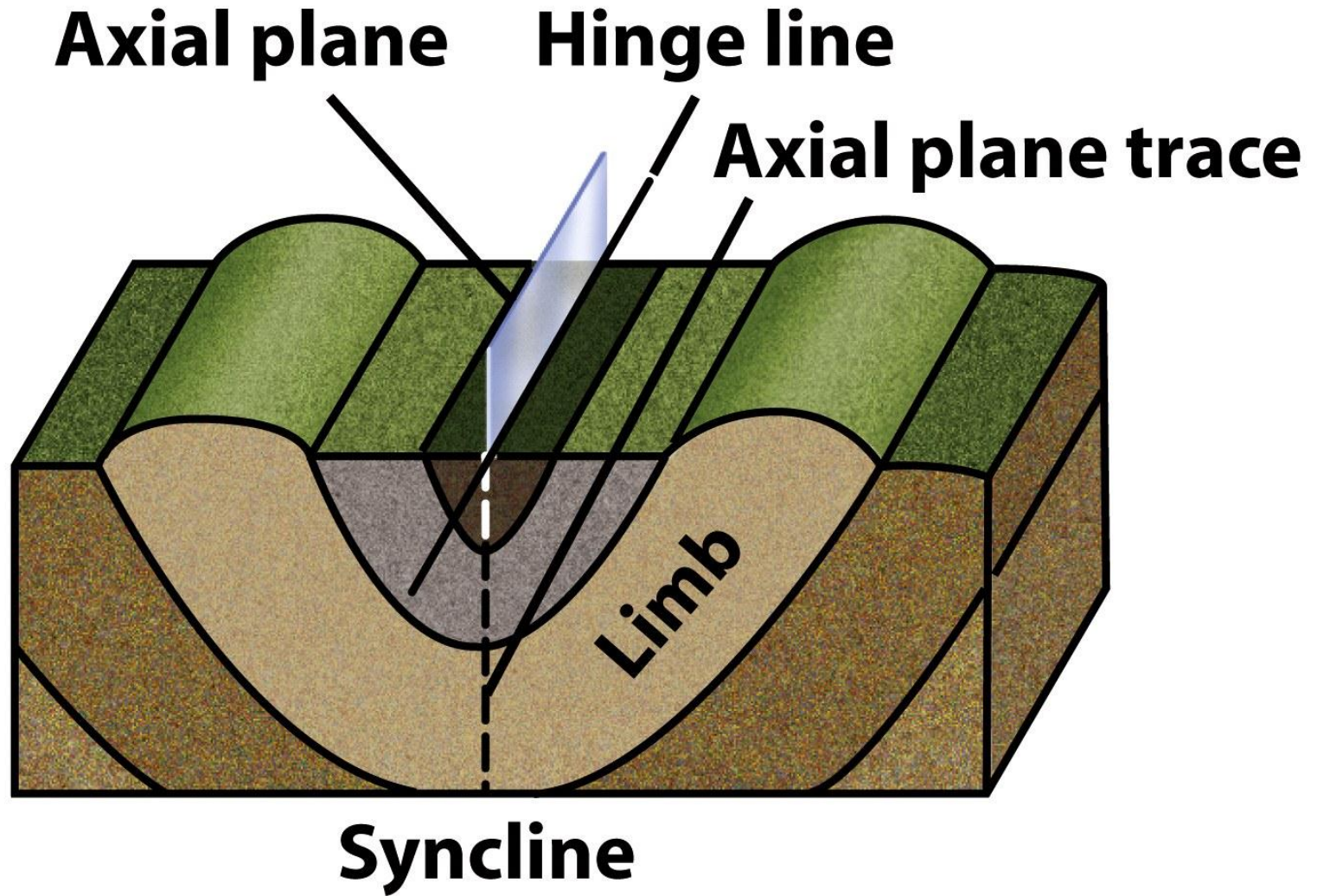




# Folding

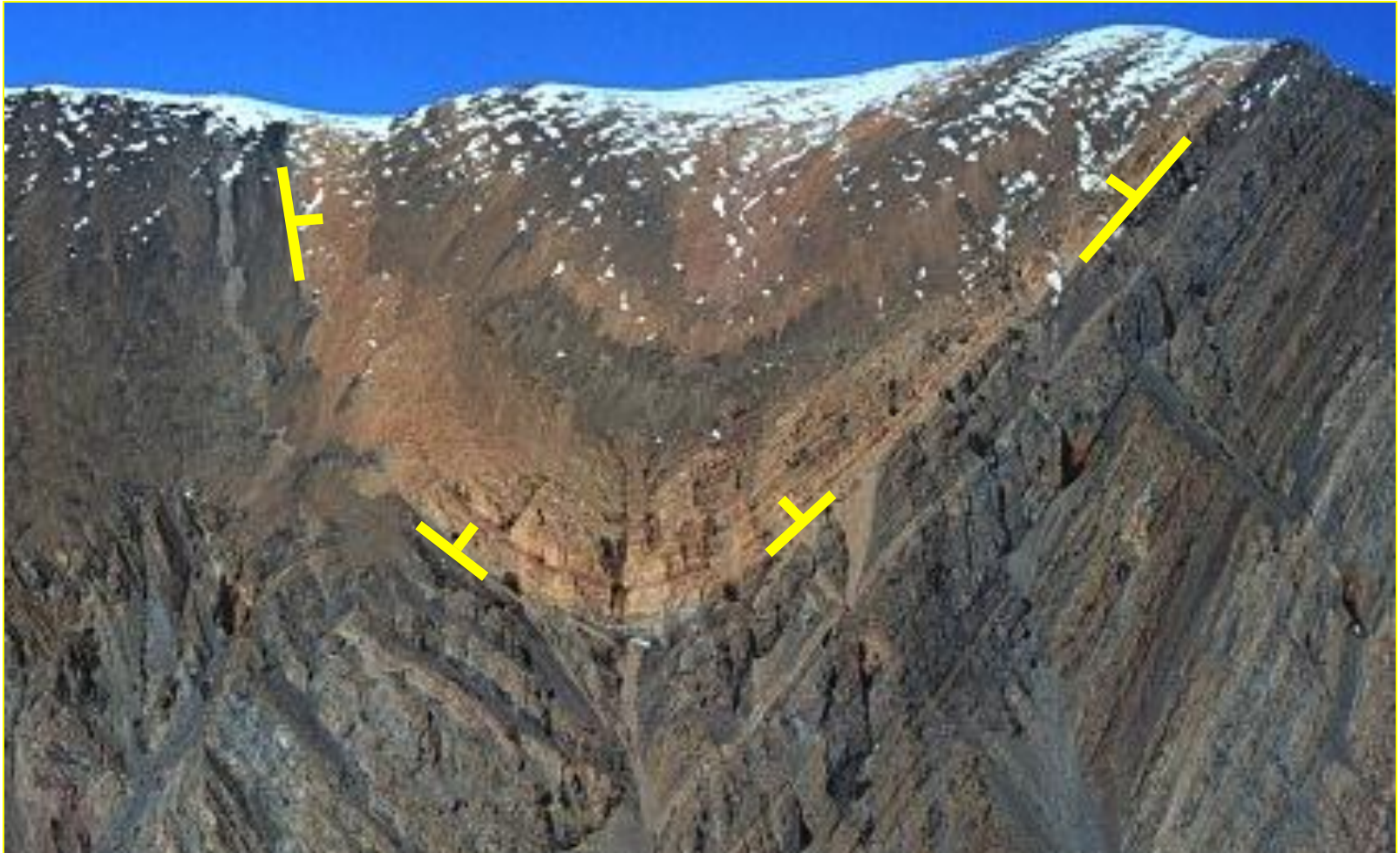


# Syncline



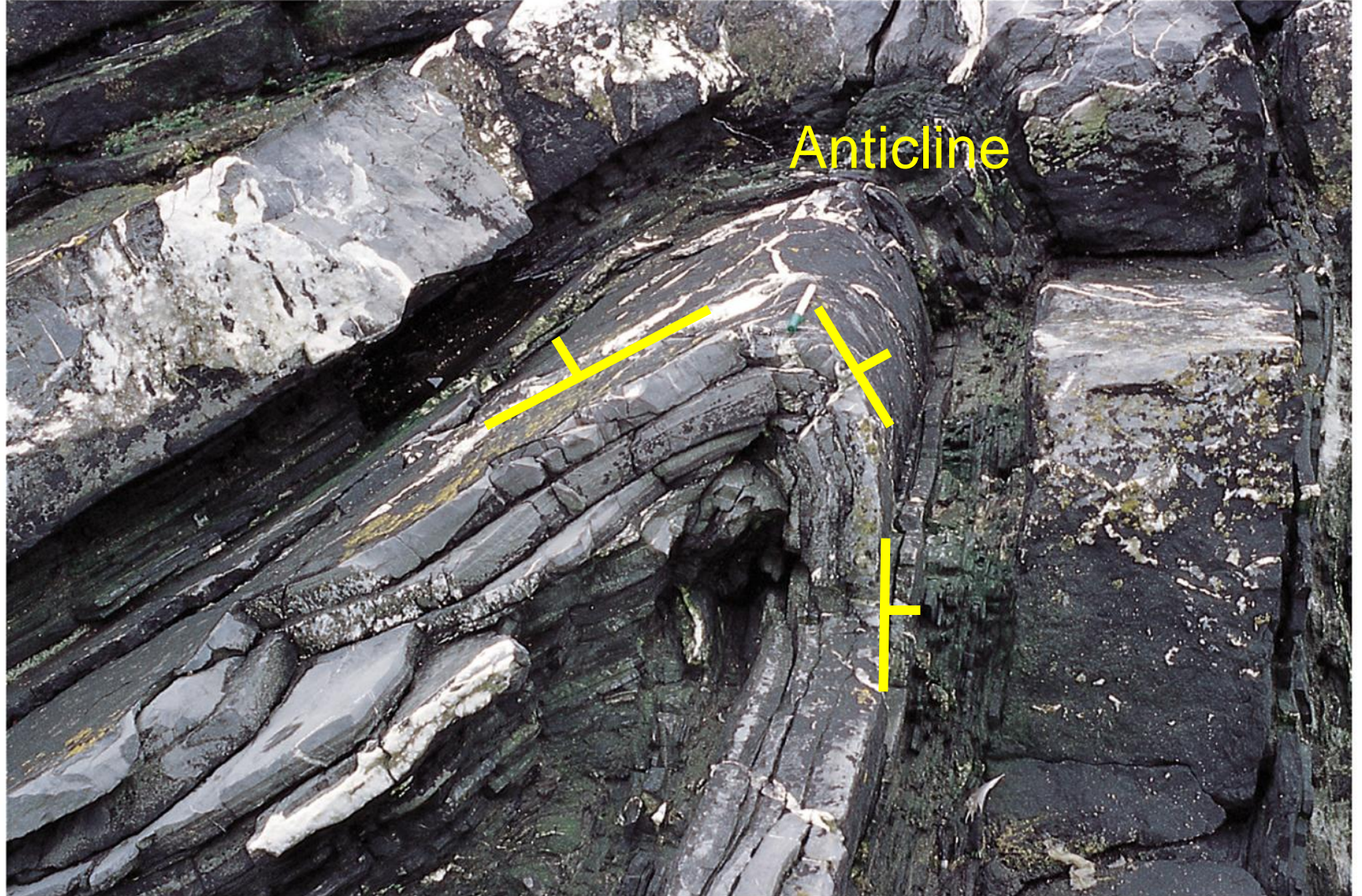


# Syncline



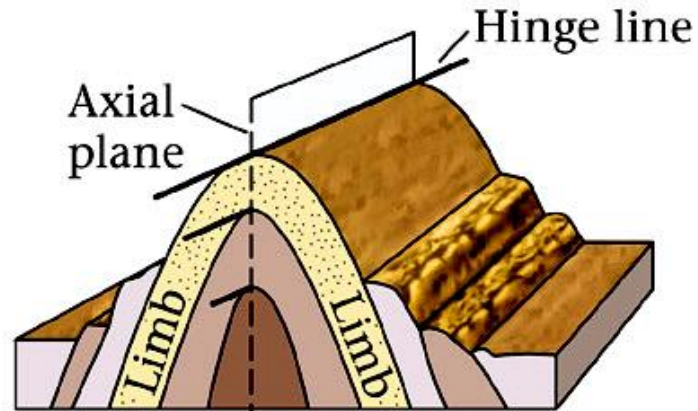


# Folding

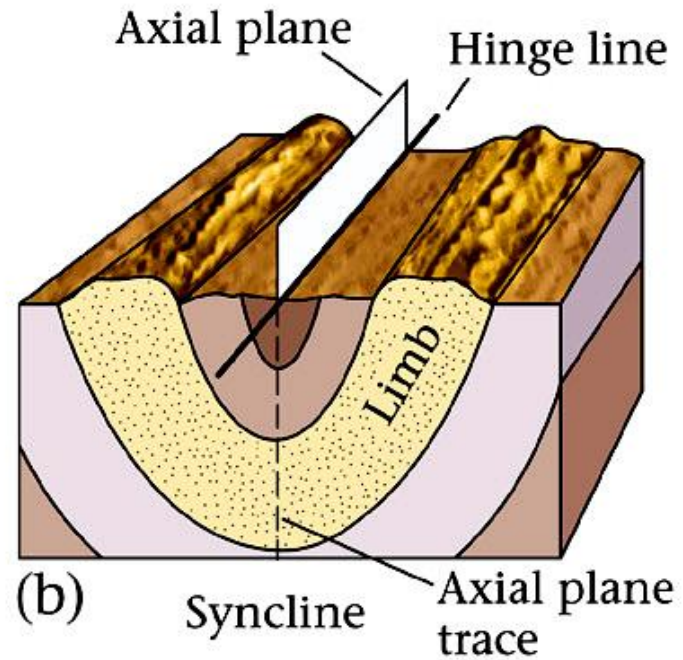




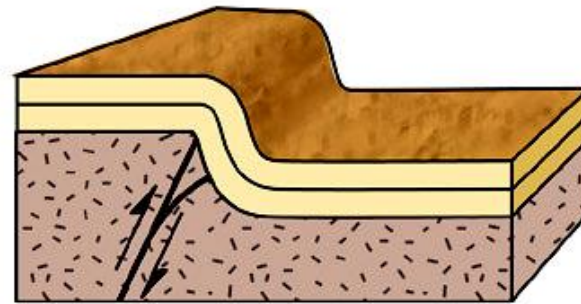
# Anticline, syncline and monocline



(a) Anticline

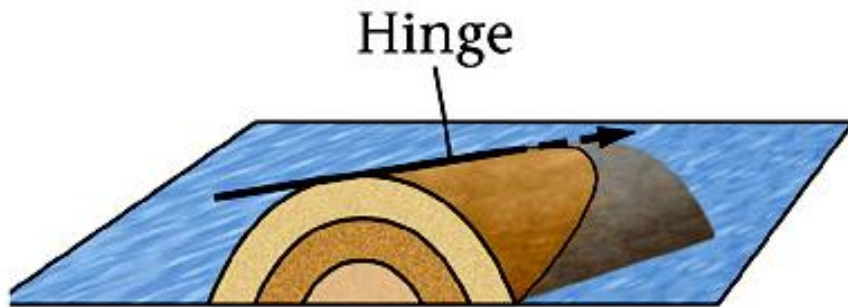


(b) Syncline

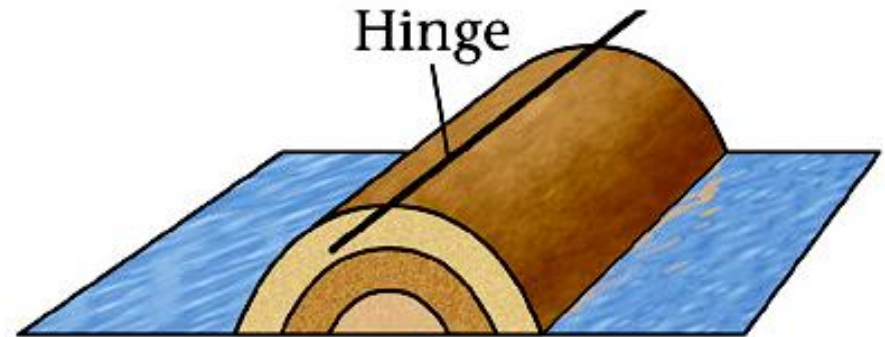


(c) Monocline

# Plunging and non-plunging folds



Plunging fold



Nonplunging fold



# Plunging Anticline





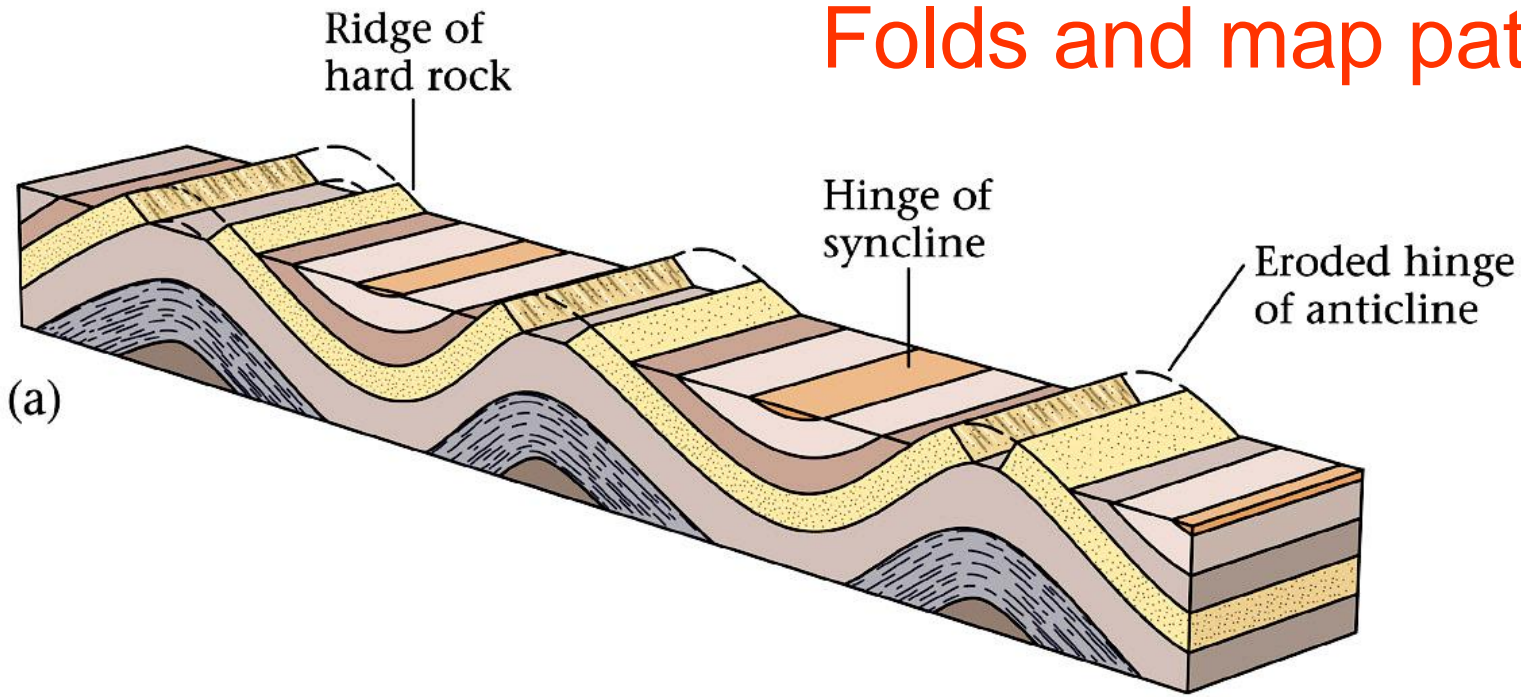
Plunging Anticline

Plunging Syncline

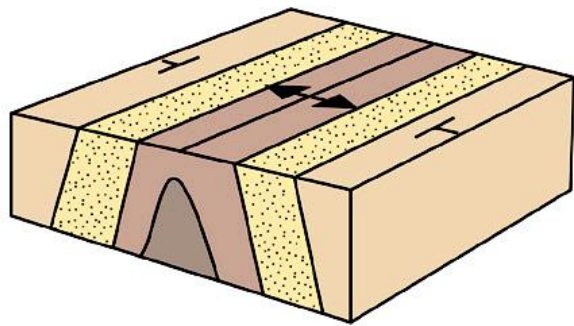




# Folds and map patterns

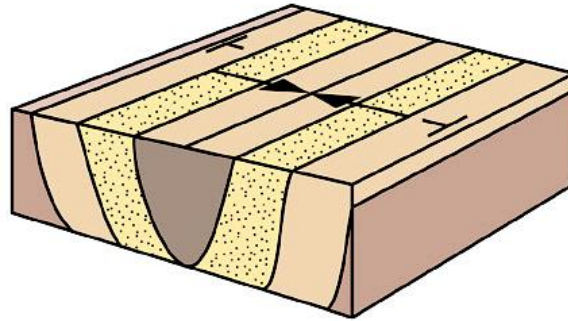


(a)

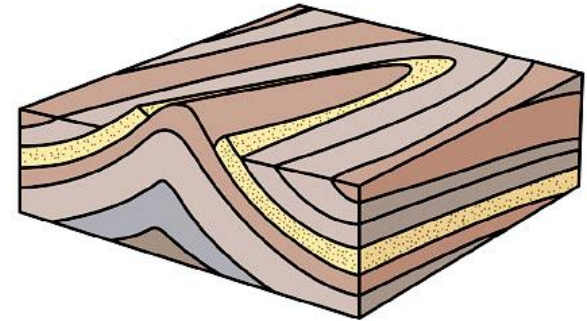


(b)

Nonplunging  
anticline



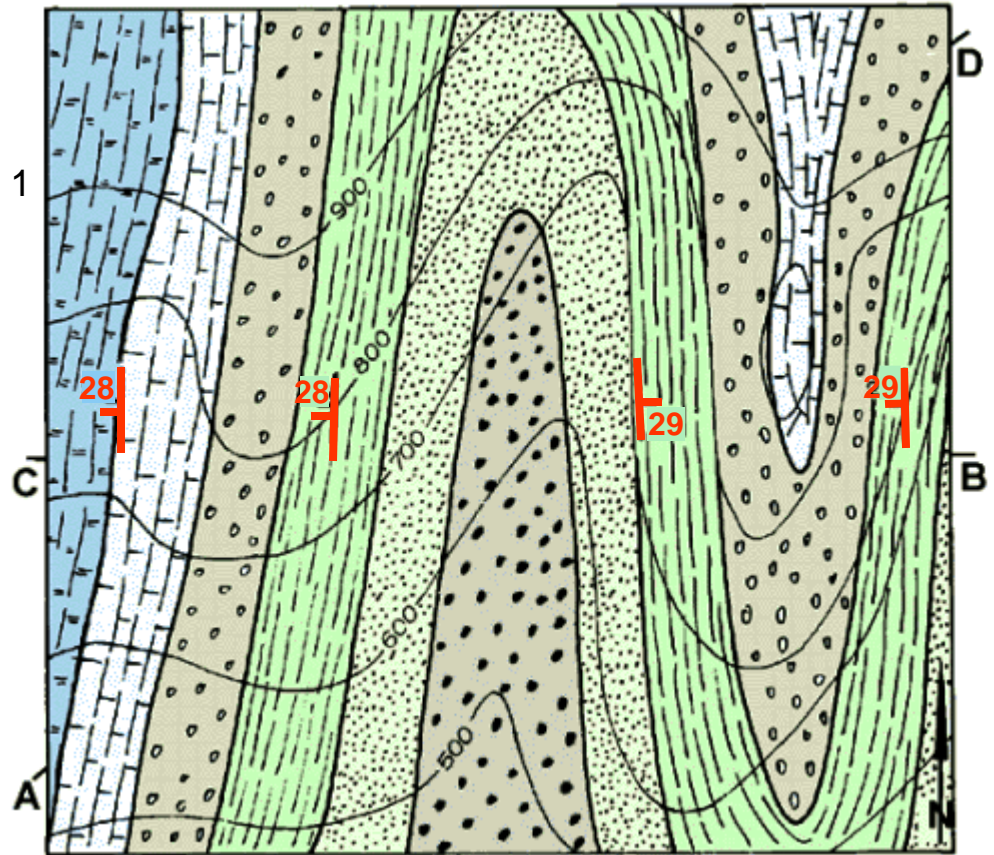
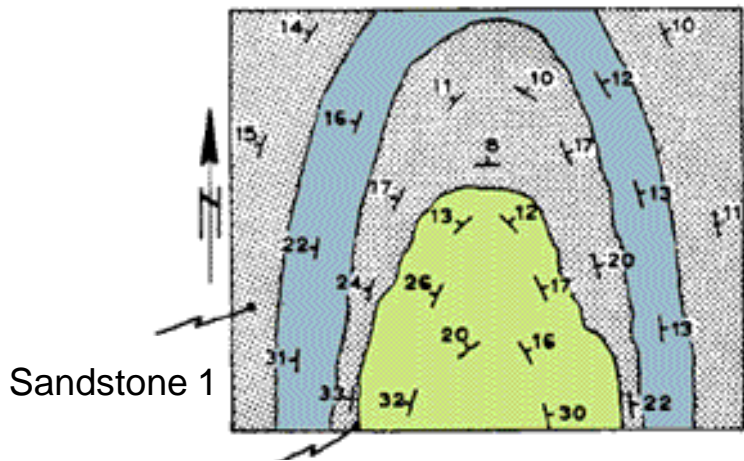
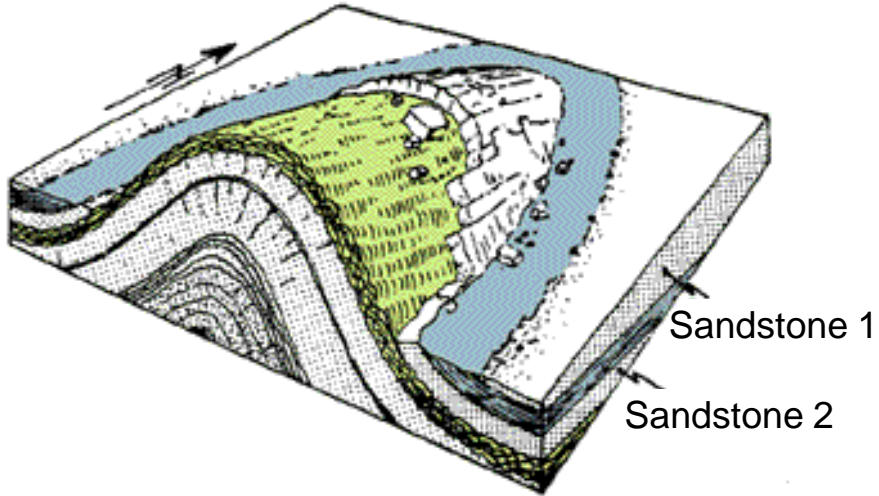
Nonplunging  
syncline



(c)

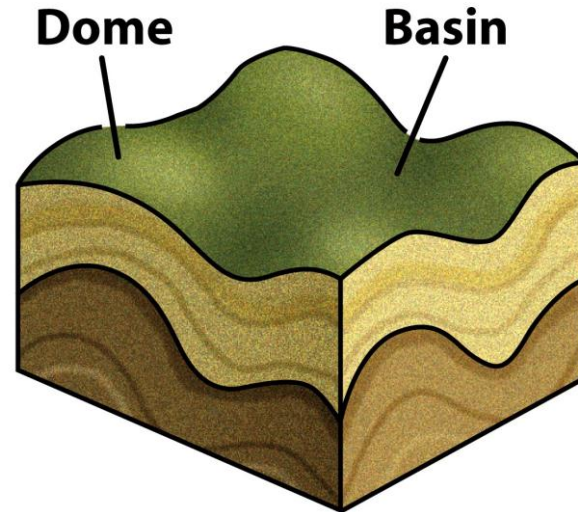
Plunging  
anticline

# Folds and map patterns



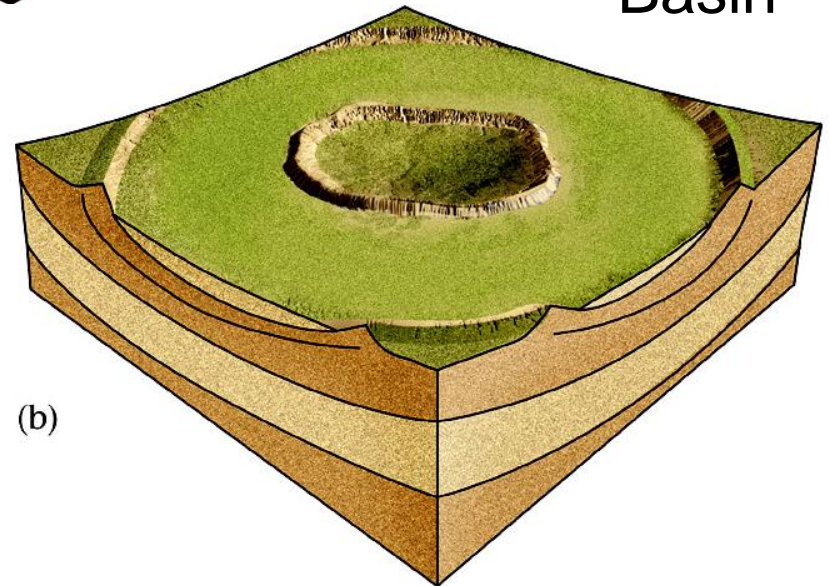
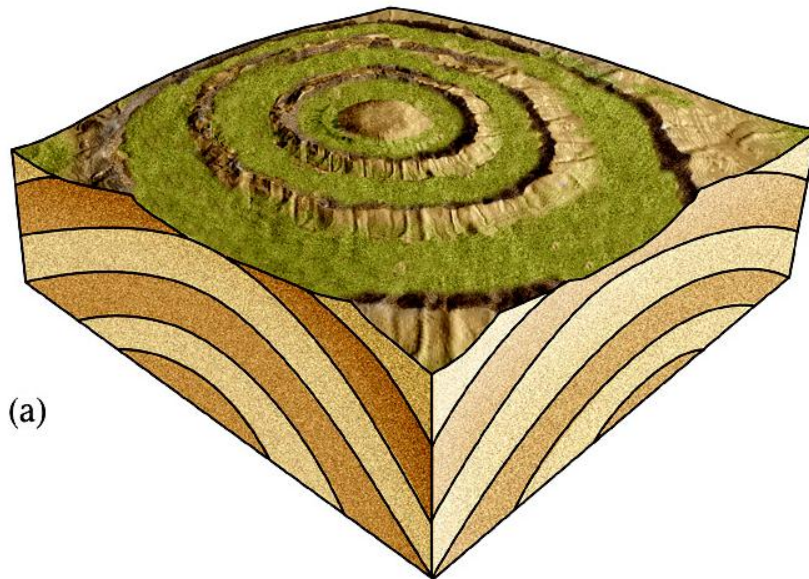


# Dome and basin formation – intersecting folds



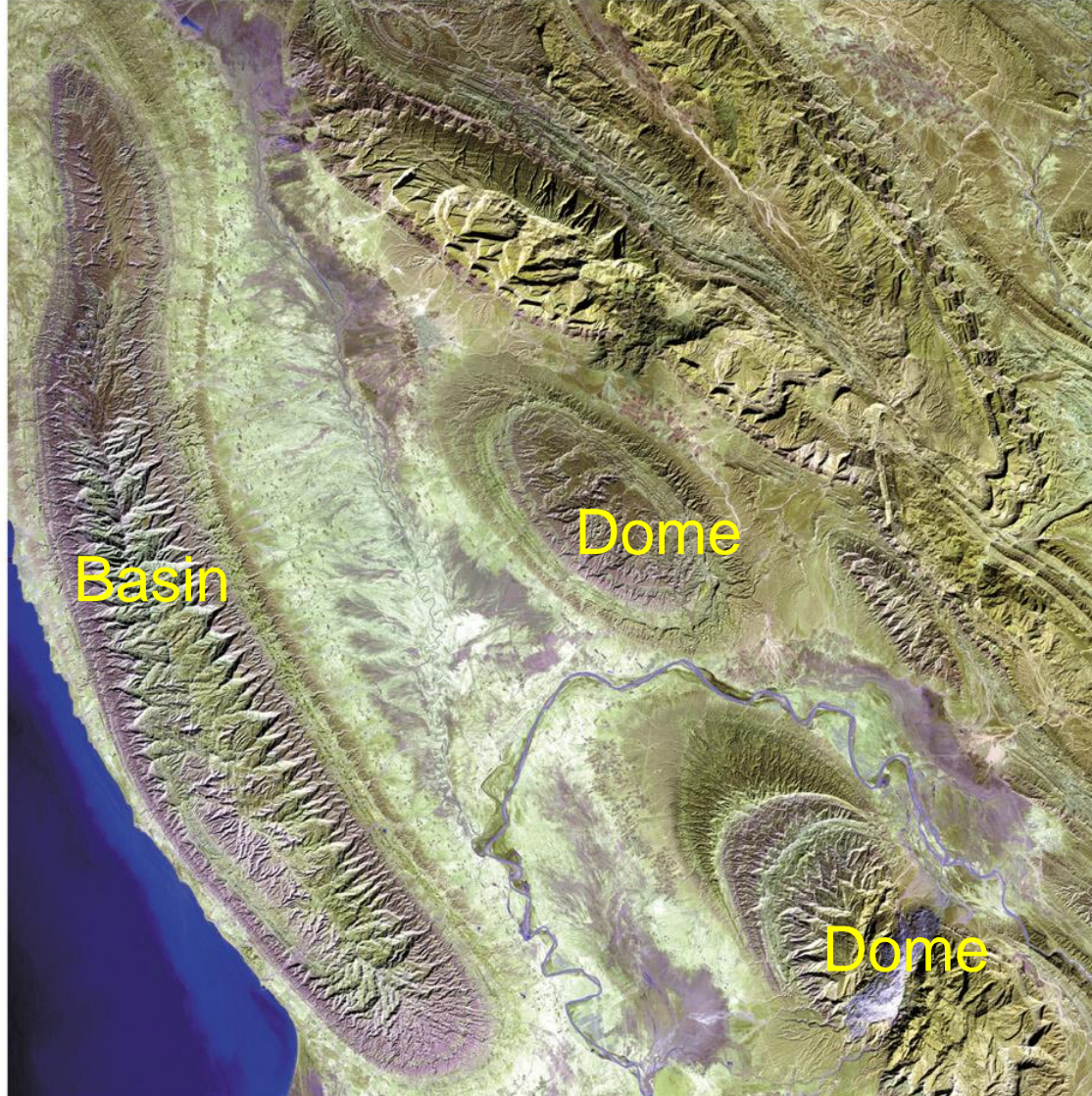
Dome

Basin



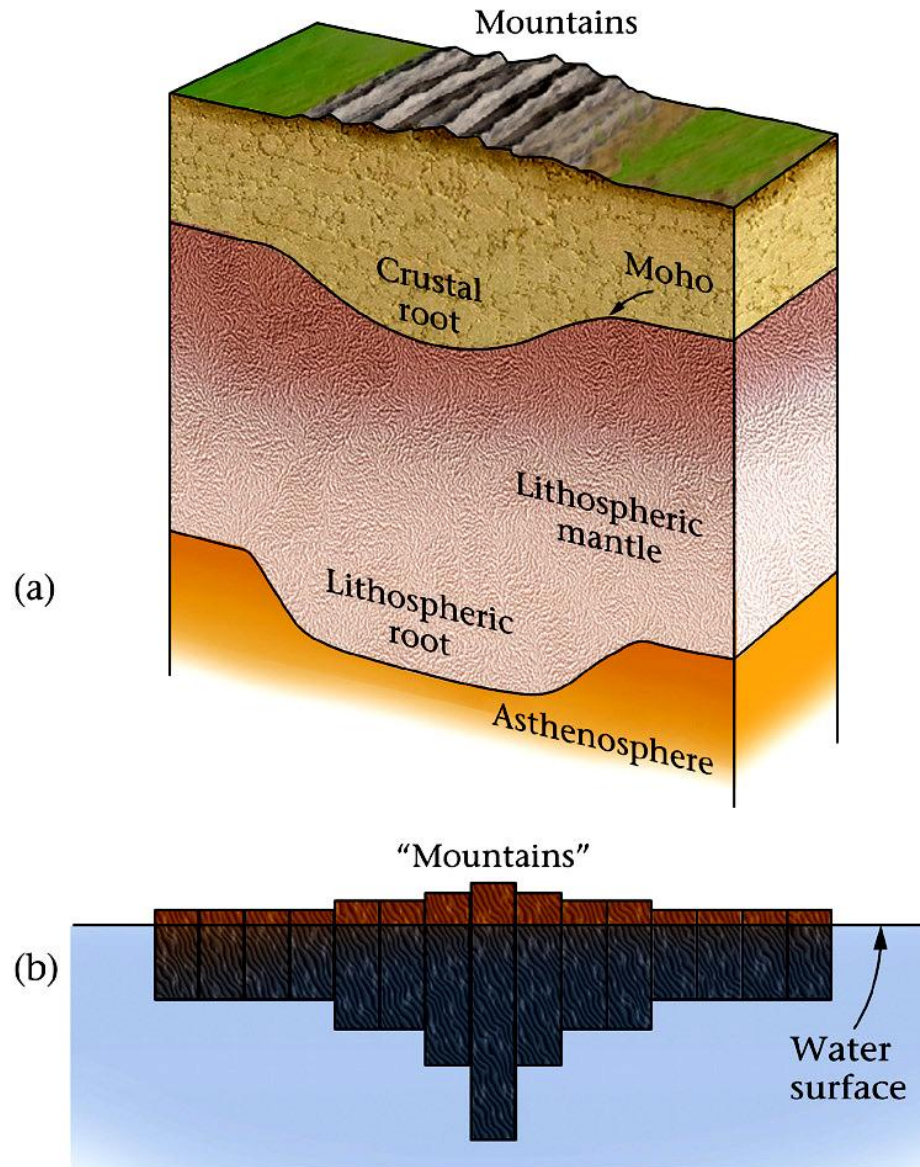


# Domes and basins





# Isostasy and Mountain building

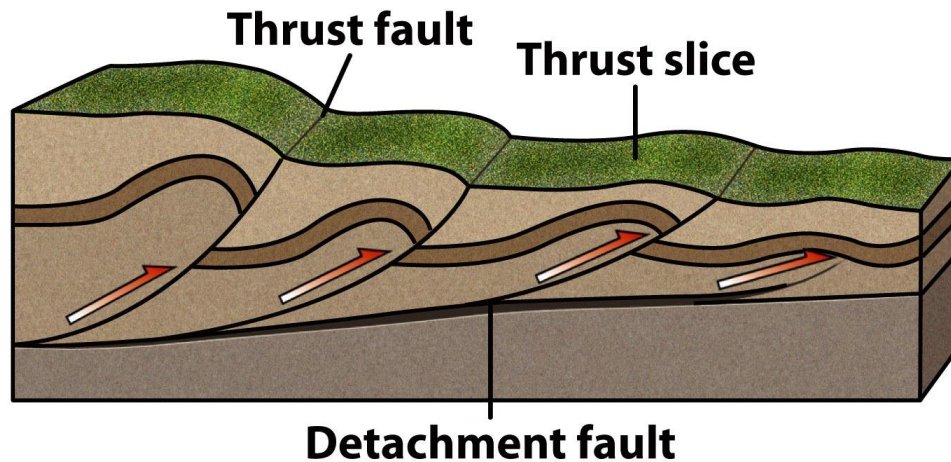
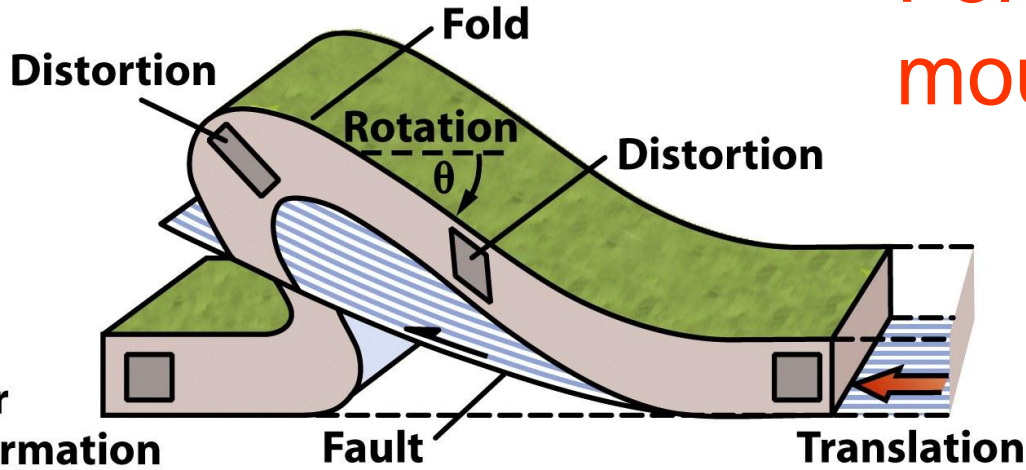


Before deformation



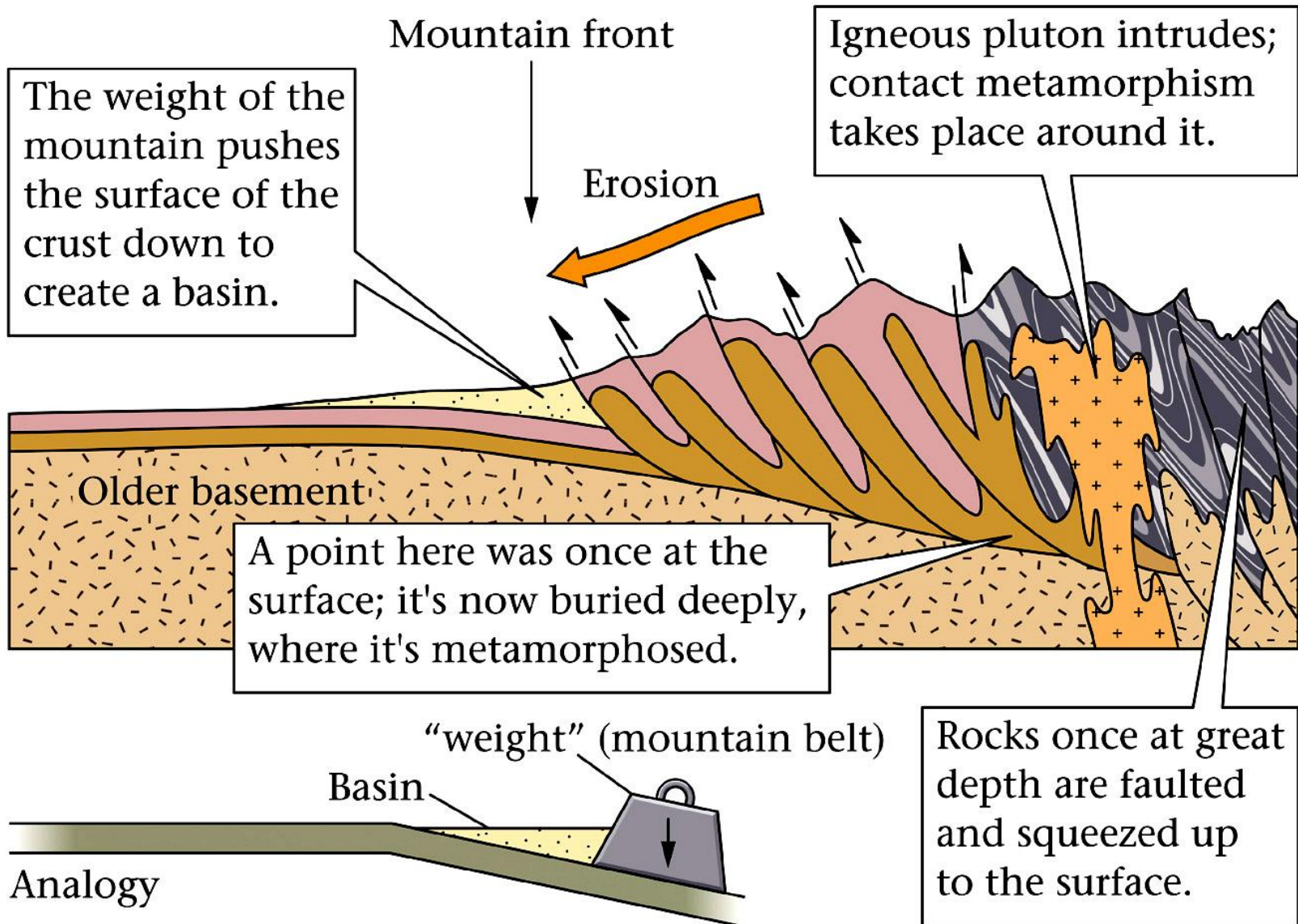
# Folding, faulting and mountain building

After deformation

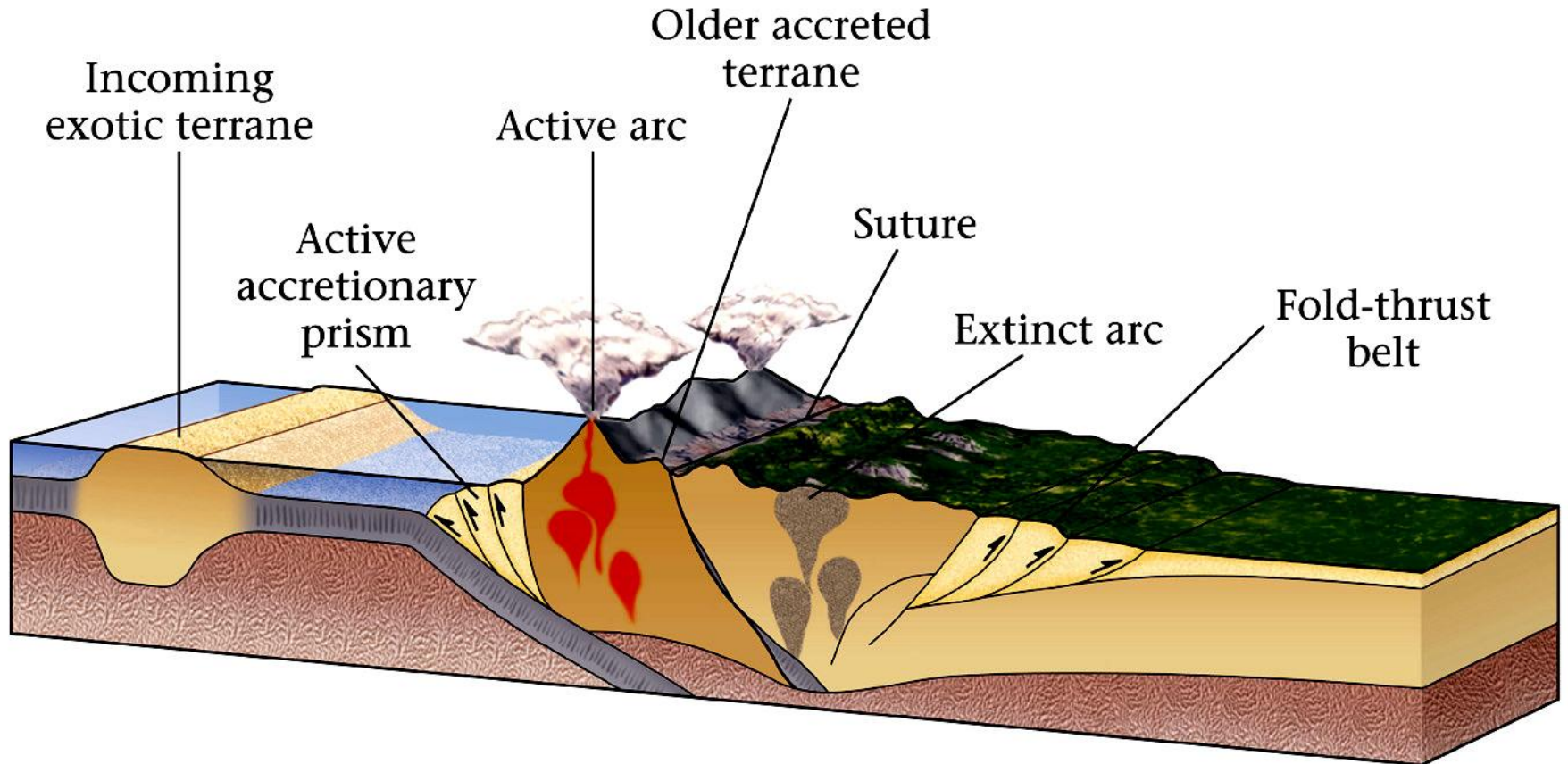




# Mountain Building

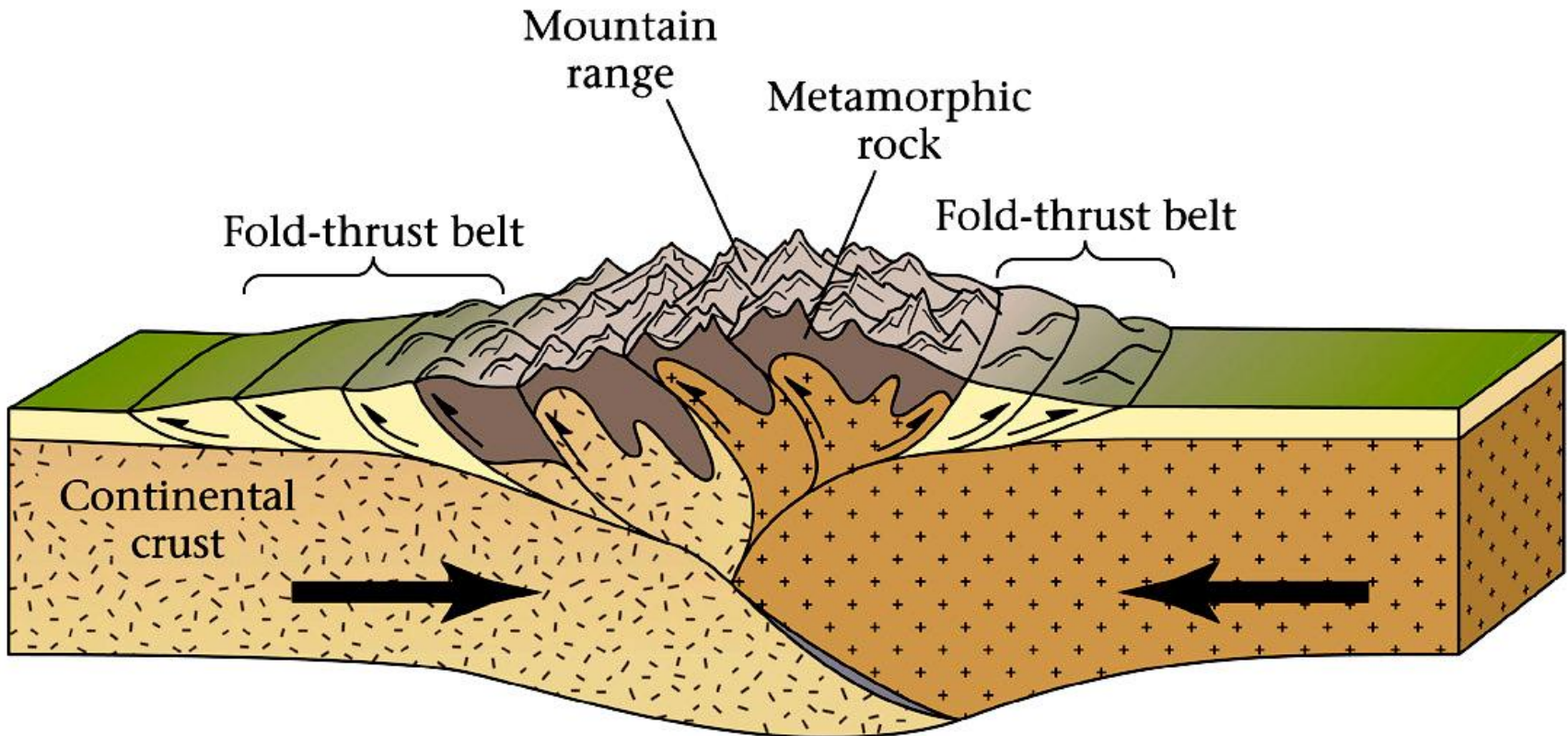


# Subduction and Mountain building





# Continent-continent collision and Mountain building



# Rift Mountains

Not to scale

