

## Geologic Maps

- Determine the structure of rocks from the pattern created by the intersection of dipping layers with the (level) land surface.
- Use strike, dip, and other map symbols to determine structure.
- **Formation:** discrete mappable rock unit
- Map notation of a formation:
  - Ex.: formation name      age      notation
  - Buda Limestone (bu) Cretaceous (K)= Kbu

## Geologic Contacts

- Line (on a map) or interface (in the real three-dimensional world) between adjacent rock units (formations)
  - Depositional contact: between adjacent sedimentary strata, lava flows, etc., or their metamorphic equivalents
  - Fault contact: between rock units that have strike-slip or dip-slip displacement
  - Igneous intrusive contact: between host rocks and an invading intrusive body
- Geologic contacts between unfolded, horizontal strata, follow contour lines.

## Interpreting Structural Forms in Geologic Maps

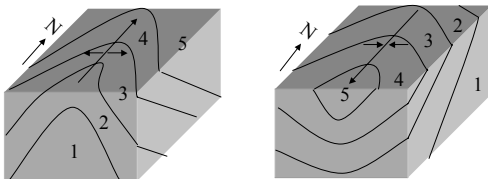
- Look for omission or repetition of beds.
- Omission of beds may signify the presence of an unconformity or fault.
- Symmetrical repetition of beds may indicate the presence of a fold - anticline or syncline.
- Anticline: repetition is in the form of younger-older-younger.
- Syncline: repetition is in the form of older-younger-older.

## Outcrop Width

- Variation related to slope of the land surface:
  - Steep slope: more narrow outcrop pattern
  - Gentle slope: broader outcrop pattern
- Variation related to dip of strata:
  - Steep dip: more narrow outcrop pattern
  - Shallow dip: broader outcrop pattern
    - The more shallow the dip of the bed, the broader the outcrop width. Hence for a dipping bed, outcrop width is greater than the true thickness of the bed for any angle of dip more shallow than 90°.
- For a vertical bed (90°), the outcrop width equals the true thickness of the bed.

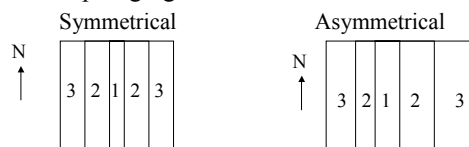
## Plunging Folds (pages 349, 350)

- Fold whose axis is inclined to the horizontal
- N-plunging anticline    S-plunging syncline



## Outcrop Patterns (pages 388,389)

- Non-plunging folds:

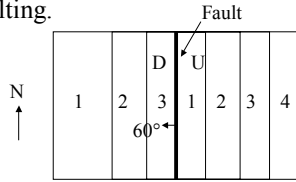


- Plunging folds:

- Plunging anticline: closure points toward the direction of plunge.
- Plunging syncline: closure points opposite to the direction of plunge.

### More Patterns

- Faults: asymmetrical repetition may be due to faulting.






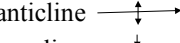
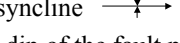




- Dome: doubly plunging anticline
- Basin: doubly plunging syncline


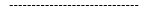


### Rule of V's (page 390)

- The pattern created when a bed outcrops in a stream bed.
- Allows us to determine the dip of the bed.

### Map Symbols

- Strike and dip 
- Horizontal bed 
- Vertical bed 
- Anticline 
- Syncline 
- Plunging anticline 
- Plunging syncline 
- Fault, and dip of the fault plane 
- Thrust fault 

### Maps Symbols (continued)

- Light solid line: depositional or igneous intrusive contact 
- Dashed or dotted light line: 
  - where contact is uncertain
- Heavy solid line: fault 
- Dashed or dotted heavy line: 
  - where location of fault is uncertain