

Chapter 10

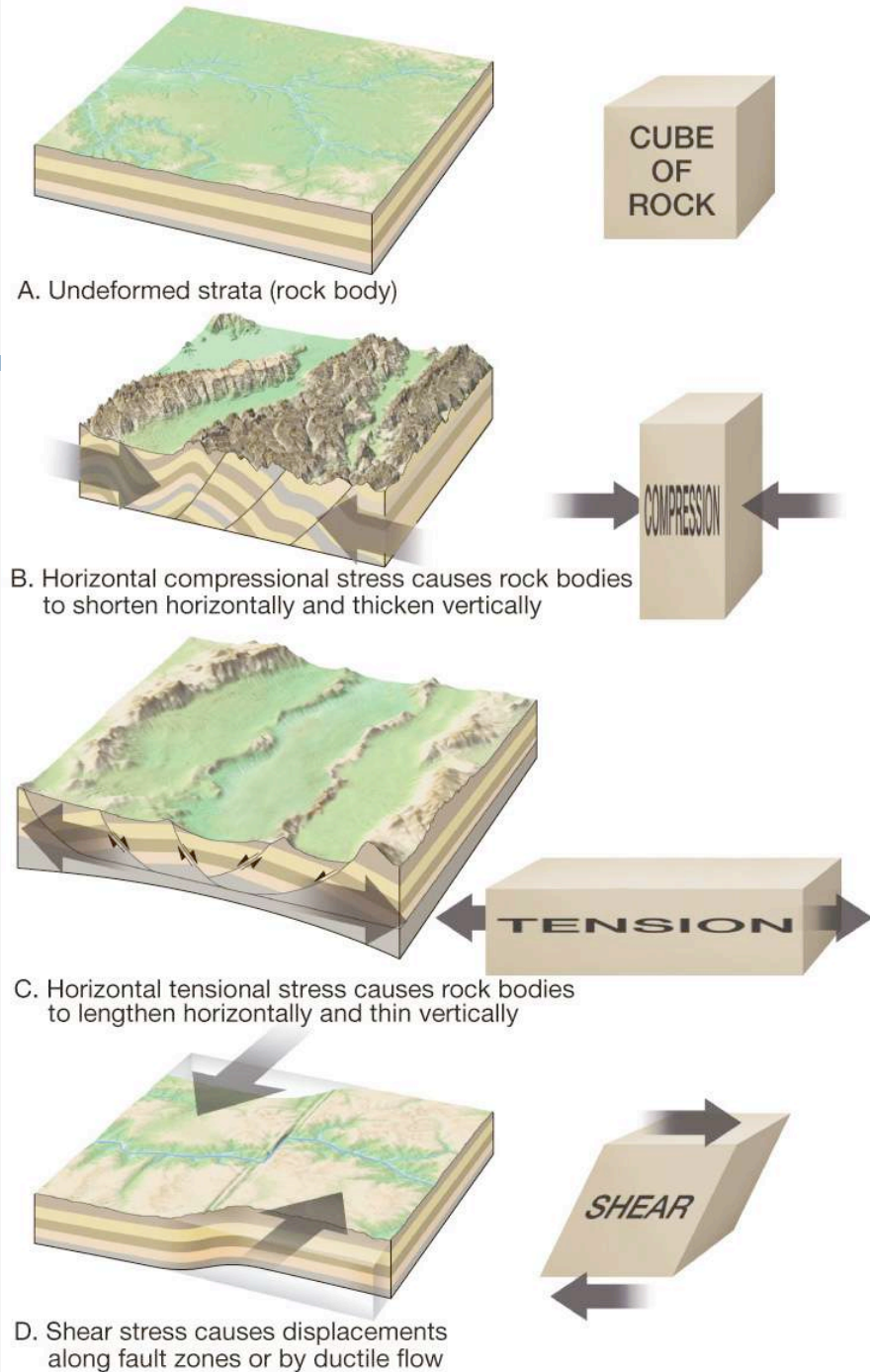
Crustal Deformation



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Forces

- Vertical
- Compressional
- Tensional
- Shear



Mapping geologic structures

- **Describing the orientation of a rock layer**
 - **Strike-** trend direction of rocks
 - **Dip-**tilt of rock layers

Strike and dip of a rock layer

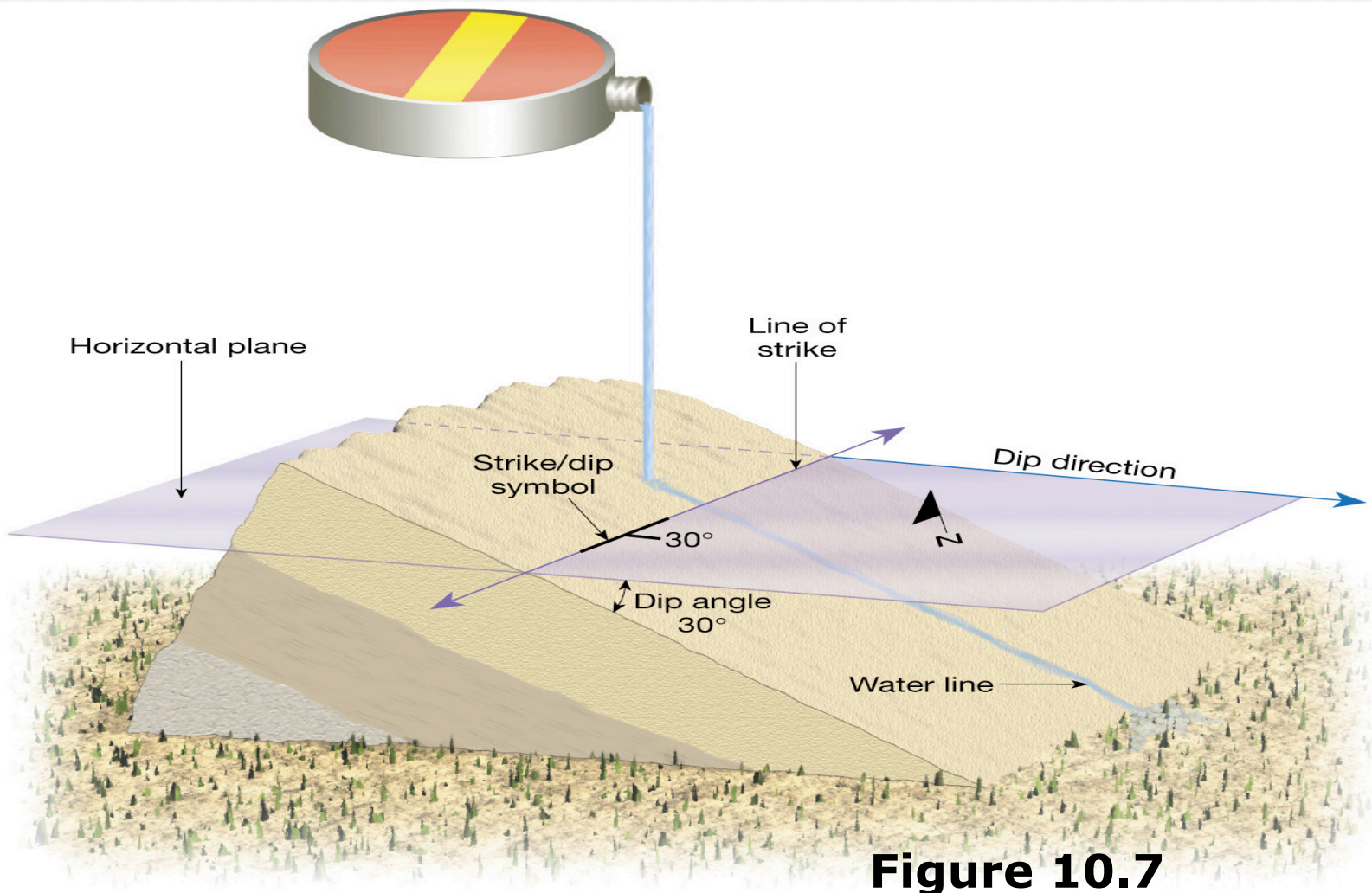
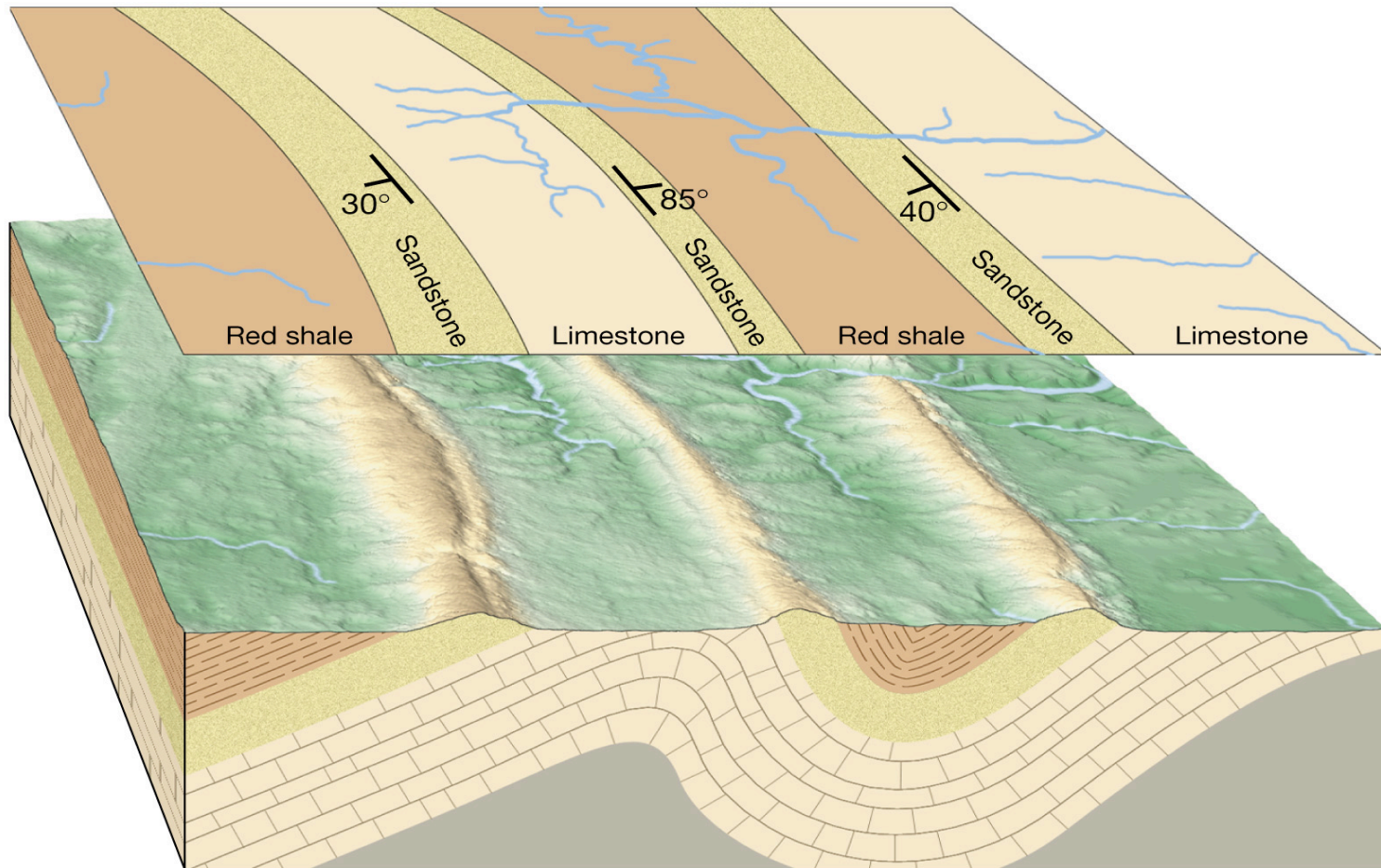


Figure 10.7

A geologic map showing strike and dip of structures

A. Map view

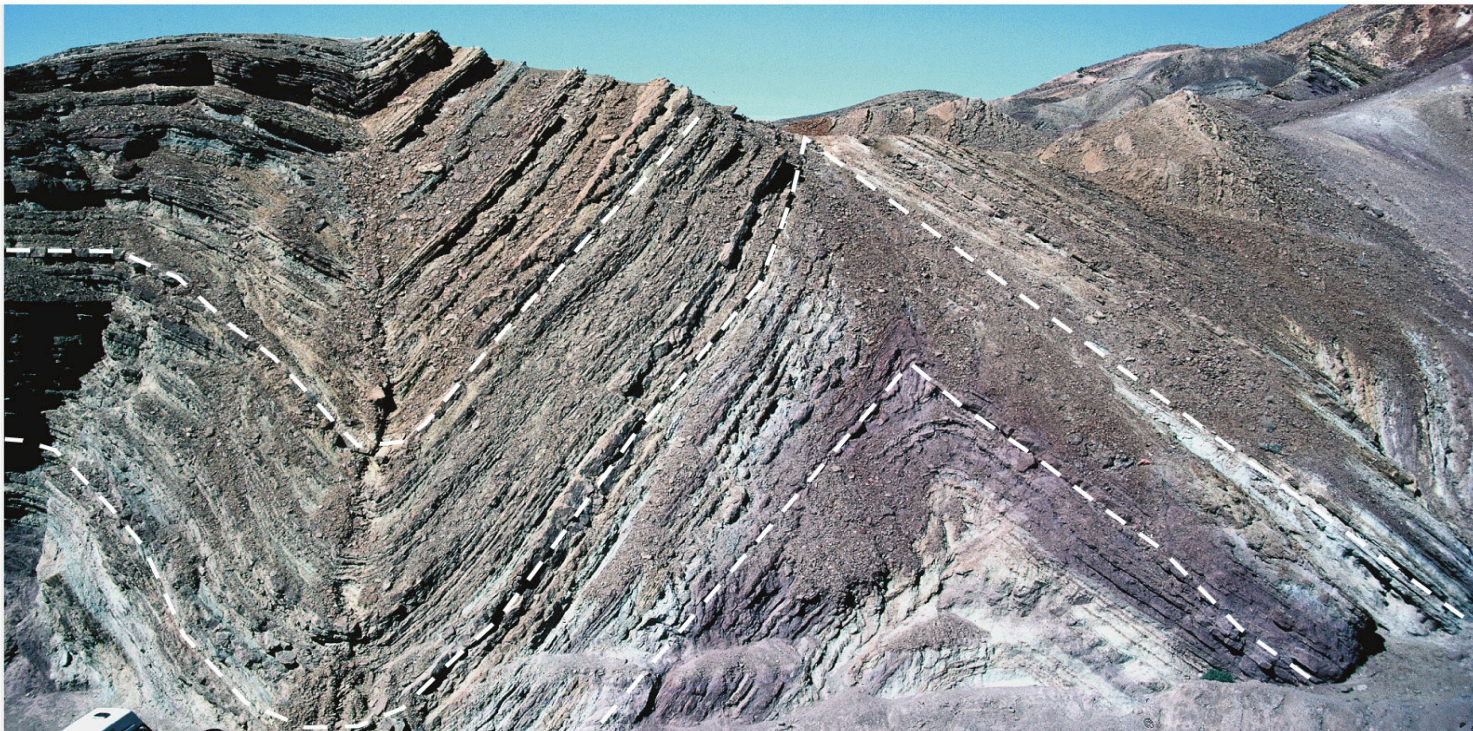


B. Block diagram

Figure 10.8

Folds

- During crustal deformation rocks are often bent into a series of wave-like undulations called **folds** due to compression



Folds

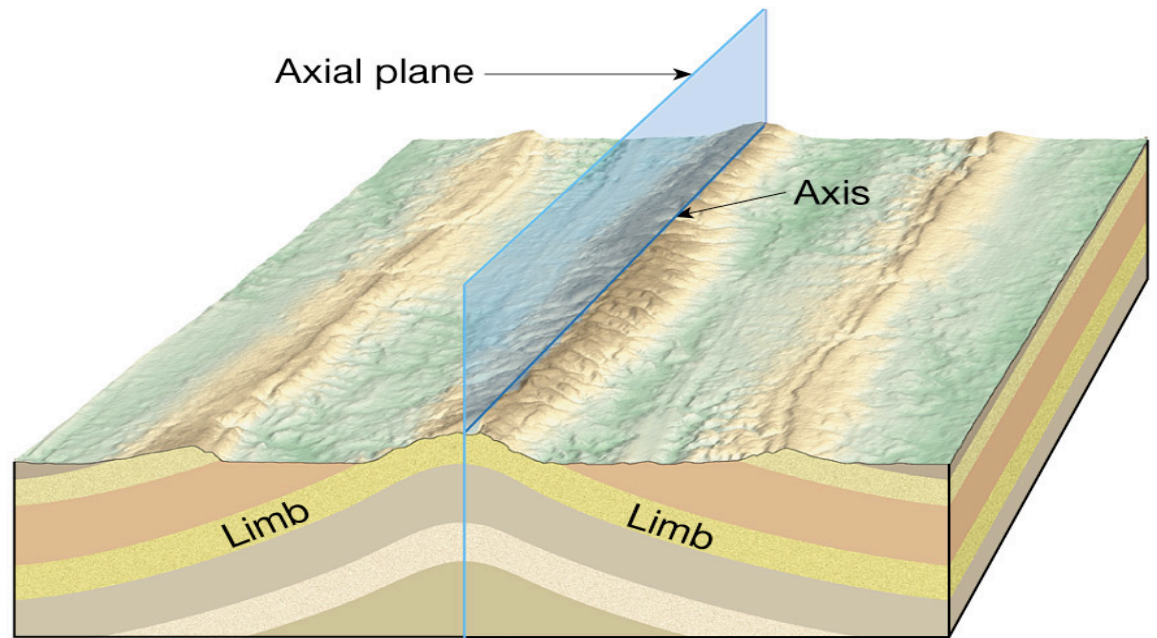
■ **Characteristics of folds**

- **Parts of a fold**
 - **Limbs** – refers to the two sides of a fold
 - **Axis** – a line drawn down the points of maximum curvature of each layer
 - **Axial plane** – an imaginary surface that divides a fold symmetrically

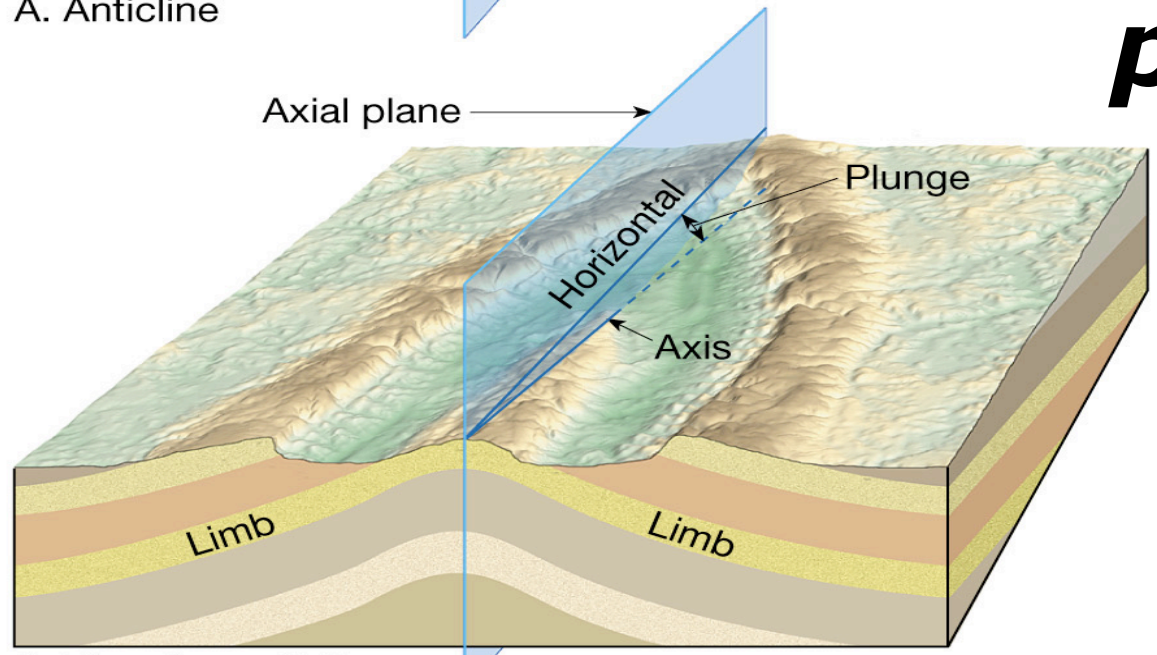
Folds

■ **Common types of folds**

- **Anticline** – upfolded or arched rock layers
- **Syncline** – downfolds or troughs of rock layers
- **Depending on their orientation, anticlines and synclines can be described as**
 - **Symmetrical, asymmetrical, recumbent (an overturned fold), or plunging**



A. Anticline



B. Plunging anticline

Horizontal (A) and plunging (B) anticlines

Figure 10.9

Anticlines and synclines

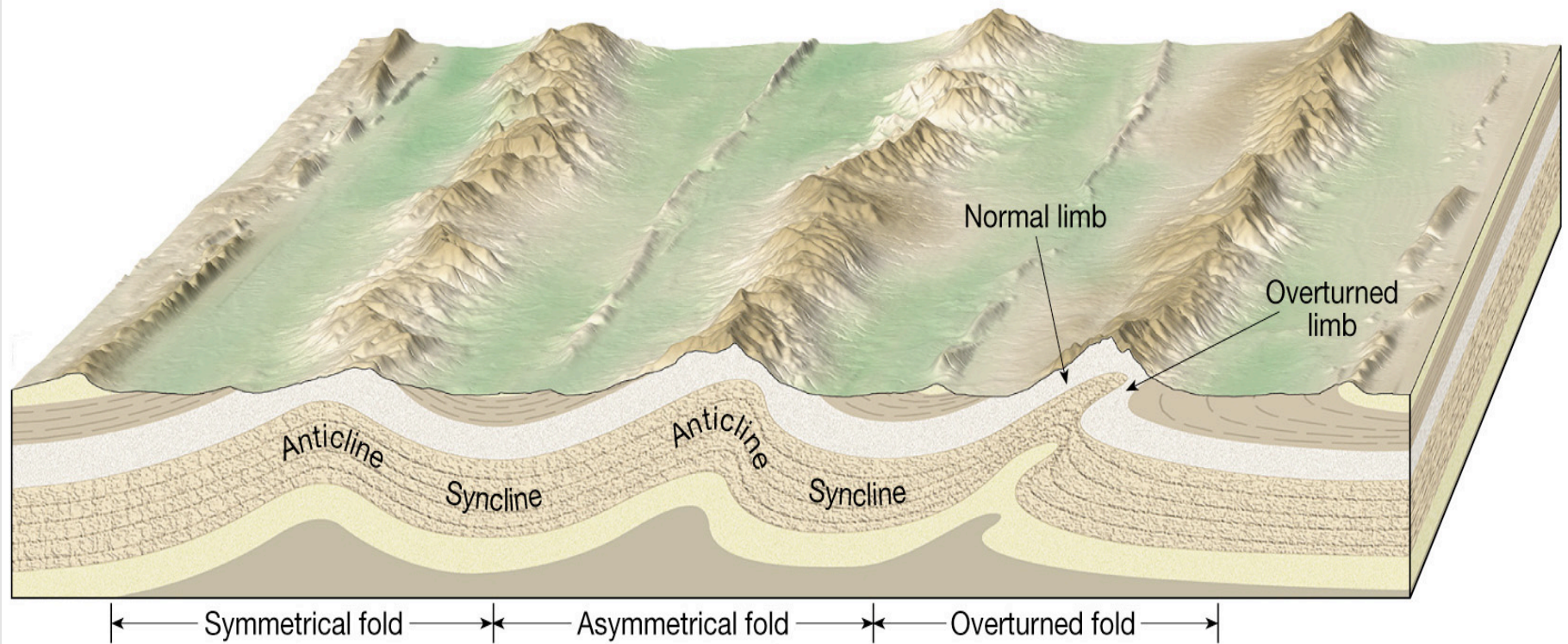


Figure 10.10

Folds

■ Other types of folds

- Basin
- Domes



Domes and basins both exhibit circular patterns

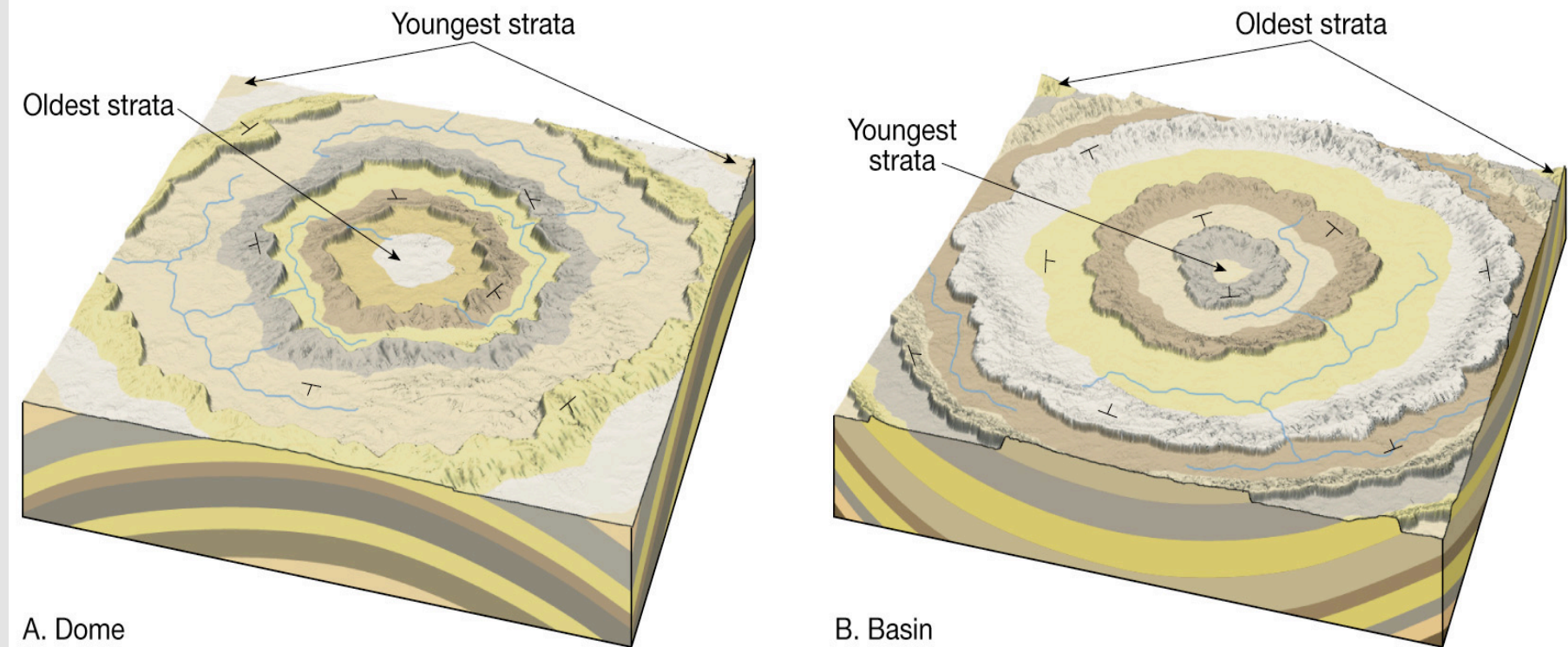
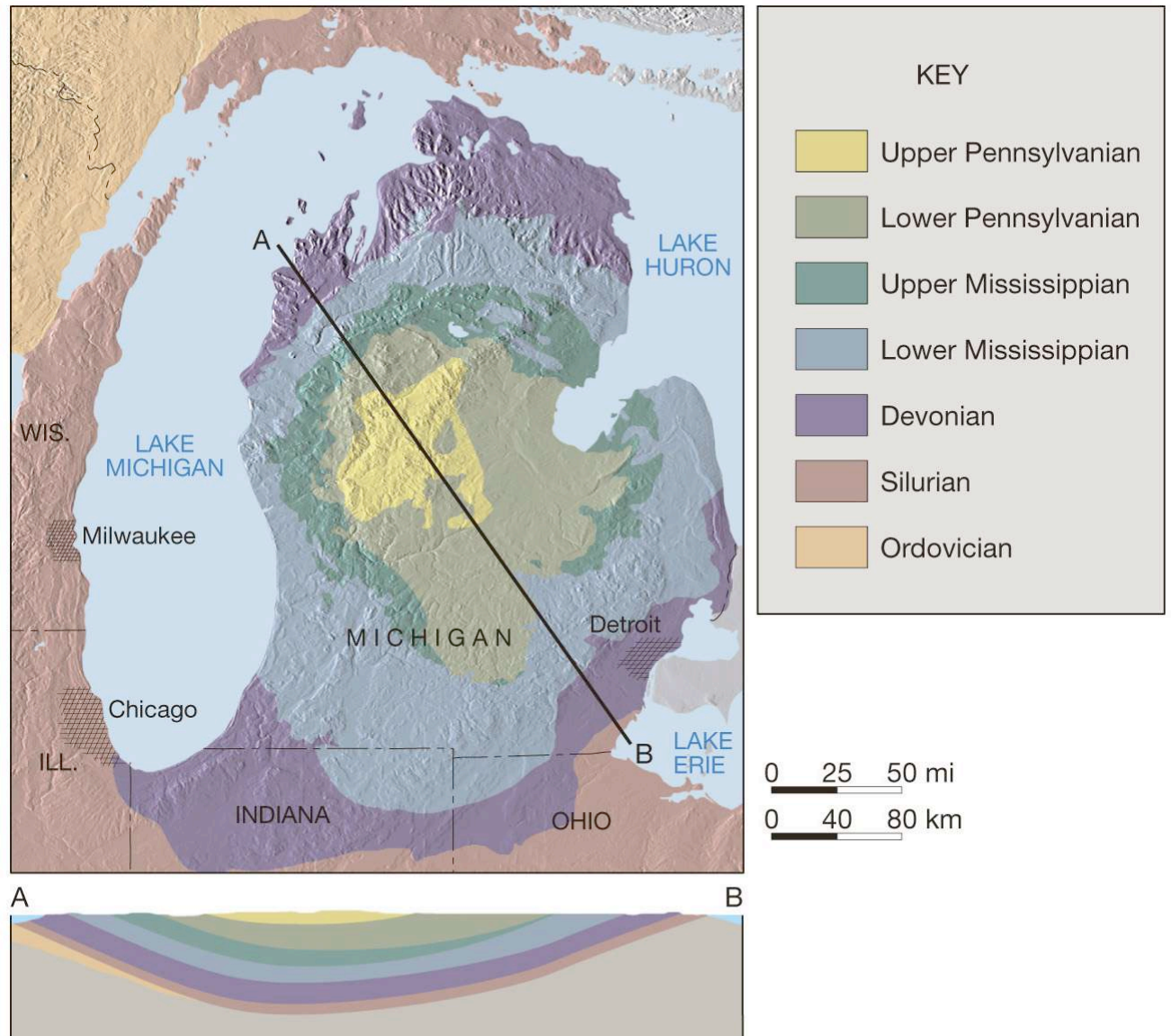


Figure 10.15

Michigan Basin



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Folded Rocks



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