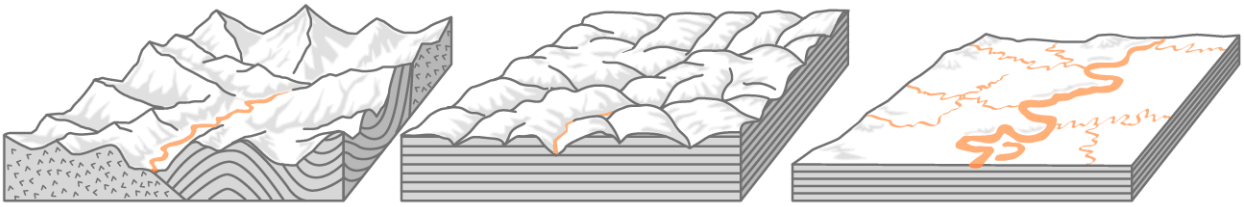
TOPIC 6: LANDSCAPES
Workbook p. 127-131

WHAT ARE LANDSCAPES?

A **landscape** is the general shape of the land surface. Landscapes include a variety of topographic features related to the processes that shaped the surface.

> For example, landscapes formed by glaciers have U-shaped valleys, rounded, grooved and polished bedrock, moraines, drumlins, and kettle lakes.

A **landform** is a single feature of a landscape. Landscapes are generally made of a variety of related landforms such as mountains, valleys, and river systems. Geological structures are major influences on landscapes.



Most landscape regions can be classified as **plains, plateaus, or mountains**.

Plains are relatively flat; there are few changes in elevation.

- Hill slopes are gentle and streams commonly meander over broad flood-plains.
- The bedrock underlying plains has been eroded to a low elevation.
- Shale and other layered sedimentary rocks are especially common in plains
- Much of the Mississippi Valley and central part of the United States is a plains landscape that is chiefly flat layers of sedimentary rock.
- The Manhattan Prong is an example of a mountain area that has been eroded to a low elevation and thus is sometimes considered a plain, even though it's made of metamorphic rock

Plateau landscapes have higher elevations than plains but are not as rugged as mountain landscapes.

- Some plateaus are relatively level areas that are nearly as flat as plains but have a <u>much higher elevation</u>. They most often consist of flat, horizontal, undistorted sedimentary rock.
- Parts of the Colorado Plateau of Arizona and Utah are high, flat elevations. The Columbia Plateau of eastern Oregon was built up by fluid lava flows that spread over great distances.
- The Appalachian Plateau, the largest plateau in the eastern United States, is a region of rolling hills. The Catskill Mountains, part of the Appalachian Plateau, are not mountains in the true sense, but a plateau divided by rivers that make the landscape look like rounded mountains.

Mountain landscapes have the highest elevations and steep gradients. Metamorphic and igneous rocks that are resistant to weathering are often found at higher elevations, and the weaker less resistant rock material erodes and forms deep valleys.

- Tectonic uplift and deformed rock structures such as folds and faults contribute to mountain landscapes.
- Major mountain areas, such as the Rockies, the Alps, or the Himalayas, have a complex geologic history and a variety of rock types.

WHAT FACTORS INFLUENCE LANDSCAPE DEVELOPMENT?

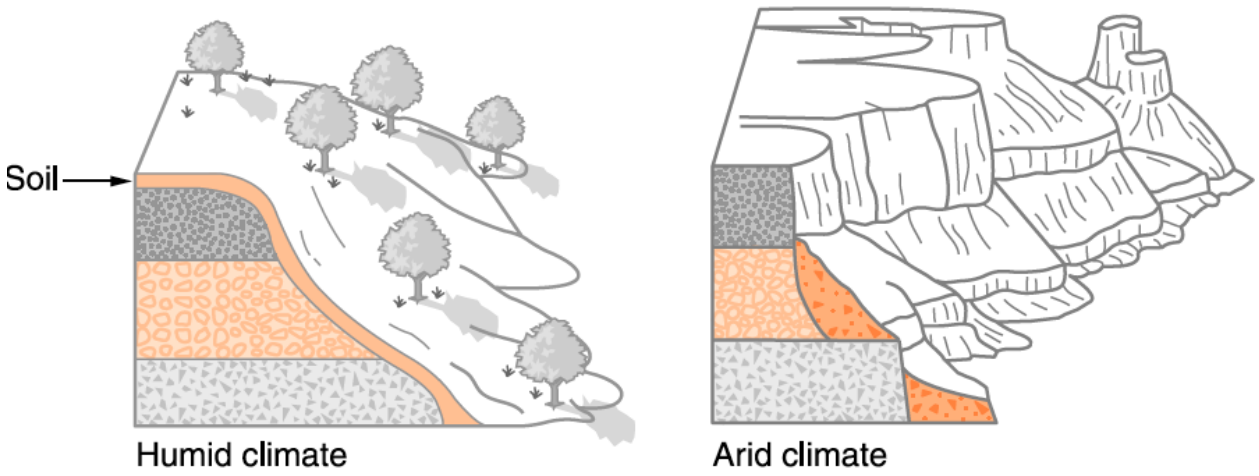
Geologic and climate factors influence landscape development.

Geologic factors include

- crustal movement: uplift, faulting, folding, volcanic action, earthquakes
- leveling forces: weathering, erosion, deposition, sinking
- rock type: whether or not the rock is resistant to weathering and erosion
- geologic structures: the highlands 30 miles north of New York City were formed by faulting; the Catskills are a divided plateau

Climate

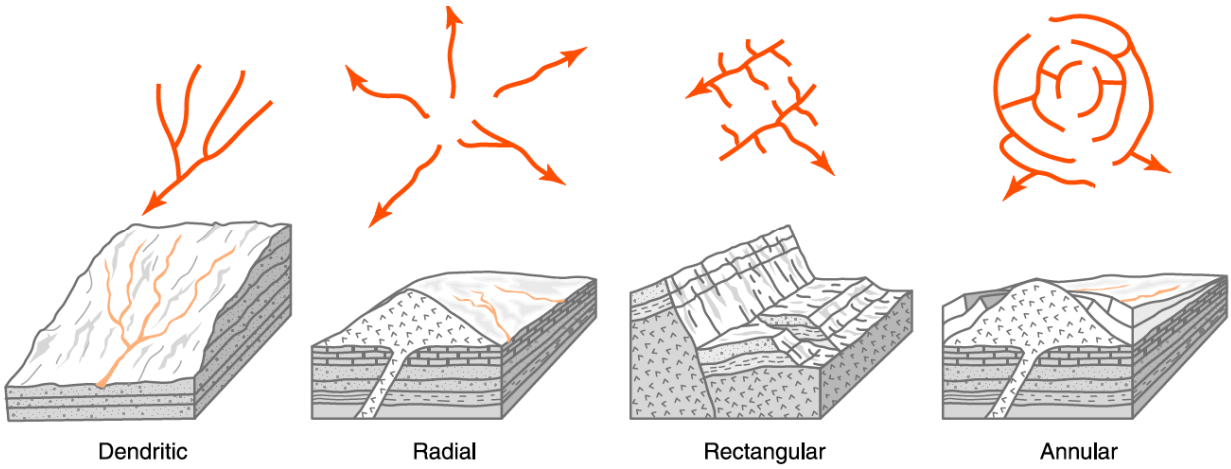
- A humid climate favors chemical weathering, which produces rounded, less angular landforms. Most of the hill slopes of New York State are rounded and gentle because of the relatively humid climate.
- A humid climate also encourages plant growth which protects soil from erosion.
- Arid, dry landscapes sometimes have a step-like profile, with flat hilltops and steep escarpments.
- Arid climates do not encourage plant growth, so rock surfaces are exposed to weathering and erosion. Differences in rock resistance to erosion forms the angular, step-like landscape.



WHAT IS A DRAINAGE PATTERN?

As streams move downhill, and they tend to erode their beds in places where the ground is weak. Therefore, both topography and geologic structure influence the path streams follow. By looking at a map view of a stream, you can often infer the underlying bedrock structures.

- **Dendritic** streams flow downhill in the same general direction and they join to make larger streams. As a result, they have a branching appearance.
- A region that has prominent parallel and perpendicular faults, repeated folds, or a strong rectangular jointing pattern will display a **rectangular** drainage pattern.
- **Annular** drainage is a pattern of concentric circles that are connected by short radial stream segments. This type of drainage occurs in an eroded dome.
- A **radial** drainage pattern resembles the spokes of a wheel. Streams flow away from a high point at the center of the pattern. Radial drainage may develop on a smooth dome or a volcanic cone.



Human Activities that Change Landscapes

- Excavation of slopes often make them unstable, increasing the chances of a landslide.
- Removal of vegetation and topsoil encourages more erosion to occur.
- Groundwater drainage is often altered by highway construction.
- Rivers are altered for irrigation, to control flooding, and to produce power.