Influences on Weathering

Rock and Mineral Type

- Different rock types weather at different rates
- Certain types of rocks are very resistant to weathering
  - Igneous rocks, especially intrusive igneous rocks such as granite, weather slowly because water cannot easily penetrate them
  - Other types of rocks, such as limestone, are easily weathered because they dissolve in weak acids
- Rocks that resist weathering remain at the surface and form ridges or hills
- Different minerals also weather at different rates
  - Some minerals in a rock might completely dissolve in water, but the more resistant minerals remain
  - When a less resistant mineral dissolves, more resistant mineral grains are released from the rock

Study Tip

To help remember how climate affects weathering, remember the letter "w." **Wetter, warmer** climates have greater **weathering.**

The Shiprock formation in northwest New Mexico is the central plug of resistant lava from which the surrounding rock weathered and eroded away.

Climate

- **Climate** of a region strongly influences weathering
  - Determined by the temperature of a region plus the amount of precipitation it receives
  - Weather averaged over a long period of time
- Chemical weathering increases as…
  - Temperature increases: chemical reactions proceed more rapidly at higher temperatures
  - Precipitation increases: more water allows more chemical reactions
- Cold, dry climate produces lowest rate of weathering
- The warmer a climate is, the more types of vegetation it will have and the greater the rate of biological weathering

Wet, warm climates have the most weathering

Resources from Weathering

- Some resources are concentrated by weathering processes

- In tropical climates, intense chemical weathering carries away all soluble minerals, leaving behind just the least soluble components

Concept Check

- What types of rocks weather most readily? What types weather least readily?
- What climate types cause more intense weathering? What climate types cause less intense weathering?
- How does bauxite form?