Warm-up Week 14 Day 2

1. Which of the following factors helps determine whether a volcanic eruption will be violent or relatively quiet?

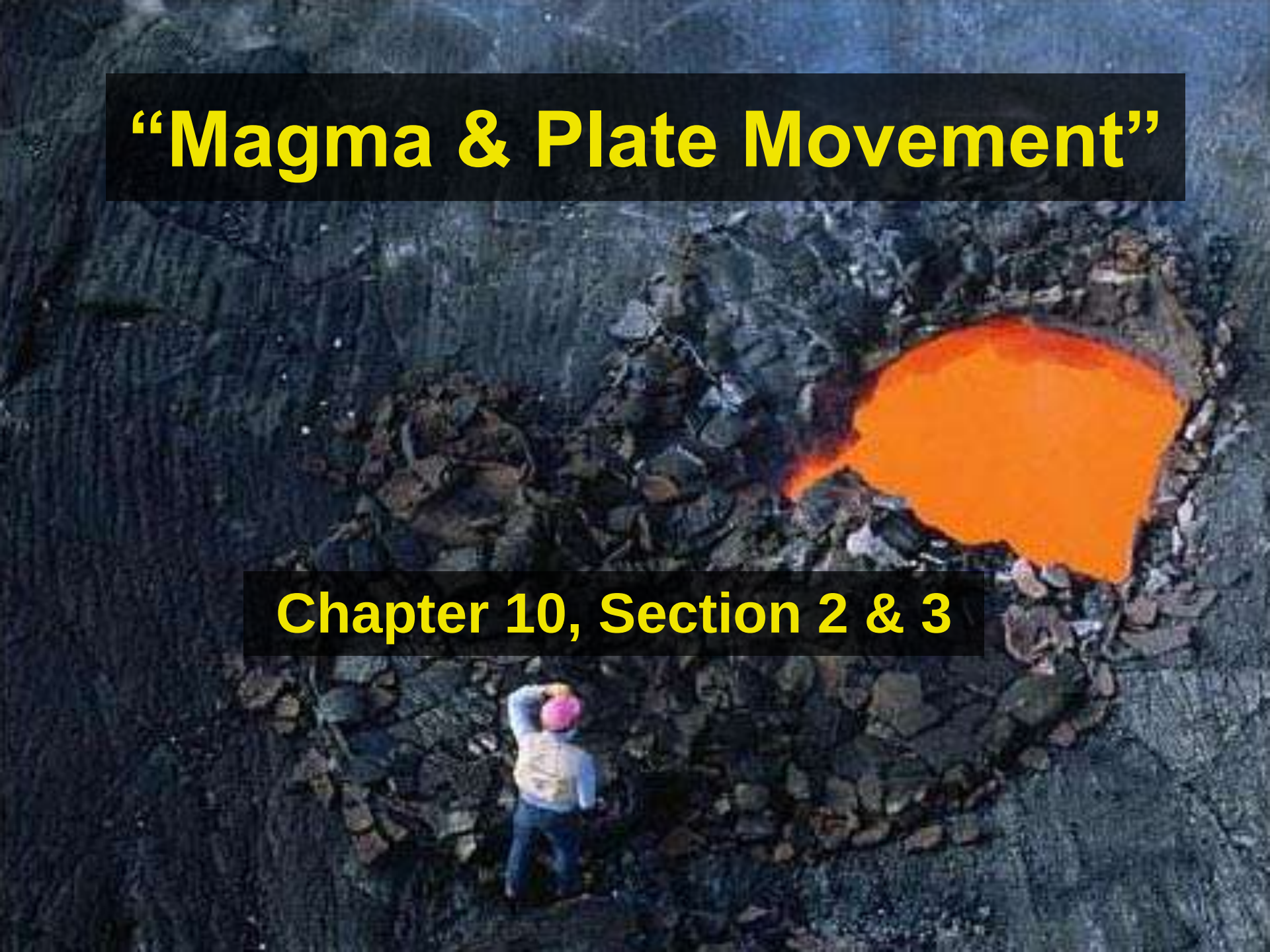
   a. composition of magma
   c. amount of dissolved gases in the magma
   b. temperature of magma
   d. all of the above

2. The most violent volcanic eruptions are associated with what type of volcano?

   a. cinder cones
   c. composite cones
   b. shield volcanoes
   d. fissure eruptions

3. The broad, slightly dome-shaped volcanoes of Hawaii are ____.

   a. composite cone volcanoes
   c. shield volcanoes
   b. cinder cone volcanoes
   d. pyroclastic volcanoes


“Magma & Plate Movement”
Chapter 10, Section 2 & 3

Q: Where does magma turn to rock?

Most magma cools deep inside Earth!

- **Plutons:**
  - **Intrusive Igneous rocks**
  - **magma that cools inside Earth.**
  - **Weathering** and **uplifting** bring plutons to surface.

Origin of Magma

- **Crust & Mantle** = mostly solid rock
- **Outer Core** = Liquid
  - Very dense
  - Can't make it to surface.
- **Magma is created when solid rock melts**

How do we melt rocks?

1. ↑ <u>Raise tempº</u>

- Sources of Heat
  1. Friction at Plate Boundaries (Subduction zones)
  2. **<u>Subduction</u>** (Deeper = Hotter)
  3. Hotter rocks rise into others

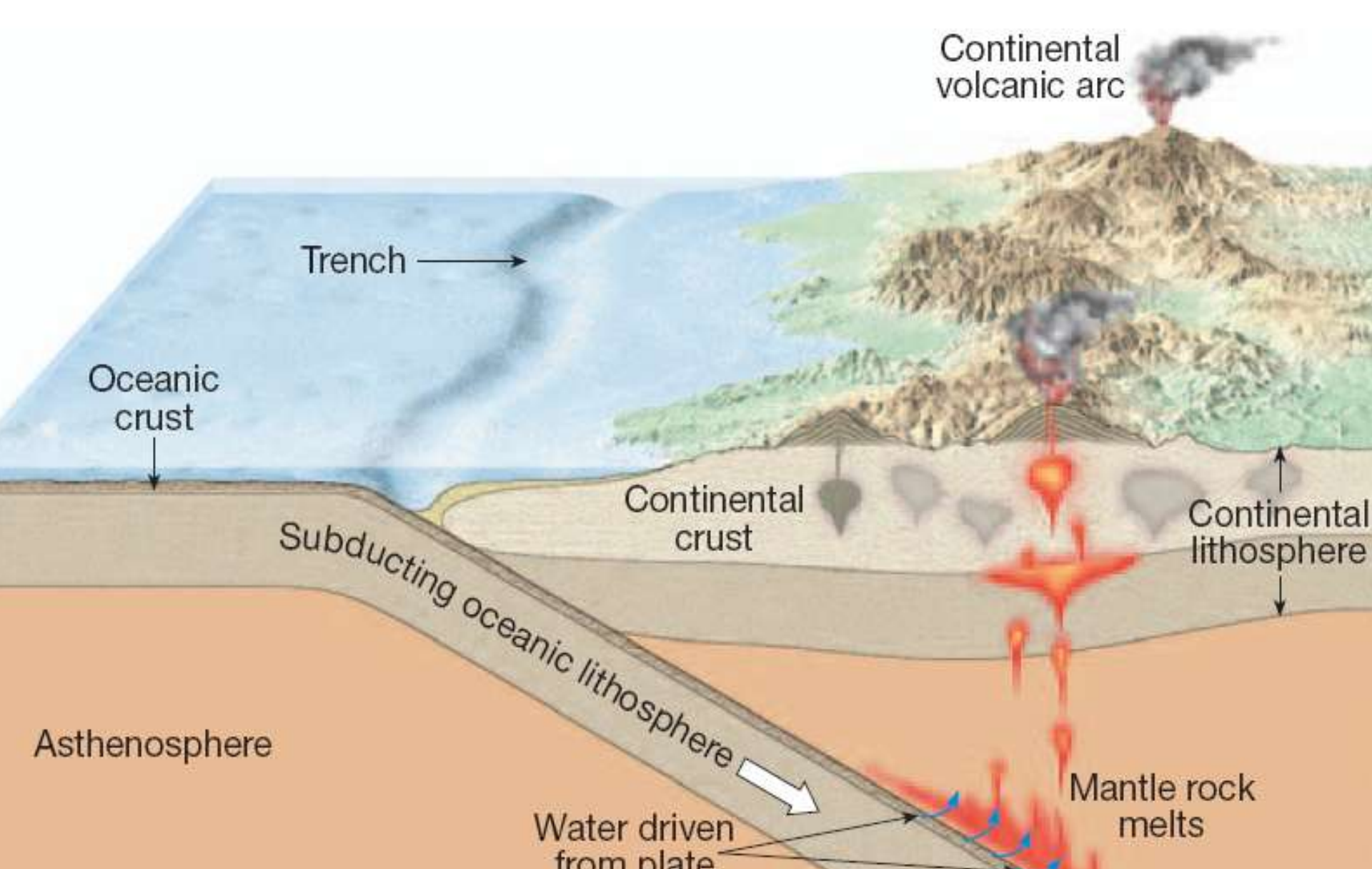
2. ↓ <u>Decrease pressure</u>

- **Decompression** melting
  - ↓ pressure, ↓ heat needed to melt

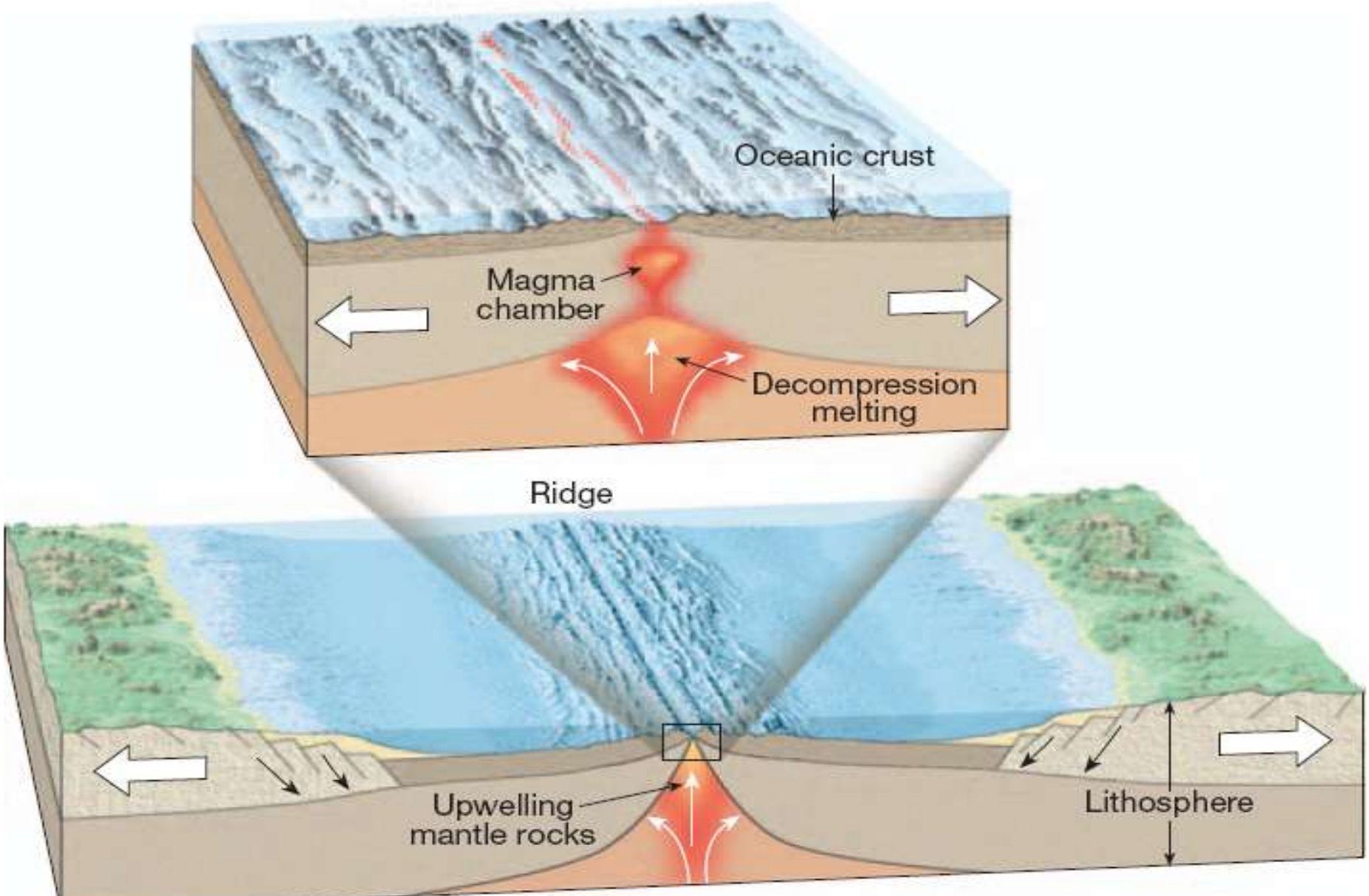
3. <u>Add Water</u>

- More water → lower melting point
- Ex: Humans

Magma Formation at Subduction Zones



Decompression Melting



- **Plate movements cause mantle rocks melt.**
- **This makes Magma.**

1. Convergent Boundaries:

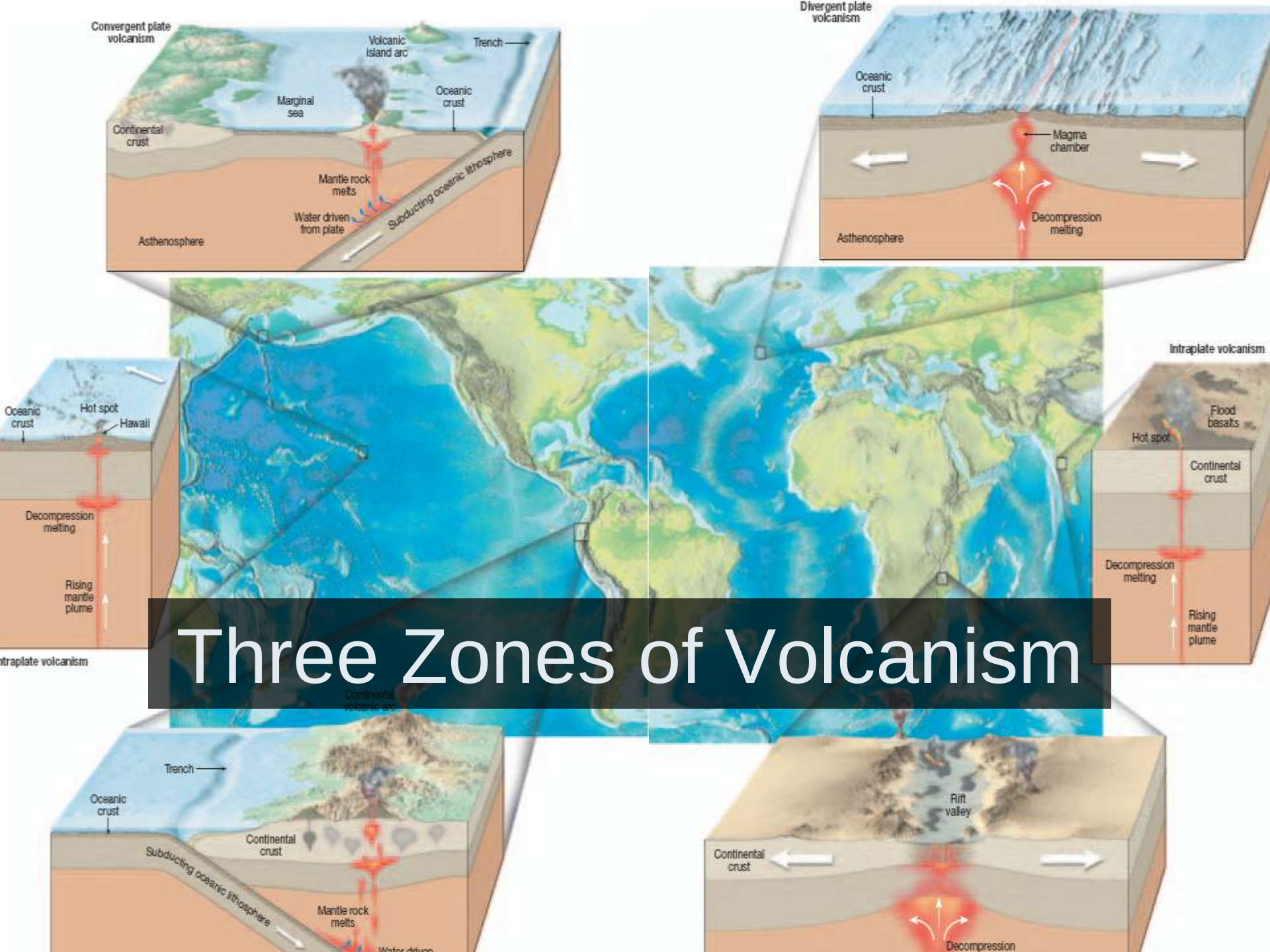
- Subduction
- Friction

2. Divergent:

- Seafloor Spreading
- Magma rises to fill gap

3. Intraplate Volcanism:

- Within plates
- Hotspots
- Lava tubes under plate



Three Zones of Volcanism

Location of Major Volcanoes

Volcano Graphic Organizer (20pts)

Assignment:

Organize the vocabulary words at the top of p. 280 into a poster that satisfies the following requirements:

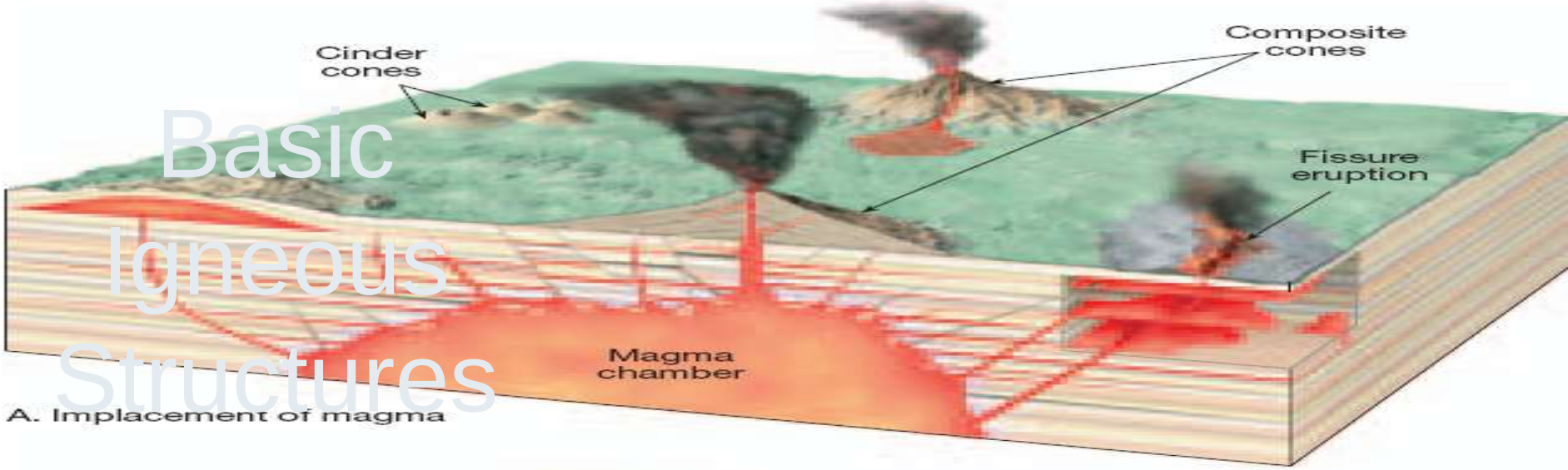
1. **Illustrate & Create analogies** representing the 3 volcano types (10pts)
2. **Include all 9 vocabulary words** 1.) labeled, and 2.) defined. (5 pts)
3. **Originality:**

   don't copy your neighbor's (5pts)

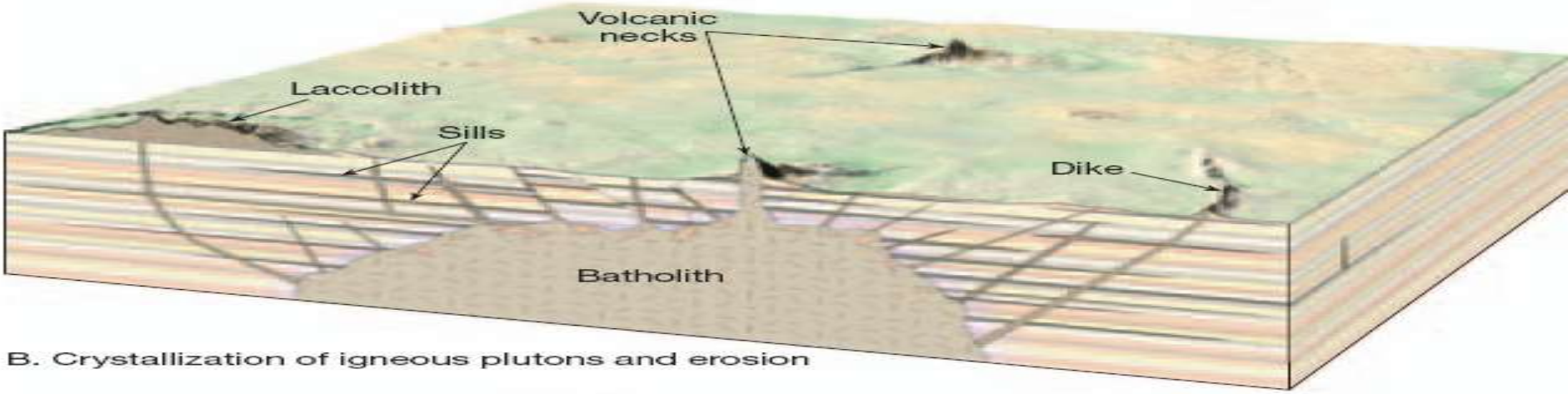
Creating an Analogy

- **Analogy:**
  - A similarity between like features of two things, on which a comparison may be based.
  - Ex: Lava is **like** Earth's blood **because** it leaks out when there is a hole in the surface and cools into a scab-like ridge.

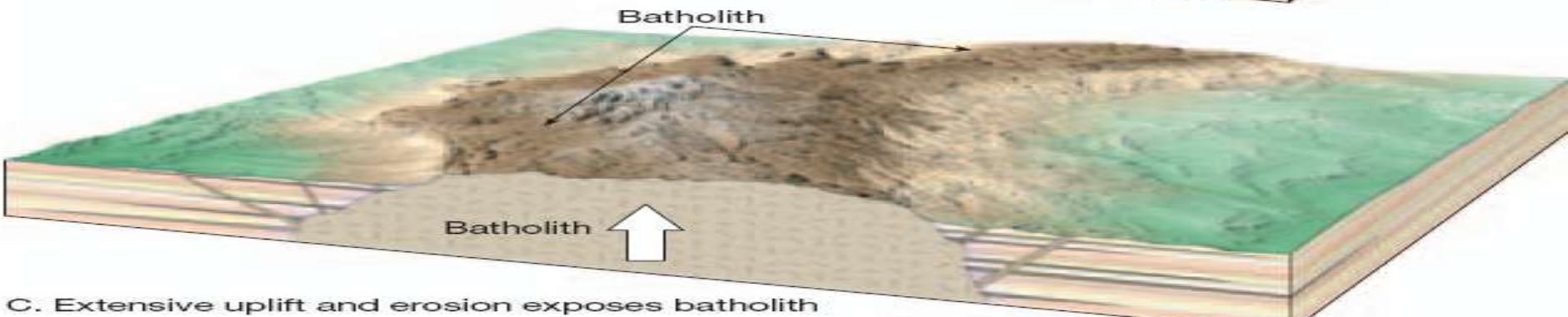
Basic Igneous Structures



A. Implacement of magma

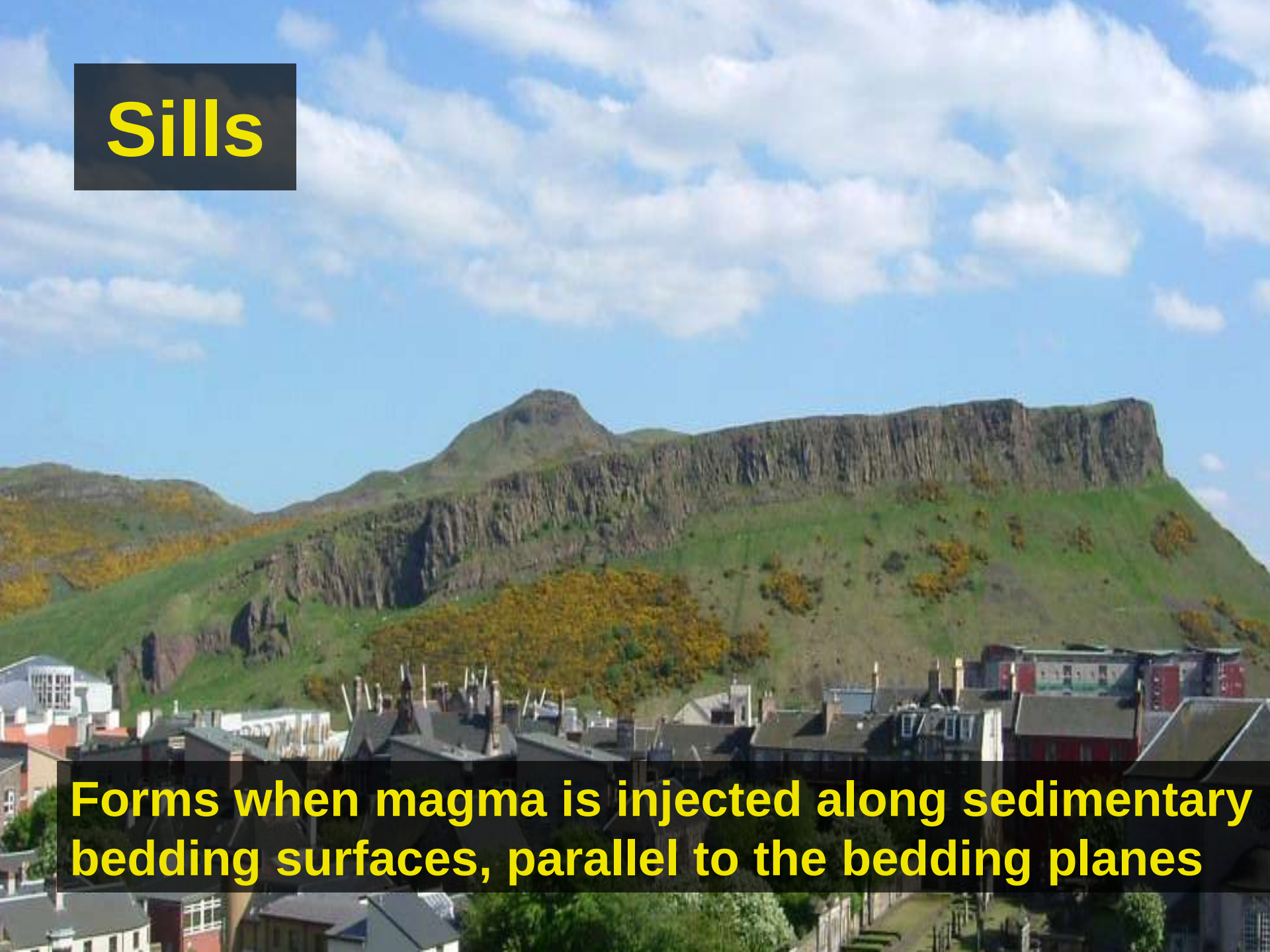


B. Crystallization of igneous plutons and erosion



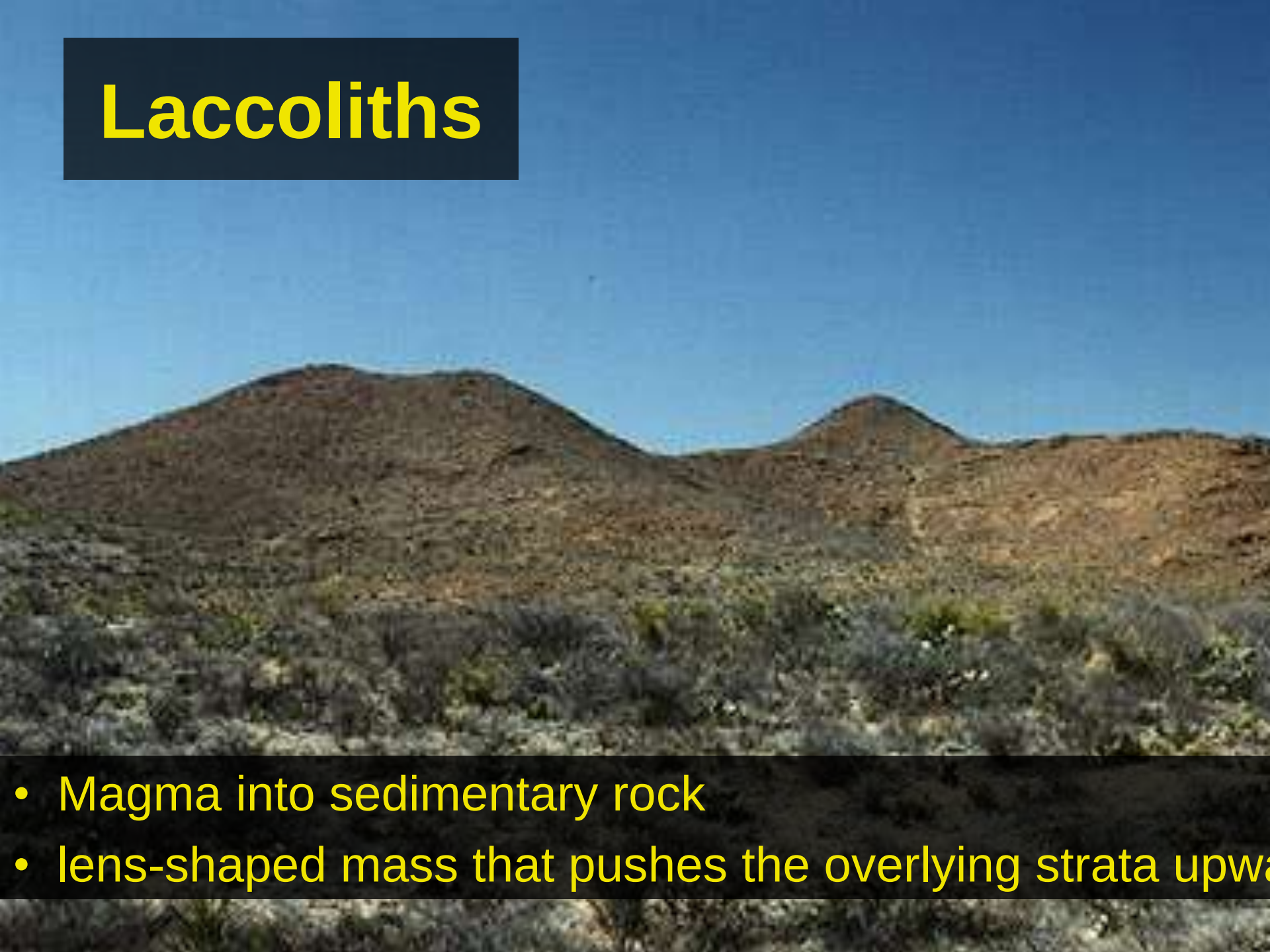
C. Extensive uplift and erosion exposes batholith

Sills



Forms when magma is injected along sedimentary bedding surfaces, parallel to the bedding planes

Laccoliths



- Magma into sedimentary rock
- lens-shaped mass that pushes the overlying strata upwa

Dikes and Batholiths

- **Dikes –** plutons that form when magma is injected into fractures, cutting across preexisting rock layers
- Many dikes form when magma from a large magma chamber invades fractures in the surrounding rocks
- **Batholiths –** the largest intrusive bodies, must have a surface exposure greater than 100 square kilometers
- Batholiths may form the core of mountain ranges

Dikes

Batholiths