

Chapter 5

Interpreting Earth's History

Geologic Interpretation of Earth

- Uniformitarianism
- Superposition
- Original Horizontality
- Igneous Intrusion
- Igneous Extrusion
- Folding of Rock Layers
- Faulting of Rock Layers
- Fossils
- Correlation of Rock Layers
- Correlation of Rock Layers
- Index Fossils
- Unconformity = Erosional Surface = Missing layers of the geologic record. The missing layers have been uplifted above sea level, then weathered, eroded, and downlifted below sea level with further deposition, compaction and cementation to form new layers of sedimentary rocks.

Geologic Time Scale

Geologists have used indexed fossils to correlate a time line that goes backward towards the beginning of Earth. Fossils yield a relative age of an individual rock layer.

In the last few decades, radio-active dating has been an important tool to help scientists confirm the age of various fossil layers. Radioactive dating yields an absolute age in numerical form.

RadioActive Dating

- Radioactive isotopes are different forms of a given element that differ in their individual number of neutrons. The unstable isotopes with time break down into lighter elements.
- **Half-Life:** The rate of decay of a radioactive element. Use page 1 of your ESRT for various elements. Example: One half of a sample of C_{14} turns into N_{14} in 5700 years, While the other half remains as C_{14} . This rate of decay is constant with time. The rate can not be altered, even by melting or crushing a sample.