

# Chapter 1 – Planet Earth

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- Earth's Diameter
- Earth's Circumference
- Earth's Structure
- Crust
- Lithosphere
- Mantle
- Asthenosphere
- Plastic Mantle
- Stiffer Mantle
- Outer Core
- Inner Core
- Hydrosphere
- Atmosphere
- Troposphere
- Stratosphere

# Chapter 1 – Planet Earth

- Mesosphere
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# Earth's Shape

- **Oblate Spheroid:**  
The earth is slightly fatter at the equator.  
Thus the distance from the center of the earth to the equator is slightly longer than the distance from the center of the earth to the North or South poles.
- **Earth's Diameter:** This value is found on page 15 of the ESRT
- **Earth's Circumference:** Need to know the Math equation for circumference =  $\pi d$

# Earth's Structure

- **Use ESRT page 10**

Crust, Lithosphere, Rigid Mantle,  
Athenosphere=Plastic Mantle, Stiffer Mantle,  
Outer Core, Inner Core: (Fe & Ni)

# Earth's Structure

- **Hydrosphere:** “Hydro” stands for water, thus this is the water layer on Earth’s surface. Approximately 75% of the area of Earth’s surface consists of oceans.
- **Earth’s Atmosphere:** Use ESRT page 14. Notice how temperatures change as elevation changes from Sea Level to 150 km or 92 miles.
- **The Atmosphere is broken down into individual layers.**
- **Troposphere:** Lowest layer of the atmosphere. This is the only layer where water vapor (gas) exists. Precipitation happens here. ESRT page 11 list composition of the Troposphere.

# Earth's Structure

- **Stratosphere:** This layer consists mainly of Ozone, ( $O_3$ ). The Ozone layer is an important layer because it absorbs the dangerous Ultra Violet (UV) electromagnetic energy of our Sun. Pollution is destroying Earth's Ozone layer.
- **Mesosphere:** Temperatures decrease as Altitude increases, (Inverse Relationship)
- **Thermosphere:** Temperatures increase as Altitude increases, (Direct Relationship)

# Navigation on Earth

- **Latitude:** Imaginary lines drawn around Earth parallel to the Equator.
- **Note:** Latitude is measured in degree's relative to how far North or South the parallel line is away from the Equator.
- **Longitude:** Also known as Meridians. Imaginary semicircles drawn around Earth from the North Pole to the South Pole. The Zero degree line of longitude is called the Prime Meridian and is located in Greenwich, England. The International Date Line is at 180 degrees Longitude.
- **Note:** Longitude is measured in degree's relative to how far West or East the meridian line is away from the Equator.

# Mapping

- **Fields:** As scientists, we collect data in order to make inferences. Data is collected individually at unique points in time and space. Thus, a **Field** consists of a set of data points.
- **Isolines:** A mathematical line drawn connect data points of equal value.
- **Examples:**
  - Isotherms:** lines of equal temperature.
  - Isobars:** lines of equal barometric pressure.
  - Contour Lines:** lines of equal elevation on a contour map.



# Topographic Maps

- **Contour Interval:**  
Elevation between any two adjacent contour line.
- **Rule of V's:** Used to determine which way the water in a stream is flowing. The V of a contour line always points uphill, and water always flows downhill.
- **Concentric Circles:**  
Represents a Hill, or considered to be positive relief.
- **Inverted Circles:**  
Represents a depression, think of a bowl in the ground. Considered to be negative relief.

# Topographic Maps

- **Closely Spaced Contour Lines:** Represents a steep slope on the ground's surface.
- **Contour Lines Spaced Far Apart:** Represents a gentle slope of the ground's surface. A location where someone in a wheelchair would look for.
- **Gradient:** Use page 1 of your ESRT. Gradient is the same concept as **Slope** is in your Mathematics class. **Slope** is “Rise over Run”, which is the change in Y over the change in X. Where Y = difference in elevation between two points, and X = distance between two points.  
*Don't forget your units.....*

# Earth's Magnetic Field

- **True North:** A point at then Northern axis of the Earth's rotation.
- **Magnetic North:** A point where magnetic fields of Earth meet at single location.
- **Be Careful:** True North and the Magnetic North are not the same..... The North Axis of rotation and the Magnetic North are about 12 degrees apart in New York State.