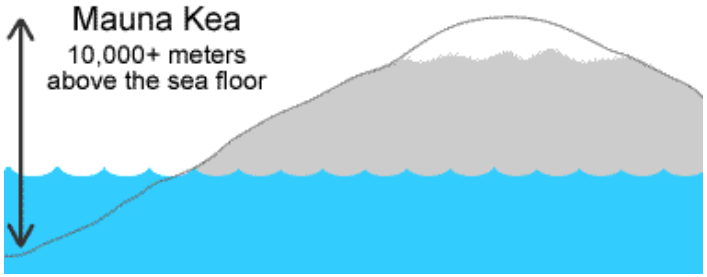
Earth

The Worksheet

If asked what is the **highest mountain (not tallest)** on Earth… how would you define "highest"?

1a)Which mountain is the highest above sea level?



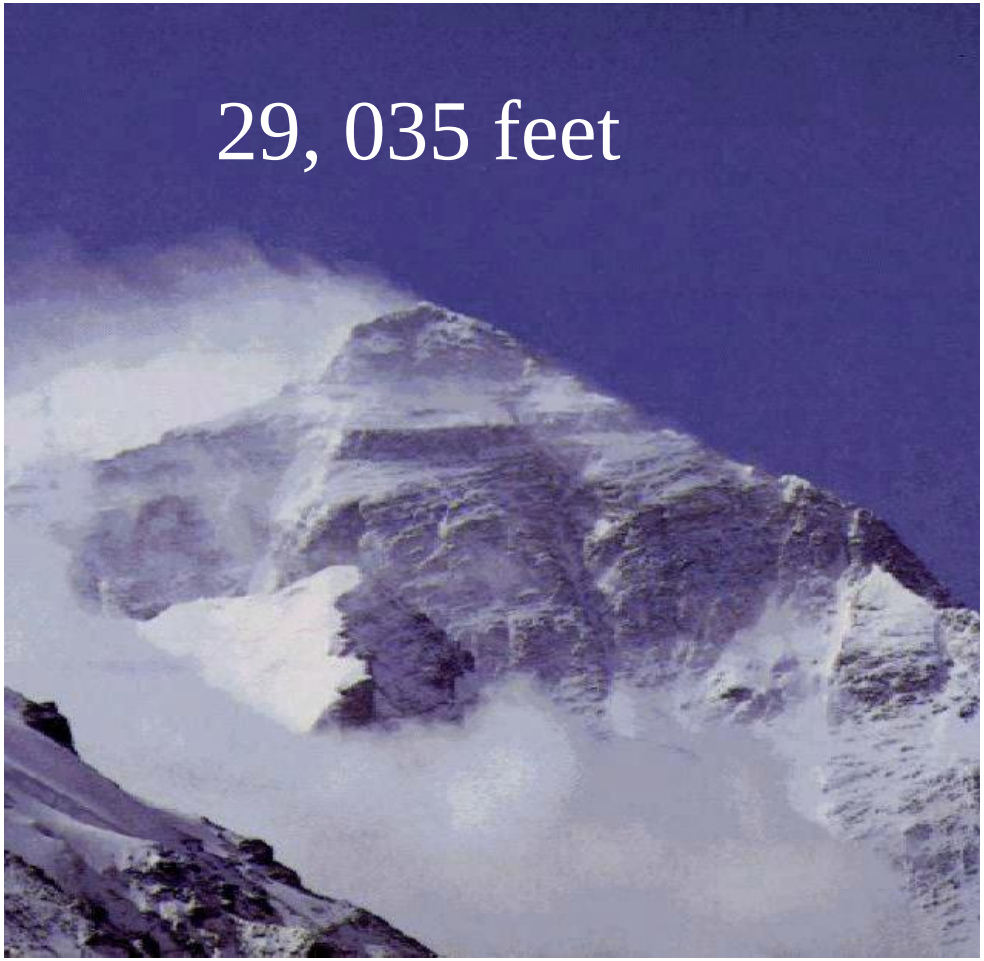
- Mauna Kea is over 30,000 feet TALL compared to Mount Everest - making it the "world's tallest mountain"

1b) Which mountain is the closest to space?

- S. Isaac Newton stated that **centrifugal force** applies to Earth. As it spins, it flattens at the poles and bulges at the equator, creating an **"oblate spheroid".**
- **(TECHNICALLY the equator has a bulge of 21km)**
- **Mt Chim 2,734 meters greater or 8970 feet higher.**

Highest mountain(s) on Earth

1a) Mt. Everest

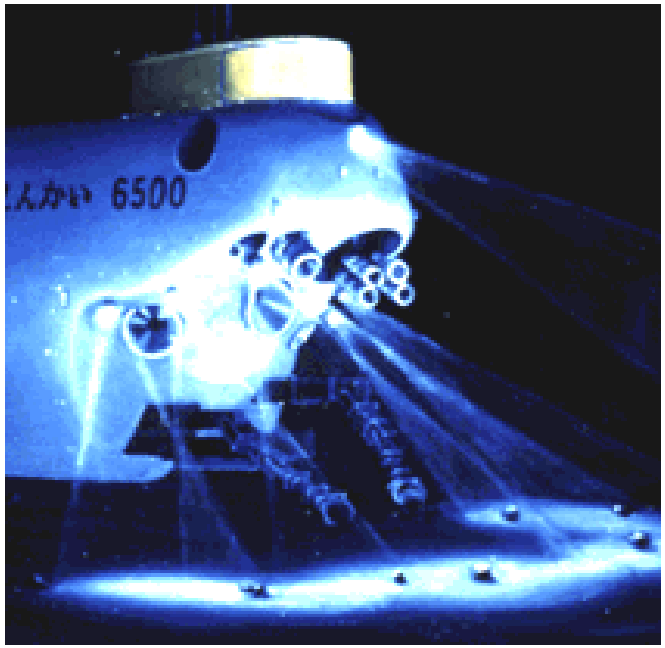


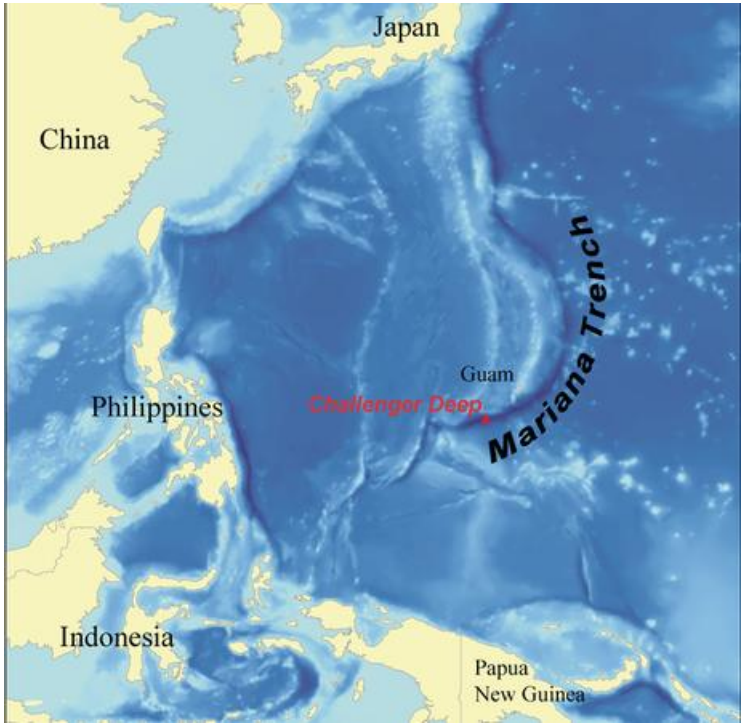
1b) Mt. Chimborazo

- **Still in the same mountain chain (Andes) as Mt. Everest, yet closer to the equator.**
- **Height above sea level is 20,565 feet, so it's closest to space.**
- **TECHNICALLY the equator has a bulge of 68,900 ft + 20, 565 ft**
- **In fact, beaches in Ecuador are farther from center of Earth than summit of Mt Everest**

2)Depth of the Marianas Trench -36,201 ft.

http://newsfeed.time.com/2012/03/25/james-cameron-reaches-oceans-deepest-point-7-miles-below/





3) Elevation of Death Valley -282 ft

4) Wind speed was 231 mph, now 318 mph

- Scientists measured the fastest wind speed ever recorded, 318 mph, in one of the tornadoes that hit the suburbs of Oklahoma City on May 3, 1999.

Typhoon Haiyan may have hit the Philippines with gusts of 170 mph, but New Hampshire's Mount Washington has topped that in the past.

Mount Washington Observatory recorded 231 mph, set on April 12, 1934."

5) OLD RECORD: Highest world surface temperature ever recorded: 136 °F Aziza, North Africa September 13, 1922.

•In five of the seven years—2004, 2005, 2006, 2007, and 2009—the highest surface temperature on Earth was found in the Lut Desert when MODIS recorded **a temperature of 159.3°F**—more than 12°C (22°F) warmer than the official air temperature record **from Libya**.

•In 2003, the satellites recorded a temperature of 156.7°F—the second highest in the seven-year analysis—in the shrublands of Queensland.

•And in 2008, the Flaming Mountain got its due, with a yearly maximum temperature of 152.2°F recorded nearby

- The January 2015 globally-averaged temperature across land and ocean surfaces was **0.77°C** (**1.39°F**) above the 20th century average of **12.0°C** (**53.6°F**), the second highest on record for January since records began in 1880.

6) Lowest temperature ever recorded

Using new satellite data, scientists have measured the most frigid temperature ever recorded AS OF 2015

The temperature breaks the 30-year-old record of about **-128.6°F** (-89.2°C), measured by the **Vostok** weather station in a nearby location

7) Record amount of Yearly Rainfall

460 inches

Mt. Waialeale….Kauai, Hawaii

8) Diameter of the Earth

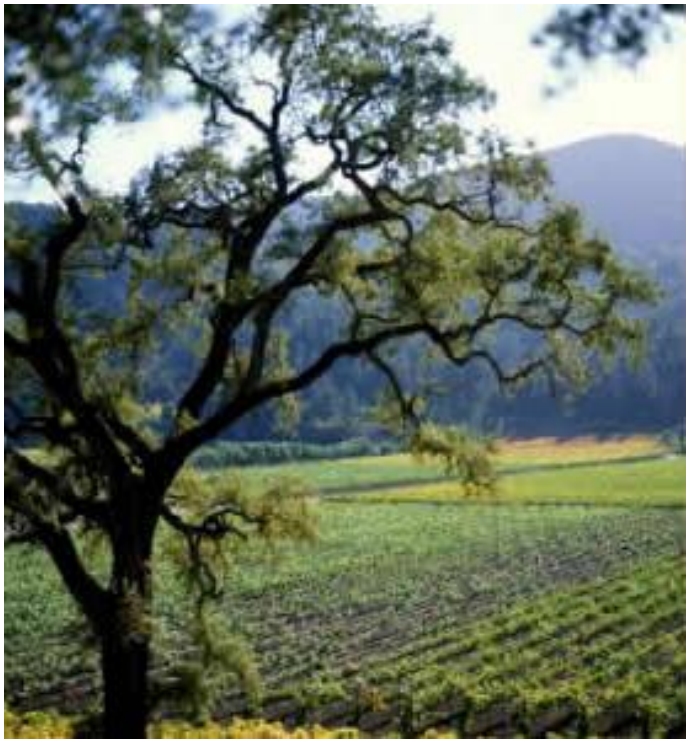
- **7,956 miles (Equatorial)**

9) Highest U.S. temperature ever recorded: 134 °F Death Valley

- The new record : the beastly 134-degree reading measured on July 10, 1913, in Death Valley, Calif.
- Furnace Creek Range

10) Lowest U.S. surface temperature ever recorded: - 80 °F 1971 Prospect Creek, **Alaska**

11) Highest temperature ever recorded in Sonoma County: 116 °F on July 13, 1972

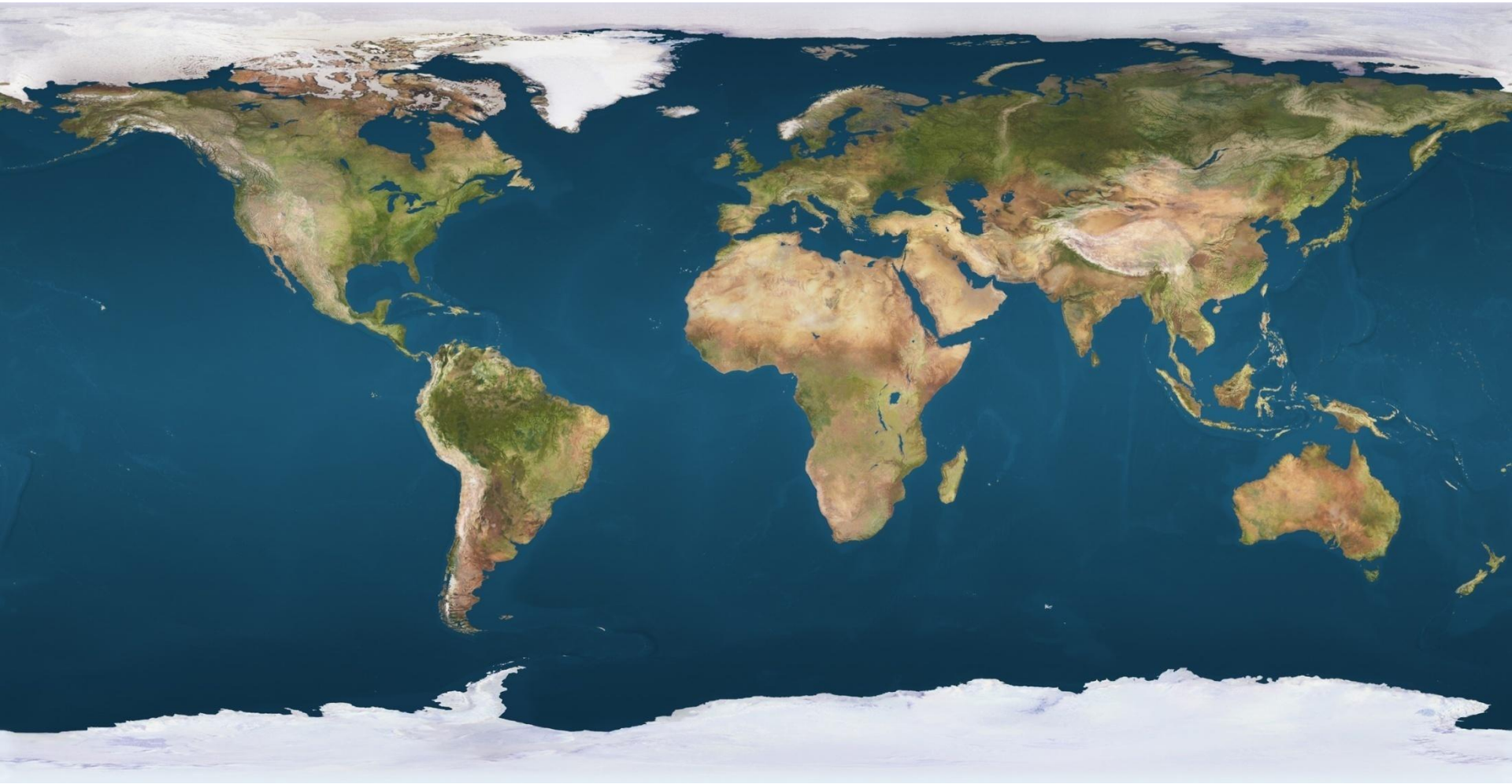


- The record low temperature of the lowest temperature was 13 °F (−11 °C) on December 22, 1990.
- In Petaluma, the wettest year was 1998 with 45.93 inches and the driest year was 2013 (4.6 in).
- The wettest month was February 1998 with 19.59 inches.
- The most rainfall in 24 hours was 4.29 inches on December 27, 2004.
- Although snow is rare in Petaluma, 1.5 inches fell in January 1916, as well as about 3 inches in January 2002

Earth

Erde: The goddess of the soil

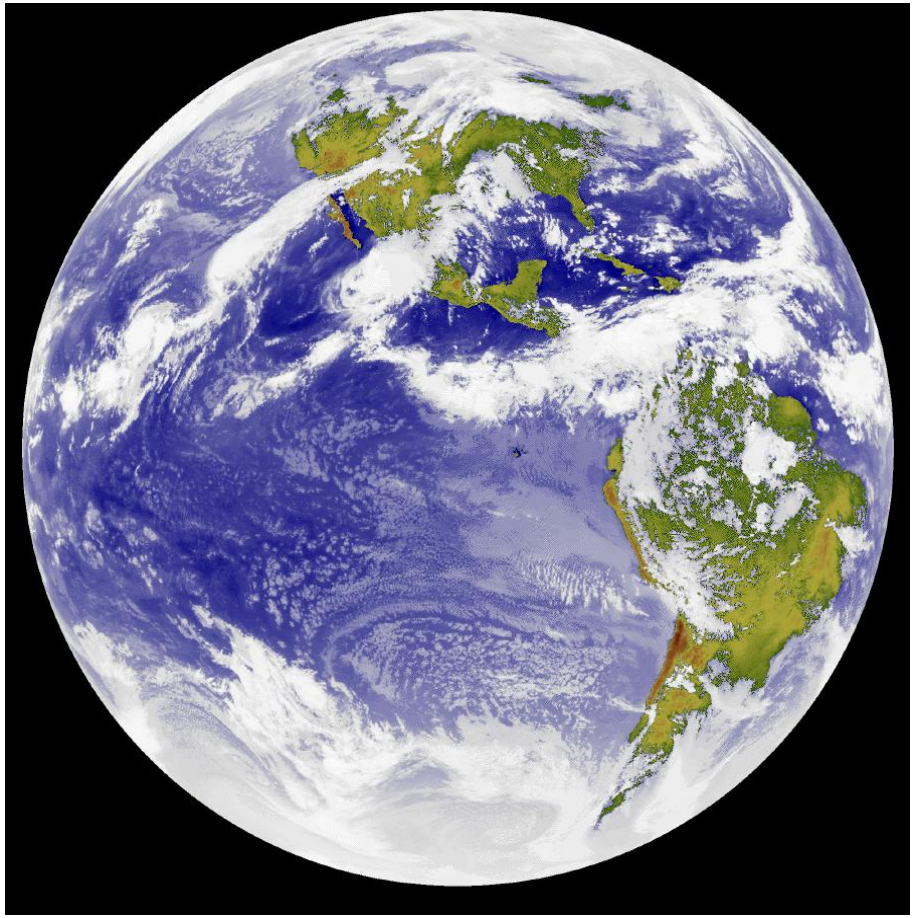
The Earth's Surface



12) 71% Oceans 29% Continents

Earth Data

- 13) AGE = 4.6 Billion years old
- 14) Diameter: 8,000 miles
- 15) Temperature range: 136 °F to – 136 °F
- 16) GRAVITY = 9.8 m/sec^2



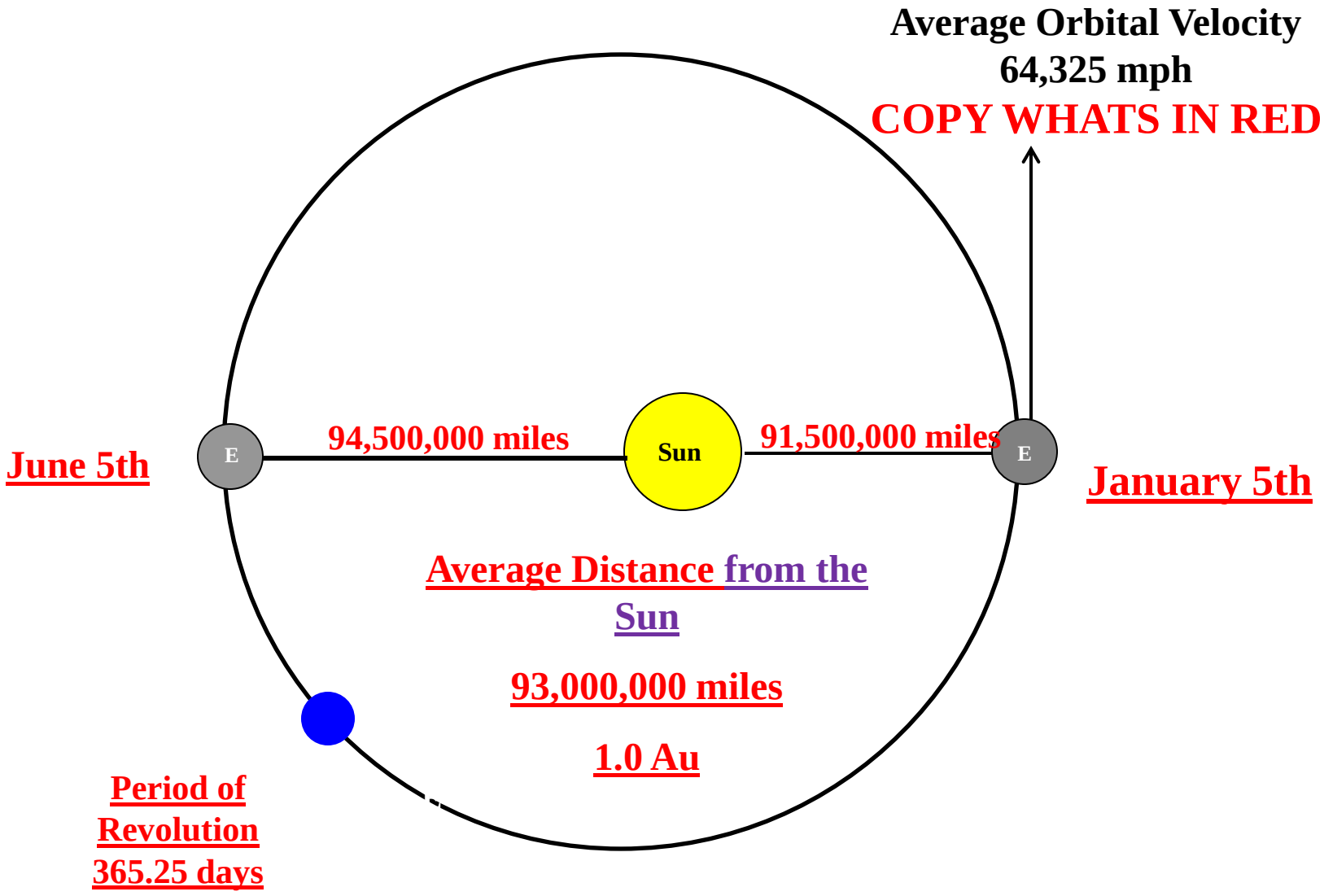
To Determine the Age of the Earth

Scientists use Radiometric dating

(The use of radioactive isotopes to determine the age of rocks)

(7^{th} grade science)

Orbit of the Earth (DRAW)



Motions of the Earth

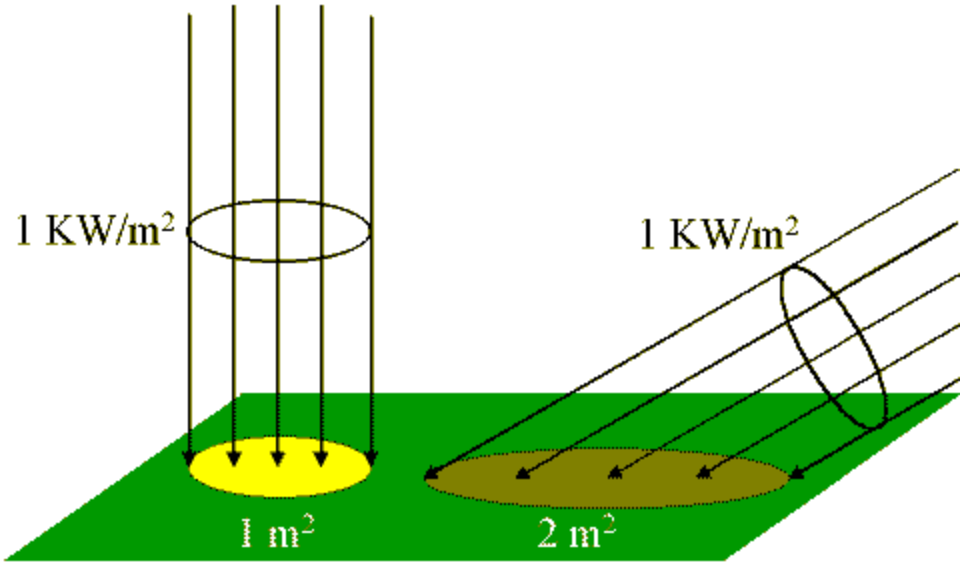
- **18) Rotation** "DAY"
  - daily motion
  - it takes 24 hours for the earth to spin around its axis once
- **19) Revolution (orbit) "YEAR"**
  - yearly motion
  - It takes 365.25 days for the earth to go around the sun once.

The Seasons

- 20) caused by the tilt of the Earth's axis
- (23°)
- *NOT* due to changes in the distance of the Earth from the Sun!!!
- 21) The tilt of the Earth's axis affects:
  - a) The amount of direct sunlight (Insolation)
  - b) The length of the day
  - Equinoxes

22) Insolation

- how directly the rays of the sun hit the ground



Summer *vs.* Winter in Sonoma (#23 & #24)

- **June 21** (Summer Solstice)
- **More insolation** for us
- **Length of the Day: 16h**
- **Northern hemisphere** tilted towards the Sun
- Distance from the Sun: 152 Million km (FAR!)

Hottest Month : July

- **Dec 21** (Winter Solstice)
- **Less insolation** for us
- **Length of the Day: 10h**
- **Southern hemisphere** tilted towards the Sun
- Distance from the Sun: 147 Million km (CLOSE!)

Coldest Month: January

Equinoxes
Day and Night are equal length (12 hours). (#25 & #26)

- **March 21**
- **Insolation = medium**
- **Length of day = 12 hours**
- Vernal Equinox
- The Sun is directly over Equator.
- **"Spring" in the Northern Hemisphere**

- **September 21**
- **Insolation = medium**
- **Length of day = 12 hours**
- Autumnal Equinox
- The Sun is directly over the Equator
- **"Fall" in the Northern Hemisphere**

Using your textbook Ch 12

- Pg 460 – copy green vocabulary table
- Define vocabulary: astronomy, axis, rotation, revolution, orbit, calendar, solstice, equinox
- Draw figure 4 on page 468 (color!)
- Draw diagram on page 469 (color!)
- Answer questions on pg 471 (1a,1b,2a,2b,2c)