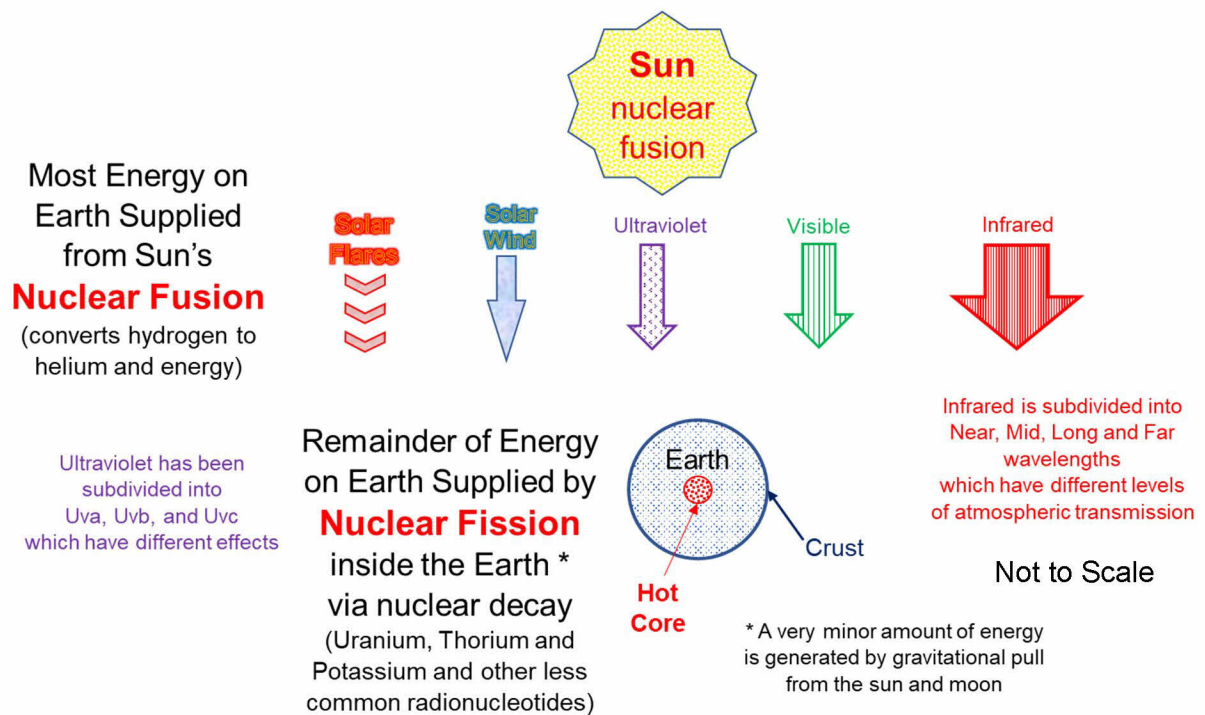


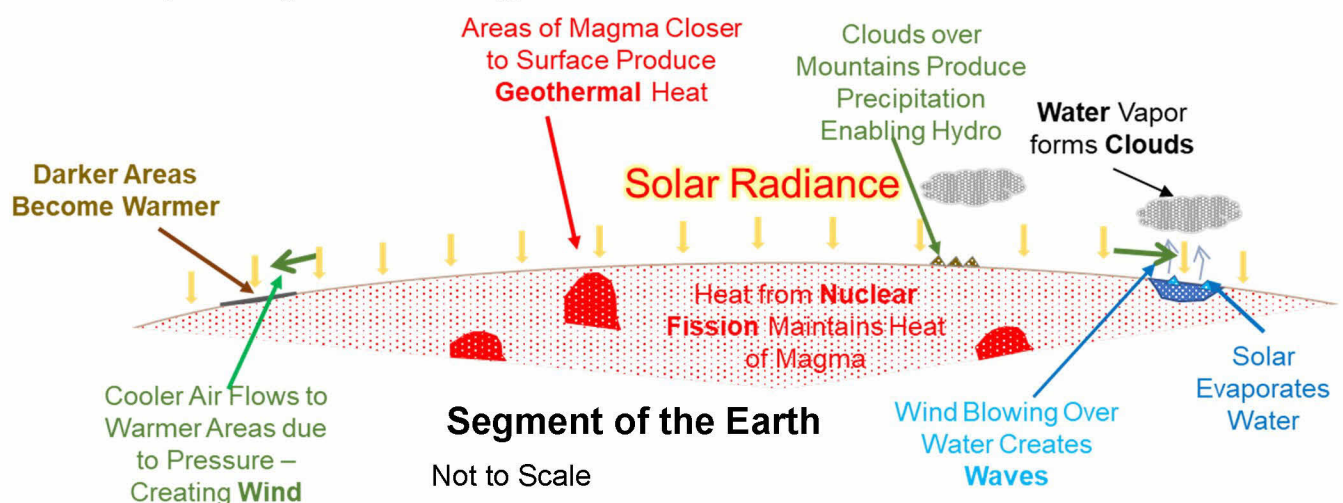
All Energy on Earth Starts from Nuclear



The majority of natural energy sources on earth result from **nuclear fusion on the sun** which converts hydrogen to helium plus lots of energy. Someday fusion¹ will be harnessed on earth to provide most of the world's electricity² at very-low cost with minimal waste and negligible hazardous waste. Naturally occurring **nuclear fission** inside the earth (same fission inside nuclear reactors producing electricity), generates heat, which produces volcanoes, geysers and provides geothermal energy.

Energy Available On Earth

- Solar radiance continually falls on earth covering a wide spectrum from infrared to visible to ultraviolet – plus solar wind. There are also occasional large blasts of material and energetic plasma ejected from the sun known as solar flares. Solar flares can have catastrophic impacts.
- High-speed particles emitted from the sun produce a so-called solar wind. These particles are dangerous, but fortunately most particles are blocked by earth's magnetic field and the atmosphere.
- Solar energy (infrared, visible, and ultraviolet) produce most energy received on the earth's surface
- Solar reaching the earth can be used as a direct source of energy for photovoltaic and solar thermal.
 - Differential heating of portions of the earth produces wind as a secondary energy
 - Heating of bodies of water produce water vapor that forms clouds as a secondary energy.
 - Clouds produce precipitation and over mountains that produces rivers which can be used the source of hydroelectric power as a tertiary energy.
 - Wind passing over water creates waves as a tertiary energy
- Heat inside the earth from naturally occurring nuclear fission (same fission used to power nuclear reactors) maintains the heat of earth's internal magma.
 - Areas of the earth where magma is close to the surface (mostly near volcanoes) can be used to produce geothermal energy.



¹ Electricity produced using fusion on earth combines deuterium (hydrogen with an extra neutron) from seawater and tritium from Lithium as fuel. Seawater contains millions of years of supply. Fusion converts deuterium and tritium into helium; the gas used to fill balloons used at party events. <https://www.iter.org/sci/Fusion>

² In numerous personal discussions I had with Richard Feynman during the 1960s, he forecasted that fusion energy would be demonstrated by the end of the 21st century and become the dominant source for electricity by 2200.