

# Earth Systems

atmosphere, geosphere, biosphere, hydrosphere

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# Earth Systems

The Earth system is quite complex. Scientists have divided it into four major geological subsystems that make up the natural environment of Earth. These subsystems are sometimes referred to as ecospheres.

The four main ecospheres are the atmosphere, the biosphere, the hydrosphere and the geosphere.

**Atmosphere** -- the mixture of gases that surround the planet The atmosphere is divided by altitude into different layers. You can see the layers of the atmosphere to the right.

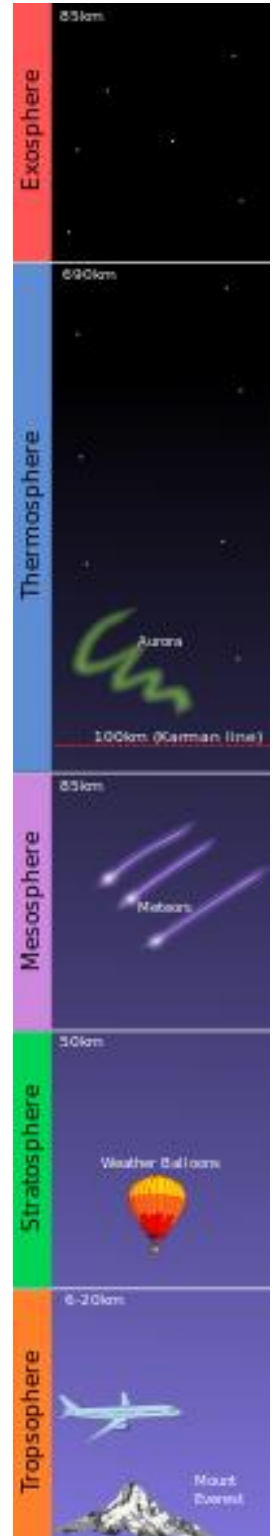
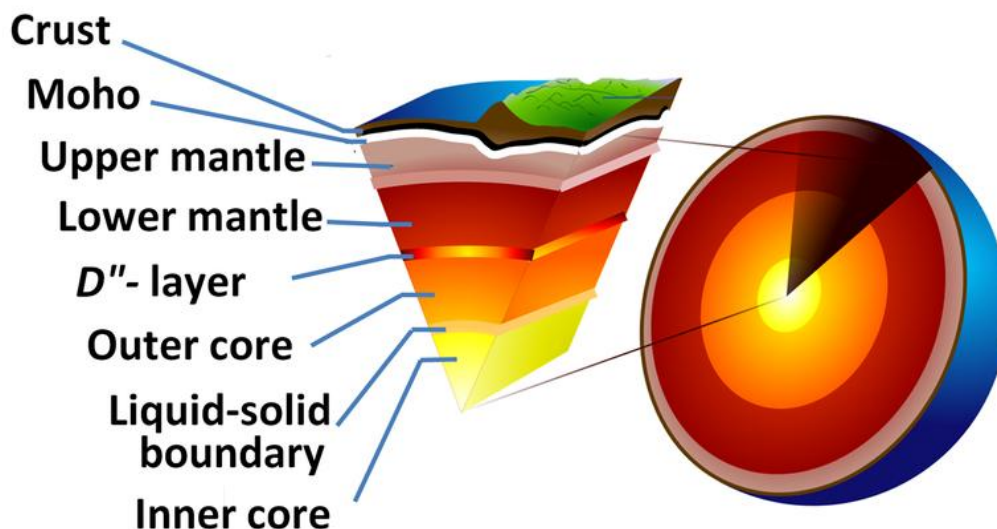
**Geosphere** -- the solid portions of Earth and the layers within the Earth. See the illustration below.

**Biosphere** -- all life on Earth. in other words all living organisms on Earth, including those on the land, in the water, and in the air. Within the biosphere, living things form ecological communities based on the physical surroundings of an area. These communities are referred to as **biomes**.

**Hydrosphere** – all water found on, under, and over the surface of Earth

**Cryosphere** – those portions of Earth's surface where water is in solid form, including sea ice, lake ice, river ice, snow cover, glaciers, ice caps, ice sheets, and frozen ground

All four major geological subsystems of Earth can function independently from each other, but there is often interaction between them.



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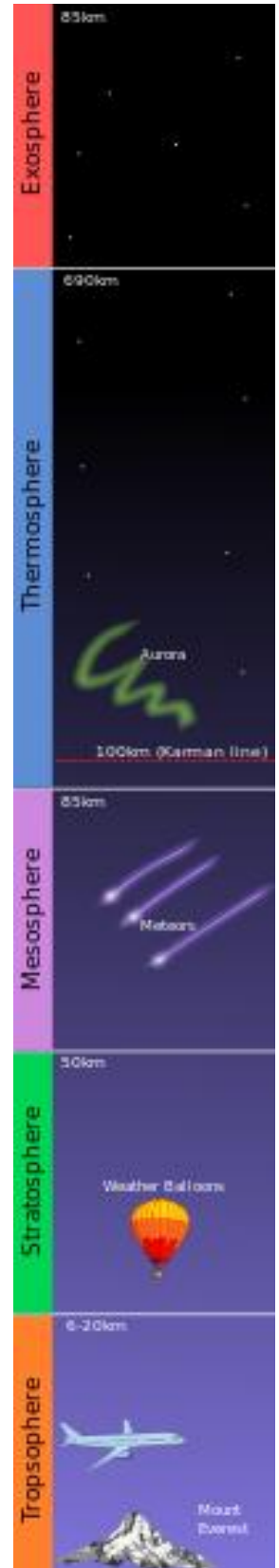
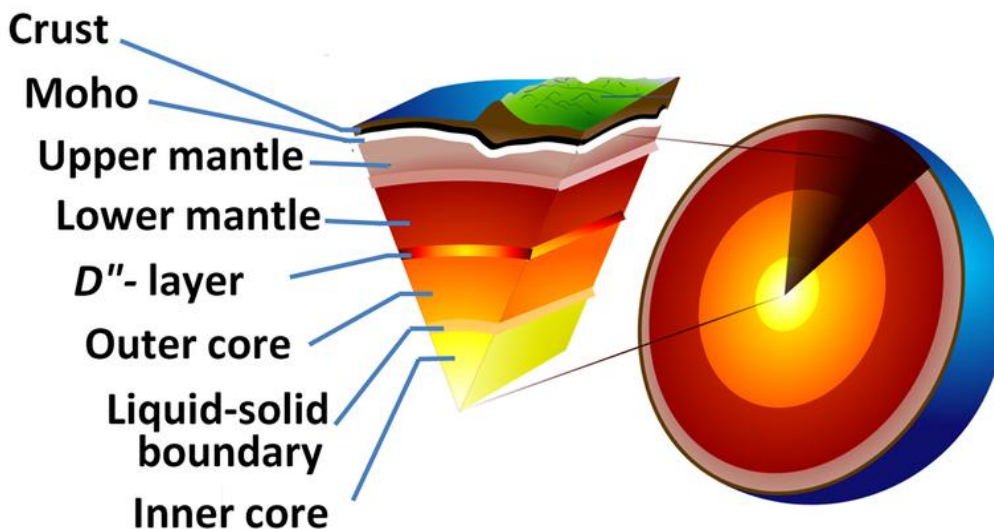
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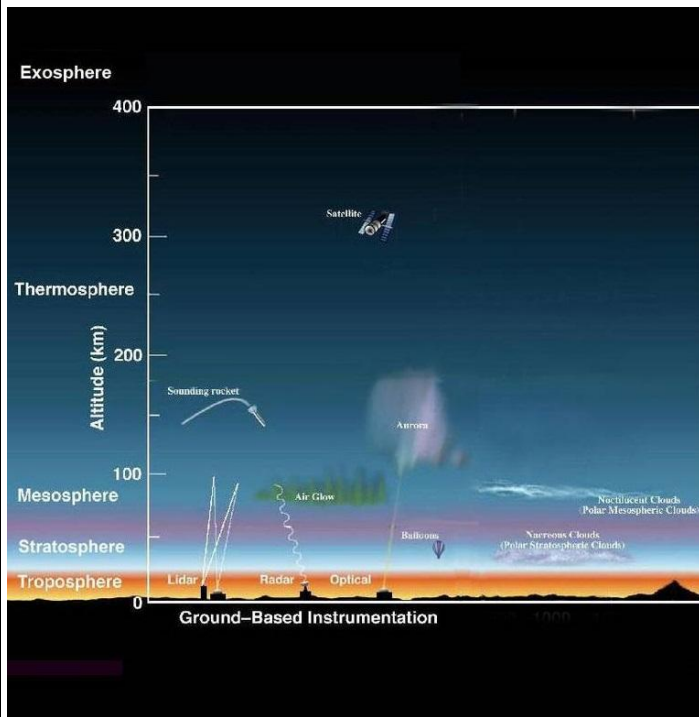
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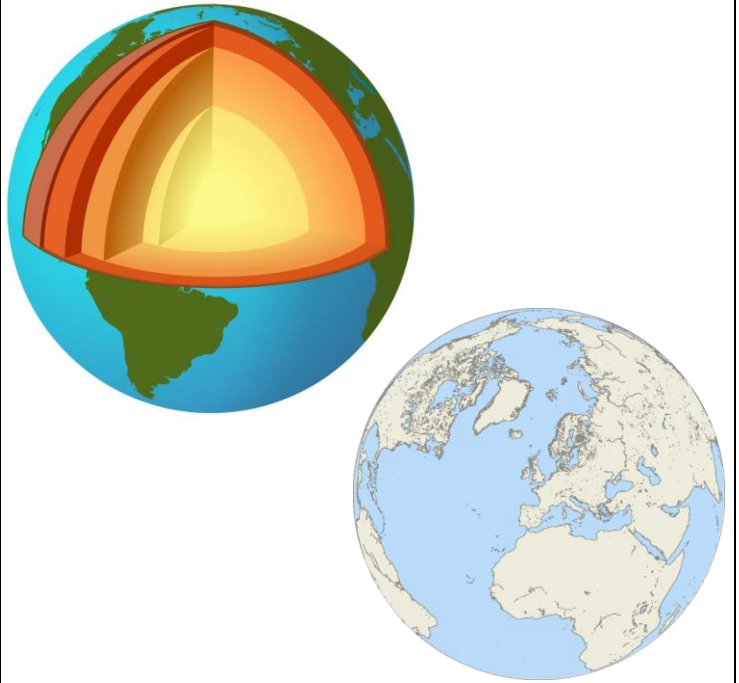
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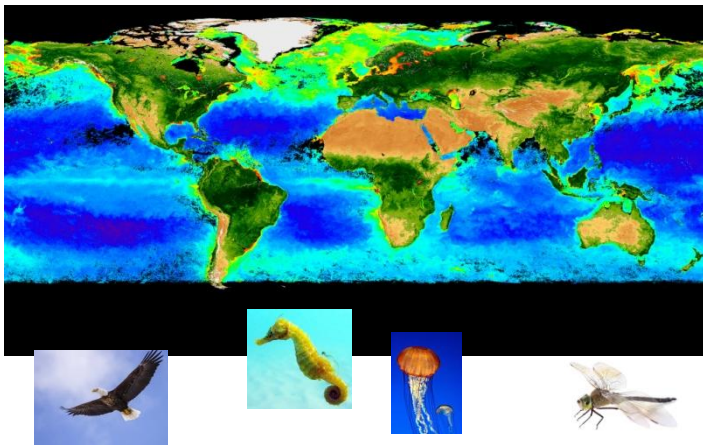
# Earth's Systems



**Atmosphere**



**Geosphere**



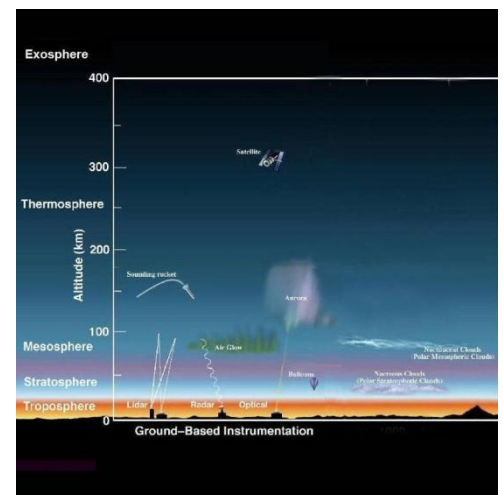
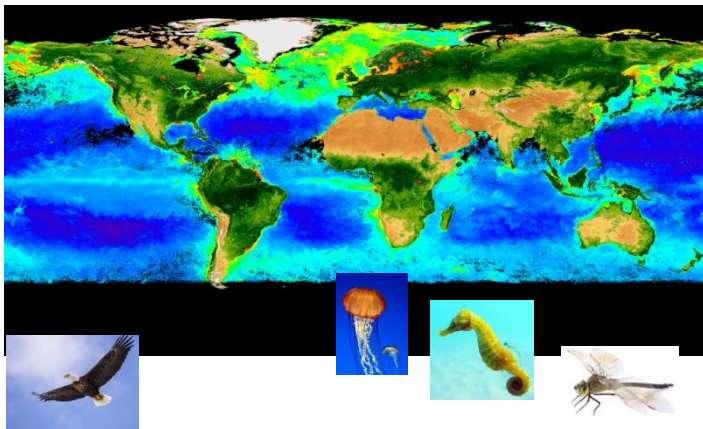
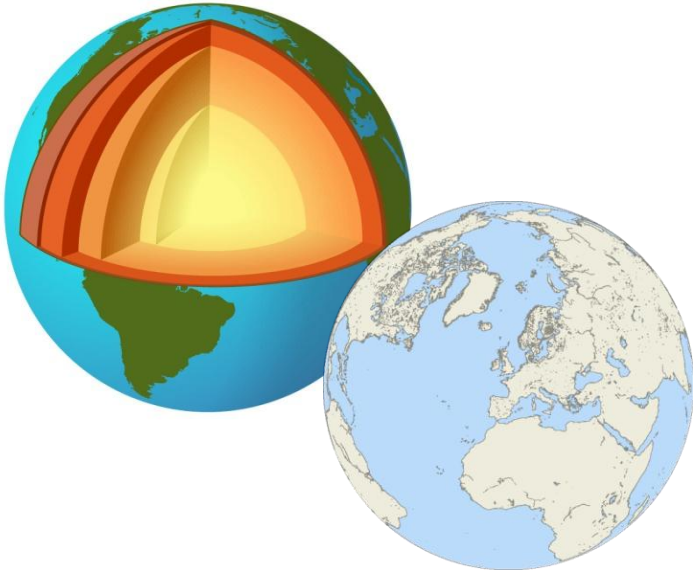
**Biosphere**



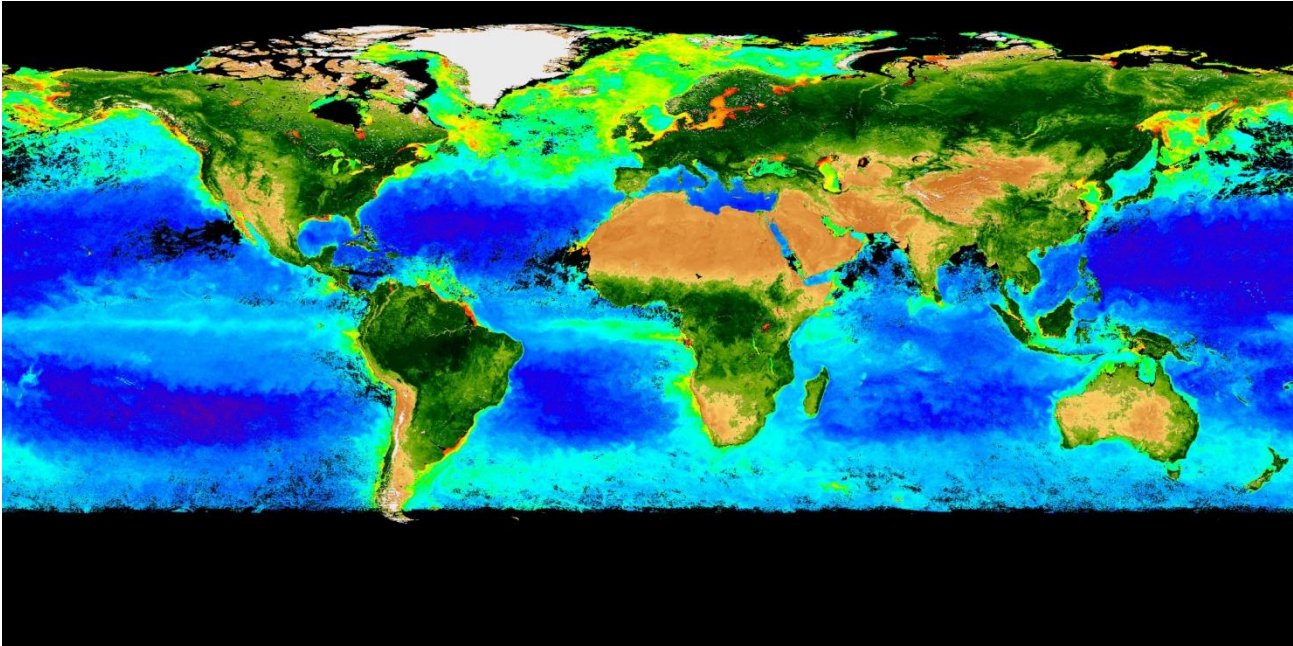
**Hydrosphere**

# Earth's Systems

What are the 4 major ecospheres? Give a brief description of each:



# Biosphere:



The image above shows the global biosphere from June 2002 measured by SeaWiFS. Data in the oceans is chlorophyll concentration, a measure of the amount of phytoplankton (microscopic plants) living in the ocean. On land SeaWiFS measures Normalized Difference Vegetation Index, an indication of the density of plant growth.

Courtesy of NASA.gov: <http://earthobservatory.nasa.gov/IOTD/view.php?id=2669>

## Photo Credits:

Atmosphere Image courtesy of NASA.gov: [http://www.nasa.gov/sites/default/files/atmosphere\\_xltn.jpg](http://www.nasa.gov/sites/default/files/atmosphere_xltn.jpg)

Atmosphere Layers courtesy of NASA.gov: [http://www.nasa.gov/mission\\_pages/sunearth/science/atmosphere-layers2.html](http://www.nasa.gov/mission_pages/sunearth/science/atmosphere-layers2.html)

Layers of the Earth courtesy of Wikimedia Commons: [https://commons.wikimedia.org/wiki/File:Jordens\\_inre.jpg](https://commons.wikimedia.org/wiki/File:Jordens_inre.jpg)

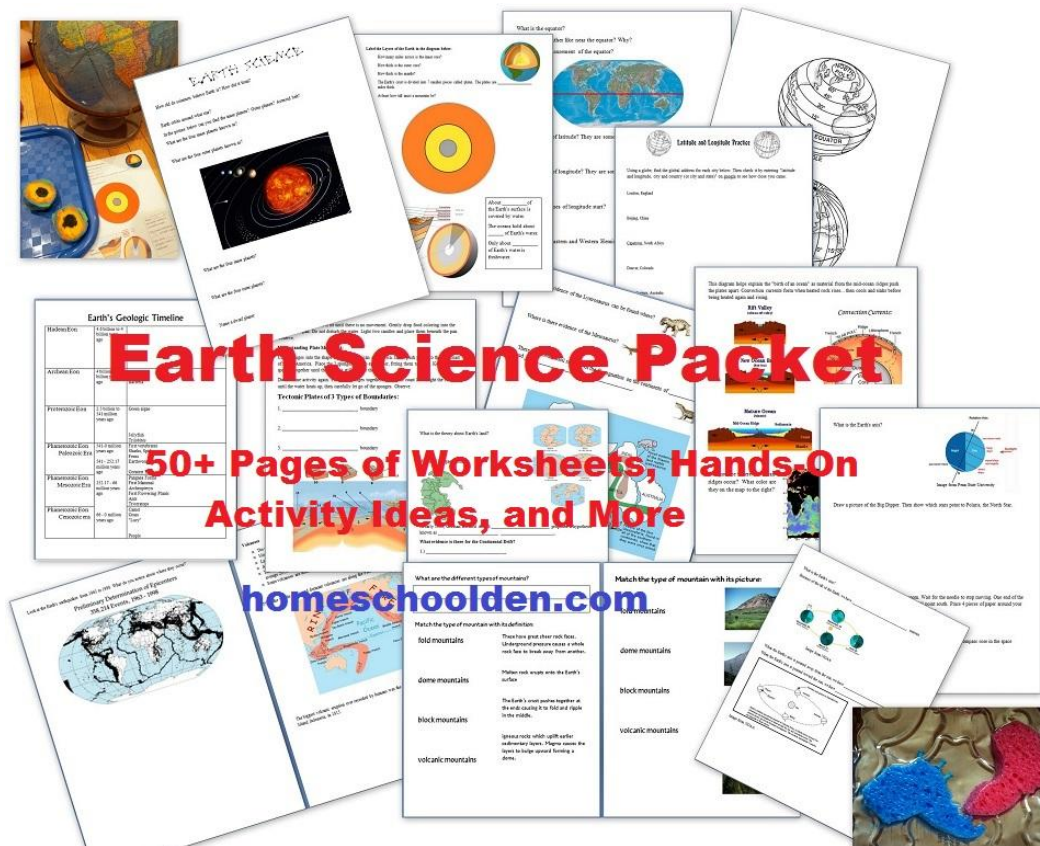
Ocean surface wave courtesy of Wikimedia Commons:  
[https://commons.wikimedia.org/wiki/File:Ocean\\_surface\\_wave.jpg](https://commons.wikimedia.org/wiki/File:Ocean_surface_wave.jpg)

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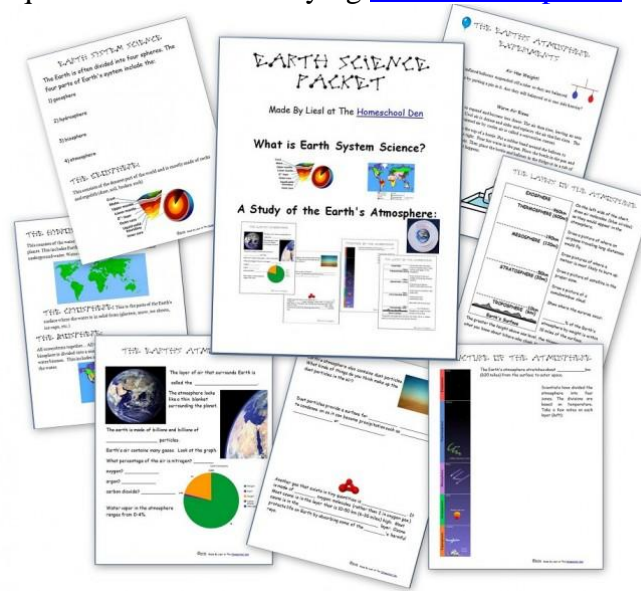
## Geosphere:

We have gone into a lot of depth about the Geosphere -- ie. our [Earth Science Unit](#) where we talked about

- Earth's place in the Solar System
- the layers of the Earth
- Geography Terms: Earth's Axis and the Seasons; Latitude Longitude
- Plate Movement Worksheets, Types of Plate Boundaries
- Earthquakes (and we made our own earthquake shake table!)
- 4 Types of Mountains Worksheets, 4 types of Volcanoes Worksheets, Parts of a Volcano Worksheet



**Atmosphere:** We also spent quite a bit of time studying [Earth's atmosphere](#) when we did our [weather unit](#).



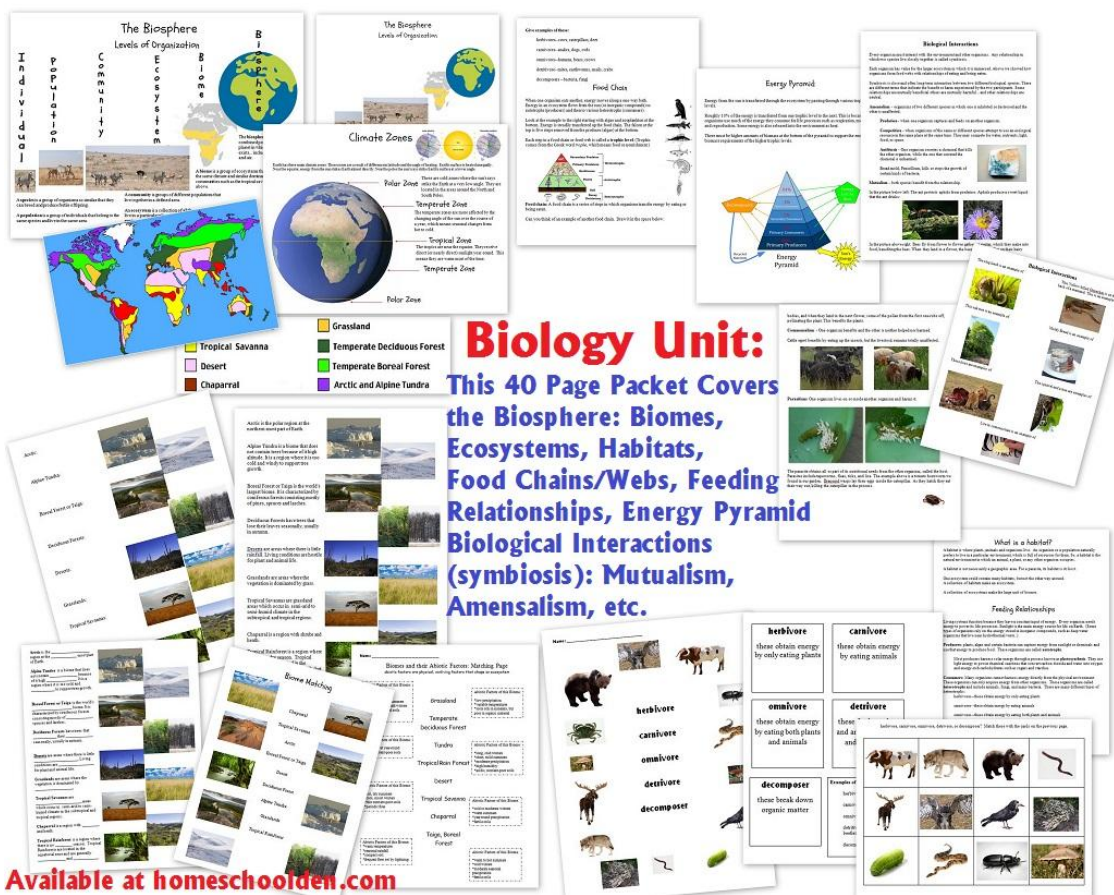
This time around we're going to spend some time on the **biosphere**, before moving onto a huge unit on the **hydrosphere**... ie. an Ocean Unit (the major oceans, marine habitats, tides, layers of the ocean, deep ocean habitats and more).

**Biosphere:** We are doing a biology unit this year. First, we reviewed the 5 vertebrate groups and their major characteristics, we talked about some of the major invertebrate groups and how they are classified. My youngest also reviewed spiders vs. insects and we talked about domesticated vs. wild animals and spent a few days on animal tracks.

You'll find that [Animal Unit](#) here.



Then we're going into more depth about biomes, habitats, ecosystems, the food chain, animal relationships (symbiosis, mutualism, etc.). That packet will be out towards the end of Jan. 2016. The packet is still growing... it's now well over 50 pages as I keep adding in other material! :)



And from there we will be doing an Ocean Unit.

