Research Hunt 10A Ocean Currents and Wind

Using your computer research the following standard: 10A Recognize that the Sun provides energy that drives convection within the atmosphere and oceans, producing winds and ocean currents.

**Heat Transfer**

1. What is Earth’s source of thermal energy? The Earth’s main source of thermal energy is the Sun.

2. List the three ways heat is transferred from one object to another. Explain each.

1. Convection: The transfer of heat through the actual movement and circulation. It is the transfer of heat energy in a gas or a liquid.

2. Conduction: the transfer of energy through matter from one particle to another. It is through one atom in a substance, to another atom in that same substance.

3. Radiation: they are electromagnetic waves that directly transfer energy through space. Sunlight is a form of radiation that is radiated through space without any help from solids of liquids/fluids, which then eliminates the chances of it being convection or conduction.

3. Which method of heat transfer occurs when the Sun’s energy is passed to Earth?

The sun does this by mostly electromagnetic radiation.

**Formation of Wind**

1. What type of energy transfer occurs to produce sea breezes? This happens because of kinetic energy.

2. How are winds formed? Winds are the result of uneven heating of the earth's surface by the sun. Warmer parts of the earth the air raises and surrounding air rushes in to replace it. Colder parts of the Earth the air is going down and when it reaches the Earth it flows outward.

3. Where does the energy for the wind come from? It ultimately comes from the Sun which causes the air to heat up, causing it to raise therefore changing pressures, and that makes wind blow.

4. What are the winds that form along the equator? They are known as trade winds.

**Ocean Currents**

1. What powers the ocean currents? The wind pressure that moves them a certain way, is what powers them.

2. What is the importance of ocean currents? They are important because, they help marine life, determine temperatures; they also help shaping the Earth’s features.

3. How are ocean currents formed? The Sun heats the atmosphere, causing winds, which creates the ocean to move through friction.

|  |
| --- |
| *Changing Ocean Currents.* n.d. Web. 1 October 2012. <http://www.nhm.ac.uk/nature-online/environmental-change/climate-impacts/ocean-currents/>. |

|  |
| --- |
| *Conduction.* n.d. Web. 1 October 2012. <http://www.nc-climate.ncsu.edu/edu/k12/.Conduction>. |

|  |
| --- |
| *Conduction.* n.d. Web. 1 October 2012. <http://kids.yahoo.com/reference/encyclopedia/entry?id=conducton>. |

|  |
| --- |
| *Convection, Conduction and Radiation.* n.d. Web. 1 October 2012. <http://www.mansfieldct.org/schools/mms/staff/hand/convcondrad.htm>. |

|  |
| --- |
| *Currents in the Earth's System.* n.d. Web. 1 October 2012. <http://www.ucmp.berkeley.edu/education/dynamic/session1/sess1\_earthcurrents.html>. |

|  |
| --- |
| *Ocean Circulations.* n.d. Web. 1 October 2012. <http://www.nc-climate.ncsu.edu/edu/k12/.OceanCirculations>. |

|  |
| --- |
| *Ocean Energy: Waves, Tidal and Currents, Salinity, Thermal.* n.d. Web. 1 October 2012. <http://www.ocean-energy-systems.org/>. |

|  |
| --- |
| *Relationship of the Ocean and the Atmosphere.* n.d. Web. 1 October 2012. <http://www.factmonster.com/ce6/sci/A0860100.html>. |

|  |
| --- |
| *Surface Ocean Currents.* n.d. Web. 1 October 2012. <http://www.windows2universe.org/earth/Water/ocean\_currents.html>. |

|  |
| --- |
| *Three Methods of Heat Transfer: Conduction, Convection and Radiation.* n.d. Web. 1 October 2012. <http://www.vtaide.com/png/heat2.htm>. |

|  |
| --- |
| *Wind.* n.d. Web. 1 October 2012. <http://www.eia.doe.gov/kids/energy.cfm?page=wind\_home-basics>. |

|  |
| --- |
| *Wind Energy Manual: Wind and Wind Power.* n.d. Web. 1 October 2012. <http://www.energy.iastate.edu/Renewable/wind/wem/windpower.htm>. |

**Citations**

|  |
| --- |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |