**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per\_\_\_**

**Heat Transfer and Global Winds**

**7.E.1.5 Explain the influence of convection, global winds and the Jet stream on weather and climatic conditions.**

**I can describe 3 different types of energy transfer**

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** the direct transfer of thermal energy (heat) from one substance to

another substance that is ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.***

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_***– the direct transfer of thermal energy (heat) by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_waves.

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_***: the transfer of thermal energy (heat) by the movement of a \_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_**.

 **I can describe convection currents**

Convection currents occur within the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the \_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Warm air or water \_\_\_\_\_\_\_\_\_\_\_\_

because it is less \_\_\_\_\_\_\_\_\_\_\_\_\_\_, cold air or water \_\_\_\_\_\_\_\_\_\_ because it is more dense.

**What is Wind?**

* **The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ movement of \_\_\_\_\_\_\_\_\_ from \_\_\_\_\_\_\_\_\_ pressure to**
* **\_\_\_\_\_\_\_\_\_\_\_ pressure.** **H**🡪**L**
* **Air moving up or down (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Pressure is caused by the characteristics of the air. Warm Air \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cool Air**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

The unequal heating of air creates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **currents** which then creates winds.

**So let’s put it all together…**

|  |  |
| --- | --- |
| **Winds form when…**Air is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** 🡪 causes a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in **pressure**/**\_\_\_\_\_\_\_\_\_\_\_\_** **= warm** air **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** creating a **\_\_\_\_\_\_\_\_\_\_\_\_\_ pressure**. **Cool** air rushes in to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the warm air **🡪** **cooler dense** air produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **pressure**. As air goes **from**  **\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_ pressure** 🡪winds form | **Make a picture to show your understanding of the description to the left 🡨** |

**There Are Two Kinds of Winds: Global and Local**

|  |  |
| --- | --- |
| **GLOBAL**Winds that blow over \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ around the Earth | **LOCAL**winds that blow a \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Different parts of the world have different temperatures because \_\_\_\_\_\_\_\_\_\_\_\_\_ is more**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ near the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ compared to the poles. For this reason, it’s**

 **warmer near the equator than at the poles.**

Air Rises at the Equator. \_\_\_\_\_\_\_\_\_\_\_ at the Equator is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Warm air \_\_\_\_\_\_\_\_\_\_

The Equator is a \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_area. What Happens to Rising Air at the Equator?

At the Equator, air rises. As the air moves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The air begins to

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Cold air \_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the

\_\_\_\_\_\_\_\_\_\_\_\_\_

Let’s Label the Winds

 Include on this diagram ***all areas*** of ***low and high pressure*** along with the ***latitudes*** 00 300,600,900 all the winds; ***Prevailing Westerlies, Polar Easterlies, Trade Winds***, and all the ***arrows to show the direction*** of the winds.

How are winds named? Winds are named based on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from which they \_\_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ winds comes from the north. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_winds come from the south.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ winds come from the southeast and blow northwest

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ winds come from the northeast and blow to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Polar Easterlies**\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_ pressure winds coming from both the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ poleThey move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(thus they are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) | **Trade Winds**The Trade Winds are blowing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_These winds are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, blowing from the east.\_\_\_\_\_\_\_\_\_\_\_\_\_ of the equator, winds blow from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the equator, winds blow from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Prevailing Westerlies**Move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for many of \_\_\_\_\_\_\_\_\_\_\_\_ movements across the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Zones of NO WIND****Doldrums**Since Trade Winds blow from \_\_\_\_\_\_\_\_ the North & South, a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Horse Latitudes**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the 300 latitude lines  |
| **300 North & South Latitude** |
| This is an area of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Air from the Equator and from the 600 latitudes \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the 300 latitude | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Along this latitude, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Why Don’t The Winds Blow in Straight Lines? The Coriolis Effect**!!!

|  |  |
| --- | --- |
| Since the earth rotates, winds \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_blow directly from north to south or south to north***Winds curve!!!!!*** They curve because the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_The Coriolis Effect is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (liquids/gases) due to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hemisphere winds curve to the \_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hemisphere winds curve to the left
 | **http://www.theozonehole.com/images/atmosphere04.gif** |

Remember, winds always blow from areas of high pressure to low pressure.

|  |  |
| --- | --- |
| **Sea Breeze**During the \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ air over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ air \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and moves to replace warm airAs warm air rises 🡪 expands and coolsAs cools 🡪 becomes more dense🡪 sinks back down | **Land Breeze**At \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ than waterAir \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & less dense that air above dry land* Convection current goes in opposite direction of daytime

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and goes out over water |

***The Jet Streams***

The ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** is a fast-moving ribbon of air that

moves from \_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hemisphere around the Earth.

It \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ and Constantly changes positions. As these changes occur, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in its path are moved along by the fast moving air.

The cold ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** can bring down cold, polar conditions from the North

The ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** can bring warm tropical conditions from the South (in the Northern hemisphere)



**W**

**E**

**E**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per:\_\_\_\_\_\_

Note Check \_\_\_: Heat Transfer and Global Winds \_\_\_\_\_/10