

**Lesson – Wind**


THE FOLLOWING VIDEO HAS BEEN APPROVED FOR  
**ALL AUDIENCES**  
BY THE EARTH SCIENCE TEACHERS ASSOCIATION OF AMERICA, INC.

THE VIDEO HAS BEEN RATED

<b>1</b>	INTELLIGENT UNDER 15 REQUIRES TEACHER ASSISTANCE
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STRONG EARTH SCIENCE LANGUAGE, DETAILED DIAGRAMS, AND SUPER AWESOMENESS

- I can define wind
- I can explain what causes wind
- I can name the instrument used to measure wind
- I can describe planetary winds & use the ESRT
- I can describe local breezes
- I can understand water currents & use the ESRT



DO: WHAT CAUSES WIND?  
WINDS: SWELLING.  
REALLY? YES, BUT THE TRUTH IS MADE UP.  
THE TREES ARE REALLY SWELLING FROM

### Wind

- Horizontal movement of air parallel to earth's surface
- Named from the direction they come from

**RANDOM FACTS:**

**Fastest wind struck Oklahoma City on May 3, 1999. (SPEED was 318 mph)**

**Two of the windiest cities are found in Massachusetts**

1. Hot Springs, Ark.	15.4
2. Dodge City, Kansas	14.0
3. Amarillo, Texas	13.5
4. Rochester, Min.	13.1
5. Casper, Wyoming	12.9
6. Cheyenne, Wyo.	12.9
7. Great Falls, Montana	12.7
8. Goodland, Kansas	12.6
9. Boston, Ma.	12.5
10. Lubbock, Texas	12.4

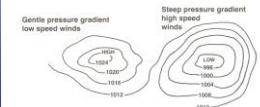
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• Caused by **DIFFERENCES** in air pressures

**AIR PRESSURE GRADIENT**

- Difference in air pressure for a specific distance


**CLOSER THE ISOBARS = GREATER Pressure Gradient & FASTER Wind Speed**



Gentle pressure gradient  
low speed winds


Steep pressure gradient  
high speed winds

### How Air Pressure Works



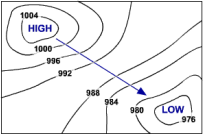
**HIGH PRESSURE (H)**  
**LOW PRESSURE (L)**

WIND



(Cold Air) → (Warm Air)  
 Wind

**WIND MOVES FROM:**  
Areas of **HIGH** pressure to areas of **LOW** pressure




Coriolis effect (Earth's rotation) causes winds to move...

**RIGHT** Northern Hemisphere  
**LEFT** Southern Hemisphere

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**MYTH OF THE TOILET**

One can find both counterclockwise and clockwise flowing drains in both hemispheres. Some people would like you to believe that the Coriolis force affects the flow of water down the drain in sinks, bathtubs, or toilet bowls. Don't believe them! The Coriolis force is simply too weak to affect such small bodies of water



**ANEMOMETER**

- Instrument used to measure wind speed  
 - Measured in miles per hour & knots

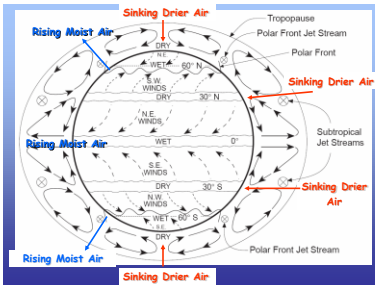
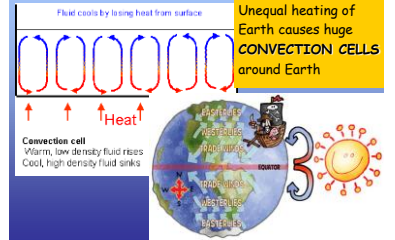
**WIND VANE**

-tells the direction of the wind

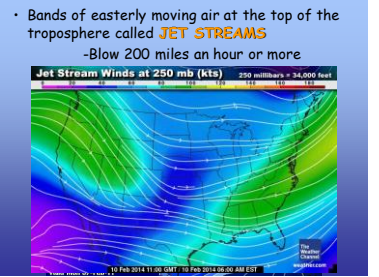
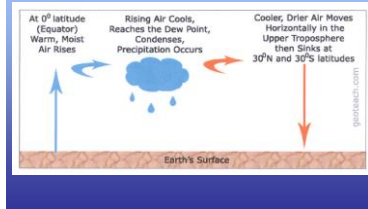


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**Planetary winds in the Troposphere**



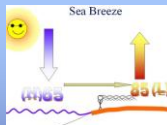
**Close Look**



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**Local Breezes**

**SEA BREEZE**  
 Air blows from the sea onto the land during the day

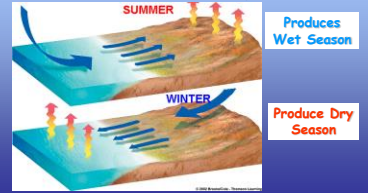


**LAND BREEZE**  
 Air blows from the land out to sea at night

\*\* Animated Land & Sea Breeze\*\*

**MONSOONS**

- Similar to Large scale land/sea breezes  
 - Causes EXTREME weather changes




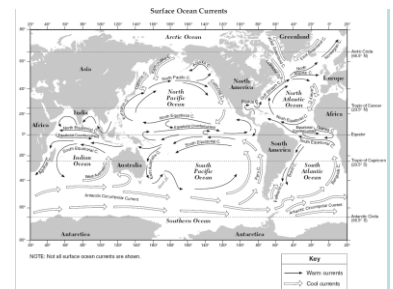
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**Surface Ocean Currents**

- Caused by wind blowing over the oceans & transferring energy to the water

DIRECTION of CURRENTS is affected by:

- 1) PLANETARY WIND BELTS
- 2) ROTATION of EARTH
- 3) BLOCKING BY LANDMASSES

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