BEFORE WE GET INTO WEATHER, LET'S REVIEW A COUPLE OF THINGS FIRST...

YOU HAVE LEARNED THAT THE SUN WARMS THE GROUND (AS WELL AS THE OCEANS) AND THE GROUND WARMS THE AIR! YOU HAVE ALSO LEARNED THAT SOME OBJECTS (LIKE THE GROUND) WILL ABSORB RADIATION FASTER THAN OTHER OBJECTS (WATER). SO, THE GROUND GETS WARMER AND COLDER MUCH FASTER THAN WATER!

THIS WEEK, YOU ARE GOING TO EXPLORE HOW...


# THE UNEVEN HEATING OF THE EARTH CAUSES WEATHER

THIS IS THE #1 RULE FOR ALL METEOROLOGISTS! THE SUN BLASTS US WITH RADIATION EVERY SINGLE DAY AND DIFFERENT PARTS OF THE PLANET WARM UP AT DIFFERENT TIMES... IN ADDITION, WE LIVE ON A PLANET THAT IS ALWAYS ROTATING AND MIXING THESE WARMER AND COOLER AREAS ALL OVER OUR ATMOSPHERE!

THERE IS A LOT OF INFORMATION THAT METEOROLOGIST USE TO HELP US UNDERSTAND OUR ATMOSPHERE. ONE OF THE MOST IMPORTANT THINGS TO UNDERSTAND IS THE DIFFERENCE BETWEEN...

# CLIMATE AND WEATHER

**CLIMATE** IS THE NORMAL WEATHER FOR AN AREA OVER A LONG PERIOD OF TIME (LIKE 30 YEARS!) AN EXAMPLE OF A CLIMATE WOULD BE A DESERT. THIS IS AN AREA THAT HAS A DRY CLIMATE BECAUSE IT DOES NOT GET MUCH RAIN IN 30 YEARS!

**WEATHER** IS WHAT HAPPENS EVERY DAY... RAIN, SNOW, WINDY DAYS... ALL OF THIS IS OUR DAY-TO-DAY WEATHER! THINK OF IT THIS WAY, IF YOU STUCK YOUR HEAD OUTSIDE AND RECORDED HOW HOT IT WAS OUTSIDE, IF IT WAS RAINING AND IF THERE WAS ANY WIND – YOU ARE LOOKING AT THE WEATHER. IF YOU STICK YOUR HEAD OUTSIDE EVERY DAY FOR 30 YEARS AND RECORD THESE SAME THINGS...YOU ARE STUDYING THE CLIMATE OF YOUR AREA!

METEOROLOGISTS RECORD THE WEATHER EVERYDAY. THEIR DATA GIVES US A DEFINITION OF OUR CLIMATE!


# REMEMBER:

1) THE FARTHER AWAY YOU MOVE FROM THE EQUATOR, THE COOLER YOUR CLIMATE IS GOING TO BE!

2) AND, THE EARTH DOES NOT HEAT UP THE SAME EVERYWHERE AT THE SAME TIME.

BOTH OF THESE THINGS AFFECT OUR WEATHER AND CLIMATE A GREAT DEAL! THE DIFFERENT TEMPERATURES ON THE EARTH CAUSE A CHANGE IN SOMETHING CALLED ***AIR PRESSURE.*** AIR PRESSURE IS WHAT METEOROLOGISTS CALL THE "WEIGHT OF THE AIR PRESSING DOWN ON THE EARTH."

CHANGES IN TEMPERATURE CAUSE SOME AREAS OF THE EARTH TO HAVE ***HIGH AIR PRESSURE*** AND OTHER AREAS TO HAVE ***LOW AIR PRESSURE.*** AREAS OF HIGH AIR PRESSURE HAVE MUCH MORE AIR CRAMMED INTO A SMALL PART OF THE ATMOSPHERE. SINCE THERE IS MORE AIR IN THESE AREAS, THE WEIGHT OF THE AIR IS HIGHER!

(THESE "SMALL PARTS OF THE ATMOSPHERE CAN BE SEVERAL HUNDREDS OF MILES LONG!)

AREAS THAT HAVE LOW AIR PRESSURE DO NOT HAVE NEARLY AS MUCH AIR SQUISHED INTO THE SMALL PART OF THE ATMOSPHERE! A SMALLER AMOUNT OF AIR IN LOW AIR PRESSURE AREAS CAUSES THE WEIGHT OF THE AIR TO BE LOWER!


## SO WHAT DOES AIR PRESSURE HAVE TO DO WITH OUR WEATHER?

WELL, IF YOU COULD ACTUALLY SEE THE AIR MOVING AROUND IN THE ATMOSPHERE, YOU WOULD SEE A LARGE PATTERN...

***THE AIR FROM A HIGH AIR PRESSURE AREA IS ALWAYS MOVING TOWARDS A LOW AIR PRESSURE AREA!***

IMAGINE FILLING UP YOUR BEDROOM WITH DOZENS AND DOZENS OF PEOPLE AND SHUTTING YOUR DOOR...ARE YOU FEELING A LITTLE BIT OF PRESSURE? ***YOU SHOULD!*** THERE ARE MANY MORE PEOPLE PACKED INTO YOUR ROOM THAN NORMAL. THIS IS JUST LIKE HIGH AIR PRESSURE!

NOW, BEFORE YOU GET TOO SQUISHED, IMAGINE WHAT IS GOING ON OUTSIDE OF YOUR BEDROOM... THERE PROBABLY ISN'T VERY MANY PEOPLE OUT THERE, RIGHT? THIS IS SIMILAR TO LOW PRESSURE AREAS.

## NOW FOR THE FUN PART! WHAT WOULD HAPPEN IF YOU OPENED YOUR BEDROOM DOOR?!?

EVERYONE WOULD START FALLING OUT OF YOUR ROOM, RIGHT!
***YOU BET!***


THE PEOPLE IN YOUR ROOM WOULD MOVE FROM AN AREA OF HIGH "PRESSURE" TO AN AREA OF LOW "PRESSURE". THIS IS WHAT HAPPENS IN OUR ATMOSPHERE EVERY SINGLE DAY! THE AIR FROM A HIGH PRESSURE AREA IS MOVING TOWARDS, AND FILLING UP, AN AREA OF LOW PRESSURE.

AND I AM CERTAIN THAT YOU HAVE FELT THIS HAPPEN BEFORE! DO YOU KNOW WHY? BECAUSE WHEN THE AIR MOVES FROM HIGH TO LOW PRESSURE AREAS, YOU GET...

# WIND!

THE ***WIND*** IS NOTHING MORE THAN AIR IN MOTION. AND, THE GREATER THE DIFFERENCE BETWEEN THE HIGH AND LOW PRESSURE AREAS, THE STRONGER THE WIND!

ONCE THE WIND STARTS TO MOVE, THE ROTATION OF THE EARTH CAUSES IT TO CURVE ACROSS OUR PLANET. THE CURVING MOTION OF OUR WIND IS KNOWN AS THE ***CORIOLIS EFFECT*** ("CORE-EE-O-LISS").


**BUT I'VE NEVER SEEN THE WIND "CURVE" BEFORE! HOW DO WE KNOW THIS IS HAPPENING?**

GOOD QUESTION...MAYBE THIS WILL HELP:

I'M SURE MANY OF YOU HAVE TRIED TO DRAW A STRAIGHT LINE BEFORE. BUT HAVE YOU EVER TRIED DRAWING A STRAIGHT LINE ON A PIECE OF PAPER THAT IS ROTATING? IF YOU HAVE, YOU SHOULD HAVE MADE A CURVED, SPIRAL SHAPE ON YOUR PAPER! THIS IS WHAT HAPPENS WITH OUR WINDS! THEY MOVE IN A STRAIGHT LINE, BUT THE ROTATION OF THE EARTH CAUSES THEM TO CURVE AS THEY MOVE! IF YOU PAY CLOSE ATTENTION TO A METEOROLOGIST, YOU CAN SEE THAT MOST OF OUR WEATHER (HERE IN THE UNITED STATES) COMES FROM THE WEST AND MOVES EAST! THE CORIOLIS EFFECT CURVES OUR WINDS AND WEATHER ACROSS OUR COUNTRY IN THIS DIRECTION!

***YOU MIGHT NOT BE ABLE TO SEE THE WIND MOVING IN OUR ATMOSPHERE VERY EASILY. BUT NEXT WEEK, YOU ARE GOING TO LEARN HOW WATER AFFECTS ALL OF OUR WEATHER AND CLIMATE!***

***DON'T FORGET THAT IT IS THE UNEVEN HEATING OF THE EARTH WHICH CAUSES OUR WEATHER! WE'LL BE LOOKING AT THIS AGAIN NEXT WEEK***