



Hurricanes



Hurricanes

- Are called different name depending on where they occur
 - Typhoons in the Western Pacific
 - Cyclones
 - Tropical Cyclone is the scientific name for these storms
- Typhoons bring much needed rainfall to South Asia and Southeast Asia
- They are about 300 miles wide, but can vary size.

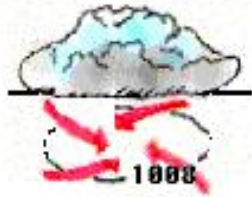




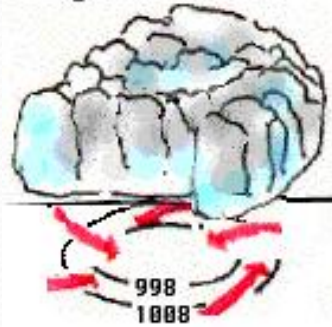
Stages of a Hurricane

- Hurricanes begin over warm water as a low pressure area or tropical disturbances
 - Tropical disturbances wind speeds are less than 39 mph
- As it continues to grow it becomes a tropical storm when wind speeds reach 39 to 74 mph
- If wind speeds reach speeds higher than 74 mph, then it is classified as a hurricane.
 - They are then classified using the Saffir-Simpson Scale
 - Not all disturbance become hurricanes

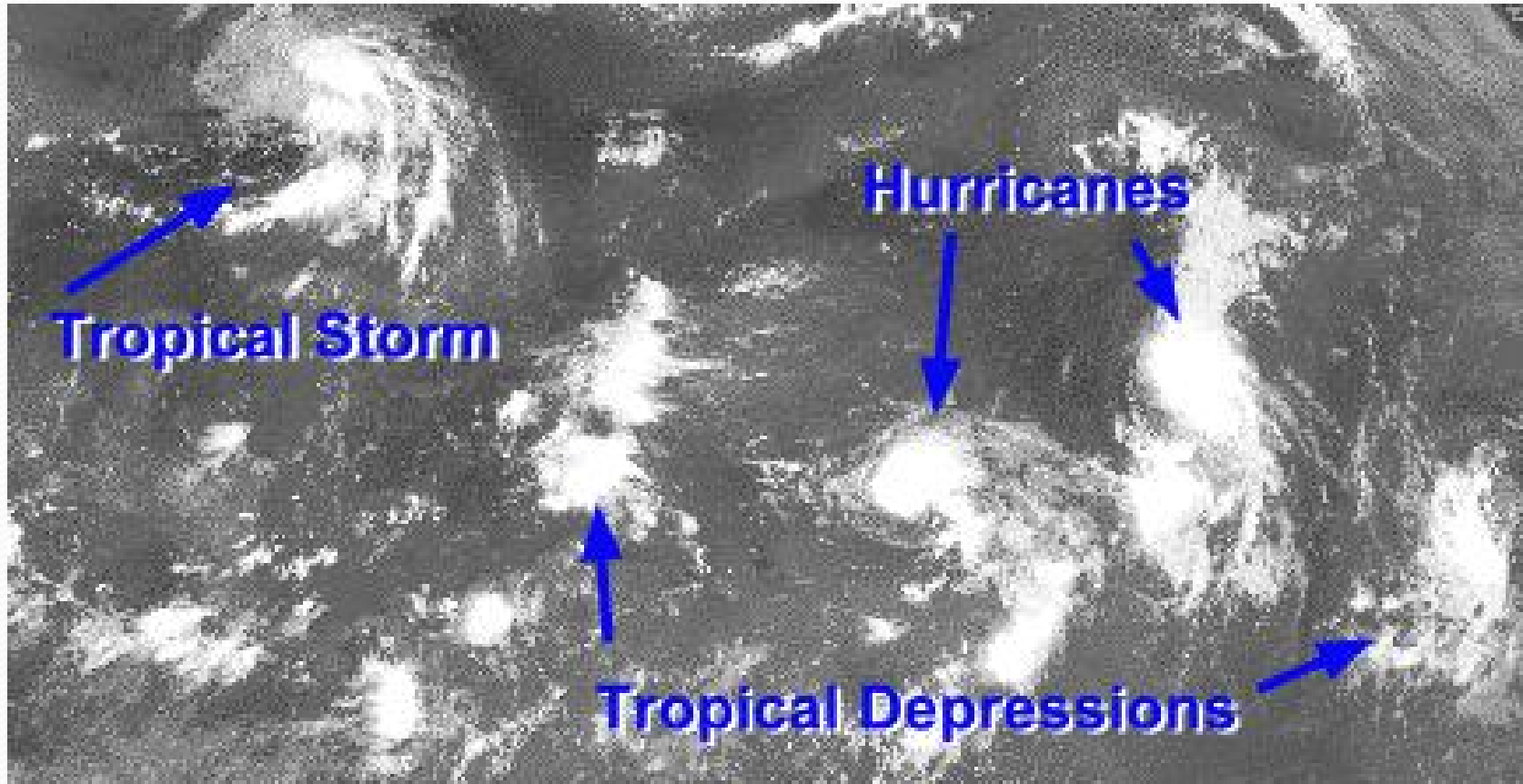
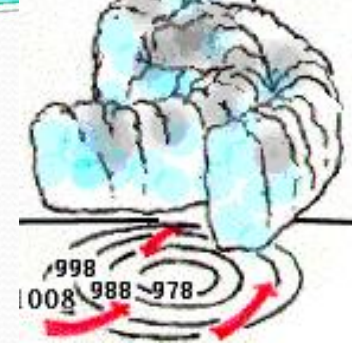
Depression



Tropical Storm



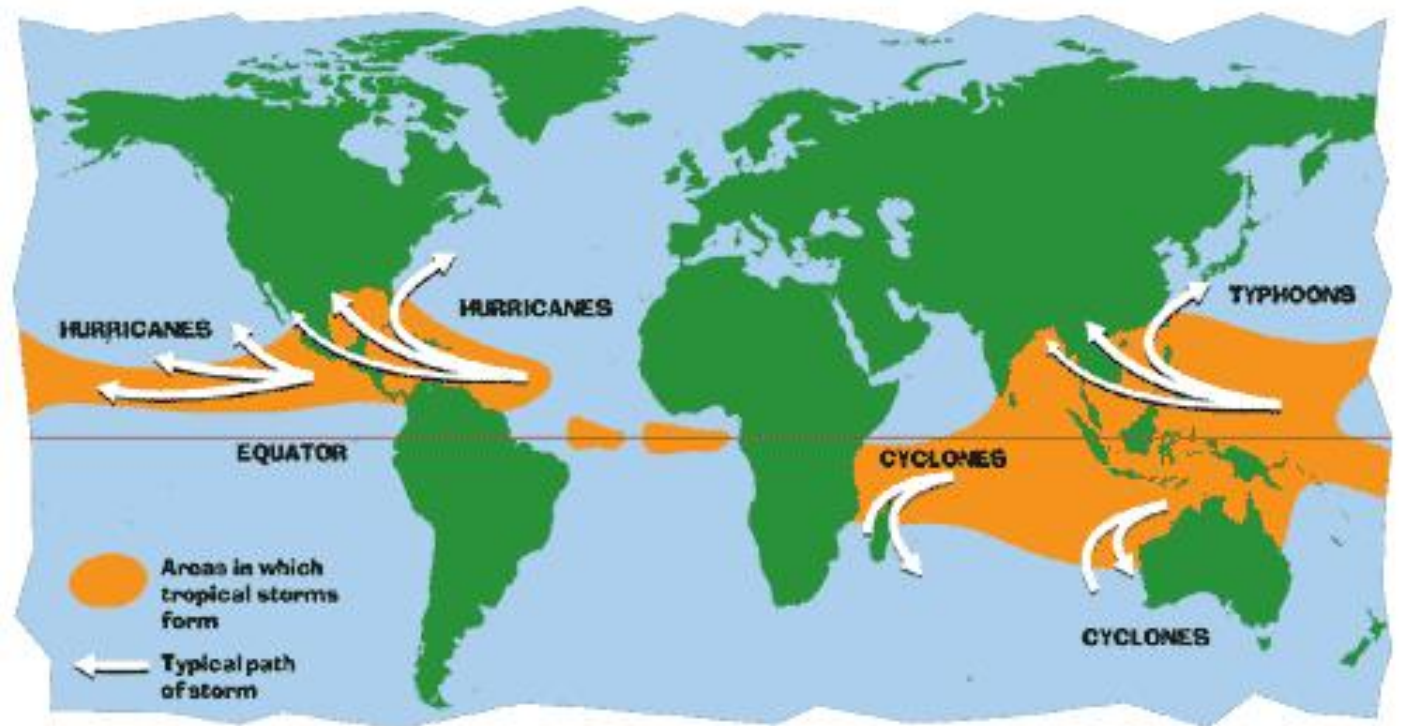
Hurricane



Hurricanes



- Form over warm ocean waters near the equator (Atlantic Ocean)
- Hurricane Season begins in June and lasts through November

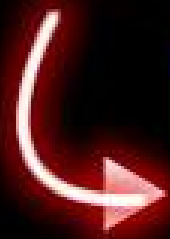


How They Form

- Get energy from warm, humid air at surface of water
 - Rises, forms clouds, more air is drawn into system
 - Winds spiral inward toward low pressure
 - High winds near center with heavy rain
 - Lowest pressure and highest temps are at center
 - Lower the pressure the faster the winds
 - Winds may be as strong as 300 km/h (186 mph)



**WHAT
DOES
A
HURRICANE
NEED?**



#1

Warm ocean water (more than 80°F) provides energy for the hurricane and causes more evaporation making humid air and clouds.

#2

Winds coming together force air upward.

#4

Humid air rising makes the clouds of the storm.

#3

Winds flow outward above the storm, allowing the air below to rise.

#5

Light winds outside the hurricane steer it and let it grow.



The Eye

- Center of the hurricane (approximately 20-40 mi wide)
- When the eye arrives, the weather changes
 - Land and sky may appear clear
 - After, storms resume, wind blow in counter clockwise direction

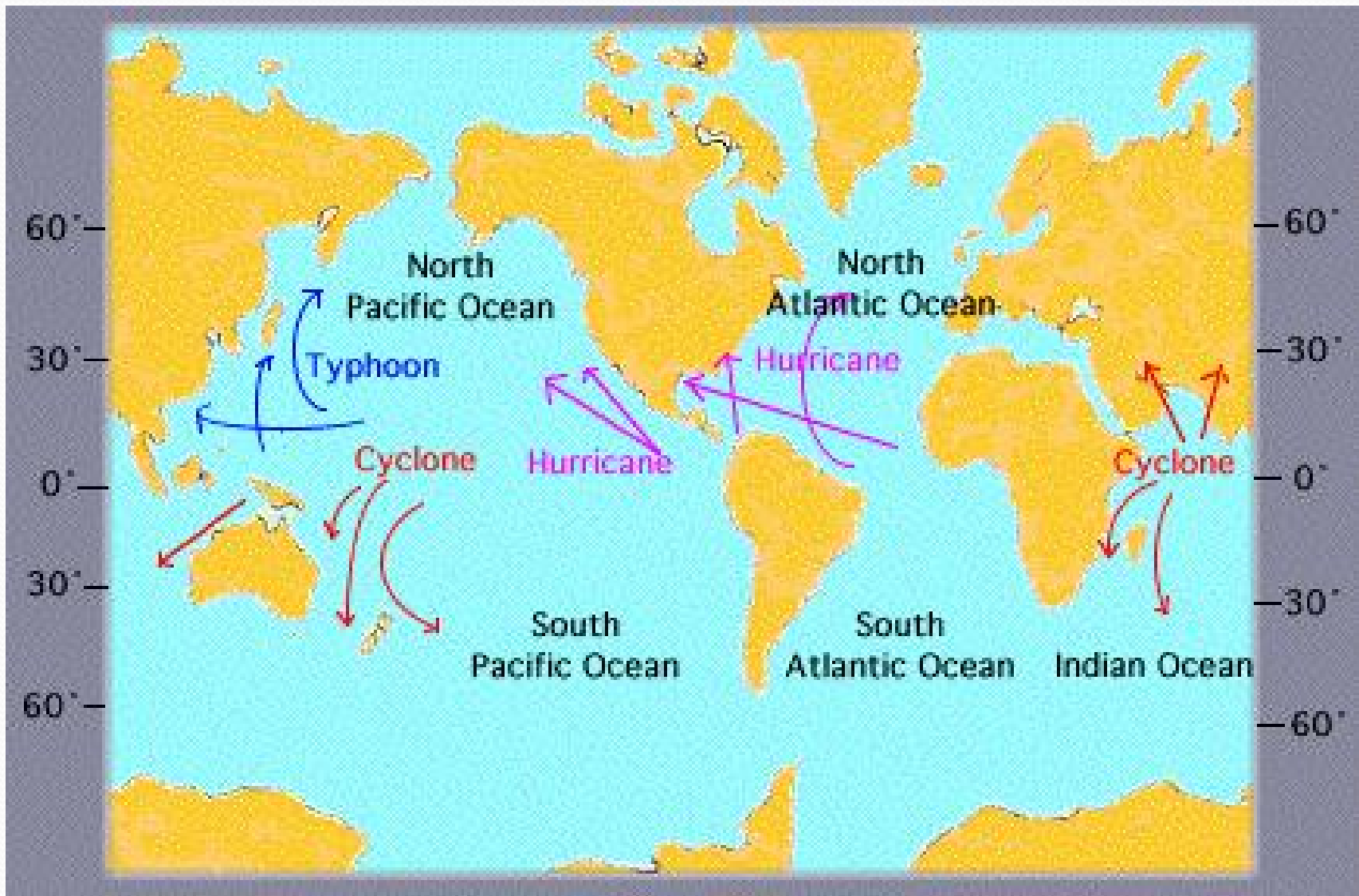


How they move



- The movement of a hurricane depends on its location
 - In the Atlantic they move westward by the easterly trade winds
- In the Northern Hemisphere they have counterclockwise winds (Southern Hemisphere = clockwise winds)
- Average speeds of 15-20 mph
- After across land, loses energy b/c no warm moist air





Hurricane Damage

- Bring high winds and severe flooding
- Most damaging features
 - Storm surge
 - Low pressure and high winds raise the level of water up to 6 meters
 - A dome of water that sweeps across the coast



Naming Hurricanes



- An international committee developed six separate lists of names for these storms.
 - Each list alternates between male and female names
 - It is used because it reduces confusion when there are two or more at the same time
 - Each list is reused every six years
 - However, hurricanes names are retired if they result in substantial damage or death.
 - One name for each letter except Q,U,X,Y,Z

2011

Arlene
Bret
Cindy
Don
Emily
Franklin
Gert
Harvey
Irene
Jose
Katia
Lee
Maria
Nate
Ophelia
Philippe
Rina
Sean
Tammy
Vince
Whitney

2012

Alberto
Beryl
Chris
Debby
Ernesto
Florence
Gordon
Helene
Isaac
Joyce
Kirk
Leslie
Michael
Nadine
Oscar
Patty
Rafael
Sandy
Tony
Valerie
William

2013

Andrea
Barry
Chantal
Dorian
Erin
Fernand
Gabrielle
Humberto
Ingrid
Jerry
Karen
Lorenzo
Melissa
Nestor
Olga
Pablo
Rebekah
Sebastien
Tanya
Van
Wendy

2014

Arthur
Bertha
Cristobal
Dolly
Edouard
Fay
Gonzalo
Hanna
Isaias
Josephine
Kyle
Laura
Marco
Nana
Omar
Paulette
Rene
Sally
Teddy
Vicky
Wilfred

2015

Ana
Bill
Claudette
Danny
Erika
Fred
Grace
Henri
Ida
Joaquin
Kate
Larry
Mindy
Nicholas
Odette
Peter
Rose
Sam
Teresa
Victor
Wanda

2016

Alex
Bonnie
Colin
Danielle
Earl
Fiona
Gaston
Hermine
Ian
Julia
Karl
Lisa
Matthew
Nicole
Otto
Paula
Richard
Shary
Tobias
Virginie
Walter

Saffir-Simpson Scale

- 1-5 rating based on damage
- Estimate of potential property damage and flooding expected
- Wind speed is the main factor

Saffir-Simpson Scale

Category	Wind (mph)	Pressure (inches)	Surge (feet)
1	74-95	> 28.94	4 - 5
2	96-110	28.50-28.93	6 - 8
3	111-130	27.91-28.49	9 - 12
4	131-155	27.17-27.90	13 - 18
5	> 155	< 27.16	> 18

Category Definition—Likely Effects

1. **ONE: Winds 74-95 mph:** No real damage to building structures, Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.
2. **TWO: Winds 96-110 mph:** Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Small craft in unprotected anchorages break moorings.
3. **THREE: Winds 111-130 mph:** Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures, Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain may be flooded well inland.
4. **FOUR: Winds 131-155 mph:** More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore Terrain may be flooded well inland.
5. **FIVE: Winds greater than 155 mph:** Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located near the shoreline. Massive evacuation of residential areas may be required.



Interesting Facts

- Right side of the hurricane is the most dangerous in terms of storm surge, winds, and tornadoes.