Severe Weather

Ms. Larsh

What is a Thunderstorm?

A thunderstorm, also known as an electrical storm or a lightning storm, is a storm characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere, known as thunder


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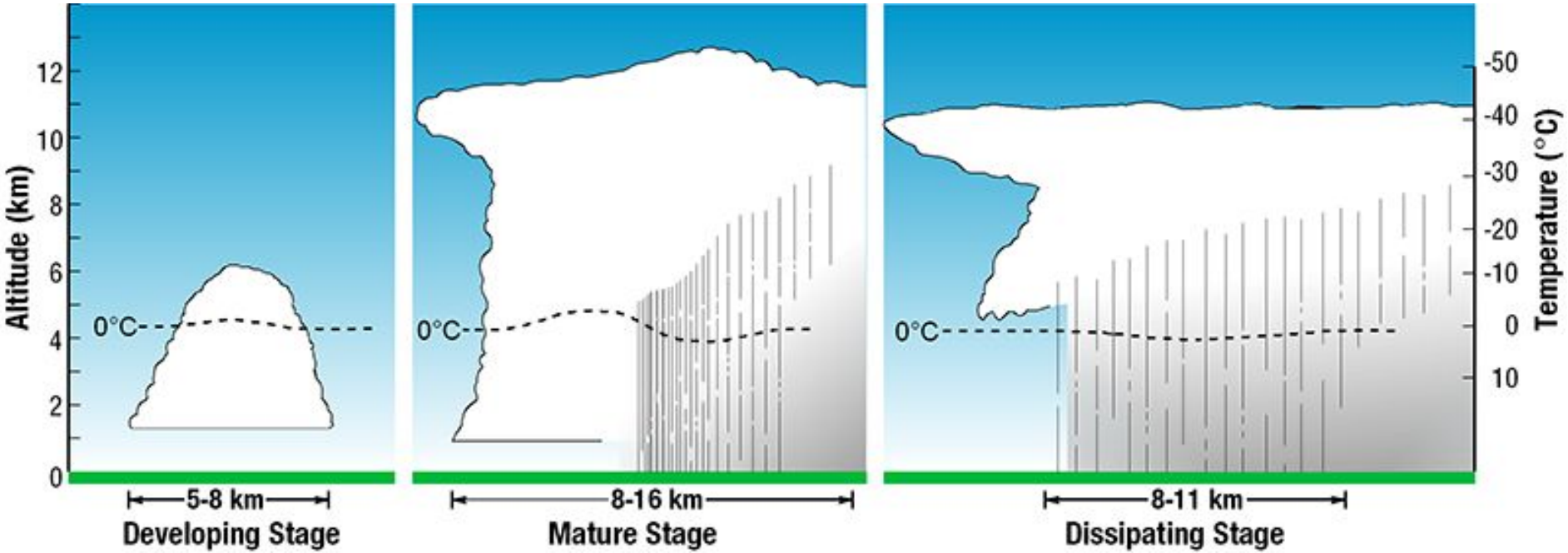
How do Thunderstorms Form?



How are Thunderstorms Classified?

Meteorologists use the **Lifted Index (LI)** to estimate the atmosphere's potential to produce severe thunderstorms. The Lifted Index measures the temperature of rising air in the atmosphere to determine the likelihood of a thunderstorm. Satellite imagery is also used to track thunderstorms.

How are Thunderstorms Classified?

Severe thunderstorms are officially defined as storms that are capable of producing hail that is an inch or larger or wind gusts over 58 mph. Hail this size can damage property such as plants, roofs and vehicles. Wind this strong is able to break off large branches, knock over trees or cause structural damage to trees.

Type of Thunderstorm?

Type	Description	Severe Weather?	Severe Weather Conditions
Single Cell	***Air mass thunderstorms***, also called “pop-up” storms, occur in weak wind shear summer atmospheres	Usually not associated with severe weather	May be accompanied by hail, downbursts, or weak tornadoes
Multicell (Cluster or Line)	Form in clusters or lines. move together as one, and strongest at the center	May produce severe weather	Hail, downbursts, & weak tornadoes
Supercell	A single, rotating updraft also called a mesocyclone, and lasts for several hours due to extremely unstable strongly sheared winds	Produces severe weather	Large hailstones, flash floods, strong downbursts, weak to incredible tornadoes

Type of Thunderstorms by Origin

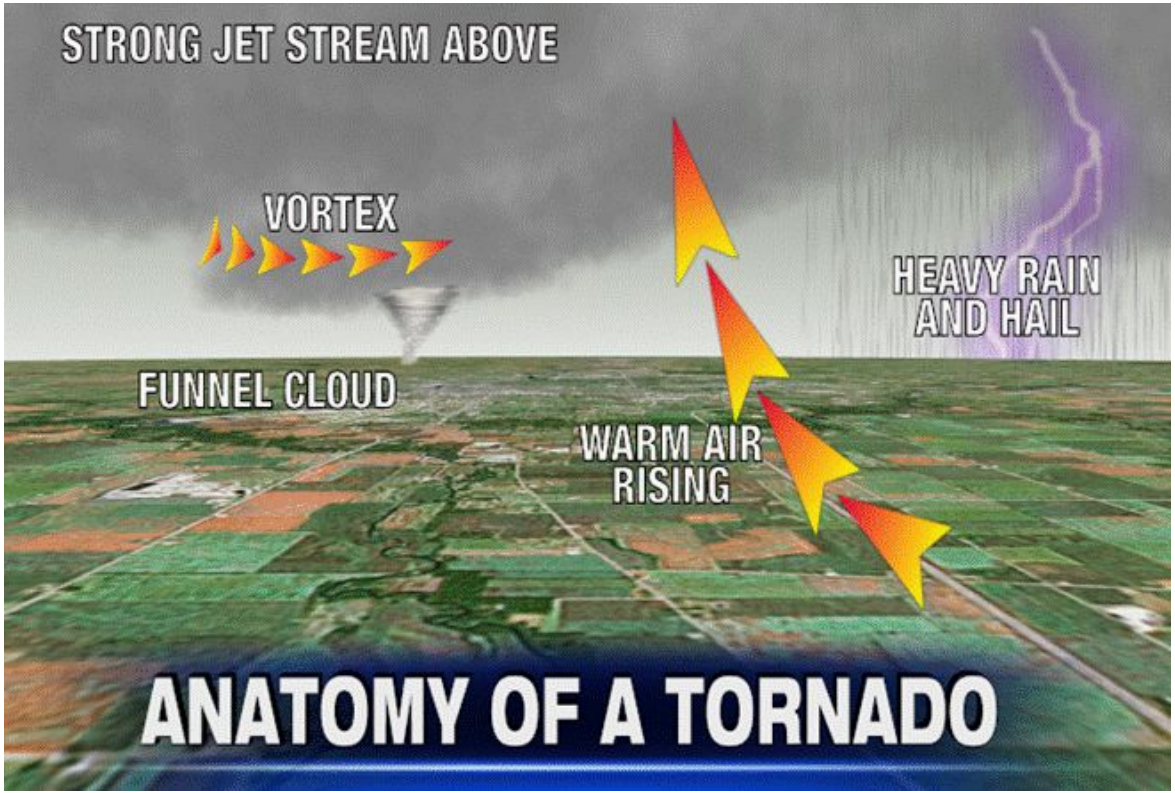
Air mass thunderstorms include mountain or orographic thunderstorms & sea-breeze thunderstorms

Frontal thunderstorms are often produced by advancing cold fronts and, more rarely, warm fronts

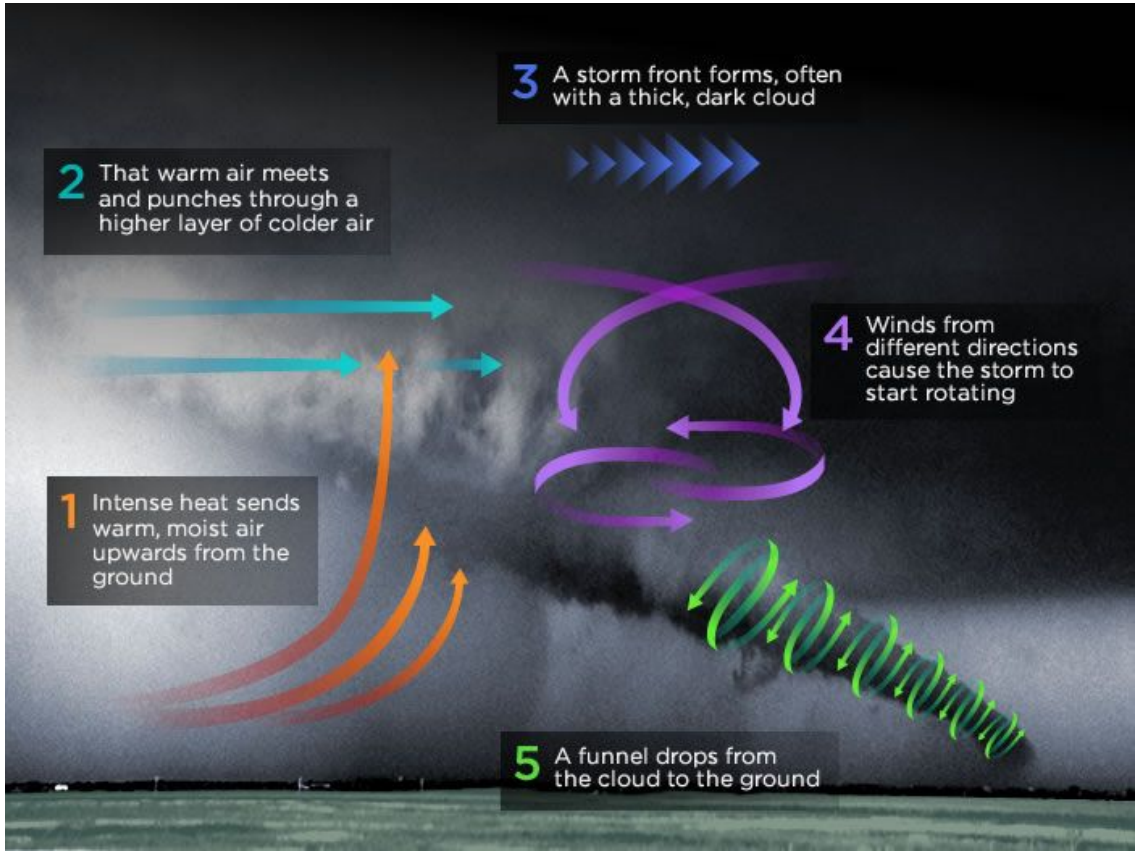
What is a Tornado?

A tornado is a violent rotating column of air extending from a thunderstorm to the ground

How do Tornadoes Form?



How do Tornadoes Form?



How are Tornadoes Classified?

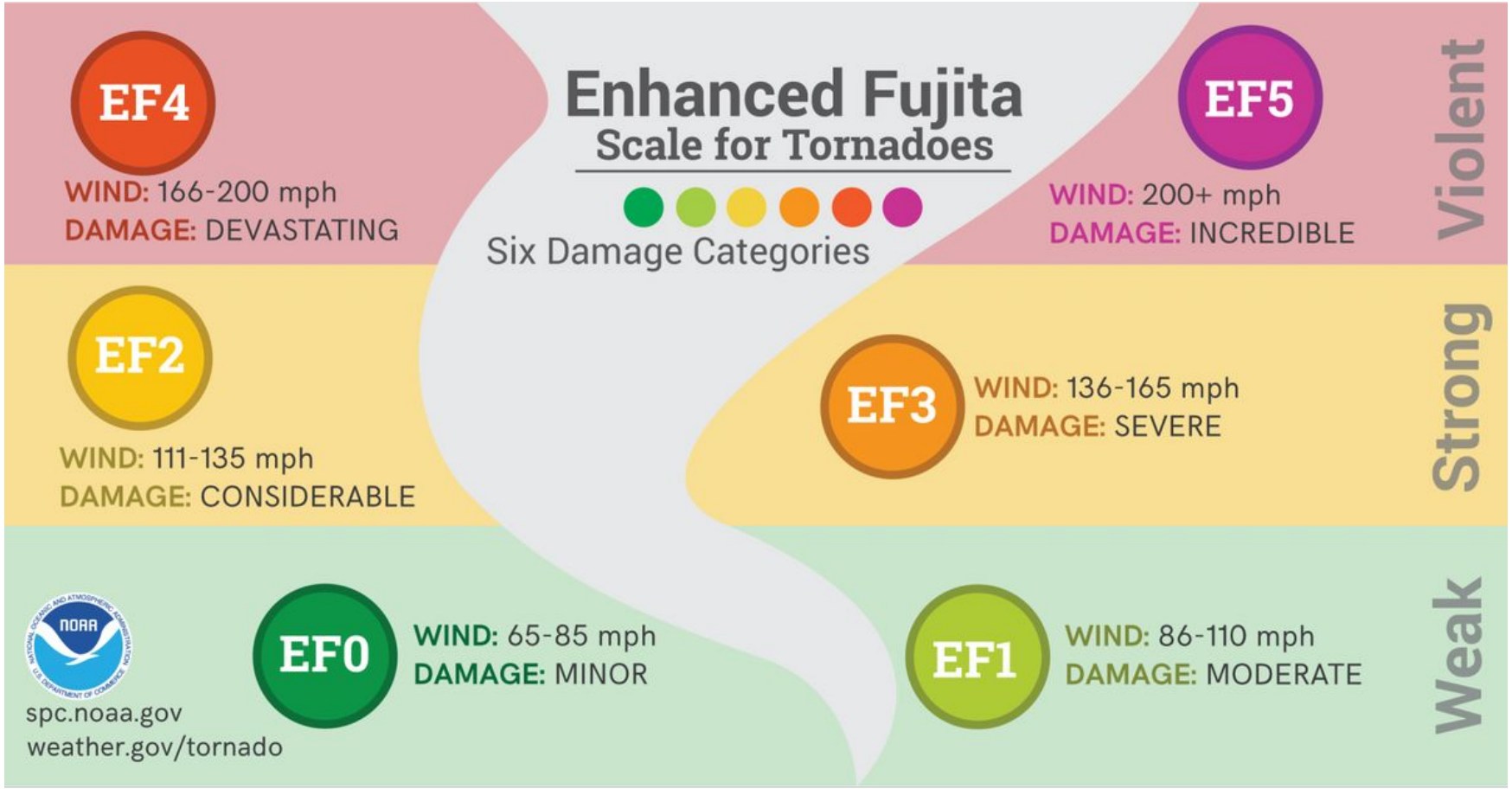
The **EF Scale** is the standard way to **measure tornadoes** based on wind damage.

The original **Fujita Scale** (or F Scale) was developed by Dr. Theodore Fujita. All tornadoes, and other severe local windstorms, were assigned a number according to the most intense damage caused by the storm.

How are Tornadoes Classified?

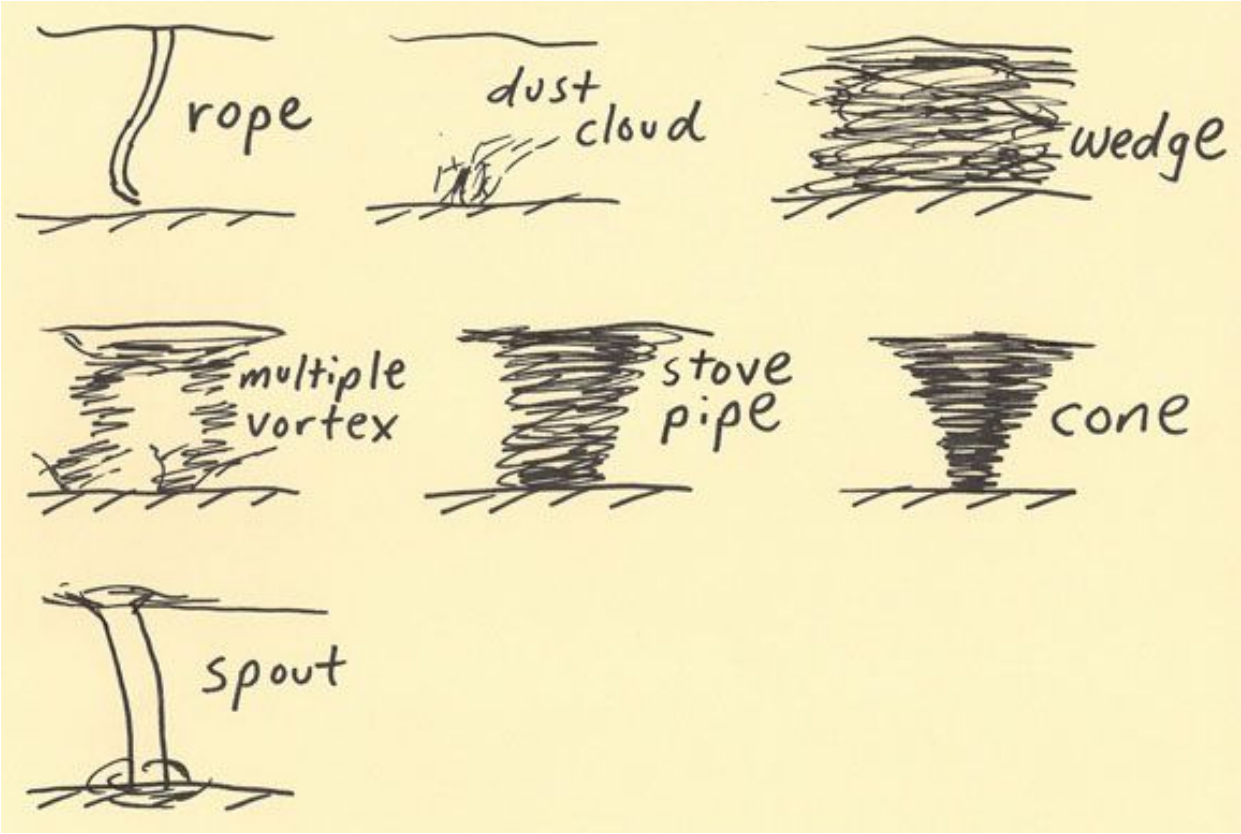
The **Enhanced Fujita Scale (EF Scale)** was implemented in the United States on February 1, 2007.

The EF scale uses three-second wind gust estimates based on a more detailed system for assessing damage, taking into account different building materials.


Enhanced Fujita
Scale for Tornadoes
Six Damage Categories
EF4
WIND: 166-200 mph
DAMAGE: DEVASTATING
EF5
WIND: 200+ mph
DAMAGE: INCREDIBLE
Violent
EF2
WIND: 111-135 mph
DAMAGE: CONSIDERABLE
EF3
WIND: 136-165 mph
DAMAGE: SEVERE
Strong
EF0
WIND: 65-85 mph
DAMAGE: MINOR
EF1
WIND: 86-110 mph
DAMAGE: MODERATE
Weak
NOAA
spc.noaa.gov
weather.gov/tornado

Scale	**Wind Speed**	**Damage**
EF0	65-85 MPH	***Light***: branches broken off trees, minor roof damage
EF1	86-110 MPH	***Moderate:*** trees snapped, mobile homes pushed of foundation, roof damage
EF2	111-135 MPH	***Considerable:*** mobile homes demolished, trees uprooted, strong built homes unroofed
EF3	136-165 MPH	***Severe:*** trains overturned, cars lifted off the ground, strong homes have outside walls blown away
EF4	166-200 MPH	***Devastating:*** houses leveled leaving piles of debris, cars thrown 300 yards or more in the air
EF5	200 MPH +	***Incredible:*** strongly built homes completely blown away, foundations & asphalt ripped up, automobile-sized missiles generated

Types of Tornadoes?



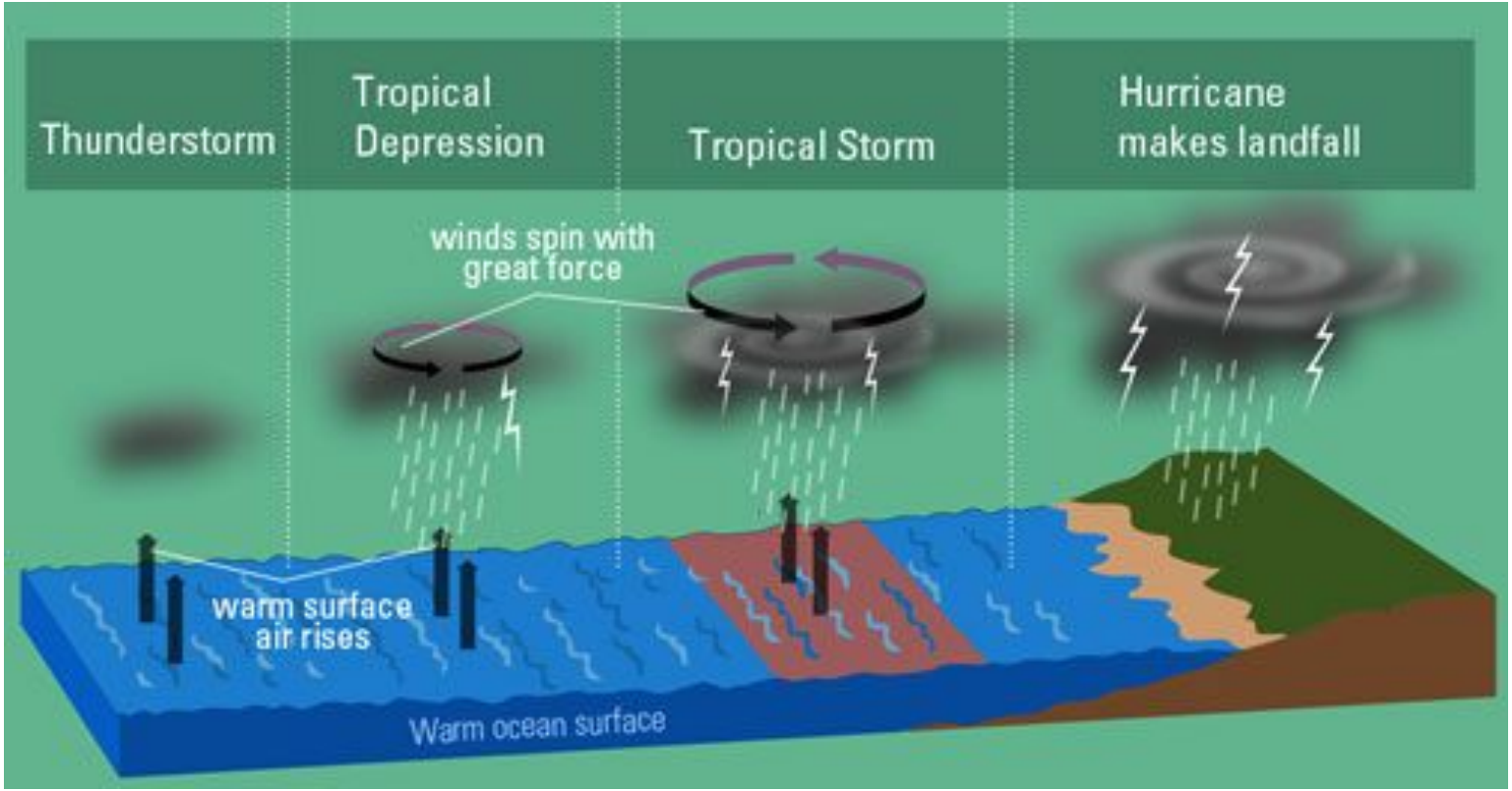
What is a Hurricane?

Hurricanes are large, swirling storms that form over warm ocean waters

In the Western Pacific these storms are called Typhoons, and in the Indian Ocean, Cyclones


SPEED LIMIT
25

How do Hurricanes Form?



How are Hurricanes Classified?

Hurricanes are classified into five categories based on current maximum wind speed, central pressure, and damage potential.

This rating scale is called the **Saffir-Simpson Hurricane Scale**, named for Herb Saffir and Robert Simpson, who developed it.

How are Hurricanes Named?

The World Meteorological Organization maintains the lists of Atlantic hurricane names which was started in 1979

They have six lists which are reused every six years

Some names are retired if the hurricane caused intense death & destruction (ex: Katrina)

How are Hurricanes Named?

There are 21 names in each list with alternating gendered origin

2019: Andrea, Barry, Chantal, Dorian, Erin, Fernand, Gabrielle, Humberto, Imelda, Jerry, Karen, Lorenzo, Melissa, Nestor, Olga, Pablo, Rebekah, Sebastien, Tanya, Van, & Wendy

Followed by the greek alphabet, if needed.

What are Some Differences between Hurricanes & Tornadoes?

How are hurricanes different from tornadoes?

	Hurricanes	Tornadoes
Where they form	Hurricanes form over warm water in the tropical oceans and develop best when far from the jet stream.	Tornadoes form over land and form within storms that are often very close to the jet stream
How big they are	Up to several hundred miles wide	No more than ¼ mile wide
How long they last	Average of 9 days (up to 3 weeks)	No more than an hour
How strong the winds are	Less than 200 mph	Up to 300 mph
Occurrences per year	An average of 10 tropical storms in the Atlantic Ocean	In the United States, 800-1000
Advance warning from forecasters	Several days	No more than 15-30 minutes