

Gretchen Allen, *Ivan Self Portrait*, 2017.

Inspiration Artist: Gretchen Allen, Karoly Szücs
Age Range: Upper Primary (9-11)

Subject Areas: Science (Weather)

WEATHER: STORMS



**NATIONAL
GALLERY** | CAYMAN
ISLANDS

DART



In This Packet

In this lesson, students will learn about four types of storms: thunderstorms, tornadoes, hurricanes and winter storms.

Students will look at each of these storms, before discovering how artists in Cayman have responded to major weather.

Learning games and art activities are included.



Introduction to Storms

A storm means strong weather that usually includes intense wind and precipitation (moisture falling from the sky like rain, snow or hail).

There are four main types of storms that we will learn about today: thunderstorms, tornadoes, hurricanes and winter storms.

Storms can be very dangerous, but they can also have positive effects on plant and animal habitats!

You can read more about how storms can positively affect plants and animals here:

<https://www.the-scientist.com/news-analysis/how-animals-and-plants-weather-hurricanes-30781>

<https://www.mnn.com/earth-matters/animals/stories/what-happens-wildlife-during-hurricane>

<https://www.audubon.org/news/how-do-tornadoes-affect-birds>

Storms and Seasons

In Cayman, we have two major seasons: dry season from November to April, when we experience less rainfall and cooler breezes, and rainy season from May to November, when we experience warmer weather with more frequent rains.

Other countries have different seasons. In Canada and the United States for example, there is Spring, Summer, Autumn and Winter.

Certain storms can be linked to a specific season. For example, hurricanes usually take place during rainy season.



Four Types of Storms: Thunderstorms

You can usually recognise a thunderstorm by dark clouds, thunder, lightning, and heavy rains.

Thunderstorms happen when warm, moist air becomes heated and rises upwards. As it moves up, it meets cool air and clouds are formed. These tall clouds release precipitation (rain, snow, hail or other types of moisture).

Electricity in the thunderstorm causes lightning, a bright, forked flash in the sky.

Thunder happens when the lightning heats the the air, causing vibrations that are the loud crashing sounds we hear.

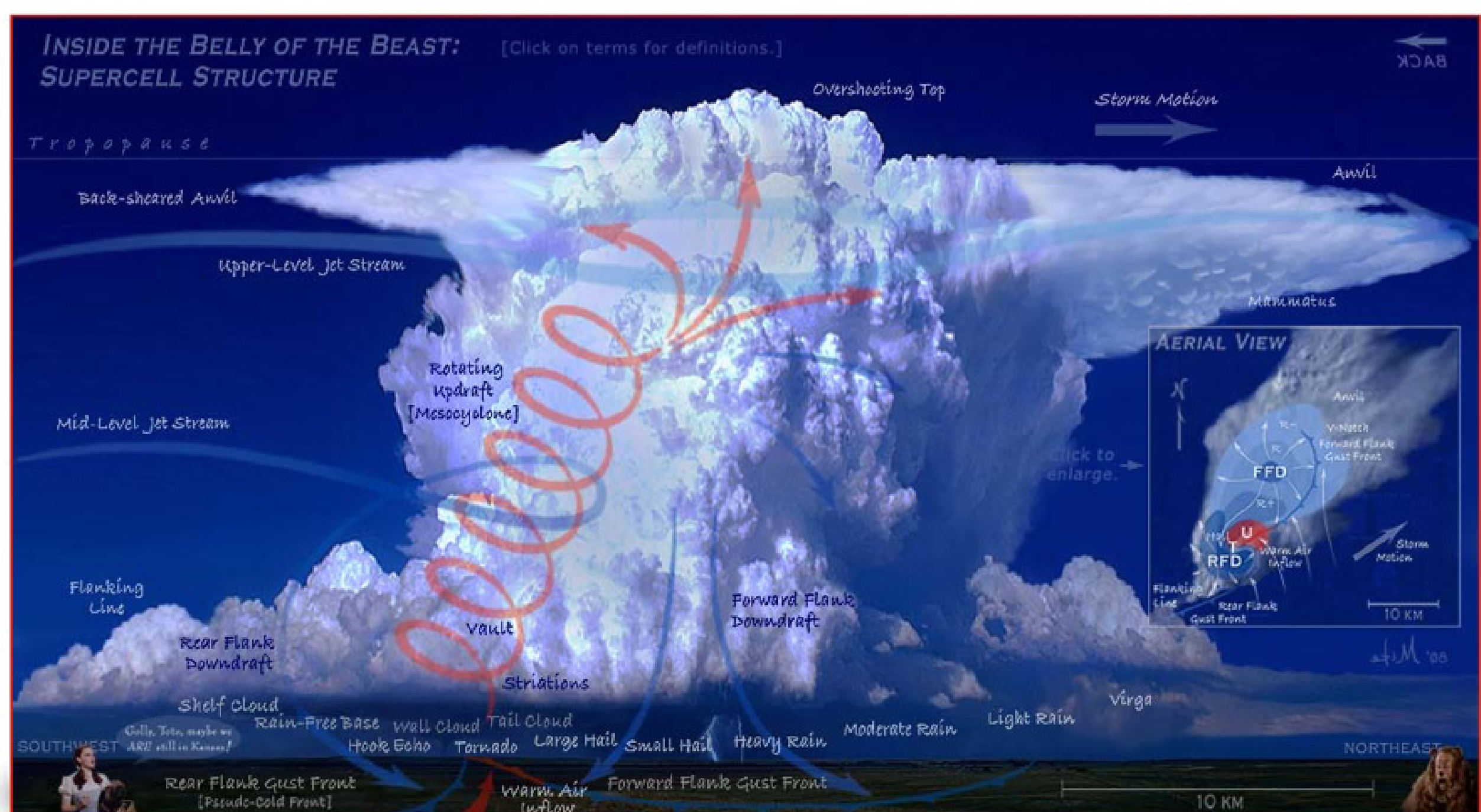


Image source:

https://www.weather.gov/source/zhu/ZHU_Training_Page/thunderstorm_stuff/Thunderstorms/thunderstorms.htm

Lightning Activity

There are many different types of lightning.

1. Cloud to ground flash
2. Cloud to air flash
3. Spider lightning
4. Intra-cloud lightning
5. Red-sprite lightning

Activity:

Look online to find out about the features of these lightning types. Here are a few links that might help:

<https://www.nssl.noaa.gov/education/svrwx101/lightning/types/>

<https://www.weather.gov/media/pah/WeatherEducation/lightningsafety.pdf>

As we approach Hurricane season in the Cayman Islands, watch the lightning storms from the safety of your home, and see if you can identify which type of lightning is being produced.

SAFETY NOTE: Don't stand out in the open or under a tree to observe the lightning!

Four Types of Storms: Tornadoes

A tornado is a column of swirling air that usually comes from a thunderstorm.

When warm air and cool air meet, they cause a disturbance in the atmosphere. Changes in wind speed and direction can cause the wind to swirl and spin. Rising air makes a vertical spinning pattern, creating a long funnel cloud appearing out of the thunderstorm. When these funnel clouds stretch all the way from the sky to the ground, they are called tornadoes.

Tornado winds move as fast as 300mph and they can measure 2-4 miles wide!

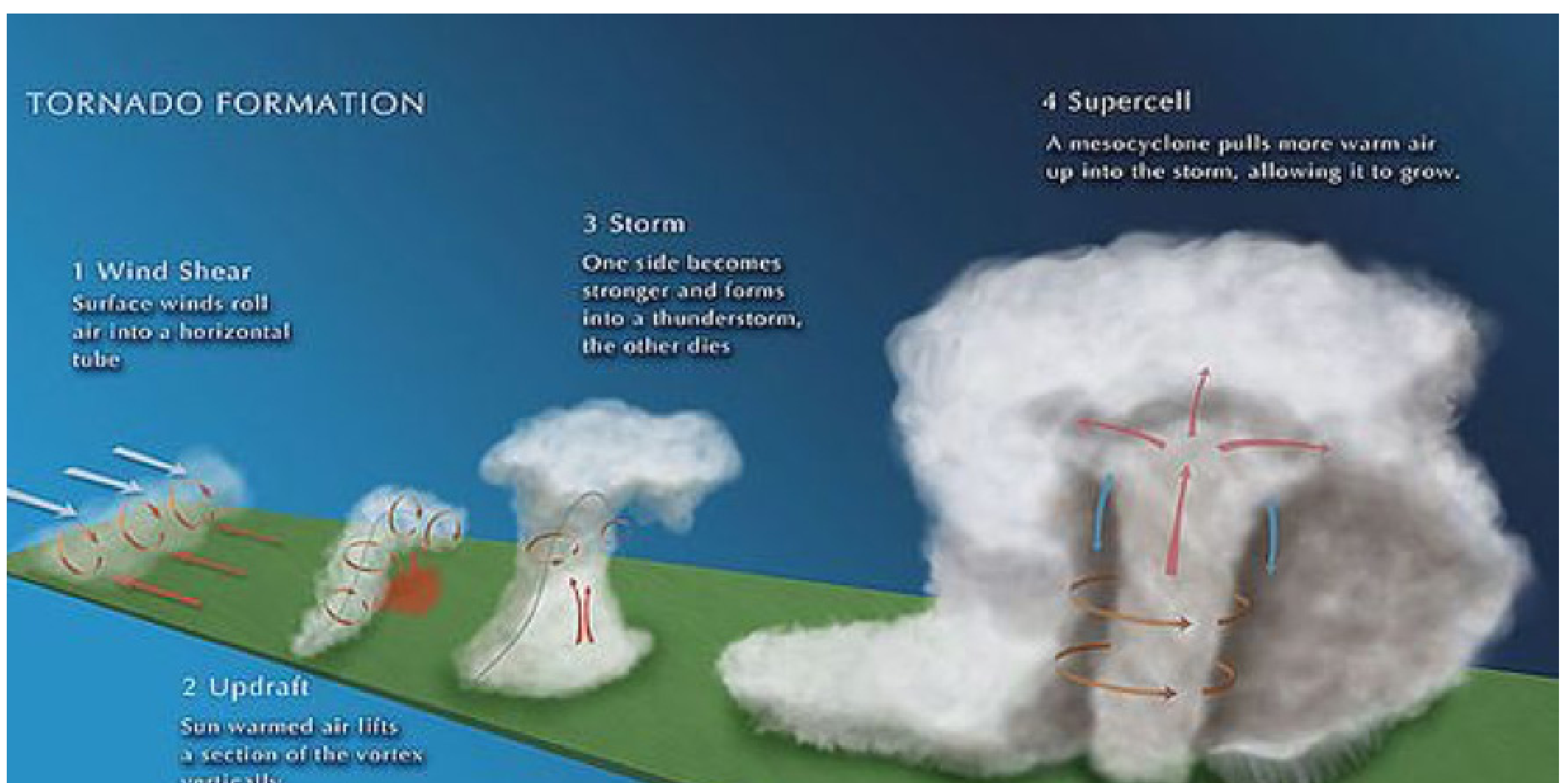


Image source: <https://www.sciencesource.com/archive/Tornado-Formation-SS2603050.html#/SearchResult&ITEMID=SS2603050>

Four Types of Storms:

Winter Storms

Winter storms usually involve fast winds and types of precipitation that are only found in cold temperatures (such as snow, sleet or freezing rain).

Like with other storms, it is dangerous to be caught outside in a winter storm as it can cause frostbite (numbing of the body due to cold) or hypothermia (an unusually low body temperature).

Winter storms happen when very cold air lifts by meeting warm air and causes precipitation.



Four Types of Storms: Hurricanes

Hurricanes form close to the equator because of the Coriolis effect, a spinning, or rotational force. Learn about it here: <https://www.nationalgeographic.org/encyclopedia/coriolis-effect/>.

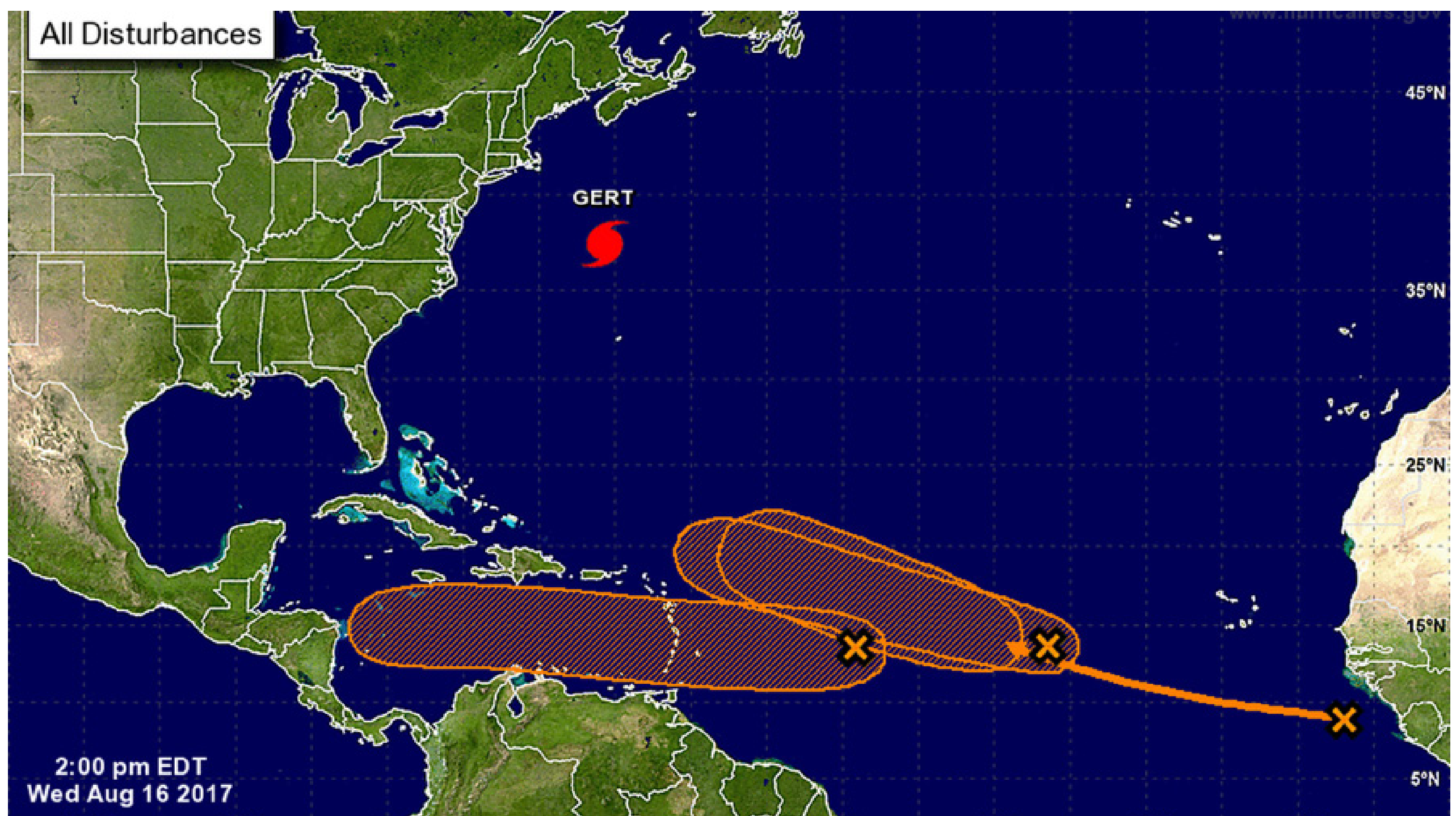


Image source: <https://www.miamiherald.com/news/weather/hurricane/article167469822.html>

Hurricanes require warm, moist air; they need water of at least 79 degrees Fahrenheit. As warm, moist air rises from above the water, it leaves an area of lower pressure below. Higher pressure air from surrounding areas pushes into that low pressure area. This air also becomes warm and moist and rises. As the rising air cools, it forms clouds due to moisture in the air.

Fed by the warm, moist water, the whole system spins and grows.

When the winds reach a speed of 74 mph or more, the storm becomes known as a hurricane. Hurricanes have a calm spot in the centre called the 'eye'. The eye is usually about 15 miles wide and is surrounded by the strongest winds.

Learn more about hurricanes here:

<https://spaceplace.nasa.gov/hurricanes/en/>

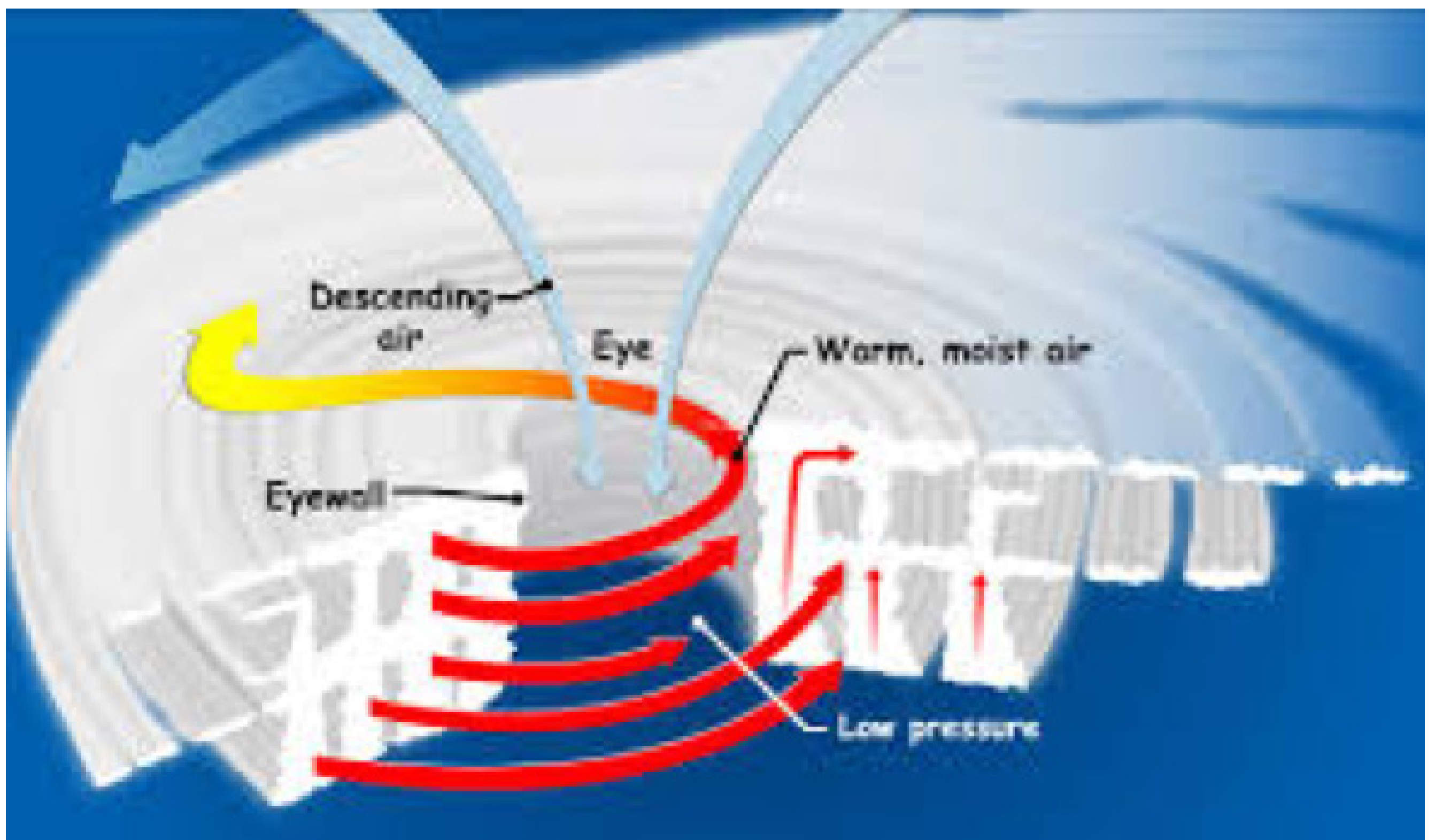


Image source: <https://gpm.nasa.gov/education/articles/how-do-hurricanes-form>

Storms in Cayman

Thunderstorms are the most common type of storm in the Cayman Islands, but hurricanes are usually the most dangerous.

Many hurricanes and tropical storms have passed over Cayman over the years. Two of the biggest storms in Cayman's history were the 1932 Storm, and Hurricane Ivan (2004).

1932 Storm: On 8 November 1932, a Category 4 hurricane devastated the Cayman Islands. Winds reached 150-200 mph, and Cayman Brac was especially affected. Homes were destroyed, loved ones were sadly lost, and many Caymanians remember sheltering in the caves to escape the worst of the weather.

Hurricane Ivan: Category 5 Hurricane Ivan passed over Grand Cayman on September 11-12 2004, hitting the island with 168mph winds, causing island-wide flooding and massive devastation. 15 foot waves were reported in our usually calm North Sound, and waves up to 30 feet bashed the shorelines.

Hurricane Activity

Here is one half of a photograph from Hurricane Ivan's damage. Continue the lines to complete what you think the other half of the picture is.

Use colours to match the photograph.



Image source: <http://www.gov.ky/portal/page/portal/otphome/announcements/rememberingivan>

Guess the Weather!

Match the picture to the correct type of storm.



Hurricane
Tornado

Thunderstorm
Winter Storm

How Artists Respond: Gretchen Allen

When photographer and journalist Gretchen Allen returned home to Cayman after Hurricane Ivan, she found her belongings covered in what she called "muck, mud and mire".

Many of her photographs had been destroyed by the storm - colours and memories literally washed away. Devastated, she placed the damaged slides in a container and stored them away.

Years later in 2017, Allen found the courage to look at her photographs again. While they did not look like they used to, they had been transformed into pictures of abstract art.

"These "Ivanized" photographs symbolize both the damage that nature can inflict, as well as the hope and transformation that emerges out of our darkest moments such as the rallying of our Caribbean community in support of those effected." - Gretchen Allen



Gretchen Allen, *Genesis*, 2017

Art Activity Inspired By Gretchen Allen

Materials:

- Food colouring
- Vegetable Oil
- Photocopy/ printer paper
- Small casserole/ foil dish

Instructions

1. Fold the photocopy paper in half and tear.
2. Take one end of the paper and fold to make a small tab for lifting.
3. Fill the dish or tray half full of water.
4. Put a small number of oil drops in the water.
5. Sprinkle very small drops of food colouring into the dish.

6. Lay the paper onto the surface of the water.

7. Pull off gently using the folded tab.

Look at Gretchen Allen's photographs and see if you can match the colours.

Experiment as much as you like to create your own series of artworks. If you like you can also try drawing on them.



Marbling art example by David Bridgeman

How Artists Respond: Karoly Szücs

Karoly Szücs sculpture was the opening piece in the National Gallery of the Cayman Islands' *Emergence* exhibition, held in 2005 after Hurricane Ivan.

Szücs' artwork shows a swirling vortex of iron. In the centre of the spiral are objects that the artist found when walking through the wreckage left behind by the storm—electricity and water meters, a broken mug and a clock that stopped at 8:10 a.m., when the storm was at its most violent.

Hungarian-born metal sculptor, Karoly Szücs has lived on Grand Cayman for several years. He was moved to create *That Morning* after returning to his devastated studio in Industrial Park to find his large supply of metal badly damaged by floodwater.



Karoly Szücs, *That Morning*, 2004.

Art Activity Inspired By Karoly Szücs

Materials:

- Pen
- Pencil
- Paper
- Eraser
- Crayons

With your family, talk about the challenges of dealing with the aftermath of a major hurricane.

What are some things you would have to deal with? What are some things that you won't be able to use for a while?

That Morning is a swirling vortex of iron rising up much like a hurricane. In the centre are objects that the artist found in the aftermath of Ivan.

Draw your own version of *That Morning*. Start by creating the spiral of wind that makes up a Hurricane in the centre of your page, then add objects you think you might find after a hurricane. Use different colours to show the different parts of the Hurricane (the outer wind, the eye and the most dangerous winds that surround the eye).

Alternative: Create your vortex using collage technique. Cut images from an old magazine or book (with permission from parents) and glue them in the swirling shape of a hurricane. Try layering images to make it more interesting, or using 3D pieces like fabric.