



Teacher Directions: McBroom and the Big Wind Research: Hurricane or Tornado

This 2nd Research mini project is much easier than the previous “Island of the Blue Dolphins” research mini project.

- Try to let students do some of the work in groups and on their own.
- Have the students look for clues that most compare with which type of wind, hurricane or tornado, they think is in “McBroom and the Big Wind.”
- Once they make their decision, step in and help them put their evidence into words with the focused model writing.

Here are some tips while working through the sequence of this mini research project!

Text #1: Comparison Chart of hurricanes and tornados

- Reading the Text:** Have them scan the text and ask what type of text it is (*chart of comparison of hurricane and tornado*). Ask students how the text is organized (*look at the categories and also the categories of comparison and its purpose*) and then read the comparisons. Students can underline key ideas (differences).
- Asking Questions and Clarifying Understanding:** You might ask questions to clarify some vocabulary or phrases (**intensity, scale, counterclockwise, funnel-shaped**) but many details and unfamiliar vocabulary will be answered in subsequent texts.
- Filling in the process grid:** Students might not be able to identify evidence/clues, unless they have looked closely back at their text. They might summarize some interesting aspects of the chart on the process grid, but it may be necessary to move on to the next text before addressing most of the process grid except purpose and some summary.

Text #2a and 2b: Interesting facts about hurricanes and tornados

- Reading and Clarifying the Text:** Discuss the purpose of texts that list quick and interesting facts (*a fast way to learn as much as you can about a topic using a wide range of ideas about the topic*). Have students ask questions to clarify any misunderstandings and underline any facts that might help them identify what a hurricane/tornado does, how and where it starts.
- Asking Questions:** Have students underline any facts that might help them identify what a hurricane/tornado does, how and where it starts. Have them look for events that are similar to the story they read. (this is how they will begin identifying what the “Big Wind” was.

c. Filling in the process grid: Students will not be able to summarize each and every fact, but rather what the whole fact sheet is about (nutshell statement). Have students use facts that most help them answer the question.

Text #3: Challenging or Easy: What’s the Difference between a Hurricane or Tornado?

(Note: easier version describes one type of storm at a time, whereas the challenging text compares and contrasts the 2 storms throughout one text).

a. Reading and Clarifying the Text: Discuss the purpose of text – *(a compare and contrast text that includes text features, and more traditional expository text)*. Have students try to read the easier text by themselves, if this is the text you choose. Ask questions to clarify any misunderstandings and underline any **new** facts that might help them identify what a hurricane/tornado does, how and where it starts.

b. Asking Questions: Have students look closely at the photographs of each type of storm.

1. Which photograph shows a wider view? (hurricane) – How might this photograph been taken and from where? *(from a satellite or airplane- far above the earth)* What does this tell you about the size of a hurricane?

2. In comparison, how was the tornado photograph taken *(from the ground – maybe a mile away)*. How is it shaped and where does the funnel touch? *(the land straight below)*

3. Which picture do you think best describe the “The Big Wind” from the story? Why?

c. Filling in the process grid: Students will be able to summarize this text, add key details that help them answer the question and finally make connections to all texts.

Connections: How does each text connect with the others?	This simple chart showed basic differences between a tornado and a hurricane.	These lists added interesting information to tell me more unusual facts – helping me make more connections to the story.	This expository text added text features to help me really see what each type of storm looked like.
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Returning to the narrative text, “McBroom and the Big Wind”

a. Have students find evidence that will help them determine if the “Big Wind” was a hurricane or tornado.

Evidence From Research

Pg. # _____ Evidence: _____

This proves it is a _____ because _____.



- Instruct students to focus on the **setting** and **events** and that will help them determine it's a tornado.

Examples: “McBroom and the Big Wind” story **evidence** (bold) and *comments* (italics):

pg 360: **on the prairie** (*that's in the Midwest*).

pg 360: **farm** (*farms aren't normally by an ocean where hurricanes occur*)

pg 361: **illustration** (*shows flat land – just like the pictures of where tornados were*)

pg 362: **prairie winds have no manners at all** (*tornados jump around and are unpredictable*)

pg 367: **The sky turning dark and mean** (*tornados start as storms – dark cloud*)

pg 367: **The wind was howling and shrieking** (*tornados make this kind of loud noise – like a train coming*)

pg 367: **wolves, bears falling out of the sky** (*tornados throw things all over the place and leave them somewhere else*)

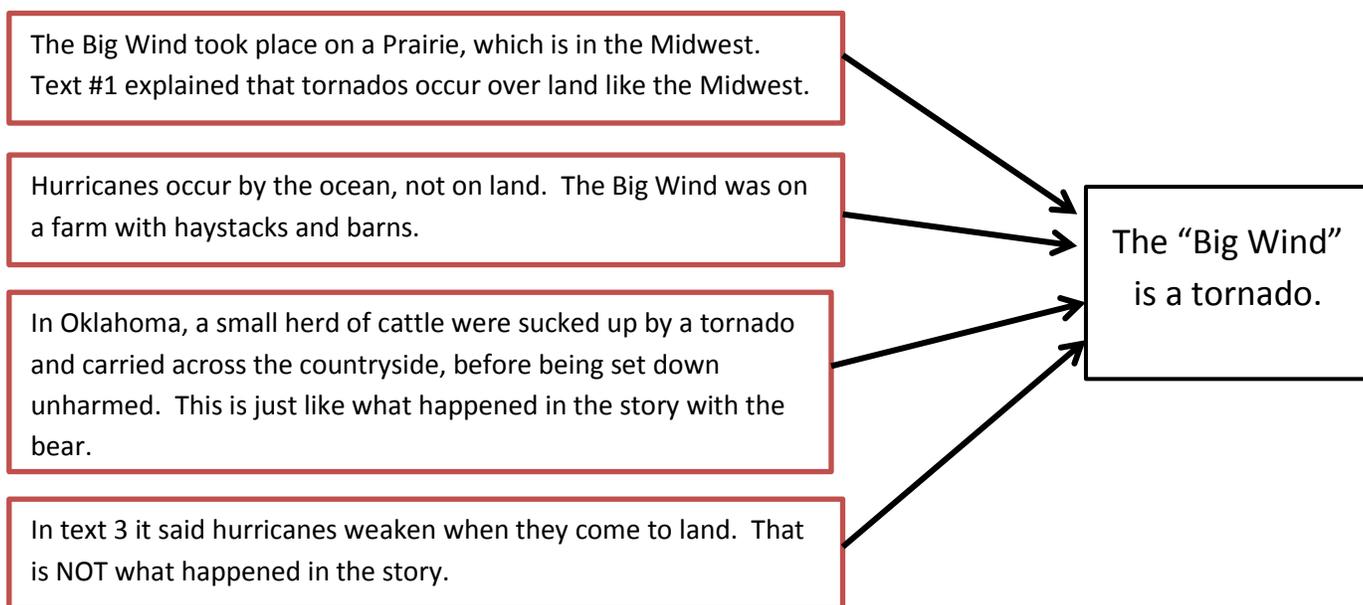
pg 370: **barns, haystacks** (*again – on a farm in the Midwest*)

pg 371: **Illustration** (*looks like the pictures of tornados*)

Creating a Multi-flow Map

Students will gather their evidence and create a multi- flow map with all their evidence (reasons) why they have determined what type of wind occurred.

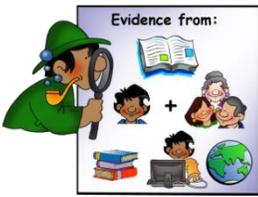
(Sentences: It must be a ___ because __. *OR* It couldn't be a ___ because __.)



Writing to Explain your Answer

Work with students on creating a topic sentence to answer the question (right side of the multi-flow). Add evidence and support with explanations (comments) about the evidence – see examples in multi – flow. You can use a free map provided if needed.

Name _____	Explain or Inform: Prove your Answer	Date _____
Opening: What you think (your decision):		
<div style="display: flex; justify-content: space-between; align-items: center;"><div style="text-align: center;"> Reason</div><div style="text-align: center;"> Evidence <small>From Research</small></div></div> <div style="border: 1px solid black; height: 80px; margin-top: 5px;"></div>	<div style="display: flex; justify-content: space-between; align-items: center;"><div style="text-align: center;"> Reason</div><div style="text-align: center;"> Evidence <small>From Research</small></div></div> <div style="border: 1px solid black; height: 80px; margin-top: 5px;"></div>	<div style="display: flex; justify-content: space-between; align-items: center;"><div style="text-align: center;"> Reason</div><div style="text-align: center;"> Evidence <small>From Research</small></div></div> <div style="border: 1px solid black; height: 80px; margin-top: 5px;"></div>
<div style="display: flex; justify-content: center; align-items: center;"><div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px; font-weight: bold;">Comment on my Evidence</div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div></div>	<div style="display: flex; justify-content: center; align-items: center;"><div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px; font-weight: bold;">Comment on my Evidence</div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div></div>	<div style="display: flex; justify-content: center; align-items: center;"><div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px; font-weight: bold;">Comment on my Evidence</div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div><div style="border-bottom: 1px solid black; width: 90%; margin: 0 5px;"></div></div>
Restate your decision: _____		



Student Planner

Discovering Answers through Research



Question #1: What was the “Big Wind”, a hurricane or tornado?

a. Read “McBroom and the Big Wind” in your anthology.

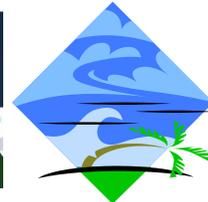
b. Read **Texts 1, 2a & 2b, and 3**. After you have read each text, fill in the process grid:

- summarize the text (main ideas and details)
- find the specific evidence that helps you answer your question.
- determine how each text is connected to the next one.

Understanding the Text			
	Text 1: Comparison chart of Hurricanes and Tornadoes	Text 2a/b: Interesting Facts about Hurricanes and Tornadoes	Text 3: How are Hurricanes and Tornadoes Different?
Summarizing Skills: What did you learn from this article?			
Detective Skills: What specific evidence did find to help you answer the question?			
Connections: How does each text connect with the others?			

c. View the visuals in all texts of a hurricane and tornado

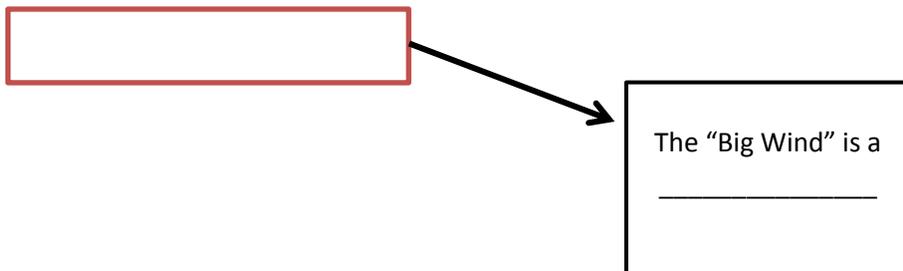
- interpret your findings



d. Return to your narrative text, “McBroom and the Big Wind” and find evidence that helps you to determine if the Big Wind was a hurricane or tornado.

Find Evidence in “McBroom and the Big Wind” to support your decision: Hurricane or Tornado?	
Pg. #	Evidence

e. Create a multi-flow map with the facts/reasons to support your answer (hurricane or tornado?) (Sentences: It must be a ___ because __. *OR* It couldn’t be a ___ because __.)



f. Answer Question 1 using a topic sentence and your reasons on a separate piece of paper.

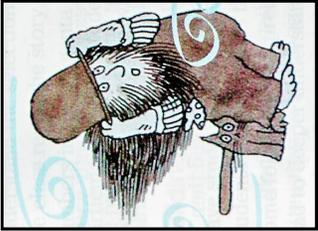
g. Extra! Answer Question 2: **What do you think the scale of the “Big Wind” is?**

Use Text either **4a** or **4b** to determine your opinion.

Understanding the Text

	Text 1: Comparison chart of Hurricanes and Tornados	Text 2a/b: Interesting Facts about Hurricanes and Tornados	Text 3: How are Hurricanes and Tornados Different?
Summarizing Skills: What did you learn from this article?			
Detective Skills: What specific evidence did you find to help you answer the question?			
Connections: How does each text connect with the others?			





Find Evidence in "McBroom and the Big Wind to support your decision:
Hurricane or Tornado?"



Pg. # ___ Evidence: _____

This proves it is a _____ because _____.

Pg. # ___ Evidence: _____

This proves it is a _____ because _____.

Pg. # ___ Evidence: _____

This proves it is a _____ because _____.

Pg. # ___ Evidence: _____

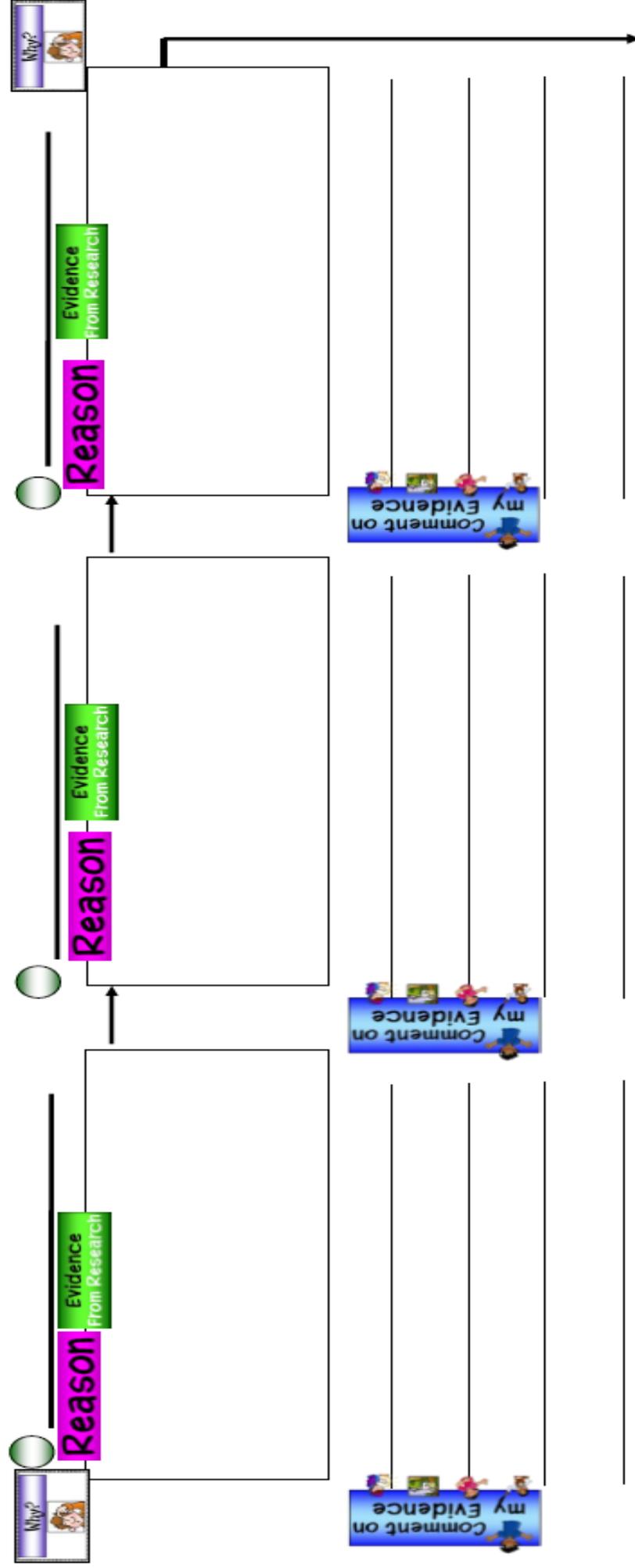
This proves it is a _____ because _____.

Name _____

Explain or Inform: Prove your Answer

Date _____

Opening: What you think (your decision):



Restate your decision: _____



Text 1

Differences and Similarities between Tornadoes and Hurricanes

Differences	Hurricane	Tornado
Define	A hurricane is a cyclone that is located in the North Atlantic Ocean, or the NE Pacific Ocean east of the International Date Line, or the South Pacific Ocean east of 160E, and with continued winds that reach or exceed 74 mph. 	A tornado is a rotating column of air ranging in width from a few yards to more than a mile and whirling at destructively high speeds, usually accompanied by a funnel-shaped downward extension of a cumulonimbus cloud. →  Winds 40-300+ mph.
Intensity	Hurricanes are classified into five categories according to the Saffir-Simpson Hurricane Wind Scale. The wind speed and intensity of damage increases as from category 1 to category 5. (see text #4a)	The scale used for rating the strength of tornadoes is called the Fujita (F) scale. The wind speed and intensity of damage increases as from category 0 to 5. (see text #4b)
Location	North Atlantic Ocean, the Northeast Pacific Ocean east of the International Date Line, or the South Pacific Ocean east of 160E. Hurricanes are found near the tropical zone, beginning over warm waters in the Atlantic and Pacific ocean and dissipate after reaching land.	Tornadoes have been spotted in all continents except Antarctica. They can begin over water and on land.
Most affected areas	Caribbean Sea	In areas where a convergence of cold and warm fronts is common. Ex: US Midwest.
Frequency	10-15 per year	The United States records about 1200 tornadoes per year, whereas the Netherlands records the highest number of tornadoes per area compared to other countries. Tornadoes occur commonly in spring and the fall season and are less common in winters

Similarities	Tornado	Hurricane
Rotation	Clockwise in the southern hemisphere and counterclockwise in the northern hemisphere	Clockwise in the southern hemisphere and counterclockwise in the northern hemisphere



Text 2 a

Interesting Facts about Hurricanes

1. The word hurricane comes from the Taino Native American word, *hurucane*, meaning evil spirit of the wind.
2. The first time anyone flew into a hurricane happened in 1943 in the middle of World War II.
3. A tropical storm is classified as a hurricane once winds goes up to 74 miles per hour or higher.
4. Hurricanes are the only weather disasters that have been given their own names.
5. All hurricanes begin life in a warm moist atmosphere over tropical ocean waters.
6. A typical hurricane can dump 6 inches to a foot of rain across a region.
7. The most violent winds and heaviest rains take place in the eye wall, the ring of clouds and thunderstorms closely surrounding the eye.
8. Every second, a large hurricane releases the energy of 10 atomic bombs.
9. Hurricanes can also produce tornadoes. They are not as strong as regular tornadoes and last only a few minutes.
10. Slow moving hurricanes produce more rainfall and can cause more damage from flooding than faster-moving, more powerful hurricanes.
11. Most people who die in hurricanes are killed by the towering walls of sea water that comes inland.
12. The first hurricane of the year is given a name beginning with the letter "A".
13. Hurricane season is from June to November when the seas are at their warmest and most humid, which are ripe conditions for a hurricane to develop.
14. The planet Jupiter has a hurricane which has been going on for over 300 years. It can be seen as a red spot on the planet. This hurricane on Jupiter is bigger than the Earth itself.





Text 2 b

Interesting Facts about Tornadoes



1. Small tornadoes sometimes form on the edge of bigger tornadoes.
2. In Oklahoma, a small herd of cattle were sucked up by a tornado and carried across the countryside, before being set down unharmed.
3. In 1981, a tornado that swept through the Italian City of Ancona lifted a sleeping baby from its baby carriage and set it down unharmed on the ground.
4. The UK gets about 60 tornadoes a year, even with its moderate climate.
5. The deadliest Tornado happened in 1925. It swept through three states and killed 689 people and injured 2,000.
6. Tornadoes is from the Spanish word, *tronada*, meaning thunderstorm.
7. Dust Devils are strong tornadoes that pass over desert areas.
8. Some people in ancient times thought dust devils were ghosts.
9. The safest place to be during a Tornado is underground, which makes basements and cellars the ideal shelters to get away from Tornadoes.
10. Most of the world's destructive tornadoes occur during the summer in mid-western states of the US.
11. Sometimes multiple tornadoes form and travel together in swarms.
12. Rescue workers have compared the destruction left behind by a tornado to a bomb blast.
13. Cities have also been hit by tornadoes like Nashville and St. Louis.
14. Tornadoes have hit places even in big cities like in Brooklyn.
15. The myth of opening the windows in a house will help prevent a tornado from it being destroyed is false. In fact, opening the wrong windows could allow air to rush in and blow the house apart from the inside.



Text 3

What is the difference between a hurricane and a tornado?

Hurricanes

Hurricanes start over warm ocean water. The water acts as a kind of energy waiting to for a storm front to help it form.

Hurricanes die once they move over land, but they can do a lot of damage even as they weaken.

Hurricanes are very, very large and can last a week or more.

A hurricane starts as a bunch of clouds that spin around and turn into a storm. It can only start over warm, **tropical** water. A hurricane has an eye in the middle.



Tornadoes

Tornadoes are much smaller events, usually lasting only an hour or so and covering only a small area, but they are very, very violent winds.

Tornadoes need very warm moist air and very dry cold air to come together to create a small storm. Winds above this warm and cold air act like a chimney to move some of the energy away.

The tornado starts as a thunder storm and then turns into a funnel cloud. A tornado can start over water and land. A tornado also has an eye.





What is the difference between a hurricane and a tornado?

Hurricanes start over warm ocean water. The water acts as a source of energy waiting to be activated by a storm front or an upper level disturbance (a front above the surface).

Hurricanes start over the oceans and die once they move over land, although they can do a lot of damage even as they weaken. Hurricanes are very, very large.

Tornadoes are much smaller events, usually lasting only a short time and covering only a small area, but they are very, very violent winds. Tornadoes need the collision of very warm moist air and very dry cold air and some upper level winds to act like a chimney to move energy away from the storm.

A tornado starts as a thunder storm and then turns into a funnel cloud. A hurricane starts as a bunch of clouds that spin around and turn into a tropical storm. Only a tornado can start over land, but they both can start over water. Both a hurricane and a tornado have eyes.

Deciding whether a tornado or a hurricane is more dangerous is difficult. They are both very powerful, but hurricanes are much, much bigger and so they do far more damage. Most meteorologists believe a hurricane is much more dangerous and destructive, but a person who has survived a tornado might think differently!!



Saffir-Simpson Hurricane Wind Scale

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures. In the western North Pacific, the term "super typhoon" is used for tropical cyclones with sustained winds exceeding 150 mph.

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

An F0 Tornado

- Have wind speeds between 40-72 mph
- Causes light damage.
- Branches break off of trees and push over smaller trees.

An F1 Tornado

- Have wind speeds between 73-112 mph
- Causes moderate damage.
- Tiles breaks off of roofs. Cars and trailers gets pushed

An F2 Tornado

- Have wind speeds between 113-157 mph
- Causes considerable damage.
- Roofs get torn off. Big trees get toppled. Mobile homes are destroyed. Heavy cars are lifted and thrown.

An F3 Tornado

- Have wind speeds between 158–206 mph
- Causes Severe Damage.
- Roofs are torn off even on the most well-constructed structures. Trains are overturned.

An F4 Tornado

- Have wind speeds between 207-260 mph
- Causes catastrophic damage
- Well-constructed structures are leveled. Structures with weak foundations are blown away.

An F5 Tornado

- Have wind speeds between 261–318 mph
- Causes Total Damage
- Few if any structures are left standing. Cars become missiles flying in the air.

