

Understanding the Cone of Uncertainty



What Is the Cone of Uncertainty?


The **Cone of Uncertainty** is a tool that meteorologists (scientists who study weather) use to help predict where a **hurricane** might go. It shows the possible path a storm's center could take over the next few days. You'll often see this cone on weather maps during hurricane season.

Imagine you're looking at a map with a white cone-shaped area over it—that's the cone of uncertainty.

Why Is It Called a "Cone of Uncertainty"?

The word "**uncertainty**" means we're not 100% sure what will happen. Forecasts are best guesses based on current data, but hurricanes can change direction and speed. The farther out in time we try to predict, the less certain we are—so the cone gets **wider** as it stretches into the future.

Think of it like this:

 The storm's center is like a dart being thrown. Right after it leaves the dartboard, we know where it is. But as it moves forward, there are more possibilities for where it could land.

What Does the Cone Show?

- The **center line** shows the **most likely path** the center of the storm will take.
- The **cone** shows the area where the center of the storm **might** go, about 2/3 of the time.
- The cone is based on **computer models** and past storm behavior.
- It does **not** show where damage will happen or where winds and rain will be felt—those can spread far outside the cone!

Important Notes:

- ✓ The storm's **winds, rain, and storm surge** can reach **outside** the cone.
- ✓ The cone only shows where the **center** of the hurricane may travel.
- ✓ Even if you're **not inside** the cone, you could still experience bad weather.

Why Is the Cone Important?

Emergency planners, schools, and families use the cone to prepare. It helps people:

- Decide when to evacuate
- Get supplies ready
- Make travel plans
- Stay safe!


And then we got

Extra Details for Curious Minds

- The **National Hurricane Center (NHC)** updates the cone **every 6 hours** during active storms.
- The cone is based on an average of **many computer models** that use math, physics, and real-time weather data.
- **Storm surge** (flooding from ocean water pushed onto land) can be the most dangerous part of a hurricane, and it can happen outside the cone.

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Why Is It Called 'Uncertainty'?
Forecasts are made using up-to-date data, but hurricanes can change speed or direction! That's why there's **uncertainty** in the forecast.



What Does the Cone Show?
The shaded cone shows where the center of the storm is likely to travel about **66%** of the time based on past forecast accuracy.

| Vocabulary | Definition |
|----------------------|--|
| Hurricane | A strong storm with powerful winds and heavy rain |
| Forecast | A scientist who studies weather and makes |
| Meteorologist | When ocean water is pushed onto land by a storm's winds. |
| Storm Surge | |

Check your understanding

1. **What does the Cone of Uncertainty show, and what does it not show about a hurricane?**
2. **Why does the cone get wider the farther it extends into the future?**
3. **Can areas outside the cone still be affected by the hurricane? Explain your answer.**

