

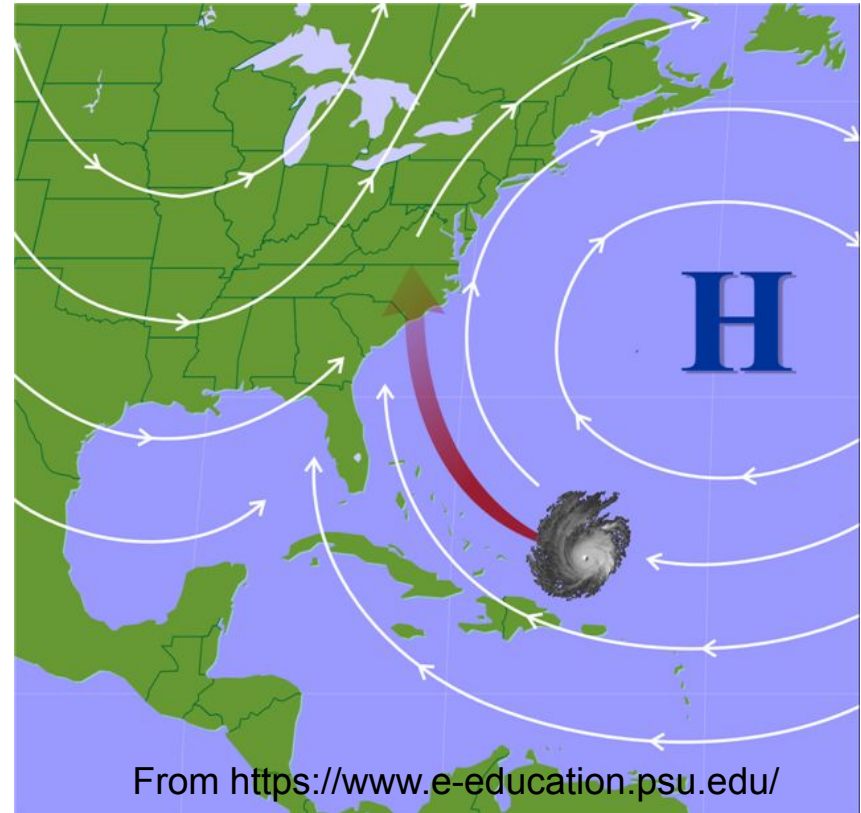
How Do Hurricanes Move?

Steering Flow Creates Rivers In The Atmosphere
That Guide Hurricanes To Their Destinations

Dr. Gus Alaka
NOAA's Hurricane Research Division

Steering Flow: The flow that tells weather systems where to go (including hurricanes).

- Large high and low pressure weather systems push hurricanes around like corks in a river.
- In the North Atlantic Ocean, air circulates clockwise around the “Bermuda High” (also called the “Subtropical High”).
 - High pressure is usually responsible for pushing hurricanes westward in the tropical Atlantic.
 - Hurricanes are then guided northward around the west side of the Bermuda High.



Steering Flow: The flow that tells weather systems where to go (including hurricanes).

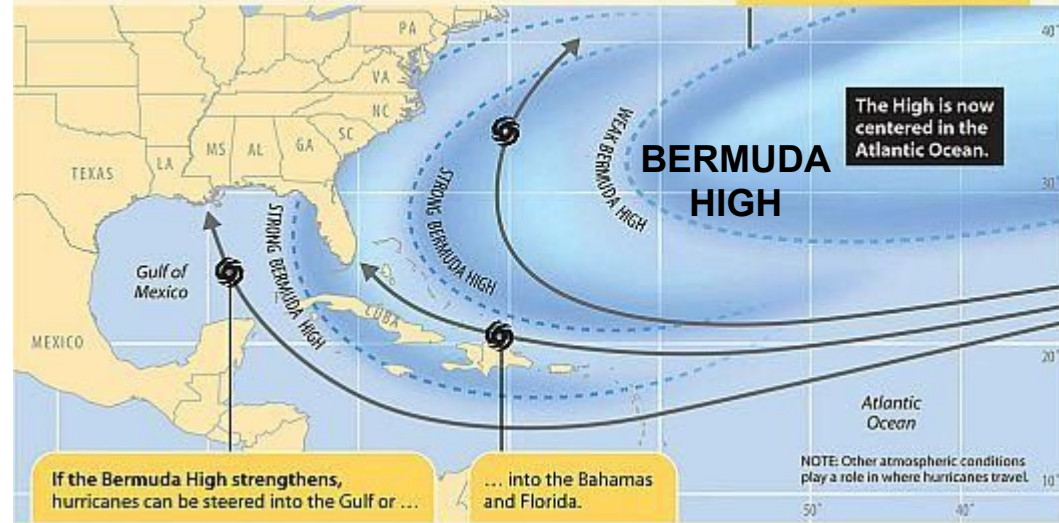
Where and when a hurricane is steered northward depends on the strength of the Bermuda High

- A **stronger** Bermuda High pushes hurricanes farther west before turning them northward (toward Florida and Gulf of Mexico).
- A **weaker** Bermuda High does not push hurricanes as far west and turns them northward sooner (toward the U.S. East Coast or out to sea).

The Bermuda High: Navigator of hurricanes

The location and strength of the Bermuda High, a ridge of high pressure, is a major factor in determining whether South Florida is besieged with hurricanes.

A weak Bermuda High allows hurricanes to move north along the East Coast and out to sea.



SOURCES: The National Weather Service, The Weather Underground, NASA, Goddard Space Flight Center

Staff graphic/Cindy Jones-Hulfachor

From wildcardweather.com

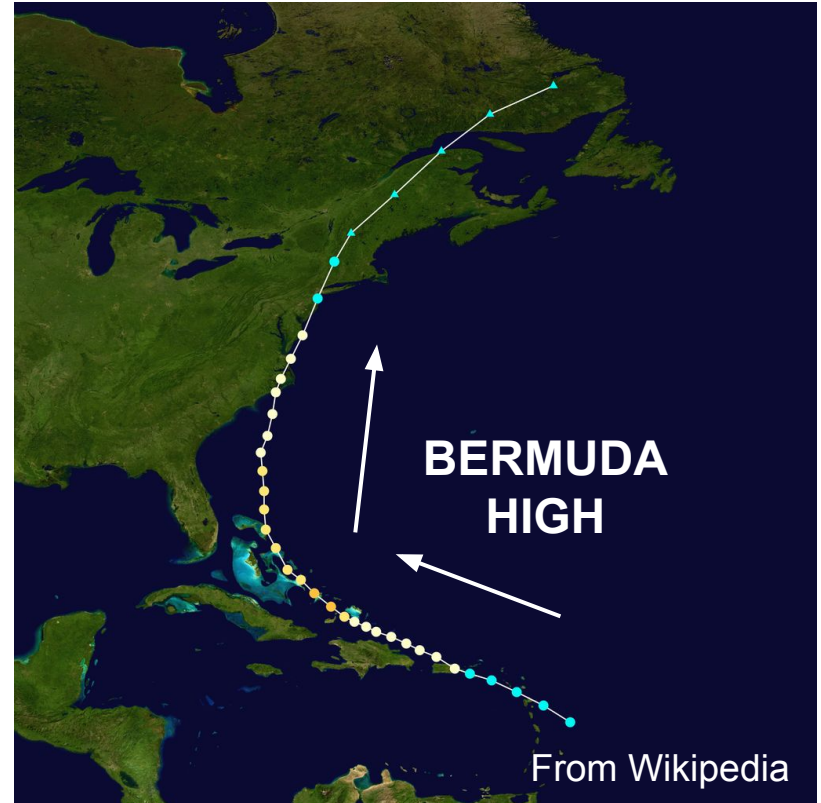
How can a hurricane impact upstate New York?

- **Steering flow** holds the answer to this question because it tells us how the hurricane gets pushed around by the atmosphere (like a cork in a river).
- Hurricanes form in the “tropics”, which is south of New York. Large weather systems, like the Bermuda High, are capable of steering hurricanes from the tropics toward New York.
- Two main scenarios for a hurricane to impact NY:
 1. A hurricane moves northward or northeastward, right along the U.S. east coast, toward New York (*like Hurricane Irene from 2011*).
 2. A hurricane moves northward, except over the open Atlantic, before turning back to the northwest or west toward New York (*like Hurricane Sandy from 2012*).

How can a hurricane impact upstate NY? **Pathway 1**

Hurricane Irene (2011)

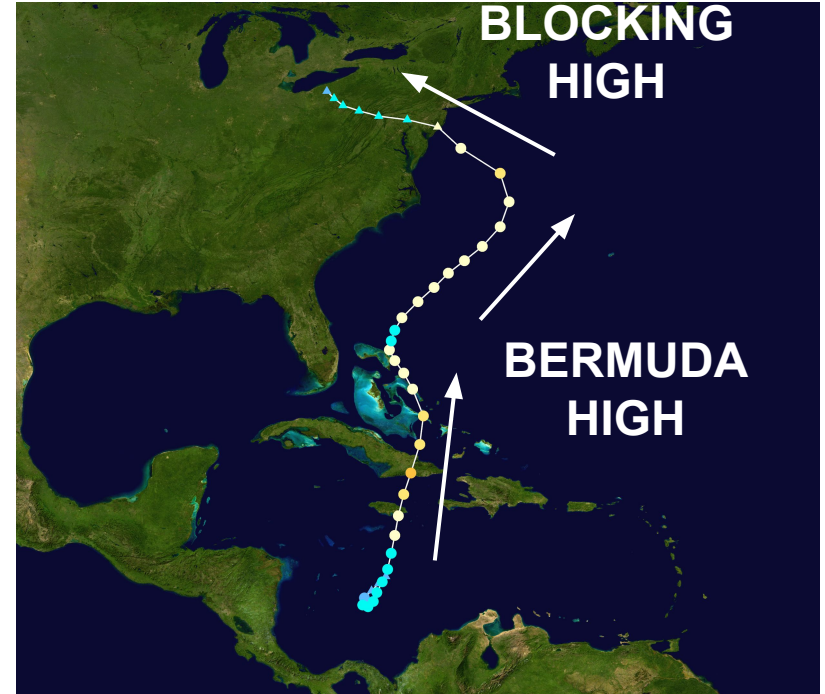
- The Bermuda High, which was weaker than usual, pushed Irene westward toward the Bahamas.
- The Bermuda High turned Irene to the north near the Bahamas and along the U.S. East Coast.
- In this pathway, hurricanes typically weaken to tropical storms by the time they reach New York.



How can a hurricane impact upstate NY? **Pathway 2**

Hurricane Sandy (2012)

- The Bermuda High, which was weaker than usual, pushed Sandy northward to its west.
- An extra high pressure, called a “Blocking High”, moved to Sandy’s north. This turned Sandy back to the northwest toward New York.
- In this pathway, hurricanes can stay stronger because they spend more time over water.



From Wikipedia