# Impacts of Climate Change on Hurricanes

## Why in news?

As Earth's climate warms, more storms are undergoing rapid intensification, growing quickly from relatively weak tropical storms to Category 3 or higher hurricanes in under 24 hours.

## What is a hurricane?

- Tropical storms that form over the Atlantic Ocean or central and eastern North Pacific, with sustained winds of at least 74 mph are called "hurricanes".
- **Hurricane formation** - When warm seawater evaporates, its heat energy is transferred to the atmosphere.
- This fuels the storm's winds to strengthen and intensifies hurricanes.

## How climate change intensifies tropical storms?

- **Warming oceans -** More than 90% of the excess heat from human-caused global warming over the past 50 years has been absorbed by the oceans.

> *Since 1901, sea surface temperatures have risen an average of 0.14 degrees Fahrenheit per decade.*

- Higher surface temperatures allow hurricanes to reach higher levels of maximum sustained wind.
- **Rate of intensification** - Warmer oceans makes the rate of intensification more rapid.
- Rapid intensification refers to an increase of at least 30 knots, or 35 mph, in the maximum sustained winds over a 24-hour period.
- For example, in 2021, Hurricane Ida strengthened from a Category 1 with 85 mph winds into a near-Category 5 hurricane with 150 mph winds less than 24 hours later.

> *The likelihood of a hurricane undergoing rapid intensification has increased to 5% from 1% since the 1980s.*

- **Vertical wind shear** – It is a measure of how much the wind changes in speed or direction at increasing heights in the atmosphere.
- Strong vertical wind shear can inhibit the development of hurricanes by tilting the structure of a storm and by forcing cool, dry air into its core.

- Warming temperatures may lead to weakening vertical wind shear, allowing hurricanes approaching the East Coast of the United States to intensify more rapidly.

## How it impacts forecasting and preparedness?

- The increase in the number of hurricanes that intensify quickly and unpredictably presents a problem for forecasters.
- The window of time to make a decision gets smaller.
- Short notice raises the stakes and can affect a community's preparedness.

## How else is climate change affecting storms?

- As climate warms, the typical season for hurricanes is shifting and more months of the year are conducive to storms.
- The Seasons for tropical storms are usually between June and November, but now they start three weeks earlier.
- Hurricanes are also shifting its landfall pattern farther north than in the past.
- Owing to the rising global air and ocean temperatures, there is a poleward shift in the landfall of hurricanes.

**References**


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