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Climate change: hurricanes to increase in more populated areas: study

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Matt McGrath | BBC Environmental Correspondent | 31 December 2021

Image Source, NASA

The area where tropical cyclones are likely to form will expand due

to climate change, a new study suggests. The study also says that millions of people are at risk of being devastated by the storms that cause these disasters.

Currently, these disasters, known as hurricanes or cyclones, primarily occur only in the tropics, north and south of the equator. But with rising temperatures, researchers say, these meteorological phenomena could also occur in the mid-latitudes.

Such areas include cities such as New York, Beijing, Boston, and Tokyo.

The study was published in the journal Nature Geoscience.

Scientists involved in the study say their findings show that by the end of this century, hurricanes will be more likely to occur than they were 30 million years ago.

In September 2020, a sub-tropical storm, Alpha, caused some headlines with relatively minor damage from the hurricane when it made landfall in Portugal.

But this is a very important event for scientists.

"We have never seen an event like this before," says Dr. Joshua Studom, a physicist at Yale University.

"Traditionally, it was a mid-latitude storm with a type of wreckage. And during that wreckage, favourable environment got created for the forming of a tropical cyclone. This has not happened in Portugal before" he says.

Dr. Studom is the primary author of this research whose findings say that climate warming could be seen creating more of these types of storms in the mid-latitudes, where vast majority of world's population lives undertaking significant economic activities.

"As the Earth warms, the difference in temperature between the equator and the polar regions will be reduced. This would also affect the jet stream" he explained.

Image Source, NASA

Typically, such high jet streams act as a kind of border guard that keeps hurricanes close to the equator.

"As the climate warms, such jet stream activity in the mid-latitudes may get weakened and get split during extreme weather events. This may lead to the formation of a hurricane like this."

The question on the impact of human-induced climate change on hurricanes has been controversial in the past. But with recent research, the relationship between the two is becoming more clear.

Last August, the Intergovernmental Panel on Climate Change released the first part of its 6th Assessment Report on the Science of Warming Climate.

Its authors claim that there is "high confidence" that the hurricanes and tropical storms have been strengthened by human stimuli.

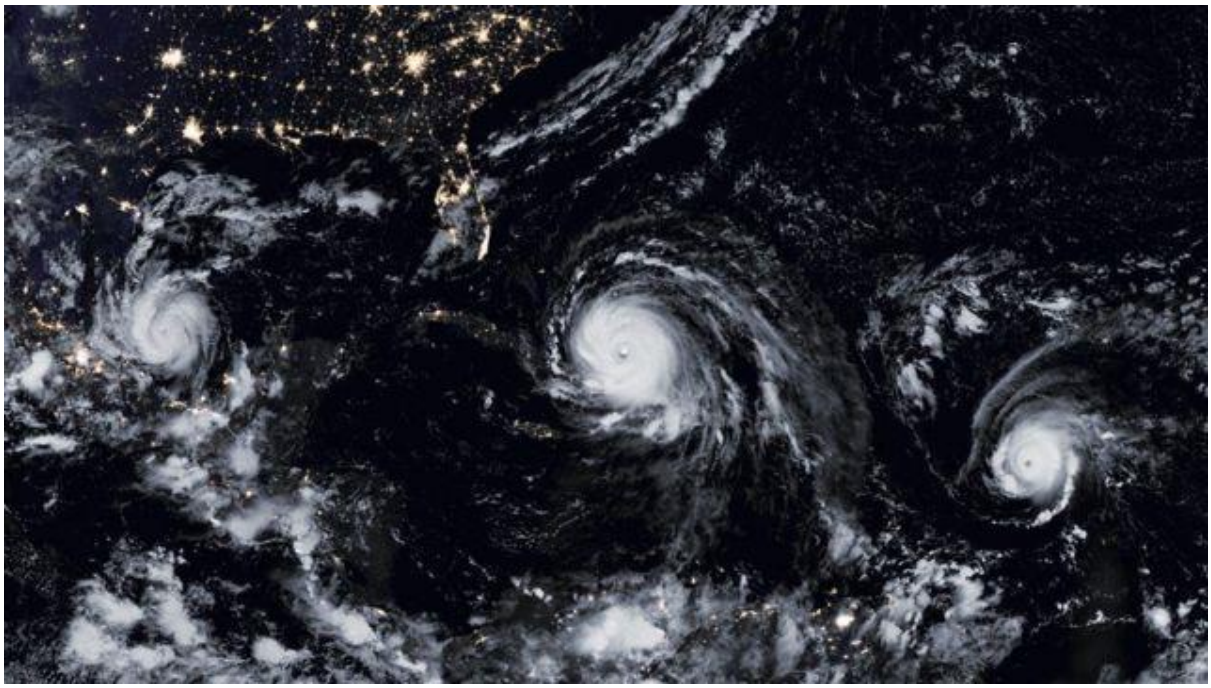

Image Source, NASA

"The rate of extreme tropical cyclones, the peak velocity of tropical cyclones and the peak velocity of the most intense tropical cyclones will increase with

increasing global warming," the IPCC said.

New research released on Wednesday uses a number of sources to show that tropical storms are more likely to occur in the future than previously thought.

"What we have done is to clarify the connection between the physics of storms worldwide and the dynamics of the atmosphere," said Dr. Studom.

"This is a difficult problem because the numeric models that run on modern computers do not exactly simulate the physics of storms."

The expansion of these storms, especially during other impacts of global warming, poses a significant risk to the world.

"Tropical storms in the mid-latitudes can also cause other changes such as slow motion and heavy rainfall" said Dr. Kon Song, a former meteorologist at Princeton University and the National Oceanic and Atmospheric Administration.

"The changes in these tropical storms and the rising sea level along the coast would significantly increase the social impact" Dr. Song said.

Image Source, Getty Images

“Sensitivity to the impact of global warming has been linked to greater uncertainty in tropical cyclones”, Dr. Song warned. “At the same time, the risk posed by these storms would also increase along with global warming”, he said.

Of course, the authors argue that this situation is not going to be the case and that these effects could change, especially if organic emissions are significantly reduced over the next decade.

"Control over this depends on the temperature between the tropics and the polar regions, and it is very closely linked to overall climate change," said Dr. Studom.

"By the end of this century, there will be a dramatic difference between high emissions situation and low emissions situation. This difference will play a crucial role in determining the way these storms will be formed.