



2021 Sixth Warmest Year

For Prelims: La Niña, wildfires, Intergovernmental Panel on Climate Change (IPCC), Heatwaves, South West Monsoon

For Mains: Rising Temperature of Earth and its impact, Steps taken in this direction

Why in News

Recently, two American agencies have released data showing that **2021 was the world's sixth warmest year on record.**

- And the last 10 years were the warmest since record-keeping began in 1880.
- The data was collected by the US. space agency [NASA](#) and the National Oceanic and Atmospheric Administration (NOAA).

Key Points

- **Earth in 2021:**
 - Earth in 2021 was about **1.1 degrees Celsius warmer** than the late 19th century average, the start of the industrial revolution.
- **Northern and Southern Hemisphere:**
 - The Northern Hemisphere land surface temperature was the **third highest on record** — 2016 (second) and 2020 (first) were warmer.
 - The 2021 Southern Hemisphere surface temperature was the **ninth highest on record.**
- **Sea Surface Temperatures:**
 - Record-high sea surface temperatures were observed across parts of the Atlantic and Pacific oceans.
 - The upper ocean heat content was record high in 2021, surpassing the previous record set in 2020.
 - The seven highest ocean heat content have all occurred in the last seven years (2015-2021).
- **Antarctic Sea:**
 - Antarctic sea ice extent during December 2021 was 3.55 million square miles.
 - This value is 11.6% below average and was the third-smallest December extent on record.
 - Only December of 2016 and 2018 had a smaller extent.
- **Effects of La Niña:**
 - Effects of [La Niña](#) kept world temperatures lower.
 - La Niña is a weather pattern that happens in the Pacific Ocean but affects weather around the world.
 - A La Niña event happens when ocean surface waters cool along the Pacific coast of the South American tropics. This takes place about every two to seven years.
- **Reasons for the Warming Trend:**
 - This warming trend around the globe is due to **human activities** that have increased **emissions of carbon dioxide** and other **greenhouse gases** into the atmosphere.

- The planet is already seeing the effects of global warming: **Arctic sea ice is declining**, **sea levels are rising**, **wildfires** are becoming more severe and animal migration patterns are shifting.

Rising Temperature in India

- The **Intergovernmental Panel on Climate Change (IPCC)** released the first part of its **Sixth Assessment Report (AR6)** titled Climate Change 2021: The Physical Science Basis in August, 2021.
- **Indian Sub-continent Specific Findings:**
 - **Heatwaves:** **Heatwaves** and humid heat stress will be more intense and frequent during the 21st century over South Asia.
 - **Monsoon:** Changes in monsoon precipitation are also expected, with both annual and summer monsoon precipitation projected to increase.
 - The **South West Monsoon** has declined over the past few decades because of the increase of **aerosols**, but once this reduces, the country will experience heavy monsoon rainfall.
 - **Sea Temperature:** The Indian Ocean, which includes the Arabian Sea and Bay of Bengal, has warmed faster than the global average.
 - The sea surface temperature over the Indian ocean is likely to increase by 1 to 2 °C when there is 1.5°C to 2°C global warming.
- **Recent Climate Related Measures by India:**
 - An ambitious climate action vision with five elements has been unveiled at UNFCCC **COP26**.
 - Taking non-fossil energy capacity to 500 GW by 2030.
 - Meeting 50% of energy requirements from renewable energy by 2030.
 - Reducing total projected carbon emissions by one billion tons by 2030.
 - Reducing the carbon intensity of the economy to less than 45% by 2030.
 - Achieving the target of **"net zero"** by 2070.
 - India now ranks fourth in terms of installed **renewable energy** capacity and non-fossil energy has increased by more than 25% in the past seven years and reached 40% of the total energy mix.
 - India has also taken the lead in initiatives such as the **International Solar Alliance (ISA)** and **Coalition for Disaster Resilient Infrastructure (CDRI)**.

Source: DTE

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