

Greenhouse Gas Bulletin

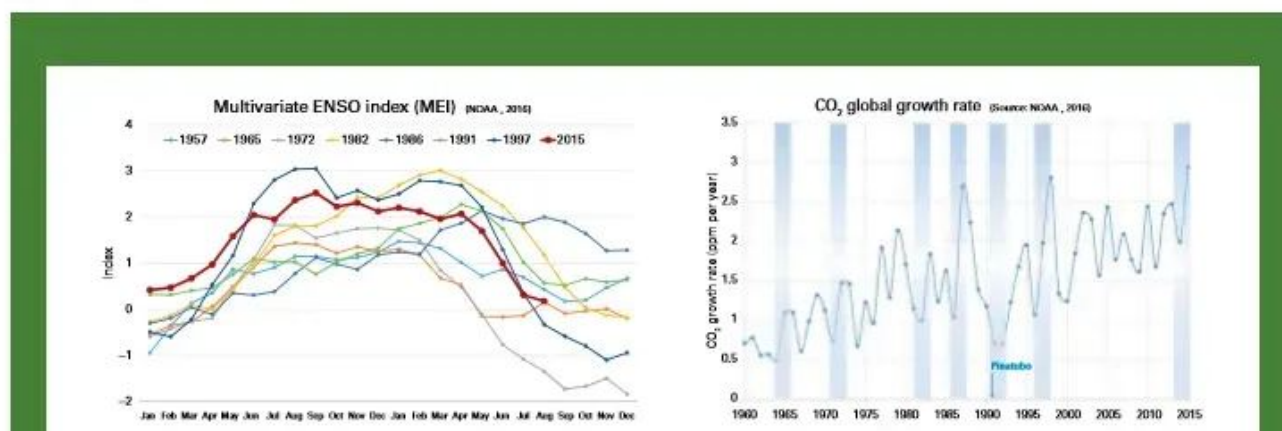
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WMO GREENHOUSE GAS BULLETIN

The State of Greenhouse Gases in the Atmosphere
Based on Global Observations through 2015

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About Greenhouse Gas Bulletin:

- It has been published annually **since 2004 by the World Meteorological Organization.**
- It shows globally averaged surface mole fractions for **carbon dioxide** (CO₂), **methane** (CH₄) and **nitrous oxide** (N₂O) and compares them with the mole fractions during the previous year and with preindustrial levels.
- It also provides **insights into the change in radiative forcing** by long-lived GHGs (LLGHGs) and the contribution of individual gases to this increase.
- It is one of WMO's flagship publications released to inform the UN Climate Change conference (COP).

Highlights of the Bulletin

- The globally averaged surface concentration of **carbon dioxide** reached 420 parts per million (ppm), **methane** 1934 parts per billion and **nitrous oxide** 336.9 parts per billion (ppb) in 2023.
- **Carbon dioxide** is the single most important greenhouse gas in the atmosphere related to human activities, accounting for approximately 64 per cent of the warming effect on the climate, mainly because of fossil fuel combustion and cement production,
- The long-term carbon dioxide increase is due to fossil fuel combustion, but there are year-to-year variations due to the El Niño–Southern Oscillation, which impacts photosynthetic carbon dioxide uptake, respiratory

release, and fires.

- **Methane** is a powerful greenhouse gas which remains in the atmosphere for about a decade. Methane accounts for **about 16 per cent of the warming effect** of long-lived greenhouse gases.
 - **Nitrous oxide**, an ozone depleting chemical, accounts for **about 6 per cent of the radiative forcing** – the warming effect on the climate — by long-lived greenhouse gases.
 - From 1990 to 2023, **radiative forcing** — the warming effect on our climate — by long-lived greenhouse gases increased by 51.5%, with CO2 accounting for about 81 per cent of this increase.
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Q1: What is the World Meteorological Organization?

It is a specialized agency of the United Nations (UN). It was established in 1950, WMO became the specialized agency of the UN for meteorology (weather and climate), operational hydrology and related geophysical sciences.

News: With 11% increase over 2 decades, carbon dioxide accumulates faster in atmosphere

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