

Aerosols

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Aerosols Latest News

A new study revealed that South Asia faces the highest climate impacts from dust-pollution aerosols, leading to significant atmospheric heating.

About Aerosols

- Aerosols are **tiny particles suspended in the atmosphere.**
- **Source:** They originate from sources such as **desert dust, vehicle emissions, industrial pollution and forest fires.**
- **Properties**
 - **Size:** Aerosols range in size from a **few tens of nanometers** to several tens of micrometers.
 - These particles **can either reflect sunlight back into space or absorb it,**
 - They are often **not or barely visible to the human eye,** yet their impact on climate, weather, health, and ecology are significant.

- These particles alter Earth's energy balance and **influence temperatures, cloud formation and rainfall.**

- **Types**

- **Primary Aerosols:** These are injected into the atmosphere directly and are known as '**primary aerosols**'.
- **Examples:** Sea spray, mineral dust, smoke, and volcanic ash are all primary aerosols.
- **Secondary aerosols:** These are aerosols which were **emitted in another form** (e.g. gases), then become aerosol particles after going through chemical reactions in the atmosphere,
- **Example: Sulfate aerosols** from volcanoes or industrial emissions.

Key Highlights of the Study

- Scientists classified aerosols into **seven categories:**
 - Pure dust, dust-dominated mixtures, pollution-dominated mixtures, very weakly absorbing, weakly absorbing, moderately absorbing and strongly absorbing aerosols
- Pure dust dominates northern Africa, while Europe and North America are largely characterised by **less-absorbing urban and industrial aerosols.**
- **Strongly absorbing aerosols**, which often contain high levels of black carbon, produced the **greatest atmospheric warming.**
- **Very weakly** absorbing aerosols had the lowest atmospheric forcing, reflecting more sunlight back into space and producing a much smaller warming effect.
- **Tropical regions** affected by biomass burning are mainly dominated by **strongly absorbing aerosols.**
- **Black carbon-rich** aerosols drive stronger warming

Source: PIB

Source: <https://vajiramandravi.com/current-affairs/aerosols/>

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