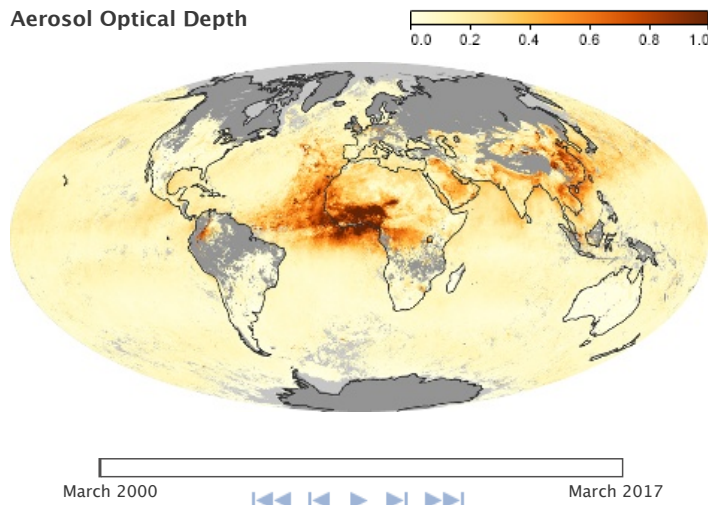


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Global Maps

March 2000

Aerosol Optical Depth



Aerosol Optical Depth



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Tiny solid and liquid particles suspended in the atmosphere are called aerosols. Windblown dust, sea salts, volcanic ash, smoke from wildfires, and pollution from factories are all examples of aerosols. Depending upon their size, type, and location, aerosols can either cool the surface, or warm it. They can help clouds to form, or they can inhibit cloud formation. And if inhaled, some aerosols can be harmful to people's health.

These maps show average monthly aerosol amounts around the world based on observations from the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's [Terra](#) satellite. Satellite measurements of aerosols, called aerosol optical thickness, are based on the fact that the particles change the way the atmosphere reflects and absorbs visible and infrared light. An optical thickness of less than 0.1 (palest yellow) indicates a crystal clear sky with maximum visibility, whereas a value of 1 (reddish brown) indicates very hazy conditions.

High aerosol amounts are linked to different process in different places and times of year. High aerosol amounts occur over South America from July through September. This pattern is due to land clearing and agricultural fires that are widespread across the Amazon Basin and Cerrado regions during the dry season. Aerosols have a similar seasonal pattern in Central America (March–May), central and southern Africa (June–September, and Southeast Asia (January–April).

In other cases, however, aerosol concentrations are not related to fires. For example, from May through August each year, aerosol amounts rise dramatically around the Arabian Peninsula and nearby oceans due to dust storms. Elevated aerosol amounts nestle at the foothills of the Himalaya Mountains in northern India in some months, and linger over eastern China for much of the year. These elevated aerosol amounts are due to human-produced air pollution.

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