

MOPITT Observations of Asian Outflow of Pollution Over the Pacific Ocean

Image Acquired
January 1-20, 2003

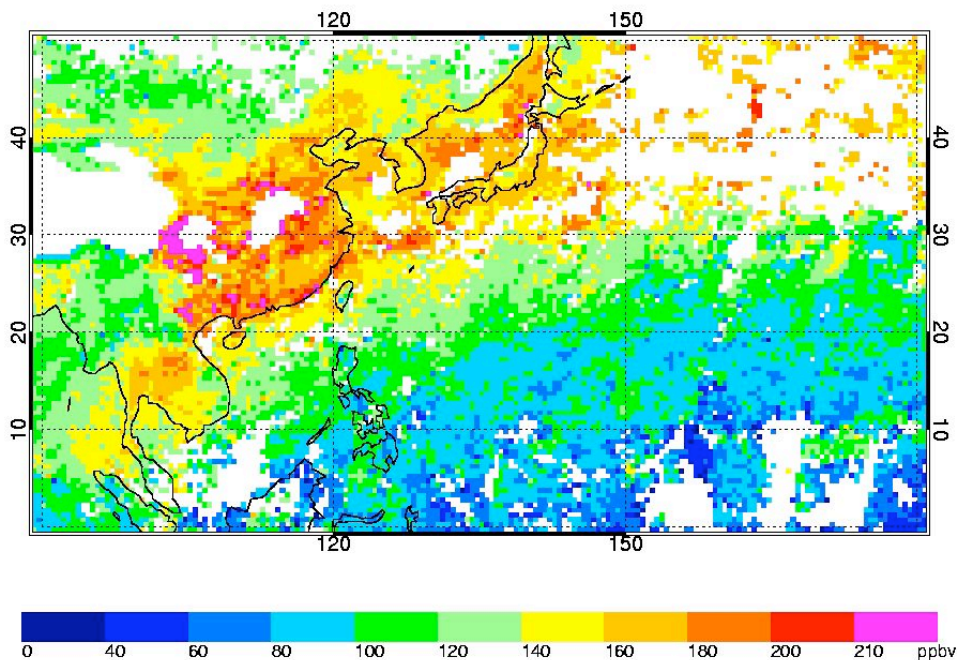
Satellite & Sensor
Terra/MOPITT

This false-color image shows concentrations of carbon monoxide at an altitude of roughly 18,000 feet (500 millibars) in the atmosphere off the coast of Asia and out over the Pacific Ocean. This image represents a composite of data collected over a twenty-day period, from January 1-20, 2003, by the Measurements Of Pollution In The Troposphere (MOPITT) instrument aboard NASA's Terra satellite. The colors represent the mixing ratios of carbon monoxide in the air, given in parts per billion by volume. In this scene, values range from as high as 220 ppbv (purple pixels) to as low as 40 ppbv (blue pixels). The white areas show where no data were collected, either due to persistent cloud cover or gaps between viewing swaths.

During the early part of the year, there is considerable outflow of pollution from China and southeast Asia. Carbon monoxide is a good tracer of this pollution since it is produced by incomplete combustion processes such as the burning of fossil fuels in urban and industrial areas, the use of biofuels in developing countries, and by biomass burning in the tropics. The Asian plume can be followed as it propagates out over the Pacific Ocean, and in some instances this plume reaches the western coast of the United States. Over China, industrial emissions are mainly responsible for the high levels of carbon monoxide observed in the image. During the time these data were collected by MOPITT, other satellite sensors observed heavy, widespread particulate pollution over this region (http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php3?img_id=5331). Over southeast Asia, the high carbon monoxide levels coincide with satellite observations of fires in Thailand, Cambodia, and Vietnam (http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php3?img_id=5359).

Image courtesy the NCAR MOPITT Team

MOPITT CO 700hPa: 20030101-20030120



MOPITT Observations of Pollution Plume from Southeast Australia Bushfires

Image Acquired: January 15-20, 2003

Satellite & Sensor: Terra/MOPITT

Bushfires continue to burn in Southeast Australia. This false-color image shows the resulting concentrations of carbon monoxide (CO) at an altitude of roughly 3 km (700 millibars) in the atmosphere over Australia and New Zealand. Data taken by the Measurements Of Pollution In The Troposphere (MOPITT) instrument aboard NASA's Terra satellite have been combined for 6 days from January 15-20, 2003. The colors represent the mixing ratios of carbon monoxide in the air, given in parts per billion by volume. In this scene, values range from as high as 250 ppbv (purple pixels) to as low as 50 ppbv (blue pixels). The white areas show where no data were collected, either due to persistent cloud cover or gaps between satellite viewing swaths.

Carbon monoxide is produced as a result of incomplete combustion during burning processes, and is important due to its impact on chemistry in the lower atmosphere. It is a good indicator of atmospheric pollution, and its presence adversely affects the atmosphere's ability to cleanse itself. Because carbon monoxide is persistent for several weeks, it clearly shows the propagation of pollution plumes from the region of the Australian fires out thousands of kilometers into the usually pristine atmosphere of the southern Pacific Ocean. The distribution of pollution over Australia corresponds closely with satellite observed aerosol emitted by the fires as observed by TOMS (http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php3?img_id=5349).

Image courtesy the NCAR MOPITT Team

MOPITT CO 700hPa: 20030115-20030120

