

# Wildfire! August 2000

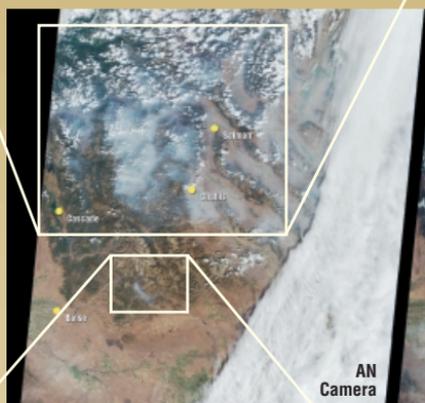
## Terra Views Idaho–Montana Fires



### Fire, Smoke, and Pollution

Terra instruments detect the environmental impact of fire on local vegetation and soil, as well as the polluting gases and particles in smoke that alter atmospheric chemistry, cloud development, and cloud reflectivity.

Penetrating smoke and haze, MODIS exposes the burning fires (red dots). (August 30)



AN Camera

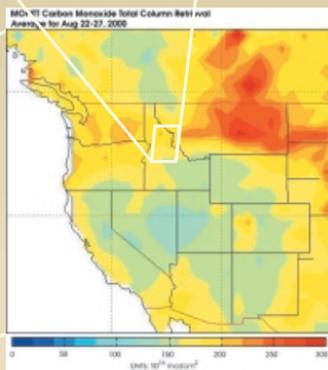


DF Camera

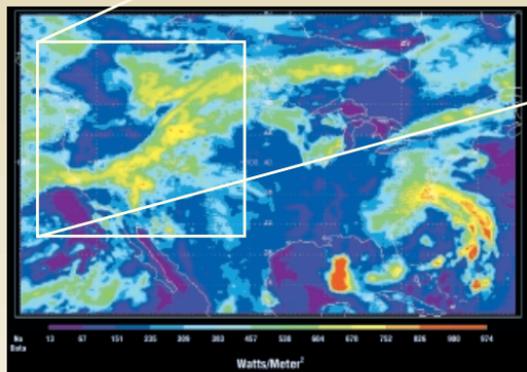
Using multiple angles, MISR shows clouds and clear air, and reveals thin haze and smoke from the fires. (August 30)



High-resolution ASTER depicts burned-out areas in detail. (August 30)



MOPITT displays a plume of carbon monoxide pollution (in red) rising from the fire. (August 22–27)



CERES shows a plume of smoke and haze from the fires (in yellow/green) extending from Montana to Wisconsin. (August 30)



National Aeronautics and Space Administration

## Wildfires of Idaho-Montana, August 2000

The sample images on this poster display environmental effects of wildfires that ravaged parts of Idaho and Montana, as viewed by the five instruments on board NASA's Earth Observing System (EOS) Terra satellite. Each instrument provides its own special view of the Earth. Since all five instruments are on the same platform, the views are coincident and they allow for synergistic data analyses. The instruments measure various radiation wavelengths, including reflected light and heat emitted by Earth back into space, which are especially useful for fire observations. The data acquired by these sensors are transmitted to data centers and processed into data products and images. Terra was launched from Vandenberg Air Force Base on December 18, 1999. The spacecraft operates in a near-circular, Sun-synchronous orbit with an inclination of approximately 98.2 degrees. The descending node (daytime) crossing time is 10:30 a.m.

### ◆ MODIS – Moderate Resolution Imaging Spectroradiometer

The MODIS nadir image reveals the burning fires with a thermal band that penetrates the smoke and haze seen in red and green bands. Scattered “popcorn” clouds are clearly evident. The forests in the Salmon River Mountains (ID) and Bitterroot Mountains (MT) and the agricultural fields in the valleys are also visible in this color composite (1-4-20:red-green-red) image. An overlay shows roads and city locations. *(Image provided by MODIS Science Team; see <http://visibleearth.nasa.gov/cgi-bin/viewrecord?3306>)*

### ◆ MISR – Multi-angle Imaging Spectroradiometer

MISR's highest resolution nadir (AN) image shows ground features, while the oblique 70.5-degree forward (DF) image focuses on atmospheric features, such as the thick shroud of smoke from fires present in some places and clear air in others. Scattered clouds are evident, as are the massive clouds of a weather front. These color composite (1-2-3:blue-green-red) images are from two of MISR's nine cameras that view Earth at different angles. *(Images provided by NASA/GSFC/LaRC/JPL, MISR Team)*

### ◆ ASTER – Advanced Spaceborne Thermal Emission and Reflection Radiometer

ASTER has the highest resolution of Terra's instruments. The nadir image highlights the smoke plume and burning “hot spot.” Prominent ground features are the mountain peaks, ridges and valleys, and normal and burned forest of the Smoky Mountains (ID). This color composite has near-infrared, red, and green bands at 15-meter (49-foot) resolution with added thermal infrared data at 90-meter (295-foot) resolution. *(Image provided by NASA GSFC, MITI, ERSDAC, JAROS, and U.S./Japan ASTER Science Team; see <http://visibleearth.nasa.gov/cgi-bin/viewrecord?6366>)*

### ◆ MOPITT – Measurements of Pollution in the Troposphere

MOPITT's false-color image of concentrations of carbon monoxide (CO) in the atmosphere shows the fire-caused pollution plume. The CO byproduct of the fires is a gas that hinders the atmosphere's natural ability to rid itself of harmful pollutants. MOPITT provides the first long-term, regional and global measurements of CO and methane gases in the lower atmosphere. *(Image provided by the NCAR MOPITT Team and the MOPITT Science Team; see <http://visibleearth.nasa.gov/cgi-bin/viewrecord?4866>)*

### ◆ CERES – Clouds and the Earth's Radiant Energy System

Color patterns in the CERES false-color image show bright clouds and aerosols (smoke from fires) over dark lands and oceans. Smoke plumes, normal weather fronts, and cloud patterns are present. The CERES ERBE-like Instantaneous Top-of-Atmosphere (TOA) Estimates (ES-8) data set shortwave flux measures reflected sunlight primarily from wavelengths <5 microns. *(Image provided by Data Management Office, Langley Research Center, NASA.)*

The *Terra Data Sampler #1, Western U.S. Wildfires 2000* CD-ROM presents information, data, and images for the event depicted on this poster. The CD also contains information about the Terra mission and instruments, and provides links to Terra-related Web sites and other sites that offer tools for viewing the data. See the Web version at [http://ivanova.gsfc.nasa.gov/outreach/Terra\\_CD-01/start.htm](http://ivanova.gsfc.nasa.gov/outreach/Terra_CD-01/start.htm).

For additional information on the Terra mission and instruments, see the Terra Web sites at <http://terra.nasa.gov/> and <http://eos-am.gsfc.nasa.gov/>.

For information about the data centers and their data products and services, see <http://nasadaacs.eos.nasa.gov>.