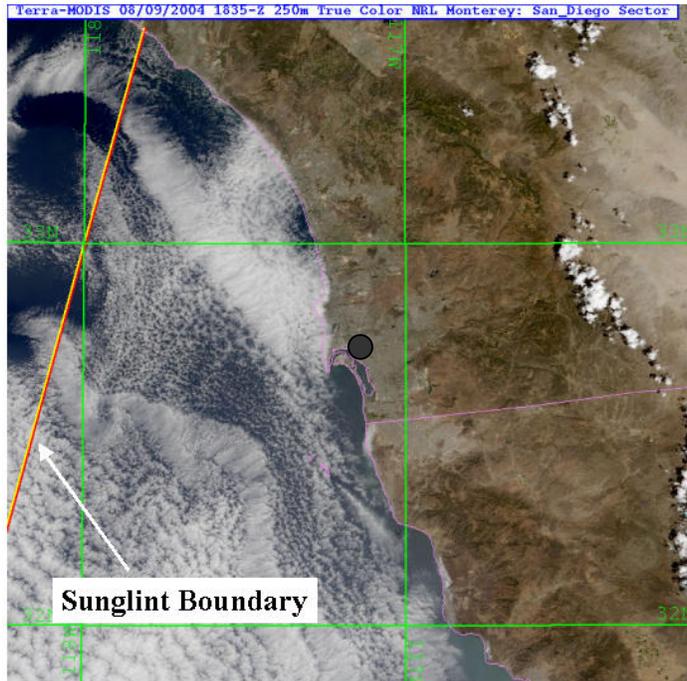




Satellite Product Tutorials:

City Zooms using MODIS DATA



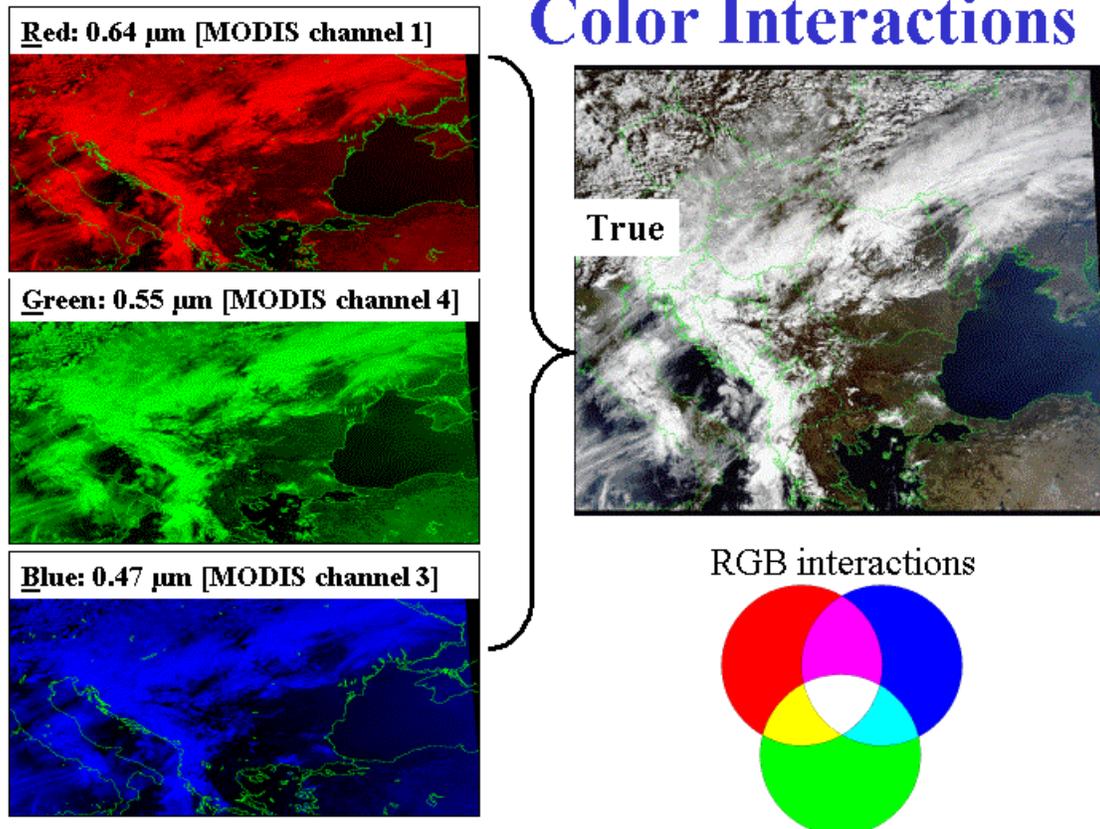
Above: The city of San Diego and environs surrounds the gray dot in the image above. Stratus covers much of the Pacific to the west. This MODIS true color zoom sees details, like hills, valleys, and urban features that most weather satellite images miss.

Why We're Interested...

City zooms using MODIS tells us about the weather in our communities TODAY, only two or three hours after satellite overpass time. The high spatial detail can help us spot fires, floods, and other unusual weather features. True color strongly resembles what an astronaut would see from the space shuttle looking down from earth: forests are green; clouds are white; urban areas are grey; water is blue. The realism marks a new era in satellite observation of our planet.

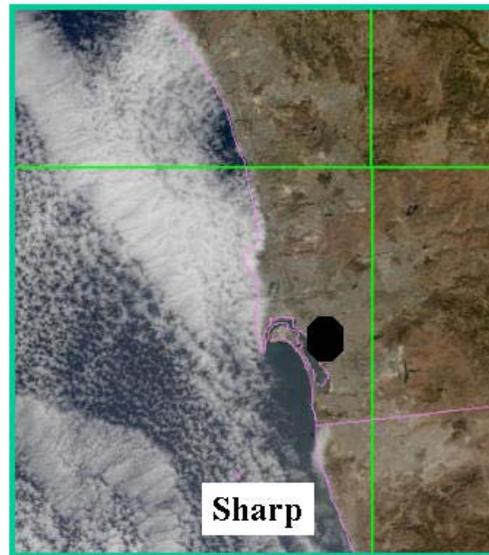
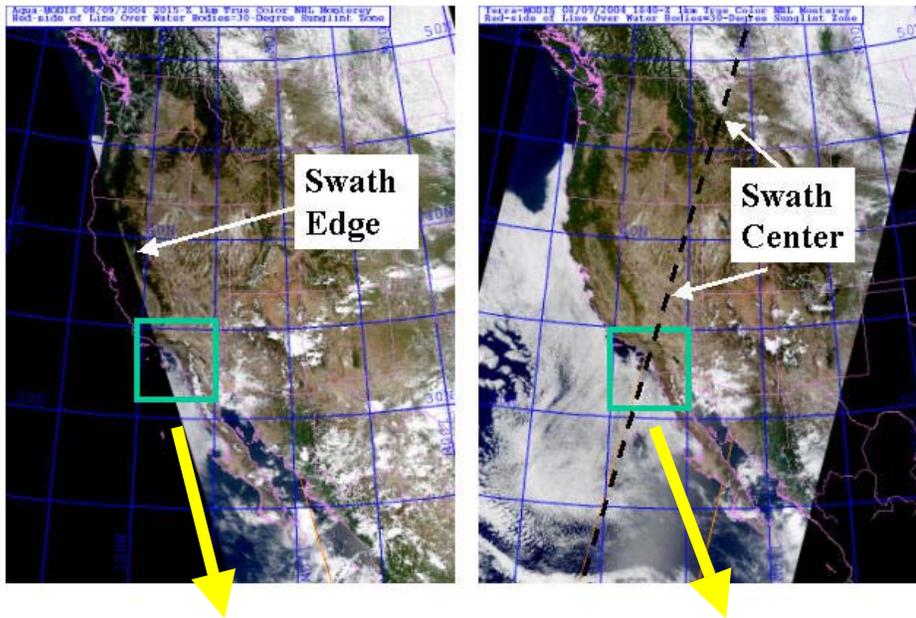
How This Product is Created...

The illustration below shows that three image channels can be combined to make a true color image. One of the input channels represents the color red, another the another blue, and another green. You can think of this combination as coming from a Red/green/blue (RGB) color projector. The fidelity in true color images allows even the novice to interpret these images correctly.



How to Interpret...

Expect to see features the way you would see them from a high-altitude aircraft. Vegetation is green; deserts are brown etc. Water is blue unless a phenomena called sunglint turns it a shiny gray. (See the annotated line in the top image of this tutorial.) It's important to realize that some views near the center of the MODIS overpass are sharper than those taken on the edge. In the example below detail is lost when the image comes from the edge of the of satellite swath, but if the image comes from the swath center, the scene is sharp and clear. This discrepancy will be fixed in the NPOESS era (more below).



Looking Toward the NPOESS Era...

In the NPOESS era the both the timeliness and quality of true color products will be improved. True color mages from the new Visible And Infrared Imaging Radiometer Suite (VIIRS) will be available in fewer than 30 min from overpass time. At the height of the NPOESS era (three satellites) there will be three true color images per 24 hour period. VIIRS will also be installed on the NPOESS Preparatory Satellite (NPP), a predecessor satellite to NPOESS, scheduled for launch in 2006. Unlike MODIS (example above), VIIRS images will maintain nearly uniform quality

toward the edge. Plus, the VIIRS swath will be wider, providing more coverage.

Did You Know...?

True color has been available since 1972 from the polar-orbiting Landsat satellite series, but only to researchers after the fact, not to the general public in near-realtime. With MODIS, and especially with NPOESS/NPP VIIRS, all of this is changing!

Want to Learn More?

Jones, D., 2004a: The Future of Earth—Sensing from Space, The Next Generation Satellite Series: A Look at NPOESS and Its Benefits. *Earth Observation Magazine*, 13, 1, 4-10.

Jones, D., S.R. Schneider, P. Wilczynski, C. Nelson, 2004b: NPOESS Preparatory Project: The Bridge between Research and Operations. *Earth Observation Magazine*, 13, 3, 12-17; 20-22.

Jones, D., C. Nelson, and M. Bonadonna, 2004c: NPOESS: 21st Century Space-Based Military Support, *Earth Observation Magazine*, 13 4, 24-30.

Technical P.O.C.: Steve Miller, miller@nrlmry.navy.mil