

The Fire Information for Resource Management System: Easily Accessible Fire Data in NASA LANCE

Diane Davies¹, Shriram Ilavajhala¹, Minnie Wong², Chris Justice², Kevin Murphy³, Jeff Schmaltz³ and Mike Teague³

1 - Sigma Space, 2 - University of Maryland, 3 - NASA / GSFC

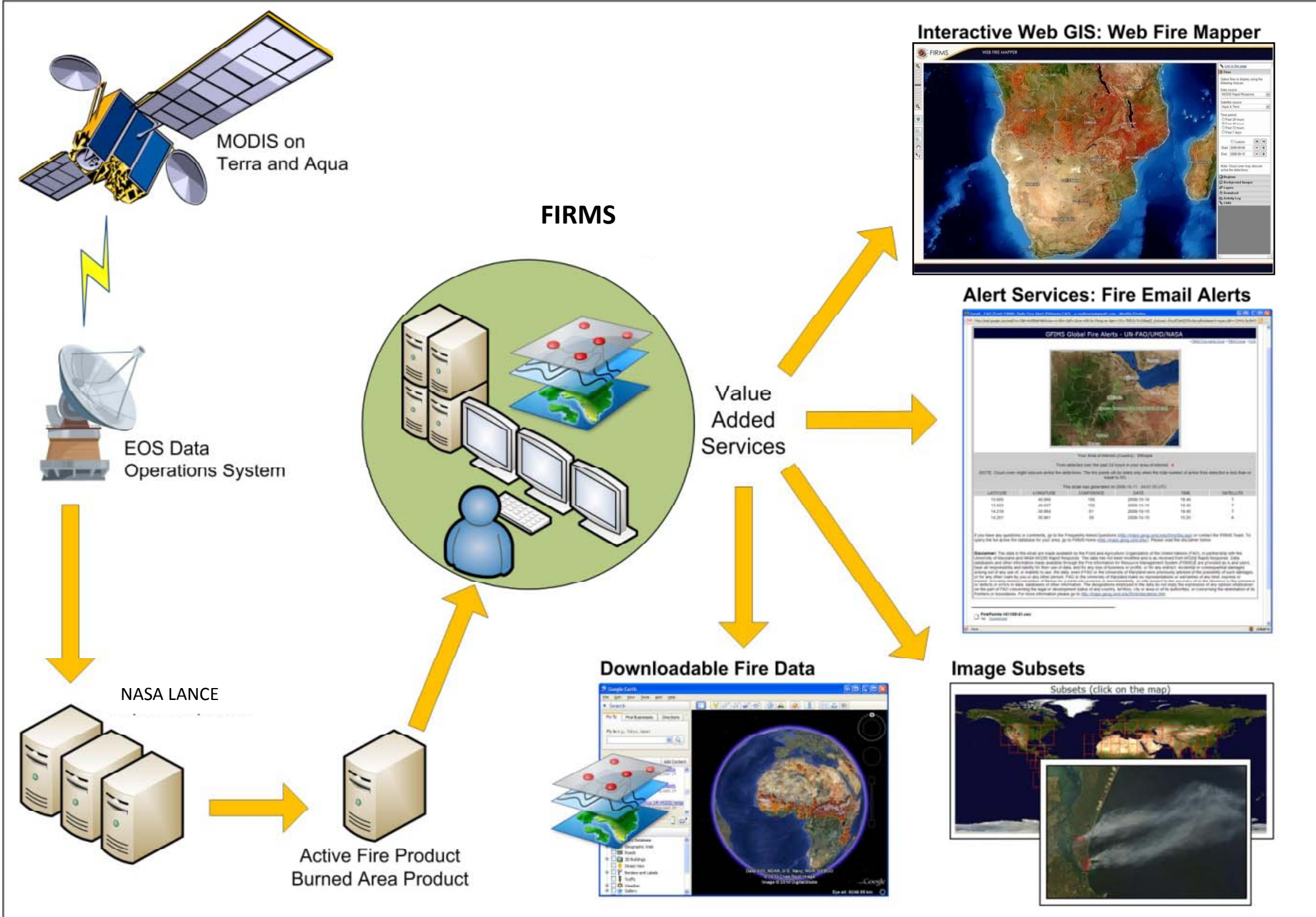
Abstract

The synergy of remote sensing, GIS, internet and mobile technologies has revolutionized the way in which near-real-time satellite-derived fire information is delivered to users around the world. The NASA funded **Fire Information for Resource Management System (FIRMS)** delivers MODIS active fire data in a range of easily accessible formats.

The FIRMS prototype, developed at University of Maryland, was transitioned to an operational system at the United Nations Food and Agriculture Organization (FAO) in Rome, in August 2010. The system at FAO is called the Global Fire Information Management System (GFIMS).

While GFIMS is being established at FAO, FIRMS will become part of NASA's **Land Atmosphere Near-real-time Capability for EOS (LANCE)**, continuing to meet NASA data-user needs. This poster describes the delivery of fire data through FIRMS, LANCE and provides examples of how these data are being used to support end user needs.

Overview of FIRMS



FIRMS Services

FIRMS delivers MODIS-derived active fire data in a range of formats including :

Fire Email Alerts (available in near-real time or as daily or weekly summaries), Interactive WebGIS - Web Fire Mapper, data downloads: Shape files/Text Files, KML/Google Earth, WMS, NASA World Wind plug-ins and subsets of MODIS images.

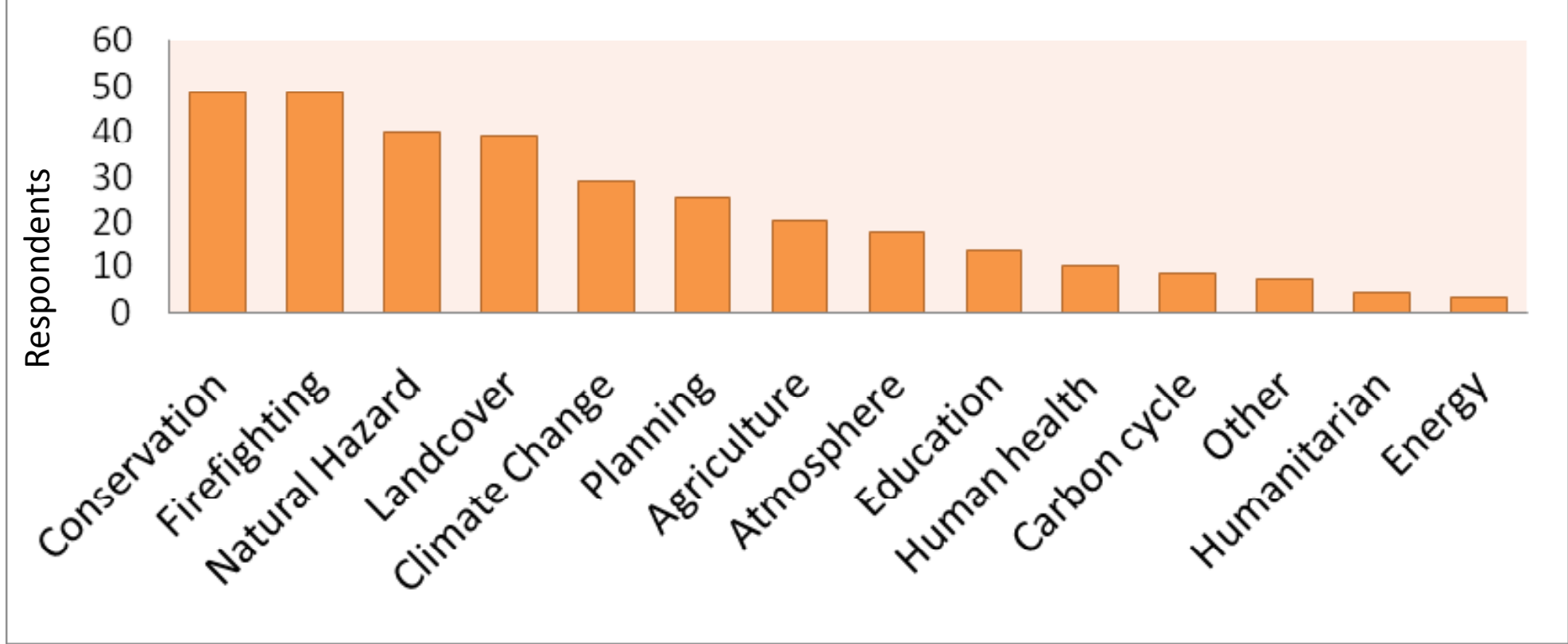
FIRMS has recently been enhanced by the addition of MODIS burned-area images which can be viewed as part of Web Fire Mapper.



Fire data from FIRMS are available in a range of formats

Use of FIRMS data

FIRMS conducted an online user survey from February – April 2009 to better understand who uses the data, how they use the data, and what data formats are most useful. The survey was completed by 345 people from 65 countries.



Results show that most people use FIRMS data for conservation and firefighting purposes.

- 82% of respondents said they use FIRMS services to monitor fires in specific areas.
- 76% use email alerts as their primary means of receiving active fire data.



FIRMS data have been used in a wide range of publications.

Benefits derived from FIRMS

- Through FIRMS, NASA MODIS satellite imagery is being used to provide:
1. Earlier warnings of large fires that warrant management response and more accurate fire locations,
 2. More timely allocation of resources to manage fires due to early alerts,
 3. More comprehensive overviews of the total fire situation (the “big picture”) for fire managers through the top-down view of satellite imagery,
 4. A better connection between fire management and conservation programs that now use FIRMS data to detect illegal clearings of land in protected areas.

Visit: <http://lance.nasa.gov/> for more information about FIRMS

For questions about LANCE, contact: esdis-users@lists.nasa.gov

For questions about FIRMS, contact: firms@hermes.geog.umd.edu

Examples of how FIRMS data are being used

The main uses of FIRMS data are: to monitor protected areas, identify areas of illegal logging, to raise awareness about wildfires, educate the public, and to inform conservation / fire management decisions. The following images and quotes illustrate how data from FIRMS are being used in Belize, Guatemala, Thailand and Indonesia.

Logging encroachment in national parks, Belize



FRIENDS FOR CONSERVATION AND DEVELOPMENT

CCMFCO-49-07

To: Diane Davies, FIRMS

Cc: Dennis Chan, Chiquibul National Park Manager

From: Mr. Rafael Macanazo, CDM Program Director

Date: May 22, 2007

RE: Fire Alerts in the Chiquibul National Park

Over the last few days we have been receiving your fire alerts and even though I am a new user – I can see your level of professionalism in ensuring that these arrive to managers on the ground in an effective and efficient manner.

Last two weeks your information gave us an insight on fires occurring on the southern portion of the Chiquibul National Park, this was later confirmed by the wings of Conservation, Lighthawk.

A ground reconnaissance mission confirmed the worst. Unknown to anyone there have been large incursions in the park from Guatemalan farmers as far as four kilometers inside the national territory. More than 100 acres of forest have been cleared for farming and the burning detected by FIRMS showed that more forest was being burnt this year. This has enabled us to put measures now in place to better secure that tropical forest from destruction.

I want to thank you and your FIRMS team for this new management tool that serves as an eye for us in the Chiquibul National Park and the Greater Chiquibul Maya Mountain Massif.

Keep the great work.

Monitoring the Mirador Basin, Guatemala

Data from FIRMS are used to monitor ongoing and potential threats in the Mirador Basin, one of the last remaining contiguous forested areas in Central America and home to more than 200 registered ancient Maya sites including Tikal, a UNESCO World Heritage Site.

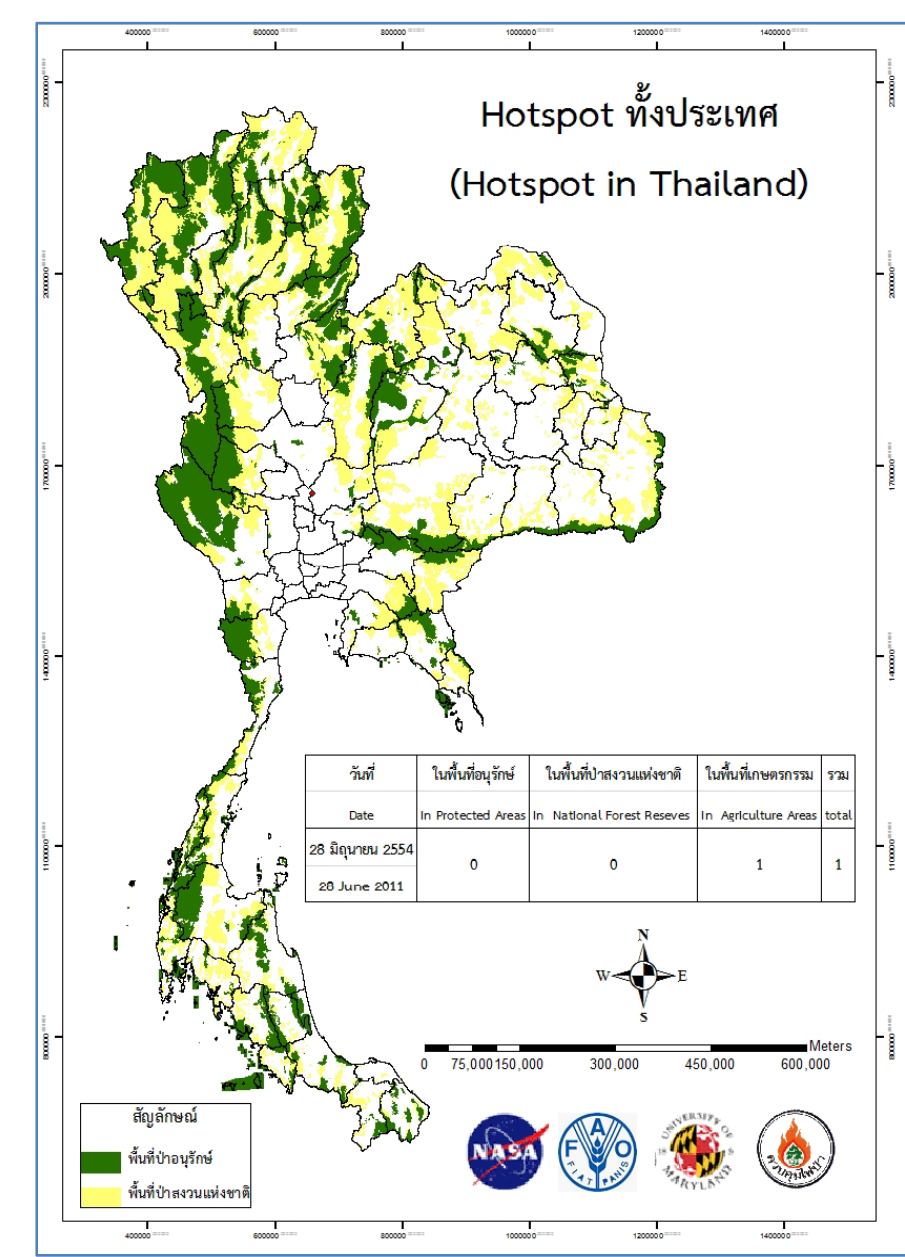
The main threats are illegal clearing for agricultural expansion and forestry concessions improperly using fire in forest timber extraction.



Sources: Victor Hugo Ramos (WCS), Josie Thompson (FARES) and <http://www.miradorbasin.com/Resources/forestscons.htm>, NASA Earth Observatory <http://earthobservatory.nasa.gov/EOFB/view.php?id=7447>

Country wide fire monitoring, Thailand

In Thailand, the Department of National Parks routinely uses data from FIRMS to get an overview of the fire situation across the country and to send maps and alerts to responsible parties.



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Subject : Letter of appreciation

I am writing this letter to express our deepest appreciation for your kind supports to Thailand's forest fire control management with your Fire Information Resource for Management System (FIRMS) since 2006.

On behalf of the Department of National Parks, Wildlife and Plant Conservation, Thailand (DNP: <http://www.dnp.go.th>), we are very pleased to be cooperating with FIRMS, Department of Geography University of Maryland and MODIS Rapid Response System, the National Aeronautics and Space Administration (NASA), and Goddard Space Flight Center (GSFC).

The DNP use the Fire Information for Resource Management System (FIRMS) which automatically processes MODIS data to enable at least twice daily generation of active fire hotspots in Thailand to update the fire situation and delivery immediate products to responsible parties throughout the country.

Since it is impossible to monitor forest fire on a large area by ground patrol, a satellite remote sensing tool presents an ideal solution. In addition, a mobile monitoring via a satellite remote sensing technology offers the most efficient and cost effective means for the forest fire management over greater area.


Finally, I would like to thank you and present our sincere appreciation again for your great supports over the years and looking forward to seeing your continue support and further collaborations between us in your future projects or efforts.

Very truly yours,

(Signature: Chaisri) (Typed: Chaisri)

DNP Department of National Parks, Wildlife and Plant Conservation
กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช
สำนักการอนุรักษ์และฟื้นฟูระบบนิเวศ


Illegal logging in Indonesia



In Riau, Sumatra: WWF use MODIS active fire data engage big companies who are logging illegally as part of their 'Eyes on the Forest' program'

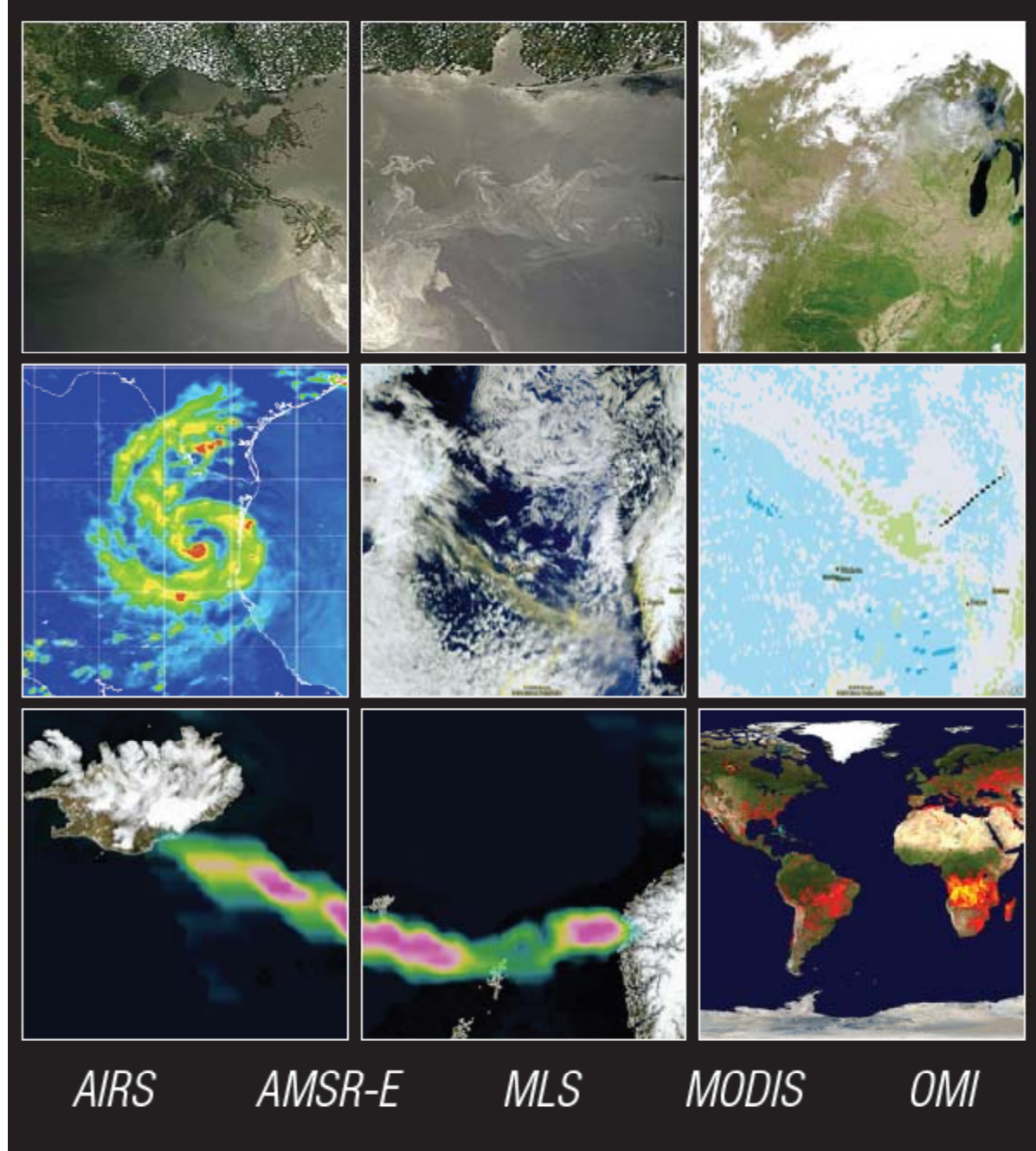
"Everything is covered in smog. The media are calling us to get the latest information on where the fires are burning. We want to relate the hot spots to our map with the concessions of the big forest conversion corporations so we can engage them. Your web site has been proven to be the most useful resource on the web to do this."

GIS Manager, Eyes on the Forest



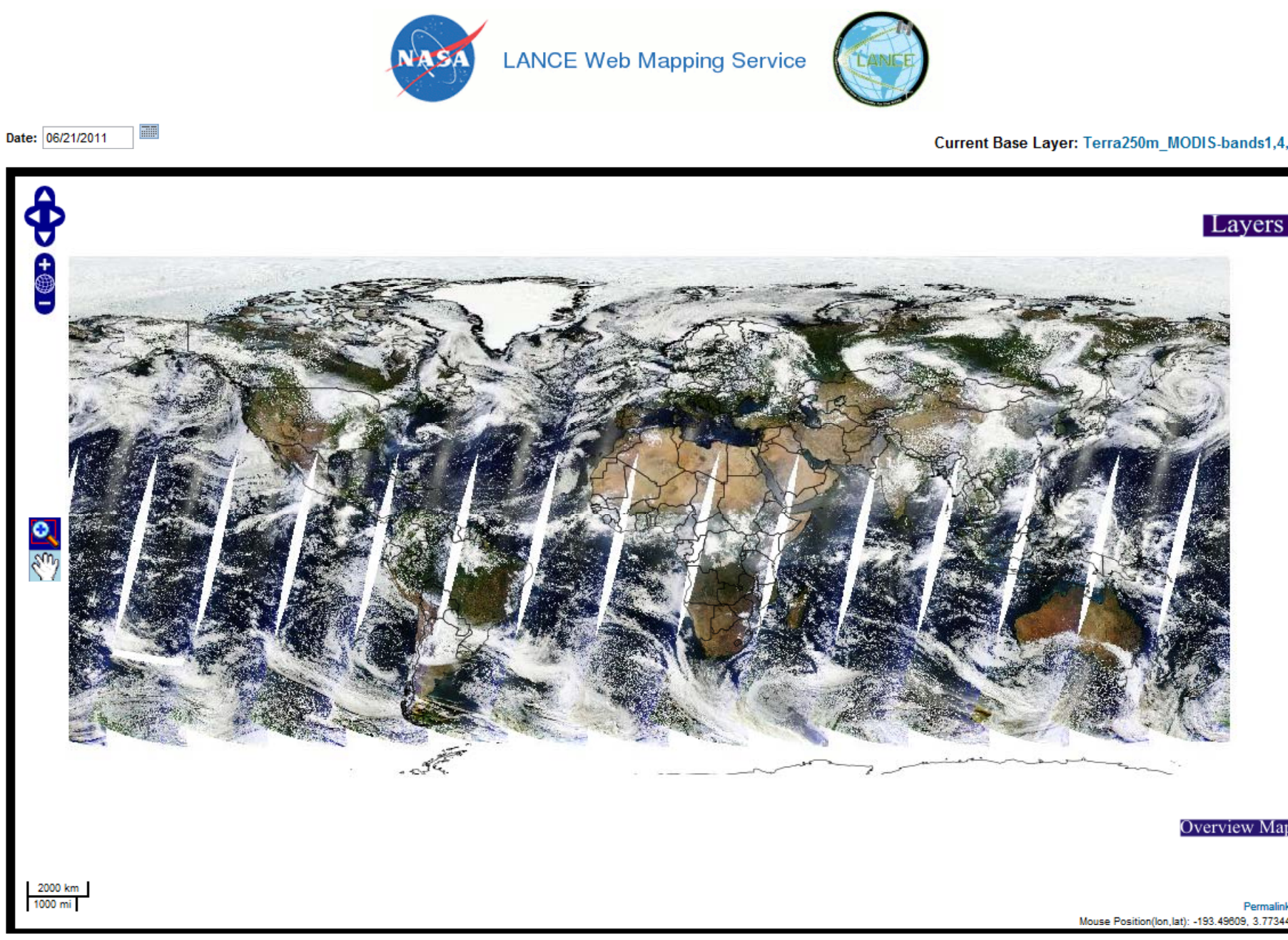
NASA LANCE: Land Atmosphere Near real-time Capability for EOS

FIRMS will be fully integrated in to LANCE in July 2011. While FIRMS focuses only on fire data, LANCE provides data for a wide range of applications from weather forecasting and climate prediction to monitoring and managing natural hazards, including drought and floods.



LANCE provides a ‘one-stop-shop’ for EOS near real-time products from the MODIS, AMSR-E AIRS, MLS and OMI instruments less than 3 hours from satellite observation.

Rapid Response (RR), formerly MODIS RR, has recently become part of LANCE and provides a platform for viewing imagery from MODIS and AMSR-E. More products will be added to RR in the near future.



Screenshot of the new Rapid Response interactive Web Mapping Service (WMS) service that enables products from multiple instruments to be overlaid with population density and administrative boundaries.

For more information, please visit: <http://lance.nasa.gov/>