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## GeoMAC Users Guide Introduction

The National Interagency Fire Center (NIFC), its member agencies – Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, National Park Service, National Weather Service, U.S. Forest Service, and the U.S. Geological Survey welcome you to the GeoMAC website.

This Users Guide is designed as a comprehensive source of detailed information about the website, the mapping application and the map layers which can be viewed in the mapping application. We hope it helps you navigate the website.

The Users Guide is organized into two sections:

1. The GeoMAC Application section contains information and detailed instructions for using the GeoMAC mapping application. The GeoMAC mapping application is accessed from the “Wildfire Mapping” category on the Home Page. It also includes the information that can be accessed in the “About GeoMAC” category from the Home Page.
2. Map Layer Information contains specific information about each layer that is used in the GeoMAC mapping application and includes the map layer legends.

GeoMAC is an interactive mapping application utilizing ArcIMS technology. It is supported by the National Interagency Fire Center and is housed and maintained at the USGS Rocky Mountain Geographic Science Center in Denver, Colorado. For additional information or other questions, contact GeoMAC at [geomac@usgs.gov](mailto:geomac@usgs.gov).

## GeoMAC Home Page

The Home Page contains links to information about GeoMAC, to the GeoMAC mapping application and to this Users Guide. These are accessed from the “**About GeoMAC**”, “**Wildfire Mapping**”, and “**Users Guide**” frames respectively.

It also lists contact information in case you have questions regarding the GeoMAC website. The agencies involved in the production and maintenance of GeoMAC are listed as **The GeoMAC Team**. This listing also functions as links to each of the agency’s websites. There are also links to the Department of Interior and Department of Agriculture web sites at the bottom of the screen.

The “**System Requirements**” link at the bottom of the page provides information about Supported Operating Systems and Browsers and about browser settings.

“Quick View Active Perimeters” allows for the selection and display of currently active perimeters in a static view.



“View Perimeters in Google Earth” allows for the selection and display of current and previous perimeters in Google Earth, and provides a link to download Google Earth if needed.





## Home Page Categories

### About GeoMAC



To obtain information about GeoMAC and why it was created, click '**About GeoMAC**'.

A second page pops-up with links to **What is GeoMAC**, **The Need**, **How it Works**, **The GeoMAC Team**, a **Disclaimer**, **Contact Information**, and **Credits**. Clicking these topics will display information related to the above headings. Clicking on the '**< home**' or '**< back**' link at the bottom-center of these pages will bring you back to the previous page.



## What is GeoMAC?

The Geospatial Multi-Agency Coordination Group, or GeoMAC, is an internet-based mapping tool originally designed for fire managers to access online maps of current fire locations and perimeters in the conterminous 48 States and Alaska. Using a standard web browser, fire personnel can view this information to pinpoint the affected areas. With the growing concern of western wildland fires in the summer of 2000, this application also became available to the public. We hope that you find this important information both timely and helpful.

## The Need

On September 22, 2000, more than 79,000 fires had burned an estimated 6,838,748 acres along with hundreds of structures and valuable natural resources. Over 25,00 firefighters, 900 fire engines, 200 helicopters and all available air tankers were deployed on the fire-lines; many of those resources had been fighting fires since early May. Long-term weather forecasts indicated that the hot, dry conditions throughout the west would continue until fall weather brought enough rain to put out the larger fires. Across the west, priorities were set by geographic fire coordination centers for deployment of fire fighting resources based on human safety, protection of property and natural resource values. Determining these priorities required more information than printed maps and situation reports provided. Fire managers requested a real-time application that provided geospatial information on the status, locations and proximity of wildfires to life, property and infrastructure. A visual representation of the active fires gave managers a better idea of where to focus resources. Rising to this challenge, the website named GeoMAC was implemented.

## How It works

In order to give fire managers near real-time information, fire perimeter data is updated daily based upon input from incident intelligence sources, GPS data, and infrared (IR) imagery from fixed wing and satellite platforms. The GeoMAC web site allows users in remote locations to

manipulate map information displays, zoom in and out to display fire information at various scales and detail, and print maps for use in fire information and media briefings, dispatch offices, and coordination centers. The fire maps also have relational databases in which the user can display information about individual fires, such as fire name, current acreage, and other fire status information.

A drop down menu for **[Technical Information]** is also available on this page. This submenu includes a **Summary**, the **Technical Overview** and a **Data Flow Diagram**.

### The GeoMAC Team

The team is a multi-agency group with technical and subject matter experts from the Department of Interior's fire management agencies – the Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, the Bureau of Indian Affairs, and the United States Forest Service of the Department of Agriculture. As the sole science agency for the Department of the Interior, the U.S. Geological Survey also plays a pivotal role. Other partners include the National Interagency Fire Center, U.S. Department of Interior – Office of Wildland Fire Coordination, U.S. Department of Agriculture, and the National Oceanic and Atmospheric Administration.

### Disclaimer

Disclaimer: Information presented on this website is a representation of the existing wildfire situation occurring in the continental United States including Alaska. While every effort is made to provide accurate and complete information, proximity of fires to populated areas may not be accurately portrayed. Please refer to the Map Layer Information subheading under GeoMAC Help for specific definitions of data layers. The same information is available under HELP while using the map.

### Contact Information

GeoMAC is housed at the U.S. Geological Survey's Rocky Mountain Geographic Science Center in Denver, Colorado.

GeoMAC  
Building 810, Denver Federal Center  
Denver, CO 80225, USA  
E-mail: [geomac@usgs.gov](mailto:geomac@usgs.gov)

Drop down menus for **[Additional Contacts]** and **[Wildfire Related Links]** are also available on this page. The **User Feedback Form** can also be found on this page.

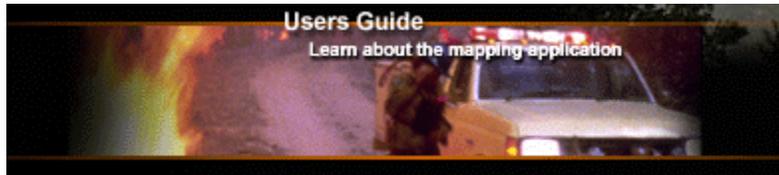
### Wildfire Mapping



To access the GeoMAC mapping application, click the **"Wildfire Mapping"** link. *A new window will open the GeoMAC Application.*

Detailed instructions and information for using **The GeoMAC Application** begin on the next page of this document.

## Users Guide



To open this users guide, click the **"Users Guide"** frame. The users guide consists of one document available in Adobe Acrobat (.pdf) format.

## The GeoMAC Application

After clicking the **Wildfire Mapping** link, the GeoMAC Application opens in a new window.



As the application is loading, the **Loading...** message will be displayed in the map-frame window.

**GEOMAC**  
WILDLAND FIRE SUPPORT

**Wildfire Viewer**

Jump to Wildfire:

Layer	Legend
<b>Map Layers</b>	
Visible Active	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Current Fires
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Current Fire Perimeters
<input type="checkbox"/>	<input type="checkbox"/> All 2007 Fires
<input type="checkbox"/>	<input type="checkbox"/> Past 2007 Perimeters
<input type="checkbox"/>	<input type="checkbox"/> 2006 Fires
<input type="checkbox"/>	<input type="checkbox"/> 2005 Fires
<input type="checkbox"/>	<input type="checkbox"/> 2004 Fires
<input type="checkbox"/>	<input type="checkbox"/> 2003 Fires
<input type="checkbox"/>	<input type="checkbox"/> 2002 Fires
<input type="checkbox"/>	<input type="checkbox"/> Historic Fire Perimeters (2001-2006)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> States
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Shaded Relief

**Refresh Map**  
**Active Layer Info**

Locator Off   Full Extent   **Zoom In**   Zoom Out   Back   Pan  
Hyperlink   Identify   Print   Lat / Lon   Reload   Help

0 656mi

UPDATED: HMS 2007-12-13; Thermal MODIS: 2007-12-13 755 (GMT); Fire Perimeters 2007-12-12; NIFC Sit Reports 2007-12-12

**Note:** You will need to wait until the entire map is displayed and the 'Loading' message disappears before proceeding.

If the above actions don't occur, your computer may not be configured properly to view the GeoMAC application. To review the system requirements, click on the **Systems Requirements** link at the bottom of the Home Page. Technical difficulties and questions with the GeoMAC website can be reported to [geomac@usgs.gov](mailto:geomac@usgs.gov)

The **Triangles** on the screen are the reported National Large Fires which are stored in the National Interagency Fire Center's (NIFC) database in Kansas City, Missouri hosted by the U.S. Forest Service. Information about each data-set layer is available by clicking on **Help** and then clicking the subheading **Layers** button. (*This information is also contained this Users Guide.*)

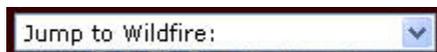


Information about the data layers is also available by clicking on the '**Active Layer Info**' button on the bottom right corner of the screen.

1. Click the '**Active Layer**' radio button to select the layer you want information about, then
2. Click the '**Active Layer Info**' button  
(A new window will pop-up displaying helpful information about the chosen layer)

## Site Navigation

At the top right corner of the GeoMAC Application, you will see a [**Jump to Wildfire**] drop down menu:



**Jump to Wildfire** allows you to choose a specific fire and quickly '**zoom in**' to that location.

1. Click on the [**Jump to Wildfire**] drop down menu and choose an active fire.
2. After a fire is selected, the '**Loading**' message will display in the map window.  
(*Wait until the entire map is displayed and the message disappears before proceeding.*)
3. The chosen fire will be displayed in the Map-Frame with a shaded relief background. Major rivers and roads are also displayed.

Below the [**Jump to Wildfire**] pop-up menu is the '**Go To Alaska**' button:



1. The **Go To Alaska** button will display Alaska with its associated base layer data and fire information.
2. The **Leave Alaska** button will take you back to the lower 48 states view.

1. The **Find Location** button will allow a user to enter a city and a state in a form. This will bring up another page, where the user can pick a city by clicking on the desired ID number.

2. After the user clicks on the ID number, the '**Loading**' message will appear in the map frame.
3. The chosen city will be displayed in the viewer.

Below the [**Jump to Wildfire**] dropdown menu are the '**Layer**' and '**Legend**' buttons:



The Layer and Legend buttons toggle between a list of layers available to be selected for display in the map-frame window and display of the legends for the visible layers. (**Layer** is selected by default when the application is started).

## Layer

Clicking the '**Layer**' button will display a list of all of the layers available for the selected scale of map being displayed in the map-frame window.

You may change the map's scale by selecting: [**Jump to Wildfire**], '**Zoom In**' or '**Zoom Out**'. The available Layer list adjusts accordingly to the map's selected scale.

## Visible and Active Layers

Each layer has two modes, '**Visible**' and '**Active**':



**Visible** - The visible checkbox works in conjunction with the '**Refresh Map**' button (located in the lower-right corner of the application).

To make a '**Visible Layer**' display in the Map-Frame:

1. Click the check-box in front of the layer name.  
(A check mark will appear/disappear in the box.)
2. Click the '**Refresh Map**' button to redraw the map displaying the new layer, and all other 'visible' layers, in the Map-Frame. This action also adds the legend information for the visible layers to the legend listing.

**Active** - The **Active** radio-buttons work along with the tool buttons at the bottom of the application.

**Note:** While many layers may be visible at a given time, only one layer at a time can be designated as active.

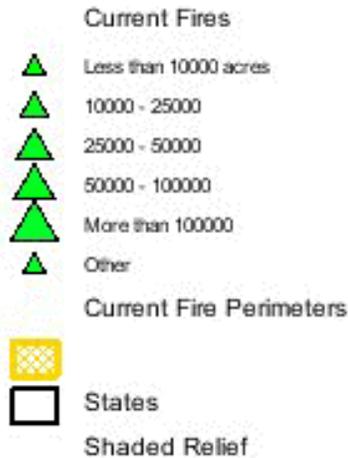
To change the **Active** layer:

1. Click on the radio-button in front of the layer name.  
(A dot will appear in the center of the radio-button and the message "**Layer Name** is now the **Active Layer**" will be displayed in the text-frame in the lower-right corner of the application, just below the map.)
2. The *Hyperlink* and *Identify* tools can be used to select an 'object' on the map that coincides with the current '**Active Layer**'.

(Text information/data about the selected object from the active layer will be displayed in a pop-up window).

## Legend

Clicking the 'Legend' button displays the symbols and attributes of the current visible layers:



The above legend window displays the legends for 5 visible layers: "Current Fires", "Current Fire Perimeters", "States", and "Shaded Relief".

**Note:** It is necessary to click the 'Refresh Map' button after a layer is made visible to have the layer's legend information visible in the legend window.

## Function Buttons

In the lower-right corner of the GeoMAC application are two function buttons:

### Refresh Map

Clicking the 'Refresh Map' will redraw the Map after changing the **Visible** layers.

(The map will redraw, and the layers with the **Visible check-box** checked will be displayed.)

Clicking the 'Refresh Map' button also adds the legend information for the layer to the legend display list.



### Active Layer Info

The 'Active Layer Info' button is used to display the *Map Layer Information* about the Active layer.



## Tools

Along the bottom of the GeoMAC application are 12 tool buttons:



When a function has a *lasting action*, the text color of the tool button changes from white to highlighted-yellow. In the above figure, **Zoom In** is the current map action. While **Zoom In** is selected, the Map-Frame will always be in **Zoom In** mode. Other buttons functioning the same way are: **Zoom Out**, **Pan**, **Hyperlink**, and **Identify**. **Zoom In** is the default action when the application is started.

When a function is *single action*, **Back**, **Full Extent**, **Reload** and **Help**, the action is completed, but no visible change to the text color of the tool button is made.

The **Locator On** and **Locator Off** tool buttons function as toggles. Clicking the text toggles between Locator On and Locator Off and controls display of the small locator map in the upper left corner of the map window. When the application is started, **Locator On** is selected with a yellow highlight.

The **Print** and **Lat/Lon** tool buttons open second display windows which request additional user input.

The functionality of all of the tool buttons is discussed in detail below:

## Tool Button Functionality

### Locator Off

Turns off location diagram found in upper left corner, this button appears when the location diagram is not displayed.

### Locator On

Turns on location diagram found in upper left corner, this button appears when the location diagram is displayed.

### Zoom In

Zooms in to a position clicked on or a box dragged on the map. To drag a box on the screen, click on the screen, holding the mouse button down, and drag the mouse across the page. A red box will appear; release the mouse button and the display will be repositioned on the outlined area.

### Zoom Out

Zooms out on a position clicked on or a box dragged on the map. To drag a box on the screen, click on the screen, holding the mouse button down, and drag the mouse across the page. A red box will appear; release the mouse button and the display will be repositioned on the outlined area.

### Full Extent

Zooms out to the initial view of the lower 48 states.

### Back

Zooms to the previous map displayed on the screen. This is inactive until the user changes extents.

### Pan

Pans the map as the user drags the pointer across the map. To pan, click on the screen,

hold down the mouse button and move the mouse around. The map will move along with the mouse. Release the mouse button to stop panning. The map will redraw to display the new position.

**Hyperlink**

Hyperlink displays to the user additional information that is available through the active layer. Only two layers, Active Fires and RAWS Weather Stations, have hyperlink capabilities. If a different layer is Active, a message is displayed stating that hyperlink is not available.

**Identify**

Allows the user to click a feature and see a list of its attributes. For example, the user might be interested in more information about a specific fire. With the Active Fires as the Active layer, click on 'Identify', next, click on one of the green triangles. Information about that fire is displayed in a pop up window. Use the scroll bars to display information that may be further to the right and not visible.

**Print**

Clicking on 'Print' allows the user to print the map viewed on the screen. When the Print options pop up, chose a print size, type in the desired title in the white box with the text 'Wildfire Information'. Click on the Print Preview button. You will see the message below. Click on OK. The map will be displayed. To print, use the File/Print on the browser window.



FOR BEST RESULTS: Before sending to your printer, go to your page and/or print set-ups to define your paper size as: letter (8.5 x 11), with 0.5 margins and set page orientation to landscape.

OK

**Lat / Lon**

Allows the user to enter a latitude and longitude so they can quickly jump to that location on the map.

**Reload**

Reloads the current mapping application. This can be used to resize the map if you change the size of the browser window.

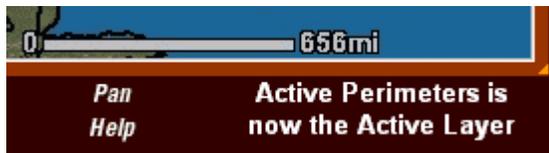
**Help**

Sends the user to the help page.

## Text – Frame

The **Text-Frame** appears below the lower right corner of the map-frame window. It is used to display the **Active Layer**.

Select an active layer by clicking the radio button in the Active column. The message “**[Layer Name]** is now the **Active Layer**” will be displayed in the text-frame.



The date and time for data that is **UPDATED** daily is displayed along the bottom of the window.

## GeoMAC Layer Information

This section contains descriptions, legends and additional information about the data layers within the GeoMAC mapping application.

### GeoMAC Layer Scale Limits

The layer information within the GeoMAC mapping application is turned on/off at different scale levels to minimize processing time. Some layers are displayed at all scale levels, while other layers will only appear when zoomed-in to a particular scale level.

The following table displays at what scale the layers are turned on/off:

Layer	(Max) Scale	(Min) Scale
Current Fires	-	-
Current Fire Perimeters	-	-
MODIS Thermal Satellite	1:18 million	1:300,000
HMS Thermal Satellite	1:15 million	1:200,000
All [current year] Fires	-	-
Past [current year] Fires	-	-
Past [current year] Perimeters	-	-
Past [current year] MODIS [previous years] Fires	1:18 million	1:300,000
Past 2006, 2005, etc. Fires	-	-
Historic Fire Perimeters (2001- [previous year])	-	-
RAWS Weather Stations	1:18 million	-
Cities	1:18 million	-
Road Numbers	1:18 million	1:300,000
Roads & Interstates	1:18 million	1:300,000
Roads – 100k	1:300,000	-
States	-	-
Counties	1:5 million	-
Land Ownership	1:3 million	-
Lakes & Ponds	1:18 million	-
Rivers & Streams	1:18 million	-
Wildland-Urban Interface	1:12 million	-
Shaded Relief	-	-

(-) indicates no scale limit

### Current Fires

This layer displays point data for large active fire incidents that have been entered into the [NIFC](#) database maintained in Kansas City. This database is updated every morning, and includes (or provides links to) information such as fire name, percent contained, latitude and longitude coordinates, event ID, size (in acres), start date, reporting date, priority, personnel committed, general location, estimated damage, estimated cost, and cause.

The size of the map symbol is directly related to the size of the fire. A large incident will be displayed in the Past [current year] Fires layer once it is no longer active.

Map Legend:



## All [Current Year] Fires

A large fire incident will be displayed in the Past [current year] Fires layer once it is no longer active. This layer displays point data for large nonactive fire incidents that have been entered into the [NIFC](#) database maintained in Kansas City. This database is updated every morning, and includes (or provides links to) information such as fire name, percent contained, latitude and longitude coordinates, event ID, size (in acres), start date, reporting date, priority, personnel committed, general location, estimated damage, estimated cost, and cause.

### Map Legend:



## Current Fire Perimeters

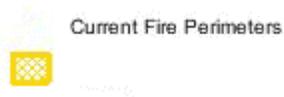
This layer contains fire perimeters that are submitted to GeoMAC by field offices. The fire perimeters are updated every one or two days, as the data is made available. If we have received no new data, the "expired" layer is not replaced. The layer is replaced as soon as we receive an updated file. Perimeters are usually collected on a daily basis for large fires that are growing. However, there may be gaps in daily coverage.

Perimeters are collected in the field by a variety of means, including infrared flights, and by using a GPS unit to map the perimeter. **Please NOTE:** GeoMAC only displays perimeter data as they are submitted by field offices. Since data are not received for all fires, you may not be able to view perimeters for every fire.

A perimeter is displayed in one of two ways depending upon its vintage. Once a perimeter is more than two days old, or is replaced by a more current perimeter, it is displayed in blue-gray in the Past [current year] Perimeters layer. Also, perimeters are usually no longer collected in the field once a fire is no longer growing in size and is mostly contained.

**NOTE:** The Identify button will display information for all Current and Past [current year] Perimeters features. Current Perimeters and Past [current year] Perimeters are displayed in separate layers so that the user need not view numerous inactive fire perimeters. The user can choose to display the Current Perimeter while not displaying the Past [current year] Perimeters. But an 'Identify' will list all of the features, both Active and Inactive. Thus, if a user has Current Perimeters visible as the active layer, a fire site will not display if no perimeter data has been received within the last 24 hours, but an 'Identify' will list all inactive current year data for that fire. The reverse is also true, i.e., if the Past [current year] Perimeters layer is visible and active, an 'Identify' will show all data at the site, Active and Inactive.

### Map Legend:



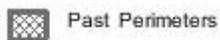
## Past [Current Year] Perimeters

This layer contains all fire perimeters that were submitted to GeoMAC by field offices for the current year. Perimeters are collected in the field by a variety of means, including infrared flights, and by using a GPS unit to map the perimeter.

Please NOTE: GeoMAC only displays perimeter data as they are submitted by field offices. Since data are not received for all fires, you may not be able to view perimeters for every fire. Once a perimeter is more than two days old, or is replaced by a more current perimeter, it is displayed in blue-gray in the Past [current year] Perimeters layer. Perimeters are usually no longer collected in the field once a fire is no longer growing in size and is mostly contained.

NOTE: The Identify button will display information for all Current and Past [current year] Perimeters features combined. Current Perimeters and Past [current year] Perimeters are displayed in separate layers so that the user need not view numerous inactive fire perimeters. The user can choose to display the Current Perimeters while not displaying the Past [current year] Perimeters. An 'Identify' will list ALL of the features, both Active and Inactive. Thus, if a user has Current Perimeters visible as the active layer, a fire site will not display if no perimeter data has been received within the last 24 hours, but an 'Identify' will list all inactive data for that fire (Inactive current year data). The reverse is also true, i.e., if the Past [current year] Perimeters layer is visible and active, an 'Identify' will show all data for the fire site, Active and Inactive.

Map Legend:



## [Previous Year] through 2002 Fires

A large fire incident that occurred in the a previous fire season will be displayed in the associated year's Fires layer.

This layer displays point data for the large fire incidents that were entered into the [NIFC](#) database maintained in Kansas City. This database includes (or provides links to) information such as fire name, percent contained, latitude and longitude coordinates, event ID, size (in acres), start date, reporting date, priority, personnel committed, general location, estimated damage, estimated cost, and cause.

Map Legend:



## MODIS Thermal Satellite

This layer displays information on fire locations using thermal images collected by the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite. The MODIS instrument images the entire surface of the Earth every two days (daily in northern latitudes), making observations in 36 co-registered spectral bands at moderate spatial resolutions (250, 500, and 1000 meters). Thermal information is collected at 1000-meter spatial resolution. The collected thermal information is converted to ellipse-shaped vector polygons. These collections are processed through the MODLand Rapid Response System using the algorithm described by the MOD14 Users Guide. The thermal MODIS data is shown by the color of the symbol on the map. This thermal data is collected twice a day, at 2:00 PM EST and again at 12:00 AM EST and are then processed and merged into a single map, which is available by 3:00 AM EST.

The currency of the thermal MODIS data is shown by the color of the symbol on the map.

### Map Legend:



Identification of a MODIS pixel as "fire" in this layer does not necessarily mean that the entire area represented by the pixel is on fire. The identification of a fire can be the result of a hot fire in a relatively small area, or a cooler fire over a larger area. At this time, there is no way to discriminate between these two possibilities. The geolocation of the centroid of the fire pixel is within one-half of one pixel (500-meters) of the location shown on the map.

On GeoMAC, the Thermal MODIS layer is updated twice daily at approximately 4:00 AM/PM Mountain Time. However, there may be gaps in daily coverage as explained below. If we have received no new data, the "expired" layers are not replaced. The layer is replaced as soon as we receive an updated file.

GeoMAC only displays data as they are submitted. Since data are not received for all fires, you may not be able to view every fire. Once a data file is more than 24 hours old, or is replaced by a more current file, it is displayed in gray in the Past [current year] MODIS layer. Also, data are usually no longer collected once a fire is no longer growing in size and is mostly contained.

**NOTE:** We must set scale dependencies for the thermal layer to turn off when zoomed down to the scale of the 1:100K DLG roads. This satellite data is collected at a larger scale, and is not intended to be viewed at a zoomed-in scale.

**NOTE:** The Identify button will list information for all Active and Past [current year] layer features combined. MODIS Thermal Satellite and Past [current year] MODIS are displayed in separate layers so that the user need not view numerous inactive features for the entire current year. The user can choose to display the MODIS Thermal Satellite while not displaying the Past [current year] MODIS. But, an 'Identify' will list ALL features, both Active and Past. Thus, if a user has MODIS Thermal Satellite visible as the active layer, a fire site will not display if no data has been received within the last 24 hours, but an 'Identify' will list all current year data for that fire. The reverse is also true, i.e., if the Past [current year] MODIS layer is visible and active, an 'Identify' will show all data for a fire site, Active and Past, for the current year.

This fire location data is compiled by the [USDA Forest Service Remote Sensing Applications Center](#) in cooperation with [NASA Goddard Space Flight Center](#), the [University of Maryland](#), the [National Interagency Fire Center](#) and the [USDA Forest Service Missoula Fire Sciences Laboratory](#). For more information, see the [USDA - Forest Service Remote Sensing Applications Center - MODIS Active Fire Maps](#) and [University of Maryland -- MODIS Rapid Response Web Fire Maps - Continental U.S.](#)

## Hazard Mapping System (HMS) Thermal Satellite

The HMS is an interactive processing system that allows the trained satellite analysts in the Satellite Analysis Branch (SAB), within the Satellite Services Division (SSD) of NOAA to manually integrate data from various automated fire detection algorithms with GOES and polar (Advanced Very High Resolution Radiometer (AVHRR), Moderate Resolution Imaging Spectroradiometer Fire Algorithm (MODIS) and Defense Meteorological Satellite Program/Operational Linescan System (DMSP/OLS)) images. The result is a quality controlled display of the locations of fires and significant smoke plumes detected by meteorological satellites.

<http://www.ssd.noaa.gov/PS/FIRE/hms.html>

Map Legend:



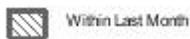
## Past [Current Year]

### MODIS

This layer contains all Thermal MODIS data that were submitted to GeoMAC for the past month. Fire locations are displayed using thermal images collected by the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite. This thermal data is collected twice a day, at 2:00 PM EST and again at 12:00 AM EST and are then processed and merged into a single map, which is available by 3:00 AM EST.

The currency of the thermal MODIS data is shown by the color of the symbol on the map.

Map Legend:



On GeoMAC, the Thermal MODIS layer is generally updated daily, as the data are made available to us. However, there may be gaps in daily coverage as explained below. If we have received no new data, the "expired" layers are not replaced. The layer is replaced as soon as we receive an updated file.

GeoMAC only displays data *as they are submitted*. Since data are not received for all fires, you may not be able to view every fire. Once a data file is more than 24 hours old, or is replaced by a more current file, it is displayed in gray in the Past [current year] MODIS layer. Data are usually no longer collected once a fire is no longer growing in size and is mostly contained.

**NOTE:** We must set scale dependencies for the thermal layer to turn off when zoomed down to the scale of the 1:100K DLG roads. This satellite data is collected at a larger scale, and is not intended to be viewed at a zoomed-in scale.

**NOTE:** The Identify button will list information for all Active and Past [current month] layer features combined. MODIS Thermal Satellite and Past [current year] MODIS are displayed in separate layers so that the user need not view numerous inactive features for the entire current month. The user can choose to display the MODIS Thermal Satellite while not displaying the Past [current year] MODIS. But an 'Identify' will list all features, both Active and Past. Thus, if a user has MODIS Thermal Satellite visible as the active layer, a fire site will not display if no data has been received within the last 24 hours, but an 'Identify' will list all current month data for that fire. The reverse is also true, i.e., if the Past [current year] MODIS layer is visible and active, an 'Identify' will show all data for a fire site, Active and Past, for the current month.

This fire location data is compiled by the USDA Forest Service Remote Sensing Applications Center in cooperation with [NASA Goddard Space Flight Center](#), the [University of Maryland](#), [National Interagency Fire Center](#) and the [USDA Forest Service Missoula Fire Sciences Laboratory](#). The thermal information is collected at a 1 km. spatial resolution and converted to ellipse-shaped vector polygons. The geolocation of the centroid of each polygon is within one-half of one pixel (500-meters) of the location shown on the map. These two collections are processed by the MODLand Rapid Response system and merged into a single file. ([see how the MODIS on-board Calibrators work](#))

For more information, see the [USDA - Forest Service Remote Sensing Applications Center -- Fire Maps](#) and [University of Maryland -- MODIS Rapid Response Web Fire Maps - Continental U.S.](#)

## RAWS Weather Stations

This layer displays the locations and names of Remote Automatic Weather Stations (RAWS) that are maintained by Federal and State agencies for the purpose of environmental monitoring. The data collected by RAWS stations includes reported weather conditions, such as temperature, relative humidity, and wind speed. This data is updated once an hour, on the half-hour, and is maintained for the previous 24 hours.

You can access this data by making this layer active, clicking on the Hyperlink button, and then clicking on a RAWS station on the map. The data collected by this station over the past 24 hours will be displayed in a new viewer.

Permanent and Semi Permanent stations are shown by a turquoise symbol. Stations categorized as Other are shown in black, and Portable stations are shown in purple.

Map Legend:

RAWS Weather Stations	
	Permanent
	Semi Permanent
	Other
	Portable

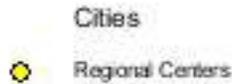
The National Weather Service, among other federal agencies, maintains a RAWS database, and monitors the weather data collected by this network. The weather stations are particularly important for monitoring the weather influence on wildland fuels for fire danger calculation. In addition, the RAWS provide a data source for fire weather forecasting in remote areas. The observations presented on the updated Boise Fire Weather web page at [raws.boi.noaa.gov/obs](http://raws.boi.noaa.gov/obs) are the latest data received at the National Interagency Fire Center.

For more information, please visit [National Fire Weather Page](#).  
[Metadata](#)

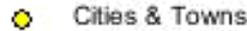
### Cities & Towns

This map layer includes the locations of over 35,000 towns and cities in the United States. These locations were collected from The National Atlas of the United States™ published in 1970. This information was updated and supplemented with additional data from our Nation's official repository of domestic geographic names information, the [Geographic Names Information System](#).

Map Legend: 1:25,000,000 scale



Map Legend: 1:2,000,000 scale



For more information, please visit the Download section of the [National Atlas of the United States](#) web site.

### Counties

This map layer portrays the county boundaries of the United States. The data was obtained from the [ESRI](#) Data and Maps CD-ROM.

Map Legend:



### Land Ownership

Land ownership information is available for the western United States and for Alaska. The map layer for the western US is a merge of BLM Land Ownership vector maps for 12 states: Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, Wyoming, and Alaska. It is intended to illustrate state wide and regional land status. Land holders in the dataset are Federal, State, local governments, and private lands.



This is a PRE-RELEASE, UNCERTIFIED cover. For more information please visit the Bureau of Land Management web site at <http://www.blm.gov>.

Currentness for the source data coverages from each BLM state office are:

- Alaska: Unknown
- Arizona: Unknown
- California: 1999 or earlier
- Colorado: 1990's
- Idaho: 1997
- Montana: Updated continuously
- New Mexico: 2000
- Nevada: 1985-1998
- Oregon: Unknown
- Utah: Unknown
- Washington: Unknown
- Wyoming: 1998

Map Legend (lower 48):

Map Legend (Alaska):

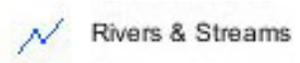
Land Ownership	Land Ownership
Bureau of Land Management (BLM)	Bureau of Land Management (BLM)
US Forest Service (USFS)	US Forest Service (USFS)
Bureau of Indian Affairs (BIA)	Tribal
Department of Defense (DOD)	Military
National Park Service (NPS)	National Park Service (NPS)
US Fish and Wildlife Service (USFWS)	US Fish and Wildlife Service (USFWS)
Bureau of Reclamation (BOR)	State
Department of Energy (DOE)	State and Native
US Department of Agriculture (USDA)	Private or Municipal
US Army Corps of Engineers (USACE)	Wild and Scenic Rivers
United States Coast Guard (USCG)	Other
Federal Energy Regulatory Commission (FERC)	
Other Federal	
State	
County	
Private	
Water	
Other	

### Rivers & Streams

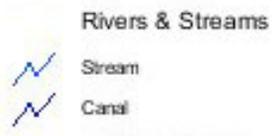
This map layer includes rivers and streams appropriate for display at scales of 1:25,000,000 or 1:2,000,000.

For more information, please visit the map layer section of the [National Atlas of the United States](http://www.nationalatlas.gov) web site.

Map Legend: 1:25,000,000 scale



Map Legend: 1:2,000,000 scale



### Roads

This map layer displays the major roads in the United States appropriate for display at scales of 1:25,000,000, 1:2,000,000 or 1:100,000. The amount of detail changes depending upon how much you zoom in or out on the map. As you zoom in, the level of detail increases, while as you zoom out, the level of detail decreases.

Map Legend: 1:25,000,000 scale



Map Legend: 1:2,000,000 scale



Map Legend: 1:100,000 scale



For more information, please visit the Download section of the [National Atlas of the United States](#) web site.

## Road Numbers

The type of shield designates the road number of a State Highway, US Highway or Interstate Highway.

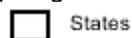
Map Legend:



## States

This map layer portrays the state boundaries of the United States. The data was obtained from the [ESRI](#) Data and Maps CD-ROM.

Map Legend:



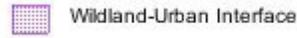
For more information, please visit the Download section of the [National Atlas of the United States](#) web site.

## Wildland-Urban Interface

The Urban Interface comes from the Nighttime Lights of the World dataset which contains the first satellite-based global inventory of human settlements, derived from nighttime data from the [Defense Meteorological Satellite Program \(DMSP\)](#) Operational Linescan System (OLS). The

DMSP-OLS has the unique capability to observe faint sources of visible-near infrared emissions present at the Earth's surface, including cities, towns, villages, gas flares, and fires. [National Geophysical Data Center \(NGDC\)](#) has developed algorithms for producing georeferenced fire and nighttime lights products.

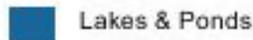
Map Legend:



## Lakes & Ponds

This map layer portrays the streams and waterbodies of the United States that can be represented at a map scale of 1:25,000,000 (one inch on a map at that scale would equal about 395.6 miles on the land surface) or at a map scale of 1:2,000,000 (one inch on a map at that scale would equal about 31.6 miles on the land surface). Some small streams, ponds, lakes, and reservoirs cannot be portrayed at these scales. We have associated names to all stream segments and water bodies for which official geographic names were available. The map layer was compiled from a variety of sources.

Map Legend: 1:25,000,000 scale



Map Legend: 1:2,000,000 scale



For more information, please visit the [National Atlas of the United States](#) web site and the National Hydrography Dataset web site at <http://nhd.usgs.gov>.

## NHD Waterbodies and NHD Flowlines

Map Legend:

