MODIS Thermal Anomalies/Fire products are primarily derived from MODIS 4- and 11-micrometer radiances. The fire detection strategy is based on absolute detection of a fire (when the fire strength is sufficient to detect), and on detection relative to its background (to account for variability of the surface temperature and reflection by sunlight). The product includes fire occurrence (day/night), fire location, the logical criteria used for the fire selection, detection confidence, Fire Radiative Power and numerous other layers describing fire pixel attributes. The product distinguishes between fire, no fire and no observation. Level 3 Daily fire products include 8 separate days of data detailing pixels according to their level of confidence as fires. This information will be used in monitoring the spatial and temporal distribution of fires in different ecosystems, detecting changes in fire distribution and identifying new fire frontiers, wild fires, and changes in the frequency of the fires or their relative strength.

MODIS data on Terra and Aqua are acquired from each platform twice daily at mid-latitudes. These four daily MODIS fire observations that are typically acquired serve operational fire management needs while also advancing global monitoring of the fire process and its effects on ecosystems, the atmosphere, and climate.


The MODIS Thermal Anomalies product includes fire occurrence (day/night), fire location, the logical criteria used for the fire selection, and an energy calculation for each fire. The product also includes composite 8-day-and-night fire occurrence (full resolution), composite monthly day-and-night fire occurrence (full resolution), gridded 10-km summary per fire class (daily/8-day/monthly), and a gridded 0.5° summary of fire counts per class (daily/8-day/monthly). The Level 2 product includes various fire related parameters including the occurrence of day and nighttime thermal anomalies, flagged and grouped into different temperature classes with emitted energy from the fire. These parameters are retrieved daily at 1-km resolution.

http://modis-land.gsfc.nasa.gov/fire.htm

Original 2006 data is available from ftp://ba1.geog.umd.edu/
The data files from the University of Maryland has the following:

1. burndata - a short "Burn Date" day of the year
2. ba_qa - a byte "BA pixel QA" no units
3. npasses - a byte "Number of Passes" no units
4. nused - a byte "Number Used" no units
5. direction - a byte "Direction" no units
6. surfacetype - a byte "Surface Type" no units
7. gap_range1 - a short "Gap Range 1" no units

Data loaded into the CIRA database has the following
1. FIRE_ - the spatial number
2. FIRE_ID - the assigned USFS fire identification number
3. LAT_ - latitude of the center of the fire
4. LONG_ - longitude of the center of the fire
5. DATE_ - the date of the fire
6. JULIAN - the calendar day of the year
7. TEMP - measured brightness temperature in degrees Kelvin
8. SPIX_ - X dimension or cross track dimension of the MODIS pixel in kilometers
9. TPIX_ - Y dimension or along track dimension of the MODIS pixel in kilometers
10. SAT_SRC - satellite source, T is Terra, A is Aqua, C is combined
11. YYYYMMDD - Year month day eight character string corresponding to the JULIAN integer
12. SHAPE_fid - feature identification number

Other references:
Core data: ftp://ba1.geog.umd.edu/2006/121/MCD45A1.A2006121.h00v08.005.2008136050100.hdf (one example)

Geospatial data was processed by the USDA Forest Service (USFS): http://activefiremaps.fs.fed.us/gisdata.php


<table>
<thead>
<tr>
<th>Attribute Label</th>
<th>Attribute Definition</th>
<th>Attribute Definition Source</th>
<th>Attribute Domain Values</th>
<th>Range Domain</th>
<th>Attribute Units of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>Date of fire detection</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>Decimal Degrees (WGS84)</td>
</tr>
<tr>
<td>TIME</td>
<td>Time of fire detection (UTC)</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td></td>
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<tr>
<td>LAT</td>
<td>Latitude of fire detection</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>Decimal Degrees (WGS84)</td>
</tr>
<tr>
<td>LONG</td>
<td>Longitude of fire detection</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>Decimal Degrees (WGS84)</td>
</tr>
<tr>
<td>MIR</td>
<td>4 micron band brightness temperature</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>Kelvin</td>
</tr>
<tr>
<td>B31</td>
<td>11 micron band brightness temperature</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>Kelvin</td>
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<tr>
<td>FRP</td>
<td>Fire Radiative Power</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>MW</td>
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<tr>
<td>SPIX</td>
<td>X dimension or cross track dimension of the MODIS pixel</td>
<td>USDA Forest Service</td>
<td>Range Domain</td>
<td></td>
<td>Kilometers</td>
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<tr>
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<td>USDA Forest Service</td>
<td>Range Domain</td>
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<td>Kilometers</td>
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Range Domain Maximum: 100
Attribute Units of Measure: %
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Attribute Definition Source: USDA Forest Service
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Enumerated Domain:
Enumerated Domain Value: A
Enumerated Domain Value Definition: Aqua MODIS

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Attribute Definition Source: USDA Forest Service
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Range Domain Maximum: 12/31/2007 2300 MDT
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Attribute Definition: Julian date of fire detection
Attribute Definition Source: USDA Forest Service
Attribute Domain Values:
Range Domain:
Range Domain Minimum: 1
Range Domain Maximum: 365
Attribute Units of Measure: Julian Date
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Attribute Label: GMT
Attribute Definition: Time of fire detection
Attribute Definition Source: USDA Forest Service
Attribute Domain Values:
Range Domain:
Range Domain Minimum: 0000
Range Domain Maximum: 2400
Attribute Units of Measure: Greenwich Mean Time or Universal Time Coordinated
Attribute:
Attribute Label: TEMP
Attribute Definition: Measured brightness temperature
Attribute Definition Source: USDA Forest Service
Attribute Domain Values:
Attribute Units of Measure: Degrees Kelvin
Attribute:
Attribute Label: SPIX
Attribute Definition: X dimension or cross track dimension of the MODIS pixel
Attribute Definition Source: USDA Forest Service
Attribute Domain Values:
Attribute Units of Measure: Kilometers
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Attribute Label: TPIX
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Attribute_Units_of_Measure: Kilometers
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Enumerated_Domain_Value: rsac
Enumerated_Domain_Value_Definition: USDA Forest Service Remote Sensing Application Center
Enumerated_Domain:
Enumerated_Domain_Value: ssec
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Enumerated_Domain_Value: uaf
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Attribute_Definition_Source: USDA Forest Service
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Enumerated_Domain_Value_Definition: TERRA MODIS
Enumerated_Domain:
Enumerated_Domain_Value: A
Enumerated_Domain_Value_Definition: AQUA MODIS


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Range_Domain_Maximum: -50.0
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Attribute_Definition: Date of fire detection
Attribute_Definition_Source: USDA Forest Service
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Range_Domain_Maximum: 12/31/2008 2300 MDT
Attribute_Units_of_Measure: Calendar Date
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Attribute_Label: JULIAN
Attribute_Definition: Julian date of fire detection
Attribute_Definition_Source: USDA Forest Service

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- **Range_Domain_Minimum:** 1
- **Range_Domain_Maximum:** 366

**Attribute_Ums_of_Measure:** Julian Date

**Attribute:**
- **Attribute_Label:** GMT
- **Attribute_Definition:** Time of fire detection
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    - **Range_Domain_Minimum:** 0000
    - **Range_Domain_Maximum:** 2400
  - **Attribute_Units_of_Measure:** Greenwich Mean Time or Universal Time Coordinated

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- **Attribute_Definition:** Measured brightness temperature
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- **Attribute_Domain_Values:**
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