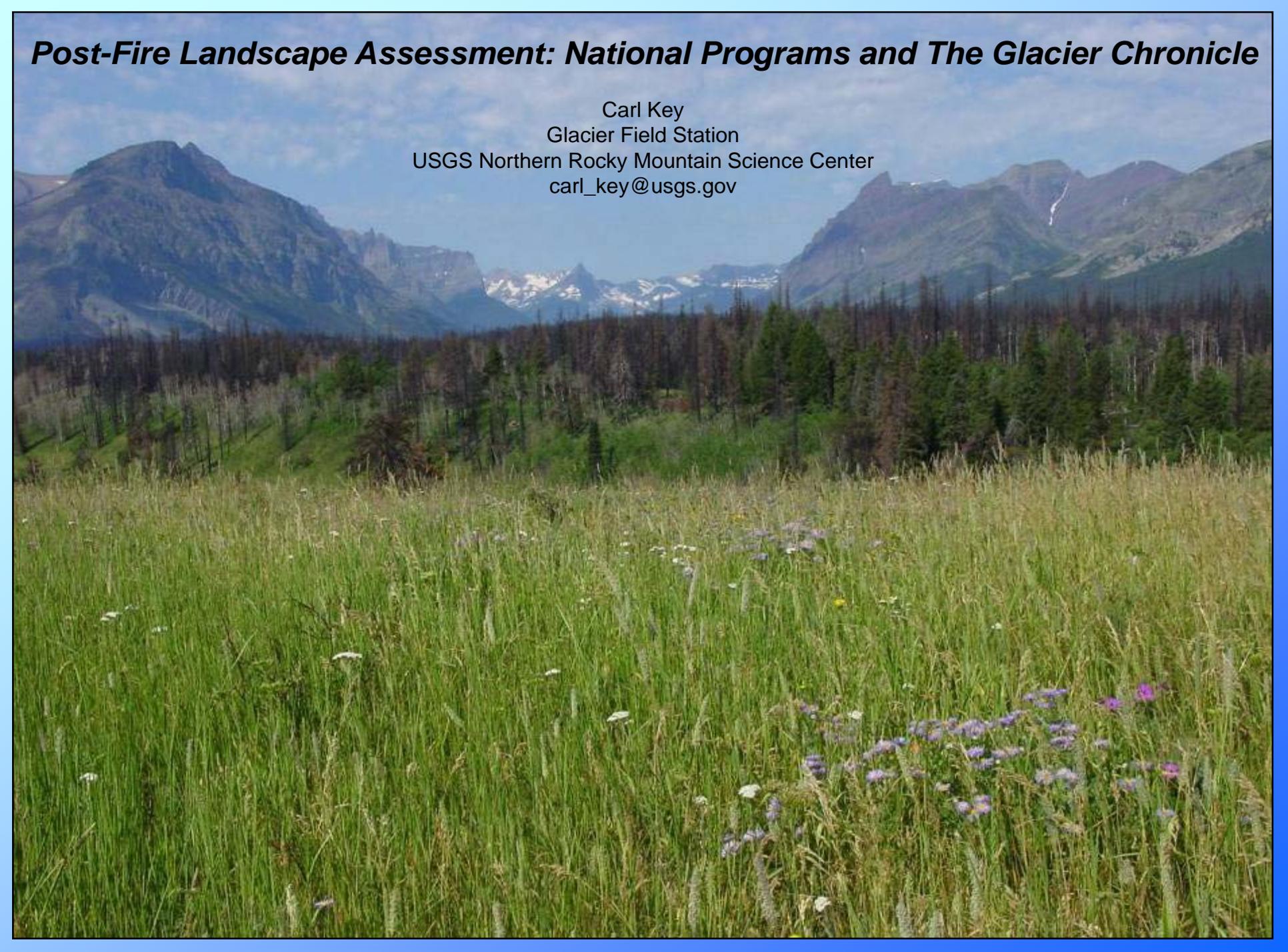
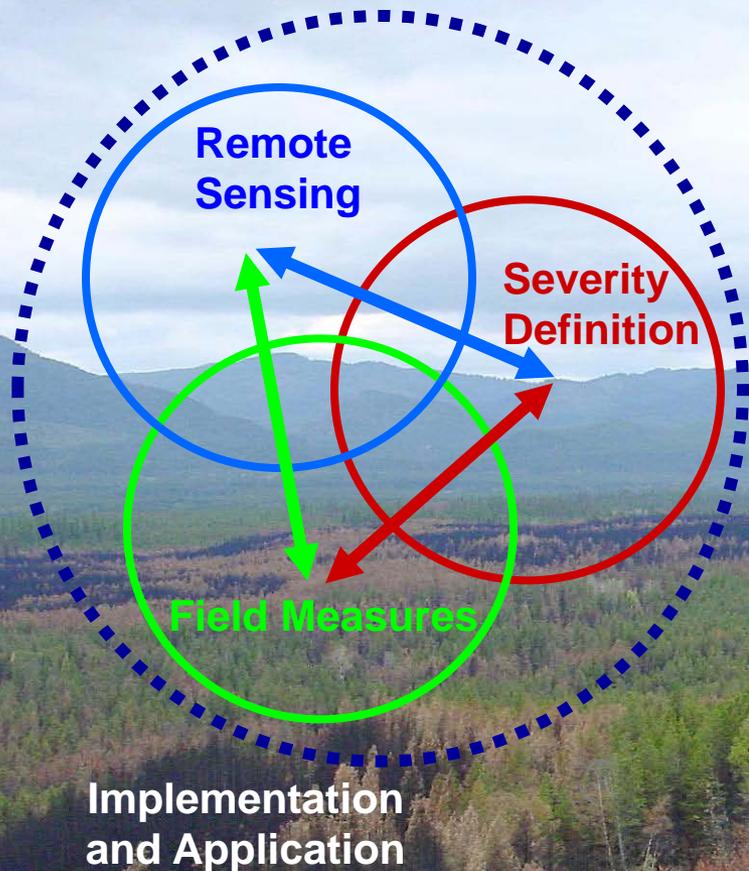


# ***Post-Fire Landscape Assessment: National Programs and The Glacier Chronicle***

Carl Key  
Glacier Field Station  
USGS Northern Rocky Mountain Science Center  
[carl\\_key@usgs.gov](mailto:carl_key@usgs.gov)



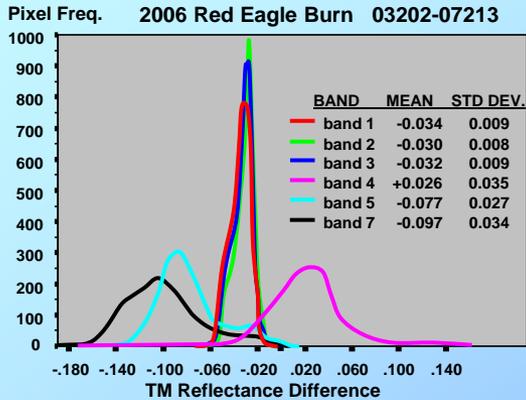
# LANDSCAPE BURN SEVERITY



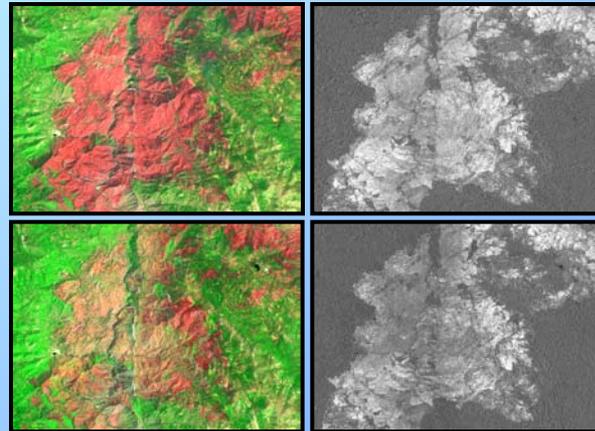
**Since initial research done in Glacier through the 1990's, I have been involved in ground and remote sensing studies of well over 90 burns on 32 Federal land areas in 15 states.**

**This has been supported by USGS, the NPS Fire Management Program Center, the Park-Oriented Biological Support Program (POBS), the Joint Fire Science Program, the Wildland Fire Leadership Council, and Glacier National Park.**

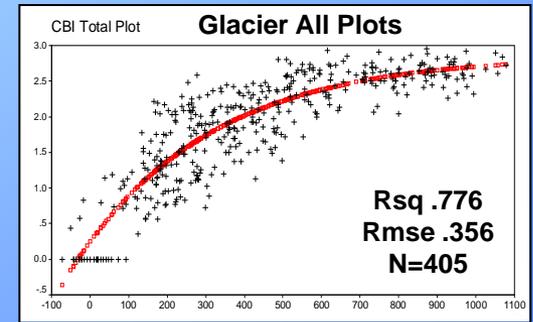
**Spectral Response Characteristics**



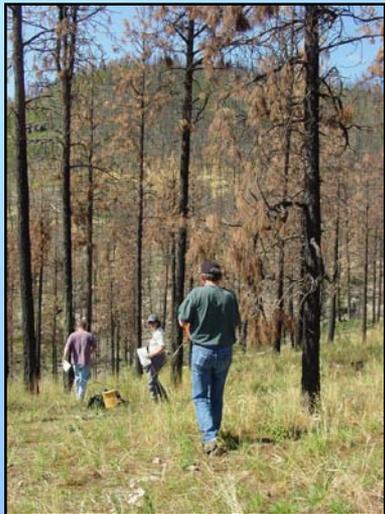
**Experiments and Testing**



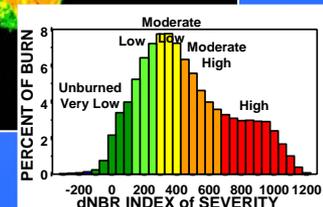
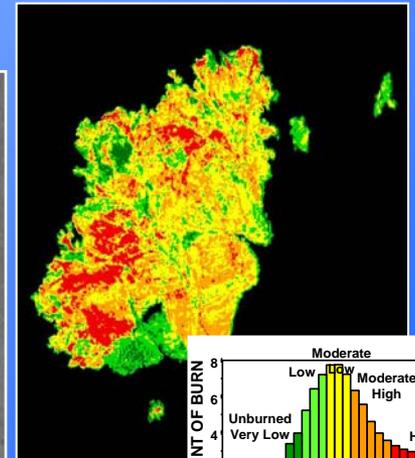
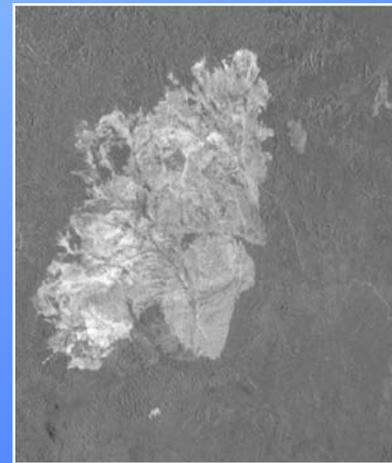
**Validation and Analysis**



**Quantifying Landscape Fire Effects**



**Field Work and Training**



# NPS-USGS National Burn Severity Mapping



National Park Service - U. S. Geological Survey  
National Burn Severity Mapping Project



[Fire Science](#) | [Burn Severity](#) | [Abstract](#) | [Overview](#) | [Methodology](#) | [Data Contents](#) | [Download Data](#) | [Contributors](#) | [Contact Us](#)

**Download Data**

The Joint NPS-USGS National Burn Severity Mapping Project addresses the need to quantify fire effects over large, often-remote regions and long time intervals. It reflects collaborative efforts to bring previous research into operational implementation for fire managers and scientists. The project focuses on National Park Service Units and adjoining lands throughout the U.S., mostly beginning with fire-year 2000, although earlier burns have been examined in some areas. It combines processing, data archive, and remote sensing expertise of the USGS EROS Data Center with the local knowledge and field sampling capability of the NPS, and the fire-effects research of the USGS Northern Rocky Mountain Science Center to deliver an effective yet simple approach to mapping severity.



**Abstract**

**Overview**

**Methodology**

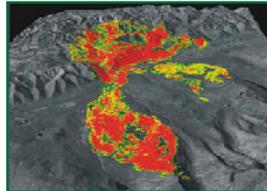
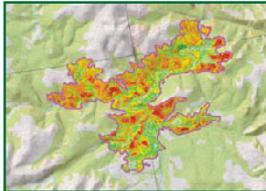
**Data Contents**

**Contributors**

**Contact Us**

This web site provides access to accumulating data within that database. Search and query functions lead users to individual burn information pages. Product deliverables may be retrieved, including textual information, graphic images, digital spatial data, and metadata. Through such standardized methodology and products, information can be compared or aggregated across multiple burns.

Users should carefully review the following information for proper interpretation and application of products: [Overview](#), [Methodology](#), and [Data Contents](#).



<http://burnseverity.cr.usgs.gov>

# MTBS- Monitoring Trends in Burn Severity

## Monitoring Trends in Burn Severity (MTBS)

- Home
- Background and Partners
- Documents and References
- Methods
- Product Descriptions
- Schedule
- Uses
- Project Reports
- Data Access
- Tech Transfer
- Glossary
- Related Websites
- Contact Us



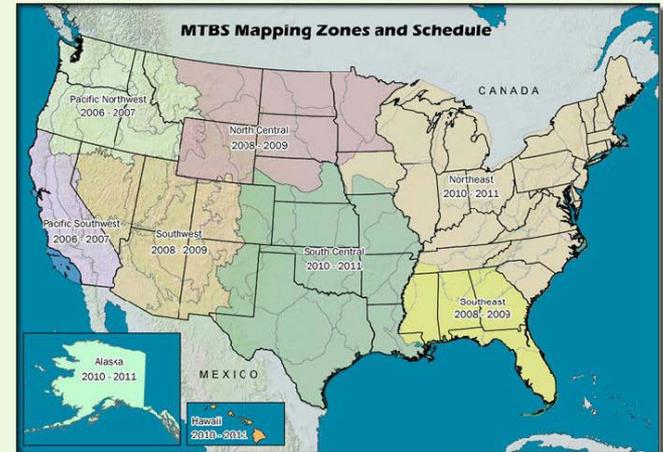
**Forest Service:**  
Accessibility  
Privacy Policy  
Important Notices  
FOIA

**DOI:**  
Accessibility  
Privacy Policy  
Important Notices  
FOIA

**Last Update**  
June 2008

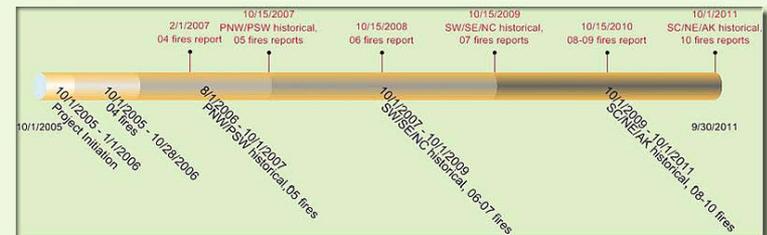
## Historical Fire Mapping Schedule

Click on mapping zone to view general distribution of historical fires.



## Project Timeline

The timeline below illustrates the expected progression of processing events over the life cycle of the project. Reporting milestones are indicated in red, which also coincides with estimated availability of associated geospatial data.



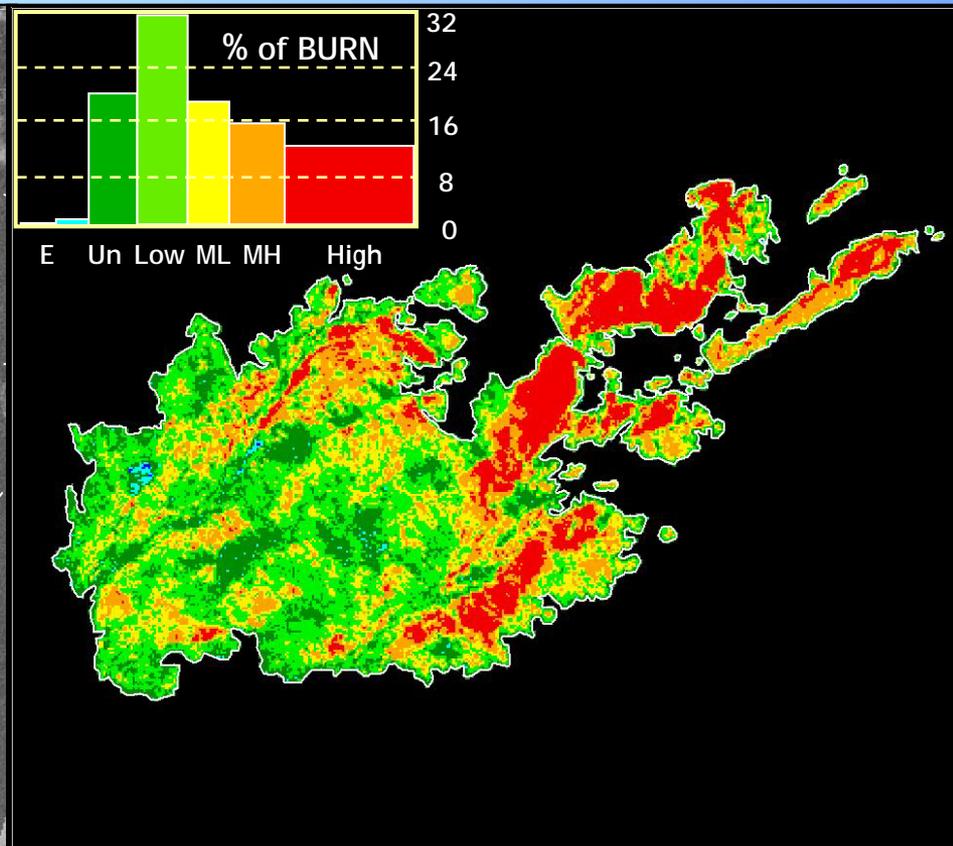
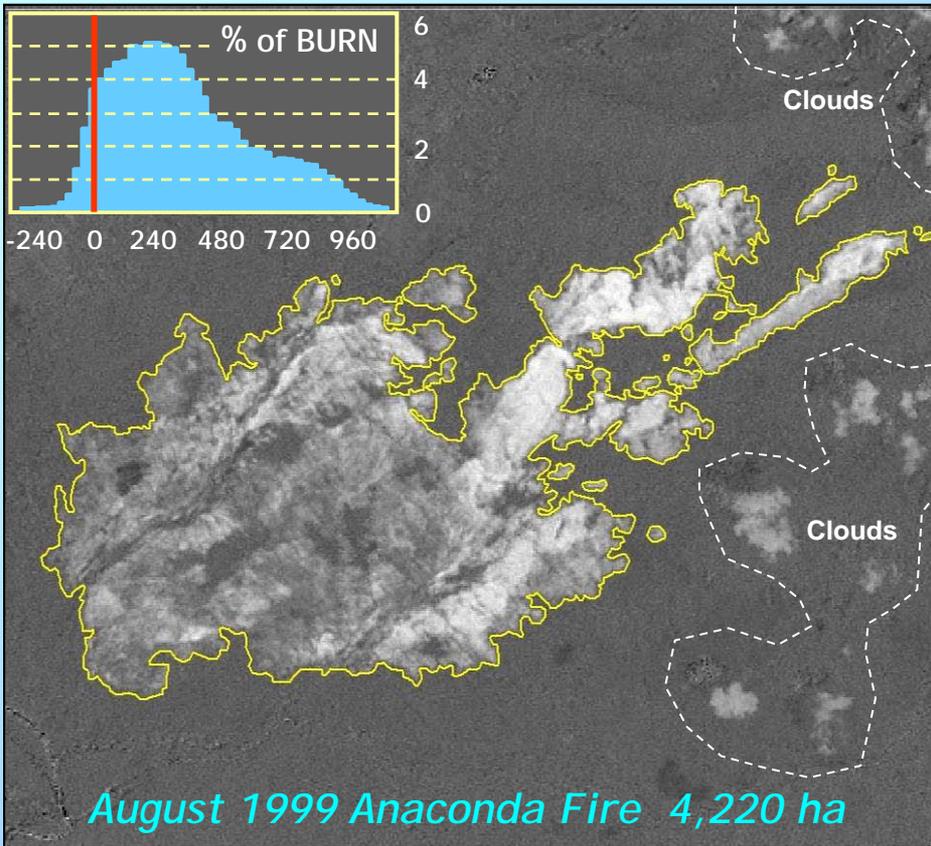
<http://www.mtbs.gov>

# Whole-Burn Spatial Characteristics of Severity

Using the dNBR, a Remote Sensing Index of Change that Responds to Fire Effects

Continuous Measure of Change  
Burn Perimeter Mapped

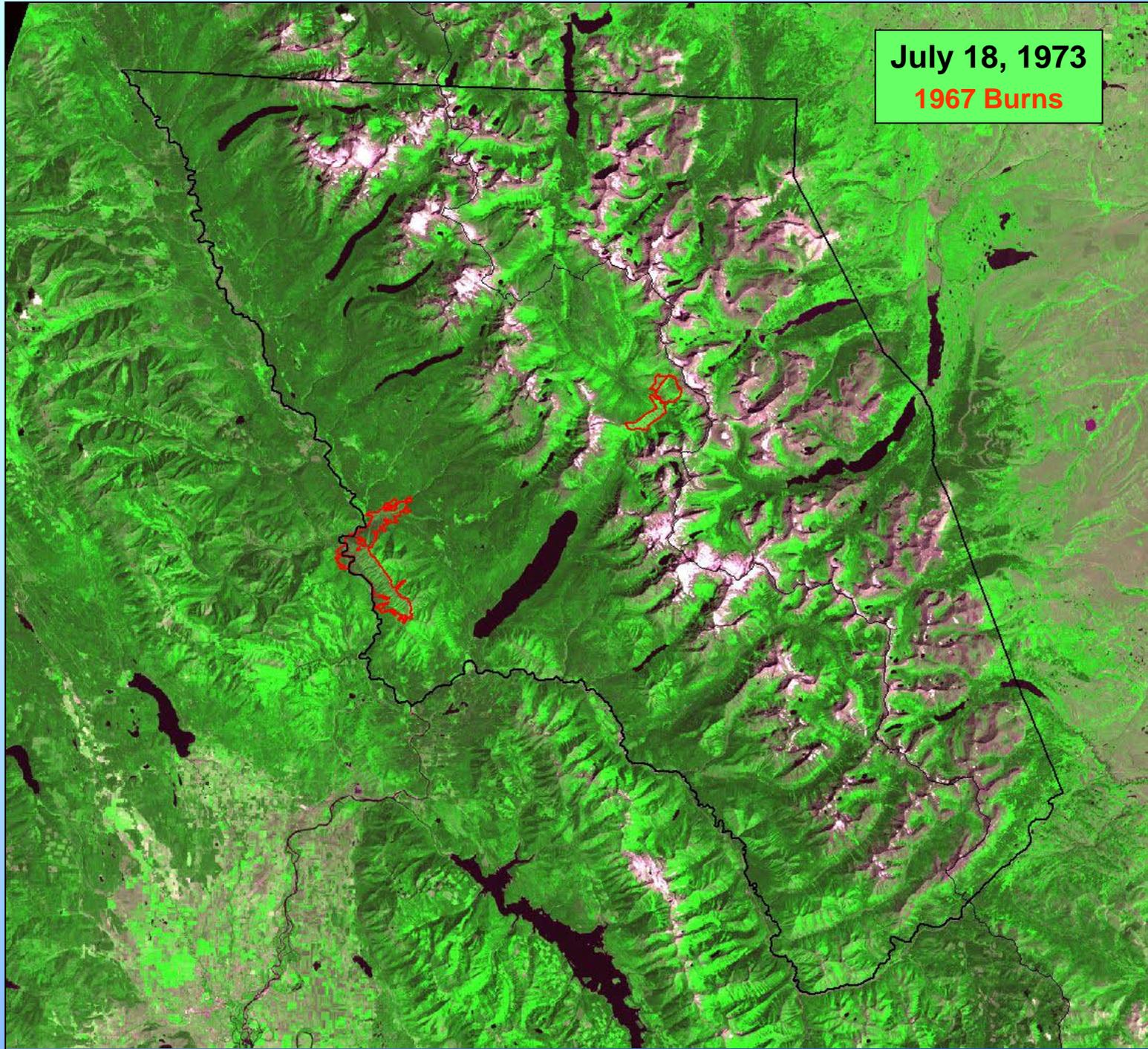
Burn Severity Levels or Classes  
Data Extracted within Perimeter

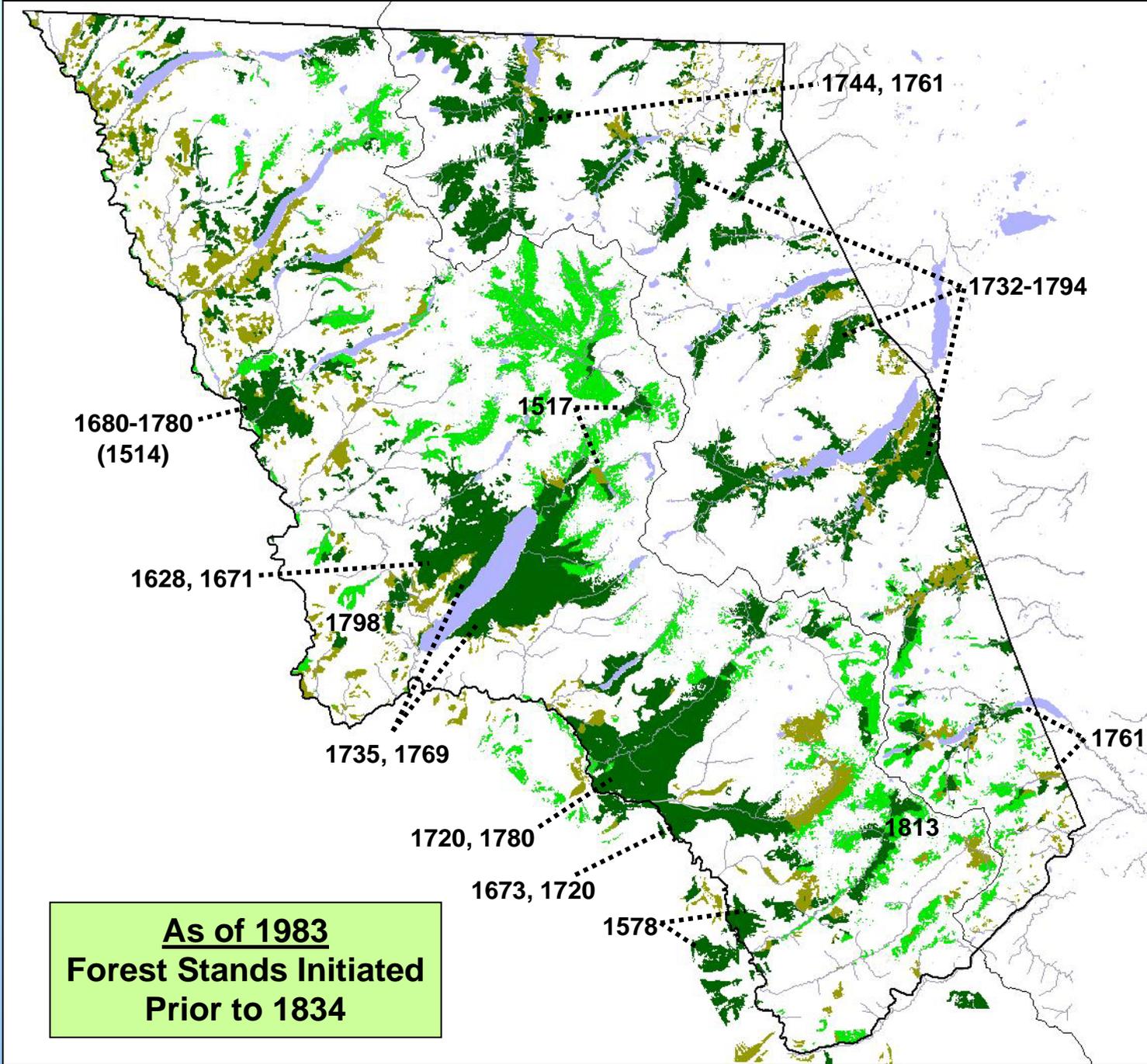


dNBR 7/10/1999 - 6/25/2000

July 18, 1973

1967 Burns





**Fire Years**

1620's – 1680's

1720's – 1780's

1794 – 1813

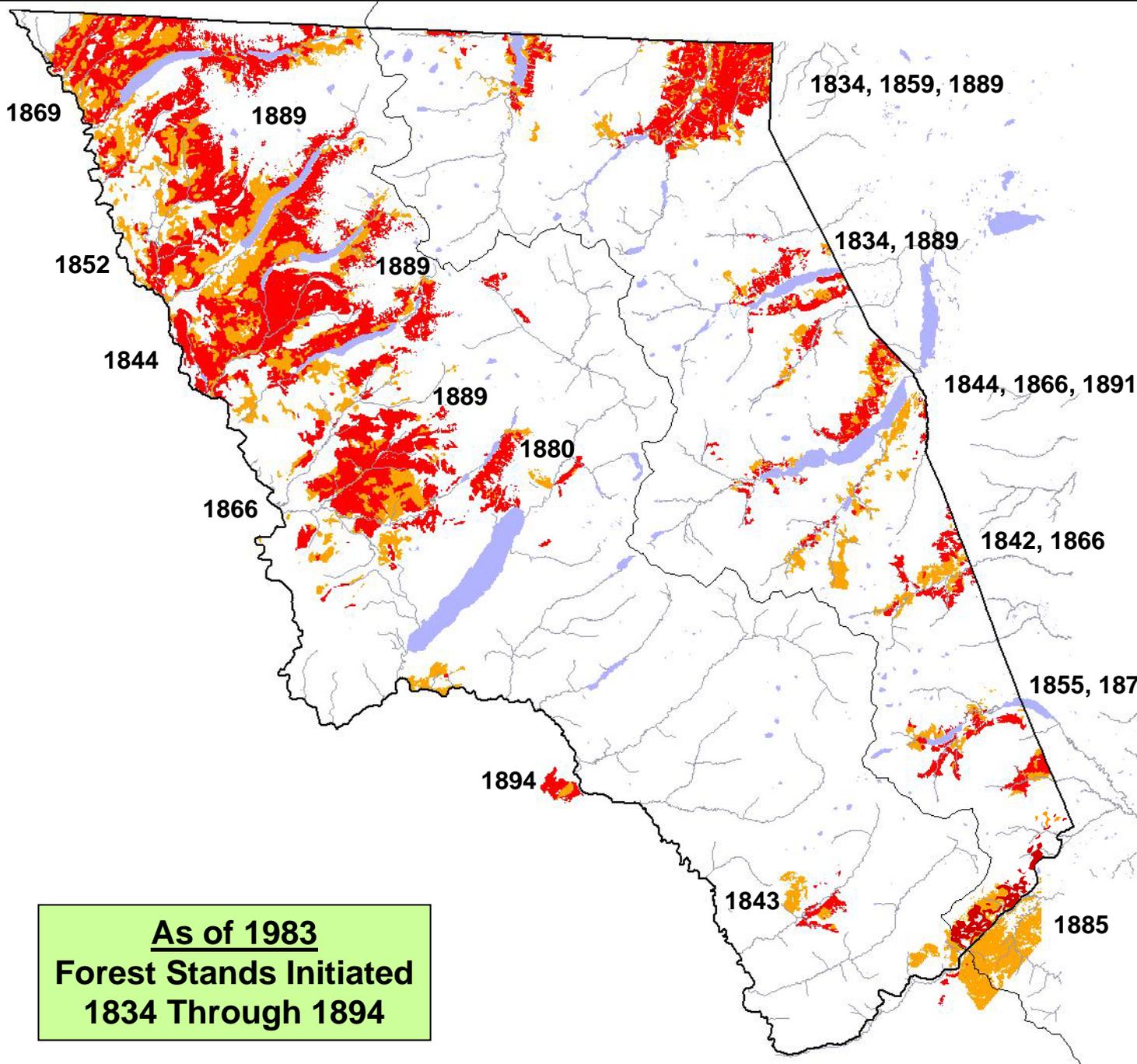
Old Age Stands

Pre-1834 only

Mixed Pre and Post 1834

Not Fire Generated

**As of 1983  
Forest Stands Initiated  
Prior to 1834**

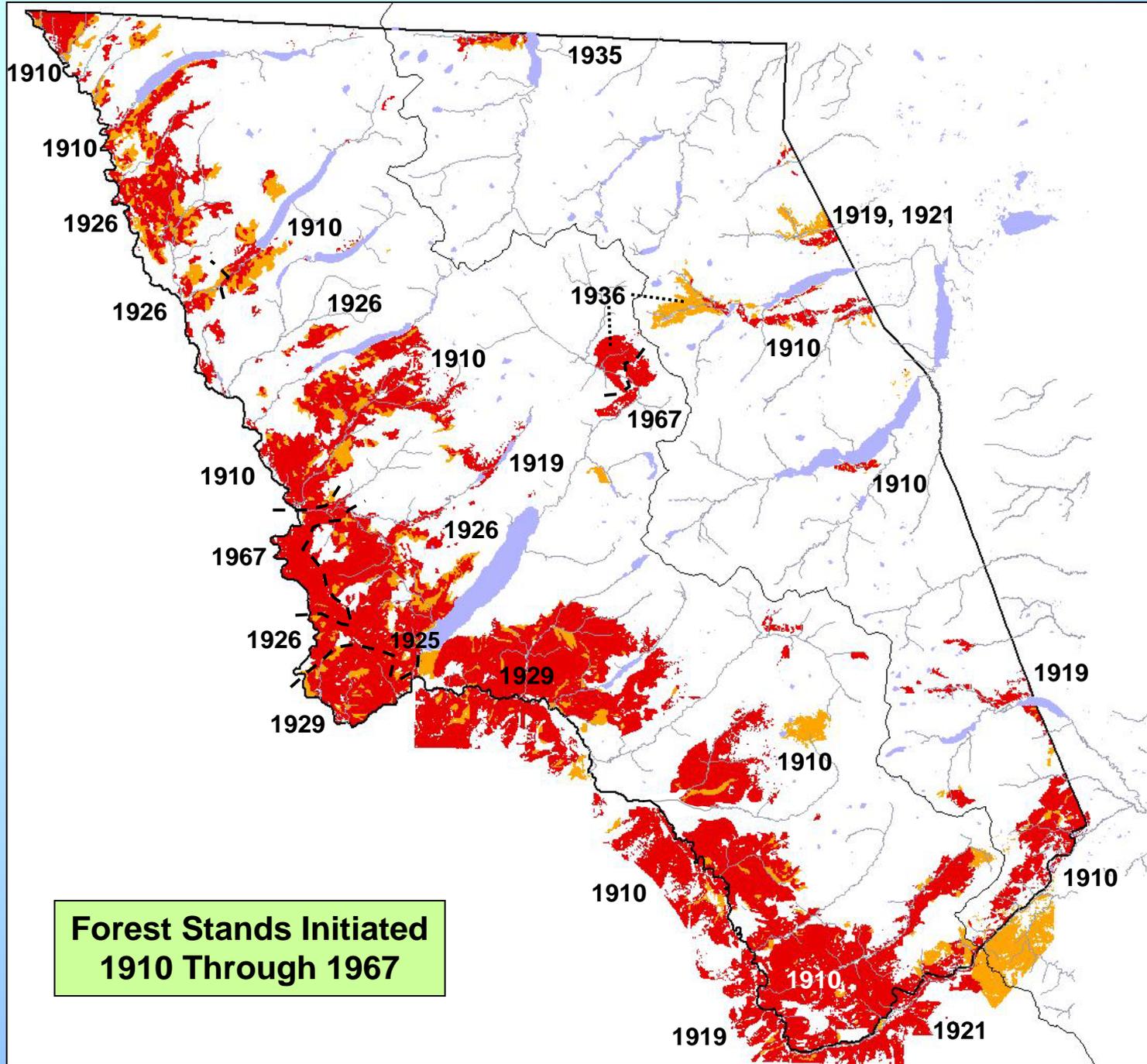


**Fire Years**

- 1834\*
- 1842
- 1843
- 1844\*\*
- 1852\*
- 1855
- 1859\*
- 1866\*\*
- 1869\*
- 1875
- 1880
- 1885\*\*
- 1889\*\*
- 1891
- 1894

- Single Age
- Mixed Age

**As of 1983  
Forest Stands Initiated  
1834 Through 1894**



### Fire Years

1910\*\*

1919\*\*

1921

1925

1926\*

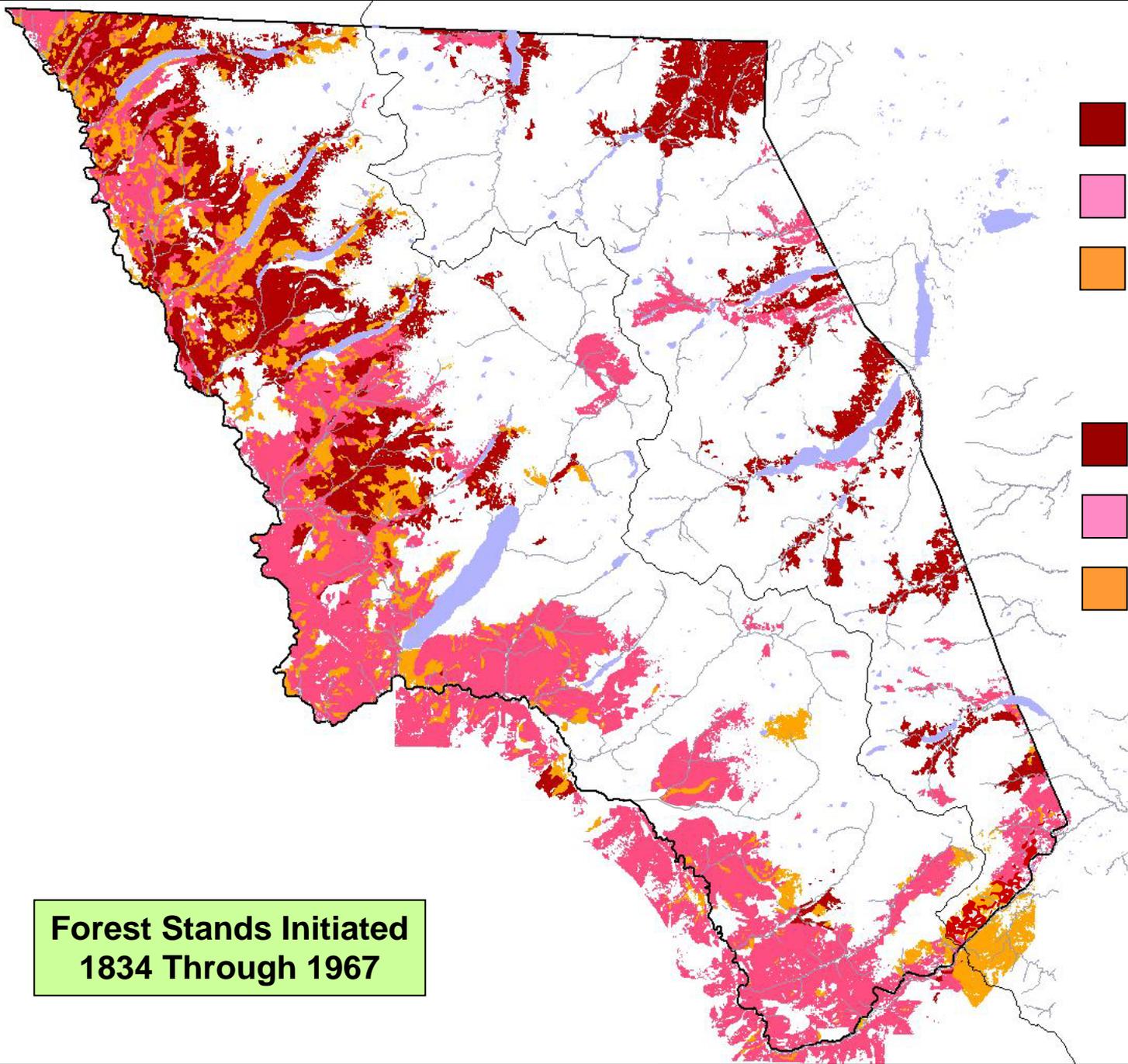
1929\*

1936\*\*

1967\*

- Single Age
- Mixed Age

**Forest Stands Initiated  
1910 Through 1967**



**Fire Years:**



1834 – 1894



1910 – 1967



Mixed Age

**Vast Majority:**



1844 – 1889



1910 – 1936



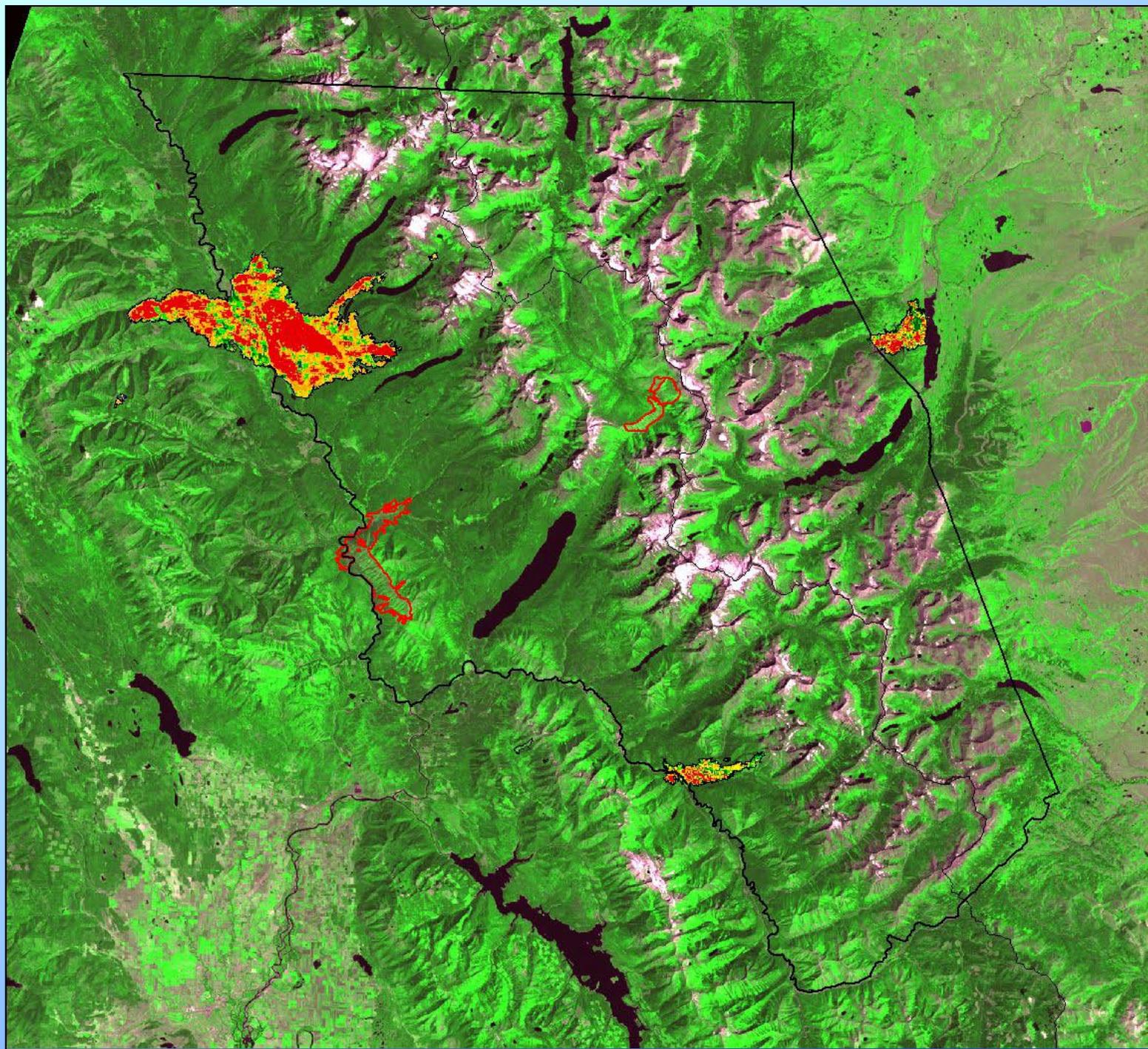
Mixed Age

**Forest Stands Initiated  
1834 Through 1967**

1967

1984

1988

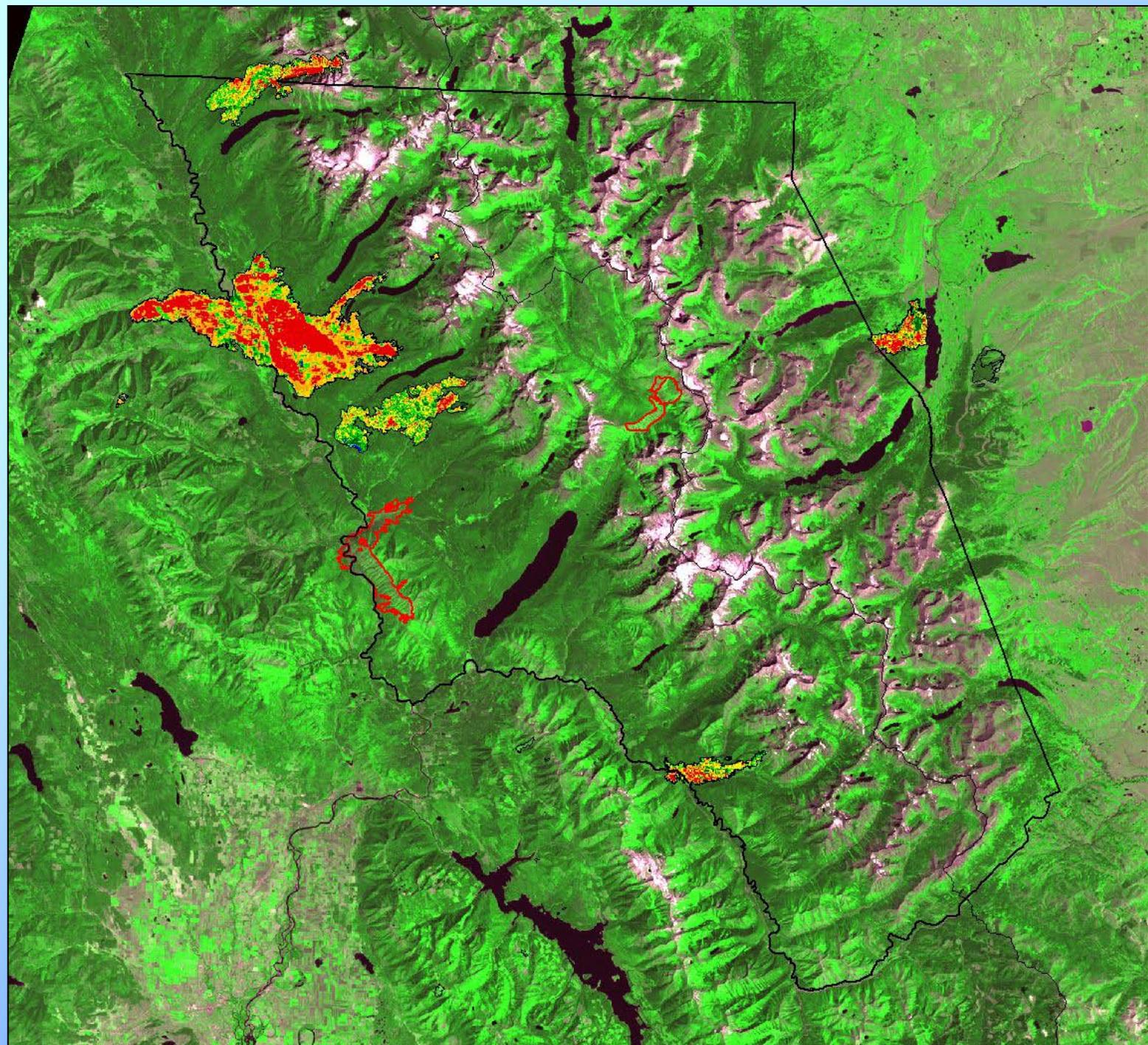


1967

1984

1988

1994



1967

1984

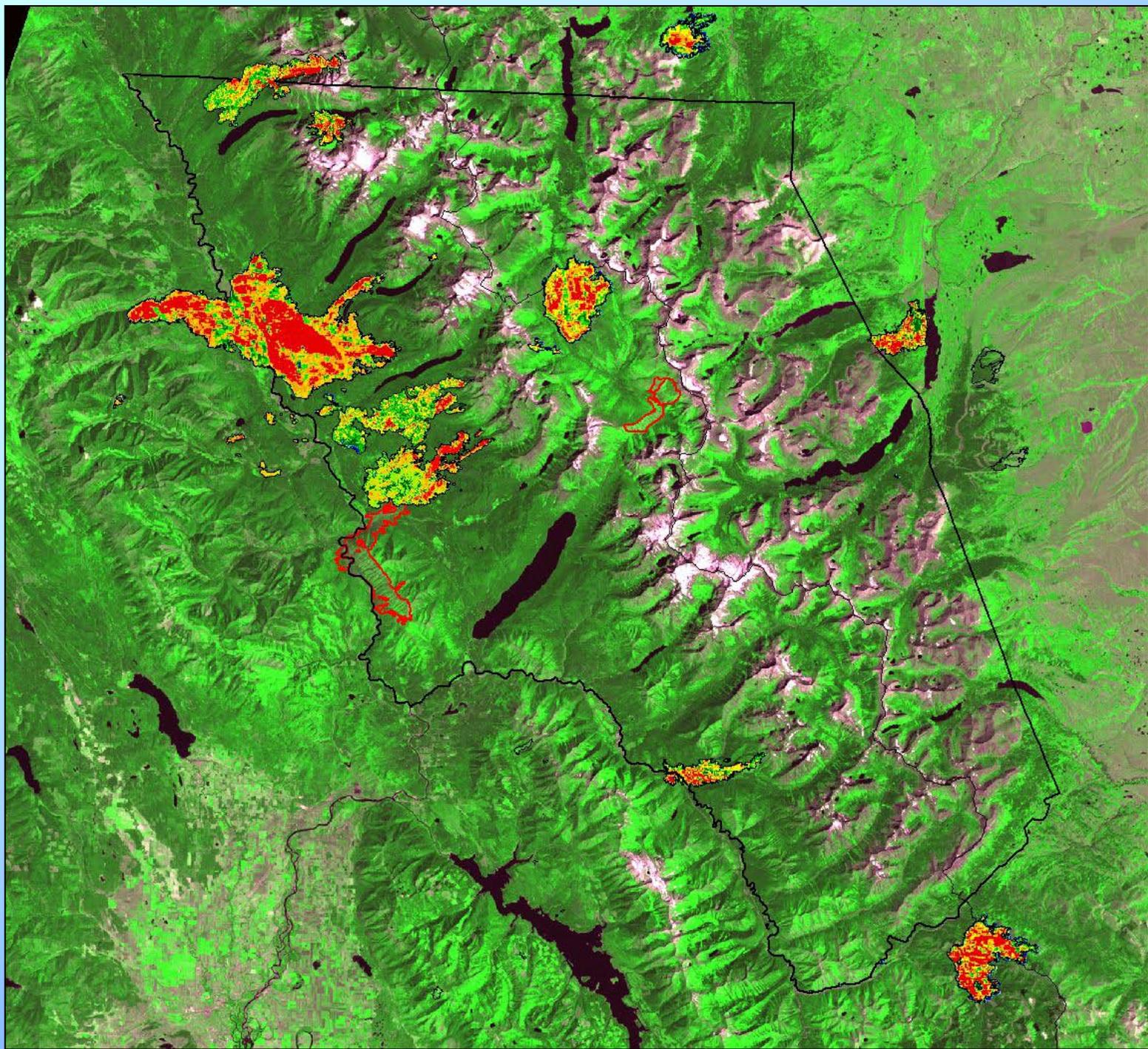
1988

1994

1998

1999

2000



1967

1984

1988

1994

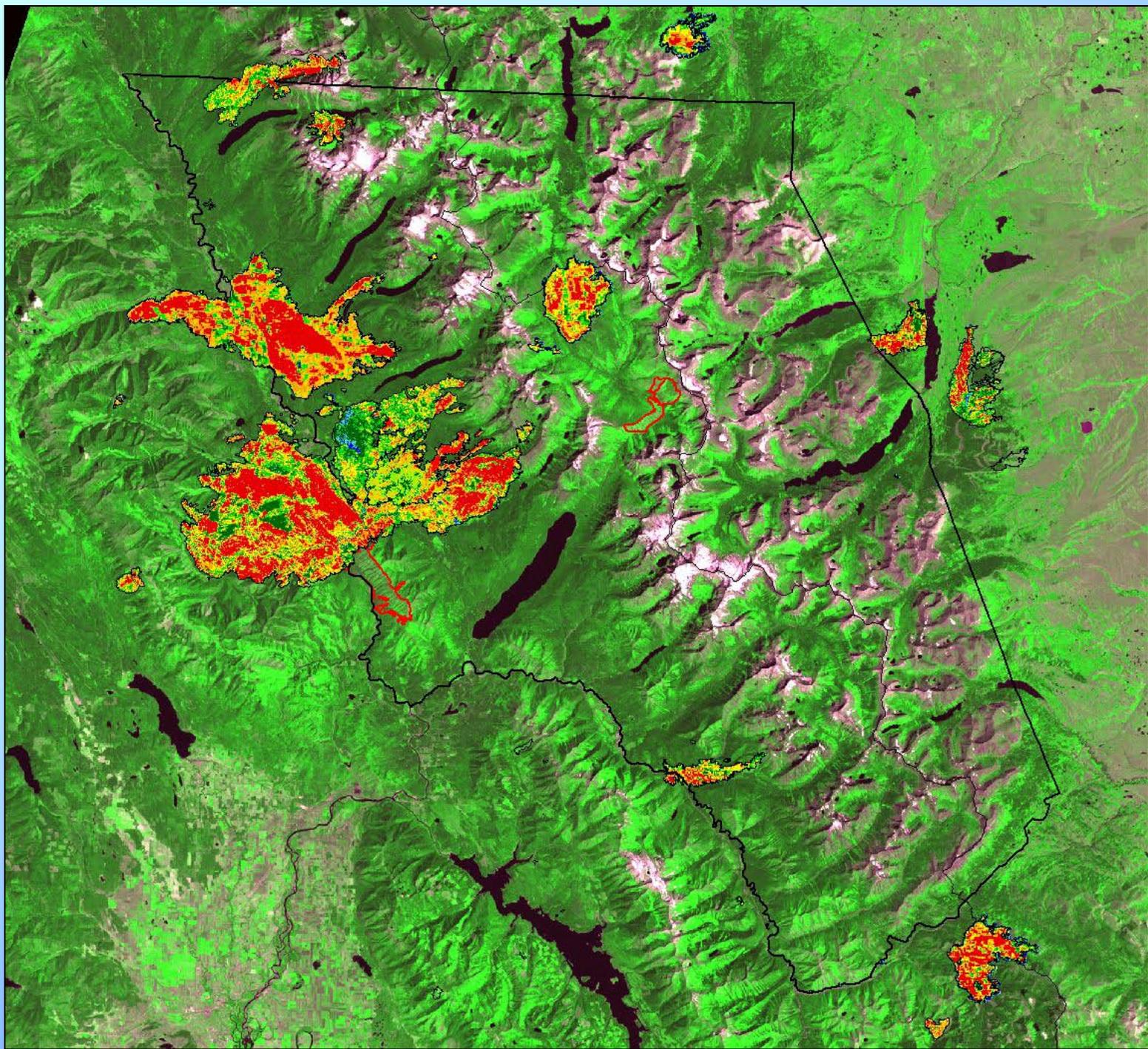
1998

1999

2000

2001

2002



1967

1984

1988

1994

1998

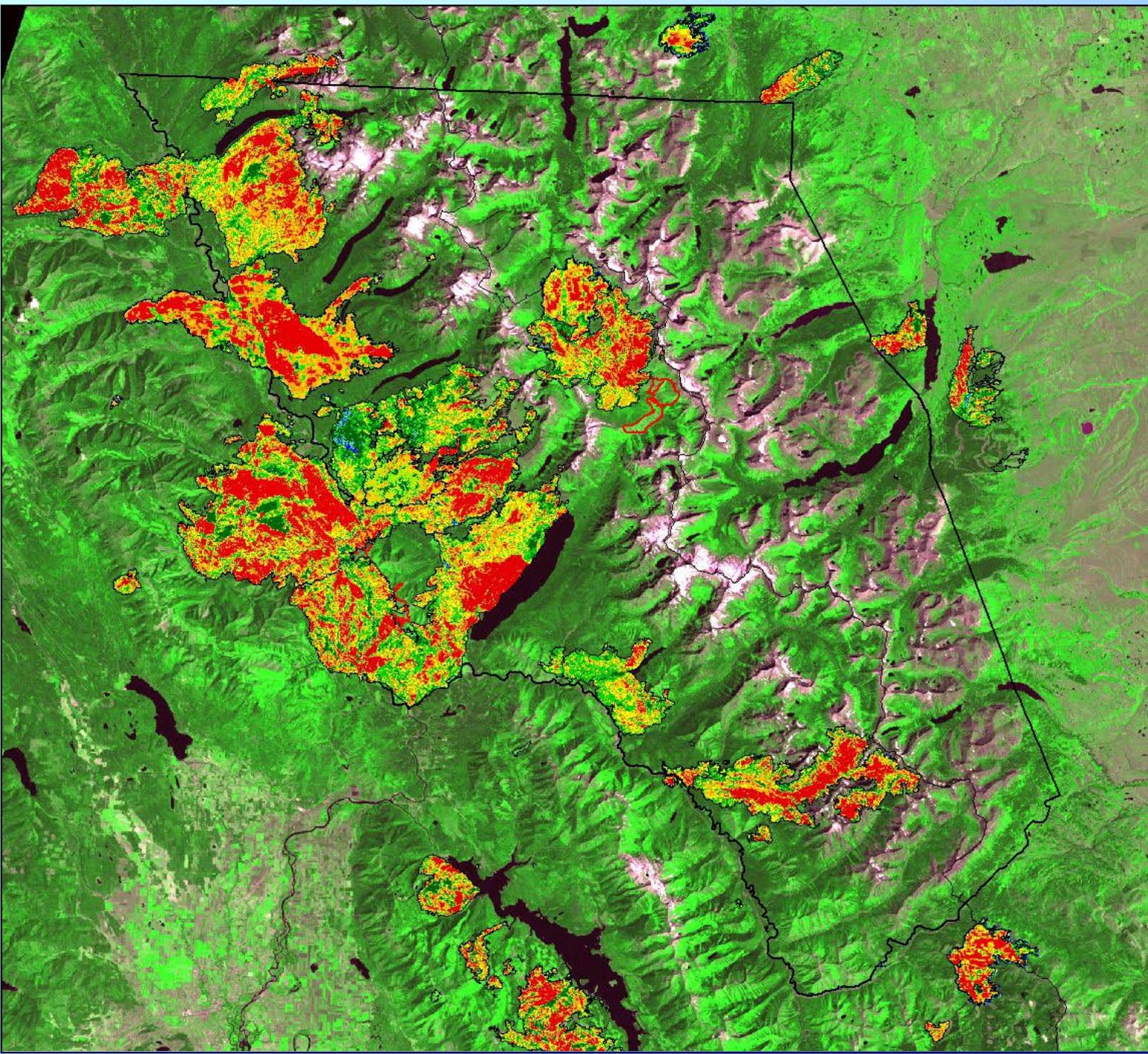
1999

2000

2001

2002

2003



1967

1984

1988

1994

1998

1999

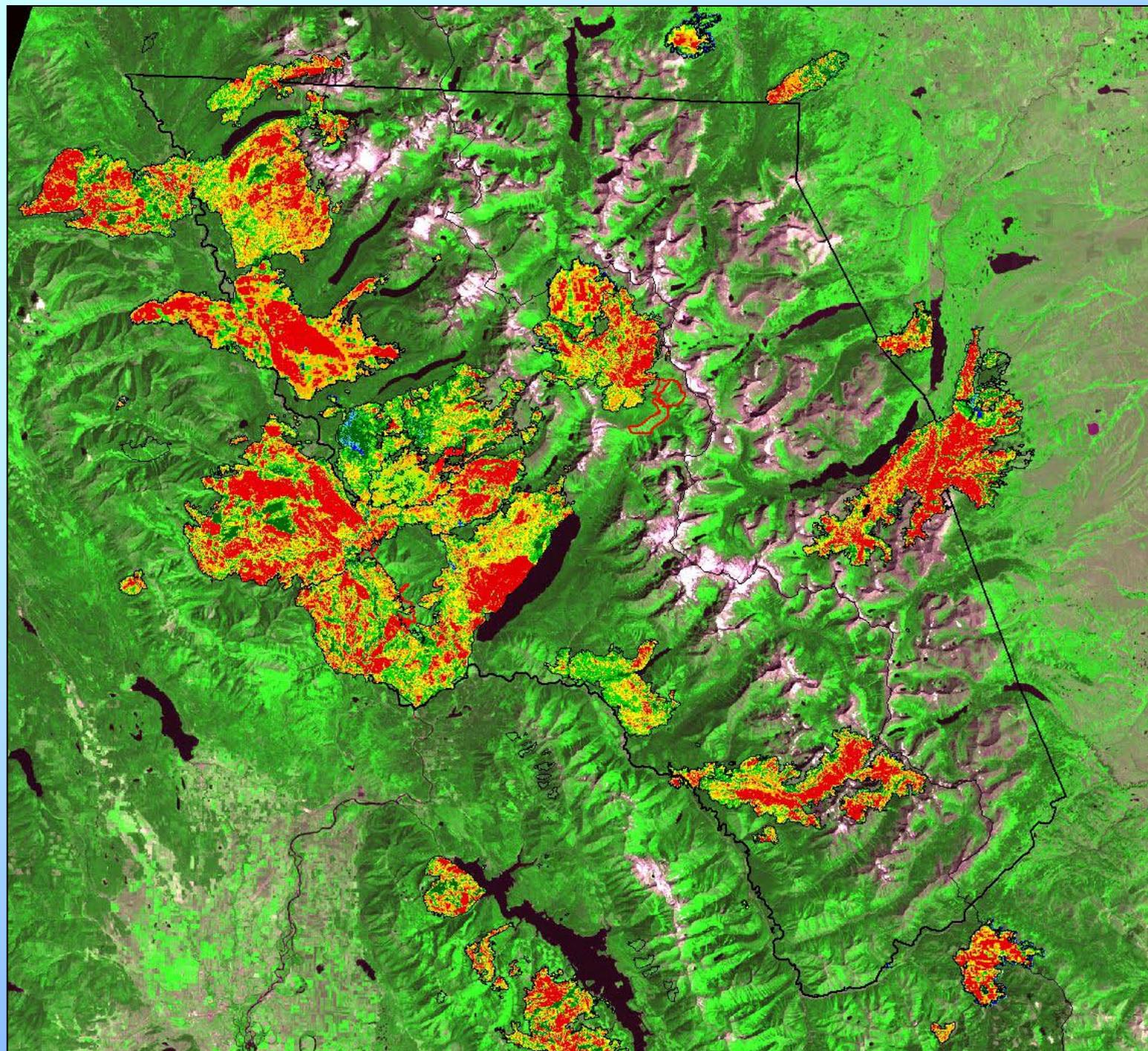
2000

2001

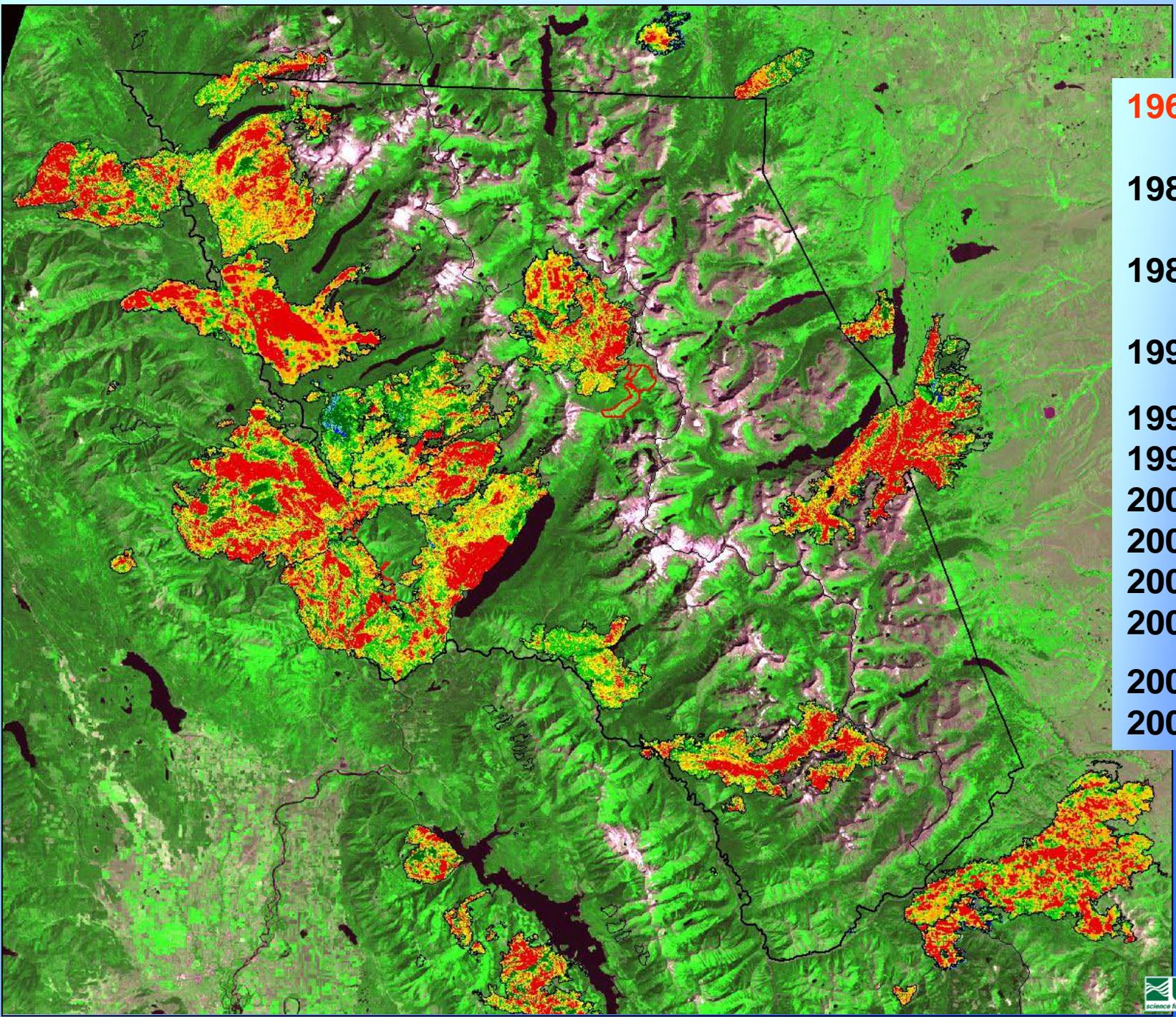
2002

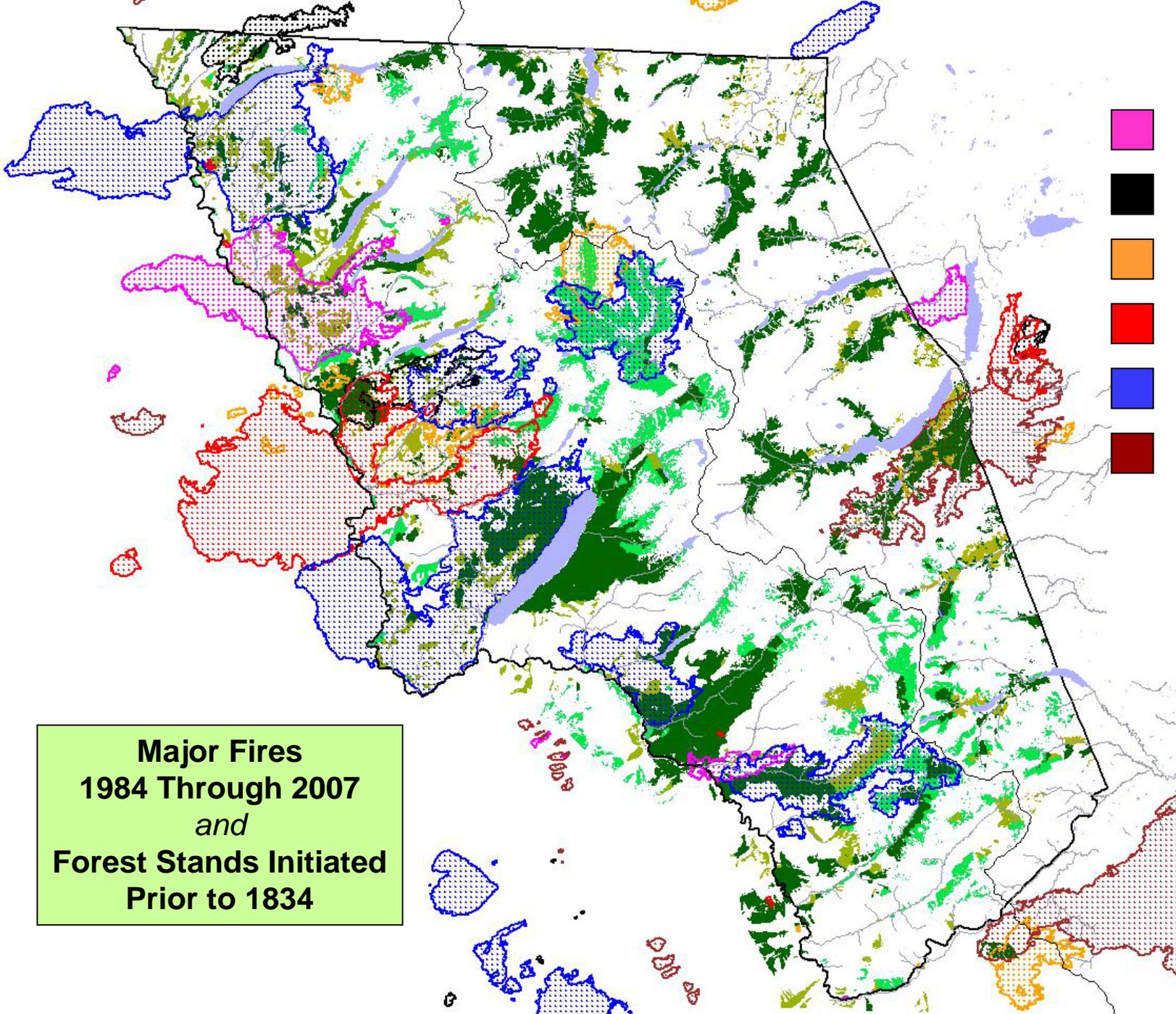
2003

2006



- 1967
- 1984
- 1988
- 1994
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2006
- 2007

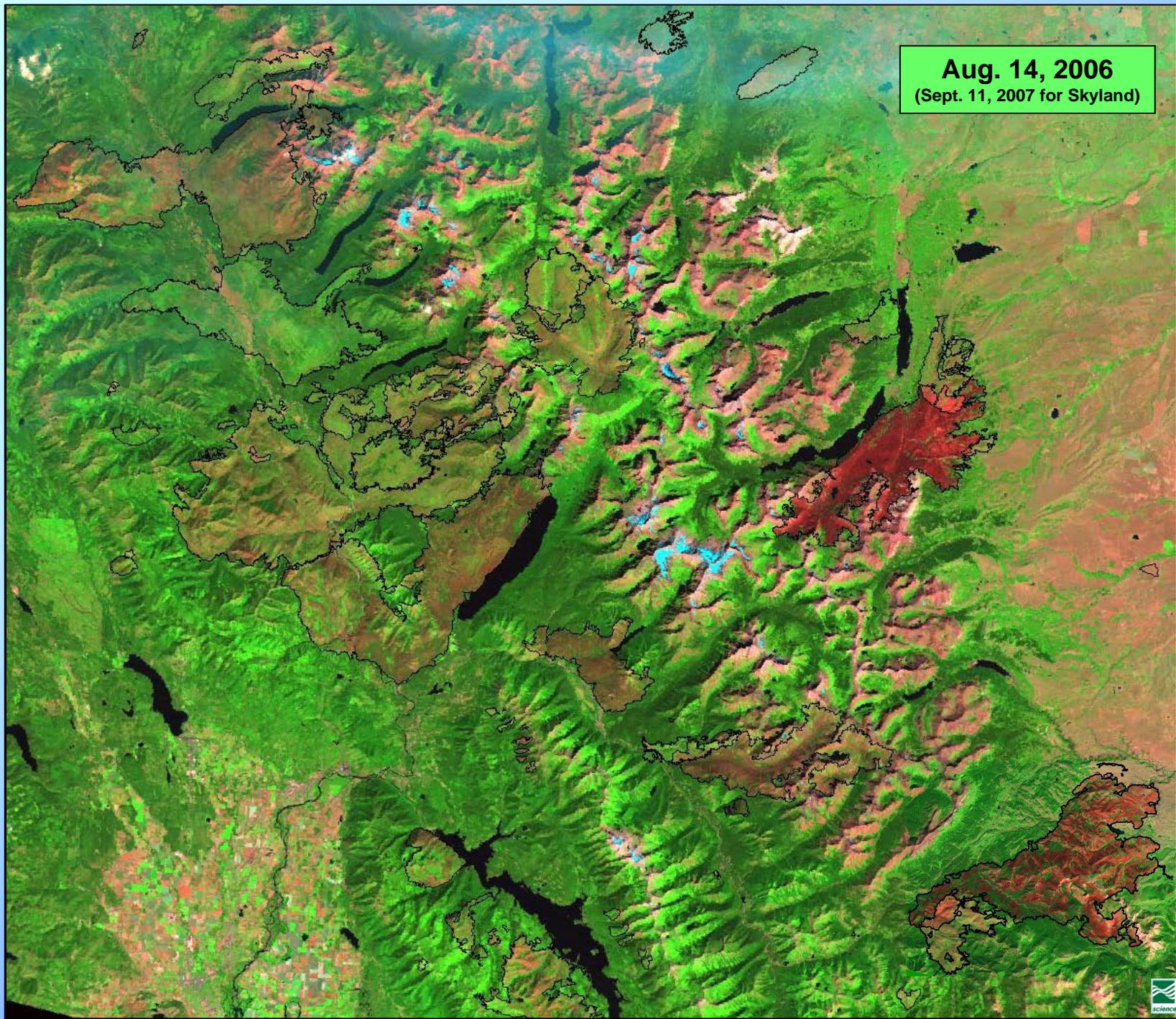




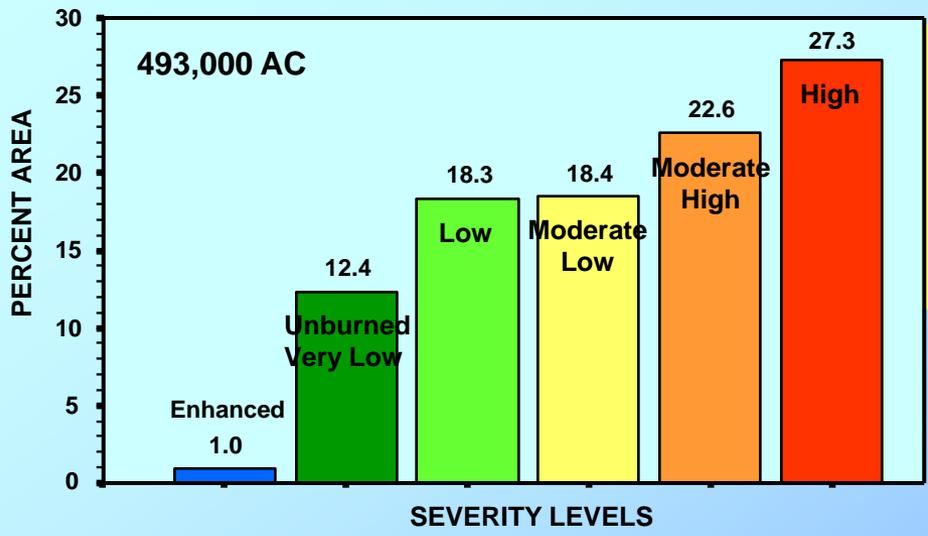
- Fire Years**
- 1984 – 1988
  - 1994
  - 1998 – 2000
  - 2001 – 2002
  - 2003
  - 2006 – 2007

**Major Fires  
1984 Through 2007  
and  
Forest Stands Initiated  
Prior to 1834**

**Aug. 14, 2006**  
(Sept. 11, 2007 for Skyland)



**COMBINED PERIMETER AREAS from 1984 – 2006 FIRES**

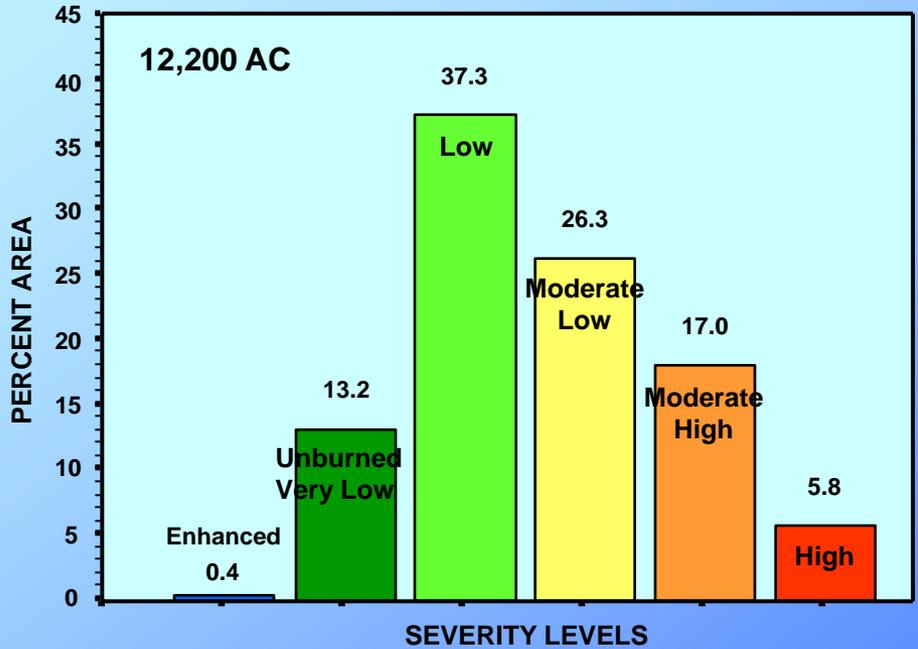


About 50%  
Moderate High to High

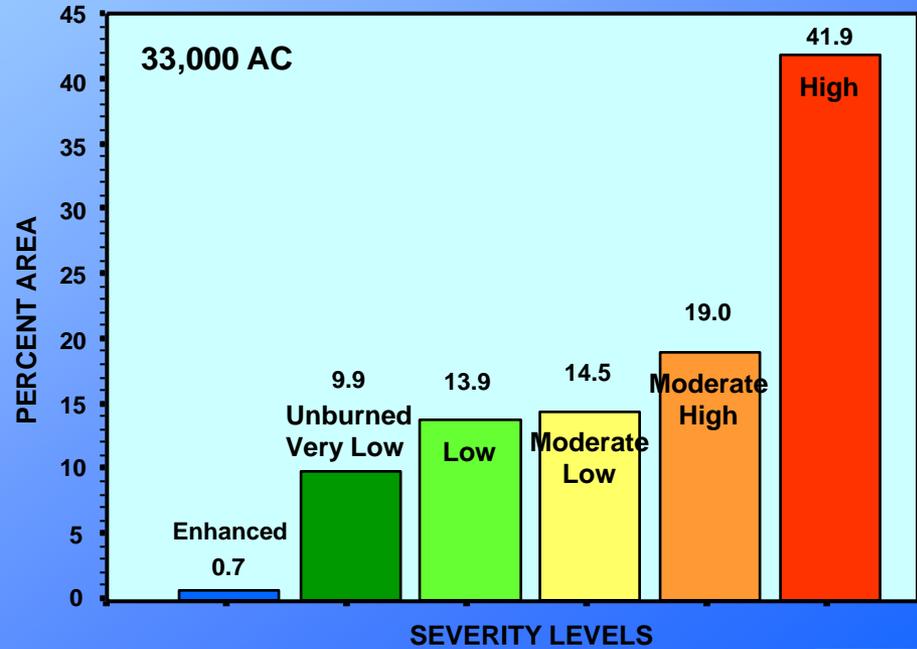
About 32%  
Unburned to Low

- | <u>Less Severe</u>    | <u>More Severe</u>  |
|-----------------------|---------------------|
| <i>Adair Ridge Cx</i> | <i>Ball Creek</i>   |
| <i>Anaconda</i>       | <i>Beta Doris</i>   |
| <i>Crystal Creek</i>  | <i>Blackfoot Cx</i> |
| <i>Fox Creek</i>      | <i>Challenge</i>    |
| <i>Middle Fork Cx</i> | <i>Lost Creek</i>   |
| <i>Poll Haven</i>     | <i>Rampage</i>      |
| <i>Ram Creek</i>      | <i>Red Bench</i>    |
| <i>Sharon</i>         | <i>Red Eagle</i>    |
| <i>Sofa</i>           | <i>Trapper</i>      |
| <i>Wolf Gun</i>       | <i>Wedge</i>        |

**2003 MIDDLE FORK COMPLEX PERIMETER AREA**



**2006 RED EAGLE FIRE PERIMETER AREA**



## Acreeage Estimates *within* Glacier National Park\*

<u>Stand Composition</u>		<u>Burn Area**</u>	
<u>Prior to 1984</u>		<u>After 1983</u>	
Pre-1844	198,000*	1980's	25,000*
1844-1894	179,000*	1990's	34,000*
1910-1967	242,000*	2000's	<u>164,000</u>
.....			223,000
1840's	30,000	.....	
1850's	30,000	1988	22,000
1860's	29,000		
		1994	12,000
1880's	61,000		
		1998-2000	24,000*
1910	119,000*		
1925-1926	39,000	2001-2002	19,000
1929	<u>52,000*</u>		
	210,000	2003	125,000
1936-1967	17,000	2006	17,000

\* Includes outside GNP  
buffer in the Middle Fork

\*\* Excludes interior unburned  
patches

# THE END

2002 Extended Assessment for the 2001 Moose Fire

