

Identification\_Information:

Citation:

Citation\_Information:

Originator: U.S. Geological Survey  
Publication\_Date: 20020701  
Title: Outlet Fire of Grand Canyon National Park - 2000  
Geospatial\_Data\_Presentation\_Form:  
Raster digital data.  
Vector data are also available as ArcView Shape Files.  
Publication\_Information:  
Publication\_Place: Sioux Falls, South Dakota USA  
Publisher: U.S. Geological Survey  
Online\_Linkage: <http://edc.usgs.gov>

Description:

Abstract:

The U.S. Geological Survey (USGS) has entered into a cooperative agreement with the National Park Service (NPS) to deliver satellite imagery and derivative products centered on major fires that impact national parks and other federal lands. This data set was compiled at the request of a federal land management agency and is part of a suite of products generated for a specific fire. See the National Burn Severity Mapping web site at: [http://edc2.usgs.gov/fsp/severity/fire\\_main.asp](http://edc2.usgs.gov/fsp/severity/fire_main.asp)

Purpose:

The purpose of this project is to develop a robust mapping methodology and consistent data products that allow federal land managers and fire ecologists to evaluate and compare burn severity within individual fires and between fires across various ecosystems. These products will help land managers to more effectively plan, implement and monitor fire recovery activities.

Supplemental\_Information:

Fire Name: Outlet  
Park: Grand Canyon National Park  
Date of Fire: 5/7/2000  
Type of assessment: extended  
Acres within satellite derived perimeter: 11870  
Landsat Path and Row: 37/35  
Pre-Fire Landsat Date/Scene ID:  
Landsat 5; June 25, 1998 / LT5037035009817610  
Post-Fire Landsat Date/Scene ID:  
Landsat 7; June 9, 2001 / LE7037035000116050  
Output Dataset Projection: UTM  
Spheroid Name: Clarke 1866  
Datum Name: NAD27  
UTM Zone: 12  
N or S: North  
Image subset Corner Coordinate  
(center of upper left pixel, projection meters)  
ULX: 384240 LRX: 437280  
ULY: 4037190 LRY: 3992610  
Image subset size:  
#Rows: 1487  
#Columns: 1769  
Pixel size: 30 meters  
Bounding Box:  
North Lat: 36 28 47 N  
South Lat: 36 04 23 N  
East Long: 111 41 40 W  
West Long: 112 17 31 W  
Latitude and Longitude within Fire Perimeter:  
Lat: 36 17 00 N

Long: 112 00 00 W

Fire Perimeter: Computer derived with manual edits.

For further information on NLAPS and Landsat TM data, please refer to the metadata documentation found on the USGS Clearinghouse website at:  
<http://www.fgdc.gov/clearinghouse/clearinghouse.html>

Product List:

outl00bpretm.tif

Pre-Fire Landsat TM Color Composite Image subset  
(bands 1,2,3,4,5,7 Geo-TIFF)

outl00bpostm.tif

Post-Fire Landsat TM Color Composite Image subset  
(bands 1,2,3,4,5,7 Geo-TIFF)

outl00b\_dnbr

Differenced Normalized Burn Ratio (DNBR) subset (ArcInfo GRID)

outl00bp

Fire Perimeter (shape file)

dnbrb\_37-35

Full Scene DNBR (ArcInfo GRID)

Time\_Period\_of\_Content:

Time\_Period\_Information:

Multiple\_Dates/Times:

Single\_Date/Time:

Calendar\_Date: 19980625 (pre-fire image)

Single\_Date/Time:

Calendar\_Date: 20000507 (date fire began)

Single\_Date/Time:

Calendar\_Date: 20010609 (post-fire image)

Currentness\_Reference: ground condition

Status:

Progress: Complete

Maintenance\_and\_Update\_Frequency: as needed

Spatial\_Domain:

Bounding\_Coordinates:

West\_Bounding\_Coordinate: -112.17.31

East\_Bounding\_Coordinate: -111.41.40

North\_Bounding\_Coordinate: 36.28.47

South\_Bounding\_Coordinate: 36.04.23

Keywords:

Theme:

Theme\_Keyword\_Thesaurus: none

Theme\_Keyword: burn mapping

Theme\_Keyword: imagery

Theme\_Keyword: fire

Theme\_Keyword: Landsat

Place:

Place\_Keyword\_Thesaurus: none

Place\_Keyword: Grand Canyon National Park

Place\_Keyword: Outlet

Place\_Keyword: Arizona

Access\_Constraints: FTP data sets are available to any user.

Use\_Constraints: There are no restrictions on use, except for reasonable and proper

acknowledgement of information sources.

Point\_of\_Contact:

Contact\_Information:

+001 605-594-6151 or (USA) 800-252-4547

Contact\_Organization\_Primary:

Contact\_Organization: U.S. Geological Survey

Contact\_Position: CSR

Contact\_Voice\_Telephone: +001 605-594-6151

Contact\_Address:

Address\_Type: physical and mailing address

Address: 47914 252nd Street

City: Sioux Falls

State\_or\_Province: SD

Postal\_Code: 57198-0001

Country: USA

Contact\_TDD/TTY\_Telephone: +001 605-594-6933

Contact\_Voice\_Telephone: +001 605-594-6151

Contact\_Facsimile\_Telephone: +001 605-594-6589

Contact\_Electronic\_Mail\_Address: fsedc@usgs.gov

Hours\_of\_Service: 0800 - 1600 CT, M-F, -6 h GMT

Contact\_Instructions: [http://edc2.usgs.gov/fsp/severity/contact\\_us.asp](http://edc2.usgs.gov/fsp/severity/contact_us.asp)

Data\_Set\_Credit: USGS and NASA

Native\_Data\_Set\_Environment: Oracle, ERDAS Imagine, & ArcInfo

Data\_Quality\_Information:

Attribute\_Accuracy:

Attribute\_Accuracy\_Report:

Three on-board calibrators (two solar, one internal) provide an absolute accuracy of 5 percent, excluding band 6.

Logical\_Consistency\_Report:

These Landsat data are collected from a nominal altitude of 705 kilometers in a near-polar, near-circular, sun-synchronous orbit at an inclination of 98.2 degrees, imaging the same 183-km swath of Earth's surface every 16 days.

The pixels representing the bands for the image are in the data set only once.

Completeness\_Report: Fire perimeter was automated, (seed value 425, distance 325) with manual edits.

Positional\_Accuracy:

Horizontal\_Positional\_Accuracy:

Horizontal\_Positional\_Accuracy\_Report:

Energy reflected from Earth's surface passes through a whisk-broom scanning system and all-reflective optics before being collected by the solid-state detectors at the focal plane.

Lineage:

Process\_Step:

Process\_Description:

These data products are derived from Landsat Thematic Mapper data.

A pre-fire scene and a post-fire scene are analyzed to create a Differenced Normalized Burn Ratio (DNBR) image. The DNBR image portrays the variations of burn severity within the fire.

The Landsat images are terrain corrected and geometrically rectified to an Albers Conical Equal Area map projection using the National Landsat Archive Production System (NLAPS). The images are further processed to convert bands 1-5 and 7 to at-satellite-reflectance. The Normalized Burn Ratio (NBR) is computed for each date of imagery using the following formula:

$$(\text{Band 4} - \text{Band 7}) / (\text{Band 4} + \text{Band 7}) = \text{NBR}$$

The differenced NBR is computed by subtracting the post-fire NBR from the pre-fire NBR:

PreNBR - PostNBR = DNBR

Higher DNBR values are correlated with more severe burns. The DNBR image is evaluated to determine the threshold value between burned and unburned areas. The perimeter of the fire is delineated using the DNBR image. The DNBR image, the pre-fire and post-fire TM images, and a fire perimeter vector file are provided in digital format in the map projection used by the National Park Service.

Source\_Used\_Citation\_Abbreviation: TM

Process\_Date: 20020601

Source\_Produced\_Citation\_Abbreviation: DNBR

Cloud\_Cover: 10

Distribution\_Information:

Distributor:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: U.S. Geological Survey

Contact\_Position:

Principal Scientist

Land Cover Applications

Contact\_Address:

Address\_Type: mailing and physical address

Address:

47914 252nd Street

EROS Data Center

City: Sioux Falls

State\_or\_Province: SD

Postal\_Code: 57198-0001

Country: USA

Contact\_Voice\_Telephone: +001 605-594-6151

Contact\_TDD/TTY\_Telephone: +001 605 594-6933

Contact\_Facsimile\_Telephone: +001 605 594-6589

Contact\_Electronic\_Mail\_Address: fsedc@usgs.gov

Hours\_of\_Service: 0800 - 1600 CT, M-F, -6 h GMT

Contact\_Instructions: [http://edc2.usgs.gov/fsp/severity/contact\\_us.asp](http://edc2.usgs.gov/fsp/severity/contact_us.asp)

Distribution\_Liability:

No warranty expressed or implied is made by the USGS regarding the use of the data, nor does the act of distribution constitute any such warranty.

Standard\_Order\_Process:

Digital\_Form:

Digital\_Transfer\_Information:

Format\_Name: Geo-TIFF

Format\_Version\_Number: 1

Digital\_Transfer\_Option:

Online\_Option:

Computer\_Contact\_Information:

Network\_Address:

Network\_Resource\_Name: [http://edc2.usgs.gov/fsp/severity/download\\_data.asp](http://edc2.usgs.gov/fsp/severity/download_data.asp)

Digital\_Form:

Digital\_Transfer\_Information:

Format\_Name: DNBR ArcInfo GRID

Format\_Version\_Number: 1

Digital\_Transfer\_Option:

Online\_Option:

Computer\_Contact\_Information:

Network\_Address:

Network\_Resource\_Name: [http://edc2.usgs.gov/fsp/severity/download\\_data.asp](http://edc2.usgs.gov/fsp/severity/download_data.asp)

Digital\_Form:

Digital\_Transfer\_Information:

Format\_Name: shape file

Format\_Version\_Number: 1

Digital\_Transfer\_Option:

Online\_Option:

Computer\_Contact\_Information:

Network\_Address:

Network\_Resource\_Name: [http://edc2.usgs.gov/fsp/severity/download\\_data.asp](http://edc2.usgs.gov/fsp/severity/download_data.asp)

Fees: No charge

Ordering\_Instructions: <http://edc2.usgs.gov/fsp/severity/help.asp#ordering>

Turnaround: same day

Metadata\_Reference\_Information:

Metadata\_Date: 20020715

Metadata\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization:

USGS EROS Data Center

Science & Applications Branch

Contact\_Position:

Principal Scientist

Land Cover Applications

Contact\_Address:

Address\_Type: mailing and physical address

Address:

47914 252nd Street

EROS Data Center

City: Sioux Falls

State\_or\_Province: SD

Postal\_Code: 57198-0001

Country: USA

Contact\_Voice\_Telephone: +001 605-594-6151

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Contact\_Electronic\_Mail\_Address: [fsedc@usgs.gov](mailto:fsedc@usgs.gov)

Hours\_of\_Service: 0800 - 1600 CT, M-F, -6 h GMT

Contact\_Instructions: [http://edc2.usgs.gov/fsp/severity/contact\\_us.asp](http://edc2.usgs.gov/fsp/severity/contact_us.asp)

Metadata\_Standard\_Name: Content Standard for Digital Geospatial Metadata

Metadata\_Standard\_Version: FGDC-STD-001-1998

Metadata\_Access\_Constraints: none

Metadata\_Use\_Constraints: none