

Identification_Information:

Citation:

Citation_Information:

Originator: U.S. Geological Survey

Publication_Date: 20060801

Title:

Atoko, Dragon, Long Jim 1, Topeka, Cape Royal, Marble 2, Cape Final and Muddersbach Fires of Grand Canyon National Park and Kaibab National Forest - 2005

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

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 Names: Atoko, Dragon, Long Jim 1, Topeka, Cape Royal, Marble 2, Cape Final, Muddersbach

Agencies: National Park Service, US Forest Service

Land Management Units: Grand Canyon National Park, Kaibab National Forest

Dates of Fires in Grand Canyon National Park:

Atoko: 6/9/2005

Dragon: 6/26/2005

Long Jim 1: 11/6/2005

Topeka: 11/9/2005

Cape Royal: 5/29/2005

Marble 2: 8/15/2005

Cape Final: 7/30/2005

Date of Fire in Kaibab National Forest:

Muddersbach: 7/15/2005

Type of assessment: Extended Assessment

Acres within Fire Perimeters in Grand Canyon National Park:

Atoko: 1670

Dragon: 9100

Long Jim 1: 1750
Topeka: 2110
Cape Royal: 2750
Marble 2: 170
Cape Final: 890
Acres within Fire Perimeter in Kaibab National Forest:
Muddersbach: 18200
Landsat Path and Row: 37/35
Pre-Fire Landsat Date/Scene ID:
Landsat 5; June 7, 2003/LT5037035000315810
Post-Fire Landsat Date/Scene ID:
Landsat 5; May 30, 2006/LT5037035000615010
Output Dataset Projection: UTM
UTM Zone: 12
Datum Name: NAD83
Spheroid Name: GRS80
Image subset Corner Coordinate (center of upper left pixel, projection meters)
ULX: 382800 LRX: 431940
ULY: 4025730 LRY: 3957720
Image subset size:
#Rows: 2268
#Columns: 1639
Pixel size: 30 meters
Bounding Box:
North Lat: 36 22 19 N
South Lat: 35 45 35 N
East Long: 111 45 24 W
West Long: 112 18 05 W
Latitude and Longitude within Fire Perimeter in Grand Canyon National Park:
Atoko Lat: 36 11 16 N Long: 111 56 11 W
Dragon Lat: 36 12 31 N Long: 112 06 37 W
Long Jim 1 Lat: 36 01 21 N Long: 112 04 49 W
Topeka Lat: 36 01 54 N Long: 112 09 27 W
Cape Royal Lat: 36 08 45 N Long: 111 57 04 W
Marble 2 Lat: 36 14 43 N Long: 112 04 45 W
Cape Final Lat: 36 08 56 N Long: 111 55 40 W
Latitude and Longitude within Fire Perimeter in Kaibab National Forest:
Muddersbach Lat: 35 52 19 N Long: 111 55 39 W

Fire Perimeter: Atoko, Dragon, Long Jim 1, Topeka, Cape Royal, Marble 2, and Cape Final perimeters were provided by Grand Canyon National Park and were edited based on dNBR and postfire imagery. The Muddersbach perimeter was digitized manually using Landsat imagery.

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:

grca05b_pretm.tif
Pre-Fire Landsat data subset (bands 1-5,7 Geo-TIFF format)

grca05b_postm.tif

Post-Fire Landsat data subset (bands 1-5,7 Geo-TIFF format)

grca05b_dnbr

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

grca05b_pi

Fire Perimeter (shape file)

grca05b_hist.xls

DNBR pixel count within the fire perimeter (excel file)

d373506030506

Full Scene DNBR (ArcInfo GRID)

Time_Period_of_Content:

Time_Period_Information:

Multiple_Dates/Times:

Single_Date/Time:

Calendar_Date: 20030607 (pre-fire image)

Single_Date/Time:

Calendar_Date: 20050609 (date Atoko fire began)

Single_Date/Time:

Calendar_Date: 20050626 (date Dragon fire began)

Single_Date/Time:

Calendar_Date: 20051106 (date Long Jim 1 fire began)

Single_Date/Time:

Calendar_Date: 20051109 (date Topeka fire began)

Single_Date/Time:

Calendar_Date: 20050529 (date Cape Royal fire began)

Single_Date/Time:

Calendar_Date: 20050815 (date Marble 2 fire began)

Single_Date/Time:

Calendar_Date: 20050730 (date Cape Final fire began)

Single_Date/Time:

Calendar_Date: 20050715 (date Muddersbach fire began)

Single_Date/Time:

Calendar_Date: 20060530 (post-fire image)

Currentness_Reference: ground condition

Status:

Progress: Complete

Maintenance_and_Update_Frequency: as needed

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -112.18.05

East_Bounding_Coordinate: -111.45.24

North_Bounding_Coordinate: 36.22.19

South_Bounding_Coordinate: 35.45.35

Keywords:

Theme:

Theme_Keyword_Thesaurus: none

Theme_Keyword: burn mapping

Theme_Keyword: imagery

Theme_Keyword: fire

Theme_Keyword: Landsat

Theme_Keyword: National Park Service

Theme_Keyword: US Forest Service

Place:

Place_Keyword_Thesaurus: none

Place_Keyword: Grand Canyon National Park

Place_Keyword: Kaibab National Forest

Place_Keyword: Atoko

Place_Keyword: Dragon

Place_Keyword: Long Jim 1

Place_Keyword: Topeka

Place_Keyword: Cape Royal

Place_Keyword: Marble 2

Place_Keyword: Cape Final

Place_Keyword: Muddersbach

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

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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

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:
$$\text{PreNBR} - \text{PostNBR} = \text{DNBR}$$

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: 20060801

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

USGS EROS

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

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

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

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

Fees: No charge

Ordering_Instructions: <http://edc2.usgs.gov/fsp/severity/help.asp#ordering>

Turnaround: same day

Metadata_Reference_Information:

Metadata_Date: 20060815

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization:

USGS EROS

Science & Applications Branch

Contact_Position:

Principal Scientist

Land Cover Applications

Contact_Address:

Address_Type: mailing and physical address

Address:

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City: Sioux Falls

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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

Metadata_Standard_Name: Content Standard for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Access_Constraints: none

Metadata_Use_Constraints: none