

BOREAS FOLLOW-ON DSP-09 SASKATCHEWAN RASTER FOREST FIRE CHRONOLOGY,
1945-1996

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Summary

This data set contains a pair of raster images and a spreadsheet chronicling the most recent fire history of Saskatchewan from 1945 to 1996. This data set was developed from a series of ARC/INFO export files of annual fire data that were compiled and provided by the Saskatchewan Environment and Resource Management (SERM) Wildlife Branch.

Data Citation

Cite this data set as follows (citation revised on October 30, 2002):

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Table of Contents

1. [Data Set Overview](#)
2. [Investigator\(s\)](#)
3. [Theory of Measurements](#)
4. [Equipment](#)
5. [Data Acquisition Methods](#)
6. [Observations](#)
7. [Data Description](#)
8. [Data Organization](#)
9. [Data Manipulations](#)
10. [Errors](#)
11. [Notes](#)
12. [Application of the Data Set](#)
13. [Future Modifications and Plans](#)
14. [Software](#)
15. [Data Access](#)
16. [Output Products and Availability](#)
17. [References](#)
18. [Glossary of Terms](#)
19. [List of Acronyms](#)
20. [Document Information](#)

1. Data Set Overview

The FFCS yearly data files delineating forest fire polygons were processed to provide a single gridded map of year of most recent burn. The input data provided by FFCS were intended to provide gross delineation of boundaries only.

1.1 Data Set Identification

BOREAS Follow-On DSP-09 Saskatchewan Raster Forest Fire Chronology, 1945-1996

1.2 Data Set Introduction

This data set contains two binary raster images and a spreadsheet of the fire history of Saskatchewan, compiled from the ARC/INFO export files provided by the Saskatchewan Environment and Resource Management (SERM) to the Wildlife Branch. It is a spatial data base of forest fires 1,000 hectares or larger in Saskatchewan from 1945 to 1996.

1.3 Objective/Purpose

These data are provided as part of the BOREal Ecosystem-Atmosphere Study (BOREAS) Follow-On.

The data set is useful for demonstrating the role of wildfire in the boreal forest and provides data layers of the year of last burn for the region.

1.4 Summary of Parameters and Variables

This data set includes polygons of fires in Saskatchewan 1,000 hectares or larger for the period 1945-1996.

1.5 Discussion

Detailed analyses of the content of the gross burn area (amount of burned timber/treed muskeg, etc.) should be performed using larger (1:50,000 to 1:12,500) scale maps on a burn-by-burn basis. Only fires 1,000 hectares or larger are included in the data set (with the exception of a few fires over 900 hectares).

Most fire boundaries were delineated at a medium-to-small scale (1:250,000), thereby prohibiting mapping of small fires. As expected, a certain amount of feature generalization occurred in the mapping process.

1.6 Related Data Sets

BOREAS SERM Forest Fire Chronology of Saskatchewan in Vector Format

BOREAS TGB-05 Fire History of Manitoba 1980 to 1991 in Raster Format

BOREAS TGB-05 Fire History of Manitoba 1980 to 1991 in Vector Format

 [Return to top of document.](#)

2. Investigator(s)

2.1 Investigator(s) Name and Title

Gloria Rapalee, Research Associate

2.2 Title of Investigation

BOREAS Follow-on DSP09 Saskatchewan Raster Forest Fire Chronology 1945-1996

2.3 Contact Information

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NASA/GSFC
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(301) 286-0239 (fax)
Jaime.Nickeson@gsfc.nasa.gov

 [Return to top of document.](#)

3. Theory of Measurements

The original Forest Fire Chronology of Saskatchewan (FFCS) data provide temporal snapshots of large fires throughout Saskatchewan forests. This data set expands upon that by providing two gridded images of the 50-year fire history of Saskatchewan - (1) year of most recent burn and (2) year and fire number of most recent burn.

For more details, see this section in the SERM Forest Fire Chronology of Saskatchewan in Vector Format data set.

 [Return to top of document.](#)

4. Equipment

4.1 Sensor/Instrument Description

Not applicable.

4.1.1 Collection Environment

Not known.

4.1.2 Source/Platform

Aerial surveys, ground crew estimates, and/or GPS boundaries were used to develop the input SERM Forest Fire Chronology of Saskatchewan in Vector Format data set.

4.1.3 Source/Platform Mission Objectives

To map 50-year fire activity (of fires 1,000 hectares or larger) in the province of Saskatchewan.

4.1.4 Key Variables

Year of fire, fire number.

4.1.5 Principles of Operation

Not applicable.

4.1.6 Sensor/Instrument Measurement Geometry

Not applicable.

4.1.7 Manufacturer of Sensor/Instrument

See Section 4.1, SERM Forest Fire Chronology of Saskatchewan in Vector Format data set.

4.2 Calibration

Not known.

4.2.1 Specifications

Not known.

4.2.1.1 Tolerance

Not known.

4.2.2 Frequency of Calibration

Not known.

4.2.3 Other Calibration Information

Not known.

[Return to top of document.](#)

5. Data Acquisition Methods

This data set was derived from the SERM Forest Fire Chronology of Saskatchewan in Vector Format data set, which includes fires from 1945 to 1996. Below are relevant excerpts from that data set document.

"Most fire boundaries were delineated at a medium-to-small scale (1:250,000), thereby prohibiting mapping of small fires. As expected, a certain amount of feature generalization occurred in the mapping process.

The FFCS data set was generated using several methods and a myriad of source map types. The methods used for digitizing the fire boundaries are categorized by grouping the years of the fires:

- (A) 1945 to 1989, excluding 1972 to 1976
- (B) 1972 to 1976
- (C) 1990 to 1994
- (D) 1995 and 1996

It was initially attempted to digitize only fires that were individual polygons of at least 1,000 hectares. For example if a 'NO-NAME' fire was based on two noncontiguous areas of 500 hectares each, the 1,000-hectare minimum was not satisfied. This rule applied more to the 1945-1989 data set than for those in the 1990s.

Fire boundaries were provided primarily on 1:50,000 and 1:250,000 source maps (categories (A) and (C)). However, burn perimeters were also depicted at other scales (1:12,500, 1:15,840, and 1:unknown), particularly for fires that occurred in the 1940s, 1950s, and 1960s, which were provided on a variety of source scales. Most category (B) fires were on a 1:1,000,000 source map. Some category (D) fires were on 1:12,500 forest inventory maps and were digitized from those source maps. A few category (D) fire boundaries were recorded using Global Positioning System (GPS) receivers and thus have no source scale.

Source map scales were not maintained in the FFCS data set; almost all fire boundaries were transcribed to National Topographic Series 1:250,000 (NTS250) base maps for digitizing. The NTS250 base maps varied from Series 1 to Series 4, depending on the version

available. In most cases, the transcribing of burn boundaries to 1:250,000 was performed visually, but a few maps were ported using a device such as a pantograph. These preparations pertain to category (A) and (C) burns as well as to the vast majority of (D) fires that were not in the commercial forest.

Master burn boundary mylar maps were coordinated to NTS250 reference tics. The tics were in extended Universal Transverse Mercator (UTM) zone 13 coordinates. Editing tolerances used were the default values.

Category (A), (B), and (D) fires were digitized according to basic manual tracing procedures: wherever a line was depicted on the map was where the line was digitized. Most category (C) fire perimeters were digitized using a method that would have facilitated achieving perfect vertical integration with NTS250 water bodies. For these fires, the digitizer intentionally strayed into the water body whenever the fire boundary was shared by the land/water interface. Thus, these fires have noticeable V-shaped arc segments where the boundary enters a lake.

Some fires were delineated directly into digital form using GPS receivers. While flying the perimeter of a fire, GPS dataloggers tracked the flight path. Note that the flight path may have approximated the burn boundary it may have followed bulldozer fireguards rather than the true boundary. The GPS boundaries pertain to a few category (D) fires.

Some fires were digitized at a 1:12,500 scale. These are easily distinguishable from all other burn boundaries in that they are surrounded by ARC/INFO geo-referencing tics that are based on 10-kilometer grids. Almost all of these category (D) fires occurred in the commercial forest and are called "project fires" by the Forestry Branch.

For details on how the source data for 1:12,500 category (D) fires were collected and digitized, contact the Forestry Branch. Details about how the 1:1,000,000 category (B) fires were digitized can also be obtained from the Forestry Branch.

Fire boundaries that crossed NTS250 neat lines were edge-matched and brought into a master year coverage. (At most, the master coverages span the forested region of Saskatchewan; at the least, they span only the areas burned). Fire labels were assigned to every polygon, and the associated attribute data base fields were filled. Basic topology checks (dangles, label errors, redundant nodes) were performed for category (A) and (B) fires."

 [Return to top of document.](#)

6. Observations

Although areas delineated in the data set are considered as "burns," it should not be assumed that these entire areas were burned. Pockets of areas within the burns may have remained unburned. Non-burn land cover types include:

- lakes and rivers
- marshes, muskegs, and other wetlands
- exposed rock (in the Canadian shield)
- "green" non-burned timber areas
- timber harvest areas (regenerating)
- cleared areas (non-regenerating)
- brushland, meadows, riparian areas
- areas of value (resource improvement areas, resorts)

6.1 Data Notes

Detailed analyses of the content of the gross burn area (amount of burned timber/treed muskeg, etc.)

should be made using larger (1:50,000 to 1:12,500) scale maps on a burn-by-burn basis. The FFCS was not compiled to allow for detailed analyses.

6.2 Field Notes

Not given.

[Return to top of document.](#)

7. Data Description

The fire seasons of 1951, 1954, 1962, and 1965 either lacked fires of at least 1,000 hectares or had no records for fires of that size. This data set covers 48 years, starting with 1945 and ending with 1996.

7.1 Spatial Characteristics

Most fire boundaries were delineated at a medium-to-small scale (1:250,000), thereby prohibiting mapping of small features. As expected, a certain amount of feature generalization occurred in the original mapping process.

7.1.1 Spatial Coverage

The extent of the burn coverages is based on recorded wildfires that occurred within provincial jurisdiction forests in Saskatchewan. Consequently, fires that occurred strictly within federal lands (i.e., within the Primrose Lake Air Weapons Range and Prince Albert National Park) are not part of the data set. Fires that crossed provincial federal jurisdictional boundaries (such as the Deer fire of 1993), however, are included in the data set in their entirety.

The spatial extent of individual fire coverages from year to year is highly variable. This variability is the function of the distribution, frequency, and size of fires in a given year.

The corner coordinates of the area covered are:

Corner	UTM Easting	UTM Northing
Northwest	134000.00	6662000.00
Northeast	749000.00	6662000.00
Southeast	749000.00	5433000.00
Southwest	134000.00	5433000.00

7.1.2 Spatial Coverage Map

Not available.

7.1.3 Spatial Resolution

The grid cell resolution is 1 km by 1 km.

7.1.4 Projection

UTM zone 13, North American Datum-1927 (NAD27).

7.1.5 Grid Description

The data are provided in the UTM grid projection.

7.2 Temporal Characteristics

The original database of fire history for Saskatchewan is maintained in vector format by SERM and is updated annually. The data are available in individual coverage per year format. The data set provided here includes two separate gridded images depicting in one the year of last burn and in the other both the year and fire-id.

7.2.1 Temporal Coverage

This data set covers fires that occurred between 1945 and 1996. The fire seasons of 1951, 1954, 1962, and 1965 either lacked fires of the minimum size mapped for this product (1,000 hectares), or larger fires that occurred were never recorded.

7.2.2 Temporal Coverage Map

Not available.

7.2.3 Temporal Resolution

Except for a few missing years, the database was updated for each fire and provided on a yearly basis.

7.3 Data Characteristics

7.3.1 Parameter/Variable

Two gridded images are included in this data set. One of the images is coded simply by a two-digit year of fire (YY) code, such that the same value will exist for multiple polygons or fires within the image that burned in the same year. In the second image, fires are coded by a combination of year and fire number (YYXX), such that each polygon or fire has a unique value and can be discriminated from other fires in the same year. The latter image can be linked by year and fire number to information in the accompanying data file described below.

An ASCII file, "sask_fires.csv", has also been included as part of this data set and is described below. This file can be used to link to fire information in the original data set (BOREAS SERM Forest Fire Chronology of Saskatchewan in Vector Format) database file, SK_FIRES.E00. This original database file contains other parameters related to the fires, such as size and perimeter. Please note, however, that fire extent in the product described here will be different from those in the SK_FIRES.E00 database file because of the process of collapsing all of the single-year layers to create a the multiple-year map of year of most recent burn. In addition, differences will be noted when compared with the original data base file in that some fires were completely eliminated by the process of overlaying more recent years.

The data file that accompanies this data set contains, for each fire, the 4 digit map_code (year(YY) and number(XX)), the fire year, the fire number, the fire name, and the National Topographic Series (1:250,000 scale) map number(s) that the fire was contained within. The fire names and numbers listed here are the same as those in the SERM Forest Fire Chronology of Saskatchewan in Vector Format data set (see section 1.6), and thus provide a link.

Field	Example
MAP_CODE	"9001"
YEAR	"1990"
FIRE_NO	"1990-002"
FIRE_NAME	"EASTSIDE"
NTS250	"740/74J"

7.3.2 Variable Description/Definition

MAP_CODE Four-digit identifier (YYXX) for each fire in the gridded image.

Coded by two-digit year of fire (YY) and fire number (XX) for each fire. Every fire has a MAP_CODE entry, without exception.

YEAR	The year that a fire occurred. Every fire has a YEAR value.
FIRE_NO	Fire identifier assigned during SERM's GIS operations. A completely arbitrary number assigned when the original database was initially constructed. The first four characters represent the fire year, and the last three represent the arbitrary fire number. There may be gaps in FIRE_NO values (e.g., there may be a "1948-002" and a "1948-004" but no "1948-003"). These gaps are the result of removing fires from the data base that were primarily in agricultural land, were smaller than 1,000 hectares, or were revealed upon subsequent investigation, to have fire maps of questionable quality. Every fire has a FIRE_NO entry, without exception.
FIRE_NAME	The name assigned to a fire, usually an arbitrary one. The name may be tied to geographical characteristics ("Esker"), mapped names ("Round Lake," "Wapiskau River"), the shape of the fire ("Football"), the start day or time of the fire ("Monday," "Morning"), or to any number of impulsive fire-naming quirks ("Pizza," "Trolley"). Naming of fires that have merged involves a modified naming system in the database. In this case, usually (but not always), all of the fire names are provided, with the names separated by slashes. For example, the single boundary for the merged Ira and Isaac fires has a FIRE_NAME value of "IRA/ISAAC". Typically, the larger of the pre-merged fires is listed first. Many fires lack names; these fires have either "UNKNOWN" or a blank value in the FIRE_NAME field.
NTS250	National Topographic Series reference number. The format of the NTS250 field (e.g., "73G/73F") lists the mapsheets within which the fire occurred in order of relative proportions and not in alphabetical order. In the example given, more land burned in 73G than in 73F. Every fire has at least one (and as many as four) NTS250 mapsheet names associated with it.

7.3.3 Unit of Measurement

Defined above (Section 7.3.2) where applicable.

7.3.4 Data Source

This product was created from the Forest Fire Chronology of Saskatchewan (FFCS) data set. The success of the FFCS project was dependent upon fire records gathered during various incarnations of the Department. Fire records were handled by numerous people over the years, including, field staff in district offices, Forest Fire Management Branch (FFMB) personnel, and Forestry Branch employees. The hardcopy burn map sources are:

1. 1945-1971 and 1977-1996 FFMB maps at various scales, typically between 1:50,000 and 1:250,000.
2. 1972-1976 Forestry Branch 1:1,000,000 provincial fire overview (source maps at larger scales were unavailable).
3. Miscellaneous - Category (A) The Forestry Branch canvassed its staff for fires that may have been missed in an earlier version of the FFCS data set. Based on that survey, the Forestry Branch provided 1:250,000 maps of the following fires:

- 1961 - Bertwell (year of fire uncertain)
- 1961 - (two name unknowns, 1961-003 and 1961-020)
- 1968 - Armstrong
- 1970 - McCusker
- 1980 - Kennedy Creek
- 1991 - Scorcher
- 1992 - Trolly
- 1993 - Thursday

4. Miscellaneous - Category (B) Various maps that surfaced from other sources were added to the data set. For example, the "Weitzel" and "Lansdowne" fire boundaries for 1973 were provided by Martin Chartier (via Mickey Desjarlais of the SERM "Buffalo Narrows Fire Centre").

All of the data design work and data set documentation were performed by the Wildlife Branch. The vast majority of the digital compilation of the fire maps was performed by the Wildlife Branch. Listing of digital compilation authors is presented via burn year groupings:

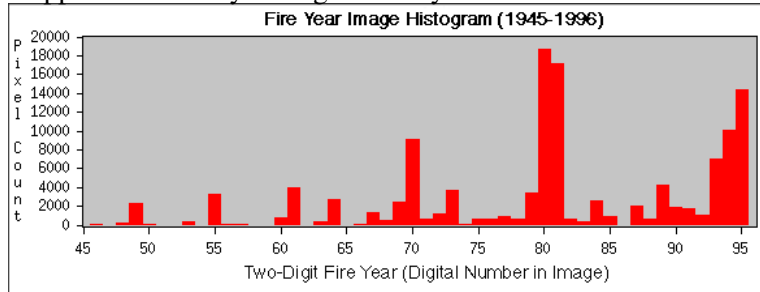
- ◆ 1945-1971, and 1977-1996 -- Wildlife Branch (linework and attributes)
- ◆ 1972-1976 -- Forestry Branch (linework) and Wildlife Branch (attributes)

7.3.5 Data Range

Fire year map (sask_fire_year.img) : 45 to 96

Fire year and fire number map (sask_fire_year_no.img) : 4501 to 9603

Values of zero are associated with no-data, such that all non-burned area in the images during the 1945-1996 time period are zero. The histogram image below shows the relative amount of mapped fire activity throughout the years covered in this data set.



7.4 Sample Data Record

Not applicable.

[Return to top of document.](#)

8. Data Organization

8.1 Data Granularity

This 50 year fire history record for Saskatchewan is available within a selection of two images available here, with additional information also available within a linked ASCII file.

8.2 Data Format(s)

The overall content of this product is:

File name	Description
-----	-----
sask_fire_year.img	Saskatchewan Binary Fire Map ñ image coded by two-digit year of most recent fire
sask_fire_year_num.img	Saskatchewan Binary Fire Map ñ image coded by a combination of the two-digit year of most recent fire and the fire number
sask_fires.csv	Fire Data Table (ASCII)

The year of most recent burn product contains two image files; each is a two-byte integer binary file (least significant byte order -- Intel/Vax), with a size of 615 pixels by 1229 lines.

[Return to top of document.](#)

9. Data Manipulations

9.1 Formulae

Not applicable.

9.1.1 Derivation Techniques and Algorithms

Not applicable.

9.2 Data Processing Sequence

9.2.1 Processing Steps

The reader is referred to Sections 4.1, 5.0, and 7.3.4 for information regarding compilation of the data.

9.2.2 Processing Changes

None.

9.3 Calculations

9.3.1 Special Corrections/Adjustments

See Sections 4.1, 5.0, and 7.3.4.

9.3.2 Calculated Variables

Not applicable.

9.4 Graphs and Plots

None.

[Return to top of document.](#)

10. Errors

10.1 Sources of Error

Because the fire chronology spans a 50-year period, many of the fire boundaries overlap because of repeat

burns in given areas. Some overlaps, however, are a result of inaccurate mapping of fire boundaries. For the data set provided here, only the most recent burn year was retained for areas that experienced repeat fire activity during the 50 year period.

10.2 Quality Assessment

10.2.1 Data Validation by Source

The fire boundaries have NOT been ground-truthed, primarily because it would be far too expensive. Alternatively, fire boundaries could be compared against other sources that would reflect the occurrence of wildfire. Such sources include forest inventory maps, field records, and aerial survey information. A 25 year satellite history record could also be a useful tool for verifying fire boundaries.

Regardless of available burn boundary verification sources, it is clear that perimeter verification would result in accentuating the already inconsistent quality levels within the database. (Data inconsistency sources are listed in the next section.)

The positioning of burn boundaries on the source maps is implicitly assumed to be correct. Yet their positioning may be significantly inaccurate. Similarly, fire boundaries defined using GPS dataloggers may have been generated by tracking the approximate boundary of the fire, although corners may have literally been cut while tracking.

Given the medium-to-small scale of the source maps and the errors inherent in the original mapped boundaries, check plots were not used to verify the digital boundaries. A standard level of digitizing error is simply assumed.

10.2.2 Confidence Level/Accuracy Judgment

The accuracy of the source maps is variable. In addition to a large number of staff delineating fire boundaries using a variety of mapping methods, data consistency variations are a function of spatial and temporal factors as well as fire mapping limitations:

1. Some smaller burns in or north of the Canadian shield may go undetected, and as such, might not be mapped. Burns in the commercial forest and around high value areas are usually mapped more accurately than those further north.
2. Conditions at present do not reflect those 50 years ago; water levels in lakes and marshes have fluctuated in the 50-year span, timber harvesting has not been accounted for, etc. Burns may have been delineated using base maps that reflect only the conditions at the time the base maps were generated.
3. Aerial reconnaissance of burn perimeters is biased toward fires that consumed understory or canopy fuels. Because ground burn perimeters may be obstructed by foliage, ground-level fires are not mapped as accurately as the other fires.

The use of GPS, lightning strike detectors, and better communication equipment means that more fires today are detected, monitored, and mapped than in the 1940s, 1950s, and 1960s.

10.2.3 Measurement Error for Parameters

Not available.

10.2.4 Additional Quality Assessments

This data set was generated using a wide range of observation quality levels, input sources, compilation methods, and data sources. Most boundaries are approximate.

10.2.5 Data Verification by Data Center

BOREAS Information System (BORIS) staff have viewed the data files to verify coverage, image format, dimensions, and data range.

[Return to top of document.](#)

11. Notes

11.1 Limitations of the Data

The authors of the FFCS make no guarantees, stated or implied, as to the correctness, accuracy, or completeness of the data or associated documentation. Users choosing to use the data or documentation do so at their own risk, understanding that the Wildlife Branch and the Province of Saskatchewan will have no liability for any loss, monetary or otherwise, that may be incurred. This data set is provided AS IS.

11.2 Known Problems with the Data

Many fires are not in the database because of missing records. See the report associated with the original FFCS data set. The FFCS database is only as complete as the fire records available to be entered. By no means should the FFCS be viewed as a totally exhaustive data set.

11.3 Usage Guidance

None given.

11.4 Other Relevant Information

Because the fire chronology spans a 50-year period, many of the fire boundaries overlap because of repeat burns in given areas. Some overlaps, however, are a result of inaccurate mapping of fire boundaries. In some instances, fires occurring in the same year had significant boundary overlaps. These fires were usually merged into one fire with multiple fire names stored in the database.

[Return to top of document.](#)

12. Application of the Data Set

The data could be used for:

- Land cover mapping ("dating" stand age based on time of disturbance)
- Wildlife habitat analyses
- Determining of fire action priorities
- Modeling

[Return to top of document.](#)

13. Future Modifications and Plans

None.

[Return to top of document.](#)

14. Software

The software used to process and analyze the vector files to a single raster image is Idrisi for Windows v2.0.

14.1 Software Description

Questions about the software should be directed to:

The Idrisi Project
The Clark Labs for Cartographic Technology and Geographic Analysis
Clark University
950 Main Street
Worcester MA 01610-1477
Phone: (508) 793-7526
Fax: (508) 793-8842
Email: idrиси@clarku.edu
Web Site: <http://www.clarklabs.org/> [Internet Link]

14.2 Software Access

Idrisi for Windows is a commercial package; contact The Idrisi Project for details.

 [Return to top of document.](#)

15. Data Access

15.1 Contact for Data Center/Data Access Information

These BOREAS data are available from the Earth Observing System Data and Information System (EOS-DIS) Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC). The BOREAS contact at ORNL is:

ORNL DAAC User Services
Oak Ridge National Laboratory
(865) 241-3952
ornl_daac@ornl.gov
ornl@eos.nasa.gov

15.2 Procedures for Obtaining Data

BOREAS data may be obtained through the ORNL DAAC World Wide Web site at <http://www.daac.ornl.gov/> [Internet Link] or users may place requests for data by telephone or electronic mail.

15.3 Output Products and Availability

Requested data can be provided electronically on the ORNL DAAC's anonymous FTP site or on various media including, CD-ROMs, 8-MM tapes, or diskettes.

 [Return to top of document.](#)

16. Output Products and Availability

16.1 Tape Products

None.

16.2 Film Products

None.

16.3 Other Products

None.

 [Return to top of document.](#)

17. References

17.1 Platform/Sensor/Instrument/Data Processing Documentation

Forest fire chronology of Saskatchewan digital data documentation. 1996. Wildlife Branch, Saskatchewan Environment & Resource Management. Prince Albert, Saskatchewan. 17 text files.

Welch, T.A. 1984, A Technique for High Performance Data Compression, IEEE Computer, Vol. 17, No. 6, pp. 8 - 19.

17.2 Journal Articles and Study Reports

A fire history for Saskatchewan. 1996. Wildlife Branch, Saskatchewan Environment & Resource Management. Prince Albert, SK. 6 pp. and appendices.

Sellers, P., and F. Hall. 1994. BOREal Ecosystem-Atmosphere Study: Experiment Plan. Version 1994-3.0, NASA BOREAS Report (EXPLAN-94).

Sellers, P., F. Hall, H. Margolis, B. Kelly, D. Baldocchi, G. den Hartog, J. Cihlar, M. G. Ryan, B. Goodison, P. Crill, K. J. Ranson, D. Lettenmaier, and D. E. Wickland. 1995. The BOREal Ecosystem-Atmosphere Study (BOREAS): An overview and early results from the 1994 field year. Bulletin of the American Meteorological Society. 76(9):1549-1577.

Sellers, P., F. Hall, and K. F. Huemmrich. 1994. BOREal Ecosystem-Atmosphere Study: 1994 Operations. NASA BOREAS Report (OPS DOC 94).

Sellers, P., and F. Hall. 1996. BOREal Ecosystem-Atmosphere Study: Experiment Plan. Version 1996-2.0, NASA BOREAS Report (EXPLAN-96).

Sellers, P., F. Hall, and K. F. Huemmrich. 1997. BOREal Ecosystem-Atmosphere Study: 1996 Operations. NASA BOREAS Report (OPS DOC 96).

Sellers, P. J., F. G. Hall, R. D. Kelly, A. Black, D. Baldocchi, J. Berry, M. Ryan, K. J. Ranson, P. M. Crill, D. P. Lettenmaier, H. Margolis, J. Cihlar, J. Newcomer, D. Fitzjarrald, P. G. Jarvis, S. T. Gower, D. Halliwell, D. Williams, B. Goodison, D. E. Wickland, and F. E. Guertin. 1997. BOREAS in 1997: Experiment Overview, Scientific Results and Future Directions. Journal of Geophysical Research 102 (D24): 28,731-28,770.

17.3 Archive/DBMS Usage Documentation

None.

 [Return to top of document.](#)

18. Glossary of Terms

None.

 [Return to top of document.](#)

19. List of Acronyms

BOREAS	- BOREal Ecosystem-Atmosphere Study
BORIS	- BOREAS Information System
DAAC	- Distributed Active Archive Center
EOS	- Earth Observing System
EOSDIS	- EOS Data and Information System
FFCS	- Forest Fire Chronology of Saskatchewan
FFMB	- Forest Fire Management Branch
GIS	- Geographic Information System
GPS	- Global Positioning System
GSFC	- Goddard Space Flight Center
NAD	- North American Datum
NASA	- National Aeronautics and Space Administration
NSA	- Northern Study Area
NTS	- National Topographic Series (basemaps)
ORNL	- Oak Ridge National Laboratory
PANP	- Prince Albert National Park
PAT	- Polygon Attribute Table
SERM	- Saskatchewan Environment & Resource Management
SSA	- Southern Study Area
URL	- Uniform Resource Locator (a World Wide Web address)
UTM	- Universal Transverse Mercator

 [Return to top of document.](#)

20. Document Information

20.1 Document Revision Dates

Written: 30-Mar-2000

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20.2 Document Review Date(s)

BORIS Review: 11-Sept-2000

Science Review:

20.3 Document ID

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 [Return to top of document.](#)
