The Forestry Corp.

Landscape Disturbance Data Documentation

Foothills Model Forest

March 1998

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1. Introduction

This document describes the data and processes used during the 'Landscape Disturbance – 1998' project. It satisfies two of the deliverables for that project (Section 4.1, items #3 and #6). A detailed description of the project itself can be found in the project definition document dated January 14, 1998.

2. General Process Descriptions

2.1 ASCII Data

The creation of ASCII data followed the same process as previous work completed for the Landscape Disturbance project (September 1996, June 1997 and October 1997). The goal was to convert the spatial data to a format which could be analyzed without the use of GIS software. Following is a detailed description of the process used. All data was forwarded to Mr. Dave Andison as per instructions from Dan Farr.

Resolution

The data for this project was required in two different resolutions. First, various attributes were required for points located every 200m across the landscape (the model forest). Second, the same attributes were required for points located every 50m across selected mapsheets. The 50m data was not done for the entire landscape since the data file sizes would be unmanageable. However, since the data was to be analyzed together, all point locations for all attributes at both scales had to be coincident. To achieve that result, the same or numerically coincident origin locations were used (i.e. the 50m origins had to fall on an even 200m point). Note that the final output point locations are actually offset by half the grid cell size (i.e. by either 100m or 25m) since they were created at the *center* of each grid cell.

Mapsheets & Origins

The 200m data did not involve any specific mapsheets, rather it was for the entire model forest area. The origin statistics for that data were:

- origin ==> 403800, 5837400
- rows/columns ==> 763, 687

Originally (1996) only a single UTM mapsheet was selected for the 50m data: 83F03NE. The origin statistics for that sheet were:

- origin ==> 483200, 5885800
- rows/columns ==> 284 336

In June 1997 eight UTM mapsheets were selected for the 50m analysis: 83E09NE, 83E09NW, 83E16SE, 83E16SW, 83F03NE, 83F03NW, 83F06SE, and 83F06SW. These were 2 distinct groups of sheets, one north (the 'E' sheets) and one south (the 'F' sheets). The origin statistics for those sheets were:

- north origin ==> 400600, 5942000
- north rows/columns ==> 572, 676
- south origin ==> 466400, 5885800
- south rows/columns ==> 564, 672

In October 1997 the decision was made (by Dan Farr and Dave Andison) to drop the 'E' sheets and replace them with 6 new sheets: 83F12NE, 83F12NW, 83F13NE, 83F13NW, 83F13SE, and 83F13SW. The origin statistics for those sheets were:

- origin ==> 433800, 5941600
- rows/columns ==> 844 672

Process – Spatial Attributes

The Arc/Info GRID module was used to convert the input polygon and line feature attributes to attributes at the 200m and 50m spacing. An alternative method for future work could be to create an Arc/Info point coverage at the given spacing (using awk to create a generate file of point locations based on the necessary origin) then use the 'identity' command to attach the polygon attributes to each point.

Following is the sequence of steps used:

1. Created a unique identifier for each feature (in most cases by making the –ID value unique)
2. Used the 'polygrid' command to convert the polygon coverage to a grid (used the appropriate origin and rows/columns values) based on the unique feature value (e.g. –ID)
3. Converted the grid back to a points coverage using the 'gridpoint' command.
4. Setup a relate between the output points and the input polygons and checked that the attributes were correct in arcplot (that the point attributes matched the underlying polygon attributes).
5. Used the 'addxy' command to add the x and y coordinates to the point attribute file (the .pat file).
6. Used Tables to alter the output width of any fields necessary to eliminate '*' in the final output (e.g. in some cases made the –ID field 10 wide).
7. Unloaded the polygon feature attributes (.pat file) to a system file using the Tables 'unload' command. This included the unique polygon identifier plus any relevant attributes. Unnecessary attributes were not unloaded to minimize file size.
8. Unloaded the point feature attributes (.pat file) to a system file using the Tables 'unload' command. This included the point ID number, the polygon ID number, the x-coord and the y-coord.
9. Used sed to drop the trailing zeros from the unloaded point file to minimize file size (e.g. 'sed "s/.00000//g" natregpts.out > natregpts.dat')

10. Transferred the files to a PC and either winzip'd or pkzip'd them before sending them to Dave Andison.
11. Used the Arc/Info 'frequency' command to create any required summaries of the input coverages (e.g. 20 year age class summaries of the fire coverage).

3. Spatial Coverage Details

3.1 Residual Burn Islands

Coverage Name: Resid

Feature Types: ArcInfo version 7.1.1 - Polygons and Label features

Source Data: Multiple scale mylars created by the Foothills Model Forest, interpreted from airphotos

Coordinate System: Universal Transverse Mercator, Zone 11 – Datum: Nad27

Data Dictionary:

Polygon attribute fields:

Field name	Field type	Width	Description
AREA	F	4	polygon area (m2)
PERIMETER	F	4	polygon perimeter (m)
RESID98#	B	4	internal polygon #
RESID98-ID	B	4	resid98 polygon ID number
FIRENUMBER	C	12	LFS Historical fire number
BURNCODE	C	1	FMF/LFS adapted burn characteristics
HECTARES	F	8	polygon area in hectares
YEAR	B	2	Year of burn
SOURCE	C	18	Source of burn information
FIREREF	N	5	FMF fire reference number

Item Descriptions:

1) Firenumber: LFS Historical fire number obtained from archival maps

Valid Codes	Code Description
49-1-56	
55-1-61	
57-1-56	
57-2-56	
6-18-61	
7-6-56	
7-9-61	
DG2-13-82	
DR6-19-79	

2) Burncode: FMF/LFS adapted burn characteristics

Valid Codes	Code Description	FMF feature
B	Burned area	class 0
J	Burned area	class 2
I	Unburned island	class 1

3) Hectares: polygon area in hectares

Valid Codes	Code Description
E.g. 18488	area in hectares

4) Year: Year of fire

Valid Codes	Code Description
0	no associated year
1956	Year of fire
1961	Year of fire

1979	Year of fire
1982	Year of fire

5) Source: Source of Fire information

Valid Codes	Code Description
FMF-AIRPHOTOS	Foothills Model Forest airphoto interpretation
FS Archive maps	Alberta Forest Service archival/historical paper maps

6) Fireref: Foothills Model Forest fire reference number

Valid Codes

0

1072

1118

1119

1120

1206

1209

1236

1499

1635

Related Tables: No related tables at current time

General Description: Coverage consists of 9 spatially separated burn areas located both within and outside the FMF boundary. Kim Maclean acted as the contact for the FMF for clarification of data loading issues. Please see appendix for further information on the original basis for the burncode characteristic as received from the Forest Service.

Related Documentation: See project definition entitled "Landscape Disturbance 1998 – Foothills Model Forest GIS Project Definition", January 14, 1998.

Last Revision Date: Feb 1998

Provider: Lionel Eshleman, The Forestry Corp (403) 452-5878 forcorp@compusmart.ab.ca

Client: Dan Farr, Foothills Model Forest (403) 865-8385 dfarr@env.gov.ca

Metadata documentation completion date: March 1998.

3.2 Forest Cover

Coverage Name: Fc_fire97

Feature Types: ArcInfo version 7.1.1 - Polygons and Label features

Source Data: Forest Service Archival Fire Maps

Coordinate System: Universal Transverse Mercator, Zone 11 – Datum: Nad27

Data Dictionary:

Field Name	Field type	Width	Description
AREA	F	4	polygon area (m2)
PERIMETER	F	4	polygon perimeter (m)
FC98#	B	4	internal polygon #
FC98-ID	B	4	FC98 polygon ID number
FIREREF	F	8	FMF fire reference number
FIRENUM	C	16	LFS Historical fire number
YEAR	F	8	Year of burn
DENSITY	C	8	Forest cover density
HEIGHT	F	8	Forest cover height(LFS ht classes)
SP1	C	6	Forest cover species 1
SP2	C	6	Forest cover species 2
SP3	C	6	Forest cover species 3
POLY	I	5	Forest cover polygon number

1) Fireref: Foothills Model Forest fire reference number

Valid Codes

1635

1499

1236

1209

1206

1119

1118

1072

1120

2) Firenumber: LFS Historical fire number obtained from archival maps

Valid Codes

2-4-58

55-1-61

57-1-56

7-2-56

7-6-56

7-8-61

9-3-56

DG2-13-83

3) Year: Year of fire

Valid Codes	Code Description
1956	Year of fire
1958	Year of fire
1961	Year of fire
1982	Year of fire

4) Density: Forest cover density – as indicated on LFS archival maps

Valid Codes	Code Description
A	A class
B	B class
C	C class
D	D class
Blank	No associated density

5) Height

Valid Codes	Code Description
0	No associated height
1	1 class
2	2 class
3	3 class
4	4 class

6) SP1: Forest cover species 1

Valid Codes	Code Description
A	Deciduous undifferentiated
CL	Clearing
P	Pine undifferentiated
PL	Lodgepole Pine
RB	Rock Barren
RV	River
SB	Black Spruce
SH	Shrub
SS	Spruce undifferentiated
SW	White Spruce
TM	Treed muskeg

7) SP2: Forest cover species 2

Valid Codes	Code Description
A	Deciduous undifferentiated
CL	Clearing
P	Pine undifferentiated
PL	Lodgepole Pine
RB	Rock Barren
RV	River
SB	Black Spruce
SH	Shrub
SS	Spruce undifferentiated

SW	White Spruce
TM	Treed muskeg

8) SP3: Forest cover species 3

Valid Codes	Code Description
A	Deciduous undifferentiated
CL	Clearing
P	Pine undifferentiated
PL	Lodgepole Pine
RB	Rock Barren
RV	River
SB	Black Spruce
SH	Shrub
SS	Spruce undifferentiated
SW	White Spruce
TM	Treed muskeg

9) POLY: Forest cover polygon number – Unique within each burn

Related Tables: No related tables at current time

General Description: Coverage consists of 8 spatially separated forest cover areas located both within and outside the FMF boundary. Kim Maclean acted as the contact for the FMF for clarification of data loading issues. Please note that the historical nature of the source maps resulted in the creation of some special species/type codes for those areas designated by symbols.

Related Documentation: See project definition entitled "Landscape Disturbance 1998 – Foothills Model Forest GIS Project Definition", January 14, 1998.

Last Revision Date: Feb 1998

Provider: Lionel Eshleman, The Forestry Corp (403) 452-5878 forcorp@compusmart.ab.ca

Client: Dan Farr, Foothills Model Forest (403) 865-8385 dfarr@env.gov.ca

Metadata documentation completion date: March 1998.

3.3 Combination Residuals and Forest Cover

Coverage Name: Residfc

Feature Types: ArcInfo version 7.1.1 - Polygons and Label features

Source Data: A unioned coverages of the above listed resid and fc_fire97

Coordinate System: Universal Transverse Mercator, Zone 11 – Datum: Nad27

Data Dictionary:

See above for item descriptions, valid codes and code descriptions

Field Name	Field type	Width	Description
AREA	F	4	polygon area (m2)
PERIMETER	F	4	polygon perimeter (m)
RESIDFC#	B	4	internal polygon #
RESIDFC-ID	B	4	residfc polygon ID number
FC98#	B	4	union cover internal polygon #
FC98-ID	B	4	union cover polygon ID number
FIREREF	F	8	FMF fire reference number
FIRENUM	C	16	LFS Historical fire number
YEAR	F	8	Year of burn
DENSITY	C	8	Forest cover density
HEIGHT	F	8	Forest cover height (LFS ht classes)
SP1	C	6	Forest cover species 1
SP2	C	6	Forest cover species 2
SP3	C	6	Forest cover species 3
POLY	I	5	Forest cover polygon number
RESID98#	B	4	union cover internal polygon #
RESID98-ID	B	4	union cover polygon ID number
FIRENUMBER	C	12	LFS Historical fire number
BURNCODE	C	1	FMF/LFS adapted burn characteristics
HECTARES	F	8	polygon area in hectares
SOURCE	C	18	Source of burn information

Related Tables: No related tables at current time

General Description: Coverage is an ArcInfo union of the resid and fc_fire97 coverages.

Related Documentation: See project definition entitled "Landscape Disturbance 1998 – Foothills Model Forest GIS Project Definition", January 14, 1998.

Last Revision Date: Feb 1998

Provider: Lionel Eshleman, The Forestry Corp (403) 452-5878 forcorp@compusmart.ab.ca

Client: Dan Farr, Foothills Model Forest (403) 865-8385 dfarr@env.gov.ca

Metadata documentation completion date: March 1998.

Appendix 1

Government Class 'E' Fire Codes

From - Wed Sep 17 15:49:42 1997
□
From: Rolf Aslund <raslund@env.gov.ab.ca>
Sender: raslund@env.gov.ab.ca
To: forcorp@compusmart.ab.ca
Subject: Class E Fires Attributes
Date: Wed, 17 Sep 1997 15:46:27 -0600 ()

To: Lionel Eshleman

We are currently using the following attributes
items in the Class E fires polygon coverages:

FIRENUMBER,12,12,C
BURNCODE,1,2,C
HECTARES,8,12,F,1
YEAR,2,5,B
SOURCE,18,18,C

where

FIRENUMBER is the Fire Number used in the Fire Incidence
Reports for the individual fires.

BURNCODE = B or I It is a flag indicating if the polygon
is an area that was Burned or an Island of unburned area
within a burned area. Burns that occur outside the Forest
Protection Area (FPA) are coded "1" and Islands outside
the FPA are coded "0".

HECTARES is the polygon area in hectares (=AREA/10000)

YEAR is the 4-digit year the fire occurred. This is
included because some Users combine all the annual
fire coverages into one.

SOURCE is a free field which is used to indicate how or
from where the digital data were captured; e.g.
"Airborne GPS", "Post-diff. GPS", "1:20k map", etc.
This item is intended to give the GIS analyst an
indication of the quality of the current data in the
event "better" data is obtained at a later time.

This coding is currently under review and it is anticipated
it will be revised during the next 6-12 months. If you have
any question, please don't hesitate to contact me directly.

I will take this opportunity to, apologize for not sending
you this information earlier.

Regards,

Rolf Aslund
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