An Overview of the Composite Burn Index (CBI) and the Feat/Firemon Integrated (FFI) Database

An Overview of the Monitoring Trends in Burn Severity (MTBS) Project and Field-Based Burn Severity Assessment
02/06/2013

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Presentation Overview

- Burn Severity
- Composite Burn Index Overview
- CBI Example
- Managing CBI data within FFI
- MTBS Data Validation

Ron Masters 2009

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Monitoring Trends in Burn Severity

Definition of Burn Severity

Nate Benson

# Burn Severity at a Landscape Level

Overstory
Big Trees
Mid-Trees

Understory
Soil, litter, Duff, Fuels, Herbs, Shrubs

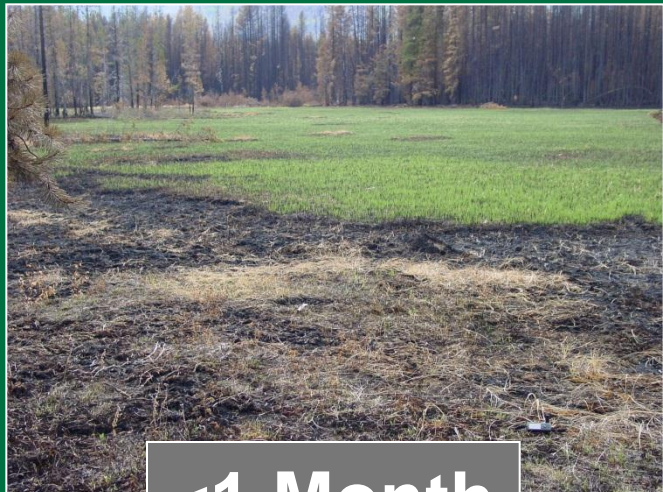*Aggregate of Many Responses - Over Area, Strata and Components*

Forest Site

Short-Term Severity (First-Order Effects)

Response
Green Biomass
Char, Scorch
Consumption
Survivorship
Mortality
Species
Composition
Colonizers
Productivity
etc.

Long-Term Severity

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Years or Growing Seasons

-10   0 1   10   20   30

MTBS
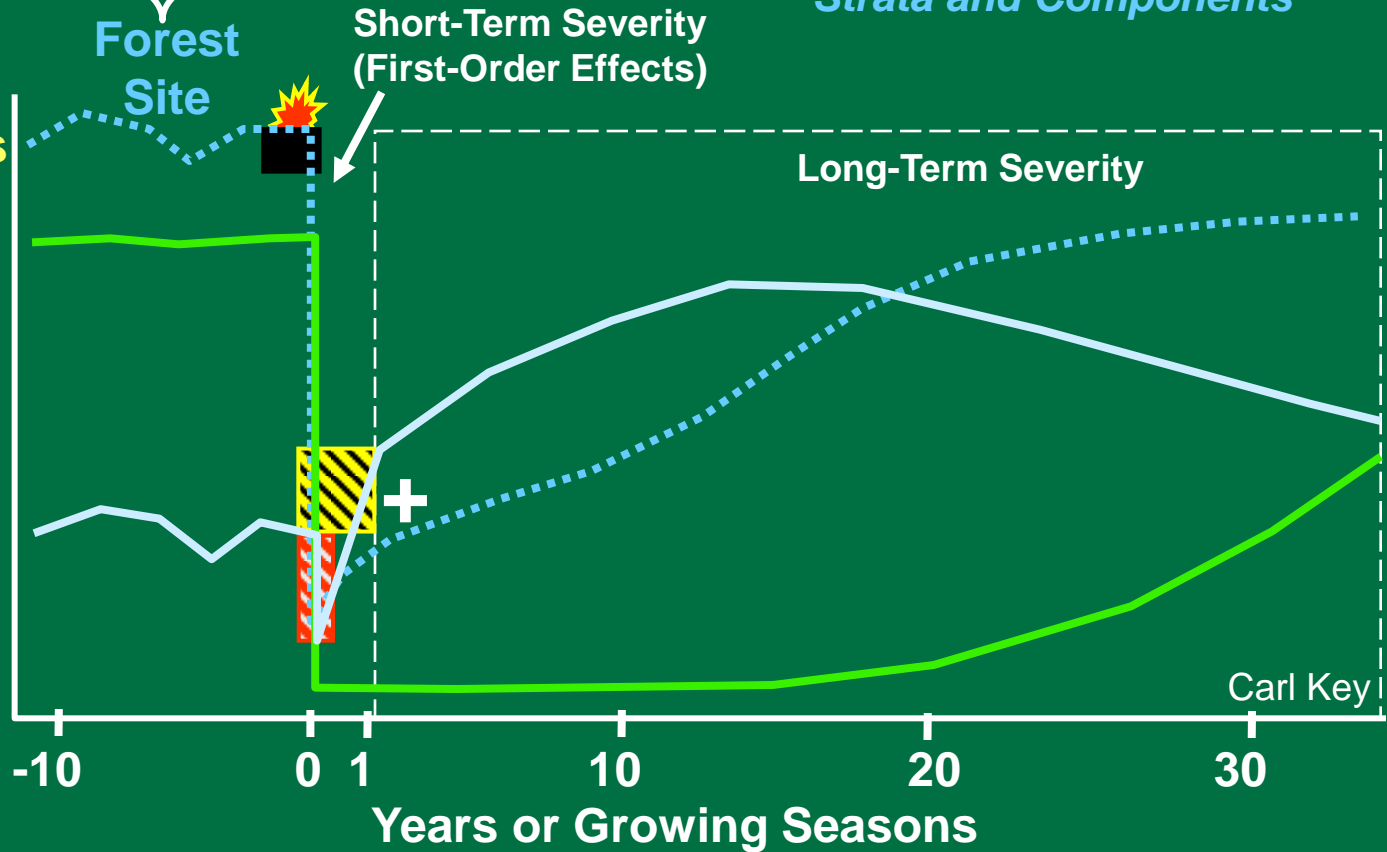
Time Since Fire
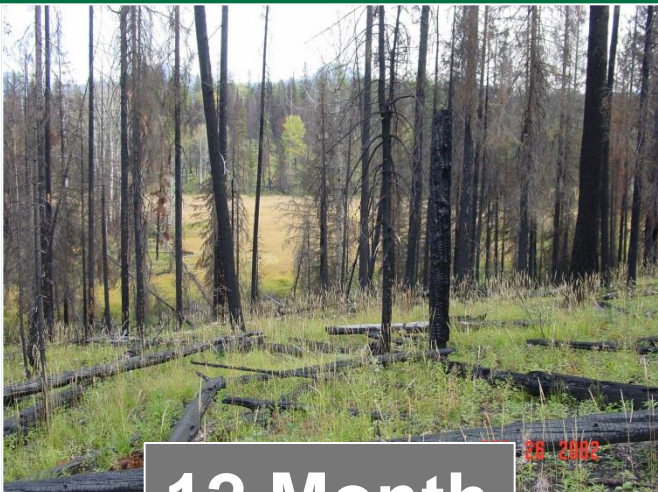
<1 Month

12 Month

Carl Key

CBI-Forensic Ecology

Carl Key

Jasper
#24
5-22-02

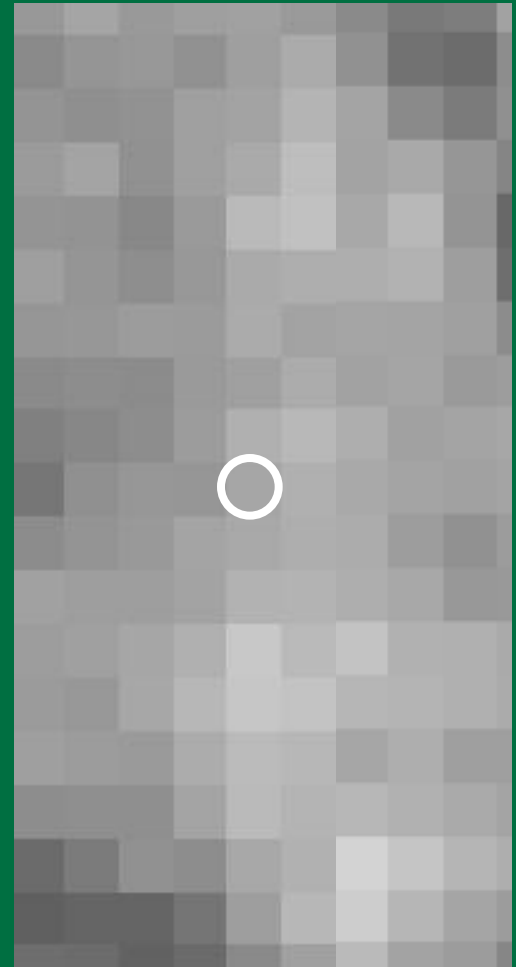# CBI-Spatial Resolution

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Plot level
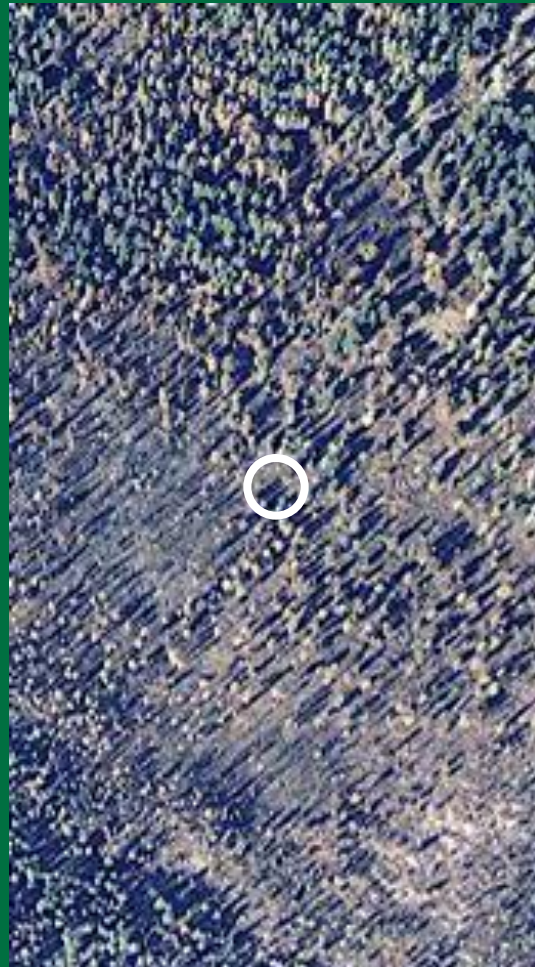
0.3 to 1 meter

30 meter dNBR

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CBI-Components

- Burn Index: 0-3
  - 0-Unburned
  - 3-Severe Burn

- Five Strata
  - 4-5 Ratings Factors
    - Ryan and Noste 1985
    - Landsat
  - Averaged

CBI Example-Understory Strata

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Substrates	Score
Litter/Light Fuels	2.7
Duff	2.6
Medium Fuels	2.3
Heavy Fuels	n/r
Soil Cover/Color	2.9

Average: 2.6

Herbs/Low Shrubs	
% Foliage Altered	n/r
% Living/Resprouting	2.0
Colonizers	2.2
Species Composition	2.7

Average: 2.3

Tall Shrubs/Saplings	
% Foliage Altered	2.8
% Green (Unaltered)	2.8
% Living/Resprouting	1.0
Species Composition	2.0

Average: 2.2

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CBI Example-Overstory Strata

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Intermediate Trees/Subcanopy

Average: 1.9

	Score
% Green (Unaltered)	2.4
% Black (Torch)	1.0
% Brown (Scorch/Girdle)	2.0
% Canopy Mortality	2.0
Char Height	1.9

Big Trees/Upper Canopy

Average: 1.7

% Green (Unaltered)	2.3
% Black (Torch)	0.0
% Brown (Scorch/Girdle)	2.0
% Canopy Mortality	2.0
Char Height	2.4

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CBI Example-Average CBI Score

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Understory Average:

2.4

Overstory Average:

1.8

Overall Average:

2.1

CBI-Site Selection

Proposed Plots (X)
Added Plots (X)

Carl Key
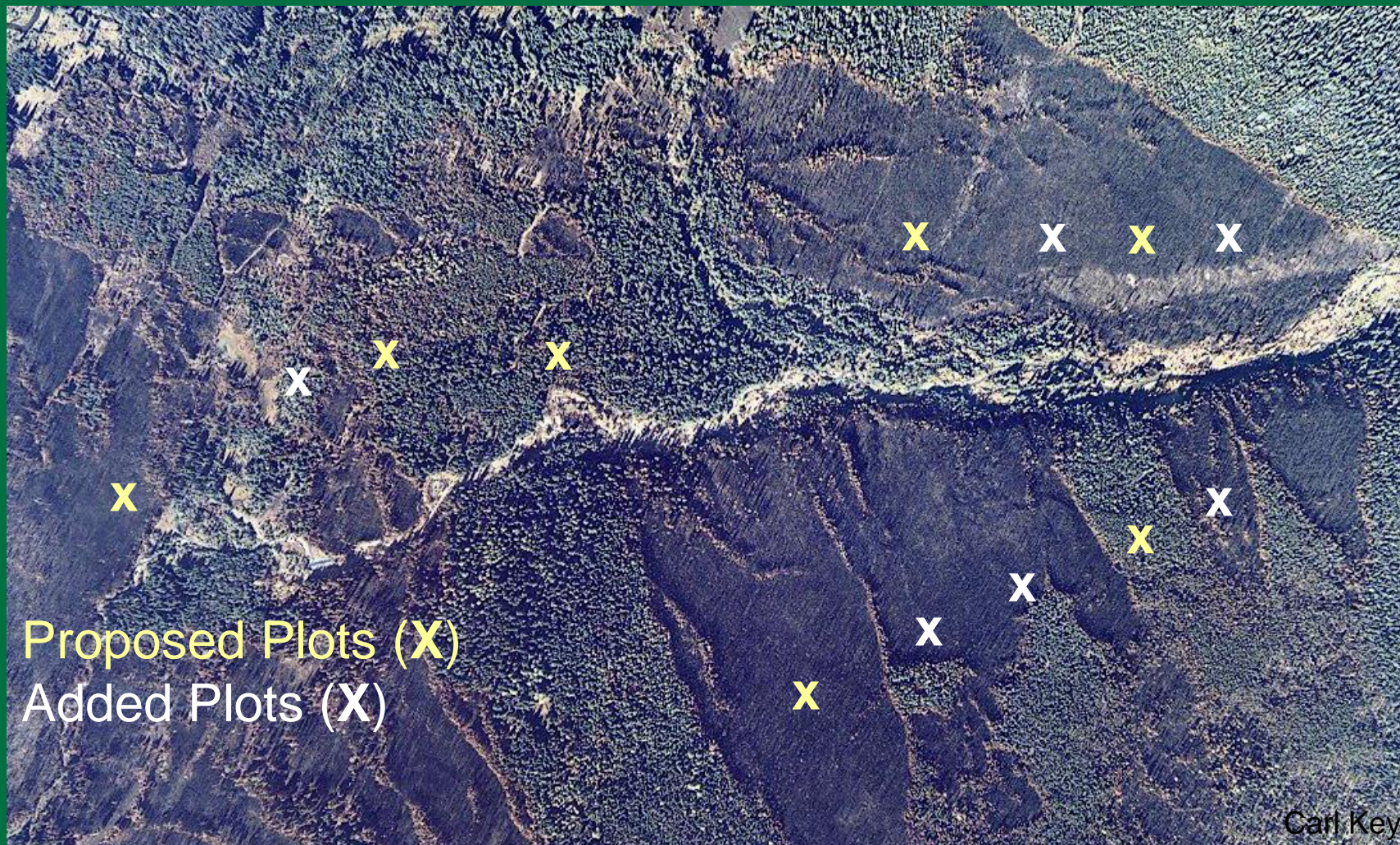
Keep in mind..

- Time affects observation
- 1st post-fire growing season
- Numeric ratings
- Averages spatial variation
- Fire effects weighted equally
- Observer bias
- Experience improves accuracy
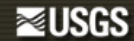- CBI is not a perfect measure

Carl Key

FFI Database-Website

http://frames.nbii.gov/portal/server.pt?open=512&objID=483&mode=2&in_hi_userid=2&cached=true0

FFI Database-Manuals and Download

FRAMES Home | Subject Areas ▾ | Geographic Areas ▾ | Partner Sites ▾

FFI Home Page | FFI Software and Manuals | FFI Training Schedule | FFI Training Materials | FFI Help Documents | FFI Fuel Constant Set References | FFI Field Data

FFI Manuals and Software

FFI Manuals

FFI User Guide - Most users will want to download this document. Includes FFI and SQL Server installation instructions
PDF (14MB): FFI_UG_March2010.pdf
HTML (66MB): FFI_UG_March2010.chm

Protocol Manager User Guide - Download only if using Protocol Manager to create protocols or manage protocol files
PDF (17MB): FFI-PM_June2008.pdf
HTML (19MB): FFI-PM_June2008.chm

GIS Module User Guide - Included with the GIS installer below

PDA Field Handbook - Download only if using a PDA to collect FFI data
PDF (2MB): FFI-PDA_June2008.pdf

FFI Software Installation Files & Training data

To use the FFI monitoring software you will need to download and install: 1) *FFI Install Package for Windows XP/Windows 7* and 2) *Microsoft SQL Server Express 2005 Edition SP3*. If you want to use the FFI GIS utility then download and install the files in *FFI GIS Installers and User Guide*. If attending a FFI training class or if you wish to have a practice dataset available for your use download the *FFI Training Dataset*.

Download the files to a temporary directory on your hard drive. Installation instructions for FFI and SQL are available in the **FFI User Guide** posted above.

General instructions for upgrading to FFI v1.04.01 - Use only when updating to the new version of FFI
FFI upgrade installation instructions v1.04.01

Microsoft SQL Server Express 2005 Edition SP3 32-bit (36MB): SQLEXPR32.EXE

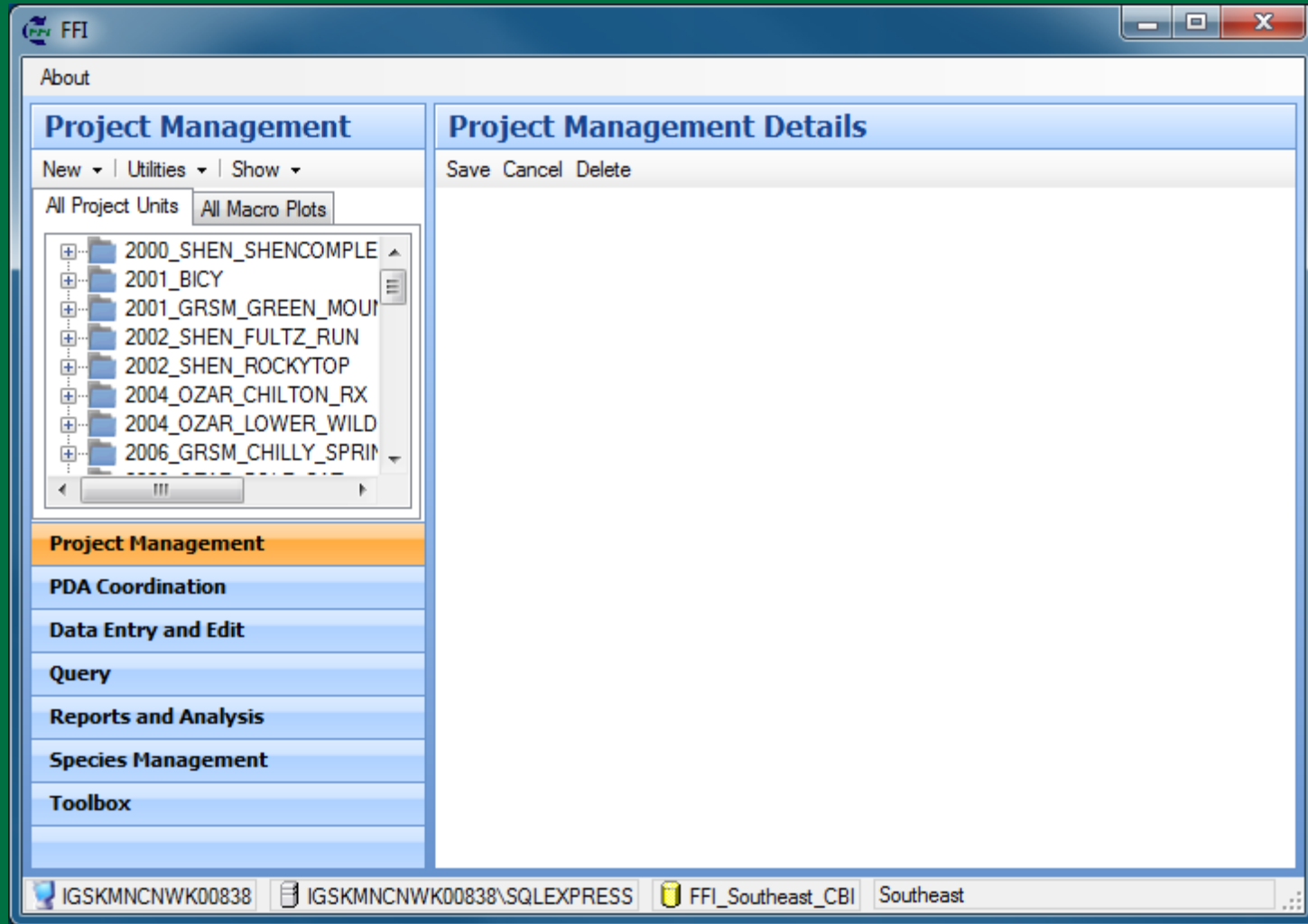**Microsoft SQL Server Express 2005 Edition SP3 64-bit (56MB):** SQLEXPR.EXE

FFI Install Package for Windows XP/Windows 7 (21MB): FFIv10401.zip

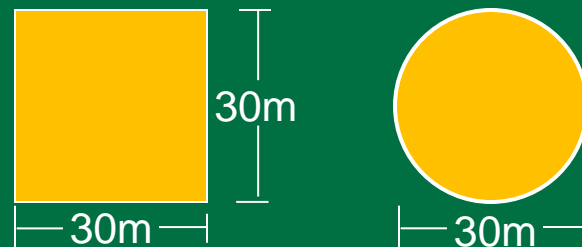**FFI Training Dataset (12MB):** FFI_TrainingData_v10401.zip

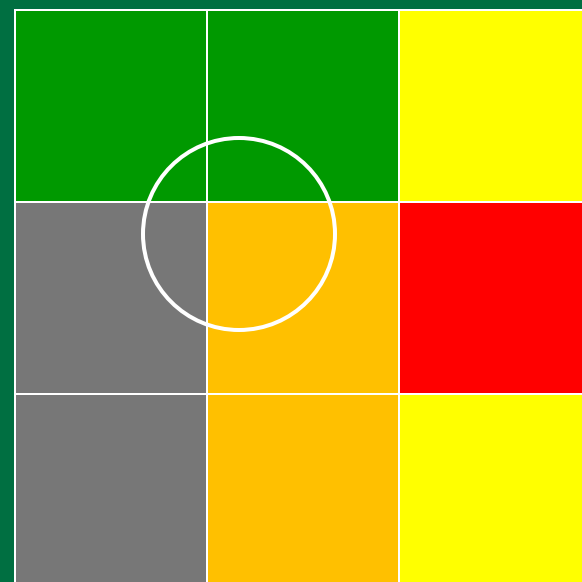**FFI GIS Installers and User Guide (4MB):** FFI GIS Installers and User Guide.zip
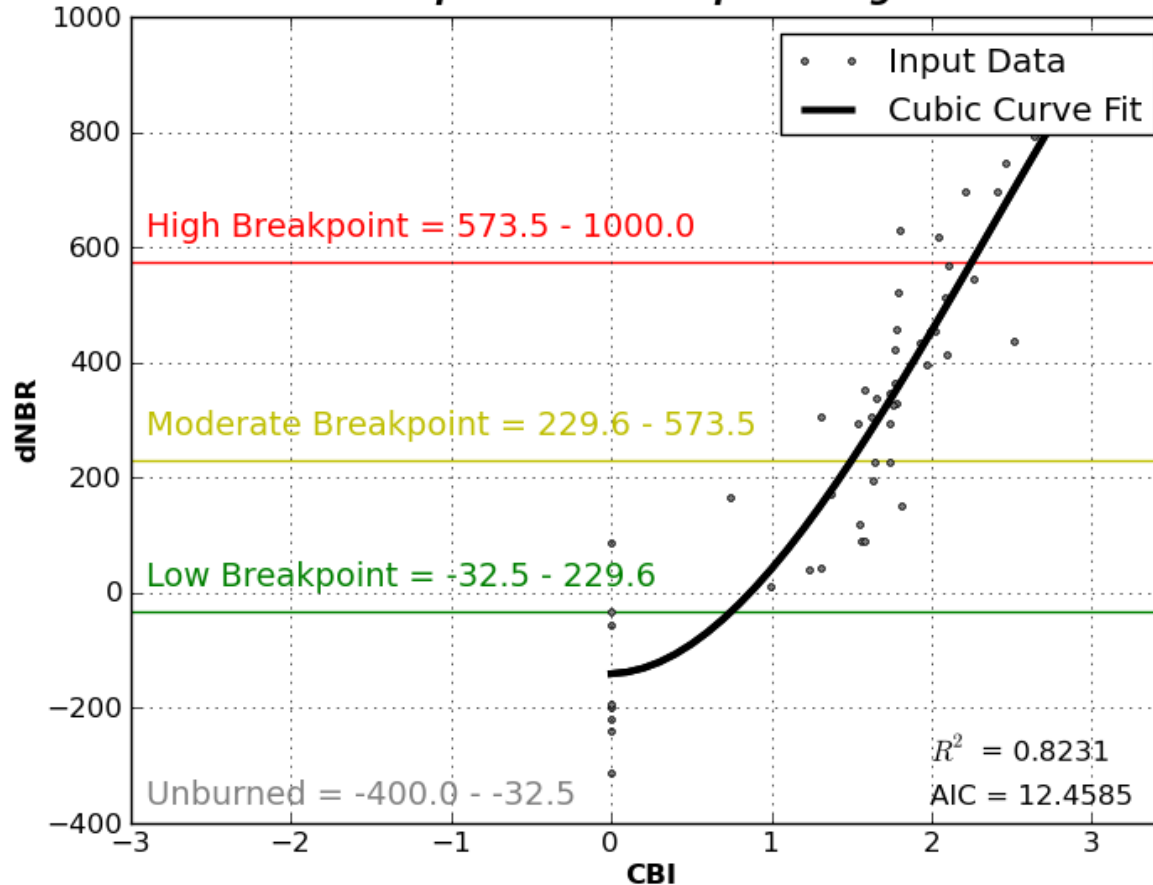
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FFI Database-Demo

Burn Severity Comparison

Severity	dNBR
Unburned	-100 - 99
Low	99 - 269
Low-Moderate	269 - 439
Moderate-High	439 - 659
High	659 - 1300

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CBI versus dNBR-Thresholding

CBI Versus dNBR in Depression Swamps During the Dormant Season

Questions ?

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