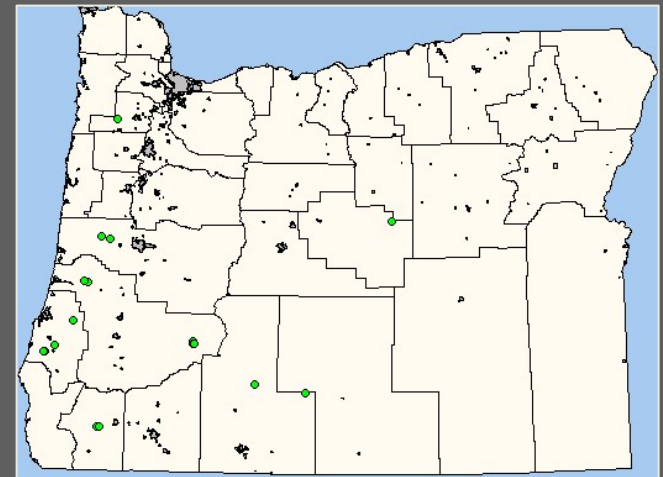


# Track One: Activity Tracking

- ⇒ Required Data Elements
- ⇒ National Fire Activity Database
- ⇒ IMPROVE
- ⇒ Data Quality and Augmentation
- ⇒ Remote Sensing
- ⇒ GIS methods for augmentation
- ⇒ Agricultural fire tracking
- ⇒ Projection of future fire activity



# Required Data Elements

Track One: Plenary One

New Orleans

4-6 May 2004

Tuesday 13:30-14:00

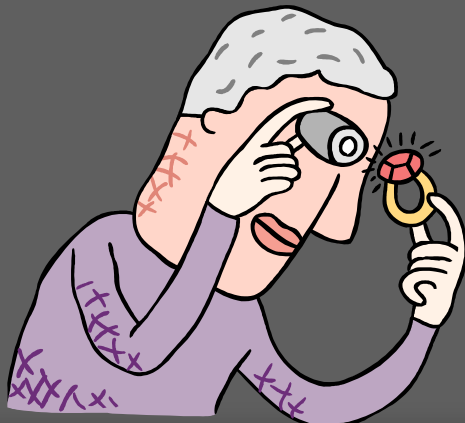




Are we overwhelmed by trying to process every detail from all sources?



Can we find ways to order and process all of it?



Or should we focus only on a few precise bits of information to form a reasonable conclusion?

# Questions

## ⇒ Data elements?

- What elements are needed to estimate emissions?
- What default assumptions should be used when data unavailable (e.g., how should fires be allocated)?

## ⇒ Format?

- What format is most effective for creating emission inventories?

## ⇒ Data Quality Objectives?

# Scale Issues – Spatial

## ⇒ Typical minimum report

- 100 acres
- 0.4 km<sup>2</sup> (0.6 km x 0.6 km)

## ⇒ Modus Satellite

- 15 acres
- 0.063 km<sup>2</sup> (250 m x 250 m)

## ⇒ Typical Satellite

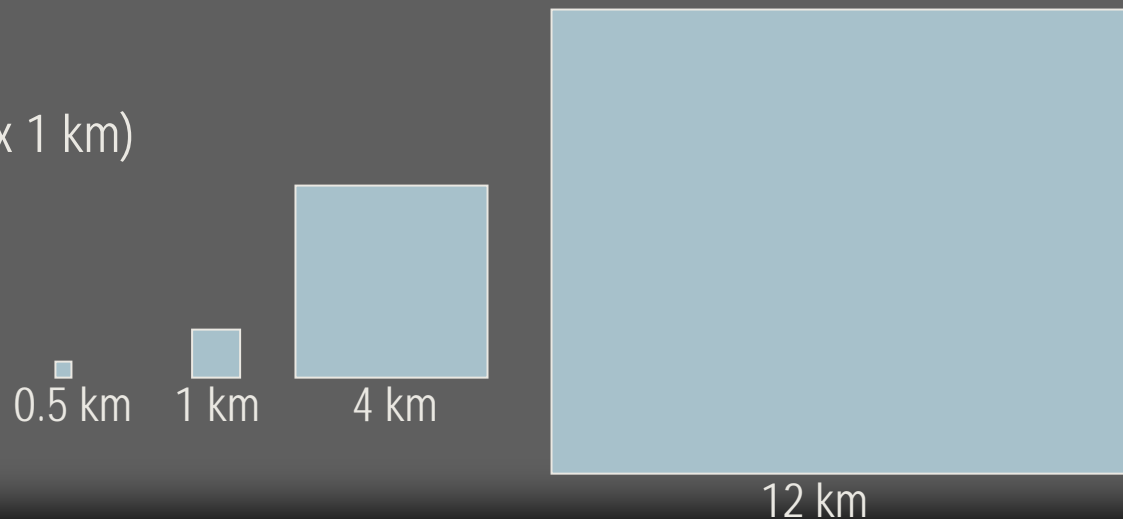
- 250 acres
- 1.0 km<sup>2</sup> (1 km x 1 km)

## ⇒ Dispersion Model

- 250 acres (1 km x 1 km)
- 4,000 acres (4 km x 4 km)
- 35,500 acres (12 km x 12 km)

## ⇒ Photochemical Model

- 35,5000 acres (12 km x 12 km)
- 320,000 acres (36 km x 36 km)



# Scale Issues – Temporal

- ⇒ AQ Observations
  - Light scattering/absorption (minute to hour)
  - Filter samplers (several days)
- ⇒ Remote Sensing
  - Column integrated
  - Twice/day orbiters
  - 30 minutes GOES
- ⇒ Fire Reports
  - Time of day
  - Daily
  - Annually



# Scale Issues – Di minimus



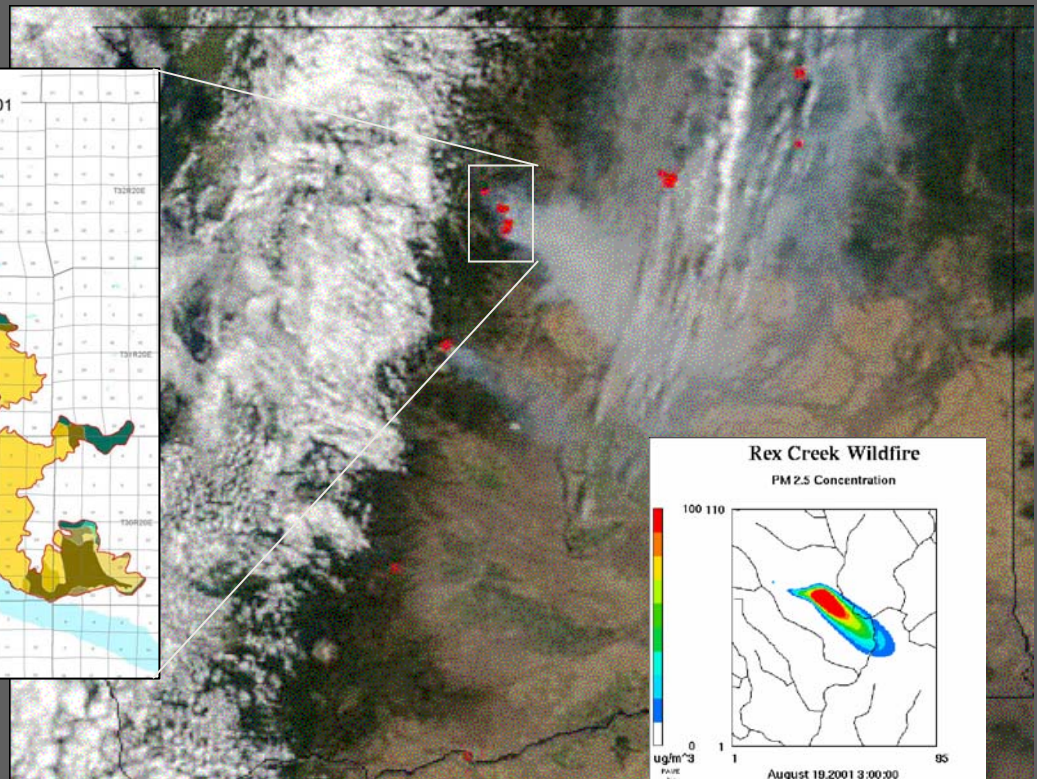
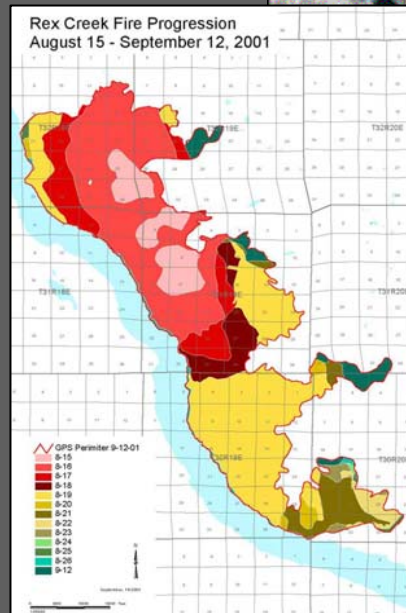
# Data Elements

- ⇒ Time and Location
  - Location over time
  - Start/stop time and date
  - Area
- ⇒ Fuel Type and Condition
  - Fuel moisture
  - Activity fuel information
- ⇒ Burn Information
  - Duration of continuous flaming
  - Crown involvement
  - Type (pile, understory, wild, etc.)



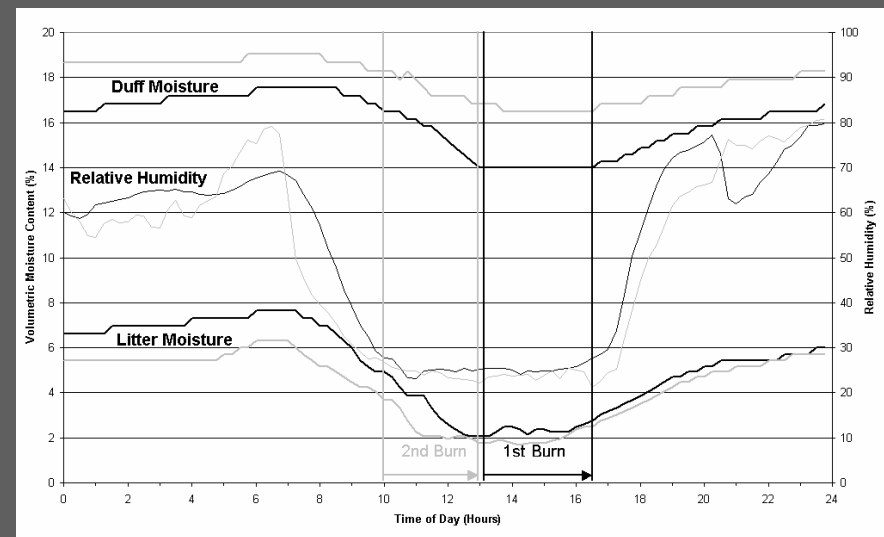
# Time and Location

- Location over time
- Start/stop time and date
- Area



# Lessons Learned: Time and Location

- ⇒ Total consumption highly dependent on time of ignition
- ⇒ Burn type can approximate time of ignition
- ⇒ Scenarios can approximate location
  - Generated by crop rotation cycles
  - Regulators select best scenario and allow burning by county
- ⇒ Conversion from township-range to lat-lon is not trivial



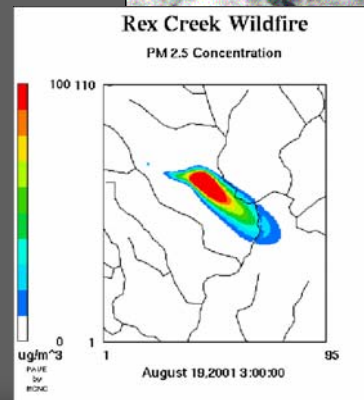
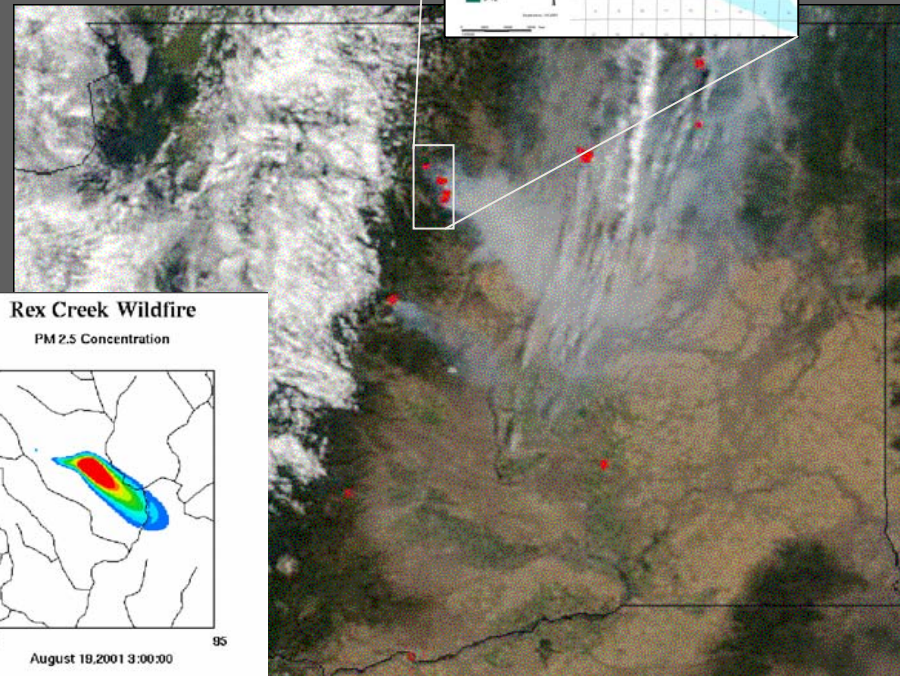
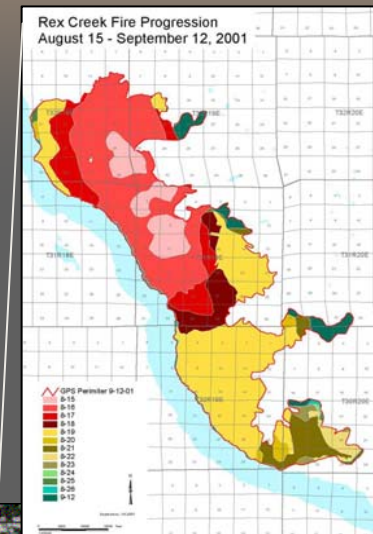
# Lessons Learned: Area

⇒ Total area within perimeter

- Diurnal approximate
- Farsite spread estimates

⇒ Blackened area

- Remote sensing
- Post-event reconnaissance
- Fire behavior models



# Fuel Condition and Type

## ⇒ Fuel Condition (Moisture)

- Assumed Constant
- Measured
- Interpolated
- Predicted (NFDRS)

## ⇒ Fuel Type

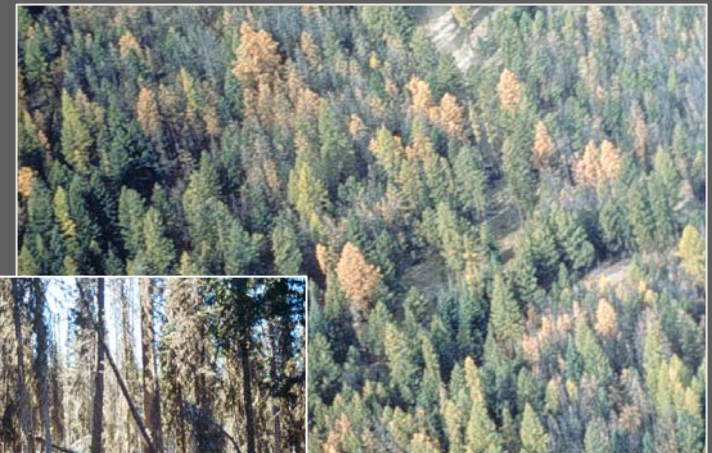
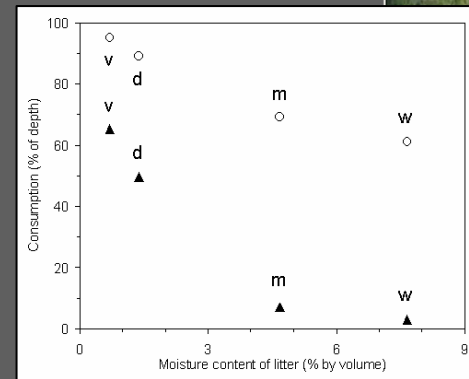
- Reported Fuel Load
  - Photo Series
  - Plot measurements
- Mapped Fuel Characteristics
  - Bergen & Hardy - Western States
  - NFDRS - 48 states
  - (McKenzie)
  - (LANDFIRE)



# Lessons Learned: Fuel Condition and Type

⇒ Total consumption is highly sensitive to moisture conditions.

⇒ At what scales are coarse estimates of fuel load adequate?



# Burn Information

## ⇒ Burn Information

- Duration of continuous flaming
  - Time of ignition
  - Times of active fire runs
- Crown involvement
- Type



# Lessons Learned: Burn Information

- ⇒ Burn type can be used to estimate duration
- ⇒ Current fire-spread models do not consider crown involvement
- ⇒ Some algorithms are available (e.g., FEPS)
- ⇒ New fire-behavior models can account for crown involvement



# Format

## ⇒ Wildfire

- Daily situation reports
- Annual summary reports
- Remote Sensing

## ⇒ Prescribed fire

- NFPORS
- Various State/Tribe reports
- Remote Sensing



# Lessons Learned: Format

- ➔ ASCII text or NetCDF file
- ➔ ftp or web accessibility
- ➔ Unique project names
- ➔ When do projects become complexes?

A screenshot of the "Unit Feature Observations" software interface. The window title is "Unit Feature Observations" and the main title is "Boundary Unit: First Project Group, 1" with "Total Acres: 50". The interface includes several input fields and dropdown menus for data entry. A table on the right side shows fuel loading and duff depth data. The bottom of the window contains a comment field and a set of navigation buttons.

	(tons/acre)	
Fuel Type (WA only)	0.00-0.25	0.0
Pile Obs Method	0.26-1.00	5.0
Load Method	1.01-3.00	13.0
Fuel Species	3.01-9.00	3.0
Duff Type	9.01-20.00	0.0
General Species	20.00+	0.0
FBPS Model	3.00+ Rotten	1.0
NFDRS Model	Live Shrubs	0.0
	Live Grass & Herb	0.0

# Data Quality Objectives

