

Weather and Large Fire Potential *Sulphur Creek Wildfire*

June 27-28 2003

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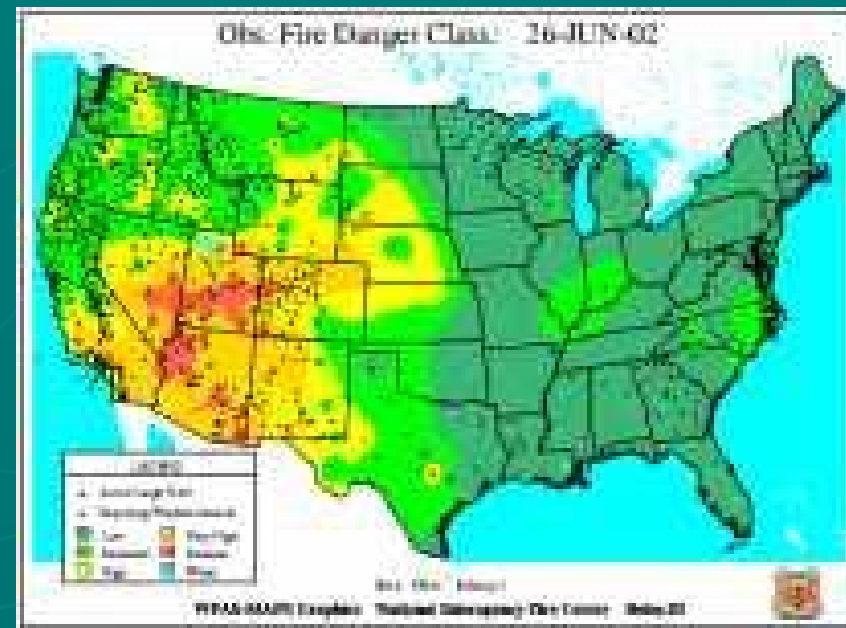
National Fire Danger Rating System

- ▶ Objectively quantifies wildland fire potential.
 - Continuous numeric indices
 - Discrete adjective descriptions
- ▶ Adaptable to varying fuels and climate.



National Fire Danger Rating System

- ▶ Sampled daily at hundreds of key points.
- ▶ Interpreted by fire agencies for planning:
 - Fire suppression readiness
 - Industry/recreation closure
 - Prescribed fire projects



National Fire Danger Rating System

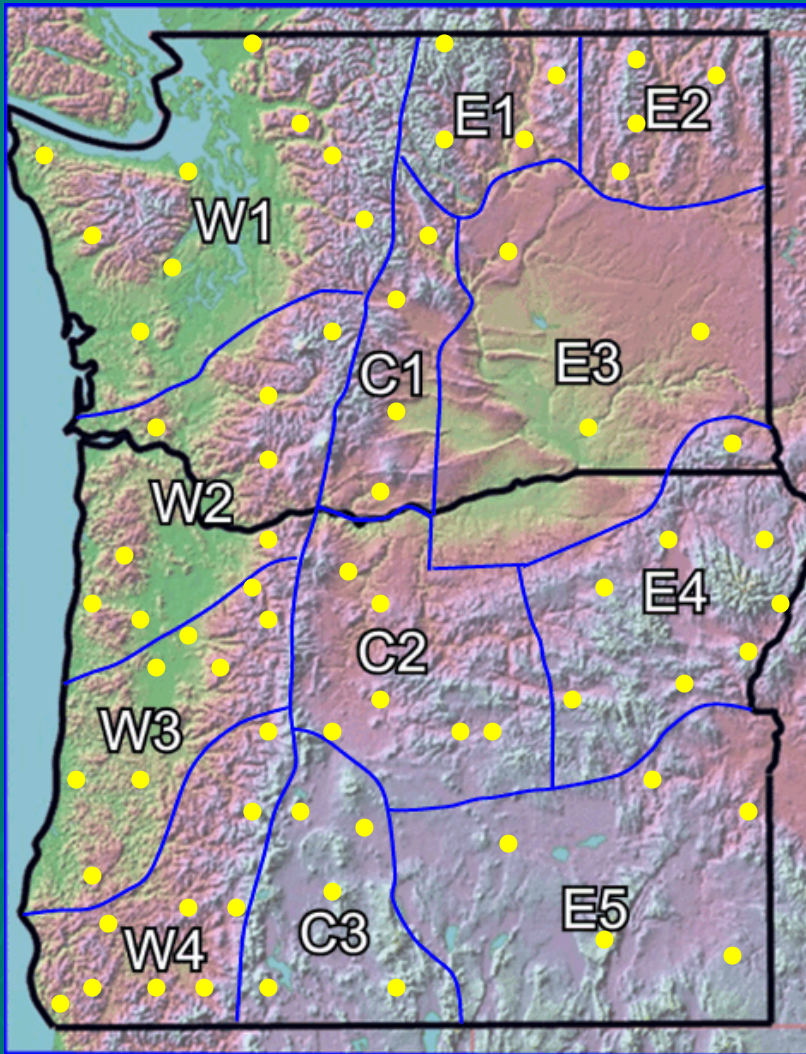
- ▶ Numeric NFDRS indices used by fire managers:
 - Energy Release Component
 - Burning Index
 - Ignition Component
 - Spread Component
 - Keetch-Byram Drought Index
 - Fuel moisture values
 - ▶ Dead fuels
 - ▶ Live fuels

***WHICH INDICES ARE
MOST EFFECTIVE?***



NWCC Predictive Services

Can NFDRS predict “project fires?”



Steps in the process:

- ▶ “Cluster” NFDRS stations into climate rating areas.
- ▶ Define a “large fire” in each area as 95th percentile size.
- ▶ What NFDRS indices were observed during past “large fire” outbreaks?
- ▶ Identify other factors.

NWCC Predictive Services

10 Year multiple regression study

NFDRS index correlation with “large fires”

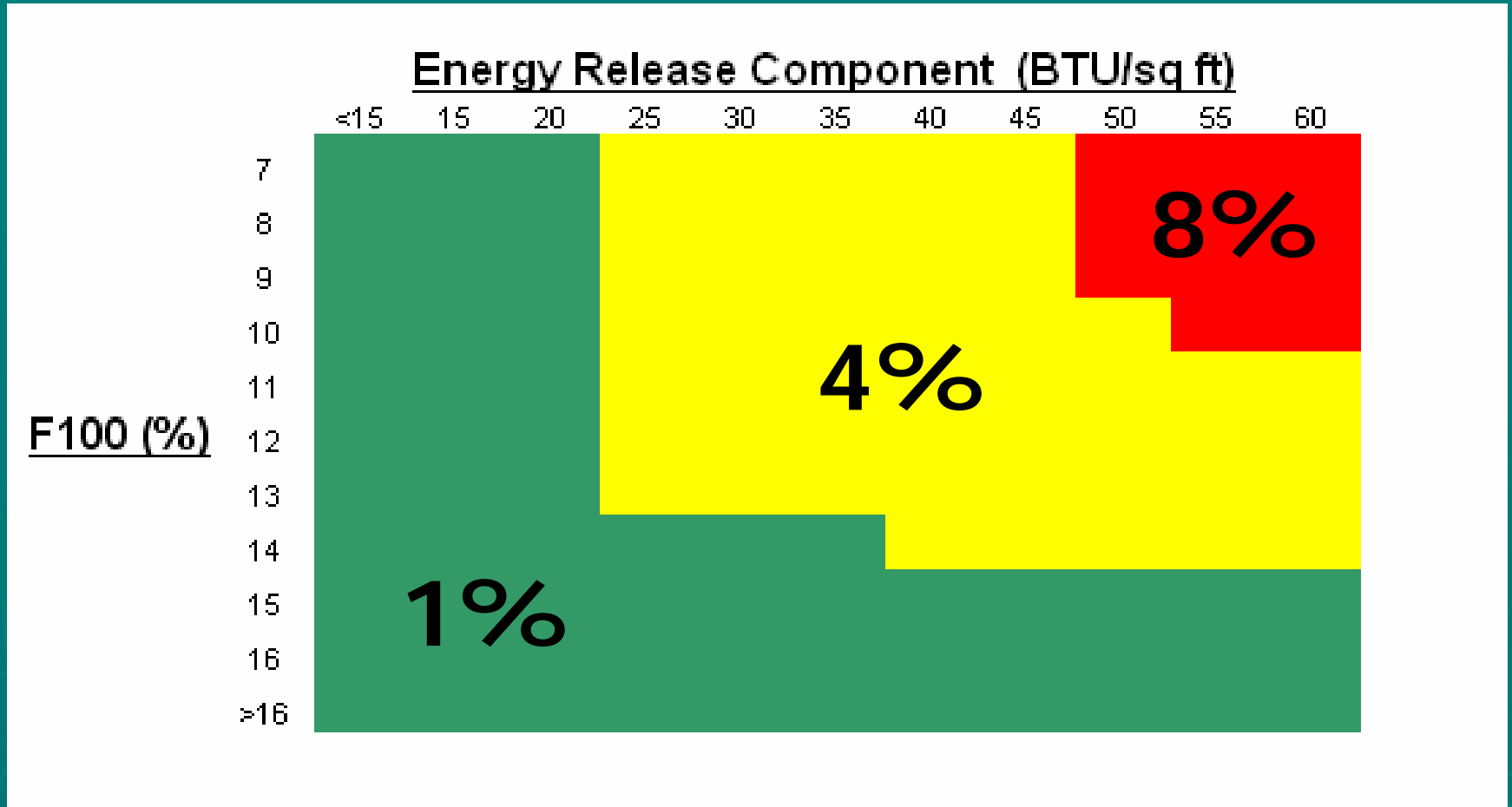
Best Predictors:

- ▶ Energy Release Component
 - (cumulative seasonal drought)
- ▶ 100 hour dead fuel moisture
 - (2-4 day short term drying)



The combination of ERC/F100
correlates best with “large fires”

ERC and 100 hour dead fuel moisture



“Dryness Level” matrix for area W3

Dryness Level Properties

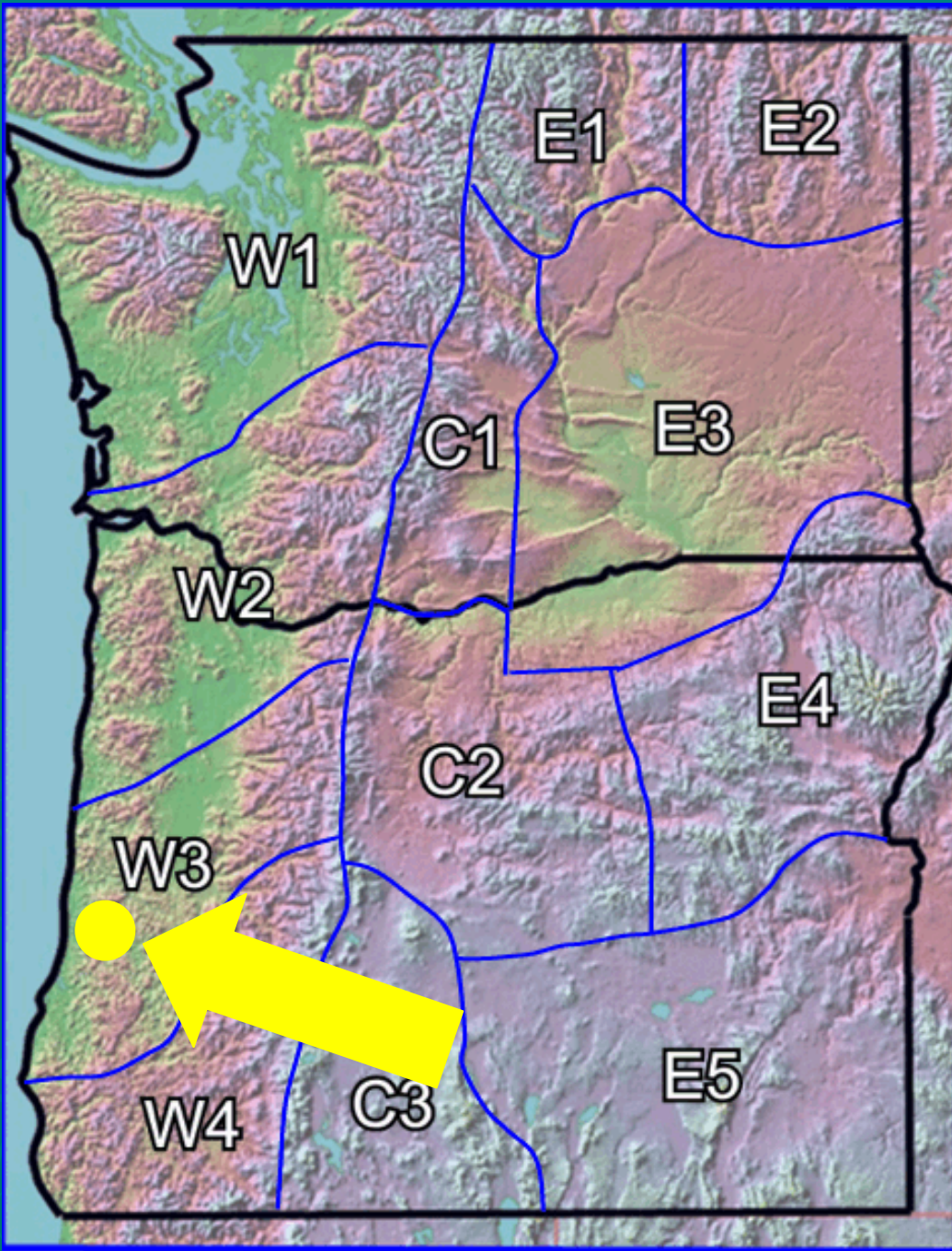
- ▶ Even during critical fuel conditions, large fire probability is still low.
- ▶ ..but large fire probability rises markedly during “trigger” events.

Examples

- Widespread lightning outbreaks
- Dry and unstable atmosphere
- Dry, gusty foehn wind storms
- Holiday weekends and hunting season



Critically Dry Fuels + Trigger Event



Sulphur Creek Fire

June 27th-28th 2003

Location: Oregon

*Coast
Range*

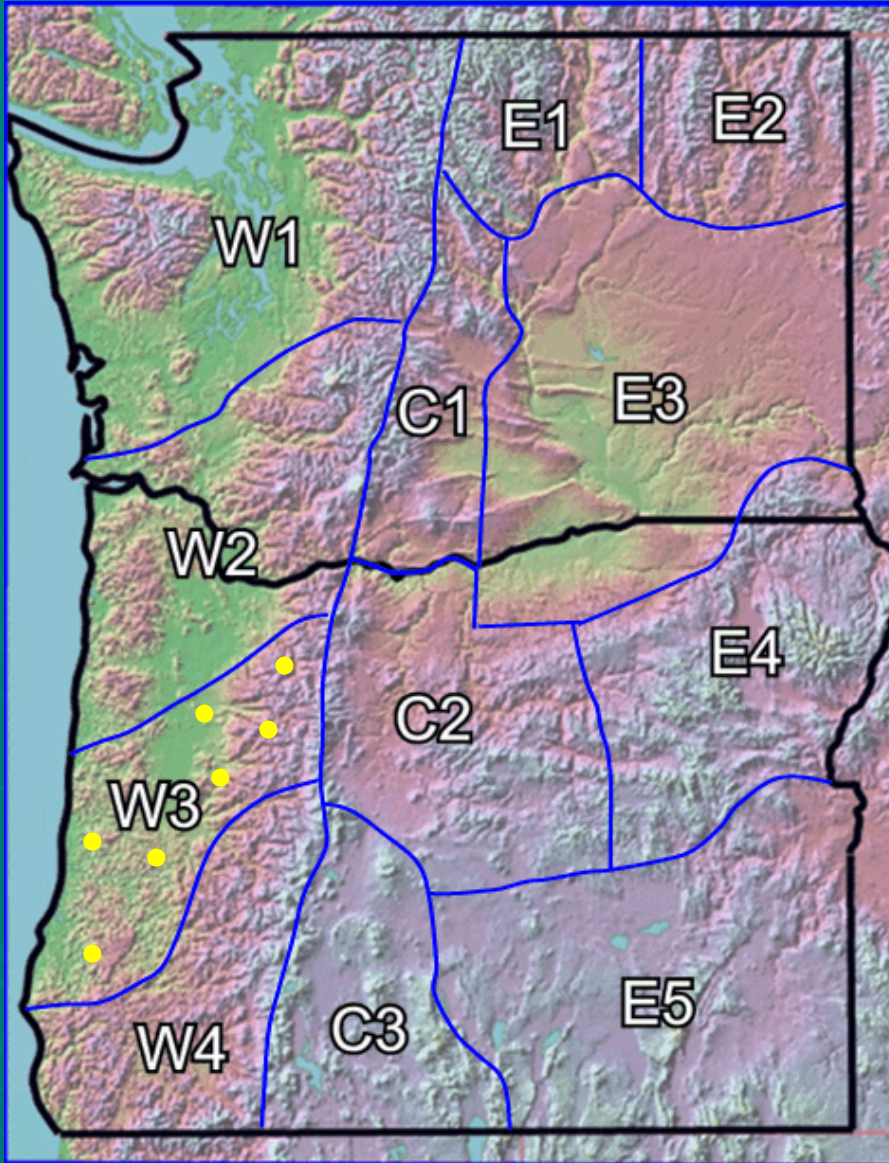
PSA: W3

Elevation: 1500 ft

Aspect: NE

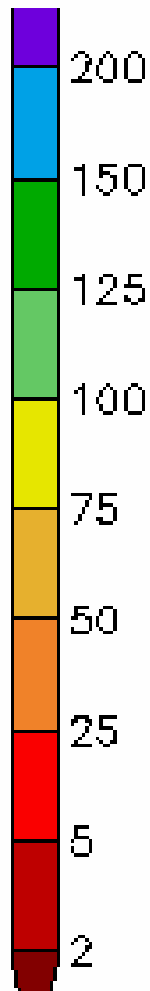
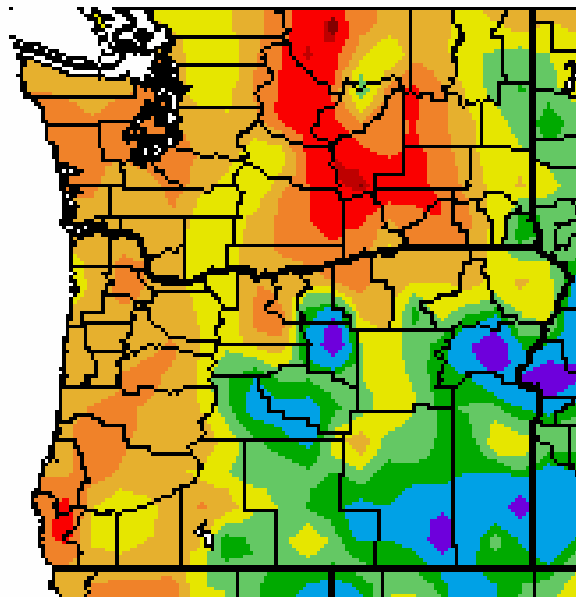
*Fuel: slash &
timber*

Predictive Service Area W3



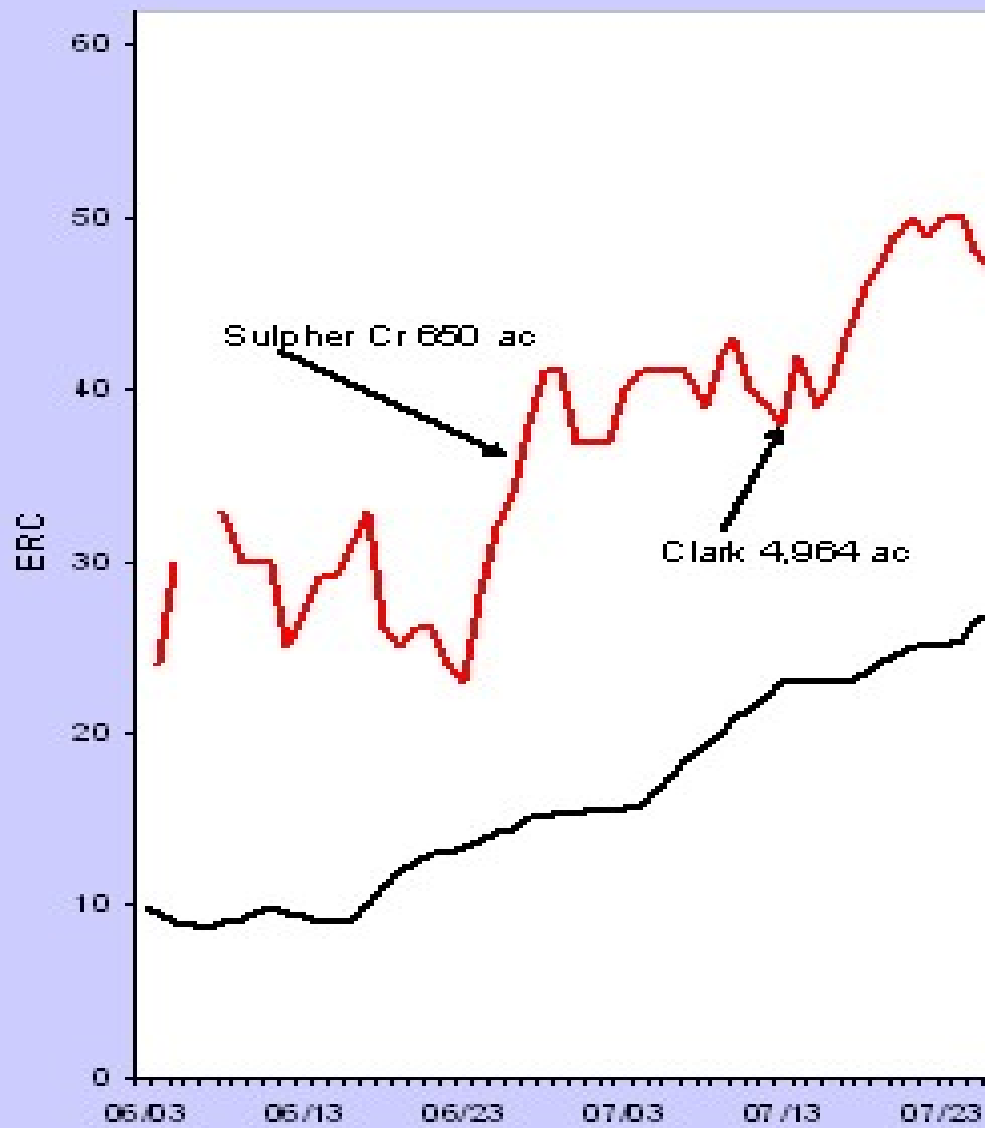
7 Key RAWs

- ▶ Goodwin Peak
- ▶ Stayton
- ▶ Red Box Bench
- ▶ Yellowstone
- ▶ High Point
- ▶ Trout Creek
- ▶ Signal Tree

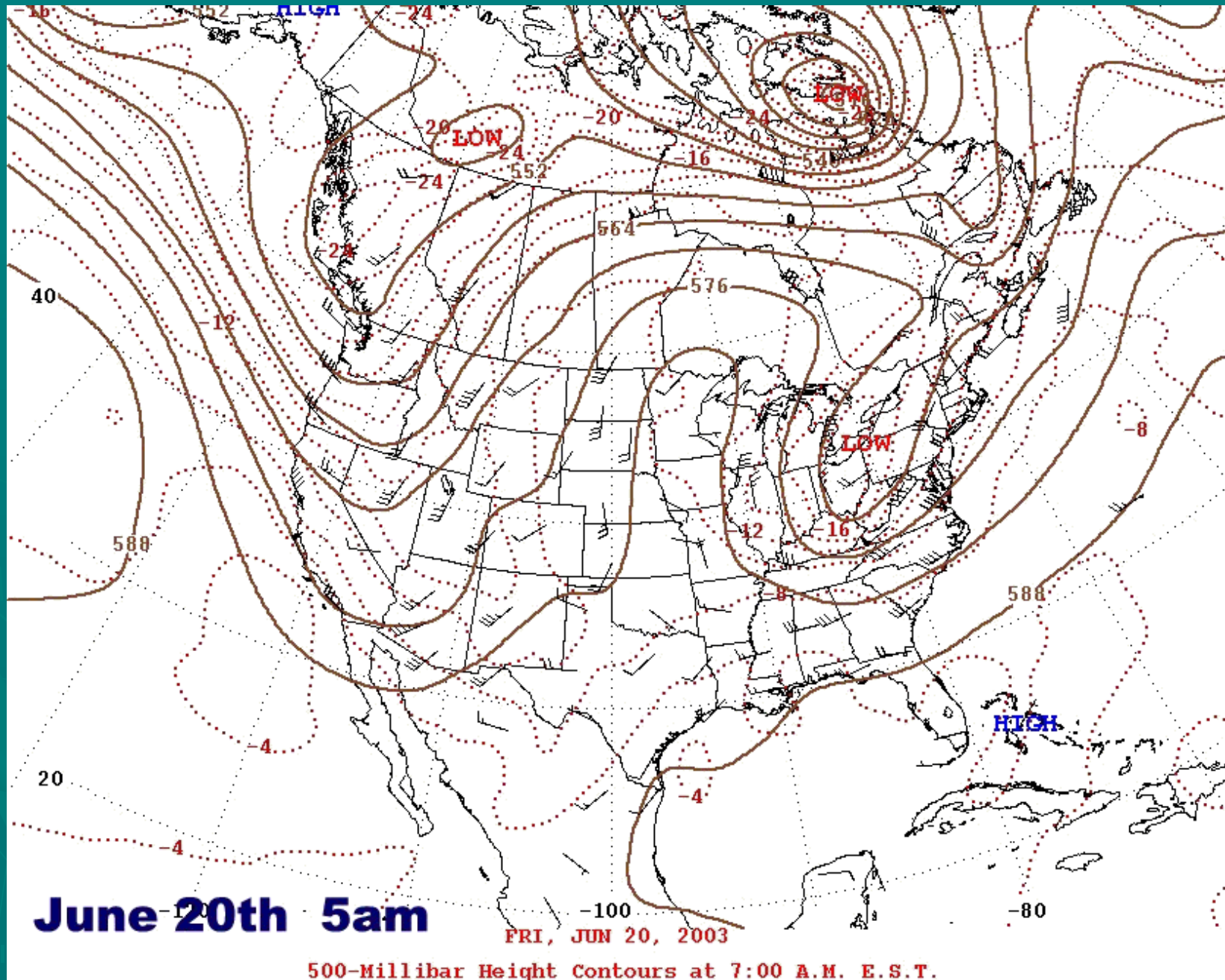


Percent of normal rain
May 2003

Low rainfall in
May 2003



June-July 2003
Average ERC for W3



500 mb series

Goodwin Peak

RAWS

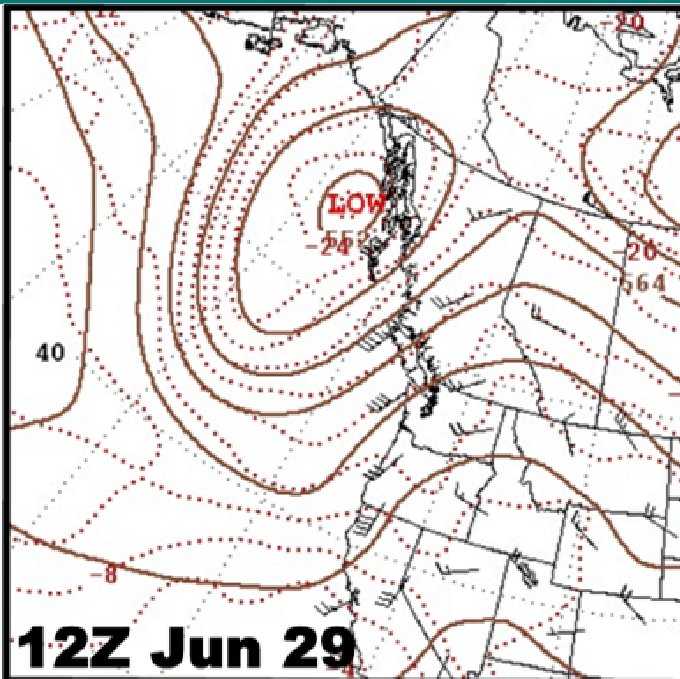
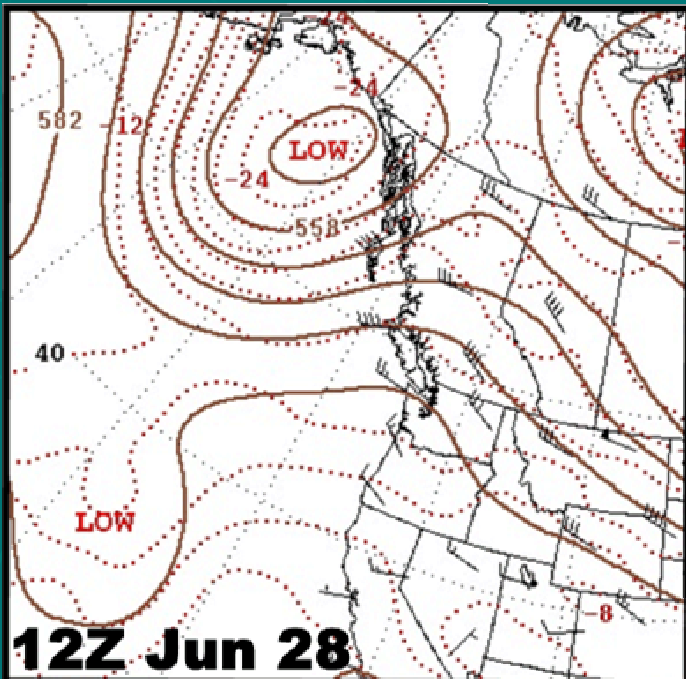
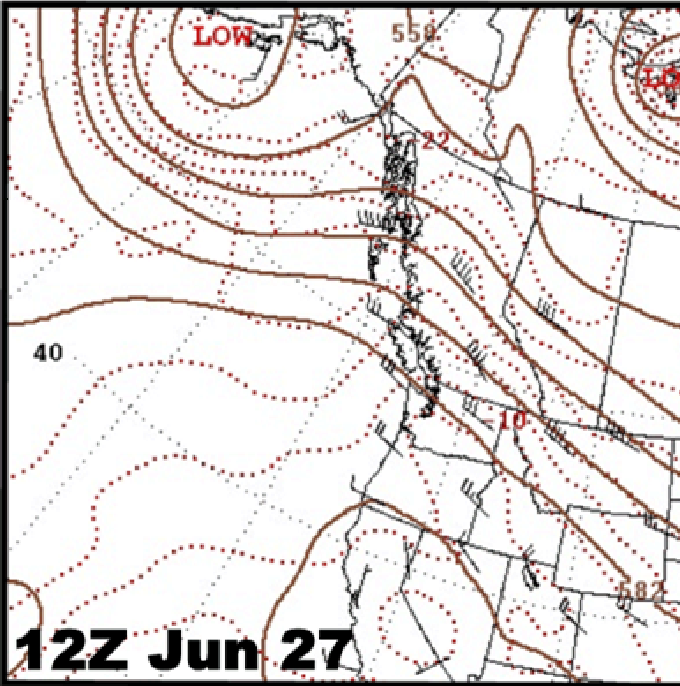
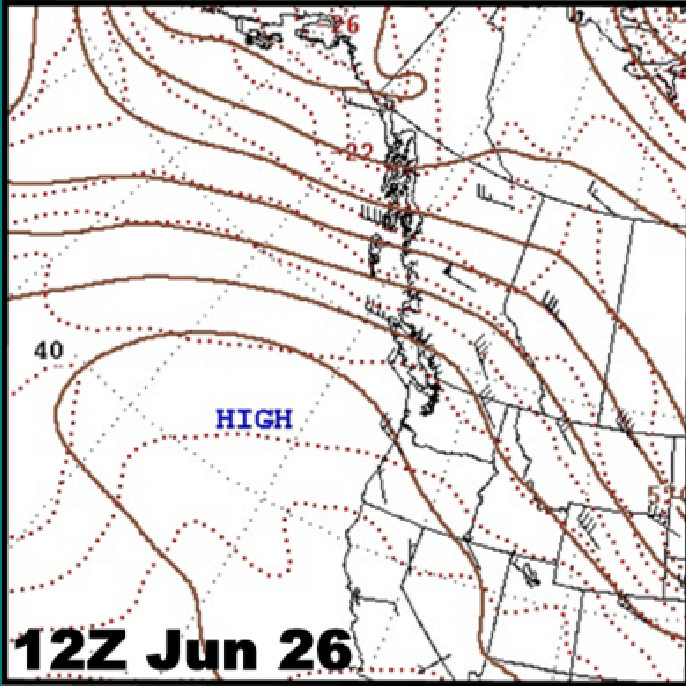
89F 24%

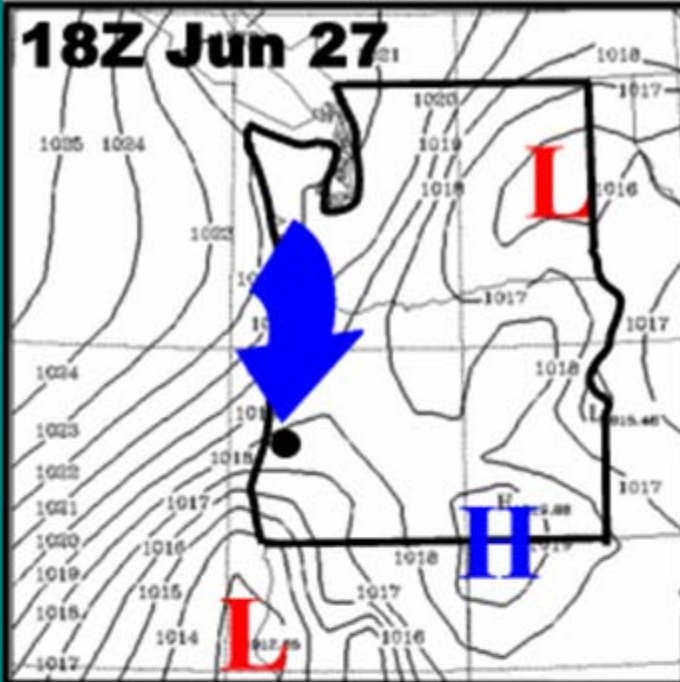
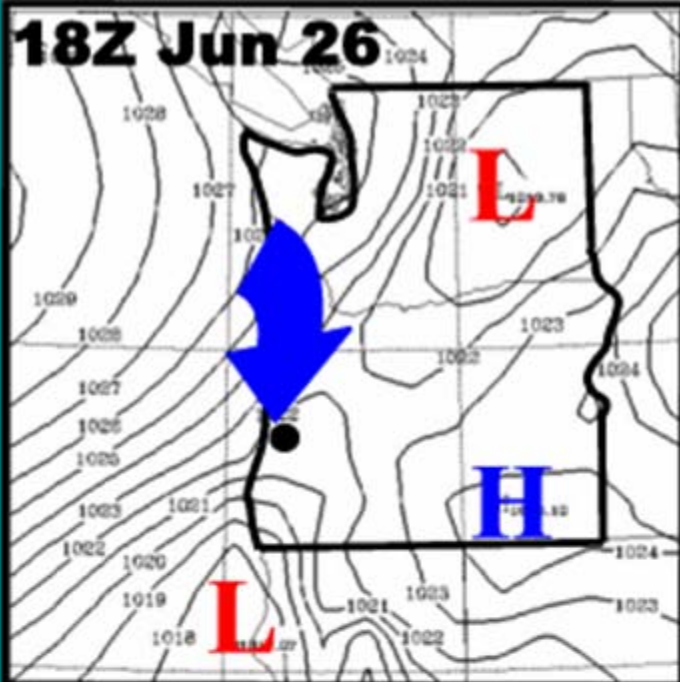
88F 23%

96F 18%

61F 76%

500 mb series





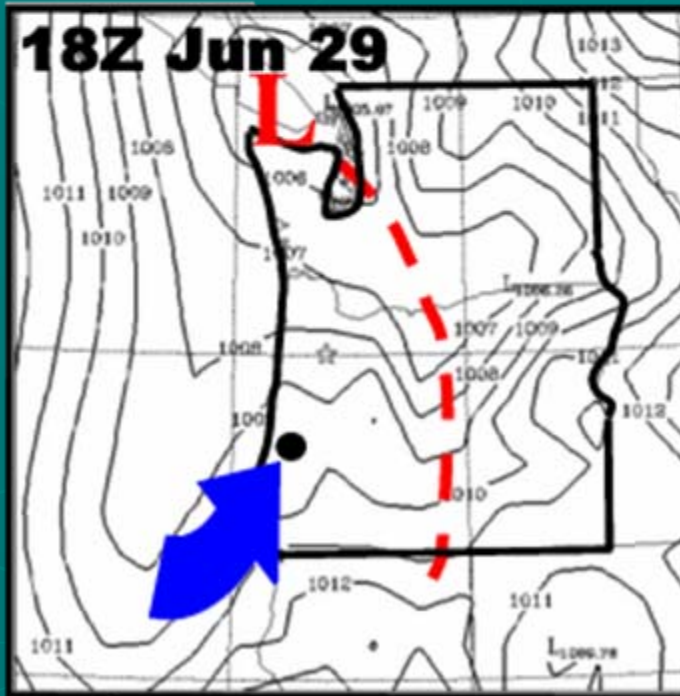
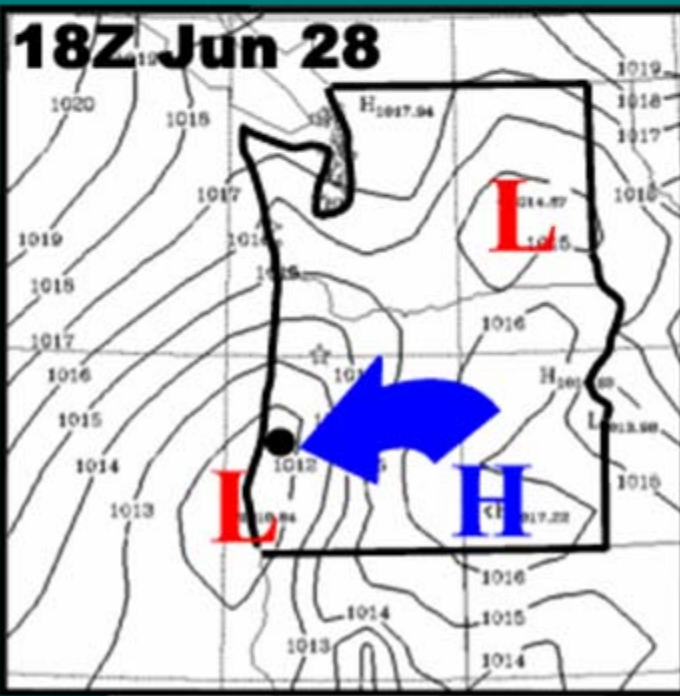
Goodwin Peak

RAWS

N 7 g 11

N 4 g 11

NE 4 g 23



S 4 g 20

Surface series

NE 20
mph

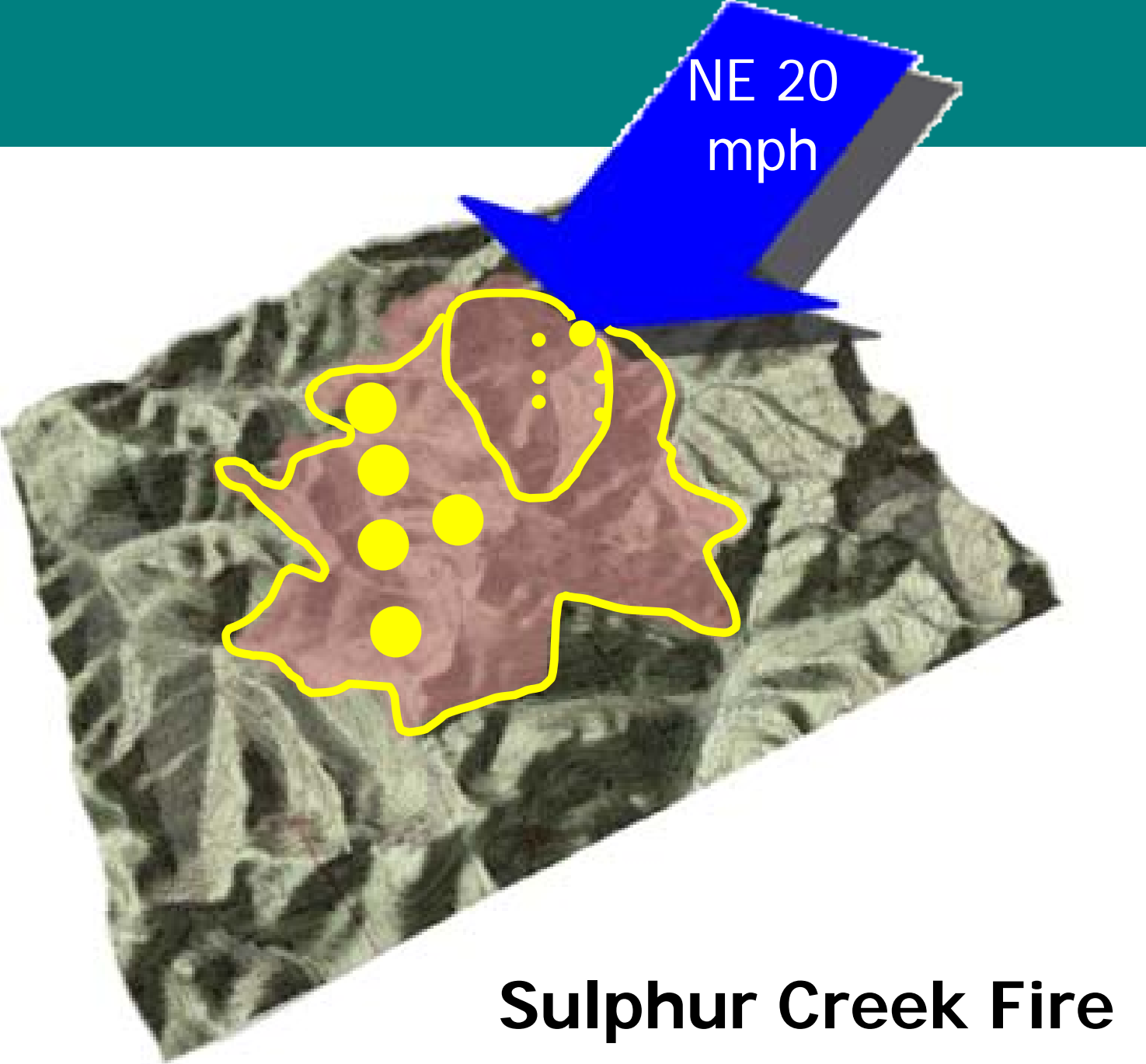
June

27th

28th

29th

Sulphur Creek Fire



Sulphur Creek Fire

Ignition Source: logging



June 27th 2003



Sulphur Creek Fire

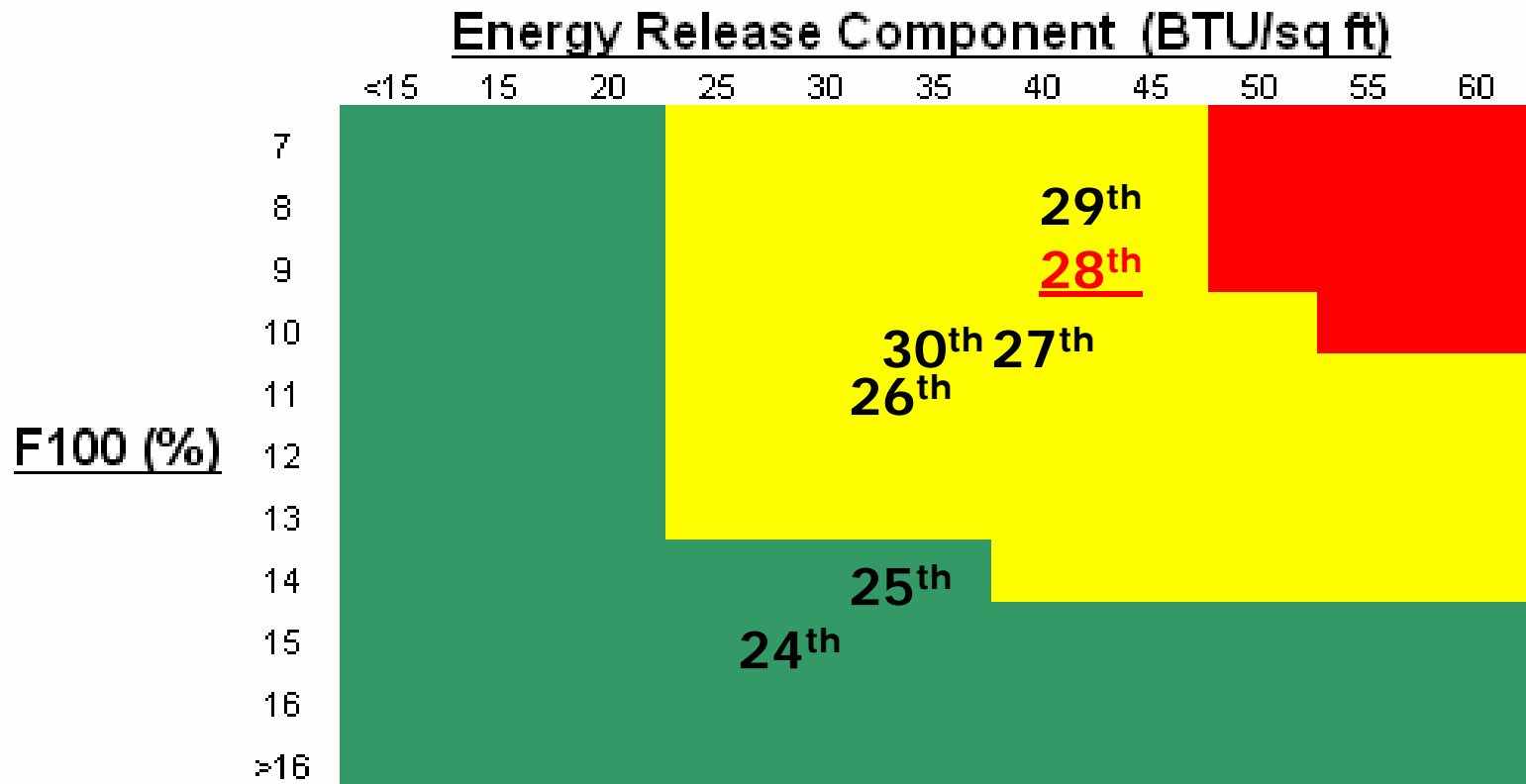


June 28th 2003

Final Size: 650 acres

99th percentile fire in W3

Late June 2003



June 28th coupled with trigger event