

POST-WILDFIRE MANAGEMENT OF SOIL

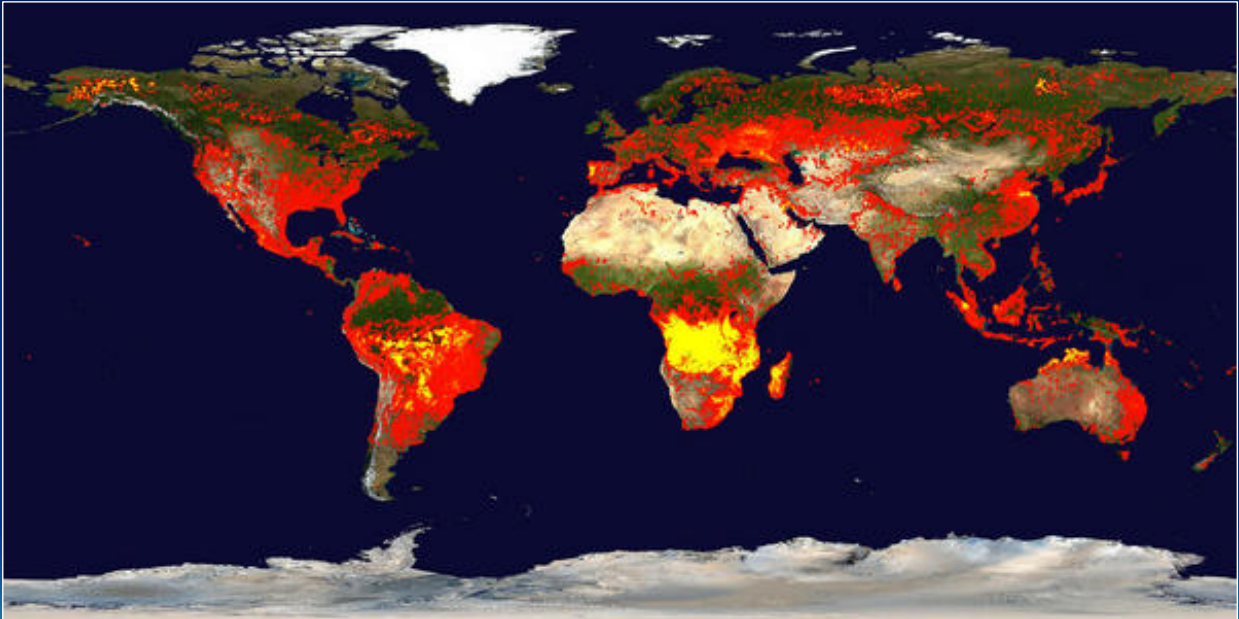
**Dan Neary
Research Soil Scientist
U.S. Forest Service
Flagstaff, AZ**

Outline

- ✓ Climate Change
- ✓ Severity of Forest Fires
- ✓ Soil Effects of Severity
- ✓ Ecosystem Effects
- ✓ What can we do: post-wildfire soil management



CLIMATE CHANGE & GLOBAL FIRES JUNE – AUGUST 2005



**Is this a normal situation?
Or is it out of bounds??**

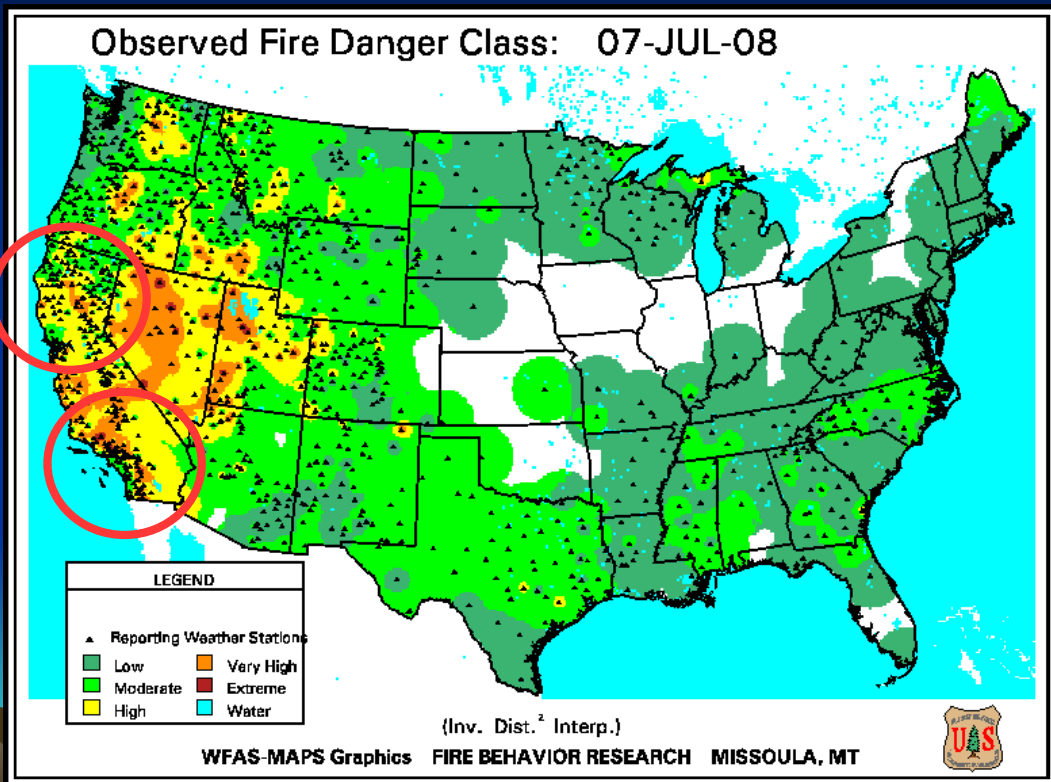
Key Factors Effecting Severity



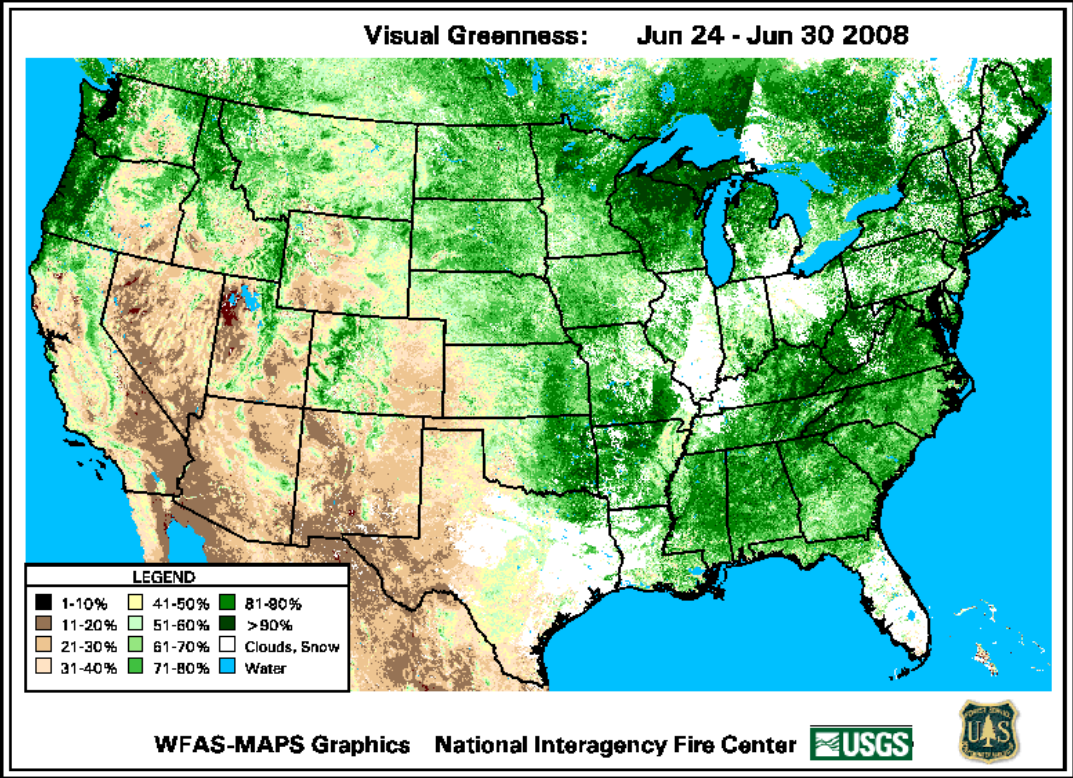
Crown-Replacing Wildfires ← Fuel Load & Drought

Weather that is hotter and drier causes fires that are larger and more severe.

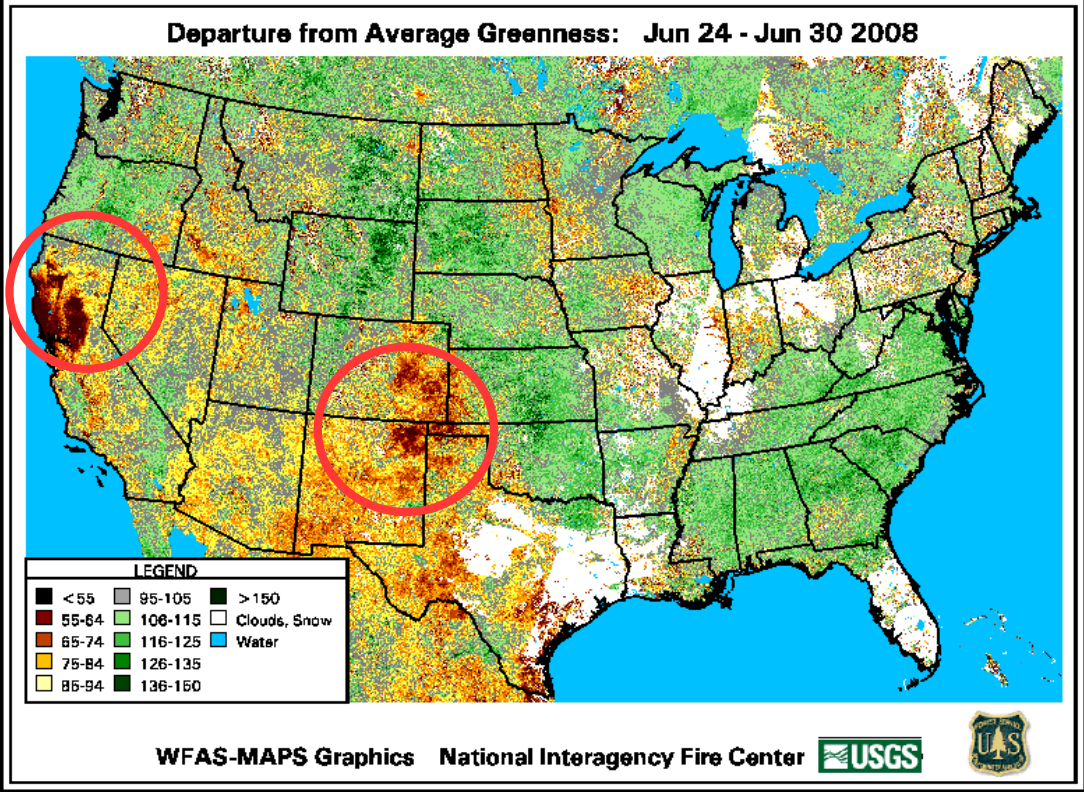
Components of Wildfire Severity



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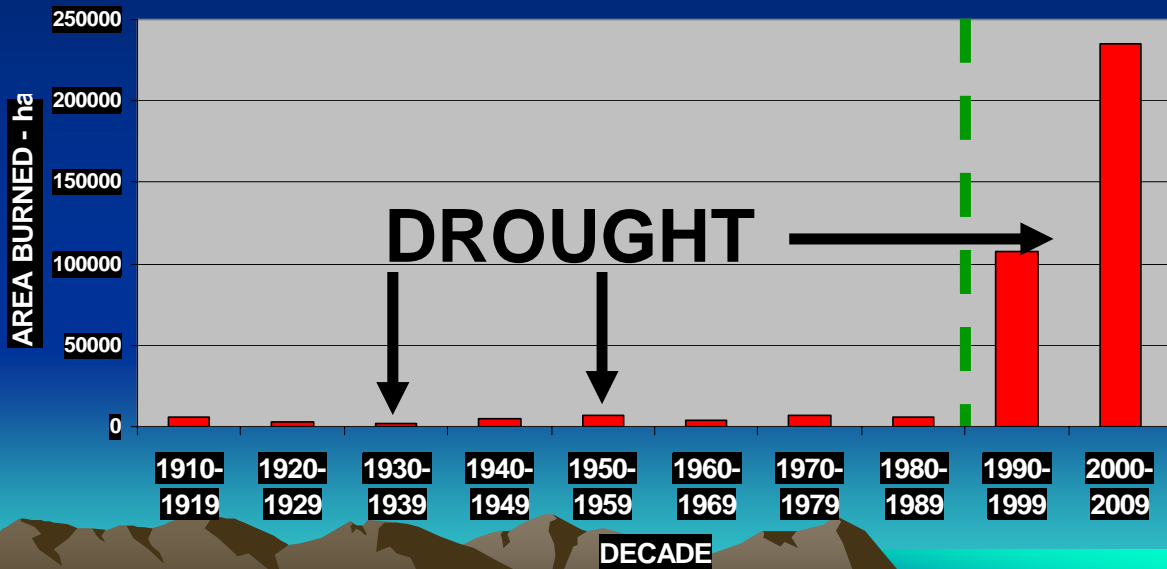


Components of Wildfire Severity



FIRE OUT OF BOUNDS


SW REGION WILDFIRES - DECADE AVERAGE



2002

APACHE-SITGREAVES
National Forest Arizona

MEGA
FIRES



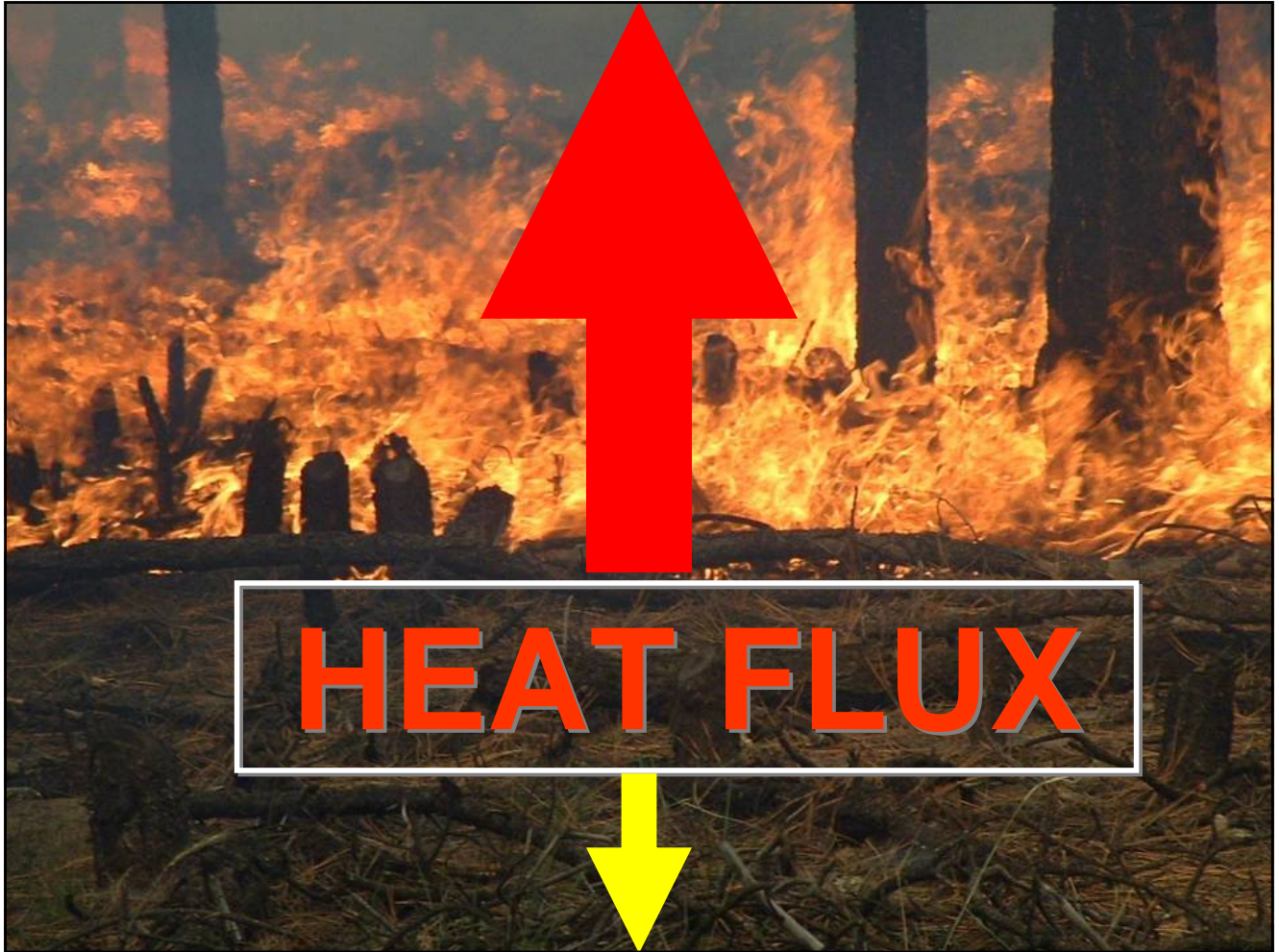
FOREST SERVICE
U S
DEPARTMENT OF AGRICULTURE

Forest Fire
Severity
Classes

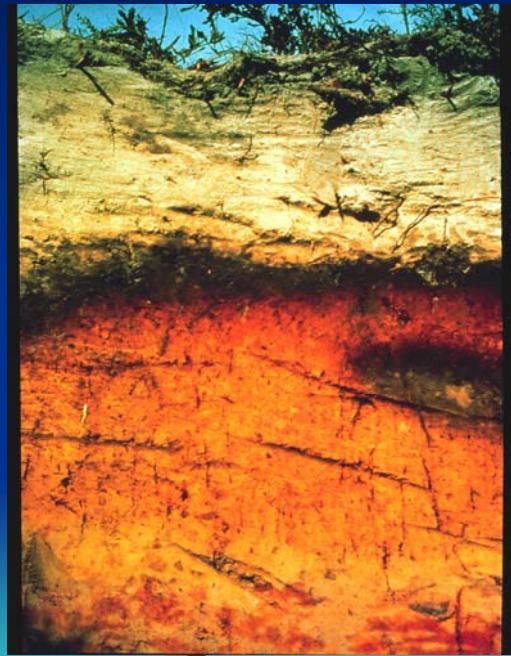
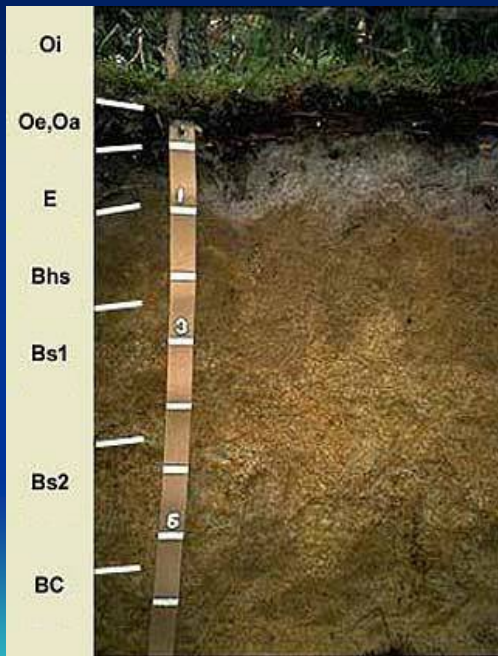
HIGH

Moderate

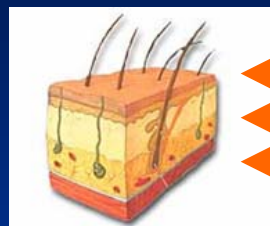
Low



SOIL EFFECTS



SOILS = ECOSYSTEM SKIN



1st
2nd
3rd

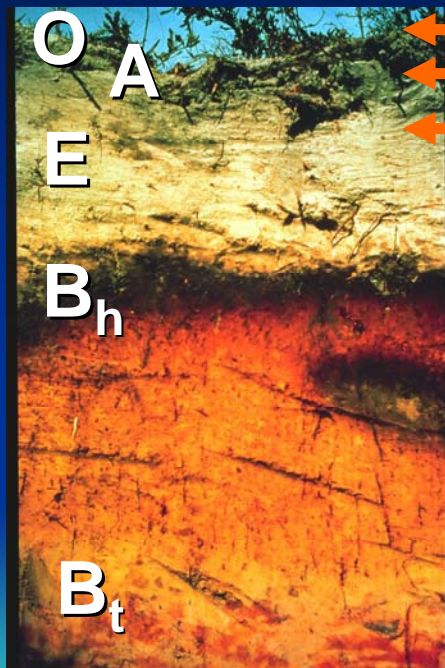
BURNS



1st


2nd

3rd



1st
2nd
3rd

PONDEROSA PINE

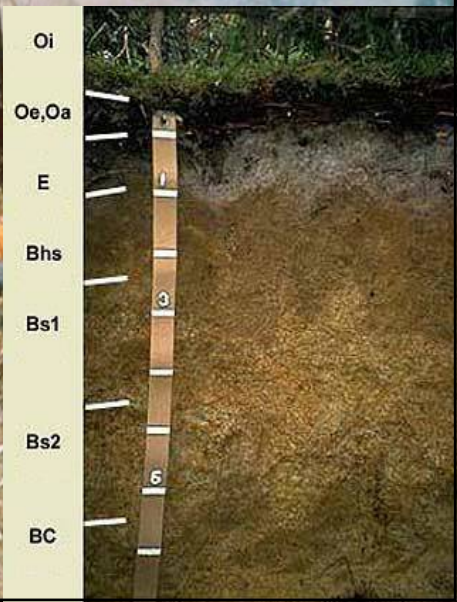


Forest Fire Severity Classes

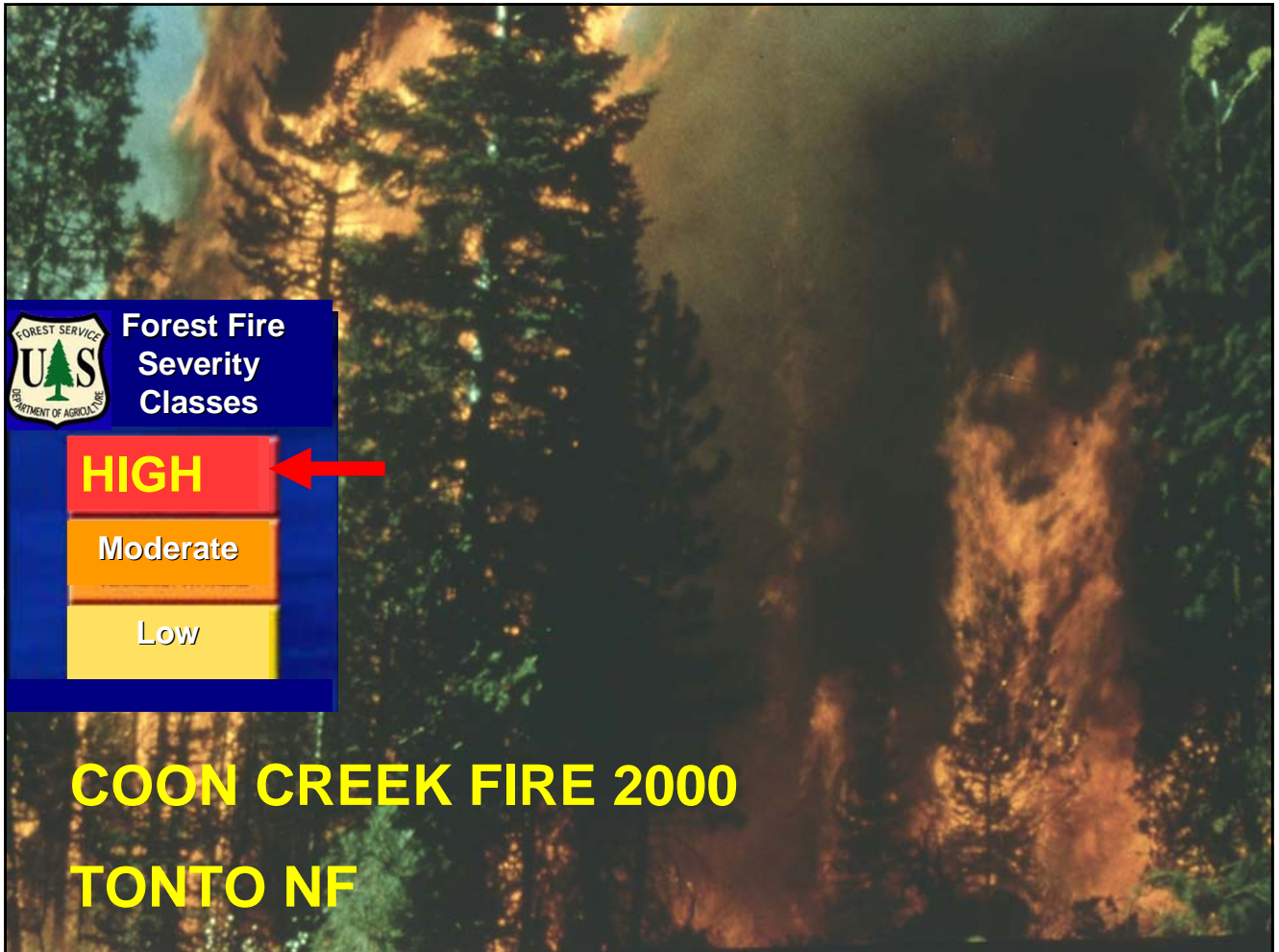
- HIGH
- Moderate
- Low



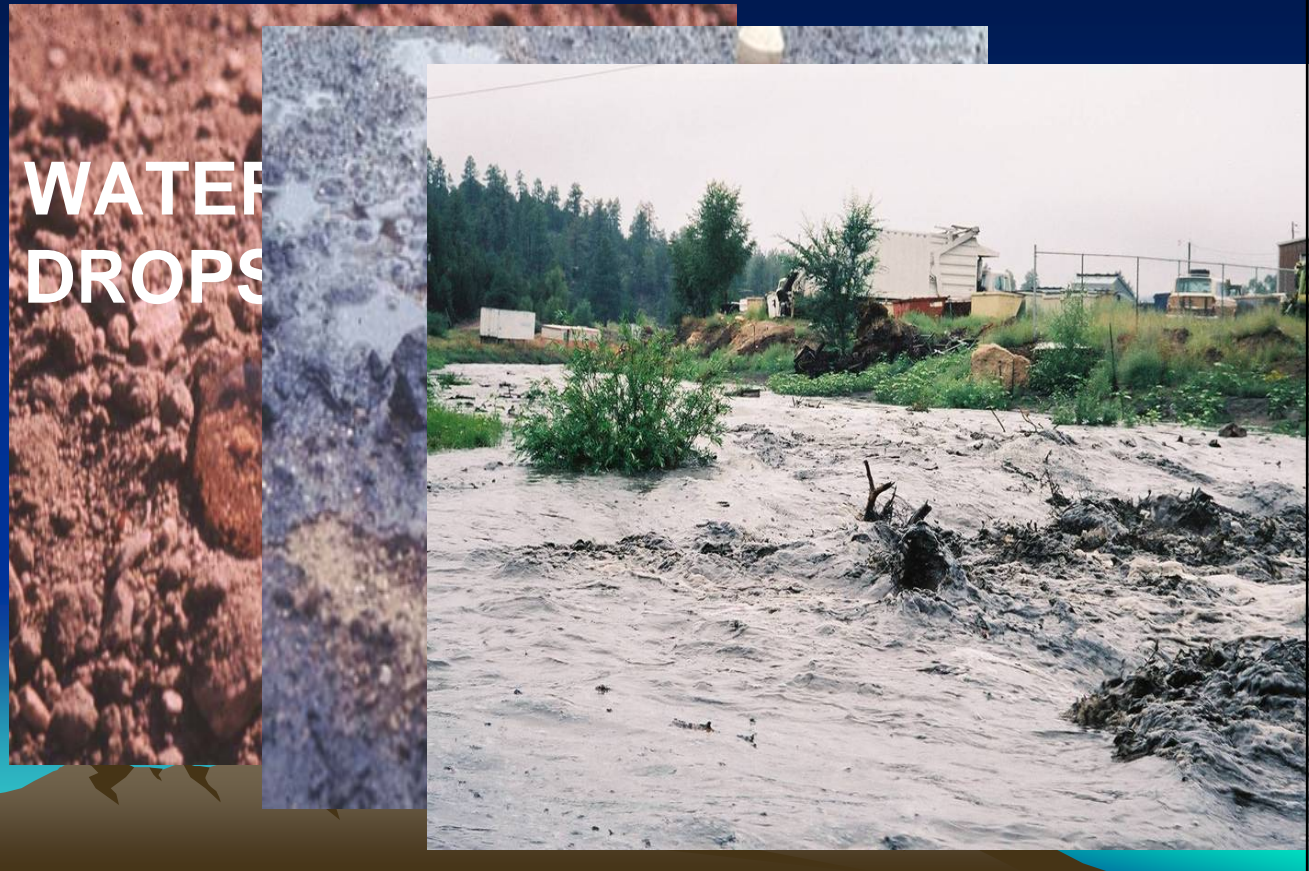
Rx FIRE COCONINO NF



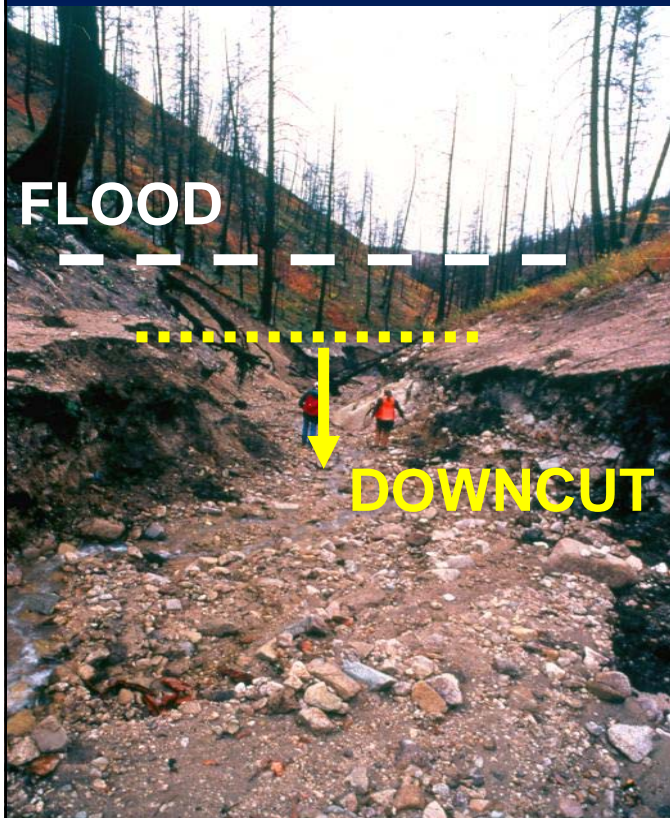




WATER REPELLENCY



Erosion Channels



POST-FIRE EROSION

LOCATION	AMOUNT Mg ha ⁻¹ yr ⁻¹	REFERENCE
Arizona - PP	1 <i>LOW</i>	Campbell 77
Arizona - CH	29 <i>HIGH</i>	Pase 65
<i>Arizona - PP</i>	<i>109 SEVERE</i>	<i>Garcia 2005**</i>
Arizona - CH	204 <i>SEVERE</i>	Glendenning 61
Arizona - MC	370 <i>SEVERE</i>	Hendricks 44

**** RODEO-CHEDISKI FIRE 2000**

Erosion, Soil Degradation and Ecosystem Health

- Desertification



- Watershed Health

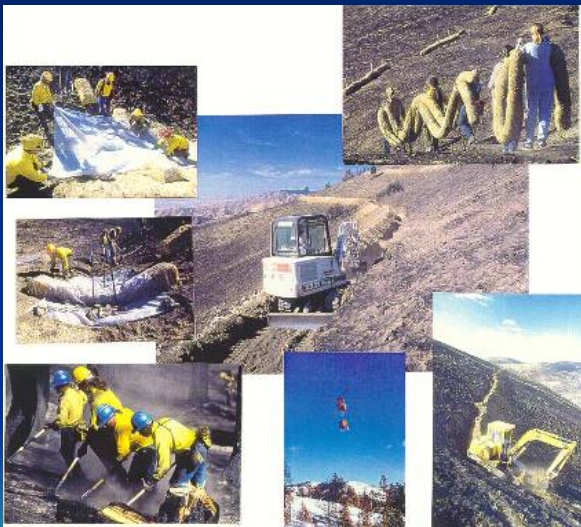


Desertification

- Deterioration of plant and soil resources
- Affects forest productivity
- Ultimately a threat to water



BURNED AREA EMERGENCY RESPONSE (BAER)



- The Burned Area Emergency Response (BAER) program's goal is protecting life, property, water quality, and deteriorated ecosystems from further damage after a wildfire is out.

BAER POST-WILDFIRE SOIL MANAGEMENT

MULCH



STRAW
WATTLES

CHECK
DAMS



LOG
BARRIERS



CONTOUR
TRENCHES



SEEDING



FOREST WATERSHEDS

Watersheds provide:

- **A source of water**
- A source of wood pulp
- Recreational sites
- Wildlife habitat
- Ecosystem services



SOCIO-ECONOMIC IMPACTS: WATER CONSIDERATIONS

- How Valuable is Water????
- 3,400 Communities Rely on National Forests For Water
- 50 – 75% of Nation's Water Supply Originates on Forests





....THE BOTTOM LINE...

1. WILDFIRES ARE NOT NEW
2. SIZE & SEVERITY ARE UP
3. WILDFIRES CAN HAVE SERIOUS EFFECTS ON SOIL RESOURCES
4. POST-FIRE SOIL MANAGEMENT IS IMPORTANT
5. WATER SUPPLY AT RISK

RODEO-CHEDISKI FIRE 2002

