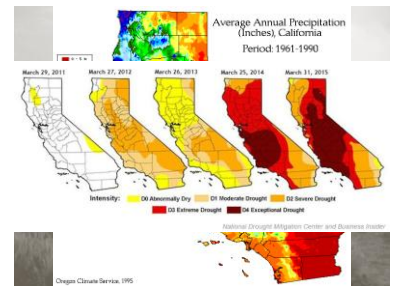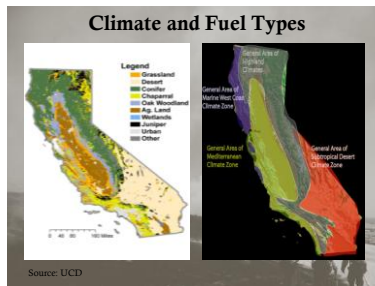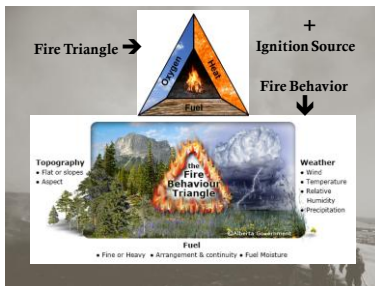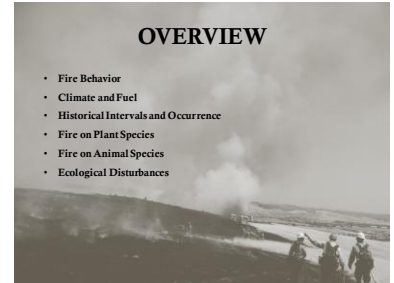**Ökologie der Wälder der Erde – 23. Oktober 2015**

**Feuerökologie der Mitteleuropäischen
Kulturlandschaften
Einführung**

Arbeitsgruppe Feuerökologie, Max-Planck-Institut für Chemie
Global Fire Monitoring Center (GFMC), United Nations University (UNU)
c/o Universität Freiburg

UNITED NATIONS UNIVERSITY

CALIFORNIA FIRE ECOLOGY
&
THE HUMAN DIMENSION

Lindon Pronto   UNITED NATIONS UNIVERSITY   22. October, 2015

OVERVIEW

- Fire Behavior
- Climate and Fuel
- Historical Intervals and Occurrence
- Fire on Plant Species
- Fire on Animal Species
- Ecological Disturbances

Fire Triangle →   **+**
                       Ignition Source

                       Fire Behavior
                       ↓

Climate and Fuel Types

Source: UCD

Average Annual Precipitation (Inches), California
Period: 1961-1990

Oregon Climate Service, 1995

National Drought Mitigation Center and Business Insider

Fuel Classification

Table 1. — Description of fuel models used in fire behavior as documented by Albini (1976)

Source:

California (selected) Fire Return Intervals

Chaparral 30-130+ years
- Characterized by large, high-severity, infrequent fire
- Driven by climate and weather
- 10-15 years or less detrimental

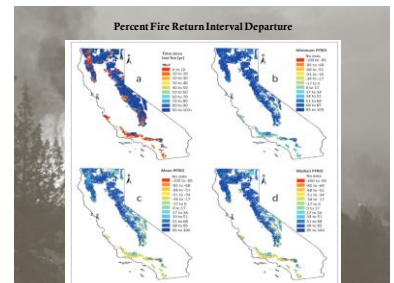**Ponderosa Pine + other coniferous
(low elevation) 5-30 years**
- Characterized by low and mixed severity
- Frequent fires clean forest floor
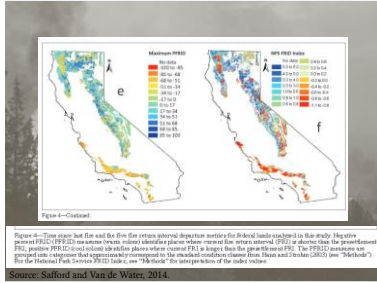
(medium elevation) 30-100 years
-Stand replacing fires 100-200 years
-dense stand composition; mixed replacement

(high elevation) 50-300 years
- Most intact
- Characterized by high-severity

Percent Fire Return Interval Departure

Figure 4—Time since last fire and the five fire return interval departure metrics for federal lands analyzed in this study. Negative percent FRID (PFRID) measures (warm colors) identifies places where current fire return interval (FRI) is shorter than the presettlement FRI; positive PFRID (cool colors) identifies places where current FRI is longer than the presettlement FRI. The PFRID measures are grouped into categories that approximately correspond to the standard condition classes from Hann and Strohm (2003) (see "Methods"); for the National Park Service FRID Index, see "Methods" for interpretation of the index values.

Source: Safford and Van de Water, 2014.

Fire and Plant Species

Dependent Species:

Reproduction
Fertilization
Natural Selection
Succession
Cleanses
Supports Diversity

Fire and Animal Species

- Visibility for predators
- Fodder for grazers
- Reproductive habitat

Disturbances and Fire

- Sudden oak death
- Bark beetle
- Invasive Species
- Other Ecological
- Human Activity

SUDDEN OAK DEATH

Source: www.suddenoakdeath.org

Bark Beetle Damage

2

Other Ecological Disturbances: Storm Damage

HUMANS! (Part II)

OVERVIEW

- Failed Fire Management
  - Suppression
  - Prevention
- Population growth

- Fragmentation
  - Infrastructure
  - Land jurisdictions
- The Wildland Urban Interface (WUI)

U.S. Forest (Fire) Management–

- 1891 National Forest System Established
- 1895 U.S. Forest Service Founded
- 1895-1910 USFS Fire Management Program faltered
- 1910 The Great Fire of 1910
  - 1,2 mio ha.
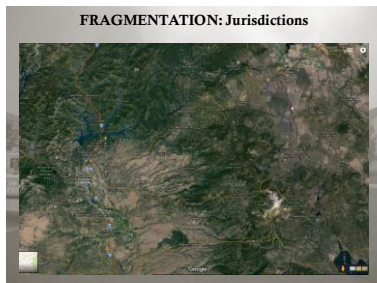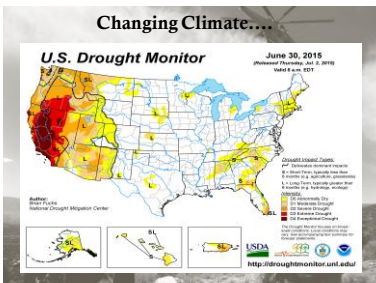 - 86 deaths

ALL FIRE BAD!

- All Fires to be extinguished by 10:00 hours the following day
- Nearly a century of aggressive fire suppression
- U.S. Forest Service revived, fire management became an important duty

SUPPRESSION: Ecological Consequences

- Fire became excluded
- European forestry models failed
- Forests became unhealthy and crowded
- Fires became explosive
- Forest composition altered
- Invasive species
- Etc.

PREVENTION: A new emphasis

- Prescribed Burning
- "Fuels Management"
- Fuels Reduction-mimic fire
- Lesson the impacts/likelihood of more severe fire

- Highly political
- Resource intensive
- Limited funding

- Highly complex…. (population, climate…

Changing Climate….

FRAGMENTATION: Jurisdictions

FRAGMENTATION: Ownership and interests

Wildland Urban Interface

Affinity for living outdoors…

Fuel Classification

Table 1. — Description of fuel models used in fire behavior as documented by Albini (1976)

Fuel model	Typical fuel complex	Fuel loading				Fuel bed depth	Moisture of extinction dead fuels
		1 hour	10 hours	100 hours	Live		
		----------------Tons/acre----------------				Feet	Percent
	Grass and grass-dominated						
1	Short grass (1 foot)	0.74	0.00	0.00	0.00	1.0	12
2	Timber (grass and understory)	2.00	1.00	.50	.50	1.0	15
3	Tall grass (2.5 feet)	3.01	.00	.00	.00	2.5	25
	Chaparral and shrub fields						
4	Chaparral (6 feet)	5.01	4.01	2.00	5.01	6.0	20
5	Brush (2 feet)	1.00	.50	.00	2.00	2.0	20
6	Dormant brush, hardwood slash	1.50	2.50	2.00	.00	2.5	25
7	Southern rough	1.13	1.87	1.50	.37	2.5	40
	Timber litter						
8	Closed timber litter	1.50	1.00	2.50	0.00	0.2	30
9	Hardwood litter	2.92	.41	.15	.00	.2	25
10	Timber (litter and understory)	3.01	2.00	5.01	2.00	1.0	25
	Slash						
11	Light logging slash	1.50	4.51	5.51	0.00	1.0	15
12	Medium logging slash	4.01	14.03	16.53	.00	2.3	20
13	Heavy logging slash	7.01	23.04	28.05	.00	3.0	25
14	**Structures…**						

Source:

Fuel Type no. 14: structures

CONCLUSION

California Fire Management:
- Most complex
- Quickly evolving
- Reactive
- Sophisticated
- Expensive
- Political

- Climate driven
- Human influence
- Artificial
- Let burn?
- Past the point of no return…

https://www.youtube.com/watch?v=xUoC8roHBX0

THANK YOU