The Modern Wildfire Situation

“To live better with fire, we need to adapt to fire”
- FAC

Graphic prepared by D. Falk

Firewise Workshop
Sierra Vista
August 11, 2018
Western Wildfire Season 2017

Terra satellite image taken September 4, 2017: NASA
Modern Wildfire Factors

- Fire suppression policy
- WUI communities
- Latter 20th century warming

Graphic prepared by D. Falk
Early Western Public Lands Policy

- Towns and Ranches
- Fire as enemy
- U.S.F.S. in 1905
- Stop wildfire

Photo by Mike Brandt
10:00 a.m. Rule

- Big Blow Up – 1910 (3 millions acres, 87 deaths).

- All fires out by 10:00 a.m. next day (by 1935)
World War II

- Americans feared attack or sabotage
- War Advertising Council and USFS
- Bambi (1942); Smokey (1944)
- Technological advances applied to wildfire suppression
Great Yellowstone Fires of 1988

Burned area  793,880 acres
WUI Wildfires

- **1991 Oakland Firestorm**
- 2,843 single-family dwellings and 437 apartments/condos
- 1,520 acres
- 25 deaths; 150 injuries
- **1990s Fire Safe Councils**
Our goals are to create the conditions that reduce wildfire in communities and neighborhoods and to prevent home ignitions
Modern Wildfire Factors

• Fire suppression policy
• WUI communities
• Latter 20th century warming
Observed US Precipitation Change

1901-1960 vs. 1991-2012
Climate Change

• Climate change is the acceleration of the earth’s hydrologic process caused by global warming.
  – Acceleration
  – Earth’s Hydrologic Process
  – Global Warming
Definitions of likelihood ranges used to express the assessed probability of occurrence: *virtually certain* >99%, *very likely* >90%, *likely* >66%.

### Global Climate Change: Future Trends

<table>
<thead>
<tr>
<th>Phenomena</th>
<th>Likelihood of trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraction of snow cover areas, increased thaw in permafrost regions, decrease in sea ice extent</td>
<td><em>Virtually certain</em></td>
</tr>
<tr>
<td>Increased frequency of hot extremes, heat waves and heavy precipitation</td>
<td><em>Very likely to occur</em></td>
</tr>
<tr>
<td>Increase in tropical cyclone intensity</td>
<td><em>Likely to occur</em></td>
</tr>
<tr>
<td>Precipitation increases in high latitudes</td>
<td><em>Very likely to occur</em></td>
</tr>
<tr>
<td>Precipitation decreases in subtropical land regions</td>
<td><em>Very likely to occur</em></td>
</tr>
<tr>
<td>Decreased water resources in many semi-arid areas, including western U.S. and Mediterranean basin</td>
<td><em>High confidence</em></td>
</tr>
</tbody>
</table>

Earth's Hydrologic Process
The “greenhouse effect” (simplified)

This natural effect helps make life on Earth possible.

www.skepticalscience.com
NATURAL GREENHOUSE EFFECT

- Water molecule: Hours to days
- CARBON DIOXIDE: Tens to thousands of years
- Methane: About 12 years
That’s a lot of carbon!

https://www.esrl.noaa.gov/gmd/obop/mlo/
That’s a lot of carbon!


- Total
- Petroleum
- Coal
- Natural Gas
- Cement Production

Million Metric Tons of Carbon / Year

1800 1850 1900 1950 2000

Source: cdiac.ornl.gov
World-wide natural disasters

EM-DAT International Disaster Database, Center for Research on the Epidemiology of Disasters, University of Louvain
Fire Behavior

Age of Megafires

- Megafire > 100,000 acres
- 177 megafires between 1997-2016
Wildfires are projected to **burn more land** as temperatures continue to rise.

Projected increase in annual burn area with an additional 1.8°F rise in temperature

By mid-century, temperatures in the Western U.S. are expected to increase even more (2.5°–6.5°F) due to heat-trapping emissions from human activity.

The choices we make **today** will determine how much temperatures increase this century, how long and damaging wildfire seasons become, and how prepared communities are for the growing risks of wildfires.

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