



Fact Sheet

Wildfires and Climate Change

September, 2009

In California, more than a hundred thousand acres have burned in at least six counties over recent weeks. While there are a variety of causes driving these fires, news reports have cited record heat and dry conditions as contributing factors. *These conditions are consistent with the documented pattern of global warming and wildfires in the western United States.* According to the most recent authoritative consensus science reports, hotter temperatures, and the subsequent drying of soils and vegetation, are increasing the likelihood and intensity of wildfires. These impacts are already occurring and are expected to increase as the planet warms.

The following are excerpts from consensus science reports on global warming and wildfire, authored by U.S. agencies, including the National Oceanic and Atmospheric Administration. Download links are listed below as well as contact information for experts.

Report excerpts:

- *“Wildfires in the United States are already increasing due to warming. In the West, there has been a nearly fourfold increase in large wildfires in recent decades, with greater fire frequency, longer fire durations, and longer wildfire seasons. This increase is strongly associated with increased spring and summer temperatures and earlier spring snowmelt, which have caused drying of soils and vegetation. In addition to direct injuries and deaths due to burns, wildfires can cause eye and respiratory illnesses due to fire-related air pollution.”* (Global Climate Change Impacts in the United States, page 95)
- *“Human-induced climate change appears to be well underway in the Southwest. Recent warming is among the most rapid in the nation, significantly more than the global average in some areas.”* (Global Climate Change Impacts, 129)
- *“Climate change already appears to be influencing both natural and managed ecosystems of the Southwest. Future landscape impacts are likely to be substantial, threatening biodiversity, protected areas, and ranching and agricultural lands. These changes are often driven by multiple factors, including changes in temperature and drought patterns, wildfire, invasive species, and pests.”* (Global Climate Change Impacts, page 131)

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- “Conditions observed in recent years can serve as indicators for future change. For example, temperature increases have made the current drought in the region more severe than the natural droughts of the last several centuries. ... Record wildfires are also being driven by rising temperatures and related reductions in spring snowpack and soil moisture.” (Global Climate Change Impacts, page 131)
- “How climate change will affect fire in the Southwest varies according to location. In general, total area burned is projected to increase. How this plays out at individual locations, however, depends on regional changes in temperature and precipitation, as well as on whether fire in the area is currently limited by fuel availability or by rainfall ... Climate changes could also create subtle shifts in fire behavior, allowing more ‘runaway fires’ – fires that are thought to have been brought under control, but then rekindle. The magnitude of fire damages, in terms of economic impacts as well as direct endangerment, also increases as urban development increasingly impinges on forested areas.” (Global Climate Change Impacts, page 131)
- “...in the American West, wildfires are strongly associated with increased spring and summer temperatures and correspondingly earlier spring snowmelt in the mountains. (Weather and Climate Extremes in a Changing Climate, page 18)

A summary of climate change impacts in the Southwestern United States from *Global Climate Change Impacts in the United States* is available at <http://bit.ly/southwestimpacts>

For the full report, including the pages cited above, a download link is available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>

The NOAA report, *Weather and Climate Extremes in a Changing Climate*, issued June 2008, is available online at <http://climatescience.gov/Library/sap/sap3-3/final-report>

Expert Contacts:

Tom Swetnam, Professor and Director of the Laboratory of Tree-Ring Research
University of Arizona, Tucson
Phone: (520) 621-2112 Email: tswetnam@ltrr.arizona.edu

Alexander Gershunov, Associate Researcher
Scripps Institution of Oceanography
Phone: (858) 534-8418 Email: sasha@ucsd.edu

Richard Somerville, Distinguished Professor Emeritus and Research Professor
Scripps Institution of Oceanography
E-mail: rsomerville@ucsd.edu

Donald Wuebbles, Professor in the Department of Atmospheric Sciences
University of Illinois
Phone: (217) 244-1568 E-mail: wuebbles@atmos.uiuc.edu

Jennifer Logan, Senior Research Fellow, School of Engineering and Applied Sciences
Harvard University
Phone: (617) 495-4582 E-mail: jlogan@seas.harvard.edu

Additional Science:

“Impacts of climate change from 2000 to 2050 on wildfire activity and carbonaceous aerosol concentrations in the western United States,” *Spracklen et al.*, 2009, Journal of Geophysical Research; accepted for publication and currently in press.

- This study predicts about a 42 percent increase in the total area burned in the California Coastal Shrub ecoregion, which includes the Los Angeles area, by 2055.

(Available at author Logan’s web site, http://www.people.fas.harvard.edu/~logan/jal_papers.html)

“Climate and Wildfire Area Burned in Western U.S. Ecoprovinces, 1916-2003,” *Littell et al.*, 2009, Ecological Applications.

“Multi-Season Climate Synchronized Forest Fires Throughout the 20th Century, Northern Rockies, USA,” *Morgan et al.*, 2008, Ecology.

(Both available at <http://www.esajournals.org>)

“Climate Change and Wildfire in California,” *Westerling et al.*, 2008, Climatic Change

“Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity,” *Westerling et al.*, 2006, Science

(Both available at http://ulmo.ucmerced.edu/~westerling/w_publications.html)

Contact Information:

Kim Curtis

Resource Media

325 Pacific Avenue, Third Floor

San Francisco, CA 94111

415.397.5000 ext 305

kim@resource-media.org