EarthDate

Wildfires

Firefighters study fire behavior using instrumentation during the Northwest Crown Fire Experiment, Northwest Territories, Canada.

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In 2018, wildfires burned an unusually high 8.5 million acres. Conversely, 2017 was a very wet year—but that was part of the problem.

Heavy rain brings more foliage, which the next year becomes fuel. Wet years are often followed by high-fire years.

Wildfires are a natural process, and in many ways can be beneficial: they clear out dead plant matter, control insects and plant disease, return nutrients to the soil, and make way for new growth.

It's even thought that, in the geologic past, fires regulated Earth's oxygen levels, to keep them in an optimum range for life.

But fires are also dangerous to humans and our property.

So what to do about that?

Forest management helps. Clearing forests and especially slopes of deadwood helps keep fires from spreading. Allowing them to burn is controversial but reduces fuel buildup.

Better fireproofing helps, too. Some embers from wildfires are very tiny—small enough to slip between roof tiles and ignite underlying wood. New codes in fire-prone areas call for fire-resistant roof decking.

Perhaps most important, we can better monitor ourselves. A new study found that 84 percent of wildfires are set by humans. Accidentally, through downed power lines or untended campfires. Or intentionally, through arson.

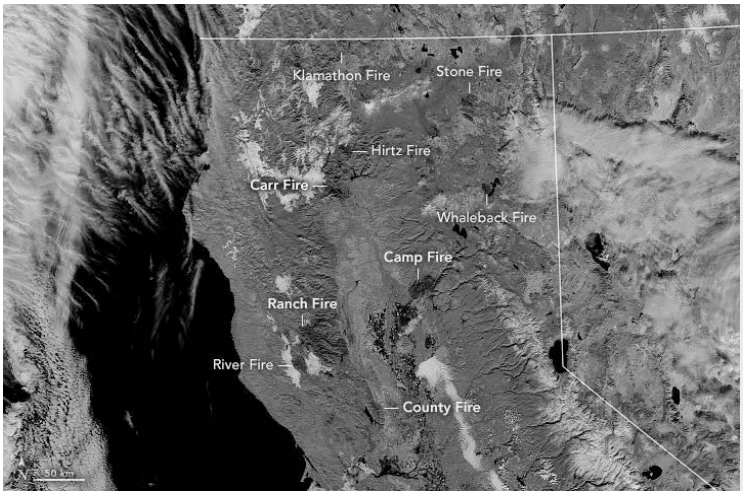
It may sound obvious, but to avoid becoming victims of fires, *we* need to become better at not setting them.

Bureau of Economic Geology

Background: Wildfires

Synopsis: Fire is a natural process that has been occurring on Earth for millions of years. How can fire be managed so humans can better live with it?

- Fire-prone ecosystems—from grasslands and savannas to shrublands and forests—cover 40 percent of Earth's land surface today.
  - Wildfire is an essential process in nature: restoring nutrients to soil; clearing out decay; and even helping some plants, like lodgepole pines, reproduce.
  - Through geologic time, fire probably moderated oxygen levels within the range that supports life on Earth.
- In 2018, fires burned more than 8.5 million acres, an area larger than the state of Maryland.
  - Fires in 2018 burned 30 percent larger areas than the average per year over the previous decade.
  - The wetter-than-average year before, 2017, might be a contributor to the 2018 abundance of fires: rain causes a bloom of combustible grass, shrubs, and trees that provide fuel for devastating fires that tend to occur a year after most wet seasons.
- Fires start by various means, but a recent study from the National Academy of Sciences found that humans are responsible for a whopping 84 percent of wildfires.
  - Human ignition of fire may occur through downed power lines, unattended campfires, or arson.
  - The study found that human-started wildfires tripled the length of the fire season and covered an area seven times larger than fires caused by lightning.
  - Wildfire can spread quickly and erratically, jumping rivers and doubling in size overnight.
- A larger number of more-intense fires that burn larger areas are expected in the future as weather extremes create the conditions necessary for fire: fuel, wind, and drought.
  - As global atmospheric temperatures warm, two things happen:
    - Snow melts earlier, resulting in longer summers.
    - Because warmer air can hold more water vapor, it draws moisture out of plants through evapo-transpiration, creating drier conditions in the fuel on the ground.



View of Northern California, where burn scars from nine major 2018 fires are visible from space. The image was acquired by Terra MODIS on November 25, 2018.

Credit: NASA Earth Observatory

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