

Extreme Wildfires

Introduction:

Wildfires are uncontrolled fires that occur in forests, grasslands, and other natural areas. They arise when the following elements interact:

- **Fuel (vegetation)**
- **Oxygen**
- **Heat**

They can start due to natural causes (lightning, volcanic eruptions) or human activities, either accidentally or intentionally.

Since the beginning of our planet's history, wildfires have existed in almost all regions where vegetation is present. In recent years, there has been a growing trend of wildfires becoming more severe and intense ([Review of causes, consequences, and response measures against forest fires: a focus on the state of Jalisco | e-CUCBA](#)), mainly due to climate change and the abandonment of rural areas.

Show image: wildfires_intro.png which is a photography of a forest with a very big fire going on.



What influences wildfires:

- **High temperatures** ([link](#))
- **Lack of precipitation and drought** ([link](#))
- **Rural depopulation:** Rural exodus: the abandonment of farmland and pastures has led to an increase in shrubland (the type of vegetation that burns the most).
[La dinmica de los incendios forestales_e20211201-10313-1hgff4i.pdf](#)
([d1wqtxts1xzle7.cloudfront.net](#))

Environmental Impact:

- **Destruction of ecosystems:** Loss of habitats, and death of plant and animal species.
- **Soil degradation:** Alteration of its physical properties, such as color, texture, water retention capacity, and increased erosion. Chemical properties are also affected, including changes in mineralogy, pH levels, and the loss of nutrients and fertility due to the decline of microorganisms (Bassaber-Zuñiga et al., 2024).
([Review of causes, consequences, and response measures against forest fires: a focus on the state of Jalisco | e-CUCBA](#))
- **Gas emissions:** Biomass combustion releases carbon dioxide (CO₂), methane (CH₄), carbon monoxide (CO), and nitrogen oxides (NO_x) into the atmosphere, as well as harmful particles that affect human health (Bassaber-Zuñiga et al., 2024).
([Review of causes, consequences, and response measures against forest fires: a focus on the state of Jalisco | e-CUCBA](#))

For more information: [Copernicus: CO2 emissions from wildfires, the highest in decades | CTIF](#)

To observe recent CO2 emissions data: [Exploration — U.S. Greenhouse Gas Center \(earth.gov\)](#)

Social Impact:

- **Health problems:** Respiratory illnesses caused by gas emissions, exacerbation of heart or lung conditions.
- **Economic losses:** Due to the resources allocated for firefighting, and the secondary problems that arise such as potential floods, and air and water quality issues.
([5 ways wildfires affect people, cities, and the environment | World Resources Institute](#))

Data:

For real-time and historical information on wildfires around the world:

[EFFIS - Current Situation \(Copernicus\)](#)

[NASA Earthdata Wildfire Map](#)

Did you know?

- While the number of wildfires has decreased, they are becoming larger in certain regions, such as Spain.
- Fire can also have positive effects: some ecosystems, like savannas and coniferous forests, rely on small controlled fires for regeneration.
- Giant sequoias and some species of pine need the high temperatures released during wildfires to open their cones and release seeds.
- Large and intense wildfires can create their own weather, leading to phenomena like fire tornadoes or firestorms (as seen in the 2020 California and Australia fires).

