



The Impact of Wildfires

OVERVIEW

In this activity, wildfires and how much area they burn serve as a phenomenon to guide student inquiry. Students examine data from published studies and evaluate evidence to develop scientific claims and construct arguments to explain recent wildfire patterns. This activity contains the following parts:

- **Part 1:** Students view a short news video about a local wildfire. They then develop questions and ideas for investigating these questions.
- **Part 2:** Working both independently and in groups, students interpret a graph showing how the area burned by wildfires in the United States and Puerto Rico has changed from 1983–2021.
- **Part 3:** Students interpret and evaluate evidence from scientific figures and apply the Claim-Evidence-Reasoning (CER) approach to explain changes in the area burned by wildfires over time. Different students consider different factors, then share their findings with the group.
- **Part 4:** Students consider all the factors from Part 3 to develop a group claim supported by evidence and reasoning.

This document contains multiple resources for using the activity with students, including the following (use links to go directly to each section):

- [background](#) information on wildfires
- [teaching tips](#) describing the data sources, pedagogical approaches, and modifying activity length
- a suggested [procedure](#) for implementing the activity
- [assessment guidance](#), including sample answers and additional information for the questions in the “Student Handout.”

Additional information can be found on [this resource’s webpage](#), including suggested audience, estimated time, and curriculum connections.

KEY CONCEPTS

- Human activities influence environmental processes and patterns.
- Changes in the environment influence wildfire dynamics. These changes may include fire suppression strategies, climate change and weather conditions, and human activities.
- One way to address scientific questions is the Claim-Evidence-Reasoning (CER) approach. It includes describing a claim that answers the question, evidence that supports the claim, and reasoning that links the evidence to the claim.

STUDENT LEARNING TARGETS

- Analyze and interpret scientific figures, such as graphs and maps.
- Evaluate various lines of evidence for which factors influence wildfire dynamics.
- Develop scientific claims supported by evidence and reasoning for why recent wildfires are burning more forest area.

PRIOR KNOWLEDGE

Students should be familiar with:

- using the Claim-Evidence-Reasoning (CER) approach, although this activity can also be used to introduce, model, or reinforce CER. This includes:
 - asking scientific questions
 - writing claims to answer questions
 - evaluating data that can be used as evidence to support a claim
 - providing reasoning to justify how evidence may or may not support a claim
- interpreting scientific figures (maps and graphs in particular)

MATERIALS

- copies of the “Student Handout”
- a short news video about a local wildfire (refer to [Part 1](#) of the “Procedure” section for tips on selecting a video)
- (optional) the “Figures” slide deck, which can be used to display all the figures from the activity

BACKGROUND

Wildfires, often naturally started by lightning, can be an important and recurring process within many ecosystems. For example, wildfires remove accumulating understory debris and dead trees from forests, and they influence carbon and nutrient cycling. Ecosystem-level responses following wildfires are also important for promoting the diversity of habitats, plants, and animals in an area ([McLauchlan et al. 2020](#)).

Where wildfires are a recurring process, plants often have adaptations to resist and recover from fire damage. For example, some trees develop thick bark to resist burning and protect living tissues. Others can resprout from buds under the soil or have seeds that rely on fires to initiate germination.

However, many plants cannot survive especially large and destructive fires, often termed **megafires**. Megafires have higher intensities (burn hotter) than typical wildfires, so they can kill all vegetation within large areas. As wildfires and megafires become more frequent, concerns have been raised about how they may impact both ecosystems and nearby areas that humans occupy ([United Nations Environment Programme 2022](#), [Bailey and Yeo 2019](#), [Heyck-Williams et al. 2017](#)). More specifically, increased wildfires and megafires can have negative impacts on:

- the diversity and abundance of wildlife
- human safety, health (due to smoke exposure), settlements, and structures
- the availability and quality of resources that humans depend on, such as animals, plants, and water

This activity uses a variety of scientific figures and studies to explore changing wildfire patterns and why recent fires are burning more forest area.

TEACHING TIPS

Data Sources

All the figures in the “Student Handout” are based on published scientific data. You can consult the original data sources for more information or consider sharing them with students (e.g., if you would like them to engage with primary literature).

- **Figure 1** depicts the “[Total Wildland Fires and Acres \(1983–2022\)](#)” data set from the [National Interagency Fire Center \(NIFC\)](#). The data were submitted by multiple agencies and include the 50 US states and Puerto Rico. Based on the [NIFC annual reports](#), note that:
 - There may be year-to-year differences in which states are most impacted by fires.

- Western states (e.g., Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Texas, Utah, Washington, and Wyoming) tend to be disproportionately represented in this data, due to having higher fire frequency and total area burned.
- Prior to 1983, federal wildland fire agencies did not track official wildfire data using current reporting practices. As a result, there is no official comparable data prior to 1983.
- The “**Info Sheet A**” figures are based on figures from [Safford et al. \(2012\)](#). Figure A1 is based on Figure 1 and Figure A2 is based on Figures 3 and 4 from the paper. Additional information about fire suppression practices can be found in [Calkin et al. \(2005\)](#).
- The “**Info Sheet B**” figures are based on figures from [Holden et al. \(2018\)](#). Figure B1 and Figure B2 are based on Figures 1 and 4 from the paper, respectively.
- The “**Info Sheet C**” figures come from two sources. Figure C1 is based on a figure from [Upton \(2017\)](#), and Figure C2 is based on Figure 2 in [Radeloff et al. \(2018\)](#).
- Keep in mind that some evidence discussed in the “Info Sheets” may be correlational. As such, even though the evidence may support students’ claims, there may still be other mechanisms or a combination of factors behind current fire patterns. This is an active area of study, and the scientific community has yet to develop a consensus on all the factors that influence current fire patterns, their relative importance, and how they may influence each other.

Pedagogical Approaches

This activity emphasizes and models the following approaches, which you could explore prior to the activity:

- **Claim-Evidence-Reasoning (CER):** Students use this approach throughout the activity to guide their understanding and development of scientific claims supported by evidence and reasoning.
- **Identify and Interpret (I²):** Students use components of this strategy in **Part 2** of the “Student Handout” to examine and interpret a figure that presents the grounding phenomenon for the activity. They can also apply the I² approach in **Part 3** as they examine and interpret figures that support different lines of evidence.
- **Group-worthy Tasks:** This activity provides multiple opportunities for students to work together on group-worthy tasks — that is, tasks associated with effective group work, which can promote the development of important science practices and make student reasoning and learning more transparent.
 - Group-worthy tasks are typically open-ended and complex, and they require both individual and group accountability.
 - It is essential that practices associated with effective group work are made explicit to students, as well as developed and reinforced over time. Consider, for example, developing classroom guidelines that promote constructive communication and dialogue, group inquiry and discussions, the inclusion of group members, and expectations for group work ([Bell and Bang 2015](#), Frey et al. 2009, Lotan 2003). These guidelines can include prompts to model practices.

Group-Work Considerations

The “Student Handout” asks students to work in groups at various points in the activity. You may want to consider the following group-work suggestions:

- **Making group work more inclusive.** Barriers to group work may exist for some students due to accessibility, language, prior experiences, and other challenges. Modify the “Student Handout” as needed to accommodate your classroom practices and needs. Also consider implementing [inclusive approaches to group work](#) to promote the inclusion of all students, such as:
 - forming groups strategically (same-language partnering, balancing students with different communication and skill sets, etc.)
 - providing opportunities for students to complete some individual work in preparation for group work

- building in more time for students to read and process information
- being explicit about group-work expectations
- visiting groups to model inclusive practices
- considering [alternative approaches](#) for individuals and groups to share with the class
- **Assessing student and group learning.** Be explicit at the beginning of the activity about how students will be held accountable for their work, including how individual and group work will be evaluated. For example, you could ask students to put their initials on any ideas they contribute to their group and have each student turn in their own copy of the “Student Handout.”
 - It is recommended to lead classroom discussions at various points in the activity for students to share their sensemaking, understanding, ideas, and questions. These discussions can help you assess and facilitate students’ progression throughout the activity, model practices, and ensure that students are making important connections. The “Procedure” section outlines discussion suggestions for [Part 1](#), [Part 2](#), and [Part 4](#).
 - Consider additional opportunities for students to provide self, peer, and group assessments. Students could also provide feedback on their experience with the group work, to help improve future group work experiences.

Adjusting Activity Length

To allow time for group work and discussions, this activity is designed to be conducted over two 50-minute class periods. Length may vary depending on students’ levels of [prior knowledge](#), including time for scaffolding, and your own goals for the class.

- Let students know how long you plan to spend on each section as they progress through the activity. Flexibly adjust the amount of time for each section if necessary.
 - You can provide students with specific “time windows” for each part to move the activity along. Adjust the time windows as needed based on your experience and classroom needs.
 - Most time should be spent on Parts 3 and 4. Consider spending about 15 minutes on Part 1 (watching the video and answering questions), 10–15 minutes on Part 2, 20 minutes on Part 3, and 20 minutes on Part 4. Any remaining time can be spent on short group discussions between the parts of the activity.
- If you would like to shorten the activity, consider the following options:
 - Assign Question 1 of the “Student Handout” as prework. (Make sure all students have access to the video in this case.)
 - Keep class discussions focused and directed. Students may not need to engage in a class discussion at the end of Part 4.

PROCEDURE

Before the Activity

Choose groups of three or four students to work together during the activity. Refer to the [“Teaching Tips”](#) section for more information on group-worthy tasks and group-work considerations.

Begin by providing a context for the activity that is relevant to your students and your classroom learning goals, which could include:

- more [background](#) on wildfires
- an introduction or review of the [pedagogical approaches used in this activity](#)
- expectations for individual and [group work](#), including how their work will be assessed

PART 1: A Local Wildfire

Part 1 introduces students to wildfires and their impacts, draws upon their current understanding of the topic, and highlights questions they might have. Students also begin to think about types of investigations and evidence that might help answer their questions.

Video

Select and show a video clip that highlights a local wildfire to engage your students in the activity's guiding phenomena. Use a short news video that:

- provides a local example of a wildfire and its potential impacts at the **wildland-urban interface (WUI)**: the area where wild vegetation is close to human homes
- discusses multiple factors that cause wildfires or impact their spread/size
- is about two minutes in length
- has closed captions or subtitles to promote accessibility

The following are examples of video clips that meet these criteria:

- ["Life-threatening wildfires storm Colorado"](#) (consider 0:00–1:50)
- ["Wildfire explodes near Yosemite National Park"](#) (consider 0:00-2:19)
- ["Florida wildfires: More than 1,000 homes evacuated as wildfires rage in Panhandle"](#)
- ["Gov. Cox warns of extreme fire danger, stretched firefighting resources in Utah"](#)

Students can watch the video twice: first to experience fire as a phenomenon, then to answer Question 1 in the "Student Handout." Students then work with their group to answer Question 2.

Class Discussion for Part 1

At the end of Part 1, consider leading a class discussion about the video. Students can share questions that arose and propose investigations to answer their questions. This is an opportunity to validate students' observations and insights, and to model classroom discussions by asking clarifying questions ("What type of evidence might help answer your question?") and being open to different student ideas.

PART 2: Explore Wildfire Data

Part 2 introduces students to the grounding phenomenon that will guide the rest of their inquiry (in Parts 3 and 4).

Figure

Students first examine Figure 1 in the "Student Handout," which shows how the total forest area burned by wildfires in the United States and Puerto Rico has changed from 1983–2021. An image of Figure 1 is provided in the "Figures" slide deck if you want to project it to the class.

It is essential that the students themselves evaluate and interpret Figure 1. Give students time to familiarize themselves with the figure, and consider providing suggestions that might help them approach it. For example, "You might want to start with interpreting the axes and considering what information they provide. The legend at the top explains what each line means, which will also help you interpret the figure."

By answering the Part 2 questions in the "Student Handout," students will first independently identify and interpret changes, trends, or differences they notice in the figure, then share their observations and

interpretations with the group. Students then develop important questions that might arise from the data presented in the figure.

Class Discussion for Part 2

At the end of Part 2, consider having a brief class discussion where groups share out:

- How they might broadly explain the information presented by the figure (i.e., changes in forest area burned over time). They could, for example, provide a verbal summary or caption for the figure, like in the [1² approach](#).
- Changes, trends, or differences they identified and their interpretations (Questions 3–4).
- Questions that emerge from exploring Figure 1 (Question 5). These questions can help you understand how students are interpreting the figure.

After the discussion, let students know that the rest of the activity will focus on evaluating data from different studies to address the question “Why has the area burned by wildfires *increased* over time?” If time permits, you may ask students to start brainstorming possible factors.

PART 3: Evaluating Evidence and Developing Claims

Each student in a group should be assigned one of the three “Info Sheets” (A, B, or C). Each sheet focuses on different factors that affect wildfires.

- If there are more than three students in a group, students can work together on the same sheet. Just make sure that at least one student per group is assigned to each sheet.
- The “Student Handout” contains all three “Info Sheets.” To reduce the length of the handout, consider printing just one copy of each “Info Sheet” for each group.

By answering the Part 3 questions in the “Student Handout,” students summarize the study or investigation associated with their sheets, then use the [Claim-Evidence-Reasoning \(CER\) approach](#) to address the question “Why has the area burned by wildfires *increased* over time?” At the end, students report back to the group with their findings.

- Consider checking in individually with students about their CER tables in Question 8 *before* they proceed to the group discussion in Question 9. You can provide feedback and suggestions to help students prepare for their group discussion.
- Allow students to revise their CER tables based on the group discussion.

PART 4: Constructing a Group Claim Supported by Evidence and Reasoning

After processing the different factors in Part 3, student groups develop a new claim to address the question “Why has the area burned by wildfires *increased* over time?” The group’s consensus CER table (Question 11) can serve as the summative assessment for the activity, as it reflects the group’s understanding of the [key concepts](#) and their ability to demonstrate scientific practices (such as interpreting and evaluating scientific figures and data).

Class Discussion for Part 4

After all the groups have developed their CER tables, consider leading a class discussion in which groups present the claims they developed and the factors they found most compelling (Questions 10–11).

If time permits, groups can also discuss other questions and ideas they had (Question 12) and solutions they proposed (Question 13). This discussion may provide opportunities to clarify information and highlight areas for further investigation.

- For example, students might wonder how the different factors in the “Info Sheets” (i.e., human activities, drier conditions, and fire suppression strategies) influence each other.
- Students might also propose other factors that could influence fire patterns (e.g., bark beetles, power plants, or high winds). You could discuss potential new claims and what types of evidence would support them.

ASSESSMENT GUIDANCE

The following are sample answers for questions in the “Student Handout.” These answers highlight key points to help you anticipate student responses, but you are encouraged to accept varied responses to promote student inquiry, understanding, and confidence. Many of the questions are designed as open-ended opportunities for students to engage in their own reasoning and develop their own understanding.

PART 1: A Local Wildlife

- List three specific questions about the wildfire in the video that may require further investigation.

Potential questions may include, but are not limited to:

- **What caused the fire?**
- **What factors led to the spread of the fire?**
- **How do people control fires like this?**
- **How might the fire impact people and human structures?**
- **How might the fire impact wildlife?**

- As a group, choose two questions that would require investigating and evaluating information (rather than just recalling facts), and record them in the table below. For each question, also describe how you might investigate the question, such as what information you could collect to answer it.

Encourage students to choose questions that are open-ended, interpretive, and evaluative. The ideas for investigation should provide information that can help address the question.

PART 2: Exploring Wildfire Data

- On your own, identify two or three changes, trends, or differences you notice in Figure 1, then interpret what each of these observations might mean.
- With your group, take turns sharing what you noticed about the figure and what you think each observation means. Record any additional patterns noted by the group below. If there are different interpretations of these patterns, discuss and record these as well.

Some potential answers for Questions 3 and 4 are shown below.

| | Identify: What did you notice? | Interpret: What do you think it means? |
|---|---|---|
| 1 | Overall, the total area burned has increased over time. | Something (e.g., human activity or other factors) has led to more or larger wildfires over time. |
| 2 | The area burned varies from year to year. | The area burned depends on different factors (such as weather, dryness, and human activities) that vary from year to year. |
| 3 | The 5-year running average fluctuates much less than the yearly total. | Although there are year-to-year fluctuations, the total area burned has increased on average. |
| 4 | The total area burned increased more after 1996. | After 1996, something led to more or larger wildfires. |

| | | |
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| 5 | 2006 was the year when fires burned the largest area. | In 2006, something caused wildfires to burn a larger area than in other years. |
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5. As a group, what are one or two big questions that emerge from your exploration and discussion of Figure 1?

Potential questions include, but are not limited to:

- **What has caused the area burned by wildfires to increase over time?**
- **Why does the area burned vary on a yearly basis?**
- **Where did the data in the figure come from? Who collected the data, which states are represented, etc.? (More information is provided in the [“Data Sources”](#) section.)**

PART 3: Evaluating Evidence and Developing Claims

6. Which “Info Sheet” were you assigned (A, B, or C)?

Students should evaluate Sheet A, B, or C depending on what you or their group assigned them.

7. In your own words, summarize the study or investigation associated with your “Info Sheet” in two or three sentences. Focus on what the researchers examined. You do not need to discuss the results.

Example summaries for each “Info Sheet” are shown below:

- **Sheet A:** This study examined whether reducing forest fuels (materials that can burn, which may be increased due to fire suppression) affects the size and impact of wildfires.
- **Sheet B:** This study examined how summer rainfall affects the area burned by wildfires each year. It also examined how the area burned and summer rainfall changed over time.
- **Sheet C:** One study examined the causes of wildfires. Another study examined how a fire-prone area called the wildland-urban interface (WUI) has changed over time (in terms of area, houses, and number of people).

8. Address the question “Why has the area burned by wildfires *increased* over time?” by filling in the following Claim-Evidence-Reasoning (CER) table based on your “Info Sheet.”

Example tables for each “Info Sheet” are shown below. Students may choose different claims and select their evidence and reasoning accordingly.

Sheet A

| | | | |
|--|---|---|---|
| Question Why has the area burned by wildfires <i>increased</i> over time? | | | |
| Claim: A statement that answers the question. Form your claim by filling in the blank. The area burned by wildfires has increased over time because <i>fire suppression strategies have led to more severe fires.</i> | | | |
| Evidence: Data or observation that supports the claim. List two or three specific examples. | | Reasoning: How the evidence justifies the claim. Provide reasoning for each piece of evidence. | |
| 1 | According to Calkin et al. (2005), fire suppression strategies have led to more vegetation, and thus fire fuels, in forests. | 1 | The increase in vegetation due to fire suppression could support more fires or fires that are more severe. |
| 2 | Figure A2a shows greater heights of fire damage in control areas than in thinned | 2 | The figure suggests that more vegetation leads to more fire damage, presumably from more |

| | | | |
|---|---|---|---|
| | <i>areas. In other words, forest areas where vegetation was not removed had more fire damage.</i> | | <i>severe fires. So increases in vegetation due to fire suppression could lead to more severe fires.</i> |
| 3 | <i>Figure A2b shows that smaller percentages of trees survived in control areas than in thinned areas. In other words, forest areas where vegetation was not removed had more trees killed by fire.</i> | 3 | <i>The figure suggests that more vegetation leads to more trees being killed by fire, presumably because the fires are more severe. So increases in vegetation due to fire suppression could lead to more severe fires.</i> |

Sheet B

| | | | |
|--|--|---|---|
| Question Why has the area burned by wildfires <i>increased</i> over time? | | | |
| Claim: A statement that answers the question. Form your claim by filling in the blank. The area burned by wildfires has increased over time because <i>drier conditions make it more likely for wildfires to burn a larger area.</i> | | | |
| Evidence: Data or observation that supports the claim. List two or three specific examples. | | Reasoning: How the evidence justifies the claim. Provide reasoning for each piece of evidence. | |
| 1 | <i>According to Westerling et al. (2006), dry vegetation may be more likely to burn and cause fires to spread.</i> | 1 | <i>This suggests that drier conditions (due to factors like less rainfall), which result in drier vegetation, may make it more likely for wildfires to burn a larger area.</i> |
| 2 | <i>Figure B2a shows that the number of rainy days has decreased over time, while Figure B2b shows that the forest area burned has increased over the same time period.</i> | 2 | <i>The decrease in the number of rainy days suggests that conditions are getting drier, and this is happening over the same time that the area burned is increasing.</i> <i>Together, these figures support the idea that drier conditions result in larger areas burned. This could be because drier vegetation leads to wildfires burning a larger area or more fires occurring.</i> |
| 3 | <i>Figure B2c shows that the area burned decreases with the number of summer rainy days each year.</i> | 3 | <i>This suggests that fires burn a larger area during drier years, possibly because fewer days with rainfall dries vegetation and makes it more likely to burn.</i> |

Sheet C

| |
|---|
| Question Why has the area burned by wildfires <i>increased</i> over time? |
|---|

| | | | |
|--|---|--|--|
| <p>Claim: A statement that answers the question. Form your claim by filling in the blank. The area burned by wildfires has increased over time because <i>the wildland-urban interface (WUI) is growing.</i></p> | | | |
| <p>Evidence: Data or observation that supports the claim. List two or three specific examples.</p> | | <p>Reasoning: How the evidence justifies the claim. Provide reasoning for each piece of evidence.</p> | |
| 1 | <i>Figure C1 shows that most wildfires are due to human activities rather than natural causes.</i> | 1 | <i>If humans cause most wildfires, increased human activities near forest areas due to growth of the WUI could cause more fires.</i> |
| 2 | <i>According to Radeloff et al. (2018), humans often start fires in the WUI.</i> | 2 | <i>If humans often start wildfires in the WUI, the growth of the WUI may make fires more likely, leading to a larger area burned.</i> |
| 3 | <i>Figure C2 shows that the size of the WUI is growing in terms of area, the number of houses, and the number of people.</i> | 3 | <i>Having a larger WUI with more people and houses may increase the chances of human activities starting wildfires.</i> |

9. Once everyone in your group has completed their CER tables, take turns sharing the “Info Sheets” each person read and the claims, evidence, and reasoning they came up with.
- Each “Info Sheet” (A, B, and C) explores different factors that could affect wildfires. Record notes on the factors from the other sheets.
Students should record information about the sheets they were not assigned.
 - After sharing with your group, what (if anything) might you want to add to or update in your CER table?
Students’ answers will vary depending on their discussion.

PART 4: Constructing a Group Claim Supported by Evidence and Reasoning

10. Consider the factors affecting wildfires presented in the three “Info Sheets.” Were some factors more convincing than others, were they equally convincing, or might there be one overarching factor that accounts for everything in the “Info Sheets”?
The answer to this question should make the students’ reasoning visible and show their ability to interpret and process presented data.
11. Based on your answer to the previous question, develop a group claim that addresses the question “Why has the area burned by wildfires *increased* over time?” Fill out the following CER table with your group claim, evidence, and reasoning.
Students should develop a group (consensus) claim that could:
- List multiple factors that have led to the increase in area burned. For example: “The area burned by wildfires has increased over time because of management practices that have increased fire fuels, drier weather conditions, and more humans living closer to forests.”***
 - Unite the factors under one overarching explanation. For example: “The area burned by wildfires has increased over time because of the way humans have impacted the environment, including climate change.”***

- **Identify specific factors that they found more compelling than others. For example, if the group didn't find Sheet C as compelling, they might say: "The area burned by wildfires has increased over time because of management practices that have increased fire fuels and drier weather conditions."**

The rest of the CER table should be filled out based on the claim that the group chose.

12. What questions or other ideas arose during your group's discussions? For example, what factors *other* than the ones presented might affect the area burned by wildfires?

Students should highlight the questions and ideas that arose during their group's discussion. Consider having students share some of their questions and ideas during a [class discussion](#) at the end of the activity.

13. Based on your group's claim in Question 11, list three possible solutions that humans could use to reduce the area burned by wildfires each year.

Solutions will vary but should align to the group's claim. Consider having students share some of their solutions during a [class discussion](#) at the end of the activity.

OPTIONAL EXTENSIONS

This activity can help support a broader curriculum in several ways:

- **Incorporating modeling.** Visual and conceptual models can be incorporated into the activity to help students visualize, organize, and clarify their thinking ([Wilson et al. 2020](#)). Models can also be used as a tool to guide student discussions/presentations and to assess learning.
 - Consider incorporating modeling at the end of Part 4. For example, students could create models that outline how the factors in their claim influence fire dynamics. Students could use the models to make connections between different factors and how they influence each other (e.g., drier conditions make areas near humans more likely to burn).
- **Expanding exploration of wildfires.** A variety of online resources can be used to build a broader curriculum that explores fires, the human dimension, and possible solutions.
 - The news article "[Understanding Fire](#)" discusses how the factors highlighted in this activity (fire suppression, drier conditions, and human activities) impact wildfires in California. You could have students read this article to help them process and apply their growing knowledge.
 - Additional resources where students can access fire data include NASA's Fire Information for Resource Management System ([FIRMS](#)) and Earth Observatory ([EO](#)), [WIFIRE](#), the National Interagency Fire Center ([NIFC](#)), and the Global Fire Atlas ([GFED](#)).
 - Consider a follow-up activity to Question 13 that allows students to further explore and develop solutions to mitigate the impacts of wildfires.
- **Connecting to climate change.** Wildfires can be used as a phenomenon to drive students' exploration of climate change.
 - BioInteractive's short film [The Science of Climate Change](#) specifically connects current fire patterns to changing global climate. You could show students this film to transition from this activity to other climate change concepts.

REFERENCES

For Specific Figures

Figure 1

National Interagency Fire Center. "Total Wildland Fires and Acres (1983–2022)." Accessed March 22, 2023. <https://www.nifc.gov/fire-information/statistics/wildfires>.

Info Sheet A

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Info Sheet B

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Info Sheet C

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