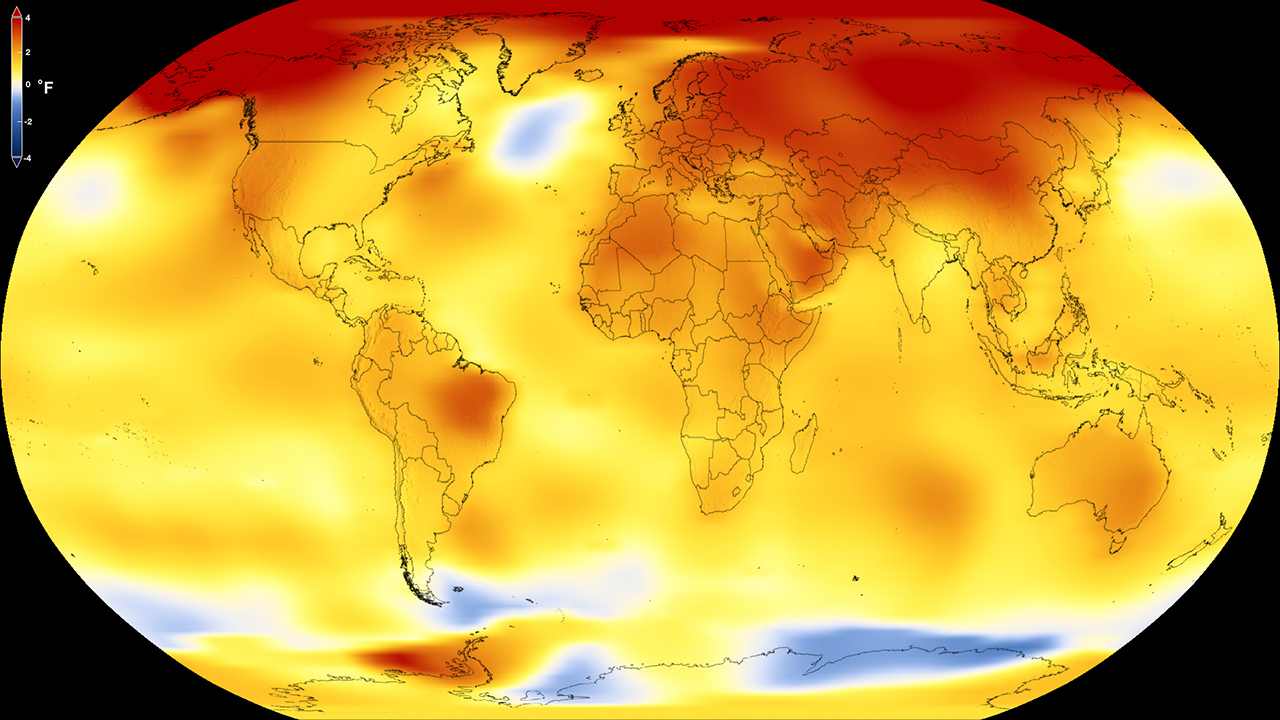
**Unit Essential Question:** *How do humans impact organisms around the world and what can we do about it?*

**Engage**

In the Lift-Off task, you saw that the bee population is declining. In the last unit, you learned that algal blooms have been on the rise in recent years. But why are these things happening? Why are we seeing changes like these in many different organisms around the world? To answer these questions, we first need to investigate how environments are changing around the world and why.



1. Watch the first minute of the following video: <https://climate.nasa.gov/climate_resources/42/video-temperature-puzzle/>.

Individually,

1. Make hypotheses:
   1. What do you think is causing these rising temperatures?
   2. Why do you think rising temperatures might affect organisms?
2. **Asking Questions**: What questions could you ask in order to find out more about these rising temperatures?

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**Explore**

Like any good scientist, we need to gather more evidence to figure out whether global temperatures are actually rising, and if so, why it’s happening. **Asking Questions:** Your teacher will be giving your group one piece of evidence at a time. For each piece of evidence, discuss with your group and record:

* What you think the evidence tells you
* Any questions you have about the piece of evidence or things the piece of evidence makes you want to know more about

|  |  |  |
| --- | --- | --- |
| **Evidence** | **What does the evidence tell you?** | **What additional questions do you have?** |
| Graph:  Global Temperature Change |  |  |
| Graph: Temperature and Carbon Dioxide |  |  |
| Experiment: Temperature and Carbon Dioxide |  |  |
| Graph:  Carbon Emissions From Fossil Fuels |  |  |
| Graph:  Carbon Emissions From Volcanic Eruptions |  |  |

**Unit Essential Question:** *How do humans impact organisms around the world and what can we do about it?*

**Explain**

Now that you have seen all the evidence, let’s return to our original questions from the *Engage*: What do you think is causing these rising temperatures? Why do you think rising temperatures might affect organisms? Draw conclusions by individually filling out a cause and effect flowchart. You may use as many or as few of the boxes as you’d like:

Label the arrows above with the resource from the *Explore* that allowed you to make the connection.

**Unit Essential Question:** *How do humans impact organisms around the world and what can we do about it?*

**Elaborate**

## **Stability and Change:** Look back at the last two pieces of evidence in the *Explore*. Both graphs examine causes of carbon dioxide emissions. In partners, discuss:

## Which one represents a sudden change? Which one represents gradual changes that have accumulated over time? Explain how you know.

1. Which cause seems to have more of an impact over time?

**Unit Essential Question:** *How do humans impact organisms around the world and what can we do about it?*

**Evaluate: Connecting to the Culminating Project**

You have been asked to create an advocacy video that describes the human impact on an organism and gives a potential solution. You have been provided with a list of organisms that are affected by rising temperatures. As a group, select an organism from the list to focus on for your culminating project and research your organism. Then individually,

* Define the **problem**: What is happening to global temperature and why might it be a problem?
* Identify the **criteria** for a successful solution: How will you know if a solution addresses the problem?
* Identify the **constraints** of solving this problem: What might make it hard to solve this problem?

This should be done individually in your Project Organizer.

**Unit Essential Question:** *How do humans impact organisms around the world and what can we do about it?*

**Reflection**

Individually reflect on Task 1, using the questions provided:

1. At the beginning of this task, you were asked to hypothesize why temperatures are rising. Look at your hypotheses in the *Engage* and your flowchart in the *Explain*. How has your understanding changed over the course of the task?
2. In this task, we focused on the crosscutting concept of:

* **Stability and Change**: Stability might be disturbed by sudden events or the accumulation of gradual changes.

Where do you see examples of **Stability and Change** in this task?

1. Now that you have learned more about the rise of global temperatures and its cause, what questions do you still have?