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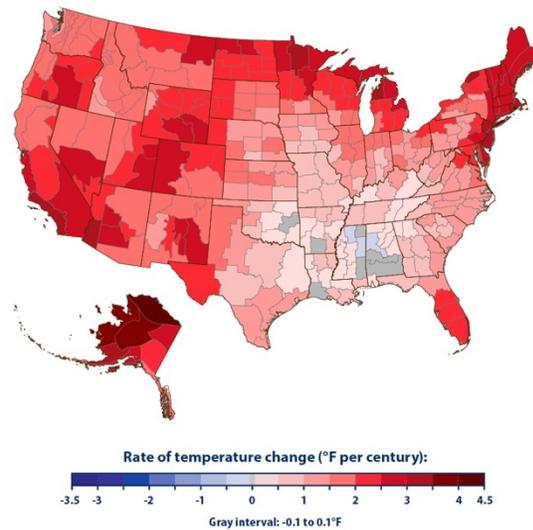
Topic: Rising Temperatures

Time: 3 days

Grade Level: 4th Grade

Standards: 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans.

Engaging Contexts: Present the map that shows the rate of temperature change among different areas of the United States.



Justification: Integrating the climate science data enhances students' understanding of STEM. Students can comprehend climate change and its effects through the scientific data. Students can look at temperature rates in a specific US state over time. Students can see that climate change refers to long term shifts in weather patterns and temperatures. These shifts and changes are proven in the online data. If students do not use this data, they will not be aware of the impact of climate change in their own lives. However, students can use scientific data to conclude that

climate change is occurring in our world. Students will be more compelled to make personal changes to prevent the rising temperatures.

Objectives: Students will be able to analyze temperature data and generate solutions to reduce the effects of climate change.

Lesson Procedure:

- **Engage:**
 - o Ask students opening questions to get them engaged in the lesson
 - o “Why is it important to study climate change?”
 - o “What are some of the effects of climate change?”
 - o Allow students to turn and talk with a partner
 - o Allow students to share with the class
- **Explore:**
 - o Randomly assign each student with a US state
 - o Have students use the NOAA dataset to analyze the annual temperature data from 1990-2020 in their US state
 - o Students will plot the data on their graphing paper
- **Explain:**
 - o Guide students through their results by helping them understand the concept of climate change
 - o Explain that the rise in temperatures is directly correlated to climate change
 - o Show the PowerPoint on the role of human activities in climate change
- **Elaborate:**

- o Students will write one concluding paragraph that explains what their data shows
- o Students will discuss and write down multiple solutions that can reduce the impact of climate change
- o Students will then share solutions with the class while we discuss what we could do in our daily lives to help reduce the impact
- **Evaluate:**
 - o Students will turn in their temperature data graphs, their paragraph and their list of possible solutions for the teacher to evaluate

Assessment:

- Temperature data graph
- Writing one paragraph that analyzes the data
- Write at least 5 possible solutions that we can do in our daily lives to reduce the impact of climate change

Rubric:

Prompt: Students will analyze annual temperature data from a US state from 1990-2020

Well Developed	Criteria	Developing
	Creates a temperature graph with appropriate labels and data	
	Creates a neat, organized and visually appealing graph	
	Writes at least one concluding paragraph that summarizes the key findings from the data	
	Generates at least 5 reasonable solutions to reduce the impact of climate change in our daily lives	

Lesson Materials:

- Graphing paper
- Paper (Concluding paragraph and reasonable solutions paragraph)
- Pencils
- Computer (access NOAA data)
- Projector (powerpoint)

Handouts and Materials:

<https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series/42/tavg/ann/1/1990-2020>

Prompt: In one paragraph, analyze and explain the results of your temperature data.

Prompt: Write at least 5 possible solutions that we can do in our daily lives to reduce the impact of climate change.
