Next Generation Climate

- Grades 6-8
- Supports NGSS
- Lots of graphs and tables
- Argumentation, Questioning
Next Generation Climate

http://www.climategen.org/ngc
## NGC Performance Expectations

### Middle School Next Generation Science Standards

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<th>Human Impacts</th>
<th>Lesson 1</th>
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<tr>
<td>MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</td>
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<td>MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.</td>
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<th>Weather and Climate</th>
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<tr>
<td>MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century</td>
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<th>Engineering Design</th>
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<td>MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</td>
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Lesson Essential Questions

Lesson 1: What evidence is there to show there is a rise in global temperature?

Lesson 2: What factors have caused the rise in global temperature over the last century?

Lesson 3: What are the repercussions of the rise in global temperature?

Lesson 4: What would you need to monitor the repercussions of the rise in global temperature?

Lesson 5: In what ways can the repercussions of climate change be minimized?

Lesson 6: How can you design a method for monitoring and minimizing climate change?
Why NGSS?

- Includes climate change as a core concept for the first time on a national curriculum
- NGSS performance expectations represent the final assessment of learning and therefore cannot fully develop a student’s full mastery.
- True NGSS instruction and learning is three dimensional— including:
  - Core ideas (DCI)
  - Cross cutting concepts (CCC)
  - Scientific and engineering practices (SEP)
Introduction: What’s happening to global temperature?

What are clarifying questions?

Clarifying questions: expands on understanding the information is presented

• Who collected this data?
• When was it collected?
• Does it represent what it’s supposed to?
• Who funded the research?
Introduction: What’s happening to global temperature?

Global Land and Ocean Temperature Anomalies Graph

- This graph shows temperature change from average
- Take a look at your graph
- Write down
  - 3 things you notice
  - 3 Clarifying questions
- Share

https://www.climate.gov/news-features/understanding-climate/
clim ate-change-global-temperature
Introduction: What’s happening to global temperature?

- Discussion about the graph sections
- Find a group of 5 to join up with based on your graph section number
Introduction: What’s happening to global temperature?

- Why is it important to look at this graph as a whole?
- Why is it important to look at change over time?

[Images of graphs showing temperature change over time]

- [Link: http://www.skepticalscience.com/graphics.php?g=47]
Besides looking at a thermometer, what are things you see/hear/smell that indicate changes in temperature?
What are the indicators of the rise in global temperature?

- Each group will get 1-2 figures to look at
- Find Temperature Indicators student worksheet
- Study your figure, discover what indicators are shown, answer questions to help clarify and ensure the evidence is reliable
- Read your figure’s explanation, to help add to your answers
Conclusion: What are the indicators of the rise in global temperature?

- Present to the group
- Walk around the room and look at the other figures
- What can we learn from multiple lines of evidence?
- What conclusions can you draw?
- These figures, when put together, provide evidence for __________.
- What data is missing? Is there anything you would like to know?
Activity Feedback

- How was the progression?
- Questions?
- Other feedback?
- Would you like to look at other lessons or curricula?
Other Resources
Intro to CLEAN - Climate Literacy and Energy Awareness Network

CLEAN Webinar Series
November 9, 2017

Join the CLEAN team for a guided tour of the CLEAN portal. Learn about the CLEAN collection of almost 700 climate and energy educational resources and the range of other supporting materials to help you effectively and accurately teach about...

view event

Teaching Climate Literacy

Climate and energy are complex topics. There are many ways to approach climate and energy depending on the grade level, course topics and instructional method.

Read more

Professional Development

LIVE FROM BONN - Climate Generation delegates to COP23 share perspectives on the international climate negotiations

Abstract: Climate Generation believes it takes all sectors to address climate change, an

View event

National Climate Assessment

Climate Youth Engagement

Learn More

Find Resources

Reviewed learning activities from cleanet.org

Grade Level
- Any -
Climate Literacy & Energy Awareness Network

- **CLEAN Collection**: an online database of over 700 free, peer-reviewed, and ready-to-use educational resources, including learning activities, visualizations, videos, and short demonstrations/experiments, for teaching about climate and energy.

- **CLEAN Network**: a professionally diverse and active community of over 650 members committed to improving climate and energy literacy since 2008.

www.cleanet.org
Reflection time

Could you implement this in your classroom? When? How long would it take?

Do you need anything? How could we help?

What about the other lessons?