



## Impacts of Climate Change 1/3

**Type of Lesson:** Introductory

**Description of lesson:** This lesson is to establish vocabulary and base knowledge on impacts of climate change. Students will be working together to match vocabulary terms. In addition, they will be taking notes about the basic impacts of climate change

### Enduring Understandings

Climate is made up of multiple variables, a change in any of those variables can have a major impact on the planet

### Essential Questions

If predicted future impacts of Climate Change are as bad as the scientific community is predicting, is our home planet doomed or saveable?

### Academic Standards:

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity

HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

HS-ENV1-2.\* Use a computational representation to illustrate that humans are part of Earth's ecosystems and how human activities can, deliberately or inadvertently, alter ecosystems

HS-ENV1-3. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

### Student learning targets:

- Students will be able to define important climate related vocabulary
- Students will construct an argument from evidence about anthropogenic climate change

**Assessment task** - At the end of this lesson, you can give students a vocabulary quiz or worksheet to assess their knowledge on the terms. In addition, you could play Quizlet Live as an informal assessment of terms.

### Differentiation:

In order to differentiate to a wide range of student ability you could consider having students work in groups to do the vocabulary matching.

For higher level students have them categorize the words together in any way they see fit, then explain why they made those categories

You could also have students make a concept map showing how the terms are connected to each other and provide an explanation

### Accommodations:

- Pre-filled notes printed out for students
- Embedding the PowerPoint in the LMS so that students can follow along at their own pace
- Vocabulary as a reference only instead of having them fill it out
- The use of notes during assessments

<p><b>Prior Learning:</b></p> <ul style="list-style-type: none"> <li>• Milankovitch Cycles</li> <li>• Greenhouse Gasses</li> <li>• </li> </ul>	<p><b>Prerequisite skills:</b></p> <ul style="list-style-type: none"> <li>• Vocabulary matching</li> <li>• Claim Evidence Reasoning</li> <li>• Interpreting graphs</li> </ul>
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Printed vocabulary cards</li> </ul>	<p><b>Technology:</b></p> <ul style="list-style-type: none"> <li>• Presenter</li> <li>• Tablets or ipads so students can manipulate the Milankovitch simulator</li> </ul>

**Vocabulary Development:** Vocabulary matching set - print vocabulary word cards, definitions, and pictures. Have students work in groups of 4 to match the word, definitions and pictures of words related to impacts of climate change. Go around and check student answers. Have students fill in a note sheet to use as reference for the remainder of the lesson

Quizlet  
Note sheet

**Procedures:**

Start the class by having stacks of vocabulary words, definitions and pictures. Have students complete the activity in the Vocabulary Development section.

When all student groups have completed the activity and have correctly matched the cards, have them fill out a vocabulary note sheet to use as reference for the rest of the unit.

For the next activity have students write a CER (Claim, Evidence, Reasoning) on the following question:

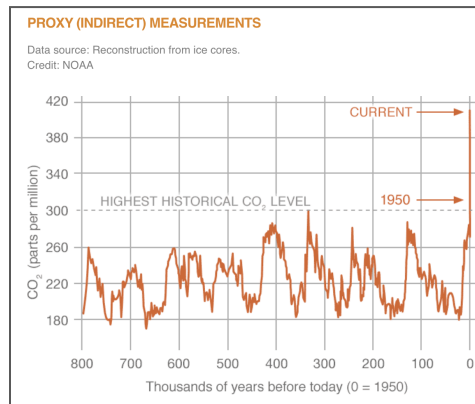
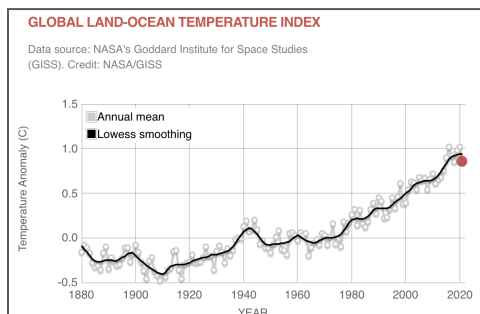
Is climate change caused by humans?

Have students use the following graphs and Milankovitch simulation to collect evidence.

Students should write a claim “Humans are/are not causing climate change”

The teacher should guide them to pick out data trends in the graphs to support their answers.

Depending on your class’s ability and comfort with CER, the teacher will need to guide them to come up with a reason (how the evidence supports the claim)



<https://cimss.ssec.wisc.edu/wxfest/Milankovitch/earthorbit.html>

\*Teacher Note: Milankovitch Simulator:



If your students have not taken an Earth & Space or Astronomy equivalent class, the Milankovitch cycles are a pattern of planetary movement that affects the climate. Please review the following terms and explanations with your students to make sure they understand how the planet moves.

Tilt - the angle of the axis. This movement determines how severe the seasons are

Precession - which way the axis is pointing. This movement determines when it is winter/summer in northern hemisphere vs. southern hemisphere

Eccentricity - how circle the orbit of the planet is. A more oval orbit can create more climate/seasonal extremes depending on where in the orbit the planet is.

As all three of the movements enter the minimums, which it will in the next 25,000 years, the planet should be going into a predictable colder climate. This is one of the biggest pieces of evidence that support climate change is human caused.

Below is an additional article from NASA with more information

<https://climate.nasa.gov/news/2948/milankovitch-orbital-cycles-and-their-role-in-earths-climate/>

CER: at this point in the sequence of the lessons, it is alright for your students to have misconceptions and write a CER where their claim is “humans are NOT causing climate change”

As you take your students through this lesson, hopefully they will collect enough evidence that they will change their mind at the end of the unit

Impacts of climate change notes (goes over different impacts briefly, gives an overview and students will dive into impacts later) remember more of what they do than what you say

## **Attach:**

Vocabulary Cards

Impacts of Climate Change PPT

Impacts of Climate Change Student Notes