Acterra | YOU(TH) BE THE CHANGE

CLIMATE CHANGE IMPACTS

WHAT YOU WILL LEARN

1. Session 1 Review
2. Increased temperatures & consequences
3. Solutions to climate change

LESSON 2: CLIMATE CHANGE IMPACTS

Time	**60 Minutes**
Next Generation Science Standards	**Next Generation Science Standards** **MS-LS2 Ecosystems: Interactions, Energy, and Dynamics** **MS-ESS3 Earth and Human Activity** **Disciplinary Core Ideas** **MS-LS4.D: Biodiversity and Humans** Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. (secondary to MS-LS2-5) **MS-ESS3.C: Human Impacts on Earth Systems** Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3) Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-3), (MS-ESS3-4) **MS-ESS3.D: Global Climate Change** Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities. (MS-ESS3-5)
Vocabulary	Increased global temperatures, drought, climate vs. weather

Materials	**Session 2 PowerPoint**
Topics Covered	1. Session 1 Review 2. Rising temperatures, why it matters, and why it's bad 3. Drought 4. Weather Vs. Climate 5. Solutions **Enrichment:** Solutions activity Ocean acidification Drought Data
Learning Goals	1. Be able to (broadly) describe at least two potential impacts of climate change 2. Understand what causes droughts 3. Be able to discern between weather and climate 4. Understand the consequences of increased global temperatures 5. Reflect on finding and implementing solutions

INTRODUCTION

Review Lesson 1: Climate Change Science

ASK | "What do you remember from Lesson 1?"
This piece is to start the lesson off with classroom participation.
Topics that need to be reviewed include:

1. The carbon cycle, carbon dioxide, and greenhouse gases

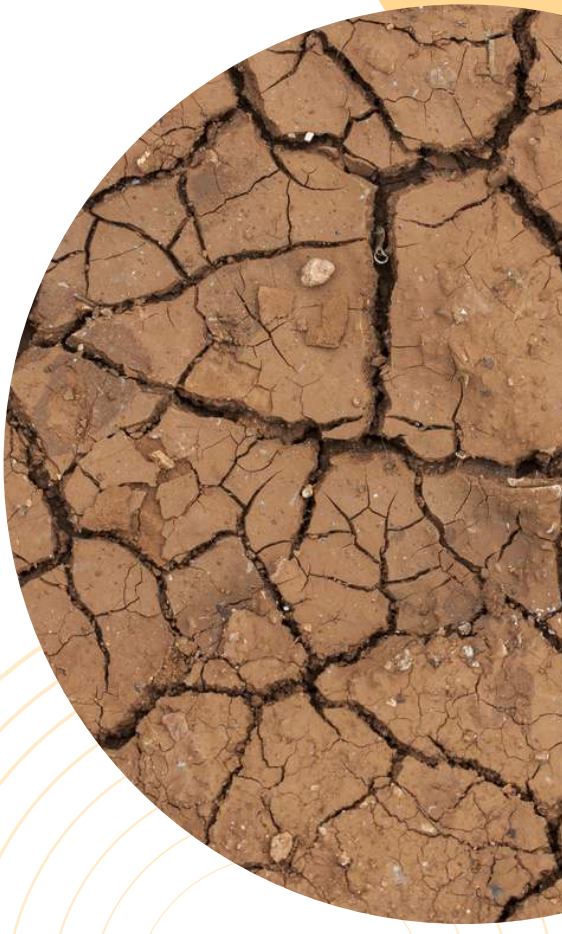
List the vocab words from Lesson 1 on the board and have students independently try to remember what each word means - even the act of trying to remember is helpful, even if they ultimately can't remember. Then go through each vocab word as a class. If there are any words that nobody remembers, make a note of it (an you can re-review it at the beginning of the next class)

After the review, go over the agenda and begin the lesson.

Today's Agenda:

1. Session 1 Review
2. Rising temperatures, why it matters, and why it's bad
3. Drought
4. Weather Vs. Climate
5. Solutions

Enrichment:
Solutions activity
Ocean acidification
Drought Data



RISING TEMPERATURES & CONSEQUENCES

Engage Explore, Explain, Elaborate, Evaluate

Throughout this lesson we will review the biggest impacts of a changing climate. Impacts are defined as extreme natural events or weather pattern fluctuations that cause negative repercussions to the health and livelihood of people, animals, ecosystems and their respective ecosystem services.

Pose the following questions to the class and ask them to independently reflect. Then have them turn to their neighbor and discuss. Then have each pairing share out 1 thought from their discussion.

- How would rising temperatures impact ecosystems and their plants?
  - E.g. really icy places (tundras), trees, oceans, etc.
- How would those changes impact the animals in those environments?
- How can rising temperatures impact humans?

Then have each pair share out 1 thought from their discussions. In your discussion, be sure to mention:

- How certain animals can only exist in certain temperature bands
- How ice only stays frozen at a certain temperature
- How extreme heat events can dangerous for humans and animals and plants
- How our planet is incredibly interconnected, so even small plants and animals dying/struggling will have really big impacts on our planet and on us
  - An example of something seemingly small impacting us is **the melting of the Thwaites Glacier**
  - Lead the class through this example

DROUGHT

Engage, **Explore** Explain, Elaborate, Evaluate

#1 One of the impacts of rising temperatures are droughts. ***What is a drought?***

Drought happens when there is not enough rain for a long period of time. There is so little precipitation (rain, snow, sleet, or any kind of moisture) that a whole region starts to dry out. Sometimes a drought takes decades to develop fully and they are very difficult to predict. Increased global temperatures facilitate faster evaporation, increasing drought frequency and intensity.

ASK

1. Have you lived in a drought before?
2. How has the California drought impacted your life?
3. What do you do to conserve water?

Precipitation < Evaporation
=
Drought

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