

THE CLIMATE CHANGE & GLOBAL WARMING MYSTERY

Gamify your students' learning with this interactive and engaging Mystery Activity.

NO PREP

The Climate Change & Global Warming Mystery

Part 1 – Mission Briefing & Case Overview

Name: _____ Date: _____

Case File #1042 – The Climate Change & Global Warming Mystery

Scientists around the world are observing major changes in Earth's climate. Temperatures are rising, ice is melting, sea levels are increasing, and extreme weather events are becoming more common. Ecosystems are shifting, animals are losing habitats, and communities are being affected.

In many areas:

- Glaciers and ice sheets are shrinking
- Heat waves, floods, and droughts are increasing
- Oceans are warming and coral reefs are bleaching
- Plant and animal ranges are changing

No single event caused these changes. What is clear is that **Earth's climate is changing**. You are a **science detective** assigned to investigate this global mystery.

Your Mission

- Identify what climate change and global warming are
- Explain what is causing Earth's climate to change
- Describe how climate change affects ecosystems, weather, and things
- Propose solutions to reduce the impact

The future of the planet may depend on what you discover.

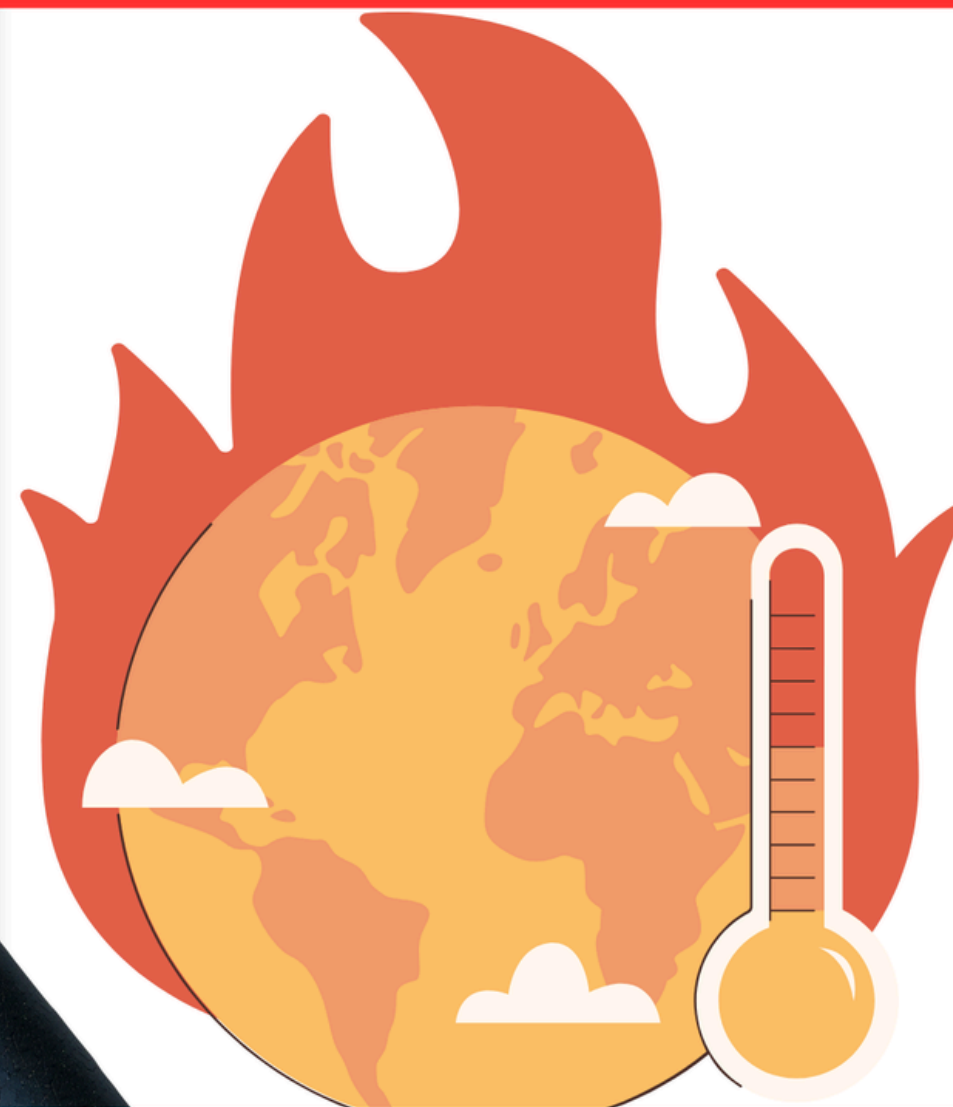
Part 2 – Background: What Is Climate Change and Global Warming?

Read the information provided by your teacher. Then answer the questions about climate change and global warming?

How is the climate different from the past?

Why is climate change difficult to stop and reverse?

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SCROLL

to take a look inside!

DETECTIVE FILE ON HOW HUMANS IMPACT THE ENVIRONMENT



★ A complete student case file with guided worksheets for every step of the investigation.

★ 10 detailed evidence cards based on real Climate Change and Global Warming research and real-world examples that include images, graphs, and text.

★ A full teacher answer key with sample responses and support for grading.

What You Get

NO-PREP. JUST PRINT TO GO!

Full investigation breakdown

Interpretation & Recording Data

10 Evidence Cards to Determine Culprit

HOW THIS ACTIVITY HELPS YOU

- Saves prep time with a fully structured, print-and-go investigations.
- Drives high engagement while still meeting academic goals as students are interested in what they're doing.
- Builds deep understanding with **real-world relevance** as they analyze real evidence, make connections, and using CER to explain human impact.

10-PART INVESTIGATION

Students:

1. Step into the role of a Science Detective.
2. Examine real scientific evidence from around the world.
3. Track the hidden pathways of Climate Change and Global Warming.
4. Interrogate suspects (fossil fuel use, industry & factories, etc.) and identify the main culprits.
5. Build a scientific case using Claim-Evidence Reasoning.
6. Propose real solutions that matter.

★★★★★ The added images and graphs enhanced the activity. My students were engaged and motivated during the case study, and it was an effective introduction to the topics. - Mystery Resource Buyer

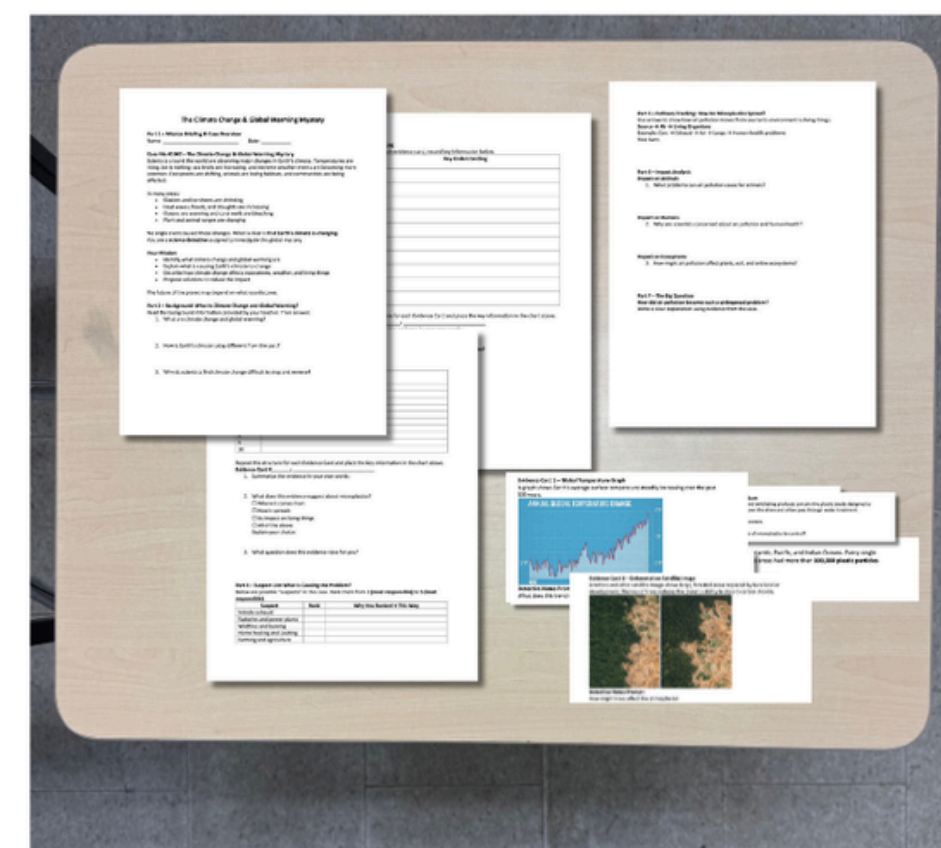
HOW THIS MYSTERY WILL HELP YOU



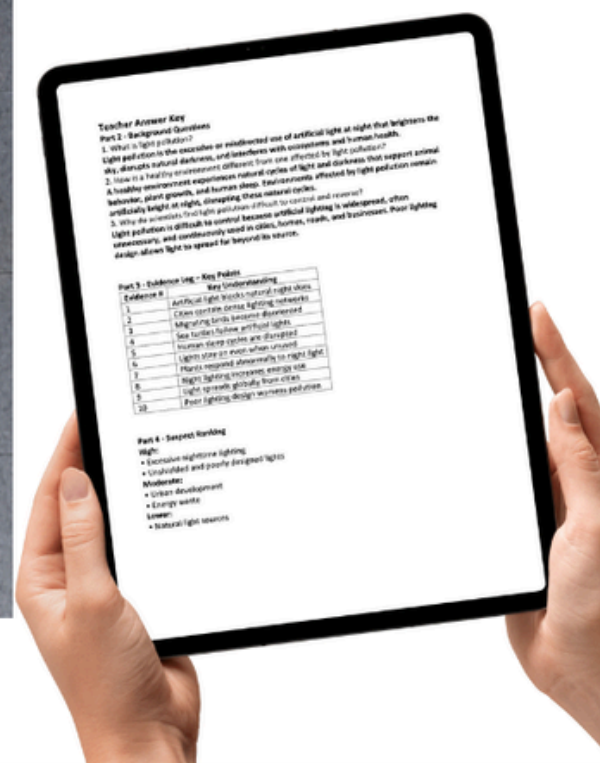
- Prep-FREE and fully editable Mystery Investigation - just print/upload and assign with no materials.
- **Evidence Cards** can be printed with and without images or projected on board.
- Engages every learner through hands-on, high-interest mystery investigations that boost motivation and participation.
- **Builds essential skills** such as graph interpretation, problem-solving, teamwork, creativity, and communication.

What Will Your Students Learn?

FULLY EDITABLE AND READY-TO-GO INVESTIGATION



**FULL
ANSWER KEY**



EVIDENCE CARDS

“

★★★★★ This product will make a great addition of Environmental Mystery Mondays for my Environmental Issues Curriculum, with no teacher prep needed. - Mystery Resource Buyer

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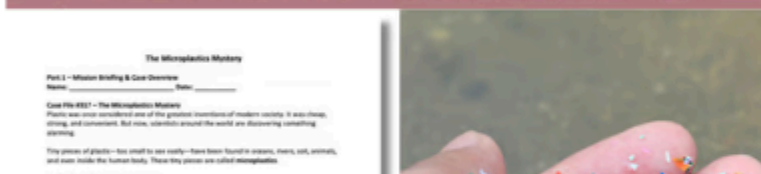
- ✓ What climate change and global warming are, how they are connected, and what causes them
- ✓ How rising temperatures affect weather patterns, oceans, ice, and ecosystems around the world
- ✓ Why climate change is harmful to animals, plants, humans, and entire ecosystems
- ✓ How to analyze data and evidence to identify patterns and draw conclusions
- ✓ How to use Claim-Evidence-Reasoning (CER) to support scientific arguments
- ✓ How to trace cause-and-effect relationships in complex environmental systems

Upgrade to the Environmental Science Detective Mystery Bundle

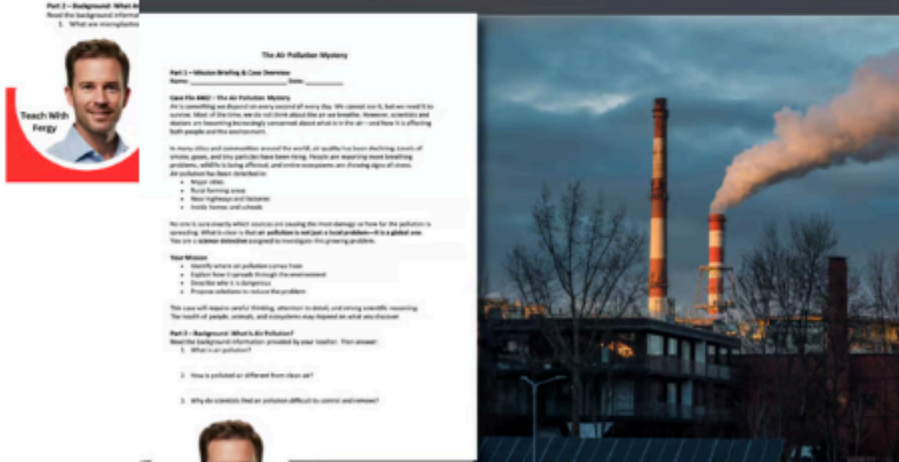
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DETECTIVE MYSTERY BUNDLE

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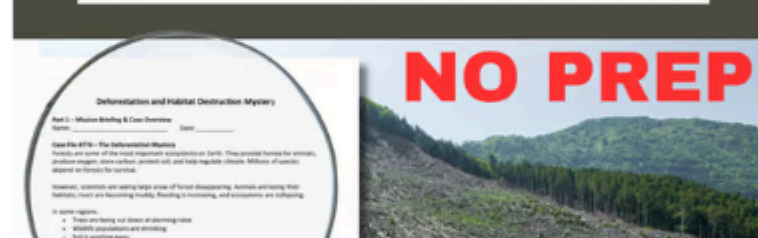


THE AIR POLLUTION MYSTERY DETECTIVE FILE ON AIR POLLUTION & THE ENVIRONMENT

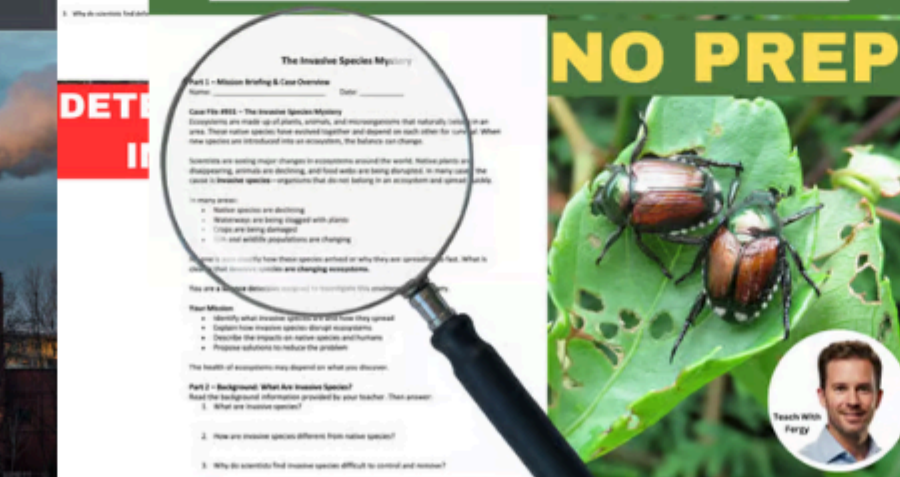


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DEFORESTATION & HABITAT DESTRUCTION MYSTERY

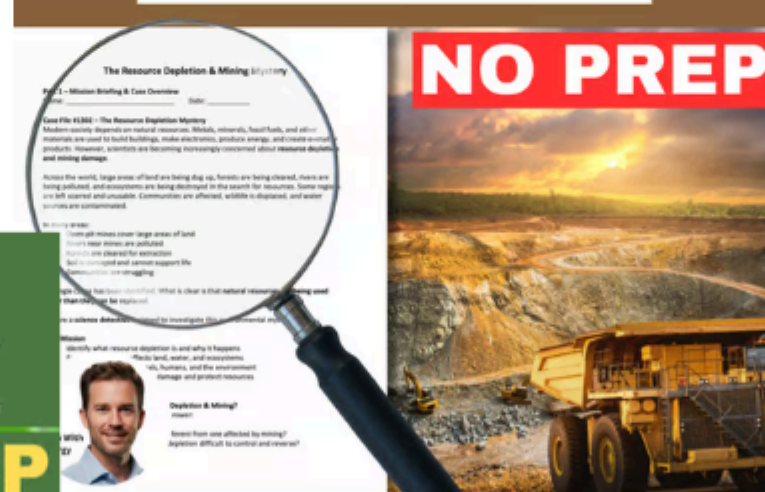


THE INVASIVE SPECIES MYSTERY



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**DETECTIVE FILE ON HOW HUMANS
IMPACT THE ENVIRONMENT**

THE RESOURCE DEPLETION & MINING MYSTERY



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**DETECTIVE FILE ON HOW HUMANS
IMPACT THE ENVIRONMENT**

NO PREP

The Urban Sprawl Mystery

Part 1 - Mission Briefing & Case Overview
Name: _____ Date: _____

Case File #3419 - The Urban Sprawl Mystery
Cities are growing faster than ever. New roads, neighborhoods, shopping centers, and highways are spreading into farmland, forests, and natural areas. This rapid expansion is known as **urban sprawl**.

Across the world, scientists are seeing major environmental changes linked to city growth. Natural habitats are disappearing, water systems are changing, wildlife is being pushed out, and pollution is increasing. Some areas are becoming hotter, flood risks are rising, and ecosystems are breaking apart.

In many regions:

- Forests are cleared for housing and roads
- Wildlife habitats are fragmented
- Runoff pollutes rivers and streams
- Heat islands form in cities
- Farmland is disappearing

No single cause has been identified. What is clear is that human settlement patterns are reshaping the planet.

You are a science detective assigned to investigate this environmental mystery.

Your Mission:

- Identify what urban sprawl is and why it happens
- Explain how land use change affects ecosystems, water, and climate
- Analyze the impact of urban sprawl on animals, humans, and the environment
- Propose solutions for sustainable city growth

1. Sprawl & Land Use Change?
Provided then answer:
Terrest from one affected by urban sprawl?
grawf difficult to control and reverse?

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**DETECTIVE FILES ON HOW HUMANS
IMPACT THE ENVIRONMENT**

Plus Many More!
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Part 1 & 2

The Climate Change & Global Warming Mystery

Part 1 – Mission Briefing & Case Overview

Name: _____ Date: _____

Case File #1042 – The Climate Change & Global Warming Mystery

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In many areas:

- Glaciers and ice sheets are shrinking
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No single event caused these changes. What is clear is that **Earth's climate is changing**. You are a **science detective** assigned to investigate this global mystery.

Your Mission

- Identify what climate change and global warming are
- Explain what is causing Earth's climate to change
- Describe how climate change affects ecosystems, weather, and living things
- Propose solutions to reduce the impact

The future of the planet may depend on what you discover.

Part 2 – Background: What Is Climate Change and Global Warming?

Read the background information provided by your teacher. Then answer:

1. What are climate change and global warming?
2. How is Earth's climate today different from the past?
3. Why do scientists find climate change difficult to stop and reverse?

Part 1 – Mission Briefing & Case Overview

Students are introduced to climate change and global warming and take on the role of science detectives. They learn their mission and begin the investigation with a real-world hook.

Part 2 – Background: What is Climate Change and Global Warming?

Students read a short background passage and answer guiding questions to build foundational understanding before analyzing evidence.

Part 3 & 4

Part 3 – Evidence Log

Students begin examining the evidence cards and record key information, observations, and insights in their evidence log.

Part 3 – Evidence Log: As you examine each evidence card, record key information below.

Evidence #	Key Understanding
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Repeat this structure for each Evidence Card and place the key information in the chart above.

Evidence Card #_____: _____

- Summarize the evidence in your own words.
- What does this evidence suggest about climate change?
☐ What causes it
☐ How it spreads
☐ Its impact on living things
Explain your choice:
- What question does this evidence raise for you?

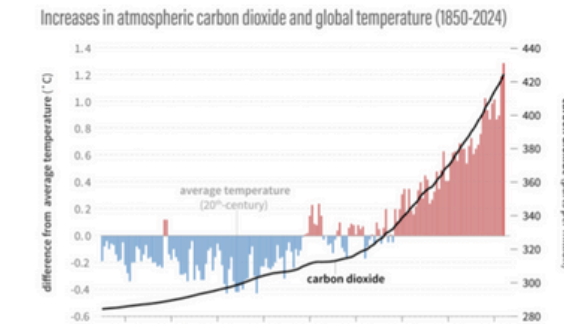
Part 4 – Suspect List: What is Causing Climate Change?

Below are possible “suspects” in this case. Rank them from **1 (most responsible)** to **5 (least responsible)**.

Suspect	Rank	Why You Ranked It This Way
Fossil fuel use		
Deforestation		
Industry & factories		
Agriculture & livestock		
Human energy use at home		

Evidence Card 5 – Carbon Dioxide Chart

A chart shows rising levels of carbon dioxide (CO₂) in the atmosphere over time. The increase closely matches the growth of industrial activity, fossil fuel use, and transportation.



Detective Notes Prompt:
Where does carbon dioxide come from?

Evidence Card 6 – Deforestation Satellite Image

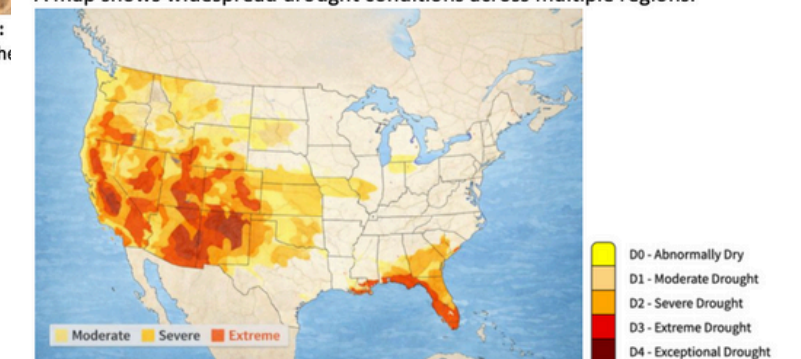
A before-and-after satellite image shows large, forested areas replaced by bare land or development. The loss of trees reduces the planet’s ability to absorb carbon dioxide.



Detective Notes Prompt:
How might trees affect the

Evidence Card 8 – Drought Map

A map shows widespread drought conditions across multiple regions.



Detective Notes Prompt:
How does changing rainfall affect soil conditions?

Part 4 – Evidence Analysis

Students summarize each piece of evidence, identify what it reveals about climate change and global warming, and generate questions, building critical thinking and reasoning skills.

EVIDENCE CARDS

➤ All Evidence Cards come in two versions - *With images and graphs and Without* and can be printed or projected as needed.

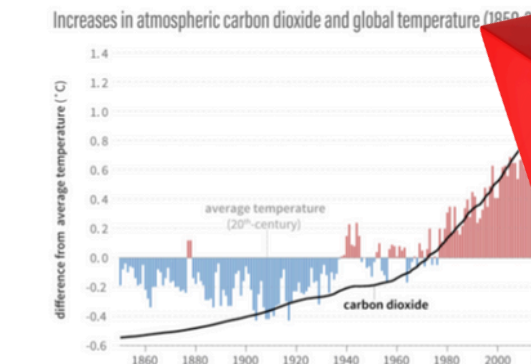
➤ Students analyze each Evidence Card and record the following in their **Evidence Log**

1. Summarize the evidence in their own words.
2. Determine what this evidence suggests
 - ☐ What causes it
 - ☐ Pathway
 - ☐ Its impact on living things
3. Explain what question(s) this evidence raises for them?

**Images
&
Graphs**

Evidence Card 5 – Carbon Dioxide Chart

A chart shows rising levels of carbon dioxide (CO₂) in the atmosphere over time. The increase closely matches the growth of industrial activity, fossil fuel use, and transportation.



Detective Notes Prompt:

Where does carbon dioxide come from?

Evidence Card 6 – Deforestation Satellite Image

A before-and-after satellite image shows large, forested development. The loss of trees reduces the planet's ability to absorb carbon dioxide.



Detective Notes Prompt:

How might trees affect the atmosphere?

Evidence Cards – No Images

Evidence Card 1 – Global Temperature Graph

A graph shows Earth's average surface temperature steadily increasing over the past 100 years.

Detective Notes Prompt:

What does this trend suggest?

Evidence Card 2 – Melting Glacier Photo

A series of photos shows a glacier shrinking over time. Large sections of ice have melted away, leaving exposed rock and water where thick ice once existed.

Detective Notes Prompt:

Why would ice be melting?

Evidence Card 3 – Rising Sea Level Map

A map highlights coastal regions at risk of flooding. Low-lying areas are shown becoming increasingly vulnerable as ocean levels rise due to melting ice and warmer water expanding.

Detective Notes Prompt:

How does melting ice affect oceans?

Evidence Card 4 – Extreme Weather Headline

A news article reports on increasing heat waves, stronger storms, and unusual weather events. These events are happening more often and affecting larger areas than in the past.

Detective Notes Prompt:

How could these weather patterns be related?

Evidence Card 5 – Carbon Dioxide Chart

A chart shows rising levels of carbon dioxide (CO₂) in the atmosphere over time. The increase closely matches the growth of industrial activity, fossil fuel use, and transportation.

Detective Notes Prompt:

Where does carbon dioxide come from?

**No
Images**

Part 5-7

Part 5 – Pathway Tracking: How Does Climate Change Happen?

Use arrows to show how human activities lead to climate change.

Example:

Burning coal → Carbon dioxide released → Heat trapped in atmosphere → Global warming

Your turn:

Part 6 – Impact Analysis

Impact on Weather

How does climate change affect storms, heat waves, and droughts?

Impact on Animals & Plants

How might climate change affect where species can live?

Impact on Humans

How can climate change affect people and communities?

Part 7 – The Big Question

How did climate change and global warming become such widespread problems?

Use evidence from the case.

Part 5 – Suspect List

Students rank possible sources of climate change and global warming, defend their choices, and determine which human activities are most responsible for the problem.

Part 6 – Pathway Tracking

Students trace how climate change and global warming leads to other environmental problems.

Part 7 – Impact Analysis

Students analyze how climate change and global warming affects animals, humans, and ecosystems, using evidence from the case to support their answers.

Part 8-10

Part 8 – Claim-Evidence-Reasoning (CER)

Claim

What is the main cause of climate change in this case?

Evidence

List two pieces of evidence from the case.

- 1.
- 2.

Reasoning

Explain how your evidence supports your claim.

Part 9 – Solutions & Action Plan

Personal Actions (Things individuals can do)

- 1.
- 2.

Community / School Actions

- 1.
- 2.

Government or Industry Actions

- 1.
- 2.

Part 10 – Reflection

1. One thing that surprised me in this case was:

2. One change I would make after learning this information is:

Part 8 – The Big Question

Students synthesize all their learning to explain the main cause of climate change and global warming in this case.

Part 9 – Claim-Evidence-Reasoning (CER)

Students write a structured scientific argument, making a claim, supporting it with evidence, and explaining their reasoning.

Part 10 – Reflection and Solutions

Students propose realistic actions at the personal, school, and government levels, moving from awareness to problem-solving.

Full Teacher Answer Key

Teacher Answer Key

Background Questions

- What are climate change and global warming?
Climate change is long-term changes in Earth's climate; global warming is the rise in average temperature.
- How is today's climate different?
It is warmer, with more extreme weather and melting ice.
- Why is it hard to stop?
Because many human activities release greenhouse gases.

Evidence Log – Key Points

Evidence #	Key Understanding
1	Earth's average temperature has been rising steadily over the past century, showing a clear warming trend.
2	Glaciers are shrinking because higher temperatures are causing ice to melt faster than it can be replaced.
3	Sea levels are rising as melting ice adds water to the oceans and warmer water expands.
4	Heat waves, storms, and floods are becoming more frequent and intense as the climate warms.
5	Carbon dioxide levels in the atmosphere are increasing due to the burning of fossil fuels and other human activities.
6	Deforestation reduces the number of trees that absorb carbon dioxide, allowing more heat-trapping gas to remain in the atmosphere.
7	Warmer ocean temperatures are causing coral reefs to bleach and die, damaging marine ecosystems.
8	Higher temperatures and changing rainfall patterns are leading to more severe widespread droughts.
9	Hotter, drier conditions are increasing the number and size of wildfires in many regions.
10	Melting sea ice is reducing habitat for animals that depend on ice to hunt and survive.

Suspect Ranking (Expected Reasoning)

High responsibility:

- Fossil fuel use
- Industry
- Deforestation

Moderate:

- Agriculture
- Home energy use

Pathway Tracking – Sample Answers

Cars → CO₂ → Heat trapped → Warming
Forest loss → Less CO₂ absorbed → Warming
Warming → Ice melt → Sea level rise

Impact Analysis

Weather:

More storms, heat waves, droughts

Animals & Plants:

Habitat shifts, migration, extinction risk

Humans:

Flooding, food shortages, heat illness

Big Question – Sample Response

Climate change and global warming became widespread because many human activities release greenhouse gases into the atmosphere. Evidence from the case shows **burning fossil fuels (Evidence Cards 1 and 5)**, **deforestation (Evidence Card 6)**, and **industrial activity (Evidence Card 4)** all increase carbon dioxide levels. These gases trap heat, causing temperatures to rise. Because these activities happen all over the world every day, climate change is now a global problem.

CER Example

Claim:

Fossil fuel use is the main cause.

Evidence:

Evidence Cards 1 and 5

Reasoning:

Burning fuel releases CO₂ that traps heat.

Solutions

Personal:

Use less energy, reduce waste

Community:

Tree planting, public transit

Government:

Regulate emissions

Background Reading: What Are Climate Change and Global Warming?

Earth's climate is the pattern of temperature, rainfall, and weather conditions over long periods of time. For most of human history, Earth's climate has changed slowly. However, scientists are increasingly concerned about **climate change and global warming**—the rapid rise in Earth's average temperature and long-term shifts in climate patterns.

Global warming refers specifically to the increase in Earth's average temperature. **Climate change** includes global warming but also describes changes in rainfall, seasons, storms, and weather extremes. These changes are mostly caused by human activities. Burning fossil fuels such as coal, oil, and gas releases gases into the atmosphere. Deforestation, factories, farming, and transportation also add gases to the air. These gases trap heat around Earth, causing temperatures to rise.

Healthy ecosystems depend on stable climate conditions. When temperatures and weather patterns change quickly, plants, animals, and people can struggle to adapt.

How Is Earth's Climate Today Different from the Past?

In the past, Earth's climate changed slowly over thousands of years. Today, temperatures are rising much faster. Many of the warmest years on record have happened in recent decades. Ice caps and glaciers are melting, sea levels are rising, and oceans are warming.

Another key difference is extreme weather. Heat waves, heavy storms, floods, droughts, and wildfires are becoming more common and more intense. Seasons are shifting, and some areas are becoming hotter or drier than they used to be. These changes affect where plants and animals can live and how people grow food.

Because these changes are happening quickly, many species and ecosystems do not have enough time to adjust.

Why Is Climate Change So Difficult to Stop and Reverse?

Climate change is difficult to stop because it is caused by **many human activities at the same time**. Cars, power plants, factories, farming, and home energy use all release heat-trapping gases. Even if one source is reduced, others may still be adding pollution to the atmosphere.

Once these gases are in the air, they can stay there for a long time. This means the heat they trap continues to affect the planet even after emissions are reduced. It also takes a long time for Earth's systems—such as oceans and ice—to respond and recover.

Climate change is also happening all over the world. As populations grow and energy use increases, more greenhouse gases are released. Because the problem is widespread and ongoing, scientists and governments face major challenges in trying to slow, stop, and reverse climate change.

Background Reading

As a special bonus, I want to send you a few resources that you can use in your classroom tomorrow. Completely free and geared towards what you teach!



Just  **and then choose what you teach!**

thanks
**for your interest
in this resource!**



 devon@teachwithfergy.com

Upgrade to the Environmental Science Detective Mystery Bundle

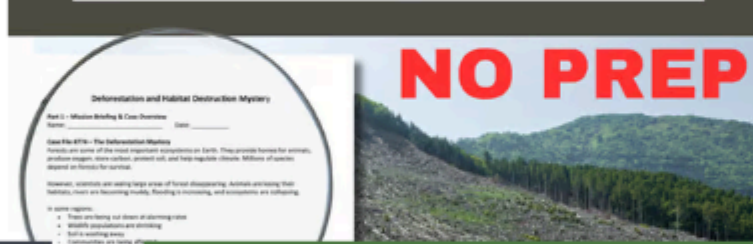
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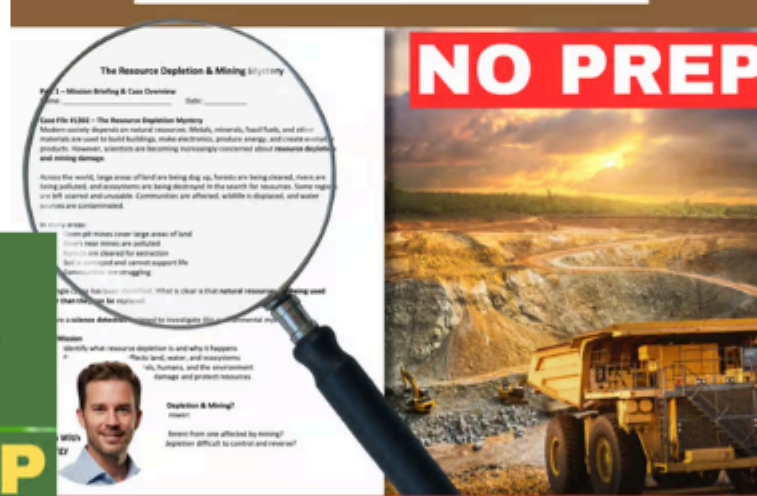
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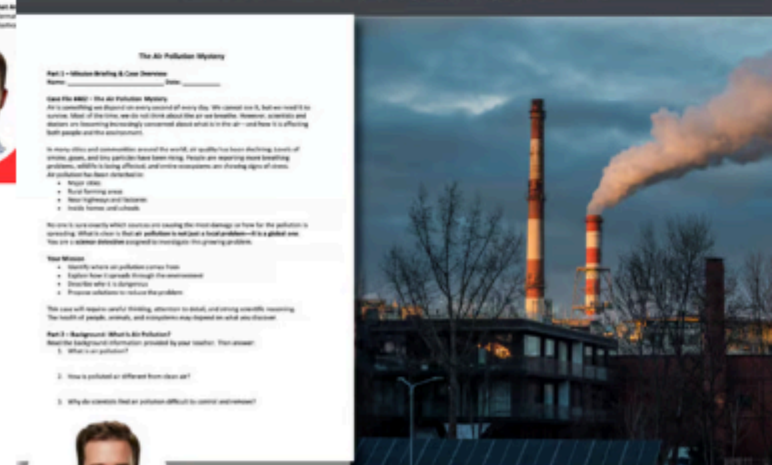
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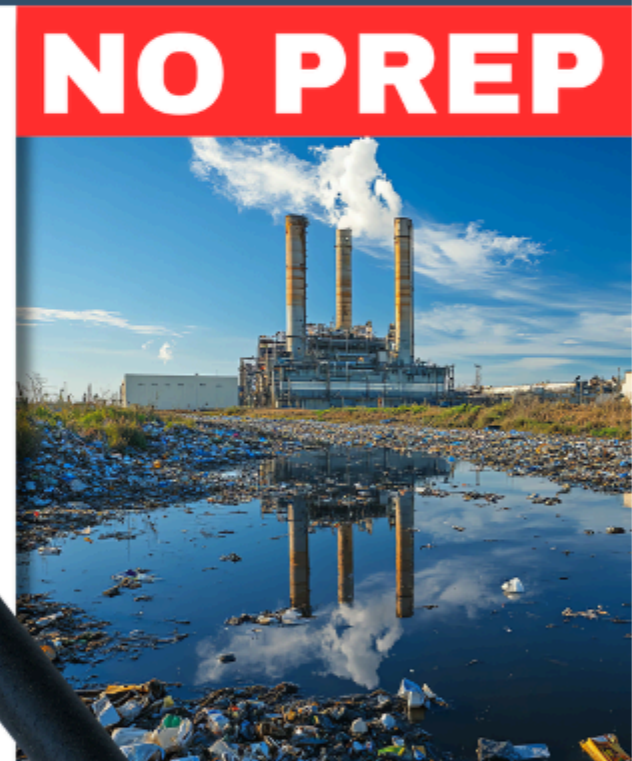
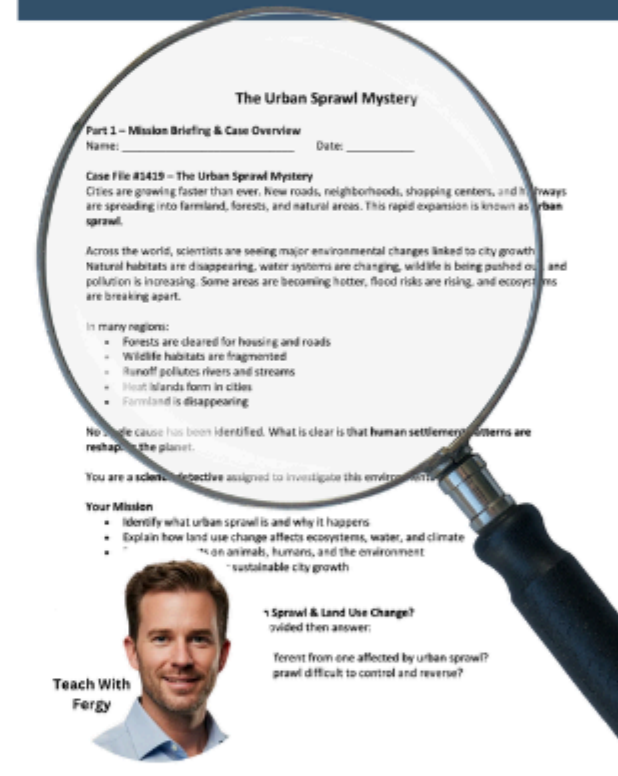
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