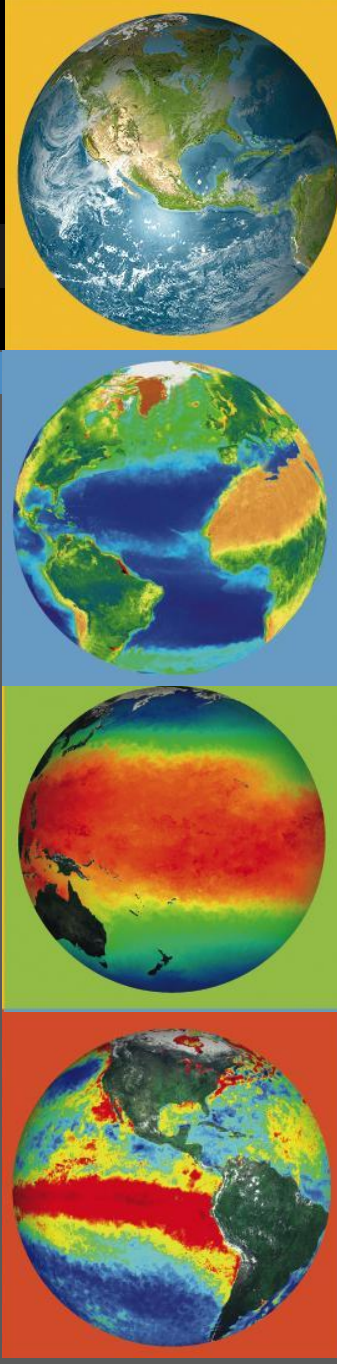
CLEAN

CLIMATE LITERACY & ENERGY AWARENESS NETWORK



CLEAN Resources to Support WA Climetime

Katie Boyd, Anne Gold, & Deb Morrison

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

NSF

TERC®

CIRES

SERC the Science Education Resource Center at Carleton College

U.S. DEPARTMENT OF ENERGY

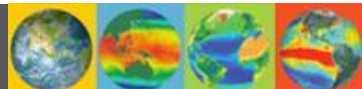
Honoring Stewards of the Land

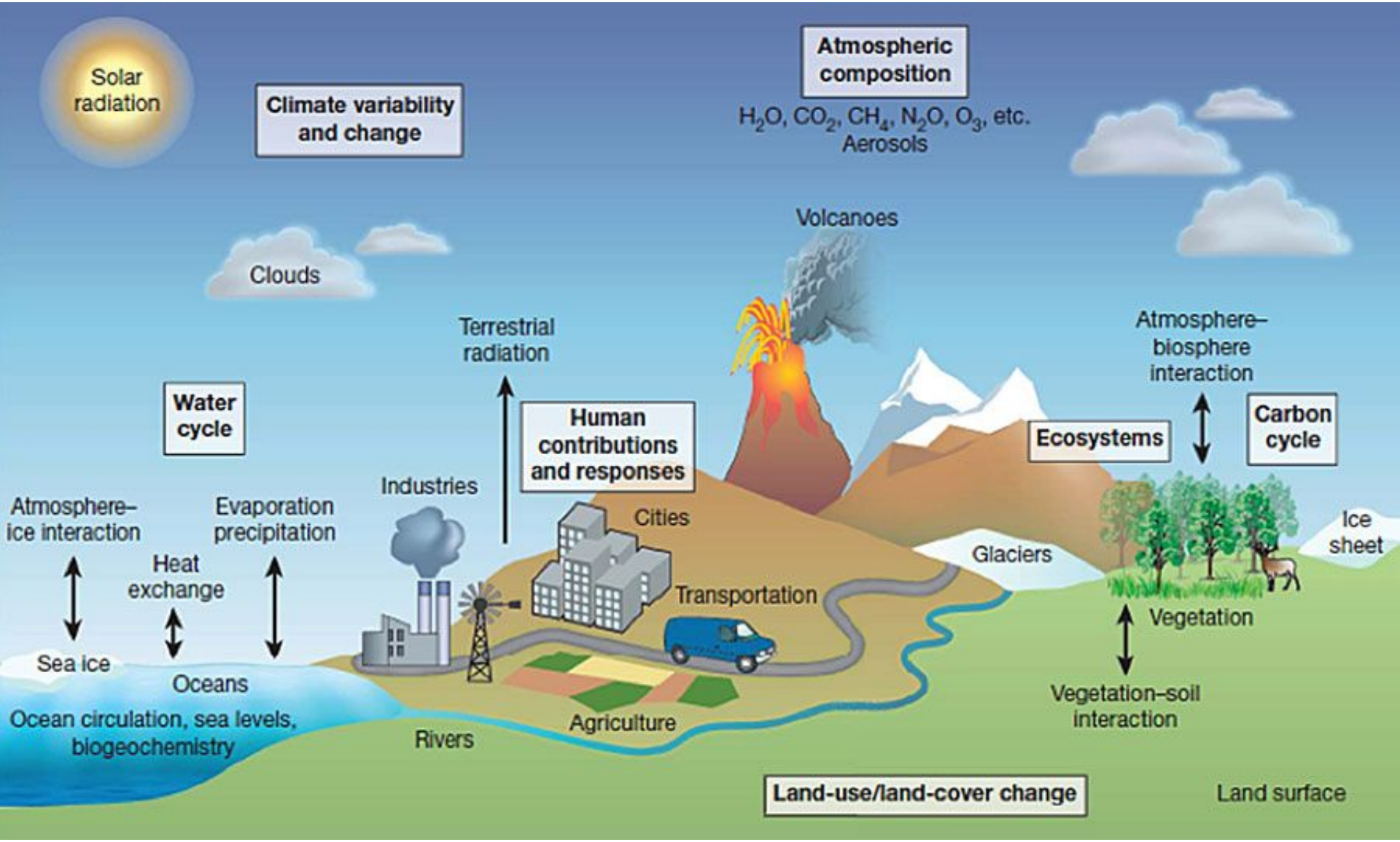
We honor their stewardship of the land, past, present and future and learn how to engage our students in climate science/NGSS so we can learn to make good decisions that heal our planet and protect our environment.

CLIME TIME
CLIMATE SCIENCE LEARNING

Goals of Session

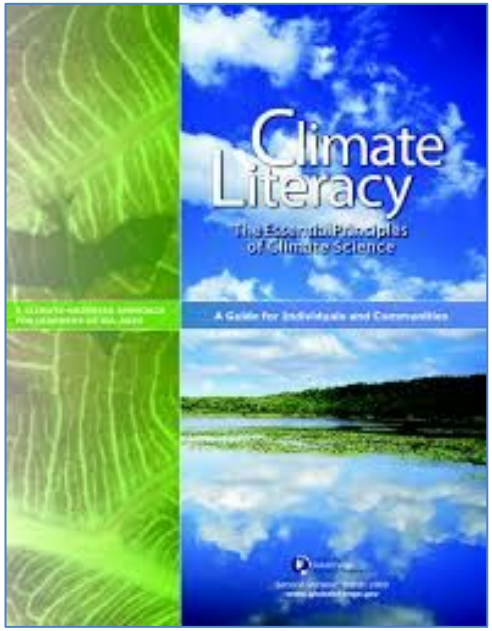
- Introduce the CLEAN collection.
- Find at least one resource to address a pressing need in your own teaching around climate change.
- Explore professional learning resources to support the teaching of climate.

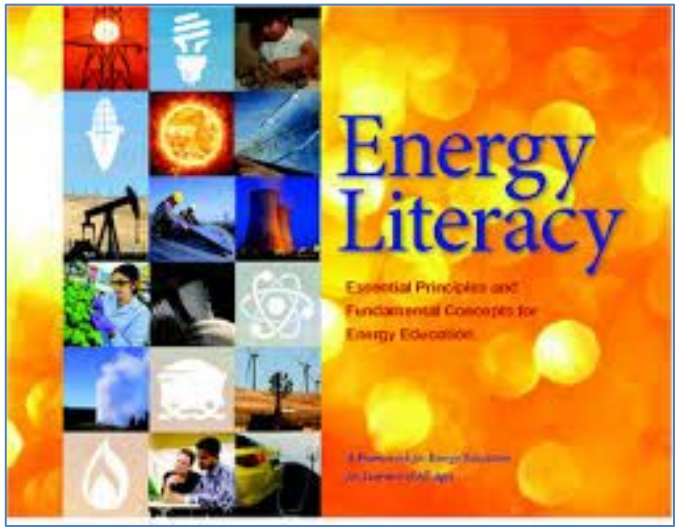


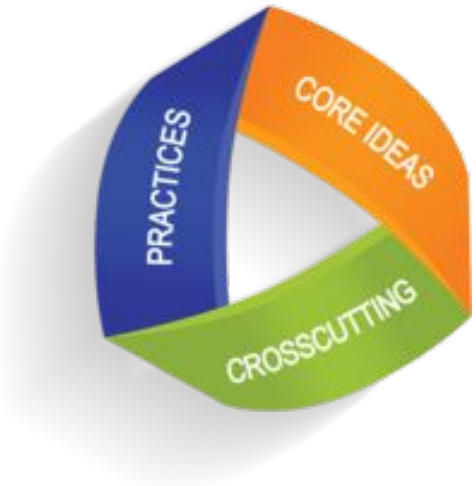

Solar radiation
Climate variability and change
Atmospheric composition
H_2O, CO_2, CH_4, N_2O, O_3, etc.
Aerosols
Volcanoes
Clouds
Terrestrial radiation
Water cycle
Human contributions and responses
Atmosphere–biosphere interaction
Carbon cycle
Ecosystems
Industries
Cities
Atmosphere–ice interaction
Evaporation precipitation
Heat exchange
Glaciers
Ice sheet
Transportation
Vegetation
Sea ice
Oceans
Vegetation–soil interaction
Ocean circulation, sea levels, biogeochemistry
Agriculture
Rivers
Land-use/land-cover change
Land surface

GFDL, NOAA

Frameworks for Teaching about Climate and Energy System







A perspective and approach for solving problems centered on the whole system, including system elements and their inter-relationships.

CLEAN Portal

CLEAN Collection

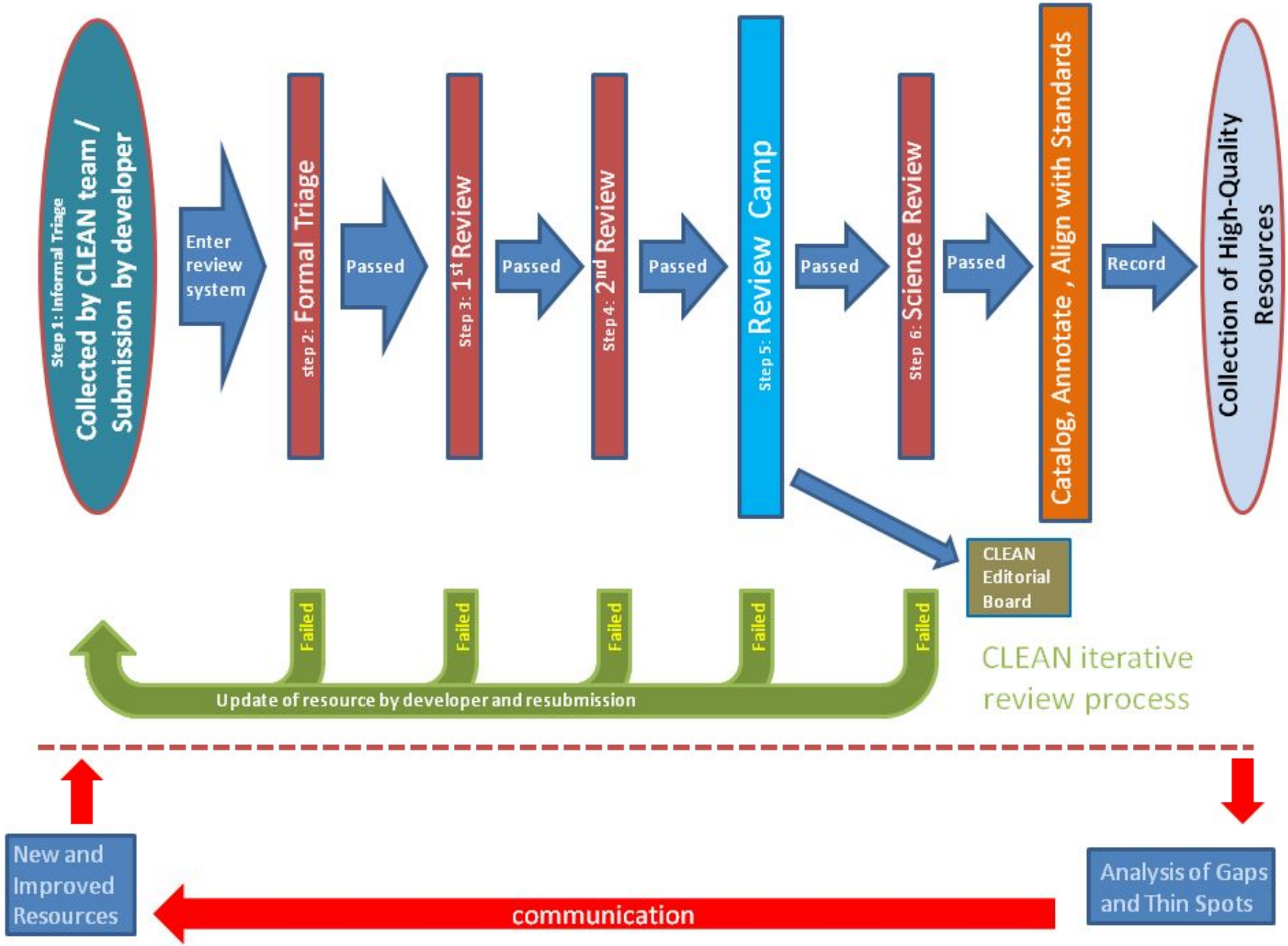
Guidance for Teaching Climate and Energy

CLEAN Network

http://cleanet.org
https://www.climate.gov/teaching

CLEAN Collection

- 700+ online, free resources
- Activities, videos, visualizations
- Classroom ready
- Community & Expert scientist reviewed
- Aligned with NGSS, Literacy Frameworks
- Grades 6-16
- Curated collection – resources developed by others

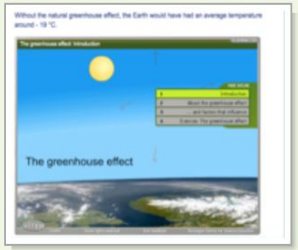

Step 1: Informal Triage
Collected by CLEAN team / Submission by developer
Enter review system
Step 2: Formal Triage
Passed
Step 3: 1st Review
Passed
Step 4: 2nd Review
Passed
Step 5: Review Camp
Passed
Step 6: Science Review
Passed
Catalog, Annotate , Align with Standards
Record
Collection of High-Quality Resources
CLEAN Editorial Board
Failed
Failed
Failed
Failed
Failed
Update of resource by developer and resubmission
CLEAN iterative review process
New and Improved Resources
communication
Analysis of Gaps and Thin Spots

Animation About the Greenhouse Effect

Jump to this Animation »

http://www.damocles-eu.org/education/Animation_about_the_greenhouse_effect_182.shtml

DAMOCLES



This is a basic animation/simulation with background information about the greenhouse effect by DAMOCLES. The animation has several layers to it that allow users to drill into more detail about the natural greenhouse effect and different aspects of it, including volcanic aerosols and human impacts from burning fossil fuels.

Learn more about Teaching Climate Literacy and Energy Awareness»

See how this Animation supports the Next Generation Science Standards»

Middle School: 1 Disciplinary Core Idea, 2 Cross Cutting Concepts

High School: 2 Disciplinary Core Ideas, 1 Cross Cutting Concept

Notes From Our Reviewers

The CLEAN collection is hand-picked and rigorously reviewed for scientific accuracy and classroom effectiveness. Read what our review team had to say about this resource below or learn more about how CLEAN reviews teaching materials

Teaching Tips | Science | Pedagogy | Technical Details

Teaching Tips

- Educators will need to scaffold this animation to ensure that the information presented is well understood by learners.
- When teaching about the greenhouse effect, using the term "heat," as this animation does, may confuse students, especially if they think of heat as a verb. The more accurate technical term "outgoing long wave IR radiation" may prove more difficult to convey, but ultimately is a clearer depiction of Earth's energy balance.

About the Science

- The animation is an accurate general overview of Earth's energy balance, but educators should recognize some of the sun/Earth dynamics have been oversimplified.
- For example, the atmosphere does filter out some short wave energy from the sun, such as extreme ultraviolet and X-rays.
- In general, the animation provides a good overview of the incoming shortwave radiation from the sun, and Earth radiating long wave Infrared Radiation (IR) once it has been warmed by the short wave visible and IR.

Topics

Greenhouse Effect
See more on this topic.

Carbon Cycle
See more on this topic.

Grade Level

Middle (6–8)
See more at this grade level.

High School (9–12)
See more at this grade level.

College Lower (13–14)
See more at this grade level.

Informal
See more at this grade level.

Climate Literacy

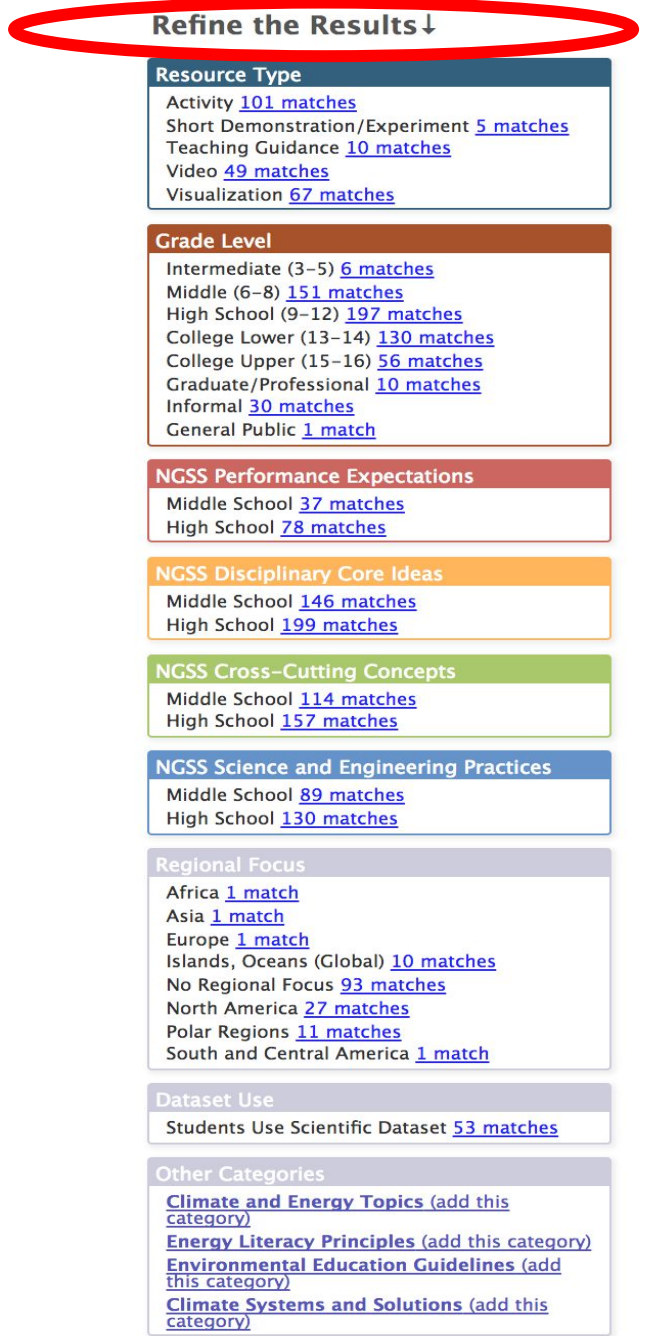
About Teaching Climate Literacy

▸2c (see details)
About Teaching Principle 2
Other materials addressing 2c

▸2d (see details)
About Teaching Principle 2

Search the Collection

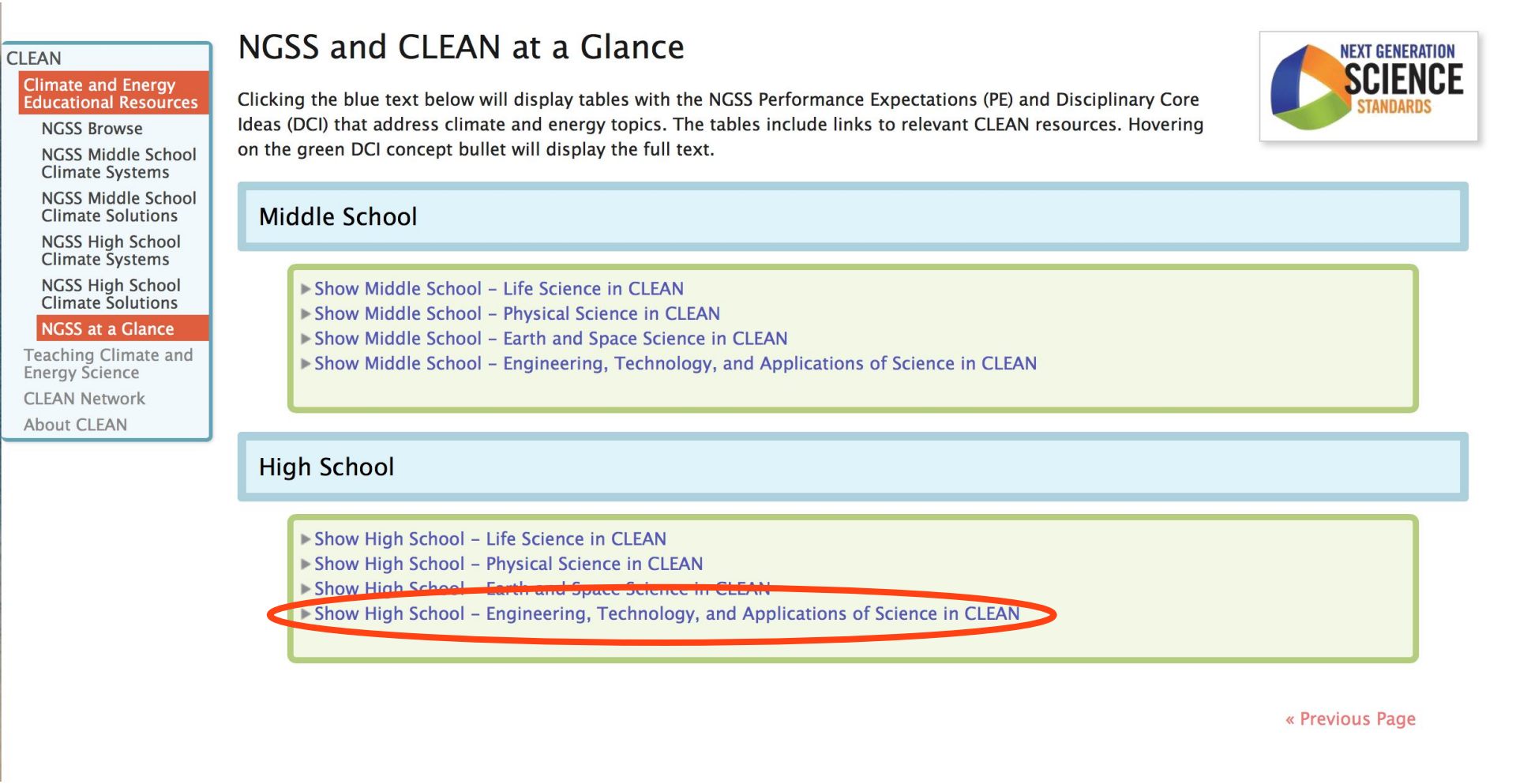
- Resource Type
- Grade Level
- Next Generation Science Standards (NGSS)
- Regional Focus / Dataset Use
- Climate & Energy Topics / Principles, etc.



Three Ways to Search CLEAN for NGSS

1. NGSS and CLEAN At-a-Glance Tables
2. Browse by NGSS
3. Search the entire Collection

1. Using the NGSS and CLEAN At-a-Glance Tables



1. Using the NGSS and CLEAN At-a-Glance Tables

NGSS and CLEAN at a Glance

Clicking the blue text below will display tables with the NGSS Performance Expectations (PE) and Disciplinary Core Ideas (DCI) that address climate and energy topics. The tables include links to relevant CLEAN resources. Hovering on the green DCI concept bullet will display the full text.

Middle School

- Show Middle School – Life Science in CLEAN
- Show Middle School – Physical Science in CLEAN
- Show Middle School – Earth and Space Science in CLEAN
- Show Middle School – Engineering, Technology, and Applications of Science in CLEAN

High School

- Show High School – Life Science in CLEAN
- Show High School – Physical Science in CLEAN
- Show High School – Earth and Space Science in CLEAN

▼Hide

High School - Engineering, Technology, and Applications of Sciencein CLEAN

Performance Expectation (PE)	Disciplinary Core Idea (DCI)	DCI Concept Bullet
HS-ETS1: Engineering Design (see CLEAN Resources)	HS-ETS1.A: Defining and Delimiting Engineering Problems (see CLEAN Resources)	HS-ETS1.A: Criteria and constraints also include... (see CLEAN Resources)
		HS-ETS1.A: Humanity faces major global challenges... (see CLEAN Resources)
	HS-ETS1.B: Developing Possible Solutions (see CLEAN Resources)	HS-ETS1.B: When evaluating solutions... (see CLEAN Resources)
		HS-ETS1.B: Both physical models and computers... (see CLEAN Resources)
	HS-ETS1.C: Optimizing the Design Solution (see CLEAN Resources)	HS-ETS1.C: Criteria may need to be... (see CLEAN Resources)

Note: Limited to standards that are relevant to climate and energy science.

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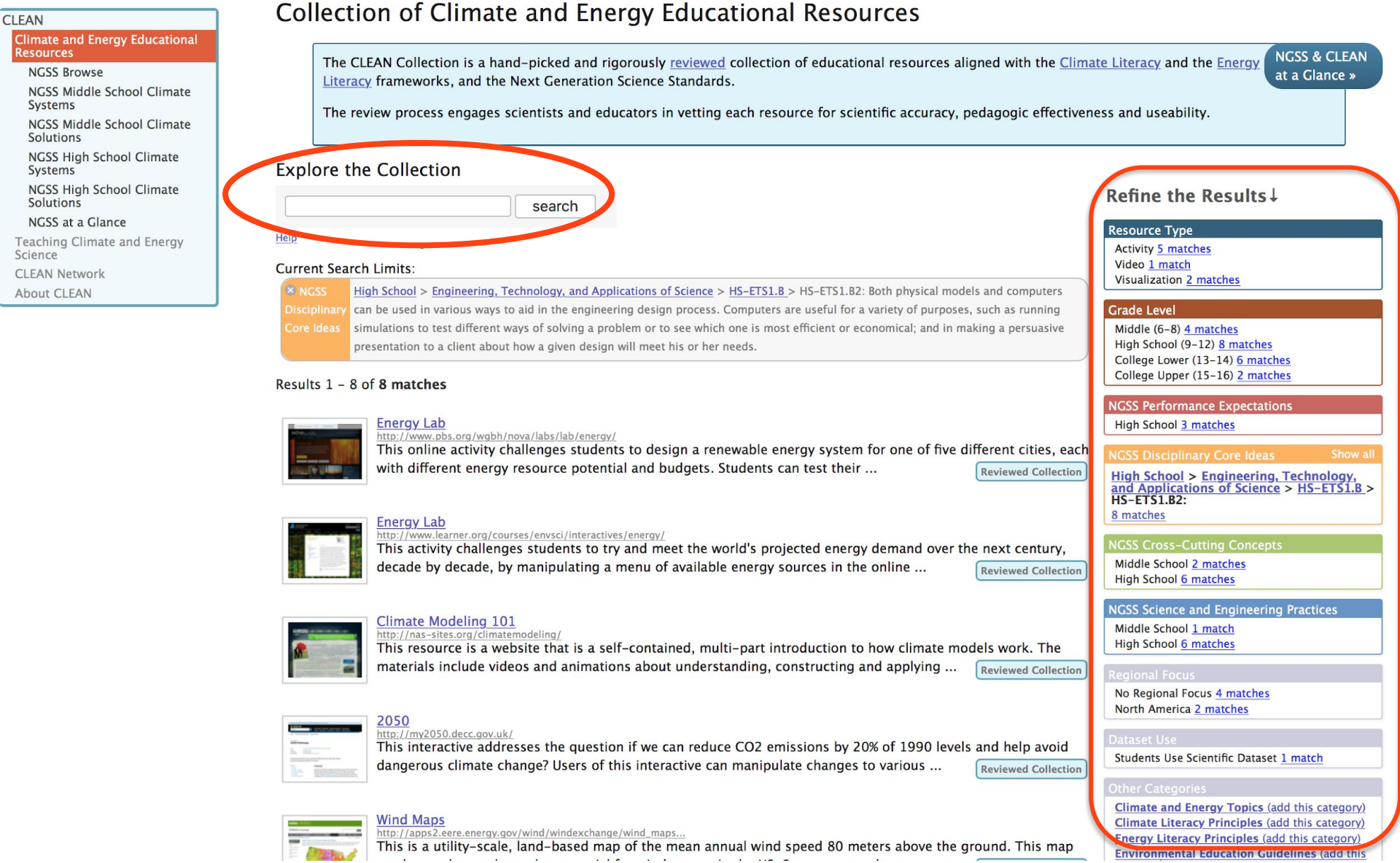

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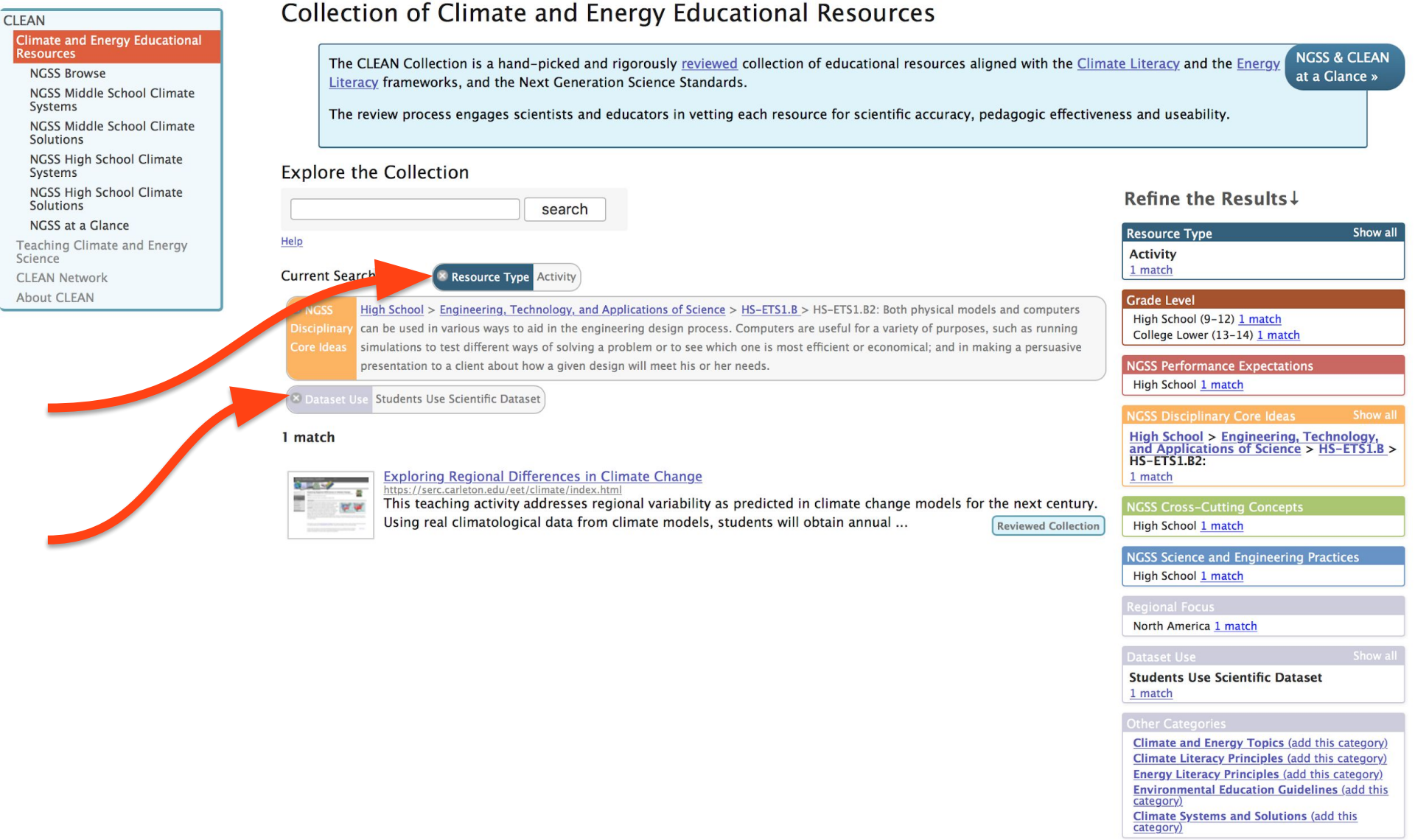
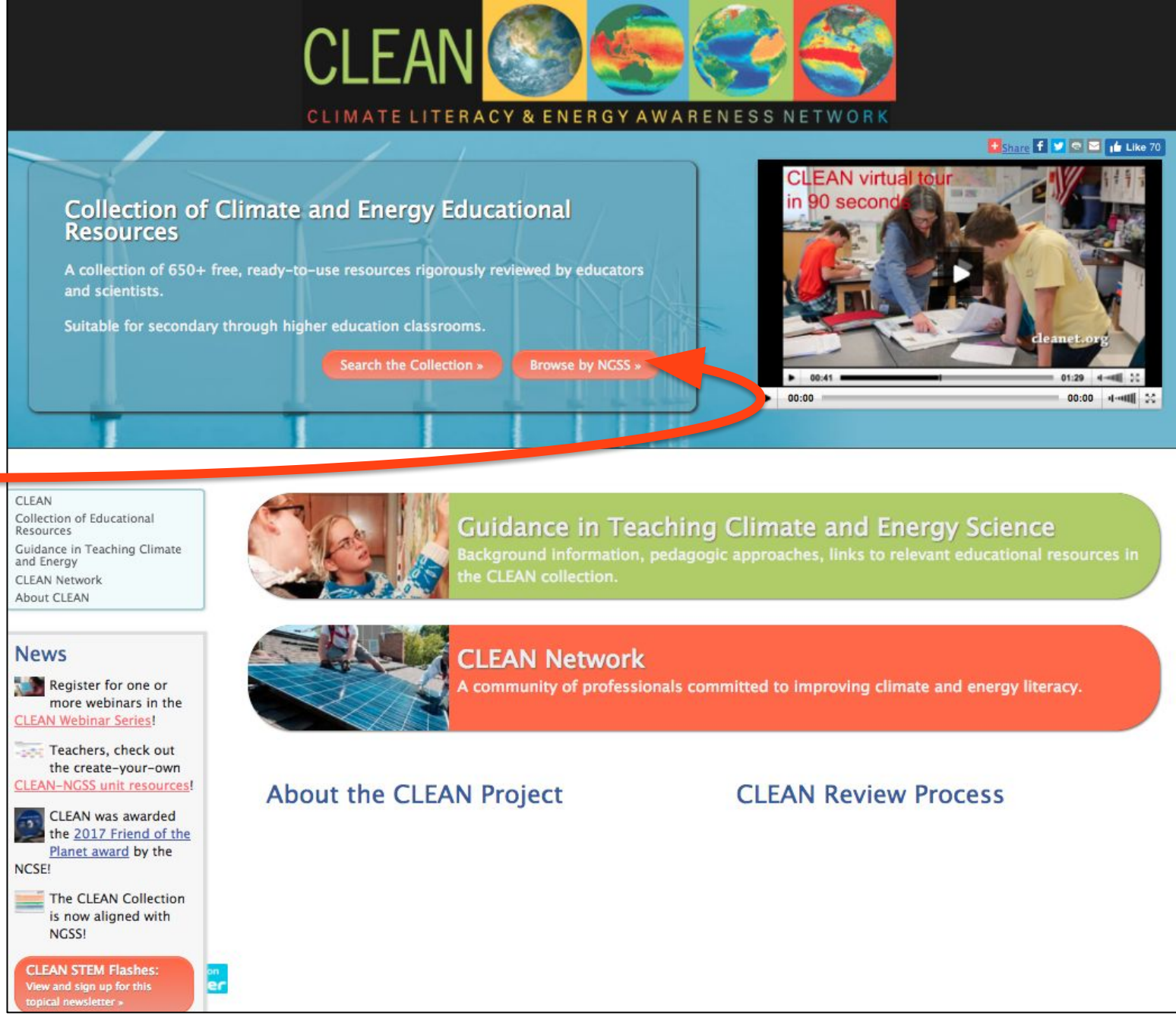


2. Browse by NGSS



2. Browse by NGSS

CLEAN
- Climate and Energy Educational Resources
  - NGSS Browse
  - NGSS Middle School Climate Systems
  - NGSS Middle School Climate Solutions
  - NGSS High School Climate Systems
  - NGSS High School Climate Solutions
  - NGSS at a Glance
- Teaching Climate and Energy Science
- CLEAN Network
- About CLEAN

Search the CLEAN Collection

With over 600 lesson plans, activities, videos, and classroom demos, we understand that it can be hard to find exactly what you're looking for. We've provided different pathways to help you get straight to what you want.

NGSS & CLEAN at a Glance »

Search the CLEAN collection by NGSS topics

Climate system and climate change

- climate data
- ice ages
- greenhouse gases
- carbon cycle
- Earth's energy balance
- ecosystems
- climate impacts
- scientific process
- and more

Middle School »

High School »

Or search by flexible filters »

- Grade level
- Topic
- Type of activity or resource

Why these two choices?

Climate and energy solutions

- clean energy
- efficiency
- policy, economics
- restoring habitats
- reducing waste
- agriculture
- adaptations
- and more

Middle School »

High School »

Learn more »

about teaching climate and energy, NGSS, and how to use the CLEAN collection.

2. Browse by NGSS

CLEAN
- Climate and Energy Educational Resources
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  - NGSS Middle School Climate Solutions
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  - NGSS High School Climate Solutions
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Teaching Climate Solutions:
High School Resources Organized by Key NGSS Standards

High School Systems : Middle School Systems : Middle School Solutions

Reset

Performance Expectations (About)

- Evaluate solutions for using energy and mineral resources. HS-ESS3-2
- Evaluate a technological solution that reduces human impacts on natural systems. HS-ESS3-4
- Design a solution to a complex problem by breaking it down into smaller problems that can be solved through engineering HS-ETS1-2
- Evaluate a solution based on priorities and trade-offs HS-ETS1-3

Disciplinary Core Ideas

- Humanity faces global challenges, such as the need for supplies of clean water and food, or for energy sources that minimize pollution. These can be addressed through engineering. HS-ETS1.A2
- When evaluating solutions, one should consider cost, safety, reliability, aesthetics, and social, cultural and environmental impacts. HS-ETS1.B1
- Resource availability has guided the development of human society. HS-ESS3.A1
- ll forms of energy production have costs, risks, and benefits. New technologies and regulations can change these factors. HS-ESS3.A2

Science and Engineering Practices

- Analyze data using tools, technologies, or models, in order to make scientific claims or determine solutions. HS-P4.1
- Analyze data to identify features of a proposed process or system in order to optimize it. HS-P4.6
- Design, evaluate, or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, and other criteria. HS-P6.5
- Communicate scientific or technical ideas in multiple formats. HS-P8.5

Cross Cutting Concepts

- Patterns of performance of designed systems can be analyzed and interpreted to improve the system. HS-C1.3
- Cause and effect relationships can be predicted by examining what is known about smaller scale mechanisms. HS-C2.2
- Changes of energy and matter into, out of, and within systems can be described. HS-C5.2
- Energy cannot be created or destroyed—it only moves between places, objects, or systems. HS-C5.3

Activity | Short Demonstration/Experiment | Visualization | Video

Selections: Analyze data using tools, technologies, or models, in order to make scientific claims or determine solutions. HS-P4.1
, Activity There are 22 matching resources

Explore this set of resources in the full search interface »

2. Browse by NGSS

Teaching Climate Solutions:
High School Resources Organized by Key NGSS Standards

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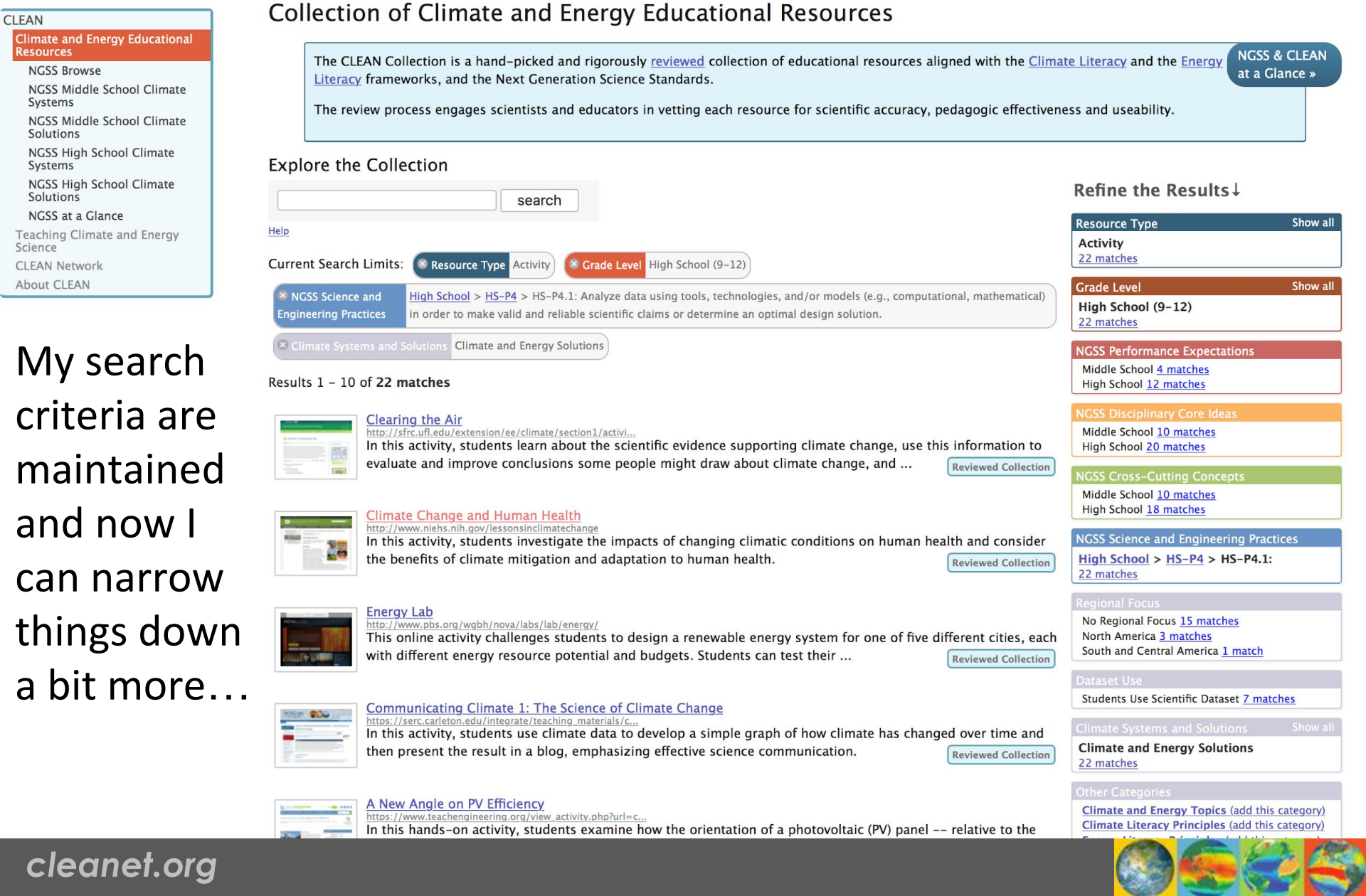
Explore this set of resources in the full search interface »

I can narrow my search with key words

2. Browse by NGSS

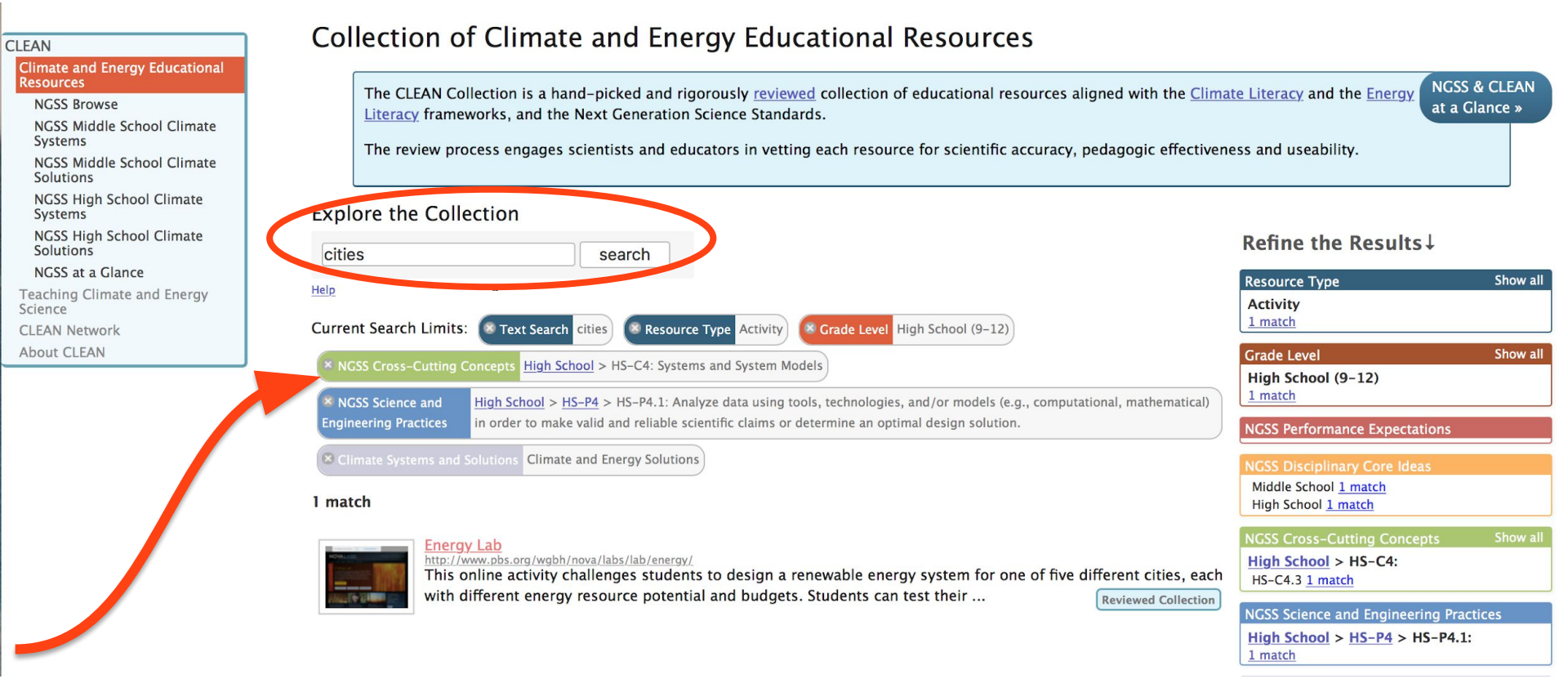


My search criteria are maintained and now I can narrow things down a bit more…

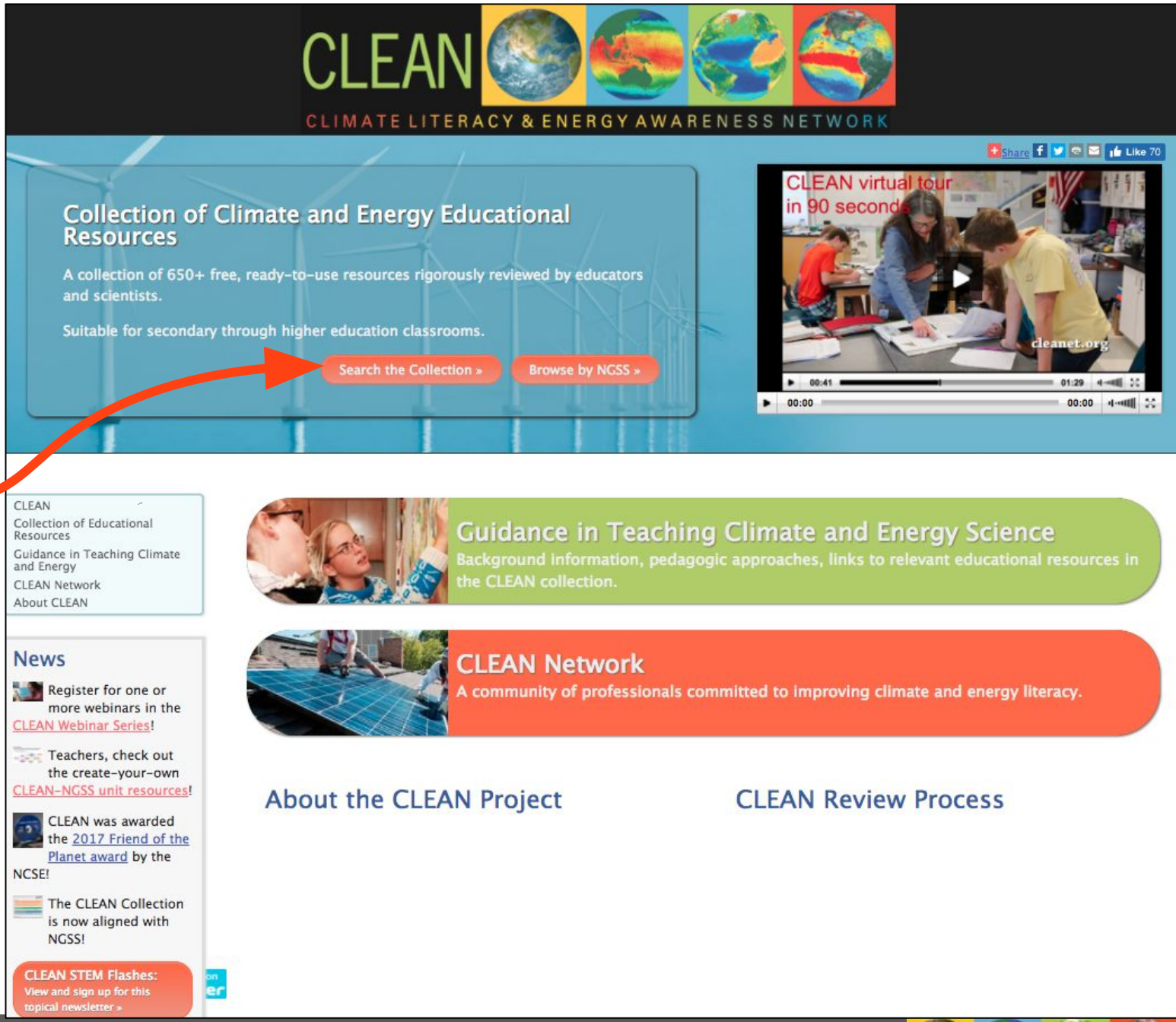
2. Browse by NGSS

Key word = cities

NGSS Cross-Cutting Concept = Systems



3. Search the entire Collection



3. Search the Entire Collection

CLEAN
- Climate and Energy Educational Resources
  - NGSS Browse
  - NGSS Middle School Climate Systems
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  - NGSS at a Glance
- Teaching Climate and Energy Science
- CLEAN Network
- About CLEAN

Collection of Climate and Energy Educational Resources

The CLEAN Collection is a hand-picked and rigorously reviewed collection of educational resources aligned with the Climate Literacy and the Energy Literacy frameworks, and the Next Generation Science Standards.

NGSS & CLEAN at a Glance »

The review process engages scientists and educators in vetting each resource for scientific accuracy, pedagogic effectiveness and useability.

Explore the Collection

Ocean Acidification search

Help

Current Search Limits: Text Search | Ocean Acidification

Results 1 - 10 of **42 matches**

Ocean Acidification
http://www.explainingclimatechange.ca/Climate%20Change/s...
This simulation allows students to explore the change in sea surface pH levels with increasing CO2 levels.
Reviewed Collection

What Is Ocean Acidification?
http://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidifi...
This static image from NOAA's Pacific Marine Environmental Laboratory Carbon Program offers a visually compelling and scientifically sound image of the sea water carbonate chemistry process that ...
Reviewed Collection

Graphing Ocean Acidification
http://www.explainingclimatechange.ca/Climate%20Change/s...
This applet is an ocean acidification grapher that allows user to plot changes in atmospheric C02 against ocean pH, from 1988 to 2009, in the central North Pacific.
Reviewed Collection

Changing Planet: Ocean Acidification

Refine the Results ↓

Resource Type
- Activity 14 matches
- Short Demonstration/Experiment 2 matches
- Teaching Guidance 2 matches
- Video 16 matches
- Visualization 8 matches

Grade Level
- Middle (6-8) 30 matches
- High School (9-12) 38 matches
- College Lower (13-14) 18 matches
- College Upper (15-16) 7 matches
- Graduate/Professional 1 match
- Informal 4 matches

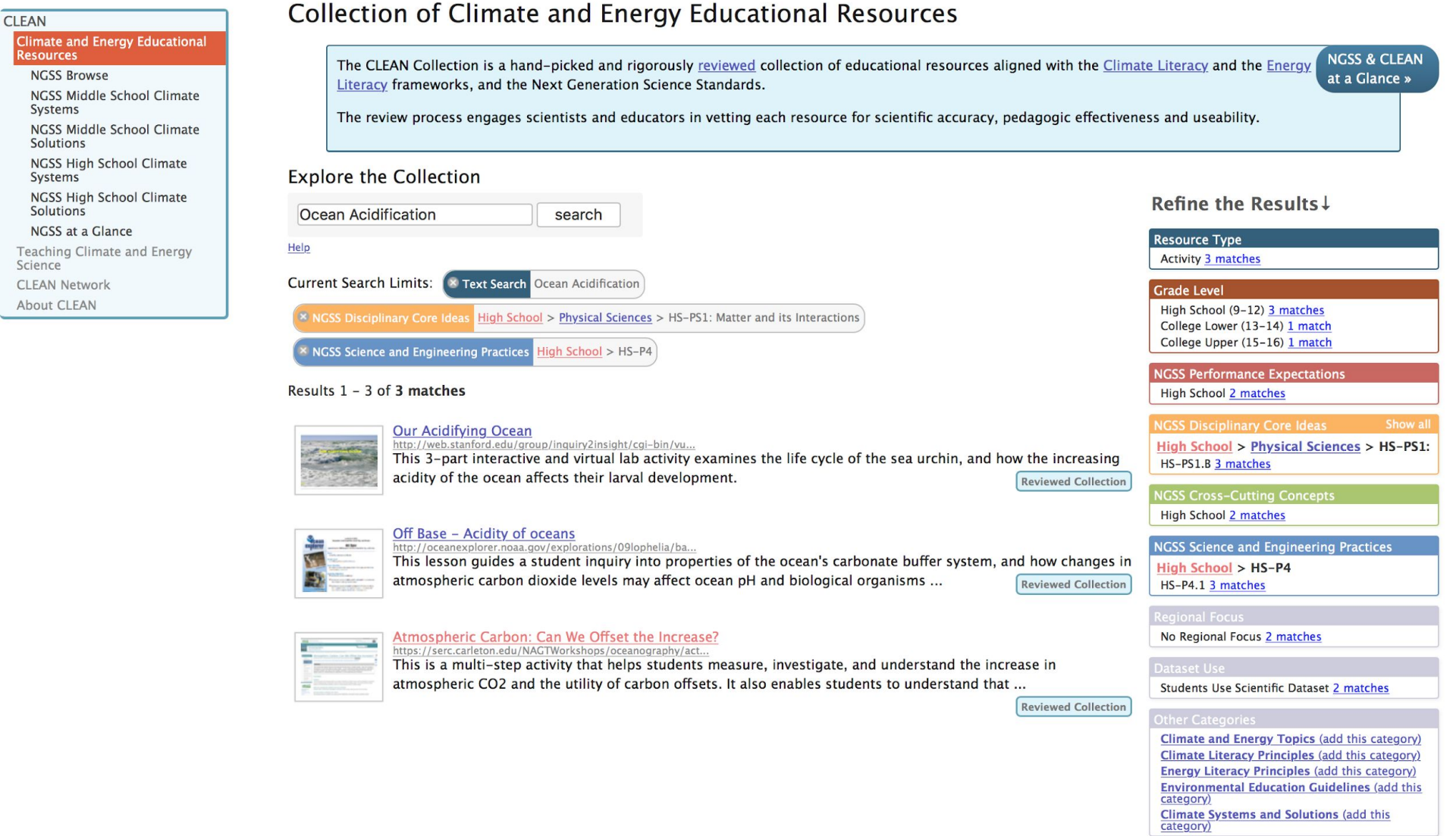
NGSS Performance Expectations
- Middle School 6 matches
- High School 10 matches

NGSS Disciplinary Core Ideas
- Middle School 28 matches
- High School 36 matches

NGSS Cross-Cutting Concepts
- Middle School 14 matches
- High School 21 matches

NGSS Science and Engineering Practices

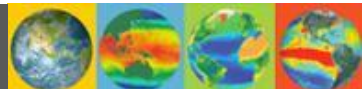
3. Search the Entire Collection



Treasure Hunt in CLEAN

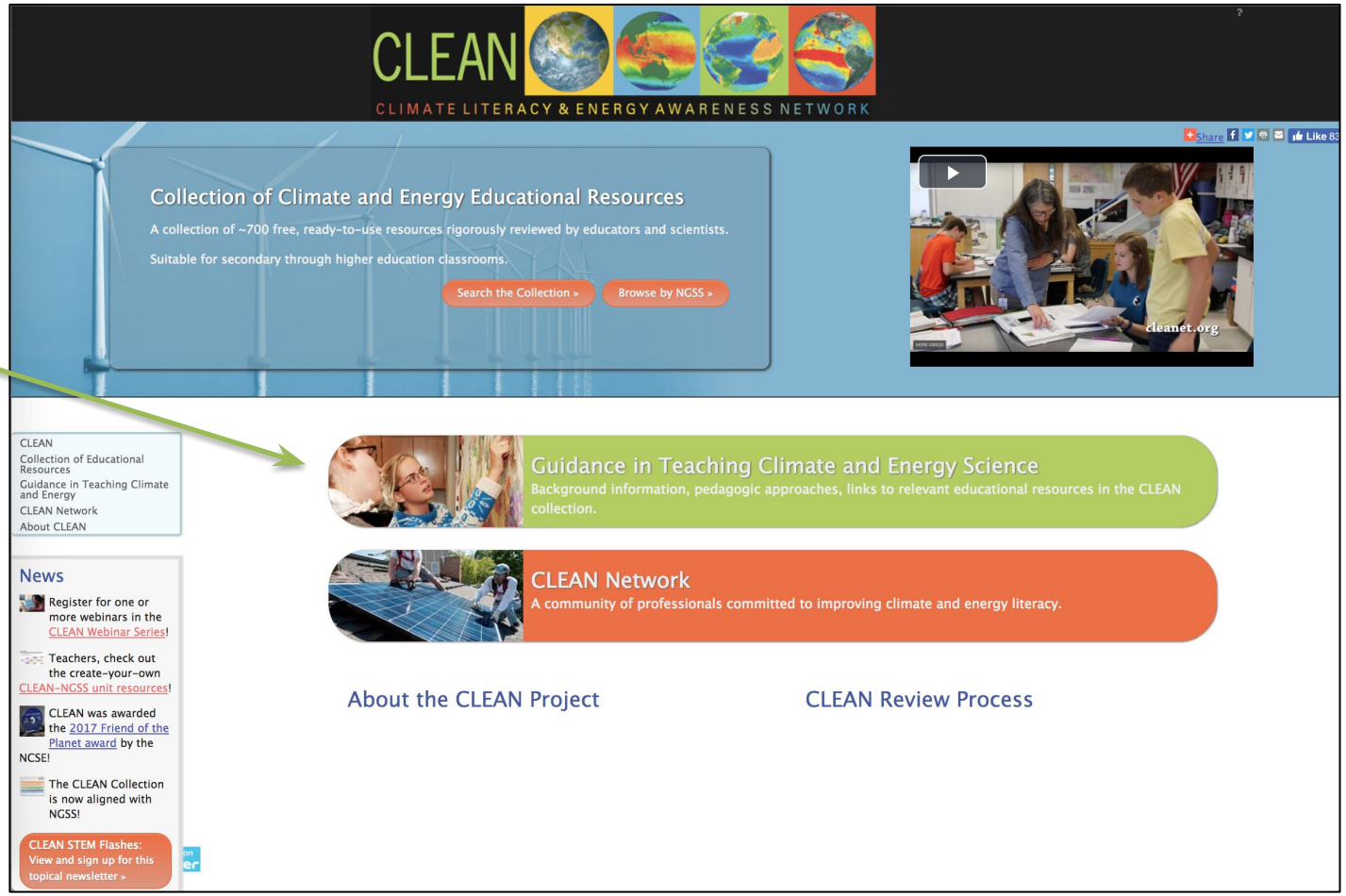
- Find a resource in CLEAN using one of the above search methods.
- Put the URL for the resource you find into the chat window with a note about what you found interesting about the resource

https://cleanet.org/clean/educational_resources/collection/index.html



Guidance for Teaching Climate and Energy

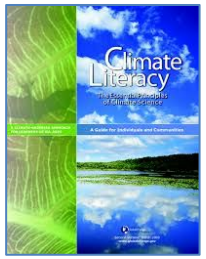
Guidance for Teaching Climate and Energy

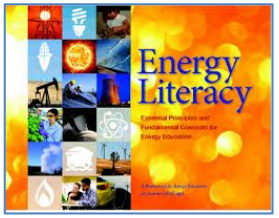


http://cleanet.org
https://www.climate.gov/teaching

Guidance in Teaching Climate and Energy

Climate and energy are complex topics, with rapidly developing science and technology and the potential for controversy.





See the following pages for:

- a summary of each of the climate and energy science principles and concepts
- possible challenges for educators
- suggested pedagogic approaches to teaching these topics, for each grade level
- relevant teaching materials from the CLEAN reviewed collection

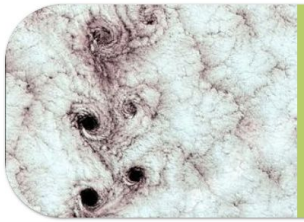
Teaching Climate

One of CLEAN's goals is to help teachers be as effective as possible when teaching climate science. This series of web pages introduces climate science in a sequence that illustrates different aspects of the climate system.

Teaching Energy

Energy Literacy is an understanding of the nature and role of energy in the universe and in our lives and the ability to apply this understanding to answer questions and solve problems. Explore the Energy Literacy Framework along with scaffolding for teaching the energy science.

Next Page »



Climate is regulated by complex interactions among components of the Earth system.

Climate Literacy Principle 2

Jump down to: Teaching these ideas | Find activities

Teaching about climate interactions is supported by six key concepts:

a. Earth's climate is influenced by interactions involving the sun, ocean, atmosphere, clouds, ice, land, and life. Climate varies by region as a result of local differences in these interactions.

▶There are 5 more fundamental concepts. See them all...

Earth's climate is governed by several different types of processes.

Oceanic, atmospheric, biologic and geologic processes all drive the climate system and result in a regional differences in climates on Earth. Many climatic processes such as the greenhouse effect and the carbon cycle are the result of interplay between the "spheres" of the Earth system (atmosphere, cryosphere, geosphere, biosphere). Feedbacks between various components work to exacerbate or mitigate changes to the climate.

Climate cycles, feedbacks, and interplay between causes and effects

These ideas address some of the natural complexities of our climate system and build a foundation for the understanding of key components such as the carbon cycle, the greenhouse effect, and interactions and feedback loops. These topics are active areas of climate research, and include important questions such as:

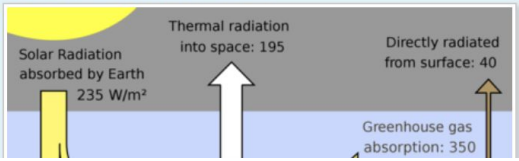
- How aerosols play a role in the changing climate. These small airborne particles have both a cooling and warming effect and originate from both natural and human-caused sources.
- How feedbacks in the climate system contribute to the effects of increasing atmospheric CO_2.
- How oceanic processes are integral in the distribution of heat, absorption of CO_2, and changes in circulation patterns.
- Why some past climate changes have been gradual and others abrupt.

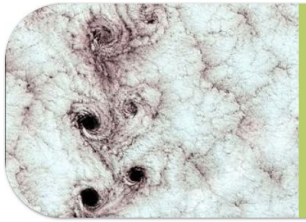
On a more basic level, the processes covered in this principle can easily be observed, such as:

- Compared to air, water takes a longer time to warm up or cool down.
- A cloudy night will be warmer than a clear night (if all other factors remain equal).
- The overall climate of a region is not solely determined by its latitude, but is also influenced by factors such as proximity to oceans or mountain ranges.

Helping students understand these ideas

The natural greenhouse effect is a common area of misunderstanding. Educators should strive to explain this concept in a way that is as simple as possible, but is still





Climate is regulated by complex interactions among components of the Earth system.

Climate Literacy Principle 2

Jump down to: Teaching these ideas | Find activities

Teaching about climate interactions is supported by six key concepts:

a. Earth's climate is influenced by interactions involving the sun, ocean, atmosphere, clouds, ice, land, and life. Climate varies by region as a result of local differences in these interactions.

▶ There are 5 more fundamental concepts. See them all...

Earth's climate is governed by several different types of processes.

Oceanic, atmospheric, biologic and geologic processes all drive the climate system and result in a regional differences in climates on Earth. Many climatic processes such as the greenhouse effect and the carbon cycle are the result of interplay between the "spheres" of the Earth system (atmosphere, cryosphere, geosphere, biosphere). Feedbacks between various components work to exacerbate or mitigate changes to the climate.

Climate cycles, feedbacks, and interplay between causes and effects

These ideas address some of the natural complexities of our climate system and build a foundation for the understanding of key components such as the carbon cycle, the greenhouse effect, and interactions and feedback loops. These topics are active areas of climate research, and include important questions such as:

- How aerosols play a role in the changing climate. These small airborne particles have both a cooling and warming effect and originate from both natural and human-caused sources.
- How feedbacks in the climate system contribute to the effects of increasing atmospheric CO_2.
- How oceanic processes are integral in the distribution of heat, absorption of CO_2, and changes in circulation patterns.
- Why some past climate changes have been gradual and others abrupt.

On a more basic level, the processes covered in this principle can easily be observed, such as:

- Compared to air, water takes a longer time to warm up or cool down.
- A cloudy night will be warmer than a clear night (if all other factors remain equal).
- The overall climate of a region is not solely determined by its latitude, but is also influenced by factors such as proximity to oceans or mountain ranges.

Helping students understand these ideas

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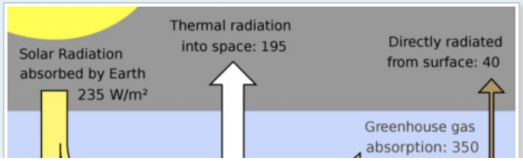
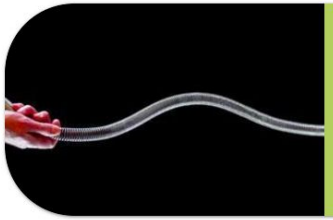




Energy is a physical quantity that follows precise natural laws.

Energy Literacy Principle 1

Jump down to: Teaching these ideas | Find activities

Teaching about the nature of energy is supported by 8 key concepts:

1.1 Energy is a quantity that is transferred from system to system. Energy is the ability of a system to do work. A system has done work if it has exerted a force on another system over some distance. When this happens, energy is transferred from one system to another. At least some of the energy is also transformed from one type into another during this process. One can keep track of how much energy transfers into or out of a system.

▶ There are 7 more fundamental concepts. See them all...

Energy is a word with many meanings yet no universal definition

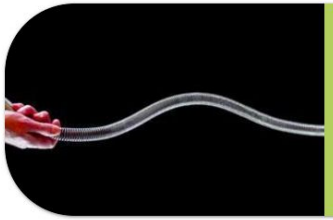
In our daily lives, we constantly interact with different forms of energy. Energy is contained in gasoline, cat food and stars, and energy moves from one form to another via wind, motion and heat. So where to begin teaching something that is both intuitively obvious yet abstract and complex?

This principle helps students become familiar with some of the fundamentals about energy, much of which is based in physics. We want students to become comfortable with the concept that energy comes in many forms, can be transferred from one system to another, and can be measured.

While it is difficult to define the term energy, it is not difficult to identify, describe and measure specific types of energy.

Mechanical energy is is the energy of mechanical systems, such as a ball rolling on a ramp, or a marble fired from a slingshot. Mechanical energy can be in three forms:

- **Gravitational potential energy** is the energy of an object or system due to gravitational attraction. For example, we can calculate the mechanical energy of a ball that is going to be released from a high window, or the



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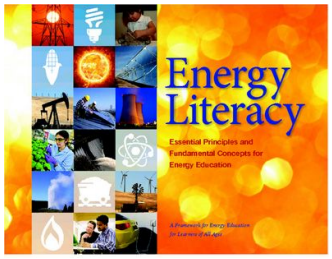


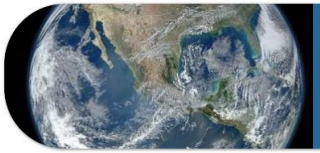
CLEAN
Climate and Energy Educational Resources
Teaching Climate and Energy
Teaching Climate
Teaching Energy
Tools for Educators
CLEAN Network
Get Involved
About this Project

Guidance in Teaching About Climate and Energy

Climate and energy are complex topics, with rapidly developing science and technology.

These pages offer easy-to-read explanations of science and policy, designed to step students through the key principles of climate and energy. Each page is illustrated with examples to bring these topics alive in your classroom.

- A summary of each of the climate and energy science principles
- Ideas to support learners
- Suggested teaching approaches, selected for various grade levels
- Relevant resources from the CLEAN collection



Teaching Climate

Walk students through key components of the climate system: the Sun, the atmosphere, life on Earth, human impacts, how scientists study climate, and actions humans can take.

Teaching Energy

Trace the story of energy in our lives, beginning with the physics of energy and how energy flows throughout the earth system. Explore energy's influence on human society, sources of energy, the ways we use energy, how we make decisions about energy, and the impacts of energy use.

Check out the Educator Toolbox to find more teaching resources

Explore tools for teaching about climate and energy science, including pedagogical approaches, activities, and instructional ideas:

- Creating Your Own Climate and Energy Units
- Earth Systems Investigations
- NCA Teaching Resources
- Newsletters
- Webinars
- Workshops

CLEAN Webinars

CLEAN
CLIMATE LITERACY & ENERGY AWARENESS NETWORK

CLEAN > Teaching Climate and Energy > Tools for Educators > Webinars

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  - Climate and Energy Educational Resources
  - Teaching Climate and Energy
    - Teaching Climate
    - Teaching Energy
    - Tools for Educators
      - National Climate Assessment (NCA) Teaching Resources
      - STEM Flash Topical E-Newsletter
      - Create NGSS-CLEAN Units
      - Earth System Investigations
      - Webinars
        - CLEAN Webinar Series
        - Webinars for Secondary Level Science Educators
      - Workshops
  - CLEAN Network
  - Get Involved
  - About this Project

CLEAN Webinars

Miss an important topic? Most of the webinars can be accessed after each event as a screencast.

CLEAN Webinar Series *(ongoing)*
Learn about CLEAN and how you can use CLEAN resources in your classroom.

Webinars for Secondary Level Science Educators
View screencast recordings from the 2011 series, which featured teaching each of the climate and energy literacy principles.

Format

The ongoing Webinar Series uses the online Zoom platform with screenshare and integrated audio.

All webinars are being recorded and archived on the CLEAN website.

Contact

For questions or more information, please contact us at clean AT colorado.edu

CLEAN STEM Flash

https://cleanet.org/clean/literacy/tools/enewsletter.html

CLEAN STEM Flash

Wildfires and Climate Change

First in a series of timely climate & energy e-blasts to use and share.
Sign-up here to be sure you're on the list.
Browse the CLEAN Collection for NGSS-aligned resources.

CLEAN supports teaching and learning about climate and energy with 600+ free peer-reviewed, scientifically accurate, and classroom-ready resources.

CLEAN Resource Spotlight:
Wildfires Out West video
Watch this video for a quick overview about the causes and effects of wildfires.
Audience: Middle and high school classes
Video length: 3:13 min

Find more resources on wildfires in the CLEAN Collection.

This video from Climate Central looks at the way climate conditions can affect vegetation in the West and what influence this has on wildfires.

Wildfires

Wildfires and the Clir

Stronger Storms

Climate Change and Stronger storms.

Drought and Crops

Crop Challenges in a Changi

Arctic Change

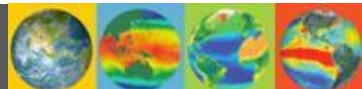
Sea Change for Arctice Ice and Pola arctic ice and ecosystems.

CLEAN STEM Flashes:
View and sign up for this topical newsletter »

Explore One Aspect of Teacher Guidance in CLEAN

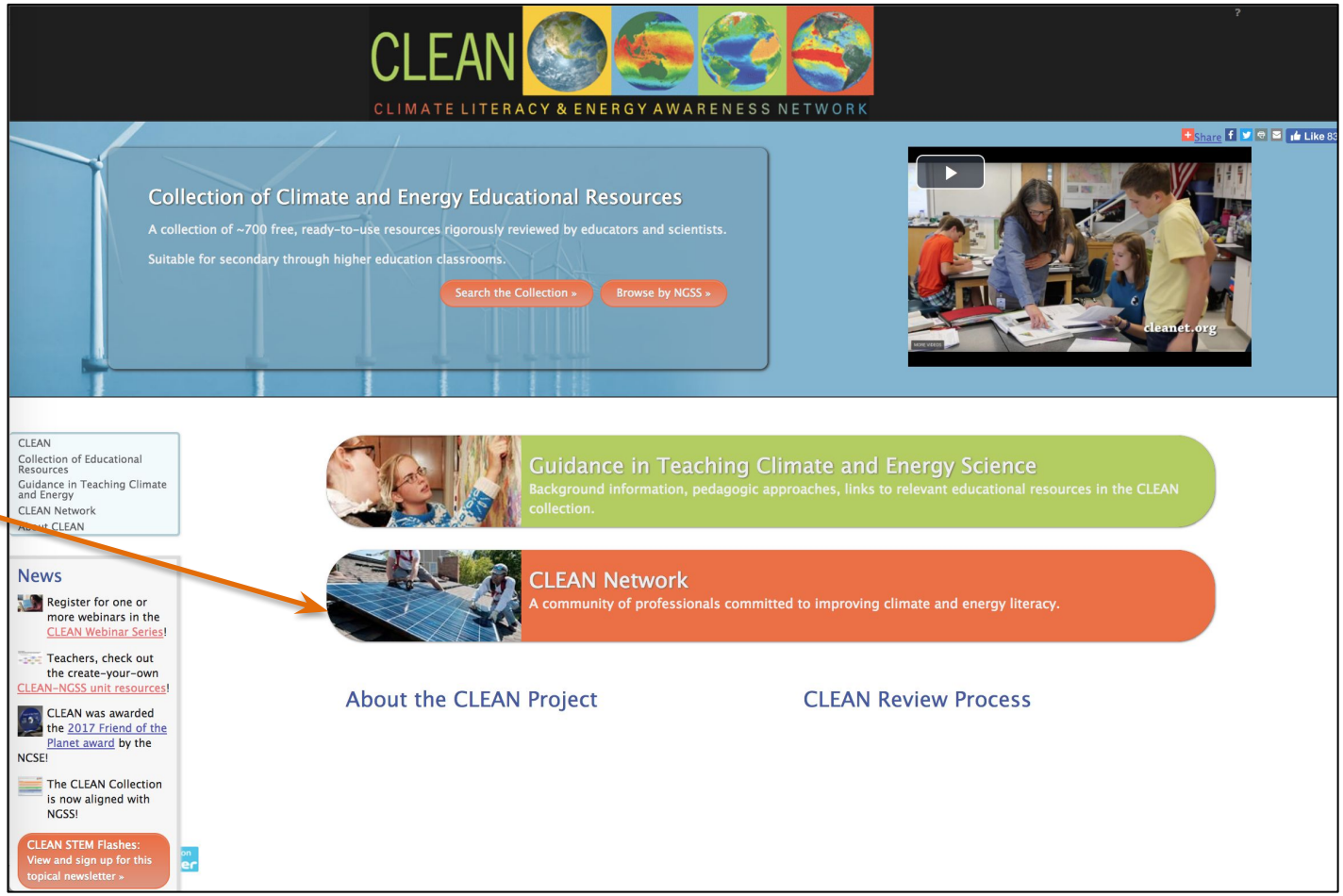
- Explore one piece of teacher guidance in CLEAN.
- Put the URL for the piece you explored into the chat window with a note about what you thought about the information.

https://cleanet.org/clean/literacy/index.html



Continued Learning Through CLEAN Resources

CLEAN Network



http://cleanet.org
https://www.climate.gov/teaching

CLEAN Network

The CLEAN Network is a professionally diverse community of over 570 members committed to improving climate and energy literacy locally, regionally, nationally, and globally, to enable responsible decisions and actions. The CLEAN Network has been a dynamic group since 2008 and is now led by the CLEAN Leadership Board established in 2016.

Join the CLEAN Network » Email list archive »

Tuesdays at 1pm Eastern time CLEAN Network members meet in a teleconference to collaborate and share information about their literacy work, upcoming events, opportunities for collaboration or funding. Frequently guest speakers present on the topic of climate and energy literacy.

Recent and upcoming telecon topics and speakers »

Educators

Search or browse the Collection of Climate and Energy Educational Resources and learn more about teaching climate and energy science.

CLEAN Collection »

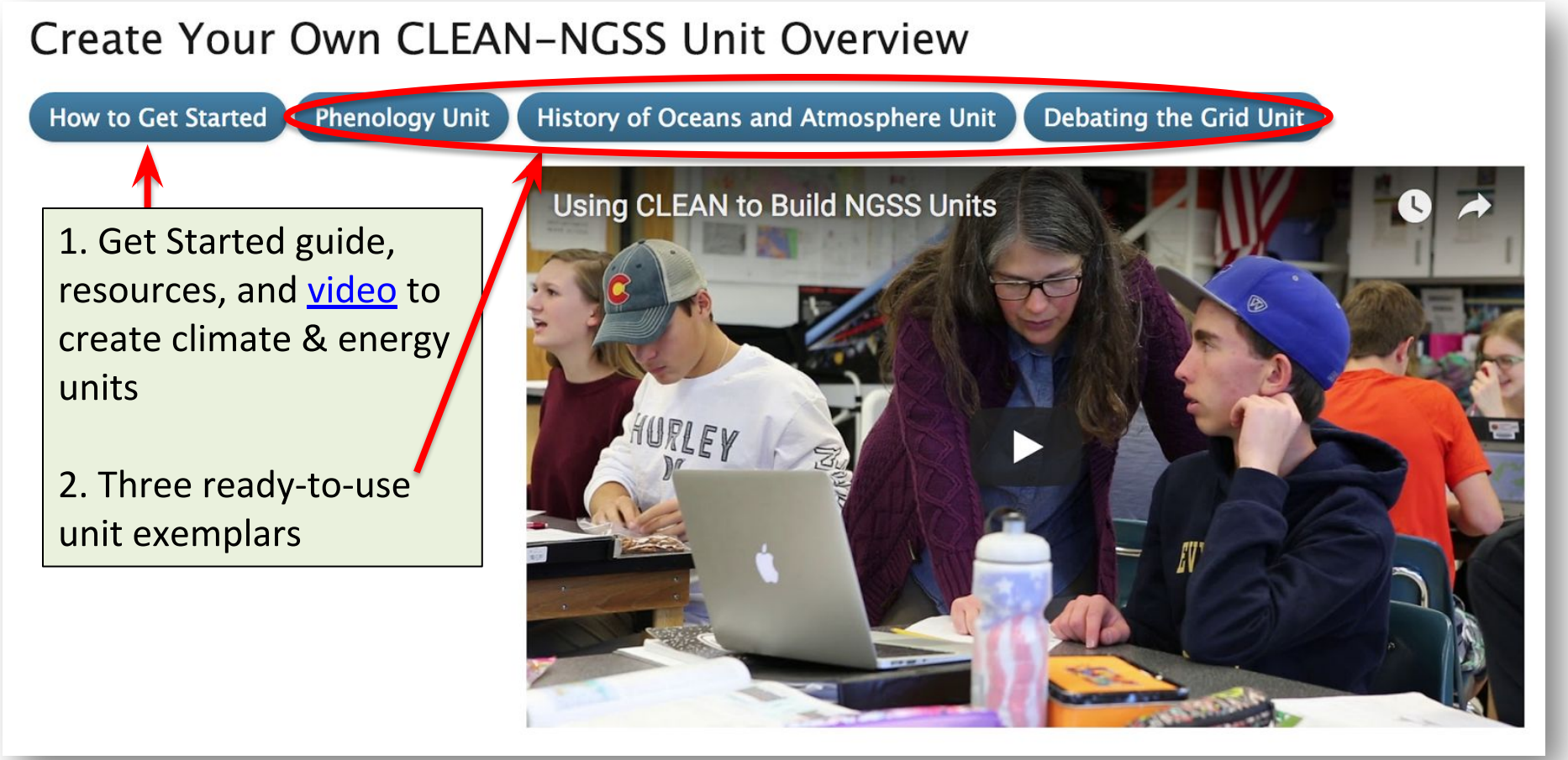
Resource Developers

See the multiple ways in which developers can participate in strengthening the collection of educational resources.

Partners

Learn about the variety of organizations that partner with CLEAN.

CLEAN Get Started Guide Homepage

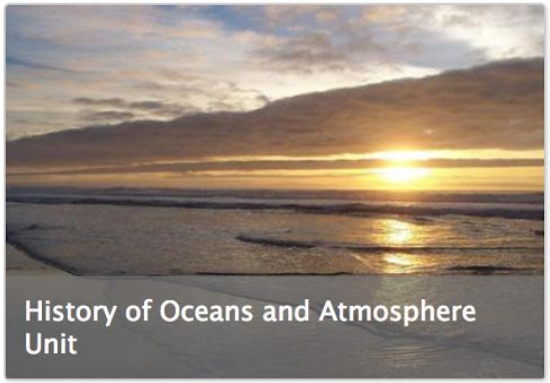


To access the *Get Started Guide*: Click the "CLEAN-NGSS unit resources" tab in the left sidebar of the CLEAN homepage

Unit Exemplars

Classroom-ready units are available to download and use:

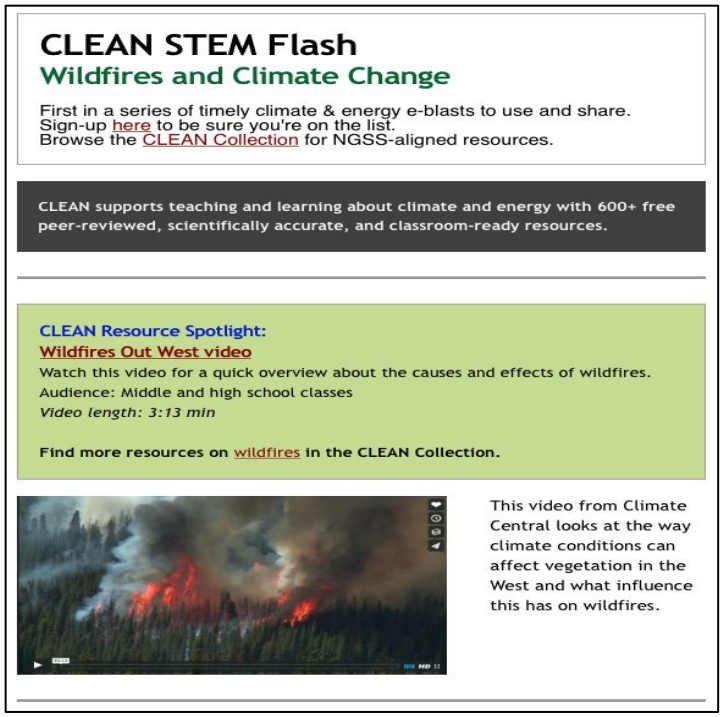
Explore Examples of CLEAN-NGSS Units

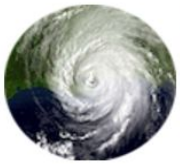


Become involved!

- Use CLEAN resources & teaching guidance
- Sign up for CLEAN STEM Flash
- Watch the CLEAN webinars
- Submit a resource to CLEAN
- Join CLEAN Network

cleanet.org





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Questions?

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CLEAN Website: cleanet.org