

# **Climate Literacy and Energy Awareness Network (CLEAN) CLEANET.ORG** | Building a foundation of support for climate and energy educators

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## **CLEAN Review Process**

A rigorous and transparent peer-review process is used for the CLEAN collection. Resources that are relevant to one of the climate and energy literacy principles and useful for grade levels K-16 are reviewed. (Gold, A. U., et al. (2012). Peer-review of digital educational resources—A rigorous review process developed by the Climate Literacy and Energy Awareness Network (CLEAN). Journal of Geoscience Education, 60(4), 295-308.)

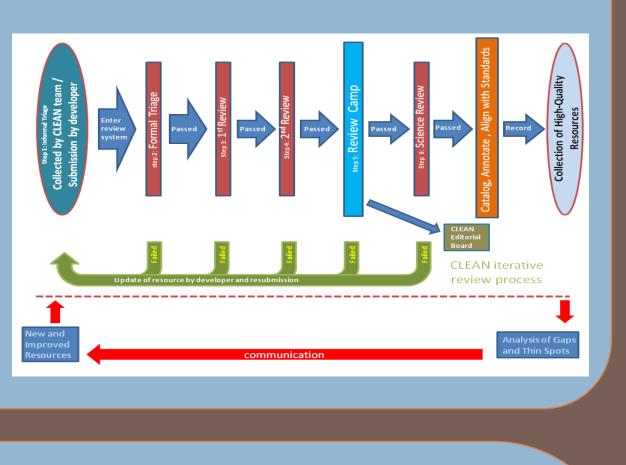
#### **Review Process**

**<u>Review for</u>**: a) scientific accuracy, b) pedagogic effectiveness, c) technical quality/ease of use.

**Panel Review:** Team of four educators and scientists discusses each resource and makes decision about inclusion in CLEAN.

**Expert Science Review:** Content expert in the field of the resource reviews for scientific accuracy.

Maintenance Review: Ensures ongoing quality of collection.



Search the CLEAN Collection

## **CLEAN For Educators**

#### Alignment with Next Generation Science Standards (NGSS)

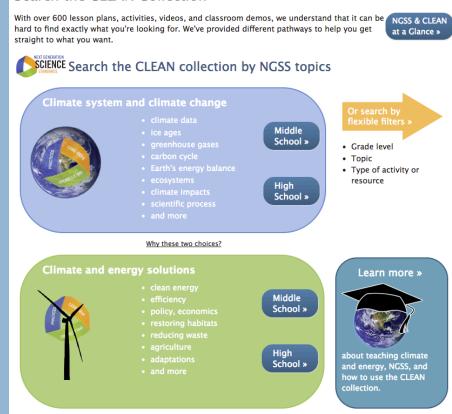
NGSS and CLEAN at a Glance Clicking the blue text below will display tables with the NGSS Performance Expectations (PE) and Disciplinary Core Ideas (DCI) that address climate and energy topics. The tables include links to relevant CLEAN resources. Hovering on the green DCI concept bullet will display the full text.							
Middle School							
<ul> <li>Show Middle School - Life Science in CLEAN</li> <li>Show Middle School - Physical Science in CLEAN</li> <li>Show Middle School - Earth and Space Science in CLEAN</li> <li>Show Middle School - Engineering, Technology, and Applications of Science in CLEAN</li> </ul>							
High School							
<ul> <li>Show High School - Life Science in CLEAN</li> <li>Show High School - Physical Science in CLEAN</li> <li>Show High School - Earth and Space Science in CLEAN</li> <li>Show High School - Engineering, Technology, and Applications of Science in CLEAN</li> </ul>							

1. Each resource has been tagged with:

- Performance Expectations
- Disciplinary Core Ideas Science & Engineering

Practices **Crosscutting Concepts** 2. CLEAN Website has

guides for creating units aligned to NGSS.



#### **Teaching Guidance**

Teaching Guidance is provided following the framework of the Climate Literacy and Energy Literacy Principles. Each page summarizes the relevant scientific concepts, provides discussion of what makes the **topic important**, and why it can be challenging to teach. Gradelevel-specific teaching strategies are provided, along with links to relevant teaching materials and reference materials.

#### **Support for Educators**

The CLEAN Network provides support for educators through an active email list, online resource pages, and webinars. Teachers can use these resources to get additional support for teaching complex topics of climate and energy. The community is responsive to requests for input.

### **Get Involved**

- Use teaching resources (collection, guidance, webinars) Submit a resource to the collection
- Join the CLEAN Network
- Sign up for the STEM Flash Newsletter

Teaching these ideas Find activities

eaching about the human impacts on climate is supported by five key concep

ent Report states, "Human influence on the climate system is clea

osphere, positive radiative forcing, observed warming, and understanding

here is overwhelming evidence that human activities, especially burning fossil

uels, are leading to increased levels of carbon dioxide and other greenhouse

gases in the atmosphere, which in turn amplify the natural greenhouse effect,

causing the temperature of the Earth's atmosphere, ocean, and land surface to

rease. That greenhouse gases "trap" infrared heat is well established

hrough laboratory experiments going back to the mid 1850s when Sir Johr

is is evident from the increasing greenhouse gas concentrations in the

f the climate system "(From the IPCC AR5, FAO broch

- Become a CLEAN Ambassador
- Become a resource reviewer

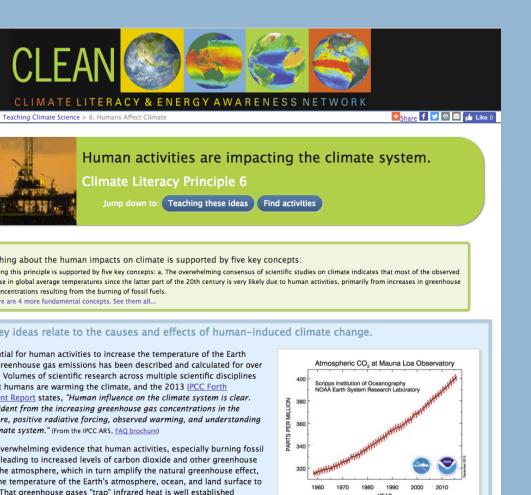
**Contact:** 

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cleanet.org

# **CLEAN Supports Climate & Energy Education**





### **CLEAN Collection:** Contains

720+ peer-reviewed educational resources such as activities, lab demos, visualizations, and videos for grades 6-16.

#### **Guidance for Teaching Climate and Energy**

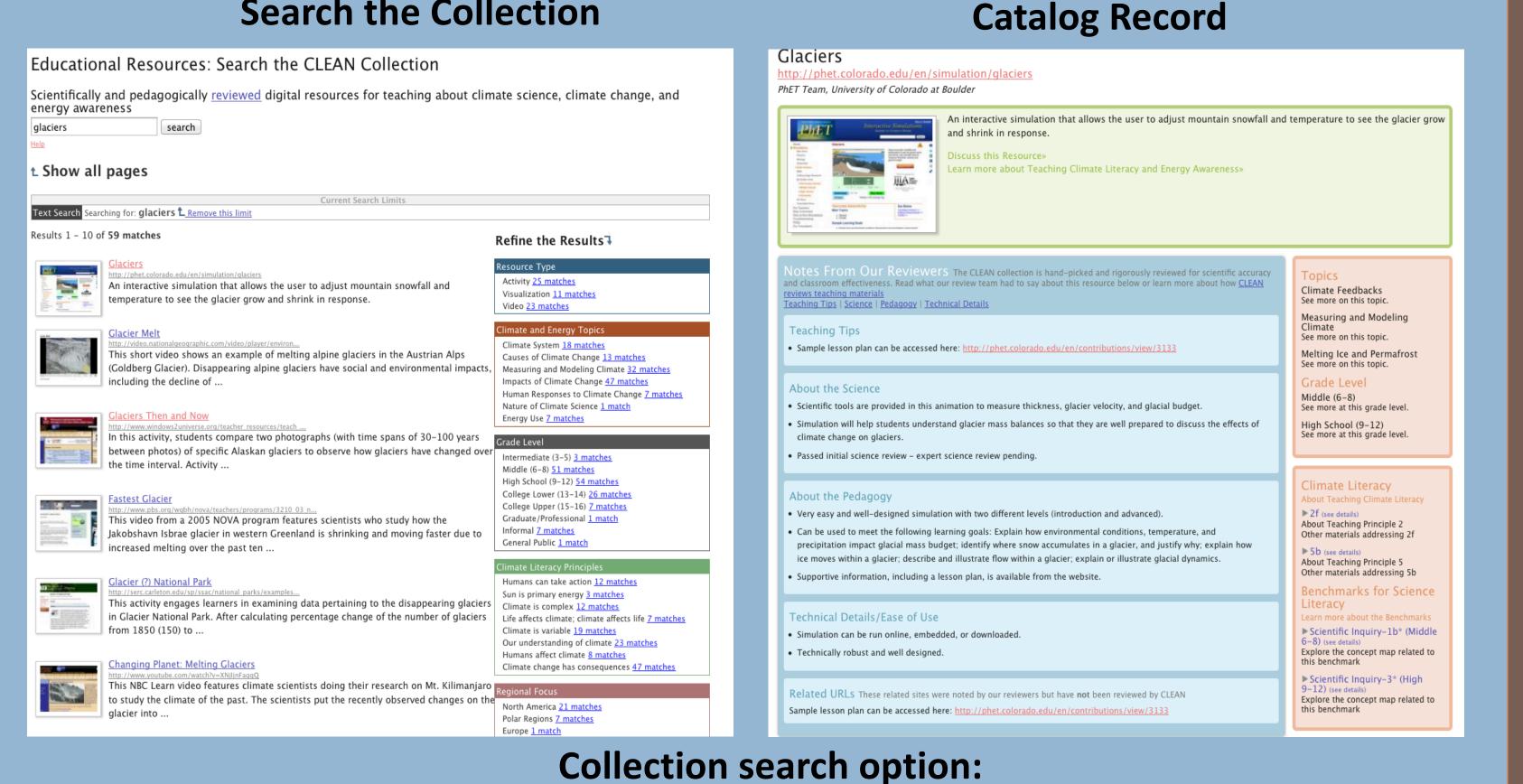
**Science:** Pedagogical support for teaching climate and energy topics, including misconceptions and best classroom practices.



# **CLEAN Collection**

The CLEAN Collection is located at cleanet.org and is syndicated to the NOAA Teaching Climate portal, climate.gov/teaching, as the official federal government collection of climate and energy teaching resources.

#### **Search the Collection**



**Open text search – grade level – resource type – Climate Literacy Principles Energy Literacy Principles – Use of Scientific Data – Regional Focus – Topic areas** Benchmarks of Science Literacy – Guidelines for Excellence in Environmental Sciences Next Generation Science Standards (NGSS)



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### **CLEAN Network:** A professionally diverse community of climate and

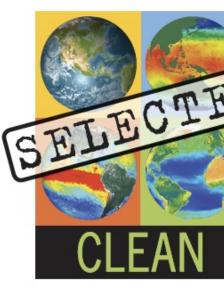
energy literacy stakeholders. Activities:

- Weekly teleconferences and presentations
- Vibrant email list
- Workshops and networking opportunities at large events and conferences The CLEAN Network is free to join and is open to anyone.

# involved are:

- CLEAN STEM Flash Wildfires and Climate Chang • Syndication with sites like PBS Learning & NSTA dience: Middle and high school c • CLEAN "Selected By" logo • CLEAN widget on websites Central looks at the way climate conditions can affect vegetation in the West and what influence this has on wildfires Climate Literacy and Energy Awareness Network (CLEAN) Webinar Series Take your teaching about climate and energy to the next level with the CLEAN Webinar Series. Use the buttons below to register for each free webina

- Social Media Engagement Professional Development Webinars • STEM Flash Newsletter • Work with developers • Presentations at professional conferences • Teacher Ambassador program Targeted outreach to states (media kits)







# Web Analytics and Pop Up Survey

below).

- The CLEAN website and the syndicated CLEAN collection site at NOAA's Climate.gov have received over 2,000,000 visits since their creation.
- Monthly average number of sessions increased from about 17,000 in 2014 (when CLEAN was syndicated to Climate.gov) to 57,000 in 2019 (a 335% increase).
- After the 2017 marketing efforts, users, new users, and pageviews increased by about 70% in 2018 compared to 2017.
- Popup survey respondents reflected CLEAN's target audience of formal and informal educators. • Popup survey results showed most new visitors came to CLEAN through a web search. Other referrals came from presentations on CLEAN, a news article about CLEAN, and social media

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							comparison after
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# **Marketing CLEAN**

CLEAN has been working since 2017 to market the CLEAN collection to educators. The efforts

CLEAN tracks website traffic through Google Analytics. A popup survey was implemented in summer 2018. Web analytics data show marketing efforts have been successful (see figures