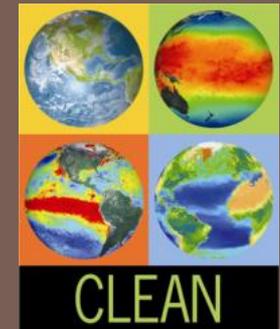




# CLIMATE LITERACY AND ENERGY AWARENESS NETWORK PATHWAY

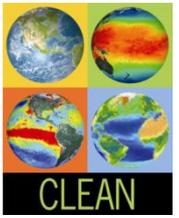


## REVIEWED TO ANNOTATED RESOURCES



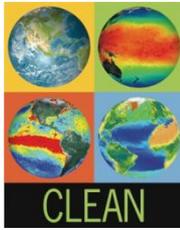
NSDL All Projects Meeting November 2, 2010

# CLEAN Pathway: Collection



- 500 excellent digital teaching resources addressing climate science or energy awareness for grades 6-16
- Resources scientifically and pedagogically reviewed
- Annotations reflect reviewer comments
- Resources aligned with
  - ▣ Climate Literacy: Essential Principles of Climate Science
  - ▣ Energy Awareness Principles
  - ▣ National Science Education Standards
  - ▣ AAAS Project 2061 Benchmarks for Science Literacy
  - ▣ NAAEE Excellence in Environmental Edu. Guidelines for Learning

# What is an excellent activity?



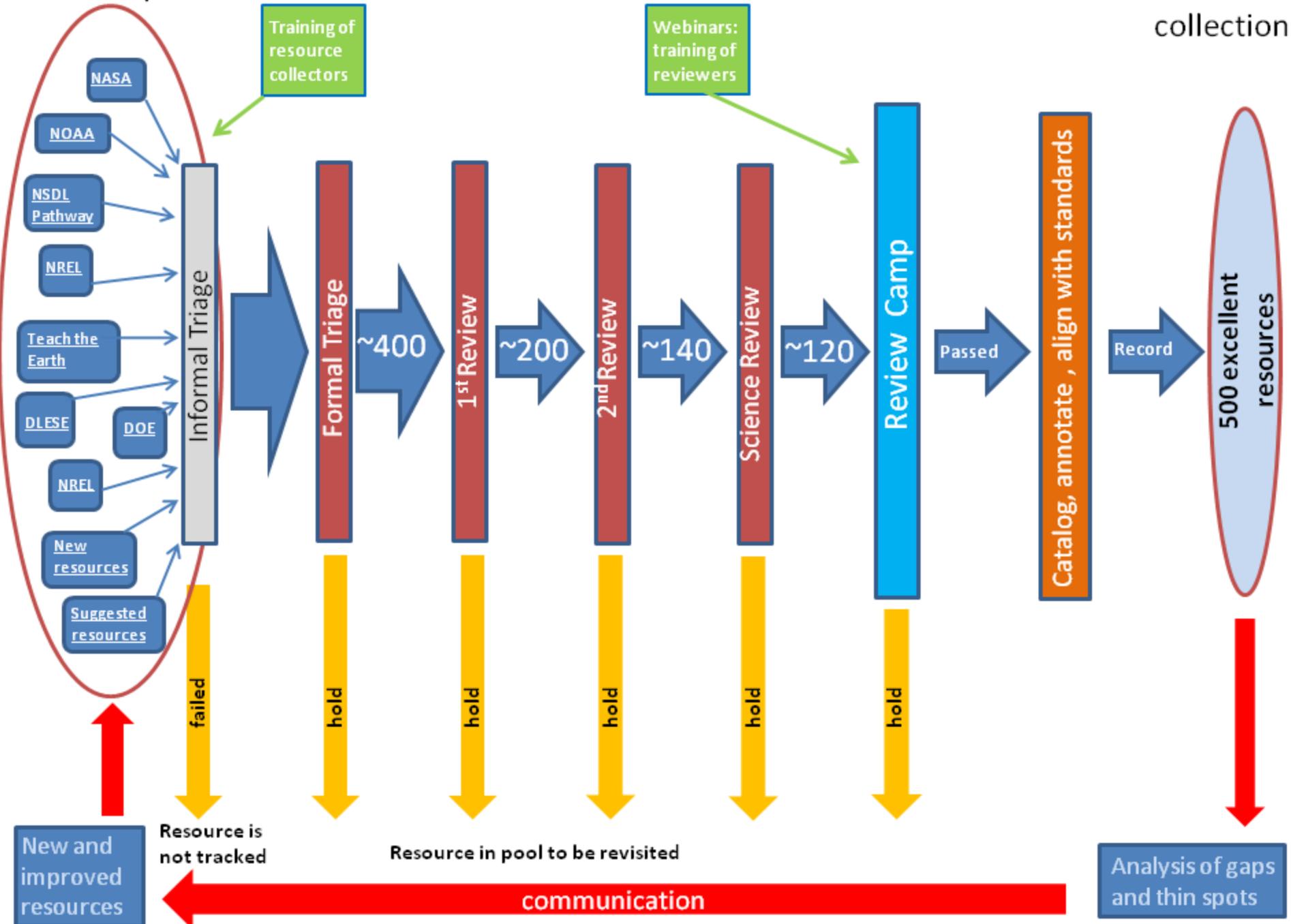
## **Definition Teaching Activity:**

Relatively brief set of instructional materials that is presented as a whole, where all the parts and ideas are linked and part of the same activity

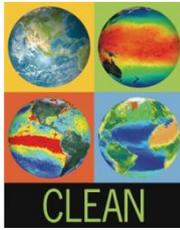
- Educator should be excited to find this activity when searching for teaching materials.

# Resource pools

# CLEAN collection

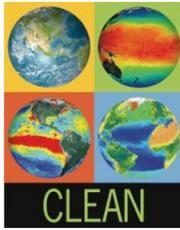


# Review questionnaire



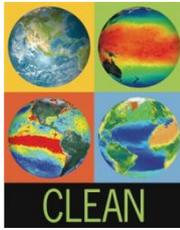
- Initial Vetting
- Review
  - ▣ Scientific accuracy
  - ▣ Pedagogic effectiveness
  - ▣ Technical quality / Ease of use
  - 6-12 questions for each category, overall rating in rubric format, comment box for annotations
  - Questions help to consider all relevant aspects for each category and lead to overall rating
  - No quantitative, only qualitative recommendation (low – medium – high priority)

# Review: Scientific accuracy

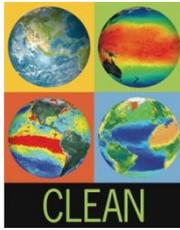


- Considerations for initial science review
  - Solid, current science
  - Original data cited and data from a quality source
  - Attribution
  - Valid concepts
  - Supporting references

# Review: Pedagogic effectiveness



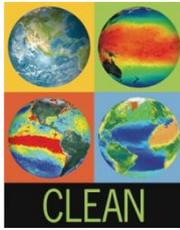
- Considerations for pedagogic review
  - Learning objectives
  - Accommodates diverse learners (learning styles, language, cultural diversity)
  - Prerequisite skills and understandings
  - Assessment strategies
  - Engaging for students in subject and approach
  - Requires independent/inquiry-based thinking



# Review: Technical quality/ Usability

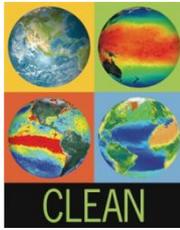
- Considerations for technical/usability review
  - ▣ Ready for use, stands on its own
  - ▣ Clear presentation of content
  - ▣ Software/Tools/Resources commonly found in classroom
  - ▣ Amount of necessary guidance for students by instructor
  - ▣ Offers comprehensive guide for instructor
  - ▣ Digitally available resource

# Expert science review



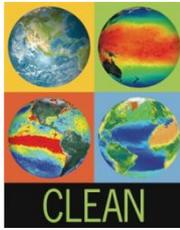
- External expert with PhD in relevant field reviews scientific quality and accuracy of resource
- Activity already passed lower level science review (75 % of resources that passed the CLEAN review were rated scientifically excellent by experts)
- Limitation/Challenge:
  - ▣ Grade-level appropriate science
  - ▣ Difficult to find scientists with enough time

# Panel review

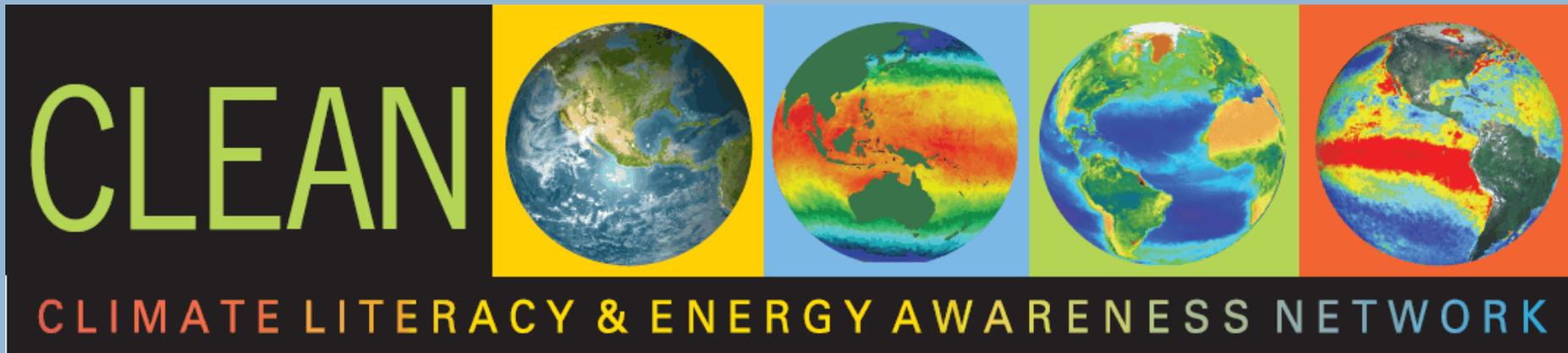


- Based on NSF-panel review system and AccessData Workshops
- Panel provides the necessary range of expertise
- Teams of 4 educators and scientists review each teaching material based on prior reviews, final decision about inclusion in collection
- Comments of all reviewers are compiled into annotation which includes teaching tips

# Annotations



- All reviewer comments, suggestions and tips are combined in notes to users (annotations)
- Annotation draft reviewed during review panels, final clean-up during cataloging process
- Annotations add considerable value, insight from scientists or experienced educators



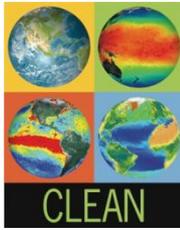
Demo on CLEAN Website

<http://www.cleantet.org>

Example CLEAN Resource with Review Annotations

<http://cleantet.org/resources/41851.html>

# Detailed Review Criteria



Details about the CLEAN review process:

<http://cleanet.org/clean/about/review.html>

Link to Initial Vetting Questionnaire:

[http://cleanet.org/files/clean/about/clean\\_vetting\\_questionnaire.pdf](http://cleanet.org/files/clean/about/clean_vetting_questionnaire.pdf)

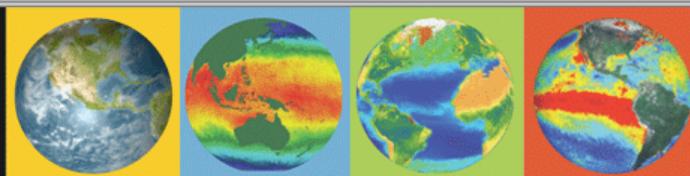
Link to Review Questionnaire:

[http://cleanet.org/files/clean/about/clean\\_review\\_questionnaire.pdf](http://cleanet.org/files/clean/about/clean_review_questionnaire.pdf)

Link to Expert Science Review Questionnaire:

[http://cleanet.org/files/clean/about/clean\\_science\\_review\\_questionn.pdf](http://cleanet.org/files/clean/about/clean_science_review_questionn.pdf)

# CLEAN



## CLIMATE LITERACY & ENERGY AWARENESS NETWORK

Welcome to the Climate Literacy and Energy Awareness Network. Explore our reviewed collection of educational resources. Learn how you can build your students' understanding of the core ideas in climate and energy science.

### Teaching Climate Literacy and Energy Awareness

How do we develop climate literacy and energy awareness in our students? A set of essential principles frame the key science and teaching strategies. Learn more about these principles and how they can inform your teaching.

### Browse the Reviewed Educational Resources

This hand-picked collection of teaching activities includes materials for middle and high school students as well as undergraduate classrooms. Learn [how we select materials](#) that are both scientifically sound and pedagogically effective.

### Join the CLEAN Community

Meet your colleagues, join discussions, comment on educational resources, become a CLEAN reviewer, join the CLEAN announcement email list, or join the active Climate Literacy Network.



### Featured Resource: Graphing the Extent of Sea Ice in the Arctic and Antarctic

This activity from Windows to the Universe focuses on measuring sea ice extent in both the Arctic and Antarctic, starting by forming a hypothesis on the variability of sea ice, testing the hypothesis by graphing real data, and finishing with a discussion of results and predictions. [Discuss this activity.](#)

### About this Project

The CLEAN project, a part of the National Science Digital Library, provides a reviewed collection of resources coupled with the tools to enable an online community to share and discuss teaching about climate and energy science.

### Call for Teaching Materials

Know of an excellent activity that address the principles of climate literacy? Please let us know.

**CLEAN collection: [cleanet.org](http://cleanet.org)**