

Weather and Climate Resources



Anonymous. (March 2009) "Making Connections in earth Science Using Local Data. *Science Scope*. V. 32:No. 7. pp. 63-67. (A helpful guide for incorporating local weather and environmental data into classroom investigations.)

Berman, Sally. (2008) *Thinking Strategies for Science*. Thousand Oaks, Ca.: Corwin Press. (A collection of a variety of reading, writing and questioning strategies to promote student thinking skills)

Bintz, J., Hand, F., & Norton-Meier, L. (2009) *Negotiating Science: Critical Role of Argument in Science Inquiry*. Portsmouth, NH: Heinemann. (Leading you through an argument-based approach to science writing, grounded in highly effective practices, this book demonstrates what good science arguments look like through student samples, models and supports top-notch instruction and teaching tools adaptable in any classroom)

Classroom Connections (2008)

<http://www3.vpt.org/pdfs/emergingscience/season1/teachersguide.pdf>
http://www.vpt.org/programs/emergingscience_resources.html

Climate change and Biodiversity

<http://www.unep-wcmc.org/climate/impacts.aspx>

Climate Literacy—The Essential Principles of Climate Sciences. Second Version: March 2009. <http://www.globalchange.gov/resources/educators> (The most current compilation of Climate Literacy goals)

Duncan, Susan et al. 2006. "Engaging Ecosystems." *Science Scope*. V. 29: No. 5. pp. 28-31 (A series of activities for grades 6-8 addressing global and environmental issues)

Eichman, Julia C. and Brown, Jeff A. 1994. "Global Warming". *The Science Teacher*. V. 61:No. 4 pp. 24-28. (An interesting description of a classroom activity that investigates atmospheric CO₂ levels—contains very useful data sets)

Environmental Literacy Council and NSTA. (2007). *Global Climate Change*. Arlington: Va. : NSTA Press. (A primer that provides basic background information on climate change for teachers and students.)

Emerging Science Video Episode 2--Weather and Climate Change

http://www.vpt.org/programs/emergingscience_episodes.html (A series of 30-minute VPT science episodes and 7-12 classroom activities)

Fulwiler, B.R. (2007) *Writing in Science: Scaffold Instruction to Support Learning*.

Portsmouth, NH: Heinemann. (In the science classroom writing is much more than an exercise for students to document their steps during an investigation. It is an important vehicle for describing their thought processes and the evidence that supports their reasoning. Writing in Science shows how to encourage students to grow as scientists and writers by moving beyond recounting how they do their work and toward explaining what they have learned.)

Gallas, K. (1995) *Talking Their Way into Science*. New York, New York: Teachers College Press. (Provides insights about how elementary students think and talk about science. It provides a window into the children's thinking about the world, enabling the reader to see how students build complex theories, identify important questions and begin to enter the world of science.)

Global Climate Change (Article giving background (and graphs) on global climate change)
http://www.ucar.edu/learn/1_4_1.htm

Hammer, D., & VanZee, E. (2006). *Seeing the Science in the Children's Thinking*. Portsmouth, NH: Heinemann. (Observing and listening to children while they inquire into the physical sciences is difficult. There is much to see and hear, but unless you know what to look and listen for, you might only see a noisy blur of activity. *Seeing the Science in Children's Thinking* is a field guide to the science classroom with authentic examples presented in written and video form.)

Hammerman, E. (2009) *Formative Assessment Strategies Enhanced Learning in Science K-8*. Thousand Oaks, Ca.: Corwin Press. (This research-based book demonstrates how student-centered assessment helps students assume more responsibility for what and how they learn. Teachers can use various models of formative assessment to monitor student progress and evaluate learning. The author guides readers through discussions, 'thought and reflection' activities, analyses of assessment techniques, and applications to classroom practice.)

Hand, B., Wise, K., Hockenberry, L., & Norton-Meier, L. (2008) *Questions, Claims, Evidence: The Important Place of Argumentation in Children's Science Writing*. Arlington, Va.: NSTA Press. (Immerses students in scientific inquiry and writing. It transforms experiments from following directions and taking notes into chances to pose and answer questions that interest students.)

Hapgood, Susanna and Palincsar, Annemarie S. Dec 2006/Jan 2007. "Where Literacy and Science Intersect." *Educational Leadership*. Vol. 64:No. 4. pp. 56-60. (An article rich with resources to support student thinking through classroom writing activities)

Harlan, W. (2001) *Primary Science: Taking the Plunge*. Portsmouth, NH: Heinemann.

Heartland Area Educational Agency -- curriculum search database
<http://currweb.aea11.k12.ia.us:8080/URLCurriculumpage/Science.html> (Sample classroom activities)

Keeley, P. (2005) *Science Curriculum Topic Study* Thousand Oaks, Ca.: Corwin Press (A valuable content resource to use when developing science curriculum)

Keeley, P. (2005). *Uncovering Student Ideas in Science Vol 1: 25 Formative Assessment Probes*. Arlington, Va.: NSTA Press. (Brief assessment activities that uncover student thinking about core science topics.)

Keeley, P. (2007). *Uncovering Student Ideas in Science Vol 2: 25 Formative Assessment Probes*. Arlington, Va.: NSTA Press. (More brief assessment activities that uncover student thinking about core science topics.)

Keeley, P. (2008). *Uncovering Student Ideas in Science Vol 3: 25 Formative Assessment Probes*. Arlington, Va.: NSTA Press. (Even more brief assessment activities that uncover student thinking about core science topics.)

Keeley, P. (2009). *Uncovering Student Ideas in Science Vol 4: 25 Formative Assessment Probes*. Arlington, Va.: NSTA Press. (The latest assessment activities that uncover student thinking about core science topics.)

Keeley, P. 2008. *Science-Formative Assessment: 75 Practical Strategies for linking Assessment, Instruction, and Learning*. Thousand Oaks, Ca.: Corwin Press. (A versatile classic in formative assessment techniques that can be applied to any content area.)

Keller, J. David. November 1994. "Investigating Carbon Dioxide." *The Science Teacher*. Vol. 61: No. 8. Pp.18-21. (An adaptable high school CO₂ activity, including data set)

Kids Green (Climate literacy site that might work for younger grades)
http://www.kidsrgreen.org/Space_ship/cc_march_08.htm

Klentschy, M. (2008). *Using Science Notebooks in the Elementary Classrooms*. Arlington, Va.: NSTA Press. (Connecting language arts to writing through expository writing, the book presents proven techniques, such as scaffolds, sentence starters, discussion starters, and other writing prompts to encourage students to build on current knowledge. Every step of the process is examined: introducing notebook writing to the class, creating questions to explore, making predictions, recording observations, making and defending claims, and using the notebooks to provide targeted student feedback.)

Klentschy, M. & Thomas, L. (2008). *Scaffolding Science Inquiry Through Lesson Design*. Portsmouth, NH: Corwin Press. (Klentschy and Thompson have created a way to scaffold your students with science notebooks and classroom discussions. They provide many graphic organizers and lesson planning templates to help teaches get started.)

Konicek-Moran, R. (2007). *Everyday Mysteries: Inquiry-Based Teaching*. Arlington, Va.: NSTA Press. (Each mystery creates opportunities for students to create questions, form hypotheses, test their ideas and come up with explanations. Focused on concepts, such as, periodic motion, thermodynamics, temperature and energy, and sound, these mysteries draw students into stories by grounding them in familiar experiences, providing them with a foundation for classroom discussion, and inquiry.)

Konicek-Moran, R. (2009). *More Everyday Mysteries*. Arlington, Va.: NSTA. (Focused on concepts, such as weather and climate, thermodynamics, interdependence of living things, adaptation, life cycles, properties of matter, reflection and refraction, and chemical bonds, these mysteries draw students into the stories by grounding them in familiar experiences, providing them with a foundation for classroom discussion, and inquiry.)

Michaels, Sarah; Shouse, Andrew; and Schweingruber, Heidi. (2008) *Ready, Set, SCIENCE—Putting Research to Work in K-8 Science Classrooms*. National Research Council. Washington: D.C. (An invaluable book, designed for educational practitioners to support effective classroom science instruction)

Norton-Meier, Lori, et al. (2008) *Questions, Claims and Evidence: The Important Place of Argument in Children's Science Writing*. Arlington, Va.: NSTA Press. (A useful approach to problem-solving and discussion for the science classroom.)

NOAA Climate Change (A rich climate information resource site)

<http://www.ncdc.noaa.gov/paleo/globalwarming/paleo.html>

AND

<http://www.ncdc.noaa.gov/paleo/globalwarming/climate.html>

NOAA Abrupt Climate Change (Another reputable climate information site)

<http://www.ncdc.noaa.gov/paleo/ctl/clisci10k.html>

NSF Climate Change (More information on climate)

http://www.nsf.gov/news/special_reports/climate/intro_video_degree1.jsp

NOAA Climate Resource Page (A source of many links for classroom materials)

<http://www.globalchange.gov/resources/educators>

Oates-Bockenstedt and Oates, Michael. 2008. *Earth Science Success—50 Lesson Plans for Grades 6-9*. Arlington, Va.: NSTA Press. (A compilation of classroom activities addressing Inquiry, physical Science, Earth Science and Technology. Each activity includes probing questions to help each student personally connect with content.)

Ocean Tides (An article on the Ocean's influence on climate)

<http://edition.cnn.com/2000/NATURE/03/27/ocean.tides.enn/>

Orgill, MaryKay and Thomas, Megan. 2007. "Analogies and the E Model." *The Science Teacher*. V. 74:No. 1. pp. 40-45 (Suggestions for classroom use of the five E's)

TERC Website (Another site with basic climate information)

http://www.classzone.com/books/earth_science/terc/content/investigations/es2101/es2101page01.cfm?chapter_no=investigation

Team, N.E. (2009, January 28). NOAA Education Page (Lessons and other resources). Retrieved July 9, 2009 from NOAA website <http://www.education.noaa.gov/html>

The National Academies 2008. *Understanding and Responding to Climate Change*. Washington, DC: National Academies Press. (A 24-page booklet that provides a strong informational overview of climate change for middle and high school readers.)
<http://dels.nas.edu/climatechange/understanding-climate-change.shtml>

Tierney, Bob and Dorroh, John. 2004. *How to Write to Learn Science 2nd ed.* Arlington, Va. :NSTA Press. (Some cogent thoughts and useful ideas from a former high school science teacher who has served as a consultant for the national Writing Project since 1980.)

Weather Activities (A variety of PK-12 classroom climate activities and games)

<http://scijinks.jpl.nasa.gov/weather/fun/wwa/index.shtml#>

AND

<http://scijinks.jpl.nasa.gov/weather/fun/challenge/> Games

Wright, Russell G. 2005. *Global Warming? An Event-based Science Module*. Boston, MA: Pearson-Prentice Hall. (A series of articles from current periodicals that each address an aspect of climate change. This is a NASA sponsored project.)

Zike, Dinah 2004. *Dinah Zike's Big Book of Science (7-12)*. San Antonio, TX:Dinah-Might Adventures. (A wonderfully useful resource for developing 'foldables' specific to any science content area.) www.dinah.com

Zmach, Courtney C., et al. Dec 2006/Jan 2007. "Infusing reading into Science Learning. " *Educational Leadership*. Vol. 64: No. 4. pp. 62-66. (A classic article reiterating the importance of reading in the science classroom)

