# Using Data in the Classroom

Cathyrn A. Manduca, Sean Fox, Ellen Iverson-Science Education Resource Center, Carleton College
David W. Mogk, Montana State University

Creating resources that bring scientific data into teaching requires both readily accesible data in useful formats and excellent teaching. The Using Data in the Classroom portal addresses both sides of this equation providing resources for faculty and developers while encouraging interaction between these groups.

## A Portal for Educators & Developers

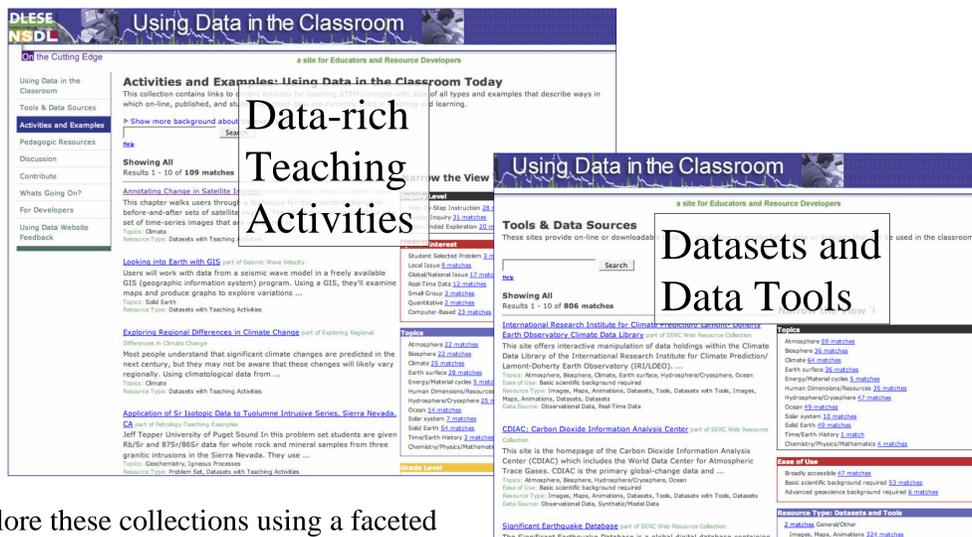**A bridge between raw data-rich material and polished educational resources**

**RESOLUTION** from the DLESE Data Access Working Group

To facilitate DLESE as a place where participants with varying expertise can work together to create finished products that will ultimately become part of the collection, DLESE should provide a clearly-identified repository for production materials -- including data, metadata, draft educational modules as well as analysis and visualization tools that are under development.

To avoid frustration on the part of DLESE users seeking finished, reviewed educational products, this production environment should be clearly identified as such.

The DAWG will move forward on this by implementing a prototype of such a system on the "Using Data in the Classroom" portal,

Building on work from the *Data, Visualization, Models* strand at the DLESE annual meeting the DLESE Data Access Working Group has pulled together this list that developers may use to assess their resources and help guide future development.

**Helping developers understand what educators need**

### Criteria for Data Sites that Support Effective Educational Use
(compiled by the DLESE Data Access Working Group)

*Data site allows educators and students to find and access appropriate data of interest easily.*
• Level of prerequisite knowledge for use is clear
• Interface is well-designed to support querying to answer applicable scientific questions
• Semantically transparent metadata enable data discovery

*Data site allows educators and students to ascertain the quality of data and determine the impact of data quality on the certainty of their conclusions.*
• The data site is presented in such a way that an educator will likely draw correct conclusions about its accuracy/limitations.
• Information is provided about overall data collection, quality, reduction, and limitations. Data site includes sources of error and limitations of collection process as well as inaccuracies/uncertainties from models/ particular choice of representations.
• Information about accuracy of individual data sets/points/analyses is provided

*Data site supports students ability to manipulate data to answer questions*
• By using data contained within the site
• By combining data within the site with data from other sites
• By generating appropriate visualizations
• By comparing student's own data to that in the site
*Use of the dataset by non-experts is supported*
• Information is provided on relevance of data to problems of significance
• Support for effective pedagogic use
*Robustness of access*
• Data and software needed for use are reliably available
• Tools needed for access and use are easily acquired and inexpensive
• Tools are reliable and easy to use
• Data are archived appropriately for persistent access

**Searchable collections**



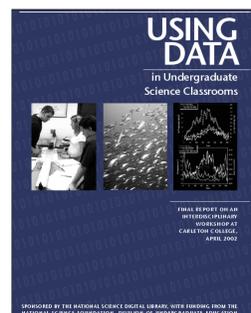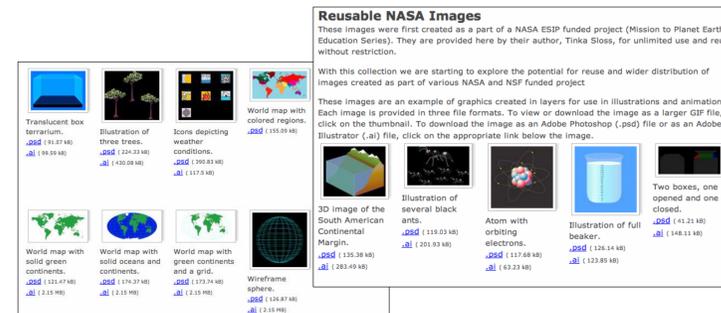Data-rich Teaching Activities

Datasets and Data Tools

Educators explore these collections using a faceted search tool described in more detail on the poster:
**Exploring Multi-Faceted Search in Specialized Collections**



Reusable NASA Images

**Exploring visual materials collections**

## Using Data in Undergraduate Science Classrooms Report

Drawn from an NSDL workshop held in 2002 this report addresses:
- What do we mean by data?
- Why is using data important?
- How do we do it?
- What do we know about how well this works?
- What are the implications for digital libraries and data providers ?



### We Need Your Feedback

Whether you're an educators or developer we need your feedback to improve our site. Contribute a teaching activity, suggest a useful data site, let us know how the search tools worked for you--share your insights with us and the community. Contributions and feedback can be made directly on the site at:
http://serc.carleton.edu/usingdata/website_eval.html and
http://serc.carleton.edu/usingdata/contribute.html

http://serc.carleton.edu/usingdata/