

# Making Data Visible: Data Citation Policy and Implementation at NCAR

Matthew S. Mayernik, Karon Kelly, Mary Marlino, & Mike Wright

National Center for Atmospheric Research (NCAR), University Corporation for Atmospheric Research (UCAR), Boulder, Colorado, USA

## Interest in data citations at many levels

- Funding agency workshops and reports
- Professional society statements (AGU and AMS)
- Research organization recommendations (ESIP and DCC)

## Numerous motivations for data citations

1. Give researchers and data archives credit for their work in collecting and creating data
2. Track the use of data sets over time, and their derivative research products (e.g. publications, tools, and other data sets)
3. Enable easier data discovery, access, and use by bringing data and their resultant publications closer together
4. Make science and data more transparent

## Data citation impediments

- Researchers typically do not cite data, but use acknowledgements or in-text attribution instead
- Overcoming inertia: scientists may not...
  - know that they are asked to cite data
  - know how to cite data
  - know that they have data to cite
  - be willing to spend time creating data citations
- What does "peer review" mean with data?

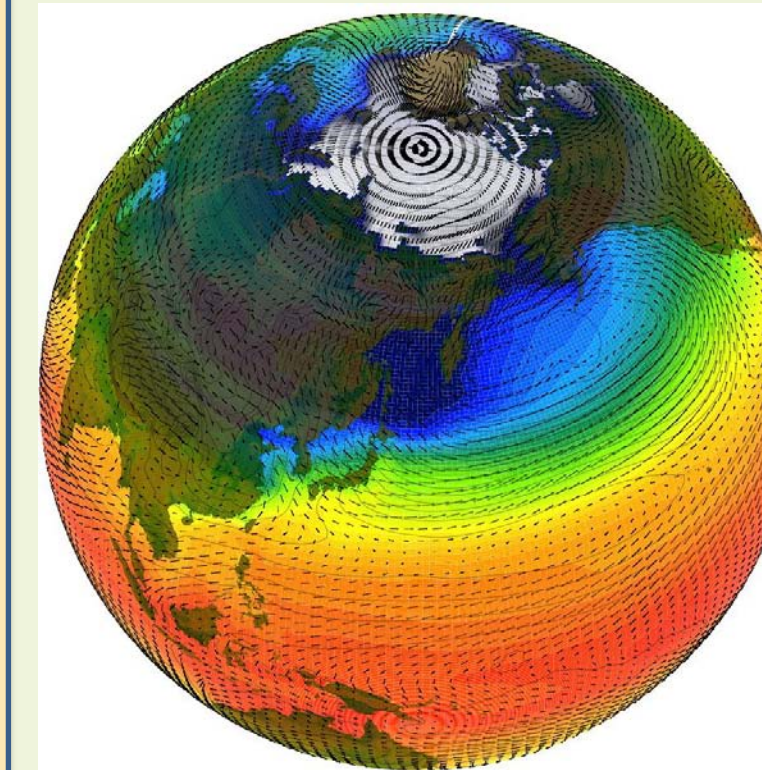
## Digital Object Identifiers (DOIs) for data

- At what granularity should data be assigned DOIs?
- At what point in the data workflow should a DOI be assigned?
- How should DOIs be assigned to continuously changing data sets? When does a data set change enough to merit a new DOI assignment?
- Who "owns" DOIs? Who assigns and maintains DOIs in inter-institutional research projects?

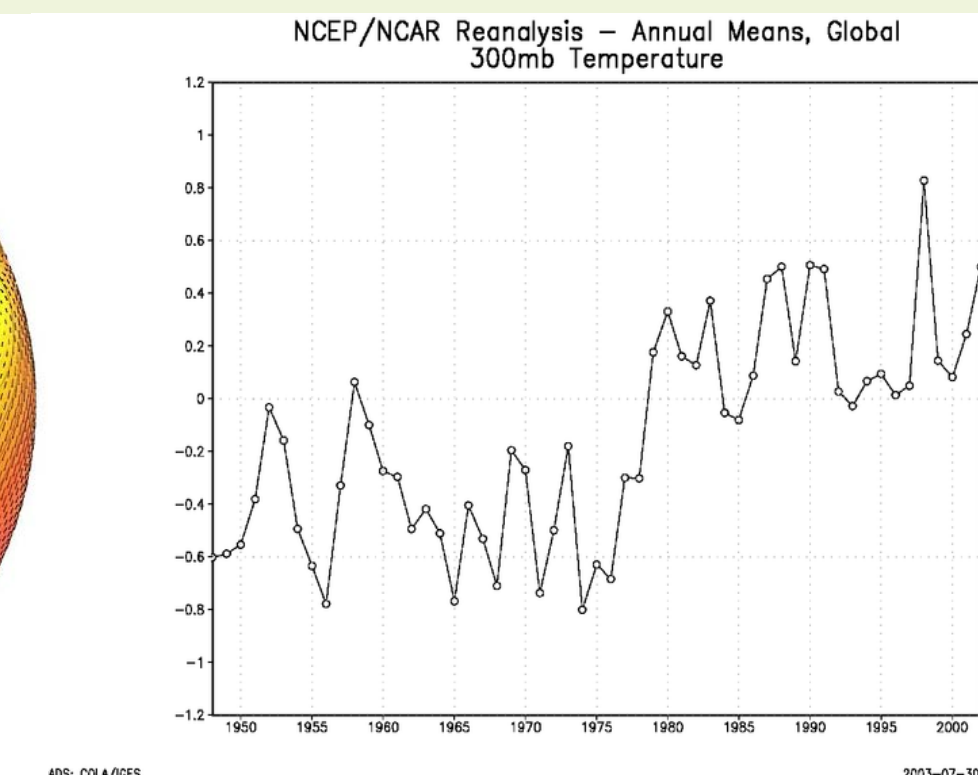
## Recommended data citation

▶ *Author. Release date. Title. Archive/Provider. Locator/Identifier. Data access date.*

## Types of data archives at NCAR



Climate model  
output data



Observational  
time-series data



Data from  
field studies

## Outreach

Buy-in from data managers  
Presentations to NCAR administration  
White paper on data citations  
Presentations to individual labs

## Challenges

How to find and count data citations?  
How to encourage institutional acceptance?  
How to build services to include data that are not currently archived?

## Policies

Who can assign DOIs  
What data should be assigned DOIs  
How to address granularity and versioning  
How to assign and maintain DOIs in collaborative projects

## Flexible citation recommendations

Many different kinds of data  
Many different journal citation formats



# Overview of the Curriculum Customization Service

PERSONALIZING INSTRUCTION TO ACHIEVE LEARNING GOALS

Tamara Sumner<sup>1</sup>, Holly Devaul<sup>2</sup>, Manuel Gerardo Saldivar<sup>1</sup>  
Lynne Davis<sup>2</sup>, John Weatherly<sup>2</sup>

<sup>1</sup>University of Colorado, Boulder

<sup>2</sup>Digital Learning Sciences and NSDL,  
University Corporation for Atmospheric Research



The Curriculum Customization Service (CCS) is a structured online environment for teachers to plan, manage and tailor their classroom instruction while:

- Adhering to district curriculum guidelines
- Collaborating to build and share professional expertise

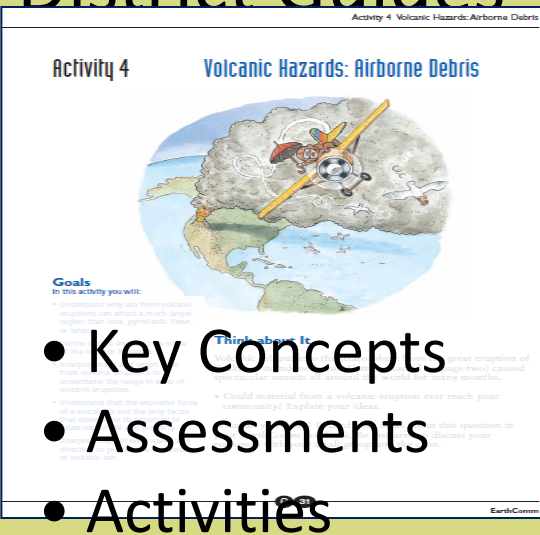
## “Under the hood”

Denver Public Schools  
Curriculum  
User Interface

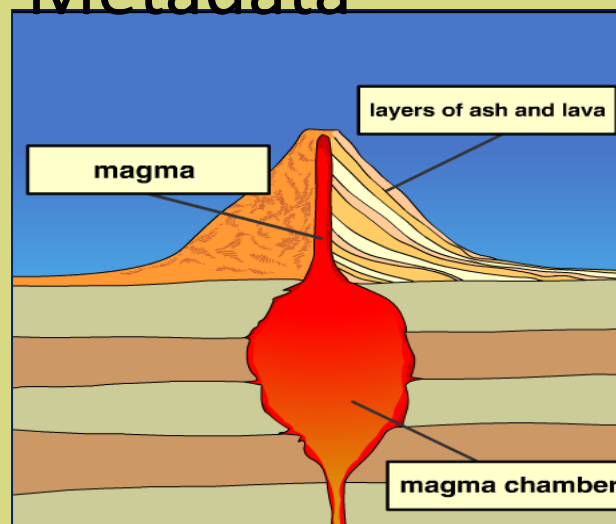
Other  
Curricula  
Interfaces

## Curriculum Customization Service Middleware

### Curriculum & District Guides



### Resource Metadata



### Searching

 Search

### Tagging

All resources

ELA  
GT  
Extension  
Math skills

At grade level 9  
Above grade level 9  
Below grade level 9

5-15 min.  
15-45 min.  
45-90 min.  
90+ min.

### Rating

Rating: ★ ★ ★ ★ ★

NSDL  
Collection  
System  
(NCS)  
manages

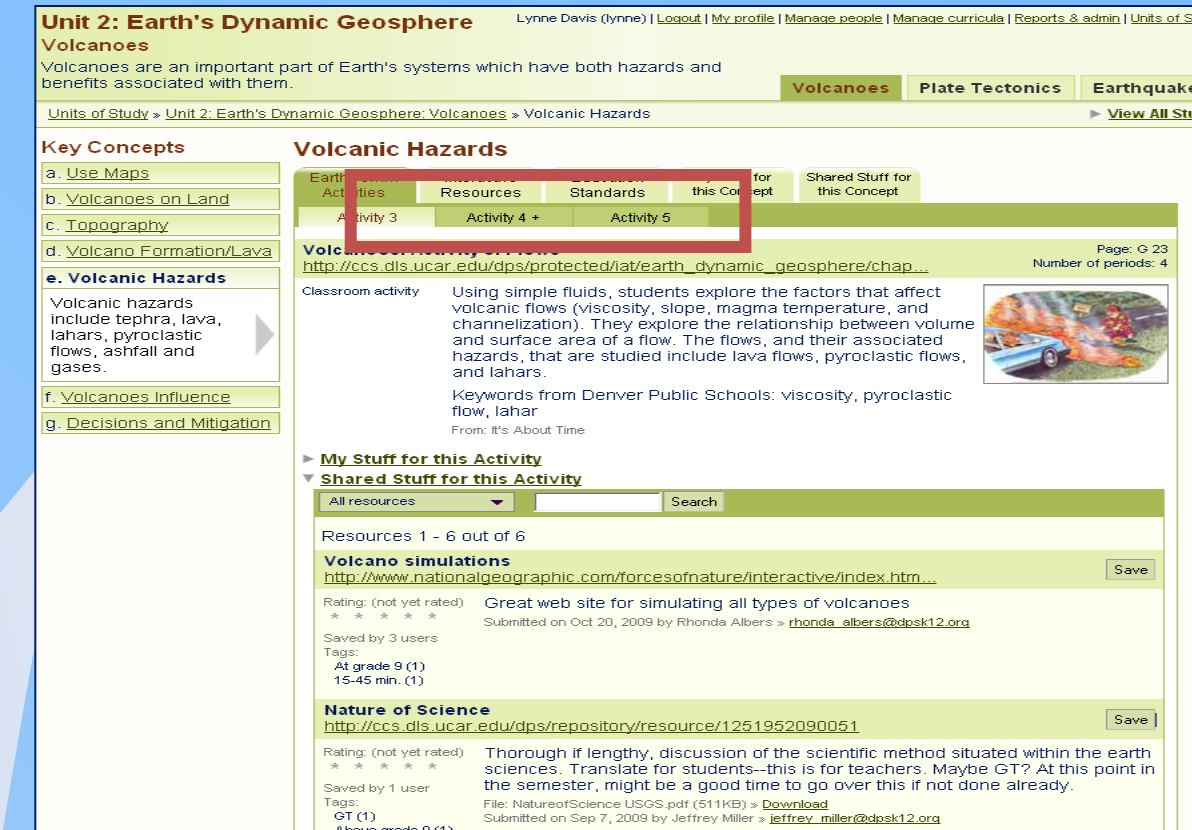
Curricula,  
Customizations  
& Information  
Model

NSDL  
Search  
Services

Strand  
Map  
Service  
(SMS)

## “Using the tool”

### CURRICULAR CONTENT

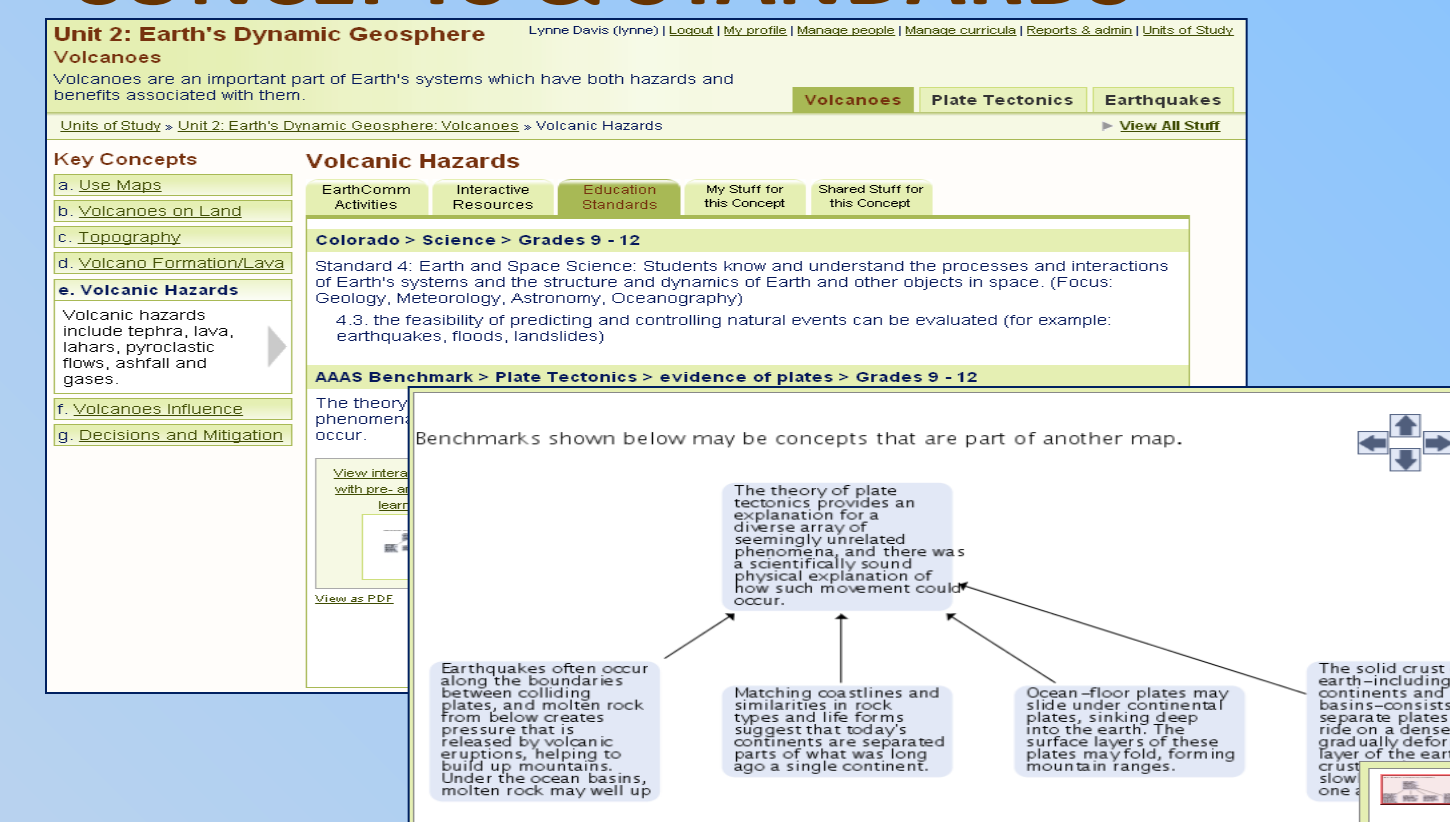


### INTERACTIVE ONLINE

### RESOURCES



### CONCEPTS & STANDARDS

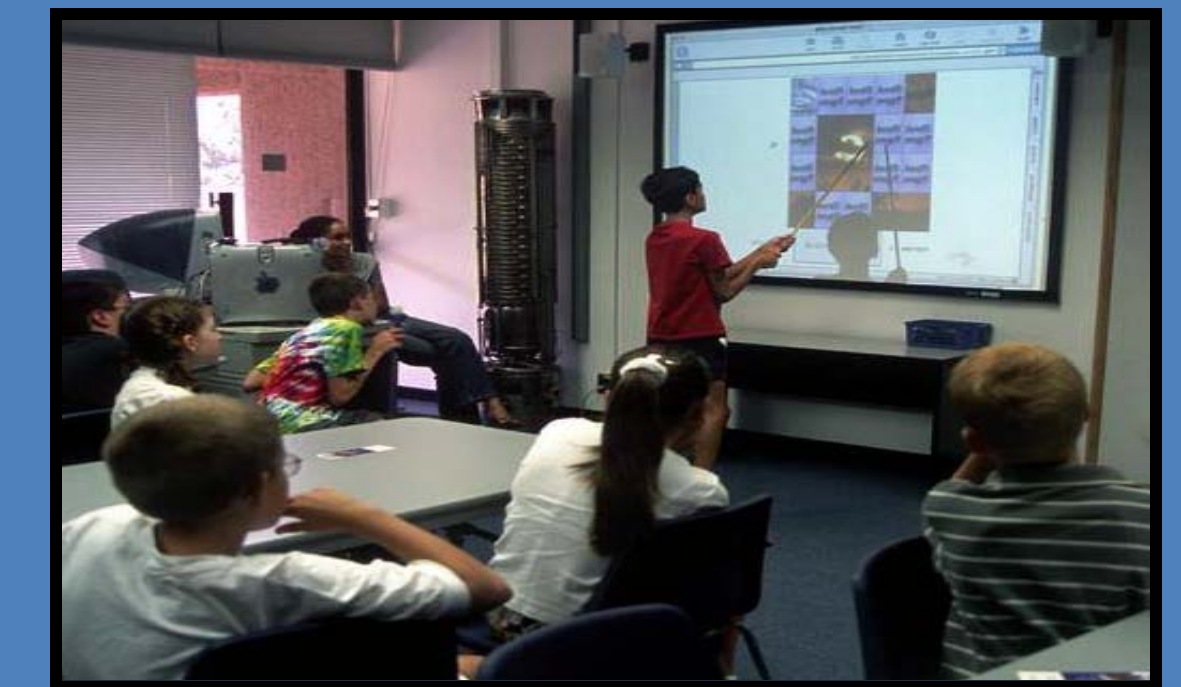


### PERSONAL, SHARED, & TAGGED RESOURCES



## “In the wild”

A field trial, Fall 2009



How do teachers use the Curriculum Customization Service (CCS)

What is the influence and impact of the CCS on teachers' beliefs, practices and knowledge and student learning.

Middle and High School teachers

### Assessment methods:

Usage logs

Surveys (pre and post use)

Content analysis of resources selected and personal and collaborative markup

Interviews – teacher knowledge organization and CCS adoption

Classroom observations

EarthComm  
Activities

Interactive  
Resources

Education  
Standards

My Stuff for  
this Concept

Shared Stuff for  
this Concept