Digital Library for Earth System Education: 
A Geoscience Community Resource

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“A Library outranks any other one thing a community can do to benefit its people.”
Andrew Carnegie
Overview

■ Community motivations for an Earth system education digital library
■ DLESE vision and progress to date
■ Funding outlook and future plans
The Educational Challenge

Recommendations for Geoscience education reform

- Earth system perspective
- Focus on active, inquiry-based methods and “doing science”
- Integration of research and education
- New understandings of learning theory, pedagogy, and technological possibilities
The Classroom Challenge

- Educators need help in implementing reforms
- Educators have difficulty finding quality resources with confidence
  - Scientifically sound
  - Pedagogically appropriate
  - “Just in time”
  - Incorporating data into classroom activities
- School libraries are under-funded
- The WWW is not organized to accommodate these needs
- Search engines yield large numbers of confusing, inappropriate, and inaccurate results
The DLESE Vision

- Easy access to collections of high-quality, *peer-reviewed* teaching and learning resources
- Interfaces and tools to allow student exploration of Earth data
- Services to help users effectively create and use materials
- A community center that fosters interaction, collaboration and sharing
Discovering Resources

- Discovery only for resources related to Earth system science
- Resources in DLESE are selected and cataloged by the ESS education community
- Resources are described in metadata records that enhance discovery and comprehension of the items
More than a Search Engine

- Access
- Pedagogy
- Accuracy

When Lava Enters the Sea: Growth & Collapse of Lava Deltas
This web page uses photographs and illustrations of Kilauea Volcano, Hawaii, to illustrate the typical growth and collapse of lava deltas, fan-shaped platforms formed when pahoehoe lava enters the ocean for extended periods of time. The page also discusses the hazards associated with active lava deltas.

Grade Level: High school, General public, Middle school, Undergraduate lower division
Resource Type: Photograph, Scientific illustration
Subject: Natural hazards
View Full Description

When Magma Enters the Sea: Kilauea Volcano, Hawaii
This web page describes the progress of lava flow from an eruption of Masa Lava threatened by the ocean in 1984, the eruption beginning in Moku'aweapua'a, Kilauea Volcano (March 25), forming an eruptive channel, and lava flow entering the ocean for the first time (March 26). The page also discusses the hazards associated with active volcanic activity.

Grade Level: High school, General public, Middle school, Undergraduate lower division
Resource Type: Photograph, Scientific illustration
Subject: Natural hazards
View Full Description
Library Building Strategy

- Community owned and governed
  - Strategic Plan provides guidance for library direction, management, and sustainability
  - Distributed governance ensures broad representation, leadership development, and diversity of interests

- Distributed building process
  - Community-developed collections, services, and technology
  - Utilization of NSDL and other non-GEO resources

- Centralized program continuity
  - DLESE Program Center: creating and operating the technical infrastructure, providing support for distributed library builders
Steering and Standing Committees

Steering Committee
- Elizabeth Ambos (Chair) CSU Long Beach
- Bryan Aivazian, Natrona County School District, Casper, Wyoming
- Susan Avery, U of Colorado
- Barb DeFelice, Dartmouth
- Chris DiLeonardo, DeAnza CC
- David Fulker, Unidata/UCAR
- Mike Goodchild, UCSB
- Jim Hays, Columbia
- Don Johnson, U of Wisconsin
- John Snow, U of Oklahoma
- Robert Wilhelmson, U of Illinois
- Kate Wittenburg, EPIC

Standing Committees
- Users: Bill Prothero, UCSB
- Services: Mohan Ramamurthy, U of Illinois
- Collections: Kim Kastens, Columbia
- Technology: Tom Boyd, Colorado School of Mines
Partnerships

- Digital Library Infrastructure
  - UCSB — digital library technology, geographic metadata
  - San Diego Supercomputer Center — persistence
- Data Access
  - IRIS — seismic data from global networks
  - Unidata — real-time atmospheric & oceanic data
  - Cornell, Columbia, Geoinformatics
- Collections Development
  - Columbia, AGI, Dartmouth, Foothills CC — funded collections effort
  - NASA/ESSE — Earth System Science Education
  - Colorado State — K-12
  - National Academy Press, SCEC, AAAS
- Library Services and Evaluation
  - U Mich, CMU — user services
  - U Colorado — evaluation toolkit
- Total number of higher ed institutions = 125
  - UCAR Member institutions = 46
  - UCAR Affiliate institutions = 12
Applicants to Annual Meeting by Discipline
Applicants by Role
Future efforts: DPC Proposal Goals

- Develop an *operational infrastructure* that is *tailored to specific geoscience education needs*
- *Support community capacity building* by providing tools and services that enable development of high-quality resources
- Promote systemic educational change through the development of *innovative resource discovery* interfaces and services
- Promote overall *library awareness*
- Conduct ongoing *library operations*
- Support broad-based *community governance*
- Promote and support DLESE *diversity initiatives*
- Support distributed *library evaluations* of user experiences, collections and services, and effectiveness