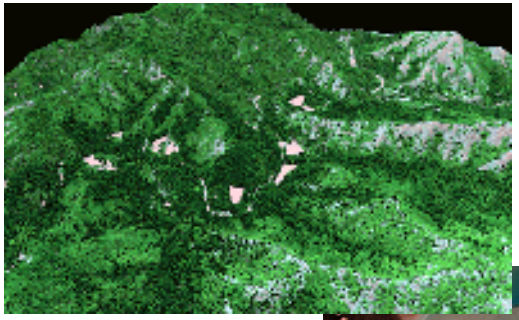
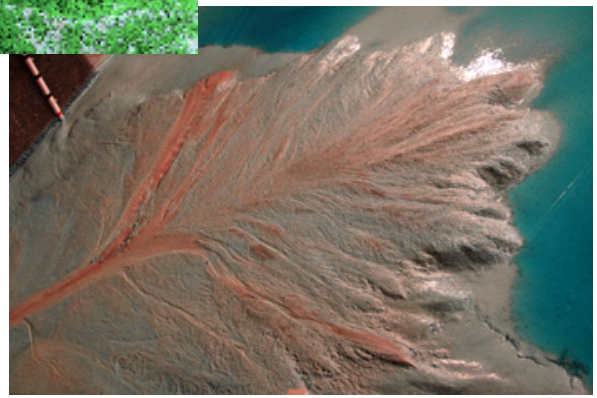
NCED's purpose is to predict the coupled dynamics and evolution of landscapes and their ecosystems, in order to transform management and restoration of the Earth-surface environment.

- Funded 2002
- Funded through 2012
- In Yr 7; begin ramp down
- NSF STC
  - SAHRA, etc.
- HQ; SAFL;
  - other institutions
- ***Originally*** Source to Sink
- Field ⇔ Lab ⇔ Model
  - Data Repository

- Research Integrative Projects
  - Desktop Watersheds
    - Bill Dietrich





  - Stream Restoration
    - Peter Wilcock
  - Subsurface Architecture
    - David Mohrig

Bring Earth-surface dynamics to life,

to educate a broad spectrum of learners

about dynamic nature of Earth's surface and

response to human activities

Graduate Student photo contest, 2006

Critical concepts:

Earth's surface IS the environment

Earth's surface is naturally dynamic

Landforms are clues to Earth's past & future dynamic evolution

Delta Basin run for Partner short course, St. Anthony Falls Laboratory, 2004

research *methods* to:

- develop public's awareness of landscape processes

- help policymakers make informed decisions

- motivate students to pursue diverse careers in science, engineering and management of landscapes

Graduate Student photo contest, 2006

NCED Education Initiative

Approach:

- Work intensively with the *Science Museum of Minnesota and other museums* to develop engaging new methods for information education centered on Earth-surface dynamics and environmental awareness.
- Enhance the education of *NCED students* by providing unique opportunities and an extended, cross-disciplinary peer and mentor network.
- Adapt research tools such as 3D visualization, wireless sensors, and laboratory experiments to provide *novel K-16 education tools*.
- Design programs to *engage science teachers* in NCED research in ways that allow them to bring this knowledge to their students.
- Expose students to the power of NCED's integrated, predictive approach to studying what the Earth's surface is doing and how it has evolved.
- Develop the tools necessary to assist educators in teaching Earth-surface science to students within formal and informal educational settings.

Programs

Graduate Education

- Grad student council
- Video conferences
- Cross-institution/discipline thesis committees
- International Research Experience
- Grad museum assistants
- IGERT
- SRES
- Short Courses
- E-CLIPS

Public Education

- BBY and SOS
- RainTable(s)
- Water: H2O=Life
- Future Earth Inititative
- Museums as ugrad with Kirkby (NSF CCLI)
- NSF Earth Science Literacy initiative

Grades 4-16 (*includes undergraduate*)

- River models and delta box
- Paul Morin textbooks and maps
- Work with YSC
- Montessori STEM and STEM ugrad minor with CSC
- Tours and visits that include experiments
- engage teachers (*including undergraduate faculty*) in NCED research through direct experiences and website
- ESTREAM interns
- SERC / Cutting Edge collaborations
- Marmot/Detla REU

OTHER:

- AGIC: Antarctic Geospatial Information Center

MEETING OF YOUNG RESEARCHERS IN EARTH SCIENCES

MYRES 2008: Dynamic Interactions of Life and its Landscape

Tulane University | New Orleans, LA | May 20-23, 2008

Long-standing paradigm:
physical processes sculpt a landscape and set the template for biological agents, which then act within the constraints of this template.

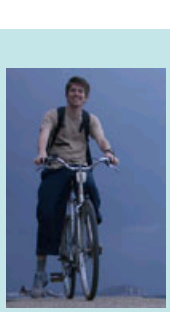
Current research:
potential two-way interactions between the landscape and ecology.

Pressing need:
a framework for examining feedbacks and modeling them

Solution:

- An organizing team of NCED alums
- ~80 young researchers from around the world and across disciplines
- a few select "OFs"
- Funding from NSF and NCED
- a week together in New Orleans to focus on micro—meso—macro--human

AND ……





Earthscapes Expo at MYRES 2008

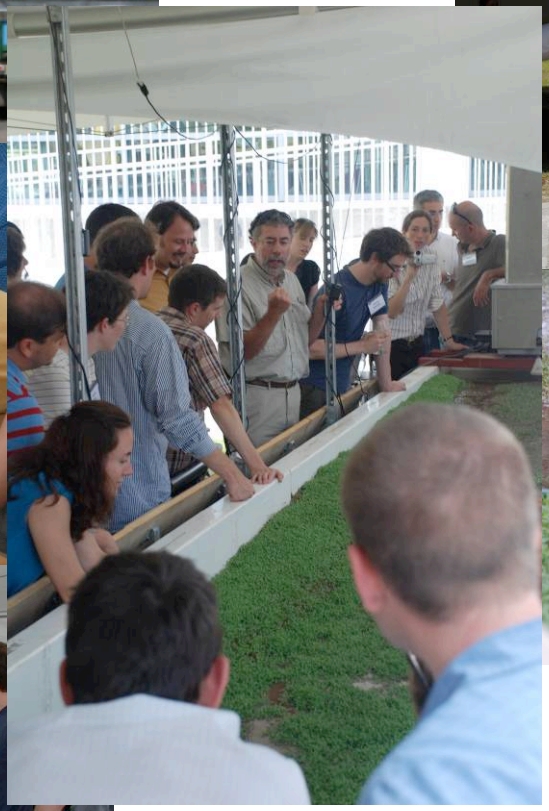
WHAT

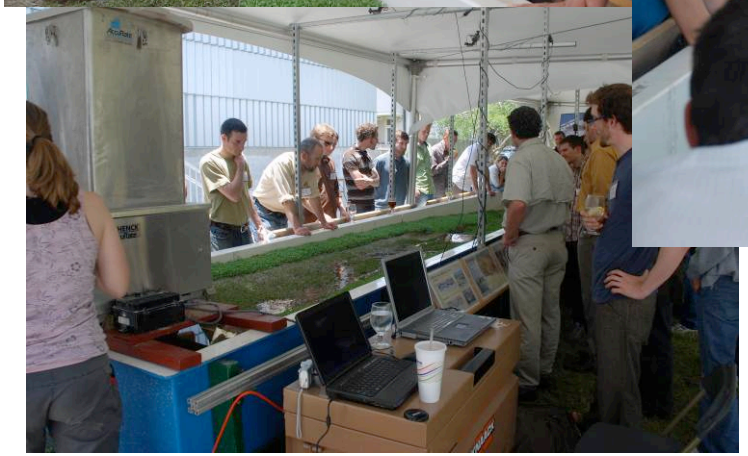
- 25 ft research flume demonstrating interactions of river morphology, vegetation and human perturbations
- Smaller flumes and stream tables (and plans for building them)
- Video from experiments

WHY

- Emphasize life and its landscape
- Demo use of experiments in integrative research
- Demo/discuss use of experiments in teaching
- Bring the field to the conference
- Provide an innovative forum for interdisciplinary discussion

MYRES





Public Education

Work with the Science Museum of Minnesota and other museums to develop engaging new methods for informal education centered on Earth-surface dynamics and environmental awareness

Big Back Yard and Earthscapes programs

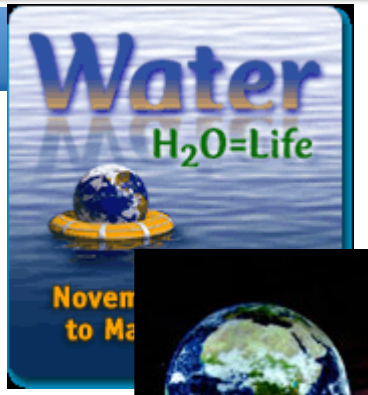
- Earthscapes Teacher Institute
- River Restoration Residency
- Earthscapes Park Crew
- Graduate Museum Assistants

Beyond Our Back Yard

- Smithsonian Folklife Festival
- River on the Road
- Water: H_2O=Life
- Future Earth
- Films

Water: H_2O = Life

AMERICAN MUSEUM & NATURAL HISTORY



Unprecedented partnership:

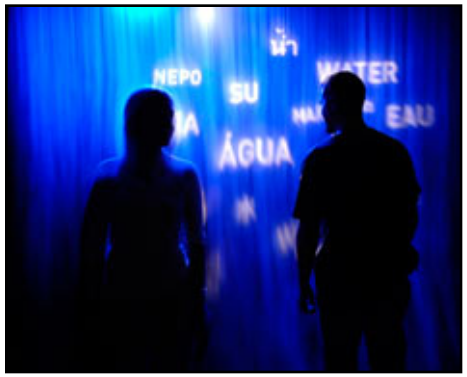
American Museum of Natural History / SMM

Opened Manhattan November 2007
350,000 Manhattan visitors

***International* tour 2008**

Concurrent *national* tour 2009

Colbert Report !



Knowledge Transfer

Stream Restoration

Partners Groups

PRRSUM

Short Courses

Regional Meetings

RRNW

new one in upper Midwest

Stream Restoration Networker

launch as a peer-review pub?

Joint Research:

Sandy River, OR
Trinity River Restoration

Desktop Watersheds

Joint projects

Stillwater Sciences

USFS Labs

Ripple

Subsurface Architecture

Industrial Consortium

Annual Meeting

Deep and Shallow Water shortcourses

Research exchange

Interns

Graduate placements