

LEARNING VISUALLY WITH HISTORIC "GEO-IMAGES"

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Public Outreach

See your town as it was 100 YEARS AGO!

Marvel at the damage wrought by the 1927 flood. Find pictures of long-vanished farms. View the Green Mountain state deerskin for sheep farming. See landfills, ice jams, mines, and quarries. Visit our collection and search thousands of Vermont images by place, by date, by topic!

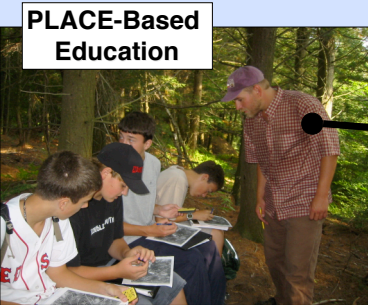
www.uvm.edu/perkins/landscape



Research Experience For Undergraduates

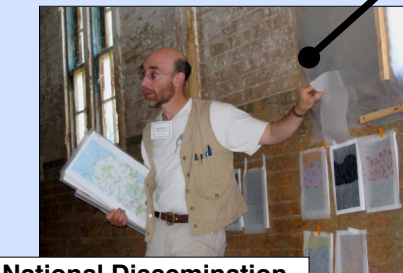


Science Research Using Images



Historic & modern images teach about RIVERS in these chapters:

- Why Rivers?
- Shapes
- Conveyers
- Interactions
- Changes



National Dissemination-- NSF (2006-2009)

Learning Landscapes-- NSF (2005-2007)

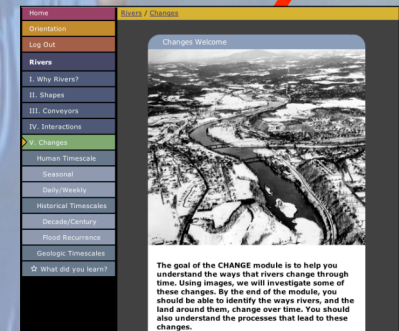
Unit #1 RIVERS

Coming Soon
Unit #2 SLOPES

Learning Landscapes

An NSF-supported educational website, Learning Landscapes uses 150 years of images to help students understand how Earth's surface works. Log in and join us on this virtual trip across Earth's amazing landscapes.

Developed at the University of Vermont



"Changes" introduces fluvial and geologic landscape change over multiple timescales.



www.uvm.edu/learninglandscapes



National Science Foundation
 DUE-0442488
 DUE-0525046



Rivers

change over many timescales...

seasonal

decadal

historical

millennial

Learning Landscapes



Seasonal

As summer transitions to fall, the hydrologic cycle changes and rivers and streams respond. By mid-fall, deciduous trees have dropped their leaves and photosynthesis, as well as the evapotranspiration that it induces, ceases. As a result, water tables rise because the trees no longer pump groundwater into the atmosphere. In New England, isolated warmer thunderstorms give way to cooling fall rains caused by slowly moving fronts and low pressure systems as the jet stream moves south.

You've probably noticed many images are of flooding in the fall. How can it be that major floods occur at a time of year when the water level is generally low and there is no melting snow pack? If the fall rains are frequent and the high water during winter, you will understand why you can't see quickly follow winter. This was the story in 1927, a wet October followed by 13 to 20 cm of rain in just a few days. Click here to see what the weather service saw about the 27 flood, the damage from which is still legendary.

Learning Landscapes



Flood Recurrence

Take a look at this photo of Bradford, Vermont in 1896. What are two different but related ways to measure the extent of the flood from this image?

Learning Landscapes



Flood Recurrence

Here's another image of flooding in Bradford - this time in 1913. Can you tell if the water level was higher in 1913 or 1896?

Learning Landscapes



Flood Recurrence

Here, finally, is a picture of Bradford in the flood of 1927. Are there any clues that would let you judge whether this flood was higher than the floods of 1913 or 1896?



Human Influence

In New England, people have been messing with rivers for centuries. Here is one of the earliest images of Hanover, Vermont's state capital. By 1821, when this etching was rendered, there had already been significant human impact on the riverine landscape. Look along the river channel and along the hill slopes. What's missing? Can you find two bridges, the mill, the canal? Take a look at the thumbnails to gain an understanding of how humans change rivers and riverside landscapes on timescales of decades to centuries.



Geologic

This oblique view is simulated from aerial photography and digital topographic information. Look in the center of the image. Can you find Camel's Hump to the right and the Whipple Bend in the center. Do you notice anything interesting about the north coast?

Learning with Historic "Geo-Images"

- Self-directed learning
- Before/after photo pairs
- Local places with people

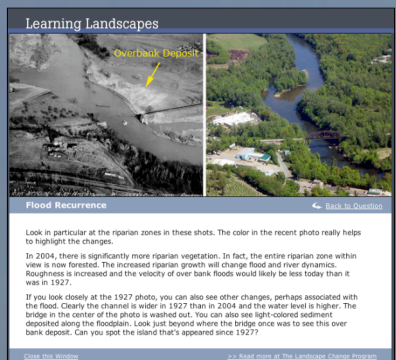
1. Question posed...



Flood Recurrence

These shots are the same view of the Winooksi River in Burlington, Vermont taken in 1927 and 2004. What changes have occurred in the 77 years between these two photos?

2. Image examined...



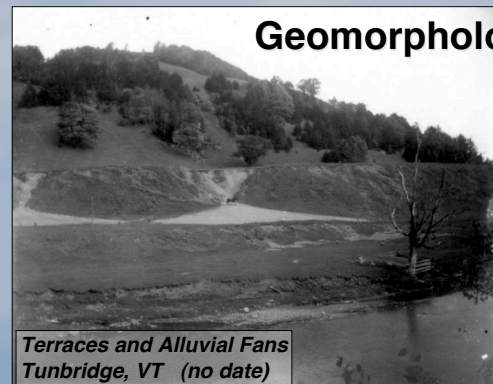
Flood Recurrence

Look in particular at the riparian zones in these shots. The color in the recent photo really helps to highlight the changes.

In 2004, there is significantly more riparian vegetation. In fact, the entire riparian zone within view is now forested. The increased riparian growth will change flood and river dynamics. Roughness is increased and the velocity of over bank floods would likely be less today than it was in 1927.

If you look closely at the 1927 photo, you can also see other changes, perhaps associated with the flood. Clearly the channel is wider in 1927 than in 2004 and the water level is higher. The bridge in the center of the photo is washed out. You can also see light-colored sediment deposited along the floodplain. Look just beyond where the bridge once was to see this over bank deposit. Can you spot the island that's appeared since 1927?

3. Question answered.



Terraces and Alluvial Fans
Tunbridge, VT (no date)

Learning Landscapes



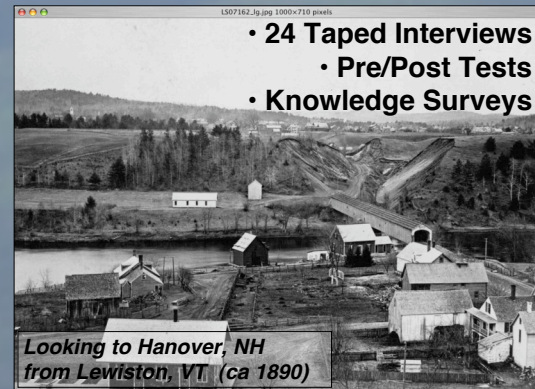
Recreation

How do you know these folks are ice skating on a river?

Engaging Images

Assessment Tools:

- 24 Taped Interviews
- Pre/Post Tests
- Knowledge Surveys



Looking to Hanover, NH
from Lewiston, VT (ca 1890)