

Short Course Proposal
Geological Society of America National Meeting, 2009
Portland, Oregon

Using and Developing Historical Image Archives to Investigate Landscape Change

Primary Proposer: Paul Bierman, Professor, University of Vermont, pbierman@uvm.edu

Co-sponsoring Divisions: Quaternary Geology and Geomorphology, Sedimentary Geology, Geoscience Education (pending), Hydrogeology (pending)

Description: Images, including photographs and drawings, provide a powerful means to document Earth's changing surface over timescales ranging from seconds to centuries. This course will show how images can be used to document a wide variety of Earth and environmental processes including human impacts on varied landscapes, the effect of warming climate on glaciers, and the response of hillslopes and stream channels to deforestation. You will learn the pitfalls and promises of building your own image collections as well as how to interest students of all ages in Earth Science by using historic images to study change over time. (98 words)

Audience and Level: We anticipate that the audience will be diverse consisting of university faculty and graduate students as well as K-12 educators. We expect few if any professionals to participate. We will teach the course at a level appropriate for educators and graduate students. Prior experiences with teaching some of this material in on-line undergraduate courses and in short public workshops suggests that because it is not highly technical, we will be able to communicate critical information successfully even if we have participants with a wide variety of backgrounds.

Short Course Goals: The short course has two overarching goals: 1.) Sharing the approach by which we have assembled an on-line digital archive of over 20,000 historic and reshot landscape images (<http://uvm.edu/landscape>). 2.) Providing examples of how a wide variety of digital image collections can be used for education and research relevant to Earth and Environmental Sciences. We will meet these goals through a combination of short topical lectures, guided exploration of our web ware, and a series of think/pair/share exercises in which participants are actively involved.

What people will learn: Participants will come away from the course with practical information they can use to do research and teach with images. They will understand the promises, pitfalls, and methods of creating their own digital image archives. We will have several presenters including: Geology Professor Bierman who will review the use of images in measuring rates and spatial distribution of surface change and the history of the NSF-funded *Landscape Change Program* (uvm.edu/landscape), Educator Massey who will describe and model the educational resources for image use we have worked with

teachers to develop, and staff member Russell who will provide details about image acquisition and archiving. Participants will become familiar with the open-source web-ware that we have developed for managing images at the University of Vermont (uvm.edu/landscape) as well as the techniques we use to identify image sources and acquire images. Those taking the short course will refine image description and key wording skills through active involvement working both alone and in small teams. Together we will examine paired imagery (where historic images have been re-shot by students, about 20% of our archive) and discuss the power of paired image analysis for documenting environmental and landscape change over time. We will use the course to build a network (through a UVM-sponsored list serve) of people interested in using historic imagery for research and teaching.

Number of participants: up to 40

Workshop Day/Time: In order to maximize participation and if possible to link the short course to a technical session proposed by Bierman, Massey, and Russell (Historic Imagery as a Tool for Earth and Environmental Science Research and Education), we request that the short course be run in a conference hotel late Monday afternoon and early Monday evening (4:00 to 7:30) toward the end of the technical sessions and before the alumni receptions. My experience from 22 consecutive GSA annual meetings is that this time frame tends to be one where little else is scheduled and thus we hope it will increase enrollment without adding the additional cost of participants arriving on Saturday. Prior experience teaching this material suggests to us that 3 to 3.5 hours will be sufficient to accomplish our goals.

Cost and Budget: The short course will be supported by funding we have from the National Science Foundation as part of a Distinguished Teaching Scholar award to Bierman. Given our NSF grant support, we intend for this course to have no net cost to participants although to discourage no-shows, we agree with the philosophy shared by GSA staff of charging a nominal fee that will be refunded for those who do attend the short course. We request no honorarium and will pay the overhead costs at the rate for faculty (\$750) from the NSF grant. Other costs we will cover using NSF support include heavy hors d'oeuvres or light dinner catering and room rental. We will supply our own projection computer and digital projector for use by presenters. We will ask participants to bring their own laptops and run an independent local wireless network to demonstrate our web ware; we will bring several laptops for those not able to bring their own. We will copy and bind our own short course notes, which will include all of the standard operating procedures for our program as well as the short course PowerPoint slides, exercises, and educational materials (for K-12 and university use). We will also make the notes available as a PDF at uvm.edu/landscape.