Development of a Digital Directory of Field Trip Localities in the Southern Appalachians Based on Guidebooks from Geological Societies

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Field trip guidebooks from local and regional geological societies are a valuable resource but are often unknown to those outside the region and may be difficult to obtain. A digital directory is being prepared for the Southern Appalachians for use primarily by instructors taking undergraduate and/or graduate students on field trips in unfamiliar areas.

The Mt. Rogers area in southwestern Virginia was used as a pilot. It is a geologically distinct province of Late Proterozoic volcanic and metasedimentary rocks that has been the topic of only a few guidebooks. Geographic coordinates were determined using topographic maps included in the guidebook or road logs to find stop locations using DeLorme TopoQuads. Most were verified by GPS on a subsequent field trip. The initial attribute table attempted to use too much detail about the nature of the geological features to be observed, with resulting problems due to complex terminology and varying interpretations.

The Carolina Geological Society guidebooks, available online, are being used for an expanded project in very early stages of development. The primary goal is to help instructors identify major categories of described stops available in a particular area, such as a county. Information will be included so that the site can be easily located, including GPS coordinates, road maps, and topographic maps of the immediate region. Information about the physical nature of the outcrops is important. A locality that is critical for researchers may be unsuitable for large groups of students or for students who are at an early stage of their studies. It would be desirable, especially for older guidebooks, to visit the site to make certain that the outcrops still exist! The user can search for major categories of features, such as general rock types or structures. The Carolina Geological Society has given permission to reproduce the actual stop descriptions as well as providing a link to the online guidebook.

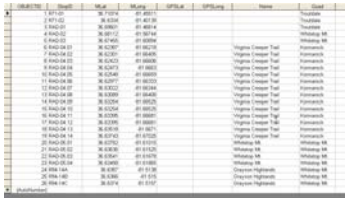
A national directory, linked to the GEON compilation of state geological maps, could be developed but would require the cooperation of local geologists to provide information about the current status of outcrops and the support of regional and local geological organizations. Such a project would provide a valuable resource for educators at all levels. The training of geoscience students must include both traditional field studies and experience with geospatial technologies, both of which would be facilitated by the digital directory.

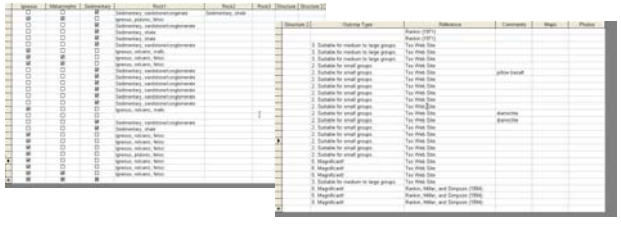
"The best geologist is he who has seen the most rocks."
H. H. Read (1940)

The primary purpose of this project is to facilitate field-based learning for undergraduate students by improving access to information contained in geological society guidebooks.

- Which guidebooks cover the area of interest?
- What are the major features of each stop?
- How do you find the outcrop?
- What is the nature of the outcrop? Is it suitable for large groups?

Field Name	Data Type
OBJECTID	AutoNumber
Shape	Text
Latitude (map)	Number
Longitude (map)	Number
Latitude (GPS)	Number
Longitude (GPS)	Number
Name	Text
Quadrangle	Text
Igneous	Yes/No
Metamorphic	Yes/No
Sedimentary	Yes/No
Rock1	Text
Rock2	Text
Rock3	Text
Structure 1	Text
Structure 2	Text
Outcrop Type	Text
Reference	Text
Comments	Text
Maps	Hyperlink
Photos	Hyperlink





PROJECT DEVELOPMENT

Coverage

- Mt. Rogers pilot
- North and South Carolina – in progress
- Southern Appalachians from Virginia through Alabama – goal
- Model for a national system

Essential attributes

- Location (road map, topo map of immediate area, lat-long)
- General features (major rock types and structures)
- Nature of outcrop
- Reference to the original guidebook

Desirable features

- Current state of outcrop
- Photograph of outcrop
- Text of guidebook stop description
- Geologic map of region

Selected areas could be expanded to include a wide variety of additional information, including imagery.

OPPORTUNITIES FOR COLLABORATION

Opportunities for collaboration exist at several levels. Local geologists can provide assistance by confirming that outcrops still exist and are accessible and by providing photographs and GPS coordinates.

Although most guidebooks do not have a copyright, I would want the support of the organization that produced the book before including the actual text of the stop description. It would be desirable if other organizations followed the lead of the Carolina Geological Society and made their guidebooks available online.

Links will be included for existing virtual field trips, such as the Mt. Rogers site developed by Radford University. This project could provide the framework for development of more virtual field trips by local geologists.

This project, especially if expanded to the national level, could use the compilation of state geologic maps by GEON as a base and provide a link between educators and the GEON data resources.