

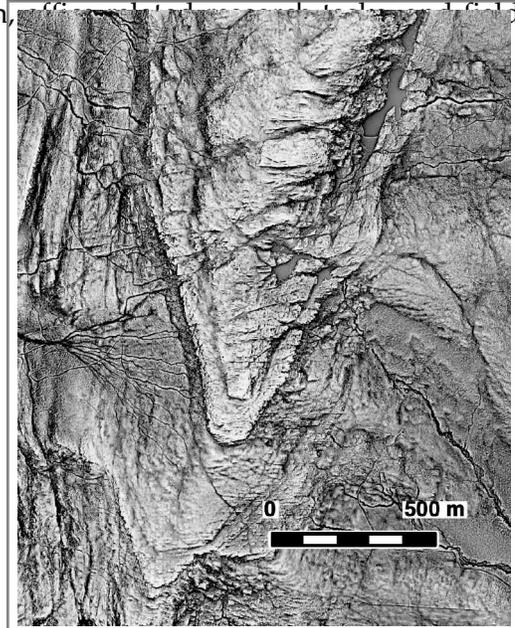
Using GMDE in the Classroom and Field

A workshop by Rick Allmendinger and Paul Karabinos

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Digital technology is revolutionizing both teaching and research in structural geology and tectonics. Geologic Map Data Extractor (GMDE) began as a desktop program but has grown to include mobile version suitable for field work, GMDE Lite. It has found broad use in academic programs because it is free, has a relatively gentle learning curve, carries out a variety of classical structural geology calculations, and provides students with data that they can use in further calculations. In this workshop, we will illustrate workflows for downloading maps and digital elevation models (DEMs), preparing the data for use in GMDE, loading the files into GMDE, and performing a wide variety of structural geology tasks. The workshop will cover ways that GMDE can be used for classroom instruction.

One of the best features of GMDE is the ability to use your own custom base maps and DEMs. It does take time and some experience, however, to prepare maps and DEMs for use in GMDE. Existing geologic maps and specially prepared synthetic geologic maps can be used to teach students fundamental structural geology concepts. GMDE is a flexible research tool for both field work and map analysis. We will introduce participants to a little known image type derived from LiDAR DEMs called texture shade images. These images are especially useful in areas of limited exposure like the Northeastern US, and are more versatile than hillshade images because they do not depend on the incidence angle of artificial light (an example to the right). The workflow that we will emphasize includes downloading of DEMs, processing for custom base maps, saving in formats that GMDE can read, pros and cons of single raster base maps versus MBTiles format, and how to produce the latter.



LiDAR texture shade image of a largely tree covered part of the Berkshires of western Massachusetts

We will review data transfer between the desktop (GMDE) and mobile (GMDE Lite) versions, and how GMDE Lite can transform field work for students and researchers. Finally, we will also cover uploading and downloading datasets between GMDE (both desktop and mobile) and StraboSpot, and GMDE and Google Earth.

Participants should bring their laptop (either Windows or Mac) with GMDE installed. For those with an iPad and/or iPhone, they should also install GMDE Lite from the iOS App Store. GMDE Lite works especially well on an iPad with Apple Pencil.