



EAS 2200 – The Earth System

Lab #3: Enfield Glen

PRE-LAB ASSIGNMENT

The bedrock that underlies the Ithaca area is made of flatlying (tilted ever-so-gently southward) sandstone and shale. These sedimentary rocks are appx. 400 million years old and formed on the bottom of the ocean. The numerous fossils that we've observed are the evidence for this.

Sandstone and shale belong to a sub-group of the sedimentary rocks known as **clastic sedimentary rocks**. This means that they are formed from particles (large or small) that have been transported and deposited. The other sub-group, the **chemical sedimentary rocks**, represent a second mode of formation; the rocks precipitate *in situ* rather than being transported. Limestone is a common example of this second type of rock. Limestone forms from the shells of microscopic plants and animals that precipitate directly out of seawater and accumulate on the sea floor.

Our study of river systems has shown us that rivers transport sediment to the ocean. Indeed, all of the sand and mud on the beaches and sea floor has been washed off the continents and deposited in the ocean by rivers. A second, obvious but nevertheless important fact, is that rivers flow downhill, and that they have their headwaters in hilly or mountainous regions. For example, the headwaters of the Mississippi River are in both the Rocky Mountains as well as the Appalachians.

The sandstone and shale that underlies the Finger Lakes region – and all of western NY and PA – had its source in the mountains and was subsequently transported by rivers to the ocean.

- Sketch a map of North America and indicate the present position of Ithaca (if you don't think you can sketch well enough, photocopy a map from an atlas or your textbook, or download one from the "Interactive Mapping" section of the Geology Department's map server: <http://atlas.geo.cornell.edu>).
- Imagine what the landscape must have been like 400 million years ago (it was **very** different). Where would the mountains and rivers have been that were the source of the sediment deposited in Ithaca? Sketch the position of the mountains and some representative rivers on the map. Any hypothesis or guess – educated or otherwise – is fine.

Bring your map with you to your lab section.