New York State Geological Association (NYSGA) Annual Meeting
Friends of the Grenville (FOG) Annual Field Conference

Lake George, New York
Friday, September 26-Sunday, September 28, 2008

Headquarters - Fort William Henry Hotel

Final Announcement and Field Trip Descriptions

Friday, September 26, 2008

Friday NYSGA Trips (assemble at starting point)

Shale Workshop and Field Trip
Hydrocarbon Potential of Ordovician (Utica) and Devonian (Marcellus) Shale
Hosted by: New York State Energy Research and Development Authority

This workshop and field trip will begin with a short pre-trip discussion of the regional setting and stratigraphy of the Utica and Marcellus Shale Formations. These units are important source beds for hydrocarbons in the Appalachian Basin, and with application of new drilling technologies, are the subject of ongoing exploration and development in New York State. The field trip will include stops highlighting the regional geology and basin evolution, and will visit exposures of the Utica and Marcellus Formations that illustrate fracture development and hydrocarbon potential.

Trip 1
Anorthosites and related rocks of the ca 1155 Ma Marcy massif
Leader: Jim McLelland

This trip will assemble at 10:00 am on Friday on the west-bound shoulder of NYS Rt. 73 at intersection with I-87 (Exit 30). Water-polished exposures of complicated relationships between anorthositic facies will be examined at Woolen Mill. In addition, a late, anorthosite-derived ferrogabbro (now a two-pyroxene-garnet granulite) that exhibits mutually crosscutting relationships with the anorthosite will be visited. Lunch will be at Split Rock Falls where gabbroic anorthosite is well exposed. Following this, and weather permitting, we shall ascend Roaring Brook on Giant Mt to examine spectacular water polished outcrops of magma commingling between anorthosite, gabbro, and charnockite. On our drive south to Lake George Village, we will stop at an olivine metagabbro, charnockite, and a mega-garnet amphibolite.

Trip 2
Chemical weathering and calcium depletion in Adirondack soils
Leaders: Rich April and Michelle Hluchy

This field trip will assemble in Old Forge Village at 10:00 am. The assembly point is the public parking lot located across from the Old Forge Hardware Store and the Old Forge Fire Department, located on NYS Route 28. Stops will be in and around the Old Forge and Big Moose areas, and will focus on the mineralogy and chemistry of Adirondack soils and the effects of acid rain on soil and soil water chemistry. We will visit several research sites in the Town of
Webb and near Big Moose Lake where geologists and biologists are studying the effects of acid rain on soil chemistry and the impact that Ca depletion in soils has on aquatic and terrestrial organisms. At these sites we will inspect experimental plots in which calcium amendments to soil have changed the CEC, base saturation, and soil and soil water pH. Along the way we will discuss the status of lake and stream acidification in the region and whether the Adirondack forested ecosystem is showing signs of recovery from years of exposure to acidic deposition.

Saturday, September 27, 2008

Saturday Friends of the Grenville Trip  (Trip 3)
Sinistral tranpression in the Adirondack Highlands during the Ottawan orogeny:
Structural evolution of the Snowy Mountain dome and Piseco Lake shear zone
Leaders: Dave Valentino, Jeff Chiarenzelli, Lindsay Williams and Gary Solar

The trip will begin at the parking lot in Indian Lake, intersection of Rt. 30 and Rt. 28 and end near Piseco Lake. This trip will present evidence for sinistral transpression in the development of the Snowy Mountain dome (SMD) and the Piseco Lake shear zone (PLz), central and southern Adirondacks. During the first part of the trip, a transect through the anorthosite-cored Snowy Mountain dome will highlight micro-, meso- and mega-structures, and evidence for polyphase deformation. Sinistral shear, and possible dome rotation, was concluded from detailed kinematic evidence. The southern Adirondacks are divided by a broad zone of tectonite, that defines the Piseco Lake shear zone. The second part of the trip will examine the rocks located between the SMD and the PLz, and variations in L- and S-tectonite within the shear zone in the area of the Piseco dome.

Saturday NYSGA Trips (all Saturday NYSGA trips leave from parking lot of Fort William Henry Hotel)

Trip 4
Deglacial History of the Upper Hudson Region
Leader: David DeSimone

The Hudson River descends from the Adirondack Mountains through beautiful terrain and empties into the northern Hudson lowland onto complex glacial lake sediments. This trip will provide an overview of the historical interpretations of the deposits, and provide the framework for a new synthesis of the deglaciation of the Upper Hudson Valleys. The trip will extend into the southeastern Adirondacks, especially the Lake George basin and surrounding areas. We will visit different sites than the Friends of the Pleistocene 2008 trip but link our discussion thread into that synthesis.

Trip 5
Transpressional deformation in Taconic slates and its relation to basement architecture
Leaders: Jean Crespi and Ray Underwood

On this field trip, we will look at outcrops in different structural domains of the northern Taconic allochthon and examine evidence for transpressional deformation in the region between the towns of Granville and Hampton, New York. In addition to addressing the longstanding and controversial topic of volume change in Taconic slates, we will discuss the role of basement architecture in the development of along-strike variations in deformation history.

Trip 6
Depositional Environments of the Middle Ordovician Stratigraphic Section at Crown Point, NY
Leader: Charlotte Mehtrens
This field trip will examine the stratigraphy of the Chazy, Black River and Trenton Groups exposed at Crown Point, NY. Exposures in the state park and adjacent historical site record, through fossils, sedimentary structures and fabrics, the evolution of the carbonate platform foreland basin during the time immediately prior to the Taconic Orogeny. We will examine outcrops from the Crown Point and Valcour Formations (Chazy Group), Orwell Formation (Black River Group) and the Glens Falls Limestone (Trenton Group), observing cycles of sea level change within the 120 meter thick transgressive section. This is a no hammer/no collecting field trip.

**Trip 7**  
**Geology of the Eastern Adirondacks: Are They Part of a Late-Ottawan Symmetrical Core Complex?**  
**Leaders: Jim McLelland and Martin Wong**  

The eastern Adirondacks contain outstanding roadcuts along along Rts. 4 and 22 from Ft Ann to Ticonderoga. The first stops will be near the junction of Rts 4 & 22 in proximity to the town of Comstock to investigate the hypothesis that the eastern Adirondacks have been affected by down-to-the-east ductile detachment faulting at ~ 1045 Ma. The trip will also examine roadcuts of 1) ~1350 Ma tonalite, 2)anorthosite-derived ferrodiorite, 3) garnet-sillimanite gneiss and graphite-rich Dixon Schist (Ticonderoga-Dixon pencils), 4) a xenolith of well-foliated garnet-sillimanite gneiss within an ~1147 Ma olivine metagabbro 5) Quartz-oligoclase dike (~1040 Ma) that intrudes country rock extension zones and is smeared out along foliation i.e., synkinematic and dating extension at 1040 Ma, 6) Exposures of normal Lyon Mt Granite (ca 1050 Ma) including quartz-albite rocks and magnetite 7) an exposure of Gore Mt.-type garnet amphibolite near Warrensburg.

**Trip 8**  
**Geology and Mining History of the Barton Garnet Mine, Gore Mt. and the NL Ilmenite Mine, Tahawus, NY and a review of the McIntyre Iron Mine and Blast Furnace circa 1857**  
**Leaders: William Kelly and Robert Darling**  

Participants on this field trip will examine the host rocks, ores, and lithologic relations of two of the most famous mines in the Adirondacks. At Gore Mt., home of the world's largest garnets, the 19th century history of the mine will be discussed along with the lithology and origin of the deposit. Also discussed will be the remarkable preservation of cristobalite occurring as inclusions in Gore Mt. garnet. The trip will then visit one of the undeveloped ilmenite deposits at Tahawus and include a discussion of the nelsonite (immiscible (?) apatite-oxides assemblage) found in association with ore. The trip will end at the best preserved blast furnace in the region where the technology of the early iron industry will be the focus. The furnace has been the target of recent archeological studies of the New York State Museum.

**Note:** This trip will be limited to 30 participants. Please register early to assure a spot.

**Trip 9**  
**Mining history, mineralogy and origin of the gneiss-hosted Fe-P-REE and Fe oxide and gabbro ("cumberlandite")-hosted Ti -Fe oxide from the Mineville-Port Henry region, Essex County, NY**  
**Leaders: Marian Lupulescu and Joseph Pyle**  

This trip will address the mining history and mineralogy of the Mineville-Port Henry iron ore district. Stops will include will gneiss-hosted magnetite and magnetite-apatite deposits from the Mineville-Barton Hill-Fisher Hill-Cheever district in the Mineville-Port Henry area and the gabbro ("cumberlandite")-hosted Ti-Fe deposit from the Split Rock mine, north of Port Henry.

**Sunday, September 28, 2008**
**Sunday Friends of the Grenville Trip (Trip 10)**  
**The Metasedimentary Rocks of Chimney Mountain**  
**Leaders: Jeff Chiranzelli and Dave Valentino**

A half-day excursion will be made to Chimney Mountain near Indian Lake to investigate a small, but relatively pristine sequence of Grenville metasedimentary lithologies and their contact relations with nearby granitic rocks. SHRIMP U-Th-Pb geochronology yields ages of 1073 +/- 15 and 1042 +/- 4 MaMa for equant, high-U (1093 +/- 483 ppm) zircons recovered from distinct quartz arenite layers, originally thought to be detrital zircons. Zircons have little to no CL response and appear to be internally featureless. Titanite from the same rock yields an age of 948 +/- 23 Ma, consistent with cooling from peak Ottawan conditions. Various possible options explaining the field and geochronological data will be explored. The round trip visit to Chimney Mountain is approximately two miles, involves some steep trail sections, and a slope scramble for those interested in following the contact.

**Sunday NYSGA Trips (all Sunday NYSGA trips leave from parking lot of Fort William Henry Hotel)**

**Trip 11**  
**Origin of the Lewis Wollastonite Deposit**  
**Leaders: William Peck and Eve Bailey**

This field trip will examine the classic wollastonite-garnet-diopside skarns of the Lewis mine near Elizabethtown, NY. The Willsboro- Lewis district shows the importance of voluminous infiltration of surface fluids during anorthosite intrusion in rocks now overprinted by granulite-facies mineral assemblages. This visit to Lewis will provide the opportunity to examine these spectacular rocks in detail.

**Trip 12**  
**Timing of Fluid Alteration and Fe-mineralization in the Lyon Mountain Gneiss: Implications for the Origin of Low-Ti Magnetite Deposits**  
**Leader: Peter Valley**

The Lyon Mountain gneiss has been altered extensively by alkali metasomatism and is host to numerous Kiruna-type low-Ti magnetite deposits. This trip will visit the Chateaugay Mine in Lyon Mountain New York. Extensive mining here has provided a 3 dimensional cross section of the ore body, its host granite and structural controls on mineralization and alteration. We will discuss new U/Pb age data that have yielded important information on the timing and origin of alkali metasomatism, Fe mineralization, and tectonic setting for the development of low-Ti magnetite deposits.

**Trip 13**  
**Stratigraphy and Sedimentology of the Potsdam Sandstone in the Southern Lake Champlain - Lake George Region**  
**Leader: Bruce Selleck**

The Upper Cambrian Potsdam Sandstone in the southern Lake Champlain and Lake George regions consists of an areally restricted non-marine lower arkosic facies that is apparently correlative to the Ausable Member of the northern Lake Champlain Valley region. The overlying marine quartz arenitic Keeseville member of the Potsdam is more widespread. This one-half day trip will examine key exposures of non-marine alluvial fan, high-energy tidalite and wave-dominated shoreface and offshore facies of the Potsdam. Stops will include photogenic outcrops of the Proterozoic-Cambrian non-conformity. Extensive fault-related hydrothermal mineralization of the Potsdam and underlying Proterozoic basement will also be examined, and the implications of new U-Pb dating of authigenic monazite in the Potsdam will be addressed. The trip will end in Ticonderoga, New York in early afternoon.

Visit the NYSGA 2008 website at: [http://groups.colgate.edu/nysga08](http://groups.colgate.edu/nysga08) or contact bselleck@mail.colgate.edu for further information.