

maps of Ron Witte and NJDEP colleagues (Witte 2008, Witte and Epstein 2005). Both maps adjoin over Lake Wapalanne, above.

2. Boulder beds

- The bouldery surface on the NJSOC campus is an obvious feature (and somewhat of a hindrance to hikers and students). What is it and how did it get there?
- Geomorphology students in 2008 helped to collect data on the size, shape, and orientation of the boulder bed fabric. The seemingly random boulders did have an orientation, varying by location, and did exhibit moderate sorting.
- Possible theories for their genesis: 1) Periglacial downslope orientation of glacial boulders, or 2) subor pro-glacial meltwater deposit or lag.
- Research published in Middle States Geographer with student coauthors (Pope et al. 2009)



3. Wapalanne Lake core

- Lake Wapalanne was constructed by CCC crews, but is predated by a smaller natural pond or marsh. The lake had an uninterrupted sediment record possibly since glacial recession Would a sediment core reveal environmental change?
- Students from an NSF-funded REU project accomplished one PVC pipe core, which was analyzed for particle size and carbon.
- No dating control. But, mid-core higher in sand, consistent with higher deposition following 19th c. forest clearing. Silt returns in recent sediments as forest recovers. (Pope et al. 2010).











ABSTRACT

landscape evolution from late-Wisconsinan glacial, post-glacial, periglacial, The New Jersey School of Conservation (NJSOC), the field campus of Montclair State University, provides an ideal location for environmental field research and temperate Holocene, and modern anthropogenic environments. The NJSOC education. The purpose of this poster is to summarize the geomorphic research also serves as a relatively natural forested watershed comparison to nearby agricultural and exurban watersheds, useful to assess human impacts on rivers in particular, based at NJSOC. Adjacent to the Kittatinny Ridge, in the Flat Brook and Delaware River watersheds, the area has diverse geomorphology. and streams. Most of this research has been attached to educational efforts, including a National Science Foundation Research Experience for Features such as boulder fields, meltwater channels, landslides, and fluvial Undergraduates program (2010-2013), an ongoing summer geology field camp terraces are described, employing field method including analysis of soil experience (2014, 2015), and individual classes from Montclair State University profiles, sediment fabric, lake sediment cores, stream channel stability, topographic surveys, and shallow geophysical surveys. The studies illustrate (1997-2015).





- NJSOC is the oldest and largest university-operated environmental education center in the nation.
- Part of the College of Science and Mathematics at Montclair State University.
- Teaching staff includes Montclair State University faculty, environmental educators and graduate students.
- Located in a 240 acre- tract of The Stokes State Forest in Sussex County.

Stokes State Forest, originally Kittatinny Forest Preserve, began as a gift of 500 in programming at the NJSOC, coming from Newark State Teachers College (now acres of the forest from Governor Edward Stokes in 1907. The land where the New Kean Univ.), Paterson State Teachers College (now William Paterson Univ.), Trenton Jersey School of Conservation now stands was sold to the state of New Jersey in State Teachers College (now TCNJ), Jersey City State Teachers College (now The New 1924. In 1934, the Civilian Conservation Corps (CCC) arrived, building a campsite Jersey City Univ.), Glassboro State Teachers College (now Rowan Univ.), and area for underprivileged city children and creating a water reservoir to be used for Montclair State Teachers College (now Montclair State Univ.). extinguishing forest fires, now known as Lake Wapalanne. By 1936, a new group of Though NJSOC was originally an environmental education center for teachers 200 CCC participants built privies and 12 cabins, which could hold 175 people, on college students, in the 1970s it became a center for elementary students as well. the eastern shore of the lake.

It was in the 70s that four program areas—Natural Sciences, Humanities, Social In 1946, approval was granted for the first group of college students to come Sciences, and Outdoor Pursuits—were developed, and continued to expand over the next decades. Today, NJSOC hosts research groups from Montclair State and participate in programming at the CCC camp. The site was transferred to Montclair State, and The New Jersey School of Conservation officially opened in University and other institutions, and continues to educate college and K-12 1949. College students from six state colleges of New Jersey arrived to participate students and their teachers.

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BACKGROUND







Soil profile development is not closely controlled by time in this study; other mitigating factors overwhelm the temporal control. However, local variations are consistent with factors such as higher water tables and different degrees of leaching due to different types of leaf or needle decay.

A larger backlog of soil profiles requires integration and comparison.

5. Terrace scarp / cove feature







Flat Brook carves an incised channel through glaciofluvial sediments, creating a terrace, on which NJSOC is built (see map Vignette #1). Two cove-shaped features indent into the terrace; their origin became the subject of geomorphic mapping during the 2014 and 2014 Geology Field Camp course.



Students employed tape-and-level and TOTAL station survey, soil profile analysis, and ground penetrating radar to map the topography and explore the subsurface.

Two theories arose to explain the landforms: 1) abandoned meander cut banks; or 2) old slope failures and slumps, possibly from permafrost thaw. The presence of a high water table is conducive to current smaller-scale mass wasting. (Pope et al. 2015)

6. Additional studies

Several additional studies incorporate geomorphic data from NJSOC compared to other regional locations.

✤ NJSOC was one of many locations assessed during the 2012 NSF-REU season in a study of watersheds in northern New Jersey (Guzner et al.; Palmer et al.; Pope et al., 2013). Data from relatively pristine Flat Brook were compared to urban and agricultural watersheds to assess stream channel stability, relevant to riparian ecology. The graph to the right compares trace element quantity in soils/sediments to RGA, a channel stability index.

Tree throw pedoturbation (right) was measured at NJSOC and Morris County following recent storm events. Tropical storms Irene and Sandy were locally significant in total soil movement (Pope & Justus, 2013). Haaq (2010) added nearby Sunrise Mtn. data to his study of Kittatinny Ridge talus slopes, revealing rock and weathering controls to the talus fabric.

