Geometry, depositional history and magmatism of early Mesozoic Central Pangean Rift system as seen from the Newark Basin.

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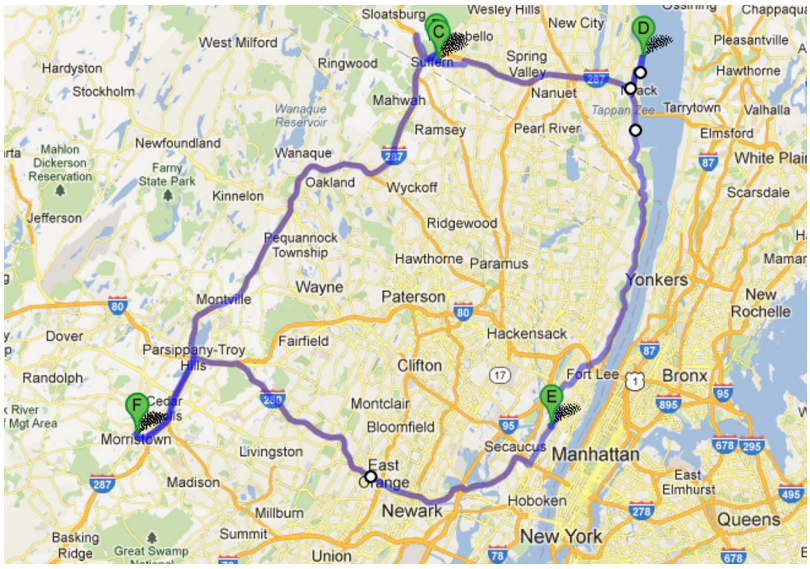
Saturday, October 27, 12:00 PM – 6:00 PM (Lunch Provided)



The field trip will follow two transects forming a loop across the northern part of Newark Triassic-Jurassic rift basin, formed during at least 35 million years of continental extension eventually leading to the break-up of the supercontinent of Pangea, seafloor spreading, and opening of the proto-Atlantic ocean. The purpose of the trip is to provide a glimpse of an ancient rift basin counterpart to the East African rifts, not only to see some similarities, but also highlight major differences, plausibly reflected not only differences in inheritance and trajectory, but also process.

The field trip route will follow the main border fault system of the of the basin from Morristown, NJ, northwest and then head east along the northern transect which is the route of a recently acquired seismic line that images a cross-section of the basin geometry in New York. Along the trace of the seismic profile, we will see deformed footwall rocks of the border fault, which is a reactivated Paleozoic contractional fault, fluvial basin sediments that entered axially from the northern terminus of the basin and the hanging wall, and the Palisade intrusive sill (clearly imaged on the seismic profile) and lava flows comprising examples of the 201.5 Ma Central Atlantic Magmatic Province (CAMP). The latter comprises the aerially largest large igneous province on Earth (~11×10^6 km^2), and is strongly implicated in the end-Triassic mass extinction as well as possibly marking the initiation of Atlantic seafloor spreading. The field trip will then proceed southwest along the outcrop trace of the Palisade sill and have a final stop at cyclical lacustrine deposits formed in a Triassic Great Lake, minimally the size of Lake Turkana, before turning west and proceeding along the southern transect, along which we will pass huge exposures of CAMP lava flows on our way back to Morristown.