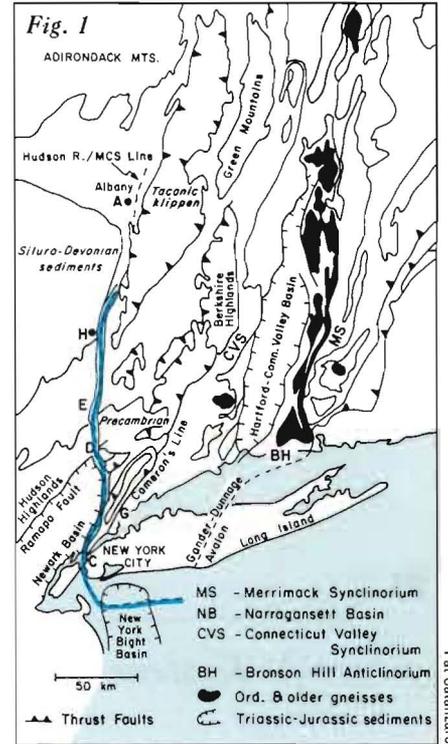


lated to those in the offshore section. Three structural features we infer from the seismic data are particularly interesting. One of these is the dipping interface (dashed bold-face line) beneath the Newark Basin, a large rift basin that formed when Africa began to rift away from North America about 200 million years ago. At the surface at the north end of the Basin (Fig. 1), this interface coincides with the Ramapo Fault, a major structural boundary that separates Grenville basement rocks in the Hudson Highlands from the Triassic and Jurassic Newark Supergroup, the strata that were deposited within the Newark Basin. Based on the seismic record, we suggest that the Ramapo Fault does not dip steeply into the deep crust as some have thought, but instead is a detachment fault that becomes sub-horizontal at a depth of 3 to 4 kilometers. Another interesting structure is a prominent sub-horizontal interface between 0.5 and 1 km depth that appears to separate highly deformed allochthonous Middle Ordovician strata (brown) from undeformed autochthonous Middle Ordovician strata (blue). This interface may be the basal detachment of

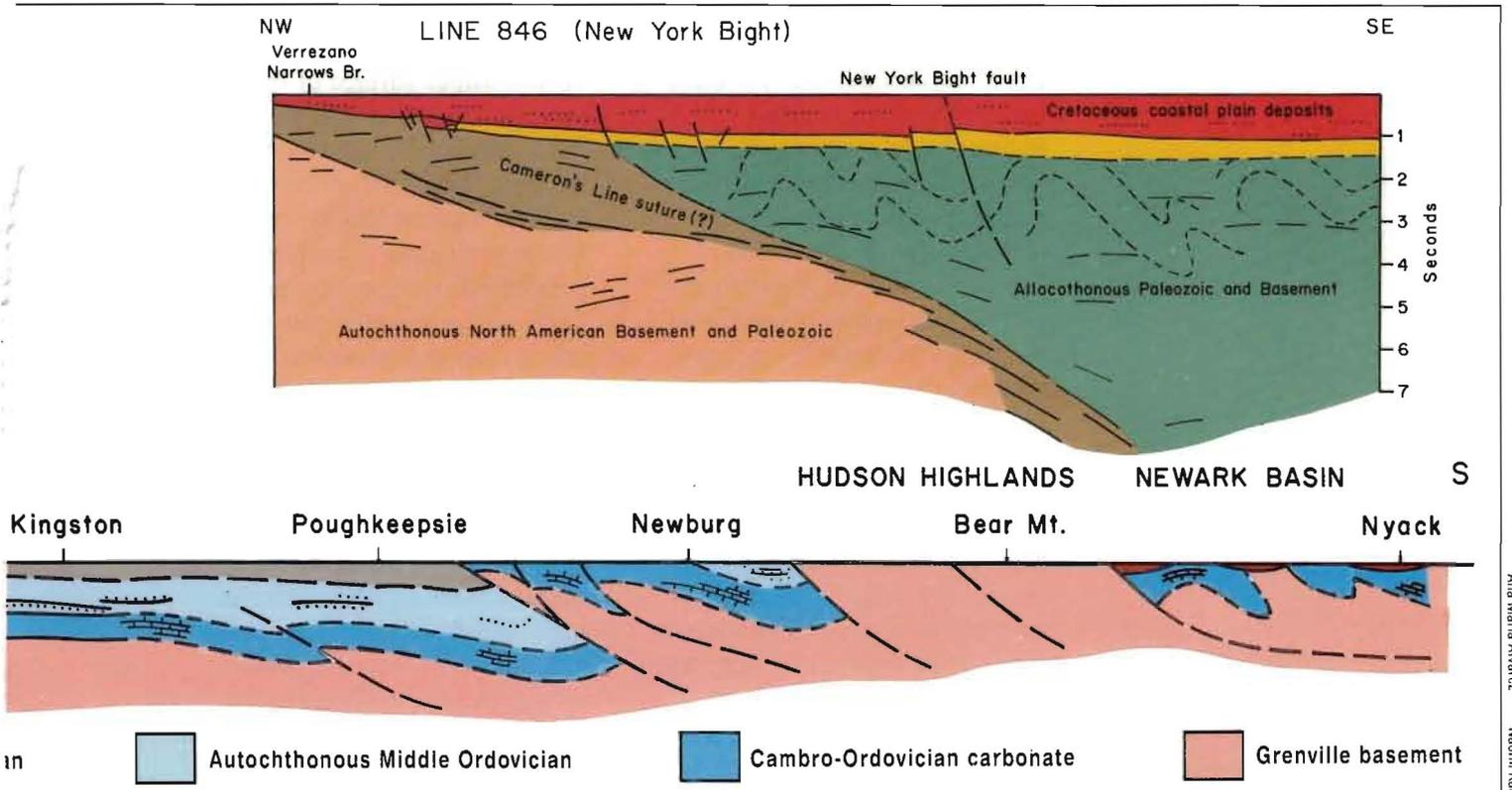
the Appalachian fold and thrust belt north of the Hudson Highlands. Finally, between Catskill and Coxsackie we have identified steeply-dipping interfaces that offset Grenville basement and overlying autochthonous Cambrian and Ordovician strata and terminate at the base of the allochthonous Middle Ordovician rocks. We interpret these interfaces to be part of a system of high-angle faults that have been mapped at the surface west of Albany in the Mohawk Valley. These faults are thought to have been formed by the bending or flexure of the crust as large volumes of rocks, possibly including the allochthonous materials in the offshore part of our section, were emplaced over continental margin to the east during the Taconic Orogeny.

Our plans for further work on the Hudson River seismic data include additional processing to resolve the details of the high quality record we obtained from the offshore area, detailed processing and vertical profile modeling across the Ramapo Fault to determine if we can identify that structure at depth and additional processing to try to identify Moho beneath the River segment.

Fig. 1: Generalized map of geology surrounding Hudson River. Blue line shows CONRAD's track. Map letters indicate locations: A—Albany; C—New York City; D—Ramapo Fault and seismic zone at Indian Pt. Nuclear Reactor; E—Newburgh; G—Cameron's Line at seismic zone in New York City area; H—Kingston.



Pat Calanzone



Ana Maria Alvarez  
Naomi Katz