

Title

Early Cretaceous magmatism in western Vermont and eastern New York: Timing, geochemistry, and role in the postrift evolution of the Eastern North American Margin

Abstract

Vermont's youngest episode of magmatism, the Early Cretaceous New England-Quebec (NEQ) igneous province, plays an essential role in our understanding of the evolution of the eastern North American margin (ENAM). Renewed interest in NEQ magmatism stems in part from the coincidence between the NEQ and the modern-day low velocity anomaly in the uppermost mantle. This investigation is focused on the western margin of the NEQ, located in western Vermont and eastern New York, as the sheet intrusions and small plutons provide information on the timing of magmatism and paleostress conditions which can be linked to ENAM development and driving mechanisms for igneous activity.

New $^{40}\text{Ar}/^{39}\text{Ar}$ ages for four NEQ dikes and a LA-ICP-MS U-Pb age for the Cuttingsville complex of southern Vermont were obtained through this investigation. Results confirm Early Cretaceous magmatism spanned at least 35 Ma with a pattern of older magmatism to the north (Burlington lobe) and younger magmatism to the south (Taconic lobe). Representative samples of Early Cretaceous dikes and small plutons were analyzed for major and trace element geochemistry by XRF and ICP-MS while fault-slip data in combination with additional field observations were collected. The trend toward younger magmatism of the Taconic lobe is consistent with a change in intrusion orientation and a changing stress field through time.

Biography

Jennifer is a Geoscience Ph.D. candidate at the University of Connecticut interested in structural geology and tectonics. Jennifer earned a B.S. in Earth Science from Southern Connecticut State University and an M.S. in Geological Sciences from the University of Missouri-Columbia. Her Ph.D. research applies structural techniques blended with geochronology and petrology to understand postrift magmatism and passive margin development. She also teaches as an adjunct instructor at Southern Connecticut State University.