The T-BR gas fields of southern New York (Fig. 2) were discovered in 1986 and have been producing large volumes of natural gas since 2000. These fields have previously been characterized as having low-matrix porosity but moderate to high permeability, due to the presence of vugs (small cavities in the rock typically lined with saddle dolomite), brecciated rock, and multiple fracture sets (Smith et al., 2009). The fields vary in size but are generally long and narrow normal-fault–bounded grabens, ranging from 5 to 20 km in length and 0.5–3 km in width. Studies have shown that these dolomite fields are hydrothermal in origin, having formed via hydrothermal alteration of limestone by hot saline magnesium-rich fluids that traveled upward along faults and concentrated below the contact between the Trenton and Black River Formations (Davies and Smith, 2006; Smith et al., 2009).

Stratigraphic and Structural Setting

After the Grenville orogeny 1.1 billion years ago, the supercontinent in which North America was embedded experienced a long period of rifting that left an imprint of failed rift zones, extensional faults, and strike-slip faults (Thomas, 1991; van Staal, 2005). The region comprising the state of New York was part