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ON THE COVER

"From Basin to Pore"

Geologic carbon sequestration research requires the application of several scientific tools and techniques to characterize the extent, thickness, and quality of prospective reservoirs. This special issue provides examples of such work from the Midwest Regional Carbon Sequestration Partnership and the Midwest Geological Sequestration Consortium. These researchers have conducted studies at varying scales, from the use of remote sensing to characterize basin-wide paleotopography to detailed core and thin section analysis to evaluate reservoir pore space in individual samples. **Background:** Secondary scanning electron microscopy image of an Oriskany Sandstone core sample from Mahoning County, Ohio, Appalachian Basin. Syntaxial quartz overgrowths and pressure solution pits are both visible, indicating that post-depositional processes have impacted pore space volume and morphology in this sample. **Foreground, upper left:** A cross-sectional view of Precambrian basement paleotopography using seismic methods. Basement highs lack Mt. Simon sediments. This correlation is integral to determining prospective Mt. Simon geologic sequestration sites in the Illinois Basin. **Foreground, lower right:** Geospatial distribution of pore volume in the Medina Group's Whirlpool Sandstone in northwestern Pennsylvania, Appalachian Basin. These maps are based on 100 geostatistical simulation runs and show the average porosity volume (cubic feet) and the standard deviation (smaller inset) for this unit. Maps such as these are intended to aid in the selection of locations for more detailed study.