KARST

SPOTLIGHT
GEOPHYSICAL SERVICES

Karst is a term used to describe surface landforms and subsurface features related to the dissolution of soluble rock such as limestone and gypsum. Karst features include sinkholes, sinking streams, caves, springs, rock cavities, and highly irregular bedrock topography. Karst geology covers approximately 25% of the United States, and is often a hazard for existing structures and new development. Since karst affects the flow of groundwater, it poses a challenge for groundwater modeling and contaminant mapping, where traditional porous media rules do not apply.

Highly variable rock topography, cavities, weathered zones, and preferential groundwater pathways are difficult to properly characterize with traditional invasive methods. However, geophysical methods can provide a complete karst reconnaissance, while guiding borings and detailed studies into anomalous areas. Multiple geophysical methods are often used as complimentary datasets that are tailored to meet the objectives of the karst investigation. Examples of geophysical methods for karst investigations include:

- Microgravity to provide a direct measure of missing mass due to cavities, paleosinkholes, weathered zones, and caves. Microgravity data are acquired along profile lines or survey grids and are used to identify anomalies and trends associated with karst features.

- Electrical Resistivity Imaging (ERI) to image the subsurface by measuring the electrical properties of geologic materials in karst settings. For example, the large resistivity contrast between clay and limestone is used to image variable top of rock conditions in karst terrain.

- Ground Penetrating Radar (GPR) to provide a high-resolution image of shallow karst conditions. For example, GPR is a highly effective tool to identify soil piping and loose zones above active sinkholes.

- Seismic Methods to acquire reconnaissance and detailed measurements of seismic velocity related to hardness of unconsolidated materials and rock.

For more information, contact Spotlight Geophysical Services at info@spotlightgeo.com on the web at www.spotlightgeo.com