

PRODUCTS

S-scan Near-Surface Imaging



 **Geo**comp
A Sercel Business

Jay Dee Tunnel/Rail / geocomp.com

S-scan

S-scan, powered by Sercel, is a geophysical site characterization solution that helps engineers better understand ground conditions below the surface. By analyzing natural vibrations from sources like traffic, wind, and rain, as well as controlled seismic measurements, S-scan provides a detailed picture of soil and rock properties. This information helps owners and engineering teams make more informed decisions for infrastructure, mining, and construction projects.

Why Choose S-scan?

S-scan provides high-resolution characterization of the shallow subsurface while also enabling deeper subsurface imaging through enhanced low-frequency performance using seismic interferometry and MEMS-based accelerometers. Incorporating patented algorithms, S-scan offers a unique hybrid solution that couples passive and active seismic measurements to generate continuous shear-wave velocity (V_s) and compressional-wave velocity (V_p) profiles for near-surface characterization.

Some key applications of S-scan include:

- Detection of voids or sinkholes
- Detect spatial variability in subsurface for critical assets where geotechnical investigation is limited
- Detect the extent of weak layers within the subsurface
- Determine the depth to rock
- Detect the transition from weathered rock to sound rock
- Determine rock stiffness
- Detect uncontrolled fill under the subsurface
- Determine the extent of soft layers for slope stability problems

Applicable Across Multiple Sectors

S-scan technology can be used on various types of infrastructure including:

- Railways
- Tunnels
- Mines
- Coal Ash Facilities
- Mine Tailings
- Levees & Dykes
- Pipelines



S-scan at TVA Facility



S-scan used for a mining project

Technology Powered by Sercel

S-scan provides clients with an accurate and unique near-surface imaging and monitoring solution dedicated to early instability anticipation of growing cavities and sinkholes. The three key technologies used to power this product and make it unique are:

WiNG Node

- For proof of concept or snapshot imaging
- Post processed results within a few days

Wired Accelerometer

- High-precision monitoring
- Real-time monitoring & processing over several weeks or months

Distributed Acoustic Sensing (DAS) Fiber-Optic Cable

- Long-term and long-range monitoring
- Real-time monitoring & processing over several months or years
- Leverages preexisting telecom cables (dark fiber)

Compared to traditional geophysical methods such as SASW and MASW, S-scan offers a more integrated approach for near-surface characterization, resulting in more reliable subsurface profiles.

Reliable. Trusted. Value-driven. Innovative.

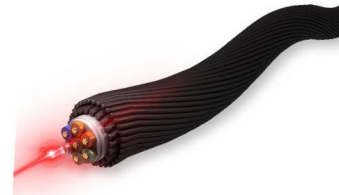
For more than 40 years, Geocomp has been a trusted partner in providing clients with innovative geotechnical solutions.



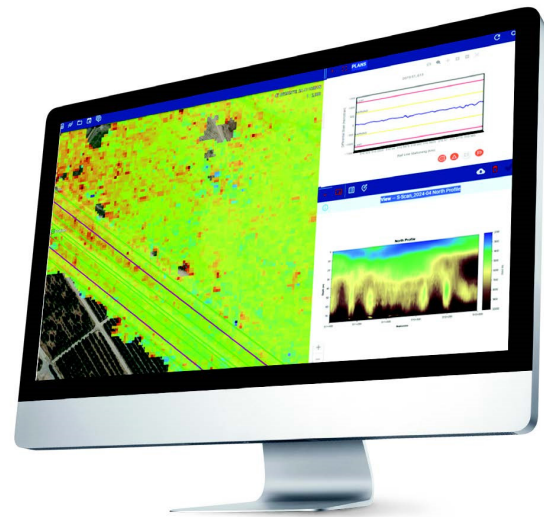
WiNG Node



Wired Accelerometer



DAS Fiber Cable



S-scan results on iSiteCentral® dashboard

KEY BENEFITS

- Passive, active hybrid surveys
- Enhanced spatial resolution for Vs profiling
- Join Vs-Vp inversion for improved characterization
- High resolution 3D & 4D time-lapse monitoring
- Soil, rock stiffness & groundwater interpretation
- Greater depth coverage up to 50 meters
- Multi-source & multi-sensor compatibility
- Fast field deployment through reduced active-source shot points
- by leveraging seismic interferometry
- Reduced human intervention with land streamer technology
- Secure cloud data storage and visualization through iSiteCentral

Experience you can trust

Geocomp, in partnership with Sercel, offers an innovative solution in S-scan. This is a geophysical solution delivering high-resolution visualization and analysis for characterization of near-surface variability. S-scan is designed for asset owners who want to identify and monitor anomalies and changes in underlying subsoil to detect and anticipate deformation and collapse (weak zones, sinkholes, etc.) to protect their assets.

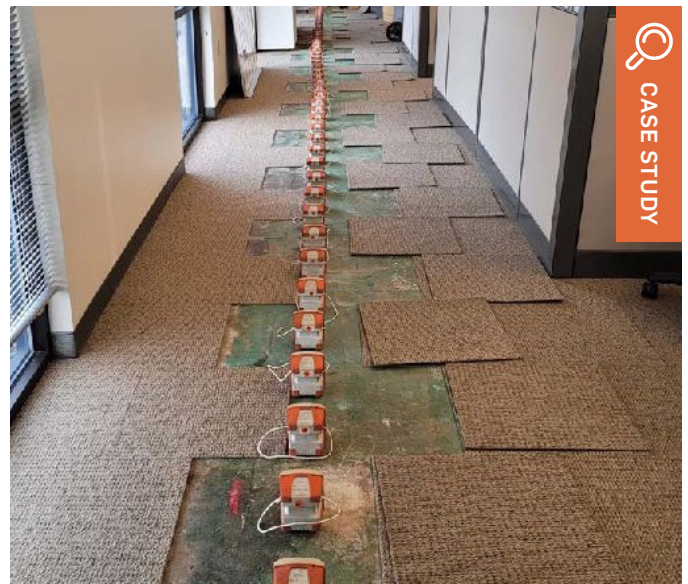
Saudi Arabia Rail (SAR)

Geocomp and Saudi Geophysical installed a comprehensive monitoring system to mitigate sinkhole risks along a 1.5 km segment of a rail line. By installing advanced monitoring systems, including fiber optic cables, wire-break TDR, and monthly InSAR satellite surveys, Geocomp and Saudi Geophysical provided continuous, real-time data that helps the rail operator assess and manage risks effectively. The project also included identifying weak zones and potential voids using advanced geophysical and geotechnical methods, which informed targeted stabilization efforts like compaction grouting, reducing the risk of future sinkholes and enabling continued operations.



Indoor Building Investigation

The client reported continuous cracking on a concrete slab within a building and Geocomp's innovative use of S-scan surveys with wireless, highly sensitive accelerometers, enabled continuous subsurface imaging that traditional geotechnical drilling could not achieve. This advanced method allowed Geocomp to accurately identify the causes of building settlement and cracking, particularly by revealing a progressively thicker clay layer contributing to the issue. By completing 1,200 linear feet of geophysical survey lines within the building in just one weekend with minimal disruption, Geocomp provided a comprehensive understanding of the subsurface conditions, which was crucial in devising a targeted mitigation plan to reduce future foundation movements.



Geocomp provides cutting-edge solutions leveraging the latest technological advancements to help clients achieve their goals. To learn more visit [geocomp.com](https://www.geocomp.com)

