



Live & Interactive On-Line EDUCATION & TRAINING Professional Webinar Series



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Webinar featuring **Phil Carpenter, Ph.D., PG.**
Professor of Environmental Geophysics at Northern Illinois University

Karst Characterization Using Geophysics

May 23, 2014

Part 1: Effective Geophysical Methods for Karst

May 30, 2014

Part 2: Case Histories and Examples

Groundwater flow and contaminant transport in karst areas is often extremely complex. Karst also creates unique problems for engineering. At the same time, buried karst features cannot be adequately characterized using only boreholes. Geophysical surveys allow the irregular nature of these features to be mapped between boreholes and, in some cases, beyond an array of boreholes. Geophysical methods also typically "see" deeper than boreholes. Geophysical models of karst systems thus provide important additional information that may be used to identify recharge points, conduit flow zones, contaminant migration pathways and subcropping bedrock irregularities that cause engineering difficulties.

Geophysical methods have advanced appreciably in the past 10 years. Learn about these new advances and discover new efficiencies for doing the work yourself.

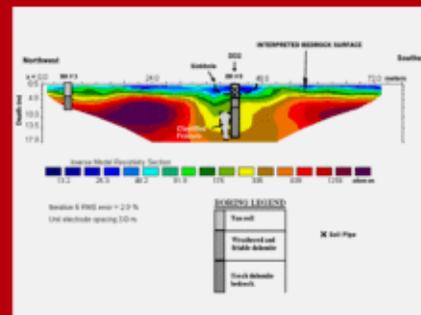
This 2-part webinar series covers cost-effective geophysical techniques for imaging buried karst features. The focus will be on a sequential and phased approach to geophysical surveys over karst. This involves a multi-step process to utilize the best technique and efficiently identify/characterize the target without collecting a lot of unused collateral information.





Although both webinars are designed to complement each other they can also be viewed independently.

Part One of this webinar series begins by introducing basic geophysical methods used in karst investigations, their advantages and disadvantages (or limitations). Electrical resistivity, EM conductivity, ground-penetrating radar, seismic refraction, gravity and borehole geophysical methods will be examined in this session. It includes a discussion of the pros and cons of each method with attention to real-life situations such data collection difficulties, interpretation time and complexity, etc. The webinar will also present an example of the geophysical response of karst features for each geophysical method (rather than a general overview).



TOPICS FOR PART ONE:

- A phased and sequential approach to near-surface geophysical surveys
- Overview of theory of each method and interpretation approach
- Pros and cons of each method, including expense and complexity of interpretation
- Unique aspects of karst geophysics
- Doing the field work and interpretation yourself vs. hiring a contractor
- How to integrate geophysical results into an overall report and answer the client's questions

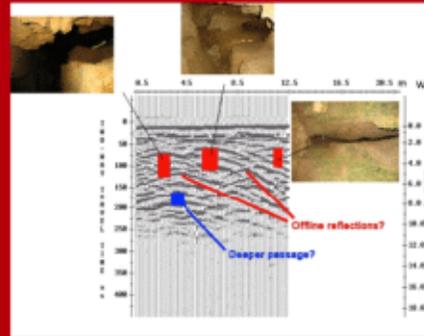
1.5 PDHs

1.5 Professional Development Hours

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Part Two of this webinar series presents actual examples of geophysical surveys over karst features. Some of the features examined include geophysical response of solutionally-enlarged fractures, caves, identification of filled or buried sinkholes, and mapping irregular buried bedrock surfaces. Geophysical imaging of these features will be related to real hydrogeological problems. Case histories may include geophysical studies at military reservations, parks, at or near Superfund sites, landfills, and construction sites.



TOPICS FOR PART TWO:

- Identifying solutionally enlarged fractures using EM, resistivity and GPR
- Identifying filled sinkholes using resistivity, GPR, EM
- Mapping caves and voids: EM, resistivity, GPR
- Well logging in karst areas
- Summary of which questions can be answered using geophysics and which cannot
- Where to rent equipment and get interpretation software (including free software)

1.5 PDHs

1.5 Professional Development Hours

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Phil Carpenter, PhD, is a Professor of Environmental Geophysics, Engineering Geology, Seismology at Northern Illinois University. Dr. Carpenter's applied research specializes in geophysical imaging of karst features and developing methods for geophysical (noninvasive) assessment of landfills and detection of pollution in adjacent aquifers. Field sites include locations across the U.S. and China.

Dr. Carpenter received his Ph.D. from New Mexico Institute of Mining and Technology; 1984; his M.S. from New Mexico Institute of Mining and Technology; 1981; and his B.S. from the University of Minnesota, Duluth; 1979.

He is recognized for his advances in geophysical assessment of landfills, mine wastes, karst features, and detection of pollution in adjacent aquifers (midwest and eastern United States, China), coupled with seismic monitoring of ambient seismic noise and earthquake occurrence in the upper Midwest (northern Illinois, southern Wisconsin, and eastern Iowa).

A **Record of Attendance Form** is included free with each webinar for your record keeping and individual PDH verification.

Attendees may also order an official a **Course Completion Certificate** from Northern Illinois University for a small administrative fee. The Certificate is optional and may be ordered separately following the webinar to confirm your attendance and showcase the certificate on your office wall. Instructions for ordering certificates are given during the webinar.



* these webinars are eligible for the
'BUY THREE, GET THREE' discount.

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Thank you for putting on a great webinar presentation! It was very helpful and applicable to the sites we are working with. Thank you again.
- Melissa Reslock, EI, McGinnis and Associates, LLC

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Upcoming Webinars:

VAPOR INTRUSION CHALLENGES, TECHNOLOGIES AND RISK MANAGEMENT SOLUTIONS:

Addressing Impacts of New Policies and Revelations

May 09, 2014 (90-minutes, 1pm Central)

by **Mark Kram, PhD**

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DESIGNING AND OPTIMIZING GROUND WATER MONITORING SYSTEMS IN SEDIMENTARY SEQUENCES: PART 1:

Deciphering Sedimentary Sequences and Targeting Meaningful Monitoring Units

May 21, 2014 (90-minutes, 1pm Central)

by **David J. Hart, PhD** and **Daniel Kelleher, PG, CIPM** and **Jim Bannantine, PG**

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TRACKING CHLORINATED SOLVENTS:

Practical Techniques for Evaluating Source, Age and Fate & Transport

June 27, 2014 (90-minutes, 1pm Central)

by **Ioana G. Petrisor, Ph.D.**

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