

Start	End	Monday, October 5th	
7:30 AM		Registration Open	
8:00 AM	8:30 AM	Continental Breakfast	
8:30 AM	12:30 PM	Short Courses 1: Geologic Site Characterization with Emphasis in Karst (4 hrs); Instructor: Lynn B Yuhr, Technos, Inc.	Short Course 2: Groundwater Tracing as a Hydrogeologic Tool in Karst and Other Landscapes (4 hrs); Instructors: Shiloh Beeman and Thomas Aley, Ozark Underground Laboratories; Jeff Green, Minnesota Dept. of Natural Resources
12:30 PM	1:30 PM	Lunch on Your Own	
1:30 PM	5:30 PM	Short Courses 3: Grouting in Karst (4 hrs); Instructors: Joseph A Fischer, Geoscience Services; Michael J Miluski, Compaction Grouting Services	Short Course 4: Minnesota Environmental Management Rules, Regulations and Permits for Southeast Minnesota Karst Landscapes and Karst Aquifers (4 hrs)

Tuesday, October 6th			
7:00 AM		Registration Open	
7:00 AM	7:30 AM	Board Buses	
7:30 AM	5:30 PM	Field Trip: Karst of Southeast Minnesota; Trip Co-Leaders: Jeff Green, Calvin Alexander, and Tony Runkel (lunch included)	
6:30 PM	9:00 PM	Welcome Reception	

Wednesday, October 7th			
6:30 AM	9:30 AM	Exhibitor Set Up	
6:30 AM	9:30 AM	Poster Set Up	
7:00 AM		Registration Open	
7:30 AM	8:00 AM	Continental Breakfast	
8:00 AM	8:10 AM	Introductory Remarks NCKRI and MGWA (10 mins total)	
8:10 AM	8:20 AM	Introduce and Remarks from Mayor of Rochester (5 mins)	
8:20 AM	8:30 AM	Introduce and Remarks from Harvey Thorleifson, Minnesota Geological Survey (5 mins)	
Plenary Session:			
8:30 AM	9:10 AM	Keynote Speaker: (40 mins) - Mike Osterholm, Center for Infectious Disease Research and Policy	
Upper Mississippi Valley Karst Aquifers: Greg Brick			
9:10 AM	9:30 AM	Joel T Groten, US Geological Survey; E. Calvin Alexander, Jr., University of Minnesota	Karst Hydrogeologic Investigation of Trout Brook
9:30 AM	9:50 AM	Sophie M Kasahara, Scott C Alexander and E Calvin Alexander, Jr., University of Minnesota	Human Impacts on Water Quality in Coldwater Spring, Minneapolis, Minnesota
9:50 AM	10:10 AM	Daniel H Doctor, US Geological Survey; E. Calvin Alexander, Jr., University of Minnesota; Roy Jameson; Scott Alexander, University of Minnesota	Hydrologic and Geochemical Dynamics of Vadose Zone Recharge in a Mantled Karst Aquifer: Results of Monitoring Drip Waters in Mystery Cave, Minnesota
10:10 AM	10:30 AM	Break in Exhibit Hall (20 mins)	
10:30 AM	10:50 AM	John D. Barry and Jeffrey A. Green, Minnesota Dept. of Natural Resources; Julia R Steenberg, Minnesota Geological Survey	Conduit Flow in the Cambrian Lone Rock Formation, Southeast Minnesota, U.S.A.
10:50 AM	11:10 AM	Kimm Crawford, Crawford Environmental Services; Terry Lee, Olmsted County Environmental Resources Department	Using Nitrate, Chloride, Sodium, and Sulfate to Calculate Groundwater Age
11:10 AM	11:30 AM	Garre A Conner, Pangea Geoservices	Karst Spring Cutoffs, Cave Tiers, and Sinking Stream Basins Correlated to Fluvial Base Level Decline in South-Central Indiana
11:30 AM	11:50 AM	Samuel V Panno, Illinois State Geological Survey and Dr. Walton R Kelly, Illinois State Water Survey	Driftless Area Karst of Northwestern Illinois and its Effects on Groundwater Quality
Hydrology of Karst: Sam Panno			
11:50 AM	12:10 PM	Amaël Poulain, Gaëtan Rochez and Vincent Hallet, University of Namur, Belgium	Hydrogeological Dynamic Variability in the Lomme Karst System (Belgium) as Evidenced by Tracer Tests Results (KARAG project)
12:10 PM	1:30 PM	Catered Lunch in Exhibit Hall	
1:30 PM	1:50 PM	James W Duley, Cecil Boswell and Jerry Prewett, Missouri Geological Survey	Recharge Area of Selected Large Springs in the Ozarks

1:50 PM	2:10 PM	Zaza Lezhava, Nana Bolashvili, Kukuri Tsikarishvili, Lasha Asanidze and Nino Chikhradze, Javakhsivili Tbilisi State University	Hydrological and Hydrogeological Characteristics of the Platform Karst (Zemo Imereti Plateau, Georgia)
2:10 PM	2:30 PM	Keith A White, ARCADIS; Thomas J Aley, Ozark Underground Laboratory; Michael K Cobb, ARCADIS; Ethan O Weikel, US Army Corps of Engineers; Shiloh L Beeman, Ozark Underground Laboratory	Tracer Studies Conducted Nearly Two Decades Apart Elucidate Groundwater Movement Through a Karst Aquifer in the Frederick Valley of Maryland
2:30 PM	2:50 PM	James Nepstad, National Park Service	Dye Tracing Through the Vadose Zone Above Wind Cave, Custer County, South Dakota
2:50 PM	3:10 PM	Gheorghe M. Ponta, Geological Survey of Alabama; Nguyen Xuan Nam, Vietnam Institute of Geoscience and Natural Resources; Ferenc L Forray, Babes-Bolyai University; Florentin Stoiciu, Viorel Badalita, Lenuta J Enache and Ioan A Tudor, R&D National Institute for Nonferrous and Rare Metals	A Comparative Study Between the Karst of Hoa Quang, Cao Bang Province, Vietnam and Tuscumbia, Alabama, USA
3:10 PM	3:30 PM	Break in Exhibit Hall (20 mins)	
Geology of Karst: John Barry			
3:30 PM	3:50 PM	Gongyu Li, Xi'an Research Institute of China Coal Technology & Engineering Group Corp.; Wanfang Zhou, ERT, Inc.	Karst Paleo-Collapses and Their Impacts on Mining and the Environment in Northern China
3:50 PM	4:10 PM	Beverly Lynn Shade, University of Texas; E Calvin Alexander, Jr. and Scott C Alexander, University of Minnesota	The Sandstone Karst of Pine County, Minnesota
4:10 PM	4:30 PM	E Calvin Alexander, Jr. and Betty J Wheeler, University of Minnesota	A Proposed Hypogenic Origin of Iron Ore Deposits in Southeast Minnesota Karst
4:30 PM	4:50 PM	Tamsin Green, University of Leeds	Down the Rabbit Hole: Identifying Physical Causes of Sinkhole Formation in the UK
4:50 PM	5:10 PM	Brian B Hunt, Brian Smith and Alan Andrews, Barton Springs/Edwards Aquifer Conservation District; Douglas Wierman, The Meadows Center for Water and the Environment; Alex S Broun, Hays Trinity Groundwater Conservation District; Marcus O Gary, Edwards Aquifer Authority	Relay Ramp Structures and Their Influence on Groundwater Flow in the Edwards and Trinity Aquifers, Hays and Travis Counties, Central Texas
5:30 PM	6:30 PM	Wine and Cheese Reception; Poster Presentations (for listing see following page)	
6:30 PM	7:30 PM	Planning Meeting for 15th Sinkhole Conference	

Poster Presentations: Available for Viewing Throughout Conference		
Wednesday 5:30 pm to 6:30 pm - Authors Present		
Session	Authors	Title
Mngt-Regs-Edu	Zhang Wei, Wang Guiling and Liu Feng, Institute of Hydrogeology and Environmental Geology, CAGS	Environmental effects of rational utilization of karst geothermal resources in the North China Plain
Mngt-Regs-Edu	Kamal Taheri, Kermanshah Regional Water Authority; Milad Taheri, Bu-Ali Sina University; Fathollah Mohsenipour, Kermanshah Regional Water Authority	LEPT, A Simplified Approach for Assessing Karst Vulnerability in Regions by Sparse Data; A Case in Kermanshah Province, Iran
GIS-DATA-Maps	Mason Johnson and Ashley Ignatius, Minnesota Pollution Cont	Finding Springs in the File Cabinet
GIS-DATA-Maps	Tim Stokes, Vancouver Island University; Paul Griffiths, Consultant; Carol Ramsey, Vancouver Island University	New Methodologies and Approaches for Mapping Forested Karst Landscapes, Vancouver Island, British Columbia, Canada.
Geology	E. Calvin Alexander, Jr., University of Minnesota; Scott C. Alexander, University of Minnesota; Kelton Barr, Braun Intertec; Andrew Luhmann, University of Minnesota; Cale Anger, University of Minnesota (deceased)	Goliath's Cave, Minnesota: Epigenic Modification and Extension of Preexisting Hypogenic Conduits
Engineering-Geotech	Edward D Zisman, Cardno ATC; Stephen West, BTL Engineering Services, Inc.	Hydrocompaction Considerations in Sinkhole Investigations
Engineering-Geotech	Zhanfei Gu, Qi Liu, Yaoru Lu, and Zhenming Shi, Tongji University; Gaoyu Su, Guangdong Freeway Co, Ltd.	Analysis and Prevention of Sinkhole Collapses During the Reconstruction and Extension of the Guang-Qing Freeway, China
Hydrology-Modeling	Nozad Hasan Azeez, Dr. Landis Jared West, Professor Simon H Bottrell, University of Leeds	Numerical Simulation of Spring Hydrograph Recession Curves for Evaluating Behavior of the East Yorkshire Chalk Aquifer
Hydrology-Modeling	Philippe Machetel, Geosciences Montpellier; David A. Yuen, University of Minnesota and China University of Geosciences	Evaluation of First Order Error Induced by Conservative-Tracer Temperature Approximation for Mixing in Karstic Flow
Hydrology-Modeling	Fuweijiang, Guizhou Institute of Technology; Mingtang Lei and Dai Jian-ling, Institute of Karst Geology	Study on the Critical Velocity of Groundwater to Form Subsidence Sinkholes in Karst Area
Geophysics	Michael G Raines, Dr. Vanessa J Banks, and Jonathan E Chambers, British Geological Survey; Philip E Collins, Brunel University London; Peter F Jones, University of Derby; Dave J Morgan, James B Riding and Katherine Royse, British Geological Survey	The Application of Passive Seismic Techniques to the Detection of Buried Hollows
Geophysics	Toby Dogwiler and Blake Lea, Missouri State University	Using Electrical Resistivity Imaging to Characterize Karst Hazards in Southeastern Minnesota Agricultural Settings
Hydrology	Min Yang, Feng'e Zhang, Sheng Zhang, Miying Yin and Guoqing Wu, Institute of Hydrogeology and Environmental Geology, Chinese Academy of Geological Sciences	Hydrochemical Characteristics and Formation Mechanism of Groundwater in the Liulin Karst System, Northwestern China
Hydrology	Feng'e Zhang, Sheng Zhang, Miying Yin, Guoqing Wu, Institute of Hydrogeology & Environmental Geology, Chinese Academy of Geological Science	Chemical Evidence for Biokarst Development in the Ordos Basin (Northwest China) in Laboratory Batch Experiments
Hydrology	Sam B Upchurch, SDII Global Corporation	Determination of the Relationship of Nitrate to Discharge and Flow Systems in North Florida Springs
Upper Mississippi Valley Karst	BJ Bonin, Greg Brick and Julia Steenberg, Minnesota Geological Survey	Seeps and Springs at a Platteville "Observatory" on the River Bluffs

Thursday, October 8th		
7:00 AM		Registration Open
7:30 AM	8:20 AM	Continental Breakfast
8:20 AM	8:30 AM	Announcements/Reminders
GIS Databases and Maps of Karst: Jason Polk		
8:30 AM	8:50 AM	Jeffrey A Green, Minnesota Dept. of Natural Resources, E Calvin Alexander, Jr., University of Minnesota
		Creation of a Map of Paleozoic Bedrock Springsheds in Southeast Minnesota
8:50 AM	9:10 AM	Vanessa J Banks, H J Reeves, E K Ward, E R Raycraft, H V Gow, D J R Morgan and D G Cameron, British Geological Survey
		Media, Sinkholes and the UK National Karst Database
9:10 AM	9:30 AM	Sam B Upchurch and Thomas M Scott, SDII Global Corporation; Michael C Alfieri, Water Resource Associates; Thomas L Dobecki, SDII Global Corporation
		Shallow Depressions in the Florida Coastal Plain: Karst and Pseudokarst
9:30 AM	9:50 AM	Clint Kromhout and Alan E Baker, Florida Geological Survey
		Sinkhole Vulnerability Mapping: Results from a Pilot Study in North Central Florida
9:50 AM	10:10 AM	John Wall, North Carolina State University; Daniel H Doctor and Silvia Terziotti, US Geological Survey
		A Semi-Automated Tool for Reducing the Creation of False Closed Depressions from a Filled LiDAR-Derived Digital Elevation Model
10:10 AM	10:30 AM	Break in Exhibit Hall (20 mins)
10:30 AM	10:50 AM	Robert G Tipping, Mathew Rantala, E Calvin Alexander, Jr., University of Minnesota; Yongli Gao, University of Texas; Jeffrey A Green, Minnesota Department of Natural Resources
		History and Future of the Minnesota Karst Feature Database
10:50 AM	11:10 AM	Gregory Brick, Minnesota Dept. of Natural Resources
		Legacy Data in the Minnesota Spring Inventory
11:10 AM	11:30 AM	Yongli Gao, University of Texas; Raghav Ramanathan, Bulent Hatigoplu and M. Melih Demirkan, Rizzo Associates; Mazen Elias Adib, Abu Dhabi City Municipality; Juan J Gutierrez, Hesham El Ganainy and Daniel Barton Jr., Rizzo Associates
		Development of Cavity Probability Map For Abu Dhabi Municipality Using GIS and Decision Tree Modeling
11:30 AM	11:50 AM	Raghav Ramanathan, Rizzo Associates; Yongli Gao, University of Texas; M. Melih Demirkan; Bulent Hatipoglu, Rizzo Associates; Mazen Elias Adib, Abu Dhabi City Municipality; Michael Rosenmeier, Juan Gutierrez, and Hesham El Ganainy, Rizzo Associates
		Evaluation of Cavity Distribution Using Point-Pattern Analysis
11:50 AM	12:10 PM	Alexandra L Todd and Lindsay Ivey-Burden, University of Virginia
		A Method of Mapping Sinkhole Susceptibility Using a Geographic Information System: A Case Study for Interstates in the Karst Counties of Virginia
12:10 PM	1:30 PM	Catered Lunch

Thursday, October 8th - Afternoon Tracks							
		Contamination of Karst Aquifers: Ming Ye				Geophysical Exploration of Karst: Mustafa Saribudak	
1:30 PM	1:50 PM	Larry Boot Pierce, Missouri Geological Survey; Honglin Shi, Missouri University of Science and Technology	Evaluation of Veterinary Pharmaceuticals and Iodine for Use as a Groundwater Tracer in Hydrologic Investigation of Contamination Related to Dairy Cattle Operations	Mustafa Saribudak, Environmental Geophysics Associates	The Million Dollar Question: Which Geophysical Methods Locate Caves Best Over the Edwards Aquifer? A Potpourri of Case Studies from San Antonio and Austin, Texas, USA		
1:50 PM	2:10 PM	Virginia Yingling, Minnesota Department of Health	Karst Influence in the Creation of a PFC Megaplume	Lewis Land, National Cave and karst Research Institute; Lasha Asanidze, Tbilisi State University	Rollalong Resistivity Surveys Reveal Karstic Paleotopography Developed on Near-Surface Gypsum Bedrock		
2:10 PM	2:30 PM	Caren Raedts and Christopher Smart, Western University of Ontario	Tracking of Karst Contamination Using Alternative Monitoring Strategies: Hidden River Cave Kentucky	Brian Bruckno, Virginia Department of Transportation; Andrea Vaccari, University of Virginia; Edward Hoppe, Virginia Center for Transportation Innovation and Research; Scott T Acton, University of Virginia; Elizabeth Campbell, Virginia Department of Transportation	Integration and Delivery of Interferometric Synthetic Aperture Radar (InSAR) Data Into Stormwater Planning Within Karst Terranes		
2:30 PM	2:50 PM	Ingrid Y Padilla, Vilda L Rivera and Celys Irizarry, University of Puerto Rico	Spatiotemporal Response of CVOOC Contamination and Remedial Actions in Eogenetic Karst Aquifers	Khiem T Tran, Clarkson University; Michael McVay, University of Florida; Trung Dung Nguyen, Clarkson University	Detection of Voids in Karst Terrain with Full Waveform Tomography		
2:50 PM	3:10 PM			Laurentiu Artugyan, Adrian C. Ardelean and Petru Urdea, West University of Timisoara	Characterization of Karst Terrain Using Geophysical Methods Based on Sinkhole Analysis: A Case Study of the Anina Karstic Region (Banat Mountains, Romania)		
3:10 PM	3:30 PM	Break in Exhibit Hall (20 mins)					
		Karst Management, Regulations and Education: David Weary				Geophysical Exploration of Karst: Mustafa Saribudak	
3:30 PM	3:50 PM	David . Weary, US Geological Survey	The Cost of Karst Subsidence and Sinkhole Collapse in the United States Compared with Other Natural Hazards	Philip J Carpenter and Lauren M Schroeder; Northern Illinois University	Investigation of a Sinkhole in Ogle County, Northwestern Illinois, Using Near-Surface Geophysical Techniques		
3:50 PM	4:10 PM	Fang Guo and Guanghui Jiang, Institute of Karst Geology, Chinese Academy of Geological Sciences; Kwong Fai Andrew Lo, Chinese Culture University; Qingjia Tang, Yongli Guo and Shaohua Liu, Institute of Karst Geology, Chinese Academy of Geological Sciences	Hazard of Sinkhole Flooding to a Cave Hominid Site and its Control Countermeasures in a Tower Karst Area, South China	Zhende Guan, X Z Jiang, Y B Wu, Z Y Pang, Institute of Karst Geology, China University of Geosciences	Study on Monitoring and Early Warning of Karst Collapse Based on BOTDR Technique		
4:10 PM	4:30 PM	Martin Larsen, Olmsted County Soil and Water Conservation District	Case Studies of Animal Feedlots on Karst in Olmsted County, Minnesota	Cathleen E Jones and Ronald G Blom, Jet Propulsion Laboratory, California Institute of Technology	Pre-Event and Post-Formation Ground Movement Associated with the Bayou Corne Sinkhole		
4:30 PM	4:50 PM	Chiara Calligaris, Stefano Devoto, Luca Zini, and Franco Cucchi, Trieste University	Evaporite Geo-Hazard in the Sauris Area (Friuli Venezia Giulia Region - NE Italy)	Modelling of Karst Systems: Ming Ye Chair			
4:50 PM	5:10 PM	George Veni, National Cave and Karst Research Institute; Connie Campbell Brashear and Andrew Glasbrenner, Bracken Engineering, Inc.	Building Codes to Minimize Cover-Collapses in Sinkhole-Prone Areas	Long Jia, Yan Meng and Zhen-de Guan, Institute of Karst Geology; Li-peng Liu, China Institute of Water Resources and Hydropower Research	Numerical Simulation of Karst Soil Cave Evolution		
5:10 PM	5:30 PM	Jason S Polk and Leslie A North, Western Kentucky University; Ric Federico, Brian Ham and Dan Nedvidek, EnSafe; Kegan McClanahan and Pat Kambesis, Western Kentucky University; Michael J Marasa, Hayward Baker	Cars and Karst: Investigating the National Corvette Museum Sinkhole	Xiaohu Tao, Ming Ye, Dangliang Wang, Roger Pacheco Castro and Xiaoming Wang, Florida State University; Jian Zhao, Hohai University	Experimental and Numerical Investigation of Cover-Collapse Sinkhole Development and Collapse in Central Florida		
6:30 PM	9:30 PM	Banquet and Guest Speaker: David Rogers, Missouri University of Science and Technology					

Friday, October 9th			
7:00 AM		Registration Open	
7:30 AM	8:20 AM	Continental Breakfast	
8:20 AM	8:30 AM	Announcements/Reminders	
Engineering and Geotechnical Investigations in Karst: Lynn Yuhr			
8:30 AM	8:50 AM	Joseph A Fischer and Joseph J Fischer, Geoscience Services	Concepts for Geotechnical Investigation in Karst
8:50 AM	9:10 AM	Mohamed Alrowaimi, Hae-Bum Yun and Manoj Chopra, University of Central Florida	Sinkhole Physical Models to Simulate and Investigate Sinkhole Collapses
9:10 AM	9:30 AM	Kevin M O'Connor, GeoTDR, Inc; Matthew Trainum, Iowa Department of Transportation	Monitoring the Threat of Sinkhole Formation Under a Portion of US 18 in Cerro Gordo County, Iowa Using TDR Measurements
9:30 AM	9:50 AM	Edward D Zisman, Cardno ATC	Predicting Compaction Grout Quantities in Sinkhole Remediation
9:50 AM	10:10 AM	Chase L Kicker, New Mexico Institute of Mining and Technology	A Feasibility Study of the Implementation of a Flowable Fill Material to Prevent Sinkhole Occurrence at the I&W Brine Well Site in Carlsbad, New Mexico
10:10 AM	10:30 AM	Break in Exhibit Hall	
10:30 AM	10:50 AM	Steven W Shifflett, US Army Corps of Engineers	Pre-Construction Rock Treatment and Soil Modification Program Using Low Mobility Grout to Mitigate Future Sinkhole Development in a 2,787.1 Square Meter (30,000 SF) Maintenance Facility
10:50 AM	11:10 AM	David M Robison, U.S. Army Corps of Engineers	Successful Foundation Preparations in Karst Bedrock of the Masonry Section of Wolf Creek Dam
11:10 AM	11:30 AM		
11:30 AM	11:50 AM		
11:45 AM	4:30 PM	Post-conference field trip: Karst in Our Built Environment; Trip Leader: Jeff Broberg (lunch included)	