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CHICAGO CHAPTER

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March 15, 2022
Announcement

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VACANT

Virtual meeting

Program Topic

Thermal perturbations of the urban subsurface: origins and effects

Speaker

Dr. Alessandro F. Rotta Loria, Assistant Professor, Department of Civil and Environmental Engineering Northwestern University

WHEN: Tuesday, March 15, 2022 @ 7 pm CST

**WHERE: Virtual meeting for March
April will be virtual.**

Virtual Room opens 6:45 PM

Presentation starts at 7:00 PM

CEUs available upon request

COST: no charge for virtual meeting

PDH/CEU: chair.aeg.chicago@gmail.com

Technical: astumpf@illinois.edu

SIGN UP for Virtual meeting – copy Zoom URL below

<https://illinois.zoom.us/j/86326200832?pwd=ZEVIMVZUME9Hblk5ZkZnZE81Rm9QZz09>

Thermal perturbations of the urban subsurface: origins and effects – Mar 15

Join Zoom Meeting

<https://illinois.zoom.us/j/86326200832?pwd=ZEVIMVZUME9Hblk5ZkZnZE81Rm9QZz09>



Dr. Alessandro F. Rotta Loria is an Assistant Professor at Northwestern University, USA, where he directs the Mechanics and Energy Laboratory within the Department of Civil and Environmental Engineering. He received his B.Sc. and M.Sc. degrees in Building Engineering from the Politecnico di Torino (Italy) while his Ph.D. degree in Mechanics from the Swiss Federal Institute of Technology in Lausanne, EPFL (Switzerland). His main research interests are Geomechanics, Energy, and Environmental Sustainability. Dr. Rotta Loria is the co-author of the book “Analysis and Design of Energy Geostuctures” (2019, Academic Press). He has also co-authored more than 30 research articles published in international scientific journals, 30 research articles published in conference proceedings, and 1 international patent. Dr. Rotta Loria is an Editorial Associate of the international journal Geomechanics for Energy and the Environment, and the task force leader of the Academia-Industry Partnership for Innovation on Energy Geotechnics for the Technical Committee 308 of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). Dr. Rotta Loria is the recipient of several awards, including the Zeno Karl Schindler Foundation Award (2019),

the ISSMGE Bright Spark Lecture Award in Energy Geotechnics (2020), the Promising Investigator Award from the International Association for Computer Methods and Advances in Geomechanics (2021), and the National Science Foundation CAREER Award (2021). In 2021, he has been nominated as one of the 100 world innovators under 35 from MIT Technology Review.

Abstract

The subsurface of urban areas is continuously subjected to thermal perturbations deriving from the operation of underground transport, district energy systems, sewer networks, geothermal technologies, and underground thermal energy storage systems. These thermal perturbations are generally associated with monotonic or cyclic temperature variations and lead to complex phenomena in the subsurface, such as heat transfers, mass transfers, and deformations. Understanding the origins and effects of thermal perturbations in the subsurface is paramount to understanding the resilience of urban areas. This lecture presents a fundamental investigation of key causes and effects of thermal perturbations for the subsurface beneath urban areas. Specifically, it addresses the impacts of thermal perturbations associated with the operation of underground infrastructures and geothermal technologies on the urban metabolism from civil, environmental, and energy engineering perspectives. Considering a large experimental and simulation dataset referring to the city of Chicago, the talk discusses the spatial and temporal evolution of temperature variations associated with waste heat continuously rejected by underground infrastructures in the subsurface. Building upon this dataset, the talk proposes a complementary analysis of the spatial and temporal evolution of the temperature variations associated with geothermal exploitations at the scale of individual and groups of buildings. Finally, the presentation highlights paramount effects of the considered monotonic and cyclic thermal perturbations for the physical state of the urban subsurface, pointing out opportunities but also threats for the resilience of present and future cities.

Providing Educational Opportunities for Working Professionals--Certificate and Master's Degree Options in Environmental Geology at Illinois - - April 19, 2022

J. Cory Pettijohn¹ and Heather Miller²

Abstract

The fields of environmental and engineering geology face the ever-increasing challenge of assimilating and analyzing enormous streams of data. These challenges might be to evaluate the frequency, intensity, and geolocation of natural hazards and extreme climate events that carry financial, property or health risk, assess and remediate water and soil contamination, or understand environmental impacts of industrial activities. Common technical capabilities required in our diverse field include the application of large data streams using scientific computer programming, implementing languages such as Python and R, as well as expertise in GIS.

To address this increasing need for environmental and engineering geologists to collect, analyze, and visualize big data streams, the Department of Geology at the University of Illinois is offering a new online M.S. degree and graduate-level certificate in Environmental Geology. These are part of the new synergistic online Master's degrees and certificate programs within each of the three departments (i.e., Geology, Atmospheric Sciences, and Geography) in the School of Earth, Society and Environment. All three online programs build on the need for educational advancement for distance-learning students and working professionals, while taking advantage of the strengths of each department's expertise in computational and data sciences as well as geospatial analysis.

The Geology Department at the University of Illinois has been a home for pioneering research and excellent teaching for well over a century, with our graduates becoming leaders in both academia and industry. As one of the nation's top public research universities, we have extensive resources, enabling our students to learn the skills needed to solve today's problems. We are using these resources to expand that reach with the online Master's and certificate programs in Environmental Geology, in which students will gain applied geology expertise to solve industry problems, including:

- Groundwater and Numerical modeling
- Contaminant Migration Characterization
- Water Chemistry and Bioremediation
- Environmental Geophysics
- Big geoscience data analysis and visualization



Dr. Cory Pettijohn jcpettij@illinois.edu

Cory Pettijohn is a Teaching Assistant Professor in the Department of Geology at the University of Illinois at Urbana-Champaign. Dr. Pettijohn is Faculty Program Coordinator of the new Environmental Geology online M.S. degree and graduate-level certificate programs, building upon his background as a Geological Engineering consultant with Weaver Consultants Group (Chicago) and Burns and McDonnell Engineering (Kansas City) and academic research in big geoscience data modeling and assimilation used in a variety of nonlinear Earth systems, including, most recently, volcanic system and eruption forecast models.

Dr. Pettijohn brings his experience as an Academic Advisor at Illinois to the new online Environmental Geology M.S., in which he will advise and partner students in their innovative capstone research project with advisors at Illinois, in private industry, and at state water and geological surveys housed in the Prairie Research Institute. Dr. Pettijohn holds a B.S. in Geological Engineering from the University of Missouri at Rolla (2000) and a Ph.D. in Hydrology from Boston University ('08). Before starting at Illinois, he was a Post-Doctoral Fellow at Oregon State University from '08 to '12.

Heather Miller

Heather Miller is the Online Program Coordinator for the School of Earth, Society and Environment (SESE). Her role is to support all the certificate and degree programs within SESE including implementing recruitment activities, facilitating the student educational experience, marketing and communications, and provide overall program operational guidance.

Ms. Miller applies her expertise from 20+ years of industry experience, and as an Illinois specialized faculty member and former student adviser, in a collaborative role with the Faculty Program Coordinator, Cory Pettijohn, to provide students a robust network of support during their online experience at the University of Illinois. She has more than 15 years of experience working with students of all levels as well as teaching experience in science communications, natural resources, agricultural and environmental sciences in both face-to-face and online settings.

Fourth Annual Earthquake Summit - March 3, 2022; St. Louis, Mo.

This is a regional professional development conference, which previously has been held in the heart of the New Madrid Seismic Zone in southeast Missouri. This conference will be held on Thursday, March 3, 2022, at the St. Louis Science Center. Hundreds of attendees from throughout the region are expected to gather to learn the latest about earthquakes in the Midwest, including the risk, preparedness strategies, and recovery planning. Experts from across the country will lead sessions focused on the latest geological findings, business continuity, insurance challenges, transportation plans, lessons learned from COVID response, building evaluation, communication strategies, and more. Please visit https://sema.dps.mo.gov/earthquake_preparedness/summit.php for a full agenda and to register for this FREE event.

Diversity Equity Inclusion

It happens that the GeoSciences are the LEAST diverse of STEM [Science, Technology, Engineering, Mathematics] according to Deb Green who is leading an effort on behalf of the AEG to promote Diversity, Equity, and Inclusion in our organization and career.

It happens that this topic has been discussed privately, almost secretly, among our membership in the Chicago Chapter. What to do?

1. The Chicago Chapter has contributed to cash awards for Earth Science projects at the Illinois Junior Academy of Sciences Exposition to promote careers in our field. We have done this for [Hm] a long time. Still Earth Science is the smallest category and once almost was eliminated but for intervention by the AEG-Chicago Chapter and this began the cash awards.
 - a. The cash awards catch the attention of TEACHERS who are influential in encouraging students to specific fields of college study
 - b. It happens that the target audience comes from families who may not have members that graduated high school let alone attend college or even graduate school.
2. AEG is attempting to reach out to Historically Black Colleges to work with STEM departments to have lectures on "You don't look like a geologist", etc.
 - a. This is exacerbated by the sad fact that these colleges and universities often do not have GeoScience Departments or faculty.
3. WHAT CAN YOU/WE DO?
 - a. Looking for an ad hoc committee on "thankless missionary work" to volunteer to go to schools on 'Career Day' to speak, meet with students, teacher and sometimes parents and tell them about opportunities in Environmental and Engineering Geology.
 - b. We will invite teachers to field trips, meetings, and short courses.

Harvard Implicit Association Test:

<https://implicit.harvard.edu/implicit/education.html>

AGI Unconscious bias training:

<https://goli.americangeosciences.org/courses/course-v1:AIPG+AIPG015+2021/about>

UCLA: <https://equity.ucla.edu/know/implicit-bias/>

West-Gray Scholarship Fund

Dear Fellow AEG Members:

We want to thank you again for contributing to the West-Gray Scholarship Fund in the AEG Foundation in the past. The Scholarship recipients for the 2021 school year have been selected and the awards will be presented at the AEG Annual meeting in September. This year we were able to give each winner a \$2000 scholarship due to the prudent financial management of the Foundation and your generosity.

In order to sustain this level of awards or increase it to help support deserving students presently studying our profession in the colleges and universities in the Eastern half of the United States, we must increase the endowment base. This scholarship supports both scholastic endeavors and field expenses. We have pledged to match all contributions up to \$20,000, made from now until the end of 2021.

Please consider sending a check to support this worthy cause. It also is your opportunity to double your generosity. Please make checks payable to the AEG Foundation with the West-Gray Scholarship indicated in the notation line on your check. Send to:

Also please encourage students in your area to join AEG and to apply for the West-Gray Scholarship. We appreciate your past generosity and look forward to hearing from you.

Sincerely yours, Terry R. West and Richard E. Gray

AEG Foundation
4013 Telegraph Ave
Suite E 423
Oakland, CA 94809

Corporate and Individual Sponsorship

Contact Chris Stohr at chair.aeg.chicago@gmail.com for information about corporate and individual sponsorship for AEG Chicago Chapter activities including:

- Earth Science Category Senior and Junior level awards, Illinois Junior Academy of Sciences
- Subsidize student attendance at the AEG Chicago Chapter in-person meetings

News and Events

- Don't forget to renew your membership or become a member!

AEG CHICAGO Winter/Spring 2022 Speaker Schedule

Date	Speaker	Title
AEG CALENDAR – direct link to national and local events https://www.aegweb.org/calendar-of-events		
	2022	
March 15 - virtual	Alessandro Rotta Loria, Northwestern Univ.	Thermal perturbations of the urban subsurface: origins and effects Join Zoom Meeting https://illinois.zoom.us/j/86326200832?pwd=ZEVIMVZUME9Hblk5ZkZnZE81Rm9QZz09
April 19 - virtual	Dr. J. Cory Pettijohn, Univ of Illinois at Urbana-Champaign	Environmental Geology Online Master's Program for Working Professionals
SPRING 2022	Dr Jason Thomason	Cone Penetrometer Short Course And Demonstration
April 22	IJAS	<i>Illinois Junior Academy of Sciences Exposition – need judges in Peoria</i>
April 27-28	I Hotel and Conference Center, Champaign, IL	EMERGING CONTAMINANTS IN THE ENVIRONMENT CONFERENCE
May 9-11	Geneva, IL	Midwest GeoSciences Short Course “Managing the Complexities and Uncertainties of Sediment Sequences for Hydrogeologic and Geotechnical Projects” Part 1, Principles. Part 2, Field Techniques.
June		Field Trip – somewhere followed by social
June	TBA In-person if possible	Environmental Geology Case Histories



SEEKING Engineering Geologists, Geotechnical Engineers

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- Bachelor's or Master's degree in environmental engineering, civil engineering, geotechnical engineering, geology
 - Knowledge of State and Federal environmental regulations a plus
 - Experience with Phase I and II Environmental Site assessments a plus
 - Strong writing skills
 - Proficient in all Microsoft Office applications
 - Must have cell phone and computer (laptop)
 - Valid Driver's License
-

Argonne National Laboratories

https://argonne.wd1.myworkdayjobs.com/en-US/Argonne_Careers/job/Argonne-National-Laboratory/Environmental-Sampler-Scientist_412138

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*We need your support! If you are interested in becoming an AEG Section Sponsor, please contact any **Section Officer** to learn more about the various benefits and sponsorship levels, and to request a copy of our sponsorship agreement.*

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Wawczak Family Donation

Survey on Dealing with Contaminated Soil During Transportation Construction Projects

Dear Professional,

Our group is currently taking Professor Reddy's course on Environmental Remediation. For our term paper, we are focusing on in-situ remediation methods used during transportation construction projects. Unfortunately, there are not many papers on this topic, so we have created a short survey for professionals like you to fill out and assist our group on gaining more information on this topic. If you could take some time to answer our questions, we would truly appreciate it.

Here is the link to the

survey: https://docs.google.com/forms/d/e/1FAIpQLScYDf643YWBfhqRQiLo4632tu0RwRnGOPfgkpF4diYybVfyw/viewform?usp=sf_link

Thank you!

Professor Krishna Reddy, PhD

Professor, University Scholar & Distinguished Researcher

Director, Geotechnical & Geoenvironmental Engineering Laboratory & Sustainable Engineering Research Laboratory

Civil, Materials, and Environmental Engineering



FIRST ANNOUNCEMENT

EMERGING CONTAMINANTS IN THE ENVIRONMENT CONFERENCE

CALL FOR Abstracts – ends February 7, 2022

April 27-28, 2022 = *HYBRID in person and online experience*

<https://publish.illinois.edu/emerging-contaminants-conference/>

<https://publish.illinois.edu/emerging-contaminants-conference/submit-an-abstract/>