CALL FOR SUBMISSIONS:

Abstracts, Panels, Technical Sessions & Short Courses

GEO-EXTREME 2021

Savannah, Georgia | August 15-18

ASCE Specialty Conference

Geotechnical Engineering for Extreme Events

Geo-Institute (GI)

www.geo-extreme.org

Extreme events and geo-hazards

Weather and climate disasters have resulted in over $1.8 trillion losses and 13,249 deaths in the United States since 1980. Historical records show that the number of billion-dollar disasters is on the rise. The 1980–2019 annual average is 6.5 events exceeding $1 billion damages/costs (CPI-adjusted) whereas the annual average for the most recent 5 years (2015–2019) is 13.8 events. 2019 is the fifth consecutive year (2015-2019) in which 10 or more billion-dollar weather and climate disaster events have impacted the United States. Over the last 40 years (1980-2019), the years with 10 or more separate billion-dollar disaster events include 1998, 2008, 2011-2012, and 2015-2019. Despite uncertainty in the projections most climate models suggest an increase in both frequency and intensity of extreme events under climate change. Further, earthquakes are estimated to cost the nation $6.1 billion annually in building stock losses. The 1886 Charleston earthquake with an estimated moment magnitude of 6.9–7.3 caused 60 deaths and $5–6 million in damage to 2,000 buildings in the southeastern United States. The number of recorded earthquake has increased dramatically in several regions, particularly within the central and eastern United States, over the past few decades partly attributed to human activities such as high pressure fluid injection associated with geo-energy technologies. There is a critical need to quantifiably assess and enhance the resilience of geo-infrastructure systems, which form a key component of the nation's critical infrastructure systems. Mitigating the consequences of future extreme events will require geo-professionals to take timely actions including, but not limited to: evaluation of existing earthen structures, design and construction of protective structures in areas where an increased probability of damage is expected, refinement of existing geo-system designs, and development of new climate-adaptive measures and risk assessment tools. Realistic models of short and long-term loading patterns will need to be developed and evaluated for the design and construction of protective earthen structures. While several large-scale studies have been conducted to evaluate various aspects of climate change, there is a clear gap in the state of knowledge in terms of assessing the performance, resilience, and risk of man-made and natural geo-systems to extreme events in a changing climate. This assessment requires quantifying the impact of climate change on geo-infrastructure, by accurately assessing the resistance (e.g., soil shear strength and compressibility, reinforcements, stabilization, etc.) and demands (e.g., loads imposed to the structure due to climate extremes). Hence, the geo-engineering community needs to closely collaborate with experts and scientists from other related disciplines, e.g., geosciences, hydro-climatology, coastal, ports, risk assessment, climate science, remote sensing, structural engineering, urban planning, emergency management, and other areas, to address future extreme events.

Geo-Extreme 2021 aims to create a multi-disciplinary forum to discuss how the geo-engineering community can work with other professionals, e.g., climate scientists, engineers, emergency managers, resilience and sustainability investigators, insurance experts, and policy makers, to properly cope with extreme events (such as hurricanes, floods, extreme precipitations, droughts, wildfires, debris flows, earthquakes, tsunamis, landslides) under a changing climate.

Geo-Extreme 2021 strives to achieve the following objectives:

- To share the lessons learned from the impact of recent extreme events on the performance of infrastructure and geo-structures (e.g., embankments, dams, levees, slopes, walls, foundations, pavements, tunnels, landfills, earth retaining systems, foundations).
- To share current and potential future applications of extreme value analysis and climate modeling in geotechnical practice and design.
- To share the latest research advances on how the rate and variability of a changing climate affect recurrence intervals and severity of climatic extremes.
- To share recent advances regarding soil behavior under climate extremes.
- To share recent advances, challenges, and areas of future research regarding the effects of individual and compound climate extremes and natural hazards on the short-term and long-term behavior of infrastructure and geo-structures.
- To highlight the use of risk in the proposal and design phases of projects to allow stakeholders to understand the potential impact of climate extremes on infrastructure and geo-structures.

Conference Co-Chairs

Timothy D. Stark, Ph.D., P.E., D.GE, F.ASCE, University of Illinois at Urbana-Champaign
Farshid Vahedifard, Ph.D., P.E., M.ASCE, Mississippi State University

About the Conference

The Conference Organizing Committee is planning a technical program that includes state-of-the-art contributions addressing all facets pertaining to the challenges and opportunities that the engineering profession faces dealing with extreme events in the face of climate change. Submissions in different forms (abstracts, technical session proposals, panel proposals, and short course proposals) are solicited on various topics related to the main theme of the conference. Technical sessions will contain multiple technical tracks delivered concurrently, and will be 90 or 120 minutes in duration. A panel discussion is an instructional technique using a group of people chosen to discuss a topic in the presence of an audience. The panel should not exceed four (4) individuals with a moderator/facilitator to facilitate the discussion and the question and answer period from the audience. The Q&A session is typically between 10 to 20 minutes in duration.

Conference Topics

Extreme events and geo-hazards of interest include tropical cyclones and hurricanes, extreme precipitation, floods, droughts, heatwaves, wildfires, ice jams, snowpack, snowmelt, debris flows, natural and man-made earthquakes, tsunamis, land subsidence, and landslides.

- Topic A: Case Histories, Lessons Learned, and Best Practices
- Topic B: Anticipation, Preparedness, Response and Recovery from Extreme Events
- Topic C: Risk Management of Extreme Events
- Topic D: Decision Making and Planning for Extreme Events
- Topic E: Climate-Resilient and Adaptive Infrastructure Systems
- Topic F: Sustainability under Extreme Events
- Topic G: Big Data and Data Analytics for Extreme Events
- Topic H: Climate Model Simulations and Predictions
- Topic I: Modeling and Assessing Compound and Cascading Events
- Topic J: Instrumentation and Remote Sensing of Extreme Events and Their Impacts
- Topic K: Natural and Man-Made Earthquakes and Associated Geo-Hazards
- Topic L: The Arctic and Cold Regions
- Topic M: Coastal Sustainability and Resilience Under Extreme Events and Changing Climate
- Topic N: Civil Infrastructure and Geo-Materials Under Extreme Loadings

Submission Types and Guidelines

Abstracts

- Abstracts may only be submitted via the online CATALYST Submission System at **https://catalyst.omnipress.com/asce_geo-extreme2021**.
- Abstracts are expected to be between 200 to 300 words.
- Abstracts cannot contain images, tables, or other graphic elements. Do not include, keywords, HTML formatting codes, or data from other database fields.
- Authors may select between two paper types to indicate the intended format of their final submission: Technical Paper (6 to 10 pages in length) or Case History (12 to 15 pages in length).
- Submissions must include the full formal names, credentials, affiliations, contact information and email addresses for all authors.
- After submission, abstracts will be reviewed and organized to form a cohesive conference program. Authors of accepted abstracts will then be invited to submit a full paper for the conference proceedings. Full papers will be peer-reviewed and accepted papers will be published in a series of ASCE Special Publications.
- Submission and acceptance of a full paper for the proceedings is required for both podium and poster session authors, prior to presenting their work at the conference.
- Authors of accepted full papers are required to sign the ASCE Copyright Transfer Agreement during the submission process, stating that: (1) all authors listed on the manuscript are aware of their authorship status and qualify to be authors on the manuscript, (2) all content, figures (drawings, charts, photographs, etc.), and tables in the submitted work are either original work created by the authors listed on the manuscript or work for which permission to reuse has been obtained from the creator, and (3) the author transfers copyright to the ASCE.

Technical Session Proposals

- Technical session proposals may only be emailed to Jay McKelvey at **jaym@earthengineering.com**.
- Proposals cannot contain images, tables, or other graphic elements. Do not include, keywords, HTML formatting codes, or data from other database fields.
- Proposals shall include: (a) session title, (b) name(s) and contact information of session leader(s)/proposer(s), (c) sponsoring organization and/or committee (include primary contact person and contact information), (d) scope or brief description of the proposed session (limited to a maximum of 300 words in length), (e) title of each presentation, if known, and (f) proposed speakers, if known.

Panel Proposals

- Panel proposals may only be emailed to Jay McKelvey at **jaym@earthengineering.com**.
- Proposals cannot contain images, tables, or other graphic elements. Do not include, keywords, HTML formatting codes, or data from other database fields.
- Proposals shall include: (a) panel title, (b) name(s) and contact information of panel moderator(s), (c) sponsoring organization and/or committee (include primary contact person and contact information), (d) scope or brief description of the proposed panel (limited to a maximum of 300 words in length), (e) proposed panelists with full names and affiliations, if known.

Short Course Proposals

- Short course proposals may only be emailed to Jay McKelvey at **jaym@earthengineering.com**.
- Short course proposals shall identity either full day or half a day courses.
- Proposals shall include: (a) short course title, (b) name(s), contact information, and short bio of short course instructor(s), (c) sponsoring organization and/or committee (include primary contact person and contact information), (d) learning objectives, (e) benefits for participants, (f) who should attend, (g) tentative course outline.

Schedule-at-a-Glance

(Subject to Change)

Sunday, August 16, 2021

8:00 a.m. – 5:00 p.m.	Full and One-Half Day Short Courses
5:00 p.m. – 7:00 p.m.	Welcome Reception with Exhibitors and Sponsors

Monday, August 17, 2021

8:00 a.m. – 5:00 p.m.	Exhibits Open
8:00 a.m. – 8:10 a.m.	Announcements
8:10 a.m. – 8:30 a.m.	"Theme of the Day" Presentation
8:30 a.m. – 9:30 a.m.	Plenary Session
9:30 a.m. – 10:00 a.m.	Morning Break in Exhibit Hall
10:00 a.m. – 12:00 p.m.	Technical Sessions
10:00 a.m. – 12:00 p.m.	Panel Discussion
12:00 p.m. – 1:30 p.m.	Lunch in Exhibit Hall
1:30 p.m. – 2:30 p.m.	Plenary Session
2:30 p.m. – 3:00 p.m.	Afternoon Break in Exhibit Hall
3:00 p.m. – 5:00 p.m.	Panel Discussion
3:00 p.m. – 5:00 p.m.	Technical Sessions
5:00 p.m. – 5:30 p.m.	Break in Exhibit Hall
5:30 p.m. – 7:00 p.m.	Bramlette McClelland Lecture

Tuesday, August 18, 2021

8:00 a.m. – 5:00 p.m.	Exhibits Open
8:00 a.m. – 8:10 a.m.	Announcements
8:10 a.m. – 8:30 a.m.	"Theme of the Day" Presentation
8:30 a.m. – 9:30 a.m.	Plenary Session
9:30 a.m. – 10:00 a.m.	Morning Break in Exhibit Hall
10:00 a.m. – 12:00 p.m.	Technical Sessions
10:00 a.m. – 12:00 p.m.	Panel Discussion
12:00 p.m. – 1:30 p.m.	Lunch in Exhibit Hall
1:30 p.m. – 2:30 p.m.	Plenary Session
2:30 p.m. – 3:00 p.m.	Afternoon Break in Exhibit Hall
3:00 p.m. – 5:00 p.m.	Panel Discussion
3:00 p.m. – 5:00 p.m.	Technical Sessions
5:00 p.m. – 5:30 p.m.	Break in Exhibit Hall

Wednesday, August 19, 2021

8:00 a.m. – 5:00 p.m.	Exhibits Open
8:00 a.m. – 8:10 a.m.	Announcements
8:10 a.m. – 8:30 a.m.	"Theme of the Day" Presentations
8:30 a.m. – 9:30 a.m.	Plenary Session
9:30 a.m. – 10:00 a.m.	Morning Break in Exhibit Hall
10:00 a.m. – 11:30 a.m.	Technical Sessions
10:00 a.m. – 11:30 a.m.	Panel Discussion
11:30 a.m. – 12:00 p.m.	Closing Remarks in Plenary

Important Dates

Proposal for Short Courses, Sessions & Panels due	May 22, 2020
Decision on Proposals	June 1, 2020
Abstracts Due	June 19, 2020
Decision on Abstracts	July 1, 2020
Draft Papers Due	November 13, 2020
Reviews on Draft Papers	December 17, 2020
Reviews and Decisions to Authors	February 19, 2021
Final Papers Due	March 19, 2021
Conference Starts	August 15, 2021