

## Memorandum

From: Center for Soil Technologies (SoilTech) Industry Advisory Board  
To: Faculty of Iowa State University, University of Connecticut, University of Southern California, and University of Washington  
Subject: SoilTech 2023 Research Solicitation  
Date: September 21, 2023

### Description of Opportunity

The Center for Soil Technologies (SoilTech), a National Science Foundation Industry-University Cooperative Research Center (IUCRC), seeks to invest in pre-competitive research and development of new technologies at partner universities that address the research priorities of SoilTech's Industry Advisory Board. SoilTech invites researchers across its four participating university sites at the University of Southern California, Iowa State University, the University of Connecticut, and the University of Washington, to submit proposals relevant to SoilTech's core research areas.

### The SoilTech Mission

Healthy soils are needed to sustain life, to grow food, to provide shelter, to provide resilient infrastructure, and to enable mobility, but there is presently a lack of knowledge about many key aspects of soil and its dynamics such as variations in the moisture and organic matter content, and how these variations affect soil and ecosystem health, terrain stability, and emergent phenomena such as wildfire hazard. SoilTech will address this knowledge gap with a mission to support industries related to agriculture, defense, energy, sustainability, and environment. SoilTech will serve as a first-of-its-kind hub for technical exchange and research among the four participating university sites and among the organizations represented within the SoilTech Industry Advisory Board, providing inter-disciplinary knowledge synthesis and broad applications of its research. SoilTech's participating sites will train the next generation of workforce in measurement and monitoring practices that will broadly benefit society.

### Key Dates

Activity	Description	Date
RFP Issued	Solicitation distributed to researchers at partner universities	<b>30 August 2023</b>
Proposals Due	3-page whitepaper submission deadline	<b>2 October 2023</b>
Projects Reviewed	SoilTech Industry Advisory Board meeting held and project selections made	<b>1-2 November, 2023</b>
Awardees Notified	All proposers will be notified of the outcomes for their research proposals	<b>TBD+1 October/November 2023</b>

Project Start Date	1 January 2024
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### SoilTech 2023 Priority Topics for Research Proposals

<b>Topic 1</b>	<b>Soil Sensors &amp; Sensor Networks</b>
Satellite-based systems and algorithms for subsurface soil profiles; <i>in situ</i> sensors and networks; UAV-based sensors and swarms; high-altitude airborne and spaceborne remote sensors; energy-aware wireless networks	
<b>Topic 2</b>	<b>New Modalities in Soil Modeling &amp; Data Analytics</b>
Integrated modeling; machine learning; uncertainty analyses to inform field initiatives	
<b>Topic 3</b>	<b>Soil Carbon Capture &amp; Accounting</b>
Carbon capture technologies; integrating carbon capture & carbon accounting; soil organic carbon dynamics; monetizing carbon credits	
<b>Topic 4</b>	<b>Soil Health &amp; Sustainability</b>
Large-scale soil health; sustainable land use; soil remediation strategies; impact on wildfire danger and ecosystem recovery assessment	
<b>Topic 5</b>	<b>Data Integration</b>
Data fusion, multi-scale and integrative data analytic frameworks for future data collection and validation, data-driven physics, physics-based models	

### SoilTech 2023 Industry Advisory Board Members

Bayer Crop Science/The Climate Corporation

Foundation for Food & Agriculture Research

John Deere

Mitsubishi Electric Research Laboratories

NASA Earth Sciences Technology Office Advanced Information Systems Technology (AIST) program

Onset Environmental

Raytheon

Syngenta

### Proposal Submission Instructions

Technical proposals should be a maximum of 3 pages (including figures), single-spaced, minimum of 12-point font, and minimum 0.5-inch page margins. Proposals must include the following information:

- Statement of objectives relevant to industry needs in one of the priority topics listed above
- Description of research plans, including methods & instrumentation
- Description of planned collaboration between partner institutions, if applicable
- Expected outcomes/deliverables
- Research timeline with project milestones
- [NSF-formatted biosketch](#) for each researcher [not included in 3-page limit]
- 1-page reference list [not included in 3-page limit]
- 1-page budget and budget justification [not included in 3-page limit] (see below)

### Proposal Budgets & Budget Justification

Please use the following template for your budget:

Faculty Salary	\$
Faculty Fringe Benefits [please check with your university for the current fringe rate]	\$
Postdoctoral Scholar Salary	\$
Postdoctoral Fringe Benefits [please check with your university for the current fringe rate]	\$
Graduate Research Assistant Stipend	\$
Materials & Supplies	\$
Equipment	\$
Travel [to SoilTech meetings only]	\$
Overhead (10%)	\$
Graduate Research Assistant Tuition	\$
Total	\$

### Additional Submission details

- Projects must be led by at least one faculty member from a participating university site (USC, UConn, UW or ISU).
- The project performance period may be up to one year. Projects may be invited for renewal/continuation as appropriate.
- Up to eight projects will be funded in the amount of \$50,000 each.
- Proposals should be *pre-competitive* in nature and are not expected to generate intellectual property (IP). Use of background IP should be avoided.
- Proposers should budget for at least one researcher to attend the second of two annual SoilTech IAB meetings to present a progress report/project update.

**Proposal materials, compiled into a single PDF, should be submitted to Samantha Danner ([samantha.danner@usc.edu](mailto:samantha.danner@usc.edu)) by 17:00 Pacific Time (UTC-08:00) on **2 October 2023**.**

### **Proposal Evaluation Criteria**

Proposals will be reviewed by the SoilTech Industry Advisory Board (IAB), whose membership is listed above.

- Reviewers will be asked to comment on proposals' major and minor strengths and weaknesses in the following areas:
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- Proposals will be selected based on their level of interest to the organizations that make up the IAB.
- Proposals will be evaluated for their potential for infusion/commercialization.
- Proposals should adhere to one or more of the priority research topics, which were vetted by the IAB.
- Proposals that are not primarily pre-competitive will not be considered.