# MASTER OF ENVIRONMENTAL DATA SCIENCE CAPSTONE PROJECTS:
## REQUEST FOR PROPOSALS 2021-22

## OBJECTIVES

Bren School Capstone Projects help clients solve a pressing environmental problem facing their organization with a data-driven solution. Serving as the Master of Environmental Data Science (MEDS) thesis, Capstone Projects are six-month collaborations between a client and a team of highly dedicated MEDS students. Projects give businesses, government agencies, NGOs, and other organizations the opportunity to have a group of talented students tackle their environmental data problem and make meaningful and actionable data science contributions.

The Bren School encourages creative, interdisciplinary proposals that leverage data science and analysis coupled with understanding of environmental science and project management skills. Throughout the project, clients receive high-quality data science work that is approximately equivalent to one full-time employee engaged for six-months.

This work helps students develop skills in project management, team-oriented data science, design and implementation, data processing/analysis/manipulation, reproducible workflows, quality assurance, interface development e.g., data visualization, technical documentation, and effective stakeholder communication. The projects also serve to expand both parties' professional networks by connecting future and current environmental data science leaders.

## DESIRABLE PROJECT ATTRIBUTES

- <u>Product-Oriented.</u> Capstone Projects prepare students to produce meaningful data science solutions to today's environmental problems. To this end, projects should yield a computational/domain science product with a strong statistics or analytical component and align with student and faculty interest.
- <u>Data-Driven.</u> Projects must provide an existing dataset and/or model for students to analyze, process, or manipulate; projects that require data collection or fieldwork will not be considered.
- <u>Clearly Defined.</u> Proposals should present a clear scope definition and specific tasks that are attainable by the approximate equivalent of one full-time employee within a six-month period.

- Underline: Funding Support. External funding for the project (e.g., for software, commercial data, travel, or supplies) is one of several factors considered in project selection. If the proposal requires substantial resources, the client will need to include a clear commitment of financial support for the proposed project.
- Collaborative, Yet Flexible. A spirit of trust and collaboration by all parties is expected; client involvement should support students while allowing them to develop their own ideas and approaches.

## PROJECT REQUIREMENTS

A successful capstone project proposal will meet the following criteria:

- Represent a significant environmental problem that requires the group to produce a solution.
- Focus on a clear computational/domain science question with a strong statistics or analytical component.
- Provide a direct link to access the complete dataset(s) and/or model.
- Match the interests, expertise and capabilities of students and faculty.
- Present a feasible project scope, given student experience and availability (must propose a manageable scope of work for a group of 3-4 master's students spending about 25% of their time during two academic quarters, or 5 months).
- Provide adequate financial support for data processing or software essential to the project.
- Support and prioritize open and professional communication among all parties; proposals should outline a clear client point of contact.

Projects that cannot be completed by May - June 2022 are not feasible and will not be considered.

## SUBMITTING A PROPOSAL

The Bren School invites any agency, company, organization, or individual facing an environmental data challenge to submit a proposal for a MEDS Capstone Project Proposal. Past clients of Bren master's projects have included local, state, and federal agencies; corporations; think tanks; non-profits and NGOs.

Proposals will be reviewed during Fall Quarter (October – November) by the Bren School Capstone Project Committee. The Committee will evaluate proposals on the criteria outlined in the Project Requirements section above. Approximately 5 Capstone Project proposals will be selected for 2021-22.

Given that projects must align with student interest to be selected, clients are encouraged to work with current MEDS faculty and/or students on proposal development. Project proposals are limited to three pages (excluding references, budget and justification, and client letter of support). For a complete description of proposal requirements, please see the full capstone project proposal guidelines.

Project Proposals are due via email on Friday, October 15, 2021
by 5:00 P.M. to [proects@bren.ucsb.edu](mailto:proects@bren.ucsb.edu)

TIMELINE

**Summer:** Bren School releases a Request for Proposals. New proposals for MEDS Capstone Projects are submitted by faculty and prospective clients.

**Fall:** Submit proposals by Friday, October 15, 2021. Projects are selected in late November; students and faculty advisors are assigned, clients are notified by the middle of December.

**Winter:** Client meets the team; students refine project objectives, review datasets and literature, and develop a design and implementation plan. Students present their design plan in a presentation to Bren School faculty and begin working on data analysis/processing/manipulation.

**Spring:** Clients meet with the students and faculty advisor to review progress and reevaluate objectives, as needed. Following the design plan, students complete the data science objective, associated project repository, and technical documentation. Students then present their findings, interface, and/or data visualization to the public, client, and Bren community.

### THINKING ABOUT SUBMITTING A PROPOSAL?

To register your interest in submitting a proposal, please contact Bren School Capstone Project Coordinator Sean Kerr (projects@bren.ucsb.edu). Sean answers questions and provides guidance regarding proposal format. He also connects proposal authors with Bren faculty, staff, and students who can provide additional guidance and assistance in writing the proposal, as needed.