

## TRESTLE mini seed grant proposal, May 2016

### 1. Project title and contact information

Project title: Early Career Geoscience Faculty Workshop: Teaching, Research, and Managing Your Career

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### 2. Project description

I am proposing to attend the Early Career Geoscience Faculty Workshop on Teaching, Research, and Managing Your Career (<http://serc.carleton.edu/NAGTWorkshops/earlycareer2016/program.html>), organized by the Science Education Resource Center, with support from the National Association of Geoscience Teachers and the National Science Foundation. By participating in this intense one-week workshop at the end of July of 2016, I expect to learn evidence-based techniques to improve my teaching in classes at CU. In particular, I signed up for teaching-focused sessions on “*Teaching Self Regulation for Improved Learning*”, “*Engaging Students in Large Classes*”, and “*Bringing Data/Research into the Classroom*”, which will all be extremely helpful for me as I develop new classes in ATOC at CU. As this workshop is targeted specifically at geoscience faculty, and has been organized several times already, it is very likely to be very useful to my teaching, especially right at the start of my teaching career at CU Boulder (I have only taught one class so far, and will teach a new class this fall, as well as develop two additional new ATOC classes over the next 2 years). I am very interested in designing the classes I will teach using current state-of-the-art evidence based teaching techniques, and I have attended several FTEP events on teaching techniques as well as participated as ATOC TRESTLE scholar in the design of course and learning goals for the ATOC major in the spring 2016 semester. However, I feel that I still need more in-depth knowledge on the best way to implement evidence-based teaching techniques, in particular on how to actively engage students and how to bring real data to the classroom, as well as to exchange ideas and experiences with other geoscience faculty members interested in teaching techniques.

### 3. Broader impacts.

I plan to report what I learn at the workshop to other faculty members in my department, in particular the colleagues involved in the ATOC TRESTLE scholar program. We have submitted a Type1 TRESTLE scholar application for the continuation of this program in the fall 2016 semester, with a focus on activity design and facilitation, to help us in the design of the project-based classes we plan to introduce as part of the new ATOC major. Bringing in the lessons learned from the experts at Science Education Resource Center to the ATOC TRESTLE community will ensure that my participation in the workshop will impact other faculty in the ATOC

department. Furthermore, I plan to use what I will learn at the workshop in the design of the Introduction to Physical Oceanography graduate class that I will teach this fall for the first times. I plan to design this course as an interactive learning experience, and to bring real data to the classroom. However, I currently do not know how to best do this, but I am sure that after the workshop I will have many ideas, which I will have a chance to immediately test this fall. I also plan to apply what I will learn in this workshop to my large (100-200) non-science major undergraduate class on climate change (ATOC1060) in the spring 2017 semester, to make it more interactive and engaging than the first time I taught it in the spring of 2015.

#### **4. Assessment.**

I plan to assess the impact of using evidence-based teaching approaches on engaging students and bringing real data to the classroom by using specific additional evaluations in my classes in fall 2016 and spring 2017. As I will be teaching the graduate-level class "Introduction to Physical Oceanography" for the first time in the fall 2016, I won't be able to compare to previous versions of the class. But by gathering feedback on the teaching techniques used, I hope to be able to evaluate how successful the more interactive learning experience and the work with real data was. In the spring 2017 semester, when I will teach the large undergraduate introduction to climate change class (ATOC1060) for the second time, I will assess the effectiveness/popularity of these changes through clicker questions as well as look for changes in the FCQs compared to the first time I taught this class in the spring 2015.

#### **5. Budget.**

The registration fee for the workshop is \$1250, including accommodation and most meals, plus \$550 airfare to Washington DC and back, and about \$200 for additional meal and transportation expenses, for a total of \$2000. I am applying for funding of 50% of these workshop expenses from the TRESTLE mini-project. I will supplement the additional funds needed to participate from personal funds, and fund my salary for the time at the workshop from summer-salary start-up funds.

#### **6. Resources leveraged.**

I will use some start-up funds as well as personal funds to fund my participation in the workshop. I will also use what I have learned from being a TRESTLE scholar during the spring 2016 semester in the conversations about teaching techniques at the workshop.

#### **7. Agreement to expectations.**

I agree to fulfill the "expectations of successful participants".