13.3 AMS EDUCATION INITIATIVES TO INCREASE ACCESSIBILITY OF GEOSCIENCE EDUCATION FOR UNDERSERVED UNDERGRADUATE STUDENTS

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1. INTRODUCTION

Ira Geer's vision for education went beyond his K-12 efforts with Project Atmosphere and the Maury Project (now Project Ocean). For almost a quarter century, American Meteorological Society Education Program scientists and educators have worked in a unique partnership with more than 900 colleges and university faculty members to introduce weather, ocean, and climate courses focused on real-world, current Earth science data. This began as an NSF-sponsored program to leverage the content of Project Atmosphere by inviting undergraduate faculty to participate in a mirror workshop at the National Weather Service Training Center. Most of the faculty invited were teachers at 2-year colleges, minority-serving institutions, and small liberal arts schools. I was among the UFEP alums from the second year of this program.

2. EARLY COLLABORATION

The UFEP-collaboration allowed me to get to know Ira Geer and begin a long and fruitful time working together (Figure 1). We shared a passion for making Earth science exciting and a desire to share this excitement to colleagues who often had few opportunities to deepen their understanding of disciplines that were part of their teaching loads. Many lacked the pedagogical approaches and classroom confidence that could enhance student excitement and learning. That next year I began to work with a new DataStreme Program local implementation team and understood the rich and exciting environmental content this curriculum contained. I began to utilize elements of it in my courses. Other UFEP alums did the same. We had long conversations about this and several of us joined Ira in curriculum development for the college audience. I was one of this group and went on to work on the Diversity Project grants and delivery throughout my career at AMS Education.

3. WEATHER STUDIES DIVERSITY PROJECT

Ira was always looking to expand and diversify the reach of weather knowledge and soon developed the idea for the Online Weather Studies undergraduate course curriculum which included some of the content and many lessons learned from DataStreme. But Ira still felt there was more to be done. At that time there were few minority students enrolled in major meteorology programs and the rest of Earth science wasn't attracting many minority students either. Ira's idea was to attract some of the best students into our disciplines by enhancing the background and experience of their professors. He also planned to leverage what he could learn from them! For him it always began with the teacher. It was the teacher's role to build excitement so enhancing this ability and providing a robust science background for professors who were often asked to teach weather courses with little course work in the discipline was, in Ira's view, the answer. He wrote several successful grants to do just this. Some of the original UFEP participants were involved in this effort. The NSF funding for the "Online Weather Studies Diversity/National Dissemination Project" (2002-2007) resulted. The project provided intensive professional development experiences from staff at the National Weather Service Training Center as well as interaction with scientists and educators at the AMS Annual Meeting (Figure 2). The faculty members also received the Online Weather Studies curriculum. This Project (NSF Awards 0119740 and 0126032) impacted 145 MSIs by recruiting faculty for the workshops and continued involvement with AMS.



Figure 1. Collaboration between James Brey and Ira Geer at a teacher summer training session in the early 2000s.

4. OCEAN STUDIES DIVERSITY PROJECT

DataStreme Ocean followed with the Maury Project participants and a curriculum was developed with the best of that program for K-12 teachers and soon undergraduate faculty. Following the template of weather diversity project the AMS Ocean Studies Diversity Project

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Figure 2. Staff and faculty participants at the May 2005 Online Weather Studies Diversity Project workshop at the NWS Training Center.

(NSF Award 0442497) provided a similar exciting extension of professional development for undergraduate faculty from 75 MSIs at the University of Washington School of Oceanography and the Pacific Marine and Environmental Laboratory and other NOAA facilities nearby. They also received the AMS Ocean Studies curriculum and AMS Annual Meeting follow-up experiences.

4. CLIMATE DIVERSITY PROGRAMS

The creation of DataStreme Climate and the follow-on AMS Online Climate Studies led to the AMS Climate Studies Diversity Project (NSF award 1107968) which included a Washington DC-area course implementation for 147 faculty at 120 MSIs (2011-2019) (Figure 3).

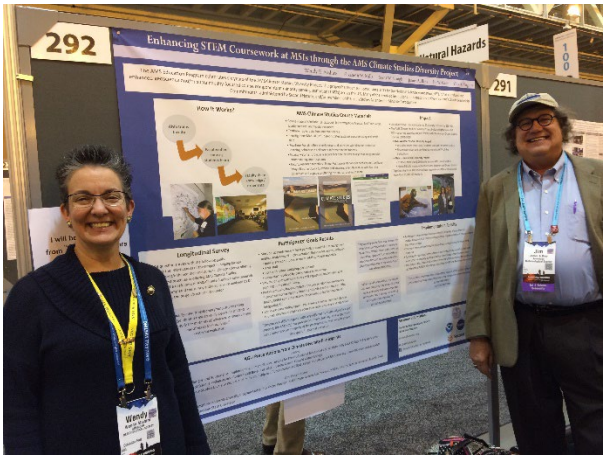


Figure 3. AMS staff poster on the AMS Climate Studies Diversity Project.

MSI-REaCH (Reconstructing Earth's Climate History) was conducted in collaboration as Co-PI with the Consortium for Ocean Leadership Deep Earth Academy at the core repository at Texas A&M University (NSF award 1443178). This professional development program integrated research-based, data-rich paleoclimate study. Faculty learned in-depth study of paleoclimate from examining the biological remains extracted from ocean cores and interpreting the paleo story revealed. This multidisciplinary study included 32 MSI faculty participants in two short courses (50 hours of immersive training over 5 days), structured mentoring, reporting and a follow-up virtual meeting and workshop.

5. CONCLUSIONS

Ira's vision of empowering undergraduate faculty from minority-serving schools with timely projects of exciting and memorable science experiences was unique in its time considering that many diversity initiatives focused on students thereby limiting the extent of the result. By embracing the idea that the teaching faculty would better interest their students in their own classrooms after an in-depth exposure to real data-based science, sound pedagogical methods, and the excitement delivered by well-known career scientists, a legacy of Ira's impact continues.