Outcomes, measure of progress and success

The objective of this proposal was to build and develop a long-term research/education relationship with atmospheric chemistry faculty members at Howard University (Washington, DC), through co-advising of graduate students, extended visits of students to NCAR and exchanges for faculty members and NCAR scientists. We aimed to begin the program by entraining two graduate student/faculty advisor pairs, and had verbal agreements with two Howard University faculty members. However, actively engaging the Howard faculty into this activity was more difficult than we had anticipated, and in the end we only succeeded with one student/advisor pair. Mary Barth (NESL/ACD) worked together with Prof. William Stockwell (Howard U. faculty) on advising Tamil Maldonado over the last two years.

Brief summary of Tamil Maldonado’s research activities

Tamil has visited NCAR/ACD twice over the past two years. For Tamil’s Ph.D. thesis, her plan was to study aerosol-cloud interactions using the WRF-Chem model applied to observations from the BEACHON field experiment. Tamil visited NESL/ACD during July-October, 2011, focusing on becoming familiar with the BEACHON project and learning how to run and modify WRF-Chem. These goals were readily achieved. By the time she left NCAR at the end of October, Tamil had successfully run the WRF-Chem model, had visited the BEACHON field site and became more familiar with the project via presentations and discussions, and learned how to use a chemistry model that solves both gas-phase and aqueous-phase chemistry.

Tamil was also a visitor to NCAR/ACD supported by the Diversity funding for the 9-month period April-November 2012. One of the goals of this visit is to modify the chemistry model so that it includes organic aqueous chemistry, to be applicable for studies involving cloud processes. With this chemistry model, Tamil is testing new chemical mechanisms in a cutting-edge field (organic aqueous chemistry) of atmospheric chemistry. Her follow-on goal is to incorporate this chemistry into the aqueous chemistry module of WRF-Chem and investigate the contribution of organic aqueous chemistry to secondary organic aerosol formation. The Diversity funding also supported a week-long visit of Tamil’s advisor Prof. William Stockwell, which was highly beneficial to everyone (including setting the stage for potential future collaborative projects with other students).

These visits to NCAR have been a very positive experience for Tamil. Please see the attached
slides for her feedback. In addition to how the experience has helped her, Tamil offers suggestions for improving UCAR-HUPAS interactions. Tamil’s advisor (Mary Barth) provided some feedbacks for improving the HUPAS student visits, including having the students be more prepared before visiting NCAR, especially regarding computer programming skills. It is difficult to teach students how to use and modify a complex model such as WRF-chem when the student has limited computer skills and experience. Overall the students may be a bit naïve about what it takes to tackle some of the complex problems that are currently being addressed at NCAR.

Overall the experience of visiting NCAR and working in NESL/ACD has been positive for Tamil. We hope to continue active collaborations with Howard U. faculty and students regarding atmospheric chemistry research projects, although perhaps not at the sustained level anticipated in our original proposal.
### Account Status With Expanded Budget & Month Rev & Exp for Multiple Keys

**For keys 112135 As of month end September, 2011**

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Total Budget: 59,978
NCAR Directorate 49,978 83%
NESL Directorate 10,000 17%

Total Spent: 38,552
NCAR Directorate 31,998
NESL Directorate 6,554

Balance Remaining:
NCAR Directorate 17,980
NESL Directorate 3,446