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NASA NICE Workshop – Wrap up Activity

2012 Elizabeth City State University

Produce 1 to 2 page document that describes your initial plan for using the workshop tools and datasets you have experienced over the last week.

Include in your plan ...

- **Which course(s) you will include workshop tools and materials**
 - I plan of including workshop tools and materials in my Introduction to Environmental Science Class for both major and non-major students. This class has 2 credits class and 2 credits lab components. Also, as part of the two funded grant activities, the new course on Climate Studies and Sustainability will be developed for spring 2012. We have an existing Microclimatology course that student enrollment is either too low or not at all and I plan of proposing to change this course from Microclimatology to Climate Studies and Sustainability. This course will be offered as a 3 credit; 2 credits class and 2 credits lab component. Materials and tools I have learned from NASA NICE Workshop and AMS Workshop I attended last May in Washington DC will be used to plan and teach to both major and non-major students.
- **When will this most likely be implemented Fall 2012, Spring 2013, Summer 2013**
 - In fall 2012, the official class will be difficult to implement. I plan of offering Independent Study for 1 credit in Climate Studies to the students' intern in my lab and others I know in Environmental Science, Fisheries and Wildlife Programs and Environmental Chemistry. In spring 2013, I plan to offer 4 credits Introduction to Environmental Science Class (this is a core course for the students majoring in Environmental Science) and 3 credits Climate Studies and Sustainability. Both courses will have lab sections where students will have an opportunity to do hands-on practices and also online component will give them a flexibility to work as a group or independently on the topics important in the climate studies. Three students in the Natural Resources Program will be given opportunity to receive hands-on training in Climate Studies Research in the University of Alaska at Fairbanks as part of the funded grant activities.
- **Describe the type of students that typically take the course, and be sure to include the approximate number of students that are pre-service teachers**

- Most of the students take my classes are students major in Environmental Science and others in Natural Resources Program. My class sizes change from 12 to 20 students depending on the year for the classes I teach. Due to most recent funding activities from NSF, USDA and NASA programs to me and other two faculty members, in-service and pre-service students' learning in climate studies is required. Planning of integration of the climate studies for training pre-service and in-service teachers will take place in the fall 2012 and the climate studies contents will be expected to be integrated in few existing science courses, freshman seminar and global societies' class. We expect the classroom size is being bigger for those courses since the current enrollment to the general science courses and global societies course is about 50 students.
- **Describe the overall learning objectives for the lesson plan or unit that will include the workshop tools and datasets**
- The plan is to offer the course as two components: regular classroom learning using a textbook AMS provided and the laboratory hands-on learning opportunity using the tools and materials covered during this NASA NICE Workshop and some of the AMS tools learned earlier. Learning objective is to first increase the awareness of the Climate Change and Adaptation, increase activities in our campus for campus-wide climate change related seminars and workshops and engage students in research efforts to enhance their learning skills and preparedness for climate change. During the AMS workshop, the learning plan is developed for the regular classroom and textbook provided will serve as guide to follow for the regular classroom instruction. Along with the field trips to the local wetlands and coastal sites, the handbook for the lab will be developed to include the laboratory section of teaching climate studies.
- **Describe any learning objectives as they specifically relate to climate education (you must have at least one climate education learning objective)**
- One of the important learning objectives for the climate studies includes but not limited to: greenhouse gas emissions and fossil fuel uses, human population and stress the population put on our Earth, renewable energy and recycling. More specifically, coastal erosion, sea level rise and habitat lost. Considering 2/3 of Delaware being the wetlands, impacts of sea level rise will have detrimental effects on the coastal habitat.
- **Identify what specific climate education module(s) from this workshop you intend to use, and whether you plan to use the total module or customize it for your specific needs.**
- I will be comfortable using the teaching methods Dr. Tim Moore applied during the workshop: poster with boxes and circles and each has some sort of connection with one another including ocean physical conditions, gases, human, by products, dead zone....etc. Also, the handouts with temperature and chlorophyll maps for each month in a year for the specified region with clues on species more abundance for the

specific month and the temperature profile by depth for each month were excellent learning tools.

Regarding the modules, I like the North Atlantic Phytoplankton Bloom Module. It was fascinating to see the changes in the chlorophyll profiles for the Gulf of Mexico and compare pre and post BP Deep Water Horizon Oil Spill in the Gulf. Currents and overall productivity in the ocean were also important learning exercise. Ocean pH exercise was pretty good. Using the modules and programs in the website <http://studentclimate.data.unh.edu> was very interesting and informative. I need to go back and do more practice of those exercise so I can teach my students Climate Change Data, Tree Atlas Tool Procedure, Biome Climate Investigation, and Measuring the Greenness Index, and Changes in Seasonal NDVI. We did not have much time to work on GLOBE Carbon Cycle and I would like to learn more on this to teach in the class. I like the locating tree and measuring them outdoor.

- **In no more than one page, share your current thoughts on what you will use and how.**
- I plan of using most everything taught during this workshop. All the teaching methods and modules were very practical and will have significant impact on student learning. As we speak, more varied teaching tools and modules and textbook combination will benefit overall learning and allow students with different skills to engage in the classroom activities. As I mentioned above, two modules we did not have much time to go over are wind and carbon cycle. I would like to learn more about them in near future so I can use all these modules as part of lab exercise in my classes. Outdoor learning experience is important and I would like to use tree identification, measurements and locating them. Water sampling for the phytoplankton identification was a good idea. I will definitely use that in my class.
- **Identify any big challenges or obstacles that immediately come to mind in your implementation?**
- We have a long process of getting approval to offer and implement the course in our department. A number of faculty members believe the faculty members who did not do climate work during their Ph.D. should not try to teach a course in Climate Studies. Also, we have issues getting administrative support especially the department t chair to allow faculty members to plan and implement new courses aligned with today's needs. Basically, it takes so long to get things approved. This worries me and I need to get going with many programs since they are part of the funded project activities besides workshops follow ups.
- **Describe how you plan to determine (assess) if the climate education module(s) you use was effective at reaching the overall learning objectives, and specific climate education objectives**

- I plan of providing a lab assignment and quiz to the students right after the module or lab exercise they learn and look how well they do and also discuss the chapter in the relevant topic during the class to enhance their learning. For each of my class, I require students to pick a topic to present and discuss as a power point presentation in the class and ask each student to grade in the class. I also ask students to pick a debate topic to debate during the semester. With weekly quizzes, chapter and lab homework, students will have opportunity more than once to enhance their learning skills via direct lecture in the class or lab exercise or the field trips I plan every spring to state and federal agencies' labs, wetlands, education center....etc.