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1.0 EDUCATION & OUTREACH

The PREDICT Education and Outreach program (E & O) was developed in conjunction with EOL Field Project Services, Media Development & Outreach, and with involvement from Chris Davis, a PREDICT Principal Investigator. The purpose of the outreach efforts are to engage interested parties and inform them of the atmospheric field research that is currently being conducted to enhance the lives of communities affected by these types of weather disturbances.

With an increasing interest and concern about global climate science, sharing how climate research is conducted with the public can only arm them with more accurate information, as well inform them what types of studies are being conducted. Many people do not grasp the breadth and depth of planning and execution that goes into an atmospheric field campaign to conduct research concerning both regional and global climate science. PREDICT offered unique outreach and public awareness opportunities, due to the intense study of tropical cyclogenesis and the depth of study of tropical disturbances that was conducted over hard-to-reach oceanic locations during a highly active hurricane season in the tropics.

2.0 EVENTS IN ST. CROIX

Three very successfully outreach events took place during the PREDICT field campaign in St. Croix, during the week of 6-10 September 2010. Outreach events took place at two private schools, while another occurred when University students and faculty visited the PREDICT Operations Center.

Considerable time was spent trying to contact various people in the public school district, from teachers to principals to district coordinators, all to no avail. The public schools system was unresponsive to offers for a free in-house presentation that would educate their students about current and relevant climate science.

With no responses from the public school system, three private schools were contacted, two of which provided immediate, enthusiastic responses. Events were planned at two of the private schools, St. Croix Country Day School and The Good Hope School, only two weeks before the actual events. Another could have been planned had there been more time to give presentations while in St. Croix. While in St. Croix, several people inquired why events were held at private schools and not the public schools, and when they heard about the lack of response from the public schools system they were not surprised and indicated they have had similar experiences.

2.1 University of Virgin Islands’ Students at PREDICT Operations Center :: 7 September 2010

Both St. John’s and St. Croix campuses of the University of Virgin Islands were contacted to come visit the PREDICT Operations Center at the Buccaneer Hotel. Nine students and three faculty responded back indicating that they were going to attend the event, however in the end only 4 students and 2 faculty attended.

Before the students going into the Operations Center to observe the Daily Planning meeting, they were given a 20 minute presentation on PREDICT & dropsondes by me and Chris Golubieski (ISF), so they were familiar with the field project and some of the terms that might be discussed in the meeting. The students and faculty stood quietly in the back of the room during the meeting. Once the meeting was over two PI’s, Michael Montgomery and Chris

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Davis, spent about 30 minutes with the visitors to explain a bit more about the research that they were conducting and to answer questions. Students indicated they were happy to have experienced “real science”, particularly with the topic of hurricanes which they could relate too in their daily lives.

2.2 The Good Hope School :: 8 September 2010
The Good Hope School is a private K-12 school located on the West end of the island, near Fredricksted. Two presentations (see attached PREDICT Presentation) were given from my computer while the school was able to provide projectors in each classroom.

The first presentation was to class of 32 8th graders in an Earth Science class. They were very enthusiastic and asked numerous questions throughout presentation. The presentation started off with a Hurricane Quiz, which was a way to engage the students and have them interact with me by asking them fun questions (see attached Hurricane Quiz). Having a demonstration dropsonde to pass around during the presentation had an affect the students as they could touch and feel an actual instrument and understood how it was ejected from the aircraft (cool factor!). The students were very enthusiastic and asking very inquisitive questions, so more time was dedicated to that rather than the planned Relative Humidity exercise, as the question and answer time was clearly an effective use of time.

The second presentation was to class of 18 4th graders, who again were very enthusiastic, and asked wonderful and inquisitive questions as well. After the presentation the students were instructed to do a Word Association activity where they all wrote down three words that they remembered from the presentation and had to say what they remembered about that word. It was a pleasant surprise to hear how many new terms they remembered and knew their meaning, for example a dropsondes and atmospheric science. The RH Lesson lesson plan was also on hand for this group, however there was not enough time to do it. It was nice to have a back-up activity just in case.

The 8th grade Earth Science teacher was very interested in using some of the PREDICT data in the classroom for an activity as a follow up activity for the students, so a lesson plan was developed on plotting sounding data using three different dropsonde from the PREDICT research. Three deferent data sets were obtained and the increments were reduced to one data set for each 50mb increments rather than every 0.5mb, which would make it easier for the students to plot. A lesson plan was developed that has the students plotting actual data from the PREDICT field study, as well as interpreting the subsequent diagrams. This lesson plan can be customized to meet the needs of specific class or can be used as is. Please see the Dropsonde Data Lesson Plan online.

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2.3 St. Croix Country Day School :: 10 September 2010
The St. Croix Country Day School is a private K-12 school located south of the Salt River Bay area. Country Day School arranged an entire upper school assembly, comprised of the schools 9-12 graders, totaling about 250 students.

Since this was a larger group the setting was a bit more formal in that the students could not ask questions during the presentation. Again, having the demo dropsonde proved to be very instrumental in explaining how some of the hurricane research is conducted. However, once the 20 minute presentation was over, the question and answer session opened up and a barrage of fantastic questions were asked. Each student who asked a question, was given a PREDICT sticker. Brigitte Baueerle, PREDICT Project Manager, came along on this event to assist with answering questions. Unfortunately there was not enough time to answer all the questions and some students were quite disappointed that we did not get to them. We did provide them with the URL of the PREDICT website and let them know that they could submit questions by way of the website.

Article in local print & online newspaper about the visits:

3.0 WEB-BASED ACCOMPLISHMENTS
Web-based projects are clearly an efficient and effective tool for dispersing information to the public. Several online portals were used to share information including a website, a PREDICT-specific blog, and the EOL platforms of Facebook, Twitter, and YouTube.

The web-based projects were aimed at the general public who are interested in atmospheric research studies, however the focus of the efforts were targeted at K-12 and university students. EOL supports the encouragement and development of early careers students into the career of atmospheric sciences by engaging them in as many ways as possible including web-based products that can be used in both traditional and informal educational settings.

3.1 PREDICT Website:
The PREDICT website was part of the newly created EOL Field Projects website, a site that hosts all of educational and outreach efforts put forth for each field project. 20 pages of PREDICT material were created, including dynamic pages such as PREDICT Science Team, Instruments, Research Aircraft, Multimedia Gallery, In the News, K-12 Lesson Plans, and a calendar. A comprehensive page that shows the NSF/NCAR GV Exterior Payload also received several positive comments.

Two PREDICT specific videos were produced for the project, with a longer documentary still in the making. Several other videos
Two K-12 lesson plans related to PREDICT were added to the website. A *Relative Humidity* lesson that was originally developed by the UCAR Education and Outreach Office was expanded upon, and is offered on the website in both teacher and student versions. Kate Young, of EOL, offered a few suggestions that were included too. Another lesson plan that has students plotting dropsonde data from three different flights during PREDICT was developed from the ground up. Three sounding profiles were obtained, with some of the data sets removed to simplify and reduce the quantity of data the students were given. Data sets for every 50mb were given rather than every 0.5mb. The *Plotting Dropsonde Data* lesson plan has students plotting data and interpreting the resulting diagram. This too is offered as both student pages and teacher pages.

The website page metrics are unavailable due to the structure of parent EOL website and how information is relayed to Google Analytics. This issue should be resolved once the site is moved to the Drupal platform and the Field Projects website is more efficiently integrated with the parent EOL website and Google Analytics.

3.2 PREDICT Blog:
From the time that the [PREDICT blog](#) started on 17 July 2010 through mid-November 2010, the blog received 694 visits, and had 28 blog posts. 27 August 2010 saw the most amount of traffic with 49 visitors. There was not a blog entry on that date, however there was a lot of hurricane activity around that date in the tropics so there may have been increased interest in the study resulting in the increase in visits to the blog.

The blog could have had greater impact if someone more involved in the project were blogging. Perhaps a Project Manager or a series of students who were in St. Croix covering the entire project. This could be another positive way to engage the students who are involved with PREDICT by exposing them to ways of “communicating science”. Wordpress was used to host the blog, which was a very convenient tool to do so, as it was very easy to customize and navigate.

3.3 Facebook & Twitter:
The [EOL Facebook page](#) was used to post PREDICT related material. Early on, it was discussed to have one concentrated EOL Facebook page rather than having fewer fans for a one time field project Facebook page. There were a total of 33 PREDICT specific posts on the EOL Facebook page. One of the drawbacks of using one Facebook page as the repository for all the field project posts is that it is difficult to ascertain exactly how many new people became a Fan of the EOL Facebook page as result of their interest in PREDICT. However, the EOL Facebook page did see an increase in 46 Fans from 15 July-23 November 2010, for total Fan base of 359.
There was another PREDICT Facebook page that was well maintained by someone from the Naval Postgraduate School. While there can not be control over who wants to manage other outreach efforts, it does seem that a focused and well-developed education and outreach plan that was agreed upon by the PI’s could help to enhance future efforts.

Twitter is combined here with Facebook as there were no Twitter specific posts on the EOL Twitter site. Tweets (what a Twitter post is called) are generated by the Facebook posts. The way that it is set up is that each time there is a Facebook post it is fed directly to Twitter, which is how the Twitter posts are generated. So there were the same number of PREDICT specific tweets as there were Facebook postings, 33 on each location.

3.4 YouTube
Two PREDICT specific videos were created that are hosted on the EOL YouTube channel, as well as embedded into the PREDICT website and posted on Facebook.

The PREDICT Science video is an overview of the science that was conducted during the field project. It was released on 14 July 2010 by the end of November 2010 the video has been viewed 1,485 times. It even was picked up by Discovery News and posted on their website.

PREDICT Research Flight 05 provided wonderful scenery for another video Hurricane Genesis Research :: PREDICT RF05 Aug 23, 2010. With the two side-cameras along with the forward looking camera mounted on the NASF/NCAR Gulfstream V, the video footage was quite stunning as well as educational. Subtitles were added to the video to explain what process were going on at various locations, along with flight direction and altitude.

Other related videos were included in the PREDICT Playlist on the EOL YouTube Channel which makes it easy for viewers to see all of the PREDICT related videos.

4.0 LESSONS LEARNED
While there are many institutions involved in any given field project, I do think having a point person to at least be aware of the various efforts should be in place. This way efforts may not be overlapped and can be better organized for the public to find. If too many unfocused E & O efforts are done by many people the result has less
impact to viewers versus having a single E & O coordinator keeping an eye on all efforts to ensure there are no duplicate outlets, etc. With many PI’s working on a project, there needs to be better coordination and understanding among them as to how a concentrated E & O effort for a project should be handled. It seemed there were numerous blogs and at least two PREDICT Facebook outlets. The resulting outcome to the public could have had deeper impact to the viewers if the E & O efforts were better orchestrated.

I think the blog could have been more effective and engaging to viewers had there been more input and blog posts. I found it challenging to come up with posts while not being in the field. I ultimately got many of the posts directly from the field catalog. In the future, perhaps there should be two to three dedicate people in the field who are responsible for blogging. Perhaps this could be a task for students who are in the field, as it would offer them an opportunity to foster their writing skills and grasping the concept of “communicating science to the public” early on in their science career.

It was a bit surprising to have such a lack of response from the St. Croix public school system. I spent a considerable amount of time during the summer trying to get in contact with various people from the district science director to principals to teachers, with no response. Contact was attempted both over the phone and via email, multiple times. My recommendation for future efforts in St. Croix would be to still contact the public school system in hopes that someone may respond, but focus efforts on the private schools of the island.

This was the first attempt at using the existing EOL social networking portals for education and outreach efforts. Moving forward with social networking as an education and outreach portal for field projects, I do like the approach of having a single platform for all the field projects, including the EOL Facebook Page, EOL Twitter, etc. Perhaps some adjustments need to be made to make the efforts more effective, and more thought put into a project blog, but I do feel that it is on the right track. Effort needs to be put forth to promote the Field Projects website and link it from other websites to drive more traffic to it. There are links from the Field Project to the social networking platforms that encourage viewers to follow the various networking options.