**Long-Term Experimental Research (LTER) Information Management System (IMS) for the Luquillo LTER site (LUQ)  
Annual Report December 2015**

***Major goals of LUQ IM:***

1. Making data accessible to the general public through the processes of data curation: maintaining its quality, making it possible to reuse on time by maintaining high quality metadata, preserving the data as technology evolves, making it readily and easily retrievable on both the LUQ’s and Network’s websites and providing publicly accessible representations of the data when possible.
2. Participate in LTER Network related activities and other Networks as well.
3. Collaborate with the scientific community, students and scientists in the development of scientific projects by providing means to manage and curate their scientific data.
4. Collaborate with the non-scientific community that assists our scientific staff and students in the administration of their projects.

***What was accomplished under these goals?***

1. Making data accessible:
   1. Major activities:
      1. Revision of data and metadata to produce EML packages that were uploaded into PASTA, the Network’s website.
      2. Improve data discovery and access in our website.
      3. Producing simple charts
   2. Specific objectives:
      1. Submit all LUQ online datasets to PASTA.
      2. Develop more dynamic tables in DEIMS were users can discover different sources of data using keywords, species codes or any other common data type.
      3. Represent long term data graphically on the web.
      4. Represent maps with locations of the plots were data was gathered.
   3. Significant results:
      1. LUQ is 100% PASTA compliant:
         * all LUQ’s online data (145 LTER): <http://luq.lternet.edu/datacatalog> ) are now in PASTA (excludes the 2 non-LTER data sets hosted by LUQ): <https://portal.lternet.edu/nis/browseServlet?searchValue=LUQ>)
      2. Keywords from the LTER Controlled Vocabulary have been assigned to all online data sets (<http://luq.lternet.edu/datasets-keys> )
      3. Online display of data sets contain a google map with coordinates of the plots.
   4. Other achievements:
      1. By hosting non-or-partially-LTER data sets in our website (see: <http://luq.lternet.edu/datacatalog?field_dataset_program_tid_2=1324&combine_op=contains&combine>= ), we have spread the LTER culture to other non-LTER programs.
2. LTER Network and Other Networks activities:
   1. Major activities:
      1. Participation in a Web site DRUPAL developers, users and managers convention: Latin American DRUPALcon (<https://latinamerica2015.drupal.org/attendees.html> )
      2. Presentation on LTER Information Management to scientists participating in the 1-5 June 2015 International Conference on Lycophyte & Fern Research “Next Generation Pteridology”. This was an invitation to the LUQ Information Manager.
   2. Specific objectives:
      1. Learn from the Drupal community of better ways to use DEIMS (LUQ’s Drupal based website-Information Management System). Share the LTER culture with other Latin American scientific-related technical community.
      2. Present the way LTER manages data, saved in databases and make them usable in the future.
   3. Significant results:
      1. Contacts with other Networks technicians established.
      2. Dissemination of the way LTER handles data and metadata to a different community of scientists.
   4. Other achievements:
3. Collaborate with the scientific community, students and scientists in the development of scientific projects:
   1. Major activities: entering, quality control, enhancing data and metadata of projects.
   2. Specific objectives: Canopy Trimming Experiment (CTE) and Fern data-related projects.
   3. Significant results:
      1. Data and metadata up-to-date on the website for the CTE (<http://luq.lternet.edu/datacatalog?field_dataset_program_tid_2=All&combine_op=contains&combine=CTE> )
      2. All fern data (a completed project) has been cleaned and incorporated into LUQ’s Information Management System and published in our local and Network websites. (<http://luq.lternet.edu/datacatalog?field_dataset_program_tid_2=All&combine_op=contains&combine=Fern> )
   4. Other achievements:
4. Collaborate with the non-scientific community:
   1. Major activities: develop and establish a database with all the scientific-related administrative-type information related to the Department of Environmental Sciences of the University of Puerto Rico, host of our LTER Program.
   2. Specific objectives:
      1. Explore and modify DEIMS for hosting non-scientific information.
      2. Develop a database hosting students and professors’ personal, project and references information:
   3. Significant results: the activities related to this goal are still under progress but:
      1. DEIMS, hence Drupal, provide enough flexibility to adapt scientific information, including Publications, Research Projects, and Person content types, to hold the corresponding administrative-type data.
         * Dissemination: <http://sandbox.ites.upr.edu/viewbiblioyear>
         * People: <http://sandbox.ites.upr.edu/people>
         * Projects: <http://sandbox.ites.upr.edu/project-auto-revision>
   4. Other achievements: exposure of other non-LTER community members to the LTER ways to manage data and metadata.

***What opportunities for training and professional development has the project provided?***

By sponsoring the participation in technical conventions such as the DrupalCon, LUQ has provided the LUQ Information Manager with an opportunity to broaden her skills in the use and development of Drupal (DEIMS version: <https://www.drupal.org/project/deims>), and to make contacts and share knowledge with members of other communities.

***How have the results been disseminated to communities of interests?***

LUQ Information manager participated in the DrupalCon Sprint event (<https://latinamerica2015.drupal.org/sprints.html>) allowing her to address the developers giving a short introduction to the LTER program.

The LUQ IM system and the LTER IM culture in general were presented at the International Conference on Lycophyte & Fern Research: Next Generation Pteridology held from June 1-5, 2015 at the Smithonian Institution & United State Botanic Garden in Washington, DC.

***What does the LUQ Information Manager plans to accomplish goals?***

1. Collaborate with the LTER scientists in the development of new experiments for LTER 5b by planning the management of data and metadata.
2. Continue the collaboration with the professors of the Department hosting our LTER Program to enhance information archival and retrieval related to the LTER Program and other programs of the Department.
3. Continue developing more dynamic tables in DEIMS were users can discover different sources of data using keywords, species codes or any other common data type.
4. Incorporate long-term data bases of widely used like precipitation and temperature data of El Verde Station in the DEIMS platform and provide a search engine to the user to extract and download the data.
5. Explore the possibility of a Network project to develop good metadata standards for Models. Start LUQ’s standards for model metadata.
6. Continue the training in Drupal for enhancing and developing the website pages to meet the plans to broaden our website’s user communities. This includes the new plans for the Schoolyard section of our LTER program.