**Long-Term Experimental Research (LTER) Information Management System (IMS) for the Luquillo LTER site (LUQ)  
Annual Report December 2016**

***Major goals of LUQ IM for 2015-16:***

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.

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

1. Collaboration with the LTER scientists in planning the management of data and metadata in LTER 5b :
   1. Major activities:
      1. By completing metadata we assisted in the planning of data acquisition for the Stream Drought Experiment.
      2. Provided information of how to use metadata as a tool to database design in the planning stage of the experimental design.
   2. Specific objectives:
      1. Assist investigator with the early completion of metadata.
      2. Assist investigator with the designing of a database and field data entry forms.
   3. Significant results:
      1. Ease data gathering process in the experimental design stage.
      2. Facilitate at an early stage and ahead of time, the writing of metadata, publications and data publication online
2. Archival and retrieval of administrative information related to the LTER Program and other programs of the Department.
   1. Major activities:
      1. Interviewed the main staff users of the Department of Environmental Science’s administrative-scientific information (DES Admin-Sc info) who are in charge of producing the monthly and yearly reports.
      2. Designed and populated databases for the archival and retrieval of the DES Admin-Scientific info.
   2. Specific objectives:
      1. The Director of the Department, the Director of the Graduate Students and the Administrator of the Science Faculty’s Students Financial Aid Office were interviewed at least twice: one to collect specifications for the design of the databases and other(s) to verify the design.
      2. The following databases where designed, implemented and populated:
         * Legacy Documents of the LTER Program (56% already scanned and published): <http://sandbox.ites.upr.edu/viewbiblioyearCEER>
         * Project (Information for Annual Reports to a local Office-DEGI): <http://sandbox.ites.upr.edu/project-auto-revision>
         * DES Grants List: <http://sandbox.ites.upr.edu/des-grants-list>
         * DES Publications (includes presentations, posters, publications, etc of Professors and Students: <http://sandbox.ites.upr.edu/viewbiblioyear>
         * People (Personnel profiles of staff, professors and students): <http://sandbox.ites.upr.edu/people>
         * DES Students (academic-related information of Students-due to the sensitive information it contains, this database is not visible to the public): <http://sandbox.ites.upr.edu/DESstudents-DepartmentView>
         * UPR Year Codes (coding information used by the University of Puerto Rico Administration to designate academic years and in the DES Students database): <http://sandbox.ites.upr.edu/year-codes>
   3. Significant results:
      1. The existence of future online access to this type of information has been received with enthusiasm by the Staff and Professors that perform the task of producing monthly and yearly reports. DES produced the best local reports in 2016 and they are welcoming a tool to prepare such a time-consuming task in the near future.
3. Development of more dynamic LTER Information tables in DEIMS
   1. Major activities:
      1. Revision of the existing dynamic tables that are used by the scientific community to search and access scientific data in our website
      2. Received feedback from some members of the scientific community to enhance the discovering capabilities of these online tables.
      3. Revision of keywords assigned to data sets.
   2. Specific objectives:
      1. Addition of Filters containing revised keywords, person-roles, etc. in the online Data Catalog (<http://luq.lternet.edu/datacatalog>)
      2. Addition of table views facilitating the discovery of data using other criteria:
         * Projects (each has a collection of data sets): <http://luq.lternet.edu/data/projectlist>
         * Data Sets grouped by duration (Long-Term Completed, Ongoing, or Short-Term Completed): <http://luq.lternet.edu/data-sets-grouped-by-duration>
   3. Significant results: Enhancement of online search for data.
4. Incorporate long-term data bases of widely used in the DEIMS platform.
   1. Major activities: Determined which data sets to incorporate:
      1. EVFS Precipitation
      2. Luquillo Mountains Vegetation Species data of mayor research sites.
   2. Specific Objective: Make these available to test the how useful it would be for the community.
5. Explore the possibility of a Network project to develop good metadata standards for Models
   1. Major activities: Enquire among Network members who are performing this activity.
   2. Specific objectives: Prepare for possible future harvest of spatial data into PASTA.
   3. Significant results: Did not find activity in the Network regarding this issue.
6. Enhancing and developing website pages to meet the plans to broaden our website’s user communities and the new plans for the Schoolyard section of our LTER program.
   1. Major activities:
      1. Enhance the Schoolyard’s webpages to reflect new Education and Outreach Activities.
      2. Make website’s pages more user friendly look at.
   2. Specific objectives:
      1. Included Schoolyard Publications, special activities and Gallery of photos
      2. Published New Schoolyard Logo on the page (<http://luq.lternet.edu/education-outreach/lter-schoolyard-schools2>)
      3. Added new Participating Schoolyard School
      4. Changed the Format of Website pages to a block format.
   3. Significant results:
      1. A tool to encourage schools’ teachers and kids to participate in LUQ’s Educational and Outreach activities
      2. Interest of teachers to publish the data gathered through time in our website.
      3. Local scientific community has expressed more interest in using local website to download data.

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

The participation of the LUQ Information Manager in the Drupal Conventions (DrupalCon) has provided her continuity in the process of broaden her skills in the use and development of Drupal and cope with the continuous changes in the technology.

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

The LUQ scientific community, including graduate students, Post-docs, educators and scientists are continuously informed of the changes in technology and the use of metadata as a tool in the experimental design process through email messages and Posters when LUQ Meeting occur.

The development of an administration database designed and developed by LUQ IM has been presented and discussed individually as well as in faculty meetings with administrators and Professors.

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

For 2017-2018:

1. Continue the collaboration with the LTER scientists in the development of new experiments for LTER 5b by planning the management of data and metadata.
2. Extend the administrative databases developed for the Department of Environmental Science (which hosts our LTER Program) by interviewing all students to get more information into the databases. Also explore ways to develop Data Entry Forms and Report Generators in Drupal thus providing a tool for the administrative staff and the Directors of the Department to generate their monthly and annual reports.
3. Start the migration of the two LUQ Information Management Systems (Scientific and Administrative) to a more recent version of Drupal.
4. Incorporate El Verde precipitation and Main LUQ Research sites Vegetation species data sets into Drupal.
5. Assist LUQs Educational Coordinator in training of the Schools Teachers on the use of our metadata forms and guidelines as a tool for experimental design.
6. Continue the training in the evolution of Drupal for enhancing and developing the website pages to meet the plans to broaden our website’s user communities.
7. Collaborate with the International Information Management community of the LTER that use DEIMS (Drupal Ecological Information Management System) in the development of DEIMS 3.