

Dean N. Williams

Supported Projects: AIMS, ESGF, UV-CDAT, ACME, PCMDI, DREAM, WIP, and ASCAC

Quarterly Report for April 1, 2017 – June 30, 2017

Quarter Accomplishments:

AIMS:

- As a member of the *LLNL Climate Leadership* team, I led and participated in daily, weekly, and monthly meetings and teleconferences for the following LLNL projects and activities: ESGF, ACME, CDAT, PCMDI, DREAM, WIP and ASCAC. **[April – June 2017]**
- As a committee member of the *DOE Advanced Scientific Computing Advisory Committee (ASCAC)*, I participated in the 2017 Spring Meeting held in Washington D.C. (April 17 – 19). The meeting reviewed the DOE's Computational and Data science needs and presented an update on the state of the Office of Science in regard to U.S. Congress Continuing Resolution (i.e., U.S. budget). The meeting also covered the United States, new Administration, views on science and science technologies as they relate to the Office of Advanced Scientific Computing Research (ASCR). **[April 2016]**
- As a committee member of the Environmental System Science (ESS) Cyber-Infrastructure, I presented ESGF and DREAM activities at the ESS Cyber-Infrastructure Meeting held in the Washington, D.C. area (April 23-25). **[April 2017]**
- Due to possible funding shortages, the visualization post-doc position was put on hold. My resume the search for a visualization post-doc in fiscal year 2018, if funding permits. **[June 2017]**
- Invited speaker and participant in the invitation only Energy-Water Nexus Knowledge Discovery Framework Experts Meeting on brainstorming use-cases for broader integrative data environments. The goal of the workshop was to develop insights on integration of elements and illustrative workflows that users might follow when addressing challenges, such as data access, manipulation, integration and visualization capabilities needed for science and model development. **[June 2017]**
- Contributed to the Biological and Environmental Research (BER) Exascale Requirements Review, which was released in June 2017. For the March 2016 meeting, I led the "Large-Scale Heterogeneous Data Management" section of the written report. **[June 2017]**
- Working Cameron Harr to purchase 4.1 petabytes of storage, at a price of ~\$500K, for the expanding Phase 6 of the Coupled Model Intercomparison Project (CMIP6) data archive. This is about half of the storage needed for CMIP6 by the end of 2018. We will purchase an additional 6 petabytes of storage in the next fiscal year along with compute clusters for server-side aggregation, subsetting, and regridding. The additional storage should be online by the end of September. Next year, in addition to more storage, there is a need to purchase additional controllers. The controllers are needed to expand our archive to the needed 20 petabytes for CMIP6. **[June 2017]**

- Wrote proposal for an additional 10 petabytes of storage for the CMIP6 archive. The additional storage will only cover the storage requirements for the fiscal year 2018. **[June 2017]**

ESGF:

- As the Chair of ESGF, I led and participated weekly and monthly teleconferences pertaining to ESGF development and operations. This includes leading written proposals, reports, articles, letters of support and collaborations posters, and presentations to various organizations. **[April – June 2017]**
- As the Principal Investigator and Chair of ESGF, I led and completed the Scientific Focus Area (SFA) proposal plan for the Earth System Grid Federation (ESGF). The proposal covers LLNL's, NASA's, and the community's organization and overarching roadmap for the continued development and deployment of ESGF over the next three to five years. The proposal was submitted to DOE and the community on April 21, 2017.
- As part of the ESGF SFA review process, I led the preparation of the defense review of ESGF SFA proposal plan that was conducted in the Washington D.C. area June 8 – 9, 2017. The ESGF SFA proposal and defense was reviewed by 11 reviewers and BER program managers. The defense presentations can be found online at: <https://esgf.llnl.gov/2017-DOE-Review.html> and community letters of support can also be found online at: <https://esgf.llnl.gov/letters-of-support.html>. The 141-page ESGF SFA proposal is not online but can be sent upon request. **[June 2017]**
- As the lead for ESGF, I completed the “*Earth System Grid Federation (ESGF) brochure/white paper*”, which captures the usefulness of the ESGF infrastructure for community projects at large. It covers “What is ESGF”, “Why is ESGF Important”, “Use Demographics”, “User Survey Results”, and “The ESGF Roadmap into the Future” in under 4-pages. The brochure is a living document and has been updated three times since its release in April. The latest version of the brochure can be found online at: <https://esgf.llnl.gov/media/pdf/2017-ESGF-Brochure.pdf>. **[April - June 2017]**

ACME:

- As the Accelerated Climate Modeling for Energy (ACME) Workflow co-group lead, I worked with the team leaders to complete the assignments associated with the 12-Month Roadmap for the time period January 1, 2017 through December 31, 2017. The roadmap includes components, such as the ACME Workbench, ACME Diagnostics, UV-CDAT, Data Management, Provenance (i.e., ProvEn), and Hardware. This also includes tracking and monitoring software releases pertinent to the success of ACME and to the community at large. **[April - June 2017].**
- As the ACME Workflow co-group lead, I also led and participated in weekly and monthly teleconferences pertaining to ACME development and operations. This includes leading written reports, posters, letters of collaborations, and presentations to various organizations. **[April – June 2017].**
- As a member of the ACME council and the ACME Workflow and Data Management Group lead, I attended the ACME All-Hands Meeting in the Washington, D.C. area. The meeting was held June 4 – 7.
 - I presented CMIP6 Data Archive, ESGF, and CMOR at the All-Hands Meeting.

DREAM:

- As the DREAM PI, I led and participated in weekly and monthly teleconferences pertaining to DREAM organization, development, and operations. This includes leading writing reports and ESGF and UV-CDAT integration. **[April – June 2017]**.
 - The team (i.e., Jason Boutte) presented the “Server-side Computing: Application Programming Interface (API) at the April monthly meeting
 - The team (i.e., Luca Cinquini) presented the CoG user interface and the metadata search capabilities at the May monthly meeting.

Papers:

- No Papers this quarter, due to the work needed for the completion of the ESGF SFA proposal plan, ESGF SFA defense, and the ESGF Brochure.

Next Quarter’s Roadmap

- I have two main focuses for the next quarter’s roadmap:
 1. Prepare for the release of the ESGF software stack (v2.5) in preparation for CMIP6 data. This will include hardware for petabyte storage and server-side hardware for data reduction. **[July - September 2017]**
 2. Respond to the ESGF SFA proposal committee’s questions that is scheduled for the end of July. I will receive the 8 to 12 scientific reviews questions and rankings from the reviewers by the end of July. I will be given a few weeks to address their questions regarding the defense and direction of ESGF for the next three years. My responses, along with the ESGF SFA proposal, will be used to update the ESGF Strategic Plan, which can be found online at: <https://esgf.llnl.gov/media/pdf/2015-ESGF-Strategic-Plan.pdf>. **[July - September 2017]**
- As a member of the ASCR Next-Generation Networks and Science (NGNS) Principal Investigator (PI) team, I will attend the NGNS PI Fall Meeting in the Washington, D.C. area, September 25 – 29, 2017. **[September 2017]**
- By invitation only, I will be attending the Data Workshop Meeting in the Washington, D.C. area, to be held sometime in the next quarter. This meeting will discuss the critical elements within the overall data and analysis components for DOE’s Data Integration Knowledge and Discovery Framework. **[July - September 2017]**
- I will continue to lead ESGF, CDAT, ACME Workflow, DREAM, and other AIMS *software development efforts* and continue to lead and/or participate in several *daily, weekly and monthly meetings and teleconferences* for the ESGF, ACME, CDAT, PCMDI, WIP, DREAM, and ASCAC projects. **[July - September 2017]**
- I will continue chair and participate on several review and *advisory committees and boards*. **[July - September 2017]**
- I will continue to push the *AIMS Leadership team* to develop *strategic and implementation Roadmap with JIRA tasks* for stakeholders and the community at large. **[July - September 2017]**

Resources Required to Achieve Goals

- None at this point. Waiting to see what the budget will be for next fiscal year (i.e., FY18).