Dean N. Williams
Supported Projects: (AIMS, ESGF, UV-CDAT, ACME, PCMDI, DREAM, ASCAC)

Quarterly Report for April 1, 2016 – June 30, 2016

Quarter Accomplishments:

AIMS:

- Led and participated in daily, weekly, and monthly meetings and teleconferences for leading projects: ESGF, ACME, UV-CDAT, PCMDI, ASCAC, and DREAM **[April - June 2016]**
- Led or participated in DOE, NASA and NOAA workshops or meetings such as: DOE ASCR Experimental and Observational (EOD) workshop, LBNL and LLNL meeting at LBNL; the DOE ACME Advisory Committee Meeting, the DOE ASCR – BER Exascale Workshop; and the DOE ASCAC Meeting. **[April - June 2016]**
- Participated, as a committee member, in the NSF review of Computational and Data science at the National Center for Atmospheric Research (NCAR). The NCAR computing and data review was held in Boulder, CO from May 23, 2016 to May 26, 2016. The committee produced a report document of our findings that was sent to the NSF Oversight of NCAR panel on June 14, 2016. **[May - June 2016]**
- As a member of the DOE BER ACME council, ACME Workflow and Data Management Group lead, chair of ESGF, and originator of CDAT, I contributed to the released DOE ASCR workshop report titled, "Management, Visualization, and Analysis of Experimental and Observational Data (EOD): The Convergence of Data and Computing Workshop Final Report". **[June 2016]**
    - http://science.energy.gov/ascr/community-resources/program-documents/

ASCAC:

- Attended the Advanced Scientific Computing Advisory Committee (ASCAC) meeting in Washington D.C. as a member of the select committee. **[April 2016]**

ESGF:

- Member of the Layered Energy-Water Data-Knowledge System Planning Steering Committee where I attended the Planning Meeting for upcoming workshop to be held in August 2016. **[April 2016]**
- **Dean N. Williams** et al., official release of the "5th Annual Earth System Grid Federation Face-to-Face Conference Report", **[April 2016]**
    - Suggested citation for this report: U.S. DOE. 2016. 5th Annual Earth System Grid Federation Face-to-Face Conference Report. DOE/SC-0181. U.S. Department of Energy Office of Science.
    - https://www.osti.gov/scitech/biblio/1253685-annual-earth-system-grid-federation
    - DOI: 10.2172/1253685
- Presented at the Environmental System Science Cyber-infrastructure Meeting (April 25) and at the Principle Investigator Meeting in Washington, D.C. (April 26-27). **[April 2016]**
- Released the ESGF Software Security Plan: http://esgf.llnl.gov/media/pdf/ESGF-Software-Security-Plan-V1.0.pdf. **[April 2016]**

- Released the ESGF Implementation Plan and present to the 17 ESGF Team Leads spanning from the user interface to server-side analysis: http://esgf.llnl.gov/media/pdf/ESGF-Implementation-Plan-V1.0.pdf. **[May 2016]**
- Released the ESGF Policies & Guidelines document to the federated community: http://esgf.llnl.gov/media/pdf/ESGF-Policies-and-Guidelines-V1.0.pdf. **[May 2016]**

ACME:

- As a member of the DOE BER Accelerated Climate Modeling for Energy (ACME) council and the ACME Workflow and Data Management Group lead, I contributed to the released DOE ASCR workshop report titled, "The Future of Scientific Workflows". **[April 2016]**
  - http://science.energy.gov/ascr/community-resources/program-documents/
- Attended the ACME all hands meeting and the ACME PI meeting June 7th – 10th. The meeting was held in Washington, D.C. **[June 2016]**

UV-CDAT:

- Submitted DOE BER research proposal, titled: "Climate model Evaluation and Data Analysis at High Resolution (CEDAHR)" to the DE-FOA-0001531 call. The proposal was led by UCLA with JPL, LLNL, and PNNL as collaboration institutions. **[April 2016]**

PCMDI, ACME, ESGF, and UV-CDAT:

- LLNL AIMS Request for Hardware proposal approved, $500K/year for four years.
- Purchased GPU for diagnostics and visualization development and user access.

Papers:

- Marcin Plociennik, Sandro Fiore, Giacinto Donvito, Michal Owsiak, Marco Fargetta, Roberto Barbera, Riccardo Bruno, Emidio Giorgio, **Dean N. Williams**, Giovanni Aloisio, "Two-level Dynamic Workflow Orchestration in the INDIGO DataCloud for Large-scale, Climate Change Data Analytics Experiments", International Conference on Computational Science 2016, ICCS 2016, 6-8 June 2016, San Diego, California, USA, vol 80, 2016, pages 722-733, DOI:10.1016/j.procs.2016.05.359.
- Covey, C., P. J. Gleckler, C. Doutriaux, **Dean N. Williams**, A. Dai, J. Fasullo, K. Trenberth and A. Berg, "Metrics for the Diurnal Cycle of Precipitation: Toward Routine Benchmarks for Climate Models", Journal of Climate, 8 June 2016, ref. 4461, DOI: http://dx.doi.org/10.1175/JCLI-D-15-0664.1.
- **Dean N. Williams, V. Balaji, Luca Cinquini, Sébastien Denvil, Daniel Duffy, Ben Evans, Robert Ferraro, Rose Hansen, Michael Lautenschlager,** and **Claire Trenham,** "A Global Repository for Planet-Sized Experiments and Observations", Bulletin of the American Meteorological Society, June 2016, doi: http://dx.doi.org/10.1175/BAMS-D-15-00132.1.
- Gleckler, P. J., C. Doutriaux, P. J. Durack, K. E. Taylor, Y. Zhang, and **D. N. Williams**, E. Mason, and J. Servonnat (2016), A more powerful reality test for climate models, Eos, 97, May 2016, DOI: 10.1029/2016EO051663.

Proposal:

- Proposal titled, "Better Tools for Better Climate Science: Turning Extreme-Scale Climate Data into Discoverable Knowledge", **Dean N. Williams** (PI), Charles Doutriaux, Sam Fries, and Ji-Woo Lee, submitted to DOE BER. **[April 2016]**

- Proposal titled, "Climate model Evaluation and Data Analysis at High Resolution (CEDAHR)", J. David Neelin (PI, UCLA), Duane Waliser (co-PI, NASA/JPL), **Dean N. Williams (co-PI, LLNL)**, Yun Qian (co-PI, PNNL), submitted to DOE BER. **[April 2016]**
- Proposal titled, "Massive-Scale Unsupervised Feature Learning for Understanding Big Data", Barry Chen (PI), Gerald Friedland, Stefan Hau-Riege, Ji-Woo Lee, Zeshawn Shaheen, Brian Van Essen, **Dean N. Williams**, Aaron Wilson, submitted to DOE ASCR. **[June 2016]**

Next Quarter's Roadmap
- I will attend several meetings and workshops in D.C **[July - September 2016]**
- I will continue to lead and/or participate in several daily, weekly and monthly meetings and teleconferences. **[July - September 2016]**
- I will continue to lead AIMS, ESGF, UV-CDAT, ACME Workflow, DREAM, and other software development efforts.
- I will continue chair and participate on several review and advisory committees.

Resources Required to Achieve Goals
- Large-scale hardware purchase for long-term storage and computing required for ACME, PCMDI, UV-CDAT, and DREAM project development.
- Clusters are needed for visualization development and server-side (remote) computing.