

OKLAHOMA

EPSCoR UPDATE

Promoting Innovative Research

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Cyberinfrastructure: Research Computing Resources for Oklahomans

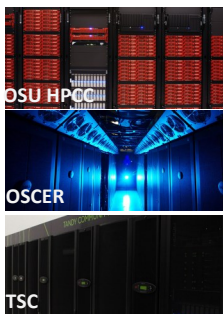
One of the goals of past and current Oklahoma NSF EPSCoR projects has been to develop the OneOklahoma Cyberinfrastructure Initiative (OneOCII), a state-wide all-inclusive advanced digital services collaboration that has been serving the Cyberinfrastructure (CI) needs for research and education across the state. OneOCII began with Oklahoma's 2008 NSF EPSCoR Research Infrastructure project and has expanded under Oklahoma's current EPSCoR grant. Jointly led by EPSCoR researchers



OneOCII Team

Dana Brunson of Oklahoma State University (OSU), Henry Neeman of the

University of Oklahoma (OU), and George Louthan at the Oklahoma Innovation Institute (OII), via a statewide CI plan shared among the OSU High Performance Computing Center (OSU HPCC), the OU Supercomputing Center for Education and Research (OSCER), and OII's Tandy Supercomputing Center (TSC), along with collaborators at several other institutions around the state, OneOCII provides support for the current EPSCoR project, including data assimilation, development of socio-ecological models and prediction capabilities, and development of decision support systems to enhance resilience of socio-ecological systems to climate variability.



"OSU HPCC, OSCER and TSC provide resources such as hardware, storage, and software, and consulting services, training, and education on the effective use of HPC resources," Dr. Brunson said.

"We've also encouraged and helped institutions not only to use CI but, also to become CI providers--we've been very excited to see CI resources at the University of Tulsa, Langston University, the University of Central Oklahoma, and now a new project to bring advanced networking to Northeastern State University, Southeastern Oklahoma State University, Southwestern Oklahoma State University and Rogers State University. In the first 9 years of OneOCII, we brought 12 times as much federal funding for CI to the state as in the 9 years before OneOCII."

"We also have an on-going effort to extend OneOCII's influence, prominence, and approach statewide, regionally and nationally," Dr. Neeman added. "Across Oklahoma, OneOCII has served over 100 institutions and organizations, including every public university in the state and many of the private institutions, plus a good number of community colleges, career techs and high schools, as well as many non-academic organizations. We're also working closely with other institutions in the region, and we're leading national efforts to expand the CI workforce."

Recently, the EPSCoR CI team partnered with OSU's faculty Drs. Dave Shideler and Richard Melstrom to construct climate datasets for each of the watersheds from a statistically downscaled time series for the Red River Basin. The OneOCII team also provided support for Dr. Tracy Boyer and coworkers in modeling land and water use in Oklahoma City Metro area. Likewise, OSU's HPCC provided the watershed climate projections including watershed shapefiles to other researchers involved in developing decision support systems. OSU HPCC partnered with Dr. Tyson Ochsner's research team to create a novel automated, high resolution soil moisture mapping system for Oklahoma.

"We helped in data conversion and scripting for EPSCoR watershed projects such as converting outputs from Soil and Water Assessment Tool (SWAT) models to Linear Programming (LP) model scripts for GAMS system. We also created scripts for converting MODFLOW model from monthly to daily scale," Evan Linde (OSU HPCC) said. "Our work in creating a water use calculator with Dr. Boyer's team is underway."

Through OneOCII, Dr. Neeman continues to present "Supercomputing in Plain English Workshops" and is involved in many other CI workshops to help build the CI capabilities of researchers and educators in Oklahoma.

Dr. Brunson's team successfully launched the inaugural Coalition for Advancing Digital Research and Education (CADRE) Spring Conference, which brought together CI professionals, librarians, and researchers interested in high performance computing; data analysis and visualization; organizing, storing and sharing data; as well as creating and implementing data management plans. CADRE and the Oklahoma Supercomputing Symposium, the oldest annual event of its kind in any EPSCoR state, bring prominent national CI leaders to our state, both to share their perspectives on the national CI agenda, and also to learn about the CI landscape here in Oklahoma. During the CADRE conference, keynote speaker John Towns (Deputy CIO for Research IT, University of Illinois-Urbana Champaign) said, "We work toward a larger vision to create a dynamic research support environment in which a broad portfolio of resources, services and support are easily discoverable and accessible to the research community."

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