

DataONE helping scientists deal with data deluge

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Vast amounts of information that could hold the key to breakthroughs in environmental research will be made readily available through a network created by Oak Ridge National Laboratory and partners.

DataONE (<http://dataone.org>) is a global data access and preservation network made possible by a \$20 million award through the National Science Foundation DataNet program. ORNL will receive \$700,000 over five years. With this effort, universities and government agencies are coming together to address the growing need for organizing and providing large amounts of highly diverse and interrelated but often incompatible scientific data, said Robert Cook, a distinguished scientist in ORNL's Environmental Sciences Division.

"The network will drive advanced research and data acquisition, storage, mining, integration and visualization for citizen scientists, researchers and decision makers," Cook said.

The resulting computing and processing cyber infrastructure will be made permanently available for use by the broader international science communities. Cook expects studies to range from research that sheds light on fundamental environmental processes to identifying environmental problems and potential solutions.

DataONE is led by the University of New Mexico and includes partner organizations across the United States, Europe, Africa, South America, Asia and Australia.

In East Tennessee, others participating in DataONE are the University of Tennessee and the U.S. Geological Survey in Oak Ridge, which represents the National Biological Information Infrastructure, a key partner in DataONE.

Ultimately, DataONE will provide a way to allow scientists from many disciplines to collaborate on important environmental scientific challenges.

"Scientists have collected an enormous amount of environmental data useful in climate change research - rainfall, temperature, forest and agricultural properties, bird species and their migration patterns," Cook said. "These data have been analyzed and reported in publications, so we know the data must exist somewhere.

"The challenge is to discover those data sets, understand how they were collected and use them to address the important climate change questions for science and society."

The DataONE team will study how a vast digital data network can provide secure and permanent access into the future and encourage scientists to share their data. The team will help determine data and data citation standards as well as create the tools for organizing, managing and publishing data.

As one of five DataNet collaborations envisioned by the NSF, DataONE will build a set of geographically distributed coordinating nodes that play an important role in facilitating all of the activities of the global network. The initial three coordinating nodes will be at the University of Tennessee/ORNL, the University of New Mexico and University of California Santa Barbara.

Like Cook, John Cobb of the Computer Science and Mathematics

Division sees great potential for the network and highlighted another benefit.

"Everyone has had or knows of horror stories of data loss when hard drives on personal computers crash," Cobb said. "One of our challenges in DataONE is to store these large volumes of data in a way that keep the data safe and properly backed up so that the data can be accessed well into the future."

Source: Oak Ridge National Laboratory ([news](#) : [web](#))

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