

# **NCCS Snapshot**

## **The Week of July 23, 2007**

**NATIONAL CENTER**  
FOR COMPUTATIONAL SCIENCES



Oak Ridge National Laboratory  
U.S. Department of Energy

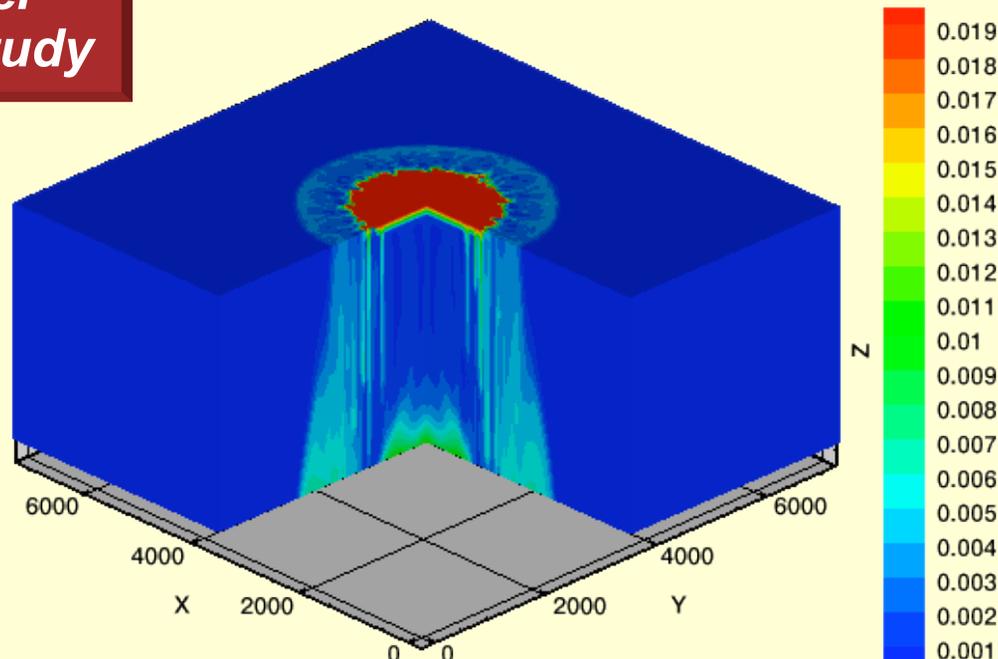
# Researchers Use Jaguar to Tackle Groundwater

***New challenges for groundwater contamination, carbon storage study***

**Uranium groundwater contamination at the Hanford 300 area remains, even though earlier studies had predicted it would be gone 5 years ago**

*“They did a study 15 years ago and concluded that within 10 years the uranium would be flushed out into the Columbia River. Now it’s 15 years later, and the uranium concentration still exceeds the maximum permissible levels.”*

**Peter Lichtner**  
Los Alamos National Laboratory



***Researchers explore the storage of carbon dioxide in groundwater as a means of removing greenhouse gases from the atmosphere.***

**Carbon storage to mitigate climate change if technical issues can be resolved**

# Jaguar Highlights Limits of Benchmark Test

## *High-performance Linpack benchmark to be modified in response to ORNL run*

- ▶ High-Performance Linpack (HPL) test used to rank supercomputers for the Top500 List
  - By running HPL's biggest problem ever, ORNL's Jaguar found a weakness in the test
  - HPL failed: 32-bit number generator too small
- ▶ HPL fixed, Jaguar run with even bigger matrix
  - Jaguar now #2 in the world at 101.7 teraflops
  - Solved most massive matrix ever (nearly 50% bigger than next largest)

*"It is the largest problem that I know of that's ever been done."*

Jack Dongarra, University of Tennessee and  
ORNL Co-creator of the Top500 List



# NCCS Users and Staff Share Ground-breaking Research at SciDAC Meeting

- Jaguar users give invited talks
  - Fusion scientists discuss research on plasma microturbulence and radio heating that will help pave the way for a clean and abundant energy future
  - Astrophysicists discuss research on supernovas and binary black holes that help us understand our universe
- NCCS visualization lead Sean Ahern gives an invited talk on visual data analysis at the petascale and a tutorial on leading visualization tools

SciDAC  
2007  
BOSTON

*SciDAC support allows researchers to take full advantage of cutting-edge supercomputers*

# Spider File System to Free Users from Web of Chores

- **Centerwide file system to be installed in stages**
  - First stage already installed for limited testing
  - Final stage (2008) to offer 10 petabytes of storage and 200 GB/second of bandwidth
- **Researchers will be able to focus on groundbreaking science**
  - No need to move data between systems in order to use visualization/data analysis tools

*“What we want is for researchers to focus on the science and the discovery. What we don’t want them to worry about is how to move data from here to there.”*

**Shane Canon, leader, NCCS Technology Integration Group**



***State-of-the-art file system will let scientists focus on science***