



Snapshot

For the week of June 1, 2009



U.S. DEPARTMENT OF
ENERGY



Modeling Volcanic Eruptions Mimics a Stressed Climate

Scientists simulate climate response to volcanic gas emissions to test model's accuracy

- Scientists at ORNL and the NCAR are using Jaguar to simulate how the climate system reacts to the atmospheric increase in aerosols from volcanic eruptions.
- The team will be able to follow the impact of aerosols on smaller scales than was possible in the past. It will monitor timescales in decades, not centuries, and space scales in geographical regions, not the entire globe.
- The sudden influx of aerosols into the atmosphere following a volcanic eruption makes a bold statement relative to other factors that influence climate.



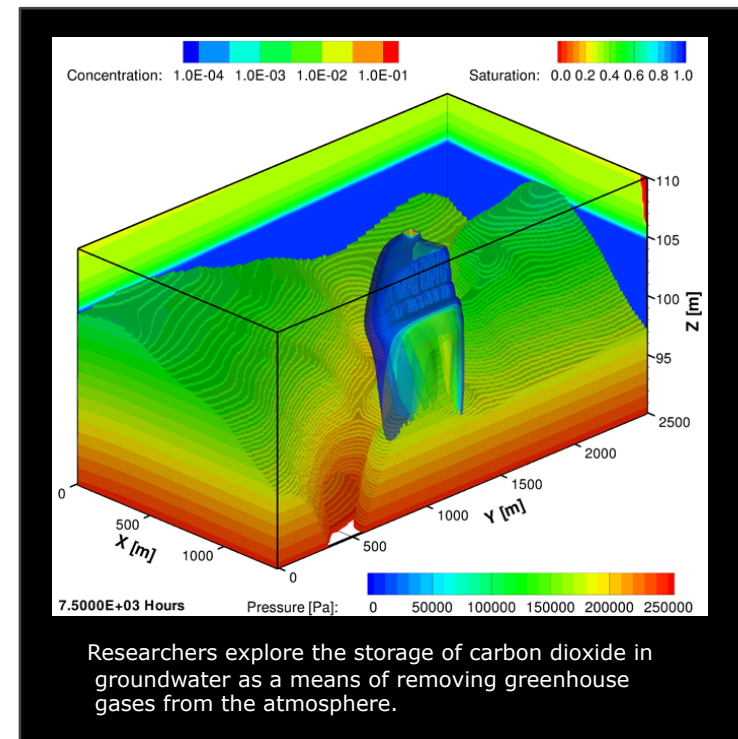
“For the first time we’ll actually be able to include more detailed information about changes in atmospheric aerosols and run the atmospheric model at a 40 kilometer resolution to assess the impact.”

- Kate Evans, principal investigator on this project to predict climate change on decadal timescales.

Sequestration Puts Carbon Dioxide Underground

Supercomputer simulations explore possibility of storage in saline aquifers

- A team led by Peter Lichtner of Los Alamos National Laboratory will attempt to understand long-term carbon sequestration using the OLCF's Jaguar supercomputer.
- Coal-burning power plants are the main source of carbon emissions in the United States, releasing more than 2 billion tons into the atmosphere every year.
- Carbon sequestration could capture the carbon emissions of these power plants and put them underground so they never reach the air we breathe.
- Lichtner's project will focus on a saline aquifer as the storage container for carbon dioxide.



“We are looking at disposing of carbon dioxide deep underground and how it will change over time. By modeling the underground chamber and the surrounding rock, including abandoned wells, we can identify where any problems or leaks will be.”
– Principal Investigator Peter Lichtner

CUG 09 Stresses Future Science On Giant Petascale Platform

NCCS hosts, provides speakers, unveils Jaguar

- More than 150 supercomputer users attended “Compute the Future,” the 51st Cray User Group meeting, an international body of member organizations that own, operate and use Cray HPC systems and support the use of Cray resources to achieve research goals.
- CUG '09 was held May 4-7 in Atlanta, GA, and was hosted this year by ORNL's NCCS and the National Institute for Computational Sciences, likewise located at ORNL. A total of 21 presentations were given by personnel from the ORNL facilities.
- James Hack, director of the NCCS and an atmospheric scientist who leads ORNL's Climate Change Initiative, gave the keynote address.
- Arthur (Buddy) Bland, leader of the Oak Ridge Leadership Computing Facility, introduced the world's most powerful computer for open science and described several applications now being used with speeds exceeding the 1 petaflop mark.



James Hack , NCCS
Director, delivers the
keynote address at
CUG 09.

“Today Jaguar is running a broad range of time-critical applications of national importance in such fields as energy assurance, climate modeling, superconducting materials, bio-energy, chemistry, combustion, and astrophysics.” - OLCF's Buddy Bland

Award Allows Researcher Access to ORNL Supercomputer

World's fastest computer for open science to explore nanodevice technology

- **Shaikh Ahmed of Southern Illinois University-Carbondale is one of just four researchers nationwide included in ORNL's first High-Performance Computing Grants Competition.**
- **As part of his successful application for the program, which was open to universities associated with ORNL, Ahmed will use the laboratory's Jaguar supercomputer to study harsh-environment nanodevice technology.**
- **The \$25,000 grant covers one year of study and holds the possibility of up to two more years of funding for a total of \$75,000 provided by the Oak Ridge Associated Universities group.**

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