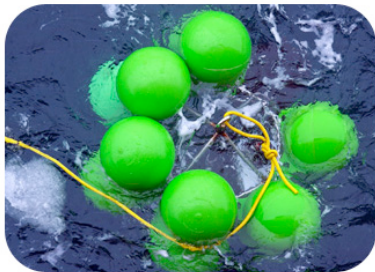


LIVERMORE LAB REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, April 30-May 4, 2012



Monitoring of the Southern Ocean using arrays of anchored and drifting instruments reveals freshening of deep waters around Antarctica. *Photo by Steve Rintoul/CSIRO*

Who knows how severe floods and droughts will become in the near future?

Laboratory postdoc Paul Durack and colleagues from the Commonwealth Scientific and Industrial Research Organization (CSIRO) certainly do by looking at how salty the world's oceans have become.

In a recent study, Durack helped refine estimates of how different parts of the globe will be affected by increased rainfall or more intense droughts as the planet heats up, affecting crops, water supplies and flood defenses.

Durack reported clear changes in salinity patterns across the world's oceans between 1950 and 2000. His findings showed that as the salinity measurements are a good way to determine changes in rainfall patterns.

Scientists monitor salinity changes in the world's oceans to determine where rainfall has increased or decreased. "It provides us with a gauge -- a method of monitoring how large-scale patterns of rainfall and evaporation (the climate variables we care most about) are changing," Durack said.

To read more, go to [Reuters](#).



Control room staff at the National Ignition Facility monitor the progress of the world's most energetic laser shot on March 15. From left: Rodrigo Miramontes-Ortiz, Dean LaTray, Scott Phillip Rogers, Dean Steven Felzkowski.

By summoning 411 trillion watts of power -- 1,000 times more than the United States uses in any instant -- Laboratory scientists are attempting to create the same energy at the core of our sun.

The scientific experiments conducted at the National Ignition Facility are meant to give the world a new energy source.

Fusion energy entails fusing hydrogen atoms to produce enormous amounts of heat, which can be captured and developed into an energy source, that is safe, cheap, does not burn fossil fuels or consume non-renewable resources.

National Ignition Facility scientists hope to achieve fusion ignition later this year.

To read more, go to [Canadian Business](#).

THE GREENING OF THE LAB



An aerial rendering of the Livermore Valley Open Campus

The Laboratory has been recognized by the National Nuclear Security Administration for four of its efforts in environmental stewardship.

For the Best in Class Award, the LLNL High Performance Computing Innovation Center (HPCIC) won for serving as an outstanding example of program and facility development with a focus on environmental stewardship. This facility is one of the first in the Livermore Valley Open Campus (LVOC) area, with a site design that includes the first permeable pavement used at LLNL, and native vegetation to limit water consumption.

Other environmental stewardship awards include:

Innovative green cleaning at the National Ignition Facility: The NIF Class 10000 clean room environment maintained throughout the facility is the same level of cleanliness you might find in a hospital operating room.

Fresh @ the Labs -- Farmers Market collaboration: The market, held in conjunction with Sandia National Laboratory/California from July 2011 through October 2011, was a highly successful partnership between the two labs that promoted community collaboration, employee health, a life convenience and environmental sustainability.

Hydrogen shuttle bus collaborative project (joint award with Sandia/CA): Two hydrogen buses, one a 12-passenger and a second 8-passenger with wheelchair capability were integrated into the LLNL taxi fleet used to transport employees at both the LLNL and SNL/CA laboratories.



A FAIR TO REMEMBER



Dan Nelson, Fun with Science presenter, conducts a liquid nitrogen experiment at the expo.

Science was on full display last weekend as the second USA Science & Engineering Expo returned to Washington, D.C.

Thousands of aspiring scientists, engineers and technicians queued up at the Laboratory's four booths to test their knowledge of basic science information, try their best at solving the world's energy needs while keeping any impact to the environment to a minimum, participate in the interactive Fun With Science shows, or learn about the National Ignition Facility.

The festival is considered the nation's largest celebration of science and engineering. The year's attendance topped 150,000 participants.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

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