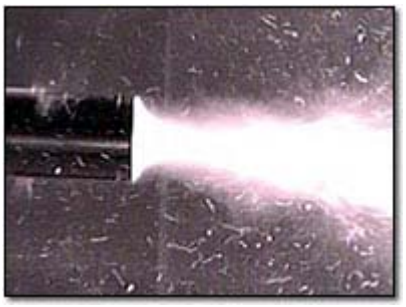
July 29, 2002: Highlights

Back to News Highlights

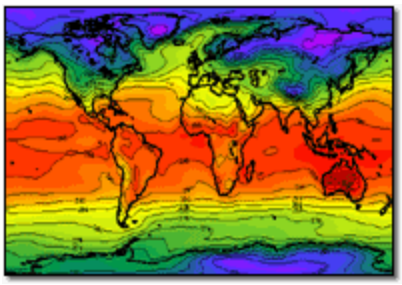
Light from Gas Bubbles: Sonoluminescence Measured

A gas bubble excited by ultrasound -- sound waves at frequencies above the range audible to the human ear -- turns a tiny fraction of the sound energy into light. This phenomenon, called sonoluminescence, has been observed for decades. Now, chemists supported by the National Science Foundation have, for the first time, measured the chemical reactions and light emission from a single water bubble excited by sound waves. The researchers, Ken Suslick and Yuri Didenko of the University of Illinois, reported their findings in the July 25 issue of *Nature*.

More... (posted July 29, 2002)



A cloud of gas bubbles in a liquid excited by ultrasound can emit sonoluminescence due to extreme temperatures inside the bubbles as they collapse. Credit: K. S. Suslick and K. J. Kolbeck/University of Illinois.



Sample graphic representation of reference height temperature data generated by CCSM-2. Credit: University Corporation for Atmospheric Research. http://www.ccsm.ucar.edu/

New Computer Model Projects Detailed Picture of Worldwide Climate

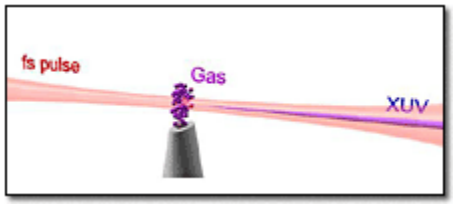
Capping two years of research, a nationwide group of more than 100 scientists has created a powerful new computer model of the Earth's climate. The model, called CCSM-2 (Community Climate System Model, version 2) and funded by NSF and the Department of Energy, is more accurate than its predecessors and handles higher-resolution information for such variables as ocean currents and land-surface temperatures.

More... (posted July 29, 2002)

Laser-Like Beam May Break Barriers to Technological Progress

Researchers have created a sharply focused, laser-like beam of ultraviolet light using a device that could fit on a dining room table. Scientists and engineers will be able to use this extreme ultraviolet (EUV) light source to measure and manipulate objects at the scale of nanometers (billionths of a meter). A team led by Margaret Murnane and Henry Kapteyn of JILA at the University of Colorado (managed by the university and the National Institute for Standards and Technology) developed the new, short-wavelength light-source with support from the National Science Foundation (NSF) and the Department of Energy.

More... (posted July 29, 2002)



In high harmonic generation (HHG), a visible light pulse lasting only quadrillionths of a second is fired into a gas, ionizing the gas and causing the ions to oscillate. The result is a high-energy EUV laser beam. Credit: Margaret Murnane and Henry Kapteyn/JILA at the University of Colorado.

Telemedicine Link With South Pole Allows Remote Knee Surgery

In a groundbreaking telemedicine development, doctors in Massachusetts earlier this month helped a physician at Amundsen-Scott South Pole Station to surgically repair the damaged knee of a meteorologist who is spending the winter in Antarctica. The operation's success marks a milestone in efforts to use telecommunications to improve the medical services available to those who must spend the long austral winter at one of the world's most remote scientific stations.

More... (posted July 29, 2002)

Dr. Timothy Pollard talks with the patient, Dar Gibson, and station personnel who assisted in the operation. Photo: Jonathan Berry/National Science Foundation

Copyright Information | Back to News Highlights

Top

nsf.gov | About NSF | Funding | Publications | News & Media | Search | Site Map | Help

The National Science Foundation
4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090

Policies
Contact NSF
Customize