CORPORATIONS GOING GREEN

If the air is bad, people won't leave the house to shop. Perhaps that is the thinking behind a couple of corporations recently announcing their use of renewable energy sources. Whole Foods Market, the organic supermarket chain, purchased credits from wind farms to account for all of the electricity it uses, making it the first Fortune 500 company to take such a step. The company said the impact will be comparable to taking 60,000 autos off the road. Meanwhile, Walgreens announced it will put solar electric systems in two distribution centers and almost 120 stores in California and New Jersey, which will provide 20%–50% of the electricity used at each site. Walgreens said that it will be the largest solar project ever undertaken in the United States and that the energy saved will be equivalent to more than 22 million gallons of gas.

enlisted and confirmed the storm was raging in the planet's southern hemisphere. *Cassini* sent back images of the storm days later.

It is unclear how such lightning storms originate on Saturn, but scientists think it might be related to the planet's warm interior.

Saturn's southern hemisphere is referred to as "storm alley" by scientists because of the high level of storm activity observed there. The latitude of the new storm matches that of the "Dragon storm," which was a powerful emitter of radio noise and was imaged by *Cassini* in 2004. It may be a reemergence of that storm or a new storm, the researchers said.

Cassini scientists are looking forward to an extensive set of night-side imaging, designed to look for lightning. That set will be collected during the first half of this year.

Wyoming Cloud Seeding Experiment Begins

Although Western states spend millions of dollars each year seeding clouds to increase snow or rain, studies to evaluate the method's effectiveness, at least on a large scale, have so far been inconclusive. Now, persistent severe

drought in the western United States is motivating scientists to further examine its potential. In particular, NCAR recently began a major project to study the effects of seeding in parts of Wyoming.

Scheduled to last five years at a cost of almost $9 million, the Wyoming Weather Modification Pilot Program's first stage occurred early this year when NCAR and other organizations studied snow clouds over the Medicine Bow, Sierra Madre, and Wind River mountain ranges, recording amounts of water vapor and liquid water in the clouds and how long clouds lasted, as well as precipitation rates, air quality, ecosystem features, and other variables. Next winter, Weather Modification, Inc., a private company, will seed snow clouds over the ranges with silver iodide, followed by more measurements to track the results. The cycle will then be repeated for the life of the project.

The seeding process will involve directing silver iodide particles from generators on the ground into clouds upwind of and over the ranges and, at the same time, injecting more silver iodide directly into the same clouds from an airplane. The icy particles of silver iodide attract liquid water in the clouds, which then freeze around the particles and form snow.

Scientists hope that continued monitoring of the results over such a long period of time, as well as more advanced seeding and evaluation techniques, will conclusively determine the effectiveness of cloud seeding. Previous experiments have not involved such rigorous evaluation and have been conducted on a year-to-year basis.

ECHOES

"This is a depressing case of failure and perhaps incompetence."

—Rep. DANA ROHRABACHER of California, commenting on delays and cost overruns in the development of new polar-orbiting satellites to be used by the U.S. Air Force and NOAA to forecast and track hurricanes and other weather systems. Part of a joint military–civilian effort, the new satellites may not be launched until 2012 due to problems in the production of some instruments on the satellites, according to NOAA's Conrad C. Lautenbacher. (SOURCE: The Associated Press)

"The Wyoming program is very unique with the amount of science that's being employed," says project manager Barry Lawrence of the Wyoming Water Development Commission. "The scientists are involved throughout the process." (SOURCE: The Associated Press)

MINI-GLACIERS COULD PROVIDE ICE PROTECTION

Reproductions of small spires of glacial ice found in the Andes may provide insight into protecting glaciers and other larger masses of ice from warming temperatures. French physicist Vance Bergeron led the experiment, in which miniature versions of the objects known as "penitentes" (due to their similarity in appearance to monks with white hoods) were created in a laboratory. This was done by exposing small mounds of snow or ice to a spotlight. Much as occurs in nature, the light evaporated random areas of the snow, creating small indentations, which then acted as lenses and attracted more light. The indentations then deepened until the ice spikes formed. As they grew more pronounced, the spikes created long shadows that then slowed the evaporation process.

The scientists found that placing a thin layer of dirt over the snow or ice surface intensifies the penitente-formation process, while also shielding the penitentes from sunlight. The key variable is the thickness of the dirt layer, which can either cause the sunlight to be absorbed or repelled. The scientists speculate that the proper amount of dirt spread over a large ice field or glacier could cause penitente formation and ultimately provide protection from warming that might otherwise melt all of the ice.

At press time, the research was scheduled to appear in *Physical Review Letters.*

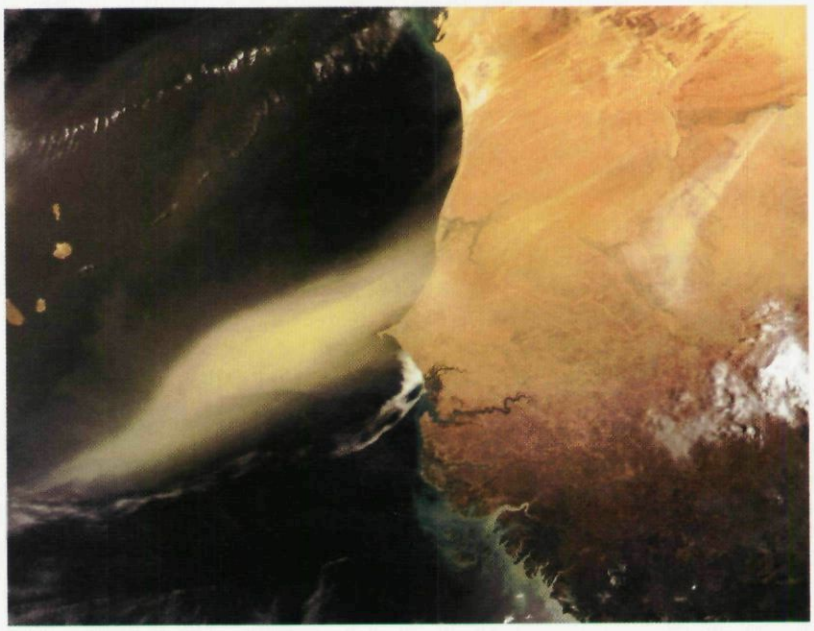
NEW LAB TO STUDY SAHARAN DUST

The U.S. Department of Energy (DOE)'s Atmospheric Radiation Measurement (ARM) Program has placed a new, portable atmospheric laboratory with sophisticated instruments and data systems in Niger, Africa, to gain a better understanding of the potential impacts of Saharan dust on global climate.

Dust from Africa's Sahara Desert—the largest source of dust on the planet—reaches halfway around the globe. Carried by winds and clouds, the dust travels through West African, Mediterranean, and European skies, and across the Atlantic into North America. Unfortunately, Africa is one of the most undersampled climate regimes in the world, leaving scientists to wonder about its contribution to global climate.

"As a point of origin for atmospheric disturbances that evolve into Atlantic storms, the Sahara is not only a driving force for the environmental conditions in western Africa, but also for the development of weather systems that can reach the United States," says Raymond Orbach, director of DOE's Office of Science. "Our ability to predict the impact of the Saharan dust on weather and climate is dependent on gathering accurate and long-term datasets for computer models that simulate these effects."

In January, at a site in Niamey, Niger, the ARM Mobile Facility (AMF) began collecting atmospheric data on desert dust, and in particular, aerosol loading, in the dry season. AMF will also collect data on deep convective clouds and large moisture generation during the summer monsoon. Measurements obtained by the AMF will



A large streak of dust from the Sahara Desert shoots off the West African coast and blows hundreds of miles over the Atlantic Ocean south of the Cape Verde Islands on 30 April 2003. (Image courtesy of MODIS Rapid Response Project at NASA/Goddard Space Flight Center.)