our sites of at least 10-fold."

Moreover, capture rates the next spring showed that rodent populations had not experienced a typical winter dieback.

Why was 1993 unusually mousy?

Parmenter says that mouse populations tend to boom after El Niños and the abundant spring rains they can bring. In 1992, the El Niño's influence brought heavy, unseasonable rains months before the monsoon season began in July.

"So we had an incredibly green year in the desert," he says. With extra food, rodent populations took off. By the summer of 1993, those populations began declining—perhaps with a resurgence of predators. In seeming lockstep, the number of new hantavirus cases also began to fall.

Since the Four Corners also experienced a rainy spring, anecdotes of heavy mouse infestations there make sense, Parmenter says. In contrast, rodent populations stagnated in Utah's Canyonlands National Park, an area 300 miles away that the El Niño rains bypassed.

"So while we can't prove a causal effect, the relationship with these El Niños looks pretty good," Parmenter says. His team hopes to publish data on this association soon.

It's hard to predict precisely where or when El Niño's climate variations will deliver their characteristically erratic patterns of severe rains, notes J. Michael Hall, director of global programs for the National Oceanic and Atmospheric Administration in Silver Spring, Md. But by mapping such altered precipitation patterns worldwide, he says, climate researchers should learn where to alert local individuals—be they physicians, government officials, or missionaries—to look for outbreaks of disease.

Currently, however, disease analysts "are not well coordinated," Morse says, and globally "our surveillance capabilities have severe limitations." But a 2-year-old nongovernmental organization that he chairs, with members in 80 nations, hopes to change that. Called ProMED, it collects and disseminates word of such outbreaks on the Internet. Interested parties can subscribe to these reports by E-mail (majordomo@usa.healthnet.org). Morse also encourages people worldwide to report outbreaks by E-mail (promed@usa.healthnet.org). —*J. Raloff*

Making big mountains out of tiny bacteria

The Dolomites, a mountain range spectacularly carved by erosion, symbolize an enduring riddle in geology. For more than two centuries, scientists have pondered how Earth constructs dolomite, a mineral that makes up more than 10 percent of all sedimentary rock, including much of the rock in these northern Italian peaks (SN: 11/30/85, p.343).

In the laboratory, using the high temperatures typical of the planet's interior, geologists can synthesize dolomite with ease. But they have never been able to manufacture the mineral at the much lower temperatures of Earth's surface, where geological evidence indicates that the vast majority of dolomite formed. Dolomite, or calcium magnesium carbonate, is a close cousin of limestone (calcium carbonate), and geologists suspect that most dolomite forms when limestone somehow incorporates magnesium ions derived from seawater.

Now, with the aid of unusually small bacteria found in sludge from a lagoon in Brazil, researchers from Switzerland have finally created dolomite in the laboratory at low temperatures.

"What they've found is tantalizing.... We've focused on trying to explain [dolomite] with classical inorganic chemistry. This upsets the applecart," says Lynton S. Land of the University of Texas at Austin.

Judith A. McKenzie of the Swiss Federal Institute of Technology in Zurich and her colleagues took sludge samples from a lagoon in Brazil where modern dolomite has formed. They placed samples of bacteria from the sludge in vials, along with a growth medium similar to the lagoon's water. After refrigerating the vials for a year, the researchers found dolomite crystals encrusting the bacteria. "Lo and behold, they produced dolomite. If we don't have bacteria [in the vial], nothing happens," says McKenzie. The team's results appear in the Sept. 21 NATURE.

McKenzie notes that Robert L. Folk, a retired geologist, recently revived the century-old idea that bacteria help make the mineral after he had examined high-magnification images of dolomite that geologists think formed relatively recently. "I saw tiny bacteria in the dolomite crystals," says Folk.

McKenzie and her colleagues suggest that their bacteria might help explain another mystery surrounding dolomite: The mineral is much more abundant in ancient rocks than in modern ones. Conceivably, McKenzie says, dolomite-producing bacteria are less widespread today.

Some geologists, however, categorize the Brazilian bacteria as a curiosity. "I think [their discovery] really doesn't have a lot to do with the dolomite problem. Most dolomite doesn't form in lakes," says Bruce H. Wilkinson of the University of Michigan in Ann Arbor.

In addition to looking at how the bacteria make dolomite, McKenzie and her colleagues hope to develop probes that will enable them to determine whether similar bacteria exist at other modern dolomite formations. "I could spend the next 10 years on the dolomite problem," says McKenzie. —*J. Travis*

Amount of virus sets cancer risk

Physicians may soon have a way of determining which women with "abnormal" Pap smears will develop cancer of the cervix. Researchers at the Albert Einstein College of Medicine in New York City have found that human papillomavirus (HPV) infections that persist over time are far more likely to develop into cervical cancer than transient infections with the virus.

Pap smears first gained acceptance in the 1950s as a way of identifying abnormalities in cervical cells—known as dysplasia—before they developed into invasive cancers. In the 1980s, researchers learned that HPV, which causes warts, is involved in approximately 90 percent of all cervical cancers, as well as a great many noncancerous changes.

But because some 50 percent of all mildly dysplastic lesions, or collections of abnormal cells, regress back to normal, physicians discovering HPV-associated cervical lesions had to decide whether close monitoring or aggressive therapy, such as cryotherapy, laser therapy, or surgery, was appropriate. "Clinicians may be overtreating women for [abnormal Pap smears] for a variety of reasons," says study collaborator Gloria Y.F. Ho.

To help resolve this quandary, Ho and her colleagues monitored 70 female volunteers with mild to moderate dysplasia every 3 months for 15 months. At each visit, the researchers gave the women a Pap test, examined their cervices under a microscope, and tested cells from the lesions for the virus' DNA.

As the researchers report in the Sept. 20 JOURNAL OF THE NATIONAL CANCER INSTITUTE, 30 percent of all moderate dysplasia spontaneously regressed; moreover, the amount of viral DNA present enabled the team to identify the lesions that would regress. "Women whose lesions contained large amounts of HPV were likely to have their lesions persist," says Ho.

Mark H. Schiffman of the National Cancer Institute in Bethesda, Md., who wrote a commentary accompanying the report, told SCIENCE NEWS that the New York group's work is a "satisfying piece of evidence that the virus and the [cervical] changes are so tightly linked that they are in fact the same thing."

Ho points out that the sophisticated DNA analysis her group used isn't routinely available to clinicians, but since the largest amounts of HPV were associated with persistent lesions, physicians could confidently monitor patients for the virus with currently available tests for several months before deciding to treat the condition more aggressively.

— *L. Seachrist*