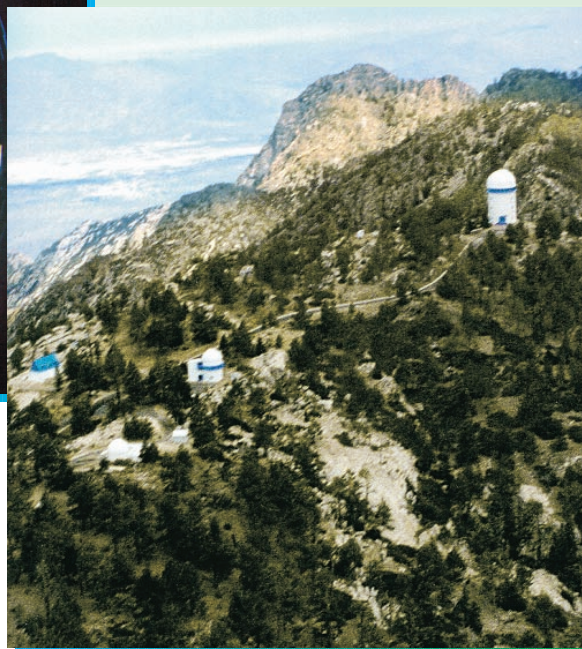




Clear skies at San Pedro Mártir might make the Baja California site competitive for state-of-the-art astronomy.



SILVIA TORRES

TODAY, August 2003, page 22). In addition to being a candidate host for the TMT, San Pedro Mártir is one of six locations being tested for the Advanced Technology Solar Telescope, and will likely be considered for the Large Synoptic Survey Telescope.

The fresh look includes an analysis of cloud cover and water vapor from about five years of satellite data. André Erasmus, a consulting meteorologist based at the South African Astronomical Observatory in Cape Town, compared 15 sites in North and South America for the TMT team. In terms of cloud cover, San Pedro Mártir, with cloud-free nighttime hours 73% of the time, is “superior to other existing sites in North America, and comparable to sites elsewhere,” Erasmus says. “But if you were focusing on infrared astronomy, it’s not the site you would pick—it’s not high enough and dry enough.” The site is excellent for infrared observations roughly 10% of the time, he says. Overall, the competition is stiff, adds Caltech’s George Djorgovski, cochair of the TMT site selection committee. He ticks off Mauna Kea in Hawaii, the Canary Islands off the coast of Spain, various sites in Chile, and perhaps other, undeveloped sites as being as good as or better than San Pedro Mártir.

As might be expected, Mexican astronomers are less cautious in their endorsement of San Pedro Mártir. “It appears to be one of the best places in the world to do astronomy—and the best in the Northern Hemisphere,” says Remy Avila of UNAM’s Morelia campus. “It’s the quality of the site that is pushing astronomers to go there, and it is not far from the US.” Avila measures atmospheric turbulence to aid in the design of adaptive optics and says that he documented nine consecutive nights with very low turbulence at high altitudes at San

Pedro Mártir. “I thought that was good, but I didn’t realize how good, how unusual it was, until I talked to colleagues around the world.” But, Avila notes, long-term comparisons of high-altitude turbulence at various sites have not yet been made.

Weighing intangibles

Surface winds, geologic stability, and light pollution also figure into siting a telescope. And after scientific and technical parameters have been considered, the final site decision factors in “intangibles,” says Djorgovski. They include politics, road access, added costs of building at higher altitudes, and so on. For example, purely on the basis of clear skies and good seeing, California has sites as good as or better than San Pedro Mártir, Djorgovski says. “But they are all politically unattainable because they are in national forests or national parks. It would be a nightmare [to get the necessary permits].”

Moving to Mexico could skirt the opposition from environmentalists and native groups that increasingly beleaguers new projects in the US—examples include the controversy over protecting red squirrels on Mt. Gra-

ham, Arizona; the revoked permit that this past spring sent VERITAS, a cosmic-ray detector, scrambling to find a new home; and the stalled Keck outriggers on Mauna Kea. “In all of America, building more telescopes is almost prohibited by environmental activists,” says Roger Angel, an astronomer at the University of Arizona in Tucson. “It’s very sad.”

Meanwhile, Mexico continues its campaign to attract telescopes to San Pedro Mártir. Two years ago, the government designated the site and its surroundings a national park to protect against future light pollution. “This good site has to be a trigger to develop better astronomy here [in Mexico], and better science generally,” says José Franco, director of UNAM’s Institute of Astronomy. “I’d like to move as fast as possible. In 10 years, I’d love to have a first-class international observatory.”

Toni Feder

Antievolutionists Lose Critical Fight in Texas Textbook Decision

A months-long effort in Texas to weaken the scientific explanation of evolution in high-school biology textbooks failed in early November when the State Board of Education approved 11 books and other material that had been vetted by a panel of biologists. With an 11-to-4 vote, the

board rejected attempts by social conservatives, as well as members of the Discovery Institute, a Seattle-based creationist organization, to include what they claimed were significant weaknesses in Darwin’s theory of evolution through natural selection.

“I think this is very good, not just

for Texas children but for schoolchildren in general, because textbook publishers don't like to put out books that can't be adopted in Texas and California," said physicist Steven Weinberg of the University of Texas at Austin. Weinberg, who testified before the board against attempts to water down evolution in the textbooks, said the debate was really "an effort to avoid what they [antievolutionists] see as a negative impact of science teaching on religious belief."

The Discovery Institute failed in recent attempts to weaken the teaching of evolution in New Mexico and Louisiana, but the Texas dispute was especially critical because that state is the second largest purchaser of textbooks nationally—behind California—and has strong influence over textbook publishers. The Texas board will spend \$193 million purchasing the biology books, and officials in each of the state's 1000 school districts will

then decide specifically which of the 11 approved texts to use.

Physicist C. A. Quarles of Texas Christian University in Fort Worth said that the 11-to-4 board vote left him wondering "what were these four people doing? What it means is that we're not out of the woods by any means in teaching science. You have to ask why it wasn't 15-to-0."



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The challenge to evolution was based on a Texas requirement that textbooks cannot be approved if they contain factual errors. Antievolutionists, using a template developed by the Discovery Institute, challenged what the institute describes as "the icons of evolution"—such things as Haeckel's embryos, drawings from the 1800s that were intended to show adaptation, and the Miller-Urey experiment in the 1950s that dealt with the development of biological molecules.

The antievolutionists then used the alleged errors to claim that evolution is a "theory in crisis" and that the students of Texas would be best served by listing all of the "weaknesses" in the textbooks. In written testimony to the board, Robert Dennison, president of the Texas Association of Biology Teachers, said the "critics claim they only want to increase and improve the coverage of evolution by removing

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these 'errors' and thereby exposing the so-called weaknesses of evolutionary theory. I grant that biologists do debate some of the mechanisms of evolution. However, none of the current debates . . . involve any of the alleged errors presented by the Discovery Institute."

"By focusing on a few alleged errors and then correctly pointing out that biologists debate about evolution," Dennison continued, "the [critics] are using a 'bait and switch' tactic in an attempt to discredit all of evolutionary theory."

Quarles, head of the Texas section of the American Physical Society, led an effort supported by APS, the American Institute of Physics, and the American Geophysical Union to alert other Texas scientists about the controversy. On 1 November, that effort resulted in a letter signed by about 550 Texas scientists and sent to the board of education. In addition to Quarles and Nobel laureate Weinberg, signatories included former presidential science adviser Neal Lane of Rice University and Nobel laureates Michael Brown and Johann Deisenhofer, both of the University of Texas Southwestern Medical Center in Dallas.

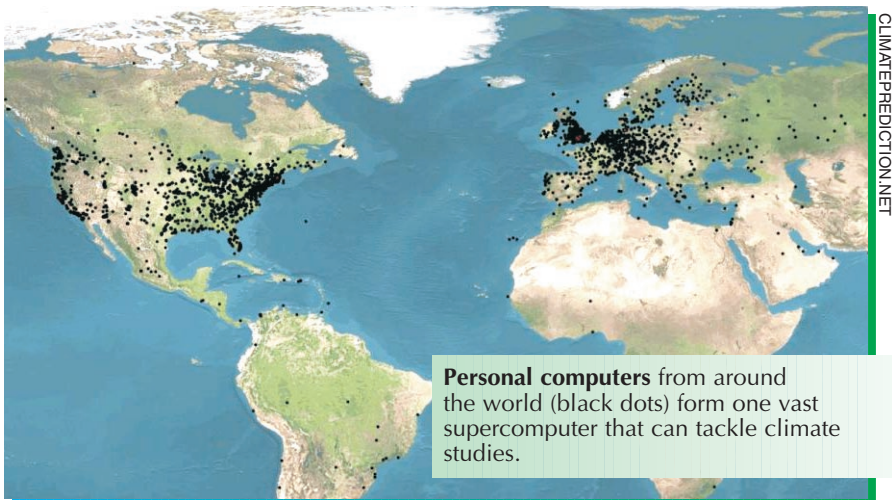
Following the board's decision, Discovery Institute President Bruce Chapman said that the Texas Education Agency commissioner's statement that all factual errors in the textbooks will be corrected was "real progress in the cause for science education reform. We were already happy that a number of embarrassing errors that overstate the evidence for evolutionary theory were being fixed."

"A few of the publishers put in qualifiers that are perfectly fine and don't weaken evolution," said Steven Schaefersman, president of Texas Citizens for Science, an organization that has for years fought attempts to dilute the teaching of evolution. "The Discovery Institute people didn't accomplish what they wanted, which was to have the books include their bogus weaknesses. The biology books are as good now as they have ever been, and we're keeping them that way. This was a victory for us."

Jim Dawson

Climate@home

Although personal computers use more than 8% of the US electricity market, most of the time they have nothing to do. Now a UK research consortium has launched the Web site climateprediction.net to improve the accuracy of climate simulations by



Personal computers from around the world (black dots) form one vast supercomputer that can tackle climate studies.

harnessing that idle computer power.

The new site originated when Myles Allen of Oxford University wrote a commentary in *Nature* (volume 401, p. 642, 1999) calling on the science community to exploit home computers for research. Allen's article was inspired by the SETI@home project, which now harnesses nearly 5 million home computers to process radio signals in the search for extraterrestrial life (see *PHYSICS TODAY*, October 1997, page 96). Eventually, the UK's main weather forecaster, the Exeter-based Met Office, worked on the project with the Rutherford Appleton Laboratory, Tessella Support Services, Oxford and Reading universities, and the Open University. So far, more than 50 000 individuals have registered on the Web site.

Visitors to climateprediction.net who run the Microsoft Windows operating system are invited to install a small program, nicknamed *climate@home*, onto their computers. The program contains a highly regarded climate model produced by the Met Office. Every version of *climate@home* that is downloaded has slightly different conditions in the climate model, which runs quietly in the background when the computer is not being used. Once the program has finished running—which can take between 10 and 22 days, depending on the speed of the machine and the length of time the computer is left on—the results are automatically sent back to the Web site for analysis and displayed on the user's screen.

By running the model thousands of times with slightly different variables, the consortium hopes to find out how sensitive the Met Office model is to temperature and to atmospheric and biological processes such as the carbon cycle. "In the past, estimates of climate change have had

to be made using one or, at best, a very small ensemble—tens rather than thousands—of model runs," says Mat Collins, a Met Office climate scientist. "This experiment will give us the most comprehensive assessment of future climate change."

Paul Guinnessy

Nuclear Industry Creates World University

A worldwide shortage of nuclear engineers, workers, scientists, and students has led the World Nuclear Association, an international trade group with headquarters in London, to launch a new global body: the World Nuclear University. Supported by both the WNA and the International Atomic Energy Agency (IAEA), the WNU plans to offer summer courses, strengthen links among academic and research institutions, and eventually establish an international standard for graduate degrees, says John Ritch, the WNA's director general.

The university was officially inaugurated in September to celebrate the 50th anniversary of President Dwight D. Eisenhower's "Atoms for Peace" initiative. The idea for creating an international university had been around for several years, but was taken up only last year by the WNA and IAEA. Former IAEA director general Hans Blix, who led the UN search for weapons of mass destruction in Iraq, will be the WNU's first chancellor.

The WNU will operate out of a small office in London, and its staff will initially consist of volunteer experts from research institutes, industry, and government agencies. The first summer courses are scheduled for 2004, and the WNU is working on what it hopes will