

humidity will be monitored for at least a year before a decision is made.

In addition to good observing conditions, where the ATST goes could be influenced by logistical, political, and financial factors. NSO is seeking partners to cover about half the telescope's estimated \$70 million price tag, and those partners will have a say. The US Air Force has shown interest in joining the ATST, says Keil. "And we are trying to organize a consortium of four or five countries in Europe, which would go to the European Commission with a proposal." A site decision is supposed to be made by the end of next year. If all goes smoothly, the telescope could come on line before the

end of the decade.

Well before that happens, however, NSO will unveil another new telescope, for studying the effects of the Sun on space weather. The \$7 million SOLIS (Synoptic Optical Long-term Investigations of the Sun) is due to start collecting data at Kitt Peak late this year—and will eventually be moved to wherever the ATST ends up. Over two or more decades, SOLIS will measure the Sun's magnetic field in three dimensions and take images and spectra of the Sun. What with going solo, ATST in the works, and SOLIS around the corner, says SOLIS project scientist John Harvey, "NSO is undergoing a renewal."

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New Swedish Solar Telescope Basks on La Palma

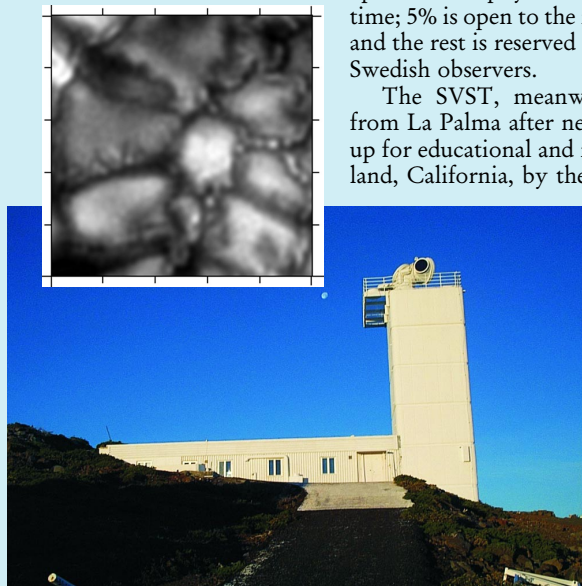
Sweden's new solar telescope on the Spanish island of La Palma grabbed the spotlight in ground-based Sun-gazing when it came on line this past spring. It's likely to keep that honor for a few years, until it's eclipsed by the Advanced Technology Solar Telescope (see accompanying story).

With its 97-cm aperture and adaptive optics, the telescope boasts record resolution imaging of the Sun. "We have already reached 0.1 arcseconds resolution—this has never been achieved before with any other solar telescope," says Göran Scharmer, head of the Royal Swedish Academy of Sciences' Institute for Solar Physics, which runs the telescope. For spectral and magnetic-field measurements, Scharmer adds, the resolution is expected to surpass 0.2 arcseconds. The telescope is intended mostly for exploring the small-scale magnetic fields of the Sun's atmosphere and the spots on its surface. Spatially resolved solar spectra could also help to interpret integrated stellar spectra.

The new telescope's cost was kept to \$1.9 million by retrofitting the observatory of its predecessor, the 47.5-cm Swedish Vacuum Solar Telescope (SVST). As hosts, Spanish solar physicists get 20% of the observing time; 5% is open to the international community, and the rest is reserved for telescope partners and Swedish observers.

The SVST, meanwhile, which was retired from La Palma after nearly 15 years, is being set up for educational and research purposes in Oakland, California, by the nonprofit Chabot Space & Science Center. Chabot bought the SVST for about \$100 000 with a grant from Wells Fargo Bank. Says Kevin Medlock, who is overseeing reconstruction, "Before [the SVST] was replaced, this was one of the best solar telescopes in the world. People are astonished we got it." Medlock expects to have the telescope, rechristened the Chabot Vacuum Solar Telescope, up and running for the public—and scientists—by the middle of next year.

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MAGNETIC STRUCTURE DETAILS (top) of the Sun, imaged on 15 July with Sweden's new solar telescope (bottom). The distance between tick marks is 1 arcsecond, or 734 km on the Sun's surface. (Courtesy of Göran Scharmer [data image] and Dan Kiselman [telescope], Institute for Solar Physics, the Royal Swedish Academy of Sciences.)

Senate Approves Yucca Mountain, but Nevada Continues to Fight

A major battle in the ongoing war over storing 70 000 metric tons of high-level nuclear waste inside Nevada's Yucca Mountain was won by President Bush and the US Department of Energy on 9 July when the Senate approved the administration's plan to build the waste repository. The Senate vote of 60–39, combined with overwhelming approval of the Yucca plan in the House in May, overrides an earlier veto by Nevada's governor and moves the project into the review and licensing phase at the Nuclear Regulatory Commission.

DOE plans to deliver its licensing application to the NRC in December 2004, and the regulatory agency is then expected to take several years to review the request, an NRC spokesman said. The earliest that radioactive waste could actually be moved to the mountain is 2010.

Senate Majority Whip Harry Reid (D-Nev.) and Senator John Ensign (R-Nev.) both worked for months to derail the Yucca Mountain plan but were unable to overcome growing concerns about the safety of nuclear waste now being stored at 131 sites around the country—mostly at commercial nuclear power plants. Without the Yucca Mountain site, the buildup of waste at power plants would make it difficult for private utilities to renew operating licenses for existing nuclear power plants or push for a new generation of nuclear power facilities (see PHYSICS TODAY, November 2001, page 23).

Energy Secretary Spencer Abraham termed the concerns about the safety of transporting thousands of tons of waste to Nevada "scare tactics employed by those opposed to Yucca Mountain." Nevada Governor Kenny Guinn contends that, despite more than 20 years of study, DOE has failed to show that waste can safely be stored in the mountain for 10 000 years, as required by federal regulations. Nevada, which generates no nuclear waste, is being used as a dumping ground by other states and the nuclear power industry, the governor claims.

Nevada Attorney General Frankie Sue Del Papa has filed seven lawsuits to try to stop the project, and state officials say more are planned. "Governor Guinn and I, and our congressional delegation, have vowed that we will not rest until this project is totally exposed for the dangerous albatross that it is," Del Papa said.

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