derstand global issues such as climate change, says retired Admiral James Watkins, who headed the Energy Department during the rise and fall of another big-science project, the Superconducting Super Collider.

Ehlers hopes that the House will adopt a resolution endorsing the report as a first step toward implementing its recommendations. And although Brown and other key Democrats are already voicing their concerns, many lawmakers have backed the report after being lobbied by university administrators in their districts who like its message. "It's not an especially partisan document, so it could spur a very useful debate," says one House staffer. Most important, he says, Gingrich's support means "it has what most reports lack—a powerful patron." **–DAVID MALAKOFF**

ASTROPHYSICS

Distant Star's Radiation Jolts Earth's Atmosphere

On 27 August at about 3:22 a.m. Pacific Daylight Time, a tidal wave of x-ray and gamma ray radiation washed over Earth, turning night to day in the upper atmosphere and shocking some satellite instruments into a self-preserving "safe hold" mode. The burst was reported at a NASA press conference in Washington, D.C., last Tuesday, but it apparently got its start 20,000 years ago and as many light-years away, when a superdense, supermagnetized neutron star suffered a massive "star-quake." Neutron stars are well-known x-ray sources, but this massive burst is "about the wildest thing in 30 years since we've been monitoring these things," says astrophysicist Kevin Hurley at the University of California, Berkeley.

The intensity of the 5-minute pulse was negligible at Earth's surface, but in space, it "was about a tenth of a dental x-ray dose," Hurley estimates. "It's a hell of a lot of radiation for a source that far away." An astronaut a tenth of a light-year away would have received a fatal dose in less than a second; near Earth the deluge was enough to trigger the momentary shutdown of equipment on NASA's Rossi X-ray Timing Explorer and on the NEAR and Konus-Wind spacecraft. It was also enough to leave its fingerprints on Earth's atmosphere.

One of the many phones that rang that August morning when the satellites felt the assault belonged to Umran Inan, a Stanford University physicist. Inan jumped out of bed to check the state of the ionosphere—the ionized layer of the upper atmosphere. He runs the Holographic Array for Ionospheric Lightning research (HAIL), a string of 50 radio antennas located in the backyards of high schools from Wyoming to New Mexico that monitors very low frequency radio broadcasts (with wavelengths tens of meters long), which the U.S. Navy uses to communicate with ships and submarines. By tracking the strength and the phase of the waves, HAIL can detect changes in the altitude of the ionosphere. A thicker ionosphere tends to act as a large pillow, weakening radio signals as they bounce between it and Earth's surface.

Inan and colleagues found that the strength of Navy radio signals from Hawaii and Seattle suddenly plummeted at the time the pulse swept over Earth. Those signals had bounced off the nighttime ionosphere, which normally hovers some 85 kilometers above Earth's surface. During the day radiation from the sun ionizes more molecules, substantially thickening the ionosphere. The weakening of the signals during the radiation pulse, Inan says, shows that the ionosphere's inner edge briefly plunged to 60 kilometers, about where it sits during the full force of daylight sun. It's the first time a pulse from outside the solar system has had such a drastic effect on the atmosphere, he says. Budding scientists at participating high schools weren't allowed to share in the excitement, however. "We couldn't tell them because of the news release" scheduled for this week, Inan says.

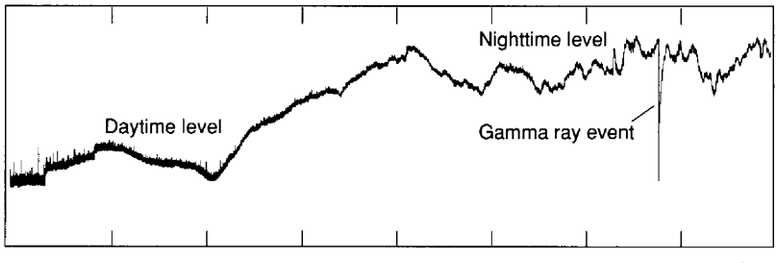
The origin of the pulse became clear when researchers noticed that its intensity varied with a 5.16-second cycle—the exact frequency of the x-ray source SGR 1900+14, located in the constellation of Aquila (the eagle), which had recently been acting up. The relative timing of the wave as it hit each of the satellites also pegged SGR 1900+14 as its origin. The object is thought to be a neutron star, which spews out x-rays from a hot spot as it rotates. "It's an x-ray lighthouse," says Hurley.

The surge, however, pointed to an unusually big convulsion on SGR 1900+14. Neutron stars, the dense embers of burned-out stars, inherit the magnetic fields of their parent stars and can concentrate those fields to enormous strengths. The magnetic field of such a "magnetar" would periodically tear apart the star's hard crust of heavy elements, relieving stress as in an earthquake. Particles shot upward in the quake would be accelerated by the magnetic field, producing a strong wave of radiation. To generate a burst of the magnitude that struck Earth, Hurley says, the field would have to be at least 10^{14} gauss, about 100 trillion times stronger than Earth's.

Could a nearby magnetar threaten the human race? "Yeah, I did that calculation," Hurley says. To trigger chemical reactions that would destroy the ozone layer, the explosion would have had to occur as close as the comet belts that girdle the solar system. A magnetar hiding there would have been sniffed out long ago, he says.

–DAVID KESTENBAUM

Hawaii Transmitter Signal Energy as Received in Colorado



Day for night. Radio signals bouncing off the nighttime ionosphere briefly weakened to daytime levels on 27 August, as a pulse of stellar radiation reached Earth.

CREDIT: STANFORD UNIVERSITY

INFORMATION SCIENCES

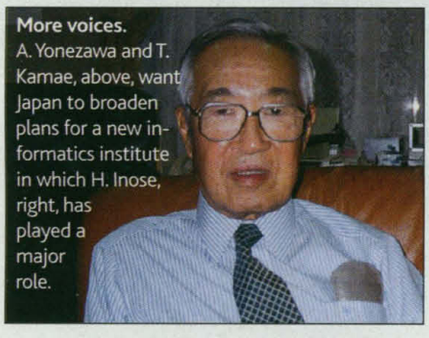
Japan Urged to Open Up Planning for Lab

TOKYO—In a country that prizes consensus, a group of university professors is planning to skirt official channels in a bold step to influence plans for a new national laboratory. The researchers fear that plans for the lab, tentatively named the National Informatics Institute, might be overly influenced by one person: electrical engineer Hiroshi Inose, a senior scientist formerly at the University of Tokyo. Meeting informally 2 weeks ago, the group put together a plan to seek government support for a broader review of the field before plans for the institute are finalized. In addition to buying time, the approach is in line with efforts to place all areas of scientific decision-making under closer public scrutiny (*Science*, 4 September, p. 1435).

"We may be losing the chance to set up a truly vibrant new national institute," says Tuneyoshi Kamae, a physicist at the University of Tokyo who has closely followed the planning for the new institute. Adds Hideo Miyahara, a computer scientist at Osaka University, "We are trying to have the opinions of the entire information science community re-

flected in the plans for this new institute." But Inose says that the established process provides ample opportunity for those interested in speaking up. "There is always some controversy between different views," he says, leaving some to feel that their opinions "aren't fully reflected" in the final plans.

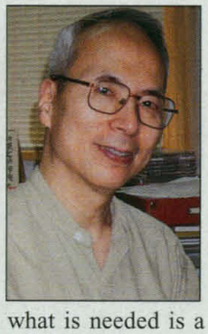
The critics emphasize that they are not criticizing Inose personally but rather are trying to reform a process that places too much authority in the hands of a few senior scientists. Indeed, they readily agree that Inose has earned his place at the top of Japan's scientific establishment. A graduate of the University of Tokyo, he spent several years in the late 1950s at Bell Laboratories in Murray Hill, New Jersey, where he began work on a key digital switching technology now at the heart of nearly all digital telephone switches. He returned to the University of Tokyo's engineering department, eventually becoming dean. Upon retiring from the University of Tokyo in 1987, he became the founding director-general of the National Center for Science Information Systems (NACSIS), which operates database systems and the computer network linking universities and national labs of the Ministry of Education, Science, Sports, and Culture (Monbusho). His long list of honors includes one of Japan's highest—designation as a Person of Cultural Merit—and he serves on numerous governmental advisory committees.



More voices. A. Yonezawa and T. Kamae, above, want Japan to broaden plans for a new informatics institute in which H. Inose, right, has played a major role.

The new institute is intended to bolster Japan's efforts in information sciences. In May 1997 the Science Council of Japan, an elected body that represents the interests of the scientific community, used a report by a subcommittee as the basis for urging the national government to set up an informatics research institute. Last January, Monbusho received a more detailed analysis of the idea from a subcommittee of its advisory Science Council, which Inose chairs.

Monbusho then assembled yet another ad hoc committee to make more detailed recommendations. Given the current fiscal crisis, the panel said, it would be better to expand and upgrade the 11-year-old NACSIS rather than to build a new institute. But even before this committee finalized its recommendations, Monbusho had won approval from the Ministry of Finance for eight new research positions at NACSIS as a step toward creating the new institute. Inose filled the slots earlier this year.



The hiring set off alarms within the community, in part because Inose ignored a pending recommendation from the ad hoc committee that positions be advertised and that a selection committee review the applicants. "The old top-down mechanism is being recreated when what is needed is a new regime in which younger researchers can play an important role," Kamae says. Computer scientist Akinori Yonezawa of the University of Tokyo, who served on the ad hoc committee, says "the committee had recommended a more open appointment process," although he concedes that NACSIS followed the letter of the law in its hiring practices.

Inose argues that there was nothing unusual about the hirings, however. "It is the same process you have at American universities" if they are trying to recruit a particularly prominent scientist, he says.

In the coming months Monbusho will assemble yet another committee to firm up the research agenda and set staffing policies for the new institute. Critics worry that the committee members will be drawn from a narrow circle of people, many with personal ties to Inose. They also worry that key decisions will be made without outside input, and they expect Inose will be appointed as head of the new institute. Inose says that there are many qualified candidates for the job and that, therefore, his selection is "unlikely."

In an attempt to influence those decisions, Yonezawa and his colleagues plan to ask Monbusho to fund yet another study. They want to assemble a panel of 15 to 20 information scientists to study the country's needs in information science. Yonezawa admits it is an indirect approach. But the group hopes it will serve notice to Monbusho that the process is being closely watched, as well as generate suggestions that the official committee will feel bound to consider.

Kamae worries that this won't be enough. "By the time they finish this new study, all the key decisions will already have been made," he says. Still, he is encouraged by the growing number of researchers who are willing to challenge the established order. "Scientists of my generation really have a responsibility to speak up and make these practices more democratic," he says. **–DENNIS NORMILE**

CREDITS: (TOP GROUPING) D. NORMILE; (BOTTOM) C. TINNEY/ANGLO-AUSTRALIAN OBSERVATORY

ASTRONOMY

A Gray Day on a Brown Dwarf

It's too early for detailed weather forecasts, but two astronomers claim to have detected clouds in the atmosphere of a nearby brown dwarf star. In a paper submitted to the *Monthly Notices of the Royal Astronomical Society*, Chris Tinney of the Anglo-Australian Observatory in Epping, New South Wales, and Andrew Tolley of Oxford University describe subtle color changes in the faint glow of LP 944-20, a brown dwarf only 60 times as massive as the planet Jupiter. They interpret the variations as evidence that clouds of titanium oxide are sweeping across the disk of this failed star. "Theirs are the first data suggesting the variability we expect for cloudy atmospheres," says theoretician Adam Burrows of the University of Arizona, Tucson, although he cautions that the variability might be due to star spots or calibration errors instead. But if the color changes are real, they fit with other recent evidence that even brown dwarfs, reclusive though they are, have active private lives.

The existence of brown dwarfs—stars not massive enough to sustain hydrogen fusion in their cores—has been suspected for decades, but the first bona fide detections of these dim objects came only a few years ago. Now, write Tinney and Tolley in their paper, "this field can finally move beyond the Guinness Book of World Records phase and into a period where real understanding of brown dwarf properties is possible." One insight appears on page 83 of this issue of *Science*, where Ralph Neuhäuser of the Max Planck Institute for Extraterrestrial Physics and Fernando Comerón of the European Southern Observa-

Cloudy outlook. Brown dwarf star LP 944-20 shows signs of weather.