European physicists who study particles from outer space made a pitch this week for the ambitious and costly experiments they want to build over the next decade. “We’ve worked hard to get the tools; now we need to move to large-scale detectors,” says Christian Spiering of DESY, Germany’s particle physics lab in Hamburg.

Astroparticle physicists aim to snare the likes of cosmic rays, neutrinos, gravitational waves, and dark matter particles as they pass by or through Earth. To better capture these elusive cosmic signals, ASPERA, a network of astroparticle physicists funded by the European Union, this week released a road map for future projects, along with a pitch to funding agencies to double the current €70 million annual spending on astroparticle physics over the next 8 to 10 years—a tall order in what’s expected to be a tough funding climate.

Researchers have been detecting particles from space for decades, but so far the scientific breakthroughs from their sensors have been few. But this groundwork will soon pay off, says Spiering, who chairs ASPERA’s road map committee. The road map, released on 29 September, divides the field into seven areas and identifies a key instrument in each.

Three of those instruments rely on tested technology, and construction could begin on them soon. First, the proposed Pierre Auger Observatory North, a vast array of detectors that would look for ultrahigh-energy cosmic rays, would likely be a bigger Northern Hemisphere version of the existing Auger array in Argentina. Second, the Cerenkov Telescope Array would look for incoming high-energy gamma rays, following the detection strategy of existing telescopes such as MAGIC in the Canary Islands. And the recently completed ANTARES, a neutrino observatory on the Mediterranean seabed, is the prototype for the third, KM3NeT, which would use a cubic kilometer of seawater as its detector. For these three proposals, “we have the technology; now we have to find the money,” says ASPERA co-ordinator Stavros Katsanevas of France’s CNRS research agency.

The road map doesn’t detail the detector of choice for two other subfields, spotting dark matter and measuring neutrino mass from a phenomenon called double beta decay; the outcomes of ongoing experiments using a variety of techniques will inform those decisions. ASPERA’s lineup finishes with two mammoth projects: an underground neutrino observatory called LAGUNA with a detector made from a million tons of either water or liquid argon, and a next-generation gravitational-wave antenna dubbed the Einstein Telescope. Both require more design work, and results from the Large Hadron Collider and current gravitational-wave detectors could change the specifications. “By mid next decade, we can launch these ambitious projects,” says Katsanevas.

Metallurgist John Wood of Imperial College London, who headed a European Union–sponsored effort to identify research infrastructure projects, is skeptical of ASPERA’s call for funding increases. “In the current climate, their chances are pretty slim,” he says. “Politically, it’s a very difficult time.” But Katsanevas says, “I’m not afraid of that.” The needed doubling of funding assumed that all of the road map’s projects remained European-led, whereas he expects many will become collaborations with North America or Asia or both. In fact, French officials have asked the Organisation for Economic Co-operation and Development in Paris to act as a coordinating body, comparing regional road maps to find openings for collaboration.

Hubble Trouble … Again

The failure of a critical device that formats data aboard the orbiting Hubble Space Telescope has delayed this month’s long-planned shuttle rescue mission until at least February. Agency officials say it will take several months to prepare the spare data system, which they want to send up because relying on a redundant component would leave the telescope without a backup. Changing out the component will add to the list of fixes, says John Shannon, shuttle program manager. But NASA science chief Edward Weiler says, “Hubble has a habit of coming back.”

Not Those Stock Analysts

The United States faces a shortfall of Ph.D.s to help analyze the status of its fisheries, according to a joint report by the departments of Commerce and Education. The report estimates that the National Oceanic and Atmospheric Administration (NOAA) alone will need to hire 150% more stock-assessment scientists (it now has 90) over the next decade, and universities are expected to confer about half the degrees needed each year.

Protection for Researchers

A California measure signed into law this week aims to protect researchers from harassment and attacks by animal-rights extremists. Publishing information about researchers that is likely to incite threats or acts of violence or trespassing on a researcher’s property with the intent of interfering with his or her academic work is now a misdemeanor. Police hope arrests made for these infractions will yield evidence on shadowy extremist groups. Several university researchers have been targeted in recent attacks (Science, 8 August, p. 755).

—GREG MILLER

Making Space Reservations

NASA will be allowed to buy seats through 2016 aboard the Russian Soyuz spacecraft, which ferries passengers to and from the space station, as part of a stopgap funding measure passed this week. The U.S. government slapped sanctions on Russia for alleged sales of nuclear material to Iran, which prohibited NASA from dealing with the Russian space industry. A waiver that allowed the space agency to carry out such spending was set to expire in 2011. Soyuz needs to be booked well in advance, however, and a failure to extend the waiver this year would leave Americans without a way to get into space if the shuttle, as planned, is taken out of service in 2010.

—ANDREW LAWLER

www.sciencemag.org  SCIENCE  VOL 322  3 OCTOBER 2008  29

Protection for Researchers

A California measure signed into law this week aims to protect researchers from harassment and attacks by animal-rights extremists. Publishing information about researchers that is likely to incite threats or acts of violence or trespassing on a researcher’s property with the intent of interfering with his or her academic work is now a misdemeanor. Police hope arrests made for these infractions will yield evidence on shadowy extremist groups. Several university researchers have been targeted in recent attacks (Science, 8 August, p. 755).

—GREG MILLER

Making Space Reservations

NASA will be allowed to buy seats through 2016 aboard the Russian Soyuz spacecraft, which ferries passengers to and from the space station, as part of a stopgap funding measure passed this week. The U.S. government slapped sanctions on Russia for alleged sales of nuclear material to Iran, which prohibited NASA from dealing with the Russian space industry. A waiver that allowed the space agency to carry out such spending was set to expire in 2011. Soyuz needs to be booked well in advance, however, and a failure to extend the waiver this year would leave Americans without a way to get into space if the shuttle, as planned, is taken out of service in 2010.

—ANDREW LAWLER

Not Those Stock Analysts

The United States faces a shortfall of Ph.D.s to help analyze the status of its fisheries, according to a joint report by the departments of Commerce and Education. The report estimates that the National Oceanic and Atmospheric Administration (NOAA) alone will need to hire 150% more stock-assessment scientists (it now has 90) over the next decade, and universities are expected to confer about half the degrees needed each year.

—ERIK STOKSTAD
U.S. Oceans Chief Leaves a Mixed Legacy in His 7-Year Wake

For 7 years, former Navy Vice Adm. Conrad Lautenbacher has preached his mantra of “one NOAA” as a way to unify the hydraulically managed National Oceanic and Atmospheric Administration (NOAA). Congress has rewarded his management prowess with larger budgets, allowing the agency to expand its efforts on everything from tracking wildfires to monitoring tsunamis. Last week, Lautenbacher announced he is leaving, and scientists say the spry technocrat leaves a reorganized and stronger NOAA research program—as well as some big headaches for the next U.S. oceans skipper.

Tucked into the Commerce Department, NOAA has responsibility for myriad activities in the air, sea, and in space. “When I came to NOAA, I saw it as a holding company of six or seven multidisciplinary, very fine scientific enterprises,” says Lautenbacher. “[But] it was too compartmentalized.”

Lautenbacher sought to break down agency stovepipes with 44 programs that cut across issues such as aquaculture, environmental modeling, and geodesy. He also combined six agency labs in Boulder, Colorado, to create the Earth System Research Laboratory (ESRL). “He’s done a good job of knitting the pieces of NOAA together,” says marine geologist Rody Batiza, a program manager at the U.S. National Science Foundation who has served as an outside reviewer for the agency. Congress apparently agreed: Legislators hiked the agency’s budget from $3.1 billion to $4.2 billion during Lautenbacher’s tenure, although they also pumped hundreds of millions of dollars into pet projects.

The improved cooperation helped bolster tsunami monitoring efforts, says geophysicist Costas Synolakis of the University of Southern California in Los Angeles. Since the Sumatra tsunami of December 2004, NOAA’s Pacific Marine Environmental Laboratory (PMEL) in Seattle, Washington, has collaborated with the National Weather Service on 33 new advanced undersea pressure gauges that have improved the service’s predictive accuracy. The weather service is also installing new tsunami-modeling software developed by PMEL’s scientists. By the same token, former NOAA advisory board chair Leonard Pietrafesa, a fluid physicist at North Carolina State University in Raleigh, says that ESRL has paved the way for better predictions of hurricane intensity.

While Lautenbacher was making it easier for NOAA’s scientists to talk to one another, the agency itself was having trouble communicating with two other federal agencies on one of its most important programs, the National Polar-Orbiting Operational Environmental Satellite System. Delays and cost overruns in the $14 billion Earth-monitoring program, which NOAA manages with NASA and the Pentagon, triggered a 2006 Pentagon review that stripped from the system five climate sensors. A report that year by the Department of Commerce inspector general faulted NOAA leadership’s “poor management oversight” of the program, and the three agencies are still trying to agree on a budget for it.

Lautenbacher says he did his best to manage the “poorly conceived” program, which was created in 1994. “I don’t regret how NOAA managed it,” he says. He reassures climate scientists that making precise climate data “operational” will be a priority for a “National Climate Service,” a new entity that his deputies are proposing for the next Administration.

Lautenbacher, who will step down next month, plans to move to Atlanta, Georgia, to chart his future. Deputy NOAA Administrator William Brennan will serve as acting director.

—ELI KINTISCH