

► scientifically critical information”, says Strobel, as well as to decide “which ones have enough SNOTEL and other sites nearby to have a lower priority”.

SNOTEL sites typically need to be visited each year to have melted snow drained away, antifreeze added and damage from grizzly bears and other problems repaired. But tight budgets will probably prevent workers from getting to every location this summer, so some of the measurements are likely to fail.

Once snow melts and starts running down from the mountains, USGS stream gauges measure it — unless they, too, are shut down. The national stream-gauge network costs about \$165 million to operate each year. The federal government supplies a little more than half of that, and state, local and tribal agencies make up the rest. Information from the 8,000 gauges is posted online in real time and used in everything from weather forecasting to designing bridges and planning kayaking trips.

Federal cutbacks mean that about 50 stream gauges are being shut down and some 100 more could be at risk, says Michael Norris, coordinator for the National Streamflow Information Program, based in Reston, Virginia. The USGS prioritizes gauges mandated by law, such as those that support water treaties, as well as gauges in crucial flood-forecast areas or those that have been in operation for a long time. The agency consults with local officials about which gauges can be cut.

The Pembina gauge was targeted because another station just across the Canadian border in Emerson provides much the same information, says Gregg Wiche, head of the North Dakota Water Science Center in Bismarck. But when Wiche heard how much the community used the information — a local railway relies on its forecasts, for example — he and others worked out a deal to keep the Pembina station and drop one elsewhere in the state instead.

Such small adjustments do little to reassure Johnnie Moore, a hydrologist at the University of Montana in Missoula who has used USGS streamflow data to study long-term trends in melt run-off from the northern Rocky Mountains. He worries that shutting off stream gauges that have been operating for decades could hurt climate-change studies. “Over the long run there’s been a big decline in the number of gauges”, says Moore, and to cut even more now “is pretty disconcerting”.

The outlook is not entirely grim: some of the 50 or so gauges at immediate risk have received extra funding from state or local governments to carry them through to 30 September.

And US President Barack Obama’s budget request for fiscal year 2014 asks for a 25% increase over 2012 levels for the streamflow information programme. That money, if Congress provides it, could let the USGS go back to watching the west’s water. ■

EUROPEAN SCIENCE

Russian academy awaits new head

Reform is in the air at the nation’s oldest research body.

BY QUIRIN SCHIERMEIER

From czarist times to the days of perestroika, the Russian Academy of Sciences (RAS) was the pillar of the nation’s scholarship, boasting the country’s best scientists as members. The dramatic decline in science spending after the break-up of the Soviet Union ended the academy’s days of plenty, and although funding has rallied in recent years, those roubles have increasingly gone to other research centres.

Now awaiting the first new academy president in more than two decades, Russian scientists hope that the leadership will revive the struggling institution and bring about reform they feel is long overdue.

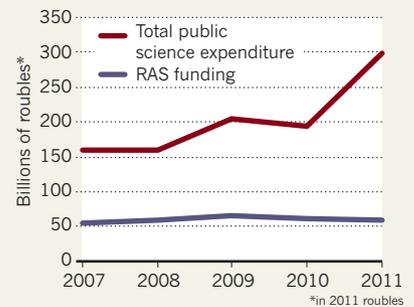
Critics say that the RAS, which employs some 45,000 scientists at 436 institutes across Russia, is burdened by a host of unproductive ageing scientists awaiting retirement and by many pursuing research of dubious value (see *Nature* 449, 524–527; 2007). They say that current president Yuri Osipov, a mathematician who has presided over the RAS since 1991, has failed to clear out dead wood and take other steps to prevent the academy, which was founded in 1724 by Peter the Great, from declining into insignificance.

On 29 May, the academy’s general assembly of more than 1,000 full and corresponding members will vote in a secret ballot on its future head. Osipov, 76, said earlier this month that he will not run for a fifth term. “I’m tired,” he told the Russian news service Pravda.ru. It is time for a new person with “new views and fresh energy” to take over.

How new the views and how fresh the energy will depend on who wins on 29 May. The favoured contender, according to sources

FLATLINING

Funding at the Russian Academy of Sciences (RAS) has stayed flat in real terms as overall science funding has risen.



SOURCE: RAS

close to the academy, is 67-year-old plasma physicist Vladimir Fortov, former deputy prime minister and former science minister in the Russian government. His election manifesto includes a raft of proposals for the RAS — to cut red tape, to improve efficiency, to regularly review the performance of institutes and scientists, and to base funding on merit. “Fortov is no doubt determined to start some reform, however timidly,” says Konstantin Severinov, a molecular biologist at the recently inaugurated Skolkovo Institute of Science and Technology near Moscow, and a professor at Rutgers University in Piscataway, New Jersey.

Fortov’s chief opponent, Zhores Alferov, is considered less likely to modernize the academy. The 83-year-old physicist and long-time director of the respected Ioffe Physico-Technical Institute in St Petersburg shared the Nobel Prize in Physics in 2000 for his ground-breaking work on semiconductor heterostructures. He is also a member of the



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communist faction in the Duma, the Russian parliament, and a stalwart champion of Soviet ideals. “Alferov is a scientist of the highest repute — but his views are not always forward-looking,” says Severinov.

At a meeting in April of the Council for Science and Education, a presidential advisory body chaired by Vladimir Putin, Alferov agreed with academicians who reject the use of bibliometric indicators — such as numbers of research papers and the impact factors of the journals in which they are published — for measuring scientific performance. He agreed that such assessments would encourage Russian scientists to publish their best work in foreign high-impact journals rather than in Russian ones.

Such nationalistic views threaten to cement the isolation of Russian science further, says Mikhail Feigel'man, deputy director of research at the academy's Landau Institute for Theoretical Physics near Moscow. (Feigel'man himself is not a member of the academy and will not be voting on 29 May.) “Our ties with international science are all but eliminated,” he says. “We're caught in a system that was constructed in Soviet times when academic exchange was not considered important. But now it is.”

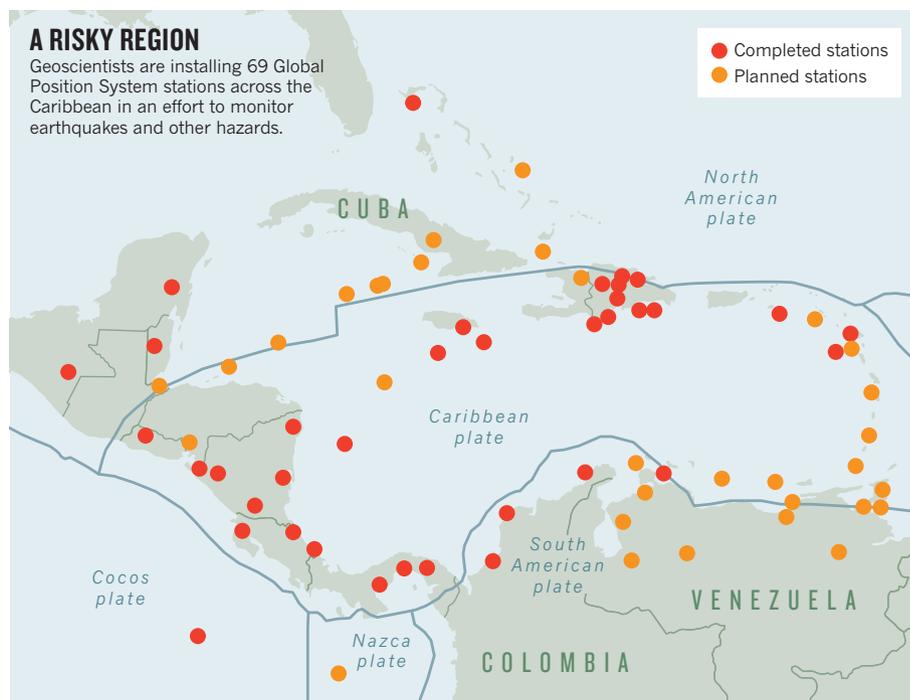
Travel grants are almost unavailable to RAS researchers, and foreign scientists or students are absent at many academy institutes. “Anyone interested in working with us, or giving talks at our institute, I have to tell that it is not possible unless they come with their own money,” says Feigel'man. Meanwhile, low salaries, lack of grant money and poor career prospects are deterring Russian talent from pursuing science at home, he says. “Our own people leave Russia as fast as they can.”

The Russian government itself seems to view the RAS as increasingly irrelevant. The academy's budget, around 60 billion roubles (US\$1.9 billion) per year, has stagnated since 2000, even as overall science spending in Russia has doubled (see ‘Flatlining’). The government is funnelling the new money into university research and ventures such as the Skolkovo, a new science complex that will focus on biotechnology and information technology, among other disciplines, in partnership with international companies. German engineering and electronics giant Siemens, based in Munich, and Finnish mobile-phone company Nokia, in Helsinki, have already signed up to participate.

Science minister Dmitri Livanov has said that he expects a thorough overhaul of the academy and that productivity should become a funding prerequisite for RAS institutes and scientists. “There are some researchers who fully meet this standard,” Livanov said in a 2012 interview. “Those who do not work we will have to call something different.” ■

A RISKY REGION

Geoscientists are installing 69 Global Positioning System stations across the Caribbean in an effort to monitor earthquakes and other hazards.



GEOPHYSICS

A network to track Caribbean hazards

Multi-nation effort is a test of scientific diplomacy.

BY ALEXANDRA WITZE IN CANCÚN, MEXICO

Some US geophysicists are going where few of their compatriots have gone before: to Cuba, Venezuela and other countries that are notoriously anti-American. But these countries are also notoriously plagued by natural disasters such as earthquakes, and so engineers are blanketing the Caribbean with a network of sensors to detect the crustal strains and brewing storms that threaten the region.

Early results from the US\$6-million system, called the Continuously Operating Caribbean GPS Observational Network (COCONet) and funded by the US National Science Foundation (NSF), were presented in Cancún, Mexico, on 17 May at the American Geophysical Union Meeting of the Americas. COCONet is an offshoot of another NSF effort that, over the past decade, has sprinkled Global Positioning System (GPS) sensors across the western United States. That was child's play compared with working across 31 separate national governments, many of which distrust the United States, says Glen Mattioli, a programme director at UNAVCO, a geodetic-survey organization based in Boulder, Colorado, that is managing the project.

Under COCONet, geoscientists across the

Caribbean are gaining free access to data that will help them to understand and prepare for natural hazards such as earthquakes and hurricanes. But unless they adopt the network as the long-term backbone for observations in the region, the project could go down as just another well-meaning but failed effort to bridge national differences and develop scientific capacity. To most, it is worth the risk. “If you don't bet, you don't win,” says Franck Audemard, a geologist at the Venezuelan Foundation for Seismological Research in Caracas.

COCONet stations are being set up at sites as diverse as steep rainforest slopes and isolated coral-reef islands (see ‘A risky region’). Each station contains meteorological instruments, along with a GPS unit that constantly monitors ground movements and, in many cases, transmits those data in near real time. So far, UNAVCO has built or upgraded 38 of its planned 69 sites. At least 61 existing stations are also being incorporated into the network.

The project has made more progress than expected in acquiring the permits needed to set up stations, says Mattioli. That holds true even in Cuba, where officials have already approved the COCONet stations slated to arrive in June, even as US officials are still working ▶