

Random Sample

Carbon Sampling Takes Flight

Last month, aerial photographer and biologist Matevž Lenarčič flew a single-seat airplane across 2000 kilometers of airspace between Easter Island and Totegegie Airport in French Polynesia (right). That lone-some leg was one hop on a 3-month journey around the world, during which Lenarčič and his tiny, lightweight aircraft, a Pipistrel Virus (inset), also touched down on Antarctica, a rare solo feat. Between piloting the plane and collecting photographs for an upcoming book on water, Lenarčič has also collected data on black carbon, or soot, concentrations in the atmosphere. His 290-kilogram plane carries a much-lighter-than-normal Aethalometer, designed by aerosol scientist Griša Močnik of Aerosol in Ljubljana, Slovenia, that measures the optical absorption of the atmosphere and converts it to a rough estimate of soot concentration.

Močnik, whose Aethalometers are already used worldwide at ground stations, hopes to learn enough from Lenarčič's flight to build instruments capable of riding piggyback on pleasure flights flown by other aviators: "One could build essentially an ad hoc network of instruments ... in airplanes [whose operators] would voluntarily participate," he says.

Aerosol scientists such as Ryan Spackman of the National Oceanic and Atmospheric Administration in Boulder, Colorado, already use much more sensitive instruments mounted on Gulf Stream jets to collect black carbon data—but such flights are expensive for scientists. Small private aircraft could help fill in a lot of data gaps, particularly at low altitudes near urban areas where soot concentrations tend to be high enough for an Aethalometer to provide very good data, Spackman says. "The first few kilometers [above ground level] are the most interesting."



BY THE NUMBERS

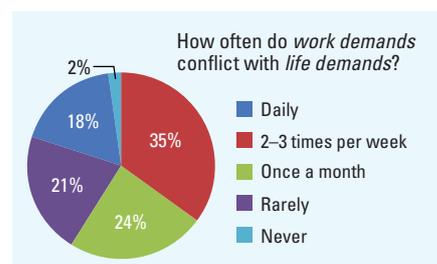
\$5 billion Amount spent on genetic tests in the United States in 2010, according to a UnitedHealth Group study published 12 March. That could go up to \$25 billion within a decade.

30 million tonnes of CO₂ Annual carbon footprint of pumping for China's groundwater irrigation system—similar to the total CO₂ emissions of New Zealand—according to a 14 March study in *Environmental Research Letters*.

FINDINGS

The Global Work-Life Juggle

A majority of scientists in a new global survey say that family responsibilities clash with their professional duties at least twice a week. For U.S. and U.K. scientists it is three out of five, and two-thirds of Canadian scientists face that problem. The data come from a survey of how 4225 active researchers (70% male) are balancing work-



life issues. Preliminary results released last week by the Washington, D.C.-based Association for Women in Science (AWIS) show few gender differences in the attitudes and experiences among younger scientists, says AWIS's Donna Dean, confirming anecdotal evidence from workshops and conferences. The association plans a detailed breakout by country and discipline of the 19-question survey, which had a response rate of 9%.

Science LIVE

Join us on 22 March at 3 p.m. EDT for a live chat with leading experts on a hot topic in science. <http://scim.ag/science-live>

>>NEWSMAKERS

The 2007 America COMPETES Act authorizes NSF to choose as many as three winners for the annual Waterman award, but this is the first year more than one was named. The \$1 million prize is double the amount of previous years' awards.

Brain Prize Awarded For Work on Hearing

In honor of their contributions to understanding the mechanisms of hearing and deafness, neurogeneticists **Christine Petit** and **Karen Steel** have received the second annual €1 million award from the Grete Lundbeck European Brain Research Foundation, a Danish nonprofit organization.

The foundation praised the two women "for their unique, world-leading contributions to our understanding of the genetic regulation of the development and functioning of the

ear, and for elucidating the causes of many of the hundreds of inherited forms of deafness."

Steel, based at the Wellcome Trust Sanger



Petit



Steel

Institute in Hinxton, U.K., has used mice to identify genes that disrupt the function of "hair cells" in the inner ear that translate sound waves into neural impulses. She has identified dozens of gene mutations that impair hearing in mice, many of which have also been linked to human hearing loss. Petit, who has appointments at the Institut Pasteur and Collège de France in Paris studies how hair cells contribute

to hearing and balance and has identified the cause of at least 10 inherited hearing and balance disorders in humans.