EARTH SCIENCE

Iconic Antarctic lab gets the boot

Homeless sediment collection dates back to 1960s.

BY ALEXANDRA WITZE

Free to a good home: more than 23 kilometres of skinny tubes of dirt. With them comes half a century of Antarctic geological history.

The US National Science Foundation (NSF) is looking for a new place to store its Antarctic marine-sediment cores, the world's biggest collection of environmental records from the Southern Ocean. The cores have lain on shelves at Florida State University in Tallahassee since 1963. But last year, the university told the NSF that it no longer wanted to host the collection. Ideas for where the Antarctic Marine Geology Research Facility might move to are due by 3 August.

"This area of research is not a priority for the current faculty," says Gary Ostrander, vice-president for research at Florida State. "It doesn't make sense to continue to support that size facility."

The NSF contributes roughly US$280,000 per year, but the university has to pay for overhead costs such as air conditioning for the 930-square-metre building.

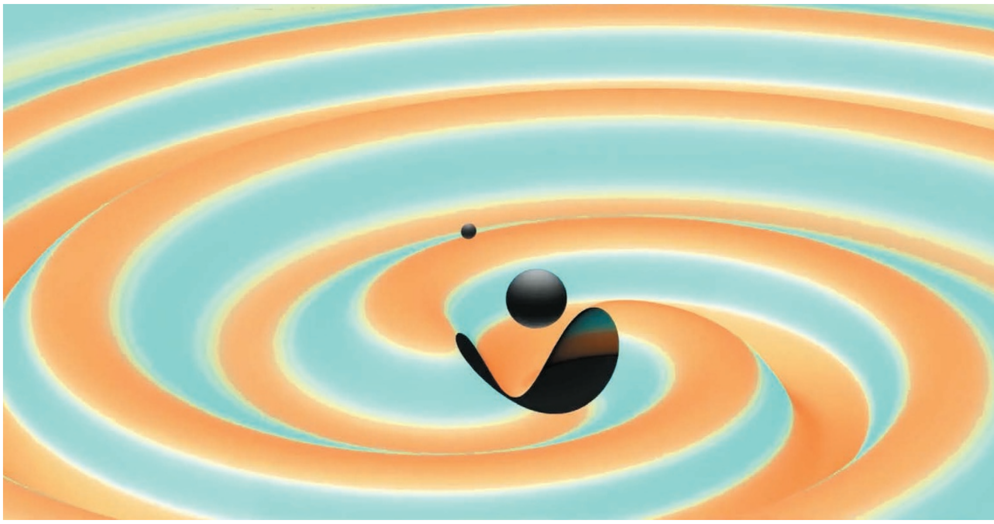
The invaluable collection includes cores gathered in the 2000s by the international ANDRILL programme, which revealed the history of the West Antarctic Ice Sheet over the past 17 million years.

The transfer is a blow for Sherwood Wise, a geologist at Florida State and the facility's principal investigator. "It'll be a sad day for me," he says. "This has been a marvellous resource for the university." Dozens of researchers from around the world visit the collection every year to study palaeoclimate clues and other evidence buried within the sediments.

Over the years, more and more cores have accumulated, from more than 90 research cruises. Studies of the samples have triggered hundreds of publications on all aspects of Southern Ocean and Antarctic history.

Curating these older materials is vital because Antarctic samples are so expensive and difficult to gather, says Philip Bart, a marine geologist at Louisiana State University in Baton Rouge. "The facility is critical to ongoing research," he says.

Wherever and whenever the Florida cores move, Wise estimates that it will take around $2 million just to pack them up and ship them. ■



A computer simulation of the black-hole merger detected on 26 December 2015.

NUMERICAL-RELATIVISTIC SIMULATION: S. OSSOKINE/A. BUONANNO (MAX PLANCK INST. GRAV. PHYS.)/SIMULATING EXTREME SPACETIME PROJECT; SCIENTIFIC VISUALIZATION: T. DIETRICH/R. HAAS (MAX PLANCK INST. GRAV. PHYS.)

PHYSICS

LIGO sees second black-hole crash

First gravitational-wave detection was not a fluke.

BY DAVIDE CASTELVECCHI

Just before 4 a.m. on 26 December, B. S. Sathyaprakash woke up to some good news: gravitational waves had been detected for the second time in history.

The theoretical physicist from Cardiff University, UK, had his laptop next to his bed, set up to alert him when he received automated e-mail notices from computers at the Advanced Laser Interferometer Gravitational-Wave Observatory (LIGO).

"I got up and I went and checked the computer. Lo and behold, there was an event from just two minutes before," he says. At 3:38:53 UTC (Coordinated Universal Time), LIGO's twin detectors in Louisiana and Washington state had both picked up the signature ripples of two massive objects — probably two black holes — in the final stages of spiralling into each other.

At the time, the international LIGO collaboration and its colleagues at Virgo, a European observatory near Pisa, Italy, were busy analysing LIGO's first discovery: the event that they had detected on 14 September. The scientists would announce that finding in February, to great global fanfare. They did not run a full analysis of the second event until weeks later, says LIGO physicist Bruce Allen, managing director of the Max Planck Institute for Gravitational Physics in Hanover, Germany.

"It was absolutely mind-boggling how, within a few months of the first event, we had a second one," Sathyaprakash says.

SECOND SUCCESS

The second detection "shows that this whole business is not a fluke", says Clifford Will, a theoretical physicist at the University of Florida in Gainesville, who is not a member of either the LIGO or Virgo teams. In principle, the September discovery could have been a huge stroke of luck, but the second event suggests that there is a large population of black-hole pairs out there that will produce frequent mergers. LIGO and Virgo can look forward to regular detections, says Will, who studies gravitational waves and other predictions of Albert Einstein's general theory of relativity. "This is going to be a new kind of astronomy."

Einstein predicted that any accelerating or rotating bodies should produce ripples in the fabric of space, which are vaguely similar to sound waves but move at the speed of light and can propagate in a vacuum.

Detailed analysis of the second detection confirmed that the signature had to be the ripples from a pair of black holes (see video at go.nature.com/28lwdkf). This time, the signal from the gravitational waves lasted for one full second, instead of one-fifth of a second as in the first event. The second event encompassed