

African network set to boost Earth sciences

Rex Dalton, San Diego

Geophysicists are joining forces behind a programme called AfricaArray, which they hope will spread the training and practice of geophysics throughout Africa.

Many African economies are heavily dependent on oil and mineral extraction — ensuring that skills in geophysics are in strong demand. Yet young, trained geophysicists remain in short supply across the continent, say companies involved in energy and mining.

That is one reason why Andrew Nyblade, a geophysicist at Pennsylvania State University, University Park, decided to initiate AfricaArray. The project plans to channel funds from the public and private sectors into research and education in geophysics.

Nyblade, who was born in Tanzania, says the idea is to combine first-rate research, backed by top agencies such as the US National Science Foundation, with training for local specialists who will stay and work in Africa. “The brain drain is a big issue,” he says.

The programme — established as a partnership between Pennsylvania State University, the South African Council for Geoscience in Pretoria and the University of the Witwatersrand in Johannesburg — has so far attracted more than US\$600,000 of the \$2.7 million that it hopes to raise.

AfricaArray researchers will focus on



Array of hope: Andrew Nyblade (centre) wants more African geophysicists.

important seismological and volcanic activity in Africa. For example, a network of seismometers will be deployed to examine the structure of the superplume of magma beneath the continent.

A boom in the price of rare mineral commodities, including gold, is currently fuelling demand for trained Earth scientists in Africa. “The Earth sciences play major roles in the mapping of important minerals,” says Gerhard Graham, head of scientific services at the Council for Geoscience. “But lack of basic geological knowledge limits development in large parts of our mineral-rich continent.”

Graham says he hopes that AfricaArray “can become a driving force, in particular for countries in eastern and southern Africa to

participate in the development of Earth sciences within their own countries.”

Paul Dirks, head of geosciences at Witwatersrand, says that more global cooperation is needed. “Geophysical training programmes in Africa are not widespread or strong,” says Dirks. “We have to go international to make them sustainable.”

Dirks and Nyblade have just completed a round of US visits to multinational corporations, including ChevronTexaco, Exxon-Mobil and Schlumberger, to seek more support for AfricaArray.

Nyblade is already using a \$165,000 grant from the South African government to rework an existing net of 11 seismometers. With 21 additions, this will be used to determine the depth of the superplume and study its role in heat convection from the inner Earth. “To me, this is the big research prize,” says Nyblade.

Mark van der Meijde, a geophysicist at the International Institute for Geo-Information Science and Earth Observation in Enschede, the Netherlands, says that AfricaArray will “open up unprecedented possibilities for starting new projects”.

Geophysicists will hold a workshop in Palmanova, Italy, on 26–27 February, to refine their plans for the programme. ■

Additional reporting by Quirin Schiermeier in Munich.

► <http://africaarray.psu.edu>

Reformation of bird-brain terminology takes off

Jessica Ebert, Washington

Neuroscientists are revamping a naming system for birds’ brains that has been in use for more than a century.

The old terminology hinders communication between bird neuroscientists and their mammalian counterparts, avian specialists say, because it does not reflect modern understanding.

The problem dates back to Ludwig Edinger, a German neuroscientist working in the nineteenth century. Edinger thought the cerebrum of the bird brain was primitive and consisted of nothing more than basal ganglia that control instinctive behaviour. In contrast, he thought, the mammalian brain consisted of layers that create a ‘neocortex’ and control learning.

Neuroscientists have known for decades that such a distinction is artificial. Signalling molecules and neurotransmitters operate similarly in the brains of birds and

mammals. And researchers agree that birds can learn: crows can pass on tool-making skills, for example.

But the different terminology meant “the value of avian research was not coming across to mammalian researchers”, says Anton Reiner, a neuroscientist at the University of Tennessee Health Science Center at Memphis.

So a new system has been designed by the Avian Brain Nomenclature Consortium, a group of 29 specialists in bird, fish, reptile and mammalian brains, who first met at Duke University in Durham, North Carolina, in July 2002.

The meeting led to a naming system that illuminates the parallels between bird and mammalian brains. A technical paper describing the terminology was published last May in the *Journal of Comparative Neurology* (A. Reiner *et al.* 473, 377–414; 2004). It was quickly adopted by “the entire

avian community”, says Erich Jarvis, a neuroscientist at Duke University who hosted the meeting. This month’s *Nature Reviews Neuroscience* (E. Jarvis *et al.* 6, 151–159; 2005) carries a general introduction to the system for the wider community.

Stephanie White, a neuroscientist at the University of California, Los Angeles, says the terminology helps her to compare vocal learning behaviour in birds and mammals. “I don’t even refer to the old nomenclature anymore,” she says.

But some argue that the terminology does not go far enough. A nomenclature “that is in greater harmony with mammalian terms and concepts”, remains possible, says George Paxinos, a neuroscientist at the Prince of Wales Medical Research Institute in Randwick, Australia. Until then, however, he says that he is grateful for the work the consortium has done to “get us out of the mess we were in”. ■