Scientific education in the Pacific

***Than Aung** describes an oceanographic educational project which has recently been initiated for the Pacific region.*

A TRULY GLOBAL collaboration has seen the launch of a new ocean observing system in the Pacific region, coordinated by the International Ocean Institute Operational Centre for the Pacific Islands (IOI-PI), based at the Marine Studies Programme of the University of the South Pacific.

The Scientific Educational Resources Experience Associated with the Deployment of Argo Drifting Floats in the South Pacific Ocean (SEREAD) project began with the formation of a steering committee in January 2001. Argo represents the "Array for Real-time Geostrophic Oceanography." SEREAD's second steering committee meeting took place in late August 2001 at the Marine Studies Programme of the University of the South Pacific in Suva, Fiji.

The SEREAD project was created with the intent to improve our understanding of the interaction between the oceans and our atmosphere. SEREAD members include the Intergovernmental Oceanographic Commission (IOC) from the Perth Regional Programme Office in Western Australia, headquarters for the International Ocean Institute for the Pacific Islands, the New Zealand-based National Institute of Water and Atmospheric Research (NIWA), the UNESCO Office in Apia, Samoa, the South Pacific Applied Geoscience Commission (SOPAC), the National Oceanographic and Atmospheric Agency (NOAA), the Scripps Institution of Oceanography (SIO) and the Partnership for Observation of the Global Ocean (POGO).

Education is an important part of this exciting new project. It aims to help school students in the Pacific understand more about our oceans. SEREAD aims to involve secondary school students from a number of Pacific Island countries. Schools will adopt an Argo float, a submersible device that takes measurements of salinity and water temperature in the upper layer of the ocean, and track it on the internet.

Bill Erb, Chair of the SEREAD Steering Committee from the IOC's Perth Regional Programme Office, has observed that "SEREAD would allow Pacific Island students to contribute to global efforts in understanding ocean and climate issues. SEREAD will generate substantial awareness and discussion among Pacific Island students, teachers and communities in subjects such as global ocean observing systems, climate change, sea-level rise, global warming and the local impacts of these dynamics."

The first phase of the project involves the adoption of Argo floats by secondary schools. "The students, who will be identified as 'Argonauts', can name the float and it will be marked accordingly," says Robin South of the

International Ocean Institute for the Pacific Islands who is also SEREAD's Project Manager.

Argo is the result of over two decades of development and utilization of float technology. It is in the form of a 1.1 metre long cylindrical tube. Three thousand Argo floats will be deployed worldwide and as many as three hundred may be used in the South Pacific Ocean with some already being in place. Argo floats can be released over the rail of small vessels or ships. Present plans for distribution of Argo in remote areas include the use of aircraft.

After deployment, an Argo stays about one hour at the surface before sinking to a 2000 metre depth and drifts for approximately 10 days at that depth (Figure 1). It will rise recording temperature and salinity profiles. The information is relayed from the surface via satellite and the float then sinks back to repeat its cycle. Floats will continue cycling throughout their design life of four to five years.

Robin South points out that the movement of these floats will be tracked by using the Internet. "The schools chosen to take part in the project must have access to the Internet." Such Internet access need not be on the grounds of the participating school itself, but could be arranged through allowing the school in question access to the facilities of a University of the South Pacific Education Centre.

Pacific Island science teachers participating in SEREAD will be trained by a SEREAD team on the theory and purpose of float development, deployment and data gathering. The development of school curriculum materials as part of the project is being carried out by the Scripps Institution of Oceanography and the National Institute of Water and Atmospheric Research in New Zealand with assistance from the International Ocean Institute for the Pacific Islands.

The UNESCO Associated Schools Project represents a significant mechanism through which SEREAD liaises with schools and departments of education across the region. During the Associated Schools Project Media Education meeting in Auckland, New Zealand, in March 2001, Julie Hall of the National Institute of Water and Atmospheric Research presented and discussed SEREAD with national Associated Schools Project coordinators from 16 countries in the Pacific region. As SEREAD further develops, UNESCO will assist in liaising with departments of education in the participating countries towards trialing and implementing the educational materials developed.

The information obtained from SEREAD and other Argo floats will help scientists to interpret ocean currents, weather patterns and other environmental issues such as sea-level rise. Unprecedented global coral bleaching experienced in 1997/1998 and the South Pacific Ocean bleaching last year highlighted our inability to predict these events. Robin South has stressed that lack of information on ocean currents is contributing to a void in most current climate assessments and prediction models.

The new Argonauts, the students, will be able to observe the changes and understand the reasons behind these changes at a click of a button. We are also offering the opportunity for our Pacific Island students to interact with some of the leading scientists in the world. This will foster a global appreciation that we are no longer isolated islands at the mercy of climate changes.

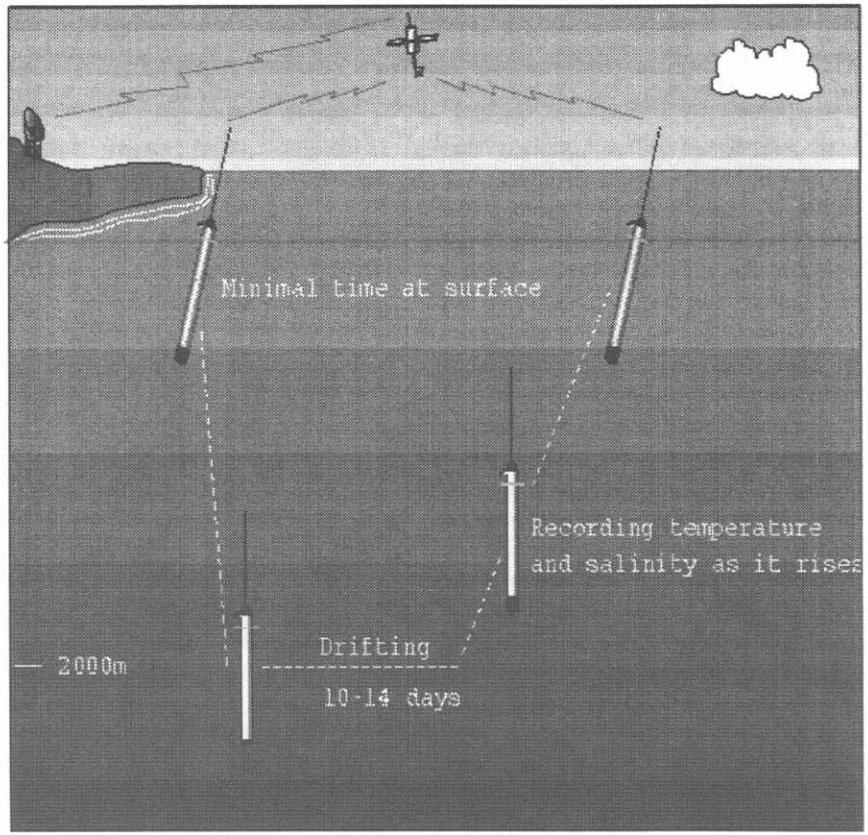
SEREAD is also an important part of the global ocean observing system (GOOS). "GOOS is an international initiative to collect data over a long-term period about the world's oceans and coastal areas. Information is produced from the data to manage the oceans,"

said Alf Simpson, Director of the South Pacific Applied Geoscience Commission and also a member of the SEREAD steering committee.

The Argo array will also enable scientists to extend their El Niño and La Niña forecasts and to predict the effects of other phenomena. This will improve the overall accuracy of climate forecasts, and will contribute to the economic well-being of the world. University of the South Pacific students in both the Marine Studies Programme and Physics will be able to use the temperature and salinity data from different locations in the Pacific for small research projects during their course of studies.

SEREAD is a timely initiative that targets the leaders of tomorrow. However, we should not forget our Pacific leaders of today and we urge them to lend their support. SEREAD is a global initiative with a Pacific flair that will, without doubt, be the envy of many regions of the world and will hopefully be adopted by those regions which have similar problems and needs as the South Pacific.

✍ **Than Aung is a Doctor in Marine Physics at the University of the South Pacific in Suva, Fiji. He is project leader of the SEREAD project.**



Schematic diagram of the deployment of the Argo float