



Twenty Third SPREP Meeting of Officials

4-6 September 2012
Noumea
New Caledonia

Agenda Item 9.2.3: Pacific Islands Global Ocean Observing System – Support for Fundamental Climate Science in the Pacific

Purpose

1. To inform the meeting on scientific efforts to understand the ocean's roles in climate variability and climate change, and SPREP's increasing contribution to these efforts
2. To brief members on how improved information and understanding on the ocean's roles in climate variability and climate change benefits both SPREP Members and the globe as a whole.
3. To report on the status of ocean observations for climate in the region and on specific plans for sustaining Argo and other key programs.
4. To seek ongoing support and collaboration from members and partners for maintaining and improving ocean observations in the region, and for identifying and implementing regionally valuable applications (education, research, ocean analysis and prediction).

Background

5. The ocean absorbs 90% of the additional heat due to anthropogenic warming¹. Historically, we have had limited ability to measure heating and other changes, such as salt content in the ocean, particularly in the southern hemisphere. To address this, over three thousand drifting floats have been deployed globally since 2003 to measure the heat and salt content of the top 2000m of the ocean via the Argo programme². The Argo programme is a truly global effort. Thirty two countries actively deploy floats with a total annual investment of \$USD 25 million. Many SPREP Members have assisted the Argo Program through a 2002 agreement, signed by the SOPAC Member countries at that time³.
6. Approximately 44% of global sea level rise is caused by the ocean expanding as it warms, with most of the remainder (39%) made up by land-based ice moving into the ocean⁴. Since the inception of the Argo programme in 2003, we have been able to accurately observe this heating and freshening of specific regions of the ocean for the first time. This has enabled the scientific community to understand the physical processes behind sea level rise and offer better predictions for the future.

¹ Church, J. A., N. J. White, L. F. Konikow, C. M. Domingues, J. G. Cogley, E. Rignot, J. M. Gregory, M. R. van den Broeke, A. J. Monaghan, and I. Velicogna (2011), Revisiting the Earth's sea-level and energy budgets from 1961 to 2008, *Geophys. Res. Lett.*, 38, L18601, doi:10.1029/2011GL048794.

² <http://www-argo.ucsd.edu/>

³ <http://www.argo.ucsd.edu/Organisation.html>

⁴ SEREAD = Scientific Educational Resources and Experience Associated with the Deployment of Argo profiling floats in the South Pacific Ocean

7. Weather and climate around most of the Pacific Islands are controlled predominantly by the ocean. Data from the Argo floats is used to predict short term weather (e.g. ocean heat available for cyclones), seasonal variability (e.g. El Niño and La Niña conditions) and longer term climatic changes (e.g. predicted sea level rise, air temperature and rainfall).

8. Regional changes of salt content in the Pacific Ocean away from large land masses are a result of changes in the precipitation and evaporation balance. Data collected from the Argo floats are now providing a valuable measurement of rainfall and evaporation in previously difficult to reach locations.

9. The Pacific Islands Global Ocean Observing System (PI-GOOS) coordinator is the contact point for Pacific Island countries for the Argo programme and other ocean observing activities relevant to the Pacific Islands. Hosting of PI-GOOS moved from SOPAC to SPREP under the Regional Institutional Framework (RIF) process. The founders of the PI-GOOS coordinator position (the United States of America National Oceanographic and Oceanic Administration, the Australian Bureau of Meteorology and the Intergovernmental Oceanographic Commission) are committed to providing ongoing support for the position.

Issues

10. Participation and cooperation from SPREP Members is essential for the Argo programme to collect high quality data in the region. This is primarily provided by allowing Argo floats to be deployed in Pacific Island Exclusive Economic Zones. About 750 Argo floats are presently active over the whole tropical Pacific Ocean. The coverage and quality of this dataset has direct implications for predictions of weather and climate around the islands.

11. The PI-GOOS coordinator is currently searching for funds to implement workshops to enhance the capacity of SPREP Members to access, interpret and use available ocean data. This includes data from Argo, remote sensing satellites and other sources.

12. The SEREAD^{iv} programme is the educational aspect of Argo, and is supported within the Pacific by the PI-GOOS Coordinator. SEREAD works with primary and secondary school teachers to include Climate Change and Variability into school curricula. SEREAD has been active in Samoa, the Cook Islands and Tonga, and is looking to begin work in Kiribati.

Recommendations

13. The meeting is invited to:

- **Note** the ongoing oceanographic science in the Pacific region and how improved information and understanding of ocean science benefits SPREP Members;
- **Directs** the Secretariat to continue to seek funds for enhancing the capacity of SPREP Members to access, interpret and use available ocean data;
- **Provide guidance** to the PI-GOOS Coordinator and collaborating international programmes on regional priorities for applications of ocean observations; and
- **Support** Argo float deployment and operation in the Pacific.