The state of the eastern North Pacific since spring 2000

Howard Freeland
Ocean Science & Productivity Division
Institute of Ocean Sciences
P.O. Box 6000, Sidney, B.C,
CANADA V8L 4B2
E-mail: freelandhj@pac.dfo-mpo.gc.ca

Dr. Howard Freeland is a research scientist in the Ocean Science and Productivity Division at the Institute of Ocean Sciences (Fisheries and Oceans Canada). His research interests include the climatic state of the ocean and low frequency variability. Presently he has interests in the maintenance of Line P, a line of CTD stations that has been monitored for over 45 years between the mouth of the Juan de Fuca Strait and Ocean Station Papa at 50°N and 145°W. Howard is also on the international science team for project Argo which aims to deploy a global array of profiling ALACE floats to monitor the evolving state of the ocean. He is involved in various PICES activities as a member of the Physical Oceanography and Climate Committee and Chairman of the Publications Committee.

In the previous issue it was reported that the southern oscillation index seemed a little unstable. This has continued. For a while during mid-2000 it appeared that, at least according to the southern oscillation index, that we might even be heading into persistently negative values, but late in the year we have seen a strong return to positive (La Niña-like) values (Fig. 1). Of course, the atmospheric pressure difference along the equator is only part of the issue, though a rather easy one to monitor. Of more interest is surface and sub-surface temperatures along the equator, and these have indeed returned to entirely normal distributions, as seen, for example, by the TAO array. The Climate Prediction Center (NOAA) has ceased issuing El Niño/Southern Oscillation Diagnostic Advisories, and their web page states that they will resume updates when conditions warrant advisories.

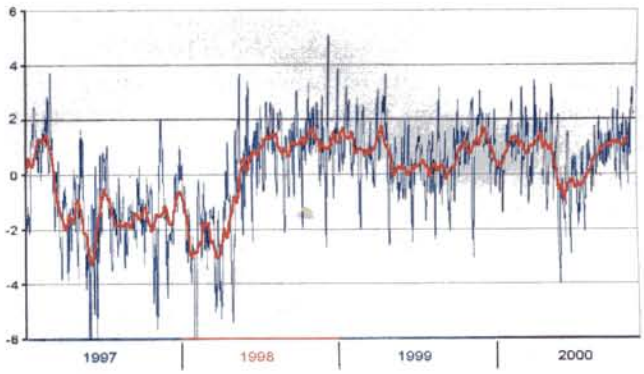

Fig. 1 Daily values of the Southern Oscillation Index (blue) and 31-day running mean (red) from Jan. 1st 1997 to Nov. 2000.

Within the Gulf of Alaska we have seen a steady decline in the influence of the surface cold water that has dominated conditions since the start of the La Niña in 1998 (Fig. 2). The only significant feature has been a mid-Pacific warm anomaly that has been migrating steadily across the North Pacific Ocean and is now approaching the coasts of N. America. This may have some influence during the upcoming winter, but as of late November, there is no sign of any significant warm anomalies appearing at the coast of British Columbia.

Project Argo is moving rapidly towards the deployment phase, and as of writing some floats have been deployed in support of Argo. It will be several years yet before the ocean is instrumented globally, but by the end of 2001, the North Atlantic should be effectively instrumented, and a large part of the Pacific Ocean will be populated with Argo drifters. The diagram shown in Figure 3 was adapted from a diagram assembled in mid-year by the Chairman of the International Argo Science Team, Dr. Dean Roemmich (SIO) and represents the best information available at that time. Since then the number of countries contributing to Argo has changed several times and this figure may now under-estimate the commitment

during 2001 to Argo deployments. All countries contributing to Argo have agreed there will be no protection of data, and that all information will be made available in near-real-time on the WWW and on the GTS (Global Telecommunications System). The implication is that should any PICES scientist be planning an experiment that could benefit from knowledge in real time of the background temperature and salinity fields, and the background geostrophic velocity fields, then by the end of 2001 you can assume that this will be available to you. I hope that one year from now when I write a report on the state of the Gulf of Alaska I will make extensive use of the fields observed by Argo drifters.

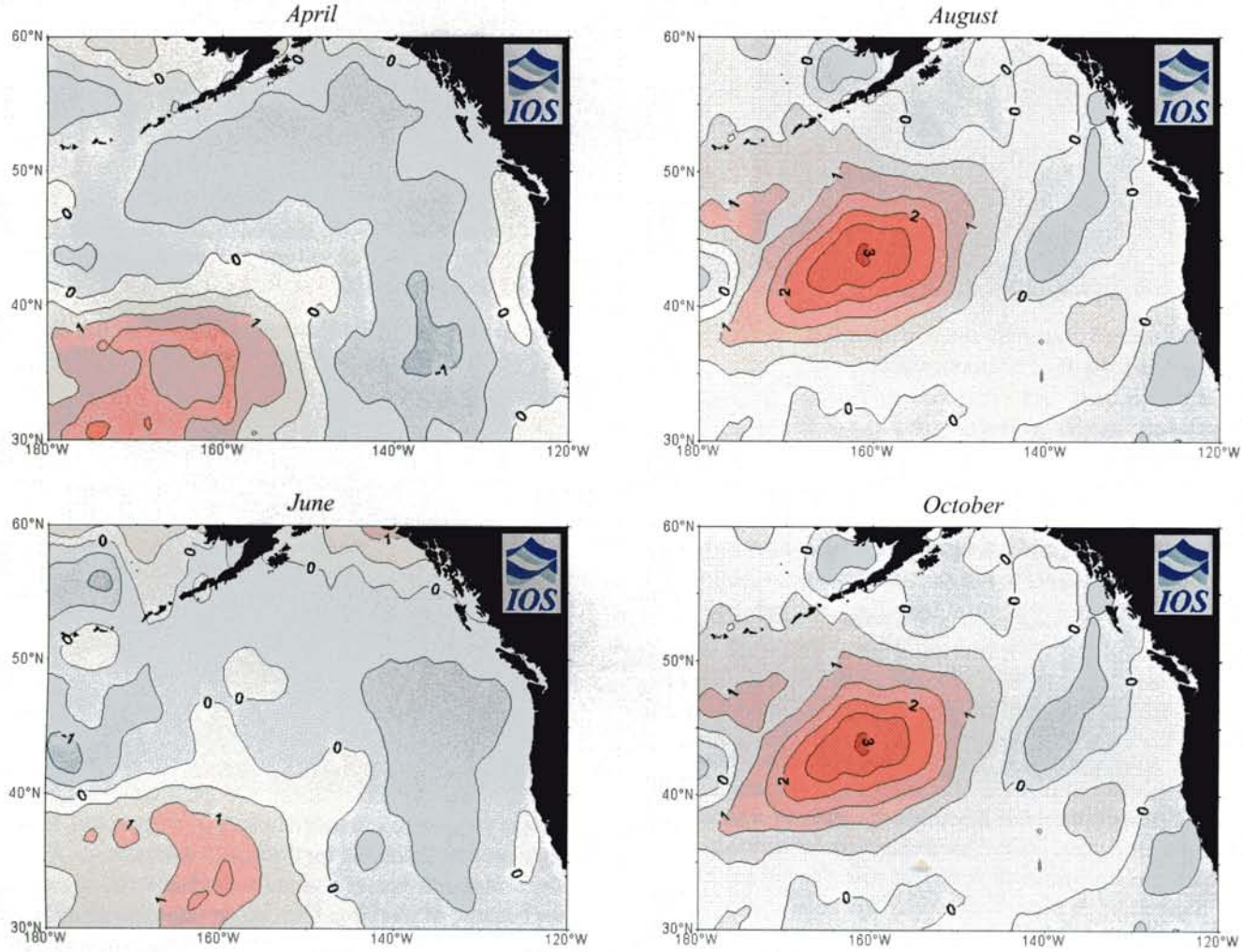

Fig. 2 Sea surface temperature anomalies in the Gulf of Alaska from spring to fall 2000.

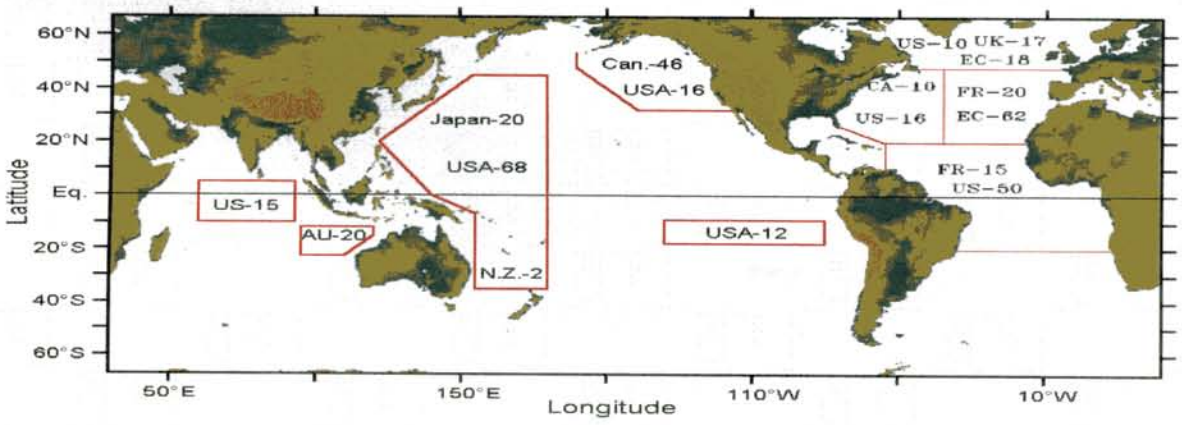

Fig. 3 Funded Argo floats will be deployed by various countries during 2001, in the regions indicated.