

**POGO Members POGO has 26 members as of November 2003.**

Bedford Institute of Oceanography (BIO) (Canada)

Bermuda Biological Station for Research (BBSR) (Bermuda)

Chilean Consortium Consisting of  
Servicio Hidrográfico y Oceanográfico de la Armada (SHOA)  
Center for Oceanographic Research in the Eastern South Pacific (COPAS)

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)

Dalhousie University (Dal) (Canada)

French Consortium Consisting of  
Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)  
Institut National des Sciences de l'Univers du CNRS (INSU)

German Consortium consisting of  
Alfred-Wegener-Institute (AWI)  
Institut für Meereskunde (IFM)  
Research Center for Marine Geosciences (GEOMAR)

Institute for Biological Energy Alternatives (IBEA) (USA)

Institute of Marine Research (IMR) (Norway)

Institute of Oceanology, Chinese Academy of Sciences (IOCAS) (China)

Japan Marine Science and Technology Center (JAMSTEC) (Japan)

Korea Ocean Research and Development Institute (KORDI) (Korea)

National Institute of Oceanography (NIO) (India)

National Oceanic and Atmospheric Administration (NOAA) (USA)

Royal Netherlands Institute of Sea Research (NIOZ) (Netherlands)

P.P. Shirshov Institute of Oceanology (Russia)

Scripps Institution of Oceanography (USA)

UK Consortium Consisting of  
Southampton Oceanography Centre  
Plymouth Marine Laboratory  
Proudman Oceanographic Laboratory

University of São Paulo (Brazil)

Woods Hole Oceanographic Institution (USA)

## Yokohama Declaration

### The Partnership for Observation of the Global Oceans (POGO)

November 18-20, 2003



#### Executive Summary

*In situ* global ocean observations are an essential component of the earth observing system. Such ocean observations must be delivered by a combination of existing and new programmes and platforms. These observations will deliver a variety of products to meet societal needs. The Partnership for Observation of the Global Oceans (POGO) is uniquely positioned to contribute to the implementation of an ocean observing system.



*Partnership for Observation of the Global Oceans*



## Partnership for Observation of the Global Oceans YOKOHAMA DECLARATION

### Executive Summary

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### Rationale

The oceans are a fundamental component of the Earth System. To understand the way our planet works, and to predict consequences of human activities and natural change, we must adopt an Earth System approach linking ocean, land and atmosphere.

Sustained, systematic observations of the ocean at appropriate time and space scales are key to understanding and prediction. These observations address issues as fundamental as climate change, weather, sea-level change, biological productivity and diversity, sustainable management, pollution and public health, safety at sea, and extreme events. In other words, the very quality and sustainability of all life.

To provide comprehensive data and products to address these issues, a diverse range of variables must be measured. This requires an integrated and sustained global observing system linking satellite remote sensing, *in situ* observations within the oceans, and appropriate modelling and data assimilation. A composite system drawing upon all available elements will deliver integrated data and predictive capabilities. This vision is the result of many years of intensive design by a wide range of national agencies and by international bodies sponsored by the Intergovernmental Oceanographic Commission (IOC) and the World Meteorological Organization.

The realisation of this vision also requires advanced technology, scientific expertise, and capacity building. Engaging and linking operational agencies, the research community and users is critical.

In this context, POGO is uniquely positioned to contribute to implementation, coordination and capacity building. POGO is an independent consortium of many of the major oceanographic institutions of the world, and has strong links with the IOC. We therefore have the essential expertise and durability to implement sustained global ocean observations and can communicate effectively between the Group on Earth Observations and IOC members.

This Yokohama Declaration results from the POGO meeting of 18-20 November 2003, and is our contribution to the discussion on implementing an earth observation system initiated by the intergovernmental Group on Earth Observations.

### The Way Forward

The primary objective of the next decade should be the completion and sustained operation of a global observing system creating improved ocean products and forecasts that address societal needs.

The ocean observing system will be a composite of subsystems - a network of networks. The information generated will be critical to research, to policy formulation and to decision making.

The system must be composite and integrated: composite to optimise the use of all available technologies, and integrated to optimise the utility of existing observing networks, analysis and forecasting activities.

The system will evolve in response to technological innovations and new knowledge, and will allow for the phasing out of elements that may become redundant.

**A global ocean observing system has been planned and is partially implemented.**

**We call for the attainment of sustained global coverage of essential variables, for example:**

- Ocean profiles of temperature and salinity from Argo floats, Volunteer Observing Ships, moorings and buoys
- Accurate sea surface height, temperature, winds and ocean colour from satellites, drifting buoys, moorings, tide gauges and Volunteer Observing Ships
- Assessment of carbon budgets from the hydrographic and carbon resurvey
- Multi-disciplinary observations from a global array of time-series stations to provide base-line data to evaluate long-term changes

**We also call for:**

- Advances in data management and numerical modelling to enable improved forecasts and products
- Improved international standards and protocols for ocean observation to promote data exchange
- Development and deployment of chemical and biological sensors and novel platforms for evaluation of biological diversity, chemical cycles and global change
- Greater effort in critical under-sampled areas, such as the Indian Ocean, the Southern Hemisphere, and the deep ocean, to achieve the coverage necessary to quantify the global carbon, freshwater and heat budgets
- Capacity building so that all nations can contribute and benefit

### Call to Action

The POGO institutions are contributing to the internationally agreed plans to enhance the global ocean observing system and its products. We provide scientific expertise to all aspects of the system. We provide focal points for national contributions to the system in many cases. We assist in the development of internationally agreed observing standards and data practices. We are actively building observing capacity throughout the world. We are working toward a new culture in support of sustained ocean observations, analyses and forecasts in the service of our nations and the world. We are a forum for clarification of roles and responsibilities aimed at promoting greater integration and coordination of earth observations. **We urge the members of the Group on Earth Observations to give high priority to these essential ocean observing activities.**

Signed on behalf of all participants at POGO-5

A handwritten signature in blue ink that reads "Howard S.J. Roe".

Howard Roe, Chairman, POGO