GOOS: A PLATFORM TO OBSERVE ESSENTIAL ECOLOGICAL AND BIOLOGICAL VARIABLES

The oceans are a fundamental component of our planet under constant change, both spatially and temporally. The ocean regulates climate, the concentration of atmospheric gases, the nutrients cycle and provides us with essential food resources. Our activities have altered the functioning of the oceans generating pollution, sea level rise, warming, acidification, dead zones, harmful algal blooms, coral bleaching, reduction of fishing stocks and deterioration of ecosystems, among many serious problems. Monitoring oceanographic variables allow us to understand what is changing, where and why. The importance of monitoring to observe, measure, evaluate and analyze the effects of human activities on the marine environments and on their capacity to fulfill vital functions for the health of the planet has been recognized and ratified as a priority to reach the Social Development Goals (SDGs) defined by the United Nations.

Under the aegis of the Intergovernmental Oceanographic Commission (IOC), the Global Ocean Observing System (GOOS) is a permanent system for observation, modeling and analysis of marine and oceanographic variables in order to provide data and unbiased scientific information that 1) help maintain operative the services provided by the oceans, 2) provide precise descriptions of the state of the oceans and their marine resources, 3) provide the capacity to generate predictions of future ocean conditions and climatic change. The information generated by GOOS is used to support management policies and to better understand coastal and oceanographic processes at a global level (www.ioc-goos.org).

Established initially to measure physical variables indicative of global climate changes in the 90s, GOOS has at present three inter-operative panels: the Ocean Observations Panel for Climate (OOPC), the International Ocean Carbon Coordination Project (IOCCP) and the Biology and Ecosystems Panel (BEP). The last two panels were established in 2013 and 2015 respectively in response to the need to incorporate the observation of biogeochemical and biological variables in a coordinated, integrated and interdisciplinary manner, within the Framework for Ocean Observing (FOO) of UNESCO. BEP aims to develop and coordinate efforts in the implementation of a global ocean observation system to include variables related to productivity, biodiversity and ecosystem services to 1) answer relevant scientific and social questions and 2) achieve critical policy development and management decisions on ocean and coastal resource sustainability and health. For implementation, the FOO proposes a simple model defined as 'input-process-output', where the inputs are driven by societal needs for scientific knowledge. The process is based on the measurement of identified Essential Ocean Variables (EOVs) providing answers to those needs, and the outputs are products generated from these measurements for the benefit of science and society.

In order to fulfill its goal as facilitator, BEP aims to: 1) identify the scientific and societal needs that require sustained biological and ecological oceanographic observations, 2) evaluate the existing time series and identify information gaps, 3) develop with the community a consensus that leads to the identification of the EOVs, and 4) coordinate initiatives and observation networks, and promote the development of a standardized and interrelated information system for the management of global data. The BEP is carrying out an inventory of ocean biological and ecological variables observation systems and programs at a global level, as well as a compilation and analysis of the different initiatives and societal elements that are defining the EOVs.

Patricia Miloslavich, Universidad Simón Bolívar, Venezuela and Australian Institute of Marine Science (AIMS)
Ward Appeltans, IOC, UNESCO
Nicholas Bax, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
Albert Fischer, IOC, UNESCO
John Gunn, AIMS, Australia
Francis Marsac, Institute de la Recherche et Developement, France
Samantha Simmons, Marine Mammal Commission, EEUU