

## Interdependence of research needs in oceanography and ocean technology

Ravindran M, Raju Abraham, Ramanamurthy M.V, Venkatesan R and Atmanand.M.A

National Institute of Ocean Technology, India

Over a period of time, Oceanography has evolved as a science which has brought benefits to mankind in terms of prediction of climate and use of technologies for developing ocean resources. To ensure the safety of men and machines located in floating and submerged platforms used in the various plants and devices, one should totally understand the dynamics of sea-machine interaction.

While developing reliable and cost effective technologies for harnessing different ocean energy forms like thermal energy, wave and tidal energy, gas hydrates etc, oceanographic data on deep soil data, temperature, salinity, hydrodynamic forcing (tide, wave, current) and met- ocean parameters are essential. Ocean mining is carried out in shallow waters as well as deep waters. Deep sea mining requires total mapping of deep ocean floor, data on soil strength, nodule density etc. apart from data on hydrodynamic loads on the vertical risers. The safety of fixed, floating or submerged structures need spatial/temporal information on all ocean parameters. The oceanographers have to evaluate the environmental impact aspects of resource harvesting technologies and their sustainability aspects. On the other hand, the long term measurements in oceans are possible only by accurate, reliable and cost effective instrumentation related technologies.

The present ocean technological advancements with underwater and satellite communication, energy storage devices, smart sensors, autonomous vehicles, profilers etc helps a better understanding of oceans which have direct relevance to the society. The advancement in communication technology made it possible for scientists to get real time data from the oceans and forewarn about any natural disasters to save mankind. The most advances in oceanography have come from new technologies that enable us to make measurements in new ways or get to previously inaccessible places. Hence, the ocean technologists and oceanographers have to work together complimenting each other's work

This paper gives some specific examples of close interactions between oceanographers and technologists of NIOT, Chennai, India, in their various projects on Ocean energy, Desalination, Deep sea mining, moored, drifting and profiling data buoys. The details of technological support systems developed for protecting coastal population from Tsunamis and storm surges are also provided in this paper

### Biography

Ravindran. M; Graduate in mechanical Engg in 1966, Ph.D. in Turbo-machinery from IIT, Madras in 1978. Faculty in Ocean Engg Centre, IIT, Madras 1982-1993, Founder Director of NIOT, Chennai 1993-2004, Vice Chairman, International Oceanographic Commission, Paris, 1995-1997, Member, Legal and Technical commission of International Sea Bed Authority, Jamaica, 2002-04.

ravinmv@gmail.com