

interests of developing countries, thus implying the creation of the necessary human, material and institutional infrastructures. This should be implemented by providing for training and education, equipment and assisting those most in need of development of their potential in technology.

The importance of development of technology and ocean service infrastructure for the developing countries including India calls for a rational and effective approach as there is a great need for manpower with the appropriate scientific, technical and managerial capabilities. These will enable the authority not only to understand available scientific data, technologies and other know-how, but also to develop technologies further.

Areas of significance where there is great need for technology development are:

- Novel observational strategies for open ocean and coastal waters.
- Autonomous in-situ and remote (satellite) measurements.
- Data management network to handle uninterrupted systematic, long term, real time data flow.
- New algorithm to elicit meta data.
- Operational predictive model with inputs from space observations.
- Products for commercial use.

Theme 5 : Marine Nonliving Resources

Role of Remote Sensing in Ocean Management

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Ocean Remote Sensing has changed its role over the last 5 years. Far from being a high-tech field meant for experts, it has now become a common tool for routine analysis of a large number of ocean parameters that have direct bearing on socio-economic well being of a community.

The sheer expanse of oceans had made it impossible even to attempt to solve some of the major issues such as weather forecast, fishery forecast, global warming, rainfall or the crucial carbon cycle that sustains life on this fragile planet.

The above problems require global measurement of several ocean parameters at least on a weekly basis to enable scientific community to correlate them to basic physics of environmental sciences. Shipboard measurements would never yield such data since mankind simply does not have so many ships that can be deployed in the oceans all over the world.

The first ocean satellite SEASAT was launched in 1979 which functioned just for 3 months and yielded valuable data that demonstrated the

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capability of ocean remote sensing. Despite this initial success, there were no follow-up satellites and the oceanographic community was left with using the broad-band data from land-use satel-



lites to develop ocean algorithms. In the early 90's, many countries including India laid a major emphasis in their space programme on Ocean Remote Sensing partly due to pressures arising from environmental concerns. The oceanographic community will soon have about 10 satellites giving them a stream of valuable data.

The focus would now shift to optical remote sensing which promises to give a global estimate on carbon fixation the world over and examine both global warming and sea-level rise. The increasing green house gases and their visible impact on climate change and diminishing fresh breathable oxygen has already alarmed the mankind following Earth summit at Rio.

The climate studies require microwave remote sensing. Special satellites carrying microwave payload are due to be launched before the turn of the century. This will go a long way in monsoon prediction which has been lagging in India for lack of on-line microwave data. The immediate need is to convert the various retrieval softwares for ocean parameters into user-friendly packages and make them freely available to primary users.

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