

ITCOcean



**International Training Course
on
"An Introduction to the Blue Ocean"
June 1-12, 2015**

**Organized
by**

**International Training Centre for
Operational Oceanography (ITCOcean)
ESSO-INCOIS, Hyderabad
India**

Background:

The ocean is the defining physical feature on our blue planet. Ocean covers over 70% of the Earth's surface and contains about 97% of the Earth's surface water. There is one ocean and many ocean basins, such as the north and south Pacific, north and south Atlantic, Indian and Arctic. Throughout the ocean there is one interconnected circulation system powered by wind, tides, coriolis effect, the Sun and water density differences. The global ocean conveyor belt moves water throughout all the ocean basins, transporting energy (heat), matter and organisms around the ocean. Changes in ocean circulation have larger impact on the climate. The ocean is an integral part of the water cycle. The vapor released into the atmosphere returns as rain and snow, replenishing the planet with fresh water.

Heat exchange between the ocean and atmosphere can result in both global and regional phenomena, affecting patterns of rain and drought. Some of the examples include the El Nino Southern Oscillation and La Nina, causing important changes in global weather pattern due to the alterations in sea surface temperature pattern in the Pacific. The oceans have made the earth habitable. They provide water, oxygen and nutrients and moderates the climate needed for life to exist on earth. The ocean dominates the earth's Carbon Cycle. The ocean has a significant influence on climate change by absorbing, storing and moving heat, carbon and water. Changes in the ocean's circulation have produced large, abrupt changes in climate during the last 50,000 years.

However, the ocean is largely unexplored. Understanding the ocean is more than a matter of curiosity. Use of the ocean resources is increasing significantly and future sustainability depends on our understanding and their potential. New technologies, sensors, satellites, drifters, buoys, subsea observatories have improved our ability to explore the ocean. Mathematical ocean models representing the ocean system help us understand the complexity of the ocean and its interactions with earth's interior, atmosphere and climate.

The present course provides a basic introduction to Oceanography covering various themes. The objective of the course is to motivate young researchers from related disciplines who intend to work in the areas of Physical and Dynamical Oceanography

Topics:

- ? Brief History of Oceanography, Space and Timescales, Properties of Seawater
- ? Atmospheric Circulation, Air-Sea Interactions, El Niño, other tropical modes
- ? Dynamical Processes of Ocean Circulation, Wind-driven and Thermohaline circulations
- ? Vorticity, Potential Vorticity, Planetary and Gravity waves and Instabilities
- ? Sverdrup Balance, Western and Eastern Boundary Currents, Equatorial Circulation
- ? Tides, Coasts, Estuaries, Beaches
- ? Characteristics of Pacific, Atlantic and Indian Oceans
- ? Marine Habitat, Productivity, Energy Transfer, Carbon Cycle
- ? Global Circulation, Water Properties, Data Analysis Concepts, Observational Methods
- ? Ocean forecasting – Hydrodynamics, Eutrophication, Ecology, Dissolve Oxygen, Fisheries

Project Work:

Projects will be formulated to better understand the theoretical concepts involving data analysis.

Eligibility:

M Sc / M Tech in Oceanography / Meteorology / Marine Science / Atmospheric Science / Physics / Mathematics / or M Tech in Ocean Engineering with good academic record and working knowledge in Computer OS / UNIX/Linux and programming languages, e.g. FORTRAN.

Who can apply?:

- ? University students pursuing their career in operational oceanography. Priority will be given to students from Indian Ocean RIM countries
- ? Staff of operational oceanographic centres and Staff of Government departments and decision makers involved with oceanographic services and marine activities

Faculty:

Prof. Raghuram Murtugudde, University of Maryland, USA
Senior Scientists of INCOIS

Venue:

The training course will be held at ITCOOcean, Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, India.

Course Fee and Financial support:

There is no course fee charged for the training course. The participants are expected to make their own arrangements for all expenses. However, INCOIS can provide accommodation at their Hostel for few deserving candidates. Preference in admission will be given to candidates who are supported by their own organizations.

Application:

The application form can be downloaded at the following link:

www.incois.gov.in/documents/ITCOOcean/BlueOceanCourseApplicationForm.pdf

The completed and signed application form should be sent to the following address by April 15, 2015

Contact Address:

ITCOOcean Coordinator
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