



ITCOcean



**International Training Course
on
Indian Ocean Dynamics : From the Large-scale
Circulation to Small-scale Eddies and Fronts**

November 16-27, 2015

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

The International Training Centre for Operational Oceanography (ITCOcean) of the Indian National Centre for Ocean Information Services (ESSO-INCOIS) is organizing an International Training Course on "Indian Ocean Dynamics : From the Large-scale Circulation to Small-scale Eddies and Fronts" during November 16-27, 2015.

About the Course:

Ocean circulation affects climate, the marine ecosystem, and directly impacts society (through navigation, transport of sediment and pollution, fisheries etc.). Therefore, the processes that determine these phenomena are critical for a complete understanding of the seas around us.

The course will include a brief description of observational features, but it will emphasize the basic processes that underlies them. In addition, it will review topics of current interest in which those processes play a prominent role.

The theory will be presented using both complex and simple models of ocean circulation. The more complex models provide the most realistic simulation of the observations and are therefore the basis for prediction systems, but they do not always yield insight into the underlying processes. Stripping away the inessential elements of this complexity to reveal the essential dynamics is the essence of science, and this course will use a suite of simple models to communicate the dynamical building blocks that produce the complex circulation patterns observed in the Indian Ocean. The material used will include animations that bring to life key processes, such as the radiation of Rossby and Kelvin waves.

A key difference between climate and the ecosystem concerns the length and time scales involved. Climate variability occurs on large-spatial and long-time scales, whereas biology also responds on the short time scales typical of the frontal systems that characterise the potential fishery zones on which INCOIS issues advisories for fishermen. These short scales are often connected to the large-scale currents through instabilities of the latter. Therefore, in addition to the large-scale waves that are ubiquitous in satellite data, the course will also consider the instabilities that lead to mesoscale and short-scale features like eddies and fronts.

In summary, the goal of this course are to provide a dynamical foundation for understanding oceanographic phenomena on a range of temporal and spatial scales, and to illustrate the importance of those processes in current oceanographic research.

Course Contents:

The course will cover the following broad topics.:

- ! Large-scale circulation of the open ocean: Observations, simulations with general circulation and simple models, and the processes underlying the dynamics
- ! Comparison of model simulations with direct current measurements
- ! Shelf circulation
- ! Instabilities: Eddies, fronts, and filaments

Faculty:

The primary faculty for the course will be Prof. Julian P. McCreary, Jr. from the International Pacific Research Centre (IPRC) / University of Hawaii, but the course will also draw on scientists from INCOIS and other Indian institutions.

Who can apply?

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

Prerequisites:

Background in Meteorology and / or Oceanography, Atmospheric Science, Physics. Minimal basic mathematics and computer skills will be assumed.

Venue:

The training course will be held at ITCOcean, 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 a 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:

<http://www.incois.gov.in/documents/ITCOcean/OceanDynamicsCourseApplicationForm.pdf>

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

Contact Address:

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