

*INCOIS-Nansen PhD and Post-doc Winter School 2016*  
**Operational Oceanography:  
Indian Ocean circulation and sea level variation**

**Brief introduction to the school –  
Lectures and Expected student work**

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# Operational Oceanography: Indian Ocean circulation and sea level variation

## Topics to be addressed:

- Monsoon variability at intra-seasonal and inter-annual time scale and its impact on Indian Ocean Circulation
- Operational Indian Ocean Circulation and Modelling
- Remote sensing data
- Data Assimilation for ocean forecasting
- The Nansen-TOPAZ ocean modelling system
- Physics of sea level variations and Indian Ocean sea level variation.

## Faculty Members (20):

- Dr. A. Carrassi, NERSC, Bergen
- Dr. Jan Even Nilsen, NERSC, Bergen
- Prof. O.M. Johannessen, Nansen Scientific Society, Bergen
- Dr. Anton Korosov, NERSC
- Mr. Lasse H. Pettersson, NERSC
- Dr. Yu Wei Dong, Center for Ocean and Climate Research (FIO), Qingdao, PR. China
- Prof. P.V. Joseph, NERCI, Cochin
- Dr. A.K. Joseph, NERCI, Cochin
- Dr. S.S.C. Shenoi, INCOIS, Hyderabad
- Dr. Arya Paul, INCOIS
- Dr. Sivareddy, INCOIS
- Dr. T.M. Balakrishnan Nair, INCOIS
- Dr. P. A. Francis, INCOIS
- Dr. Pattabhi Ramarao, INCOIS
- Dr. R. Harikumar, INCOIS
- Dr. Arnab Mukherjee, INCOIS
- Dr. Amit Apte, ITCS, Bangalore
- Dr. Satish Shetye, NOI, Goa
- Dr. Unnikrishnan, NIO, Goa
- Dr. S Kumar, INCOIS, India



# Time line

- An interesting and education week for us all!!
- Prepare & Present a **Student report by FRIDAY**,  
*as a basis for*
- a **peer review scientific (overview) article** about the state-of-the-art in operational oceanography for the Indian Ocean.
- Continue e-cooperation after this week.
- Students to submit and publish a scientific article within June 2017?



# Research topics and Thematic Groups

1. Ocean Modelling
2. Data Assimilation
3. Sea Level Variation
4. Real Time Ocean Observations
5. Forecasting, Applications and Market

*Is this the ToC + Introduction and Conclusions?*



# Group Tasks

- Elaborate the s-o-a, constraints, opportunities, roles and importance..... of each given topic wrt. *“Operational Oceanography ..... Indian Ocean.... ”*
- Formulate questions and cardinal requirements/conditions to each lecture
- Discussion and clarifications of these questions with the lecturers in plenary and directly
- Use your own experiences, including the posters!!
- Exploit external e-resources - **if needed**
- Collect notes and write synthesis during student sessions on Thursday and Friday
- Prepare and present your report on Friday.



# Methodology

- **The Process - progressive steps;**

1. Thematically in the 5 groups based on current lectures given (Monday)
2. Distribute roles and tasks!
3. Thematically in the 5 groups based on additional lectures, exercises and student posters given (Tuesday and Wednesday)
4. Merging of “pairs” of groups or exchange expertise – cross-disciplinary discussions and formulations
5. Inter-disciplinary synthesis of findings from ALL group (initial 5, the “pairs”, and more?)
6. Presentation and review comments in plenary
7. **Use your time efficient – Friday is very coming soon**



# Student Group # 1

## 1. Ocean Modelling & data Assimilation

**Mentor:** Francis, Alberto & Amit

1. Fehmi
2. Majambo
3. Rupak
4. Rakesh
5. Manivavnan
6. **Abishek (Moderator)**
7. *Maxime (Rapporteur)*
8. Shaju



# Student Group # 2 & 3

## 2. Sea level variation

**Mentors: Even & Unikrishnan**

1. Bernadino (Moderator)
2. Maruf
3. Anya
4. Ballari
5. Srinivas
6. Dhanalakshmi
7. Prerna

## 3. Real-time ocean observations

**Mentors: Pattabhi & Anton**

1. Ghomsi Franck
2. Ramesh
3. Radharani (Rapporteur)
4. Antoop
5. Syam (Moderator)
6. Dmitry



# Student Group # 4

## 4. Forecasting, Applications and Users

**Mentor:** Harikumar

1. Daneeja
2. Sultan
3. Jagottam
4. Prathipita
5. Malavinge
6. Nabir

*Sick /absent:*

- Rohith
- Deep Sankar



# Student poster presentations (6 min each)

1 Ghomsi Franck

2 Bernardino

3 *Daneeja*

4 Fehmi

5 Majambo

6 Nabir

7 Rupak

8 *Marufa*

9 Sultan

10 Abishek

12 Maxime

11 Ernada

13 Dmitry

14 Ramesh

15 Rakesh

*Coffee*

16 *Any*

17 *Radhranisan*

18 & 19 Agrawal

Manivanan

20 Syam

21 *Dhanalakshmi*

22 Shaju

23 Anoop

24 Prithipati

25 Ballari

26 *Prerna*

27 Srinivas



# Report writing groups (TOC)

\* Moderators, Rapporteurs

## 1. Introduction

- XX

## 2. Ocean modelling & Data assimilation

- XX

# Students to complete

## 3. Sea level variation

- XX

## 4. Real-time observations

- XX

## 5. Forecasts and Market

- XX

## 6. Conclusions

- XX





# Meals

- Breakfast @ INCOIS dormitory
- Joint lunch @ INCOIS canteen
- Dinners @ INCOIS canteen – not on Thursday



# Obvious, but to remember

- We start every day @ 09:00 – better 5 min. early than 1 min. late!
- All students should attend all lectures and sessions
- Switch off your cell phone!
- Bring with you:
  - Laptop, paper, ....
  - Drinking water/soft drinks – we will serve tea & coffee
  - Your own poster (today or tomorrow AM!)
  - Other personal needs for a whole day of work
- Thursday PM we will have a trip to “see” Hyderabad
- enjoy your stay @ INCOIS!!!

