

BoBBLE OCEAN TURBULENCE SCIENCE (BOTS) WORKSHOP

JULY 15–19, 2019
Bengaluru, India



Beyond Measurements: Observations to Parameterization of Vertical Mixing in Ocean Models

Hosted by IISc. Bangalore, the **BOTS Workshop** will provide instructional content and interactive tutorials on topics related to the processing, analysis and interpretation of microstructure turbulence data. The Bay of Bengal Boundary Layer Experiment (BoBBLE) will provide the context and sample data sets used in the tutorials.

The BOTS workshop will also include presentations from Indian research institutions showcasing the latest advancements in turbulence observations in the Bay of Bengal and Arabian Sea.

PRELIMINARY PROGRAM

Day 1, July 15

- Keynote address
- Ocean turbulence fundamentals
- Tutorial: converting raw data to physical units using BoBBLE dataset

Day 2, July 16

- Estimating K from field measurements
- Shear spectrum analysis
- Tutorial: estimating epsilon from shear spectra

Day 3, July 17

- Turbulence scalar spectra analysis (temperature & salinity)
- Estimating scalar dissipation rate, chi, from viscous and/or the inertial-convective subrange

**each day of the BOTS workshop also includes special presentations from the Indian research community, topics and speakers TBD*

- Tutorial: CT sensor processing for salinity, density, & buoyancy frequency

Day 4, July 18

- Advanced Topics: data quality analysis, control and assurance
- Tutorial: estimating K & Gamma from epsilon, chi & background gradients.

Day 5, July 19

- Assessing and developing turbulence models
- Confidence intervals on epsilon
- Glider-based turbulence measurements
- Closing address and discussion



Ministry of Earth Sciences
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For more information & registration details, please contact **BOTS workshop co-organizers:**

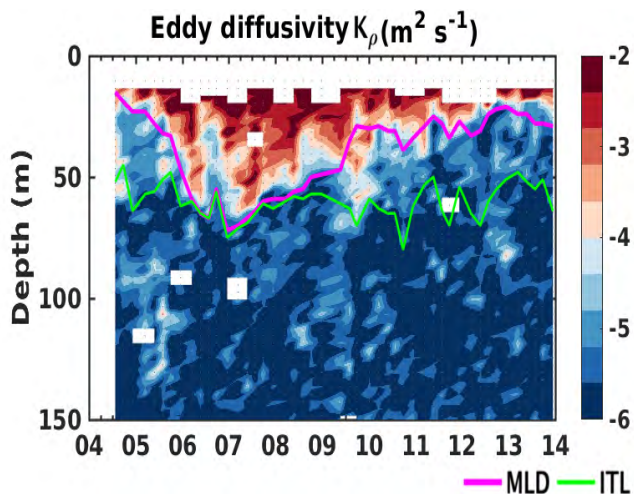
Prof. Vinayachandran, IISc. Bangalore
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Mr. Jeremy Hancyk, Rockland Scientific
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The BOTS Workshop, facilitated by ocean turbulence specialists from Rockland Scientific, is designed for scientists with a background in physical oceanography. Operational training for data acquisition is not covered in this workshop.

Sponsorship for the BOTS Workshop is provided by:

- Ministry of Earth Science, Govt. of India
- IISc. Bangalore
- Bay of Bengal Boundary Layer Experiment (BoBBLE)
- Pan India Consultants Pvt. Ltd.
- Rockland Scientific Inc.



BOTS WORKSHOP FACILITATORS



Fabian Wolk, Ph.D., MSc.

Dr. Wolk has worked in academic research and in the oceanographic industry in North America, Europe, and Japan. His detailed technical knowledge of turbulence instrumentation and his extensive field work enable him to advise and assist researchers in many aspects of oceanographic measurements. Dr. Wolk earned his Doctorate degree in Marine Science from the Tokyo University of Marine Science and Technology with focus on microstructure sensor design and implementation. A senior partner at Rockland Scientific since 2005, Dr. Wolk is dedicated to enabling scientists understand climate change by designing, manufacturing, and distributing world-class ocean turbulence instrumentation.



Cynthia Bluteau, Ph.D.

Dr. Bluteau's research quantifies transport, in particular, mixing, from field observations to develop the predictive capability of numerical circulation and environmental models. Through this work, she has developed ways to quantify turbulence processes more directly from moored and profiling platforms, which allow contextualising turbulence measurements with the background flow. The goal of these methods is to assess and develop predictive mixing relationships to better understand the connections between large-scale physical processes and mixing in the ocean.



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