

# Ocean Biology Observatories Workshop

**Dates:** 16-18 September 2009 (OceanObs'09 is 21-25 Sept.)

**Location:** Holiday Inn Mestre. This hotel is 6 miles from St. Mark's Square in Venice. It is near the Marco Polo International Airport and we can get into Venice for dinners. I have reserved 50 sleeping rooms, a main meeting room and breakout rooms.

## **Schedule:**

### Day 1

Introduction

**Goal of Workshop:** Bring together biologists, observing community, and technological community to develop ocean biology observatories that could address the grand challenges of observing ocean life and its response to global change.

**Definition of an ocean biology observatory:** The definition will be broad, including a sustained, integrated system from a broad range of platforms that can support existing and emerging technologies for observing marine life and its interaction with the ocean and broader Earth system. The observatory components will include platforms, instrumentation, data management and analysis. Observatories could include fixed-point moorings (cabled or autonomous), animals as oceanographers, measurements from Volunteer Observing Ships, AUVs/ROVs/HOVs, drifters, CPRs, Ocean Tracking Network, satellites, among other platforms and technologies.

**Products:** Special issue of peer-reviewed journal and guidelines for pilot ocean biology observatories.

**Plenary Session 1**—What do we need to observe to understand the response of ocean biology to global change and the impacts of biological changes on the Earth system? What collection of observations are needed? (invited plenary presentations)

- Modeling and observations: how do they interact (parameterization to data assimilation)? - *Katja Fennel*, Dalhousie University and *Philippe Cury*, IRD, France
- What is the marginal benefit of putting in place ocean biology observatories? What chance is there for ocean biological observatories to make a difference? – *Steve Rintoul*, CSIRO, Australia
- Thresholds/tipping points/regime shifts/forecasting extreme events – *Francisco Chavez*, Monterey Bay Aquarium Research Institute
- Astrobiology perspectives on remote observations

Lunch

After Lunch

**Breakout Session 1:** What are the justifications for ocean biology observatories? What are the key observing systems, efforts, plans, and documents?

- People introducing themselves and their projects/systems
- What is missing from existing systems and gaps in observations?

Panel discussion: John Gunn (1.5 hours)

## Day 2

**Plenary Session 2**—What are the global change issues that we need to address and the observational approaches required? – Marlon Lewis, Session Chair (30 minutes each)

- Observational approaches to ocean acidification – *Andrew Dickson*, Scripps Institution of Oceanography
- Observational approaches to oxygen depletion – *Denis Gilbert*, Fisheries & Oceans Canada
- Observational approaches to community structure, from microbes to zooplankton – *Kendra Daly*, University of South Florida
- Observational approaches to distribution and movement of marine organisms and changes in ocean properties – *Barbara Block*, Stanford University
- Observational approaches to vertical movements of predators and prey in relation to physical/chemical structures – *Martin Biuw*, Norwegian Polar Institute
- Observational approaches to changes in trophic structures
- Observational approaches to changes in benthic dynamics – *Paul Snelgrove*, Memorial University

Lunch

**Breakout Session 2:** Each of the 7 groups will develop a report that will discuss and document (need chairs and rapporteurs)

- Background and context for the need discussed in the morning
- Need for systematic long-term measurements over large scales
- What are the priority observations to address this issue?
- Where should the observations be made and at what frequency and duration?
- Observational technologies now available on the horizon, and gaps in available sensors to address the need

## Day 3

### **Plenary Session 3**

Short presentations (30 min each) from people developing new and highly advanced platforms and instrumentation packages. Speakers should be at the cutting edge of technology.

- Sensing in extreme environments

- Small integrated sensors applicable to biology
- Management and Integration of Large, Diverse Data Flows

Reports back from yesterday's breakout sessions

Plenary Discussion: What are the common features among the reports from the six working groups?

**Breakout Session 3:** Breakout groups continue work

- How can different observational approaches be integrated and what advantages would be gained?
- What kinds of intercalibrations and validations are needed among sensors of the same type, as well as different approaches?
- How can these activities be funded, particularly sustained observations?
- How can data be integrated, delivered, and visualized?

Lunch

After Lunch

**Discussion Session 3 (continued)**

**Final Report Back**

**Closing**

- Schedule and action items for production of special issue and science and implementation plan