

Instrumenting our oceans for better observation: a training course on a suite of biogeochemical sensors

June 10-June 19, 2019

Sven Lovén Center for Marine Sciences (Kristineberg, Sweden)

Draft Course Agenda

During hands-on sessions, participants will be divided into **groups of 7 participants**. Each group will have 1-2 instructor(s) dedicated to the group. Groups will take turns in exchanging sensors used in the practical sessions of the course. Ultimately and regardless of prior experience with any or none of the sensors, each participant will receive basic training for all four sensors that the course focuses on.

As preparation for the course, participants are requested to familiarize themselves with the 2017 IOCCP guide, which was an outcome of the first international IOCCP sensors summer course: <http://www.ioccp.org/images/09SummerCourse2015/A-users-guide-for-selected-autonomous-biogeochemical-sensors.pdf>

MONDAY, JUNE 10, 2019

Morning

Welcome and introduction

[Course Organisers]

Course objectives, expected outcomes, logistics and format of the course

[Course Organisers]

Session 1: **Scientific importance of instrumenting our oceans**

[Plenary session]

Session 2: **Key oceanographic characteristics that will determine what sensors can be used where**

[Plenary session]

12:00-13:00 Lunch

Afternoon

Session 3: **Sensors – inside out** *[sensors 1 (oxygen) & 2 (biooptical)]*

Evening

Session 4: **Flash (2-min) presentations by participants and lecturers**

TUESDAY, JUNE 11, 2019

Morning [4 hours, 9-13]

Session 5: **Sensor deployment:** *Participants familiarize themselves with the sensors and deploy their sensors (1 & 2) off the pier.*

Sensor 1: oxygen

Sensor 2: biooptics

13:00-14:00 Lunch

Afternoon

Session 6: **Sensors – inside out (part 2):** *[sensors 3 (pH) & 4 (pCO₂)]*

pH

pCO₂

WEDNESDAY, JUNE 12, 2019:

Morning [4 hours, 9-13]

Session 7: **Sensor deployment:** *Participants familiarize themselves and deploy their sensors (3 & 4) off the pier*

13:00-14:00 Lunch

Afternoon

Session 8: **Interfacing sensors** *[plenary session]*

Session 9: **The Carbon system: assessing and controlling measurement uncertainty in estimating the seawater CO₂ system** *[plenary session]*

Session 10: **Sponsors** *[15 minutes for each sponsor, total 1h]*

THURSDAY, JUNE 13, 2019:

Morning

Session 11: **Calibration and validation: what are the needs?**

12:00-13:00 Lunch

Afternoon

Session 12: **Wet chemistry validation and benchtop**

FRIDAY, JUNE 14, 2019:

Morning

Session 13: **Recovery of sensors 1 & 2 (raw data)**

12:00-13:00 Lunch

Afternoon

Session 14: **Theoretical plenary session on data processing (sensors 1 & 2)**

Session 15: **Practical session on data processing (sensors 1 & 2) [in groups]**

SATURDAY, JUNE 15, 2019:

Morning

Session 16: **Elusive Oxygen – How do we accurately measure it?**

AND/OR

Session 17: **How to derive meaningful biogeochemical quantities from bio-optical sensors?**

Afternoon

Field trip / social activities

SUNDAY, JUNE 16, 2019:

Morning

Session 18: **Recovery of sensors 3 & 4 (raw data)**

12:00-13:00 Lunch

Afternoon

Session 19: **Theoretical session on data processing (sensors 3 & 4)**

Session 20: **Practical session on data processing (sensors 3 & 4)**

MONDAY, JUNE 17, 2019

Morning

Session 21: **Modelling for best observation design; models without data do not work**

Session 22: **How to take care of data?**

13:15-14:00 Lunch

Afternoon [2 x 90 minutes]

Session 23: **Remote Sensing** [plenary session]

Session 24: **Smart data extrapolation** [plenary session]

TUESDAY, JUNE 18, 2019

Morning

Session 25: **From surface measurements to fluxes; air-sea exchange parameterization, Eddy Flux, Flux-Engine** [total 4 h]

13:00-14:00 Lunch

Afternoon

Session 26: **All I always wanted to know about sensors**

WEDNESDAY, JUNE 19, 2019

Morning

Session 27: **Emerging technologies**

Session 28: **Biofouling - open discussion**

Afternoon

[Time to fill out evaluations]

[Time to give feedback on the 2015 IOCCP users guide to selected autonomous biogeochemical sensors.]

Course ends this evening after a nice dinner.

THURSDAY, JUNE 20, 2019

DEPARTURE