Course title: The role of global change in the alteration of biogeochemical cycles

Modality: CFA- Advance Training Course

Orientation:

- [x] Ocean Observation and Global Change
- [ ] Sustainable use of Marine Resources
- [ ] Integral Management of the Sea
- [ ] Technological progress. Engineering and Business Management

Dates: September 19th-23th

Timetable: 12:00 -14:00 and 16:00-18:00

Duration:

Lectures: 20h

Laboratory: one day field trip in Ría de Vigo.

Location: DOMAR videoconference oom TORRE-CACTI Building, Campus As Lagoas-Marcosende, Univeridade de Vigo

Academic coordinators:

Name	Institution	e-mail
Carmen González	Instituto de Investigaciones Marinas (IIM - CSIC)	cgcastro@iim.csic.es
Joao Serodio	Universidade de Aveiro	jserodio@ua.pt

Lecturers:

Name	Institution	e-mail
Paula Conde Pardo	Instituto de Investigaciones Marinas (IIM - CSIC)	pautag@gmail.com
María Froján Fuentes	Instituto de Investigaciones Marinas (IIM - CSIC)	mariafrojan@iim.csic.es

General description:

The course is focused on the most relevant oceanic biogeochemical processes that are modified by global change. The course studies the biogechemical cycles of carbon, nitrogen and silicon with a focus on understanding the consequences of rising atmospheric CO2 and climate change. Changes in ocean biogeochemistry seem to be the most significant in terms of their potential impacts on marine life, particularly in coastal ecosystems. Particularly emphasis will be placed on ocean acidification and the interplay between nutrient biogeochemistry and ecosystem functioning.

Contents:

1. Marine biogeochemical cycles
   Carbon and carbonate cycles
   The nitrogen, and silicon cyles
   Biogeochemical cycles and productivity and diversity of ecosystems

2. Interactions with environmental changes
   Modes of natural variability and anthropogenic forcings
   Anthropogenic CO2 and oceanic acidification
   Effects of climate change on the biological pump

Teaching methodologies:

Lectures, participative debates and practical exercises. There will be one field trip to a mussel raft area in Ría de Vigo.

Evaluation system:

Attendance and participation in the scheduled sessions. The students will have to complete a series of practical exercises.

Brief CV of the lecturers:

Dra. Paula C. Pardo

Paula C. Pardo es titulada en Ciencias del Mar y doctora en Oceanografía por la Universidade de Vigo. Tras finalizar sus estudios universitarios Paula C. Pardo realizó un master en Oceanografía y Geología de Costas en la Universidade de Vigo. Tras el master, la Dra C. Pardo trabajó en el ámbito de la oceanografía física primero como becaria para el Instituto de Investigaciones Marinas de Vigo y luego como titulada superior para el Instituto Español de Oceanografía y Meteogalicia. Posteriormente, la Dra C. Pardo trabajó como titulada superior para el Instituto de Investigaciones Marinas de Vigo en donde realizo su trabajo de tesis doctoral sobre el carbono antrópico en el océano. En 2015, la Dra. C. Pardo obtuvo un contrato postdoctoral para trabajar en el Antarctic Climate and Ecosystem Cooperative Research Center (ACE CRC) en Australia, en donde realizó estudios científicos centrados en el carbono oceánico y con la finalidad de cuantificar los procesos físicos, químicos y biológicos que controlan la absorción por parte del océano de dióxido de carbono atmosférico.

Dra. María Froján

Dr. M. Froján is a postdoctoral researcher in the Oceanography Department of Instituto de Investigaciones Marinas (IIM – CSIC, Spain). She has a Bachelor degree in Marine Sciences (Universidade de Vigo, 2007), a MSc in Oceanography (Universidade de Vigo, 2012), and a PhD in Oceanography (Universidade de Vigo, 2016). Dr. M. Froján expertise is focused on plankton marine ecology with several ISI manuscripts published in this subject.

Dr. João Serodio

Assistant Professor of the Department of Biology, University of Aveiro, and the head of the Primary Productivity Laboratory of CESAM. Bachelor's degree in Biology (University of Lisbon, 1989), MSc. in Probability and Statistics (University of Lisbon, 1993), PhD. in Biology (Ecology and Biosistematics; University of Lisbon, 1999). Habilitation ('Agregação') in Biology (University of Aveiro, 2016). Principal Investigator of one European project (FP7) and four national (FCT) projects. Participation in various international and national projects as team member. Author of 80 ISI papers, 55% on JSR top 1st quartile. h-index 23 and 1500+ citations. 75 communications in international meeting, 15 as invited speaker. First author of one national patent. Reviewer of 95 articles for 45 international journals. Member of evaluation panels of two FCT scholarship calls (post-doctoral and PhD) and bilateral projects. Member of evaluation panels of research projects submitted to funding agencies of Canada, the Netherlands, Belgium and France. Supervision of 8 post-docs (5 concluded), 7 PhD (5 concluded) and 10 MSc. Has participated in the teaching of 25 courses (Bachelor and MSc), being coordinator of 8, mainly in the areas of Plant Physiology, Ecology and Biological Oceanography. Director of the Master Course in Applied Biology (2011-2018) and in Marine Biology (2013-2016).

Dr. Carmen G. Castro

Dr. C. G. Castro is a researcher in the Oceanography Department of Instituto de Investigaciones Marinas (IIM – CSIC, Spain). She has a Bachelor degree in Chemistry (Universidade de Santiago de Compostela, 1991) and a PhD in Chemistry (Universidade de Santiago de Compostela, 1997). Her research interest is focused in Marine Biogeochemistry of coastal upwelling ecosystems. Dr. C.G. Castro has participated in several, national and international projects, being principal investigator of 12 national projects, and published more than 60 articles in scientific journals. She has been supervised 3 successful PhD and 7 MsC Thesis.