

Fortaleza's Austral Spring School on Climate Change and Marine Conservation

Motivation:

Since the early twenties the oceans have been under crescent stress as a result of human interference. In particular, studies show that 90 percent of large fish disappeared and, at least, one tenth of the oceans's coral reefs have been degraded beyond recovery. Destructive fishing practices, massive coastal development, movement of invasive species and new diseases degrade global marine environments. Marine organisms and ecosystems are some of the most beloved and fantastical places on the face of our planet. More recently, due to the huge amount of plastic and other pollutants that have been spreaded throughout the entire basins, the oceans can no longer be considered an unlimited mixing zone for the dilution of pollution. Meanwhile very few parts of the oceans are protected. To make things even worse, it is now recognized that there is an overarching layer of human-induced global climate change threats to coastal and marine ecosystems, which include sea-level rise, increased air and water temperatures, and changes in weather patterns.

If the present and near-future generations do not act quickly and responsibly, much of what we cherish about the ocean will vanish, soon. This motivates the organization of an international Spring School to be offered to undergraduate and graduate students at the Marine Sciences Institute (LABOMAR) of the Universidade Federal do Ceará (UFC), in Fortaleza, Brazil. The main objective is to understand the state of the oceans and to discuss ways to increase a more pro-active participation of young scientists and public workers in the conservation of our coastal zones.

Structure of the School

The event will be composed by lectures given by world class scientists, focusing on the following the following topics:

- Global Climate Change; Warmer oceans and effects on climate stability;
- Effect on the regional meteorological conditions;
- The present status of the climate forecast efforts;
- Impacts of climate change on the regional ecosystems and marine species;
- Impacts of plastic and other chemical pollutants on the world oceans;

- Impacts of climate changes on human health;
- How to protect the intrinsic values of the global oceans;
- Would the human survival be possible without a healthy ocean?

Confirmed Lecturers & Lectures:

1) Dr. Jerry L. Miller, PhD in Physical Oceanography; former Assistant Director for Ocean Science at the Office of Science and Technology Policy (OSTP) of the White House; Founder and President of Science for Decisions LLC.

Topics to be addressed by Dr. Miller:

J. Miller will lecture on the “sustainability of coastal urban areas in a changing climate”, with emphasis on the environmental issues (e.g., warming atmosphere and ocean, sea level rise) but also on some issues that are encompassed by a broader definition of climate (e.g., plastics, pathogens) as well as the “human climate” (e.g., stresses on governance that result in human migration to coastal areas). He will give his lecture in the morning, assign the students a thought exercise (to write a brief statement of a national or global sustainability problem that political leaders should address) in the early afternoon, and then devote the rest of the day to classroom discussions of what evidence is needed for each problem, how to develop the evidence, and how to articulate it for political leaders who do not have scientific training. In short, I would contribute mainly to the final two bullets in your list (intrinsic value and human survival).

2) Dr. Reinder J. Haarsma. PhD in Meteorology; Senior researcher at the Royal Netherland Institute for Meteorological Institute (KNMI); a world class specialist in the studies of climate change impacts on the ocean circulation and the feedback on the weather system.

Topics to be lectured by Dr. Haarsma:

He will focus on the impact of global warming on the Atlantic, in particular on the Atlantic Meridional Overturning Circulation (AMOC), and on how this will affect regional climates. He will also discuss the ocean-atmosphere interaction along the western boundary; and the relevance of El-Nino for Brazil, evaluating the impacts of global warming on El-Niño and the consequences for the regional climate.

He will teach his class in the morning and discuss problems and practical exercises in the afternoon.

3) Dra Helena Matthews-Cascon. PhD in Zoology; Full Professor of Biological Oceanography, Federal University of Ceará (UFC).

Topics to be addressed by Dr. Matthews- Cascon:

She will focus on the impact of climate change on the benthic macrofauna, including modifications in the faunal composition, changes in the communities structure and species distribution areas, and local and global species extinctions.

Schedule:

September 10 to September 14/2018