

# Studying Environmental Composition



Nicolas Cassar  
Associate Professor, Earth and Ocean Sciences

## CURRENT RESEARCH

### Analyzing the chemical and biological health of our oceans

Climate change has received considerable press in recent years as we observe crucial changes in weather patterns and atmospheric composition. Professor Nicolas Cassar in the Division of Earth and Ocean Sciences at Duke University is studying, and developing new methods to study, chemical changes in our environment. Dr. Cassar's work focuses on carbon, nitrogen and oxygen movement between the oceans and the atmosphere. Particular attention is directed towards Earth's polar regions, the Arctic and Antarctica, due to their rapidly changing environments and disproportionate influence on global climate.

At the nexus of chemistry, biology and atmospheric and oceanic sciences, Dr. Cassar's research is directed at furthering our understanding of the feedbacks between climate and the cycling of elements such as carbon and oxygen. Oceanic carbon is important in numerous ways. There is 50-60 times more carbon in the oceans than in the atmosphere.

Over geological timescales, the exchange of this large reservoir of carbon with the atmosphere is believed to have had a large impact on carbon dioxide present in the atmosphere, and thereby climate.

Furthermore, a large proportion of fossil fuel carbon dioxide and heat associated with global warming have been absorbed by the oceans. This has led to an unprecedented rate of change in marine ecosystems. We are venturing into unknown territory with respect to environmental health. Dr. Cassar is studying what factors regulate the rate at which carbon is transferred, and what some of the long-term impacts may be. Working not just as a chemist, but as an environmental engineer and biologist, Dr. Cassar is asking multi-disciplinary questions such as: How might...

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## AFFILIATION



## EDUCATION

- Post doc, in Biogeochemistry, 2007, Princeton University
- Ph.D., in Oceanography, 2003, University of Hawaii, Manoa
- B.S., in Biochemistry/biology, 1997, McGill University

## AWARDS

- Alfred P. Sloan Research Fellow, 2012-2014
- NSF CAREER Award, 2014
- Tyge Christensen Prize awarded by the International Phycological Society, 2008
- Ernest Frohlich Fellow, 2009
- FQRNT Postdoctoral Research Fellowship, 2006

## RESEARCH AREAS

Environment, Atmospheric / Space, Chemical, Oceanic

## FUNDING REQUEST

Your donations will fund in-lab theory development and field research explorations. Preliminary work is done in the lab, and funding will support graduate students and lab assistants necessary for developing theories and new methodology. Laboratory instruments are required to test these theories before they are practiced in nature. Funding will be used to prepare the research team for data collection ship deployments to the Arctic and Antarctic regions.