Palestra Prof. Ming Li

14 Outubro 2024, 14h00 Auditório Magalhães (IPMA-Algés)

Título da palestra: *Coastal water quality decline at the nexus of eutrophication and climate change: A case study of Chesapeake Bay, the largest estuary in the US*

Resumo:
Since the mid-20th century coastal waters around the world have experienced declining water quality such as oxygen depletion, harmful algal blooms (HABs) and low pH. This decline has been widely attributed to eutrophication but climate change has emerged as a new driver in recent decades. Upwelling of low-oxygen waters from oxygen-minimum zone has resulted in extensive hypoxia in the eastern boundary current systems. HABs appear in seemingly oligotrophic seas by developing versatile nutrition acquisition strategy. Although respiration of organic matter lowers both O_2 and pH, oceanic uptake of atmospheric CO_2 causes ocean acidification. Eutrophication and climate change are affecting different estuaries and coastal oceans in a complex nexus. Discerning the underlying mechanisms driving the water quality decline has far reaching implications for nutrient management, fisheries and human health. In this talk I will describe mechanistic investigations using numerical ocean models that couple hydrodynamic models with models for biogeochemical cycling, carbonate chemistry, nutrient kinetics and plankton physiology. Using Chesapeake Bay as an example, I will discuss historical model simulations for the 20th century and climate downscaling projections for the 21st century, and demonstrate the paradigm shift from eutrophication-dominated regime to climate-dominated regime.

Biografia:
Dr. Ming Li is a Professor at the University of Maryland Center for Environmental Science, U.S.A. He obtained his B.Eng from Hohai University, China and D.Phil from the University of Oxford, U.K. Dr. Li's research spans several areas in physical oceanography, including estuarine and coastal dynamics, sea level rise, turbulence, internal waves, and air-sea interaction. He is also actively engaged in interdisciplinary research to address pressing environmental problems such as hypoxia, ocean acidification, and harmful algal blooms. He has published over 120 peer-reviewed papers in top oceanographic and environmental science journals such as Science of the Total Environmental, Limnology and Oceanography, Geophysical Research Letters, and Journal of Physical Oceanography as well as Science and Nature. He is a Specialty Chief Editor at Frontiers in Marine Science, an Associate Editor at Continental Shelf Research and an Academic Editor at PLOS Climate. A major focus of Dr. Li's research is the regional impact of climate change and extreme weather events on coastal systems. He has been leading large multi-institutional research projects on hypoxia, harmful algal blooms, and salt intrusion into estuaries and tidal rivers. He has recently established a National Research Coordination Network to advance interdisciplinary research for building resilient communities and infrastructure in estuaries and bays. He is also leading a global synthesis of salt contamination of drinking water supplies in tidal rivers. He has raised $22 million of funding to support research on a wide range of oceanographic topics.