Boulder Fluid and Thermal Sciences Seminar Series

Thursday, February 27, 2020
10:45—11:45 AM (refreshments at 10:30 AM)
Bechtel Collaboratory 1B70, Discovery Learning Center
University of Colorado Boulder

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Modelling the coupled physical/biogeochemical dynamics of the Adriatic Sea

The seminar will provide an overview of the general characteristics of the coupled (circulation and biogeochemical dynamics) models implemented in order to simulate the environmental dynamics of the Adriatic Sea, a regional Mediterranean Sea basin characterized by very much contrasting physical and biogeochemical characteristics, ranging from truly coastal (shallow depth, large river input, meso to eutrophic) in the North, to truly open ocean (dense water formation, oligotrophic) in the South. Modelling activities ranged from implementation of one- to three-dimensional models, carried out in order to understand the role of the physical structure (seasonal stratification/destratification cycle) and dynamics (advection/diffusion) in constraining/governing the structuring of the lower trophic levels (from nutrients and light to bacteria, phytoplankton and zooplankton) ecosystem. The variability of the ecosystem dynamics has been studied considering climatological, interannually varying and future scenarios (surface and lateral) boundary condition, in order to start investigating the climate related long term variability.

Biography: Dr. Marco Zavatarelli is an Associate Professor at the University of Bologna in the Department of Physics and Astronomy and the Interdepartmental Environmental Sciences Center (CIRSA), where he has been on staff since 2000. He earned his Ph.D. in Marine Environmental Sciences from Genoa University in 1986. Dr. Zavatarelli's research is focused on the numerical modelling and simulation of the coupled physical and biogeochemical dynamics of the marine environment. He has participated in numerous international research projects including, most recently, "ODYSSEA" (Operating a network of integrated observatory systems in the Mediterranean Sea) and "SeaDataCloud" (Pan-European infrastructure for ocean & marine data management), both a part of the European Union's Horizon 2020 programme (EU-H2020).