CONSIGLIO NAZIONALE DELLE RICERCHE
ISTITUTO DI SCIENZE MARINE

CICLO DI SEMINARI

ON LINE LINK

Martedì 10/06/2025 ore 11:00

Phytoplankton Dynamics in Subtropical Gyres: New insights into Biomass and Physiology from 25 years of Satellite Observations

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Previous satellite-based studies have suggested an expansion of subtropical gyres concomitant with decreasing chlorophyll concentrations over time due to ocean warming, raising major concerns about a potential increase in ocean desertification and its effect on the global climate. However, these studies have relied on the analysis of limited time periods and/or a single gyre, and thus do not provide a comprehensive overview of the temporal evolution of phytoplankton biomass in these systems. In this seminar, I will present a 25-year analysis of satellite-derived ocean colour and corresponding phytoplankton biomass estimates across all five major subtropical gyres. Main results show that chlorophyll levels have declined in their most oligotrophic regions, albeit with rather stable biomass, suggesting that the observed chlorophyll changes are primarily driven by phytoplankton's physiological adaptation to the ongoing global warming. Future work will explore how these trends affect carbon export and its transfer efficiency using 4D observations-based data.

Dr. Chiara Volta is a biogeochemical oceanographer whose research focuses on carbon cycling, phytoplankton dynamics, and the response of marine ecosystems to climate variability.
She earned her B.A. and M.A. in Marine Environmental Science from the University of Tuscia in Viterbo (Italy), and a Ph.D. in Biogeochemical Modelling from the Free University of Brussels (ULB, Belgium), followed by two postdoctoral fellowships – one at the Sorbonne University (Paris, France) and one at the University of Hawaii (USA) – where she conducted modelling and experimental research on carbon cycling at the land-ocean interface. Since 2023, she has been a research scientist at the Italian National Agency for New Technologies, Energy and the Sustainable Economic Development (ENEA, Rome, Italy), where she is in charge of quality control for Ocean Colour data in the Climate Data Store (ECMWF/C3S) and contributes to the BIOcean5D European project by modelling phytoplankton diversity and biogeography in the Mediterranean Sea.