

Virtual BSC RS/AI4ES: Regional ocean warming and sea level rise: an AI perspective

Objectives

Abstract: Analysis of global and regional ocean temperature and sea level observations across the three major basins shows that heat uptake and its redistribution through the subsurface waters has widespread impacts on the global climate. The transport of heat into the ocean is also key to diagnose region-specific coastal sea level variability on timescales of several years to decades. Even so, there is still limited understanding of past variability and associated processes, which poses challenges for predictability of such changes. Moreover, climate is a highly complex and networked dynamical system that can change naturally in unexpected ways. In view of this complexity, there is a need for more sophisticated tools to model and anticipate our changing oceans. In this context, the AI4OCEANS Group is developing machine learning techniques to help assess the regional effects of climate change in the oceans. Our findings have so far provided useful insight into the topic in several ways and highlight the importance of artificial intelligence within the rapidly expanding oceans.



Short bio: Veronica Nieves is the head of the AI4OCEANS Research Unit. She is based at the University of Valencia in Spain, where she joined the Image Processing Lab as a distinguished researcher in 2020. Her current research focuses on understanding the ocean's role in the global climate system under global climate change via artificial intelligence. She is lead developer / contributor of several models and techniques for: identifying regional coastal sea level variability and change; extracting salinity / freshwater content information; tracking ocean currents; characterizing eco-hydro-geomorphological processes across scales. She combines the modeling with both in situ and satellite-based measurements. She has a background in climate, physical oceanography, and Earth system modelling. She has previously worked at the University of California Irvine, NASA's Jet Propulsion Laboratory / California Institute of Technology and the University of California Los Angeles. She was a member of the NASA Sea Level Change Team.

Speakers

Veronica Nieves is the head of the AI4OCEANS Research Unit.
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Source URL (retrieved on 25 Abr 2024 - 12:31): <https://www.bsc.es/es/research-and-development/research-seminars/virtual-bsc-rsai4es-regional-ocean-warming-and-sea-level-rise-ai-perspective>