Ph.D. thesis

The Ocean Fine-scale Circulation as Revealed by High-resolution Field Observations and SWOT Altimetry

Solange Coadou-Chaventon

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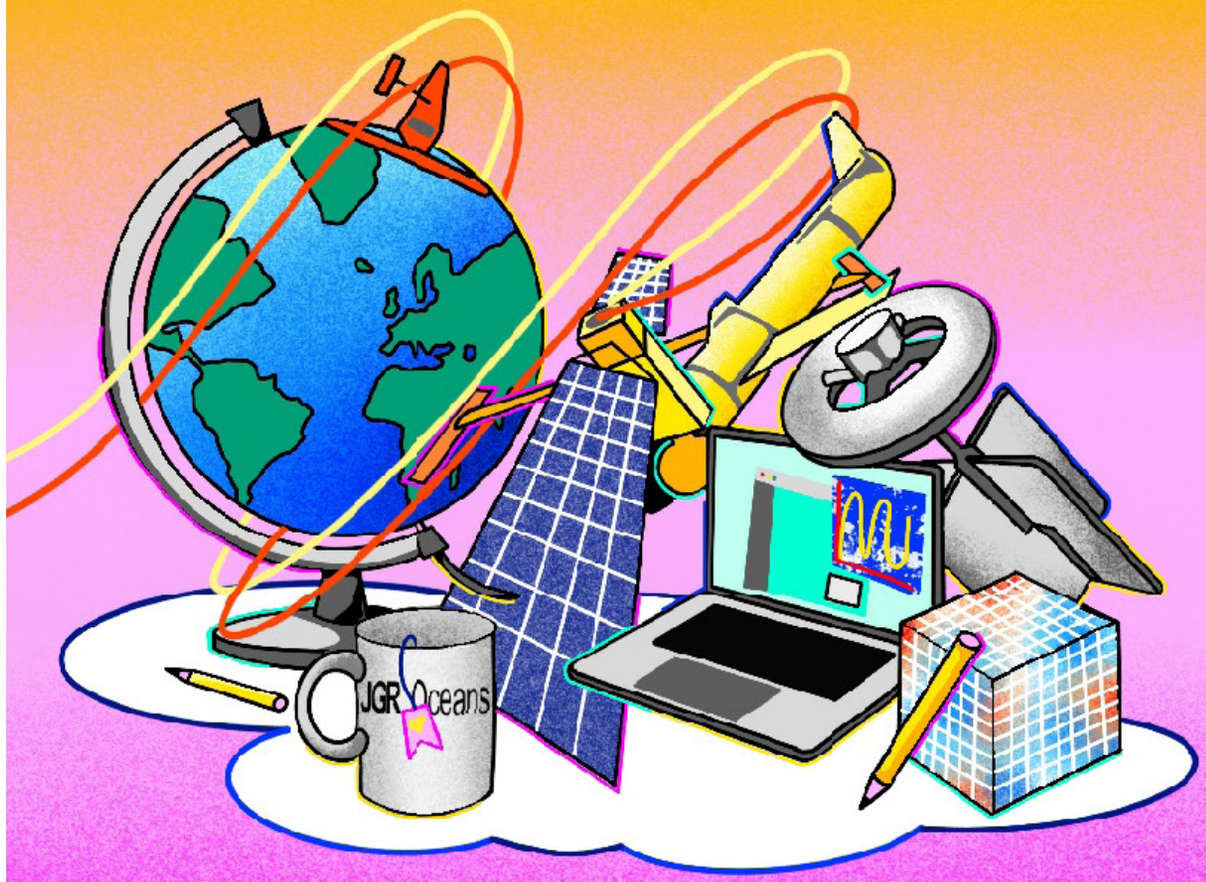

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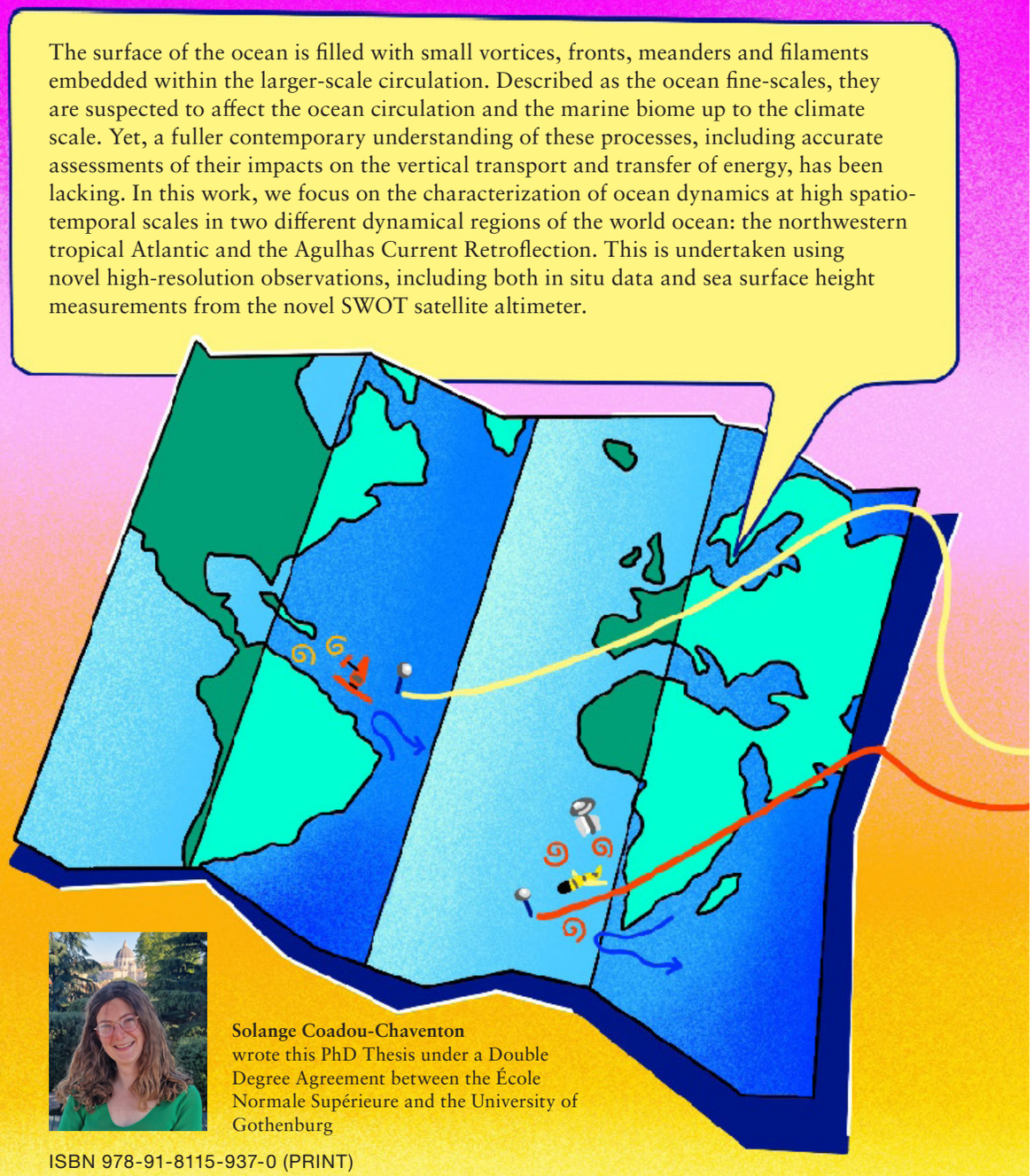
The surface of the ocean is filled with small vortices, fronts, meanders and filaments embedded within the larger-scale circulation. Described as the ocean fine-scales, they are suspected to affect the ocean circulation and the marine biome up to the climate scale. Yet, a fuller contemporary understanding of these processes, including accurate assessments of their impacts on the vertical transport and transfer of energy, has been lacking. In this work, we focus on the characterization of ocean dynamics at high spatio-temporal scales in two different dynamical regions of the world ocean: the northwestern tropical Atlantic and the Agulhas Current Retroflection. This is undertaken using novel high-resolution observations, including both in situ data and sea surface height measurements from the novel SWOT satellite altimeter.



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