Observing and identifying internal waves from space

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Abstract

High resolution images of the ocean surface roughness, temperature, and soon elevation (SWOT altimetric mission launched in 2020) provide an unprecedented view of the near-surface ocean dynamics. One critical difficulty for the correct interpretation of these images lies in the often poor temporal resolution of such data and in our ability to distinguish processes (e.g. balanced mesoscale eddies, submesoscale features, internal waves) which may share comparable spatial scales and interact. This talk will report on recent efforts to develop methodologies that achieve the distinction between the sea level signatures of low-mode internal waves and mesoscale eddies. These methodologies rely on a combination between observations of sea level and sea surface temperature and on the fundamental difference of dynamics between these two processes. High resolution numerical simulations of the propagation of an idealized internal tide through a turbulent eddy field provide testbeds for these methodologies.

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