Université de Bretagne Occidentale

MASTER PHYSIQUE

PARCOURS PHYSIQUE OCÉAN ET CLIMAT

semestre 8 Physique POC

Méthodes avancées en océanographie

Présentation

This course focuses on some major physical oceanic processes (waves, eddies and meridional overturning circulation) by emphasizing how they work. To develop this understanding, the course uses two complementary approaches of physical oceanography: numerical modelling and observations.

2 crédits ECTS

Volume horaire

Cours Magistral : 8h
Travaux Dirigés : 15h
Travaux Pratiques : 7h

Objectifs

Develop your physical insight on how waves and eddies work in the ocean. Apply theoritical knowledge to interpret numerical results and use numerical results to better understand the theories.

Pré-requis nécessaires

fluid mechanics 1, waves, data analysis 1

Compétences visées

- acquire specialized thematic knowledge in marine physics
- apply analytical and numerical theories and tools to thematic problems
- present one's results

Descriptif

The course is organized in two equal parts, each evaluated in the form of a final report.

Part 1 Waves and eddies

- propagation of linear waves (surface waves, inertia-gravity waves, internal waves),
- basic eddy dynamics (self transport, merging, mirror effect),
- one layer quasi-geostrophic dynamics on the beta plane (westward drift, gyre, Rossby waves).
- classes (3h long) blend lectures and numerical practicals (Python codes) that allow to interact with the processes and see them in action.

Part 2 Observing the ocean In situ measurement

- Mixing and Atlantic meridional overturning circulation
- Rapid monitoring of the Atlantic meridional overturning circulation
- Argo: Heat content and Circulation
- Models and Observations

Modalités de contrôle des connaissances

Session 1 ou session unique - Contrôle de connaissances

Nature de l'enseignement	Modalité	Nature	Durée (min.)	Coefficient	Remarques
	CT	Ecrit - rapport		100%	

Session 2 : Contrôle de connaissances

Nature de l'enseignement	Modalité	Nature	Durée (min.)	Coefficient	Remarques
	CT	Ecrit - rapport		100%	