

## Geography 163

## Ocean Circulation

Spring 2008

Lecture: TR 1230-145 HSSB 1173 (code = 53405)  
Section 1: W 2-250 ELLISN 2620 (59923)  
Section 2: R 11-1150 ELLISN 2620 (59931)

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Office hours: Tu 2-3 or by appt.

### Brief Description

An introductory description of large-scale ocean circulation, the physical processes that drive these motions and their implications on global climate and its changes. The effects of the Earth's rotation, seawater properties and wind and buoyancy forcing will all be addressed and their role in driving ocean circulation, maintaining global climate and as a sink for anthropogenic carbon emissions.

**Text:** The Open University, *Ocean Circulation*  
Readings off the web (see the website)

**Class Web Site** [www.icess.ucsb.edu/~davey/courses/Geog\\_163](http://www.icess.ucsb.edu/~davey/courses/Geog_163)

### Grading

Midterm	25%
Final	25%
Presentation	25%
Homework	25%

The final will be on Monday, June 9 from 12:00 to 3:00 in HSSB 1173

### Miscellaneous Policies

No late homework. Group work is fine, but everyone must turn in his or her own assignment. Exams are closed book. The final will be cumulative. The “presentation” is a 10 minute oral presentation of a relevant topic made during section. It is your chance to go into more detail into a relevant area than we can in lecture. It is recommended that you work in groups of two. Both the oral presentation and the powerpoint file will be graded. Presentations will be made the last 3 weeks of the quarter (you will get extra credit if you do not wait till the last week).

## Schedule (may be cast aside at any time)

Week	Date	Topic	Reading
1	4/1	Course Introduction - Why study ocean circulation?	1.0
1	4/3	What drives ocean circulation?	1.1-2
2	4/8	Seawater properties	web readings
2	4/10	The atmosphere - wind stress & wind forcing	2 & 3.1
3	4/15	Coriolis - inertial motions	3.2
3	4/17	Geostrophy	3.3
4	4/22	Divergences, convergences & mesoscale motions	3.4 & 3.5
4	4/24	Subtropical gyres - Vorticity	4.2
5	4/29	The Gulf Stream - Subtropical gyres - N Atlantic	4.1, 4.2 & 4.3
5	5/1	Coastal upwelling	4.4
6	5/6	Equatorial currents & ENSO	5.1-2 + web
6	5/8	Midterm	
7	5/13	ENSO and Monsoon dynamics	5.4
7	5/15	Planetary waves	5.3-4
8	5/20	Satellite altimetry	web readings
8	5/22	High latitude processes & Southern Ocean	5.5
9	5/27	Global heat & salt budgets & ocean water masses	6.1, 6.2 & 6.3
9	5/29	Transient tracers & deep circulation	6.4, 6.5 & 6
10	6/3	Ocean carbon budget and fossil fuel sequestration	web readings
10	6/5	Review	

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