

SIO 220 - Observations of Large Scale Ocean Circulation 2017 topics

A. General Introduction

1. Discussion of objectives, schedule, and example topic
2. A brief history of general circulation studies
3. The level of no motion problem
4. Data visualization: Gridded Argo data

B. Subtropics

1. Overview of subtropical gyres
2. Florida Current transport
3. Western boundary current “tight recirculation gyres”
4. The East Australian Current
5. Subtropical Mode Waters
6. The Southern Hemisphere Super-Gyre
7. The Agulhas Current
8. The Leeuwin Current
9. Ekman transport and the Ekman spiral
10. Subtropical gyre interiors - Sverdrup Transport
11. Deep Western Boundary Current of the North Atlantic
12. North Atlantic heat transport
13. North Pacific heat transport
14. Time variability of the Atlantic MOC

C. Tropics

1. Overview of tropical circulation
2. The Pacific Equatorial Undercurrent
5. The South Equatorial Current Bifurcation
3. Geostrophy near the Equator
4. Interior sources of the equatorial Pacific thermocline
6. The Indonesian Throughflow
7. Ocean circulation and evolution of El Niño
8. El Niño 2015/16 impacts in the California Current

D. High latitudes: water formation and spreading

1. Deep transport from S. Pacific via Samoan Passage
2. Antarctic Circumpolar Current
3. Water mass formation in the Labrador Sea
4. Southern Ocean surface layer under seasonal ice

E. Global change

1. Global ocean warming.
2. Warming of the abyssal ocean
3. Is the global cycle of (E-P) changing?

Other possible topics include: Formation and spreading of Antarctic Bottom Water, Antarctic Intermediate Water, Flow through the Strait of Gibraltar, ...