THEORY SEMINAR FALL 2014

SIO 219, 1 unit S/U
Professor Paola Cessi
pcessi at ucsd.edu
Phone: 858 534 0622
Office: Keck room 366 - this is on the 3rd floor of Keck, south-west corner.

Meetings Friday 3:30pm, Keck Conference Room

Description The theme of the theory seminar this quarter is baroclinic instability. There'll be a mixture of research seminars and student-led presentations of key papers. Students are encouraged to register for the class, and participation by interested post-docs and faculty is very welcome.

Course Requirements Students should register as S/U. Registered students will be expected to present at least one paper during the quarter and participate in the discussion each week.

The reading list below is under development. Participants are encouraged to suggest papers that they like to read and discuss.

READING LIST

1. Eady, E. T. 1949. Long Waves and Cyclone Waves. Tellus, 1, 33-52

2a. Stone, P. H. 1966. On non-geostrophic baroclinic stability. J. Atmos. Sci., 23, 390-400.

2b. Stone, P. H. 1970. On non-geostrophic baroclinic stability. Part II. J. Atmos. Sci., 27, 721-726.

2c. Haine, T. W. N. and J. Marshall. 1998. Gravitational, Symmetric, and Baroclinic Instability of the Ocean Mixed Layer. J. Phys. Oceanogr., 28, 634-658.

3a. Gill, A. E., Green, J. S. A., & Simmons, A. J. 1974. Energy partition in the large-scale ocean circulation and the production of mid-ocean eddies. In Deep Sea Research and Oceanographic Abstracts (Vol. 21, No. 7, pp. 499-528).

3b. Tulloch, R., Marshall, J., Hill, C., & Smith, K. S. 2011. Scales, growth rates, and spectral fluxes of baroclinic instability in the ocean. J. Phys. Oceanogr., 41, 1057-1076.

4. James, I. N. 1987. Suppression of baroclinic instability in horizontally sheared flows. J. Atmos, Sci., 44, 3710-3720.

5. Chen, C. and I. Kamenkovich 2013. Effects of topography on baroclinic instability. J. Phys. Oceanogr., 43, 790-804.

6. Samelson, R. M. and J. Pedlosky 1990. Local baroclinic instability over variable topography. J. Fluid Mech., 221, 411-436.

7. Chomaz, J. M. (2005). Global instabilities in spatially developing flows: non-normality and nonlinearity. Annu. Rev. Fluid Mech., 37, 357-392.

8. Pierrehumbert, R. T. 1984. Local and global baroclinic instability of zonally varying flow. J. Atmos. Sci., 41, 2141–2162.

9. Charney, J. G. 1947. The dynamics of long waves in a baroclinic westerly current. J. Meteor., 4, 135–162

SCHEDULE

- **October 3, 2014: Cesar Rocha: "Eady's model". The primary reading is chapters 7.6 and 7.7 of Pedlosky's GFD book. Secondary reading is paper 1.**
- **October 10, 2014: Ruth Musgrave: "Ageostrophic baroclinic instability". The primary reading is papers 2a and 2b. Secondary reading is paper 2c.**
- **October 17, 2014: Ru Chen: "Oceanic baroclinic instability". The primary reading is papers 3a and 3b.**
- **October 24, 2014: Gregory Wagner: Title to be announced.**
- **October 31, 2014: Catherine Jones: Title to be announced.**
- **November 7, 2014: Uriel Zajaczkovski: "Baroclinic instability with localized topography". The primary reading is papers 5 and 6.**
- **November 14, 2014: Cecily Keppel: "Title to be announced".**
- **November 21, 2014: Thomas Seon: "Title to be announced".**
- **December 5, 2014: Jean-Marc Chomaz: "Absolute and convective instability". The primary reading is paper 7. Secondary reading is paper 8.**
- **December 12, 2014: Katarzyna Matusik: Title to be announced.**

Back to my homepage
