

**SIO 209 Special Topics:
Aerosol-Cloud Interactions**
Course Syllabus and Lecture Schedule

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Coordinator: Amanda Frossard, afrossard@ucsd.edu

Spring 2012 Title and Topics

- 5-Apr Th Cotton Krall and Cotton, 2012: "Potential indirect effects of aerosol on tropical cyclone intensity..." [Atmospheric Chemistry and Physics Discussions](#).
- 12-Apr Th Kohler, 1936: "The nucleus in and the growth of hygroscopic droplets," [Transactions of the Faraday Society](#).
Twomey, 1974: "Pollution and planetary albedo," [Atmospheric Environment](#).
Albrecht, 1989: "Aerosols, cloud microphysics, and fractional cloudiness," [Science](#).
- 19-Apr Th Charlson, et al., 1987: "Oceanic phytoplankton, atmospheric sulfur, cloud albedo and climate," [Nature](#).
Russell, et al., 1994: "Aerosol production and growth in the marine boundary-layer," [Journal of Geophysical Research-Atmospheres](#).
Quinn and Bates, 2011: "The case against climate regulation via oceanic phytoplankton sulphur emissions," [Nature](#).
- 26-Apr Th Leaitch Leaitch, et al., 1992: "The relationship between cloud droplet number concentrations and anthropogenic pollution...", [Journal of Geophysical Research-Atmospheres](#).
Jones, et al., 1994: "A climate model study of indirect radiative forcing by anthropogenic sulfate aerosols," [Nature](#).
- 3-May Th Durkee, et al., 2000: "The impact of ship-produced aerosols on the microstructure and albedo of warm marine stratocumulus clouds...", [Journal of the Atmospheric Sciences](#).
Leaitch, et al., 2010: "Cloud albedo increase from carbonaceous aerosol," [Atmospheric Chemistry and Physics](#).
- 10-May Th Russell, et al., 1999: "Aerosol dynamics in ship tracks," [Journal of Geophysical Research-Atmospheres](#).
Feingold, et al., 1998: "Stratocumulus processing of gases and cloud condensation nuclei - 1. Trajectory ensemble model," [Journal of Geophysical Research-Atmospheres](#).
- 17-May Th Ghan Ghan, 2011: "Droplet nucleation: Physically-based parameterizations and comparative evaluation," [Journal of Advances in Modeling Earth Systems](#).
Nenes and Seinfeld, 2003: "Parameterization of cloud droplet formation in global climate models," [Journal of Geophysical Research-Atmospheres](#).
- 24-May Th Ackerman, et al., 2004: "The impact of humidity above stratiform clouds on indirect aerosol climate forcing," [Nature](#).
Lu and Seinfeld, 2006: "Effect of aerosol number...on cloud droplet dispersion: A large-eddy simulation...for aerosol indirect forcing," [Journal of Geophysical Research-Atmospheres](#).
- 31-May Th Stevens, et al., 2005: "Pockets of open cells and drizzle in marine stratocumulus," [Bulletin of the American Meteorological Society](#).
Lu, et al., 2009: "Marine stratocumulus aerosol-cloud relationships in the mase-ii experiment: Precipitation susceptibility...", [Journal of Geophysical Research-Atmospheres](#).

7-Jun Th Class Presentations
12-Jun Tu Final Projects Due

Assignments: Each week students will complete and discuss (in class) the assigned reading, as well as submitting a 1-line summary of each assigned paper. Two literature reviews are due during the quarter, summarizing the current knowledge of the topic discussed that week and presented in class. The final project is a literature review on a course-related topic of the student's choice, summarized in a table and a graph that are presented in class.