

SIO 209

Special Topics: Temperature Inversions and Air Quality over California

Fall 2009

Reading List

Week 1: presentation by Sam Iacobellis on California temperature inversions

Week 2: presentation by Joel Norris on case studies of air quality and meteorological conditions

Week 3: no class meeting

Week 4: *San Joaquin Valley air pollution episodes and meteorology*

Watson, J. G., and J. C. Chow, 2002: A wintertime PM_{2.5} episode at the Fresno, CA, supersite. *Atmos. Env.*, **36**, 465-475. [**Simple meteorology**]

Bao, J.-W., S. A. Michelson, P. O. G. Persson, I. V. Djalalova, and J. M. Wilczak, 2008: Observed and WRF-simulated low-level winds in a high-ozone episode during the Central California Ozone Study. *J. Appl. Met. Climatol.*, **47**, 2372-2394. [**Detailed meteorology**]

Week 5: *Inversion processes*

Milionis, A. E., and T. D. Davies, 2008: A comparison of temperature inversion statistics at a coastal and a non-coastal location influenced by the same synoptic regime. *Theor. Appl. Climatol.*, **94**, 225-239. [**Simple meteorology**]

Tennekes, H., 1973: A model for the dynamics of the inversion above a convective boundary layer. *J. Atmos. Sci.*, **30**, 558-567. [**Equations and dynamical processes**]

Week 6: *Southern California circulation and air quality*

Wakimoto, R. M., 1987: The Catalina Eddy and its effect on pollution over Southern California. *Mon. Wea. Rev.*, **115**, 837-855. [**Detailed meteorology**]

Conil, S., and A. Hall, 2006: Local regimes of atmospheric variability: a case study of Southern California. *J. Climate*, **19**, 4308-4325. [**Meteorology and EOF analysis**]

Week 7: *Ventilation of boundary layer*

Dacre, H. F., S. L. Gray, and S. E. Belcher, 2007: A case study of boundary layer ventilation by convection and coastal processes. *J. Geophys. Res.*, **112**, D17106, doi:10.1029/2006JD007984. [**Relatively simple meteorological processes**]

Lu, R., and R. P. Turco, 1994: Air pollutant transport in a coastal environment. Part I: two-dimensional simulations of sea-breeze and mountain effects. *J. Atmos. Sci.*, **51**, 2285-2308. [**Equations and more complicated meteorological processes**]

Week 8: *Non-California air pollution episodes and meteorology*

Prezerakos, N. G., 1998: Lower tropospheric structure and synoptic scale circulation patterns during prolonged temperature inversions over Athens, Greece. *Theor. Appl. Climatol.*, **60**, 63-76. [**Intermediate meteorology**]

Flocas, H., A. Kelessis, C. Helmis, M. Petrakakis, M. Zoumakis, and K. Pappas, 2009: Synoptic and local scale atmospheric circulation associated with air pollution episodes in an urban Mediterranean area. *Theor. Appl. Climatol.*, **95**, 265-277. [**Intermediate meteorology**]

Week 9: *More non-California air pollution episodes and meteorology*

Prtenjak, M. T., A. Jeričević, L. Kraljević, I. H. Bulić, T. Nitis, and Z. B. Klaić, 2009: Exploring atmospheric boundary layer characteristics in a severe SO₂ episode in the north-eastern Adriatic. *Atmos. Chem. Phys.*, **9**, 4467-4483. [**Detailed meteorology**]

Rappenglück, B., R. Perna, S. Zhong, and G. A. Morris, 2008: An analysis of the vertical structure of the atmosphere and the upper-level meteorology and their impact on surface ozone levels in Houston, Texas. *J. Geophys. Res.*, **113**, D17315, doi:10.1029/2007JD009745. [**Simple meteorology**]

Week 10: Open