ES208 - METHODS IN PALEOCLIMATOLOGY
AUTUMN 2011 SYLLABUS

Text: Required: *Paleoclimatology, Reconstructing Climates of the Quaternary* (2nd Ed.), by R. S. Bradley, plus supplemental readings which designated discussion leaders will be assigned to download and circulate as pdf files.

Instructor: Lisa Sloan (office, A247; email lsloan@ucsc.edu)
Office hours: Tuesdays 10 am - noon, and by appointment (please set up via email).

Course description: The purpose of this course is to provide a survey of the methods used for reconstructing aspects of past climates and environments, as well as survey climate forcings and responses. We will focus primarily upon terrestrial climate reconstructions, but will also address important linkages with oceanic records of paleoclimates. An overview of climate change through Earth history will also be explored as will climate modeling as an important tool for understanding paleoclimate dynamics.

Grades: Will be based upon participation in all class discussions, on the quality of student-led presentations of papers, as well as written reviews as assigned. Each student will lead the discussion and analysis of several papers.

NOTE THAT Assigned readings should be completed by the date listed. Bradley chapters should be read by the first course meeting of the week. Additional readings will be the focus of the second meeting of the week for the course discussions.

COURSE SCHEDULE, TOPICS, READINGS

DATE	TOPIC	ASSIGNED READINGS
9/23	Course Introduction, Logistics; how to read and review papers	
9/28	Bradley Chs. 1, 2	
	How to read papers in this course; Introduction to climatology, climate forcing on short (annual to Milankovitch) to long (tectonic) timescales;	
9/30	Introduction to climate modeling; Sloan 2006	
10/5	Climate change through Earth history (NO CLASS, JUST WORK) Bradley Chs. 3, 4; Zachos et al. 2001; Crowley , 2000 Written assignment: 2 page review of a proxy data type on the NOAA website: http://www.ncdc.noaa.gov/paleo/data.html (due 10/11/11)	
10/7	Oral presentation of NOAA website investigation	

10/ 12	Climate change through Earth history Geologic dating methods; Overview of paleoclimatic reconstructions and proxy paleoclimate data Bradley Chs. 3, 4	
10/14	Dendroclimatology and dendrochronology	Bradley Ch. 10 Jahren & Sternberg 2008; (LCS) Kuniholm et al., 1996; (LCS) Buckley et al. 2005; (LCS) Briffa et al., 1998 (LCS)
10/19	Paleobotany and Paleopalynology	Bradley Chs. 8, 9
10/21		Whitlock & Bartlein, 1997; (PA) Anderson & Smith, 1994; (JK) Wilf and Labandeira, 199X (AR)
10/26	Paleosols, peats & coals, faunal proxies, stable isotopes in terrestrial records	Bradley Chs. 5, 7, 8
10/28		Retallack,1999; (MB) Markwick 1994 (DP) Frappier et al., 2007 (KK)
11/2		Drysdale et al., 2006 (KO) Vaks et al. 2007 (DP) Larsen et al, 2008; (AR)
11/4	Lake sediments, lake levels, terrestrial and marine paleoclimate connections	Bradley Ch. 7
11/9		Verschuren et al., 2000 (KK) Russell & Johnson 2007 (MB) Ashley 2008 (DP)
11/11	HOLIDAY	
11/16	Paleoclimate Modeling	Oreskes (LCS)
11/18		Sewall & Sloan 2004 (KO) COHMAP, 1988 (JK) Poulsen et al., 2007 (MB)
11/23	Students' choice of topics: Future Climate Change	Snyder et al. 2002; (AR) Bell et al., 2006 (KK)

11/25 HOLIDAY

11/30 Presentations (to be assigned by 10/31; proposed projects due for my ok by 11/16)

12/1 Presentations