

GEOG 310U

Climate and Water Resources

MWF 9:00-10:05

413 Cramer Hall

Course Description

This course is intended to teach you to understand the main issues of climate variability and change that affect water resources. We will cover such topics as the hydrological cycle, causes of climate change, potential consequence of climate change on water resources, droughts and floods, and potential strategies to mitigate the negative impacts of climate change. Geog 310U will be interdisciplinary and collaborative in nature, integrating real world examples with class discussion and linking theory with decision-making. Course participants are expected to engage in weekly readings and discussion and to write and present a research project.

Instructor

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Textbook

- 1) Arnell, A. L. (1996) *Global Warming, River Flows and Water Resources*, Wiley, New York: NY. (Available at PSU bookstore)
- 2) IPCC (2001) *Climate Change 2001: Impacts, Adaptation and Vulnerability*, Cambridge University Press. (Available at http://www.grida.no/climate/ipcc_tar/wg2/index.htm)
- 3) Collier, M and Webb, R.H. (2002) *Floods, Droughts, and Climate Change*, The University of Arizona Press (Available at PSU bookstore)

Grading

Term project (40%), Quizzes (30%), Article reviews (20%), Participation (10%)

Term project: The term project asks you to collect data appropriate for this course and to critically analyze the data to support any aspect of problem of interest. This project can be done individually or in groups and is presented in the form of a poster at the end of the term. Late term project will not be accepted (Due date 8:00 AM Tue, June 10th).

Quizzes: There are three quizzes in this class. The tests will not be cumulative. Quizzes will consist of short answers, and problem solving questions. Material will be from the assigned readings. A study guide will be posted on the class web page. There will be no make-up quizzes except for **documented** medical or family emergencies. University policies on academic honesty apply.

Article Reviews: (Double-spaced, 2 page limit per review, Penalty for late submission)

1) Appropriate citation (author, year, title, journal name, volume, page)

McDonald, G.M., Szeicz, J.M., Claricoates, J., Dale, K.A. (1998) Response of the central Canadian treeline to recent climate change. *Annals of the Association of Geographers* 88: 183-208.

2) Problem statement

- What question(s) do(es) the author(s) try to answer? What are the hypotheses?
- What goals and objectives are found in the article?
- Is this an important or a novel question?

3) Data/ Methods

- What kinds of data were used? Did the author(s) collect the data?
- What statistical method was used?

4) Results

- What are the findings of the article? – What is most surprising?

5) Your own evaluation of the article

- Did the author(s) answer the hypotheses?
- Were the data enough to support the hypotheses?
- Was the method employed appropriate to answer the research questions?
- What do you find most interesting about the article?
- What remains unanswered?
- Would you like to replicate some of the approaches adopted in the article? If not, how would you like to approach differently?

Tentative lecture schedule

Date	Topic	Activities	Readings
3/31 – 4/04	Introduction to the course Hydrologic cycle		Arnell 1, 2 Collier and Webb 1,3
4/07 – 4/11	Climate system Climate variability	Poster assignment discussed (4/11)	Arnell 2 Collier and Webb 5,6
4/14 – 4/18	Severe weather (Floods and droughts)	Quiz 1 (4/18)	IPCC 4.2 Collier and Webb 2
4/21 – 4/25	Teleconnections and Hurricanes	Poster assignment update (4/25)	Collier and Webb 8 – 10
4/28 – 5/02	Evidence of climate change	Article review 1 due (4/30)	Collier and Webb 7, 11 – 14
5/05 – 5/09	Assessing climate impacts	Quiz 2 (5/07)	Arnell 3 IPCC 1
5/12 – 5/16	Climate impacts		IPCC 4.3 – 4.5 Arnell 6
5/19 – 5/23	Climate impacts	Drafts of poster content / layout due (5/21)	IPCC 4.3 – 4.5, 15.2.1 Arnell 7
5/26 – 5/30	Climate policy	Quiz 3 (5/28)	IPCC 4.6 – 4.8 Arnell 8
6/02 – 6/06	Water resource management under climate change	Article review 2 due (6/04)	IPCC 4.6 – 4.8 Arnell 8
6/10 (Tue) 8-9:50AM		Poster presentation	

