Course Announcement and Overview:

Winter 2017, 2:00-3:20p Monday & Wednesday, 175 Lillis, CRN: 26597

Instructor Pat Bartlein, 154 Condon Hall, 6-4967; email: bartlein@uoregon.edu
GTF: TBA

Overview: This course will examine the physical and human geographical aspects of global environmental change, focusing on natural variations of the environment over time, the impact of human action on the Earth and its environmental systems, and the projection of future environmental changes. An alternative title for the course might be *Future Earth*.

Syllabus, supplemental materials: http://geog.uoregon.edu/bartlein/courses/geog361/
Lecture outlines, online readings, lecture images, sample quizes and exams, grades, etc.: http://canvas.uoregon.edu

Prerequisites: GEOG 141 (or equivalent introductory Earth-science course)

Grading/assessment: Two in-class exams (20% each; Feb 8 and Mar 10); plus 4 short quizzes (5% each), completion of ten online exercises (40%).

Texts: All readings will be available as .pdfs online, and will consist of chapters from the following books:

Climate Change 2013: The Physical Science Basis http://www.ipcc.ch
U.S. National Climate Assessment http://www.globalchange.gov
Weart, S.R (2004) The Discovery of Global Warming, http://www.aip.org/history/climate/
One Planet Many People, Atlas of Our Changing Environment http://na.unep.net/atlas/index.php

Lecture topics include:

- Introduction: Why study global change?
- The Earth system
- Tools for studying global change
- Drivers of global change
- Climate history
- Changes in atmospheric composition
- Observed changes in climate
- Climate-biosphere coupling
- Climate models and their evaluation
- Global climate projections
- Regional climate projections
- Climate impacts -- physical systems
- Climate impacts -- biosphere
- Climate impacts -- water
- Extreme events and health
- Potential responses to climate change
- Projecting the far future
- What's next?

Expanded course description: The course will introduce some of the major themes in global environmental change, a relatively new interdisciplinary field that focuses on both long-term and recent changes in the Earth system, including those brought about by both human and natural causes. The major components of the Earth system will be described, along with the ways they are linked and vary over time. The lectures and readings will cover the basic concepts and records of environmental change (both natural and human-induced), the tools used to develop those records, and the ways in which our understanding of those concepts have developed.

An important reason for studying past environmental change is to learn how to project future environmental changes, and this task is motivating the development of both stand-alone models of individual components of the Earth system as well as integrated models that explicitly examine the linkages between human activities and the environment. The way in which such models are developed, tested, and used will be a key component of the lectures and discussion.

The study of global environmental change also provides the context for understanding how humans have interacted with the environment over time to create the one we are currently living in and rapidly modifying. A full understanding of environmental change therefore requires the synthesis of information from a variety of sources that describe both physical environment and human activity, and in ways that encourage and exploit new techniques for viewing the Earth system. An alternative title for the course might be *Future Earth*.

The online exercises will be focused mainly on "making sense" of the kinds of data and information that arise in studying global environmental change. Although ultimately based on numerical data from satellites or from simulation models, most of the information that is actually analyzed in studying global appears in the form of maps or other graphical summaries, and interpretation of such summary information, is critical for understanding how the physical environment varies over time and space.
