



# 21st Century Climate Change

Geography 4/521 Advanced Climatology: Spring 2016

4:00-5:20 Monday and Wednesday, 201 Condon Hall

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**Overview:** This course will focus on the concepts and procedures that underlie projecting the variations of the Earth's climate system over the next few decades to centuries. We will rely mainly on the projections undertaken by the Intergovernmental Panel on Climate Change (IPCC) in preparing the Fourth Assessment Report

## Texts:

- *Climate Change 2013: The Physical Science Basis*, IPCC Working Group I Fifth Assessment Report, available on-line at <http://www.ipcc.ch>
- Weart, S.R. (2004) *The Discovery of Global Warming*, Harvard Univ. Press (paper, ISBN 0674016378, also available online at <http://www.aip.org/history/climate/>).

**Prerequisites:** GEOG 321 Climatology or GEOG 322 Geomorphology or GEOG 323 Biogeography or GEOG 361 Global Environmental Change, or an equivalent. (Not open to students who have taken GEOG 4/532.)

**Grading:** Undergraduates: Two exams (40% each), (take home), due at the beginning of week six, and during the final exam period (8 Jun 2016), and an annotated bibliography on global climate change-related material (10%), Graduates: Two exams (30% each), an annotated bibliography focusing on a global climate-change issue (20%), and a *Nature Climate Change* or *Earth's Future*-style short perspectives or review paper.

Week	Topic -- See individual Canvas pages for readings
1	Overview: global climate change, the IPCC and the AR5, the climate system
2	Climate history up to the industrial period
3	Changes in atmospheric composition and radiative forcing
4	Observed changes in the atmosphere, ocean and cryosphere
5	Observed changes, continued, first exam
6	Climate models and their evaluation
7	Global projections
8	Regional projections
9	Impacts
10	What's next? (climate change research programs)