

# GC170A1: Introduction to Global Change Spring 2012

**Time: Tu/Th 5-6.15pm**  
**Education Room 211**

## **Prof. Valerie Trouet**

Laboratory of Tree-Ring Research  
and School of Natural Resources and the Environment

**Office Address:** 206 W Stadium (enter the stadium on the West side through gate 15, take a left at the top of the stairs)

**Office Phone:** 520-626-8004

**Email (preferred):** [trouet@ltrr.arizona.edu](mailto:trouet@ltrr.arizona.edu) (please refer to the course number GC170A1 in your subject line)

**Office Hours: Tu/Th 10-12 or by appointment in my office.**

NOTE: **To set up an appointment** with me, you **must arrange it through email**. I am also readily accessible by email on most any day of the week and can usually get a response back to you within 24 hours.

## **Graduate Teaching Assistants:**

**Rebecca Franklin** (*Geosciences & Laboratory of Tree-Ring Research with a Global Change minor*) Email: [rsf@email.arizona.edu](mailto:rsf@email.arizona.edu)

**Rebecca's Office Hours: Mon 9-10 and Wed 10-11 or by appointment**

**Office Address:** 294 W Stadium (enter the stadium on the West side through gate 15, take a left at the top of the stairs continue through glass door at end of hallway)

**Catherine Hulshof** (*Department of Ecology and Evolutionary Biology with a Global Change minor*) Email: [hulshof@email.arizona.edu](mailto:hulshof@email.arizona.edu)

**Catherine's Office Hours: Th 3-4 or by appointment**

**Office Hour Address:** BioscienceWest 302

## **COURSE OVERVIEW**

The science behind Global Change is simple, but can be overwhelming:

1. Carbon dioxide is a greenhouse gas that traps heat
2. Over the last 100 years or so, we have been putting a lot of extra greenhouse gases into the atmosphere
3. Temperatures on planet earth have been rising over the same period of time
4. We've been seeing a lot of related effects in the atmosphere, biosphere, and hydrosphere
5. All of the above (1-4) are connected.

In this course, we will cover all of these scientific aspects of global change in detail. I will also focus on potential solutions for the global change challenge. The media coverage, controversy, and politics surrounding global change are not the main

focus of this course, but they can often be even more overwhelming than the science. My aim for this course is therefore to provide you with the necessary scientific background to understand and have an informed opinion about global change-related media and policy issues.

## **REQUIRED READINGS AND COMPUTER ACCESS**

*Textbooks (REQUIRED):*

- **Our Changing Planet** by Fred T. Mackenzie (2011)
- **Dire Predictions, Understanding Global Warming** by Michael E. Mann & Lee R. Kump (2009)

*TurningTechnologies Response Card (REQUIRED)* -- This is a device that lets you click and send instant responses to questions during class. The cost of the Turning Tech Response Card is about \$50, but you will more than likely be using your clicker in several classes at UA. **To register your clickers for our class:**

1. Go to the website *student.turningtechnologies.com*
2. Enter your ResponseCard ID (found on back of unit)
3. Enter your first name and last name in the appropriate fields
4. Enter your student ID in "Other Field"
5. Complete security entry
6. Press **Next**
7. Enter my email address trouet@email.arizona.edu
8. Select class name (GC170A1) and add it to the list on the right
9. Click **Next** and confirm information. You may click **Back** if you find information you need to correct.

*Computer & Internet Access is REQUIRED for this class.* -- For information on computer access on campus or from home go to:

[http://www.oscr.arizona.edu/computer\\_help/new\\_student\\_guide](http://www.oscr.arizona.edu/computer_help/new_student_guide)

## **COURSE RESPONSIBILITIES**

*Classroom etiquette*

- Please turn off your cell phones at the start of each class
- In general, there is no need to bring laptop computers to class, but I will gladly make exceptions to this rule on a case-by-case base. If you want to use a laptop for taking notes in class, please discuss this option with me (Dr. Trouet) at the start of the semester (no later than 01/19).
- Food, drinks (except water in closed containers), and smoking are not permitted in the classroom.
- Please avoid class disruptions: if you have to arrive in class late/leave early, please do so in a modest and quiet manner.

### *Attendance*

- is **expected** and is necessary for taking quizzes, exams, performing in-class exercises. It also is good preparation for graded work.
- **Excused absences:** If legitimate extracurricular activities result in occasional and officially excused absences, leave a photocopy of your absence excuse with the Instructors during lecture, preferably before the excused absence, and find out what you will miss. Under these circumstances, exams can be made up, but make-ups for activities/homework/quizzes are unlikely.
- However, excessive absences may result in an administrative drop.

### *Additional expectations*

- General information, updates, announcements, assignments, discussion topics, and general communication will be posted on the course **D2L site <https://d2l.arizona.edu>**. It is your responsibility to keep up to date with what is posted on the D2L site, so please check the site before each class and make sure the 'last update' date is current. The course syllabus/schedule is subject to change as announced in class.
- **Additional readings** from selected topical, authoritative and timely sources will be required and will be posted on the D2L site as Portable Document Format ([pdf](#)) files or as webpage links. We will make use of copyrighted materials under academic Fair Use Policy of applicable copyright law.
- **Assignments** that are not formally indicated in the syllabus can be assigned in class and will be posted on D2L.
  - Assignments are to be submitted in the D2L dropbox.
  - Assignments should be in proper grammatical form, spelled correctly, expressed in complete sentences, clear, and "to-the-point" (read: no B.S.). Always proofread what you've written before you turn it in and beware of automated "spell check" selections. Most importantly, do not plagiarize (see below).
  - Assignments are to be submitted by the due date. Extensions may be granted but require one full day's advance approval from Dr. Trouet. Beyond this, late assignments will not be accepted. Assignments turned in late will either receive a zero (0), or loss of 5-10% per day depending on assignment.

## **EVALUATION**

### *Letter grades*

The following are guaranteed grades, but the lower boundaries of each subdivision may be adjusted slightly downward depending on final grade distribution:

**A** (90-100%), **B** (80-90%), **C** (65-80%), **D** (55-65%), **E** (<55%).

### *Graded Activities*

Your final letter grade will be based on the **% earned of 1000 possible points** distributed over a variety of graded activities as follows:

<b>mid-term exam:</b>	<b>225 points</b>
<b>final exam:</b>	<b>275 points</b>
<b>in-class quizzes<sup>1</sup> (4):</b>	<b>160 points (4*40 points)</b>
<b>homework assignments<sup>2</sup>:</b>	<b>240 points (125+115 points)</b>
<b>readiness quizzes<sup>3</sup>:</b>	<b>75 points (15*5 points)</b>
<b>in-class participation<sup>4</sup>:</b>	<b>25 points</b>
<b>extra credit<sup>5</sup>:</b>	<b>up to 50 points extra</b>

#### *<sup>1</sup>In-class quizzes*

Three in-class quizzes will take place in each half of the semester. They will take up to a maximum of 30 minutes and will be followed by lecture. Only your highest 2 scores in each half semester will count. If you miss one of the quizzes, this will be considered your lowest score (no make-up quizzes will be held).

#### *<sup>2</sup>Homework assignments*

There will be two kinds of homework assignments:

- **5 homework assignments (25 points each)** will be spread out throughout the semester. Details about these assignments will be provided in class and on D2L.
- **A final paper (115 points)** will have to be turned in by 04/17. This writing assignment will consist of either an OP-ED article OR a letter to the editor for a newspaper or magazine. Either writing exercise should be on-topic and in reference to current events as reported in the newspaper/magazine. The writing should be 1000-1500 words in length and along with your writing, you should also submit the article(s) that it is in reference to. When writing the OP-ED piece or the letter to the editor, make sure you express knowledge you have gathered in class.

#### *<sup>3</sup>Readiness quizzes*

In due time, a total of 15 readiness quizzes (5 points each) will be posted on the D2L class that need to be filled out before the start of the appropriate classes.

#### *<sup>4</sup>In-class participation*

In-class participation points will be based on clicker participation, namely on the % of all clicking opportunities that you clicked.

#### *<sup>5</sup>Extra credit*

There will be 2 ways to earn extra credit (EC) points for this course (max. of 25 points each):

- On-topic, relevant, and approved **media specials** (TV shows, talks/lectures, radio shows, popular movies) can be viewed/listened to and journal/magazine articles read after which a 1-page double-spaced typewritten summary/critique must be submitted within 1 week of opportunity for 5 EC point each, up to a

maximum of 25 EC points and will be added on to your final class grade average. We will advertise some opportunities in class and on D2L, and you are encouraged to find others but you must obtain approval before attempting to use them for extra credit. NOTE: Only 10 extra points may be earned after 04/17 and before 04/26, and none after 04/26. NO PLAGIARISM- like your other writing, it will be checked!

- **Personal carbon footprint reduction:** we want to encourage you to put some of the solutions for the global change challenge in practice and to reduce your ecological footprint for *one full semester*. Suggestions for how to do this will be provided in the second class of the semester and you are encouraged to find others but you must obtain approval before attempting to use them for extra credit. To receive the available 25 EC points, you must be *consistent and pertinent throughout the semester* in the footprint reduction mechanism of your choice AND you must keep a D2L blog about your (quantitative and qualitative) experiences. More details about this EC mechanism will be provided in the second class of the semester.

## **ACADEMIC INTEGRITY**

Academic dishonesty will not be tolerated, including cheating on quiz/exams, copying assignments, and presenting the work of others as your own (plagiarism). See the [University Code of Academic Integrity](#) for additional information. Anyone cheating, plagiarizing or violating any other aspect of the code of academic integrity will be assigned the grade of "E" for the course and may be reported to University officials for disciplinary action. Policies and procedures in the Code of Conduct can be viewed at <http://dos.web.arizona.edu/uapolicies/>

## **STUDENTS WITH DISABILITIES**

Do you have a physical or learning disability? Please speak with Dr. Trouet as soon as possible about accommodations. You will only need to show us a faculty letter from the DRC (621-3268; [drc.arizona.edu](http://drc.arizona.edu)), and we can make arrangements from there. For any other special needs, bring your paperwork and/or explain circumstances to Dr. Trouet.

## **PRELIMINARY SCHEDULE**

- Th 01/12 Introduction to the class and syllabus overview**
- Tue 01/17 Science and Global Change Science**
- Th 01/19 Atmosphere: structure, energy budget**
- Tue 01/24 Atmosphere: chemical composition and Greenhouse Effect**
- Th 01/26 QUIZ 1; Atmosphere: weather and climate**
- Tue 01/31 Hydrosphere: oceans and ocean-atmosphere interactions**
- Th 02/02 Natural Climate variability: Past and Factors**
- Tue 02/07 QUIZ 2; Instrumental climate data and climate models**
- Th 02/09 Atmosphere: extreme weather**
- Tue 02/14 Hydrosphere: the water cycle**
- Th 02/16 Hydrosphere: the cryosphere**
- Tue 02/21 QUIZ 3; Atmosphere-hydrosphere: feedback effects**
- Th 02/23 Lecture by Catherine: Hydrosphere: droughts and floods and southwestern drought issues**
- Tue 02/28 Lecture by Rebecca: Hydrosphere: Sea-level rise and ocean acidification**
- Th 03/01 Biosphere: biodiversity and ecological pyramids**
- Tue 03/06 REVIEW session**
- Th 03/08 Mid-term Exam**
- Tue 03/12 Spring Recess**
- Th 03/14 Spring Recess**
- Tue 03/20 Biosphere: terrestrial ecosystems**
- Th 03/22 Biogeochemical cycles**
- Tue 03/27 The carbon cycle and fossil fuels**
- Th 03/29 QUIZ 4 Energy resources**
- Tue 04/03 Soil and Water pollution**
- Th 04/05 Air pollution; ozone**
- Tue 04/10 Global population increase and natural resources**
- Th 04/12 QUIZ 5 Global change and human health**
- Tue 04/17 Climate policy: IPCC and protocols**
- Th 04/19 macro-scale solutions: models and adaptation**
- Tue 04/24 micro-scale solutions: personal choices and adaptation**
- Th 04/26 QUIZ 6 climate politics**
- Tue 05/01 Review session**
- Th 05/03 Reading day**
- Between 05/04 and 05/11: Final Exam**