



Course ID and Title: Geology 108, Crises of a Planet

Units: 4

Spring—MWF—11:00 to 11:50am:

Location: SLH 200

Instructor: Prof. John Vidale

Office: 107 Zumberge Hall of Science

Office Hours: Monday noon to 1pm or by appointment

Contact Info: jvidale@usc.edu, 310-210-2131, responding with three hours during the day.

Teaching Assistants: to be assigned later

Course Description

We will examine the power and limitations of science to improve our lives through the example of geophysical natural hazards. Prof. Vidale's specialties, earthquakes and volcanoes, will be emphasized. Landslides, flooding, wildfires, hurricanes, tornados, flooding and other hazards will be explored.



Half the course presents the background geophysics - the science and history of the hazards. The other half will be discussion of case studies of individual disasters and actions to avert disasters across these topics. Exploration for oil and mitigation of nuclear weapons risk will be additional topics addressed with similar science and tools.

The objective is a greater understanding of science and case-history knowledge of how we fight

natural disasters. The intended audience is those who wish to understand the process of mitigating hazards more deeply through research, activism, legislation, and enforcement of improvements.

Geophysics is a particular strength of the Earth Sciences department at USC, and Los Angeles is the epicenter of the ~\$6B average annual earthquake risk in the US.



We'll discuss practical hazard mitigation, including discovery, denial, alarmism, and acquiring state and federal resources. Earthquake and volcano prophecies offer examples of social media rumors of "breakthroughs" and conspiracies. Short-term earthquake and volcano prediction does not yet work, but still there is hope at the cutting edge of current research. The more general issue of clarifying contentious science also is a recurrent theme, but the main theme is natural threats and how they are addressed.

Learning Objectives

Objectives

By the end of this course, students should be able to:

1. Understand the qualitative physical process responsible for a range of natural hazards and other societal problems that can be ameliorated through geophysical methods.
2. Remember cases studies of these disasters, their history, and the actions taken to mitigate them.
3. Extend the case history to interpret additional science and similar cases not addressed in class.
4. Analyze the outcomes in case studies to judge their societal impact.
5. Evaluate whether the measures taken have been sensible.

Assignment/Assessment

This learning objective skill is measured by:

- Midterm, final exam, polls
- Midterm, final exam, polls
- Labs conducted in section
- Questions on final exam
- Questions on final exam

Prerequisite(s): none.

Co-Requisite(s): none.

Concurrent Enrollment: none.

Recommended Preparation: perusing the textbook would be helpful but not necessary.

Course Notes

Grading type: letters, a curve will be applied.

Lecture Powerpoints will be posted on Blackboard before class.

Technological Proficiency and Hardware/Software Required

We will use only the standard features of Blackboard and Poll Everywhere.

Required Readings and Supplementary Materials

The Big Ones by Lucy Jones, 255 pages

- Sold by: Random House LLC, on Amazon
- Kindle - \$12, Hardback - \$10, Paperback - \$14
- ISBN 0385542704

Natural Hazards and Disaster by Donald Hyndman and David Hyndman

- Either the 4th (2013) or 5th edition (2016) is fine.
- New, used, electronic, paper, buying, renting – any would work
- Choices range from ~\$20 to ~\$300 on Amazon
- Just needed for reading and reference – fancy extras unnecessary.
- ISBN-13: 978-1305581692, ISBN-10: 1305581695



Description and Assessment of Assignments

The midterm and final will be in-class Blackboard multiple choice tests. Polls and quizzes in class will be graded for participation but not correctness. **NO field trip, despite the outdated claim in the catalog.**

Participation

Participation will be scored by answering Poll Everywhere questions and engaging with TA in section.

Grading Breakdown

Assessment Tool (assignments)	% of Grade
Weekly lab assignments	35
Midterm exam	25
In-class polls and quizzes	10
Final exam	30
TOTAL	100



Course Schedule

	Topics	Readings/Preparation
Week 1	Natural Hazards	14 of 18 chapters in Hyndman's book and
Week 2	Plate tectonics	all chapters in Jones will be assigned readings.
Week 3	Earthquakes	
Week 4	California earthquake mitigation	
Week 5	Notable global earthquakes	
Week 6	Volcanoes	
Week 7	Volcano case studies	
Week 8	Landslides	
Week 9	Storms	
Week 10	Hurricanes	
Week 11	Floods and tornados	
Week 12	Earthquake prediction	
Week 13	Tsunamis	
Week 14	Unnatural disaster of nuclear weapons	
Week 15	Wildfires	
FINAL	Cumulative	

Grading Scale

Class GPA will likely be in the range 3.4 to 3.6, and scores will be curved.

Assignment Submission Policy

Weekly lab assignments will be due in class by the corresponding class time the following week.

Grading Timeline

Grades and feedback will generally be within a week.

Course Specific Policies

Late assignments lose 10% of the score each week, no more than two labs may be missed without arranging with us how the work will be covered ahead of time.

Course Evaluations

Course evaluation occurs at the end of the semester.

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is contrary to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Group work. Unless specifically designated as a 'group project,' all assignments are expected to be completed individually.

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Statement on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and

could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.



Raging wildfire. Photo: SciJinks, NOAA