

GEL 25 - Geology of National Parks

Dr. David Osleger

daosleger@ucdavis.edu

Dept. of Earth & Planetary Sciences

Office hours

Tu 1:00 – 2:00
(online via Zoom)

W 1:30 – 2:30
(3224 EPS building)

- always available
after class



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Canvas class site

- syllabus, lecture notes/images, textbook, lecture videos
- please read the homepage carefully for details
- check ucdavis.edu email (announcements)

GEL 025 001 SQ 2025

Spring Quarter 2025

Home

Files

Equitable Access

Bookshelf

Media Gallery

Assignments

Quizzes

Grades

Zoom

UCD Library

History

Help

Dr. David Osleger Email: daosleger@ucdavis.edu
<https://daosleger.faculty.ucdavis.edu>
Dept. of Earth & Planetary Sciences, 3224 Earth & Physical Sciences building

Office hours
Tuesdays 1:00-2:00 (online via Zoom)
Wednesdays 1:30-2:30 (3224 EPS building)

General Information

GEL 25 will be taught in Giedt 1001 from 10:00 - 10:50 through the quarter.
I may opt to teach class via Zoom on the occasional Friday, but I'll announce that far in advance and also send an announcement.

All class lectures will be recorded for asynchronous viewing and will be available in the Media Gallery link in the menu on the left column.

Download the syllabus with dates of course topics, quizzes, and exams. Be sure to enter the quiz and exam dates in your calendar or academic planner.

UCD Course Catalog Description: This course will help you to develop an appreciation of the geologic framework underlying the inherent beauty of U.S. National Parks. Each park provides a visual focus for understanding a variety of geologic processes such as mountain building, volcanism, stream erosion, glaciation, and shoreline features. GE credit: SE, SL.

Yes, this course homepage is long, but please take the time to read it. Everything you need to know about the course is on this page.

Goals for the Course

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GEL 25 syllabus

- link on Canvas site
- topics, dates
- quiz and exam dates
- record in your calendar/planner

GEL 25 - Geology of National Parks – Spring 2025

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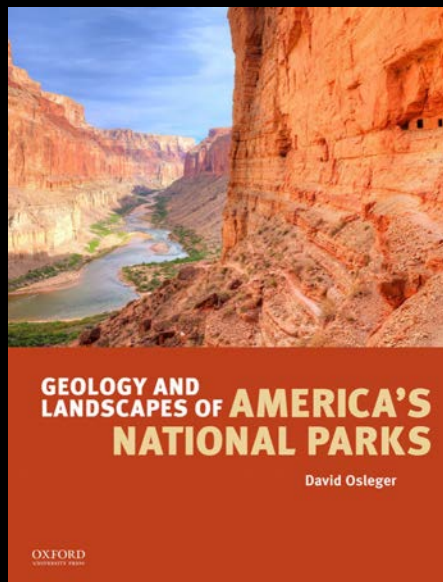
Please read the GEL25 Canvas site closely for more detail on the course.

Date	Lecture Topic
May 31 – Apr 18	National Parks of the Colorado Plateau: Grand Canyon, Zion, Bryce, Canyonlands, Arches. Concepts addressed include deep time, erosion and sedimentation, river processes, landscape evolution
Apr 9 – Quiz 1 Apr 16 – Quiz 2 Apr 23 – Quiz 3	
April 21 – May 2	National Parks of the Cascades: Crater Lake, Mt. Rainier, Lassen. Concepts addressed include convergent tectonics, explosive volcanism
April 30 – Midterm - (50 min, in Giedt 1001)	
May 5 – May 14	National Parks of the Sierra Nevada: Yosemite, Sequoia, Kings Canyon. Concepts addressed include convergent tectonics, mountain building, and glaciation.
May 14 – Quiz 4 May 21 – Quiz 5 May 28 – Quiz 6	
May 16 – May 21	National Parks of the Rocky Mountains: Rocky Mountain, Glacier. Concepts addressed include convergent tectonics, ancient landscapes
May 23 – May 30	National Parks of the Basin & Range: Death Valley, Grand Teton. Concepts addressed include extensional tectonics, desert processes
June 2	National Parks related to volcanic hot spots: Yellowstone, super-volcanoes, volcanic hazards
June 4	National Parks along the San Andreas Fault: Pt. Reyes. Concepts addressed include shear tectonics, earthquakes, shoreline processes.
June 11 – Final exam – (2 hours, in Giedt 1001, beginning at 10:30am)	

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Textbook

- lots of graphics
- easy to read
- more information than necessary (so read/browse **after** having had the lecture)
- “mandatory”
- read the **Preface**



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Lecture notes & images

- comprehensive **notes** of lectures
- pdfs of lecture **images**
- both posted on Canvas under 'Files'

- download class to class
study tip: read the notes in coordination with the images right after class or as close to class time as possible to transfer knowledge from short-term to long-term memory. And to study for the quizzes & midterms.



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Class structure



- emphasis on principles and concepts
- class built around **images** of geologic features
- all lectures recorded (in Media Gallery on Canvas)
- **come to the physical class** (rather than just watching the lecture videos) – most efficient use of your time

*I strongly encourage you to ask **questions***

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Quizzes & Exams

Quizzes – 6, dates on syllabus

Quizzes done online in Canvas (open-book, open-notes)

- each quiz worth 6 points
- quizzes open on Wednesdays at 11:00 am, due in 24 hours
- drop your lowest quiz (5x6 = 30 possible pts)
- please work alone
- reason for the quizzes . . .

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Quizzes & Exams

Midterm - Wednesday, April 30 (30 pts)

Final exam - Wednesday, June 11 @ 10:30 (40 pts)

Exams – closed-book, multiple-choice & T/F questions

- study guide a week before exams
- no early exams or makeup exams
- must take both exams to pass

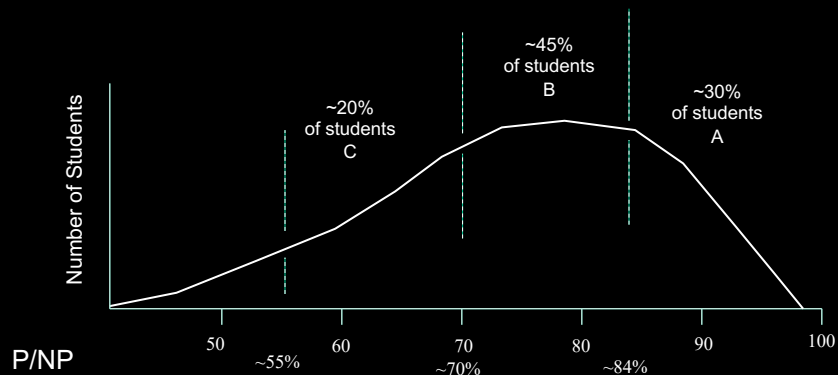
Don't take this class too lightly!

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Grading

Final grades determined on a **curve** based on total points accumulated on all exams and quizzes.

$$\begin{array}{rcl} \text{quizzes} & + & \text{mdtm} + \text{final} = \text{total points} \\ 30 & + & 30 + 40 = 100 \text{ total points} \end{array}$$




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How to do well in GEL 25

- **come to class** & think actively; ask questions
- download and study the **notes & images** week-to-week (devote time in your planner to this)
- keep an organized digital notebook
- use the **textbook** to supplement understanding
- review the **lecture recordings** as necessary



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No prior geology knowledge necessary

- visits to NPs?
- Yo, GC, Yel

***ultimate goal
for the course***

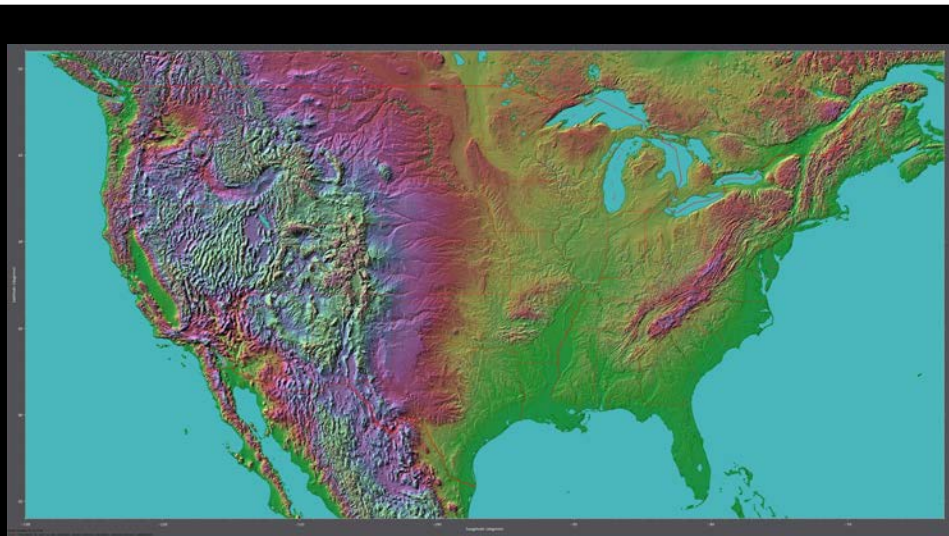
**Havasu Falls,
Grand Canyon NP**

11



- 429 NPS units (parks, monuments, seashores, historic sites)
- 63 national parks

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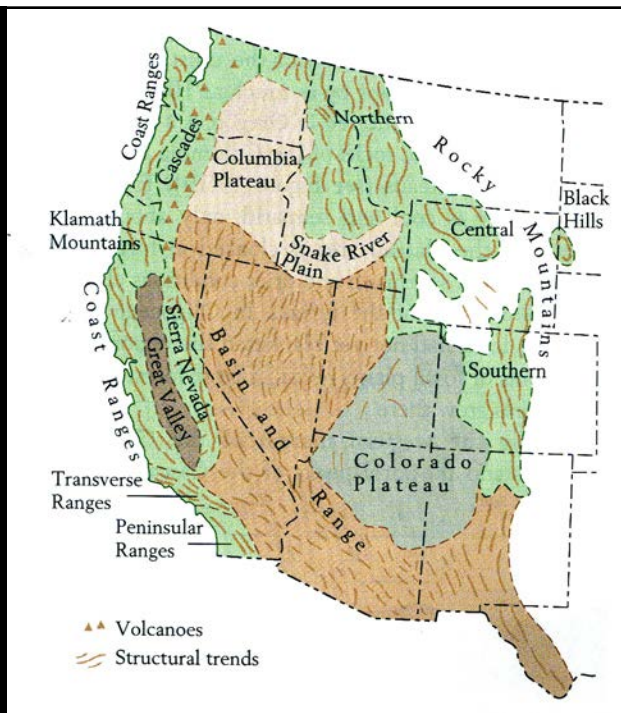


North American Cordillera
aka 'American West'

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Geologic provinces of the American West

Read the
4-page
Preface of
the textbook



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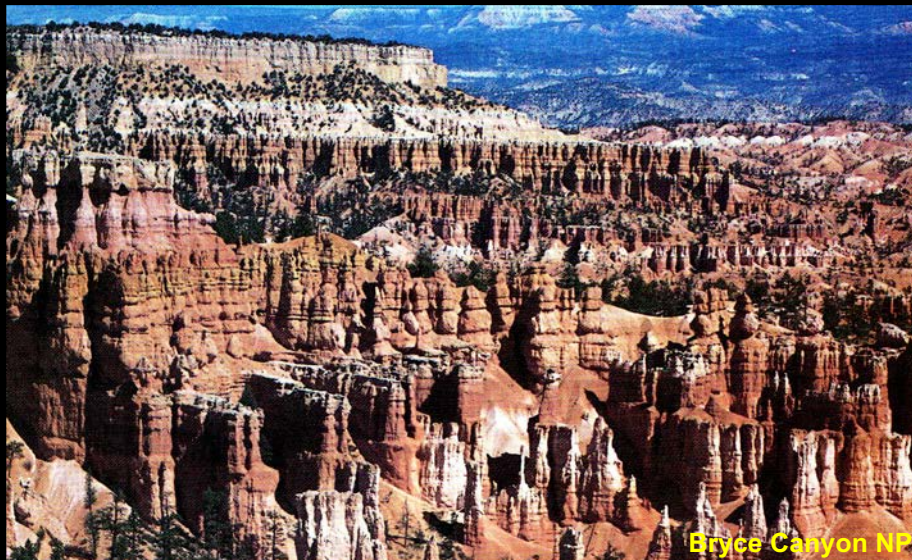
National parks of the *Colorado Plateau*



Grand Canyon NP, Arizona

Deep time, sedimentary rocks, how rivers create canyons

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Bryce Canyon NP

weathering, erosion, landscape evolution

16



Arches National Park, Utah

weathering, erosion, landscape evolution

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National parks forged by **volcanism**

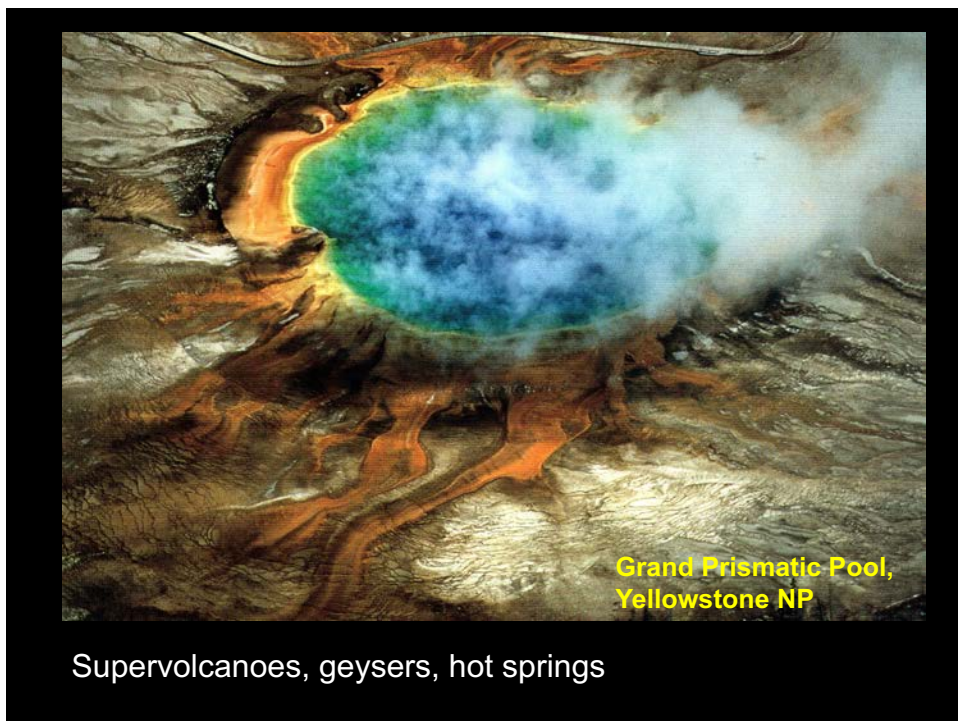


Mt. St. Helens NM, 1980

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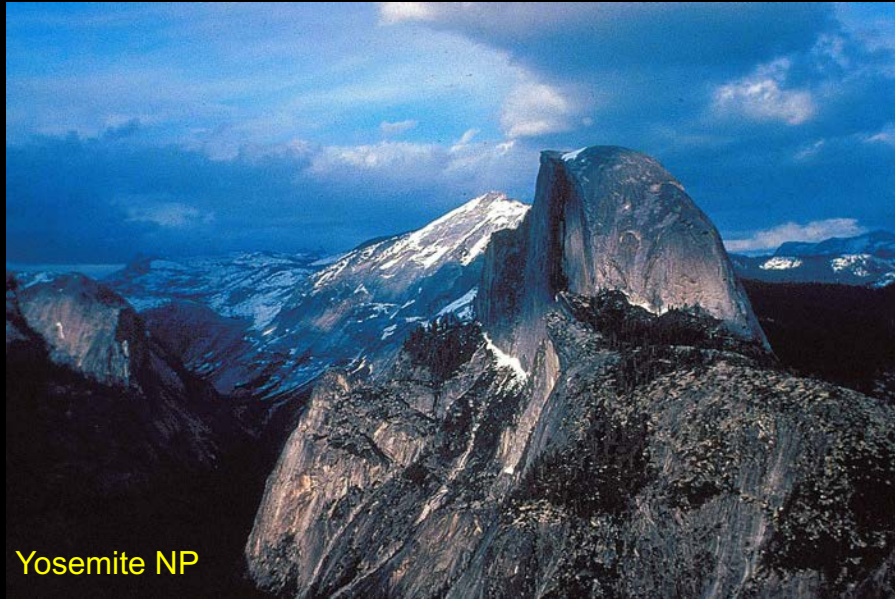


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National parks of the *Sierra Nevada*



Yosemite NP

Mountain formation, magmatism, glaciation

21



Yosemite 20,000 years ago?

22

National parks of the *Rocky Mountains*



Glacier NP, Montana

23

National parks of the *Basin & Range*



Death Valley NP, Calif.

Desert processes

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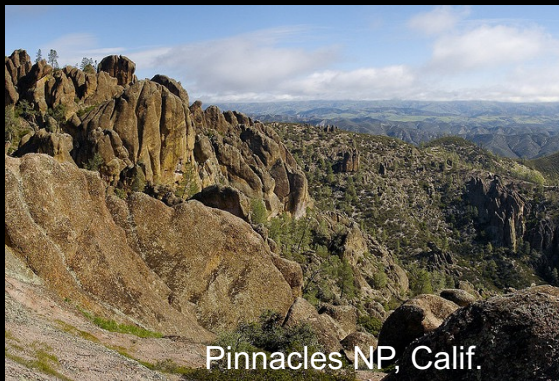
**Grand Tetons
Wyoming**



styles of
mountain growth

25

**Pt. Reyes
National
Seashore
Calif.**



Pinnacles NP, Calif.

**National parks
along the
*San Andreas
Fault***

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