

DATES TO REMEMBER

❑ **Until May 26: Course evaluation period.**

Check your Hunter e-mail for instructions.

Smartphone: www.hunter.cuny.edu/mobile Computer: www.hunter.cuny.edu/te

❑ **May 12: Last day** to hand in **REQUIRED ROADTRIP EXERCISE** without late penalty.

❑ **May 16:** Last class lecture **and last day for pre-approved extra credit** (paper or other project).

❑ **May 23: Exam III: The Final Exam**

- From 9 to 11 AM << note different time from class
- Same format as exams I and II.
- **Last day** to hand in Exam III extra credit exercise and "Landscape Analysis" extra credit option.

Regional Landscape Studies

- ✓ NORTHLANDS
- ✓ NORTHEAST COAST
- ✓ MEGALOPOLIS
- ✓ CANADA'S NATIONAL CORE
- ✓ AMERICA'S HEARTLAND
- ✓ APPALACHIA and the OZARKS
- ✓ THE SOUTH
- ✓ GREAT PLAINS and PRAIRES
- **MOUNTAINS, PLATEAUS and BASINS: The Empty Interior**
- ❑ DESERT SOUTHWEST
- ❑ NORTH PACIFIC COAST
- ❑ HAWAII

<<<For each region:

1. Know its physical geography.
2. Identify its unique characteristics.
3. Be able to explain the human imprint.
4. Discuss its sequence occupancy and economic development.

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Regional Landscapes of the United States and Canada

Mountains, Plateaus and Basins: The Empty Interior

Prof. Anthony Grande

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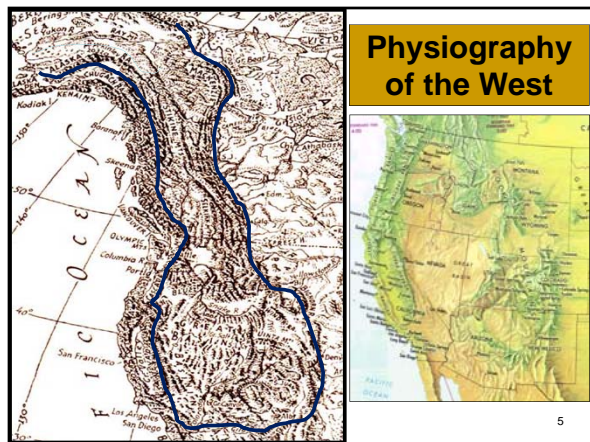
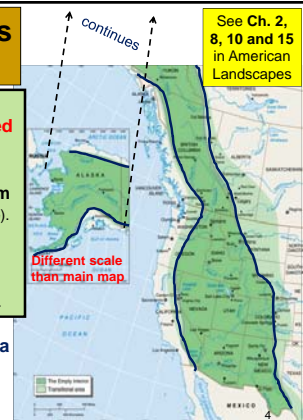
See Ch. 2, 8, 10 and 15
in American Landscapes

Mountains, Plateaus and Basins

Visual landscape is dominated by physical features with rugged natural beauty but few people.

- Long, narrow region with great variations in landform (geology) and climate (latitude).
- Extends from Alaska's North Slope to the Mexican border and from the Great Plains to the Pacific mountain system.

Very Wide through Alaska
Narrow in Canada
Wide in Southwest US



Physiography of the West

Mountains, Plateaus and Basins

When you think about this region, what images come into your mind?



OVERVIEW: Physical Geography

Harsh, isolated area

Physical landscape dominates

➤ Unique combo of impressive topographic features: high mountains, deep valleys, dissected plateaus (with canyons), basins and salt flats.

✓ Contains North America's highest and lowest points.

✓ Contains North America's largest supervolcanos.

➤ Climate variation due to **both latitude and altitude.**

Denali (Mt. McKinley from 1896-2015)
+20,310 ft



Death Valley - 282 ft



OVERVIEW: Human Geography

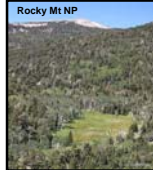
Difficult area to exist and prosper

- **Very low population density:** few cities.
- **Limited overland routes:** habitable areas isolated.
- **Regionally distinctive populations:** ethnic, cultural, and religious (isolation factor).
- **Resource removal and recreation are chief economic activities.**
- **Spectacular scenery for human enjoyment:** much of it preserved in parks.
- **Most of the land is government-owned.**
- **Ideal area for military training and testing.**
- **Conservation issues and conflicts abound.**

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Vast Empty Landscape

(at least empty of people)



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Climate

CLIMATE ZONES



▪ **Harsh conditions every where.** Climate varies with latitude and elevation.

▪ **Orographic precipitation** is dominant. Rain shadows pronounced.

▪ **Snow is the chief form of precipitation.**

- Occurs in the mountains from autumn to late spring.
- Deserts and basins may get winter snowfall.

▪ **Arid/semi-arid conditions** esp. in the southern portion.

▪ **Death Valley is hottest and driest place in Western Hemisphere.**

> 134°F on July 10, 1913

> 128°F on July 15, 1972

PRECIPITATION



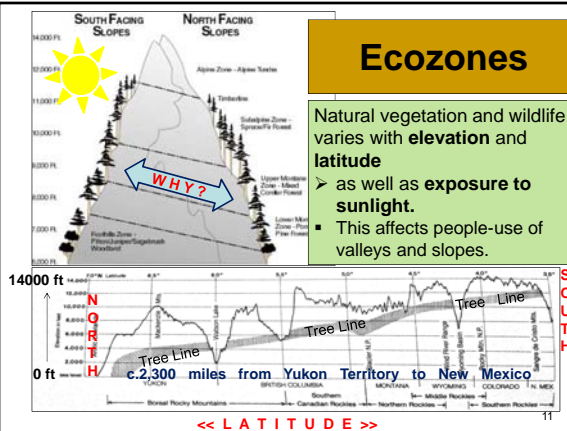
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Ecozones

Natural vegetation and wildlife varies with **elevation and latitude**

➤ as well as **exposure to sunlight.**

▪ This affects people-use of valleys and slopes.



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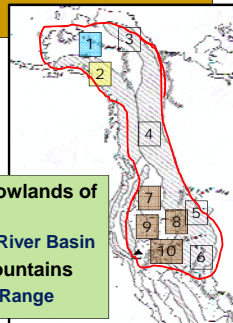
Main Topographic Units

I. Central Lowlands of Alaska

1. Yukon River Basin

II. Coast Mountains

2. Alaska Range



III. Rocky Mountain System

3. Brooks Range

4. Canadian (or Northern) Rockies

5. Middle Rockies

6. Southern Rockies

IV. Intermontane Area

7. Columbia Plateau

8. Wyoming Basin

9. Basin and Range

10. Colorado Plateau

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Yukon River Basin




Between Brooks and Alaska ranges in Alaska and Yukon.

Lowland area of rolling hills and swampy river valleys; underlain by permafrost.


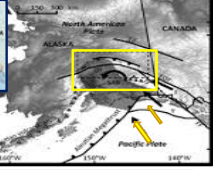

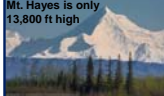
- Covered by taiga.
- Frozen and snow-covered from October to June.
- Drained by the Yukon river system whose drainage basin that is larger than Texas. The Yukon River is 1,980 miles long.

➤ First people from Asia followed the valley inland at end of the last Ice Age.




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Alaska Range

- Extension of the Coast Mts.
- Separates the Gulf of Alaska coastal plain from the Yukon River Valley.
- Created as the Pacific Plate pushes against the North American Plate.
- Contains some of the tallest peaks of North America, including Denali (>20,300 ft high) and Mt. Foraker (>17,400 ft.). Seven are taller than 13,000 ft.

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Rocky Mts.

- Steep slopes with pointed summits.
- High elevation: most peaks exceed 10,000 ft; most gaps (called **passes**) are at 6,000-12,000 ft.
- Dramatic elevation changes: local relief over 3,000 ft from base to summit.
- Narrow valleys with swift rivers.
- Forms the **Continental Divide**: backbone of North America.

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Difficult Area to Traverse

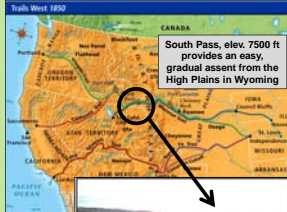

Few natural routes cross it. Most are steep.

Canadian Rockies are a major impediment to E-W movement.

Gaps (called passes) in the **Middle Rockies** (WY/CO) exist and were the pathways used by explorers, frontiersmen and wagon trains.

South Pass was the main route across the continental divide.

Today's highways and rail lines continue to use these passes.

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Technology Needed







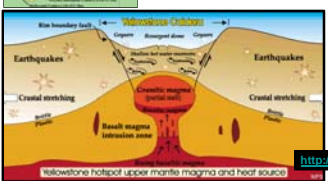


Tunnel at Loveland, CO cuts into the Rockies at 11000+ ft.

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Yellowstone Caldera

Yellowstone National Park

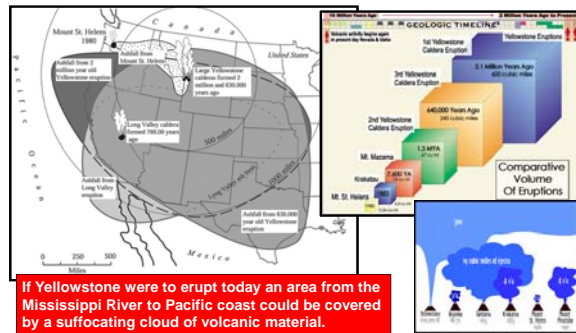
- Sits on a "hot spot."
- Does not look like a volcano.
- N. Am.'s largest **supervolcano**: few eruptions but with cataclysmic results.
- Noted for its **geothermal** features including *Old Faithful* geyser.

<http://volcanoes.usgs.gov/volcanoes/yellowstone/>

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Eruption Comparisons



Intermontane Area

Located between the Rocky Mts. and the Pacific mountain system. Four major units:

1. **Columbia Plateau:** a **basalt (lava) plateau** formed from the gradual buildup of lava flows; **>2,000 ft** thick with narrow, deep canyons.
2. **Wyoming Basin:** an **outlier of the High Plains**; natural passage between Middle and Southern Rockies.
3. **Basin and Range:** **fault-block region** of sedimentary rock layers; **area of interior drainage with salt flats**.
4. **Colorado Plateau:** dissected **sedimentary plateau** carved by rivers; "canyon lands" area is **>5,000 ft** thick.

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Columbia Plateau (layers of lava)

Snake River Canyon



One of the largest flood basalt formations on Earth created 2.5-3 million years ago.

Hells Canyon of the Snake R. (ID-OR)



Craters of the Moon Nat'l Mon., Idaho

Columbia Plateau Washington State

Walla Walla Section of the Columbia Plateau in southern Washington. Snake River cuts through the farmland.



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Wyoming Basin

Wyoming Basin is nestled behind the Front Range between the Wind River Range and Uinta Mts.
- Considered a western extension of the High Plains.
- South Pass allowed travelers to easily move from the High Plains to the Great Basin.

South Pass and Wyoming Basin

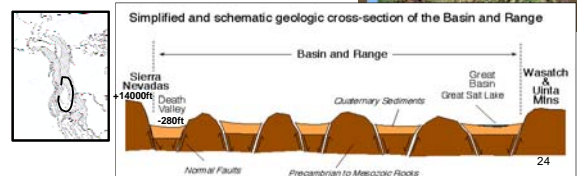
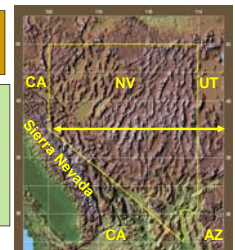


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Basin and Range

Made up of over 80 broad, flat basins and 200 linear ridges.

>No drainage outlet to the sea. Streams from surrounding highlands flow into it, but **none leave it**.



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Salt Flats

Lake Bonneville (W Utah) was largest lake of the Ice Age. Today **Great Salt Lake** and numerous **salt flats** in the basin bottoms are its remnants.

Salt flat

Pleistocene lake locations.

Bonneville Salt Flats International Speedway

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Sierra Nevada

N-S trending fault block mountain range of E. California forming the western boundary of Great Basin.

Rises to 14,505 ft at Mt. Whitney, (highest point in lower 48 states).

- Major barrier to movement of people and air masses.
- Few mountain passes cross it.

Mt. Whitney

Switch back road up east face

East face of the Sierra Nevada

Owens Valley (in the rain shadow)

Basin and Range Province

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Donner Pass

Donner Pass is the chief route across the Sierra Nevada now used by I-80.
Connects the Humboldt Valley in Nevada with the Central Valley of California. Subject to winter storms.

Donner Summit
ELEV. 7227 FT

Infamous for the 1846 tragedy when the Donner Wagon Train, following the California Trail across the Sierra, got caught in a blizzard. People resorted to cannibalism to survive.

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Colorado Plateau

Dissected plateau: layers of sediment carved by the Colorado River system.

Canyonlands National Park

Grand Canyon National Park

Bryce Canyon National Park

Monument Valley Navajo Tribal Park

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Population Characteristics

Low headcount. Low density. Young population. Growth in urban areas.

Population Density by county.

Population Change by county.

Population Aged 75 or older by county.

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Mormon Influence

See historical atlas maps pp. 36, 42, 46.

- Innovative farmers**, especially irrigation techniques.
- Strong central organization** (theocracy).
- Tried to create the State of Deseret** (1849). Covered most of Intermontane area.
- Utah Territory** (est'd. 1850)
- Admitted to the Union as the **State of Utah** in 1896.
- Today, area of rapid population growth:** high birth rate; in-migration; missionary outreach for converts.

Utah Territory

State of Deseret

MORMON

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Salt Lake City Utah



"This is the Place" Monument

Salt Lake City metro area

Mormon Temple Tabernacle Square

Salt deposits on the shore of Great Salt Lake

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Gold in the Sierra Nevada

Jan. 24, 1848: **Gold flakes** were discovered in the South Fork of the American R. at **Sutter's Mill**, a lumber camp in the Sierra Nevada. **This set off the California Gold Rush of 1849**. The find encouraged prospecting in the Rocky Mts. in the 1850s ("backwards settlement").



Gold strikes were along the main route from the Great Plains to San Francisco, making it convenient for easterners to get to the area.

Sacramento became the center of the gold mining region and was the region's financial center.

San Francisco grew as a supply point for the gold mining region and was the region's financial center.

Both cities are outside of the Sierra Nevada.

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Mining

- ❖ **Miners were the 2nd largest group to settle the region** (after the Mormons).
 - **Variety of mineral deposits staked in late 1850s; gold was the lure.**
 - **Easily mined** (close to the surface)
 - Numerous towns grew on or near the deposits
 - Today towns serve as tourist attractions.
- **Mining today:**
 - **Gold and silver** still mined, but less important
 - **Copper: most important mineral of the region**, especially in Arizona and Utah
 - **Lead and zinc:** mined in U.S. and Canada.




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Ghost Town

- ❖ A town/settlement that has been abandoned by people. **WHY?**

After the economic activity, as mining or rail depot, that supported the town ceases to exist, there is no reason for anyone to stay.



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Abandoned Mines, Colorado

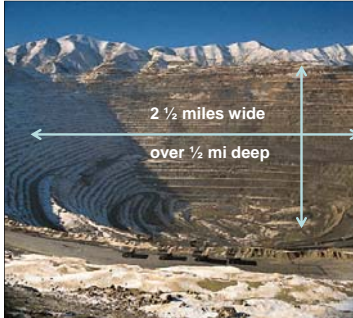
Oldest operations. Small scale. No longer economical. Environmental hazards.

Some are now tourist attractions.



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Open Pit Copper Mine Bingham Canyon, Utah



2 ½ miles wide
over ½ mi deep

Open pit mining is a means of extracting minerals from the earth by digging a bowl-like pit that gets wider and deeper with use.

It is used where the mineral is near the surface and/or if the ground is unsuitable for tunneling.

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Open Pit Mining Landscape

SCALE: Morenci Copper Mine, AZ



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Oil Shale: Newest Operation

Oil shale comes from sedimentary rocks containing **kerogen**, a solid mixture of organic compounds from which from which liquid hydrocarbons called "**shale oil**" can be produced after heating. **Shale oil** is a substitute for conventional crude oil and **not a petroleum product**.



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Southwestern Coal Mining

Mining coal on the Navajo Reservation in Arizona.

Controversial because of landscape destruction, air and water pollution. Coal is used to generate electricity on site.

Coal seams are 30 feet below the surface at the Navajo Mine.



Coal Mine Canyon near Tuba City, NE Arizona



Public Control of Land

❖ **Most land in the region is under government control.** Largely unsuitable for agriculture but has grazing/lumbering potential.

❖ **Gov't. management programs**

- ✓ U.S. national park system (NPS)
- ✓ U.S. national forests (USFS)
- ✓ U.S. Bureau of Land Management (BLM)
- ✓ Canadian provincial lands

➤ **Criticism of Public Control**

- Hindrance to planning (free enterprise)
- Hindrance to private resource development
- Hindrance to commercial grazing
- Plight of Indian reservations in the southern part of the region



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Lumbering and Ranching

❖ **Transhumance:** Seasonal movement of animals; crossing/using government land is esp. important to sheep ranchers who need grazing areas (regrowth period after browsing)

❖ **Use of Federal Lands**

- **Grazing and lumbering is allowed on US Forest Service (USFS) and Bureau of Land Management (BLM) land.**
- Productivity of government land tends to be less than private land because of inferior conditions, however, much more land is available for use (getter volume).
- On going controversy regarding the low cost leasing of these lands to for-profit corporations.

➤ **Rocky Mt. area:** Wood from government land is important

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Military Landscape

The emptiness and isolation of the area is an asset for:

- ✓ Military bases/bomb-proof command centers
- ✓ Training centers
- ✓ Secret staging areas
- ✓ Practice bombing ranges
- ✓ Weapons testing/proving grounds
- ✓ Military development and manufacturing
- ✓ Nuclear waste storage



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WATER

Most important resource of the U.S. portion of the Empty Interior.

- Coveted and diverted by the dry areas outside of the region, especially Southern California.
- Now increasingly needed and retained by those inside the region, as Phoenix and Las Vegas metro areas.
- Important for the production of electricity.
- Supplies affected by western drought, snowfall and shifting global precipitation patterns.

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Irrigation and Agriculture

Arid conditions do not support agriculture without irrigation.

➤ **Water from the Colorado and Columbia-Snake river systems is essential to the region.**

- Diversion of rivers long practiced.
- **Doctrine of Prior Appropriation:** "first come, first served" as opposed to eastern US view of equal sharing
- **Reclamation Act of 1902:** support for water works west of 100°W longitude.



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NEXT

DESERT

SOUTHWEST

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