

## 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 and PLATEAUS
- 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


# The Great Plains and Prairies

### Part 1

Prof. Anthony Grande

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American Landscape: Ch. 9  
also review Ch. 2 and 7.  
Historical Atlas: Sect. 6



## Great Plains and Prairies

**Situated between the Interior Lowlands/Gulf Coastal Plain and the Rocky Mts., and from Canada's taiga and the Mexican border.**

- Layers of sedimentary rock are **very thick** and slope toward the Mississippi River.
  - Some layers are **porous** and contain **great water supplies**.
- **Region gently increases in elevation E to W** (c.1500-6000 ft.)
  - The High Plains abut the foothills of the Rocky Mountains.



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## Great Plains and Prairies

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

**Boring landscape**

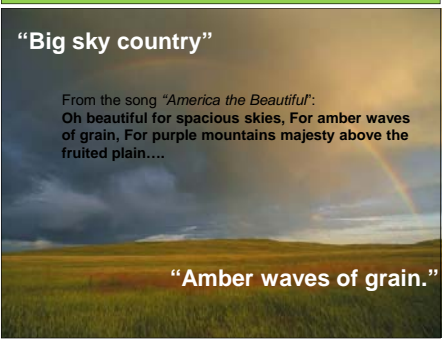
- Grasslands
- Buffalo
- Straight roads
- Cowboys & Indians
- Wagon trains
- Severe weather
- Grain fields
- Cattle ranches



## The Great Plains

"Big sky country"

From the song "America the Beautiful":  
Oh beautiful for spacious skies, For amber waves of grain,  
For purple mountains majesty above the fruited plain....



"Amber waves of grain."

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## OVERVIEW

American Landscape: Ch. 9  
also review Ch. 2 and 7.  
Historical Atlas: Sect. 6


- ✓ **Flat to rolling landscape**; minimal topographic relief.
- ✓ **Experiences extreme and violent weather.**
- ✓ **Has a rainwater deficiency**; dependent on groundwater.
- ✓ **Historically, an area of many negative misconceptions**, esp. as a place to live and farm, and also about the Indians.
- ✓ **Good food source**: hunting to grazing to farming.
- ✓ **Characterized by a rectangular land division system.**
- ✓ **East-west transportation routes pass through it.**
- ✓ **Has been affected by farm management decisions.**
- ✓ **Not culturally uniform**: Native American heritage; French and Spanish exploration; Louisiana Purchase; European ethnic enclaves.

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## Plains vs. Prairies: What's the difference?

- ❖ **Plains** is a **topographic term** signifying expansive and relatively flat land.
- ❖ **Prairie** is a **vegetation unit** that refers to a variety of grasses.


*Most of the Great Plains was originally covered by prairie.*



*"Prairie covered plains."*

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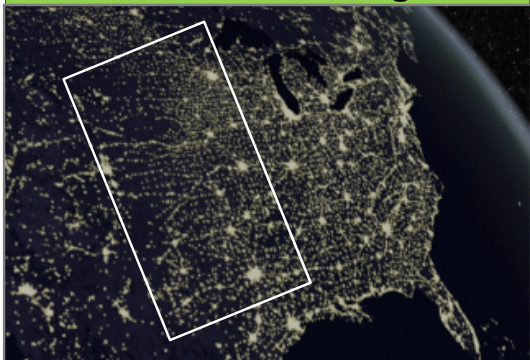
## Great Plains at Night



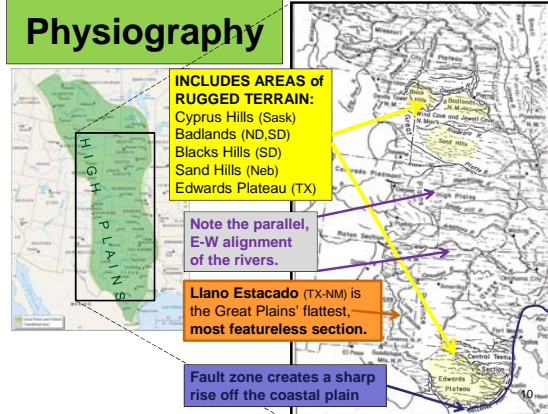
What do you notice about the pattern and density of the dots within the box?

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## Great Plains at Night



## Physiography



**INCLUDES AREAS of RUGGED TERRAIN:**  
 Cyprus Hills (Sask)  
 Badlands (ND,SD)  
 Black Hills (SD)  
 Sand Hills (Neb)  
 Edwards Plateau (TX)

Note the parallel, E-W alignment of the rivers.

Llano Estacado (TX-NM) is the Great Plains' flattest, most featureless section.

Fault zone creates a sharp rise of the coastal plain

## Unusual Terrain Features

**Badlands** – erosional landscape of deep gullies carved into soft rock by running water; barren or sparsely vegetated.  
 Badlands National Park, South Dakota, preserves this landscape.

**Braided stream** – drainage pattern created by slow-moving water carrying a large sediment load; characterized by many shallow, shifting channels. Rivers meander and are subject to flooding.  
 The Platte River of Nebraska is a much used example.



Badlands topography



Braided stream




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## Unusual Terrain Features


**Sand hill** – grass-covered, stabilized sand dune. Sand Hills region of Nebraska is the most famous in the U.S.

**Butte** – feature created from the erosion of sedimentary material; used as landmarks. (A butte is the remnant of a mesa.)


**Geologic dome** – area of metamorphic rock uplifted by deep volcanism; surrounded by sedimentary rock cuestas (ridges).  
 The Black Hills (SDWY) is a large eroded dome.  
 Mt. Rushmore Nat'l Memorial and Devils Tower NM (a volcanic plug) are located here.




Sand Hills region, NE



Wagon Mound is in New Mexico.




Devils Tower NMon





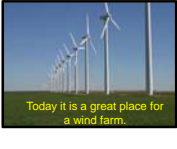
Mt. Rushmore National Memorial, SD

## Unusual Terrain Features


**Llano Estacado or Staked Plain** was named because ranchers had to plant markers (stakes) to find their way around: **NO natural landmarks.**  
**The horizon looks the same in all directions so it is easy to get lost.**



Extremely flat






Today it is a great place for a wind farm.





## Escarpments


The **edge** of the Southern Plains in Texas is marked by **escarpments** (Balcones/Llano Estacado; see map). Areas where springs (water) flowed from the bedrock, became sites of settlement.




ESCARPMENT

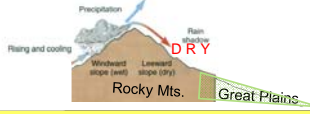
Other areas have escarpments marking local geologic boundaries/fault zones. These areas of exposed rock provided local residents with stone building material.



Limestone quarry in Kansas that provided the stone to build a court house.



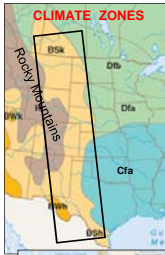
## Climate



Rising and cooling  
Windward slope (wet)  
Rocky Mts.  
Leeward slope (dry)  
Great Plains  
Run Higher  
DRY

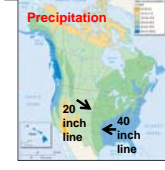
**In the rain shadow of the Rockies.**

- ❖ **Semi-arid climate** with cold winters and snow (BSk) in the north and dry subtropical conditions in the south (BSh).
  - ✓ Precipitation **decreases** from east to west.
  - ✓ Precipitation occurs along the frontal zones of air masses.



CLIMATE ZONES

BSk Dfb Dfb Dfb Dfb Cfa




Precipitation

20 inch line 40 inch line


## Vegetation

**Grasses predominate.**

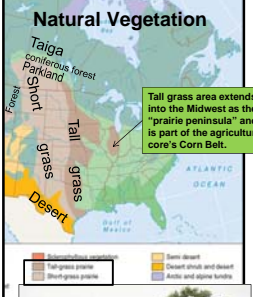
- Taller and denser in the east where it is wetter.
- Shorter and sparser in the drier west.



Tall grass prairie




Short grass prairie



Natural Vegetation

Taiga  
coniferous forest  
Parkland  
Forest  
Tall grass  
Short grass  
Desert

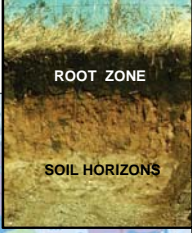
Tall grass area extends into the Midwest as the "prairie peninsula" and is part of the agricultural core's Corn Belt.




Trees are found along rivers and where water is near the surface.

## Soils

- ❖ **Chief soil type is Mollisols.** It forms under grasses, not forests
- **Grasses have intricate, dense root systems that adds decayed organic matter to the soil.**
  - Characterized by a highly organic surface layer up to 5 feet thick.
  - Excellent for grain production.
  - But it is very difficult to plow.
    - ✓ Can be cut into blocks
    - ✓ Was used as a construction material (sod houses).







ROOT ZONE  
SOIL HORIZONS



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## Pioneer Sod House

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## Air Masses

The Great Plains are in the zone of conflict between major air masses.

Greatest difference in the temperature of the air masses is during spring and autumn.

Thunderstorms, blizzards, tornadoes and windy conditions are common.

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## Area of Extreme Weather

- ❖ **Great Seasonal Swings of Temperature.**  
Range is from below 0°F to over 100°F
- ❖ **Blizzards**
  - Heavy snow + high wind + intense cold
  - Can last for several days
  - Can cause "whiteouts" that limit visibility
- ❖ **Windy Environment**
  - Increases rate of evapotranspiration (desiccation)
  - Has the highest average wind speeds in North America.
- ❖ **Drought Cycles.**
  - Undependable precipitation.
  - Varies from 80%-120% of normal.

Homesteader's lament: In God we trusted. In Kansas we busted.

## Dust Bowl

- ❖ **Dust Bowl:** an area on the southern High Plains that experienced major "dust storms" during the severe drought of the 1930's.
- **Dust storm:** when strong winds blow fine particles high into the air and reduce local visibility. Its forward edge is usually marked by a "wall of dust."

It was immortalized by John Steinbeck's novel, "The Grapes of Wrath," which told the story of poor Oklahoma farmers during the Great Depression.

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## 1930s Dust Bowl

**Caused by a combination of natural and human deeds:**

- ✓ Unaware of precipitation cycles; fooled by a wet period in 1910s.
- ✓ Used inappropriate deep-plowing techniques.
- ✓ The false belief that "rain follows the plow."
- ✓ Several years of drought that contributed to a drying of the soil.
- ✓ Steady period of high winds that picked up the dried soil and carried it away.

## More Extreme Weather

- ❖ **Chinook: a regional wind called the "snow melter"**
  - Occurs in winter as unseasonably warm dry air descends from Rocky Mts.
  - Gives relief from bitter cold and snow.
  - Can cause flooding with rapid snow melt.
- ❖ **Thunderstorms with hail**
  - Collision of contrasting air masses
  - Creates intense local weather conditions
- ❖ **Tornadoes**
  - Result of extreme thunderstorm conditions
  - Extremely destructive within small areas

## Tornado Alley

"Tornado Alley" A vernacular region that refers to parts of the U.S. where tornadoes are most frequent.

Area where air masses with extreme, contrasting conditions come together.

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### Tornado Formation

The diagram illustrates the process of tornado formation in three stages. Stage 1 shows high-level winds (purple) and surface winds (red) spiraling inward. Stage 2 shows a developing storm cloud with a rotating column of air. Stage 3 shows a fully formed tornado extending from the cloud to the ground. A map of the United States highlights the Tornado Alley region.

<http://news.bbc.co.uk/2/hi/science/nature/7533941.stm>

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### Tornadoes on the Ground

A collage of four photographs showing tornadoes on the ground. The top-left photo shows a large, dark, swirling funnel cloud. The top-right photo shows a smaller, more distant view of a tornado. The bottom-left photo shows a person standing next to a road, looking at a large, dark, swirling funnel cloud. The bottom-right photo shows a large, dark, swirling funnel cloud.

<http://www.youtube.com/watch?v=dwMvIn7v8V8&feature=related>  
<http://www.youtube.com/watch?v=EfdK6H9d6J0>  
<https://www.youtube.com/watch?v=xPTXqzMVfUA>

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### Landscapes of Destruction: Aftermath of a Tornado

Four photographs showing the aftermath of tornadoes. The top-left photo shows a destroyed town in Texas. The top-right photo shows a destroyed building in Kansas. The bottom-left photo shows a destroyed city in Oklahoma City. The bottom-right photo shows a destroyed city in Joplin, Missouri.

Texas Kansas Oklahoma City Joplin, Missouri

### NEXT

## The Great Plains and Prairies Part 2

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