SLIDE 1

Chapter 15
Physical Geography of Russia and the Republics: A Land of Extremes

From the frozen Arctic tundra of Siberia to the deserts of Kazakhstan, size and climate help define Russia and its former republics.

SLIDE 2

Section 1: Landforms and Resources
Section 2: Climate and Vegetation
Section 3: Human-Environment Interaction

SLIDE 3

Section 1: Landforms and Resources

- Flat plains stretch across the western and central areas of the region. In the south and east, the terrain is more mountainous.
- Many resources in Russia and the Republics are in hard-to-reach regions with brutal climates.

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Northern Landforms

A Tremendous Expanse of Territory
- Russia and the Republics cover 1/6 of earth's land surface
  - 8 1/2 million square miles
  - three times the land area of U.S.
  - region crosses 11 time zones
- Northern 2/3 of region divided into four areas

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Continued **Northern Landforms**

Northern European Plain
- Northern European Plain an extensive lowland area
- Stretches over 1,000 miles from the western border to the Urals
- **chernozem**—world's most fertile soil, abundant in area
- 75% of region's 290 million people live on the Plain
  - cities: Moscow, St. Petersburg, Kiev

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Continued **Northern Landforms**

West Siberian Plain
- **Ural Mountains**—separate Northern European, West Siberian Plains
  - some see them as dividing line between Europe and Asia
  - some consider Europe and Asia as single continent—**Eurasia**
- Plain lies between Urals and Yenisey River (west to east)
  - between Arctic Ocean and Atay Mountains (north to south)
- Plain tilts northward, so rivers flow to Arctic Ocean

IMAGE: Ural Mountains

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Continued **Northern Landforms**

Central Siberian Plateau and Russian Far East
- Uplands and mountains are dominant landforms
- Central Siberian Plateau between Yenisey, Lena rivers
  - high plateaus that average 1,000 to 2,000 feet
- East of Lena River is Russian Far East and system of volcanic ranges
  - Kamchatka Peninsula has 120 volcanoes, 20 still active
- Sakhalin, Kuril islands at south of peninsula
  - taken from Japan by USSR after WWII; still claimed by Japan

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Southern Landforms

The Caucasus and Other Mountains
- Caucasus Mountains lie between Black and Caspian seas
  - border between Russia, **Transcaucasia**—Armenia, Azerbaijan, Georgia
- **Central Asia** region includes “stan” republics
  - Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
- Southern border a massive wall of mountains, including the Tian Shan

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Continued **Southern Landforms**

The Turan Plain
- Between Caspian Sea and the mountains, uplands of Central Asia

- Very dry, despite Syr Darya and Amu Darya rivers
- Two large deserts, Kara Kum and Kyzyl Kum

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Rivers and Lakes

Drainage Basins and Rivers
- Main drainage basins (areas drained by major river, tributaries)
  - Arctic and Pacific oceans; Caspian, Baltic, Black, and Aral seas
- Arctic basin is largest
  - Ob, Yenisey, and Lena rivers drain over 3 million square miles
- Volga River, longest in Europe, drains Caspian Sea basin
  - flows 2,300 miles south from Moscow
  - carries 60% of Russia's river traffic

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Continued **Rivers and Lakes**

Lakes
- Caspian Sea is 750-mile-long (north to south) saltwater lake
  - largest inland sea in world
- Aral Sea, east of Caspian, is also saltwater
  - has lost 80% of water volume since 1960 due to irrigation

Lake Baikal
- Deepest in world: a mile from surface to bottom at deepest point
  - 400 miles long, holds 20% of world's fresh water
  - very clean lake, home to 1,200 unique plant, animal species

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Regional Resources

Abundant Resources
- Huge reserves of coal, iron ore, other metals
- Region also a leading producer of oil and natural gas
  - petroleum deposits around Caspian Sea among world's largest
- Forests have 1/5 of world's timber
- Large producer of hydroelectric power due to rivers

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Continued **Regional Resources**

Resource Management
- Hard to get at, move resources due to climates, terrain, distances
  - many resources are in **Siberia**—frigid, arctic, Russian area of Asia
- Mining, oil and gas production cause grave environmental damage
- Hydroelectric plants damage animal and plant habitats through:
  - damming
  - discharge of unusually hot water (thermal pollution)
- Leaders must balance economic needs, environmental responsibilities

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Section 2: Climate and Vegetation

- Much of Russia and the Republics lie in subarctic and tundra climate zones.
- In the region's southern areas, semiarid and desert climates feature warmer winters and hot summers.

SLIDE 15
Section 2: Climate and Vegetation

A Climate of Extremes

Major Climate Regions
- Humid continental and subarctic climates dominate region
- **Continentality**—effect the region's enormous size has on its climates
- Distance from sea decreases precipitation
  - moisture from Atlantic Ocean is lost further inland
- Distance from sea also creates extreme temperatures
  - average Siberian temperatures are usually below 50 degrees F
  - Siberian temperatures can drop below –90 degrees F

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Continued **A Climate of Extremes**

Major Climate Regions
- Cold weather has impact on daily life
  - Siberians use frozen lakes and rivers as roads for part of year
- Region has layer of permafrost that can reach depths of 1,500 feet
- Warmer, semiarid and desert climates in Central Asia
  - southeast mountain wall blocks moist Indian, Pacific ocean air
- Moist Mediterranean air creates subtropical climate in Transcaucasia
  - region's health resorts were once tourist destinations

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Vegetation Regions

Four Major Regions
- The 4 major vegetation regions run east to west in wide strips

Tundra
- Mostly in Arctic climate zone; only specific vegetation can survive
  - mosses, lichen, small herbs, low shrubs

Forest
- South of tundra:
  - **taiga**—largest forest on earth, mostly coniferous
  - sable, fox, ermine, elk, bear, wolves
  - deciduous trees dominate lower latitudes

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Continued **Vegetation Regions**

Steppe
- Temperate grassland from southern Ukraine to Altay Mountains
  - highly fertile chernozem soil
  - region is major source of grain for Russia and the Republics

Desert
- Wide plains in west and central areas of Central Asia
- Two main deserts together cover 230,000 square miles
  - Kara Kum (Turkmenistan)
  - Kyzyl Kum (Uzbekistan)

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Section 3: Human-Environment Interaction

- The region's harsh climate has been both an obstacle and an advantage to its inhabitants.
- Attempts to overcome the region's geographic limits have sometimes had negative consequences.

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Section 3: Human-Environment Interaction

The Shrinking Aral Sea

A Disappearing Lake

- Aral Sea gets water from Amu Darya and Syr Darya rivers
- In ’50s, rivers are drawn on to irrigate Central Asian cotton fields
  - flow from rivers becomes a trickle, sea begins to evaporate

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Continued **The Shrinking Aral Sea**

The Effects of Agriculture

- Pesticides and fertilizers for cotton are picked up by runoff
  - **runoff**—rainfall not absorbed by soil, runs into streams and rivers
  - chemicals carried into Aral kill all 24 native species of fish
- Retreating sea waters expose fertilizers, pesticides, salt
  - windstorms blow them onto nearby populations
- Substances increase diseases: throat cancer, typhoid, hepatitis
- Central Asia child mortality rates are among highest in world

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Continued **The Shrinking Aral Sea**

Saving the Aral

- To maintain present lake level, 9 of 18 million farm acres have to go
  - would cause great hardship for farmers
  - many argue only such drastic measures can save the Aral

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The Russian Winter

Coping in Siberia

- 32 million Siberians live with the earth’s most variable temperatures
  - city of Verkhoyansk can be -90° F in winter, 94° F in summer
  - most of the time it is cold
- Warm weather melts ice, forms pools, swamps
  - become breeding grounds for mosquitoes, black flies
- Buildings on permafrost sink and fall when their heat thaws ground
  - buildings must be set off ground on concrete pillars

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Continued **The Russian Winter**

War and "General Winter"
- Harsh climate has helped Russia fight off invaders
- In early 1800s, French leader Napoleon Bonaparte conquers Europe
- Bonaparte invades Russia from Poland in 1812
  - arrives in Moscow in September, as winter begins
  - Muscovites burn the city leaving no shelter
  - Napoleon retreats; cold helps doom 90% of his 100,000 men

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Crossing the "Wild East"

The Trans-Siberian Railroad
- In late 1800s, Siberia is like U.S. "Wild West"
  - travel is dangerous, slow
- Emperor orders 5,700-mile **Trans-Siberian Railroad** built
  - links Moscow to Pacific port of Vladivostok

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Continued **Crossing the "Wild East"**

An Enormous Project
- From 1891 to 1903, 70,000 workers move 77 million cubic feet of earth
  - clear 100,000 acres of forest; bridge several major rivers

Resource Wealth in Siberia
- Railroad helps populate area so resources can yield profit
  - in first 10 years, 5 million people use railway to settle Siberia
  - begin mining coal, iron ore