REGIONAL GEOGRAPHY OF THE WORLD 18BGE53C

Unit – 2 NORTH AMERICA

PHYSIOGRAPHY:

North America, third largest of the world's continents, lying for the most part between the Arctic Circle and the Tropic of Cancer. It extends for more than 5,000 miles (8,000 km) to within 500 miles (800 km) of both the North Pole and the Equator and has an east-west extent of 5,000 miles. It covers an area of 9,355,000 square miles (24,230,000 square km).

North America is bounded on the north by the Arctic Ocean, on the east by the North Atlantic Ocean, on the south by the Caribbean Sea, and on the west by the North Pacific Ocean. North America's only land connection is to South America at the narrow Isthmus of Panama.

The name America is derived from that of the Italian merchant and navigator Amerigo Vespucci, one of the earliest European explorers to visit the New World.

North America contains some of the oldest rocks on Earth. Its geologic structure is built around a stable platform of Precambrian rock called the Canadian (Laurentian) Shield. To the southeast of the shield rose the ancient Appalachian Mountains; and to the west rose the younger and considerably taller Cordilleras, which occupy nearly one-third of the continent's land area. In between these two mountain belts are the generally flat regions of the Great Plains in the west and the Central Lowlands in the east.

Land:

Relief - The central shield:

The central shield, named the Canadian or Laurentian Shield by geologists, consists of a low plateau (averaging about 1,400 feet [400 metres] in elevation) that is tilted at its edges and is most depressed at Hudson Bay, its centre. It has a rough surface of old, worn mountains and domes that rise above flat, geologically ancient basins.

The marginal mountains:

The Appalachians:

Erosion also profoundly altered the marginal mountains. The Appalachians have been planed down to such an extent that their crest lines are smooth-topped for hundreds of miles. In Canada the highest level lies at about 4,000 feet (1,200 metres), in the flattops of the Shickshocks (French: Chic-Chocs); another level exists at 2,000 feet (600 metres) on Mount Carleton; and lower ones lie at roughly 1,100 feet (300 metres) and 600 feet (180 metres) in the Acadian ranges.

The Cordilleras:

Taking up about one-third of North America, the Cordilleras completely dominate Alaska and Central America and swell out widely in the United States as the Rocky Mountains.

In Canada the Cordilleras consist of six well-marked zones: (1) the 10,000- to 12,000-foot- (3,000- to 3,700-metre-) high Rocky Mountains, continuing north into the Brooks Range of Alaska, (2) the Rocky Mountain Trench, a profound fault feature forming the headwaters of the Columbia, Fraser, Peace, and Yukon rivers, (3) the interior uplands and old fold mountains from the Selkirk and Okanogan ranges in the south to the Cassiar Mountains and the Yukon Plateau in the north, mostly lying at elevations of about 2,400 feet (700 metres) but with ridges above 8,000 feet (2,400 metres), (4) the Coast Mountains, extending north into the Alaska Range and including lofty volcanoes in the north, (5) the Inside Passage from Puget Sound to Alaska, which is possibly a downfaulted zone flooded by the sea, and (6) a structurally complex outer island arc, running from Vancouver Island to the Aleutian Islands.

The lowlands:

Irregular ridges of coarse morainic deposits mark the outer limits of the advance of the Cordilleran ice sheets, which swept down preexisting river valleys in the Rockies. Broad, low moraines also mark the southern limit of the larger, thicker continental sheets, which advanced south out of Canada.

DRAINAGE:

Drainage conditions and water supply are affected markedly by climate, though they also reflect topography. North America has one of the longest rivers in the world (the Mississippi) and also a drainage system with one of the greatest water capacities (the Great Lakes–St. Lawrence system). It is a continent of immense rivers—largely because of their vast drainage area in the long and broad plains between the central shield and the marginal mountains.

Lakes:

Lakes abound in North America. Most of them are products of glaciation, which has had a vast effect on the continental drainage pattern—notably by widening the passes through the northern Appalachians and the Cordilleras and by forming big lakes in ice-deepened basins. The Great Lakes proper have a fascinating history, as Lakes Superior and Huron were vast synclinal depressions even in Precambrian times. In place of the present eastern lower Great Lakes (Erie and Ontario), a scarp-and-vale topography existed, with the high front of the Niagara limestone scarp separating vales of shale to the west and east.

Rivers:

The river regimes of North America exhibit great variety. Northward-flowing rivers—such as the Yukon, Mackenzie, Red River of the North, and Nelson and the rivers of eastern Canada—freeze in winter. Because their upper courses then thaw before the lower sections are free of ice, their lower (northern) reaches frequently flood, especially if the thaw is late enough to coincide with early summer rains. The St. Lawrence runs high in spring and early summer, because any winter precipitation in its drainage basin falls on a frozen surface and serves to heighten runoff during the spring thaw.

The Mississippi system also is frequently swollen in spring as melting snows in the upper parts of the drainage basin are added to runoff from spring rains in the southern Great Plains and southeastern states; flooding can then become a major hazard. River water is kept high by the rains that tropical gulf air and local convection storms bring until midsummer. A marked falloff then occurs, giving way to full flow in late autumn and winter as polar continental air reactivates mid-continental storm tracks. Most other eastern rivers have two periods of high water, occurring in early summer and late winter.

CLIMATE:

The enormous width of the continent in the higher latitudes has led to a great extension of Arctic and cool temperate climates, while the tapering south has greatly reduced the land area under tropical climates. Most storms are driven from west to east by a strong mid-continental airflow called the jet stream, and these storms most often converge on the New England region. Thus, the Cordilleras of Canada and the United States have climatically wet, windward slopes facing the Pacific and dry, leeward slopes facing the interior.

Temperature:

While the greater part of North America falls within the temperate zone—a fact that made it attractive to European settlers—large cool-to-cold areas lie in the north and extend as far south as the Ozark Mountains in winter. The continent's northerly position means that Greenland, the Canadian Shield, the Mackenzie Lowlands, and the northern part of the Cordilleras have unusually long and cold winters. Much of this land has permanently frozen subsoil (permafrost) and is under snow and ice most of the year. The frequently frozen seas interlacing the Canadian Arctic Archipelago, together with innumerable northern lakes, allow for an enormous chilling effect on the air above, and the temperatures for these huge regions are 6 to 8 °F (3 to 4 °C) cooler than the average for their latitude.

Precipitation:

Most of the continent is humid and provides an adequate water supply for settlement and development. From mid-California north, the windward sides of mountains along the Pacific coast are bathed with rain- or snow-laden westerlies, giving from 40 to 200 inches (1,000 to 5,000 mm) of precipitation per year. Westerlies again reassert themselves east of the Rockies—especially east of the Missouri River and Red River of the North—bringing moderately wet (20 inches [500 mm]) to wet (45 inches [1,100 mm]) conditions in the central and eastern regions.

Air masses:

The continent's air masses reflect different conditions of temperature and humidity; they include northern and southern components, subdivided into continental (dry) and maritime (moist) types.

In the north are found the Arctic air mass, over Greenland and the Canadian Arctic Archipelago; the polar continental, over northern central Canada; the maritime polar Pacific, over the Gulf of Alaska and the northern Pacific shores; and the maritime polar Atlantic, off the Atlantic provinces of Canada and New England.

Storm tracks:

Where cyclones (low-pressure cells) develop persistently along the advancing air-mass edges, strong storm tracks occur. Pacific storm tracks thread the Strait of Georgia, Puget Sound, and the Inside Passage to Alaska. In summer they shift north of Prince Rupert; in the depth of winter they migrate southward to San Francisco. Moving up the Columbia and Fraser river valleys, these storms weaken as they pass through the Cordilleras, only to strengthen again on the lee side as they join with a stream of Pacific air that overtops the mountains.

Climatic regions:

Differing continental climatic regions reflect the considerable amount of Arctic land, the great spread of temperate conditions, and the small but significant tropical area; dry climates also stand out in strong contrast to the prevailingly humid ones.

The Arctic zone:

Including the northern parts of the Canadian Shield and Alaska, the Canadian Arctic Archipelago, and Greenland, the Arctic zone is dominated by Arctic and polar continental air masses and is perennially cold or cool. Temperatures below 0 °F (−18 °C) last 5 to 7 months, and subfreezing temperatures can persist for 8 to 10 months. Only between June and September do temperatures frequently rise above 32 °F (0 °C).

The cool temperate zone:

The cool temperate zone extends from Newfoundland to Alaska and from Hudson Bay to the Ohio River. It is dominated by the polar continental air mass, especially during the long, cold winters. After the period of “Indian summer” that continues into October, temperatures fall quickly and do not rise substantially until April or early May. In January and February they drop to below 32 °F (0 °C) in the Ohio River valley and below 0 °F (−18 °C) north of the Great Lakes, with minimum temperatures as low as −20 to −80 °F (−29 to −62 °C).

The warm temperate zone:

On the southeast coasts of the United States, the warm temperate zone extends to the Mississippi River and over the Gulf Coast; the zone is strongly influenced by the warm, moist tropical air mass that originates over the Gulf of Mexico. The long frost-free season exceeds 200 days. Tropical air spreads north in February and dominates the region until November, when polar continental air occasionally invades. Winters are mild, with January means of 40 to 54 °F (4 to 12 °C). July averages are tropical, with highs exceeding 80 °F (28 °C).

The tropical humid climate:

Central America, with its tropical humid climate, has no real winter; even the coldest month averages above 64 °F (18 °C). With summers of 80 to 82 °F (27 to 28 °C), the mean annual temperature range is lower than the usual daily range, a characteristic which is markedly different from most of North America. Rainfall is ample and regular, with 45 to 80 inches (1,100 to 2,000 mm) where the easterly trade winds blow onshore. Lee valleys, however, often are quite dry. Summer hurricanes frequently occur, causing much damage.

Dry climates:

About one-third of North America, including the high Arctic latitudes, has a dry climate. Chief dry areas lie in the American Southwest, where a combination of the mid-latitude high-pressure belt, the tropical continental air mass, and rain shadow effects behind the high Sierra Nevada has led to lack of rainfall. Summer winds blow from the continent outward, discounting the effect of Pacific subtropical air.

SOILS:

Before 1960, climate was the main basis used for categorizing soils, with a division first into humid and arid groups and then into subgroups according to the way in which temperature and moisture acted together to produce different horizons (layers) in the soil. Since then, soil classification has come to depend on the unique characteristics of soils and their horizons. The current system of soil classification, called soil taxonomy, involves hierarchical groupings of soils based on strictly defined types of horizons, temperature, colour, drainage or wetness,

chemistry, and mineralogy. Twelve major categories of soils have been identified, all of which can be found in various parts of North America.

Forest soils:

Forest soils are widespread in North America and typically occur in humid regions.

Spodosols:

The cool temperate climatic zone is characterized by spodosols, which typically form on sandy materials under coniferous or mixed coniferous and deciduous forest. They are easily recognized by a leached, acid, grayish white horizon near the surface and a dark, brown to black subsoil B horizon.

Andisols:

Only since about 1989 have andisols been recognized as a distinct soil category. Andisols are formed in volcanic ash and are found throughout the tectonically active belt of the Cascades and north into Canada. There, layers of ash have accumulated and formed these highly fertile, though easily eroded, black soils.

Alfisols:

Alfisols are found in the warm-summer subregion of the cool temperate zone, primarily in the Laurentian mixed-forest vegetation region. They are characterized by an upper horizon leached of iron and aluminum compounds, humus, and clay. These materials accumulate in the subsoil, where they form a reddish, clayey subsoil. Alfisols are the moderately fertile, grayish brown soils so typical of the glaciated parts of the north-eastern United States.

Ultisols:

Bright red and yellowish red ultisols occur south of the glaciated areas, extending southward from the Ohio valley and Chesapeake Bay to the Gulf Coastal Plain. They correspond to the area of the southeasternmesothermal climate, which has a long growing season and rainfall of up to 60 inches (1,500 mm) per year.

Oxisols:

The tropical climates of southern coastal Mexico and Central America, with constantly high temperatures from the mid-60s to the low 80s °F (about 18 to 28 °C) and perennial rainfall of 80 to 120 inches (2,000 to 3,000 mm), have caused intense weathering. The resulting soils, called oxisols, are deep red in colour, are infertile, and may even harden irreversibly into bricklike laterite after being drained and cultivated.

Grassland, desert, and tundra soils:

Soils in this group cover an extensive area of North America and generally are found in the drier or colder regions of the continent, where trees are not common.

Mollisols:

Marking the transition between humid and arid soils, mollisols are found in the open parklands, the tallgrass prairies of the Great Plains, and the humid prairies of the western Central Lowlands. Unlike the forest soils mentioned above, these soils have formed under grassland vegetation and have been heavily influenced by the closely matted roots in the dense sod of the thick-growing grasses.

Vertisols:

Vertisols form in materials with a high clay content where there are distinct wet and dry seasons; they are distinguished by the large, deep cracks that form in the surface during dry periods as the clays within shrink and dry. These soils are limited in North America to small areas of Mexico and Texas.

Aridisols:

Characterizing the dry climates of the intermontane basins of the United States, most of the Mexican Plateau, and the southwest Pacific Coast, aridisols are found where vegetation is sparse and where, accordingly, little humus has formed at the surface.

Gelisols:

Recognized as a distinct soil order in the late 1990s, gelisols are soils of very cold climates. They contain permafrost within 6.5 feet (2 metres) of the surface. The active (seasonal thaw) layer of

gelisols and the upper part of the permafrost contain materials that show evidence of cryoturbation (the mixing of materials from different horizons, caused by the freezing and thawing of the soil; also known as frost churning) or ice segregation.

Other soils:

Three soil types are distinguished by their relative youth—i.e., their greater affinity to parent minerals than to the vegetation associated with them—and can be found scattered across most vegetational environments.

Entisols:

The very youngest and least-developed soils are entisols. These soils strongly resemble their geologic parent materials, as there has been insufficient time to alter these materials into soils with strongly developed horizons. Disturbed landscapes also have soils classified as entisols, such as the many square miles of land occupied by freeway medians and urban centres in North America.

Inceptions:

Inceptisols are slightly more weathered and developed than are entisols; like entisols, inceptisols are not uniquely associated with any particular climatic regime but are widespread across the continent.

Histosols:

Saturated with water for many months of the year, histosols constitute nothing more than deep accumulations of organic materials. They are especially common beneath the coniferous forests and swamps of the Great Lakes area and in Canada, where geologically recent glaciation has left many areas of standing water or shallow lakes.

NATURAL VEGETATION:

The Pacific coniferous forest:

Offering one of the great spectacles of the continent, the Pacific coniferous forest consists of immense redwoods and firs forming vast cathedral-like groves, where the tall trunks rise hundreds of feet like great pillars to support a canopy of evergreen branches overhead. A long growing season, moderate temperatures, and a heavy, constant supply of moisture have combined to foster the tallest and largest trees found in North America. Redwood and western cedar along the north coast of California give way to Douglas fir and western hemlock from Oregon to British Columbia and Sitka spruce in Alaska. In the south, red-stemmed arbutuses lend a Mediterranean touch; giant-leaved maple, oak, and ash are common in the middle sector; and birch and aspen are the subdominants in the north. This coastal forest is one of the continent's chief sources of construction timber. It also is a major source of pulp and paper and a home for large numbers of red deer and mountain elk and also for black bears, lynx, and beavers.

The boreal forest:

One of the greatest sweeps of forest in the world, the boreal forest (or taiga) extends in a vast and virtually unbroken sheet of green eastward from the Aleutian Islands through Alaska and northern Canada to the island of Newfoundland. The boreal forest is home to an enormous bird population. Year-round residents include species of jay, owl, raven, and woodpecker, while summer migratory birds include such waterfowl as the common loon, mallard duck, and Canada goose and large flocks of warblers and other songbirds.

The Cordilleran forest:

The Cordilleran forest lies between the Pacific coniferous forest and the northern Great Plains and is south of the interior boreal forest. On the west it is made up of cedar and Douglas fir, with Sitka and Engelmann spruce at higher elevations; while, in the east, it has more pine and spruce, with lodgepole pine and white spruce making close, straight-limbed stands. On the intermontane plateaus and ridges, western hemlock and yellow or sugar pine form groves with parkland between. Elevation and aspect dictate tree distribution, with tall and dense fir woods occurring on the wetter faces at lower levels, spruce blanketing the higher slopes, and pine abundant mainly on the drier exposures.

The Laurentian mixed forest:

Lying in the warm-summer region of the cool temperate zone, the Laurentian mixed forest occurs in the Great Lakes–St. Lawrence, the upper Mississippi–Ohio, and the New England lowland regions. It consists mainly of deciduous hardwoods—maple, beech, oak, hickory, elm, ash, and birch—but also has a good deal of coniferous softwood, including pine and the eastern hemlock. White pine and white and red oak once were abundant but have largely been cut for timber.

The Eastern Upland forest:

Also known as the Acadian forest in Canada, the Eastern Upland forest covers much of the central and northern Appalachians and New England; there, polar continental air is pronounced, while elevation modifies the tropical maritime winds. The growing season ranges from 90 to 120 days, and winter cold brings sub-zero temperatures. The forest, therefore, consists of fast-growing evergreen softwood species such as black spruce and balsam fir, along with aspen, alder, birch, and numerous flowering species.

The Eastern mesophyticforest:

Extending from the mid-Atlantic states to northern Florida, the Eastern mesophytic forest is a mixture of hardwoods and softwoods. On the clays of river bottoms and the sands of the coastal plain, great-crowned oaks form a tall, dense forest, mixed with hickory, walnut, and yellow poplar on the lower slopes of rivers and with ash and elm on the higher slopes.

Mangrove thickets:

Ringing southern Florida and the Mexican lowlands facing the Caribbean, mangrove thickets are backed by oak and palms. Ibis fleck the woods with their gleaming white feathers. Water moccasin and other venomous snakes are common in these swamps, as are alligators.

The Western sclerophyllous scrub forest:

In the hills of southern California and throughout much of the American Southwest, the Western sclerophyllous scrub forest occurs. There, the small trees and shrubs must be adapted both to dry, hot summers when the tropical continental air is dominant and to moist, mild winters when polar Pacific air sweeps in off the ocean.

The tropical rainforest:

Tropical rainforests provide a dense covering of all windward slopes in southern Mexico and Central America. The forests consist of such tall, broad-leaved evergreen trees as mahogany, ironwood, and palm, which form a spreading canopy over a lower tier of tree ferns, grape bays, gum trees, rattans, and mangroves laced with lianas and covered with epiphytes. Numerous species of plants are widely scattered in the forest, as community diversity is very high in this environment.

Tropical savannas:

Located in patches in subhumid parts of Central America, tropical savannas usually occur at the intermediate levels of the lee slopes of mountains and on plateaus. They are significant in Guatemala and the Yucatán Peninsula of Mexico.

Temperate grasslands:

The temperate grasslands, or prairies, form a belt between forest and desert, mainly on the Great Plains but also on the mid-slopes of the intermontane basins, above the salty desert flats. At the "break of the plains" on the eastern subhumid margin, invaded by rain-bearing tropical gulf air in spring and early summer, the grasslands consist of a dense growth of tall grasses, such as big and little bluestem and Indian grass, along with many forbs and some small berry bushes, wild roses, and stunted aspen trees.

Deserts:

Desert vegetation is found in intermontane basins and along arid coasts of the western United States and in northern Mexico. Extensive salt flats and mountains with rocky soils make this a harsh environment for all but the most drought-tolerant plants. Frost and snow are not uncommon in the Great Basin Desert of Nevada, Utah, and Wyoming, which is dominated by sagebrush and scattered short grasses.

Tundra:

Across northern Canada and on the many islands in the Arctic Ocean lies a vast marshy plain called the tundra. There the growing season is only 45 to 60 days, and frost is possible year-round. Too cold for trees, this community contains only a few plant species, such as sedge, moss,

lichen, cotton grass, and heath. In sheltered areas willow and alder shrubs and some dwarf birches are found.

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