

Earth's Ecosystems and Biomes



Modeling Biomes

- Biome location dependent upon temperature, precipitation
 - Connected to altitude, latitude, and proximity to other landforms

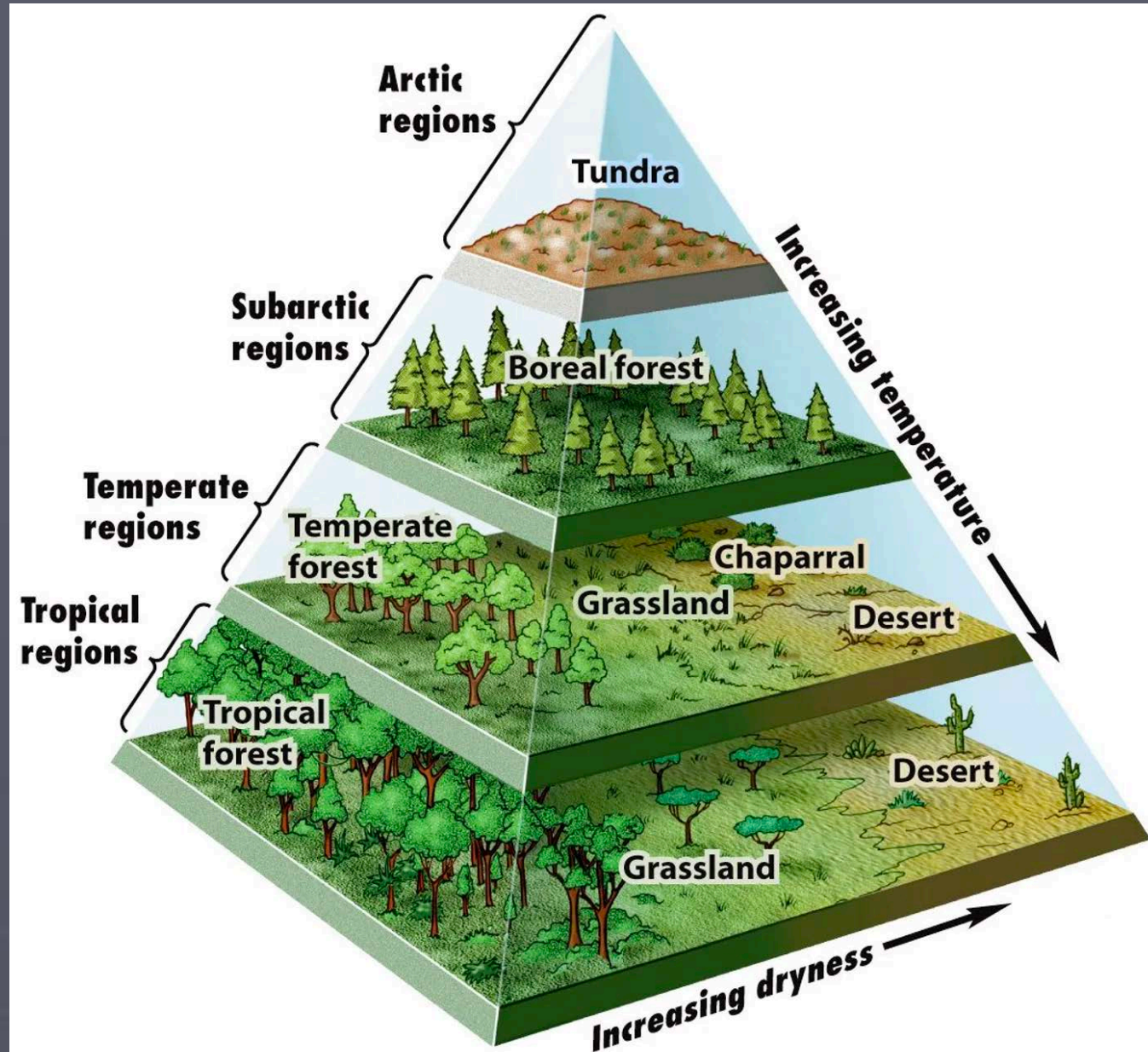


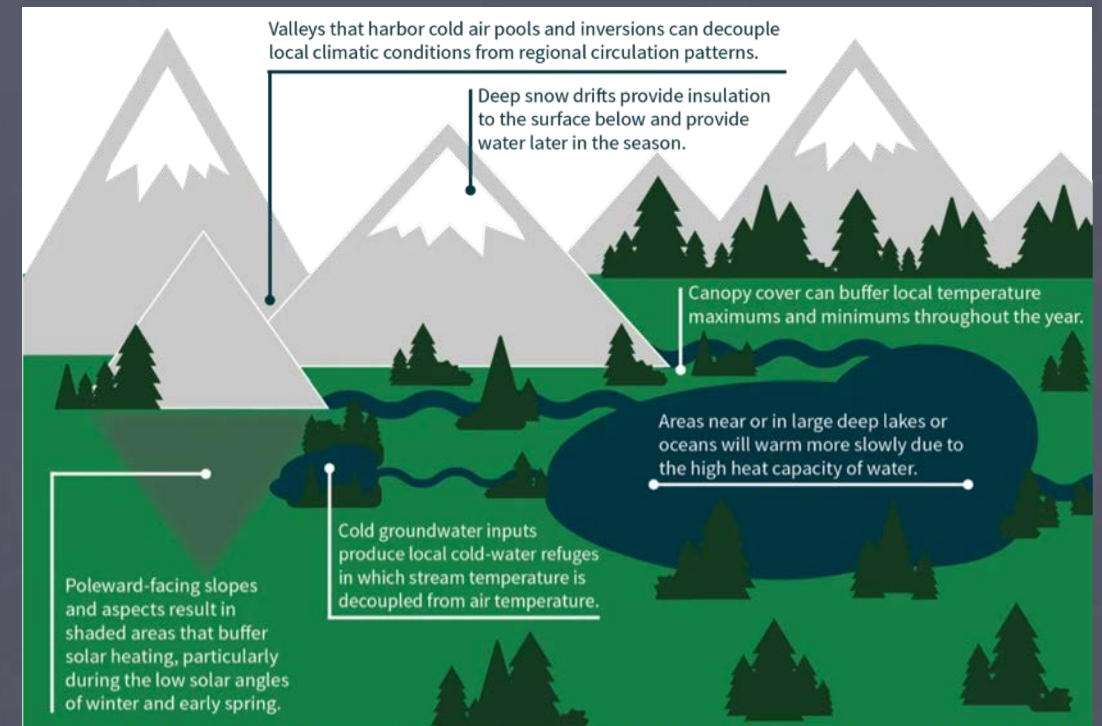
Figure 33-10 Discover Biology 3/e
© 2006 W. W. Norton & Company, Inc.

Biomes and Ecosystems

- **Biome:** A biome is a large, stable, terrestrial ecosystem characterized by specific plant and animal communities.
- **Ecosystem:** A terrestrial ecosystem is a self-sustaining association of land-based plants and animals and their abiotic environment.
 - Key difference is the relationship with environment
- **Ecotone:** Boundary between two different ecosystems

Microclimates

- Microclimates: Changes in climatic conditions due to proximity to other land forms or human activity
 - Can exist year-round, seasonally, or shift depending on time of day

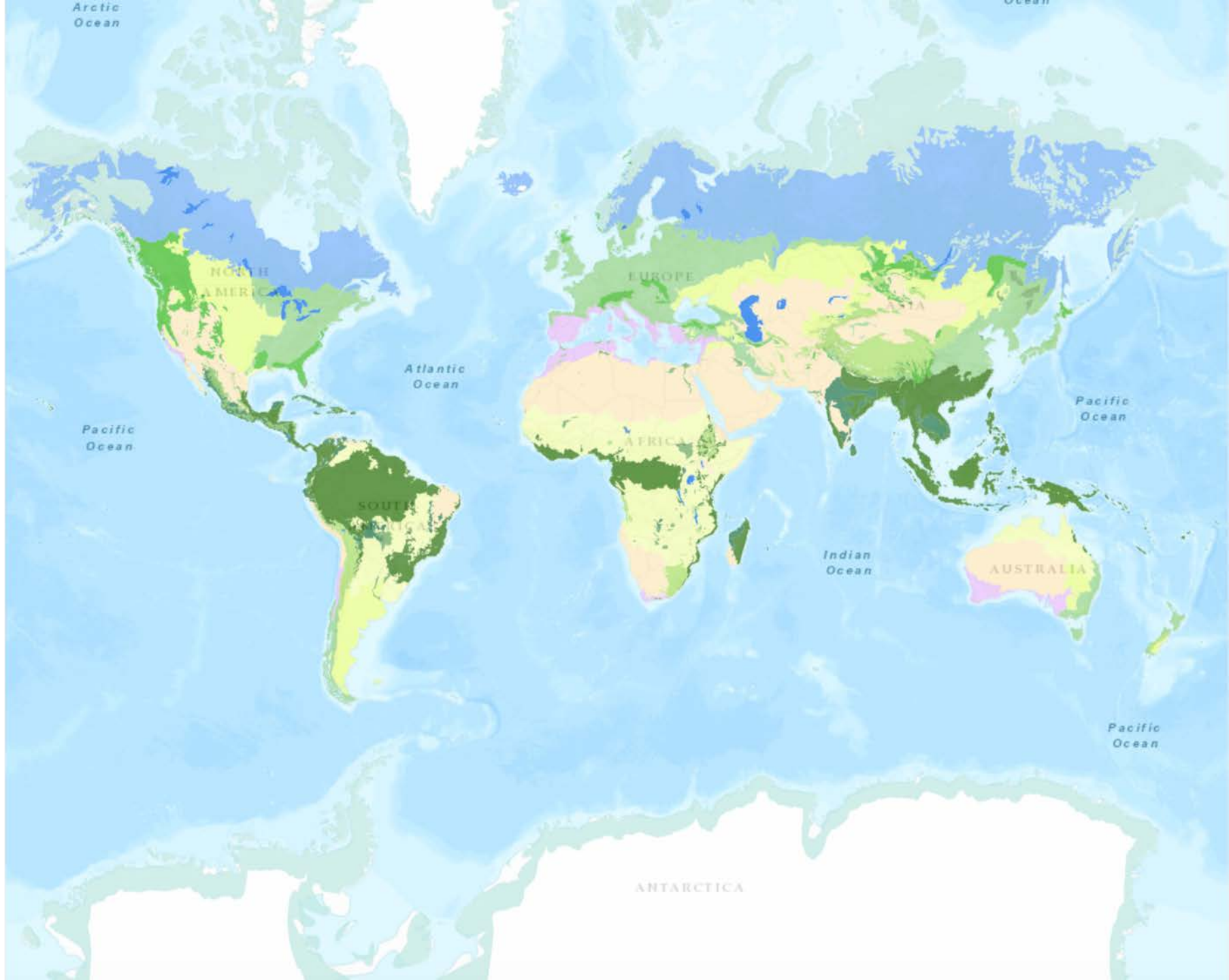


Major Terrestrial Biomes

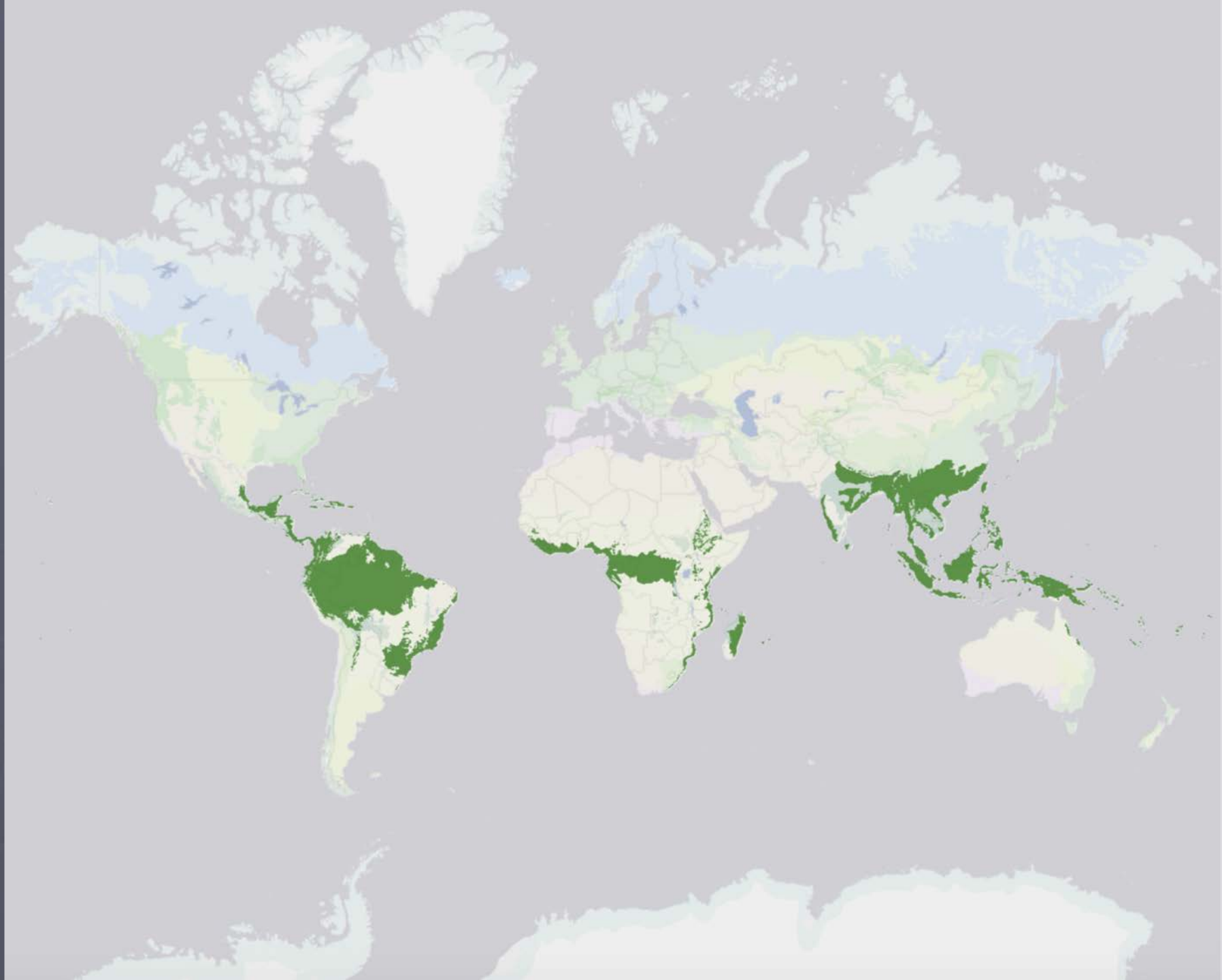
- Equatorial and tropical rain forest
- Tropical seasonal forest and scrub
- Tropical savanna
- Midlatitude broadleaf and mixed forest
- Needleleaf forest and montane forest
- Temperate rain forest
- Mediterranean shrubland
- Midlatitude grasslands
- Deserts
- Arctic and alpine tundra

Global Biomes

-  Boreal Forests/Taiga
-  Deserts
-  Savannas
-  Lake
-  Mangroves
-  Mediterranean Scrub
-  Mountain Grasslands
-  Rock and Ice
-  Temperate Deciduous Forests
-  Temperate Evergreen Forests
-  Temperate Grasslands
-  Tropical Coniferous Forests
-  Tropical Dry Forests
-  Tropical Moist Forests
-  Tundra



Tropical Rain Forest



Tropical Rain Forest

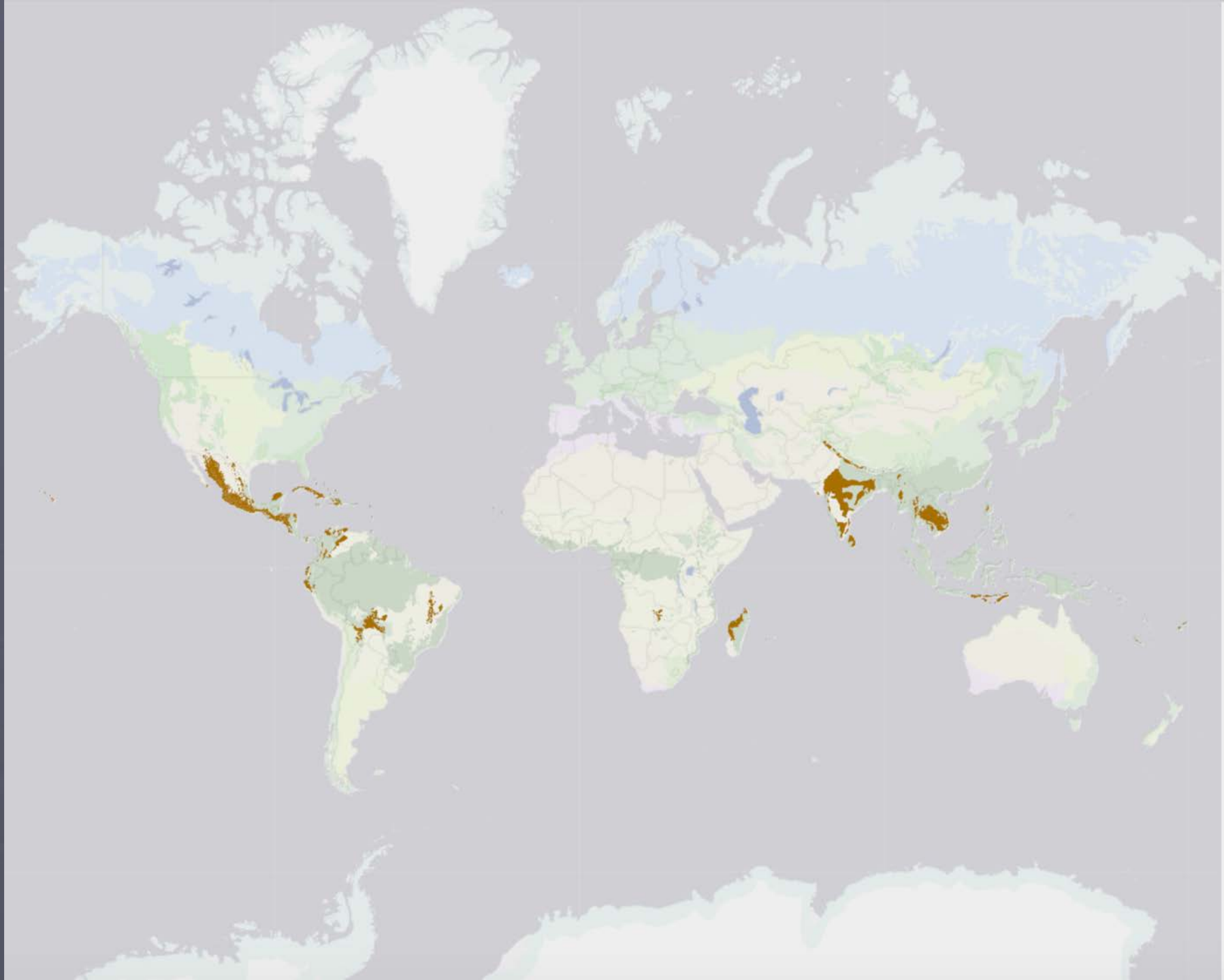
- Located near equator in South America, Africa, and SE Asia
- Near Constant Temps between 65°F and 100°F
 - Avg. more than 100in of rain a year
- Support the most diverse life on earth (50% of all earth's organisms)
- Lungs of the world (produce 40% of oxygen)
- Cover 6% of world



Tropical Rain Forest



Tropical Seasonal Forest and Scrub



Tropical Seasonal Forest and Scrub

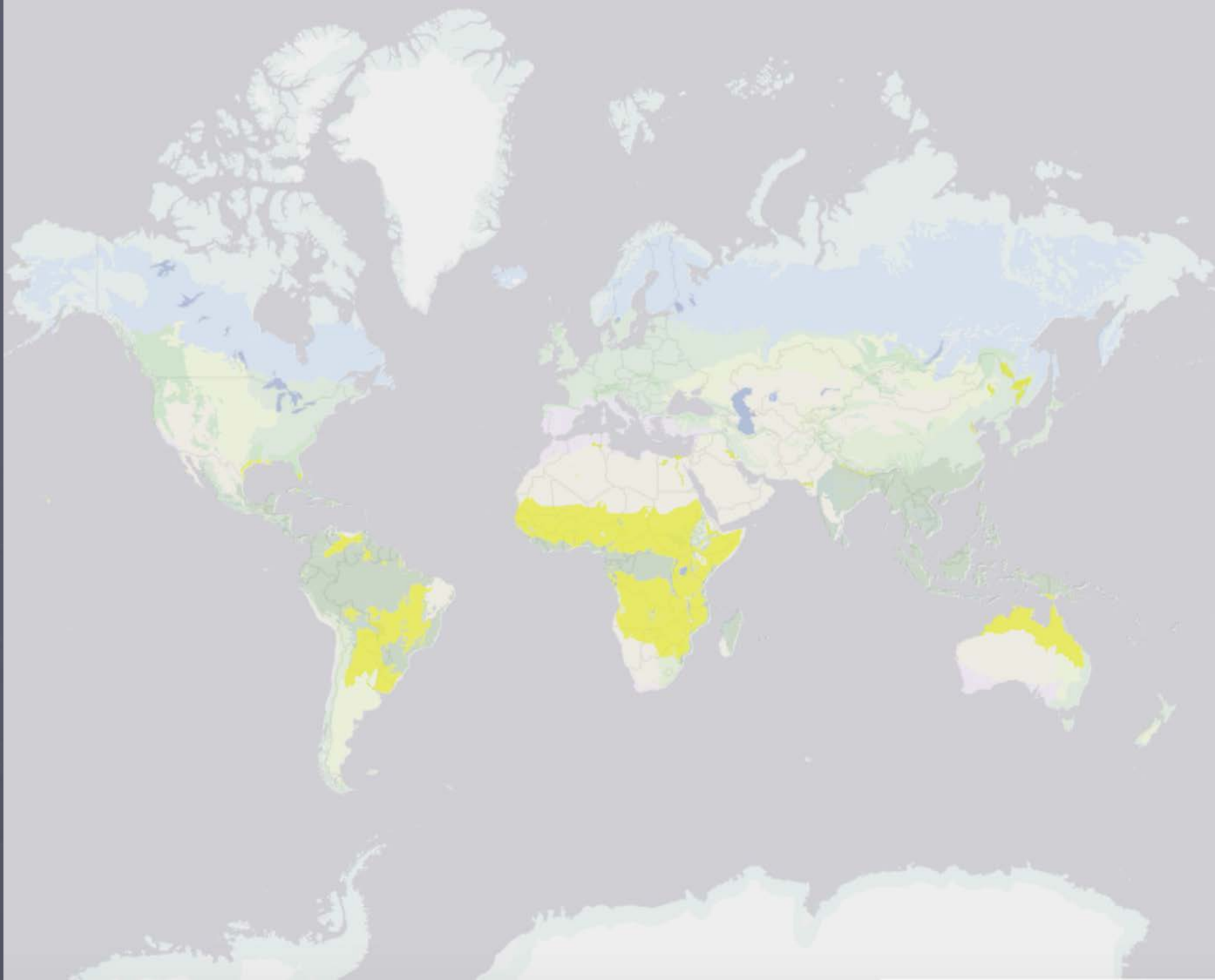
- Usually exist close to Savannas
- Seasonal variation between rainy season and dry season
 - Temperatures vary from warm to very hot/humid
- Mix of vegetation
 - Grasses and large trees
 - Plants may drop leaves during dry season



Tropical Seasonal Forest and Scrub



Tropical Savanna



Tropical Savanna

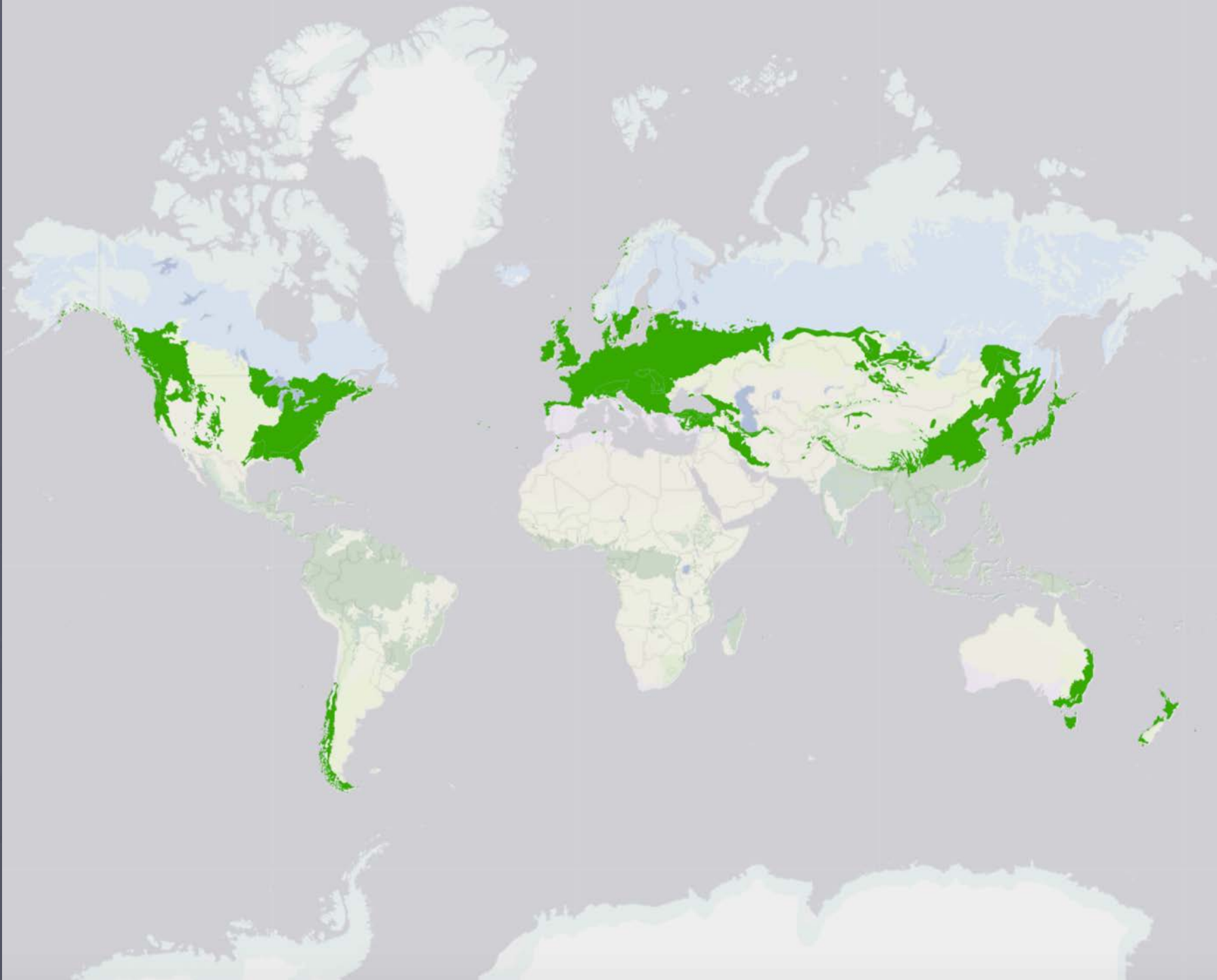
- Located almost completely in Southern Hemisphere
- Able to support groves of drought resistant trees
 - 6-8 month rainy season followed by droughts and wildfires
 - Consistently Warm to Hot
- Supports large variety of herbivores and carnivores



Tropical Savanna



Midlatitude
Broadleaf and
Mixed Forest



Midlatitude Broadleaf and Mixed Forest

- Mid-Latitude of Asia, Europe, Australia and the Americas
- Characterized by broadleaf forests and coniferous trees
- 4 Definitive Seasons
 - Warm to hot summers and cool to cold winters
 - Precipitation evenly spread over 12 months
- Wide variety of Flora and Fauna



Midlatitude Broadleaf and Mixed Forest



Temperate Rainforests

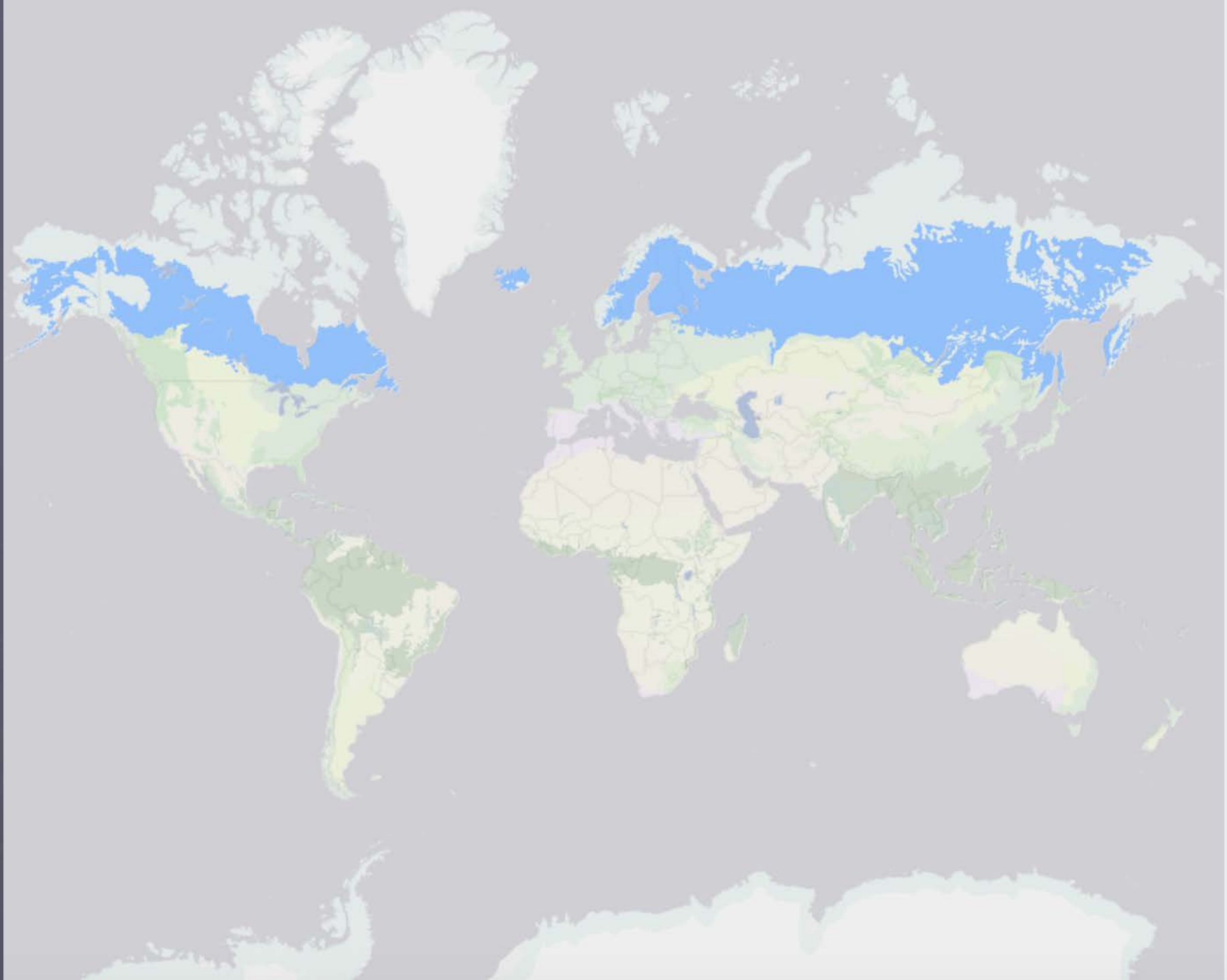
- Marine West Coast Climate due to proximity to oceans provides ample precipitation year round
 - As rain and snow
 - Warm summers and cool to cold winters
- Primarily the west coast of Canada, the United States, SE China, Japan, Korean Peninsula and Chile



Temperate Rainforests



Boreal and
Montane
Forest / Taiga



Boreal and Montane Forest / Taiga

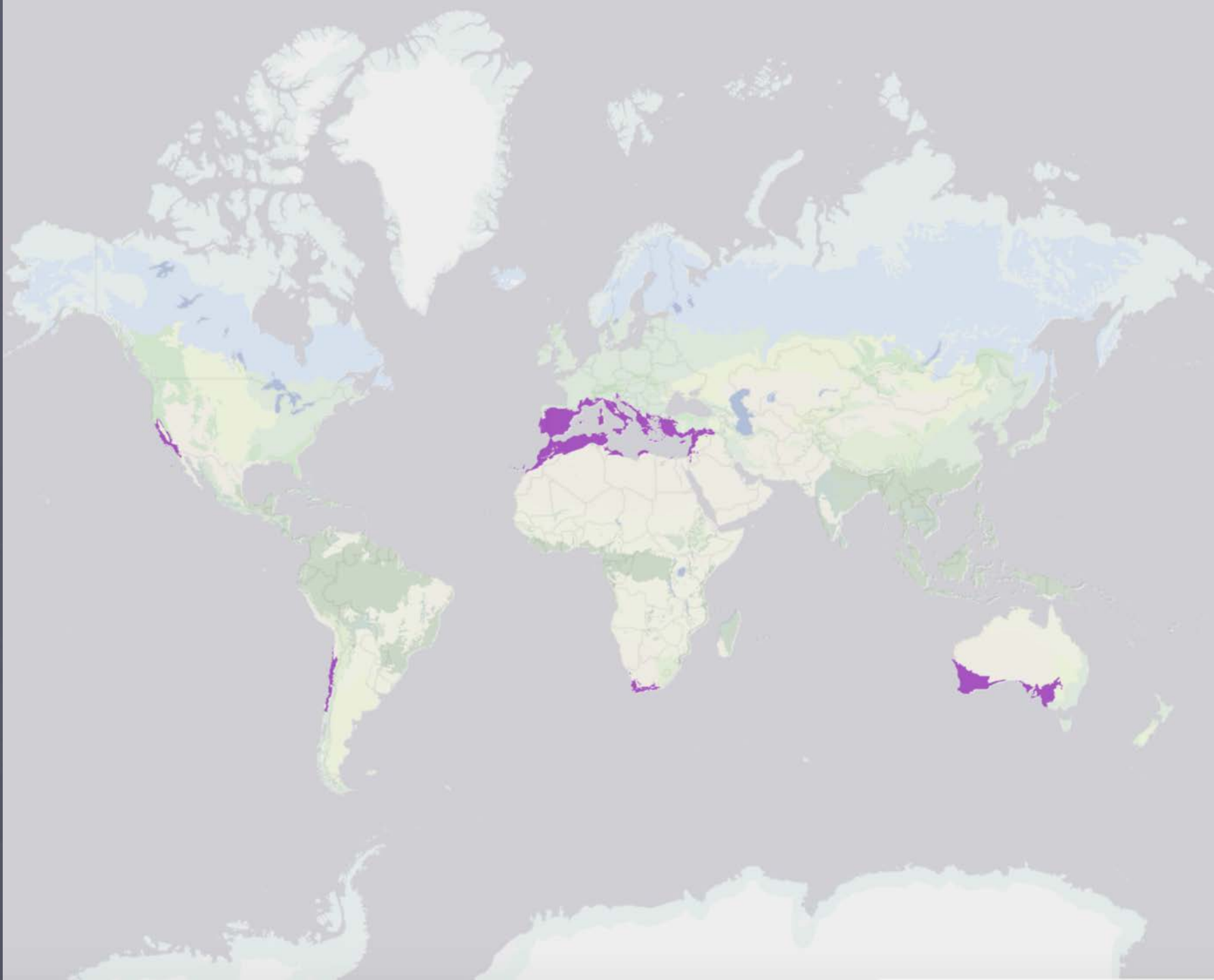
- Characterized by large area of coniferous forests
- Mainly located in sub-arctic regions of northern hemisphere
 - Warm summers and cold winters - moderate precipitation
- Supports many predators and migratory birds



Boreal and Montane Forest / Taiga



Mediterranean
Shrubland /
Chaparral



Mediterranean Shrubland/Chaparral

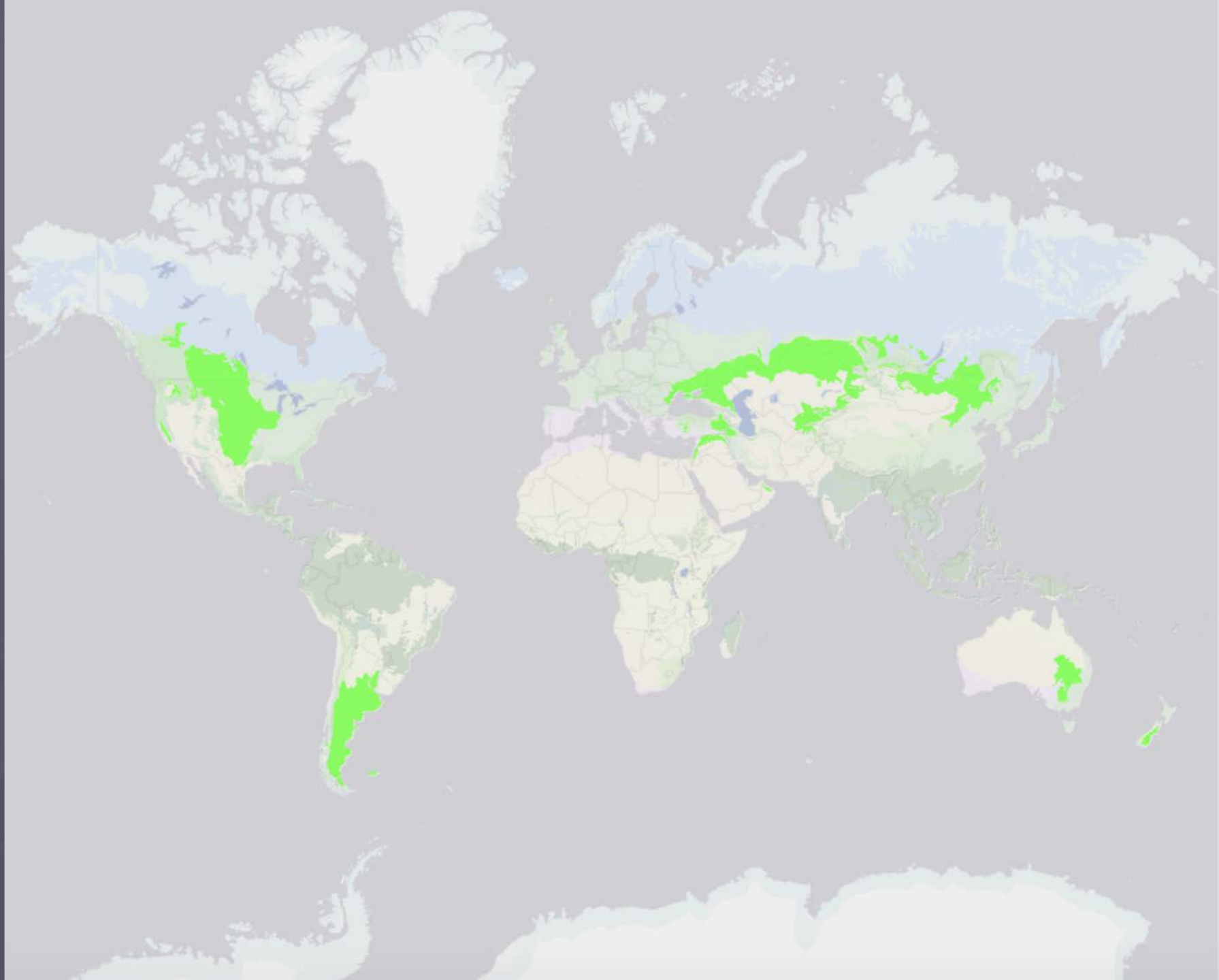
- Located on Coastal regions on SW corner of California, the Mediterranean , Australia, Chile, South Africa
- Hot and Dry
 - Warm to hot summers and warm to cool winters
- Shrubs grow and can support grazing animals and scavengers



Mediterranean Shrubland/Chaparral



Midlatitude Grassland



Midlatitude Grassland

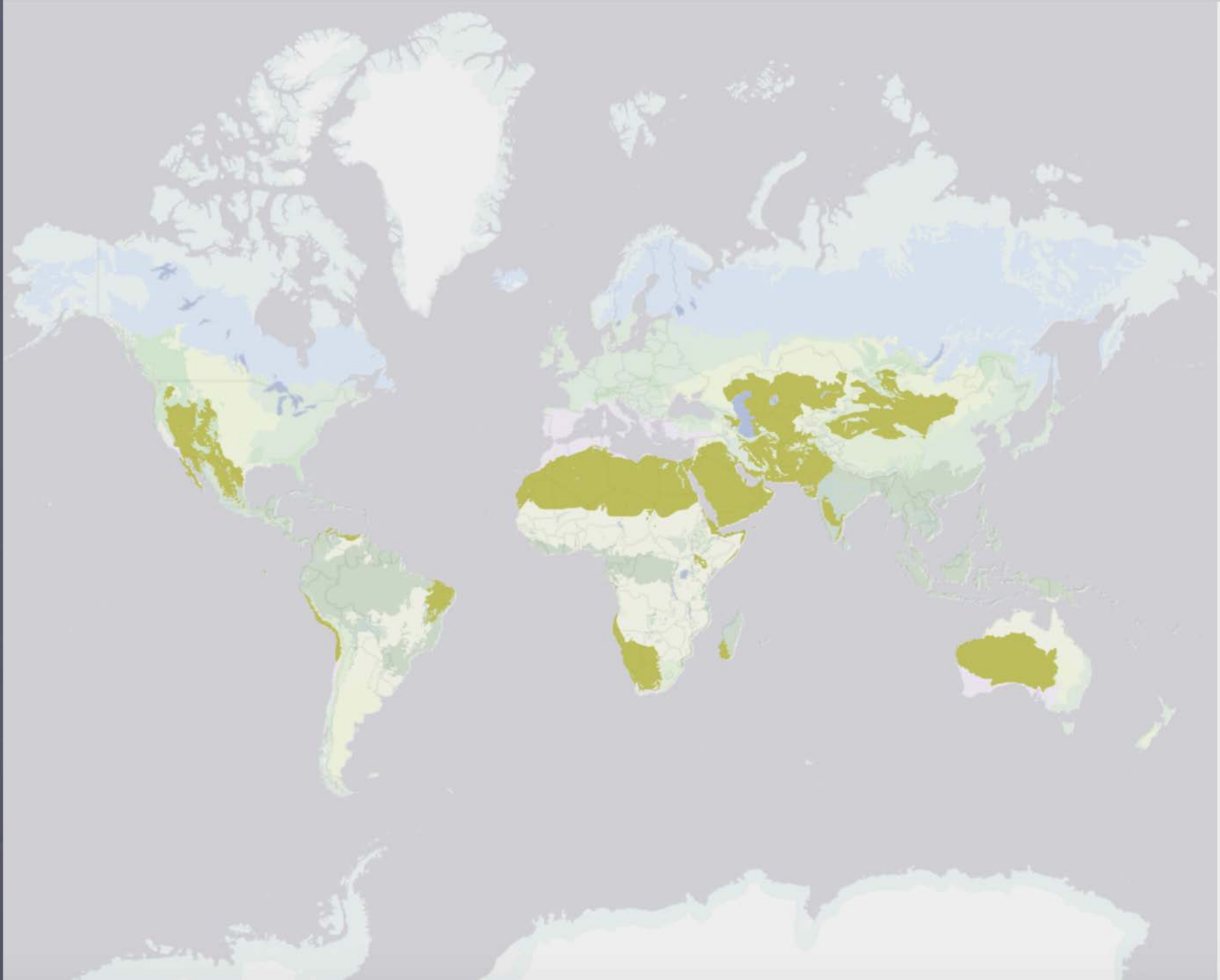
- Located in mid-latitudes in the interior of continents
- Sporadic rainfall and wildfires not suitable for large plants
- Full four seasons
 - Warm to hot summers and cold winters
- Can support large herbivores



Midlatitude Grassland



Desert



Desert

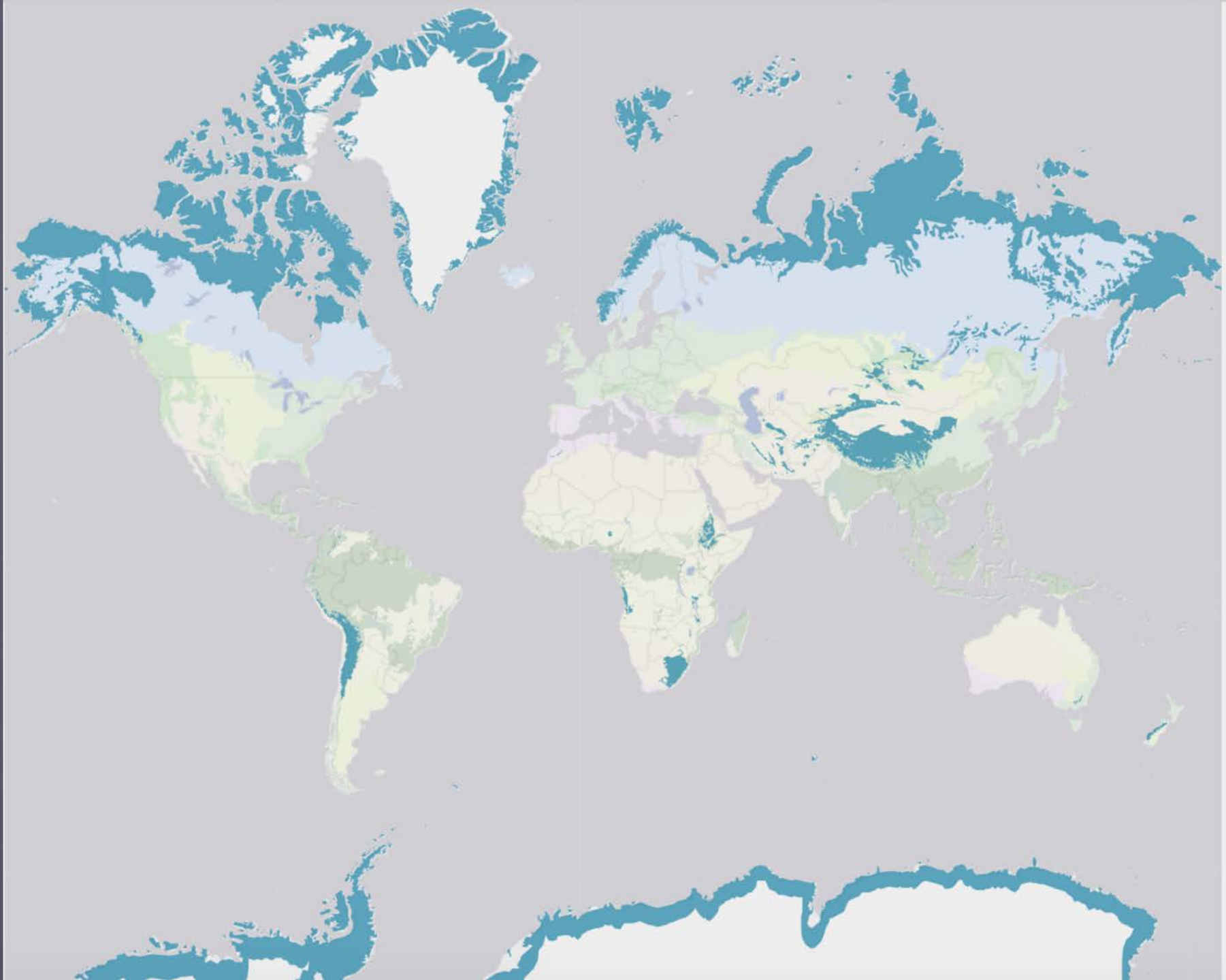
- Located mid-continental around tropics and in leeward side of mountains
- Characterized as an area that gets less than 25cm of precipitation a year
 - Hot to very hot summers and warm to very cold winters
- Minimal plants and animals
- Covers about 30% of Earth's surface



Desert



Arctic and Alpine Tundra



Arctic Tundra

- Characterized by Long snowy winters, & short marshy summers
 - Cool summers and very cold winters – minimal precipitation
- Almost wholly located between 55°N and 70°N
- Not suitable for large plants
 - Short Growing period
 - Permafrost
 - Can still sustain substantial populations of herding animals



Arctic Tundra



Alpine Tundra

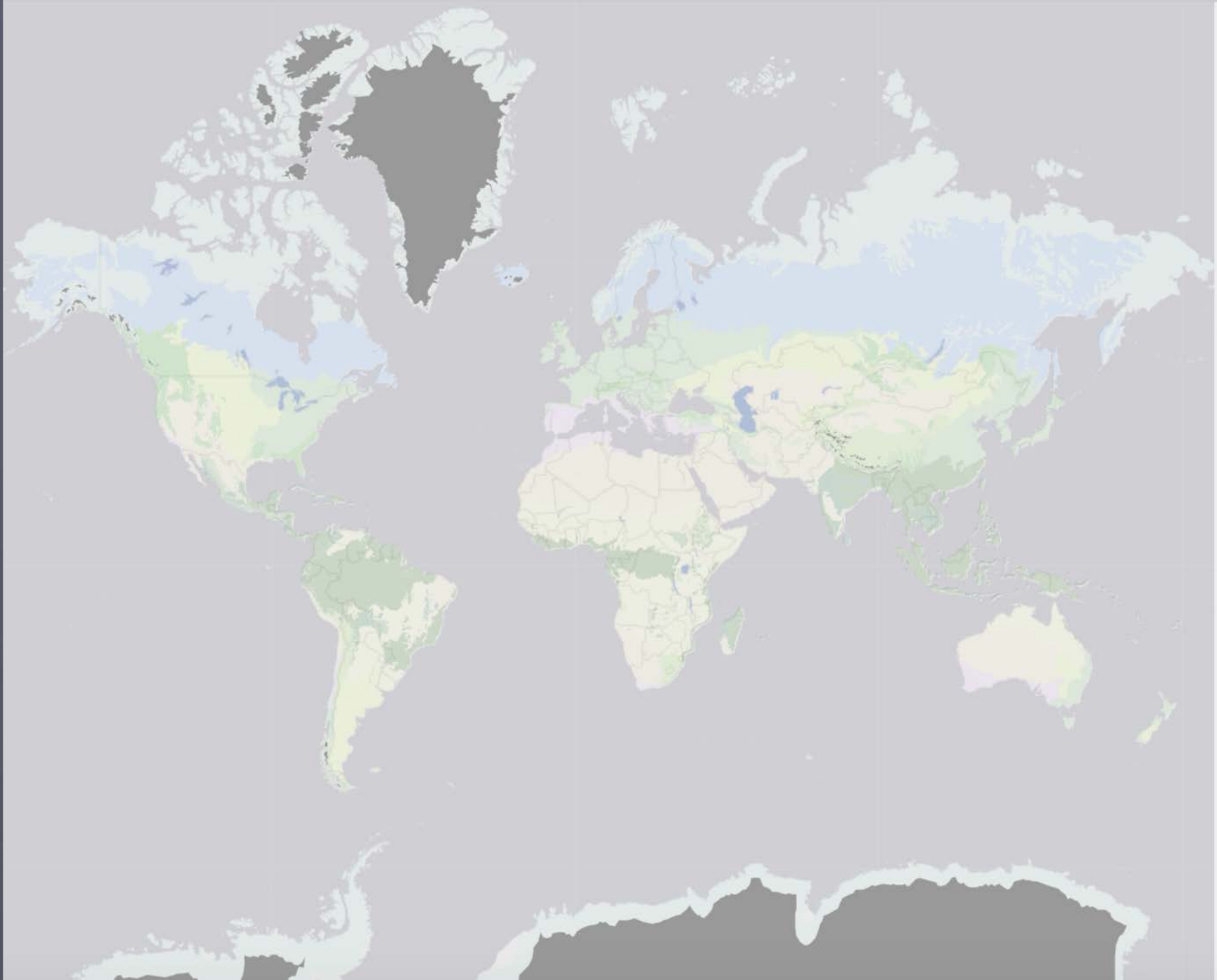
- Alpine refers to Mountainous regions with an altitude of 9800 feet or more
- Located in high mountainous areas and "highland areas" of each continent
- Due to weather the climate is unpredictable
 - Dependent upon altitude, latitude and proximity to Ocean
 - Some factors able to outweigh others



Alpine Tundra



Polar/Ice Cap



Polar/Ice Cap

- Refers to high latitude areas with year-round ice
 - Also Glacial areas of high alpine
- Consistently cold year-round
 - Cold summers with very cold winters
 - Minimal precipitation but limited potential for evapotranspiration
- Minimal vegetation
 - Life dependent upon oceans



Polar/Ice Cap

