1. Entity Generation
   1. Planetary Features
      1. Size – Small Earth-sized Large
      2. Rotation Speed – Slow Earth Day Fast
      3. Options:
         1. Average Planetary Temperature
         2. Moons
         3. Solar System Planets
         4. Number of Stars
         5. Gas Giant Moon World
   2. Geology
      1. Number of Plates
         1. 5 - 10
      2. Major Geological Feature
         1. Number of Features (Based on number of plates)
            1. 4 per plate
         2. Type of Plate Boundary
            1. Convergent, Divergent, Transverse
         3. Crust vs Crust border
            1. Oceanic Crust vs. Continental Crust for each
         4. Distance from Plate Boundary
            1. 0% to 50%
         5. Geographical/Geological Feature
      3. Options (Underwater Feature Generation)
   3. Climate
      1. Temperature
         1. low to high
      2. Rainfall
         1. 0 to 200 cm
      3. Drainage(topography)
         1. Geological Feature to Drainage
      4. Elevation
         1. Geological feature to Elevation
   4. Ecology
      1. Ecological Levels
         1. Plants
         2. Herbivores
         3. Omnivores
         4. Predators
         5. Number of Levels
      2. Flora
         1. Plant Type
      3. Fauna
         1. Ecological Level
         2. Morphology
            1. Vertical vs Horizontal
            2. Number of Limbs
            3. Defensive/Offensive Features
            4. Animal Type

wReptiles, Birds, Fish, Mammals, Amphibians, Soft Invertebrate (squids, snails, starfish, snails, etc.), Arthropods (exoskeleton – Arachnids, Crustaceans, insects, myriapods)

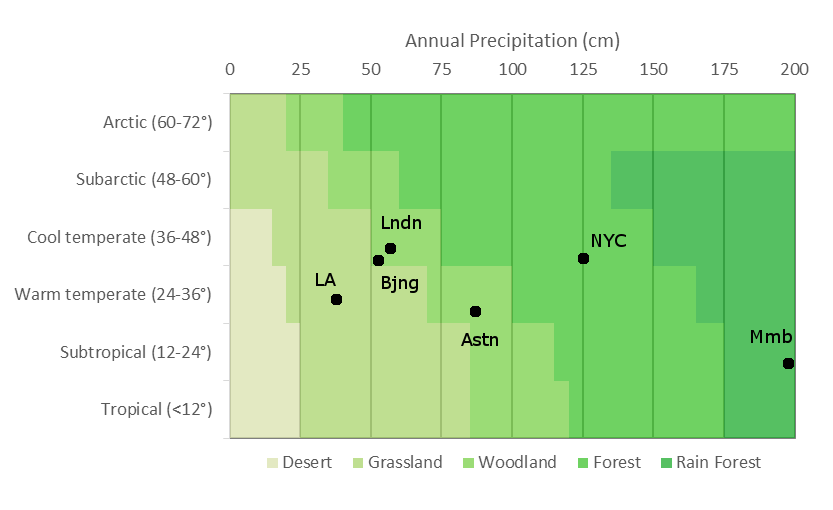
* + 1. Options
       1. Earth Flora/Fauna
       2. Analogous Earth Flora/Fauna
       3. Unique Flora/Fauna
       4. Detailed Animal Classification
  1. Resources
     1. Based on Geological Feature
     2. Random chance based for other resources
  2. Regions
     1. Group Distributed Geological Features
  3. Cultures
     1. Resources, Ecology, Climate, Geological Feature
     2. Values, Interests, Practices, Religion, Magic, Tech, Number of Regions, Original Regions, Languages
  4. Religions
     1. Culture, Resources, Ecology, Climate, Geological Features, Values, Interests, Quirks, Beliefs, Practices, Magic, Tech, Characters
  5. Civilizations/Nations
     1. Climate, Ecology, Resources, Cultures, Religions, Regions
     2. Population, Primary Exports/Imports, Magic, Tech, Military, Government, Major Cities, Control Rating, Languages, Industry, Resources, Manpower, Allegiance, Capital, Assets, Goals, Values, Rivals, Interests, Practices, Characters, History
  6. Cities
     1. Geological Feature, Region, Resources, Ecology, Climate, Culture, Religion, Civilization
     2. Imports/Exports, Industry, Main Features, Government, Characters
  7. Factions
     1. City, Geological Feature, Region, Resources, Ecology, Climate, Culture, Religion, Civilization, Imports/Exports, Industry, Main Features, Government, Characters
     2. Resources, Manpower, Allegiance, Capital, Assets, Goals, Rivals, Values, Interests, Practices, Magic, Tech, Regions (if independent), Scale (city to Intercultural), Characters, History
  8. Characters
     1. Rivals, Values, Goals, Assets, Capital, Resources, Faction, Civilization, Culture, Religion, Religious Piety, Profession, Languages, Quirks, Species
  9. Histories

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Parent** | **Setting** | **Range** |
| Planetary Features |  | Planet Size | Small, Earth, Large |
| Planetary Features |  | Rotation Speed | Slow, Earth Day, Fast |
| Geology | Planet Size | Number of Plates | 5 to 10 |
| Geology | Number of Plates | Number of Geographical Features | 4 \* Number of Plates |
| Geology |  | Geographical Feature (GF) |  |
| Geology | GF | GF Boundary Type | Convergent, Divergent, Transverse (Rare) |
| Geology | GF | Crust 1, Crust 2 | Oceanic, Continental |
| Geology | GF | Distance from Boundary | 0% to 50% |
| Geology | GF | Geographical Feature Type | Geographical Feature Tables |
| Climate | Planet Temperature | Temperature | -12° to -70° |
|  | Distance from Boundary | Annual Precipitation | 0 to 200 cm |
|  | GF | Elevation | Affects Temperature |
| Ecology |  |  |  |
| Resources |  |  |  |
| Cultures |  |  |  |
| Religions |  |  |  |
| Civilizations |  |  |  |
| Nations |  |  |  |
| Cities |  |  |  |
| Factions |  |  |  |
| Characters |  |  |  |
| Histories |  |  |  |

1. Generation control methods
   1. Selective Generation
   2. Generation Dependencies
   3. Generation Range Control
   4. Generation Detail Control
   5. Independent Entity Generation
2. File system integration
   1. Save, Load, Export, and Import Generation Settings
   2. Save, Load, Export, and Import Entities
3. GUI and inline text controls
   1. GUI
      1. Entity Tree Sidebar
         1. Entity Moving
      2. Generation Settings
         1. Entity Name
         2. Entity Details
         3. Description
         4. Checkbox to generate
         5. Parents, Children
         6. Generation Ranges
         7. Toggle for greater detail
         8. Toggle Randomization, Distribution
         9. Generate Independent Entity
         10. Generate Button
      3. File Menu
         1. Load
         2. Save
         3. Import
         4. Export
   2. In-line text controls
      1. Show Entity Tree (root, levels, detail level)
      2. Generation Settings
         1. ShowSettings (Root, levels, detail-level)
            1. Show the settings for generation.
         2. ShowDescription (Entity[, Entity, …])
            1. Print out the player-entered description for 1 or more entities.
         3. ToggleGeneration (Entity)
            1. Toggle World Generation for an entity
         4. ChangeGRanges(Setting, [Entity])
            1. Change Generation ranges, specify for specific entities.
         5. ChangeGType(Setting, [Entity])
            1. Change between Random Generation and Distributed Generation.
         6. SelectDetailLevel(Setting, [Entity])
            1. Change between different levels of detail. Specify for particular entities.
         7. GenerateEntity(Entity, [Parameters], [quantity])
            1. Generate an Entity Independently or Dependently, or a list of entities.
         8. GenerateWorld()
            1. The general command to generate each of the values toggled in the file.
4. Website and Github to showcase the project.

https://worldbuilding.stackexchange.com/questions/23941/creating-a-realistic-world-map-vegetation-biomes

If you've covered the earlier bases, specifically geography and climate, biomes are actually quite easy. As a first-order approximation, the predominant natural (before human intervention) biome for a region is largely determined by just two factors: **precipitation** and **temperature**. Here's a rough breakdown:

[](https://i.stack.imgur.com/NHS1i.png)

"Grassland" is really tundra in arctic and cooler subarctic areas.

I've marked a few cities: Los Angeles, Beijing, London (San Francisco is about the same), Austin, New York, and Mumbai. Note that although London and San Fran get relatively little rainfall, they have mild coastal climates with relatively little seasonal change, encouraging vegetation, while Beijing and New York have east-coast continental climates, with hotter summers and colder winters. The Gulf Stream also makes London (and all of Europe) much warmer than the same latitudes in elsewhere in the world. India's monsoon-dominated climate is a challenge for vegetation, so Mumbai is really a "monsoon forest," though its high rainfall (225 cm) would easily be enough for a tropical rain forest if the precipitation was even year-round.

Those are the two biggest factors. Next is **topography**, or really, drainage. A flat area will tend to collect water: if it's very dry, you'll get salt lakes, a little more and you get seasonal lakes, more and you'll get a marsh (a wetland dominated by grass), and finally if there's plenty of rain you'll get a swamp (a wetland dominated by trees). Going the other way, rugged topography mean hills. Up to a point, this typically won't have a profound impact on the biome: a rugged area with plenty of rain will be a forest just like the flatter areas nearby. Extreme slopes may prevent trees from taking root, but you might be surprised at what it takes!

On the topic of drainage, areas near **rivers and lakes** are basically equivalent to additional rainfall. Even a desert might have trees around the few arroyos and seasonal lakes.

Then there's **elevation**. All else being equal, higher land is cooler, has lower air pressure, and has greater climate variation. All of these factors tend to work against trees, and plant growth in general; a high plateau is effectively similar to moving one climate zone further from the equator. For example, South Africa is at about 30° S - the subtropical zone. However, the highlands have a climate similar to some temperate zones, which appealed to Dutch and British settlers in the 18th and 19th centuries. Note that highlands often catch rainfall from passing air currents, making them relatively green stretches in otherwise dry areas (e.g., the Atlas Mountains).

https://www.reddit.com/r/worldbuilding/comments/9g3sz2/list\_of\_environments\_geological\_formations/

Resources (animals) - able to domesticate, bioluminescent light source, bones, carapace, dung, feathers, food, fossils, fur, guano, hide, honey, ink, ivory, oil, pearls, quills, scales, silk, venom, wax, wool

Resources (plants) - bioluminescent light source, building material, brewed drink, cotton, drug, dye, flowers, food, fuel, incense, innately magical, medicine, needles, oil, poison, resins, spice, syrup, tinder, water, wax

Resources (minerals) - clay, coal, crystals (+ fast growing, giant, luminescent), gems, innately magical material, metals, minerals (+ glowing), salt, stone

Resources (other) - fertile soil, fossils

Resources (magic) - innately magic material or substance, amplify magic, resist magic, replenish mana, anti-magic

https://worldbuilding.stackexchange.com/questions/51916/which-natural-resources-go-where-medieval-fantasy-setting

Mountains could be a source of minerals/metals/rocks and gems/mines, ice/water, and home to rare flowers as well as goats and sheep. They could be similar to the Alps, Himalayas, Rockies or any other mountain range on Earth, so research those ecologies. This area may import wood for fires (for heat and foundries) and additional food, clothing and art from the lowlanders.

Note: very tall mountains have multiple ecologies from tundra at the peak to jungle at the base.

Check out [Altitudinal zonation on Wikipedia](https://en.wikipedia.org/wiki/Altitudinal_zonation) for more information.

Long Mountain Slopes - see Mountains (these are the same).

Forests provide wood (a good building material, also good for arts and crafts, paper, burning/fuel), mushrooms and deer/game (including buckskin and antler/bone tools). These people could want metal tools from the mountains, grains from the plains and fish from the coast. Note: there are several types of forest to research from rain forests and jungles to bayou to pine forest. The type of forest depends on latitude. [Here is a forest biome intro](http://www.ucmp.berkeley.edu/exhibits/biomes/forests.php) to start.

Coastal Plains will probably provide seafood, salt, boats and trade goods from other coastal towns. They may want grains, clothing and such from inland farms, wood for their boats from the forest, metal tools and harpoons from the mountains. Biggest advantage here is trade from city to city across the water is probably faster than over land, so you could get a lot of exotic goods coming from far-away locations.

Inland Plains/Grasslands will probably be the bread basket for the region because it's the best place to grow grains (like wheat) and raise animals like sheep (wool and meat), horses (transportation more than meat) and cows (milk, beef). They will need heating fuel (wood) and supplemental meat from the forest, metal tools from the mountains and whatever exotic goods/baubles are offered from the coastal cities.

Swamps are also a very broad category. There are all kinds of wetlands including fens (mostly grasses), bogs (mostly peat) and bayous (mostly trees). Depending on which, you could have rice, cranberries, fish and birds. It would be a good source of fresh water. Residents will probably want to import metal tools from the mountains, clothing from the plains and boats from the coast.

|  |  |  |
| --- | --- | --- |
| Mountains | Minerals, metals, rocks, gems, ice, Fresh Water | Import wood, food, clothing, art |
| Forests | Wood, Mushrooms, Game, Skins, Antler, Bone | Metal, Grain, Fish |
| Coastal Plains | Seafood, Salt, Boats, Trade Goods (commodities) | Grains, Clothing, Wood, Metal |
| Inland Plains | Grains, Wool, Meat, Horses (Transportation), Cows (milk, meat), | Wood, Coal, Trade goods, Metal |
| Swamps | Rice, Cranberries, Fish, Birds, Fresh Water | Clothing, Boats, Metal |

1. Lead
2. Fresh Water
3. Salt
4. Tin
5. Bismuth
6. Zinc
7. Iron
8. Copper
9. Mercury
10. Nickel
11. Coal
12. Silver
13. Gold
14. Wood
15. Tameable Animals

|  |  |  |
| --- | --- | --- |
| Medieval Resources | | |
| Metals | Gold, Silver, Iron & Steel, Copper, Tin, Lead | Mountains/Hills |
| Metals (alloying, pigmentation) | Cobalt, Zinc, Titanium, Cinnabar, Calcium | Mountains/Hills |
| Stone (for working) | Granite, Porphyry, Agate, Onyx, Limestone, Marble, Gypsum, Alabaster | Mountains/Hills |
| Stone (Precious, Semi-Precious) | Amethyst, Jasper, Crystal (Quartz), Malachite, Azurite, Limonite, Chrysocolla, Mica, Muscovite, Lapis lazuli, Topaz, Ruby, Sapphire, Garnet, Turquoise, Jade | Mountains/Hills |
| Salt |  | Anywhere |
| Ceramics | Bricks and Mortar, Earthenware, Terracotta, faience, Stoneware, Porcelain, Celadon | Not Mountains |
| Spices | Numerous | Anywhere |
| Vines | Olives, Grapes, Dates, Honey | Temperature |
| Oils and Waxes | Fish, Whale, Beeswax, Tallow, Lard, Shellac, Lacquer, Resin, Amber | Coastal/Anywhere |
| Textiles | Linen, Silk, Canvas, Burlap, Papyrus and Paper, Parchment, Leather, Fur, Cotton, Wool | Temperate, Forest |
| Grains, Meals, and Brews |  | Temperate, Plains |
| Weapons, Tools |  | Anywhere |
| Garments |  | Anywhere |
| Misc | Rope and Netting (Animal and Plant based), Perfume, Lye | Trade, Coastal |
| Slaves |  | Anywhere |
| Sugar |  | Plains |
| Tobacco |  | Plains |
| Magical Supplies |  |  |
| Pearls |  | Coastal |
| Ivory |  | Anywhere |

<https://www.reddit.com/r/worldbuilding/comments/28n175/natural_resources_and_trading/>