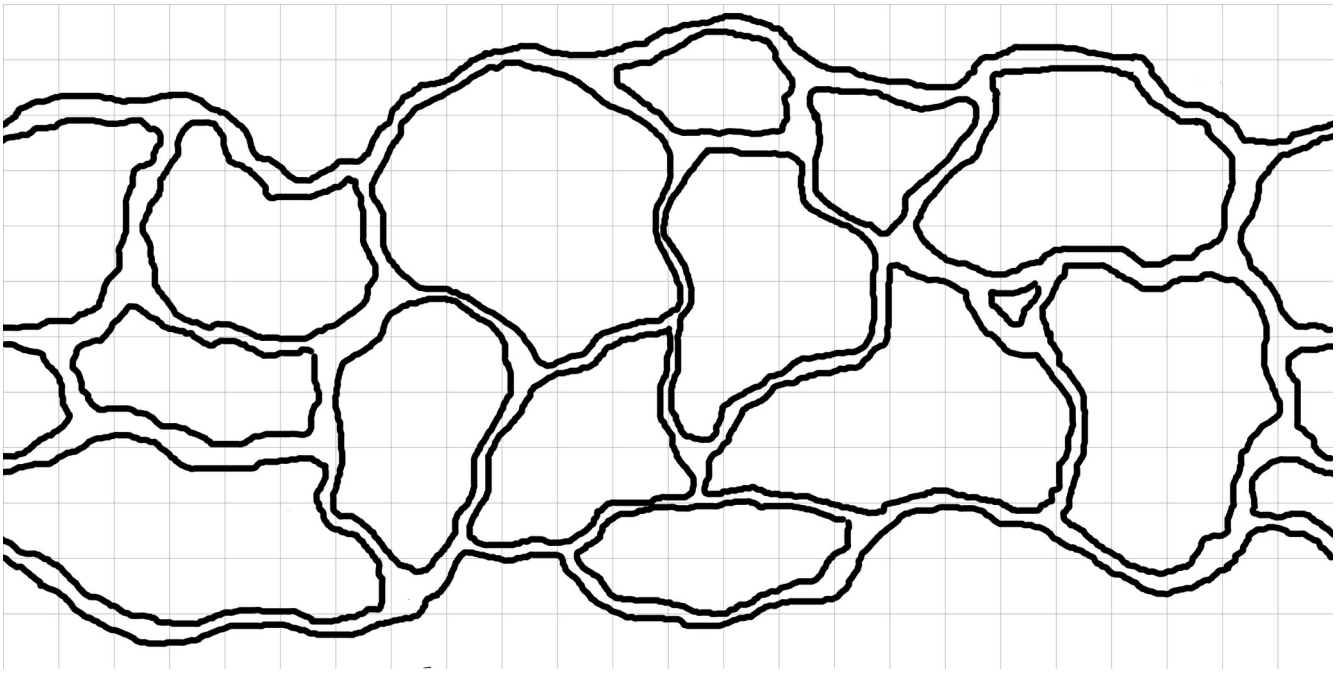
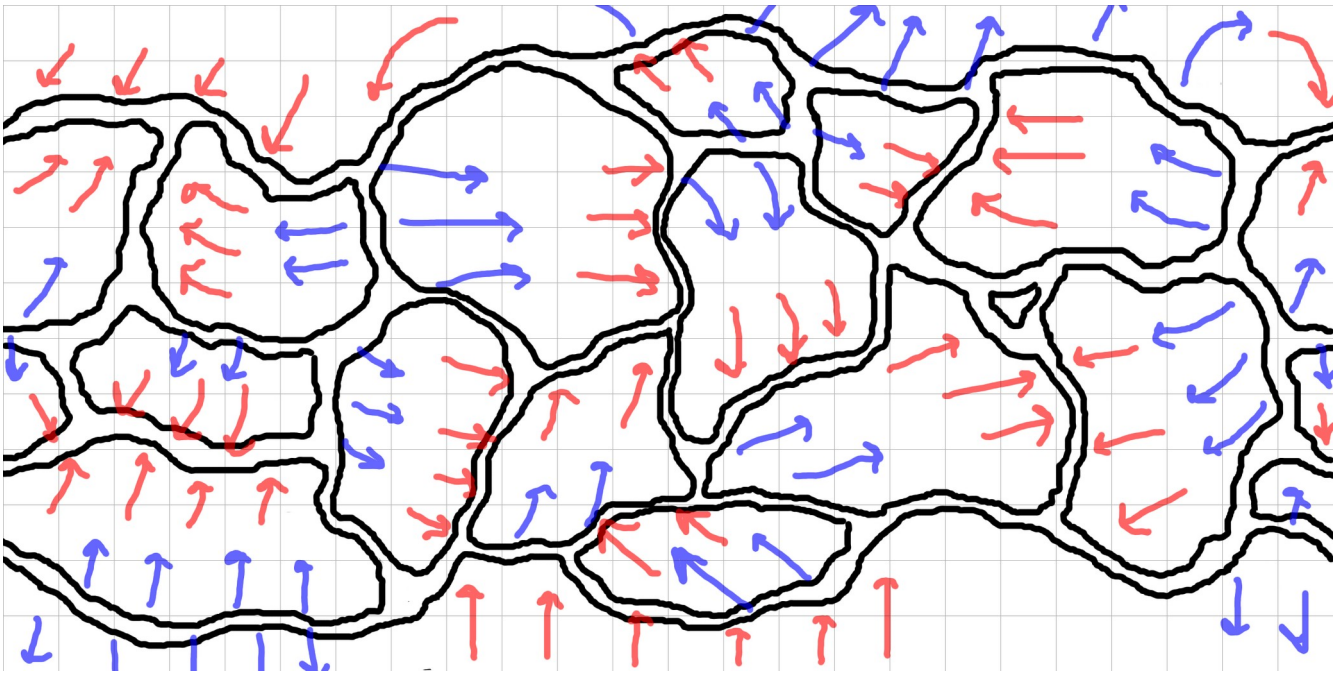
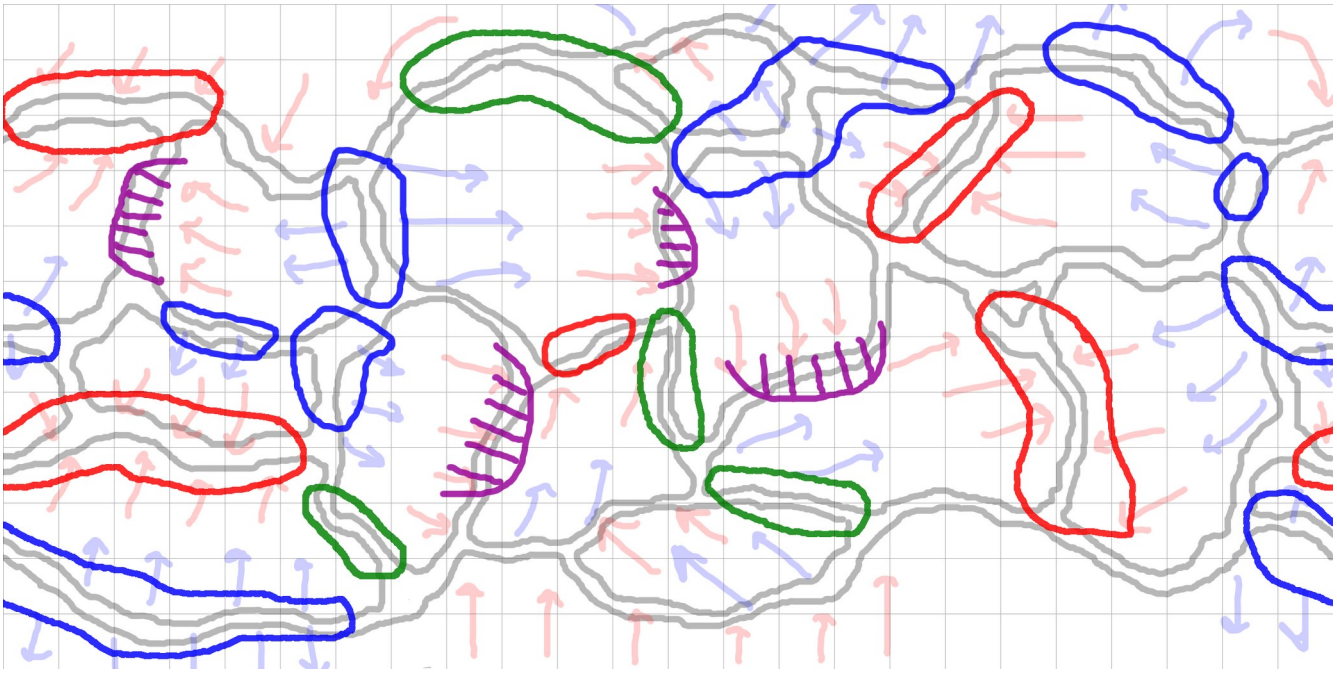


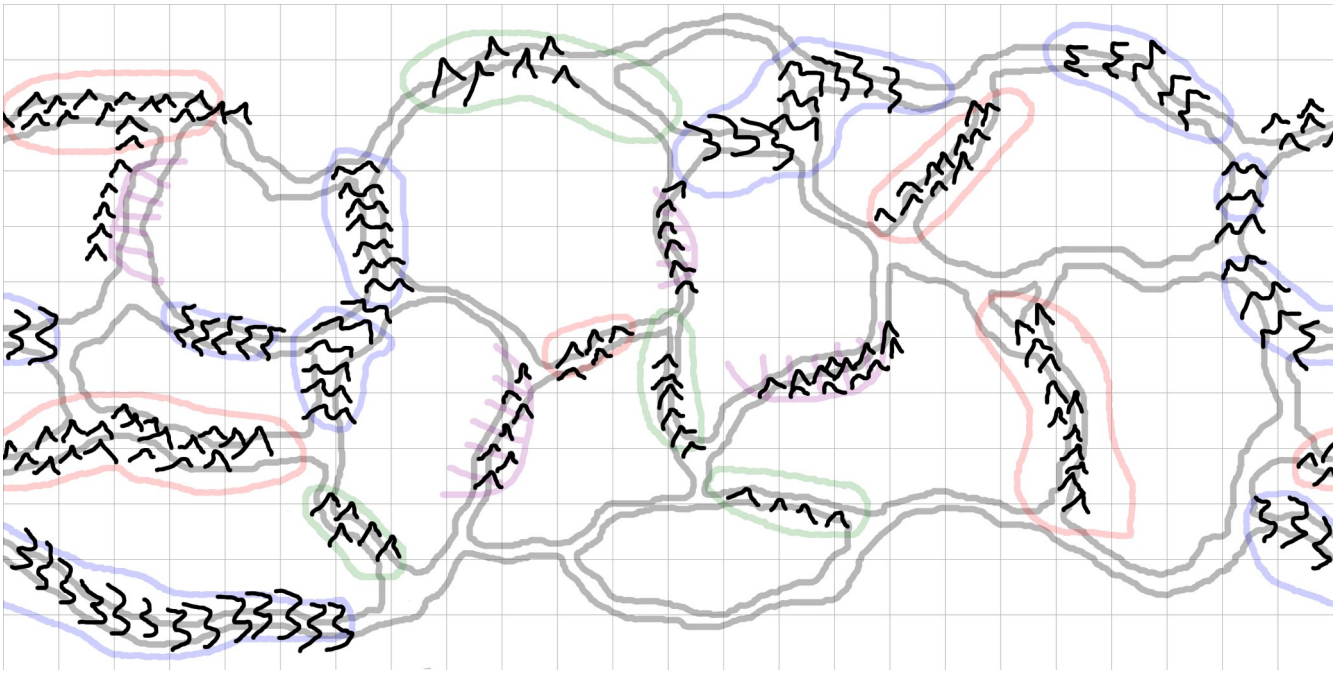
To start things off, I gave myself a 2:1 landscape grid, and made some arbitrarily placed tectonic plates. I made sure to keep latitude distortion from the projection in mind (the plates in the north and south look HUGE) and I was careful to connect one side of the projection to the other as best I could, but besides that, I just arranged them in a way that I thought looked cool!



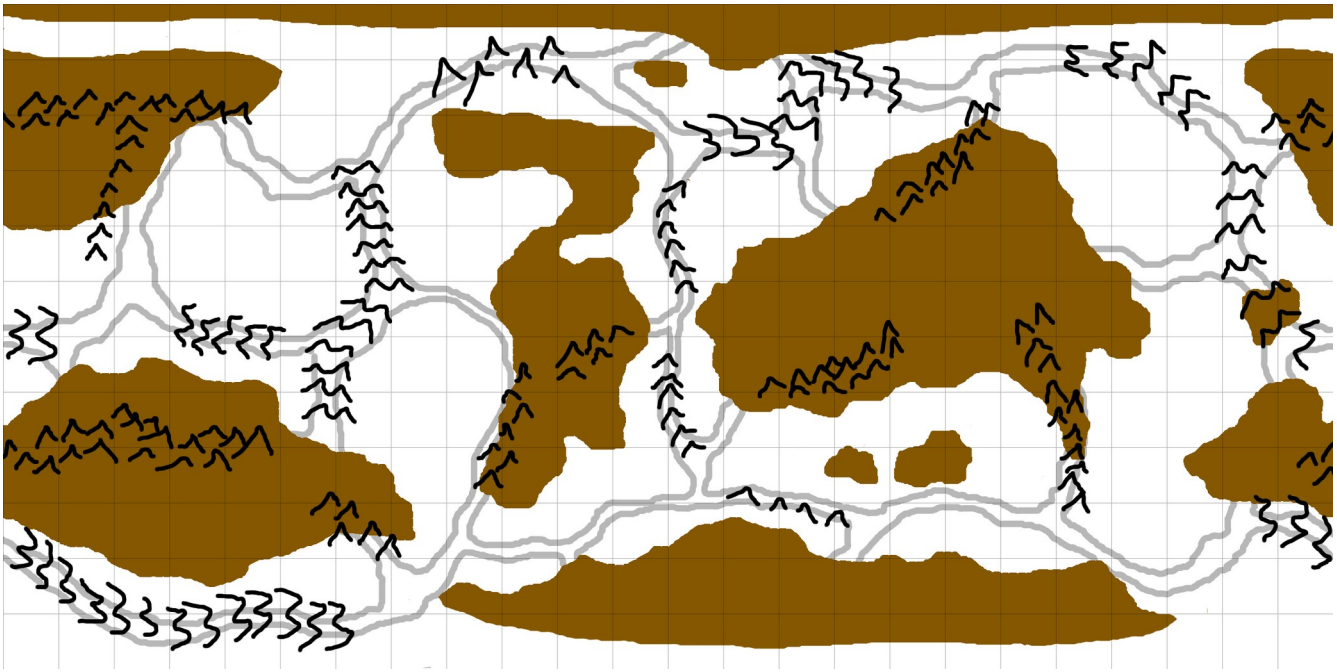
My second of three arbitrary steps was the designations of plate motion. Both sets of arrows aren't really necessary, but they helped me keep things straight. Figuring out what the plates at the north and south poles were doing was a little weird here, but I think I did well enough.



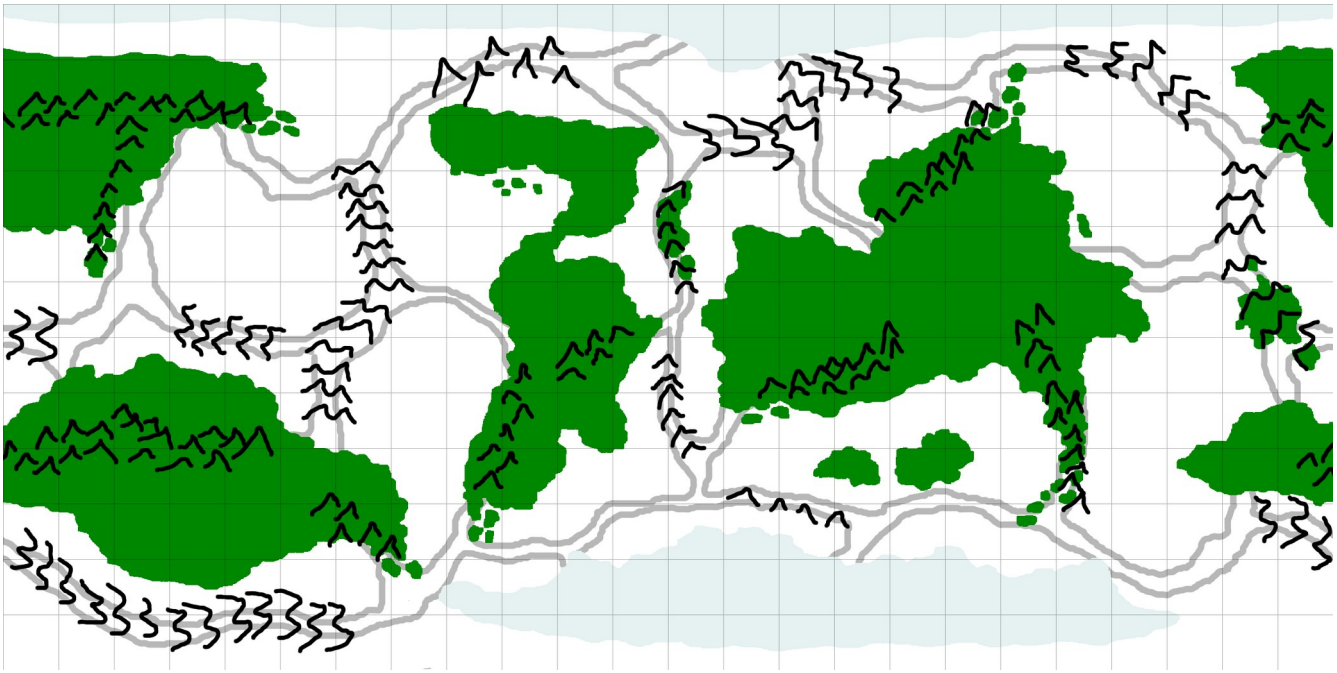
Now that I had my plates and their motion, I figured out how they'd be smashing into each other! Red is for convergent boundaries (Rocky Mountains), Blue is for divergent boundaries (Mid-Atlantic Ridge), Purple is for subduction zones (southern Alps) (as you can see, these have directionality), and Green is for transform boundaries (San Andreas fault, parts of the Sierra nevadas).



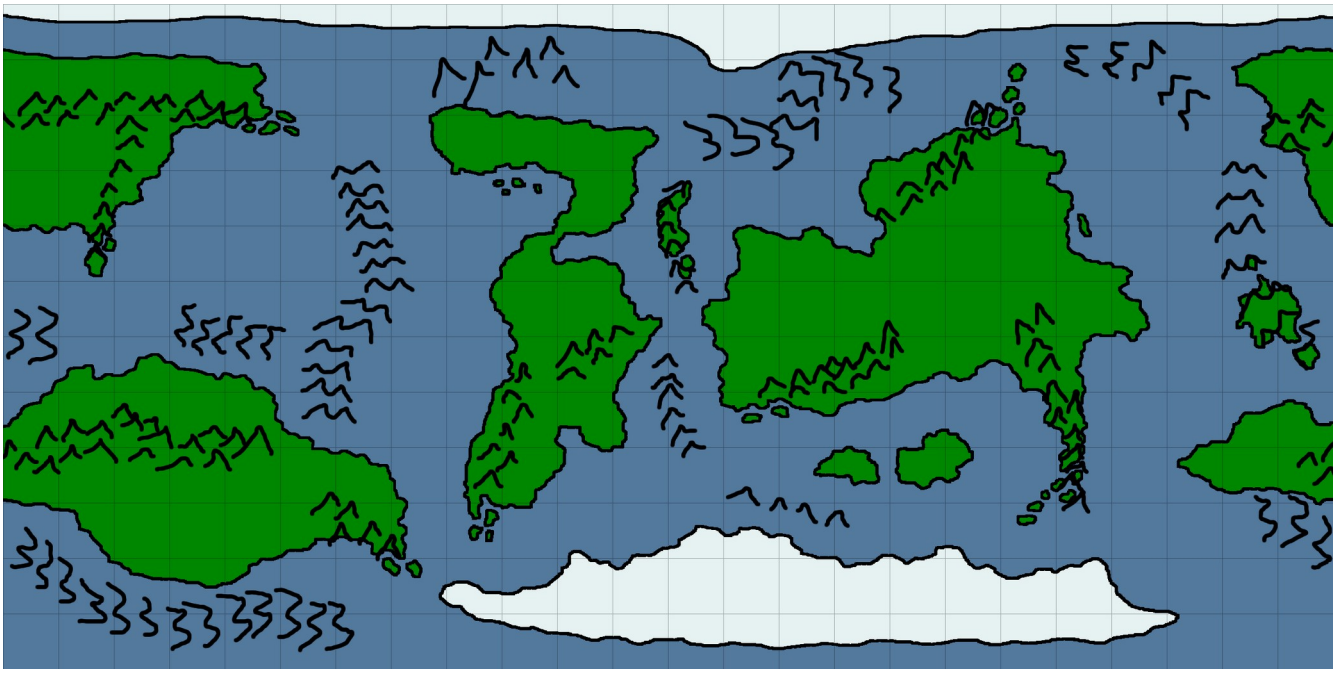
With the plate boundaries fleshed out, I could then create the actual mountains above them. The "M's" are for ridges and the carrots are for mountain ranges. This also helped give me an idea of where to put continental crust vs oceanic crust; ridges are almost always (ALMOST, I'm looking at you, Iceland) under the sea.



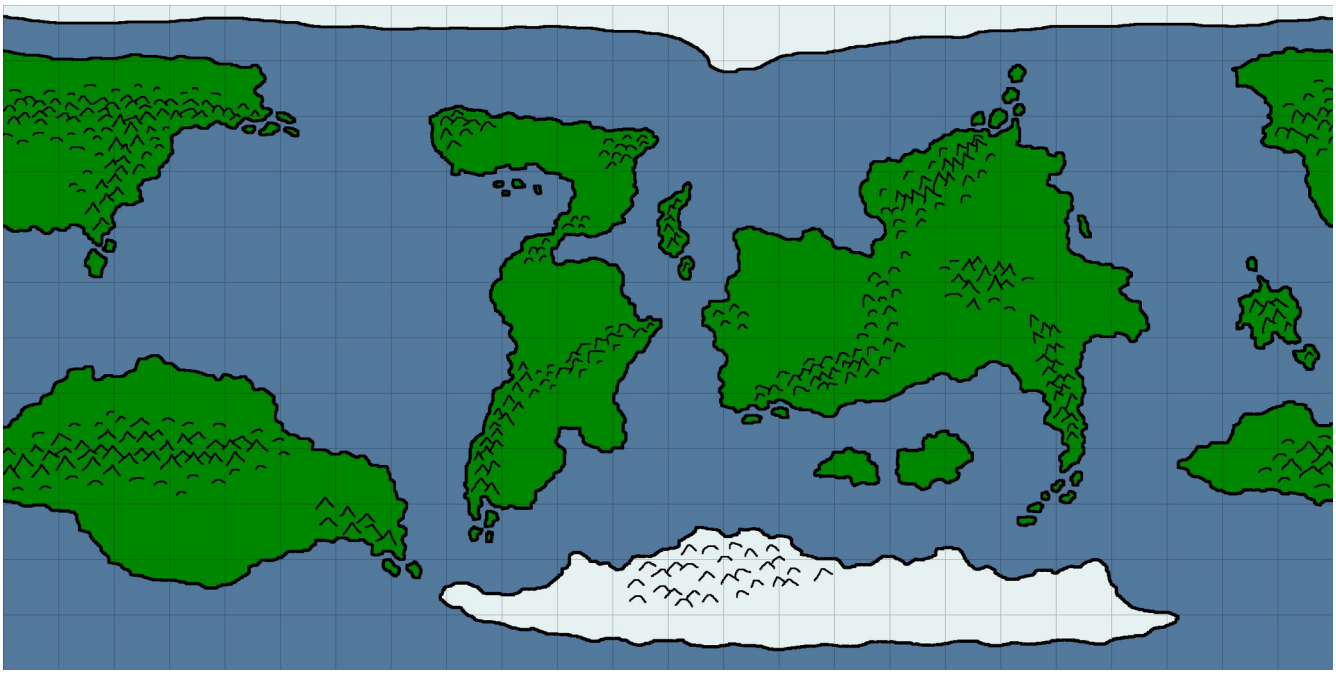
The third and final (partially) arbitrary step in my creation progress! I basically used the mountain locations and the plate sizes and shapes to decide where there should be continental crust and where there shouldn't. All of the ridges are now between continents, on the sea floor, and the rest of the mountain ranges either fell on the borders of continental-oceanic or oceanic-oceanic crust (subduction zones) or in the middle of continents (continental collisions).



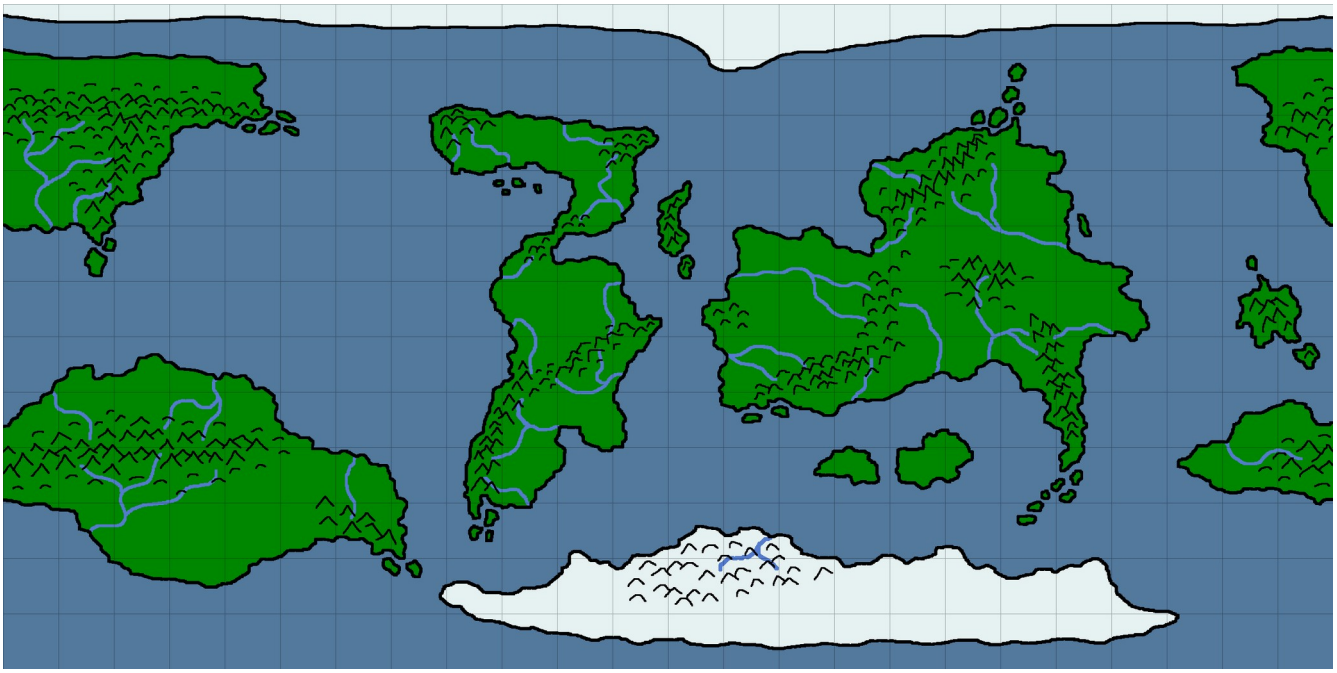
The continents I started with were ugly and uninspired; I think these shapes are a little bit more believable. In particular I want to point out that the small continent in the middle of the map wasn't there before. I originally just had a mountain range there, under the sea, but everything else suggested that that range should indeed be poking out of the ocean a bit, and thus, Japan 2.0 was born!



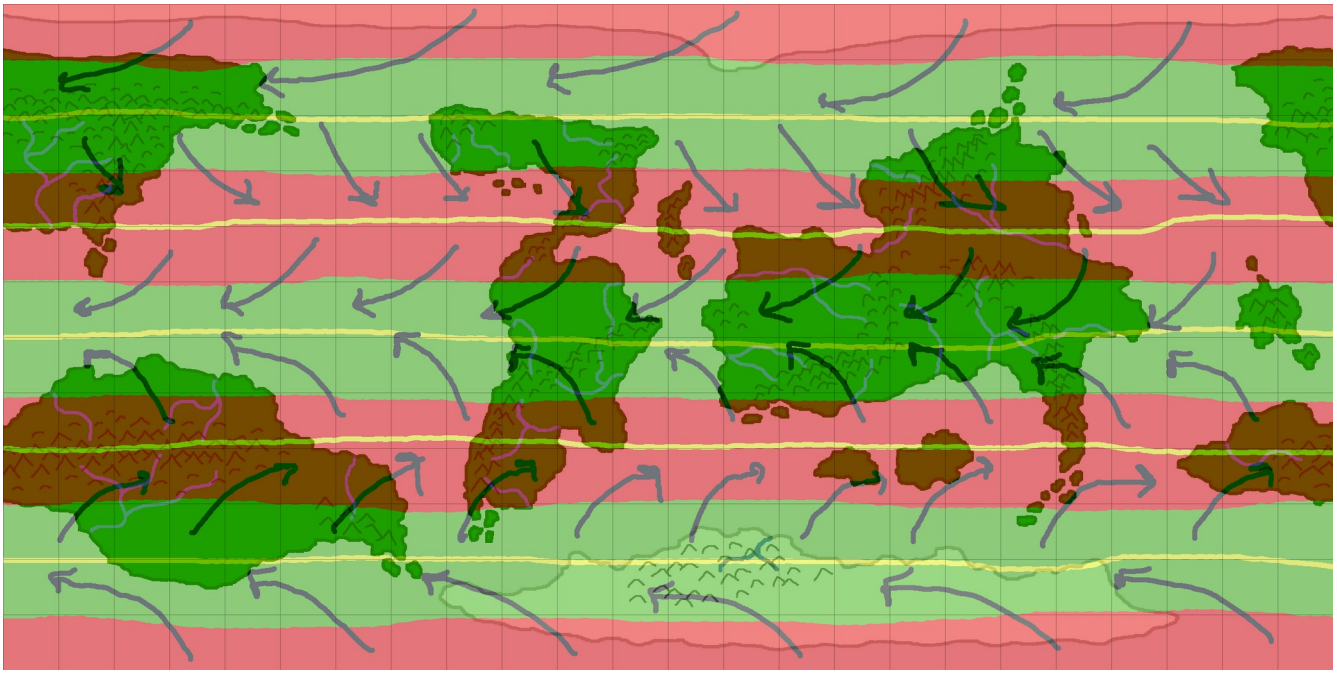
Looking a little more legit..



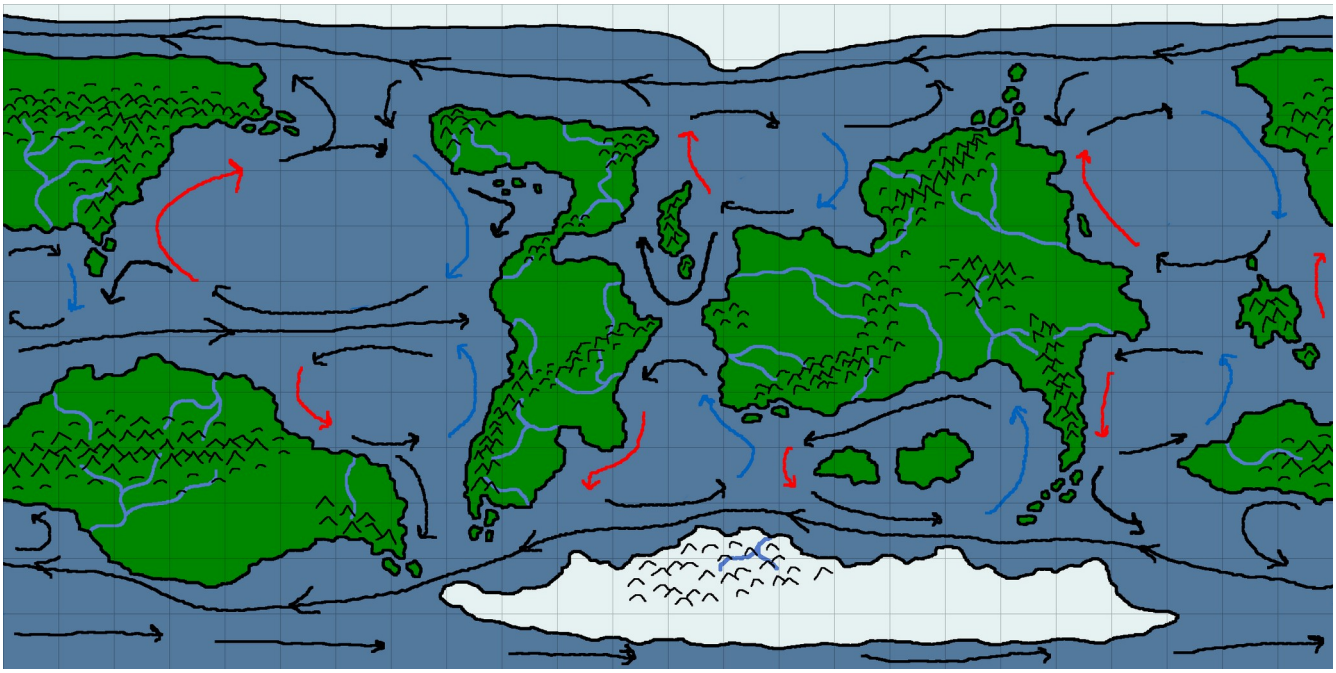
Starting to look good! Depending on the location of mountain ranges relative to the origins of their plates, I made either steep, young, craggy mountains or low, eroded, rolling mountains.
Side note: The Rockies are very close to the origin of their western plate, which means that they are very young, and as a result, they're quite jagged (winds and rain/snow haven't worn them down yet), whereas the Appalachians are very far from their plates' origins (mid-atlantic ridge, North American west coast), and as a result they've had plenty of time to get beat up and smoothed out by the elements.



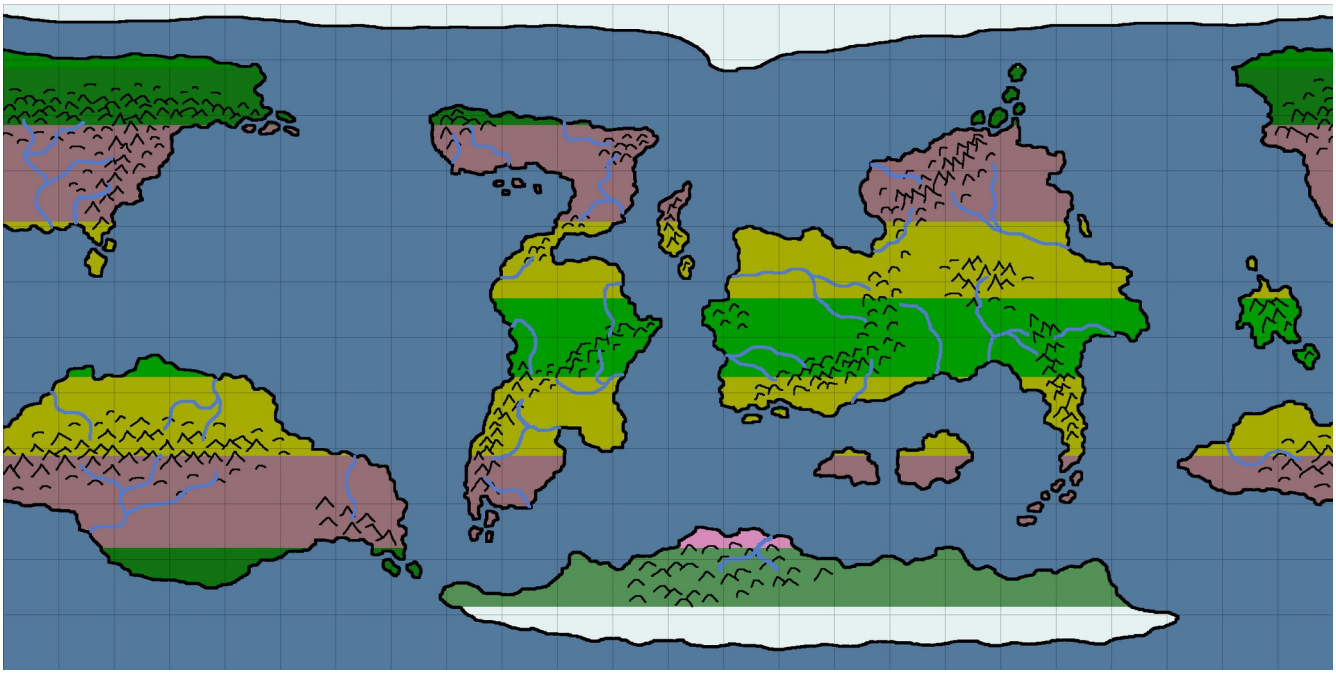
Rivers primarily flow from mountains to the sea, and on planets shaped like Earth, they tend to flow toward the equator. I didn't use this latter rule of thumb very often; it didn't really make sense with the way my mountan ranges lined up.



The arrows represent the general wind patterns for the planet. I decided to have this planet rotating the same direction as Earth, both because that's something I'm very used to academically and because it looked like it was going to make more interesting climates given the geology I'd created.

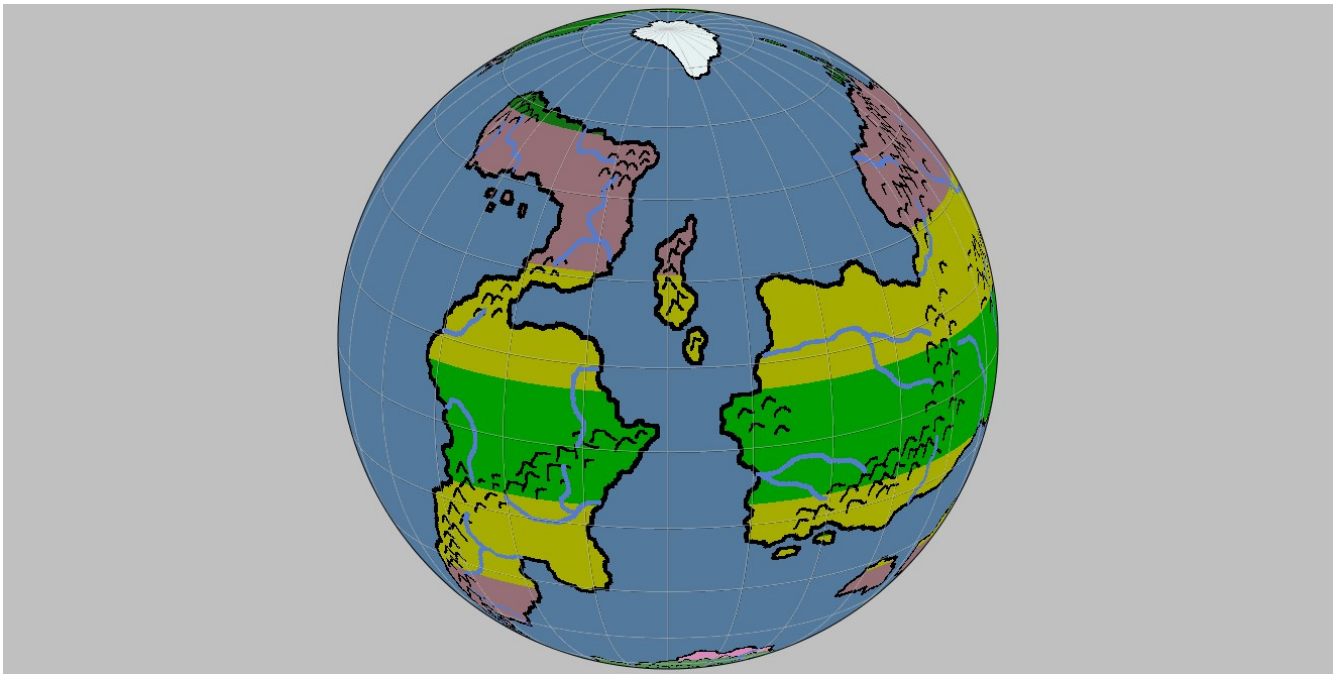


Same as with the wind, I have the general currents flowing on this planet just as they would on Earth, since the two planets are rotating in the same direction. These were a little tricky since there are a lot of smaller landmasses breaking up what would otherwise be large, predictable currents, but I know enough of fluid dynamics and oceanography to at least field a slightly reasonable estimate of how the waters be flowin!

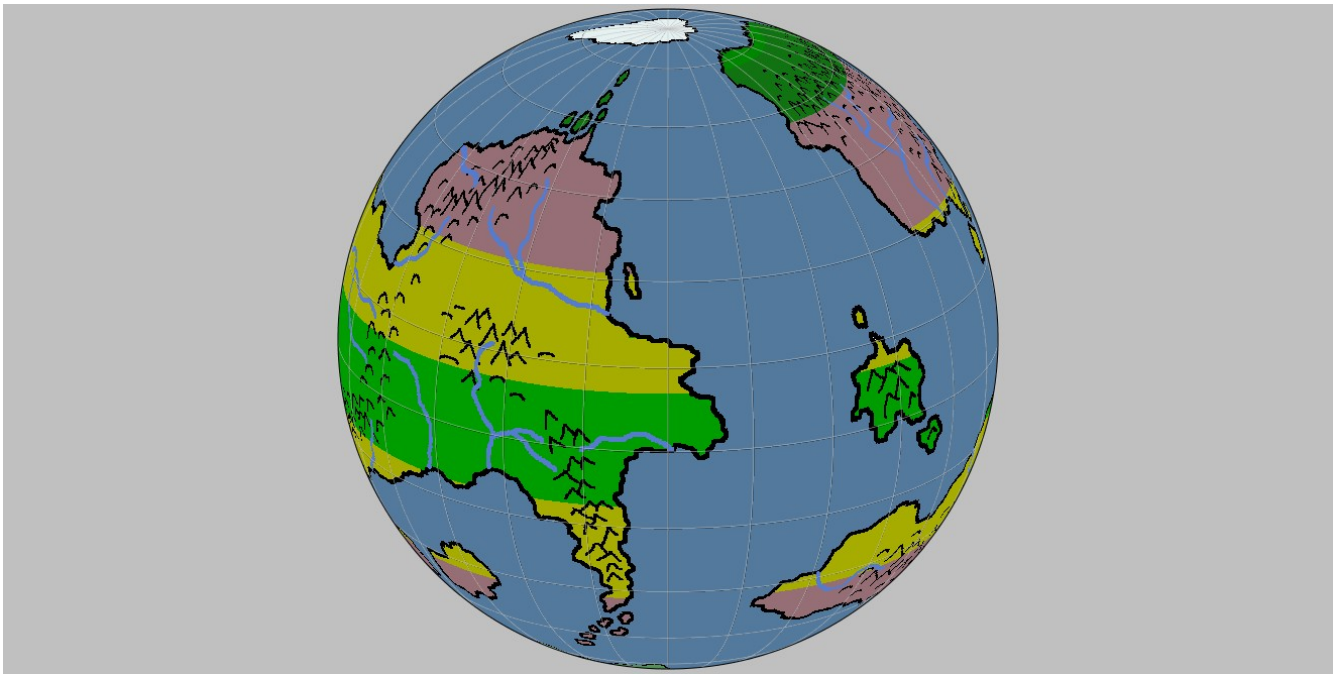


These biomes are based ONLY on wind patterns. I'm only going to use this as a super general guideline for when I actually start to place biomes on each continent, as I haven't even begun to consider mountains, rivers, sea temperature, sea proximity, etc. Only considering atmospheric upwelling (rising air) and downwelling (descending air). Where air rises, it's wet, and where it descends, it's dry. If you

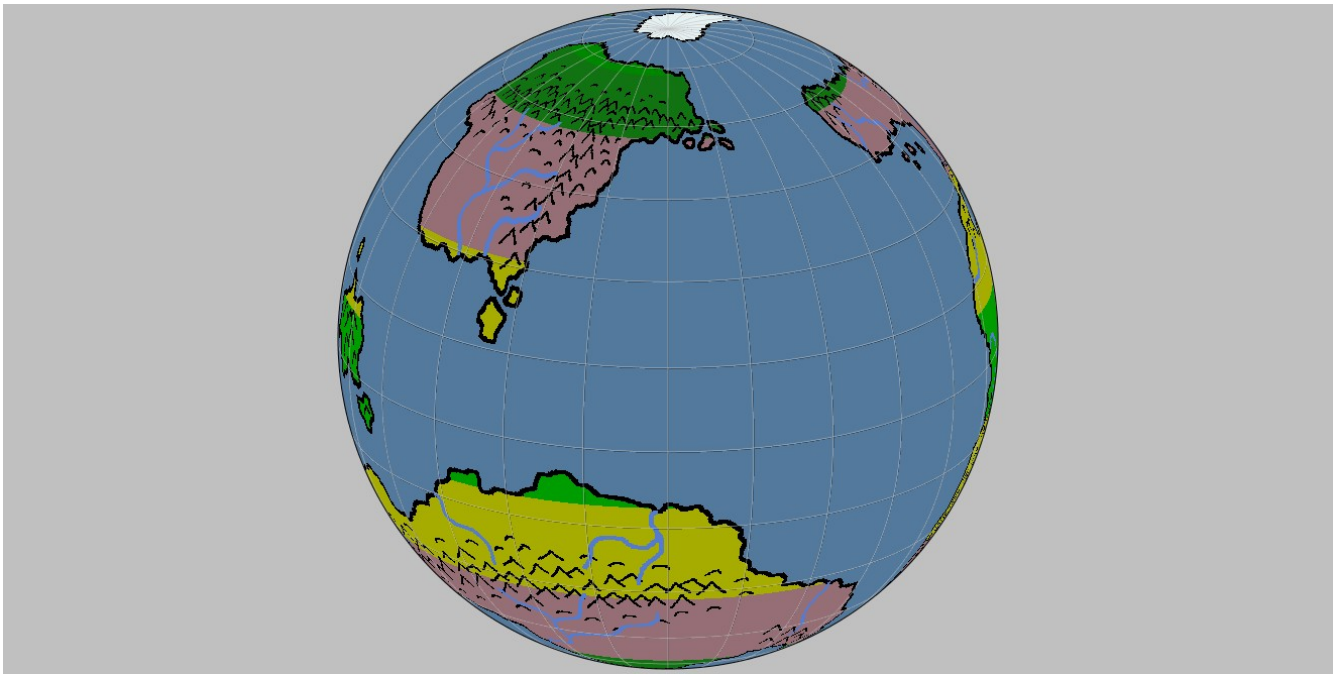
go back and look at the wind cells, you'll see that the green bands on there correspond to wet, rising air, and that results in moist climates at the equator and in the northern subarctic latitudes. Between them, you have the red bands, which represent dry air descending onto deserts or tundras.



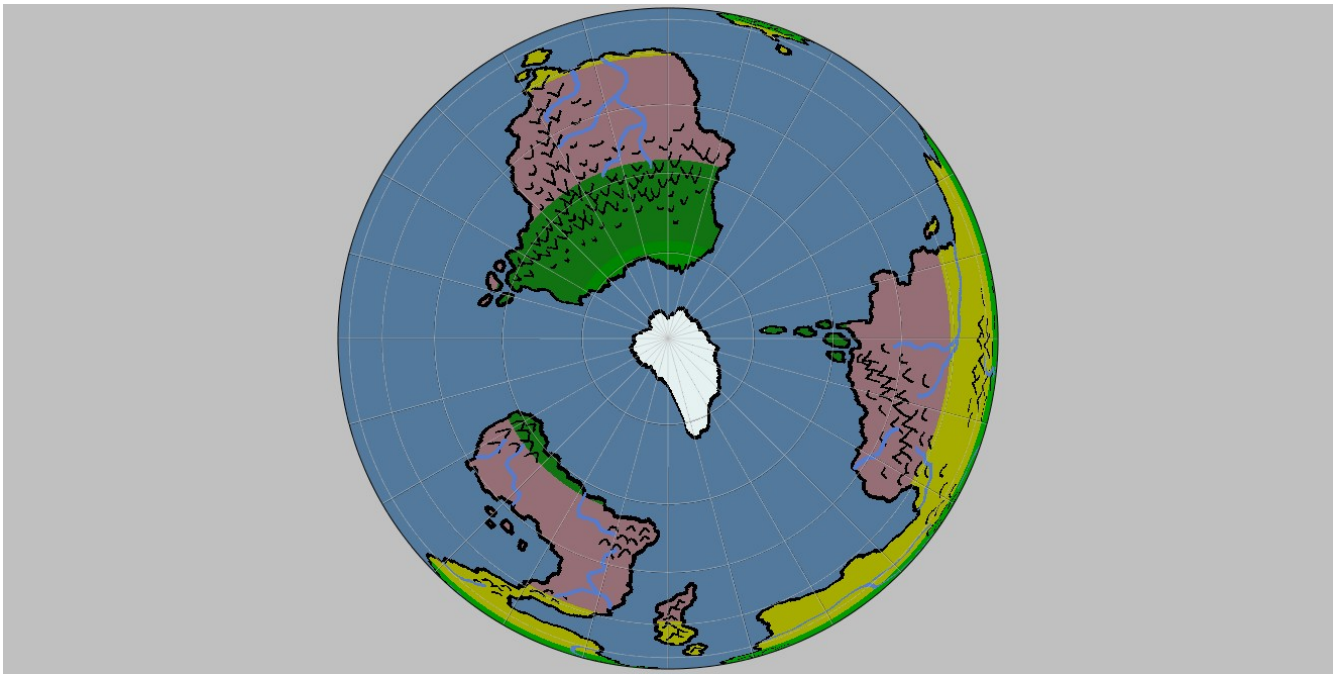
Centered at 0°E at the planet's ~20° tilt.



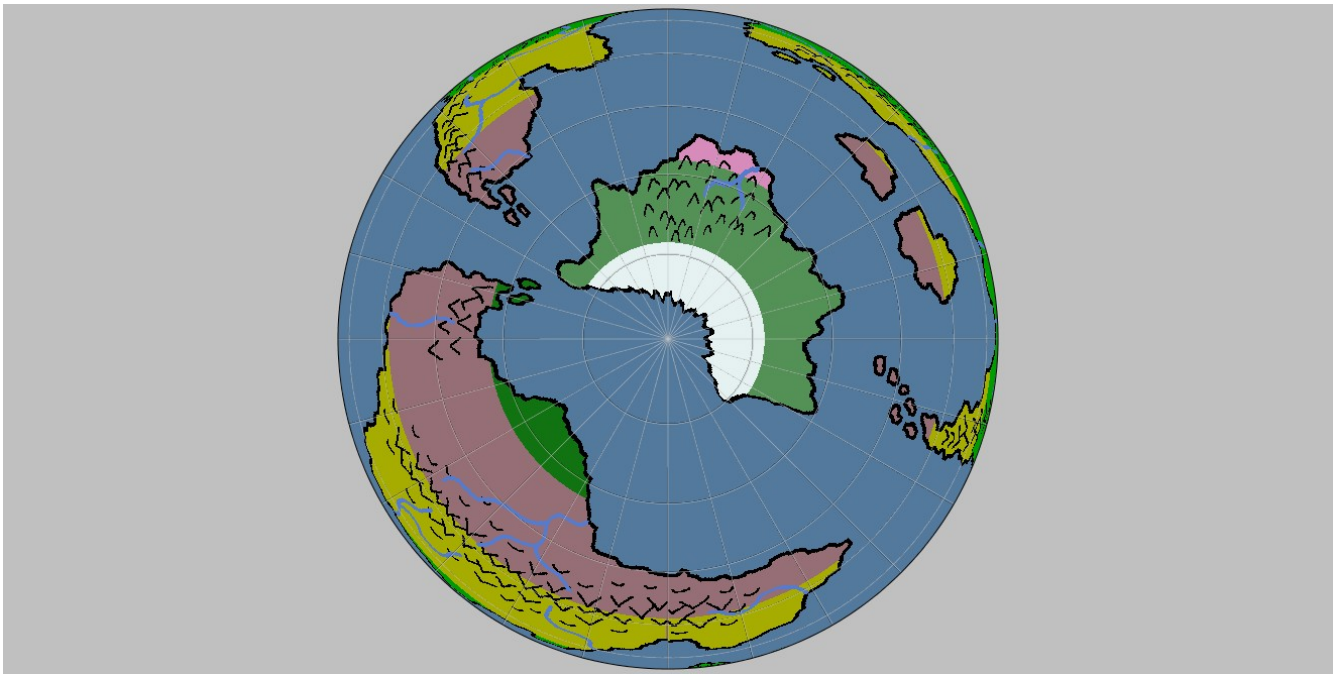
At 120°E



At 120°W.



Geographic North Pole.



Geographic South Pole.