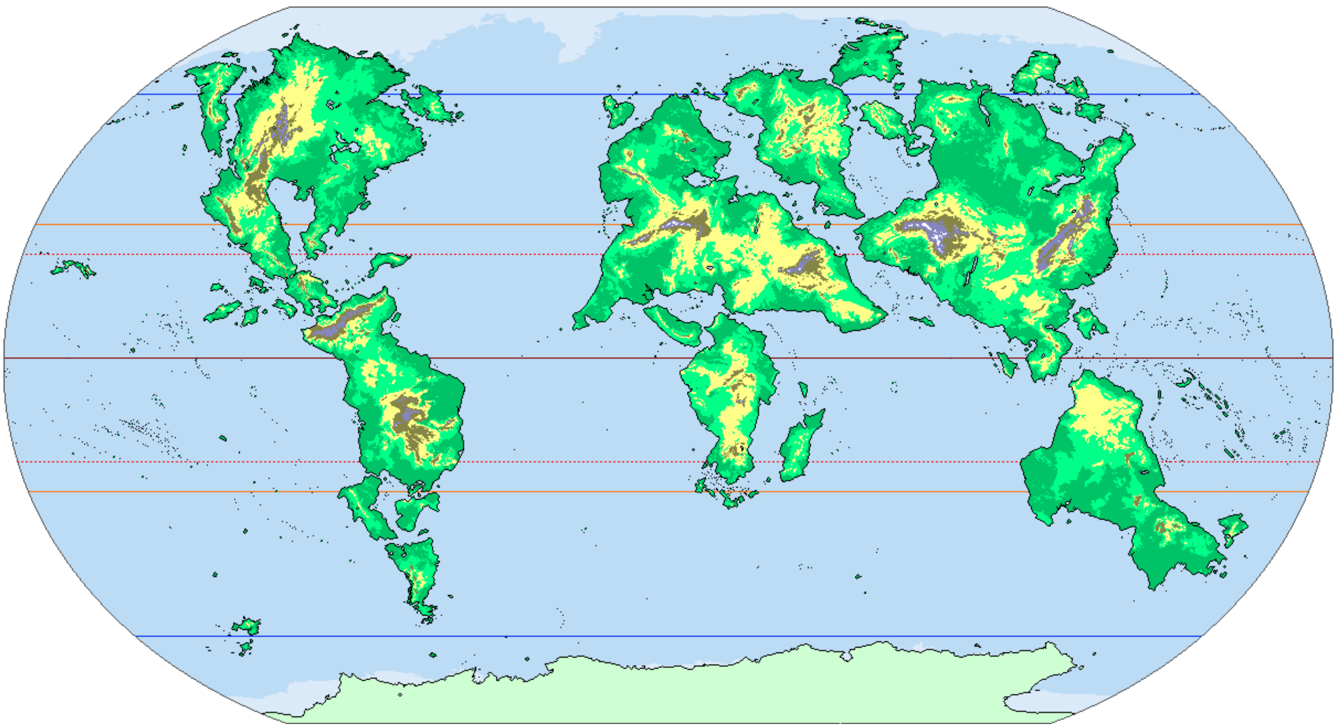
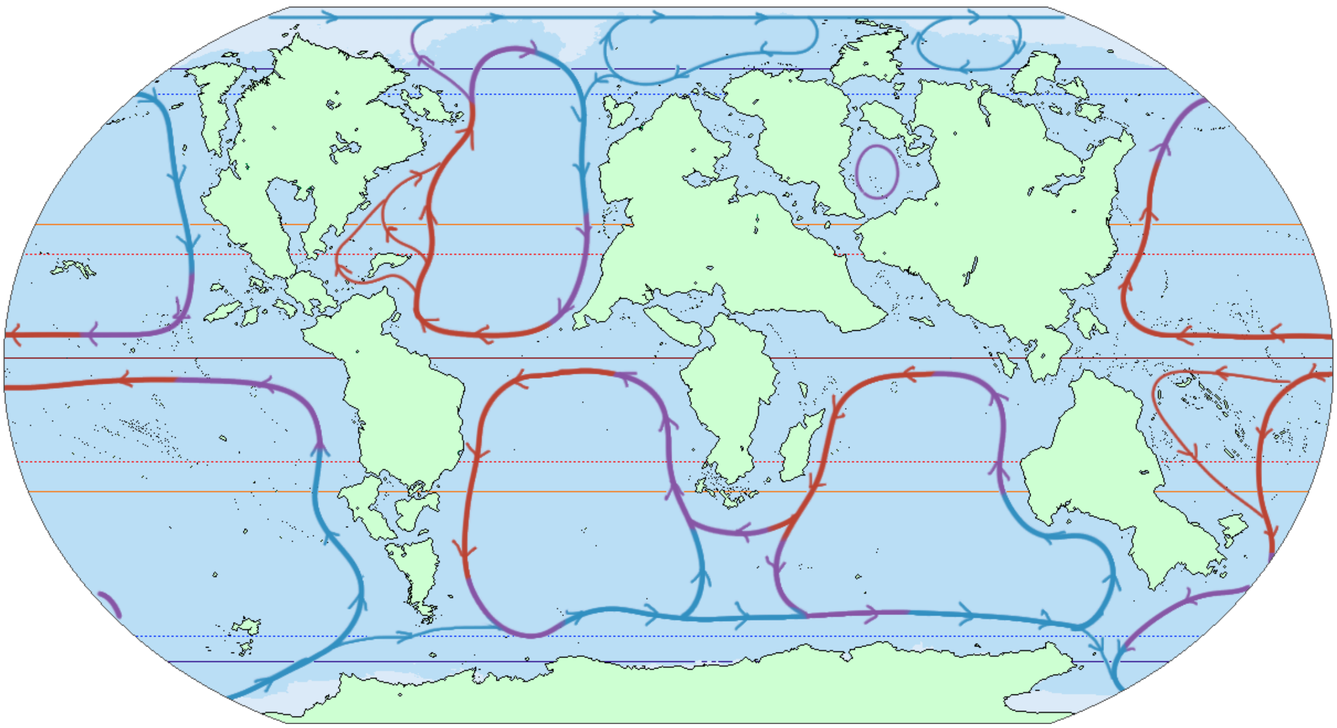
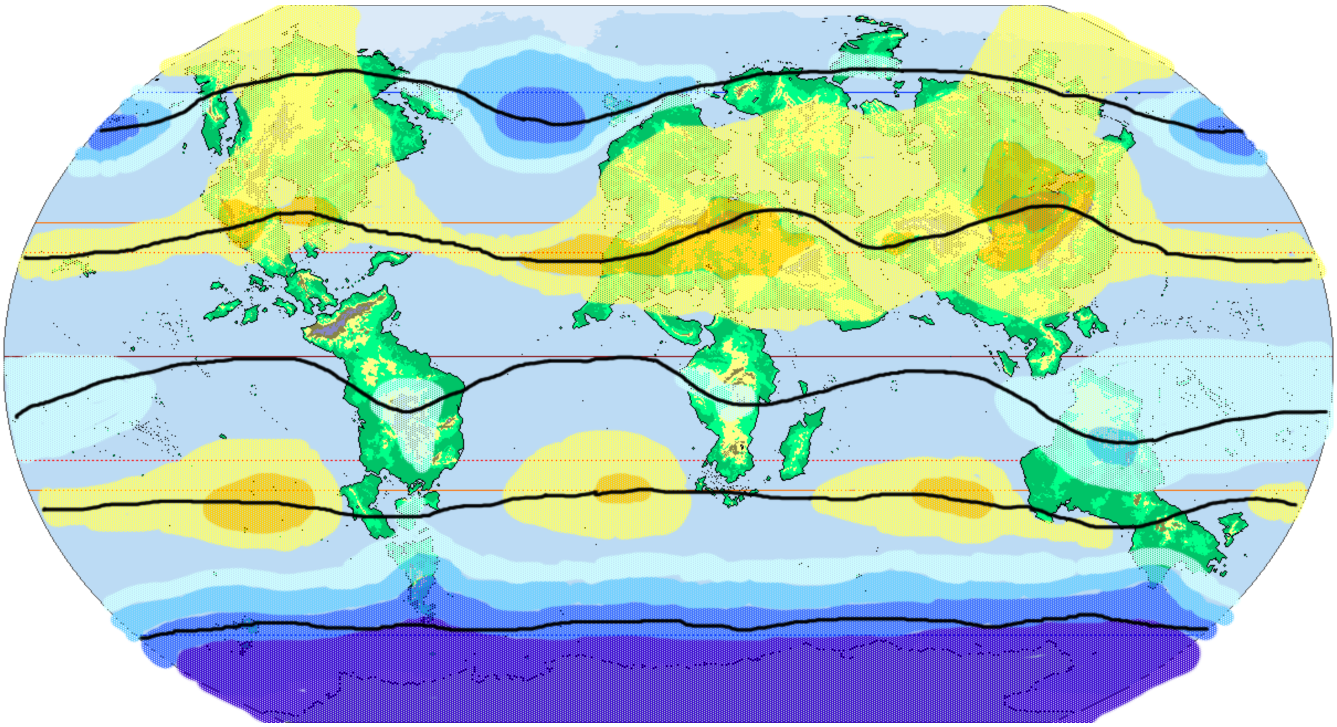


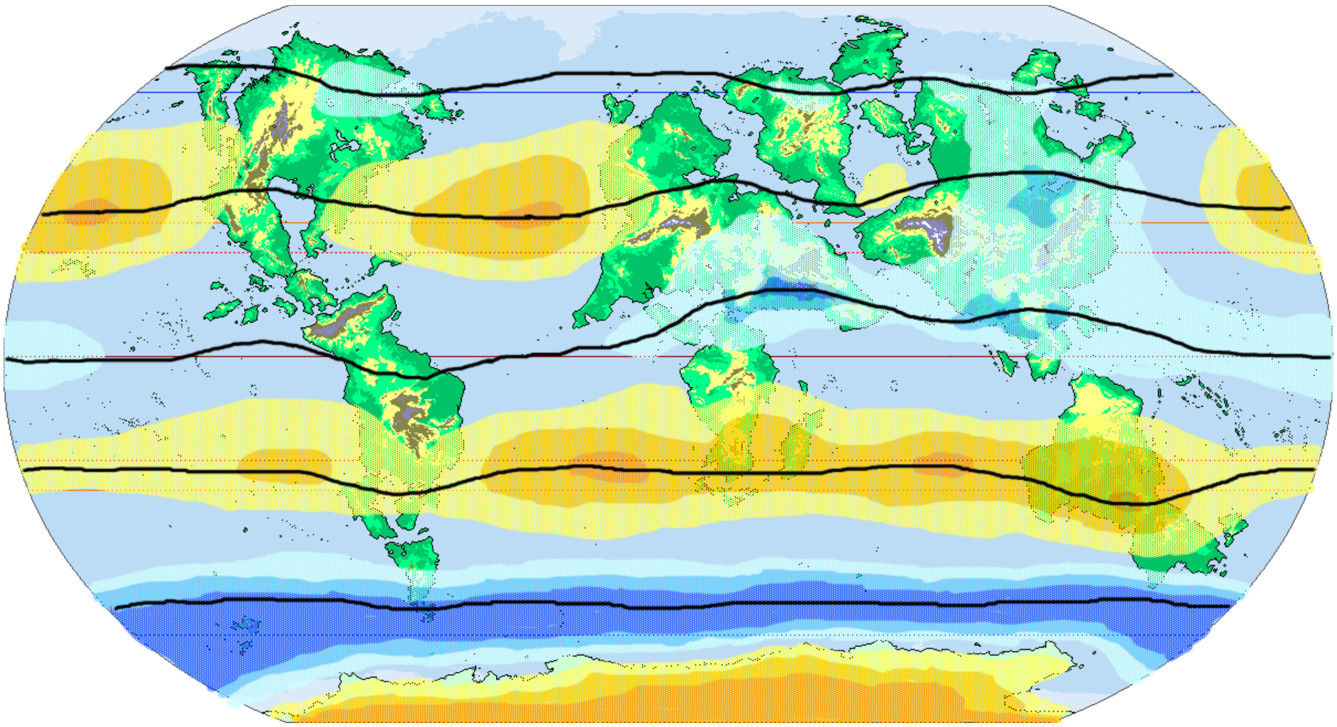
Here's the world HumanityDark has made. It's very similar to Earth in terms of the shape of the continents, which will prove immensely useful to me; I used a series of Earth climate maps from here: http://geog.uoregon.edu/envchange/clim_animations/index.html to help me with designing the climate. Seeing as how the map is so similar, I'll be talking about these continents by calling them not!Asia, Not!Australia and so on. We have a West and East Not!Asia (technically Not!Eurasia) as well as a central one which I won't talk about much.



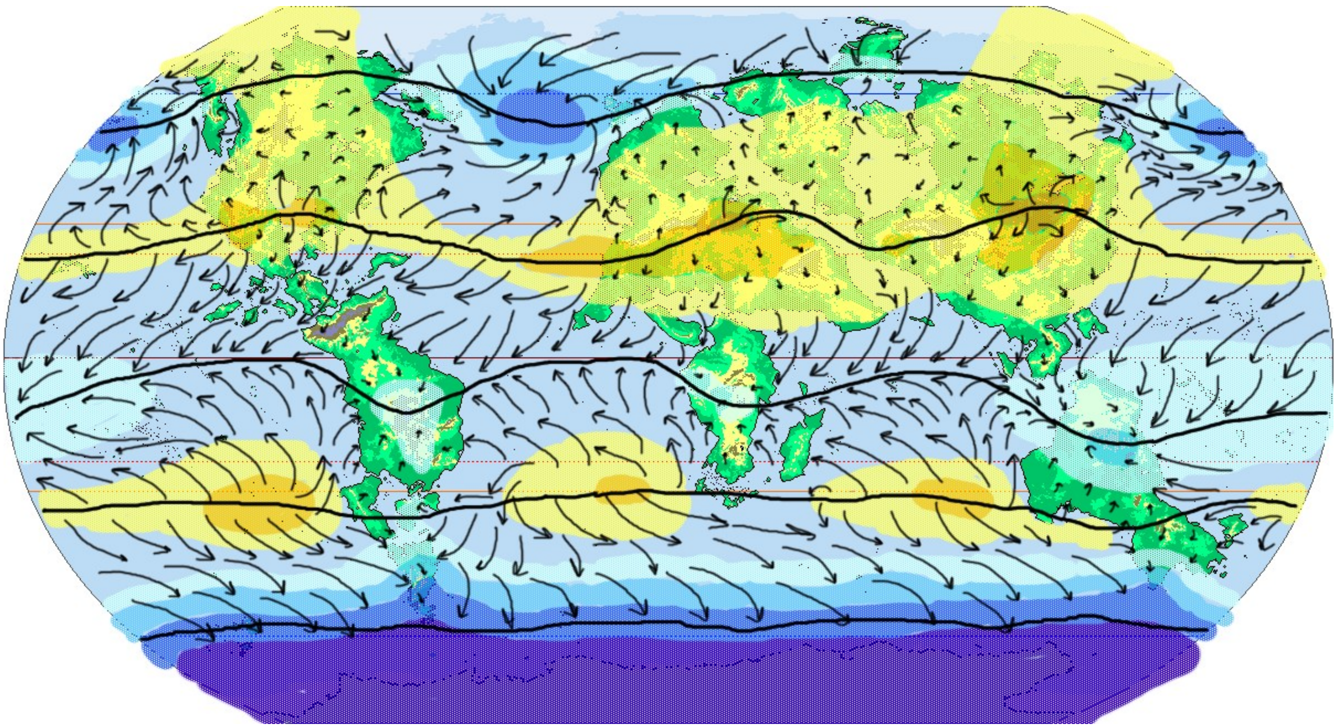
Very important, Humanity Dark helpfully provided this map (I'm bad at working out currents). Each map from now on until the final one will have two variants; winter and summer (referring to the Northern hemisphere). The winter map will have a description of the process of drawing the map, and the summer map details of what has actually occurred on the maps in question, as well as some other interesting information about climatology.



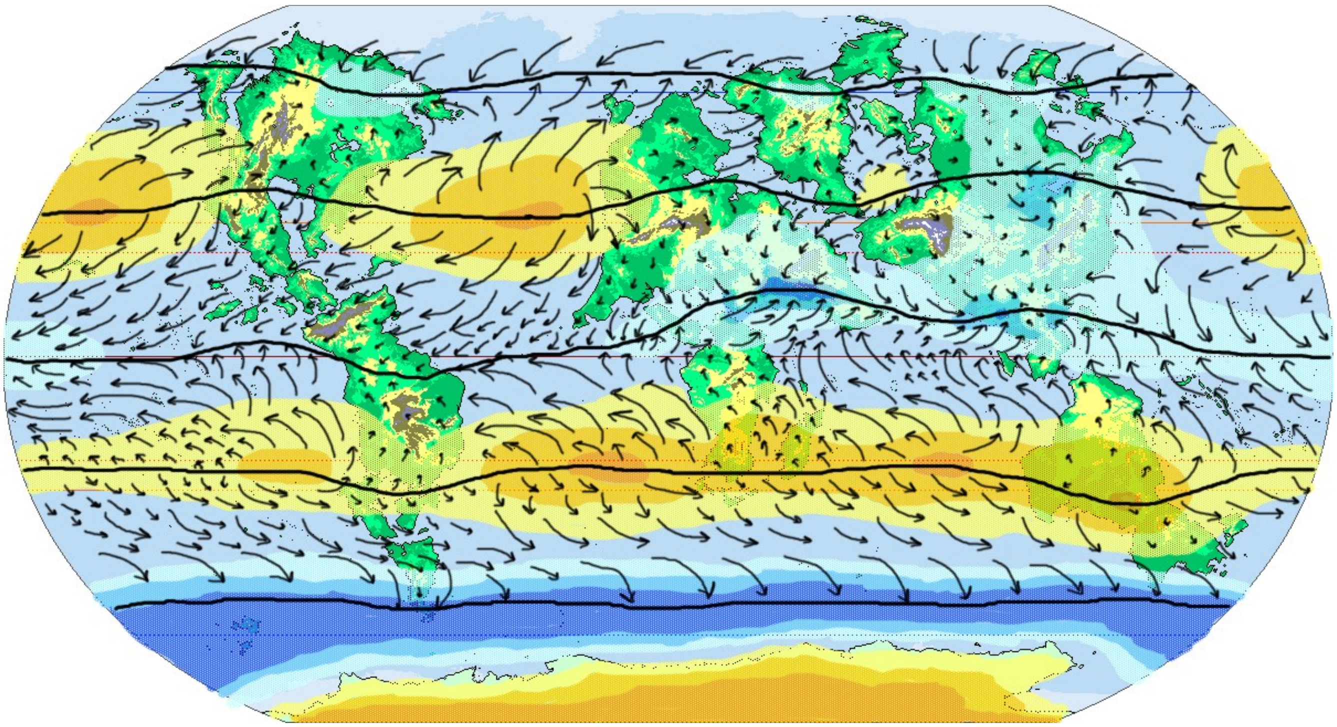
Pressure is the first thing we have to work out, since it drives climate. The Earth has three separate atmospheric cells in each hemisphere; the Hadley Cells at the equator, the Polar Cells at the poles and the Ferrel Cells (which arise as a consequence of the other two cells) in between. The Hadley cell is driven by heating at the equator (the thermal equator, which moves north and south with the seasons). Warm, moist air is lifted upwards, forming a low-pressure zone called the Inter-Tropical Convergence Zone. This air travels away (in the upper atmosphere) from the equator, and descends to form a high pressure zone roughly 30 degrees north and south called the Sub-Tropical High Zone. A similar system occurs at roughly 60 degrees north, with air being heated, traveling towards to poles and falling; this is the Polar Front. You can see these three marked on the map in black. An interesting aside; The reason the air can't travel all the way to the poles from the equator is the Coriolis Effect; the Earth's spin deflects the wind until it is travelling more or less horizontally. The Coriolis Effect gets stronger the faster the planet spins; if the Earth span slow enough, there would be one atmospheric cell reaching all the way to the poles, while if it span faster we would have five or more cells. The many bands we see on Jupiter are actually caused by its many atmospheric cells, since it spins a lot faster than Earth and has a bigger coriolis effect. In addition, the difference in heat capacities between land and sea creates additional pressure systems. In summer, areas of permanent low pressure form over land, linking up with the ITCZ or the PF. In winter, areas of permanent high pressure form over land, linking up with the STHZ. Here is the Winter pressures. Summer in this case refers to the northern hemisphere; this is July. Pressure is measured in millibars; Dark, medium and light blue are 995-1000, 1000-1005, and 1005-1010 respectively. No colour is 1010-1015. The pale yellow, yellow and orange colours are 1015-1020, 1020-1025 and 1025-1030 respectively. These pressures are averaged, naturally.



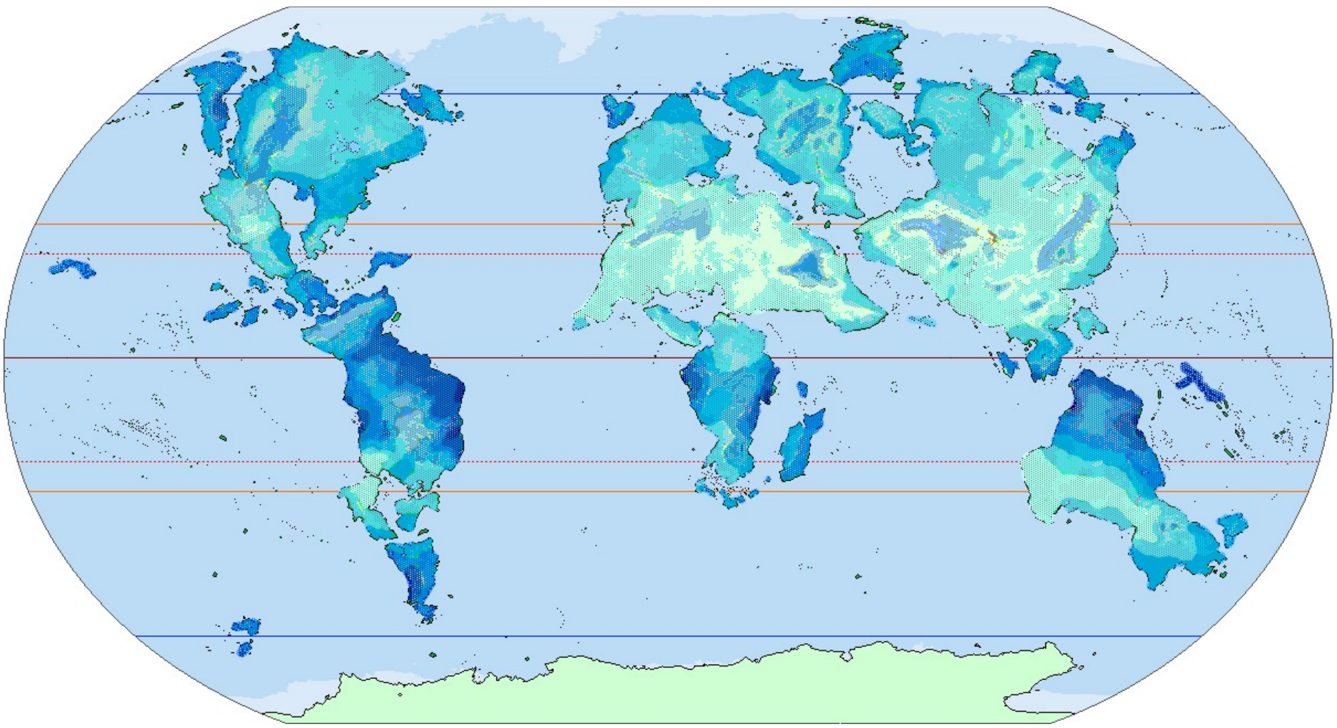
We can notice several things from comparing our maps to those I mentioned in the first post. In both cases, the ITCZ is much more significant over land than over sea, while the sea-based pressure systems of the STHZ and PF are more significant than the land-based ones (This may be a consequence of both planet's lack of land in the southern hemisphere, I'm not an expert on this). We can also see the huge Low-pressure systems Antartica creates which make its climate as terrible as it is; not!Antarctica is the same. Considering how elevated Antarctica and presumably not!Antarctica are, those pressure systems are incredibly powerful, because large enough mountain ranges (The Rockies, Andes and especially the Himalayas) have significant effects on Pressure systems; they limit the size of low pressure systems in summer and high pressure systems in winter. The Himalayas disrupt the low-pressure system more than the high-pressure on because of how far south they are. The not!Himalayas do something similar, but since there are two major mountain ranges they hem in the pressure areas, which will make the East Coast of not!Asia a bit more temperate. The fact that not!Asia has big seas running through it is significant (the eastern, round-sea in particular). These break up the pressure systems that form over Asia in our world, leaving several smaller (and thus lower intensity) pressure systems. Not only will these regions not be anywhere near as dry as in our world, they'll also have climates that are probably more temperate. The difference between high and low pressures in Siberia creates places which have temperature ranges from -65 degrees Celsius in winter to 35 Celsius in summer, which not!Siberia, being coastal, won't see. At the same time, these areas will be protected from the variability of the monsoon system. They'll probably be rather similar to Europe, with the southern and south-eastern parts of the landmass being more like our South and Southeast Asia.



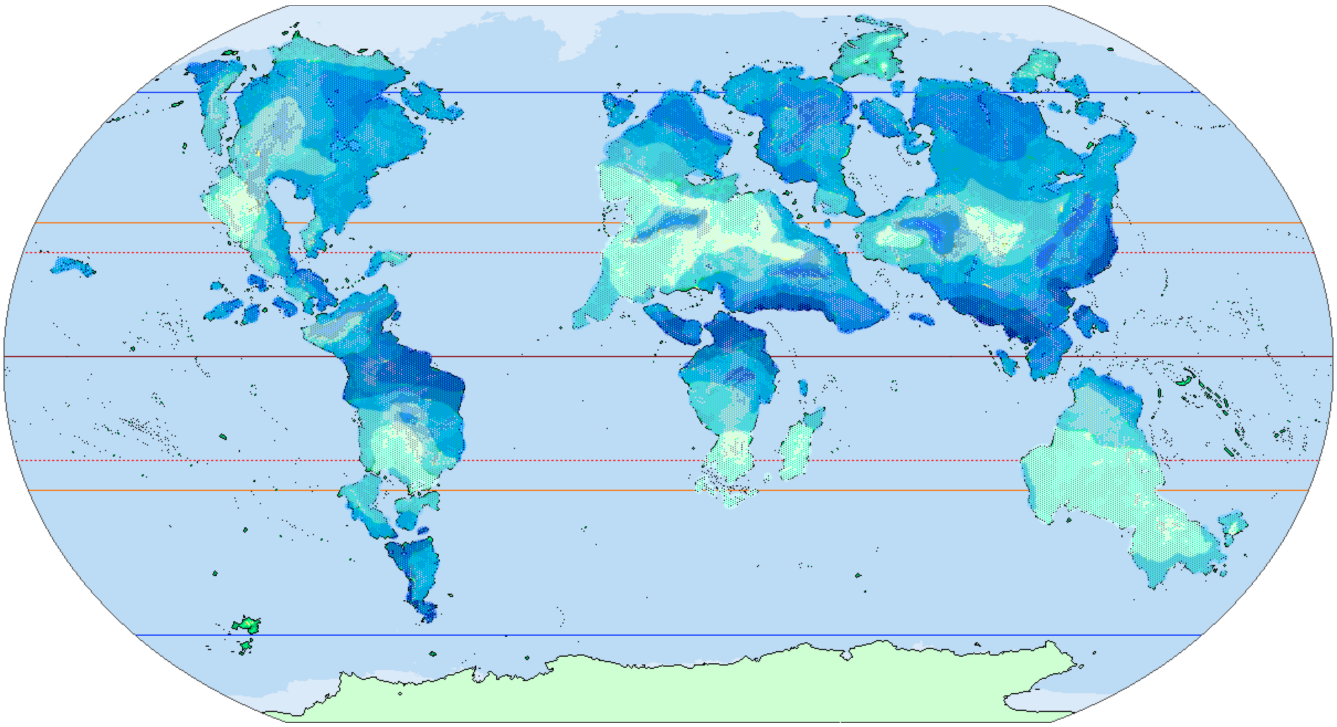
Now we've moved onto Winds. Winds flow from areas of high pressure to areas of low pressure; wind is simply the natural tendency of the atmosphere to want to spread evenly. However, the Coriolis force deflects the winds, preventing them from moving straight from high to low pressure. In the Northern hemisphere, they are deflected clockwise around high pressure areas and counterclockwise around low pressure areas. In the Southern hemisphere, the reverse is true; they are deflected counterclockwise around high pressure areas and clockwise around low pressure areas. We are most concerned with winds over the oceans, for several reasons. Baring a few exceptions, only winds over oceans pick up enough moisture to be significant in precipitation. Winds over oceans determine the best ways to sail, which is obviously useful for a worldbuilder. Finally, local topography has such a large effect on wind direction that the winds on land have much less of a general direction except in the case of very high or low pressure systems. Thus, I've used very small arrows for land based winds. Calculating which regions will be very windy or not is beyond my abilities, except upland areas will generally be more windy.



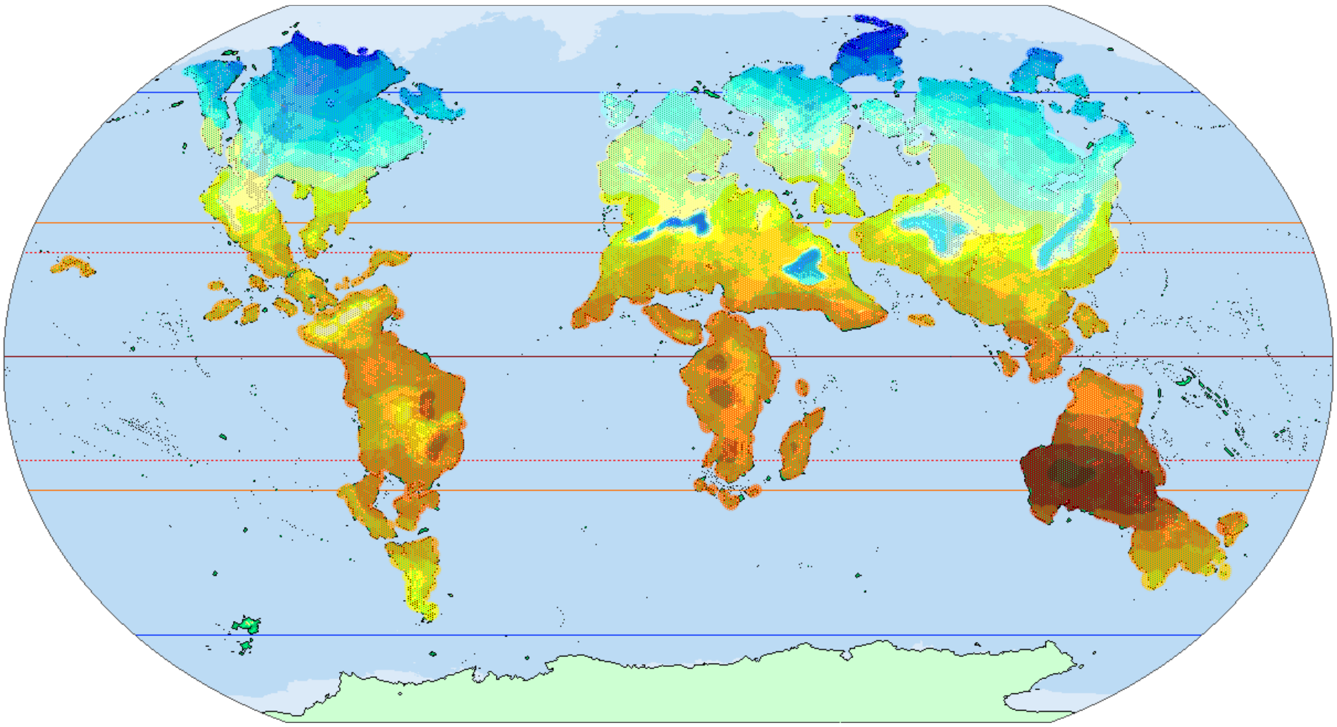
We can see several things immediately in our two maps. The winds around not!Antarctica are powerful and will contribute to it having a terrible climate. That island in the bottom left hand corner of the map will not be a nice place to live. The not!Amazon region will be just as wet as it is on Earth, having year-round onshore winds. The south coasts of our two not!Asias will have something like the monsoon, with a significant wet and dry season, although not quite as powerful; they'll be less rain in the rainy season and more rain in the dry season. The southwestern part of the West not!Asia will be similar to the Sahara, but nowhere near as big. The lack of such a large desert will mean this world will have much stronger links between not!Asia and not!Africa. There are two significant seas that are part of high pressure systems, being located in the middle of continents. They'll be a source of moisture in otherwise dry areas. The one in not!N.America analogue will have a small effect at making that part of the world more temperate; there will not be a great American southwest desert; it'll probably be more like a steppe. The other sea, in not!Asia is going to have some odd effects. Like I said earlier, it makes the area more temperate, but beyond that I really don't know. Nothing like it exists on Earth. It'll have pretty constant clockwise winds, though, so that'll aid navigation.



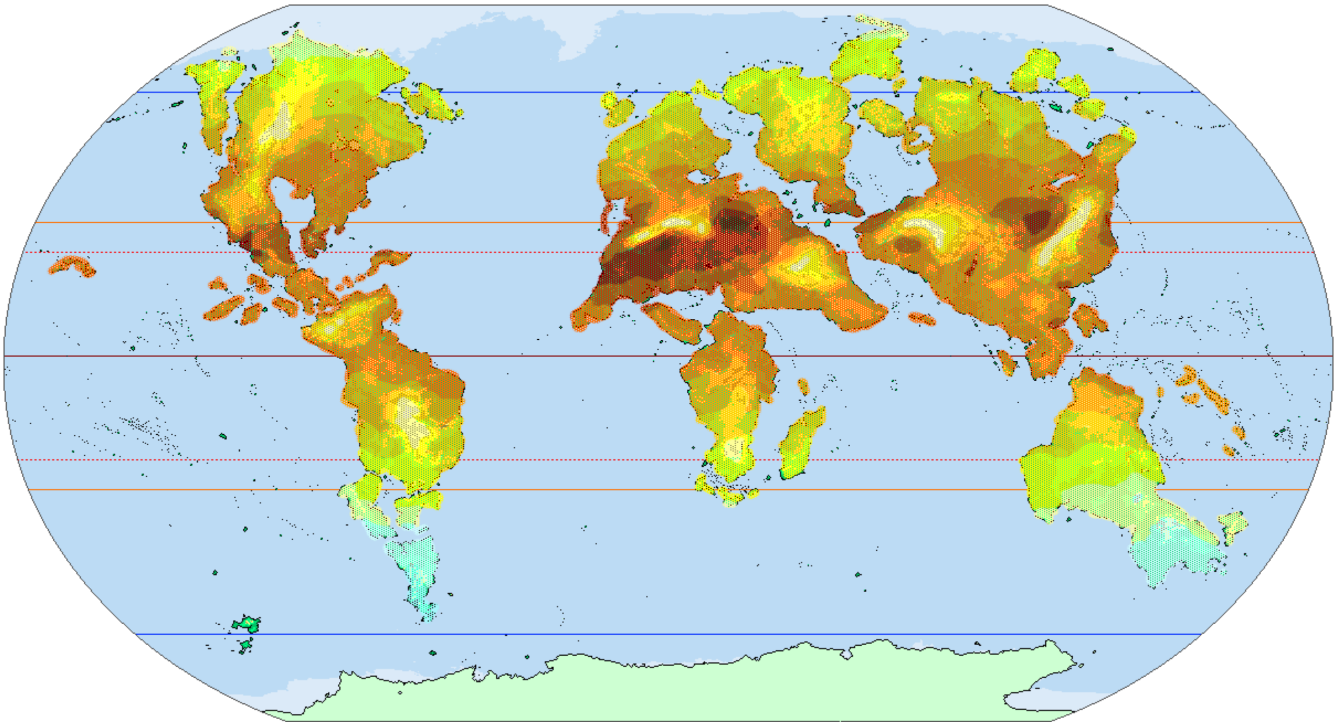
Precipitation is influenced by four main factors; permanent pressure systems, prevailing winds, warm or cold currents, and elevation. Low pressure and warm currents bring rainfall, high pressure and cold currents do the opposite. Prevailing winds carry moisture from sea to land, but if the reach mountains they may lose water all at once and prevent rainfall beyond the mountains. This is, of course, a simplification. However, the way the four interact is complicated. As far as I can tell, Permanent pressure systems take precedence, but can be overcome to a limited extent by a combination of favourable prevailing winds and warm currents. Winds are slightly mor eimportant than currents, and elevation only matters a lot for very large mountain ranges. Darker blues is more rain; the six increments are 0-10, 10-50, 50-100, 100-200, 200-400 and 400+ millimetres per month.



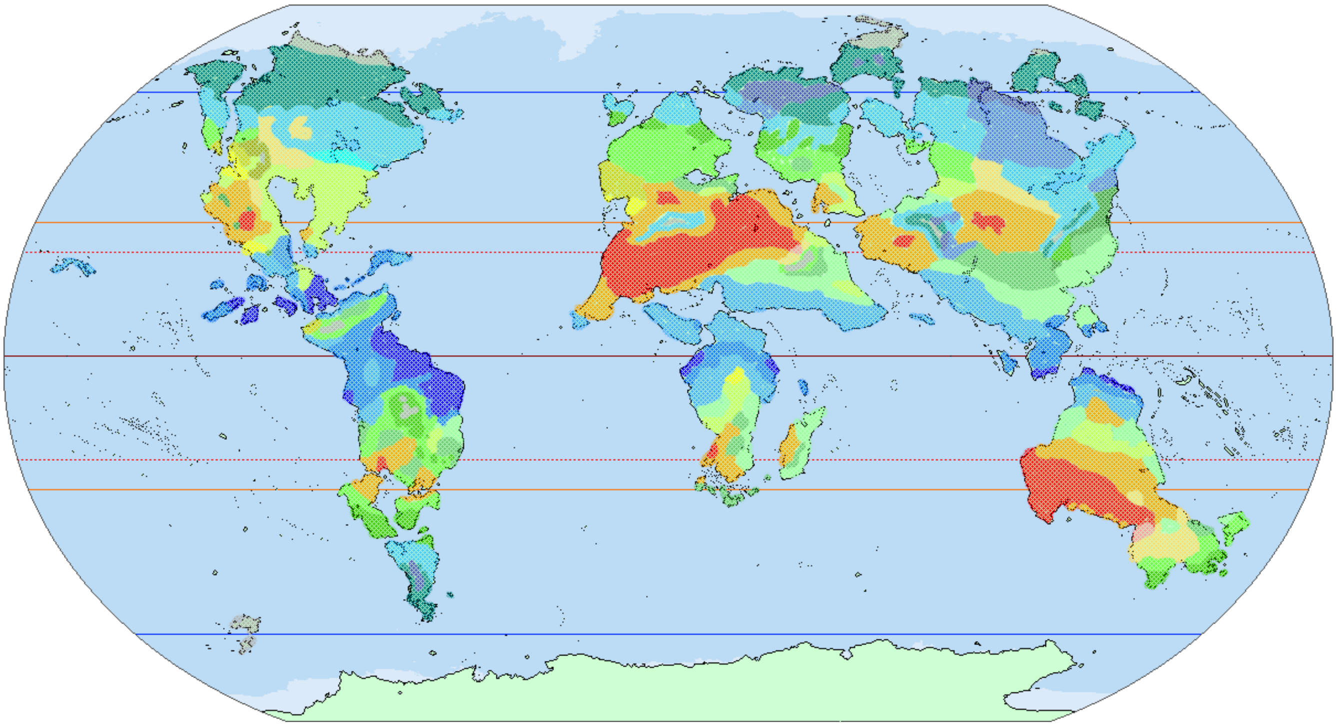
We can make out the bands formed by the ITCZ and STHZ in these maps, although the locations of permanent high-pressure systems mean these bands are not perfectly continuous. We can see the difference, on West Not!Asia, between dry year round on the southwest coast, giving a desert, and a monsoon season on the southeast coast, giving a climate more like India. Something similar occurs on the north coast of not!Australia, which also has a monsoon climate. Further, south there is another large desert (this world's second largest, probably) but the southeastern extent of this continent is far move livable than southeastern Australia. The desert's southern coast will probably be a bit like Namibia; just barely livable, while inland it will become like the Sahara. Like I suggested, the areas around the inland seas have rainfall year-round, which will keep the temperate and fertile. not!N. America does as well, although it is a bit drier. Despite the inland seas, the landmasses in not!Asia are quite large, so the temperature difference between winter and summer will be large as well. Climates around these seas may be more like the continental US (East Coast, or inland more like Nashville) than the west coast of Europe. Not!S.America has a nice Amazon-analogue shaping up, but has much more complex climates further south; I estimate there won't be a massive rolling pampas like Earth has, but areas of moderate steppe and scrubland near areas of light forested regions; since the continent is smaller, temperatures will be more even thoughout the year. Another nice place to live. Not!Africa has no real areas of rainforest like the Congo; they'll be smaller and scattered, with more regions like the Sahel prevaling. Again, the smaller continent will see more even temperatures year round, although I'm not sure it'll be particularly livable, with the southern half having a lot of steppe.



Luckily, doing temperature is much easier than precipitation. It's mostly dominated by latitude, with elevation, distance from the sea and pressure systems having smaller but still significant effects. Higher elevations are colder, obviously, and the further you are from the sea the bigger the effect of summer/winter is (i.e. inland areas are warmer than coastal areas in summer, but colder in winter). The way pressure systems work is more complicated. Again, the maps I have of Earth are what I based most of this on, although there are some key differences. Each colour is a 5 degree increment for average temperature. I haven't added the key, but the darkest red spot on either map (two places in the North-central continent in summer, one place on the SE continent in winter) are 35-40 degrees, and each lighter colour is a 5 degree increment lower. The colest we get are -30 to -35 (in the very dark blue right in the north) on the winter map, and -5 to -10 in the very south of the SW continent on the summer map. Note that on the summer map, if I did temperatures for the south polar continent they would easily go below -50. For the largest mountain ranges (of which there are quite a few) I have only done a rough temperature gradient - obviously the very highest regions would be far colder than they are shown, but at that stage it becomes a question of topography too small for the base map.



These maps show the effect of axial tilt on the planet's climates the best. Earth, and I assume HD's world, have an axial tilt of roughly 23 degrees. This doesn't sound like much, but its deceptive; this creates huge changes in the sunlight received between summer and winter, which in turn drives the movement of the ITCZ and the pressure systems I've aready drawn. If there was no axial tilt at all, these pressure systems wouldn't move and we wouldn't have seasons. Consequently, several climate types would dominate; tropical rainforests would be much larger than they are, and would have a thin transition zone to large hot desert climates as you headed polewards. The deserts would transition polewards through a thin band of something vaguely meditteranean into large areas of something similar to the temperate maritime climates of Western Europe, except again these would have no seasons (they'd be most like Spring and Autumn, I think). These would then gradually get colder into polar tundra. Only landmasses, and their consequent pressure systems, would lead to small careas of climate not like this. As axial tilt increases, these climates become rarer. The temperate regions are the first to go; there are only a few places on Earth like I describe, all microclimates in elevated regions near the equator (there's some in Mexico and Ethiopia) and even places which are mild year round (Western Europe, for example) are very limited. Tropical rainforest becomes rarer slower, and hot desert and polar tundra even slower than that. Around 50 degrees axial tilt, all four of these climates disappear entirely; since by that stage a location is alternately directly beneath the sun (effectively equatorial) in summer and parallel to the sun (effectively polar) in winter. These climates would be most like Siberia, with its huge temperature swings between summer and winter; and that would be the mild, coastal parts! At the so called Cold Pole in Siberia, the difference between lowest and highest recorded temperatures exceeds 100 degrees centigrade. This would be common once 50 degree axial tilt occured, and inland areas would see much greater transitions. As for the map, it's again very similar to Earth. We can see the stabilising effect the inland seas have on not!Asia, with temperature ranges of 15-20 degrees or so; very hospitable. Our expanded not!Australia also has a very hot summer, while the southernmost parts are much colder in winter. On Earth, a band of extremely hot summer weather goes from Western Sahara to northern India, and is only stopped from reaching China by the Himalayas. With more huge mountain ranges at that latitude in HD's world (was that deliberate or something?) theres a much smaller region of such grossly hot areas, since these huge mountain ranges, and their attendant ice caps, tend to cool the climate for a large area around them. What specific effects this will have I don't know, although the two areas trapped between large mountain ranges, one on each continent, will probably have some weird weather.



Here's HumanityDark's climate map finished. It uses the Koppen Climate Classification system, which you can find out more about here: https://en.wikipedia.org/wiki/K%C3%B6ppen_climate_classification The colour scheme is from the map in the link. Explaining it would take too much space here, as there are more than 30 climates by its classification system. But the lighter equatorial blues are tropical rainforest and savannah, the reds and oranges hot desert and steppe, the yellows are mediterranean, the greens various temperate and subtropical climates (from the southern US to Western Europe to China) and the darker, polar blues and purples are continental climates (northern US, eastern Europe and northern Asia). One thing to note. In not!N.America, as you head north up the west coast you go through Mediterranean climates into a climate that doesn't show up on the Koppen Map, because it's extraordinarily rare on our planet. It is a dry-summer maritime subalpine climate, which in our world is only found in small elevated coastal areas in parts of Chile and Oregon. A combination of slightly altered conditions of this world and me being not that good at this means that it's geographically significant in this world, although again not very big. The most obvious thing about this map is that the additional seas breaking up continents have vastly increased the amount of temperate climate, which has made a lot of rather pleasant places to live in not!Asia. Not!N.America is much the same as in our world, with the Rockies creating a confusing mish-mash, as is not!S.America, although as you head further south the strange geography makes a confusing quilt of climates that aren't as different as the colours suggest. Still, it'd be an interesting place. The far southern tip will not be pleasant. Not!Africa is much smaller than Africa, but generally a rather nice place, although there is still a desert like the Kalahari. The Sahara has an analogue too, past of West not!Asia, although its not such a big obstacle to travel. The southern coast of the West not!Asia will be much like India. East Not!Asia is dry and has heat extremes in the centre, but round the edges is much more pleasant. Even the northern coast isn't quite as bad as Siberia, and the east and southeast coasts are very much like China. Not!Australia is much bigger than Australia, and as such has more arable land but also more desert. Expect the area to the southeast to be vibrant but cut off from most of the rest of the world. Not!Antartica is a block of ice. That should go without saying. I haven't even bothered to label it; it's a polar tundra.