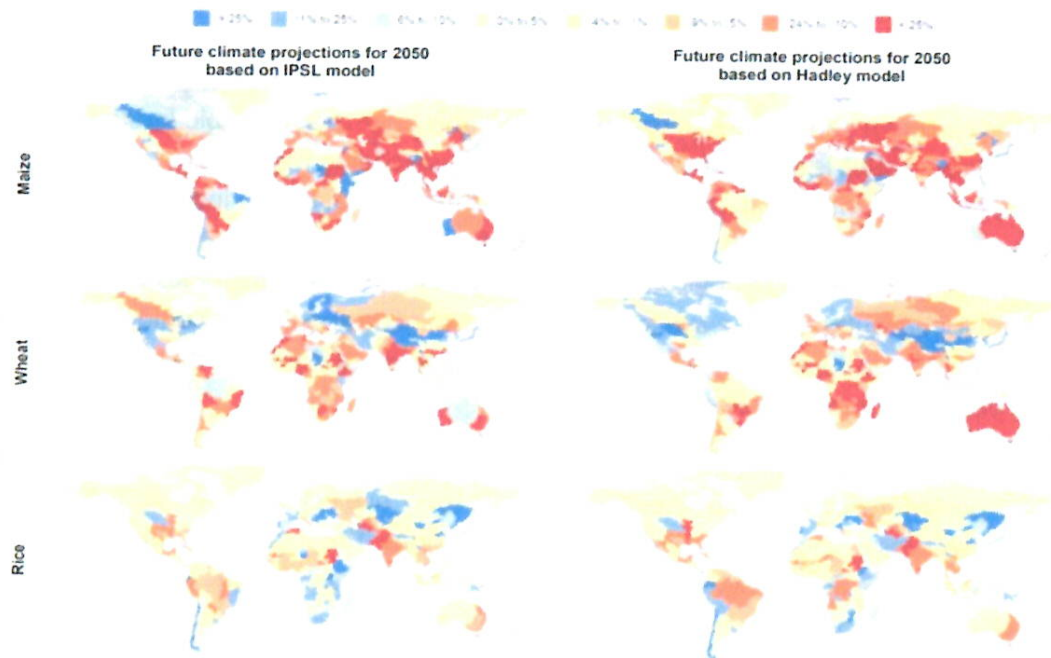


Figure 1. Effects of climate change on yields are negative in most producing regions (red shades), but some regions may actually benefit (blue shades)



Climate change & Agriculture

Outline to what extent agricultural systems and climate change are interlinked ^{temperature?}

Over the years, the Earth's climate has been increasing at alarming rates, especially since the industrial revolution which caused a huge release of greenhouse gases. These rising temperatures are a concern in many aspects, but possibly one of the most important is how this can impact agricultural systems. We rely on these systems to be stable in order to have food every day. Here is how climate change can have an effect on agriculture, and therefore how agriculture unconditionally ties in with climate change too.

With the rise in temperatures, agriculture around the equator becomes more difficult: the soil becomes dry, water is scarce and of lesser quality, crops die easily. This causes a general shift of agriculture poleward, leading to previously overly cold areas to be the right climate for specific ^{rainforest?}

To be used in conjunction with: <http://www.ibgeographypods.org/b-consequences-of-globalclimate-change.html>

Could you tie in population growth = increased food supplies??

I'd perhaps focus on the edges of the temperate latitudes, desertification etc...

Continue

crops. However, simply shifting the plantations poleward may not always be the solution due to differences in precipitation frequency and intensity, extreme weather events, soil type etc. The map above shows how the rising temperatures would detriment many areas such as Africa, South Asia, Australia and some part of northern-central South America; especially for maize and wheat.

big area. be more specific

On the other hand, this temperature change could cause permafrost to melt in the tundra sections of the Northern hemisphere, allowing us to use this large area of stable fertile soil for agricultural purposes. This is the case of vineyards that are spreading further north in the UK due to warm temperatures. Unfortunately, the melting of permafrost would also include a massive release of methane gas, trapped under the permafrost for hundreds of years. As we can see from the map above, the rising temperatures would benefit areas nearer the poles that would become useful for agriculture with a rise in temperatures. Canada and Europe could grow maize and wheat, some of Asia could start growing wheat as well as more rice in northern Asia; and Africa could potentially grow maize and rice.

Not the right place for this between two sources permafrost!

METHANE RELEASE

However, it's not only climate change that's affecting agriculture: this is also the case vice-versa. Agriculture is part of the emissions of greenhouse gases too – rice fields, ruminants, fertilizers and soil are all sources of methane and nitrous oxide emissions. This increase in the quantity of greenhouse gases in the atmosphere is leading to even more climate change. There is also the example of the cultivation of land that used to be frozen: as crops (and therefore the surrounding buildings too) are darker than snow and ice, the albedo will be reduced, causing more heat retransmission and creating a positive feedback loop.

Deforestation?

ALBEDO

One other problem created by shift of agricultural systems would be the population distribution. Most of the large cities are located on the coasts at latitudes that offer a pleasant or warm climate. However, as the agriculture shifts poleward, it moves away from these cities, meaning that transporting the resources from the still remote locations of the crops cultivation areas to these cities will be more costly, both economically and environmentally. There is still the possibility of the creation of new megacities nearer to the cultivated areas, but this would take time and money.

URBAN TRANSPORT MEGACITIES

Overall, we can see that agriculture and climate change are closely interlinked and dependent on one another. There are some disadvantages caused by changes in climate which impair certain populations and areas, but this can also open up new possibilities for other countries. We also need to be careful with our agricultural methods and these may need to be adapted for a better match of our planet's environmental needs.

space for S.D.F.?

7/10