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How does climate change affect poor people in Africa?

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Abstract

Our planet is warming up! That doesn't mean we will have nicer *weather,* though. It means we have weather events that are more extreme. *Floods, droughts*, and *heatwaves* are more powerful and are happening more often. People lose their homes, jobs, and eat less food. And poor people suffer the most! People who are very poor do not have enough resources to handle the effects of extreme weather events. To help them in the future, we need a good understanding of what is happening now.

We studied one of the poorest regions in the world, *sub-Saharan Africa* (SSA). We analyzed data from thousands of families living all across the continent and looked at what happens to them when extreme weather events occur. We found that floods had a worse impact than heatwaves and droughts. Finally, we predicted that because of climate change, the number of people living in poverty there could increase in 10 years. Our results could be very useful for planning ways to help people in Africa.

Introduction

Climate change is a hot topic – quite literally! Climate change refers to long-term changes in otherwise normal weather conditions. Scientists agree that human activities are heating our planet more and faster than any other time in the past. In fact, Earth's temperature has increased by about 0.9 degrees Celsius (1.6 degrees Fahrenheit) in the last 150 years. This may not sound like much, but it's enough to melt glaciers, warm waters, raise sea levels, and change ocean currents. This causes the weather to become more extreme and unpredictable. Some places receive more rainfall or powerful hurricanes that lead to flooding. Other places get less rainfall, which might mean drought and *wildfires*. These extreme weather events harm *agriculture* and reduce the world's food supply. They also cause people to lose their jobs and property and affect the *welfare* of families.

These weather changes affect every country on every continent on Earth. But poor countries are hit the hardest. Sub-Saharan Africa is one of the poorest regions in the world – millions of people are struggling with *poverty* and hunger.

Women gather with water containers in Ethiopia. The surrounding region has not seen rain for two years.

Source: Petterik Wiggers/ Panos Pictures

Most Africans do not have the resources to handle the impacts of climate change. And worse yet, scientists predict that SSA is an area that will see the greatest increases in extreme weather events in the future. Many governments and organizations are looking for ways to help them. But we don't really know the effect of climate change on the poor in Africa. In our study, we investigated the effect climate change and extreme weather events are having in SSA and tried to predict what might happen in the future.

Methods

We analyzed data from more than 200,000 families in 24 countries in sub-Saharan Africa. We aimed to answer two main questions:

1 How are welfare and poverty spread out across SSA?

- We saw (from the data) the gender, age, education level, and jobs of people in each family.
- We calculated how much each family spends per day and how much of that amount is for food.
- We determined how many people are living in poverty and hunger and where they live.

2 What are the effects of climate change and extreme weather events on the welfare of families in SSA?

- We determined the length of the planting and growing season for crops because those are the months during which farming households are the most vulnerable to extreme weather events.
- We collected data about the timing and intensity of extreme weather events, plus monthly rainfall and temperatures in SSA from 1950 to 2010 (Fig. 1).
- Then we matched this weather data with the household survey data, for each household each year.
- Finally, we predicted which regions will be hit by more floods, droughts, and heatwaves.

How do the rainfall and temperature change in SSA? Make a prediction: how will rainfall and temperatures change in the next 10 years?

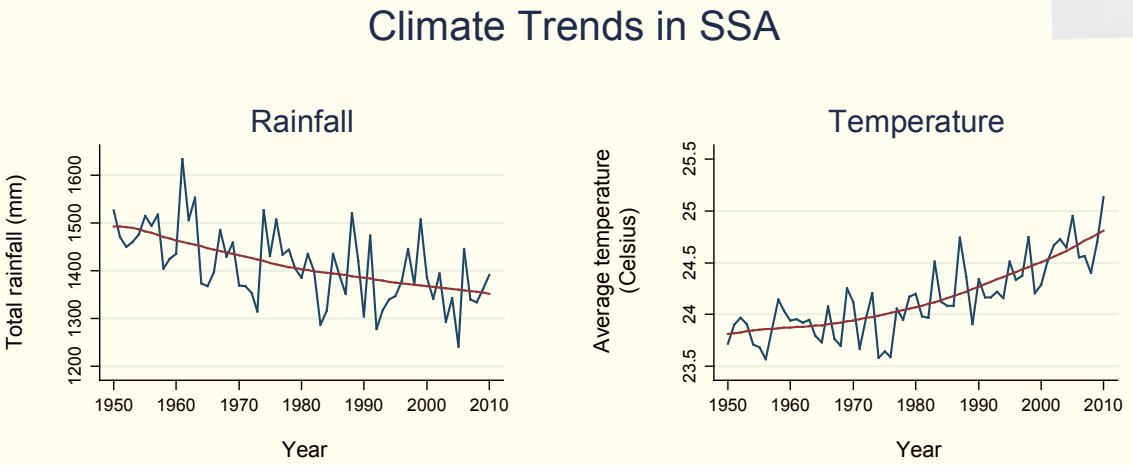
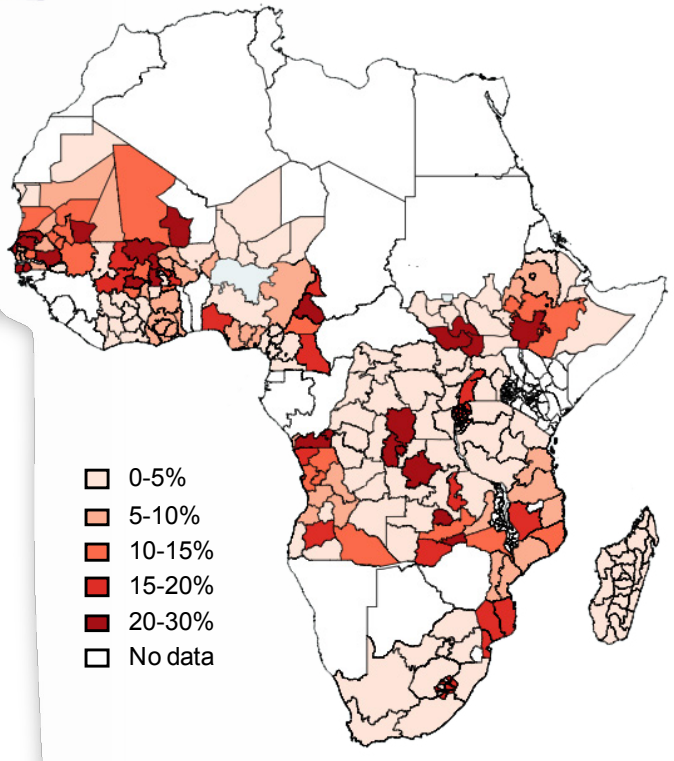


Figure 1: These graphs show the total rainfall and average temperatures in SSA from 1950 to 2010.

Results

- On average, rainfall has been decreasing since the 1950s, while temperature has been increasing.
- The areas that get the greatest rainfall and floods are also the areas with the highest poverty rates.

Figure 2:
The predicted increase in poverty in 10 years if rainfall and temperature stay on their current trend.



- Areas with droughts and heatwaves have lower poverty rates.
- The countries with the highest poverty rates in our sample are Madagascar, Burundi, and Congo. On the other hand, Ghana and South Africa have the lowest poverty rates.
- Extreme weather events (both floods and droughts) affect households with small farms the most.
- In 10 years, extreme weather events will affect about 20% of SSA. Climate change will hit Western and Central Africa the hardest. In some areas, extreme poverty is projected to increase by up to 30% (Fig. 2).

Discussion

The data we analyzed covered about two-thirds of the population in sub-Saharan Africa. We found that families in areas affected by floods are worse off than those affected by heatwaves and droughts. We also discovered that people with small farms are at the highest risk. If climate change continues, we predict a dramatic increase in the number of people living in poverty in 10 years' time.

Scientific evidence shows that climate change has now become a global crisis – and it has hit people living in poverty the hardest. Climate change is not fair: it doesn't affect everybody equally. We should carefully plan our efforts to help Africans in their battle against climate change. Our study could help governments and organizations plan ways to support the poor.

Conclusion

You can do a lot to fight climate change. Here are some ideas:

- Raise awareness in your community. Not everyone understands climate change. Learn the facts and talk to your friends and family.
- Avoid burning *fossil fuels*, which release gases that cause the climate to change. Try to walk, ride your bike, use public transportation or carpool whenever possible, or use energy that comes from renewable sources, such as sunlight, wind, or water.
- Produce less waste. Find ways to reduce, reuse, or recycle.
- Use energy sources more efficiently. Turn off unnecessary lights and use energy-efficient light bulbs.

Glossary of Key Terms

Agriculture – growing plants and raising livestock (animals such as cows, goats, sheep).

Climate – weather conditions over a long period of time (at least 30 years).

Climate change – a change in the average weather conditions over a long period of time. Scientists overwhelmingly agree that the observed increase in temperature of 0.8 degrees Celsius (1.4 degrees Fahrenheit) since 1980 is due to the release of greenhouse gases by human activities (mainly from burning fossil fuels). The climate is changing in other ways as well, such as the amount of rainfall and snowfall, the frequency of hurricanes, etc.

Crop – a plant that is grown for human, animal, or industrial use (e.g. food, feed, or biofuel).

Drought – a period of low rainfall, leading to a shortage of water.

Flood – an overflowing of a large amount of water (precipitation, in our case) beyond its normal path, especially over what is normally dry land.

Fossil fuel – a natural fuel such as coal or gas, formed in the geological past from the remains of living organisms.

Heatwave – a period of high temperatures.

Poverty – a state of being poor and not having enough money for necessary things to survive such as food, a decent place to live, or clothing.

Sub-Saharan Africa – the area of the continent of Africa that lies south of the Sahara desert.

Weather – the state of the atmosphere at a particular time and place. Weather is described by temperature, humidity, wind, rainfall.

Welfare – the health, happiness, and fortunes of a person or group.

Wildfire – a large, destructive fire that spreads quickly over woodland or bush.

Check your understanding

1. What is climate change? How does it (or can it) affect your life?
2. Why do you think climate change affects people in poverty the most?
3. Scientists found that floods have a worse effect than droughts in Africa. What could be the reason for that?
4. Scientists suggested that small farming communities need the most help. Why do they think these are the people most vulnerable to poverty?
5. Climate change is a global crisis. Scientists agree that human activity makes it worse. We should all work together to fight climate change. What kind of things can you do to help?

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