

The intersection of climate science and hope: A personal story

August 31 2018, by Alhousheyeni Maiga



Alhousheyeni Maiga, right, with CIESIN team members on the new project Geo-referenced Infrastructure and Demographic Data for Development (GRID3), the focus of his internship. Credit: Columbia University

As a native of the Timbuktu region in Mali, West Africa, one of the most unstable areas of the country, I have been an eyewitness to the devastating effects of climate variability and change on people's lives. It has been affecting livelihoods, causing migration and hardship, contributing to conflict, and even impeding access to education, among the many impacts. Because of my desire to help my country, I spent my summer interning at Columbia's Center for International Earth Science Information Network (CIESIN).

Mali is one of the three poorest countries in the world, ranked 176th on the 2015 Human Development Index. A landlocked nation that is mostly desert or semi-desert, Mali is a little more than 480,000 square miles, with a population of about 18 million as of 2016. The Niger River is considered the country's life stream, supporting the provision of water, irrigation, transportation, and agriculture.

In addition to mining—Mali is the third largest producer of gold in Africa—Mali's population sustains itself on subsistence agriculture and the tending of livestock, inhabiting dry-land areas that are poorly connected to markets and heavily dependent on rainfall. Thus the majority of the population is highly vulnerable to shocks. Eighty percent of livelihoods depend on the use of land and water, so pressures on natural resources risk the emergence of conflict situations. Exposure to shocks such as drought, and calamities such as crop pests and animal disease, has historically led to major crises of [food insecurity](#) and widespread malnutrition in Mali. It is estimated that more than four million people—more than 25 percent of the Malian population—are chronically food-insecure, and around 1.7 million are permanently at risk of hunger.

Only 10 percent of the population of Mali lives in the north. According to a 2016 World Bank report, the delivery of services in such a large territory is challenging, affecting geographic equity and social cohesion.

High population growth rates and drought especially in this region have fueled [food insecurity](#), poverty, and instability. For 40 years, the North (Gao and Timbuktu regions) has suffered one of the severest [droughts](#) of its history, and central Mali has been undergoing severe drought for many years.

Research finds that climate change may amplify conflict. A Reuters [article](#) on the years-long conflict in Mali cited a study by the Brookings Institute that found that the kind of inter-group violence found in Mali increases 14 percent for each percentage change in average temperature and rainfall. In the same article, professor Steve Harmon of Pittsburgh State University said that water shortages linked to global warming are one of the factors behind the most recent Tuareg revolt in Mali; and Dona Stewart, former US military analyst, points out that, "The current crisis...coincided with a period of drought and famine." This is particularly true of northern and central Mali.

The most visible and direct effect of the drought is the damage to farming. Livestock is decimated, water becomes scarce, and farmers and their families starve along with their herds. An indirect effect from reduced income is becoming unable to afford to educate children (as in many West African countries, annual fees are required to attend public school in Mali). Out-migration occurs. Generational consequences of lack of mobility and negative impacts on development and [social cohesion](#) ensue.

My native village, M'bouna, 100 km from Timbuktu, was a prosperous village on the banks of the Faguibine Lake. It was a small melting pot where people lived in peace and harmony. It drew people from all different regions of Mali—as well as from other African countries such as Niger, Nigeria, Mauritania, and Algeria—to farm, to fish, to do trade, or to work for the government. The Algerians and Mauritians were the big traders, importing goods like sugar, powdered milk, fabric, and

clothes. They also exported local goods like woven fabric. People from Niger and Nigeria exported fish to their countries.

In Grade 1, we had about 100 students, children of different colors, backgrounds, and cultures. In the daytime, when we were not studying or playing together, we were in the forest hunting and playing games. At night, especially when the moon was bright, we would gather to sing, dance, and play around until late. One day after a big rain, playing soccer with my mates, I felt so happy just sitting and watching the other kids running after the ball, laughing and shouting to each other joyfully. I remember thinking, "Is there any place on this earth where there exists such happiness? Will I have to leave this paradise one day?" This was the peaceful environment in which I grew up and went to school. A paradise that disappeared when the drought descended.

In M'bouna, everything depended on the harvest. Without it, few villagers could not afford more than one meal a day, much less pay for school fees. Six years after my idyllic experiences in primary school, as the drought persisted and one harvest after another failed, the original enrollment of around 100 students had dwindled to nine students who remained and made it to the sixth grade, myself included. Many families left the village and migrated to more hospitable areas with more rainfall. I left to continue attending school in Mopti, living with a relative. The population of M'bouna fell from 3,000 to 200. Around that time, the conflict started in the north.

In May 2012, at the peak of the conflict, I returned to the village. Many homes were abandoned, and people seemed listless and without direction, misery and sadness everywhere. The fright on their faces, the knowledge of the loss of all the years of hard work resonated in me with an urgent call to action. Helping to address this dire situation and return peace to my community and my country became my dream, a dream that has led to a Rotary International fellowship at Duke University and later,

to an internship this summer at CIESIN, working with colleagues who specialize in the visualization of spatial data and its integration with earth sciences, on interdisciplinary topics related to human interactions in the environment.

For my internship, I worked on Geo-Referenced Infrastructure and Demographic Data for Development (GRID3.) GRID3 is a project that facilitates the collection, analysis, integration, dissemination, and utilization of high-resolution population, infrastructure, and other reference data by developing countries, to ensure that everyone, especially the most vulnerable, are counted, and help advance development goals. In addition to improving my research skills in institutional and stakeholder analysis, situational analysis, and risk assessment for African countries, especially sub-Saharan, I have had the opportunity to learn ArcGIS, a critically important software in the field of geographic information systems (GIS). ArcGIS enables the compilation, management, analysis, mapping, and sharing of geographic information in a range of applications. ArcGIS also provides a kind of database infrastructure for making maps and [geographic information](#) available throughout an organization, across a community, and openly on the Web.

At CIESIN, I was mentored by a team experienced in the study of [climate change impacts](#), including two colleagues specifically studying climate change in West Africa and in Mali. This is a huge asset in planning my master's project on climate change and climate variability in Mali, as well as to my future professional goals to address climate change issues in Mali and throughout Africa.

I hope to use my newfound skills not just to fulfill academic requirements and professional aspirations for peace and conflict resolution, but to contribute to building peace in my village, the region, and throughout Mali—and beyond, in the Sahel, in Africa, and

throughout the world. I will rest only once peace becomes a reality as it once was in this wonderful region of M'bouna. This is only possible by addressing [climate variability](#) and [climate change](#) issues, and building the resilience of communities to better adapt to these shocks.

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