Climate change and trajectories of blame in Northern Ghana

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Abstract

This study provides an analysis of environmental observations by farmers, as well as of models of blame in Northern Ghana, an agricultural region of high vulnerability to climate change. Qualitative data were collected through a standardised questionnaire on the community's consensus on how to explain observed changes. Responses were transcribed to allow content analysis. Natural data sets confirmed most local observations, but older age and the affectedness of the respondents were crucial in determining the views. Climate change was generally given a lower priority by the respondents compared to other manifestations of change, such as infrastructural development, human-spiritual relations and changes in social relations. Moreover, the respondents made reference to the blessing of the land and the destruction of the land. The destruction of the land was understood in a metaphorical way as the result of eroding social relationships and stagnation, as well as norm-breaking and lack of unity within the community. Thus, climate change was perceived in local social terms rather than based on global natural science knowledge. The article concludes that the anthropological analysis is meaningful and may serve as an entry point for further planning of adaptation and public education.

KEYWORDS: climate change, perception, farmers, blame, West Africa

Introduction

'The emerging anthropology of climate change will inject social dynamics into the debate, and the issue of what climate change means cross-culturally is likely to be the cutting edge of this inquiry' (Sheridan 2012: 232). People throughout the world talk about the weather, and the ways in which we respond to the weather bear cultural-specific connotations:

> Culture frames the way people perceive, understand, experience, and respond to key elements of the worlds which they live in.… Individual and collective adaptations are shaped by common ideas about what is believable, desirable, feasible, and acceptable.… Anthropology's potential contributions to climate research are the description and analysis of these mediating layers of cultural meanings and social practice (Roncoli et al. 2009: 87).

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Such studies can be aided by drawing a conceptual distinction between *description*, i.e., what people observe and think, and *comprehension*, i.e., what people feel and how they make sense of their observations (Strauss & Orlove 2003: 6), or by a more detailed approach involving an analytical distinction between *perception, knowledge valuation* and *response* (Roncoli et al. 2009).

Perception studies in climate change research, which are currently conducted using different multidisciplinary approaches, usually put emphasis on descriptions of weather events and the question whether farmers' observations are correct (West et al. 2008; Kemausuor et al. 2011). In contrast, investigating local comprehension has revealed modes for local weather prediction and the local evaluation of events that explain causal relationships (Meze-Hausken 2004; Slegers 2008; Brou & Chaléard 2007; Tschakert 2007; Orlove et al. 2010; Guthiga & Newsham 2011).

From the classic anthropological literature until today (for a review, see Peterson & Broad 2009), rain making and weather discourses are interpreted as politically meaningful because they are used for the legitimisation or a manifestation of power relations in many rural areas of sub-Sahara Africa. The vast literature presents 'a notion that political [and social] order brings ecological order in the form of reliable rain – but that conflict brings drought –functions as the rhythm of political improvisation' (Sheridan 2012: 231).

This study, conducted in northern Ghana, contributes to the local comprehension approach by acknowledging 'the inevitable gap between anthropological and the others' projects of sense making. For these projects are never the same thing, even if some anthropologists, by writing about "local models", "emic perspectives", and the like, have pretended they are' (Sanders 2008: 198). The study used interviews as the main source of information and has made use of a quantitative and a qualitative mixed-method approach, including the use of a standardised questionnaire for consensus analysis, combined with *Nakani* audio records, their transcription and English translation and free listing. This paper gives considerable space to quotations from these talks to enable the reader to follow the respondents' way of reasoning.

The study took place in early April 2012, the hottest time of the year, before the onset of the annual rainy season. The analysis of the talks was facilitated by the researcher's familiarity with the people based on ethnographic research during several research visits since 2004. The study illustrates causal relationships as they were explained by the farmers and young people. Almost all the respondents extended the topic of conversation to other kinds of change that they had seen within the past decades, thereby inviting an exploration of the emic concept of change as the first step of the investigation.

The research site is located in a peri-urban settlement in the Upper East Region of Ghana, where the population speaks Nankani and mainly practices agro-pastoralism, as well as non-farm activities. The region is densely populated and is one of the poorest regions in Ghana. Its natural conditions are characterised by savannah vegetation. It has a semi-arid climate, which is projected to undergo transformation as a result of global climate change (see below).

Aaron Denham has worked among Nankani-speaking people on the phenomenon of spirit children, a research subject that belongs to the domain of reproduction and family

relations. He analysed how risk is perceived and how blame is attributed, as well as 'how blame influences future perceptions of risk' (Denham 2012: 175). Although dealing with a different domain, he offers some useful terminology for the analysis of climate talks: trajectories of blame, cultural (he calls them traditional) and scientific models of blame, as well as unofficial and official risk. Comprehensions of observations that negatively affect rural livelihoods often entail a notion of blame: the identification of an undesired activity and the ascription of responsibility to an individual or a group of actors. Blaming enables people to make sense of risk and respond to it in a practical manner (Douglas & Wildavsky 1982). Blame may follow different trajectories and is site- and culture-specific. Therefore, the study of trajectories and models of blame can serve as an alternative entry point for risk perception studies.

Cultural models of blame are found in different domains of the same society. While unofficial risk within a society may show typical cultural patterns, official risk may differ from domain to domain. Denham identified unofficial risks among Nankani-speaking people, such as 'jealousy, witchcraft, benevolent and malevolent sorcery, hidden forces or intentions, ancestral demands, spirits, destiny and a range of behavioral taboos' (Denham 2012: 177). These unofficial risks seem less relevant in the work of public agencies, despite their relevance or 'greater concern to the community' (Denham 2003: 177). Typical official risks with regard to climate change are the destruction of shelter through floods, food insecurity or health hazards.

Do we talk about climate change or something else?

Much of the climate change adaptation literature assumes that the populations are aware of the risk posed by climate change and that they are able to react to observable outcomes of this change. As a critical analysis by scholars pointed out, empirical evidence is problematic due to the uncertainty of climate projections and the low local perceptibility of global change, as well as the impossibility of isolating climate as a crucial variable for action (Nielsen & Reenberg 2010; Mertz, Mbow et al. 2010; Eguavoen & zur Heide 2012). There is evidence of farmers being rather good, although not perfect, observers of their natural and social environment (e.g. Slegers 2008). The possibility of observing long-term environmental change usually increases with age and the individual's affectedness. People transform their observations into models, which are informed by their knowledge and experience. These models do not necessarily reflect natural science explanations, although they may, of course, make reference to them. However, the models, i.e. typical patterns of explaining causal relationships, may guide negotiation about responsibilities in the form of laying the blame on people and unwanted processes.

Empirical studies have indicated the challenge of translation with regard to the term *climate* (Brou & Chaléard 2007; Tschakert 2007; Slegers 2008). The majority of respondents in rural Ghana had never heard of *climate change* before the interview, in particular older respondents. If a radio was accessible in the compound, the older respondents did not understand many of the English programs: 'Yes, I have heard of weather change in the media. I have heard of the word "climate change" but I don't

know how to explain it and its meaning. I have never been to school. That is the reason why I cannot explain' said an old man. Some public speeches in the local language made reference to climate change but used the English term *climate change* without further explanation. However, all the farmers were familiar with the local expression of *changes in the weather* (*saŋa teeri*[1]).

A starting point for the adequate translation of the standardised English questionnaire into the local language was the concept of change (*tiŋteeri*, literally *land has changed*), which bears a non-linear connotation in the sense that things become different over time. When we asked farmers about changes in the weather, the respondents referred to precipitation, temperature, humidity, thunder, dust and wind, thus, covering all of the study's variables. However, weather cannot be equated to climate. Overall, the responses predominately focused on short-term observations. The people talked about winds blowing from one direction, with thunder indicating the imminent arrival of the first rains from the opposite direction. These weather predictions were proven correct when these first rains set in a few days later.

Looking for an alternative way of encouraging discussion about climate changes, we then discussed changes in the weather in the long term, something that required a lengthy explanation and made us finally end up with environmental change, which could not be translated literally but would be best described as *changes in the surroundings* in local terms (*korom korom teeri,* literally *olden days have changed*).[2] These surroundings include diverse natural variables, such as the plants and animals, people, the landscape and the weather. They also include the spiritual world, which is closely linked to natural objects. Thus, asking about observations relating to their surroundings automatically made people think about the connection between natural and spiritual phenomena, as well as the role human behaviour plays in mitigating between these two.

Observations were assumed to be influenced by age and the affectedness of the respondent, as well as by their access to information through media and formal education. Three groups were distinguished based on three age categories (youth: 15–35 yrs., adult: 36–55 yrs., older adult: more than 55 yrs.),[3] and the responses were evaluated according to these clusters. Change was usually explained in a holistic way, showing individual views but also cultural patterns. Moreover, the quality of change was usually valuated by using the bipolar categorisation *blessing* versus *destruction* of the land, as explained in the following paragraph.

[2] *Saŋa*, n. temps, saison; tee, v. changer, échanger, imperf. *teeri* (Kropp Dakubu 2009: 165, 169).

[3] *Koromme* = earlier, long ago, in old times (Rapp 1964: 187).

[4] The local age categorisation mainly considers biological age and physical appearance. *Bilia* are infants. *Bia*/*koma* are children until ca. 15–16 years old. To serve the analysis, the largest category of adults was divided into adults and older adults. Koma are youth (ca. 15–35 years old) who have strength (*taari panga*) and who can work hardest. Elder people are considered adults (*bunkeka*). Adults and young people with the function of household heads are equated in this study with farmers as only adults involved in farming were interviewed. Adulthood is not defined via marriage or parenthood status, although there is a change in terminology, with girls becoming women (*pugela-poka*) and boys becoming men (*budibela-boora/ budaa*) after marriage. The term *kɛ́ɛma* (elder) reflects a political authority, not an age category, meaning that under some circumstances a person categorised as a youth can be an elder. To serve the analysis, the large category of adults was divided into adults and older adults. These are analytical categories.

Communication about climate change is not always easy, as conceptual frameworks between the researcher and the respondents may differ significantly. The priorities of the people in the conversations do not necessarily reflect the dramatic narrative of climate change, especially if there is no distinct local concept, term or understanding of the global process. Therefore, scholars need to reflect critically whether it is correct to place so much emphasis on a concept that is perhaps of little relevance to their respondents.

Description of changing natural conditions

Free listing and the consensus analysis questionnaire aimed at the documentation of observations that respondents had made with regard to natural conditions. The following selected answers by older farmers illustrate that the perception of change depended on the individual's judgment, as well as on the cultural understanding of change. Change does not indicate a direction and is a process rather than an outcome:

> There is a change. Even if there is no change, there is change.
>
> Yes. I have seen the change in the farming season because the farming season has been moved forward and we no longer have rain the way we used to have it.
>
> Why can't I see that things have changed? Things have really changed. If it were in the olden days that they perform all the ceremonies, by April rain will set.
>
> I have not seen any change. There is still rain. We are still sowing. The change is within the individual. Anytime it rains. It is still the same water. I have not seen any changes.

These four quotations by respondents represent the diversity in the descriptions and the comprehension. The first statement emphasises the process character of change: it always happens, although conditions may seem stable. The observations reported in the second quotation are usually quoted in climate change perception studies in the region, usually as a result of standardised questionnaires and multiple-choice responses. The third quotation brings in an additional dimension by linking social behaviour and weather events. Finally, the eldest respondent quoted in the fourth example states that she has not observed any relevant change in the weather and that perceptions and change are separate issues. People change more than the weather.

The oldest cluster among the respondents could make reference to the olden days based on their individual experiences. They still knew the village as a location of vast bush land with dispersed houses, little infrastructure and a smaller population. The old men and women had witnessed how farm land had come to dominate the bush land over the past decades and how access to natural resources had changed over time. Thus, their observations were much to the point, including outbreaks of disease, the prevalence of pests or the establishment of water points. They enumerated more observations than the younger generations (see Tables 1 and 2) during free listing and in their extensive responses to the questionnaire.

*Table 1: Observations of changes in the natural environment by older respondents**

Observations	Old people (55 yrs and older)	Confirmation by data sets/ climate projections
Rainfall	Sometimes very destructive rains in olden days	no data
	Enough rain in olden days; nowadays, there is less rain	opposite trend
	More erratic rainfall nowadays	confirmed
	Fresh air for a few days after the rain in the olden days	no data
Rainy season	Farm season has moved forward	confirmed
	Rainy season is shorter than in olden days	confirmed
Temperature	Hotter weather nowadays	confirmed
Wind	More/stronger wind nowadays	no data
Floods	Floods are not more frequent but more severe/destructive	different observation
Agro-pastoral livelihood	Drought did not kill crops in olden days	no data
	Other crop varieties were grown in olden days	confirmed
	Low availability of wild fodder nowadays	confirmed
Other observations	Water places were farther away in olden days	confirmed
	There was vast bush land in olden days	confirmed
	Shea nut flowers later and fruits later	no data
	Many people died from measles in olden days	no data

*Free listing, April 2012, Jung & Kunstmann (2007), van der Giesen et al. (2010); responses are listed without consideration of their rank and frequency

Older adults stated that drought and flood have always posed a threat. There was no consensus on whether climate change has aggravated the risk of destruction caused by these threats because respondents linked effects of their farming practices to the occurrence of rain, heat and wind. With regard to floods, droughts and crop disease, they stated that some farm practices have contributed to the higher risk of yield losses. The line between natural conditions and anthropogenic effects in many responses was totally blurred. The following quotation by a female farmer recounts the benefit of historical floods and the negative impact of drought on crops, as well as the change in agricultural practices that have made crops less resilient to pests:

> Flooding even used to give us manure in olden days because it will work a land somewhere and put it here. But floods were not as destructive as nowadays…. We used to have drought long time ago. Anytime, there is drought, our plants were always in survival until the rain comes again. But now the drought always kills all our crops…. Our way of farming has also invited more disease for our crops. In the olden days, they used to put the seeds into the holes but now they make lines that always leave the seed defenceless. [The holes were diagonal not horizontal and reaching deeper layers of the soil. With lines, only the upper layer of the soil is touched.]

In contrast, a man spoke about change in practices that have reduced the risk of crop loss to pests, as well as about the lower priority that farming has as a result of livelihood diversification:

> No [bad harvest is not mainly due to climate change]. A bad harvest is coming from our own laziness. Because what we are supposed to be doing in order to get enough yield is not always done…. Some people like to do business and no farm work…. In the time of our forefathers, if you harvest, you don't put the crops immediately in the store. You leave them outside for your family members to come and see before you store. And so many food crops have been spoiled by [pests]. If you harvest and all your crops have been chopped [eaten] like this. What will you do? Only weep…. Crop diseases have been there since long, not only today.

Young people, in contrast, did not give lengthy answers during the interview. However, they free listed a number of observations. Some of these observations are unlikely to be based on their personal experience but rather seem to stem from local narratives and public media, especially when they made use of English climate change buzz words, such as *onset* or *distinction*.

*Table 2: Observations of changes in the natural environment by youngest respondents**

Observations	Youth (15–35)	Confirmation by data sets/climate projections
Rainfall	Reduction of rainfall	opposite trend
Rainy season	Onset of the rainy season has shifted	confirmed
Temperature	Hotter weather	confirmed
Wind	More wind nowadays	no data
Floods	More frequent floods	confirmed
Agro-pastoral livelihood	Livestock does not grow well	no data
	More animal diseases	no data
	Reduction of crop yield	no data
	More destructive crop diseases nowadays	?

**Source*: Free listing, April 2012 Jung & (Kunstmann 2007; van der Giesen et al. 2010); responses are listed without consideration of their rank and frequency

This is not to say that younger people cannot perceive change themselves and make up their own pattern of explanation. In informal conversations, a man in his mid-thirties but from another region reported on ponds that had disappeared in his neighbourhood and on a beloved wild vegetable that used to grow around Easter but that he had not seen for many years. A student in his late twenties explained how he thinks the higher birth rate of girls in comparison to boys is related to climate change, the change of food habits and general conditions, including heat. However, all this evidence is anecdotal. Generally, the youth have better access to external information due to English language skills, formal education and high spatial mobility. If their economic status allows, they make extensive

use of the internet (via mobile phones). Therefore, as their sources of knowledge are more diverse, it may be more difficult to trace common patterns of thought. In addition, the issue of affectedness comes into play here, as many youth contribute labour on the family farms but not yet have decision-making authority. Moreover, they tend to generate cash income from non-farm activities rather than directly from farming.

How do these observations relate to climate projections in northern Ghana? The rainy season in the Upper East Region of Ghana currently begins during the period April to May and finishes at the end of September or the beginning of October*:*

> The onset of the rainy season … is often preceded by short isolated showers with intermittent dry spells of various lengths … Precipitation, in monthly totals, gradually increases during the rainy season before falling sharply towards September and October, and rainfall events are highly erratic and variable over space. Average annual rainfall in the north ranges from 700–1,000 mm, with peak rainfall occurring in August … Wind speed is low (Eickhof 2010: 16).

It is difficult to find precise numbers on trends that exactly cover the Upper East Region. Climate studies employ diverse spatial scales, as well as various periods, for measurements and model projections. However, the hotter temperatures that were observed by the respondents could be based on individual observations as the increasing trend of the temperature was confirmed by measurements. Compared to the 1990s, an average increase up to 1.5 degree Celsius until 2030 was projected for the Volta River basin. In addition, the shift in the onset of the rainy season, with the season beginning earlier, has been validated by rainfall data sets from the region, and it is projected to move further to a later time in the year. The average onset of the rainy season in 2030 to 2039 might be in June or even later. The suggestion that rains are more erratic nowadays seems to also be based on experience. Rainfall variability will increase in the future (Jung & Kunstmann 2007). However, the observation that total rainfall was greater in the past is not confirmed by the measured data sets. Since the drought period during the 1970s and 1980s, total rainfall amounts per year have actually increased (Dietz et al. 2004), and no significant reduction of rainfall in the coming decades is projected by the climate models. What can be claimed for the future are prolonged dry spells and more frequent occurrences of floods (Tschakert et al. 2010).

Local priorities

Old people are cited in the climate change literature as being the most knowledgeable age group to report on climate change, simply because they have had more time for observation. However, the abundantly obvious fact that they have also witnessed enormous transformation in terms of technology, political and economic conditions, as well as demography, is often neglected. Some of these changes are quite dramatic because they determine well-being with regard to work load, health, food security and survival, much more than future climate change will probably ever affect their children's and grandchildren's generations. Thus, the conversations constantly tended to shift from weather to other observations, which reflect the importance that the respondents ascribed to them:

> It is not only the weather I can talk about when talking about change. I can also talk about diseases…. Measles has been killing so many people like this. As for the diseases, they are no longer as they used to be…. No, the change in the weather is not a problem of my generation because the weather is changing with so many things. For example: in the years back, war used to be a matter of pride … But now, we are now talking of peace…. So anybody can eat at any place at all or can do whatever he wants to do.

The old man made a reference to improved health services that accompanied other infrastructural improvements mentioned by the respondents, such as water supply, roads, cement houses, bridges, vehicles for transport, machinery for constructing dams, etc., all of which could be summarised as "development". In the local parlance, people say *tiŋmaalego* (literally *blessing of the land*). Tiŋmaalego implies that things get better, that there is some progress. Rose Amenga-Etego, a local anthropologist, noted that

> *malgo* is a reflection on improvement, betterment, advancement, repair and maintenance … within this conceptual understanding, the Nankani say *malgo* is a never-ending process … For them, the future is uncertain and each step presents new needs for *malgo* (Amenga-Etego 2011: 27).[4]

For the youth and adults who feel less connected to traditional ways of doing things, tiŋmaalego in the sense of development describes a lifestyle that is characterised by technical facilities, motorised vehicles, formal education–based knowledge, notions of modernity, timeliness and, finally, superiority over the so-called traditional way of doing things. The latter connotation is not directly spelled out in conversations but can be observed in everyday interactions among formally educated, partly Christian sections of the population towards their not formally educated, mostly traditionalist counterparts.

The divide is, of course, the largest in the middle-age category (the group of people aged between mid-thirties to mid-fifties) due to the history of school enrolment in Northern Ghana. However, the divide is by no means absolute, because there are many individuals who embrace ways of doing things that include elements of both sides without seeming contradictory. There is no point in wondering about university graduates being the proudest war dancers during traditional funerals or the unbroken popularity and re-election of an outspoken young, educated, polygamous traditionalist into the district assembly. There is no contradiction between a person telling you one day about how to identify the thief by inviting thunder to strike the culprit and the next day telling how he has taken someone to the High Court for the illegitimate sale of his family land. A study on local religion emphasised that*:* 'According to the Nankani, prayers do not fight each other…. "Mixing" (*garngo*) here refers to a religious atmosphere in which adherents combine freely indulge in the different religious traditions and practices in the area' (Amenga-Etego 2011: 67).

[5] The articles uses spelling as suggested by Kropp-Dakobu (2009). *Maalego* and *malgo* are the same.

Returning to the old man's statement about war leads to a second category of changes described during the interviews. Not knowing the context of northern Ghana, one could assume that the change man refers to political conditions. Violent conflicts between settlements and ethnic groups have been reported for the past years but, generally, the region is peaceful. The inhabitants of the village, in particular, have not participated in the fights between two neighbouring villages and they used all occasions to declare that they would not allow other villages to pull them into violent conflict. Thus, the man rather speaks of good relations, trust and unity among neighbours, a condition of not fearing being bewitched or pulled into unwanted affairs by others. Neighbours here can be understood as parts of the kin group, other village sections and other villages, or as Amengo-Etego calls it in relation to maalego: 'various constituents of *malgo* were given. This included *bure* (family), *nuyeene* (unity/peace) … and *nungire* (liking/ solidarity)' (ibid.: 28). The underlying idea that a community can succeed in something or have strength if it acts as a unit is quite crucial. This seems to be the message of the old man: peace is what we want, peace is what we have. However, as he later noted and as other respondents pointed out during the talks: unity in action is what we are missing.

Comprehension and models of blame

Local religion and moral discourses were found to be hold responsible for weather and climate variability in Sub-Sahara Africa, though they may be communicated in various ways and from different perspectives (Brou & Chaléard 2007; Slegers 2008; Endfield & Nash 2010). In rural Christian communities, for example, respondents made reference to the 'biblical seven-good-and seven-bad-years cycle' (Tschakert 2007: 390), to 'punishments … because of the sins of the world or disobedience and unfaithfulness to Him [God]' or the end of the world vision on Luke 21 (Tambo & Abdoulaye 2012). There are many reports on weather manipulation in the form of rainmaking, praying for rain or witchcraft (for a review, see Sanders 2008).

Though Muslim and Christian communities are visible parts of life in the study site, the majority of people are still animists (called "traditionalists"). Nankani traditionalist belief is much more complex than the basic idea that the weather can be influenced by humans. Nevertheless, the interviewees thought of the weather as God's response to rituals that are performed by Nankani authorities on behalf of their kin group. The weather is conceptualised as God's and the ancestor's punishment for norm-breaking behaviour and, of course, it is also imagined as the outcome of local resource management practices and global processes. The questionnaire asked about causes of climate change, such as cutting trees and bush burning, as well as smoke from cars and factories, and other manifestations, such as the frequency of floods and droughts and the occurrence of plant diseases and poor harvests. It also investigated which countries were affected (Ghana/ far-away countries) and whether the process could be reversed.

As climate change was obviously not a local concept, it was explained in local terms. Change in the weather was used in the follow-up questions to investigate whether people saw causal relations between their management practices and the change in the

weather/climate. Most of the people blamed local motorised vehicles, deforestation and burning the land. However, they also made it abundantly clear that these practices are unavoidable as they secure their poor livelihood. Other respondents emphasised bad behaviour as causal factors:

> It is true that we are not supposed to be felling trees anyhow because they provide shade. But what can we do? We cut the trees mainly for our house building. Trees bring rain…. Felling a tree is like evicting someone from my house because where the trees are, are our homes.
>
> We say we want rain, but we are not ready for the farming because we did not clear our lands [collect rubbish and residues and burn them, prepare the soil]. If we were to clear our lands, God would have had mercy on us…. If I was God, the rain would come in September [laughter].
>
> The floods are not caused by natural things only, also spiritual. Sometimes the flood is like a curse to us for our sins, for what we have been doing…. Women sleep anyhow with men. Men are sleeping anyhow with women.
>
> We are no more obedient. The rules and regulations to guide us in our behaviour, the advice we don't take them. There is no help for the elderly. Youth behave like this because they don't take advice. I was respecting my husband, my son, and even my younger people but modern Ghana doesn't do this.
>
> We used not to sell land. We used to give it free of charge for someone to build or to farm. But nowadays, we sell land, which is a serious crime. That is why we get no more food from the land.
>
> Yes, it is true [that cutting trees affects the weather in a bad way]. But some of the trees when they are in your land don't encourage high yield. We therefore cut them away … You can even cut a bad tree [a seat of spirits] and it can have a serious effect on you – even to the point of dying. So it is not proper that we cut trees anyhow. Clearing the land and burning the rubbish is harmful but if we also sow without clearing the land, crop disease like termites will chop of [eat] the roots of the plant … We think that our tradition is now full of dirty things [deggero] but that is not the issue…. Because we have left our tradition, we now give birth to spirit children.

The quotations show how people justify their management practices not just against the charge of degradation, but also against the breaching of local rules and culture. Culturally, it is not desirable to cut trees. It might even be dangerous as it may annoy some spirits and bring harm to the individual (such as sickness or madness), the family (birth of spirit children who bring misfortune, sickness and death) and the community (receiving less rain during the farming season or unwanted rain storms during the harvest season).

Tradition is not preventing better resource management: pragmatism and experience drive people to (selectively) cut trees or burn farm land.

As in many other places in northern Ghana, custodians of land, the *tindaama*, perform rituals to ensure the fertility of the land and sufficient rainfall. The elders may also approach the ancestors to beg God for rain. Moreover, the custodian of rain, the *saadaana*, is in charge of the well-being of the entire population with some special duties that only he can fulfil (such as perform rituals for people hit by lightning).[5] While the tindaama were quite prominent, it seemed that many people no longer knew about the saadaana's function or who was currently in office. Both title holders take action only if people approach them directly.

> It is not one person who comes to ask for the rains, but it is the whole community who comes together to our father [the saadaana] to ask for rain when it is not raining. The work of our father was to go and seek some Gods before he comes back to sacrifice the God *saa* [rain] and it will give rains. The people will always come together and discuss with him, and he goes out to consult the soothsayers and know why it is not raining. But the [present] community leaders are no more united. They do not mind about the poor rains for there is now money, whether it rains or not, they will get food to eat. So, they do not have time for the God again. He [the saadaana] cannot also go out alone to know what is happening that is why he is also sitting.[6]

In the case of the saadaana, these requests now occur less and less frequently. At the same time, being less active contributes to the waning of the public presence of the saadaana office; this, in turn, leads to fewer approaches because fewer people are aware of his duties and abilities. The tindaama were more prominent because they were frequently involved in land transfers within the village. Some old people referred to the tindaama when discussing the changes in the weather and also hinted at the fact that there was not enough attention paid to ceremonies that ensure sufficient rainfall:

> There are a whole lot of changes on the sky and on the land. In the olden days,… anytime there is drought, we always gather at the tindaana house and sing and dance there for the rain to come…. And crops were dying off unless you would consult the tindaana. But now, there is a lot of food even if there is drought. People do not consult the tindaana because they are not hungry.
>
> We used to go to the tindaana yire for consultation. But now the tindaama are drunkards, they do no more proper consultation…. Nowadays, the heavy wind that is always blowing is our shrine [*tingaane*] who is looking for

[6] Another on-going ethnographic study by Stephen Adaawen reports on the believes in a close district that people are able to hold the rain and prevent it to fall (compare Orlove et al. 2010: 257 for Uganda) and that ancestral spirits are annoyed and prevent falling of the rain because their paths are covered by intense agriculture.

[7] Mr. A. Asinsagbo (village saadaana) and Mr. A. Akonwake (his older brother), 2005.

> water. Simply because we don't do the right sacrifices. But if they were to be doing proper sacrifice, there wouldn't have been wind blowing all over. The shrines are helpmates of God…. And if we fail to do the right thing, they will also leave us. Development like building, road construction is good, but our social life is bad. We need to go back to our ceremonies. So that the weather will also change in a good way for us, especially rain.

There is low demand for ritual weather manipulation because people purchase food from the market in lean seasons rather than relying on their farm produce. Thus, the priority is to generate money through non-farm activities rather than investing more in farming. Although the literature states a regular period of hunger in northern Ghana, some of the respondents explicitly stated that people are not hungry and, therefore, show less commitment to traditions. This may be attributable to various factors. Their families may have found successful ways to overcome the lean season. The food aid system may work effectively, or the general belief in the power of weather manipulation is not shared by all community members.

The cultural model contends that the abandonment of tradition results directly in the absence of blessing because the underlying source of tiŋmaalego is local religion, tradition and culture*:* 'It has been noted that in the past, things were good, if not, better because people paid attention to *malma* and, in return, their efforts were blessed' (Amenga-Etega 2011: 28). This model has been documented in the ethnographic literature (e.g. Roncoli et al. 2002; Sanders 2008). Among Mossi in Burkina Faso, for example, the 'state of degradation of the land is causally connected to processes of social erosion: loss of knowledge and morals' (Luning 2007: 87).

This deviation from tradition is often spelled out as destruction, in Nankani *tiŋsa'aŋo*,[7] a state of stagnation in which no progress can be reached. It is the opposite of tiŋmaalego, which stands for dynamism and betterment. The negative valuation 'destruction of the land' with connotations of pollution and the breaking apart refers to social issues only, not to land degradation. Change in the weather may be a manifestation of the state of social destruction. Thus, while there are Nankani terms to translate the English terms *development* and *destruction of the land*, they bear a different meaning to that of the English words.

Local expectations

The study also investigated local projections of future weather. The answers indicate that weather and climate cannot be thought of as single variables but only in the cultural context of change, in the sense of tiŋmaalego and *tiŋsa'aŋo*. There was a strong tendency to claim that current conditions cannot be reversed and will even worsen in the future. Despite future generations being expected to face more problems, they were also viewed as having opportunities to better know how to 'follow the weather'. This was reflected in all age groups but illustrated here with expressions from the older respondents, as outlined below:

[8] *Saango*, Zerstörung, Verderben, Umkommen (Rapp 1964: 212); *sa´am*, v. polluer, devenir ruiné, gér. *Sa´aŋo* (Kropp Dakubu 2009:165).

> The change we have today will forever be.
>
> Yes, the next generation will get more changes than this time. And this is even our prayer. That they will see new things. For instance, we used to sleep under thatched building but people are now building block [cement] houses to follow the weather…. The changes … are moving with development. And once we want to be developed, then we can't go back to this stage again.
>
> You, the young, will experience more than us, especially in terms of problems. God will also want the young to experience more [laughter].
>
> Yes, the grandchildren will see change more than us. We are even better. Years are coming if your child sees you sick, they will even beat you so you can die early. It will continue to be like that. It will never go back to the olden days. It is the youth who have changed things. But the world itself has not changed.
>
> One person cannot change it [climate change]. If one does something and another is doing something else. If all people come together with one mind, one can change something. Not one person alone.
>
> We cannot stop it [climate change]. Because if you want to do it, somebody [else] may not like to do it. We continue to sacrifice. Our tradition will never go. We will always continue our funerals in the traditional way. The change is lying in our heads, so we can do whatever we want. Can we change back to the olden days? No…. We have seen little and are about to go [to die]. You [the younger generation] will see more and tell us.

Although children were used as a reference term for the next twenty to forty years, some respondents returned to the topic again and spoke about inter-generational contracts and the young who change the world with their new habits, priorities, disobedience and technology. Their statements underline the fragmentation within the community and also express fears that the young may break the social contract between the generations that is in place to ensure that the old may rely and depend on their children when they become economically inactive and that they will also receive a decent funeral:

> The drums [big loudspeakers used to play music on festive occasions and funerals] we have been using, it is never part of our culture because drums are not made from here. So if I die and you are playing this music, you play it for yourself but not for me. The youth has destroyed the earth [*koma la sa'aŋ'tiŋa la nɛ*] because of the drums they always play chase away our forefathers.

The complaints by the old people clearly shift the blame for unwanted change to the youth, with the youth freeing the old from blame for agricultural practices that may have led to degradation of the resource base. They generally agreed with the suggestion

that bush burning and cutting trees cause changes in the weather. However, the youth and the older people did not place the blame on anybody for these practices.

Summary

Weather was conceptualised as the outcome of global pollution and local resource management. It was evenly conceptualised as something that can be manipulated by human activities through norm-conform (or breaking) behaviour, as well as by the ritual mediation (Brou & Chaléard 2007; Slegers 2008; Sheridan 2012). Different trajectories of blame merged scientific and Nankani cultural models, often switching within one and the same statement.

Good weather shows that things in the community are good and orderly, whereas bad weather indicates that something is going wrong. This finding is supported by the anthropological literature dealing with weather discourses (Strauss & Orlove 2003; Sheridan 2012). Bad weather (including climate change with negative effects on the livelihood) was perceived as a punishment by the community. As the punishment is directed to a group, the blame was put on groups or the society at large. Countries far away, Ghana or the local community were viewed as the origin of the curse, and where a solution needed to be sought. In the local talks, the youth were viewed as destroying the land. Moreover, the old people (also their age mates in far-away countries) were considered to be the ones who suffer most from the consequences because they are not well prepared to gain a living outside farming or to survive without the support of their relatives.

The scientific model of blame was informed by formal education, science and media coverage, as well as by personal experience and observation. A central theme in the discussion was degradation, which refers to the deterioration of the natural resource base. This resource base can be damaged by chemical pollution, destructive activities and local management practices. At the local level, people were blamed for refusing to do what was needed to ensure a good harvest. All the farmers emphasised that soil requires constant effort to keep it fertile. However, it seemed that the work to collect and apply the manure was done by older people. Young people, although aware of the importance of manure, did not seem to be interested in this work. Fields needed to be prepared before the onset of the rainy season. Although it was the right time for this work (end of April), almost all the fields looked unprepared. The general consensus appeared to be that if a neighbour had not started, then why should they. All households cultivated crops, but single household members had found a more promising non-farm income and preferred to dedicate their labour to these activities. On a more general level, this shift in priority contributes to a reduction in yields.

The cultural model of blame was informed by cultural and religious knowledge and by rules of the community, as well as by personal experience and observation. Another characteristic was the fear from unofficial risk and its visible manifestation as *tinsa'aŋo*/destruction. First, the cultural model shifted the blame to disobedience towards other members of the community. There were overly diverse aspirations and frames of reference in the community that prevented united action. Although united action is also

required in natural resource management (all the people would need to stop burning their farms to produce an effect, for example), it is especially required to approach custodians of land and rain. The number of requests put forward may have decreased, but weather manipulation is still alive, as apparent in July/August 2011 when a severe drought struck one of the six village sections:

> The community came to the saadaana and pleaded for rain. So I [the saadaana] consulted and went to the shrine and the rain came. I cannot call for rain when it is not there [to stir the onset of the rainy season] because we always use crops dying as a way of begging God. When we go to the shrine, we will then say: Our crops are dying. Out crops are dying. Have a pity on us. But as we have not done the sowing, what will we be saying?[8]

Blame was placed on the local authorities for not performing ceremonies in the correct way. A second kind of blame was shifted to noise-making practices that scare spirits away. 'Although rain is not explicitly imagined to be a living thing, it possesses some characteristics which allow people to communicate with it … rain may hear noise … rain can be hurt, and … be driven away' (Eguavoen 2008: 120).

The blame was placed on the village's members, with two trajectories of blame (the scientific and cultural model) apparent, although the cultural model clearly dominated the conversations. Farmers, especially older people, gave higher priorities to the unofficial risk and perceived the official risk of climate change of lesser importance. One reason might be that the official risk of climate change, spelled out in terms of drought and floods, for example, was contextualised historically. Both droughts and floods and their associated risks to people are already part of the local experience. They were only perceived as gradually different from olden times, not more frequent but more disastrous (compare Tschakert et al. 2010).

A second reason for the low priority placed on official risk might be that people also see the effects of floods and droughts as the results of management practice, e.g., houses in the compound destroyed by floods were re-established at the same locations again. Thus, if this agency changed, the floods and the droughts might become less harmful once again.

Respondents also evaluated changes to be positive or negative changes and linked them to the local concepts of blessing of the land and destruction of the land. Other studies in West Africa have indicated that blame for natural degradation may also extend to external, as well as internal , transgressors (Luning 2007). Respondents in East Africa have linked local weather conditions with the political global arena (Sheridan 2012). This study, however, underlines the importance of internal moral discourses about the production of disorder and stagnation. This is remarkable because the talks originally centred on climate change, which is caused externally.

The contribution of this study to the debate is neither about 'correct perceptions' and 'differences between perceived and real environment,' nor about 'perceptions [that]

[9] Mr. A. Asinsagbo, April 2012.

are unscientific, mainly because many subsistence farmers, who are by definition often poorly educated, resort to superstition to explain natural events because that is their only source of information' (Kemausuor et al. 2011: 26, 27). From an anthropological perspective, this statement is problematic because '[p]erceptions cannot simply be wrong as they are social constructs. They may have just a statistically low correlation with the underlying meteorological conditions' (Meze-Hausken 2004: 27). A farmer's knowledge is not either scientific or cultural but highly merged, despite the fact that formal education rates of the respondents in northern Ghana may be low. In the eyes of the individual, his or her perceived world is the real world, which guides decisions and actions. It is not what scientists may consider real (equals measurable). The farmer may shift the view when receiving new information or experiencing new things through, for example, anticipatory learning processes (Tschakert & Dietrich 2010), but then the individual's perception and knowledge change and redefine what is real.

Participatory mapping exercises with farmers and experts in Senegal revealed 'many misconceptions and gaps in understanding causes and consequences of climate change … among both "expert" and "non-expert" respondents,' as well as that 'some concepts were rather understood well' (Tschakert 2007: 391). Ghanaians tend to blame themselves for degradation rather than blaming external causes, especially their use of logging, intensive land cultivation and bush fires (BBC 2010; Tschakert & Sagoe 2009). Mismanagement of local resources was also identified as a driver for environmental and climatic change by farmers in other West African countries (Tschakert 2007). A study by the BBC World Trust's Research and Learning Group emphasised the need for education of the population, which is informed poorly about the process of global change. Many people tend to explain changes in the weather in relation to local environmental degradation. This phenomenon has been explained in relation to the prevalence of the degradation/ desertification narrative (Tschakert et al. 2010; Eguavoen & Schraven 2013). Many Ghanaians do not understand the scientific terminology that is used in media and governmental publications. Thus, in many cases, projects concentrate on mitigation instead of adaptation (BBC 2010).

It was also observed that adaptation education programmes in Nigeria 'mainly focus on adaptation issues without discussing the causal activities' (Tambo & Abdoulaye 2012). Providing comprehensive information on global causes of climate change to the population, as well as information on opportunities and limitations of climate change adaptation projects, is also a responsibility of researchers conducting these kinds of studies. Poor rural farmers should be made aware of the actual causes of global climate change and not left believing that their management practices are responsible for causing climate change. In Ghana, Tschakert et al. (2010: 497) noted an absence of adequate communication tools for anticipatory learning about climate change, such as 'posters, drawings, board games, songs, theatrical skits, open days and special radio programs.'

This study also demonstrates that talks about responsibility for climate change follow different trajectories. There may be an impression that cultural models and local priorities are not in accordance with 'Western' models and narrations. Farmers have legitimate concerns about changes that affect them, and if climate researchers wish to

understand their responses to environmental challenges, farmers' perceptions, knowledge and valuations should be taken seriously. Listening to their concerns may contribute to the identification of relevant social processes and local priorities involved in the adaptation to environmental change.

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References

Amenga-Etego, Rose Mary. 2011. *Mending the broken pieces. Indigenous religion and sustainable rural development in Northern Ghana*. Trenton: Africa World Press.

BBC 2010. *Ghana talks climate. The public understanding of climate change*. London.

Brou, Yao Télesphore & Jean Louis Chaléard. 2007. Visions paysannes et changements environnementaux en Cote d'Ivoire. *Annales de géographie* 1(653): 65–87.

Denham, Aaron R. 2012. Shifting maternal responsibilities and the trajectory of blame in Northern Ghana. In: Lauren Fordyce & Aminata Maraesa (eds.), *Risk, reproduction, and narratives of experience*. Nashville: Vanderbilt University Press, pp. 173–89.

Dietz, Ton, David Millar, Saa Dittoh, Francis Obeng & Edward Ofori-Sarpong. 2004. Climate and livelihood change in North East Ghana. The impact of climate change on drylands. With a focus on West Africa. In: Antonius Johannes Dietz, Ruerd Ruben & A. Verhagen (eds.), *The impact of climate change on drylands. With a focus on West Africa*. Dordrecht: Kluwer Academic Publishers, pp.149–72.

Douglas, Mary & Aaron Wildavsky. 1982. *Risk and Culture. An essay on the selection of technological and environmental dangers*. Berkeley: Califonia University Press.

Eguavoen, Irit. 2008. *The political ecology of household water in Northern Ghana*. Lit: Münster.

Eguavoen, Irit & Friedrich zur Heide. 2012. Klimawandel und Anpassungsforschung in Äthiopien. *Zeitschrift für Ethnologie* 137(1): 97–118.

Eguavoen, Irit & Benjamin Schraven. 2013. The ambiguous representation of the savanna landscape and its new political relevance in Ghana. In: Joseph Yaro (ed.), *Rural development in Northern Ghana*. New York. Nova Science Publishers, pp. 207-23.

Eickhof, Tom. 2010. Climate change and water storage. Opportunities and limitations for increasing adaptive capacity in the Vea catchment, Northern Ghana. Unpublished diploma thesis. Berlin: Humboldt University.

Endfield, Georgina H. & David J. Nash. 2010. Missionaries and morals. Climatic discourse in nineteenth-century Southern Africa. *Annals of the Association of American Geographers* 92(4): 727–42.

Guthiga, Paul & Andrew Newsham. 2011. Meteorologists meeting rainmakers. Indigenous knowledge and climate policy processes in Kenya. *IDS Bulletin* 42(3): 104–9.

Jung, Gerlinde & Harald Kunstmann. 2007. High-resolution regional climate modeling for the Volta Basin of West Africa. *Journal of Geophysical Research* 112(D23): 2156-202.

Kemausuor, Francis, Ernest Dwamena, Paul L. G. Vlek & Ahmad M. Manschadi. 2011. Farmers perception of climate change in the Ejura-Sekyeredumase district of Ghana. *ARPN Journal for Biological and Agricultural Sciences* 6(10): 26–37.

Kropp Dakubu, Mary Esther. 2009. *Parlons farefari (gurenè)*. L'harmattan. Paris.

Luning, Sabine. 2007. Rural territories as local heritage. Discourse on disruptions in society and nature in Maane, Burkina Faso. *Africa* 77(1), 86–103.

Mbow, Cheikh, Ole Mertz, Awa Diouf, Kjeld Rasmussen & Anette Reenberg. 2008. The history of environmental change and adaptation in eastern Saloum, Senegal. Driving forces and perceptions. *Global and Planetary Change* 64: 201–21.

Mertz, Ole, Cheikh Mbow, Anette Reenberg & Awa Diouf. 2009. Farmers' perceptions of climate change and

agricultural adaptation strategies in rural Sahel. *Environmental Management* 43(5): 804–16.

Mertz, Ole, Cheikh Mbow, Jonas Østergaard Nielsen, Abdou Maiga, Drissa Diallo, Anette Reenberg, Awa Diouf, Bruno Barbier, Ibrahim Bouzou Moussa, Malicki Zorom, Ibrahim Ouattara & Daniel Dabi. 2010. Climate factors play a limited role for past adaptation strategies in West Africa. *Ecology and Society* 15(4): 25pp.

Mertz, Ole, Sarah D'haen, Abdou Maiga, Ibrahim Bouzou Moussa, Bruno Barbier, Awa Diouf, Drissa Diallo, Evariste Dapola Da & Daniel Dabi. 2012. Climate variability and Environmental Stress in the Sudan-Sahel Zone of West Africa. *Ambio* 41: 380–92.

Meze-Hausken, Elisabeth. 2004. Contrasting climate variability and meteorological drought with perceived drought and climate change in Ethiopia. *Climate Research* 27: 19–31.

Nielsen, Jonas O. & Anette Reenberg. 2010. Temporality and the problem with singling out climate as a current driver of change in a small West African village. *Journal of Arid Environments* 74(4): 464–74.

Orlove, Ben, Carla Roncoli, Merit Kabugo & Abushen Majugu. 2010. Indigenous climate knowledge in southern Uganda. The multiple components of a dynamic regional system. *Climatic Change* 100: 243–65.

Peterson, Nicole & Kenneth Broad. 2009. Climate and weather discourse in anthropology. From determinism to uncertain futures. In: Susan A. Crate & Mark Nuttal (eds.), *Anthropology and climate change. From encounters to actions*. Walnut Creek: Left Coast Press, pp. 70–86.

Rapp, Eugen Ludwig. 1964. Die Gurenne-Sprache in Nordghana. Leipzig: Verlag Enzyklopädie.

Roncoli, Carla, Todd Crane & Ben Orlove. 2009. Fielding climate change in cultural anthropology. In: Susan A. Crate & Mark Nuttal (eds.), *Anthropology and climate change. From encounters to action.* Walnut Creek: Left Coast Press, pp. 87–115.

Sanders, Todd. 2008. *Beyond bodies*. *Rainmaking and sense making in Tanzania*. Toronto: University of Toronto Press.

Sheridan, Michael J. 2012. Global warming and global war: Tanzanian farmers' discourse on climate and political disorder. *Journal of Eastern African Studies* 6(2): 230–45.

Slegers, Monique F.W. 2008. "If only it would rain". Farmers' perception of rainfall and drought in semi-arid central Tanzania. *Journal of Arid Environments* 72: 2106–23.

Strauss, Sarah & Ben Orlove 2003. Up in the air. The anthropology of weather and climate. In: Sarah Strauss & Ben Orlove (eds.), *Weather, climate, culture*. Oxford: Berg, pp. 3–14.

Tambo, Justice & Tahirou Abdoulaye. 2012. Smallholder farmers' perception of and adaptation to climate change in the Nigerian savanna. *Regional Environmental Change* 13(2): 375–88.

Tschakert, Petra. 2007. Views from the vulnerable: Understanding climatic and other stressors in the Sahel. *Global Environmental Change* 17: 381–96.

Tschakert Petra & Regina Sagoe. 2009. Mental models. Understanding the causes and consequences of climate change. *Participatory Learning and Action, Community-Based Adaptation to Climate Change* 60: 154–9.

Tschakert, Petra, Regina Sagoe, Gifty Ofori-Darko & Samuel Nii Codjoe. 2010. Floods in the Sahel: an analysis of anomalies, memory, and anticipatory learning. *Climatic Change* 103(3–4): 471–502.

Tschakert, Petra & Kathleen A. Dietrich. 2010. Anticipatory learning for climate change adaptation and resilience. *Ecology and Society* 15(2): 11pp.

Van der Giesen, Nick, Jens Liebe & Gerlinde Jung. 2010. Adapting to climate change in the Volta Basin West Africa. *Current Science* 98(8), 1033–7.

West, Collin Thor, Carla Roncoli & Frederic Ouattara 2008. Local perceptions and regional climate trends on the central plateau of Burkina Faso. *Land Degradation & Development* 19(3), 289–30.

Povzetek

Študija predstavlja analizo okoljskih opazovanj kmetovalcev kot tudi modelov krivde v severni Gani, kmetovalski regiji, ki je zelo ranljiva zaradi podnebnih sprememb. Kvalitativni podatki so bili zbrani prek standardiziranega vprašalnika o konsenzu skupnosti glede razlage opaženih sprememb. Odgovori so bili transkribirani in so tako omogočili vsebinsko analizo. Naravni podatki so potrdili večino lokalnih opažanj, vendar pa sta starost in prizadetost anketirancev ključno vplivala na njihove poglede. Podnebnim spremembam so anketiranci pripisovali nižjo pomembnost kot pa drugim izrazom sprememb kot so infrastrukturni razvoj, človeško-spiritualni odnosi in spremembe družbenih odnosov. Še več, sklicevali so se na blagoslov zemlje in na uničenje zemlje. Slednje je bilo razumljeno v prenesenem smislu kot rezultat erozije družbenih odnosov in stagnacije kot tudi kršenja norm in pomanjkanja enotnosti znotraj skupnosti. Podnebne spremembe so bile tako dojete na podlagi lokalnih družbenih pogojev ne pa na podlagi globalnega naravoslovnega znanja. Prispevek kaže, da je antropološka analiza smiselna in da lahko služi kot vstopna točka nadaljnjega načrtovanja prilagajanja ter javnega izobraževanja.

KLJUČNE BESEDE: podnebne spremembe, zaznave, kmetovalci, krivda, zahodna Afrika

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