



Climate, the Earth, and God – Entangled narratives of cultural and climatic change in the Peruvian Andes

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ABSTRACT

How different groups perceive climate-related problems and changes is of growing interest in research and practice, especially in relation to the adaptation of vulnerable communities to climate change. However, research on local climate perceptions to date has tended to focus on *what* changes are perceived, not on *how* those changes are interpreted in particular socio-cultural contexts and given meaning within local worldviews and systems of values and beliefs. Based on fieldwork in agro-pastoral communities in highland Cusco, Peru, this study examines climate perceptions in terms of how local community members understand and explain changing climatic conditions. Specifically, two local climate narratives are identified and found to relate to Andean re-interpretations of Catholic and Evangelical religious traditions. The Andean practice of ritual offering to the earth (*pago a la tierra*) is found to play a key role both in the shifting religious identifications encountered at the local level, and in giving meaning to changing climatic conditions. The article further explores how these perspectives are rooted in diverging ontological and epistemological foundations. While in the local Catholic view the earth is conceived of as a non-human sacred/social person (*pachamama* or *Santa Tierra*) with whom a relationship of reciprocity must be maintained, the local Evangelical perspective instead conceives of the earth as an object, not a subject, more closely mirroring modernist Nature/Culture dualism. More broadly, the study suggests that how people interpret changing climatic conditions cannot simply be extracted and purified from the contexts of meaning production, and proposes the concept of ‘entangled narratives’ as a way of accounting for the social and cultural embeddedness of climate perceptions. Fulfilling our obligation to address climate change in socially just ways will require deepening our understanding of its human dimensions, including taking seriously what these changes may *mean* to the impacted groups.

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1. Introduction

That the human dimensions of climate change must be taken into account to understand and address this hypercomplex issue is increasingly recognized. To date, the social, cultural and political aspects of adaptation and vulnerability have drawn particular attention (e.g. Kelly and Adger, 2000; Eriksen and Kelly, 2007; O'Brien, Eriksen, Nygaard, and Schjolden, 2007; Ribot, 2010; Bassett and Fogelman, 2013). However, beyond assessing their vulnerability or adaptive capacity, how different groups understand climate-related problems and changes on their own terms constitutes an underdeveloped but emerging stream of empirical research. Anthropology has begun to address this question (e.g. Crate and Nuttall, 2009; Crate, 2011; Barnes et al., 2013) based on the premise that, ‘culture frames the way people perceive, understand, experience, and respond to key elements of the worlds which

they live in’ (Roncoli, Crane and Orlove, 2009, pp. 87). Similarly, human geographers have called attention to how culture and values shape understandings of and responses to climate change (e.g. O'Brien, 2009; O'Brien and Wolf, 2010; Adger, Barnett, Brown, Marshall, and O'Brien, 2013). This work suggests that attention to diverse culture- and place- based understandings of environmental change is necessary to explain, ‘why different groups exposed to the same sets of changes display vastly different responses’ (Adger et al., 2013, pp. 113). Nevertheless, although their value and relevance are recognized in some quarters, local perspectives are still undervalued and poorly understood in global debates.

It is generally recognized that local knowledge can make unique contributions to understanding and responding to climate change (e.g. Reyes-García et al., 2016). However, research in this vein has tended to focus on comparing local perceptions with scientific sources of climate information (e.g. Luseno, McPeak, Barrett, Little, and Gebru, 2003; Wiid and Ziervogel, 2012; Mulienga, Wineman, and Sitko, 2017) rather than examining these perspectives on their

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own terms. In fact, a recent systematic review highlights the relative paucity of research delving into how changes are not only *perceived*¹ (in the strict sense of whether they are detected) but how they are *conceptualized and understood*, bringing to the fore the role of local cosmologies, ontologies, and epistemologies in interpreting these changes (Pyhälä et al., 2016). How people perceive (in the broader sense of understand or interpret) climatic changes is shaped by their broader concerns and priorities and how they identify with particular groups (e.g. Jurt, Burga, Vicuña, Huggel, and Orlove, 2015). It is also founded on the ontological and epistemological underpinnings of their worldviews, which may differ significantly from the dominant understanding upheld by climate science (Rosengren, 2016) and upon which mainstream responses to climate change are singularly based.

Further, while 'local perceptions' work to date has tended to present a single, homogeneous 'local' (Pyhälä et al., 2016, pp. 25), it is increasingly recognized that in the face of social and environmental change, 'responses can differ by gender, class, caste, and ethnicity; and these societal determinants impact adaptive capacity overall' (Bhattarai, Beilin and Ford, 2015, pp. 123). Such factors (but also others, such as worldview and religious affiliation) not only shape adaptive capacity, but more fundamentally frame how climate-related problems and changes are perceived and understood in the first place. This may vary significantly even within relatively small localities.

While research on the human dimensions of climate change is quickly gaining prominence, insights on the specifically interior dimensions², which include 'beliefs, understanding, morality, motivations, values, and worldviews' (O'Brien and Hochachka, 2010, pp. 94), is decidedly less prevalent. Specifically in relation to the focus of this article, how (diverse and changing) religious affiliations and beliefs inform local understandings of climatic and environmental change has received relatively little attention (cf. Watson and Kochore, 2012; Allison, 2015; Murphy, Tembo, Phiri, Yerokun, and Grummell, 2016; Gergan, 2017). While it has been generally recognized that religious beliefs and practices have practical, ecological consequences (even, explicit ecological functions) (e.g. Reichel-Dolmatoff, 1976; Allison, 2004), research on place-based understandings of climate in particular that incorporate interior dimensions, including especially how these relate to (religious) beliefs, is still limited (but see an overview by Allison, 2015).

Further, 'local perceptions of global environmental change' research in general is particularly limited in South America, and especially limited in the Andean region. A global review of 126 such articles by Pyhälä et al. (2016) identified only two in the Andes (Orlove, Chiang, and Crane, 2000; Boillat and Berkes, 2013; cited below), whereas the literature focuses more commonly on Africa, Asia, and North and Central America. Peru is particularly interesting for examining such questions because it is frequently cited as one of the most vulnerable countries, due in particular to impacts on glacial retreat and water availability in the Andes (e.g. Vuille et al., 2008; Bury et al., 2011), and because of its cultural diversity. In the Andean context signs used by local people to

predict the weather have been studied to some extent. For example, researchers have identified local techniques based on the observation of the apparent brightness of constellations (Urton, 1981; Orlove, Chiang, and Crane, 2000; Rivière, 2002) and plant development and animal behavior (Rivière, 2002; Boillat and Berkes, 2013, pp. 5–6). Some of this work has focused on cataloguing and describing such signs (Urton, 1981; Rivière, 2002; Boillat and Berkes, 2013) or comparing local perceptions with scientific climate information (e.g. Orlove, Chiang, and Crane, 2000; Gurgiser et al., 2016). While this research is important, one can again note a tendency, as in the climate perceptions literature generally, to focus on *what* climatic changes are perceived rather than *how* those changes are interpreted and understood within a particular cosmology or system of beliefs.

In the Andean context, whereas Rosengren (2016) has documented how migrants from the Andean plateau fully embrace the scientific discourse on climate change, perspectives less congruent with this dominant view have been recorded elsewhere in the Andes. For example, the retreating glaciers of Mount Ausangate, considered an *apu* or mountain deity and important religious pilgrimage site, are interpreted as a sign foretelling the departure of the mountain god or even the end of the world (see Allison, 2015). In the Ecuadorian Andes, some indigenous farmers identify changes in climate and agricultural production as punishment from 'Mama Cotacachi', the volcano that dominates the local landscape (Rhoades, Zapata, and Aragundy, 2008, pp. 219–221). Other research has suggested that specific signs may be understood as divine messages (Rivière, 2002, pp. 366) or that climate-related problems such as hail and frost may be interpreted as the result of failures to maintain socially-mandated reciprocity relations (Berg, 1989, pp. 138–139; Rivière, 2002, pp. 360; Boillat and Berkes, 2013, pp. 6–7). More fundamentally, it has been argued that Andean perspectives on climate may challenge Western views of a Nature/Culture dichotomy (Paerregaard, 2013; Cometti, 2015). Nevertheless, research on how climatic changes are perceived from Andean perspectives and in relation to local religious beliefs is quite limited.

This paper begins to respond to many of these challenges by exploring how agro-pastoralists living in communities of rural Cusco, Peru understand the climate-related problems and changes they experience and how they relate these to religious beliefs and fundamental cosmological perspectives on human-environment relationships. The analysis underlines that local perspectives are by no means homogeneous, but that two prevalent narratives that fall along the lines of local Catholic and Evangelical Protestant beliefs can be identified. It is argued that these narratives are deeply embedded both socially and culturally, and are best understood not as ready-made climate narratives, but entangled narratives of climatic and cultural change.

Beyond contributing to our understanding of the perspectives of these particular groups, the paper seeks to highlight the broader importance of taking into account the cultural and social embeddedness of climate perceptions. In particular, it shows that even within the space of a small study area that may seem at first relatively homogenous in terms of livelihoods activities, cultural background, and historical trajectory, starkly contrasting understandings of the same climate phenomena may be encountered. This paper argues more generally that cultural values and beliefs influence understandings of climate, which will naturally shape individual and collective priorities and responses to climate change, and as such, must be taken seriously in adaptation research and practice if we are to address climate change in effective and socially just ways.

2. Methods

Ethnographic fieldwork was conducted in 2012–2013 in six agro-pastoral communities in Canas province, Cusco, Peru located

¹ As pointed out by an anonymous reviewer, 'perception' and 'understanding' are sometimes synonymous. Yet, the Oxford Living Dictionary contains two distinct definitions of the word perception – 'The ability to see, hear, or become aware of something through the senses,' and 'The way in which something is regarded, understood, or interpreted.' As argued here, much 'local perceptions of climate change' literature focuses on the first, asking questions about what changes are perceived by different groups (and often, evaluating the 'accuracy' of these perceptions vis-a-vis scientific climate data), rather than exploring how those changes are understood or interpreted in relation to particular cultural notions. This paper focuses on the latter.

² A term derived from Integral Theory, 'interior dimensions' refers to individual subjective experience as well as collective intersubjective factors influencing a person's perspectives and actions (O'Brien and Hochachka, 2010).

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