



Religion and climate change: varieties in viewpoints and practices

Randolph Haluza-DeLay*

Although religions are major social actors and institutions with considerable reach, relatively little social science research has focused specifically on the interaction of religious bodies and human-induced climate change. Most of the current scholarship on the topic has been theological, pastoral, or normative, and specific to particular faiths; the focus of such scholarship is to draw on resources internal to the faith in order to make the case to adherents about the duty to attend to climate change. Only recently has empirical or social scientific research sought to examine what the world's religions and their adherents are actually saying or doing about climate change. Reviewing this research is the focus of this article. An essential first step is to conceptualize the problematic term 'religion' and to describe the extensive diversity of the world's religions. Religion includes beliefs, worldviews, practices, and institutions that cross borders, time, and scale from the level of individuals all the way to transnational and transhistorical movements. A summary of religious engagements with climate change is followed by two case studies that show the complexity of religion and religious engagement with climate change. The Pacific Islands are used as a geographic case. Buddhism is used as a case study of a specific faith tradition. Because the world's religions and faith groups are major social institutions and sites of collection action, greater attention to them by climate-oriented social scientists is recommended. © 2014 John Wiley & Sons, Ltd.

How to cite this article:

WIREs Clim Change 2014. doi: 10.1002/wcc.268

INTRODUCTION

One of the oldest and most enduring social institutions, one that directly touches more than two thirds of the world's population, is religion. Faith-based actors and institutionalized religious groups have issued numerous statements on climate change in recent years. Many groups have actively engaged with global climate agencies and civil society organizations on anthropogenic climate change. Such engagement has occurred at the highest levels, involving popes, UN Secretary Generals, national leaders, and monarchs.¹

*Correspondence to: randy.haluza-delay@kingsu.ca

Department of Sociology, The King's University College, Edmonton, Alberta, Canada

Conflict of interest: The author has declared no conflicts of interest for this article.

Climate change is becoming an area of interfaith cooperation.^{2–6} Religious groups have been active in the climate justice movement. And scientists have called for cooperation on the climate issue between scientists and religious groups.^{7,8} At the same time, some groups, most notably American politically conservative evangelical Christian organizations, have received widespread media attention for opposition to climate change mitigation and even outright denial of climate change, sometimes as a correlate of other anti-science biases. However, showing that the faith is not incommensurate with the sciences of climate change, Sir John Houghton, co-chair of the IPCC's (Intergovernmental Panel on Climate Change) scientific assessment working group and lead editor for the first three assessment reports, is an evangelical Christian from the United Kingdom. Climate scientist Katherine Hayhoe, also an evangelical Christian,

discussed both her science and her faith in a recent issue of the *Bulletin of Atomic Scientists*.⁹ Hayhoe also discussed attacks received from climate denialists, including from some co-religionists. Current IPCC head Rajendra Pachauri is Hindu. Numerous other examples indicate that climate science and religious faith are not necessarily inimical.

Nevertheless, while there is mobilization around climate change among religious groups, there is discontinuity as well. Any analysis of religious engagement with human-induced climate change must take account of such ambivalence. Furthermore, religious groups and their impacts exhibit tremendous variety. While Roman Catholicism is hierarchically organized, no specific leader speaks for Hinduism or most religions, and localized indigenous or 'folk' religions have vastly different social dynamics. Abrahamic religions (Islam, Judaism, and Christianity) have a far greater degree of codified belief than most other religions. An analysis cannot homogenize religion into a monolithic category. Finally, the effect of scale is of paramount importance for consideration as local communities of faith organized as mosques, temples, or churches may have far different engagements with climate change than the broader tradition to which they belong.

This article assesses the engagements of various religious groups and traditions with human-induced climate change. It focuses on the social scientific research literature rather than the ethical, normative, or theological literature, which is more extensive.^{10,11} An essential first step is to conceptualize the problematic term 'religion'. While religion is often presented as determinative of values, it also includes worldviews, institutions, and collective practices and meaning-making processes. The article focuses particularly on worldview and the social organization of religious groups as a cross-scalar characteristic. Perhaps even more importantly, the socio-historical processes variously called 'secularization' and 'modernization' in the contemporary world must be considered, especially as they are associated with the assumptions of social science and social scientists about 'religion'. These assumptions affect, and in some cases impede, a more comprehensive understanding of religious people's reactions *vis-a-vis* phenomena like climate change at its manifestations at local and global scales.

Religion has ongoing significance at individual, national, and global levels, and a continuing role in ethical discourse and the shaping of normative responses to social problems. Religious bodies also have an influence in the public sphere beyond their impact on individual adherents' worldviews and practices. Cultural imaginaries and political action

are among the effects of religious action, intentionally or incidentally. In recent years, the world's major religious traditions have grown increasingly concerned with environmental matters and an extensive research literature is developing on religion and nature or environment.¹² As with other environmental perspectives, religiously based ones are highly contested. One benefit of religious environmentalism is its presentation of alternative ways of conceptualizing the human–environment relationship. As citizens try to address environmental degradation, these alternative praxes may be considered as expanding the cultural repertoire.^{13–15} On the other hand, religious perspectives and institutions can be among the barriers to addressing significant issues such as climate change. It is unclear whether religious institutions are 'greening' any more or less effectively than other social sectors. Moving from environment in general to climate change in particular, the planetary scale of human-induced climate change can seem incomprehensible to millennium-old traditions with belief systems that are based on the far-reaching characteristics of deity and the corresponding puniness of mere humans. Yet, compared to most social institutions, and despite their prominence, religious groups and traditions around the world have been examined by relatively little social science research regarding how they have engaged with the prospect of human-induced climate change. This is beginning to change,^{10,11,16,17} although the topic is still dominated by survey research with individual believers as the unit of analysis^{18–21} or scholarship that is primarily theological or ethical explication of climate change originating from within various religious traditions.^{22–30}

BENEFITS AND BARRIERS TO RELIGIOUS GROUPS' ENGAGEMENT

Besides their prominence as social and political agents, there are other reasons to think it useful to examine religious groups in regard to climate change,³¹ and recent handbooks on climate change have included chapters on religion.^{32–34} Climate researchers and activists have asserted that attention to values are an important consideration,³⁵ that new sources of motivation to break political deadlock are needed, moral authority and courage is lacking, or that consumerist and other worldviews[sic] are barriers to meaningful adaptation. Among social institutions, religions are often presumed to be one of the most important avenues for values, motivations, morals, and worldviews.

Therefore, observers have suggested several key reasons why the world's religions, once engaged,

could be an important part of the societal response to climate change.^{11,31,36–41} First, religions may be able to encourage a response to climate change via their influence on believers' worldviews or cosmologies and the moral duties that they promote. Second, religions are able to engage a broad audience, many of whom accept and respect their moral authority and leadership. Third, religions have significant institutional and economic resources at their disposal. Finally, religions have the potential to provide connectivity (e.g., in the form of social capital) that fosters achievement of collective goals. Each of these characteristics could be applied to the issue of climate change. In sum, religions are assumed to be important influences on adherents' attitudes and subsequent behavior as well as being powerful social actors.

But the potential utility of religions engaging the issue of human-induced climate change is compromised by perceptions that religions are anti-climate change and anti-science. Much of this perception is due to the 'culture wars' in the United States. This stance is not representative of all the world's religions, and certainly not of all Christians. Nevertheless, it indicates one way that one social institution competes with another social institution (science), and points to one of a variety of potential obstacles identified by researchers and observers. In terms of environmental awareness in faith groups, four types of barriers were identified in one study.⁴² *Paradigmatic* barriers were theological beliefs or worldviews that disable environmental concern, such as an imminent end-times theology. *Applicability* barriers include the level of attention to give environmental concerns, that is, the application of efforts to them, especially when compared to issues like hunger or economic development in the face of poverty. Inadequate *social critique* can be a barrier in that a faith group may not recognize the problem as a social one (rather than rooted in individual or immoral behavior such as greed); the consequence is failure to acknowledge deeper roots of the problem and derive sufficient solutions. Finally, the barrier of *conviction* is a category that includes such factors as lack of knowledge or motivation to act, or attachment to current lifestyles. These obstacles, especially the latter two, are not unique to religious adherents. For example, Norgaard describes the social psychology of denying the severity of climate change among Norwegians despite the population of that country having some of the highest levels of climate knowledge and corresponding government policies.⁴³

Other obstacles have also been identified. Leaders of religious groups may be reluctant to

address the issue. For example, some Catholic bishops in the United States are hesitant to take action on climate change because they worry that tackling such a controversial issue would squander their political capital.⁴⁴ Another question is the extent to which religious beliefs and institutions influence habits of the life world.⁴⁵ Another obstacle is the adequacy of resources, especially as religious groups respond to a wide variety of needs. Researchers studying Indonesian Muslim organizations and American Roman Catholicism both referred to external criticism that these organizations were not doing enough on human-induced climate change, but noted that such critics failed to understand that the faith groups were responding to a broader range of needs and doing so caused less concentrated attention on any one issue.^{44,46} At the same time, recognizing that human needs are interrelated, the Catholic Health Association of the USA was one of the founding partners in the Catholic Climate Covenant (see <http://www.chausa.org/environment/climate-change>).

Nevertheless, these barriers to religious engagement with climate change are potentially significant. Along with other human social institutions, religious traditions are adapting to the conditions of new times but institutions and practice change slowly. More comparative research is needed: it may be that religious institutions are coming to the climate change issue at least as quickly as health, business, government, tourism, and other global sectors. As Szasz asserted, it may be that 'We are pessimistic because we pay too much attention to conservative Christians'.⁴⁷

To assess religious constructions and engagements with climate change, we must work at an understanding of the breadth and diversity of the social phenomena often called 'religion'. This makes the topic much more complex. In order to understand the engagement of religious groups from within their own understanding and practice, we first discuss broader orientations to understanding the confluence of religion beyond narrow understanding of it as flawed attempts to explain the world⁴⁸ or in opposition to the 'truth' of a scientific worldview. It is particularly important to note that different faiths do not serve as interchangeable functional alternatives, that they occupy clearly different societal positions in most societies—especially in complex multi-faith, multi-ethnic, and multi-cultural societies—and that they may operate very differently in different contexts and scales. The engagements of individuals will be different than the engagement of local faith communities and yet different again as longstanding and transnational religious institutions.

CONCEPTUAL MATTERS: DEFINING RELIGION

The definitional problem with the concept of 'religion' is that all such definitions exclude or include some 'faiths' that are not meant to be excluded or included. For example, definitions based on 'beliefs', especially with theistic assumptions, exhibit a Western bias. Indigenous spirituality is often focused on communal practice and less on specific belief systems, and Confucianism has been considered a religion despite not having supernatural content. Secular philosophies, such as Marxism or neoliberalism, are 'faiths' in terms of being based on unprovable tenets and have assertions about human nature, ontology, and eschatology (hope for the future). Not all religions have written scriptures or revelations. Some faiths are highly rational while others are oriented toward mysticism either among individual adherents or in communal practice. Nature-oriented spirituality, which appears to be on the rise,^{14,49,50} has little or no organized structure. In contrast, some faiths—like many Christian denominations—are extensively organized. Some faiths have a sense of the createdness of the cosmos—with or without an active agent, either Creator or impersonal unificatory force—while Hinduism holds to a cyclical conception of time wherein the material world emerges repeatedly. These are just some of the examples of the diversity captured under the term 'religion'. Even climate change has been called a religion⁵¹; environmentalism certainly has been characterized as such in both popular discourse and by scholars,^{52,53} especially in terms of some environmentalism's apocalyptic pronouncements.^{54–56}

Religion is variously described as a symbolic system, a social institution, a relationship with the divine (e.g., covenant), or a moral code. 'Religion' in general or even as a specific object (such as the 'Jewish religion') is a modern construct without parallel in pre-Enlightenment times or in non-Western cultures.^{57–60} The conceptualization of faith as individually held beliefs betrays the Western or Enlightenment bias toward reason. Scholars including Max Weber and Charles Taylor have demonstrated how the Protestant Reformation facilitated modern individualism and the conditions for the secularization of society.^{61–63} This history is important for understanding both the diverse manifestations of religiosity in contemporary societies and the unreflexive assumptions social scientists may bring to the research. For religious studies scholars, declines in organized religion are not necessarily declines in religiosity or spirituality. It is in this context of the modern 'disenchantment of the world' that new forms of contemporary spirituality with implications

for sustainability are developing, such as 'New Age', nature-based and green religiosity.^{49,50,64–66}

COSMOLOGICAL FUNCTIONS

One of the most significant functions ascribed to religion is to present a cosmology or worldview. Cosmologies are narratives, albeit not always explicitly expressed, that contain our most fundamental assumptions about the world and the place of humanity in the cosmos. They also identify the direction of 'a good, meaningful, and worthwhile life' (Ref 6, p. 9). However, cosmologies are not the purview solely of identified religious traditions. Scientific materialism is a cosmological narrative. Arguably, a modernist cosmology portrays humankind as exempt from natural laws and separate from and independent of natural systems.⁶⁷ Its effect is to facilitate extensive resource extraction and fossil fuel addictions¹⁴ and problematic expectations (hope?) for technological salvation from emissions producing climate change.^{68,69} Similarly, scholars such as Talal Asad have elucidated the entanglement of secularism's worldview with capitalist liberal democracies—in which the myth of progress, claims to know (and manage) 'nature', and bureaucratic and technical rationality are central while moral claims are to be eradicated.^{70,71}

The cosmological orientations of many religions can be based on different epistemic and ontological foundations than science; a metaphysics of a transcendent deity or a holistic vitalism is grounded differently than science's materialism. What this means is that scientific approaches (and clearly there is not one approach) are not automatically taken as the complete truth by religious people. Increasingly, social scientists are examining the cosmological character of science and the narrating of climate science and possible futures.^{72–76}

A belief about the cosmos as created is a cosmological statement of profound materiality but more than materialism. What Escobar writes about indigenous peoples is applicable to many communities of faith, even in modern societies:

[U]nlike modern constructions with their strict separation between biophysical, human and supernatural worlds, it is commonly appreciated that local models in non-Western contexts are seen as often predicated on links of continuity between the three spheres. This continuity might nevertheless be experienced as problematic and uncertain; it is culturally established through symbols, rituals and practices and is embedded in particular social relations which also differ from the modern, capitalist type. In this way, living, non-living, and often times supernatural beings

are not seen as constituting distinct and separate domains—certainly not two opposed spheres of nature and culture—and social relations are seen as encompassing more than humans (Ref 77, p. 151).

Such cosmologies can manifest in practical ways that go beyond different understandings of the world.⁷⁸ In a classic statement Eliade distinguished religion as presenting a ‘sacred’ sphere separable from the mundane or ‘profane’ sphere.⁷⁹ This presents an unacceptable division reflective of modernist dichotomies. According to Eliade, for religious people, the sacred manifests and is ‘real’; social science has usually framed the perception of the sacred as a mere social construction. Any cosmology purports to present the world as it is, not merely as one choice among possible choices. However, the action that arises from such deep-seated beliefs is not determined in a linear fashion. Science can be seen as portraying a newly determined role for humans in the cosmic order. Another cosmology, say, belief that a divine force is in control of the cosmos or that humankind is not so powerful as God or Nature is likely to shape in very different ways what people believe about anthropogenic climate change.^{21,80} Believing that we are in the epoch of *Kaliyuga*—the most degenerate period in the cycles of cosmological time—for some Hindu faithful the divinity of the sacred Ganges River is assumed to provide reassurance in times of decay; disrupted flow from climate changes are filtered through this framework, creating multiple layers of interpretation of world.⁸¹ On the other hand, local ecological knowledge is often infused with spiritual worldviews or emotive awarenesses of place and thereby disregarded by research scientists trained in the rigid man/nature/spirit divisions of modernity’s understandings of the world. In such situations, the use of ‘religion’ to characterize and categorize traditional ecological knowledge (TEK) is misleading at best.⁸² Jenkins describes it as ‘an imposed and misleading category, used by an alien culture to dissect holistic aspects of lived culture’ (Ref 12, p. 449). Some cultural groups resist the scientific cosmology, others accept, while for others the interaction of faith, reason, and science cause adaptation. However, these worldviews are only a part of what constitutes ‘religion’.

COLLECTIVE AND ORGANIZATIONAL FUNCTIONS

Assessing religious engagement with human-induced climate change via beliefs or organizational statements (e.g., the statements collected at⁸³) over-represents those faiths that have a greater degree of

institutionalization. Religions like Christianity have extensive—and often hierarchical—organization into denominations. Although Buddhism has three major branches, there is no specific institutional form. This organizational structure is one of the reasons why there is not even data to measure adherents associated with each branch. Indigenous religions are localized and in terms of social organization may have little more than a traditional teacher or shaman. While many tend to consider religion as beliefs, the organization of a faith is an important part of the influence on individuals. Members become part of a collective body with a varied set of ties to other believers. It could be that beliefs about climate change is not a function of demographics or affiliation, but of associational characteristics, that is, individuals are influenced by who they spend time with and listen to. Such a consideration is a fundamental sociological insight. Similarly, expecting adherent coherence to doctrinal-denominational statements applies a simplistic process of this sort of social influence implied by association with other believers (and misunderstands the social psychological processes associated with any value-to-behavior schematic^{35,84}).

The organizational features of religious groups may have considerable implication in relationship to human-induced climate change. That people come together to share resources means religions utilize and produce social capital^{85,86} which is already acknowledged as relevant to climate adaptation.⁸⁷ Some religions have institutional resources in money, well-placed affiliates, networks, know-how, chains of communication and so on that can be involved in reaction to climate change (as barriers to or as productive elements of response). The crossing of scales from local to transnational is also an important part of assessing religions’ advantages in response to climate change.⁸⁸

More important, perhaps, is to focus on how behavior—both communal and individual—is enacted by the confluence of cosmological narrative, held values, and social influence. Religious ideas are not simply thought, but they are used. Ideas and lived practices reflect, respond to, and shape their larger sociocultural milieux. Researchers must still understand the symbolic and theological content of the particular religion(s), but the insight of sociology is that practices are socially organized sets of action and not simplistically derived in a linear progression from belief statements or declared values nor simply appropriated from organizational authority. Practices are consistent patterns of behavior that are produced, enabled, contextualized, and constrained within and by systems larger than individuals and

social groups.⁸⁹ This may give more traction for understanding the relationship between religiosity, context, and climate-related behavior than measures of belief or demographics. When lived practices rather than beliefs are the unit of analysis, a more localized (but not individuated) scale for action is predominant. A Lutheran in a congregation with an active environment committee or where climate change is mentioned from the pulpit will differ from a Lutheran without such discourse in their experience. Some evidence indicates that conservatives or liberals in one denomination have more in common with those of a political persuasion similar to their own, but in another denomination than they may have with religious brethren in their own denomination.⁹⁰ It is becoming clear that believers are also embedded in local networks which have considerable effect on the application of faith principles to practical action on climate change.^{91–96}

With this in mind, it may be more productive to use a ‘family resemblance’ approach to understand religion. One could argue that all things categorized as ‘religions’ (or ‘spiritualities’) have six integrated dimensions in lesser or greater degree: doctrine, sacred narrative, ethics, ritual, experience, and social institutions.⁹⁷ *Doctrine* is the codification of beliefs, as in creeds or theological explication. *Sacred narrative* fits the cosmological discussion above while *ethics* correspond to the discussion of values. *Ritual* includes the deliberately religious symbolic actions conducted in a collective fashion, although in more individualistic faiths, people may create their own symbolic practices. *Experience* is the coordination of ongoing practices and life events interpreted by and reinterpreting the symbolic and narrational aspects of the faith. *Institutions* are the relevant organization of a religion at various levels as discussed above. Individual participants in a faith tradition will appropriate these features in differing ways, such as in the consistency of a theological framework in a sect with the person’s own practices or beliefs. The variability of this appropriation will affect the religion–climate change interaction.

In the end, any definition or any list of characteristics capture particular philosophies and faiths. Those that are captured by most such attempts can be said to be ‘religion’ while those filtered out more often may be omitted from most analyses. This is an imprecise solution to the definitional problem but one that facilitates analysis with a more limited number of disqualifications than precise definitions of what constitutes ‘religion’ globally. Still, the boundary-making effect of definitions may reduce the effectiveness of research on the complex ways personal and collective religiosity intersects with human-induced climate

change. Acknowledging the variety of religiosities as well as religions’ capacities for adapting to new conditions or attributing signification differently (as in the ways that notions of the domination of nature’ are changing into ‘stewardship’ and ‘creation-care’ within Christianity), Ivakhiv advocates social scientists approach religion as an ‘unstable signifier’ rather than assuming universal features.⁹⁸ Lastly, of particular analytic importance is consideration of the effect of scale, as religion for the individual adherent may have different consequences from religion at other scales. For example, the Presbyterian (Christian) Church USA has extensive statements about climate change, but it quite unclear what that means at the scale of the local church or individual Presbyterians.⁹⁹ The same is true of the Roman Catholic Church. Despite the declarations from the Holy See that climate change is of profound moral significance, the effect in the parishes of the world is more complicated and muted.^{44,100}

RELIGION AROUND THE WORLD

The previous section argued that religions vary widely between faiths and these specific differences must be taken into account in research and climate-associated social engagement. Religious groups also operate at several scales with different features at the levels of individual, group, institution, and transnational/transhistorical traditions. Because of these widely divergent characteristics they should not be subsumed into a single substantive category, and should be analyzed separately for their multifaceted engagement. How are the world’s religions responding to climate change? The obvious answer is that they are responding in such a wide range of ways that it would be impossible to arrive at a single, simple answer.

It is difficult to get a precise number for the population of each religion much less the societal importance of various religions. Below, we summarize the largest of the world’s religions. There are many smaller religions around the world. Some, such as Judaism, Taoism, or the Baha’i faith, may be well known and more influential. Others, such as Jain, Shinto, or neo-pagan religions and spiritualities, may not have the same reach but research on all these faiths is lacking. Although over 100 million people belong to faith groups in China, they represent only a small proportion of the population, and are not one of the five official religions for which data is collected. Furthermore, Chinese approaches like the general ‘harmony’ orientation in Chinese philosophy may be considered religion-like.¹⁰¹

The data from the Pew Research Center’s Forum on Religious Life is generally accepted as the most

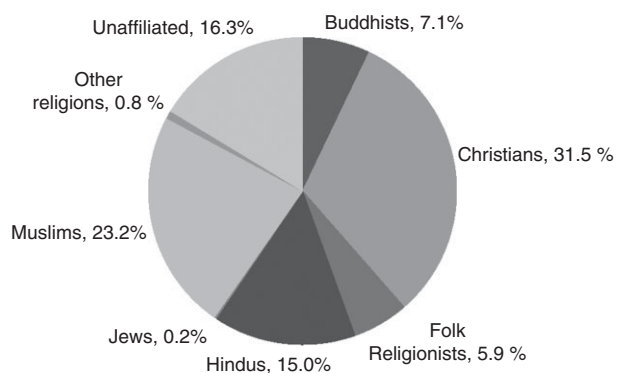


FIGURE 1 | The world's population by religious association.¹⁰³

current and allows for interactive comparisons by religion, region, and country.¹⁰² By these figures, religiously affiliated people comprise about 85% of the world's population. The relative proportion of the religious association of the world's population is represented in Figure 1. However, gross numbers indicate some degree of affiliation and do not represent degrees of religious participation or commitment. Furthermore, degrees of sociopolitical influence vary widely: of the 232 countries and territories included in the Global Religious Futures project, 157 have Christian majorities, but great caution against labeling any nation as a 'Christian' (or 'Muslim', 'Buddhist' or 'Hindu') is warranted. Long histories of migration, especially in recent decades, is increasingly placing religious and other approaches to life, politics, society, and nature adjacent to each other, creating pluralist configurations in the public sphere.

Christians make up the largest religion by population and worldwide breadth. The rapid growth in the past century, especially in Africa, is the reverse of declines of Christian participation witnessed in Europe, and to lesser extents in North America and other western countries.¹⁰⁴ The three major branches of Christianity are Roman Catholic (1.1 billion), Protestant (850 million, in many denominations), and the Orthodox church (265 million). Christian denominations are more centrally organized than any other religious tradition. The evangelical version of Protestant Christianity is rapidly growing in Africa and the historically (several centuries) Catholic countries of Latin America. The world's Catholic population has tripled in size in the past century, and relatively conservative versions of Catholicism and other Christianities have spread. There has been a great deal of Christian theological writing and denominational statements on climate change, and considerable research has been done on Christianity and climate change, especially in the United States. This owes, perhaps, to the dominance of Christianity

within countries with extensive research networks. Comparable work on other faiths is far less available.^{11,12}

Islam also has an extensive geographic reach. It is also rapidly growing in Africa and elsewhere. Immigration is spreading Islam (and other faiths) to historically Christian countries altering the Christendom cultural consensus that has evolved into the modern, secular division between private faith and the public spheres.¹⁰⁵ Forty-three million Muslims now live in Europe.¹⁰³ Indonesia has the largest population of Muslims. Muslims are divided into two major branches—Sunni and Shi'a. Nine tenths of the world's Muslims are Sunni. In some countries, the relationship between governments and religious authorities is explicit. Like Christianity and Judaism, Muslims value revelation as presented in their scriptures to orient practice and guide responses to new phenomena.¹⁰⁶ There is a developing ecological theology within Islam with relevance to climate change.^{27,107} This includes a reframing of central Islamic concepts, such as the notion of *jihad* to extend idea of 'struggle' to Muslim duty to care for the environment.⁴⁶ Countries with large proportions of Muslims are located in regions of the world beginning to experience the most significant climatic changes.

India contains about 94% of the world's 1 billion Hindus. Most of the remainder are located in nearby countries although immigration has spread to Eastern African and Arab countries as well as to other countries of the former British Commonwealth.¹⁰³ India is both secular and highly religious.⁶² Recently, Hindu fundamentalism has emerged as a political force with unclear implications for climate change. India has strenuously argued for climate equity in global negotiations. A Hindu Declaration on Climate Change was developed in 2009.¹⁰⁸ Sikhs, numbering 30 million worldwide, belong to a faith that was founded in the fifteenth century as a reform movement within Hinduism and is now considered its own religion. Like other Indians, Sikhs have emigrated elsewhere with Canada and Britain among the countries with over a million Sikhs. This adds to the religious pluralism around environmental and social issues generally in which perceptions, action, and policy regarding human-induced climate change must figure.

Buddhism is widespread in Asia, where 99% of the approximately 488 million adherents live. Seven countries have Buddhist majorities. Over half of all Buddhists, however, live in China. The Dalai Lama is an authoritative spiritual position in one of the three major branches of Buddhism and has

spoken vocally about the need to address human-induced climate change. A number of very well known Buddhist teachers contributed to a pan-Buddhist statement on the climate emergency, with a chapter on a Buddhist approach to global warming science.²⁹ Buddhist practice varies widely around the world. Temple-oriented worship and events and the long Buddhist presence and visibility of monks in regions of Asia gives Buddhism a considerably different visage than the more individualized and philosophical approaches that Buddhist practice tends to take in western/northern countries.

The Pew Forum estimates that around 405 million people of the world's population adhere to folk or traditional religions. These are faiths that are closely associated with a particular group of people, ethnicity, or tribe. Examples of folk religions include African traditional religions, Chinese folk religions, and Native American religions. Often they are called 'indigenous spirituality' which raises awkward questions about what constitutes indigeneity (Christianity is indigenous to Palestine, not Europe, for example; Buddhism is not indigenous to Tibet), and how to take account of hybridization (or syncretism) as in Latin American Catholicism. Folk religions often have no formal creeds or sacred texts and are very challenging to measure. They are more diffuse than many other faiths and often omitted as a category from data collection. They are pervasive in China, for example, although surveys do not include them because they are not one of the five religions officially recognized by the government. Complicating matters even more is that in folk religiosity there is often combination or syncretism of practice. Chinese folk religions may include traditional elements of locally specific religious practice along with elements of Buddhism and Taoism. Religion in Africa may combine Christian or Muslim and folk practices. Two examples may illustrate the complexity of research in the context of changing religious praxis.

In the first example, among the Diola of Guinea-Bissau, Roman Catholic practices had been relatively well accepted, yet controversy erupted recently over participation in ceremonies that built metaphysical bridges between land and masculine farming roles, which had previously been communally agreed upon as inconsistent with the Catholic faith.⁹¹ The Diola men felt changing precipitation patterns (possibly climate-induced) compelled their participation in these rituals. In a second example, Hermesse probed the understandings of climate change among rural people in a region of Guatemala, drawing distinctions between Mayan indigenous practice, Roman Catholicism and Pentecostal Christianity.⁹⁴

There had been some syncretism between Mayan and Catholic practices in everyday life, so that the prevalent religious effect manifested as localized ecological knowledge albeit coupled with religious influences originating elsewhere (Europeanized Catholic theology and authority). Newly arrived Pentecostalism carried a view of a vengeful God unrecognizable to Catholic-influenced locals, and drew converts away from longstanding everyday practices that had heretofore carried both religious and ecological knowledge. It is impossible to separate the religious and the cultural and the epistemological in such circumstances. Nevertheless, this is to be preferred over climate research, policy and programs that treat culture as epiphenomena.¹⁰⁹

As these short summaries imply, any and all religions will have different effects in contexts where they are majority or minority, culturally homogenous or not, diasporic, colonial or historically rooted, and myriad other contextualizations.¹¹⁰ This summary has not even mentioned New Age spirituality and associated practices, or nature-oriented spiritualities, which are important trends. Taylor argues that the world's major faiths (and other social institutions) are only becoming 'light green' and that a 'dark green religion' is required for the extensive spiritual, social, and worldview changes that he believes environmental and climate data indicate is necessary.⁵⁰ He also demands that more systematic research must be accomplished before we begin to draw conclusions about the efficacy of religious groups' contributions to improving environmental conditions.¹¹¹

A SKETCH OF RELIGIONS ENGAGING CLIMATE CHANGE

An overview of the world's religions and faiths with human-induced climate change will tend to privilege groups that are institutionally organized. No comprehensive account of the history of religious engagement with climate change currently exists, although portions of the account can be found in various sources.^{1,4,11,33,83,112,113} Attention to climate change came primarily out of attention to environmental concerns in general. Like most social institutions, religious groups began to notice environmental concerns in the mid-20th century. Christianity, in particular, was heavily criticized for worldview assumptions that seemed to form the basis for industrial expansion. However, action by Christian groups on what they called 'eco-justice' had already begun in the 1960s¹¹⁴ and has continued in the stewardship and climate justice approaches in the present. Religious groups quickly began to

plumb past traditions for resources to engage the new questions about environmental degradation.¹¹⁵ The World Council of Churches (WCC) initiated a decade long theme of 'Justice, Peace, and the Integrity of Creation' (JPIC) in the early 1980s that included reference to global warming.^{4,112} The WCC called for a carbon tax and other measures of 'atmospheric solidarity' before the Rio Earth Summit in 1992. The highest levels of leadership in the Eastern Orthodox Church and the Roman Catholic Church also began to engage environmental concerns in the 1980s. Pope John Paul II convened an ecumenical gathering of representatives and leaders from 160 of the world's faiths for a World Day of Prayer for Peace in Assisi, Italy in 1986. Assisi is the birthplace of St. Francis, the 'patron saint of ecology'. By praying alongside each other, the interfaith gathering was historic; that it was held at Assisi helped position ecology and interreligious peace in a central place in interfaith contexts. Both John Paul II and Pope Benedict XVI have repeatedly called for 'climate justice'. So has the WCC, although until recently, factions in the WCC struggled over the degree of attention to give peace and justice, international development, and environmental concerns during the JPIC process.⁴ Although religious groups are not recognized among the nine 'Major Groups' as defined by Agenda 21, at the annual Congregation of Parties (COP) the UNFCCC Secretariat has allowed a statement from the 'community of faith', which in most years has been delivered by the WCC with increasing participation by other religious traditions. The Alliance of Religions and Conservation (ARC) was launched by Prince Philip of the United Kingdom in 1996, listing the Assisi meeting as part of its history. ARC is a secular, interfaith initiative with the UN Environment Programme and World Wildlife Fund International among the other partners. A series of action plans on climate change that are specific to each faith have been coordinated by ARC although little evaluation of the plans and their implementation is in evidence.

These events represent a growing interfaith orientation to climate change, increasingly associated with advocating for the world's poor from a climate justice perspective. From 1996 to 1998, a series of conferences were organized by Mary Evelyn Tucker and John Grim of the Center for the Study of World Religions at Harvard University.⁸³ Ten books presented the ecological resources of different religions of the world. Tucker and Grim continue their work at Yale University with increased focus on climate change. More and more religious groups issued statements about environmental protection, and later, on climate change. More and more resources

were produced in the form of books, scholarship, teaching materials, and organizations. Social science researchers have studied religion and the environment in various ways. Several recent papers provide excellent summaries.^{12,116,117} Much of this research has sought to correlate religious variables with pro- or anti-environmental values compared to other groups in the population. Except for characteristics associated with fundamentalist or conservative Christians such as biblical literalism and end-times theology, the results of the research have been weak at best, although political ideology or risk affect seems to be more closely associated than religious characteristics with environmental behavior and attitudes.¹¹⁸ Similar results have been found in survey research about climate change attitudes and religious variables. Far less research has been conducted on other faiths. Beyond survey research, other methods show considerable religious engagement with environmental concerns and are to be recommended. As noted, relatively little research has focused specifically on climate change rather than environmental concerns more broadly.

In the early 2000s, Sir John Houghton convinced key American evangelical Christians that climate change was a serious issue. They created the Evangelical Climate Initiative (ECI) in 2006. The American Catholic bishops had produced a booklet on climate change and environmental justice in 2001¹¹⁹ and numerous other denominations had also produced statements calling for mitigation of human-induced climate change. The ECI encountered tremendous backlash in the American evangelical landscape, led by the Southern Baptist Convention. The burgeoning climate denial movement found fertile ground and partnerships within conservative Christianity, both evangelical and Catholic.¹²⁰ The Cornwall Alliance became one of the most visible climate sceptic organizations in this religious field, with the subterfuge that investment in climate mitigation reduced protection for the poor of the world,¹²¹ a position rejected by the climate justice activists in the WCC and other Christian groups.

Polls frequently show evangelical Christians in certain countries (e.g., Britain, Canada, the United States, Australia) have higher rates of denial of climate change and lower rates of acceptance of climate policy options than most other social groups. However, when political ideology is included in the analysis, the picture changes somewhat. British researchers noted 'highly religious' among a list of variables in previous studies that had been associated with rejection of human-induced climate change but did not include it in their own analysis.¹²² Their research showed

'the strongest associations were found with political affiliation and environmental values. Those with a conservative voting intention and low environmental values tended to be the most uncertain about the reality and severity of climate change'. (p. 1017) Similarly, McCright and Dunlap found political ideology, but not religiosity (measured as attendance), as significant in American political polarization on climate change.¹²³ Similar results occurred in a cross-national comparative study.¹²⁴ Tjernström and Tietenberg divided survey respondents according to self-identification (with no measures of commitment or participation levels) with an Abrahamic religion (assuming these to have a dualistic notion of human and nature) and Buddhism/Hinduism (because both reject the duality). The religious variable was not statistically significant but liberal political values did increase the likelihood of climate concern.

As noted, among the few religious variables in surveys that consistently show a relationship to climate variables are belief-centered ones about biblical literalism and end-times (eschatology) theology.^{21,80} In one sense, this makes sense: belief in the imminent end of the world would seem unlikely to provoke concern about something that is presented apocalyptically as an end-of-the-world-as-we-know-it. But other methods of research produce more nuanced perspectives on eschatological framing. For the community members in New Guinea environmental changes were signs of the world's end and probably a sign of societal breakdown.¹²⁵ Mozambique Christians saw climate change as part of the will of God,¹²⁶ as did indigenous spiritualists in Ghana,¹²⁷ (but for a different analysis of the cultural efficacy of traditional, Christian, and Muslim religions see¹²⁸). Among crab fishermen of the East Coast of the United States, unpredictable weather is understood as a reminder that God remains in control of creation, and a moral exhortation to avoid excess and greed.¹²⁹ Muslim farmers in Burkina Faso interpreted efforts to predict rainfall as a lack of humility and trust in God¹³⁰ This is similar to research on disasters. For example, following a deadly earthquake, Javanese (fully aware of plate tectonics) also interpreted the event as spirits demanding attention to religious traditions.¹³¹ In their view, modernity, secularism, ecological exploitation, and moral decay are associated while tradition is idealized, creating a narrative of a return to harmony. Other studies discern similar belief structures (e.g.,^{81,91,94,125,128,132}). Researchers using interviews to achieve more nuance than surveys provide showed that even evangelical Christian eschatology-based fatalism coincides with other beliefs that could substantiate environmental concern and acceptance of anthropogenic climate

change.⁹⁵ The point is that the application of beliefs to everyday life is complex, and in the case of environmental praxis even in a particular tradition there exists variability, as Danielson¹³³ describes American evangelicals holding several positions about how best to care for the environment.

Arguably, these results indicate what so much other research about religious practice demonstrates: context matters and we need to understand religious practice beyond the scale of the individual believer. Eschatological beliefs and climate denial can both be signs of the 'ontological insecurity' that Norgaard identified as important facets of the ignoring of climate change in her secular Norwegian research participants.⁴³ These are part of the 'sacred canopy' that religion (and nonreligious worldviews) provide—an overarching 'plausibility structure' of shared assumptions among co-religionists that cohere together to become orderly and meaningful.¹³⁴ These shared understandings include views of science, authority, economics, and political rights, as well as the metaphysical beliefs and moral duties more commonly associated with religion.

More importantly for sustainability concerns, researchers and communicators should understand that regularized practices operate within the plausibility structure provided by local communities, not just individually held beliefs nor the articulated frames of historical faith traditions. The changing map of religion includes cosmological impacts on the 'sacred canopy' of the earth itself, to which all humanity is struggling to comprehend and adapt. It also includes traditions and institutions that are part of the adaptive process. At this point, it might be productive to consider two case studies, one geographic and one specific to one religion. The existing research illustrates the entwining characteristics noted above.

PACIFIC ISLANDS AS A CASE STUDY

Climate change is a slow creeping disaster for South Pacific island states with vulnerability to rising sea levels associated with climate change. This has implications across scales, such that experts argue both top-down and bottom-up approaches are needed.¹³⁵ Disaster studies have come to understand that religions may provide benefits or must at least be recognized as part of the response system.^{36,37,136–138} In the Solomon Islands, 92% of the population is Christian and other Pacific island states have similar rates. It may be that traditional spiritual practices are still conducted within this new framework.⁹² Theologians have worked to indigenize the faith, developing an 'oceanic' theology adequate for a

'liquid continent' with the sea taking the place of the Old Testament Hebrew relationship to the land.¹³⁹ Such 'metaphysical resilience'¹⁴⁰ contributes to collective responses to the potential of climate change, both adaptively and maladaptively. A maladaptive resilience of a cosmological type is shown by interviewees in Tuvalu who 'believed that climate change was not an issue of concern due to the special relationship Tuvalu shares with God and due to the promises God made to Noah in the bible [e.g., not to flood the land again]' (Ref 141, p. 109).

In terms of social organization, disaster and climate change specialists frequently report that churches play a significant role in cultures and authority systems of local communities in the Pacific and should be included in planning, education, and mobilization. The presence of churches in every community in the Solomon Islands fosters response to island disasters better at present than a national government perceived as distant.⁹³ Their material resources are available for use, and they provide a place for gathering and communication. They facilitate social capital in certain circumstances, although in other circumstances, faith-based competition can undermine disaster response and climate adaptation.^{93,142} Recognizing the reach of church groups, the Red Cross in Samoa used these networks to deliver disaster/climate education programs. According to the latter research team, this had the added benefit of enabling women's participation in community planning more effectively than the gender role expectations that would have resulted if program delivery had been sought through traditional village authorities. In a series of case studies, faith groups were significant actors in the Pacific Island disaster and climate response architecture.¹⁴³ Researchers repeatedly recommend their inclusion in the disaster (which includes climate change related issues) education and response architecture. But researchers also indicate that non-Christian citizens (such as Muslim and Hindu Indo-Fijians) experience some discrimination in terms of resource allocation (note that precisely the opposite was reported from Bangladesh where Christianity is in the minority¹⁴⁴). Kuruppu is critical of the churches in Kiribati.⁹² She argues that church authorities usurped the autonomy of the people, and particularly criticizes the financial resources donated by parishioners to the church and which are therefore not available for individuals and thus decrease their resiliency. Still, recognizing that culture is dynamic and that church involvement is significant to climate adaptation, she recommends experts acknowledge their contemporary role within a framework that takes account of cultural meanings in general.

Finally, the local faith groups are connected beyond specific locales, meaning that transnational networks of assistance and aid can also be mobilized. Large religious organizations are major actors in adaptive response to human-induced climate change. The National Council of Churches of Australia is widely involved in programs with various Pacific Island states such as Fiji, Tonga, and Vanuatu.¹⁴³ The Australian Catholic bishops helped fund disaster (including climate) education programs for the Islands, as has Caritas (a coalition of Catholic development organizations). Caritas also supported the Academy Award-nominated documentary *Sun Come Up*¹⁴⁵ about the efforts of the Carteret Islanders to find a new home; transnational networks have helped the film be widely screened in the United States by the Catholic Coalition on Climate Change. Similarly, the Pacific Conference of Churches has been vocal on the issue of climate change,^{146,147} with added impact because the WCC and the Geneva Interfaith Forum on Climate Change, Environment and Human Rights have identified the region as of particular climate justice concern.

Clearly, local interpretations and outside knowledge can improve each other. Interpretations of changing conditions are shaped by climate science and symbolic action in contextually specific communities. If that community is a faith group, the faith tradition may be more expansive than its local manifestations. Christianity, relatively new to the Pacific, has been interpreted in ways meaningful to the conditions of Oceania, showing that even longstanding faith traditions are adjustable. The available organization of the faith group is also relevant. Churches are in the communities, across the widely spread islands, and connected to affiliated groups located far from the local sites of particular islands. This extended scale of time and space is also part of what provides context for response to apparent or potential human-induced climate change. Local social capital and organization can facilitate the deploying of the resources of extended networks. A possible conclusion is that more institutionalized faiths (such as Christian or Muslim groups) are better positioned to be useful than faiths with lower degrees of organization or centralization (such as Hinduism and most indigenous faiths).

BUDDHISM AS A CASE STUDY

Buddhism has sometimes been perceived as a 'greener' religion than Abrahamic faiths.¹⁴⁸ As with other religions, Buddhism is not monolithic, and research has not corroborated a simple and uniformly positive association between the faith and pro-environmental action.^{12,124} Two recent studies offer dramatically

different scales for the research and from which to draw conclusions about Buddhism and climate change.^{149,150} In both cases, Buddhism is the main faith of the region; little or no social science work has been published about Buddhism and climate change in Western countries where it has been exported, although ethical and normative scholarship has been produced.^{12,29}

In Bhutan, the Buddhist underpinning of the nation's emphasis on Gross National Happiness (GNH) was examined. In Nepal, researchers investigated one locality to understand TEK regimes and agricultural practices in the context of climate change. In the Nepalese case, climate change is, over time, compromising the value of the traditional knowledge and traditional ritual practices encoded in Buddhist beliefs and interpreted by Buddhist lamas. On the other hand, these beliefs are depicted as flexible enough in actual application that the villagers can still believe in old ways while, in actual behavior, they are adapting to new conditions. The religious aspect is complicated by the syncretism between Buddhism and the indigenous, shamanist Bon religion that preceded the arrival of Buddhism around the 9th century C.E. In Bhutan Buddhism has been reinterpreted to the point that it has become the basis for GNH as the governing philosophy of the nation. Moving from political to ecological scale, GNH is in the process of being expanded to address some of the impacts of climate change (such as glacial lake outflow flooding).

These studies correspond to other research on Buddhism and climate change. Like Branch on Bhutan, Daniels positions happiness as a key Buddhist principle that can improve ecological economics.^{151,152} Like Manandhar et al. Nepalese study, a team led by Jan Salick has conducted long-term research on Tibetan Buddhist ecological practices and cosmology *vis-a-vis* climate change in Tibet and Yunnan, China.^{153–155} Buddhism does not have central authorities although respected figures such as the Dalai Lama have actively expressed views on climate change. But from such research, it appears that Buddhism is characterized by flexibility or adaptability or a relative lack of rigid adherence to doctrinal orthodoxy. If such a generalization is justifiable, this could imply that societies where Buddhism is the main faith and more generally informs the culture's attitudes would find it somewhat easier than others to search for new ways to adapt to climate change. However, Salick et al. note that Buddhists conceive of time very differently than Western temporal frames, which illustrates both that social scientists need to be cautious in applying their own cultural frames to the study of religions and the applicability of this

research to other cultural contexts may not be a simple transference. Furthermore, Bhutan's case may be unique in terms of such a religiously inspired national policy, an intervention inconceivable in the secularized West. Finally, Salick's work is an example of the difficulty in extricating religion and culture in some, but not all social scientific settings. For example, in some of their research Salick and collaborators simply refer to 'Tibetan' although they also describe their field and its practices as characterized by a Buddhist cosmology.

Significantly, these examples offer little guidance about the role(s) Buddhism may take in pluralistic societies or in the Western world. Two other examples offer comparative value. First, the 2004 tsunami in the Indian Ocean offered a situation ripe for studying the interplay of religious practice and disaster. Falk's ethnographic work in southern Thailand showed the way that Buddhist ceremonies became important coping mechanisms, even for previously uncommitted citizens.¹³⁷ Muslims in southern Thailand also engaged in interpretive work but differently, partially blaming societal immorality for the disaster.¹⁵⁶ As a second example, Buddhism has become part of European and North American societies, partly through immigration but also through intellectual translation. Illustrating its completely different appearance in Canada is that way that educators drew on Buddhist practices for environmental education programs, but stripped of its cosmological, doctrinal, ethical, and institutional dimensions: 'Buddhism is understood and presented as a system of education, rather than a religion or even spirituality' (Ref 157, p. 10). In this way, Buddhism is serving as a cultural resource. Within a pluralistic and globalized society, the world's religions operate very differently in different contexts and scales.

CONCLUSION

There are many gaps in scholarship on religious engagement with human-induced climate change. What role will religions have relative to climate policy? What are the effective means of communication with people of various faiths? How widespread is climate denial in religious settings other than evangelical Christianity? How do the religions not called 'traditional' relate to the land, and what effect could a place-attentive spirituality within the world's major traditions have on a global phenomenon like human-induced climate change? To what extent is climate justice a part of the climate response of various faiths? To what extent can climate change be

an avenue for interfaith cooperation? Are religious orientations and resources of utility to the larger community? The gaps in research are especially pronounced outside of the United States.

In the discussion above, several points have been emphasized. Religion is practiced, not just believed; it consists of a number of characteristics—such as cosmology, values, social organization, and lived experience symbolically interpreted—that vary among and within religious traditions; religion scales from individual adherents through congregations, communities, institutional bodies, and transhistorical and transnational traditions. These are facets of religions that must be taken into account in order to understand religious engagement with anthropogenic climate change.

More significantly, there is such immense variability in the phenomenon of ‘religion’ that it may be unproductive to talk about ‘religion’ and climate change. Instead, we should begin to talk more specifically about particular religions in particular contexts. The way that North American Buddhists or South Pacific Christians enact their religion amidst changing ecological conditions is different than the ways that Bhutanese Buddhists or Canadian Christians enact their faiths in practice. The caveat to that observation is that particular religions can be global phenomena as well as private and personal. This is not a new phenomenon; one effect of the *hajj* over the centuries is that it drew Muslims from as far apart as North Africa and Central Asia into contact. This process is accelerated in the contemporary world, which means that resources can flow along these networks, but so can things like climate denial discourse.

The most significant gaps in the scholarship are the lack of comparative research. We know about the variability of religious engagement with climate change, but without good, nuanced comparisons that account for lived practice of everyday religiosity situated within even broader contexts, we can only say ‘here this was what happened; there is what occurred’. Cultural and political interactions affect the way the religious groups operate and religious cosmologies influence the broad society as well as adherents. Perhaps the building of many case studies at many scales and deploying differing methodologies with their concomitant advantages can affect a broader theory of religious engagement with human-induced climate change. What is clear is that a better understanding at the level of local faith communities is needed to understand what influences climate-positive behavior. At the same time, study of the cross-scalar interactions of local groups and the religious

institutions and traditions to which they belong would help understand when top-down and bottom-up social processes are operative.

Some of the potential benefits of religious engagement with climate change are borne out by some research. In particular, *when faith groups do engage the issue* they do make some resources available and enhance connectivity up to the global level. But it remains unclear when and why religions engage climate change—other than postulating underlying societal opportunity—and the degree to which they are able to encourage a response. More focused research on the efficacy of religious groups to promote mitigation or adaptation, as well as the preconditions for their engagements, would be highly recommended. As well, the capacity for climate change and climate justice to be avenues for interfaith collaboration is already noted and should be further investigated.

There are some false directions for understanding religious engagements with climate change. The purported conflict between religion and science is an overplayed debate. While conflict characterizes some of the interplay, other religion–science interaction takes the form of dialogue, integration (as in the Pontifical Academy of Sciences), or independent, non-overlapping domains. Another false direction is overemphasis on the cognitive aspects of religious belief and a simplistic assumption that beliefs correspond to behavioral consistency. This orientation may also lead to a corresponding underemphasis on socio-religious practices. Conceptions of the metaphysical—all powerful, or vengeful, or loving, or impersonal—do affect how people engage a matter like human-induced climate change. But how people coordinate their beliefs and the conditions of their lives is still in need of research. Therefore, the trope that religion equals worldview is too narrow; particularly when features of local context and the social influence of a religious tradition that transcends time and place are added to the influences on the person.

Another consideration is that religions change. Like all social phenomena, they are not static. Religions do tend to change slowly. Yet, environmental questions may be provoking a surprisingly attentive reaction from the world’s religions. Witness the explosion of ecotheology, especially in the Christian tradition and other faith traditions appear to be following, although the effect of that explosion on everyday faith practices of adherents and the sometimes millennia old institutions and practices demands more research. Global climate change challenges worldviews of divine power, which may

account for some forms of resistance to climate data. Climate change may be a wild card that will require faiths to rethink and recalibrate practices about the relationships between human, nature, and divine. In particular, new perspectives on faiths not prominent in the current literature would be welcome.

The practical effects and the potential benefits or barriers to religious engagement with human-induced climate change need testing by social scientists. The currently limited body of research

needs methodological (beyond surveys), geographical (beyond the United States), and topical (beyond Christian, especially evangelical Christianity) expansion. Central to the research agenda is probing how people make sense of climate change, how these meanings circulate across the global religious communities and shape social practice, and how religious institutions react. As religion is such a major site of collective action, a better picture of the engagement with human-induced climate change is clearly warranted.

ACKNOWLEDGMENT

Colleagues Robin Globus Veldman and Andrew Szasz contributed greatly to this article through our collective effort to edit a journal issue and book together.

REFERENCES

1. Rollosson N. The United Nations Development Programme (UNDP) working with faith representatives to address climate change: the two wings of ethos and ethics. *CrossCurrents* 2010, 60:419–431.
2. Robra M. Uppsala Interfaith Climate Manifesto 2008. By Church of Sweden, editor. *Ecum Rev* 2010, 62: 242.
3. Interfaith Power & Light. Canadian interfaith call for leadership and action on climate change: Canadian interfaith call for leadership and action on climate change. 2011.
4. Kerber G. International advocacy for climate justice. In: Veldman RG, Haluza-DeLay R, Szasz A, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
5. Millais C, ed. *Common Belief: Australia's Faith Communities on Climate Change*. Sydney: The Climate Institute; 2006.
6. Reuter T. Faith in the future: climate change at the World Parliament of religions, Melbourne 2009. *Aust J Anthropol* 2011, 22:260–226.
7. Kolmes SA, Butkus RA. Science religion and climate change. *Science* 2007, 27:540–542.
8. Wilson EO. *The Creation: An Appeal to Save Life on Earth*. New York: Norton; 2006.
9. Bulletin of the Atomic Scientists. Katharine Hayhoe: Preaching climate to the unconverted. *Bull At Sci* 2013, 69:1–9.
10. Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
11. Veldman RG, Szasz A, Haluza-DeLay R. Climate change and religion: a review of existing research. *J Study Relig Nat Cult* 2012, 6:255–275.
12. Jenkins W, Chapple CK. Religion and environment. *Annu Rev Environ Resour* 2011, 36:441–463.
13. Gottlieb RS, ed. *A Greener Faith: Religious Environmentalism and Our Planet's Future*. Oxford: Oxford University Press; 2006.
14. Reuter T. Anthropological theory and the alleviation of anthropogenic climate change: understanding the cultural causes of systemic change resistance. *WANE J* 2010, 5:7–32.
15. Jamison A. Climate change knowledge and social movement theory. *WIREs: Clim Change* 2010, 1:811–823.
16. Gerten D, Bergmann S, eds. *Religion in Environmental and Climate Change: Suffering, Values, Lifestyles*. London: Continuum; 2012.
17. Wilkinson K. *Between God and Green: How Evangelicals Are Cultivating a Middle Ground on Climate Change*. New York: Oxford University Press; 2012.
18. McCammack B. Hot damned America: evangelicalism and the climate change policy debate. *Am Q* 2007, 59:645–668.
19. Wardekker JA, Petersen AC, van der Sluijs JP. Ethics and public perception of climate change: exploring the Christian voices in the US public debate. *Glob Environ Chang* 2009, 19:512–521.
20. Leiserowitz AA, Kates RW, Parris TM. Sustainability values, attitudes and behaviors: a review of multinational and global trends. *Annu Rev Environ Resour* 2006:31.

21. Barker DC, Bearce DH. End-times theology, the shadow of the future, and public resistance to addressing global climate change. *Polit Res Q* 2013, 66:267–279.
22. Atkinson D. *Renewing the Face of the Earth: A Theological and Pastoral Response to Climate Change*. Norwich, UK: Canterbury Press; 2008.
23. Bloomquist KL, ed. *God Creation and Climate Change: Spiritual and Ethical Perspectives*. Geneva: Lutheran World Federation; 2009.
24. Echlin EP. *Climate and Christ: A Prophetic Alternative*. Dublin: Columba Press; 2010.
25. Primavasi A. *Gaia and Climate Change: A Theology of Gift Events*. New York: Routledge; 2009.
26. Scott L. *Christians, the Care of Creation, and Global Climate Change*. Eugene, OR: Pickwick Publications; 2008.
27. Wisdom in Nature. *Islam and Climate Change*. UK: Wisdom in Nature; 2010.
28. Jain P. *Dharma and Ecology of Hindu Communities: Sustenance and Sustainability*. Surrey, UK: Ashgate; 2011.
29. Stanley J, Loy DR, Dorje G, eds. *A Buddhist Response to the Climate Emergency*. Somerville, MA: Wisdom Publications; 2009.
30. Northcott MS. *A Moral Climate: The Ethics of Global Warming*. Maryknoll, NY: Orbis Books; 2007.
31. Posas PJ. Roles of religion and ethics in addressing climate change. *Ethics Sci Environ Polit* 2007, 7:31–49.
32. Levett-Olson L. Religion, worldview and climate change. In: Lever-Tracy C, ed. *Routledge Handbook of Climate Change and Society*. New York: Routledge; 2010, 261–270.
33. Haluza-DeLay RB. Religion. In: *Sage Encyclopedia of Global Warming & Climate Change*, vol. 3. 2 ed. Thousand Oaks, CA: Sage Reference; 2012, 1176–1179.
34. Kearns L. The role of religions in activism. In: Dryzek J, Norgaard R, Schlosberg D, eds. *The Oxford Handbook on Climate Change and Society*. Cambridge: Oxford University Press; 2011.
35. DeVries BJM, Peterson AC. Conceptualizing sustainable development: an assessment methodology connecting values, knowledge, worldviews and scenarios. *Ecol Econ* 2009, 68:1006–1019.
36. Schipper ELF. Religion as an integral part of determining and reducing climate change and disaster risk: an agenda for research. In: Voss M, ed. *Der Klimawandel*. Wiesbaden, Germany: VS Verlag für Sozialwissenschaften; 2010, 377–393.
37. Wisner B. Untapped potential of the world's religious communities for disaster reduction in an age of accelerated climate change: an epilogue & prologue. *Religion* 2010, 40:128–131.
38. Gardner G. *Invoking the Spirit: Religion and Spirituality in the Quest for a Sustainable World*. Worldwatch Institute: Washington, DC; 2002.
39. Gardner GT. *Inspiring Progress: Religions' Contributions to Sustainable Development*. New York: W.W. Norton/Worldwatch; 2006.
40. Reder M. Religion in the public sphere: the social function of religion in the context of climate and development policy. In: Gerten D, Bergmann S, eds. *Religion in Environmental and Climate Change: Suffering, Values, Lifestyles*. London: Continuum; 2012, 32–45.
41. Kellert SR, Farnham TJ, eds. *The Good in Nature and Humanity: Connecting Science, Religion and Spirituality with the Natural World*. Washington, DC: Island Press; 2002.
42. Haluza-DeLay RB. Churches engaging the environment: an autoethnography of obstacles and opportunities. *Hum Ecol Rev* 2008, 15:71–81.
43. Norgaard K. *Living in Denial: Climate Change, Emotions, and Everyday Life*. Cambridge, MA: MIT Press; 2011.
44. Agliardo M. The U.S. Catholic response to “Climate Change”. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
45. Pepper M, Jackson T, Uzzell D. An examination of Christianity and socially conscious and frugal consumer behaviors. *Environ Behav* 2011, 43:274–290.
46. Amri U. From theology to a praxis of “Eco-Jihad”: the role of religious civil society organizations in combating climate change in Indonesia. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
47. Szasz A. We're Pessimistic Because We Pay Too Much Attention to Conservative Christians. In: *Association of Environmental Studies and Sciences*, Santa Clara, CA, 2011.
48. Dawkins R. *The God Delusion*. Boston: Houghton Mifflin; 2006.
49. Gibson JW. *A Reenchanted World: The Quest for a New Kinship with Nature*. New York: Metropolitan Books; 2009.
50. Taylor B. *Dark Green Religion: Nature Spirituality and the Planetary Future*. Berkeley: University of California Press; 2009.
51. Robinson C, ed. *Climate Change Policy: Challenging the Activists*. London: Institute of Economic Affairs; 2008.
52. Dunlap T. *Faith in Nature: Environmentalism as Religious Quest*. Seattle: University of Washington Press; 2004.
53. Nelson RH. *The New Holy Wars: Economic Religion Versus Environmental Religion in Contemporary*

- America. College Park, PA: The Pennsylvania State University Press; 2010.
54. Skrimshire S, ed. *Future Ethics: Climate Change and the Apocalyptic Imagination*. London: Continuum; 2010.
 55. Swyngedouw E. Apocalypse forever? post-political populism and the spectre of climate change. *Theory Cult Soc* 2010, 27:213–232.
 56. Veldman RG. Narrating the environmental apocalypse: how imagining the end facilitates moral reasoning among environmental activists. *Ethics Environ* 2012, 17:1–23.
 57. Cavanaugh WT. “A fire strong enough to consume the house”: the wars of religion and the rise of the state. *Mod Theol* 1995, 11:397–420.
 58. Cavanaugh WT. *The Myth of Religious Violence: Secular Ideology and the Roots of Modern Conflict*. Oxford: Oxford University Press; 2009.
 59. Cantwell-Smith W. *The Meaning and End of Religion*. New York: The North American Library of World Literature; 1964.
 60. Marx A. *Faith in Nation: Exclusionary Origins of Nationalism*. Oxford: Oxford University Press; 2003.
 61. Taylor C. *The Secular Age*. Cambridge, MA: Harvard University Press; 2007.
 62. Cannell F. The anthropology of secularism. *Annu Rev Anthropol* 2010, 39:85–100.
 63. Martin DR. *On Secularization: Towards a Revised General Theory*. Aldershot, UK: Ashgate; 2005.
 64. Hedlund-de Witt A. The rising culture and worldview of contemporary spirituality: a sociological study of potentials and pitfalls for sustainable development. *Ecol Econ* 2011, 70:1057–1065.
 65. Heelas P. *Spiritualities of Life: New Age Romanticism and Consumptive Capitalism*. London: Wiley-Blackwell; 2008.
 66. Nita M. Christian and Muslim climate activists fasting and praying for the planet: emotional translation of “Dark Green” activism and green-faith identities. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World’s Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
 67. Catton WR, Dunlap RE. Paradigms, theories and the primacy of the HEP-NEP distinction. *Am Sociol* 1978, 13:256–259.
 68. Jamieson D. Ethics and intentional climate change. *Clim Change* 1996, 33:323–336.
 69. Byrne J, Glover L. Ellul and the weather. *Bull Sci Technol Soc* 2005, 25:4–16.
 70. Asad T. *Genealogies of Religion: Discipline and Reasons of Power in Christianity and Islam*. Baltimore, MD: Johns Hopkins University Press; 1993.
 71. Asad T. *Formations of the Secular: Christianity, Islam, Modernity*. Stanford, CA: Stanford University Press; 2003.
 72. Daniels S, Endfield GH. Narratives of climate change: introduction. *J Hist Geogr* 2009, 35:215–222.
 73. Heymann M. The evolution of climate ideas and knowledge. *WIREs: Clim Change* 2010, 1:581–597.
 74. Hulme M. Four meanings of climate change. In: Skrimshire S, ed. *Future Ethics: Climate Change and the Apocalyptic Imagination*. London: Continuum; 2010, 37–58.
 75. O’Neill SJ, Hulme M. An iconic approach for representing climate change. *Glob Environ Chang* 2009, 19:402–410.
 76. Lahsen M. The social status of climate change knowledge: an editorial essay. *WIREs: Clim Change* 2010, 1:162–171.
 77. Escobar A. Culture sits in places: reflections on globalism and subaltern strategies of localization. *Polit Geogr* 2001, 20:139–174.
 78. Hulme M. *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge: Cambridge University Press; 2009.
 79. Eliade M. *The Sacred and Profane*. New York: Harcourt Brace; 1959.
 80. Curry J. Christians and climate change: a social framework of analysis. *Perspect Sci Christ Faith* 2008, 60:156–164.
 81. Drew G. A retreating goddess? Conflicting perceptions of ecological change near the Gangotri-Gaumukh Glacier. *J Study Relig Nat Cult* 2012, 6:344–362.
 82. Leduc T. *Climate, Culture, Change: Inuit and Western Dialogues with a Warming North*. Ottawa: Ottawa University Press; 2011.
 83. Forum on Religion and Ecology at Yale. Available at: <http://fore.research.yale.edu/>. (Accessed January 20, 2014)
 84. O’Brien KL, Wolf J. A values-based approach to vulnerability and adaptation to climate change. *WIREs: Clim Change* 2010, 1:232–242.
 85. Smidt C, ed. *Religion as Social Capital: Producing the Common Good*. Waco, TX: Baylor University Press; 2003.
 86. Wuthnow R. Religion and social capital. *J Sci Study Relig* 2002, 41:670.
 87. Adger WN. Social capital, collective action, and adaptation to climate change. *Econ Geogr* 2003, 79:387–404.
 88. Adger NW, Arnell NW, Tompkins EL. Successful adaptation to climate change across scales. *Glob Environ Chang* 2005, 15:77–86.
 89. Shove E, Walker G. Governing transitions in the sustainability of everyday life. *Res Policy* 2010, 39:471–476.

90. Wuthnow R. Restructuring of American religion: further evidence. *Sociol Inq* 1996, 66:303–329.
91. Davidson J. Of rice and men: climate change, religion, and personhood among the Diola of Guinea-Bissau. *J Study Relig Nat Cult* 2012, 6:276–299.
92. Kuruppu N. Adapting water resources to climate change in Kiribati: the importance of cultural values and meanings. *Environ Sci Policy* 2009, 12:799–809.
93. Reale A. Churches building resiliency to climate change in Solomon Islands. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
94. Hermesse J. Prophecies and climate change in the Mama Altiplano of Guatemala. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
95. Carr W, Patterson M, Yung L, Spencer D. The faithful skeptics: evangelical religious beliefs and perceptions of climate change. *J Study Relig Nat Cult* 2012, 6:276–299.
96. Crate SA, Nuttall M, eds. *Anthropology and Climate Change: From Encounters to Actions*. Walnut Creek, CA: Left Coast Press; 2009.
97. Pacione M. The relevance of religion for a relevant human geography. *Scott Geograph J* 1999, 115:117–131.
98. Ivakhiv A. Toward a geography of “Religion”: mapping the distribution of an unstable signifier. *Ann Assoc Am Geogr* 2006, 96:169–175.
99. Townsend PK. How many Presbyterians does it take to change a light bulb?: confronting global climate change in the Presbyterian Church, U.S.A. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
100. Braun GW, Hellwig MK, Byrnes WM. Global climate change and Catholic responsibility: facts and faith response. *J Cathol Soc Thought* 2007, 4:373–401.
101. Cao S. Socioeconomic value of religion and the impacts of ideological change in China. *Econ Model* 2012, 29:2621–2626.
102. Pew-Templeton Global Religious Futures Project. Available at: [http://www.globalreligiousfutures.org/ and http://www.pewforum.org/global-religious-landscape.aspx] (Accessed January 20, 2014)
103. Pew Research Center's Forum on Religious Life. *The Global Religious Landscape: A Report on the Size and Distribution of the World's Major Religious Groups as of 2010*. Washington DC: Pew Research Center's Forum on Religious Life; 2012.
104. Jenkins P, ed. *The Next Christendom: The Coming of Global Christianity*. New York, NY: Oxford University Press; 2002.
105. Razack SH. *Casting Out: The Eviction of Muslims from Western Law and Politics*. Toronto: University of Toronto Press; 2008.
106. Abdul-Matin I, Ellison K. *Green Deen: What Islam Teaches about Protecting the Planet*. New York: Berrett-Koehler Publishers; 2010.
107. Foltz RC, ed. *Environmentalism in the Muslim World*. New York: Nova Science Publishers; 2005.
108. Hindu Declaration on Climate Change: presented at the Parliament of the World's Religions. 2009. Available at: http://www.hinduismtoday.com/pdf_downloads/hindu-climate-change-declaration.pdf.
109. Wisner B. Climate change and cultural diversity. *Int Soc Sci J* 2010, 61:131–140.
110. Veldman RG, Szasz A, Haluza-DeLay R. How Are the World's Religions Responding to Climate Change?. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
111. Taylor B. Editor's Introduction: toward a robust scientific investigation of the ‘Religion’ variable in the quest for sustainability. *J Study Relig Nat Cult* 2011, 5:253–262.
112. Kerber G, Robra M. Special issue on ‘Climate change’. *Ecum Rev* 2010, 62:113–118.
113. Kearns L. Religious Climate Activism in the United States. In: Gerten D, Bergmann S, eds. *Religion in Environmental and Climate Change: Suffering, Values, Lifestyles*. London: Continuum; 2012, 97–124.
114. Gibson WE, ed. *Eco-Justice: The Unfinished Journey*. New York: State University of New York Press; 2004.
115. Spring D, Spring E. *Ecology and Religion in History*. San Francisco: Harper Torchbooks; 1974.
116. Hitzhusen GE. Judeo-Christian theology and the environment: moving beyond scepticism to new sources for environmental education in the United States. *Environ Educ Res* 2007, 13:55–74.
117. Berry E. Religious environmentalism and environmental religion in America. *Relig Compass* 2013, 7:454–466.
118. Smith N, Leiserowitz A. American evangelicals and global warming. *Glob Environ Change*. 23:1009–1017.
119. United States Conference of Catholic Bishops (USCCB). *Global Climate Change: A Plea for Dialogue, Prudence, and the Common Good*. United States Conference of Catholic Bishops, Washington, 2001.
120. Zaleha BD, Szasz A. Keep Christianity Brown! Climate Denial on the Christian Right in the United States. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.

121. Cornwall Alliance. A Renewed Call to Truth, Prudence, and Protection of the Poor: An Evangelical Examination of the Theology, Science, and Economics of Global Warming. vol. Cornwall Alliance for the Stewardship of Creation: Burke, VA, 2009.
122. Poortinga W, Spence A, Whitmarsh L, Capstick S, Pidgeon NF. Uncertain climate: an investigation into public scepticism about anthropogenic climate change. *Glob Environ Chang* 2011, 21:1015–1024.
123. McCright AM, Dunlap RE. The politicization of climate change and polarization in the American public's views of global warming. *Sociol Q* 2011, 52:155–194.
124. Tjernström E, Tietenberg T. Do differences in attitudes explain differences in national climate change policies? *Ecol Econ* 2008, 65:315–324.
125. Jackha J. Global averages, local extremes: the subtleties and complexities of climate change in Papua New Guinea. In: Crate SA, Nuttall M, eds. *Anthropology and Climate Change: From Encounters to Actions*. Walnut Creek, CA: Left Coast Press; 2009, 197–208.
126. Artur L, Hilhorst D. Everyday realities of climate change adaptation in Mozambique. *Glob Environ Chang* 2012, 22:529–536.
127. Golo B-WK, Awetori Yaro J. Reclaiming stewardship in Ghana: religion and climate change. *Nat Cult* 2013, 8:282–300.
128. Sarfo-Mensah P, Awuah-Nyamekye S. Climate change and indigenous African religion: a case study of the transitional ecological zone of Ghana. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
129. Paolisso M. Chesapeake Bay watermen, weather, and blue crabs: cultural models and fishery policies. In: Strauss SS, Orlove B, eds. *Weather, Climate and Culture*. Oxford: Berg; 2003, 61–83.
130. Roncoli C, Ingram K, Kirshen P. Reading the rains: local knowledge and rainfall forecasting among farmers of Burkina Faso. *Soc Nat Resour* 2002, 15:411–430.
131. Schlehe J. Anthropology of religion: disasters and the representations of tradition and modernity. *Religion* 2010, 40:112–120.
132. Chérif S, Greenberg JH. Religious Perspectives on Climate Change in the West Ivoirian Mountainous Region. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
133. Danielsen S. Fracturing over creation care? Shifting environmental beliefs among evangelicals, 1984–2010. *J Sci Study Relig* 2013, 52:198–215.
134. Berger PL. *The Sacred Canopy: Elements of a Sociological Theory of Religion*. New York: Anchor Books; 1967.
135. Kellman I, West JJ. Climate change and small island developing states: a critical review. *Ecol Environ Anthropol* 2009, 5:1–16.
136. Chester DK, Duncan AM. Responding to disasters within the Christian tradition, with reference to volcanic eruptions and earthquakes. *Religion* 2010, 40:85–95.
137. Falk ML. Recovery and Buddhist practices in the aftermath of the Tsunami in Southern Thailand. *Religion* 2010, 40:96–103.
138. Gaillard JC, Texier P. Religions, natural hazards, and disasters: an introduction. *Religion* 2010, 40: 81–84.
139. Tuwere IS. *Vanua: Towards a Fijian Theology of Place*. Suva: Institute of Pacific Studies/University of the South Pacific; 2002.
140. Rubow C. Metaphysical aspects of resilience: South Pacific responses to climate change. In: Hastrup K, ed. *The Question of Resilience: Social Responses to Climate Change*. Copenhagen: The Royal Academy of Sciences and Letters; 2009.
141. Mortreux C, Barnett J. Climate change, migration and adaptation in Funafuti, Tuvalu. *Glob Environ Chang* 2009, 19:105–112.
142. Gero A, Méheux K, Dominey-Howes D. *Disaster Risk Reduction and Climate Change Adaptation in the Pacific: The Challenge of Integration (ATRC-NHRL Miscellaneous Report 4)*. Sydney, Australia: University of New South Wales; 2010.
143. Gero A, Méheux K, Dominey-Howes D. Integrating disaster risk reduction and climate change adaptation in the Pacific. *Clim Dev* 2011, 3:310–327.
144. Pender J. Pursuing diplomacy overseas, fostering adaptation at home: The Church of Bangladesh's proactive responses to climate change. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
145. Redfearn J. *Sun Come Up*. XXXX, XX: New Day Films; 2010.
146. Pacific Conference of Churches. Moana Declaration: Pacific Church Leaders Meeting Statement on Resettlement as a Direct Consequence of Climate Induced Calamities. Nadi, Fiji, 2009.
147. Pacific Conference of Churches. Pacific Conference of Churches Strategic Plan 2008–2012. Suva, Fiji, 2007.
148. Johnston L. The “Nature” of Buddhism: a survey of relevant literature and themes. *Worldviews Glob Religi Cult Ecol* 2006, 10:69–99.
149. Branch M. Climate change projects in the land of gross national happiness: Does religion play a role in environmental policy in Bhutan?. In: Veldman RG,

- Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
150. Manandhar S, Schmidt-Vogt D, Pandey VP, Kazama F. Religion, indigenous knowledge and climate change in a mountain region: a case study of Thini Village, Mustang, Nepal. In: Veldman RG, Szasz A, Haluza-DeLay R, eds. *How the World's Religions Are Responding to Climate Change: Social Scientific Investigations*. New York: Routledge; 2013.
 151. Daniels PL. Climate change, economics and Buddhism — Part I: an integrated environmental analysis framework. *Ecol Econ* 2010, 69:952–961.
 152. Daniels PL. Climate change, economics and Buddhism — Part 2: new views and practices for sustainable world economies. *Ecol Econ* 2010, 69: 962–972.
 153. Byg A, Salick J. Local perspectives on a global phenomenon—Climate change in Eastern Tibetan villages. *Glob Environ Chang* 2009, 19:156–166.
 154. Salick J, Byg A, Bauer K. Contemporary Tibetan cosmology of climate change. *J Study Relig Nat Cult* 2012, 6:447–476.
 155. Salick J, Fang Z, Byg A. Eastern Himalayan alpine plant ecology, Tibetan ethnobotany, and climate change. *Glob Environ Chang* 2009, 19:147–155.
 156. Merli C. Context-bound Islamic theodicies: the tsunami as supernatural retribution vs. natural catastrophe in Southern Thailand. *Religion* 2010, 40:104–111.
 157. Bai H, Scutt G. Touching the earth with the heart of enlightened mind: the Buddhist practice of mindfulness for environmental education. *Can J Environ Educ* 2009, 14:92–106.