# Acts of God: Continuities and change in Christian responses to extreme weather events from early modernity to the present

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## Authors:

**[List each person's full name, ORCID iD, affiliation, email address, and any conflicts of interest.** Copy rows as necessary for additional authors. Please use an asterisk (*) to indicate the corresponding author.]


| **First author** |
|---|
| Dr Joseph Hardwick, University of Northumbria, joseph.hardwick@northumbria.ac.uk |
| **Second author** |
| Dr. Randall J. Stephens, University of Oslo, r.j.stephens@ilos.uio.no |


### Abstract


Scholars, activists and others increasingly acknowledge that religion – whether conceived in terms of ideas, rituals or institutions – can help us cope with climate change and make sense of extreme weather events. Churches provide moral lessons in times of crisis, they spread awareness of climate change, and through community ritual, religious institutions can nurture a sense of ~~help build feelings of~~ collective responsibility. Much has been written on how contemporary faith groups have understood and acted on climate change and extreme weather events. Yet this literature is often not historically rooted and makes only superficial reference to the complex relationships between climate, extreme weather and religion in the past. Without an historical awareness we cannot understand the extent to which present-day

religious discourses on the environment – from those articulated by 'greener faith' advocates to fundamentalist sceptics – connect with how past societies understood climate and, more specifically, extreme weather events. A survey of the ~~existing~~ literature on Christian responses to extreme weather events, whether these be slow disasters (droughts) or isolated events (storms and severe winters), suggests that histories that emphasise ruptures in attitudes to the natural world are problematic. Extreme weather events have long been regarded as omens and signs, and as divine judgments on sin. It is still thought that weather disturbances reflect disorders in human society. This literature survey introduces these continuities in Christian responses to extreme weather by ranging broadly across the English-speaking world from early modernity, though special attention is given to current work on Anglophone settler societies.

## Graphical/Visual Abstract and Caption

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## Introduction

We live in a world of extreme and increasingly variable weather. Everyone remembers winds, rains and temperatures that seemed severe or unusual for the time of year or place. The growth of a globalised mass media has expanded our climatic awareness and exposed us to other people's devastating cyclones, droughts, heatwaves and brutal winters. Not only does the weather appear stranger, there also seems to be more of it. This unsettles us. Mike Hulme has written that all human societies develop a sense of climate to help them stabilise and normalise an otherwise confusing 'experience of unruly and unpredictable weather' (Hulme, 2017a, p. 4). Unfortunately, the weather and the seasons no longer conform to our expectations. Such uncertainty feeds the current climatic anxiety.

The modern preoccupation with disorderly climates and strange weather is not new. For centuries societies have looked to naturalistic and supernatural explanations to make sense of extreme and volatile weather events. Despite advances in meteorological science and naturalistic explanation, the weather still seems to be beyond human comprehension and control, and, as Simon Donner argues, many today still hold to the ancient idea that the weather is the 'domain of the Gods' (Donner, 2007, p. 235). The insurance industry continues to refer to 'acts of God', societies still read moral lessons into extreme weather events and it is commonplace to link unruly weathers and climates to disorders in politics and society. For one environmental theologian, global warming should be conceived as a judgment on the moral shortcomings of selfish western consumers (Northcott, 2007). Such comments indicate that present in the current climate debate is an old belief that the natural world is sensitive and responsive to human behaviour (Thomas, 1973).

The persistence of such moralistic explanations and ideas about divine retribution suggests that fruitful connections and comparisons can be drawn between past and present responses to extreme weathers and climates. Though it is increasingly accepted that religious ideas and religious institutions must figure in the current climate crisis debate (Hulme, 2017b), much of the existing work on the religious engagement with climate and weather is heavily situated in environmental ethics, theology and religious studies, and focuses on present-day examples. It may well be that an oftentimes secularised

climate change debate might be enriched if we examine the historical and religious roots of what one writer has called 'the unspoken norms and assumptions that regulate contemporary environmental discourse' (Miglietti, 2017, p. 905). Recent research has demonstrated, for example, that conceptions of human-induced climate change, at both the local and the global scale, are not peculiar to today's world. According to one scholar, early modern religious thinkers anticipated modern understandings of anthropocentric climate change when they attributed the deterioration in environments and climates, starting with Noah's deluge, not to a capricious God, but to human sinfulness (Barnett, 2015; Glacken, 1967, pp. 164-5).

This article introduces these connections between the past and the present through an analysis of the scholarly literature on the western Christian engagement with strange weather from early modernity to the present. Though we acknowledge that work is needed on non-western and non-Christian engagements with extreme weathers and changing climates (note 1), our focus is warranted, as Christianity has been peculiarly entangled with climate change and bears special responsibility for developing the ideological and practical responses to the current crisis (Jenkins et al, 2018). The following emphasises continuity above change in the ritualistic and intellectual responses of the devout to extreme weather. Our survey also gives special consideration to work on responses to extreme weather in Anglophone settler societies in Australia, Africa and North America. These contexts have relevance for today's climate debates. Theirs were societies with histories of invasive settlement and environmental abuse. The (non-indigenous) inhabitants of the English-speaking settler world were frequently hurt by extreme weather, and they, like us, recognised that climate crisis was a present reality. By attending to how Christian settlers from early modernity responded to floods, droughts and dust storms, we can examine how religion bolstered colonial practices that gave rise to climate change, and, conversely, whether religious groups in unlikely places offered progressive responses to climatic crises. Our colonial focus also invites an examination of the work of scholars who have studied the encounters between settler and indigenous understandings of extreme weather events.

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The first section~~article first~~ asks when and why Christians have taken notice of extreme weather events. This~~e~~ section considers recent literature that has sought to explain why religious explanations of extreme weather appealed in certain contexts and lost purchase in others. The second section discusses the scholarship on the weather rituals that helped communities order and cope with variable and unpredictable climatic conditions. The third and fourth sections discuss several key themes in recent work on North American religion and extreme weather – interactions between settler and indigenous understandings of weather, how churches and denominations have responded to extreme weather events and taken part in disaster relief, and the communal and theological resources groups have drawn on in periods of crisis – before emphasising the persistence of older forms of religious explanation. The conclusion reflects on the place of religion in present-day responses to extreme weather and offers suggestions for future research.

## 1. RELIGION AND STRANGE WEATHER

In his cultural history of the English weather, Vladimir Janković identifies an early modern preoccupation with exceptional weather and such 'marvellous meteors' as fireballs, multiple suns and

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northern lights. Exceptional meteorological phenomena fascinated early moderns because such events were often regarded as omens or prodigies sent by God to warn, punish or save. Meteors carried considerable political, moral and religious significance: battling armies in the sky portended impending changes in the political world, while unexpected storms, such as that which devastated southern England in November 1703, had moral causes, and were judgments on the aggregated 'national sin' of the country (Janković, 2000; Thomas, 1973, pp. 96-7, 108).

The provincial clergy were among the most prominent observers and chroniclers of extreme weather events. Ministers recorded the 'prodigious', 'rare' and 'uncommon' heavenly events to confirm the workings of divine 'providence' (see sidebar 1). Meteorological reportage had other benefits too. Gathering and recording unusual and exceptional weather events drew clergymen into the world of metropolitan letters and science. And, in an age when contemporaries regarded 'unique natural events' as important markers of local exceptionalism, regional identity and 'communal memory', clerical weather recorders could legitimate their authority as the guardians of the history, knowledge and identity of a locality, county or region (Janković, 2000, pp. 78-89). The colonial world provides examples of extreme weather events nourishing community identities: societies as far apart as Jamaica and Newfoundland observed anniversary fast days to remember historic earthquakes, storms and other destructive public disasters, a practice that continued deep into the nineteenth century (Mulcahy, 2006, pp. 418, 421; Hardwick, 2017, p. 688).

It is unsurprising that the Christian clergy of the early modern period should take such interest in calamitous weather, or that so many read God's displeasure in dramatic occurrences. It was the responsibility of the clergy to make sense of exceptional weather and to draw analogies between contemporary events and biblical – usually Old Testament – precedents. Isaiah 30:30 served as a frightening warning: 'And the Lord shall cause his glorious voice to be heard, and shall shew the lighting down of his arm, with the indignation of his anger, and with the flame of a devouring fire, with scattering, and tempest, and hailstones' (King James Version). Divine punishment might also take the form of deprivation, as in Deuteronomy 11:17: 'And then the Lord's wrath be kindled against you, and he shut up the heaven, that there be no rain, and that the land yield not her fruit; and lest ye perish quickly from off the good land which the Lord giveth you' (KJV). As Lucian Boia points out, such passages (and similar ones in Genesis, Exodus, 1 Kings, Job and Jeremiah) emphasised human sin and responsibility. Yet they also gave hope for the future. God always gave individuals chances to reform, and to bring better weather (Boia, 2005, pp. 136-7).

Reading signs of God's work was common across the western world. The New England Puritan minister and pamphleteer Cotton Mather thought that 'dreadful storms of thunder and lightning' occurred especially because men and women had violated the Sabbath (Mather, 1820, p. 340). Mather inhabited a world in which exceptional occurrences were widely regarded as 'wonders', sent by God to warn sinful communities of approaching disaster and to commend people to pious and penitential lives. Unusual events, such as the 1703 storm, revealed God to be an 'assiduous, energetic deity who constantly intervened in human affairs', as Alexandra Walsham notes (Walsham, 1999, p. 2). To ascribe seemingly chance events to the workings of an omnipotent deity was to make sense of contingency and to impose order on a random and hazardous world (Thomas, 1973, pp. 90-4; Winship, 1996, p. 1). This was a shared culture, one that crossed the Atlantic and united all levels of

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society, Protestants as well as Catholics. It was also a culture passed down through the generations. For Walsham, the Protestant belief in wonders, marvels and 'special providences' is another demonstration of how the Reformation 'was able to assimilate aspects of traditional piety' – in this case a medieval Roman Catholic belief in miracles and the religious significance of natural events – 'and to rehabilitate them in a new guise' (Walsham, 2005, p. 289).

What counted as wonderous and strange weather? It mattered that events were rare, unpredictable and surprising. Of course, freak weather in one place was normal in another. Europeans carried beliefs about a superintending providence with them as they migrated overseas, but such 'intellectual paradigms' had greater or lesser relevance depending on the environmental and climatic context. Matthew Mulcahy, writing on colonial reactions to extreme weather in the early modern Caribbean, notes that only the most unusual and destructive weather events – such as the hurricane that devastated Jamaica in 1722 – lingered in the memory and elicited providential interpretations. Hurricanes ceased to carry moral significance or appear unusual and wondrous once colonists adjusted to the environment of the Caribbean and learnt that tempests were regular, possibly even predictable, events (Mulcahy, 2006, pp. 33-4, 48-50, 55-6). Providential explanation might have grip in the early days of European settlement, when there seemed to be only weather and no climate. In these contexts – early colonial Australia is a good example – there was no background against which weather events could be understood as normal or abnormal. In late eighteenth and early nineteenth-century Australia, white settlement was marred by a bewildering series of intense heats, sudden winds, torrential rain and floods, and on occasion contemporaries, both chaplains and their convict charges, turned to divine ~~causes~~ explanations to make sense of events (Fenby, 2012, ch. 3).

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In places where climates had been comprehended, occurrences that had biblical precedents, such as great floods, droughts and hailstorms, invited speculation about God's power to interrupt the natural order (Oberholzner, 2011). Generally, however, it is hard to find in the early modern 'world of wonders' a uniform and systematic mode of thought. Both Alexandra Walsham – writing on England – and David Hall – on Puritan New England – note that early modern attitudes to wonders and inclement weather was 'highly eclectic', even contradictory. Seventeenth-century English religious writers might search for naturalistic explanations of seemingly chance events while at the same time decrying those who failed to see the divine origin of dramatic tempests. Common folk might be criticised both for dismissing unpredictable events as simple misfortunes, and for reading too much significance into occurrences that the learned elite considered trifling (Walsham, 1999, pp. 125-7). The political and religious context determined which strange events counted as divine signs. 'In a time of plague, war, or religious schism', Lorraine Daston writes, 'the two-headed cat or shooting star that might have otherwise aroused only mild interest as a wonder provoked anxious interpretations as a portent' (Daston, 1991, p. 101).

Daston's work makes the important point that explanations of natural phenomena in the early modern period cannot be reduced to a 'natural' versus 'supernatural' binary. A range of rare, exceptional and singular events – monstrous births, physical deformities, celestial apparitions and strange weather events – formed a third, 'intermediate', category, the 'preternatural'. Such happenings retained a 'numinous' or spiritual and divine quality, but they fell short of supernatural miracles; they also defied scientific explanation as their causes remained hidden from human understanding. Such

events might be read as signs portending some larger divine meaning or message, but this was not always the case, and, as time went on, and as scientific knowledge advanced, a greater range of 'preternatural' phenomena lost their divine meaning and acquired naturalistic explanations (Daston, 1991, pp. 95-113). Janković points out that an important shift happened in the later seventeenth century as observers sought to discern the natural laws of the weather through the recording of temperatures, atmospheric pressures, and precipitation levels in weather diaries (Janković, 2000; Golinski, 2007, ch. 1; Daston, 2008, pp. 237-41). A new conception of a national climate emerged. Systematic recording revealed a temperate and moderate British climate that suited the cooler political temperature of eighteenth-century England (Golinski, 2003, p. 31; Golinski, 2007, pp. xii, 42). The attempt to normalise unruly weather through systematic recording pointed towards a new emphasis on the uniformity and regularity – maybe even predictability – of God's beneficent creation, one that aligned with the Enlightenment's stress on order and reason (see Sidebar 1).

Belief in wondrous portents did not always condition how contemporaries responded to crises or made sense of the world. Religious interpretations and emergent scientific understandings of the weather competed and interacted with folk astrology and 'weather-wisdom'. This venerable 'weather lore' – a cluster of proverbs, timetables and rules preserved in oral culture, popular customs and printed guides and almanacs – enabled country people to forecast the character of coming seasons (Thomas, 1973, p. 282; Golinski, 2007, p. 92; Daston, 2008, p. 246; K. Anderson, 2005, pp. 4-5). Malign or benign weather might be regarded as chance or lucky events, requiring no moral meaning or explanation (Thomas, 1973, pp. 129-32). John Morgan shows that not every flood recorded in parish records in early modern England elicited formulaic reflections on 'portentous warnings' and 'righteous judgments'. River workers might regard floods as frequent events brought on by human failings; for others – the clergy among them – floods might be remembered for their impact on local communities, not their wider religious significance (Morgan, 2015).

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Yet as many historians point out, metropolitan science pushed aside but did not wholly destroy the wonder culture, the preoccupation with unusual weather, and old forms of observation and explanation. Belief in an active and interventionist God may have given way to a 'general providence' in many circles in eighteenth- and nineteenth-century Britain, but natural laws were not so mechanistic so as to rule out the possibility of divine intervention, and any strange accident or event was liable to both supernatural or natural explanation, as God could 'synchronise' the moral and physical worlds (Daston, 1991, pp. 112-3). Rare events continued to be interpreted as warning and chastening 'special providences'. Although nineteenth-century British evangelicals tended to see the divine hand in cholera epidemics and the Irish famine, the wet English summer of 1860 was interpreted by at least one English bishop as a divine judgment (Williamson, 2008, pp. 133-4; Hilton, 1988; F. M. Turner, 1974, pp. 50-1). The belief in divine intervention, and the doctrine of special providences, seems to have flourished in places where a particularly strange and capricious natural world made inhabitants feel vulnerable. Evidence from early twentieth-century Australia reveals that Christian preachers interpreted droughts as divine chastisements on the 'national sins' of settler populations that had destroyed indigenous cultures, damaged the environment and pursued worldly wealth at the expense of moral seriousness (Hardwick, forthcoming).

Country weather lore was also very resilient. Katharine Anderson points out that astrological almanacs featuring rules for predicting the weather – branded 'vulgar superstition' by some elites – flourished in nineteenth-century Britain, and Victorian 'weather prophets' who used planetary and lunar movements to predict severe colds and storms enjoyed widespread popularity (Golinski, 2007, pp. 51, 65, 70, 75-6; K. Anderson, 2005, ch. 2). These points apply to other places and to our own times: interest in the exceptional continues to characterise everyday weather talk and press reportage (Boia, 2005, pp. 123, 177). Providential thinking and moral understandings of the weather may, then, have persisted. So too have the religious rituals that have long shaped communal responses to extreme weather.

### Figures and Tables

None to add

### Sidebar 1: Providentialism

At its most basic, the doctrine providentialism refers to the belief that everything that happens in natural and human worlds stems from the superintending influence of a beneficent, if sometimes wrathful, omnipotent God. Although providentialist beliefs are historically associated with Calvinism, all Christian denominations – Catholics as well as Protestants – agreed that God could suspend the laws of nature and send public calamities to warn sinful people (Deconinck-Brossard, 2005). Historians recognise that providence was a difficult and contested doctrine. Seventeenth-century Church of England clergymen, particularly those historians categorise as 'high churchmen', worried that too many preachers claimed the right to divine the meaning of natural world events, and that in the wrong hands, providential interpretation – particularly of a partisan sort – might arouse controversy and threaten the public peace (Winship, 1996, pp. 36-9; Daston, 1991, p. 108). One response was to avoid blaming calamities on specific sins and transgressions. Another was to move the focus from dramatic episodes or extraordinary interventions to the regularity, order and benevolence of a 'general providence' that worked through natural laws or 'secondary causes' (Golinski, 2007, pp. 48, 85-90). The shift in emphasis from sudden and unpredictable 'special providences' to the regular workings of a 'general providence' did not imply a move away from religion, or bring with it a contrast between religious and scientific ways of thinking, but it did suit the post-enlightenment emphasis on reason and the mechanical operation of the universe. The shift was enormously important, as it required the devout to reconceptualise the causes of calamities, as well as the purposes of prayer and ritual. Though the range of phenomena that attracted a providential interpretations shrank over time, scholars are careful to emphasise that beliefs in divine interventions and special providences did not disappear from mainstream religious opinion, even as meteorological science gained ground in the nineteenth century (Thomas, 1973, p. 129).

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## 2. WEATHER RITUALS

Ceremonies and rituals associated with the weather were common to European societies across the medieval and early modern world (S. White, 2015, p. 38). In Roman Catholic countries and in the pre-

Reformation British Isles, communities suffering adverse weather sprinkled holy water on crops and homes (Thomas, 1973, pp. 32-3), rung church bells (Corbin, 1998, pp. 103-9) and processed the sacraments (Pfister, 2007, p. 59). Such practices, it was believed, had preventative and preservative qualities; and, as David Hall points out in reference to ritual in Puritan New England, patterned responses to moments of crisis helped reassure the anxious (Hall, 1989, pp. 137, 167-8). Other ceremonies, such as special masses and rain-making prayers and processions, sought to control the weather through appeals to divine influence (Thomas, 1973, p. 45).

In post-Reformation England, establishment Protestant clergy stopped some rituals, notably the processions of the Host that took place in times of need. Nineteenth-century French Catholic bishops tried to prohibit what was thought of as the superstitious and dangerous practice of ringing church bells during thunderstorms (Corbin, 1998). Other rituals were affairs of particular places and particular moments. While Wolfgang Behringer and others have found evidence that early modern German communities coped with ‘unnatural weather’ and deteriorating climates by blaming ‘weather magic’ and executing witches, no evidence has been found of comparable ritualised responses in seventeenth-century England (Behringer, 1995; Pfister, 2007; Walsham, 1999, p. 126).

Other traditional ceremonies, such as fast days and special prayers, continued to be sanctioned and enjoyed widespread popularity. Here is further evidence of continuity across pre-Reformation and post-Reformation worlds. Despite Puritan opposition, the Church of England allowed for the continuation of ‘rogation week’ ceremonies – an ancient ritual in which participants walked around the bounds of the parish and offered prayers for fertility and good weather (Thomas, 1973, pp. 71-3; Hutton, 1996, ch. 26). Protestants continued to offer petitionary prayers to God in the expectation, though never confidence, that He would intervene in earthly affairs and send material blessings. In England, Church of England ministers used the *Book of Common Prayer*’s ‘occasional prayers’ for rain and fair weather, though in times of exceptional crisis, such as after the 1703 storm, the authorities in church and state ordered the use of new prayers. Public fasts – days set aside in moments of political, social and environmental crisis – had been a fixture of the English religious scene long before seventeenth-century Puritans carried the tradition to New England (Hall, 1989).

Rogation perambulations and occasions of collective abstinence, penitence and prayer were premised on the notion that religious ritual could have material effects and benefits (Thomas, 1973, pp. 44, 73). Such rituals held meaning and importance even for those who doubted their material efficacy. In times of disaster and acute need, c~~C~~ommunal prayers and processions might strengthen a sense of corporate solidarity and ~~corporate~~common identity (Duiveman, 2019)~~y and religious mission~~. Clergymen regarded fasts and thanksgivings as opportunities to purge communities of sin and bring worshippers back to a closer relationship with God. Yet fasts did not always cultivate a sense of community and unanimity. Hall notes that in seventeenth-century New England, ministers and congregations clashed when rival explanations of the same event – he cites a 1662 drought – were offered from pulpits (Hall, 1989, p. 172). Clergy could not always get their parishioners to internalise the blame or share responsibility for great public calamities (Walsham, 1999, p. 126). And some groups, notably Quakers and certain types of Presbyterians, would not observe state fasts as they did not accept government authority in religious matters.

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Communities quarrelled over the meaning of weather events and the purpose of rituals. Still, ongoing scholarship on weather rituals has emphasised their portability and enduring appeal. A recent Durham University project has identified thirty-four instances between 1689 and 1871 when the state and ecclesiastical authorities in England and Scotland ordered special prayers or set aside fast and thanksgiving days in response to storms, to petition for better weather, or to give thanks for good harvests. Local communities organised countless more 'harvest home' thanksgivings and prayer services in times of need, and nineteenth-century Anglican high churchmen revived rogations (Williamson et al, 2018; Raffe, 2010, pp. 240-1; Hutton, 1996). The persistence of such acts of special prayer, and the wider providential attitudes they reflected, perhaps indicates the limits of the British Enlightenment: as Golinski writes, 'British society showed a distinctive unenlightened face when confronted with violent or unusual weather' (2007, p. xiii). Belief in the efficacy of collective worship endured: a member of the Plymouth Brethren could still credit the national prayer day of 26 May 1940 with bringing the good weather that enabled the evacuation of Allied troops from Dunkirk (Groom, 2013, p. 332, n. 33).

Practices and rituals of considerable pedigree were updated and modified for new purposes and contexts. As colonists in the eighteenth-century Caribbean learnt that hurricanes struck within a distinct season, they developed a tradition of seasonal annual fasts and thanksgivings to ward off the threatened calamity (Mulcahy, 2006, pp. 47-8). Elsewhere, fasts and thanksgivings continued to be spontaneous affairs, called in response to unexpected events. Joseph Hardwick has shown that British colonial governments in late nineteenth-century Australia and South Africa frequently summoned their cosmopolitan populations to observe days of humiliation and thanksgiving in times of drought: there are even examples of Australian and South African governments appointing days of prayer in the 1920s (Hardwick, 2017 and forthcoming; Hardwick and Williamson, 2018, p. 277). The survival of these antique forms reveals something about the centrality of environmental crisis in Australia's settler history, as well as the extent to which drought was regarded as an aberration, a natural disaster, not as a characteristic of an Australian climate (Sherratt, 2005, pp. 6, 12; Jones, 2017). The tradition also speaks to the vulnerability – James Beattie has talked of 'environmental anxiety' – felt by settlers inhabiting regions with exhausted soils and unstable ecologies (Beattie, 2011).

As Hardwick makes clear, such occasions have rich significance for the historian of colonial environments and weather, not least because they suggest that a sense of responsibility, solidarity and humility could be spread amongst large, diverse and multi-faith communities. Important here is the shift that took place in Christian thinking about the purpose of ritual and prayer, with the emphasis shifting from the power of God to the character, behaviour and qualities of worshippers. These shifts followed changes in providential belief that left less scope for unpredictable 'special providences' (see Sidebar 1). The texts of special prayers and surviving sermons from colonial droughts reveal that in the later nineteenth century God was more frequently regarded as a benevolent figure who had given humans the ability to understand the operations of His natural laws and to take steps to avoid or remedy natural disasters. Across denominations, petitions for special divine interventions gave way to prayers for guidance and a strong emphasis on the character and qualities of those praying (F. M. Turner, 1974, p. 57; Williamson, 2013, pp. 353-4). So, colonists in British settler societies now prayed that God would enrich the understanding of the scientists and technocrats who were responsible for irrigation, better land use, and water storage. These shifts perhaps explain why James Beattie has found New Zealand

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clergymen in the late nineteenth century offering prayers for rain at the same time as they endorsed scientific experiments in cloud-seeding (Beattie, 2004, p. 83).

Another result of this emphasis on human agency and the qualities of worshippers was the emergence of what Beattie and John Stenhouse, again writing on the New Zealand context, have called the 'environmental sermon'. In such texts, colonial clergymen encouraged their hearers and readers to adopt more sensitive, responsible and conservationist relationships with the natural world (Beattie and Stenhouse, 2007, p. 433). The task for researchers is to determine the extent to which climatic shocks did indeed prompt a sense of environmental crisis among settler communities, one that transcended gender, class and ethnic differences. Preliminary research on nineteenth-century Australia suggests that we today might not always find useful lessons in these past examples, as ministers often struggled to build a sense of shared responsibility: town dwellers felt they had no reason to observe days of humiliation during droughts, as the visitation had been sent to punish sinful farmers, not innocent townspeople (Hardwick and Williamson, 2018, p. 278). Nevertheless, it is in the sermons delivered in times of drought, and their emphasis on humility, shared communal responsibility and stewardship of nature, that we might find lessons for our climatic crisis.

We run into several questions at this point. First, how far did providential interpretations dominate colonial conversations about the causes of drought? Meredith McKittrick has examined debates between 'vernacular' and 'expert' understandings of drought in early twentieth-century South Africa in which religious beliefs rarely played a decisive part (McKittrick, 2018). Was this true of other places? When, if ever, was providentialism pushed to the margins of public debate? How important was denominational belief in shaping responses to extreme weather? Were indigenous understandings of extreme weathers and climates in tension with those of invading settlers? These and other questions have exercised scholars of the North American religious scene, and it is to that literature we now turn.

## 3. INDIGENOUS AND SETTLER INTERPRETATIONS OF THE WEATHER

Early white settlers to the New World were quick to notice the striking differences between their own views of nature and those of the first inhabitants. Anya Zilberstein has described the ways that white newcomers disparaged Native American agricultural practices and ideas about nature while promoting their own improvement of the land – improvement that was founded on the belief that the inhospitable climate could be tempered by European agricultural settlement (Zilberstein, 2016, p. 13). In nineteenth-century southern Africa, early European missionaries and Tswana agreed the land was drying up, but attributed blame for the desiccated environment differently: while missionaries considered the land cursed, and connected recurring drought with the supposedly sinful state of the original African inhabitants, the Tswana associated the drying land with the arrival of European colonisers (Grove, 1989, pp. 166-7; Endfield and Nash, 2002, pp. 38-41).

Basic religious and cultural differences often fed misunderstandings. The category of 'indigenous' is problematic and it is very difficult to make sweeping claims or overgeneralizations, especially because of the diversity of experiences, wide regional variations and changes over time. But as Nimachia Hernandez observes, 'The traditional indigenous peoples of the Americas share much in common with indigenous peoples throughout the world who have been affected by the forces of

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globalization. At the same time the importance of their knowledge — spiritual, ecological, and social — retains its significance in this increasingly globalized world for myriad reasons. Among these are a respect for the natural environment and ecosystems that sustain life' (Nimachia, 2009). In North America, Native Americans tended not to divide the world into categories of sacred and profane or religious and secular. Robert S. McPherson notes in his Utah study that indigenous peoples tended to see 'the land as an interconnected whole – with rocks, trees, animals, water, clouds, and a host of other participants in a circle of life. Human relationships exist with non-human entities, bonded by a mutual respect for the role each plays as a part of nature' (McPherson, 2003, p. 4).

Many Native American groups in North America cultivated spiritual practices and rituals that were tied directly to ideas about the land, the seasons or to episodes of severe weather. For the Pueblo Indians of the southwest, for example, water irrigation was critical for survival in an arid desert landscape. Long periods of drought required groups to relocate or face destruction. In the case of the large-scale mound building society of Cahokia, northeast of modern-day St. Louis, climate change had a devastating impact on culture and population. Persistent drought between 1100 and 1245 AD, observes Larry V. Benson, Timothy R. Pauketat, and Edward R. Cook, 'appears to have led to the downfall of upland farming if not also to the demise of Cahokia' (Benson, Pauketat and Cook, 2009, p. 480). By approximately 1200 AD, Cahokia's population had declined by 50%. From such brutal circumstances arose rituals associated with water and the cultivation of corn, a vital staple at Cahokia and throughout Central and North America. These rituals were common among the Pueblo, the Omahas, the Mandans, the Zuni and others (McMillen, 2000). Among groups in the southwest, rain dances performed by different native communities made use of 'imitative magic'. As part of the ritual rain dancers, imitating rain, sprinkled water on the earth and replicated the sound of thunder or created depictions of rain clouds (Young, 2011, p. 5). Colonisers typically disparaged or demonised such Indian rituals as misguided or pagan.

This traditional understanding of water, weather, and climate is still critical in the lives of Native Americans. Writing in the journal *Climatic Change*, K. Cozetto et al examine the ways that climate change has depleted the water resources of American Indians in general and Alaska Natives in particular. Accordingly, that change has disrupted the political, environmental and spiritual lives of tribes. The authors note that this has been especially problematic because water has been 'integral to many Native American practices such as purification and blessing rituals and is used to acknowledge all relations and to establish connection to Mother Earth and Father Sky' (Cozetto, 2013, p. 570). The authors find that on a spiritual and cultural level American Indians and Alaska Natives are particularly vulnerable to the disruptions of climate change. 'They are keepers of complex and extensive bodies of ecological and societal knowledge', they observe, 'passed on through generations. They strongly associate cultural identities and traditional knowledge with their waters and lands and seek spiritual and religious inspiration from them' (Cozetto, 2013, p. 574). The destruction of traditional ways of life and spiritual practice are more acute today - with the frequency of extreme weather, drought, and unseasonal storms - than at any point in the modern era. The authors contend that 'In contrast to the non-tribal utilitarian view of water, Native Americans revere water and water is life' (Cozetto, 2013, p. 570). Indeed, since the period of first contact between colonisers and tribal peoples different understandings of environment, natural resources, weather and ecology led to long-lasting and brutal conflicts.

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For the many differences and points of conflict between whites and indigenous peoples, there were also similarities between them. Both conducted rituals and offered prayers to ease drought or to petition for an end of torrential rain. Both also often thought of hurricanes or flash floods as ominous signs, just as each developed spiritual interpretations of the devastating introduction of smallpox, which so decimated Indian populations. Indigenous peoples occasionally recognized that white colonizers were closer to them in their outlook on weather than the newcomers imagined. And at times of acute difficulty, such as droughts, communities might turn to rival churches, cosmologies and rituals for assistance in ending malign weather. Sam White's research on early white settlement in North America has uncovered a striking history of collaborative rainmaking between European settlers and indigenous peoples. Much could go wrong: successful ceremonies and prayers might engender uneasiness, misgivings and distrust, and failed efforts could expose the weakness or foul intentions of settlers (S. White, 2015, pp. 53-4). The seventeenth-century encounter between Wendat Indians and Jesuits in what is now Ontario provides another example. Jesuits seemed to be able to control the weather with acts of prayer. The Wendat viewed these newcomers as shamans, who had access to and influence on benevolent and malevolent spirits, and who could use their spiritual powers for good or ill (E. Anderson, 2010, p. 144).

Though more research is needed, it could be that such experiments in multi-faith and cross-ethnic weather control became rarer as missionaries grew in confidence, and as the asymmetries in power between settlers and indigenous peoples became starker. Research by Jørgen Klein and others on nineteenth-century southern Africa reveals that Christian missionaries disparaged those amaZulu leaders who sought to strengthen their political power by monopolising rain-control rituals (Klein et al, 2018; Endfield and Nash, 2002, p. 40). Yet in South Africa there is evidence that peoples of European and African descent shared the belief that wars between Britons and Boers disrupted rainfall and ruined the fertility of the land (McKittrick, 2018, p. 15). Missionary archives reveal instances of Protestant clergymen entreating indigenous peoples to join them in praying for rain. Georgina Endfield and David Nash have argued that those European missionaries who developed an understanding of long-term environmental change in southern Africa, namely the idea that a once watered African continent was desiccating, did so by drawing on indigenous memory, landscape knowledge and local understandings of climate change (Endfield and Nash, 2002, p. 41).

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## 4. RELIGIOUS RESPONSES TO EXTREME WEATHER IN NINETEENTH- AND TWENTIETH-CENTURY AMERICA

By the nineteenth century, America's diverse immigrant populations had come to understand and interpret weather through a variety of cultural and religious perspectives. Native Americans, whites and blacks, the enslaved and the free, as well as Catholics, Protestants and those in new religious movements, all made sense of changes in the land and the destructive power of floods, storms and droughts. In this era as well, a new more evidence-based model of modern meteorology developed, one that challenged traditional beliefs and practices about prayer, providence and prophecy.

Baptists and Methodists dominated nineteenth-century American Protestantism. In many ways, these relatively new evangelical churches ran parallel to, and drew upon, Enlightenment and romantic

era themes. Devotees emphasized charisma, experience, biblicism and interpreted nature and weather as signs of divine favor or disapproval. They held to a kind of rationalism, defined by Mark Noll as the belief that empirical and inductive procedures provided 'the best methods for organizing ethics, epistemology, theology, and study of the Scriptures' (Noll, 2002, pp. 562-3). Scottish 'Common Sense' philosophy heavily influenced this evangelical rationalism. In the nineteenth-century, college professors and prominent ministers in the movement taught that mankind could clearly understand God's natural order and the moral laws of the universe. As George Marsden puts it, 'Common Sense philosophy supplied evangelicals with both a popular intellectual defense of the faith and a clear rationale for moral reform' (Marsden, p. 233). Extreme weather might seem to lie in the preternatural realm, but for many evangelicals, even into more recent times, devastating storms, floods, or tornadoes were understood as having moral causes. This commitment to late-Enlightenment rationalism remained strong in evangelical communities even as romanticism and idealism thrived elsewhere.

Such Common Sense rationalism inspired fundamentalist readings of extreme weather as straightforward warnings from God, or a foreshadowing of looming judgment and the apocalypse. Before the mid-nineteenth century, atheism or agnosticism was exceedingly rare and, as James Turner notes, 'seemed almost palpably absurd' (Turner, 1985, p. xxi). Accordingly, religious readings of shocking weather were commonplace into the modern era. Jefferey Williams notes how weather could even serve the cause of evangelism. In the early nineteenth century, a Methodist minister conducted his service amid a thunderstorm and 'he took the opportunity to exploit the natural elements for divine purposes, hoping that people's association of stormy weather with divine judgement might prove useful in their conversion' (Williams, 2010, pp. 76-7). Signs and wonders, then, continued to animate vernacular religion.

Despite these continuities, perceptions of calamities did change in the mid-nineteenth century. Amid the revivals and benevolence work of the Second Great Awakening, writes Gareth Davies, evangelicals had a basic 'desire to do good and, in doing good, to promote God's will, personal salvation, and the second coming of Christ. Fires and other disasters like intemperance, poverty, or bad prison conditions constituted an opportunity to undertake good works' (Davies, 2013, p. 59). Such activism in the face of weather disasters showed that Americans were not totally given to fatalism. A popular 'Arminian' theology emphasized human agency and the need for cooperation during disaster relief. Named after Jacobus Arminius, a seventeenth-century Dutch theologian, Arminianism gave Methodists a strong sense that the act of faith ensured salvation. Arminianism also tended to stand directly in opposition to Calvinistic ideas about predestination and election. Into the present, popular forms of Arminianism give American Protestants an optimism about the acts of God and the quid pro quo logic of extreme weather's relation to personal or national sin. But there is much work to be done about the major and subtle differences between theological traditions and denominations, the two largest of the latter being the United Methodist Church and the Southern Baptist Convention.

Ted Steinberg finds that by the early twentieth century, representatives of the American establishment media, whether speaking about earthquakes or devastating hurricanes, were much less likely to invoke God. A more powerful strand of secularism had also taken hold among elites and the intelligentsia along with the rise of modern professional science, climatology and meteorology (Steinberg, 2006, p. 21). The sociologist Max Weber called the process 'the disenchantment of the

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world'. In the later nineteenth century, more accurate means of forecasting were made possible with detailed weather history, the work of the Army Signal Service and the establishment, in 1891, of the US Weather Bureau (Meyer, 2014, pp. 55-7, 106-10).

Around the time that Weber was diagnosing the modern condition and as the field of meteorology made great advances, the emergence of the new religious movements, fundamentalism and Pentecostalism in particular, challenged the narrative of secularity (Sutton, 42-43, 343). Pentecostals, soon to become the largest subset of global Protestantism, viewed tornadoes, hurricanes and earthquakes as indicating God's action in the world. Pentecostalism first took root in Los Angeles, California, following the Great San Francisco Earthquake of April 1906. This event, believers thought, was evidence of God's call to repentance before the end of the world. Pentecostals focused heavily on the apocalypse and the miracles and wonders that would accompany the 'last days'. Believers practiced a kind of mimetic Christianity, drawing closely on the language and presumed practices of biblical Christianity, and the Book of Acts in particular. They conducted healing meetings, spoke in tongues and read current events through a millennialist lens. Their magazines and newspapers recounted famines and plagues as well as hurricanes and typhoons. Some claimed to be able to predict the weather or to make the weather change through the power of prayer (Wacker, 26, 107). In the early twentieth century a new pentecostal faith healing movement arose that drew on water and weather metaphors. Early pentecostals called this movement the Latter Rain: a reference to the rains that marked the end of the Jewish harvest in the Old Testament book of Joel (2:28). Advocates expected an outpouring of the spirit to take place before the second coming of Christ. Devastating tornadoes, droughts and floods, for initiates, pointed to the fast-approaching end of history (Stephens, 2008, pp. 12, 72, 178, 196, 201, 345; Wojcik, 1996, pp. 305-306.).

The Dust Bowl of the 1930s provides a fruitful case study for research on the religious engagement with extreme weather. Drought and over-farming caused severe erosion, crop failures and dust storms across the American Plains. Pentecostals and fundamentalists frequently commented on the ominous warning signs the chaotic weather portended. Ministers and leaders of denominations regularly called citizens to prayer and repentance in national newspapers and in denominational magazines (Stephens, forthcoming). Some did not hesitate to blame the ecological and weather misfortunes on specific sins: causes included the election of president Franklin Delano Roosevelt and the formalization of relations with Russia. Brad Lookingbill has examined the folk eschatology of such devotees on the dry plains of the 1930s. 'Reports of Judgment Day abounded', Lookingbill observes, 'and fueled the image of terrorizing dust storms. . . . Countless people across the High Plains voiced their fears in eschatological language' (Lookingbill, 1994, pp. 279, 280). As the so-called 'Okies' of the Oklahoma Panhandle migrated to California, they brought with them to the Golden State religious folkways and conservative political principles that would give rise to the Christian Right and the New Right by the 1960s and 1970s (Dochuk, 2011, p. 20). Lookingbill concludes that 'Fundamentalistic religious beliefs functioned as both an escape and a creative force by pointing to the economic and environmental calamity as evidence of Heaven's mysterious ways. In the Dust Bowl of the 1930s, people drew upon their cultural background to explain calamitous events and ecological warnings' (Lookingbill, 1994, p. 284).

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On the other end of the religious spectrum, groups like the theologically and socially liberal northern Baptists, Methodists and Presbyterians established new, Social Gospel inspired action committees. These were intended to address the problems of poverty, racism, militarism and ecological degradation. The Congregationalist's Council for Social Action (CSA, founded in 1934) tried to meet the needs of those on the Great Plains who were devastated by dust storms and the historic lack of rain (Bendroth, 2015, pp. 141, 147). The CSA's liberal members produced pamphlets and books on proper farming techniques, water management practices and the balance of nature and agriculture (Dorn, 1983, pp. 53, 55, 60). Its leaders also condemned the apocalyptic, bleak theology of more conservative groups. Many of the religious and political divisions that so define the US had their roots in this era. For the CSA, the extreme weather of the age was the product of human shortsightedness, bad government management and cyclical drought patterns. In the coming decades such organizations would face enormous challenges in the form of natural disasters as they attempted to serve their denominations and the larger society.

The major natural disasters of the last one-hundred- and fifty-years would reorient religious communities' understanding of the destructive power and devastating effects of floods, tornadoes and hurricanes. Not surprisingly, these also strained denominational and local church resources, the CSA among those. In *Disaster Citizenship: Survivors, Solidarity, and Power in the Progressive Era* Jacob A.C. Remes reveals how effective informal grassroots relief efforts, lying outside of official channels, could be in American and Canadian communities. These efforts, he maintains, often clashed with the official campaigns of early-twentieth-century reformers, social workers and soldiers. He stresses the importance of community, social ties and solidarity. Perhaps the disenchantment of established elites that Weber described and the growing divide between government officials and ordinary folk led to social divisions in other parts of the western world. It may be that authorities failed to, and continue to fail to, recognize the value of church groups and denominational support networks.

While Remes' account offers a fuller picture of grassroots, non-government relief and the role that community support networks played, the scope and scale of disasters in the twentieth century dwarfed such informal efforts. Already by the early twentieth century it had become obvious to many that only large-scale government assistance could most effectively meet the challenges of a major, catastrophic weather events (Meyer, 2014, pp. 138-139). In addition to the Dust Bowl, some of the most overwhelming episodes included: the western drought of 1890-1896; the Johnstown, Pennsylvania Flood (1889); the Galveston, Texas Hurricane (1900); the Tri-State Tornado (1925); the Great Mississippi River Flood (1927); the Vanport, Oregon Flood (1948); Hurricane Betsy (1965); Hurricane Andrew (1992); Hurricane Katrina (2005); and the Joplin, Missouri Tornado (2011). Each revealed something basic about the economic and social inequalities that compounded tragedy, while also highlighting the differing approaches and resources of denominations and local churches. In the case of the Tri-State Tornado, local churches worked closely with the Red Cross to provide assistance, to act as an operation base, or to serve as a temporary morgue (Partlow, 2014, pp. 68, 82, 104). Following the Johnstown Flood, churches called for donations, coordinated relief efforts and distributed food and clothing (McMaster, 1933, pp. 10, 31, 32, 34). Future research might look at the theological and practical dimensions of such efforts. Were some denominations better equipped to serve communities? How did national or international networks facilitate relief work? How, when and why did churches

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cooperate with each other? How did sermons, tracts and articles in the denominational press describe natural disasters in religious terms and make the case for relief?

These historical examples bear out the view, expressed in a 2017 US government report, that after a destructive storm people of lower socioeconomic status are much more likely to face barriers in getting financial assistance as well as housing. These also suffer more from the debilitating effects of stress and depression ('Greater impact', 2017, pp. 12-13). Denominations with a larger footprint in impoverished areas — black and white pentecostal and holiness churches, Jehovah's Witness and Baptists, for example — have historically faced greater obstacles and challenges during natural disasters (Masci, 2016).

In at least three cases – the Great Mississippi River Flood of 1927, the Vanport Flood and Hurricane Katrina – African Americans were disproportionately impacted. According to one contemporary estimate, of those who lost their homes in the Mississippi Flood, more than half a million were African American, or approximately 91%. Black churches, the social centers of communities in the era of segregation, played a vital role after such extreme weather events. Though black and white Baptists, Methodists and pentecostals shared a similar theological heritage, they diverged quite sharply in their social emphases and seldom worked together. That is still largely true of recent decades as well. As Martin Luther King Jr lamented on national television in 1960, 'one of the tragedies of our nation, one of the shameful tragedies, [is] that eleven o'clock on Sunday morning is one of the most segregated hours, if not the most segregated hours, in Christian America' (King, 1960, p. 435). The prophetic and social justice tradition of black Christianity helped to meet the crisis of the Mississippi Flood and has had a similar role to play in the aftermath of other recent disasters (Schneider, 2006, pp. 38-39).

Black churches were critical to recovery and educational efforts that followed Hurricane Katrina in August 2005. Religious studies scholars, sociologists and historians have already begun to examine these recovery efforts. Laypeople and church leaders know that the kinds of responses necessary are far greater than the church can handle alone. Looking at the rebuilding of black churches in New Orleans, Donald E. DeVore shows that 'Religious leaders know that faith-based initiatives alone cannot command the monetary resources necessary to rebuild a shattered city. But they see no fundamental contradiction between federal aid and grassroots action. They also understand the importance of religiously informed group solidarity in preventing the kind of psychological fragmentation that leads to defeat and despair'. DeVore concludes that 'the outlines of a "new" New Orleans may be less about politics and race or concrete and steel, and more about the prophetic and communal role of the African American church' (DeVore, 2007, p. 769). At the same time, references to an all-powerful God can obscure the human dimensions of such tragedies. A kind of fatalism is evident in some coverage of massive disasters like Katrina. Seneca Vaught has argued that the racial injustices and economic and social responsibility for Hurricane Katrina have been obscured or covered over by references to the divine. The idea of an 'Act of God', he notes, 'was rife with racial consciousness and economic incentive, deemphasizing the human tragedy and hopelessness wrought by the storm' (Vaught, 2009, p. 3).

Our modern age might be, then, witnessing a revival of the 'act of God' discourse. Ted Steinberg makes sense of this in his *Acts of God: The unnatural history of natural disasters in America*, a sprawling study that looks at how Americans have interpreted and acted on a range of destructive

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weather events. Steinberg writes that his argument 'is not simply that natural disasters bear a strong human component, but that those in power (politicians; federal, state, city policymakers; and corporate leaders) have tended to view these events as purely natural in an effort to justify a set of responses that has proved both environmentally unsound, and socially, if not morally, bankrupt' (Steinberg, 2006, p. xiv). Throughout modern history, Steinberg claims, the 'natural act' and 'act of God' interpretations have resulted in unnecessary suffering, casualties and death. In the nineteenth century, claims Steinberg, invoking God as an explanation for a deadly weather event was a way to prompt moral responsibility. By the twentieth century that evocation of the divine 'amounted to an abdication of moral reason. With the religiously inclined less disposed than ever to take acts of God seriously, the opportunity has arisen over the last century for some public officials to employ God-fearing language as a way — thinly veiled though it may be — of denying their own culpability for calamity' (Steinberg, 2006, p. xxiv).

## Conclusion

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Anyone reading over the literature on extreme weather and religion notices that much more has been written on the early modern era and colonial contexts than on nineteenth- and twentieth-century Britain and America. Religious ideas and religious personnel are largely absent in the historiography of modern British weather (K. Anderson, 2005 is an exception), and writers on colonial weather and droughts tend to cast the views of the devout as marginal and unhelpful (Jones, 2017, pp. 297-8). Yet our survey suggests that a rich, ~~though~~ albeit scattered, literature on weather and religion exists, and that scholars have begun to address the issue of changing understandings of weather and climate. Forthcoming works, notably Peter J. Thuesen's volume, *Tornado God: American religion and violent weather*, are eagerly anticipated. In the American context, future work might trace the regional variations and the ways that sections of the country with greater concentration of religious adherence, notably the South, have coped with the impact of fierce weather. Other fruitful areas of research include how extreme weather has prompted moral and ethical reflection or ideas of divine favour or judgment. ~~Future w~~Researchers~~ork~~ might also examine how scientific and religious developments have overlapped, produced conflict or sparked new beliefs and practices. Also, there is much to be gained from work on the links between religion and weather as related to racial, economic, regional and social inequalities.

The foregoing literature survey lends further support to those who have argued that the relationship between religion and environmentalist thinking and action was always more complicated – and perhaps more positive – than Lynn White, writing in the late 1960s, recognised (L. White, 1967). Beyond this, the survey of the historical literature allows us to frame a new set of questions about the continuities linking religious responses to extreme weathers and climates across the past and present. How do present-day religious discourses on the environment – from those articulated by 'greener faith' advocates to evangelical obstructionists – connect to past societies' understanding of climate and unnatural weather? To what extent do the key elements in current climate debates – issues such as blame, responsibility and human agency – run through historical engagements with extreme weathers and changing climates? How far have the ritualistic responses of past religious communities – collective acts of fasting and prayer, for instance – persisted into the present? Historical examples raise larger questions about whether climate change is a new problem that requires new ethics, doctrines, theologies and ways of thinking (Clingerman and O'Brien, 2017), or if we can benefit by listening to past climate

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theories and environmental attitudes. The state of the current literature means that much future research is needed before these important questions can be answered, though some initial thoughts can be offered.

Native American organizations have drawn more directly from their religious traditions than have most American Christians. Protestant and Catholics could learn much from their example. A long history of respect for environmental balance has informed modern groups like the Denver-based Indigenous Environmental Network, which describes itself as 'an alliance of Indigenous peoples whose mission it is to protect the sacredness of Earth Mother from contamination and exploitation by strengthening, maintaining and respecting Indigenous teachings and natural laws' (www.ienearth.org). Other groups, like the National Wildlife Federation's Tribal Partnership programme, engage in public education efforts, outreach and call for action on climate change. Such groups point back to the long tradition of living in harmony with their environment. For instance, highlighting the impact of disruptive droughts and wildfires, the programme noted in a 2011 report that 'The loss of forest resources will be especially challenging for Tribes that rely upon them for their spiritual, cultural, and environmental values, and their potential to improve economic development opportunities' (National Wildlife Federation, p. 6).

There is other evidence that weather rituals of considerable pedigree have taken on new relevance in our current age of extreme weather. In Britain, for instance, commentators in the popular media have made the case for the social benefits of communal prayers for rain (Fraser, 2018), and recent interest in folk understandings of the English seasons has spotlighted the historic importance of ecclesiastical calendars and religious rituals (Groom, 2013). The early twenty-first century evangelical clergy who attributed blame for English floods and American hurricanes to the permissiveness and sinfulness of western society demonstrates the extent to which moderns, like their forebears, regard humans as morally culpable for the disturbed state of weathers, climates and environments. Today, as much as in the past, there is a tendency to bring together moral and naturalistic explanations, and to regard the weather and human behaviour as connected (Hulme, 2018).

It also seems theological orientation and religious practice continue to shape perceptions of extreme weather. It may be that apocalypticism shapes the views of believers more than scholars have understood. A 2012 Public Religion Research Institute (PRRI) survey in the United States found that thirty-six per cent of Americans 'believe that the severity of recent natural disasters is evidence that we are in what the Bible calls the end times' (Cox, Navarro-Rivera and Jones, 2012). Pentecostalism, and the associated charismatic movement, likely play a powerful role here. Since the movement first emerged in the early twentieth century, its adherents have connected signs and wonders of weather and climate with God's favour or disfavour. When the PRRI survey narrowed the field to white evangelical Protestants, the evidence was stunning. Of those, 65% thought that recent natural disasters were signs of the end of the world. Only 21% of Catholics thought the same (Cox, Navarro-Rivera, and Jones, 2012). It may be the case that evangelical and fundamentalist ways of understanding the world through a Common Sense rationalist lens continues to make it difficult for them to develop a more robust response to climate change and extreme weather.

At the other end of the spectrum, liberal Protestant and Catholic groups have built on a longstanding environmental ethic to think creatively about present responses and solutions. The World

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Council of Churches, for instance, has worked with victims of disruptive weather events and climate change. Groups such as the interfaith GreenFaith initiative and the Global Catholic Climate Movement draw on scripture, tradition and historical examples to educate and to call to action. In the US, groups like Evangelicals for Social Action have a strong record on public education and outreach efforts on climate change. This non-profit has also emphasised the reform record of the tradition, linking contemporary environmentalist campaigns to nineteenth century evangelical abolitionist, women's rights crusades and the early pacifist movement. Most groups like these are driven by a sense of urgency and concern for 'creation care'. On the seriousness of the matter, Bill McKibben observes that, 'as the reality of climate change has grown steadily more apparent, all the thoughtful branches of humanity have begun to recognize that their philosophies and theologies need to be reconsidered in light of this new fact'. He concludes that 'religion may be particularly prone to this rethinking: an understanding of God as all powerful and beneficent badly needs squaring with the reality that we are systematically dismantling our planet' (McKibben, 2015).

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## Research Resources

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## Notes

1) On the basis that in the future Asian countries will feel the impact of global warming the most (Ghosh, 2016).

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## Further Reading

Nothing to report

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