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The widespread perception of a global environmental crisis has stimulated the burgeoning interest in environmental studies and has encouraged a range of scholars, including historians, to place the environment at the heart of their analytical and conceptual explorations. An understanding of the history of human interactions with all parts of the cultivated and non-cultivated surface of the earth and with living organisms and other physical phenomena is increasingly seen as an essential aspect both of historical scholarship and in adjacent fields, such as the history of science, anthropology, geography and sociology. Environmental history can be of considerable assistance in efforts to comprehend the traumatic environmental difficulties facing us today, while making us reconsider the bounds of possibility open to humans over time and space in their interaction with different environments. This series explores these interactions in studies that together touch on all parts of the globe and all manner of environments including the built environment. Books in the series come from a wide range of fields of scholarship, from the sciences, social sciences and humanities. The series particularly encourages interdisciplinary projects that emphasize historical engagement with science and other fields of study.

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Richard Grove · George Adamson

El Niño in World History

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For Edwin Grove

PREFACE

It is not hard to appreciate the influence that Richard Grove has had on historical and environmental scholarship in the twenty-first century. At the time of writing the Centre for World Environmental History, at the University of Sussex, that Richard founded has sixty-eight members, associates and graduate students from around the world. In the last two decades Richard's ideas have informed the 'cultural turn' in climate science, which incorporated physical climatologists as much as historians and social scientists.¹ The Palgrave Series in World Environmental History, in which this book is published, derives from Richard's vision. New networks such as the ACRE (Atmospheric Circulation Reconstructions over the Earth) and IHOPE (Integrated History and future of People on Earth) are taking this vision in new directions.

This book derives originally from Richard Grove's work on the environmental history of the British Empire and his increasing awareness during the 1990s that climate extremes in diverse locations could be explained by the El Niño Southern Oscillation (ENSO) phenomenon. Richard commenced his pioneering project to uncover the 'millennial history of El Niño' after the devastating El Niño of 1997–98, a project designed to trace El Niño's impact from first appearance in the mid-Holocene to the end of the twentieth century. This became Richard's life work, resulting in peer-reviewed journal publications in *Nature* and the *Medieval History Journal*,² as well as five book chapters³ and an edited book with John Chappell entitled *El Niño: History and Crisis*.⁴ Tragically Richard was never able to finish the project. Whilst in Australia in late-2006 Richard

suffered a severe car accident that has since left him unable to work. The monograph that was to underpin this project remained dormant.

My involvement in this project began in 2012 when I was working as a postdoctoral research assistant on a research network *Collaborative research on the meteorological and botanical history of the Indian Ocean*, a network created by Richard and coordinated by his partner, the environmental historian Vinita Damodaran, on the natural history collections of the British Empire. The network built on the extensive international contacts that Richard had developed during his career as an environmental historian and represented a continuance of his vision to generate an environmental history of the world. The diversity of researchers involved reflected Richard's wide interdisciplinary interests: geographers, anthropologists, climatologists, art historians, archivists, digital archivists, librarians, NGO-workers and environmental activists. Whilst working on the project I was humbled to be offered the opportunity by Vinita to finish the manuscript, due to the interest shared by Richard and me in the history of El Niño and its effects on the Indian subcontinent and southern Africa.

I had first become aware of Richard Grove when researching for a Ph.D. at the University of Brighton in 2009. His writings have had an incredible influence on my work, particularly his 1997 monograph *Ecology, Climate and Empire*. It is not an exaggeration to say that Richard's work has changed the way that I regard climate and what is possible from historical climate research. In particular, Richard has demonstrated the overwhelming potential of the East India Company archives, seeing them as not merely the dry bureaucratic records of a colonial state or trading company but as a remarkably diverse set of writings on meteorology, botany, environment, demographics, trade, history, language and culture, written by an organisation whose desire for knowledge was almost as strong as its appetite for revenue and power.

More fundamentally, Richard has also shown—through articulate and well-reasoned argument derived from a number of geographical and historical contexts—that climate cannot be detached from context. Or, to adopt a terminology that has become more common during the last decade, climate has a dyadic relationship with *culture*.⁵ Climate is not just a set of physical processes for individuals to respond to: it is loaded with cultural meaning and this meaning is as important in informing the way people respond to variability as is the intensity of a drought or flood or the dynamics of a socio-political system. This has had profound implications both for the way we understand how societies responded to the climates of the past and the challenges posed by climate today.⁶

It is this element of the culture of climate that I have chosen to explore in my contributions to this book. It was an early decision of mine not to try to ‘finish’ Richard’s work. I would not like to second-guess what his final ideas were for the project, and neither would Richard have approved if I had. I have instead framed my contributions as a complement to Richard’s, attempting to elucidate in more detail society’s understanding of the El Niño phenomenon. Some of these contributions have built directly on sections that Richard had planned or partially completed, including the introduction, a section on El Niño in the twentieth century, and the history of El Niño’s scientific discovery. My final section—on El Niño in the public imagination—is entirely new. The narratives provided by Richard and me are designed to be complementary and I hope that any tension between chapters strengthens the book rather than diminishing it.

One area of science that has moved on significantly since 2006 is the reconstruction of past El Niño behaviour. This is the only area where I have made alterations to Richard’s draft. In general the new evidence for El Niño’s behaviour in the past overwhelmingly supports and strengthens Richard’s arguments on El Niño’s role in human history. In these cases I have referenced the new evidence as appropriate but left the narrative the same. In one or two cases new evidence has suggested that events previously considered to be related to El Niño were in fact caused by other factors. Here I have adjusted Richard’s writing accordingly, but these adjustments are rare and very minor. Otherwise I have left his contributions as they were.

I hope this book proves to be a worthy addition to Richard’s important legacy.

February 2017
London, UK

George Adamson

NOTES

1. See for example M. Hulme (2009) *Why We Disagree About Climate Change* (Cambridge: Cambridge University Press); J.B. Thornes (2005) 'Cultural Climatology', *Encyclopedia of World Climatology*, 308–309; J.B. Thornes (2008) 'Cultural Climatology and the Representation of Sky, Atmosphere, Weather and Climate in Selected Works of Constable, Monet and Eliasson', *Geoforum*, IXL, 570–580; N. Stehr and H. von Storch (1995) 'The Social Construct of Climate and Climate Change', *Climate Research*, V, 99–105; H. von Storch and N. Stehr (2006) 'Anthropogenic Climate Change: A reason for concern since the eighteenth century and earlier', *Geografiska Annaler*, LXXXVIII, 107–113.
2. R.H. Grove (1998) 'Global Impact of the 1789–93 El Niño', *Nature*, XCDIII, 318–319; R.H. Grove (2007) 'The Great El Niño of 1789–93 and its Global Consequences: Reconstructing an extreme climate event in world environmental history', *The Medieval History Journal*, X, 75–98.
3. R.H. Grove (1997) *Ecology, Climate and Empire* (Winwick: White Horse Press); R.H. Grove, V. Damodaran and S. Sangwan (1998) *Nature and the Orient: The environmental history of South and Southeast Asia* (Delhi: Oxford University Press); R. Grove (2002) 'El Niño Chronology and the History of Socio-economic and Agrarian Crisis in South and Southeast Asia 1250–1900' in Y.P. Abrol, S. Sangwan and M.K. Tiwari (eds.) *Land Use—Historical Perspectives: Focus on Indo-Gangetic Plains* (New Delhi: Allied Publishers Pvt. Ltd.), pp. 133–172; R.H. Grove (2005) 'Revolutionary Weather: The climatic and economic crisis of 1788–1795 and the discovery of El Niño' in T. Sherratt, T. Griffiths and L. Robin (eds.) *A Change in the Weather: Climate and culture in Australia* (Canberra: National Museum of Australia Press), 128–140; R.H. Grove (2007) 'Revolutionary Weather: The climatic and economic crisis of 1788–1795 and the discovery of El Niño' in R. Costanza, L.J. Graumlich and W. Steffen (eds.) *Sustainability or Collapse: An integrated history and future of people on Earth* (Cambridge: The MIT Press), pp. 151–169.
4. R.H. Grove and J. Chappell (2000) 'El Niño Chronology and the History of Global Crises during the Little Ice Age' in R.H. Grove and J. Chappell (eds.) *El Niño History and Crisis: Studies from the Asia-Pacific region* (Cambridge: The White Horse Press).
5. This relationship has been articulated recently by Mike Hulme in M. Hulme (2015) 'Climate and its Changes: A cultural appraisal', *Geography and Environment*, II, 1–11.
6. M. Hulme (2016) *Weathered: Cultures of Climate* (London: Sage).

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