

**Mike Hulme:  
The gentleman understanding climate beyond  
the fascination of differential equations**



An interview by Hans von Storch and Martin Claussen in  
May/June 2021

# Editor's Preface

With changing partners, I, Hans von Storch, have carrying out interviews with respected scientists for more than twenty-five years. Hans Hinzpeter in 1996 was my first interviewee. This interview is number thirteen in this [series](#) of snapshots of our joint scientific history.

Nearly all interviewees have been geoscientists who can look back at long and impressive scientific careers. They are all witness to events that often lie far in the past but heavily influence our present time. These “testimonies” alone are already valuable in that they allow younger generations to understand why conditions and knowledge are the way they are today, that science is not a collection of truths, but is, as George Philander describes, a social process: *“Science is organized skepticism, a strange religion that demands of its congregation a firm commitment to the continual testing of all observational and theoretical results. The tests permit no compromises, are not democratic – if 99% of all scientists are in agreement, then they are not necessarily right – and produce results that, in the long run, are objective, independent of ethnicity, race, gender, religion, values etc.”*

These interviews follow the same premise – it's not about truth, but the perception of our witnesses; it's therefore only to a certain degree about how matters were, but about how the witnesses had experienced these matters. It is naturally possible that others understood the events and conditions differently. Our partners in dialogue have control of what finally ends up in the interview – all statements were checked and approved by our interview partners.

This time my interview partner was Martin Claussen who also wrote the foreword.

The interview was carried as an online-exchange. The subject of the interview was on science and its significance or policymaking, but also its conditions under changing attention milieu; the subject of the interview is not the interviewed individual's personal background.

June 29, 2021

*Hamburg – Hans von Storch*

## Foreword

In March 2021, Mike Hulme received the [Eduard Brückner prize](#) for pioneering our understanding of climate and the interactions between climate change knowledge, society and policy.

Starting as scientists with a deep knowledge of climate, Mike Hulme has expanded the field of knowledge beyond understanding climate to explore the relation between climate and society. He has studied geography at the University of Durham. As a lecturer at the University of Salford, he has investigated African climate change and variability and its significance for ecology and society. At the same time, he has developed a deeper reflection on the role of culture in understanding climate and human response.

In 1988, Mike Hulme moved to the University of East Anglia, and he became a member of the internationally renowned [Climate Research Unit](#). He compiled and analyzed large-scale observational climate data sets, in particular on precipitation, which was, and is, one of the most comprehensive gridded precipitation datasets in the world. But Mike Hulme is not only a data person, he was also involved in model evaluation, and he made numerous contributions to Integrated Assessment Models. In 2013, he became professor of Climate and Culture at King's College in London, and since 2017, he is professor of Human Geography at the University of Cambridge.

During his time at the University of East Anglia from 2000 to 2007, Mike Hulme was the founding director of the [Tyndall Centre for Climate Change Research](#), a distributed virtual network organization headquartered at the University of East Anglia. As the director of the Tyndall Centre, Mike Hulme became more and more exposed to climate policy and to the communication of climate change science. He became increasingly uneasy about some of the ways in which climate science was being presented and deployed in public debates, and he developed a more critical view on the relation between climate change science, public knowledge and discourse, and policy development. In an [article for the BBC](#), in November 2006, Mike Hulme warned against the dangers of using alarmist language from which emerges a strong fatalistic narrative with frequent referrals to helplessness, societal collapse, and catastrophe.

[“Why we disagree about climate change”](#) presumably is Mike Hulme's most famous book, published in 2009. He does not describe climate change as being ‘a problem’ waiting for ‘a solution’. Instead, he considers it as an environmental, cultural and political phenomenon, which is re-shaping the way we think about ourselves, our societies and humanity's place on Earth. He shows that climate change can act as a catalyst to revise our perception of our place in the world.

A few months after his famous book was published, Mike Hulme found himself in the midst of the “Climategate”. Because of his previous involvement with the Climate Research Unit, he was familiar with some aspects of the allegations subsequently made by critics about the corruption of science. Some of his own email correspondence was made public and he was also accused of certain dubious practices, or at least of being a proximate observer of such practices. But instead of taking a defensive stance, Mike Hulme asked: What does “Climategate” teach us about the changing relationships between scientists and the public,

about expectations for transparency and accountability in science and about the relationship between climate science and climate policy?

I had the pleasure of meeting Mike only a few times when he was at the Tyndall Centre. I have very much enjoyed our conversations. Mike is a great person and a great personality. He is a courageous person who tackles the inconvenient truth of how we do science and how we communicate science.

*Martin Claussen, June 2021*

*Mike, let us begin by sketching the sequence of stations of your career.*

My higher education was completed between 1978 and 1984, first as an **undergraduate geography student at Durham University** and then, from 1981, as a **PhD student at University College Swansea**, in Wales. My PhD research investigated twentieth century fluctuations in rainfall in the semi-arid regions of Sudan and the coping strategies employed by rural communities to adapt to shorter and longer periods of drought.



*Mike in 1983 at the University of Khartoum, Sudan*

I was fortunate to secure my first academic position in October 1984, whilst still completing my PhD, as a Lecturer in **Physical Geography at the University of Salford**. Here in the mid-1980s, I taught – amongst other things - a final year BSc

course I called ‘Contemporary climatology’. This included topics such as acid rain, ozone depletion, climate & desertification, and the emerging science of anthropogenic climate change. During this period of employment, I was seconded for 4 months to the **University of Harare, Zimbabwe**, where I taught and researched African climatology.

My ambition however was to devote much more of my time to research than to teaching and so in 1988 I applied successfully to an open research position in the **Climatic Research Unit at the University of East Anglia (UEA)**.



*Mike at UEA in 1991*

This was to work as a post-doctoral scientist on a project contracted by the British Government’s Department of Environment investigating ‘the validation of climate models’ especially, but not only, with reference to the rapidly developing UK Met Office climate models. Although the position was initially for only two years, I enjoyed my work there so much that what followed was a series of short-term contract renewals for the next 10 years. This saw me securing and working on climate change research projects funded by a wide range of national and international governmental, non-

governmental and scientific organisations – among others, the British Government, the EU, UNEP, WWF and BP.

In 1999, I was able to lead a successful interdisciplinary team of scientists and academics from across nine UK universities to secure £10m funding to establish a national climate change research centre, which we named the **Tyndall Centre for Climate Change Research**. After leading the Centre from 2000 to 2007, I retired from this role to take up a more general professorship in climate change within the School of Environmental Sciences at UEA, which involved a mixture of climate change teaching and research.

By now my interests around climate change had moved decisively into the social sciences and humanities, exploring the social and cultural meanings of climate change. I found myself increasingly peripheral to the thrust of research in the School which was heavily dominated by the natural sciences. I was invited to apply for a **Chair in Geography at King's College London (KCL)** -- the opportunity to return to my "home discipline" of Geography was extremely attractive. I took up this position in 2013 and I remained there for four years during which time I established a new MA Programme on Climate Change: History, Culture, Society. During these years, I spent a six-month summer sabbatical in 2014 at the **Rachel Carson Centre at Ludwig Maximilian Universität, München**, from whom I had won a Writing Fellowship.

By 2016 I was Head of Department at KCL with significant administrative obligations and the opportunity to apply to the **University of Cambridge** presented itself

later in 2016, a process in which I was successful. I took up the position of Chair in Human Geography in September 2017 and this remains my current position.

The arc of my career has thus taken me from Physical Geography to Human Geography, via an extended stay in a School of Environmental Sciences during which I was able to establish a national inter-disciplinary centre for the study of climate change.

*If you look back, what do you personally think were your most significant scientific achievements?*

I would probably say that, scientifically speaking, my most significant achievement was to lead the design and publication of the world's first **high resolution (0.5° latitude x longitude) observational land climate dataset for the whole twentieth century**. This developed out of a sustained programme of research in the Climatic Research Unit in which I, first, expanded the coverage and quality of a global precipitation database and, second, compiled a worldwide dataset of 1961-1990 climatological data. This gridded climatology – published in 1999 and 2000 – found a very wide range of scientific uses in thousands of published studies around the world. I think the work I led during the period 1992 to 2002 on developing climate scenarios, from national to global scales, was also of significance. This was work commissioned for the British Government, for the EU and for the IPCC (and other public and private sector bodies) and brought together my work on observational datasets and analysis of climate model simulations and integrated

these with different socio-economic development pathways. These climate scenarios found wide application in adaptation planning and climate mitigation analysis.

In terms of **institutional achievements**, I think there are three things I would draw attention to as significant. One was the setting up and running the IPCC's Data Distribution Centre (DDC) during the period 1996 to 2001 and another was establishing and running the Tyndall Centre from 2000 to 2007. It was my work for the IPCC, especially for the Third Assessment Report in 2001, that led to my receiving a personalised certificate from the IPCC recognising my contribution to its awarded (jointly) of the Nobel Peace Prize in 2007. The third achievement was founding, designing and editing the multi-disciplinary review journal *WIREs Climate Change* from 2008 to the present-day.

Beyond this scientific work and institutional innovation, the research I have published over the past 10-15 years on placing the idea of **climate change in a cultural context** is also highly significant. Through a series of books and articles I have made the case that all human societies in the past, and still today, make sense of their climate and its fluctuations drawing upon a wide variety of beliefs, theories, stories and values. If the phenomenon of climate change is understood solely through a scientific lens then it will not really be understood.

*Would others share this judgement of most significant achievements, or would they point to other aspects of your work?*

This is a difficult question to answer because it depends on who you ask. Until around 2009, many people would have come across my work in the context of gridded climatological data, model evaluation, global precipitation and the design and application of climate scenarios. This would have applied to environmental scientists and some social scientists working on climate impacts. However, within the last decade more people would probably point to my work on broadening our understanding of what type of phenomenon climate change is and the different cultural vantage points from which it needs study. This would apply to a wide range of social science and humanities scholars who have found my work valuable in shaping their own approaches to the study of climate change. Such people might be completely unaware of my earlier work in the 1990s on data, models and scenarios.

*Have these achievements been connected with societal achievements?*

Yes, the work I have led and been involved with has always had wider societal benefits. I can trace this back to some of my very early work in the 1980s.

For example, for my BSc Geography Degree I conducted an original project developing an empirical winter weather severity index for the UK. This was later picked up and christened "The Hulme Index" and used by organisations responsible for winter road maintenance operations.

### 3. The Hulme index

An index for the estimation of winter weather variability was introduced by Hulme (1982). This index has been modified by Thornes (1991) and used in Thornes (1992) to compare different indices. The modified Hulme winter index (*HI*) is given by:

$$HI = 10 \times T_{\max} - N_{\text{frost}} - 18.5 (N_{\text{snow}})^{1/3} \quad (1)$$

where  $T_{\max}$  is the mean maximum winter road surface temperature,  $N_{\text{frost}}$  is the number of days with ground frost and  $N_{\text{snow}}$  is the number of days with snow lying at 0900 LST.

Source: Gustavsson, T. (1996) *Test of indices for classification of winter climate. Meteorological Applications. 3, 215-222.*

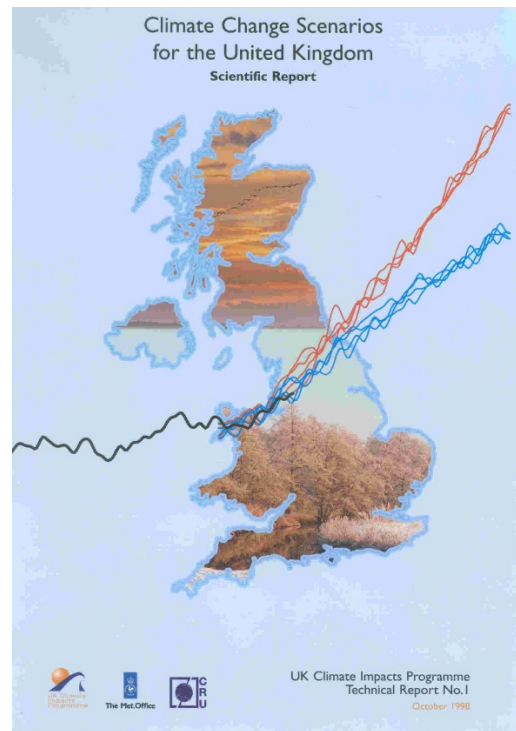
In the late 1980s, I introduced a new regular feature in *The Guardian*, a national UK daily newspaper. On their weather pages I introduced for the first time in any national UK newspaper a regular climate column where each month I would provide a retrospective assessment of the climatic anomaly of the previous month and also a series of short popular articles about aspects of climate change.



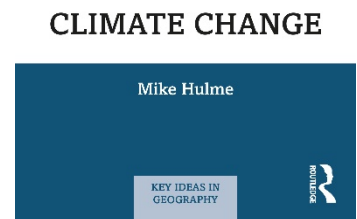
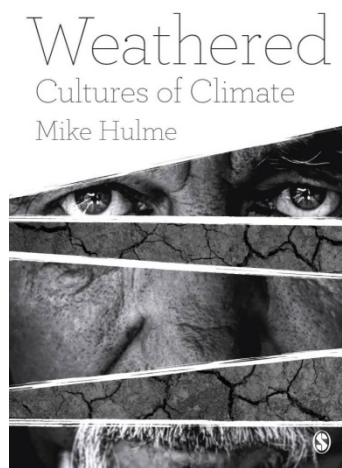
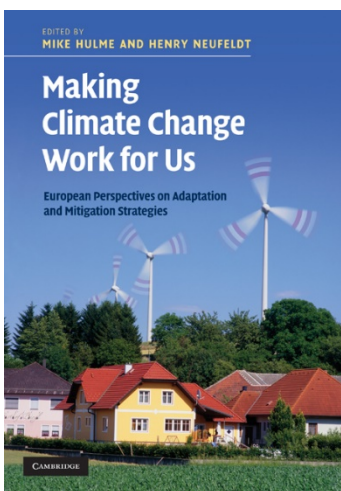
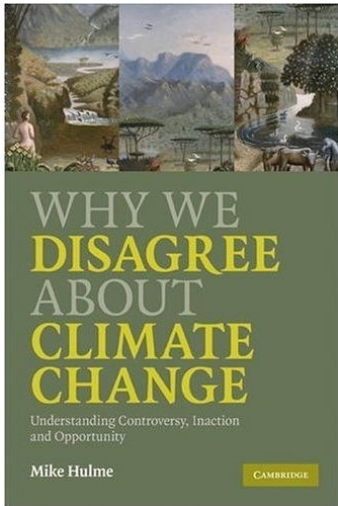
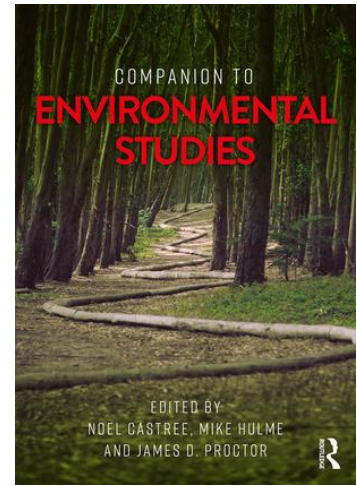
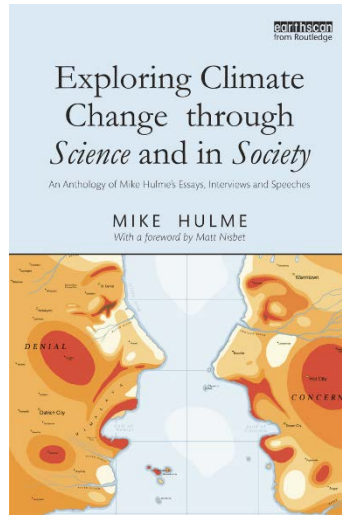
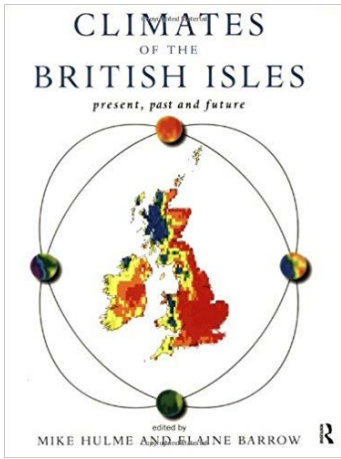
An example of a retrospective assessment of the climatic anomaly of the previous month in the *Guardian*.

The work I led in the 1990s and early 2000s on creating future climate scenarios, found many societal applications ranging from water resource planning, to building heating engineering and coastal protection.

And my more recent work about the centrality of human values in climate change discourse has been societally valuable in that it recognises the importance of multiple voices to be heard in climate change debates. If climate change is indeed a global phenomenon affecting all peoples, societies and systems, then all voices are needed in public debates – decisions must not be left to scientists or technocrats.



Presentation of future climate scenarios, 1998



*The **Climategate affair** - in 2009. You were affected by it. What happened, how have you been affected, and how do you judge the whole episode now, with hindsight?*

Climategate was certainly the most 'dramatic' set of events in my professional career. As a former member of the Climatic Research Unit (CRU) in the School of Environmental Sciences from where the emails had been obtained and as an employee of the University of East Anglia I was an 'interested party' to the events unfolding in November 2009. A number of the published emails had been copied to me or else were sent to me. Some of them were sent *by* me. I knew quite well a number of the central characters in the story. In the days immediately after the emails were published, I was therefore in correspondence with many interested actors in the climate change debate seeking my perspective on the significance of the unfolding events. These included scholars and scientists, members of the public, a variety of journalists and representatives of various organisations.

I first wrote about Climategate in early December 2009 in [an essay for the BBC](#), co-written with Jerry Ravetz, just a fortnight after the controversy broke. Then again 12 months later in [a commentary for The Guardian newspaper](#). A few years later, in 2013, I wrote a longer essay - 'After Climategate ... never the same' - which was published in my book *Exploring Climate Change Through Science and In Society* (2013, Routledge).

Climategate certainly had a short-term (1-3 year) impact on the politics of climate science, and it affected public attitudes and perceptions of climate change, more so in English speaking western nations than elsewhere. The resulting public confusion about the credibility of climate science

undoubtedly had an influence on what I call the 2009/10 'winter of climate discontent'. Climategate was followed a few weeks later by the failure of COP15 in Copenhagen to agree a successor to the Kyoto Protocol and then in the early weeks of 2010 a series of trenchant and damaging criticisms of the IPCC's Fourth Assessment Report and its chair, R K Pachauri.

In many respects – and I thought this at the time – Climategate was a controversy waiting to happen. As tinder-dry brushwood accumulates in dryland ecosystems over a period of time and prepares the conditions for a major wildfire, so over the previous two decades climate science – or at least some aspects of climate science - had slowly begun to operate in ways which was building up inflammable material. As the public policy debates around climate change grew and multiplied in scale and complexity, so the cultural and political contexts in which climate science was practiced became more febrile. The polarising of political positions around climate change responses began to be reflected in a polarising of opinions amongst some practising climate scientists about other climate scientists: they were either 'on our side' or else 'against us'. This is what Judith Curry at the time referred to as the warring tribes of climate science.

Because of this, leading up to Climategate things began to change ... very subtly. Access to certain data became a victim of this mentality; 'friends' could access the data, but not 'enemies'. Peer review processes and judgements became subject to similar group loyalties; papers were judged on their authorship rather than on their content. The IPCC exerted an increasingly important influence over what science was deemed to be 'useful', and hence fundable; research was designed to fill gaps identified by the IPCC and papers

were prepared to meet IPCC deadlines. And in the name of a 'good cause', some climate scientists temporarily lost sight of their role to produce critical, sceptical and qualified scientific claims.

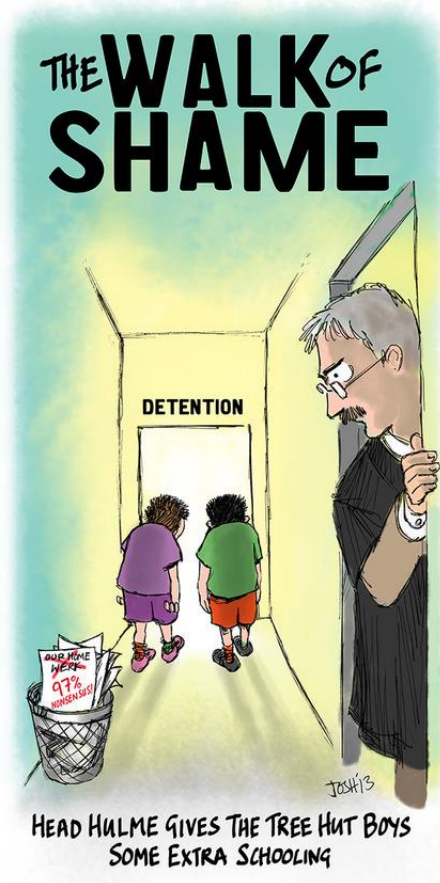
All of these practices – or variants of them -- are recognisable in published ethnographies of scientists at work. In its ceaseless work of establishing and stabilising public facts, science is not immune from such influences and strategies, and never can be. But in the case of climate science in the years leading up to Climategate these influences had become magnified. Powerful interests across the political spectrum were "interested" in what climate science was saying. The CRU emails were only a shock to commentators if they did not realise that scientific facts are made and not discovered and that facts emerge as products of deliberation, persuasion and struggle. These scientific 'impurities', as Steven Shapin calls them, offered a heady mix of brushwood awaiting its lightning strike. In this sense, Climategate was a wildfire waiting to happen.

Climategate revealed exactly what I had been reading and thinking about in the few years beforehand -- that science is a social process, that's its practices and knowledge claims evolve in the context of changing cultural norms, and that securing socially robust scientific knowledge is a political struggle. As Sarah Whatmore has argued, all controversies are 'teachable moments', teachable for scholars of science but also for citizens more widely. Controversies create opportunities for re-thinking how problems are structured, how science governs and undertakes its work, and how new forms of public accountability can be exercised. From this perspective, the Climategate controversy needs to be seen in a wider historical and cultural context of how science evolves. It was a dramatic

example of science having to come to terms with new social forms of communication, new movements towards greater openness with data, and greater public accountability.

*Have you been confronted with challenges caused by skeptics?*

I haven't received many personal attacks on my work or integrity, unlike colleagues at the centre of the Climategate controversy, although I have in the past been criticised indirectly through my association with the likes of Phil Jones and Michael Mann, and for working in CRU. There probably has been as much criticism of my work and writings from climate activists/alarmists as there has been from climate sceptics. One amusing response occurred in 2013 when I made some critical remarks about the "97% consensus" paper of Cook et al. These critical remarks were picked up by the sceptical cartoonist 'Josh', who characterised me in his cartoon [see below] as a head-teacher admonishing out-of-line junior pupils.



*Would you say, there is also a problem with what some call alarmists?*

Yes, I think so. And it is a problem I first spoke out about 15 years ago. I wrote a short essay for [the BBC web-site in November 2006](#) calling out alarmist rhetoric about climate change. It caused a lot of strong reactions, both for and against – I think that short essay in 2006 generated stronger reaction than anything else I’ve written. More recently, in 2019, my colleagues and I wrote an essay for *Nature Climate Change* about the dangers of what we called “deadline-ism” – setting artificial dates for ‘stopping climate change’ after which it becomes ‘too late’. Associated with deadline-ism has been the growing fashion for designing public clocks counting down to climatic endings which will arrive in 5, 10 or 12 years (The first one I remember started in August 2008 and gave

the world just 100 months to stop climate change after which it would be too late. We are now 5 years beyond this and the clocks have all been re-set). I believe these modes of public communication are at best unhelpful and at worst dangerous. Countdown clocks suggest there is a ‘cliff-edge’ to the evolution of climate and it fuels fears and calls for ‘emergency declarations’. And as we have seen with the pandemic, all sorts of undesirable anti-democratic politics become acceptable in an emergency.

The last 40 years have seen peaks and troughs in alarmist claims about climate change. Most recently, extreme claims about climatic catastrophe have come from spokespersons from the protest group Extinction Rebellion, and someone called Jem Bendell who talks about mass (billions) deaths in the next 10 years or so and about the end of civilisation. They claim their predictions are based on a “truthful” account of science. Bendell – together with Rupert Read, another climate alarmist – have a new book coming out in July 2021 which will further propagate this alarmist view: *Deep Adaptation: Navigating the Realities of Climate Chaos* (Polity). This most recent manifestation of alarmism has prompted a few mainstream climate scientists to push back against ‘climate doomism’. Michael Mann, for example, spends a considerable part of his recent book taking on what he calls “the doomists” (*The New Climate War: The Fight to Take Back Our Planet*. 2021, Public Affairs), claiming that they have damagingly infiltrated “the climate movement” itself. I agree with Mann on this point. The disingenuous claims of the climate doomists pay little regard to the nature and provisionality of climate scientific knowledge.

*Could you outline what your normative position is on the role, and service, of science to society?*

My views on science have certainly evolved during my career – partly through my own first-hand observations of climate science being used in society and partly through becoming more interested in the academic field of science studies. As mentioned above, the Climategate controversy was important for me in both respects. In the 1980s, when I first encountered climate change, the idea of anthropogenic global warming was heavily dependent on scientific knowledge. At first glance, this was unlike other big political issues of the 1980s, for example nuclear war, global poverty, fair trade. Geographers like me knew that climatic variations affected societies in important ways, but the claim that global climate was being changed significantly by human activities was a new, and very specifically scientific, claim. The science behind anthropogenic global warming was complex and still quite tentative.

On the other hand, just like the other political issues of the 1980s, these new scientific claims being made about a changing climate had enormous social, political and economic implications. Although seemingly rooted in science, climate change was in fact a deeply social and political issue, just like nuclear war and global poverty. And so quite rapidly during the 1980s and into the 1990s, different political actors mobilised to appropriate climate science to support their particular worldview. Initially, these were environmental NGOs, some energy companies and then a little later developing nations and development organisations. This made me think about climate science rather differently from how I had earlier imagined it. Rather than thinking that scientific evidence simply

informs and direct policy – the linear model of science advice – I began to get more interested in the philosophy of post-normal science and the relationship between science and democracy.

As a minimum, one might regard science as a powerful mode of inquiry into how the physical world works. Scientific knowledge might then explain how A leads to B. This might be interesting for its own sake, but more significantly it offers the promise that if one can control A then one can manipulate B. This thinking lies behind most technologies rooted in scientific knowledge and is why science and technology are often closely coupled in the public imagination.

But when thinking about science in society we need to go well beyond this instrumental view of science. Because science offers (the promise of) powerful knowledge – which can be used for controlling physical processes – scientific knowledge is inevitably political. If one can control physical processes, one can begin to control people. Science in its ideological form of scientism can become dangerously dehumanising and oppressive, an idea explored in a book that was influential on me as a teenager, C S Lewis' 1945 *That Hideous Strength*. This is why it matters who controls scientific knowledge and its technical applications, and who determines the credibility of the knowledge being made and claimed. These questions are abundantly obvious in the case of technologies such as AI, gene-editing and, in my own field, sunlight reflection technologies which seek to regulate global temperature.

Because science carries significant cultural authority in many societies and amongst many citizens, these questions about how scientific knowledge is made, by whom and with what credibility become politically-charged questions. Scientific

knowledge is not just offering a textbook about how the physical world works. Science becomes enrolled by political actors – political in the broadest sense, including citizens – to be used as a strategic or tactical resource. This can be in the sense of science being used rhetorically in order to ‘trump’ one’s opponent’s argument: ‘we have science on our side’. Or it can also mean that science becomes enrolled as some sort of moral authority: ‘the science says we must do C’.

Both of these uses of science can be dangerous. Yet they are claims about science that are frequently heard in public discourse and political arguments about climate change.

I have written extensively about this in my new book, *Climate Change: Key Ideas in Geography* (Routledge, 2021). There I identify three high-level political stances on climate change, which I label reformed modernism, sceptical contrarianism and radical transformation. These positions each signify what the idea of climate change means for political action in the world. In each case, the science of climate change is seriously engaged with; there is great political necessity in doing so. These three positions each find political and cultural advantage in justifying their framework for political action by leaning heavily on their particular interpretation of climate science. But what is extracted from the sprawling body of scientific evidence about climate change is different in each case. Climate reformers, contrarians and radicals each mobilise very different sets of axioms, values and justifications to interpret scientific evidence in ways that build distinct evidential arguments in support of their preferred political programmes.

Since each of these three interpretative positions broadly affirms the cultural authority of science, all three stances are

deeply interested in evaluating the state of climate science. In particular, they scrutinise the credibility of the climatic futures offered by the IPCC. To simplify a little, climate contrarians believe the IPCC is compromised by liberal and environmental ideologies and produces alarmist science, whilst climate radicals believe the IPCC is too conservative and errs on the side of over-caution. Climate reformers place the greatest trust in the scientific pronouncements of the IPCC, believing them to be ‘just right’ -- neither too alarmist nor too conservative.

The arguments that erupt around climate science should be understood as part of a struggle to secure the cultural authority of science as legitimation for the preferred political response to climate change. Very much as the various European combatant nations in the First World War declared ‘God on our side’, so too with climate change. No political movement on climate change can afford to dispense with science as an ally.

*Thanks, Mike for this analysis of the political landscape of climate science in society. Let us now go to a different issue, your earlier mentioned work in **Africa**. How was life in Sudan and Zimbabwe back then in the **1980s**?*

I made two extended research visits to Sudan in the early 1980s as part of my PhD fieldwork – six months in 1982/93 and two months in 1984. I was affiliated to the University of Khartoum and joined in with quite a lot of graduate student activities in the Department of Geography. Sudan at the time was under a civilian government –

President Nimeiri – and was relatively stable and a safe place to be. At least in the north of the country – civil war broke out in the south during 1983. But I was able to travel freely in the north of Sudan, including to my fieldsite near the White Nile. I was also in Khartoum for a short research visit in February 1989 when I was arrested (for taking some innocent photographs) and held in custody and interrogated for 6 hours! Political tensions were running high, ahead of the military coup which took place in June that year and which brought Colonel Omar al-Bashir into power for the next 30 years.

The 3 months I spent at the University of Zimbabwe in Harare in 1986 were also very productive. At the time Zimbabwe was well governed under Mugabe's early government when he showed magnanimity to the white minority and included some white politicians in his government. This contrasted with neighbouring South Africa which at the time still operated an apartheid regime. I taught climatology to Zimbabwean students and they included a number of white South Africans who had left their home country because Zimbabwe was safer for them. Mugabe's regime later became more and more dysfunctional.

*What did you learn? or How did your stay in Africa has affected your life as researcher?*

There is no doubt my research experience in Sudan influenced some of the ways I conceived of the relationship between climates and societies, both at the time in the 1980s but then also later on in my career. In the early 1980s, 'global climate change' was not the all-encompassing thought framework within which most people studied climate. For example, my PhD research in Sudan sought

to understand the nature of climate variability in the region, especially rainfall fluctuations, and to examine the relationship between climate variability and desertification/land degradation.

The empirical part of my thesis research involved considerable time spent in repetitive tasks of (meteorological) data transcription in a (literally) dusty archive in Khartoum and subsequent manual data entry into a computer back in Swansea (this was before digital technologies were widespread). My thesis introduced me to this arduous work of data digitisation, which shaped a considerable part of my subsequent work in CRU in the 1990s. But it was only 20 years later and the emergence of large-scale projects of meteorological 'data rescue' using citizens as mass data transcribers, that I began to re-interpret my own experiences in the 1980s as an exercise in data rescue. I could then re-imagine the hundreds of hours I spent in the archive transcribing data as a contribution to a much larger social goal.

Another thing I experienced in Sudan (and in Zimbabwe to some degree) was the precarity of human life. My PhD thesis refers frequently to the interactions between climatic variation and water scarcity, and hence human life. At the time, the broader regional context for my research was the Ethiopian famine of 1983-1985, and the globally-mediated construction of that tragedy through subsequent public events such as the LiveAid Concert in the summer of 1985. But my first-hand encounter with the precarity of life in a dryland environment made me appreciate in a very direct way the significance of climate variability. One of my earliest papers (Hulme, 1986) was about the adaptability of a rural water supply system in Sudan, an early example of climate vulnerability and adaptation studies.

My research in Sudan also sensitised me to the importance of culture for understanding climate. The empirical dimensions of my thesis were all established within a very different cultural context to my own, that of a rural Islamic culture. As a Christian, I was acutely aware of this difference in religious outlook. Although my thesis says very little directly about this, looking back I can see that the entire immersive experience of my PhD research was conditioned by this cultural context. I think my research into climate in Sudan laid the seeds for my later understanding about the importance of cultural beliefs. As the idea of climate change has mobilised the world politically in the years since, I have been prompted to rethink climate and its changes using cultural, and sometimes explicitly religious, lenses.

My PhD thesis therefore conditioned much of my later thinking about how climate and its variations, and its associations with different social worlds, should be studied: numerically, socially, culturally, historically. Even if none of these lines of thought or analysis are explicit in my PhD thesis, the deeper insights gained during my PhD experience have lived with me. The personal and tacit knowledge (Polanyi, 1958) gained while preparing my thesis – embodied in memory, thought, sensibility and practice - has shaped all my subsequent readings, analysis and writings on climate change. I would even say that to understand my later approaches to the study of climate change -- particularly as a social scientist but also, to a lesser degree, as a natural scientist – it is necessary to understand how my 1980s experiences of African climates shaped me.

*Would you recommend your students to spend a few months or even longer in Sudan or Zimbabwe?*

My early training as a Geographer and, now, working in a Geography Department convinces me of the value for students spending time learning, if not researching, in a different culture to their own. I would say this not just to Geography students, but to all students. This is one of the reasons why student exchange programmes and research mobility schemes are so important.

It is a great tragedy that the UK has now left the EU. This will lessen these opportunities. But even more than just mobility around Europe, there is huge value in stepping outside one's cultural comfort zone to spend time in African, Asian and Latin American countries whilst one is still relatively young. This will produce better informed research. And it will also produce better citizens who realise the danger of naïve universalist assumptions about how people live and what matters to them.

*Could you speak a little about CRU, about its history, its achievements, and its significance for science and for policymaking? If possible, please address also the role, achievements and legacy of Hubert Lamb.*

There is no doubt for me that the Climatic Research Unit (CRU) and its founder, Hubert Lamb, were pioneers in the study of climate, history and society. The decision of Lamb to leave the UK Met Office in 1971 and establish a university-based research group was far-sighted, as indeed was the decision of the University of East Anglia (UEA) to accept his proposal and offer some start-up money for CRU. This money matched funds Lamb had already secured from the oil and gas company Shell. It is ironic that fossil fuel money helped launch a research unit which made a large contribution to confirming the influence of fossil fuels on climate!

At the time, the importance of historical variations in climate for contemporary societies issue was a very niche and specialised concern – in the scientific world there was just not the sense of the idea of “climate change” as it exists today. Lamb’s important conviction was that historical climate variations – both temporal and spatial – could be reconstructed using historical methods. He thought that by better understanding past climates, he could help today’s societies cope with the impact of climatic variation and extremes on social, economic and, hence, political life. Lamb had been pursuing this goal over the past two decades in the UK, but the Met Office – where he was working – was not sympathetic to this idea, nor to his use of historical reconstruction methods. And so he left.

Of course, the early 1970s coincided with a rising awareness of environmentalism in general which would have influenced UEA’s decision to accept Lamb’s proposal. A new School of Environmental Sciences had opened at UEA in 1967 and it was in this School that CRU was located – and still is.

In thinking about my answer to your questions, I went back and found this early statement of purpose – from 1972 – for the newly created Climatic Research Unit. I imagine Hubert Lamb must have written it:

- “To establish firmer knowledge of the history of climate in the recent and distant past.
- To monitor and report on current climatic developments on a global scale.
- To identify the processes (natural and Man-made/anthropogenic) at work in climatic fluctuations and the characteristic time-scales of their evolution.
- To investigate the possibilities of making advisory statements about

future trends of weather and climate from a season to many years ahead, based on acceptable scientific methods and in a form likely to be useful for long-term planning purposes.”

Nearly 50 years later, this mission statement still holds up very well.

You ask about Hubert Lamb. Yes, I met him a few times during my first 10 years at CRU, although I did not get to know him personally. I had read quite a bit of his work when I was a Geography student in the late 1970s and I had a brief conversation with him in 1980 – I was 20 years old – when he came to give a talk at Durham University. I remember asking him whether I might get a job at CRU, but he said he was no longer the Director and I would have to write to Tom Wigley instead. So I did, asking whether I could join CRU to do my PhD. The answer was ‘no’!

Later, by the time I did join CRU in 1988, Lamb had more or less fully retired (he died in 1997), but he would occasionally come into the building to work on his historical manuscripts. But he rarely interacted with the younger climate scientists such as me. His style of climatology was very different to that of the new Director, Tom Wigley, and Lamb never really fitted in with the new climate science and modelling of the 1980s and 1990s. Lamb also displayed a degree of scepticism – in the questioning Mertonian sense of the word – about the relative importance of human greenhouse gases for altering climate, versus the natural forcing mechanisms working on the climate.

I think the culmination of Lamb’s work was the hosting in July 1979 by CRU of the First International Conference on Climate and History. The purpose of the conference was to discuss climate and its possible impact on past and present societies and it

attracted historical climatologists from all over the world. Lamb was 66 years old at the time (the new Director Tom Wigley was 39 and of a different generation to Lamb) and I think it was a hallmark conference that really put CRU on the international stage.

By the 1980s, CRU was very well placed to do research that bridged between the new science of global climate change, and its reliance on models, and the emerging social and policy implications of climate change. There were not many other research groups at that time that had the capacity or freedom to do this kind of work. CRU scientists pioneered work on paleoclimate reconstructions (Briffa, Jones), constructing global-average land temperature in the instrumental period (Jones, Kelly, Goodess), climate scenarios (Wigley, Palutikof), impacts and vulnerability (Kelly, Warwick) and simple climate models, such as MAGICC (Wigley, Raper). Virtually all this work was funded through external contracts – CRU had no central funds to support its work. There was little job security for researchers. Between 1990 and 1998 I had 15 separate short-term renewals to my contract of employment.

Gradually through the 1990s other universities entered into this research space creating their own climate centres. And especially after 2000 new climate research institutes were founded all around the world as the expansion of climate change research grew exponentially in many different and new directions.

In relative terms therefore, CRU's importance today is much less than it was 30-40 years ago, but its legacy remains significant. I would say there are two main legacies of CRU. Its work on historical climate data – and this was very much Lamb's influence. Lamb worked mostly

with historical documents, but others at CRU developed tree ring climate reconstructions. Out of this historical climatology grew – almost accidentally – the global-land temperature record. The second significant legacy is much more closely linked to Tom Wigley's work on simple climate models. He and Sarah Raper developed the MAGICC model in the 1990s and derivatives of this model are still being used today in science-policy analysis. CRU's work in the 1990s on observed global gridded datasets and climate scenarios, to which I contributed, was also pioneering.

*Claussen: I think, we have first met at the newly founded Tyndall Centre, when John Schellnhuber had joined the Centre. Back then, we were excited to launch a British-German enterprise on climate system science and sustainability. How do you view this enterprise in retrospect? Did it intensify British-German cooperation sustainably?*

We established the Tyndall Centre in 2000 at the University of East Anglia with a £10 million contract from the UK research councils, but I developed the Centre as a networked organisation with eight other UK university or research institute partners. John Schellnhuber – then the Director of the Potsdam Institute for Climate Impact Research (PIK) – had been on the international selection panel that awarded the contract to UEA, and he was subsequently appointed – initially part-time, later full-time -- as the Research Director for the Tyndall Centre between 2001 and 2005.

The collaboration between Tyndall and PIK was very much John's initiative. It certainly hadn't been part of our original vision for the Tyndall Centre. Indeed, as a new networked research organisation between nine UK partners, my first priority as Executive Director was to create a

research culture and a joint operation for the Centre that brought different disciplines, institutions and individuals in the UK together around our common aim of conducting applied inter-disciplinary work on climate change. Building transnational collaborations was going to have to take second place. Indeed, a strong transnational cooperation could even have been premature – or self-defeating -- if it preceded the Tyndall Centre establishing itself on its own terms and with its own identity. At least that was my thinking at the time.

I think the difficulties we had in building a close cooperation between PIK and Tyndall in the early 2000s show some of the challenges and limits of scientific cooperation across borders. There might well have been a degree of scientific and intellectual convergence between the two institutions – and John worked hard to identify and cultivate this convergence. But ‘science across borders’ needs more than just a scientific agenda. There are many frictions introduced by the other important contextual factors of scientific research and institution-building: different institutional norms, research cultures, governance models, funding cycles, political accountabilities, and so on. Some of these frictions were evident in both the German and UK funding systems. I think we, and John in particular, underestimated the importance of these frictions. Some proved just too difficult to resolve.

There were a few successes from this effort at collaboration, but I don’t think any of them have really endured. John Schellhuber and Sir David King, the UK Government’s chief scientific advisor at the time, were able to position UK-German scientific collaboration around climate change as an important element of Queen Elizabeth’s State Visit to Berlin in November 2004. And there were some

shared workshops at the time between researchers at PIK and Tyndall around integrated assessment modelling especially. But looking back now, 15 or more years later, I think it was always going to be extremely difficult to make a transnational research network between Potsdam and Norwich work effectively.

John returned to PIK full-time in 2005 after the end of the Tyndall Centre’s first funding cycle. His return to Germany was at least partly triggered by the difficulties we encountered in 2004 with the UK funding councils in seeking a 5-year refunding of our work. The place for a UK-German collaboration within this funding settlement was quite controversial within the UK research councils – and nor was everyone in the Tyndall Centre supportive of the idea.

*Based on our experiences as reviewer and author, we have gotten the feeling that English scientists in our field have a clear advantage when submitting papers to Nature. Is this just a bad feeling, or does it fit your experience?*

This is a difficult question for a native English academic/scientist to answer. My experience of publishing papers has always been filtered by my national and linguistic identity and so if barriers exist for non-English authors then they are likely to be invisible to me. But perhaps the existence of such obstacles in publishing for non-native English-speaking scientists is another example – like the one above – that shows that the idea of ‘science without borders’ is an impossible ideal to fulfil. Studies in the sociology of science suggest that all sorts of extraneous non-scientific factors get in the way of the free sharing of data, the movement of scientific labour, the open publication of ideas and the meritocratic allocation of research funds. Michael Polanyi published his well-

known paper in 1962 – ‘The Republic of Science: Its Political and Economic Theory’ - about science as a self-governing republic. But this republic – even if it ever existed, which it hasn’t – could never have been universal, egalitarian, impartial or democratic. Politics intrudes into science from top to bottom. So, I can certainly imagine that – unfortunately -- chauvinism

and national politics intrudes into the vetting and peer-reviewing of scientific papers.

## Awards and recognitions

2021 The Eduard Brückner Prize, for outstanding interdisciplinary achievements in climate research.

2015 *Why We Disagree About Climate Change* was selected by Cambridge University Press in November 2015 as one of their top 20 most influential books of all time

2014 5-month Writing Fellowship, Rachel Carson Center, Ludwig Maximilian University of Munich (LMU)

2009 One of *The Economist* magazine's four science & technology 'Books of the Year' for *Why We Disagree About Climate Change*

2007 Personalised certificate for 'contributing significantly' to the award of the 2007 Nobel Peace Prize jointly to the Intergovernmental Panel on Climate Change

1995 Hugh Robert Mill Prize from the Royal Meteorological Society for contributions to the understanding and analysis of precipitation

## Publications List, April 2021

### Books

- B12** Hulme, M. (ed.) (2020) **Contemporary Climate Change Debates: a Student Primer**. Abingdon/New York: Routledge. 253pp.
- B11** Hulme, M. (2019) **Can science fix climate change? A case against climate engineering** National Centre for Translation, Cairo, Egypt, 155pp. [Arabic translation]
- B10** Castree, N., Hulme, M. and Proctor, J.D. (eds.) (2018) **Companion to environmental studies** Routledge, Abingdon, 848pp.
- B9** Hulme, M. (2017) **Weathered: Cultures of climate** SAGE, London, 185pp.
- B8** Hulme, M. (2015) **İklim değişikliği konusunda: Neden anlaşıyoruz?** (Turkish edition of 'Why we disagree about climate change') trans. by Merve Özenç, Alfa Baim Yayim Dagitim San. Ve Tic. Ltd., Istanbul, Turkey, 392pp.
- B7** Hulme, M. (ed.) (2015) **Climates and cultures: SAGE Library of the Environment** 6 Vols., SAGE, London, 1872pp.
- B6** Hulme, M. (2014) **Can science fix climate change? A case against climate engineering** Polity, Cambridge, UK, 158pp.
- B5** Hulme, M. (2014) **Streitfall Klimawandel: warum es für die größte Herausforderung keine einfachen Lösungen gibt** (German edition of 'Why we disagree about climate change') trans. by Jörg Matschullat et al., Oekom Verlag, München, Germany, 381pp.
- B4** Hulme, M. (2013) **Exploring climate change through science and in society: an anthology of Mike Hulme's essays, interviews and speeches** Routledge, Abingdon, UK, 330pp.
- B3** Hulme, M. and Neufeldt, H. (eds.) (2010) **Making climate change work for us: European perspectives on adaptation and mitigation strategies** Cambridge University Press, Cambridge, 413pp.
- B2** Hulme, M. (2009) **Why we disagree about climate change: understanding controversy, inaction and opportunity** Cambridge University Press, Cambridge, 393pp.
- B1** Hulme, M. and Barrow, E.M. (eds.) (1997) **Climates of The British Isles: present, past and future** Routledge, London, 454pp.

### Peer-reviewed Journal Papers

- J169** Hulme, M. (2020) Climate change forever: the future of an idea. **Scottish Geographical Journal**. 136(1-4): 118-122.
- J168** Hulme, M. (2020) Climates multiple: three baselines, two tolerances, one normal. **Academia Letters**. Article 102. <https://doi.org/10.20935/AL102>.
- J167** Hulme, M., Lidskog, R., White, J.M. and Strandring, A. (2020) Social scientific knowledge in times of crisis: what can climate change learn from Coronavirus (and vice versa?)

**WIRES Climate Change.** 11(4): e656, 5pp.

- J166** Hulme,M. (2020) One Earth, many futures, no destination. **One Earth.** 2(4): 309-311.
- J165** Hulme,M. (2020) Is it too late (to stop dangerous climate change)? An editorial. **WIRES Climate Change.** 11(1): e630, 7pp.
- J164** Asayama,S. and Hulme,M. (2019) Engineering climate debt: temperature overshoot and peak shaving as risky subprime mortgage lending **Climate Policy** 19(8), 937-946
- J163** Hulme,M. and Burgess,N. (2019) London's weather and the everyday: two centuries of newspaper reports **Weather** 74(8), 286-290
- J162** Norton,C. and Hulme,M. (2019) Telling one story, or many? An ecolinguistic analysis of climate change stories in UK national newspaper editorials **Geoforum** 104, 114-136
- J161** Hulme,M. (2018) "Gaps" in climate change knowledge: Do they exist? Can they be filled? **Environmental Humanities** 10(1), 330-337
- J160** Hulme,M., Obermeister,N., Randalls,S. and Borie,M. (2018) Framing the challenge of climate change in *Nature* and *Science* editorials **Nature Climate Change** 8(6), 515-521
- J159** Gannon,K.E. and Hulme,M. (2018) Geoengineering 'at the edge of the world': exploring perceptions of ocean fertilization through the Haida Salmon Restoration Corporation **GEO: Geography and Environment** 5(1), e00054, 21pp.
- J158** Mahony,M. and Hulme,M. (2018) Epistemic geographies of climate change: science, space and politics **Progress in Human Geography** 42(3), 395-424
- J157** Hulme,M. (2017) Calculating the incalculable: is SAI the lesser of two evils? **Ethics and International Affairs** 31(4), 507-512.
- J156** Pearce,W., Grundmann,R., Hulme,M., Raman,S., Kershaw,E.H. and Tsouvalis,J. (2017) A reply to Cook and Oreskes on climate science consensus messaging **Environmental Communication** 11(6), 736-739
- J155** Pearce,W., Grundmann,R., Hulme,M., Raman,S., Kershaw,E.H. and Tsouvalis,J. (2017) Beyond counting climate consensus **Environmental Communication** 11(6), 723-730
- J154** Selby,J., Dahi,O.S., Fröhlich,C. and Hulme,M. (2017) Climate change and the Syrian civil war revisited: a rejoinder **Political Geography** 60, 253-255
- J153** Selby,J., Dahi,O.S., Fröhlich,C. and Hulme,M. (2017) Climate change and the Syrian civil war revisited **Political Geography** 60, 232-244
- J152** Turnhout,E., Dewulf,A. and Hulme,M. (2016) What does policy-relevant global environmental knowledge do? The cases of climate and biodiversity **Current Opinions in Environmental Sustainability** 18, 65-72
- J151** Mahony,M. and Hulme,M. (2016) Modelling and the nation: institutionalizing climate prediction in the UK, 1988-92 **Minerva** 54, 445-470
- J150** Hulme,M. (2016) 1.5°C and climate research after the Paris Agreement **Nature Climate Change** 6(3), 222-224
- J149** Hulme,M. (2015) (Still) Disagreeing about climate change: which way forward? **Zygon: A Journal of Religion and Science** 50(4), 893-905

- J148** Hulme,M. (2015) Changing what exactly, and from where? A response to Castree **Dialogues in Human Geography** 5(3), 322-326
- J147** Hulme,M. (2015) Climate and its changes: a cultural appraisal **GEO: Geography and Environment** 2(1), 1-11
- J146** Sillmann,J., Lenton,T., Levermann,A., Ott,K., Hulme,M., Benduhn,F. and Horton,J.B. (2015) Climate emergency – no argument for climate engineering **Nature Climate Change** 5(4), 290-292
- J145** Borie,M. and Hulme,M. (2015) Framing global biodiversity: IPBES between Mother Earth and ecosystem services **Environmental Science & Policy** 54, 487-496
- J144** Lövbrand,E., Beck,S., Chilvers,J., Forsyth,T., Hedren,J., Hulme,M., Lidskog,R. and Vasileiadou,E. (2015) The ontological politics of the Anthropocene: a critical research agenda for the social sciences **Global Environmental Change** 32, 211-218
- J143** Hulme,M. (2015) Climate **Environmental Humanities** 6, 175-178
- J142** Hulme,M. (2015) Better weather? The cultivation of the sky **Cultural Anthropology** 30(2), 236-244
- J141** Hulme,M. (2014) Attributing weather extremes to ‘climate change’: A review **Progress in Physical Geography** 38(4), 499-511
- J140** Hulme,M. (2014) Climate change and virtue: an apologetic **Humanities** 3(3), 299-312
- J139** Beck,S. ...., Hulme,M. ... and 14 co-authors (2014) Towards a reflexive turn in the governance of global environmental expertise. The cases of the IPCC and the IPBES **GAiA** 23/2, 80–87
- J138** Porter,K.E. and Hulme,M. (2013) The emergence of the geoengineering debate in the British print media: a frame analysis **Geographical Journal** 179(4), 342-355
- J137** Turnhout,E., Bloomfield,R., Hulme,M., Wynne,B. and Vogel,J. (2012) Listen to the voices of experience **Nature** 488, 454-455
- J136** Sutherland,W.J., Bellingan,L., ... , Hulme,M., ... and 49 others (2012) A collaboratively-derived science-policy research agenda **PLoS ONE** 7(3): e31824. doi:10.1371/journal.pone.0031824, 5pp.
- J135** Mahony,M. and Hulme,M. (2012) The colour of risk: an exploration of the IPCC’s ‘burning embers’ diagram **Spontaneous Generation: A Journal for the History and Philosophy of Science** 6(1), 75-89
- J134** Lake,I.R., Hooper,L., Abdelhamid,A., Bentham,G., Boxall,A., Draper,A., Fairweather-Tait,S. Hulme,M., Hunter,P.R., Nichols,G. and Waldron,K. (2012) Climate change and food security: health impacts in developed countries **Environmental Health Perspectives** 120(11), 1520-1526
- J133** Hulme,M. (2012) Climate change: Climate engineering through stratospheric aerosol injection **Progress in Physical Geography** 36(5), 694-705
- J132** Hulme,M. (2012) ‘Telling a different tale’: literary, historical and meteorological reading of a Norfolk heatwave **Climatic Change** 113(1), 5-21
- J131** Hastrup,K., Schaffer,S., Kennel,C.F., Sneath,D., Bravo,M., Diemberger,H., Graf,H-F.,

- Hobbs,J., Davs,J., Nodari,L., Vassena,G., Irvine,R., Evans,C., Strathern,M., Hulme,M., Kaser,G. and Bodenhorn,B. (2012) Communicating climate knowledge: proxies, processes, politics **Current Anthropology** 53(2), 226-244
- J130** Mahony,M. and Hulme,M. (2012) Model migrations: mobility and boundary crossings in regional climate prediction **Transactions of the Institute of British Geographers** 37(2), 197-211
- J129** Hulme,M., O'Neill,S.J. and Dessai,S. (2011) Is weather event attribution necessary for adaptation funding? **Science** 334, 764-765
- J128** Hulme,M. (2011) Meet the humanities **Nature Climate Change** 1(4), 177-179
- J127** Hulme,M. (2011) Reducing the future to climate: a story of climate determinism and reductionism **Osiris** 26 (1), 245-266
- J126** Bellamy,R. and Hulme,M. (2011) Beyond the tipping point: understanding perceptions of abrupt climate change and their implications **Weather, Climate and Society** 3(1), 48-60
- J125** Jennings,N. and Hulme,M. (2010) UK newspaper (mis-)representations of the potential for a collapse of the thermohaline circulation **Area** 42(4), 444-456
- J124** O'Neill,S.J., Hulme,M., Turnpenny,J. and Screen,J.A. (2010) Disciplines, geography and gender in the framing of climate change **Bulletin of the American Meteorological Society** 91(8), 997-1002
- J123** Hulme,M. (2010) The idea of climate change: exploring complexity, plurality and opportunity **Gaia** 19(3), 171-174
- J122** Hulme,M. (2010) Problems with making and governing global kinds of knowledge **Global Environmental Change** 20(4), 558-564
- J121** Hulme,M. (2010) Learning to live with re-created climates **Nature and Culture** 5(2), 117-122
- J120** Hulme,M. (2010) Cosmopolitan climates: hybridity, foresight and meaning **Theory, Culture and Society** 27(2/3), 267-276
- J119** Hulme,M. (2010) Moving beyond climate change **Environment** 52(3), May/June, 15-19
- J118** Hulme,M. (2010) Claiming and adjudicating on Kilimanjaro's shrinking glaciers: Guy Callendar, Al Gore and extended peer communities **Science as Culture** 19(3), 303-326
- J116** O'Neill,S.J. and Hulme,M. (2009) An iconic approach for representing climate change **Global Environmental Change** 19(4), 402-410
- J115** Lorenzoni,I. and Hulme,M. (2009) Believing is seeing: laypeople's views of future socio-economic and climate change through scenarios in England and Italy **Public Understanding of Science** 18, 383-400
- J114** Girod,B., Wiek,A., Mieg,H. and Hulme,M. (2009) The evolution of the IPCC's emission scenarios – changes, causes and critical aspects **Environmental Science and Policy** 12(2), 103-118 doi:10.1016/j.envsci.2008.12.006

- J113** Hulme,M., Dessai,S., Lorenzoni,I. and Nelson,D. (2009) Unstable climates: exploring the statistical and social constructions of 'normal' climate **Geoforum** 40(2), 197-206  
doi:10.1016/j.geoforum.2008.09.010
- J112** Adger,W.N., Dessai,S., Goulden,M., Hulme,M., Lorenzoni,I., Nelson,D., Otto-Naess,L., Wolf,J. and Wreford,A. (2009) Are there social limits to adaptation to climate change? **Climatic Change** 93, 335-354 [doi 10.1007/s10584-008-9520-z](https://doi.org/10.1007/s10584-008-9520-z)
- J111** Hulme,M. and Dessai,S. (2008) Predicting, deciding, learning: can we evaluate the 'success' of national climate scenarios? **Environmental Research Letters** 3(4), 045013, 7pp. doi:10.1088/1748-9326/3/4/045013
- J110** Dessai,M. and Hulme,M. (2008) How do UK climate scenarios compare with recent observations? **Atmospheric Science Letters** doi:10.1002/asl.197
- J109** O'Neill,S., Osborn,T.J., Hulme,M., Lorenzoni,I. and Watkinson,A.R. (2008) Using expert knowledge to assess uncertainties in future polar bear populations under climate change **The Journal of Applied Ecology** 45(6), 1649-1659
- J108** Hulme,M. (2008) Governing and adapting to climate. A response to Ian Bailey's commentary on "Geographical work at the boundaries of climate change" **Transactions of the Institute of British Geographers** 33(3), 424-427
- J107** Hulme,M. (2008) The conquering of climate: discourses of fear and their dissolution **The Geographical Journal** 174(1), 5-16
- J106** Hulme,M. and Dessai,S. (2008) Negotiating future climates: a critical review of the development of climate scenarios for the UK **Environmental Science and Policy** 11(1), 54-70
- J105** Hulme,M. (2008) Geographical work at the boundaries of climate change **Transactions of the Institute of British Geographers** 33(1), 5-11.
- J104** Dessai,M., O'Brien,K. and Hulme,M. (2007) On uncertainty and climate change **Global Environmental Change** 17(1), 1-3
- J103** Dessai,M. and Hulme,M. (2007) Assessing the robustness of adaptation decisions to climate change uncertainties: a case-study on water resources management in the East of England **Global Environmental Change** 17(1), 59-72.
- J102** Dessai,S., Lu,X. and Hulme,M. (2005) Limited sensitivity analysis of regional climate change probabilities for the 21st century **J. Geophys. Res.**, 110, D19108, doi:10.1029/2005JD005919
- J101** Adger,W.N., Brown,K. and Hulme,M. (2005) Re-defining global environmental change **Global Environmental Change**, 15, 1-4.
- J100** Dessai,S. and Hulme,M. (2004) Does climate adaptation policy need probabilities? **Climate Policy** 4, 107-128
- J99** Watkinson,A.R., Gill,J.A. and Hulme,M. (2004) Flying in the face of climate change: a review of climate change, past, present and future **Ibis**, 146 (Suppl. 1), 4-10
- J98** Dai,A., Lamb,P.J., Trenberth,K.E., Hulme,M., Jones,P.D. and Xie,P. (2004) The recent Sahel drought is real **Int. J. Climatol.**, 24, 1323-1331

- J97** Hulme,M. and Turnpenny,J. (2004) Understanding and managing climate change: the UK experience **The Geographical Journal** 170, 115-125
- J96** Dessai,S., Adger,N.W., Hulme,M., Köhler,J., Turnpenny,J. and Warren,R. (2004) Defining and experiencing dangerous climate change **Climatic Change** 64, 11-25
- J95** Goodess,C.G., Hanson,C., Hulme,M. and Osborn,T.J. (2004) Representing climate and extreme weather events in integrated assessment models: a review of existing methods and options for development **Integrated Assessment** 3, 145-171
- J94** Hulme,M. (2003) Abrupt climate change: can society cope? **Phil. Trans. Royal Society London (A)**, 361, 2001-2021.
- J93** Adger,W.N., Huq,S., Brown,K., Conway,D. and Hulme,M. (2003) Adaptation to climate change in the developing world **Progress in Development Studies**, 3, 179-195.
- J92** Turnpenny,J.R., Crossley,J.F., Hulme,M. and Osborn,T.J. (2002) Air flow influences on local climate: comparison of a regional climate model with observations over the United Kingdom. **Climate Research**, 20, 189-202.
- J91** Patz,J.A., Hulme,M., Rosenzweig,C., Mitchell,T.D., Goldberg,R.A., Githeko,A.K., Lele,S., McMichael,A.J. and Le Sueur,D. (2002) Regional warming and malaria resurgence **Nature** 420, 627-628.
- J90** Osborn,T.J. and Hulme,M. (2002) Evidence for trends in heavy rainfall events over the UK **Phil. Transactions of the Royal Society (A)**, 360, 1313-1325.
- J89** New,M., Lister,D., Hulme,M. and Makin,I. (2002) A high-resolution data set of surface climate over global land areas **Climate Research** 21, 1-25
- J88** Mitchell,T.D., Hulme,M. and New,M. (2002) Climate data for political areas **Area**, 34, 109-112.
- J87** Mitchell,T.D. and Hulme,M. (2002) Length of the growing season **Weather**, 57, 196-198.
- J86** Lu,X., Crossley,J. and Hulme,M. (2002) An exploration of regional climate change scenarios for Scotland **Scottish Geographical Journal**, 117, 251-270.
- J85** Doherty,R.M. and Hulme,M. (2002) The relationship between the SOI and extended tropical precipitation in simulations of future climate change **Geophys. Res. Letts.** 29(10), 113-1,4.
- J84** Arnell,N.W., Cannell,M.G.R., Hulme,M., Kovats,R.S., Mitchell,J.F.B., Nicholls,R.J., Parry,M.L., Livermore,M.T.J. and White,A. (2002) The consequences of CO<sub>2</sub> stabilisation for the impacts of climate change **Climatic Change** 53, 413-446.
- J83** New,M., Todd,M., Hulme,M. and Jones,P.D. (2001) Precipitation measurements and trends in the twentieth century **Int. J. Climatol.**, 21, 1899-1922.
- J82** Hulme,M., Doherty,R.M., Ngara,T., New,M.G. and Lister,D. (2001) African climate change: 1900-2100 **Climate Research** 17, 145-168.
- J81** Hulme,M. (2001) Manabe,S. and Wetherald,R.T. 1975: The effects of doubling the CO<sub>2</sub> concentration on the climate of a general circulation model *Journal of the*

- Atmospheric Sciences*, 32, 3-15. Classics in physical geography revisited **Prog. in Phys. Geog.**, 25, 385-387.
- J80** Hulme,M. (2001) Climatic perspectives on Sahelian desiccation: 1973-1998 **Global Environmental Change** 11, 19-29.
- J79** Horton,E.B., Parker,D.E., Folland,C.K., Jones,P.D. and Hulme,M. (2001) The effect of increasing the mean on the percentage of extreme values in Gaussian and skew distributions. Response to X. Zhang *et al.* **Climatic Change**, 50, 509-510.
- J78** Dessai,S. and Hulme,M. (2001) Climatic implications of revised IPCC emissions scenarios, the Kyoto Protocol and quantification of uncertainties **Integrated Assessment**, 2, 159-170.
- J77** Subak,S., Palutikof,J.P., Agnew,M.D., Watson,S.J., Bentham,C.G., Cannell,M.G.R., Hulme,M., McNally,S., Thornes,J.E., Waughray,D. and Woods,J.C. (2000) The impact of the anomalous weather of 1995 on the UK economy **Climatic Change** 44, 1-26.
- J76** Osborn,T.J., Hulme,M., Jones,P.D. and Basnett,T. (2000) Observed trends in the daily intensity of United Kingdom precipitation **Int. J.Climatol.**, 20, 347-364.
- J75** New,M.G. and Hulme,M. (2000) Representing uncertainties in climate change scenarios: a Monte Carlo approach **Integrated Assessment**, 1, 203-213.
- J74** New,M., Hulme,M. and Jones,P.D. (2000) Representing twentieth century space-time climate variability. Part 2: development of 1901-96 monthly grids of terrestrial surface climate **J.Climate**, 13, 2217-2238.
- J73** Lorenzoni,I., Jordan,A., Hulme,M., Turner,R.K. and O'Riordan,T. (2000) A co-evolutionary approach to climate change impact assessment (II): a scenario-based case study in the UK **Global Environmental Change**, 10, 145-155.
- J72** Lorenzoni,I., Jordan,A., Hulme,M., Turner,R.K. and O'Riordan,T. (2000) A co-evolutionary approach to climate change impact assessment: part I - integrating socio-economic and climate change scenarios **Global Environmental Change**, 10, 57-68.
- J71** Parry,M.L., Arnell,N.W., Hulme,M., Martens,P., Nicholls,R.J. and White,A. (1999) The global impact of climate change: a new assessment **Global Environmental Change**, 9, S1-S2.
- J70** Osborn,T.J., Conway,D., Hulme,M., Gregory,J.M. and Jones,P.D. (1999) Air flow influences on local climate: observed and simulated mean relationships for the UK **Climate Research** 13, 171-191.
- J69** New,M., Hulme,M. and Jones,P.D. (1999) Representing twentieth century space-time climate variability. Part 1: development of a 1961-90 mean monthly terrestrial climatology **J.Climate**, 12, 829-856.
- J68** Mitchell,T. and Hulme,M. (1999) Predicting regional climate change: living with uncertainty **Prog. in Phys. Geogr.**, 23, 57-78.
- J67** Jones,P.D., Horton,E.B., Folland,C.K., Hulme,M., Parker,D.E. and Basnett,T.A. (1999) The use of indices to identify changes in climatic extremes **Climatic Change**, 42, 131-149.

- J66** Hulme,M., Mitchell,J.F.B., Ingram,W., Johns,T.C., Lowe,J.A., New,M.G. and Viner,D. (1999) Climate change scenarios for global impacts studies **Global Environmental Change**, 9, S3-S19.
- J65** Hulme,M., Harrison,P.A. and Arnell,N.W. (1999) Climate variability and crop yields in Europe: reply to Porter,J.R. and Semenov,M.A., **Nature**, 400, 724.
- J64** Hulme,M., Barrow,E.M., Arnell,N., Harrison,P.A., T.E.Downing and T.C.Johns (1999) Relative impacts of human-induced climate change and natural climate variability **Nature**, 397, 688-691.
- J63** Doherty,R.M., Hulme,M. and Jones,C.G. (1999) A gridded reconstruction of land and ocean precipitation for the extended Tropics from 1974-1994 **Int. J. Climatol.**, 19, 119-142.
- J62** Parry,M.L., Arnell,N.W., Hulme,M., Nicholls,R.J. and Livermore,M. (1998) Buenos Aires and Kyoto targets do little to reduce climate impacts **Global Env. Change** 8, 285-289.
- J61** Parry,M.L., Arnell,N., Hulme,M., Nicholls,R.J. and Livermore,M. (1998) Adapting to the inevitable **Nature**, 395, 741.
- J60** Osborn,T.J. and Hulme,M. (1998) Evaluation of the daily precipitation characteristics of AMIP atmospheric model simulations over Europe **Int. J. Climatol.**, 18, 505-522.
- J59** Hulme,M., Osborn,T.J. and T.C.Johns (1998) Precipitation sensitivity to global warming: Comparison of observations with HadCM2 simulations **Geophys. Res. Letts.**, 25, 3379-3382.
- J58** Hulme,M. and Viner,D. (1998) A climate change scenario for the Tropics **Climatic Change**, 39, 145-176.
- J57** Hulme,M. and Brown,O. (1998) Portraying climate scenario uncertainties in relation to tolerable regional climate change **Climate Research**, 10, 1-14.
- J56** Osborn,T.J. and Hulme,M. (1997) Development of a relationship between station and gridbox rainday frequencies for climate model validation **J.Climate** 10, 1885-1908.
- J55** Hulme,M. and New.M. (1997) Dependence of large-scale precipitation climatologies on temporal and spatial gauge sampling **J.Climate** 10, 1099-1113.
- J54** Hulme,M. (1997) The climate in the UK from November 1994 to October 1995 **Weather** 52, 242-257.
- J53** Downing,T.E., Ringius,L., Hulme,M. and Waughray,D. (1997) Adapting to climate change in Africa **Mitigation and Adaptation Strategies for Global Change**, 2, 19-44.
- J52** Chattopadhyay,N. and Hulme,M. (1997) Evaporation and potential evapotranspiration in India under conditions of recent and future climate change **Agric. and Forest Meteor.** 87, 55-72.
- J51** Wardlaw,R.B., Hulme,M. and Stuck,A.Y. (1996) Modelling the impacts of climatic change on water resources **J.Chartered Inst. Water & Env. Management**, 10, 355-364.
- J50** Parry,M.L., Carter,T.R. and Hulme,M. (1996) What is a dangerous climate change? **Global Environmental Change**, 6, 1-6.
- J49** Jones,P.D., Hulme,M., Briffa,K.R., Jones,C.G., Mitchell,J.F.B. and Murphy,J.G. (1996)

Summer moisture variability over Europe in the Hadley Centre GCM using the Palmer Drought Severity Index **Int. J. Climatol.**, 16, 155-172.

- J48** Jones,P.D. and Hulme,M. (1996) Calculating regional climatic time series for temperature and precipitation: methods and illustrations **Int J. Climatol.**, 16, 361-377.
- J47** Hulme,M., Conway,D., Joyce,A. and Mulenga,H. (1996) A 1961-90 climatology for Africa south of the equator and a comparison of PE estimates for the region **S.African J. Science**, 92, 334-343.
- J46** Hulme,M. (1996) Recent climatic change in the world's drylands **Geophys. Res. Letts.**, 23, 61-64
- J45** Conway,D., Krol,M., Alcamo,J. and Hulme,M. (1996) Future water availability in Egypt: the interaction of global, regional and basin-scale driving forces in the Nile Basin **Ambio**, 25, 336-342.
- J44** Conway,D. and Hulme,M. (1996) The impacts of climate variability and climate change in the Nile Basin on future water resources in Egypt **Int. J. Water Resources Development**, 12, 277-296.
- J43** Barrow,E.M., Hulme,M. and Semenov,M. (1996) Effect of using different methods in the construction of climate change scenarios: examples from Europe **Climate Research**, 7, 195-211.
- J42** Barrow,E.M. and Hulme,M. (1996) The changing probabilities of daily temperature extremes in the UK related to future global warming and changes in climate variability **Climate Research**, 6, 21-31
- J41** Airey,M.J., Hulme,M. and Johns,T. (1996) Evaluation of simulations of precipitation by the UK Met. Office/Hadley Centre model **Geophys. Res. Letts.**, 23, 1657-1660.
- J40** Viner,D., Hulme,M. and Raper,S.C.B. (1995) Climate change scenarios for the assessment of climate change on regional ecosystems **J. Therm. Biol.**, 20, 175-190.
- J39** Srinivasan,G., Hulme,M. and Jones,C.G. (1995) An evaluation of the spatial and interannual variability of tropical precipitation as simulated by GCMs **Geophys. Res. Letts.**, 22, 1697-1700.
- J38** Hulme,M., Conway,D., Jones,P.D., Barrow,E.M., Jiang,T. and Turney,C. (1995) A 1961-90 climatology for Europe for climate change modelling and impacts applications **Int. J. Climatol.**, 15, 1333-1363
- J37** Hulme,M. , Raper,S.C.B. and Wigley,T.M.L. (1995) An integrated framework to address climate change (ESCAPE) and further developments of the global and regional climate modules (MAGICC) **Energy Policy** 23 347-355
- J36** Hulme,M. (1995) Estimating changes in global precipitation **Weather**, 50, 34-42
- J35** Airey,M. and Hulme,M. (1995) Validating precipitation simulations by climate models: problems, methods and applications **Prog. in Phys. Geography**, 19, 427-448
- J34** Rotmans,J., Hulme,M. and Downing,T.E. (1994) Climate change implications for Europe: an application of the ESCAPE model **Global Env. Change**, 4, 97-124
- J33** Hulme,M., Zhao,Z-C. and Jiang,T. (1994) Recent and future climate change in East Asia

- Int. J. Climatol.**, 14, 637-658
- J32** Hulme,M. and Jones,P.D. (1994) Global climate change in the instrumental period **Environmental Pollution**, 83, 23-36
- J31** Hulme,M. (1994) The cost of climate data - a European experience **Weather**, 49, 168-175
- J30** Hulme,M. (1994) Regional climate change scenarios based on IPCC emissions projections with some illustrations for Africa **Area**, 26, 33-44
- J29** Briffa,K.R., Jones,P.D. and Hulme,M. (1994) Summer moisture supply across Europe: an analysis based on the Palmer Drought Severity Index, 1892-1991 **Int. J. Climatol.**, 14, 475-506
- J28** Jones,P.D., Hulme,M. and Briffa,K.R. (1993) A comparison of Lamb circulation types with an objective classification derived from grid-point mean-sea-level pressure data **Int. J. Climatol.**, 13, 655-664
- J27** Hulme,M., Hossell,J.E. and Parry,M.L. (1993) Future climate change and land use in the United Kingdom **Geogr. J.** 159, 131-147
- J26** Hulme,M., Briffa,K.R., Jones,P.D. and Senior,C.A. (1993) Validation of GCM control simulations using daily airflows indices over the British Isles **Climate Dynamics**, 9, 95-105
- J25** Hulme,M. and Kelly,P.M. (1993) Exploring the links between desertification and climate change **Environment**, 35, 4-11 and 39-45
- J24** Conway,D. and Hulme,M. (1993) Recent fluctuations in precipitation and runoff over the Nile sub-Basins and impacts on Main Nile discharge **Climatic Change**, 25, 127-152
- J23** Hulme,M. (1992) Rainfall changes in Africa: 1931-60 to 1961-90 **Int. J. Climatol.**, 12, 685-699
- J22** Hulme,M., Marsh,R. and Jones,P.D. (1992) Global changes in a humidity index between 1931-60 and 1961-90 **Climate Research**, 2, 1-22
- J21** Hulme,M., Biot,Y., Borton,J., Buchanan-Smith,M., Davies,S., Folland,C.K., Nicholds,N., Seddon,D. and Ward,M.N. (1992) Seasonal rainfall forecasting for Africa. Part II: application and impact assessment **Int. J. Env. Studies (A)**, 40, 103-121
- J20** Hulme,M., Biot,Y., Borton,J., Buchanan-Smith,M., Davies,S., Folland,C.K., Nicholds,N., Seddon,D. and Ward,M.N. (1992) Seasonal rainfall forecasting for Africa. Part I: current status and future development **Int. J. Env. Studies (A)**, 39, 245-256
- J19** Hulme,M. (1992) A 1951-80 global land precipitation climatology for the evaluation of General Circulation Models **Climate Dynamics**, 7, 57-72
- J18** Barring,L. and Hulme,M. (1991) Filters and approximate confidence intervals for interpreting rainfall anomaly indices **J. Climate**, 4, 837-847
- J17** Hulme,M. (1991) Record warmth in 1990 and global warming **Geography**, 76, 365-369
- J16** Hulme,M. (1991) An intercomparison of model and observed global precipitation climatologies **Geophys. Res. Lett.**, 18, 1715-1718

- J15** Hulme,M. and Jones,P.D. (1991) Temperatures and windiness over the UK during the winters of 1988/89 and 1989/90 compared to previous years **Weather**, 46, 126-135
- J14** Jones,P.D. and Hulme,M. (1990) Temperatures and sunshine duration over the UK during the period May to October 1989 compared to previous years **Weather**, 45, 430-437
- J13** Hulme,M. (1990) Global warming in the twentyfirst century: an issue for Less Developed Countries **Science, Technology and Development**, 8, 3-21
- J12** Hulme,M. (1990) The changing rainfall resources of Sudan **Trans. Inst. Brit. Geogr.**, 15, 21-34
- J11** Hulme,M. and Trilsbach,A. (1989) The August 1988 storm over Khartoum: its climatology and impact **Weather**, 44, 82-90
- J10** Hulme,M. and Tosdevin,N. (1989) The Tropical Easterly Jet and Sudan rainfall: a review **Theor. and Appl. Climatol.**, 39, 179-187
- J9** Hulme,M. (1989) Is environmental degradation causing drought in the Sahel? **Geography**, 74, 38-46.
- J8** Walsh,R.P.D., Hulme,M. and Campbell,M. (1988) Recent rainfall changes and their impact on hydrology and water supply in the semi-arid zone of Sudan **Geogr. J.**, 154, 181-198
- J7** Hulme,M. (1987) Secular changes in wet season structure in central Sudan **J. of Arid Environments**, 13, 31-46.
- J6** Hulme,M. (1987) The 1986 wet season in central Sudan **Weather**, 42, 193-195.
- J5** Hulme,M. (1987) Rainfall in Sudan: An asset or liability **Geoforum**, 18, 321-331.
- J5** Hulme,M. (1986) The adaptability of a rural water supply system to extreme rainfall anomalies in central Sudan **Applied Geography**, 6, 87-103.
- J4** Hulme,M. (1985) Dust production in the Sahel **Nature**, 318, 488.
- J3** Trilsbach,A. and Hulme,M. (1984) Recent rainfall changes in central Sudan and their physical and human implications **Trans. Inst. Brit. Geogs.**, 9, 280-298.
- J2** Hulme,M. (1984) 1983: an exceptionally dry year in central Sudan **Weather**, 39, 270-274.
- J1** Hulme,M. (1983) Unusual rains in the 1982-83 'dry' season at Khartoum **Weather**, 38, 275-276.

## **Book Chapters and Special Journal Issues**

- C71** Hulme,M. (2020) The IPCC (updated) Entry in: **The International Encyclopedia of Geography: People, the Earth, Environment, and Technology**. (eds.) Richardson,D., Castree,N., Goodchild,M.F., Kobayashi,A.L., Liu,W. and Marston,R., John Wiley & Sons, Malden, Oxford, **9,120pp**. doi: **10.1002/9781118786352.wbieg0254**
- C70** Hulme,M. (2020) Window of opportunity pp.396-399 in: **Connectedness – an Incomplete Encyclopedia of the Anthropocene**. (ed.) Krogh,M. Copenhagen, Denmark: Danish Architecture Center.

- C69** Hulme, M. (2020) Historiographies and geographies of climate pp.274-279 in: **Weather, Climate and the Geographical Imagination: Placing Atmospheric Knowledges**. (eds.) Mahony, M. and Randalls, S. Pittsburgh PA: University of Pittsburgh Press. 376pp.
- C68** Sato, M., Laing, T. and Hulme, M. (2020) Are carbon markets the best way to address climate change? Chapter 6 (pp.83-95) in: **Contemporary Climate Change Debates: A Student Primer**. (ed.) Hulme, M. Routledge: Abingdon/New York. 253pp.
- C67** Hulme, M. (2019) Framing climate change pp.58-67 in: **Environmental expertise: connecting science, policy and society** (eds.) Turnhout, E., Tuinstra, W. & Halffman, W., Cambridge University Press, Cambridge
- C66** Hulme, M. (2019) The first climate scenario: a drama in three acts pp.73-76 in: **Culture and Climate Change: Scenarios** (eds.) Tyszczuk, R., Smith, J. & Butler, R., Cambridge: Shed, 112pp.
- C65** Hulme, M. (2017) 'The IPCC' Entry in: **The International Encyclopedia of Geography: People, the Earth, Environment, and Technology** (eds.) Richardson, D., Castree, N., Goodchild, M.F., Kobayashi, A.L., Liu, W. and Marston, R., John Wiley & Sons, Malden, Oxford, 9,120pp. doi: 10.1002/9781118786352.wbieg0254
- C64** Hulme, M. (2017) 'Climate change (concept of)' Entry in: **The International Encyclopedia of Geography: People, the Earth, Environment, and Technology** (eds.) Richardson, D., Castree, N., Goodchild, M.F., Kobayashi, A.L., Liu, W. and Marston, R., John Wiley & Sons, Malden, Oxford, 9,120pp. doi: 10.1002/9781118786352.wbieg0343
- C63** Hulme, M. (2017) 'Foreword' pp.xi-xiii in: **Governing the environment in the Early Modern world: theory and practice** (eds.) Miglietti, S. and Morgan, J., Routledge, Abingdon/New York, 204pp.
- C62** Hulme, M. (2017) 'Foreword' pp. ix-xii in: **The role of language in the climate change debate** (ed.) Fløttum, K., Routledge, Abingdon, 194pp.
- C61** Hulme, M. (2016) 'Climate change: Varieties of religious engagement' Chapter 25 (pp.239-248) in: **Routledge handbook on religion and ecology** (eds.) Jenkins, W., Tucker, M.E. and Grim, J., Routledge, Abingdon, 448pp.
- C60** Hulme, M. (2016) 'Climate' Chapter 4 (pp.29-34) in: **Part I-Mapping Shakespeare's World** (ed. Whitfield, P.) in: **Volume 1: Shakespeare's World, 1500-1660**, in: **The Cambridge Guide to the Worlds of Shakespeare** (ed.) B.F.Smith, Cambridge University Press, Cambridge, UK, 2248pp.
- C59** Hulme, M. (2016) 'Climate change and memory' Chapter 18 (pp.159-162) in: **Memory in the twenty-first century: new critical perspectives from the sciences, arts and humanities** (ed.) Sebastian Groes, Palgrave Macmillan, London, 428pp.
- C58** Hulme, M. (2015) 'Knowledge pluralism' pp.555-565 (chapter 49) in: **Research handbook on climate governance** (eds.) Bäckstrand, K. and Lövbrand, E., Edward Elgar Publishing, Cheltenham, UK, 672pp.
- C57** Hulme, M. (2015) Editor's introduction: the cultures of climate pp.xxiii-xlvi in: **Climates and cultures: SAGE Library of the Environment** (ed.) Hulme, M., SAGE, London, 1666pp.

- C56** Hulme, M. (2015) 'Afterword: The many uses of climate change' pp.289-299 in: **Climate cultures: anthropological perspectives on climate change** (eds) Barnes, J. and Dove, M.R., Yale University Press, New Haven CT, 319pp.
- C55** Mahony, M. and Hulme, M. (2014) The colour of risk: expert judgment and diagrammatic reasoning in the IPCC's 'burning embers' pp.105-126 in: **Image politics of climate change: visualizations, imaginations, documentations** (eds.) Schneider, B. and Nocke, T., Transcript Verlag, Bielefeld, Germany, 388pp.
- C54** Hulme, M. (2014) Commentary on Part I: Beyond climate, beyond change pp.55-59 in: **Culture, politics and climate change: how information shapes our common future** (eds.) Crow, D.A. and Boykoff, M.T., Routledge, Abingdon UK/New York, 234pp.
- C53** Hulme, M. (2013) Reducing the future to climate: a story of climate determinism and reductionism (abridged, with commentary) pp.506-525 in: **The future of nature: documents of global change** (eds.) Robin, L., Sorlin, S. and Warde, P., Yale University Press, New Haven CT, 564pp.
- C52** Hulme, M. (2013) 'On the transmission of heat': commentary on John Tyndall's 1859 paper pp.295-302 in: **The future of nature: documents of global change** (eds.) Robin, L., Sorlin, S. and Warde, P., Yale University Press, New Haven CT, 564pp.
- C51** Hulme, M. (2013) Foreword, pp.xii-xiv in: **How the world's religions are responding to climate change: social scientific investigations** (eds.) Veldman, R.G., Szasz, A. and Haluza-DeLay, R., Routledge, Abingdon/New York, 327pp.
- C50** Hulme, M. (2013) Lessons from the IPCC: do scientific assessments need to be consensual to be authoritative? pp.142-147 in: **Future directions for scientific advice in Whitehall** (eds.) Doubleday, R. and Wilsdon, J., CSaP, Cambridge, 158pp.
- C49** Hulme, M. (2013) How climate models gain and exercise authority pp.30-44 (Chapter 2) in: **The social life of climate change models: anticipating nature** (eds.) Hastrup, K. and Skrydstrup, M., Routledge, Abingdon, UK, 240pp.
- C48** Hulme, M. (2012) On the 'two degree' climate policy target pp.122-125 in: **Climate change, justice and sustainability: linking climate and development policy** Edenhofer, O., Wallacher, J., Lotze-Campen, H., Reder, M., Knopf, B. and Müller, J. (eds.), Springer, Dordrecht, 380pp.
- C47** Hulme, M., Dessai, S., Lorenzoni, I. and Nelson, D. (2009) Unstable climates: exploring the statistical and social constructions of 'normal' climate *Geoforum* 40(2), 197-206 Appearing as Chapter 76 in: **Human geography: fundamentals of geography (5 Vols.)** (2011) (eds.) Gregory, D. and Castree, N., Sage, London, 2132pp.
- C46** Hulme, M. (2010) Four meanings of climate change Chapter 2 (pp.37-58) in: **Future ethics: climate change and apocalyptic imagination** (ed.) Skrimshire, S., Continuum Press, London
- C45** Neufeldt, H., Jochem, H., Hinkel, J., Huitema, D., Massey, E., Watkiss, P., Mcevoy, D., Rayner, T., Hof, A., Lonsdale, K., Barker, T., Held, A., Hulme, M., Reiter, U., Turton, H., van Vuuren, D., and Werners, S. (2010) Climate policy and inter-linkages between adaptation and mitigation pp.3-30 in, **Making climate change work for us: European**

- perspectives on adaptation and mitigation strategies** (eds.) Hulme,M. and Neufeldt,H., Cambridge University Press Cambridge, 413pp.
- C44** Hulme,M. and Neufeldt,H. (2010) Preface pp.xix-xxv in, **Making climate change work for us: European perspectives on adaptation and mitigation strategies** (eds.) Hulme,M. and Neufeldt,H., Cambridge University Press, Cambridge, 413pp.
- C43** Hulme,M. (2009) Mediating the messages about climate change: reporting the IPCC Fourth Assessment in the UK print media pp.117-128 in, **Media and climate change** (eds.) Boyce,T. and Lewis,J., Peter Lang, New York, 261pp.
- C42** Dessai,S., Hulme,M., Lempert,R. and Pielke,R. jr. (2009) Climate prediction: a limit to adaptation? pp.64-78 in, **Adapting to climate change: thresholds, values, governance** (eds.) Adger,W.N., Lorenzoni,I. and O'Brien,K. Cambridge University Press, Cambridge, 514pp.
- C41** Hulme,M. (2009) A belief in climate pp.85-98 in, **Real Scientists, Real Faith** (ed.) Berry,S., Lion Hudson, London, 288pp.
- C40** Adger, W. N., Huq, S., Brown, K., Conway, D. and Hulme, M. (2009) Adaptation to climate change in the developing world pp.161-185 in, **Earthscan reader in adaptation to climate change** (eds.) Schipper, E. L. and Burton, I., Earthscan, London
- C39** Andronova,N., Schlesinger,M.E., Dessai,S., Hulme,M. and Li,B. (2007) The concept of climate sensitivity: history and development pp.5-17 in, **Human-induced climate change: an inter-disciplinary assessment** (eds.) Schlesinger,M.E., Khesgi,H., Smith,J., Chesnaye,F., Reilly,J.M., Wilson,T. and Kolstad,C., Cambridge University Press, Cambridge, UK, 451pp.
- C38** Dessai,M., O'Brien,K. and Hulme,M. (eds.) (2007) Uncertainty in climate change adaptation in mitigation **Global Environmental Change** Special Issue, Volume 17(1).
- C37** Hulme,M., Doherty,R.M., Ngara,T. and New,M.G. (2005) Global warming and African climate change: a re-assessment pp.29-40 in, **Climate change and Africa** (ed.) P.S.Low, Cambridge University Press, Cambridge, UK, 369pp.
- C36** Metz,B. and Hulme,M. (eds.) (2005) Climate policy options post-2012: European strategy, technology and adaptation after Kyoto **Climate Policy** (Special Issue), 5, 243-391.
- C35** Hulme,M. (2005) Recent trends in climate pp.31-40 in, **Climate change and biodiversity** (eds.) Lovejoy,T.E. and Hannah,L., Yale University Press, Yale, USA, 418pp.
- C34** Hulme,M. (2004) A change in the weather ? Coming to terms with climate change pp.21-44 in, **Global environmental issues** (ed.) Harris,F., Wiley & Sons, Chichester, UK, 324pp.
- C33** Hulme,M. (2002) The changing climate of the UK: now and in the future pp.9-26 in, **Climate change: impacts on UK forests** (ed.) Mark Broadmeadow, Forestry Bulletin No. 125, Institute of Chartered Foresters/Forestry Commission, Edinburgh, 198pp.
- C32** Hulme,M. (2002) Climate change: a sober assessment pp.1-17 in, **Nature's revenge?: hurricanes, floods and climate change** (ed.) Tony Gilland, Institute of Ideas, Hodder & Stoughton, London, UK, 88pp.

- C31** Mearns,L.O., Hulme,M., Carter,T.R., Lal,M., Leemans,R. and Whetton,P.H. (2001) Climate scenario development pp.739-768 in, **Climate change 2001: the scientific basis** (eds.) Houghton,J.T., Ding,Y., Griggs,D.J., Noguer,M., van der Linden,P.J., Dai,X., Maskell,K. and Johnson,C.A. (eds.) (2001) Contribution of WG1 to the IPCC Third Assessment, Cambridge University Press, Cambridge, UK, 944pp.
- C30** Magistro,J., Roncoli,C. and Hulme,M. (eds.) (2001) Anthropological perspectives and policy implications of climate change research **Climate Research Special Issue 11**, volume 19
- C29** Giorgi,F., Hewitson,B., Christensen,H.J., Hulme,M., Von Storch,H., Whetton,P., Jones,R., Mearns,L.O. and Fu,C. (2001) Regional climate information – evaluation and projections pp. 583-638 in, **Climate change 2001: the scientific basis** (eds.) Houghton,J.T., Ding,Y., Griggs,D.J., Noguer,M., van der Linden,P.J., Dai,X., Maskell,K. and Johnson,C.A. (eds.) (2001) Contribution of WG1 to the IPCC Third Assessment, Cambridge University Press, Cambridge, UK, 944pp.
- C28** Hulme,M. and Sheard,N. (2000) Escenarios de cambio climatico para la Argentina pp.314-319 in, **Situacion ambiental Argentina 2000** (eds.) Bertonatti,C. and Corcuera,J., Fundacion vida Silvestre Argentina, Buenos Aires, Argentina, 440pp.
- C27** Hulme,M. and Carter,T.R. (2000) The changing climate of Europe pp.47-84 in, **Assessment of potential effects and adaptations for climate change in Europe: the Europe ACACIA project** (ed.) Parry,M.L., The Jackson Environment Institute, UEA, Norwich, UK, 320pp.
- C26** Cramer,W., Doherty,R., Hulme,M. and Viner,D. (eds.) (2000) **Climate scenarios for agricultural, forest and ecosystem impacts** Proceedings of the ECLAT-2 Potsdam Workshop, 13-15 October 1999, Climatic Research Unit, UEA, Norwich, UK, 120pp.
- C25** Beersma,J., Agnew,M., Viner,D. and Hulme,M. (eds.) (2000) **Climate scenarios for water-related and coastal impacts** Proceedings of the ECLAT-2 KNMI Workshop, 10-12 May 2000, Climatic Research Unit, UEA, Norwich, UK, 144pp.
- C24** Hulme,M. and Carter,T.R. (1999) Representing uncertainty in climate change scenarios and impact studies pp.11-37 in, **Representing uncertainty in climate change scenarios and impact studies, proceedings of the ECLAT-2 Helsinki Workshop, 14-16 April, 1999** (eds.) Carter,T., Hulme,M. and Viner,D., Climatic Research Unit, Norwich, UK, 128pp.
- C23** Hulme,M. (1999) Climate change pp.406-436 in, **The Changing Geography of the UK** (eds.) Gardiner,V. and Matthews,H., Routledge, London, 528pp.
- C22** Carter,T., Hulme,M. and Viner,D. (eds.) (1999) **Representing uncertainty in climate change scenarios and impact studies** Proceedings of the ECLAT-2 Helsinki Workshop, 14-16 April, 1999, Climatic Research Unit, Norwich, UK, 128pp.
- C21** Smith,J.B. and Hulme,M. (1998) Climate change scenarios Chapter 3 in, **Handbook on methods of climate change impacts assessment and adaptation strategies** (ed.) Feenstra,J., Burton,I., Smith,J.B. and Tol,R.S.J., UNEP/IES, Version 2.0, October, Amsterdam

- C20** Servat,E., Hughes,D., Fritsch,J.M. and Hulme,M. (eds.) (1998) **Water resources variability in Africa during the 20<sup>th</sup> century**, IAHS Publication No.252, Wallingford, UK, 462pp.
- C19** Hulme,M. (1998) The sensitivity of Sahel rainfall to global warming: implications for scenario analysis of future climate change impact pp. 429-436 in, **Water resources variability in Africa during the 20<sup>th</sup> century**, Servat,E., Hughes,D., Fritsch,J.M. and Hulme,M. (eds.), IAHS Publication No.252, Wallingford, UK, 462pp.
- C18** Raper,S.C.B., Viner,D., Hulme,M. and Barrow,E.M. (1997) Global warming and the British Isles pp.326-339 in, **Climates of the British Isles: present, past and future** (eds.) Hulme,M. and Barrow,E.M., Routledge, London, UK, 454pp.
- C17** Jones,P.D. and Hulme,M. (1997) The changing temperature of ‘Central England’ pp.173-195 in, **Climates of the British Isles: present, past and future** (eds.) Hulme,M. and Barrow,E.M., Routledge, London, UK, 454pp.
- C16** Hulme,M. and Barrow,E.M. (1997) Introducing climate change pp.1-7 in, **Climates of the British Isles: present, past and future** (eds.) Hulme,M. and Barrow,E.M., Routledge, London, UK, 454pp.
- C15** Barrow,E.M. and Hulme,M. (1997) Describing the surface climate of the British Isles pp.33-62 in, **Climates of the British Isles: present, past and future** (eds.) Hulme,M. and Barrow,E.M., Routledge, London, UK, 454pp.
- C14** Hulme,M. (1996) Climatic change within the period of meteorological records pp.88-102 in, **The physical geography of Africa** (eds.) Adams,W.M., Goudie,A.S. and Orme,A.R., Oxford University Press, Oxford, UK, 348pp.
- C13** CCIRG (co-author) (1996) **Review of the potential effects of climate change in the UK**, HMSO, London, 247pp.
- C12** Okoth-Ogendo,H.W.O., Ogallo,L, Hulme,M., Conway,D., Kelly,P.M., Subak,S. and Downing,T.E. (1995) Global climate change and the environment pp.11-46 in, **A climate for development: climate change policy options for Africa** (eds.) Okoth-Ogendo,H.W.O. and Ojwang,J.B., ACTS Press/SEI, Nairobi, Kenya, 264pp.
- C11** Ojwang,J.B., Hulme,M., Conway,D., Kelly,P.M., Subak,S. and Downing,T.E. (1995) Greenhouse gas emissions and their impacts pp.49-84 in, **A climate for development: climate change policy options for Africa** (eds.) Okoth-Ogendo,H.W.O. and Ojwang,J.B., ACTS Press/SEI, Nairobi, Kenya, 264pp.
- C10** Hulme,M. (1994) Global warming and the implications for Asia and the Pacific pp.39-46 in, **The Far East and Australasia, 1995** (26th edn.) Europa Publications, London, 1142pp.
- C9** Hulme,M. (1994) Validation of large-scale precipitation fields in General Circulation Models pp.387-405 in, **Global precipitations and climate change** (eds.) Desbois,M.and Désalmand,F., Springer-Verlag, Berlin, 466pp.
- C8** Hulme,M. (1994) Global climate seasonality, variability and change pp.50-63 in, **Atlas of world development** (ed.) Unwin,P.T.H., J.Wiley & Sons, Chichester, 346pp.
- C7** Hulme,M. (1994) Global climate change and the Nile Basin pp.139-162 in, **The Nile:**

- sharing a scarce resource** (eds.) Howell,P.P. and Allan,J.A., Cambridge University Press, Cambridge, 408pp.
- C6** Hulme,M. (1993) Historic records and recent climatic change pp.69-98 in, **The changing global environment** (ed.) Roberts,N., Blackwell, Oxford, 531pp.
- C5** Hulme,M. (1992) Recent and future precipitation changes over the Nile Basin pp.187-201 in, **Climate fluctuations and water management** (eds.) Biswas,A.K. and Abu Said,M.A., Butterworth-Heineman, Oxford
- C4** Hulme,M. and Trilsbach,A. (1991) Rainfall trends and rural changes in Sudan since Nimeiri pp.1-18 in, **Sudan after Nimeiri** (ed.) Woodward,P., Routledge/SOAS, London, 223pp.
- C3** Hulme,M. (1991) Living in the greenhouse pp.68-73 in, **Children's Britannica Yearbook 1991** Encyclopaedia Britannica International Ltd, London, 232pp.
- C2** Hulme,M., Wigley,T.M.L. and Jones,P.D. (1990) Limitations of regional climate scenarios for impact analysis pp.111-129 in, **Landscape-ecological impact of climatic change** (eds.) Boer,M.M. and de Groot,R.S., IOS, Amsterdam, 429pp.
- C1** Hulme,M. (1988) Changes in wet season structure in central Sudan, 1900-86 pp.179-182 in, **Recent climatic fluctuations and changes: data, characteristics and impacts** (ed.) Gregory,S., Belhaven Press, London, 310pp.

### Other Formal Publications (ISSN, ISBN listed)

- P100** Boas,I., Farbotko,C., Adams,H. .... Black,R. and Hulme,M. (2019) Climate migration myths **Nature Climate Change** 9(12), 901-903
- P99** Hulme,M. (2019) Climate emergency politics is dangerous **Issues in Science and Technology** 36(1), (Fall Issue), 23-25
- P98** Asayama,S., Bellamy,R., Geden,O., Pearce,W. and Hulme,M. (2019) Why setting a climate deadline is dangerous **Nature Climate Change** 9(8), 570-572
- P97** Hulme,M. (2018) Zwischen Fakten und Bedeutung: Kulturelle Kontexte in der Klimawandelkommunikation [German] (Between facts and meaning: cultural contexts of climate change communication) *Promet: Meteorologische Fortbildung* 101, 59-65
- P96** Hulme,M. (2018) <<Abbiamo sempre il clima che meritiamo>> *La stretta tenace della responsabilità morale* [Italian] ('We always get the climates we deserve': The tenacious grip of moral accountability) *Gnosis* Summer Issue, 48-55
- P95** Hulme,M. (2018) Weather-worlds of the Anthropocene and the end of climate *Weber : The Contemporary West* Fall Issue, 63-74
- P94** Hulme,M. (2018) *WIREs Climate Change* 2018: an editorial essay **WIREs Climate Change** 9(1), e503, 6pp. <http://dx.doi.org/10.1002/wcc.503>
- P93** Hulme,M. (2017) [Climate change and the significance of religion](#) **Economic & Political Weekly** 52(28), 14-17, 15 July 2017
- P92** Hulme,M. (2015) Finding the message of the Pope's Encyclical **Environment Magazine** 57(6), 16-19

- P91** Hulme,M. (2015) Engineering the Earth's climate. Can we? Should we? **Geography Review** 29(1), 38-41
- P90** Hulme,M. (2014) Comment on Rudiak-Gould 'Climate change and accusation: global warming and local blame in a small island state' **Current Anthropology** 55(4), 378-379
- P89** Hulme,M. (2014) *WIREs Climate Change* after 4 years: an editorial essay **WIREs Climate Change** 5(1), 1-5
- P88** Hulme,M. and Mahony,M. (2013) Climate panel is ripe for examination **Nature** 502, 624
- P87** Mahony,M. and Hulme,M. (2012) PRECIS: Regional climate modeling for adaptation and development planning pp.168-173 in: **ICTs, climate change and development: case evidence** (eds.) Heeks,R. and Ospina,A.V. Centre for Development Informatics, Institute for Development Policy and Management, University of Manchester, 177pp.
- P86** Hulme,M. (2012) Que tal falar a mesma lingua? **Exame CEO** 11(April), 42-45
- P85** Hempel,M., Mahony,M. and Hulme,M. (2011) Climate results for public vetting **Nature** 480, 39
- P84** New,M., Jones,P.D. and Hulme,M. (2011) ISLSCP II Climate Research Unit CRU05 Monthly Climate Data. In: **ISLSCP Initiative II Collection. Data set** (eds.) Hall,F.G., Collatz,G., Meeson,B., Los,S., Brown de Colstoun, E. and Landis,D. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA  
doi:10.3334/ORNLDAAC/1015<<http://dx.doi.org/10.3334/ORNLDAAC/1015>>
- P83** New,M., Jones,P.D. and Hulme,M. (2011) ISLSCP II CRU05 climate time series for global land areas, 1986-1995 In: **ISLSCP Initiative II Collection. Data set** (eds.) Hall,F.G., Collatz,G., Meeson,B., Los,S., Brown de Colstoun, E. and Landis,D. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA  
doi:10.3334/ORNLDAAC/1014<<http://dx.doi.org/10.3334/ORNLDAAC/1014>>
- P82** Hulme,M. and 26 co-authors (2011) Science-policy interface: beyond assessments Correspondence **Science** (5 August), 333, 697-698
- P81** Hulme,M. (2011) Will foreign-aid pledges materialize? **Nature** 469, 299
- P80** Prins,G., Galiana,I., Green,C., Grundmann,R., Hulme,M., Korhola,A., Laird,F., Nordhaus,T., Pielke jr.,R., Rayner,S., Sarewitz,D., Shellenberger,M., Stehr,N. and Tezuka,H. (2010) **The Hartwell Paper: a new direction for climate policy after the crash of 2009** London School of Economics, London, 42pp.
- P79** Hulme,M. and Mahony,M. (2010) Climate change: what do we know about the IPCC? **Progress in Physical Geography** 34(5), 705-718
- P78** Hulme,M. et al. (2010) IPCC: cherish it, tweak it or scrap it? **Nature** 463, 730-731
- P77** Hulme,M. (2010) Mapping climate change knowledge - an editorial for *Wiley Interdisciplinary Reviews (WIREs) Climate Change* **WIREs Climate Change** 1(1), 1-7

- P76** Hulme,M. (2009) Les obstacles a l'adaptation **Liaison Energie-Francophonie (LEF)**, 85(4), 140-143
- P75** Hulme,M., Pielke,R.A. Jr. and Dessai,S. (2009) Keeping prediction in perspective **Nature Reports Climate Change** Issue 11, 29 October, doi:10.1038/climate.2009.110
- P74** Hulme,M. (2009) Many types of action are required to tackle climate change Correspondence in **Nature** 11 November, 462, 158
- P73** Hulme,M., Boykoff,M., Gupta,J., Heyd,T., Jaeger,J., Jamieson,D., Lemos,M.C., O'Brien,K., Roberts,T., Rockstrom,J. and Vogel,C. (2009) Conference covered climate from all angles **Science** 324, 881-882
- P72** Hulme,M. and Turnpenny,J. (2009) What does applying 'scientific values' mean in reality? Correspondence in **Nature** 9 April, 458, 702
- P71** Dessai,S., Hulme,M., Lempert,R. and Pielke,R. jr. (2009) [Do we need better predictions to adapt to a changing climate?](#) **EOS** 90(13), 111-112
- P70** Hulme,M. (2009) On the origin of the greenhouse effect: John Tyndall's 1859 interrogation of Nature **Weather** 64(5), 121-123
- P69** Hulme,M. (2008) To what climate are we adapting? **ECOS** 29(3/4), 80-85
- P68** Hulme,M. (2008) Climate refugees: cause for a new agreement? Commentary on: 'Climate refugees: protecting the future victims of global warming' by Biermann,F. and Boas,I. **Environment** 50(6), November/December 50-54
- P67** Hulme,M. (2008) The Star Wars solution to climate change that will crash back to Earth **Times Higher Education** 26 June, pp.24-25
- P66** Hulme,M. and Dessai,S. (2008) Ventures should not overstate their aims just to secure funding Correspondence in **Nature** 19 June, 453, 979
- P65** Hulme,M. (2008) Das Vokabular zur Katastrophe: Wie wir uber den Klimawandel reden (in German) **Kulturaustausch** 2008, Issue 2 (April), p.46
- P64** Dawson,R., Hall,J., O'Connell,E., Hulme,M., Lenton,T., Watkinson,A., Nicholls,R., Stansby,P., Clare,M. and Abbas,A. (2007) A response to 'Climate stability: an inconvenient proof' by Bellamy,D. and Barrett,J. **Proceedings of the Institution of Civil Engineers: Civil Engineering**, 160(3), 104-105.
- P63** Hulme,M. (2007) Mike Hulme on John Constable's *Cloud Study* (1822) **Tate etc.**, Issue 9 (Spring), p.109
- P62** Hulme,M. (2007) Understanding climate change: the power and the limit of science **Weather** 62(9), 243-244
- P61** Hulme,M. (2007) The appliance of science in **The Guardian**, 14 March, G2, p.9
- P60** Hulme,M. (2007) The limits of the Stern Review for climate change policy-making **Bulletin of the British Ecological Society** March issue, pp.20-21
- P59** Hulme,M. (2007) Newspaper scare headlines can be counter-productive **Nature** 445, 818

- P58** Hulme,M. (2006) Break moulds to recognize value of interdisciplinary research **Research Fortnight**, 22 November, pp.16-18.
- P57** Hulme,M. (2006) Climate change in Europe: implications for the future and choices for the present pp.16-17 in, '**Climate change and biodiversity – meeting the challenge**' Report of the 13<sup>th</sup> Annual Conference of the EEAC, English Nature, UK, 84pp.
- P56** Hulme,M. (2006) We need a change of climate to survive **Times Higher Educational Supplement**, 6 January, p.14
- P55** Hulme,M., Githeko,A. and Matthies,F. (2005) Climate change and infectious diseases in Africa pp.27-33 in, **Infectious diseases in Africa: using science to fight the evolving threat** (ed.) Office of Science and Technology, DTI, London, UK, 57pp.
- P54** Lu,X. and Hulme,M. (2004) Combating climate change Chapter in: **Introducing sustainable development in 9½ chapters** LEAD International CD-ROM, London, UK [ISBN 0-9546927-0-5].
- P53** Hulme,M. (2003) Mike Hulme pp.244-245 in **Moving on up** (ed.) Brown,S., Ebury Press, London, UK, 336pp.
- P52** Hulme,M., Turnpenny,J.R. and Jenkins,G.J. (2002) **Climate change scenarios for the UK: the UKCIP02 briefing report** Tyndall Centre, UEA, Norwich, UK, 14pp.
- P51** Hulme,M., Jenkins,G.J., Lu,X., Turnpenny,J.R., Mitchell,T.D., Jones,R.G., Lowe,J., Murphy,J.M., Hassell,D., Boorman,P., McDonald,R. and Hill,S. (2002) **Climate change scenarios for the UK: the UKCIP02 scientific report** Tyndall Centre, UEA, Norwich, UK, 112pp.
- P50** Hulme,M., Jenkins,G.J., Brooks,N., Cresswell,D., Doherty,R., Durman,C., Gregory,J., Lowe,J. and Osborn,T.J. (2002) What is happening to global climate and why? pp.18-49 in, **Health effects of climate change in the UK** Department of Health Report, London, UK, 238pp.
- P49** Hulme,M. (2002) Frameworks for an integrated global climate management strategy **Environmental Scientist**, 11, 7-8.
- P48** Hulme,M. (2002) Framework for an integrated global climate management strategy **Science in Parliament**, 59, 14-15.
- P47** Adger,W. N., Brooks,N. Brown,K. Conway,D., Haxeltine,A. and Hulme,M. (2002) Memorandum of evidence on climate change and sustainable development by the Tyndall Centre for Climate Change Research pp.59-62 in, **House of Commons, International Development Committee, Global Climate Change and Sustainable Development. HC Paper 519-II. Session 2001-02.** The Stationery Office: London, UK
- P46** Hulme,M., Crossley,J. and Lu,X. (2001) **An exploration of regional climate change scenarios for Scotland** The Scottish Executive Central Research Unit, Edinburgh, 50pp.
- P45** Hulme,M. and Torok,S. (2001) New Tyndall Centre to encourage integrated climate research **Ocean Challenge**, 10, 15-16.

- P44** Hulme, M. (2001) Defining future climates – from scenarios to risk assessments pp.8-9 in, **Impacts of climate change on wildlife** (eds.) Green, R.E., Harley, M., Spalding, M. and Zöckler, C., RSPB, UK, 71pp.
- P43** Hulme, M. (2000) There is no longer such a thing as a purely natural weather event **The Guardian**, 15 March, Environment Section <http://www.guardian.co.uk/society/2000/mar/15/mozambique.guardiansocietysupplement>
- P42** Hulme, M., Wigley, T.M.L., Barrow, E.M., Raper, S.C.B., Centella, A., Smith, S. and Chipanshi, A. (2000) **Using a Climate Scenario Generator in Vulnerability and Adaptation Assessments: MAGICC and SCENGEN Workbook**, Climatic Research Unit, UEA, Norwich, 60pp.
- P41** Hulme, M. and Dwyer, I. (2000) UK climate research set fair **Science and Public Affairs**, December, 14-15.
- P40** Hulme, M. (contributor) (2000) **Wales: changing climate, challenging choices – the impacts of climate change in Wales from 2000 to 2080** (eds.) Farrar, J.F. and Vaze, P., The National Assembly of Wales, Cardiff, 101pp.
- P39** Hulme, M. (2000) Heavy weather? **Third Way**, 23, 8-9.
- P38** Hulme, M. (2000) Global warming **Prog. Phys. Geography**, 24, 591-599.
- P37** Hulme, M. (2000) Choice is all **New Scientist** 2263, 4 November, 56-57.
- P36** Carter, T.R., Hulme, M., Crossley, J.F., Malyshev, S., New, M.G., Schlesinger, M.E. and Tuomenvirta, H. (2000) Climate change in the 21st century: interim characterizations based on the new IPCC emissions scenarios **Finnish Environment Institute Report No.433**, Helsinki, Finland, 148pp.
- P35** Hulme, M. (1999) Global warming **Prog. in Phys. Geogr.**, 23, 283-291..
- P34** Hulme, M. (1999) Future climates of the UK: the UKCIP98 climate change scenarios **Town & Country Planning**, 68, 12-13.
- P33** Hulme, M. and Parry, M.L. (1998) Adapt or mitigate? Responding to climate change **Town & Country Planning**, 67, 50-51.
- P32** Hulme, M. and Jenkins, G.J. (1998) **Climate Change Scenarios for the United Kingdom** UKCIP Technical Report No.1, Climatic Research Unit, Norwich, UK, 80pp.
- P31** Hulme, M. (1998) Is global climate changing? **Suffolk Wildlife Trust** Spring/Summer Issue, pp.14-15.
- P30** Hulme, M. (1998) Global warming **Prog. in Phys. Geogr.**, 22, 398-406.
- P29** Hulme, M., Parry, M.L., Arnell, N. and Nicholls, R.J. (1997) Trouble is on its way **The Guardian**, 2 December, p.17
- P28** Hulme, M. and Parry, M.L. (1997) Whistling in the dark **New Scientist** 6 December, p.51
- P27** Hulme, M. (1997) Global warming **Prog. in Phys. Geogr.**, 21, 446-453.
- P26** Bohn, L. and Hulme, M. (1997) El Niño's: the heartbeat of climates **The World Today**, 53, 306-309.

- P25** Ringius,L., Downing,T.E., Hulme,M., Waughray,D. and Selrod,R. (1996) Climate change in Africa – issues and regional strategy **CICERO Report 1996:8**, Oslo, Norway, 154pp.
- P24** Hulme,M. (ed.) (1996) **Climate change and southern Africa: an exploration of some potential impacts and implications** CRU/WWF, Norwich, UK, 103pp.
- P23** Hulme,M. (1996) Global warming **Prog. in Phys. Geogr.**, 20, 222-22
- P22** Hulme,M., Conway,D., Kelly,P.M., Subak,S. and Downing,T.E. (1995) **The impacts of climate change on Africa** Stockholm Environment Institute, Stockholm, Sweden, 46pp.
- P21** Hulme,M. and Zhao,Z. (1994) Century-scale series of annual and seasonal precipitation anomalies for East Asia pp.911-917 in, **Trends '93: A compendium of data on global change** (eds.) Boden,T.A., Kaiser,D.P., Sepanski,R.J. and Stoss,F.W., ORNL/CDIAC-65 Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge,
- P20** Hulme,M. , Raper,S.C.B. and Wigley,T.M.L. (1994) An integrated framework to address climate change (ESCAPE) and further developments of the global and regional climate modules (MAGICC) pp.289-308 in, **Integrative assessment of mitigation, impacts and adaptation to climate change** (ed.) Nakicenovic,N., Nordhaus,W.D., Richels,R. and Toth,F., IIASA Collaborative Paper Series CP-94-9, Laxenburg, Austria, 669pp.
- P19** Hulme,M. (1994) Using climate information in Africa: some examples related to drought, rainfall forecasting and global warming **IDS Bulletin**, 25, 59-68
- P18** Hulme,M. (1994) Global warming **Prog. in Phys. Geography**, 8, 401-410
- P17** Hulme,M. (1994) Century-scale time series of regional rainfall anomalies for Africa pp.964-973 in, **Trends '93: A compendium of data on global change** (eds.) Boden,T.A., Kaiser,D.P., Sepanski,R.J. and Stoss,F.W., ORNL/CDIAC-65 Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, Tenn., USA, 984pp.
- P16** Jones,P.D. and Hulme,M. (1993) The climate: temperatures, windiness and sunshine duration pp.3-10 & 65-73 in, **Impacts of mild winters and hot summers in the UK in 1988-1990** (eds.) Cannell,M.G.R. and Pitcairn,C.E.R., HMSO, London, 154pp.
- P15** Hulme,M. (1993) Global warming **Prog. in Phys. Geogr.**, 17, 81-91
- P14** Hulme,M., T.M.L.Wigley, T.Jiang, Z-C.Zhao, F.Wang, Y.Ding, R.Leemans and A.Markham, (1992) **Climate change due to the greenhouse effect and its implications for China** WWF International, Gland, Switzerland, 57pp. (English and Chinese versions).
- P13** Hulme,M. (1992) International conference on the physical causes of drought and desertification **Disasters**, 16, 185-188.
- P12** Wigley,T.M.L., Jones,P.D., Hulme,M. and Kelly,P.M. (1991) Recent global temperature changes: ozone and aerosol influences pp.194-202 in, **Proceedings of the 16th Annual Climate Diagnostics Workshop, October 28 to November 1, 1991**, NOAA/CAC, 451pp.
- P11** Hulme,M. (1991) Global warming **Prog. in Phys. Geography**, 15, 310-318
- P10** Hulme,M. (1991) Environment and climate change: the challenge for China **Disasters**,

15, 282-285

- P9** Hulme,M. (1991) Rainfall monitoring and forecasting in Sudan pp.70-75 in, **Sudan: environment and people, Conference papers (Vol.2)**, SSS(UK)/University of Durham, 329pp.
- P8** Hulme,M. (1990) Rainbows in the greenhouse **Third Way**, May, 22-24.
- P7** Hulme,M. (1990) The application of seasonal rainfall forecasts for Africa **Disasters**, 14, 171-172.
- P6** Hulme,M. (1990) Global climate change and the Nile Basin pp.59-82 in, **The Nile: resource evaluation, resource management, hydropolitics and legal issues** (eds.) Howell,P.P. and Allan,J.A., Centre of Near and Middle-Eastern Studies, SOAS, London, 238pp.
- P5** Hulme,M. (1988) The Tropical Easterly Jet and Sudan rainfall, 1968-85 **Climate Monitor**, 17, 122-133.
- P4** Hulme,M. (1987) Some hydrological consequences of secular climatic change in White Nile Province, central Sudan pp.35-46 in, **African resources: monitoring and appraisal, Vol.1** (eds.) Millington,A.C., Binns,J.A. and Mutiso,S.K. Reading Geographical Paper No.96, University of Reading, 57pp.
- P3** Hulme,M. (1987) **Annotated bibliography of the climate of Sudan** Cambridge Occasional Papers No.5, African Studies Centre, Cambridge, 54pp.
- P2** Hulme,M. and R.P.D.Walsh (1985) A generation of drought that triggered disaster **New Scientist**, 1451, 11
- P1** Hulme,M. (1982) A new winter index and geographical variations in winter weather **J. of Meteorology** (UK), 7, 294-300