

# Historical Climatology Meeting

University of Sussex

September 10<sup>th</sup> 2014

## Attendees

[Dr. George Adamson](#) - Lecturer in Geography, Kings College London

[Prof. Rob Allan](#) - International ACRE Initiative, Project Manager, Met Office Hadley Centre

[Ms Fiona Carroll](#) - Climate Communication and Met Office Academic Partnership (MOAP) Manager, Met Office Hadley Centre

[Dr. Vinita Damodaran](#) - Senior Lecturer in History and Director of Centre for World Environmental History, University of Sussex

[Prof. Georgina Endfield](#) - Professor of Environmental History University of Nottingham

[Dr. Mick Frogley](#) - Senior Lecturer in Physical Geography, University of Sussex

[Prof. Nick Groom](#) - Professor of English, University of Exeter

[Mr Matthew Hannaford](#) – Doctoral student, Department of Geography, University of Sheffield

[Dr. Erica Hendy](#) - Lecturer in Biogeochemical Cycles, University of Bristol

[Prof. Rob Illiffe](#) - Professor of Intellectual History and History of Science, director of Centre for Intellectual History and Centre for Early Modern and Medieval Studies, University of Sussex

[Dr. Julie Jones](#) - Lecturer in Climatology, University of Sheffield

[Dr. Neil Macdonald](#) – Senior Lecturer, Geography and Planning, University of Liverpool

[Prof. Roy MacLeod](#) – Emeritus Professor of Modern History University of Sydney

[Prof. David Nash](#) – Professor of Physical Geography, University of Brighton

[Prof. Martin Todd](#) - Professor in Climate Change, University of Sussex

[Dr. Yi Wang](#) - Lecturer in Climate Change, University of Sussex

Those listed above met at the University of Sussex with the aim of developing an understanding of the current state of studies pertaining to the environment and climate change in various disciplines, and the opportunities for addressing imbalances and omissions opened up by the coming together of academics from fields as disparate as English and climate modelling.

After a short introduction from [Rob Allan](#) (Met Office) – who chaired the meeting – in which he laid out a discursive vision for the day's proceedings, [Vinita Damodaran](#) (CWEH, Sussex) spoke briefly of the day as an interdisciplinary brainstorming session aimed at forming a kind of 'field guide' for the study of climate in the past, whether this be linked to livelihood issues, the history of climate science or reconstructions of climate in the recent or more remote past. Discussions should look to reveal how sources used by those working in different disciplines might help to fill the gaps in those traditionally relied upon in each area, while consideration should be given to issues of engagement and dissemination across disciplinary and institutional boundaries, in terms of both education and impact at the level of policy formation.

In a round table session attendees described their work and their interest in the subject of historical climate studies.

[Nick Groom](#) described his interest as stemming from a drive to understand the changing cultural status and meaning of the weather, developed most fully in his book *The Seasons*. Currently he is looking to fund a project looking at the cultural, literary and artistic impact of the 1816 eruption of Mt. Tambora, considering how contemporary artistic representations and developments can be keyed into scientific narratives and how these, and the events they describe, transform cultural understandings of what such events *mean*. How an understanding of culture and cultural development, and linkages to material developments more traditionally described in quantitative terms can help to build a much deeper, richer and more experiential understanding of climate change in the past present and future.

[Fiona Carroll](#), Communications Manager at the Met Office's Hadley Centre, described her role in ensuring the dissemination of the Met Office's academic output, primarily to government bodies, and handling institutional links with a number of universities. She also confessed a personal interest in the meeting rooted in her own study of both the sciences and classics. Ms Carroll described interesting work being carried out on climate reconstructions in the classical period based on migration of populations. A particular piece of work was noted in which an unusually cold winter recorded in the military journals of Alexander the Great's Macedonian armies is corroborated by modern tree ring data.

[Julie Jones](#) described her work on climate reconstructions – recently looking to reconstruct ENSO – working from ship log books as well as new developments within the Department of Geography at Sheffield University focussing on societal level responses to climate change. Recently, Dr Jones' work has extended into the high latitudes of the southern hemisphere which has led back into investigations in the tropics as knowledge of linkages between tropical and Antarctic weather systems begin to be better understood.

[Dr. Yi Wang](#) described his background in palaeo-environmental studies, particularly abrupt climate change in the mid-Holocene. He is involved in climate modelling and looking at the possibility of such abrupt changes occurring in the future.

[Neil MacDonald](#) described his work on historical hydrology which, for the most part, has involved the transformation of qualitative descriptions into numerical data, giving figures for frequency of various hydrological events in Britain. Very long series of instrumental data augmented with documentary sources have been used to identify spatial and temporal patterns for high-intensity hydrological

occurrences. More recent work has extended into temperature reconstructions, again over long time scales, at high temporal resolution (days) in very localised areas, i.e. for specific towns. These are used to help build understanding of drought variability around the UK. Plans exist to extend coverage to include wind speed and air pressure.

[George Adamson](#) described his multiple interests within the field, ranging from climate reconstructions from documentary sources, climate history and culture to the assessments of impact on human populations. Working with Prof. Mike Hulme at King's College London, Dr Adamson is involved in the building of a research and teaching centre looking to engender understanding and appreciation of the necessity of considering cultural impacts and societal level understanding of the meaning of climate, climate change and extreme climate events. Dr Adamson argues that science itself is insufficient to describe climate and its impacts, and that work on livelihoods and vulnerability in the past are central to the climate change argument in the present and for the future. Dr Adamson's research is focussed on cultural impacts of climate in western India, a current bid looks to extend this into southern India, while he is also working on an incomplete manuscript by environmental historian Richard Grove focusing on El Nino.

[David Nash's](#) work focuses on historical climate reconstruction using documentary sources working mainly in southern and east Africa, and more recently in India with Dr Adamson. Sources have been primarily missionary archives and colonial reports. Missionary archives are seen as of particular value in reconstructing temperature, annual and cold season variability and drought and flood cycles. A recent Leverhulme award has extended the African side of the project into Lesotho, Malawi, Madagascar and KwaZulu Natal.

[Mick Frogley](#) described his work on paleo climate reconstructions in the Holocene, having in the past used mainly lake sediment proxies in mountainous regions of South America, most notably in the Peruvian Andes. In recent times his interests have begun to extend into monsoonal regions. Dr Frogley's work is extremely interdisciplinary, often involving archaeologists and palaeologist.

[Matthew Hannaford](#) of Sheffield University outlined his work on reconstructing climate – specifically precipitation variability – in Southern Africa from ship's log books and palaeo sources. A social dimension is added to this via the study of Portuguese and early British colonial sources. In particular Mr Hannaford's work looks to identify ways in which we can conceptualise climate variability using this as a case study.

[Dr Andrea Jenku](#), a sinologist working at SOAS, described a strong resistance to even the consideration of environment and climate on social, cultural and political history in China. In an attempt to overcome this resistance Dr Jenku describes her intention to set up a database of Chinese natural disasters, data for which has been collected by various centres but remains disparate.

[Vinita Damodaran](#) described how her work had traditionally focused on indigenous communities in eastern India, famine and vulnerability, documentary sources for climate change, forest cover, deforestation and water issues since 1800. More recently a paper on the 1770 famine has linked this event with El Nino. Dr Damodaran is also Director of the UK Arts and Humanities Research Council (AHRC)- funded network *Meteorological and Botanical History of the Indian Ocean 1600-1900* of which some of those present are members. This network looks at networks of plant and knowledge

exchange throughout the Indian Ocean region and with European metropolitan centres as well as wider issues of climate, climate variability and social impact.

[Prof. Roy MacLeod](#) described his background in the history of science and empire and his more recent interest in security studies, partly in terms of resources but also in the study of how conflict affects landscape, how man-made disasters, such as WWI leave sometimes permanent marks on the non-human environment in which they take place.

[Dr Erica Hendy](#), a palaeoclimatologist working at Bristol University described her focus on coral cores, which can yield climate data with sub-annual resolution, looking primarily at the tropics and currently South America.

[Dr Martin Todd](#), speaking on behalf of Climate Science and Society research group based at Sussex, described their work on understanding the fundamentals of climate variability and climate processes in the contemporary period, using strong observational data sets to suggest responses to current climate issues. In a social dimension, the group look to both assess and project impacts of climate change and incorporate deeper understandings of climate processes such as decadal variability into conceptions of climate change and proposed responses. Recent work has looked at the east Africa paradox in which climate models project an increase in precipitation while records show a distinct decrease in the region. The resolution of this paradox is a central question for climate science today. Documentary records are seen as one possibility for pushing back the instrumental record and therefore gaining some perspective on decadal and other period climatic trends, hopefully moving toward a resolution of the paradox. The group's work on eastern and southern Africa looks at links between climate, conflict and migration, again considering issues of social and political impact the geographic focus of this work means that monsoonal conditions are of great interest.

[Alex Elliott](#), a doctoral student in the philosophy department at Sussex described his interest in how humanities could, or perhaps should, be engaging with issues of climate change

[Rob Iliffe](#), a professor of the history of science at Sussex working on the period 1600-1800 described his involvement in a number of very large scale internet based data projects looking to collect together and open up its use by historians and climate scientists, datasets which are currently often only partially known and disparately held. Prof. Iliffe described his interest in the nature of the pay-off achieved when such resources are brought together and what the extension of access means for the study of such subjects. As a central figure in the Indian Ocean network of which Dr. Damodaran is director, Prof. Iliffe described the work done there in beginning to collect data and rescue vulnerable sources, he also outlines the network's vision of a large scale digital architecture providing access to something approaching an exhaustive collection of climate and environment sources for the region since 1600.

[Prof. Rob Allan](#) described his work at the Met Office's Hadley Centre where for the last 7 years he has led the international ACRE (Atmospheric Circulation Reconstructions over the Earth) initiative. ACRE collects together masses of historical global surface instrumental weather observations over the last 200 or so years that are then assimilated into dynamical global weather reconstructions or reanalyses by ACRE's prime US partner – the 20<sup>th</sup> Century Reanalysis (20CR). The various 3D weather variable fields created by 20CR can be plotted and re-visualised producing a searchable 3D map of weather over time, with sub daily resolution. The focus has been on instrumental data due to the

desired resolution, though reconstruction via various proxies, including documentary sources could in future potentially be used to extend such baselines of the weather. The primary purpose of such a meeting from Prof. Allan's point of view is to break down disciplinary boundaries which have led in many cases to ignorance of huge amounts of work and data from those strictly defined by their fields of study.

[Dr Georgina Endfield](#) described her focus on qualitative climate records having worked on numerous projects with others present such as David Nash on southern Africa, plus Neil MacDonald and Rob Allan on extreme weather in Britain.

## Discussion

The discussion was begun by [Vinita Damodaran](#) who suggested that the purpose of the meeting was to identify synergies, common themes and gaps which exist at disciplinary boundaries, to explore questions of how climate reconstructions and models inform understandings of documentary data and vice versa. [George Adamson](#) spoke of his hope that studies of the interconnections between climate and society would go on to inform policy and, in particular, see the development of new paradigms over the current ones, which he described as very short-termist. He observed that many climate change narratives look back only as far as the 1980s – one of the goals of this group, should be looking to convince policy makers of the relevance of historical climate studies and in so doing contribute to the development of more appropriate responses.

[Andrea Jenku](#) asked what might be the question that bound the group together. Suggesting that a specific question or questions – rather than the desire to work together which could be justified retrospectively – should be the basis of the group's existence. [George Adamson](#) suggested that a unifying question might be the manner in which historical climate studies can be applied to the issue of climate change and how cultural historians might be able to insert themselves into the climate change debate? A lack of literature addressing this question is noted.

[Rob Allan](#) suggested that rather than addressing a particular question, the purpose of this coming together might be the exploration of the contribution such an interdisciplinary group might make to the narrowing of the gap between climate studies in the humanities and the sciences. That is, to explore what happens when such a group comes together. It was, therefore, the identification of a project which might act as a suitable test-bed, rather than of a specific academic question which was the business of this meeting.

On the subject of culture [George Adamson](#) outlined [Mike Hulme's](#) (of KCL)'s opinion that the climate debate is beyond solving by the improvement of scientific models or understanding. Dr Adamson argued that anybody remaining unconvinced of the reality of anthropometric climate forcing will not, at this late stage, be convinced by better models or smaller error bars, furthermore, progress in this direction will do nothing to solve climate change. Rather, climate change has to be understood as a cultural and societal phenomenon as much as a scientific one. The core questions must therefore be re-framed. At the most basic level we must ask what climate *is*? It is a scientific description, it is the nature of the seasons, but it is also an historically contingent cultural construct. To make progress we must understand its meaning in the present. To this [James Cullis](#) (a doctoral student at Sussex

University) added the necessity of an understanding of the historical development of this construction and in turn what this means for our understanding of documentary climate records. It was noted therefore that an appreciation of the manner in which this contingent notion of climate might develop in the future must inform our preparation for dealing with a transformed climate. [David Nash](#) identified these cultural aspects of the study of climate as a particular strength in the UK, contrasting this with a more quantitative approach in continental Europe. [Roy MacLeod](#) pointed to the founding of an Environmental Humanities course at Princeton as evidence of a movement in this direction in North America.

Linking to a discussion of work based on more quantitative sources and data, [Fiona Carroll](#) noted the value of historical work in questioning climate models, and that – given the paucity of instrumental data – proxy and documentary sources have a central role to play in forcing the reassessment of assumptions about climate, variability, and as a consequence, pushing climate modellers to refine what they produce.

The difficulty – [Neil MacDonald](#) observed – lies in convincing 'hard scientists' of the usability of qualitative documentary data, the use of indices i.e. 1 to 10 of wetness, wind speeds, tides etc. can be of great help in bridging this gap. Julie Jones observed that the current discussions over the use of documentary sources almost exactly mirror those which took place over the use of proxy sources a decade ago. [George Adamson](#) suggested that the lack of appreciation of the value of documentary sources to scientific investigation was a product of the particular route by which the study of historical climate had developed through the 1980s and 90s, that having been, in general, with the aim of informing the study of history by the incorporation of scientific knowledge rather than to inform science by the use of sources traditionally studied from within the humanities.

[Martin Todd](#) questioned whether the group might not make an important contribution to this debate and produce a workable methodology by collating geographically closely matched documentary and instrumental sources. It was observed that many people had worked on such methodologies and that, while significant for some, this was not of great interest to all those present. [Vinita Damodaran](#) suggested decadal variability as a suitable topic by which the particular value of various disciplines and interdisciplinary links might be explored.

[Nick Groom](#) then outlined his thus far embryonic plans for a conference, or perhaps larger project, based around the 200<sup>th</sup> anniversary of the 1816 eruption of Mt. Tambora, and the ensuing 'year without a summer'. The anniversary is seen as an opportunity to bring together climate modellers and climate historians with scholars working on the literature and art history of the period to look at climate and day-to-day weather, and how cultural experience and expectation then informed thinking about not only climate but also broader issues of national identity and the heritage and history of weather. By way of example it is noted that, if, as might be expected, the 1810s gave Dickens his experience of cold winters, then the eruption is etched deep in our literary and cultural heritage via Dickens' *A Christmas Carol* which was so important in the formation of the Christmas we now have in Britain, not only in visual and climatic terms but also of commercialisation, Christmas cards, the resurrection of old traditions and a societal level feeling of guilt toward the poor and downtrodden. Media interest will peak in 2016 and therefore such a topic is seen as a particularly appropriate basis for a case study to explore the potentials of the group.

[David Nash](#) suggested that rather than just organising a conference that a funding bid should be made around the idea of Tambora to allow for exploration of disciplinary tangents. He further noted that work on the 1810s in Europe is plentiful and that it might therefore better suit the regional expertise of the group to focus on what was happening elsewhere in the world at that time. Tambora is seen as an example of a topic amenable to investigation by all three of the major categories of scholarly expertise in the group, climate science, climate reconstruction and social and cultural history. The common interest is therefore seen as residing in what happens at the interfaces of these areas. It is seen as a somewhat arbitrary choice but a convenient and useful one.

[Vinita Damodaran](#) questioned the wisdom of choosing to focus on a volcanic eruption, when links to wider climate variation are so poorly understood. [Erica Hendy](#) was similarly concerned noting that ice core records have shown that there was another large tropical eruption preceding Tambora around 1808-09, as a result of which global temperatures had already dropped. [George Adamson](#) noted the possibility of consulting Dutch colonial records held in The Hague and, as an aside, the link between El Nino, the Monsoon and volcanic activity suggested in a recent paper by Adamson and Nash.

[Martin Todd](#) stated that while the 1816 eruption was clearly of historical interest, its relevance for current debates is less obvious, such is the cultural gap to be navigated in studying responses to it. The topic was seen as an opportunity to educate on the influence of volcanoes, on past variability, on the impact such events can have on culture and politics, and yet, the manner in which it might inform the contemporary climate change debate remains unclear. Concern is raised that while the topic may do a good job of representing the group, the focus should perhaps be on identifying a vital task or question only answerable via such an interdisciplinary approach.

[George Adamson](#) countered that while the study of historically contingent responses to climatic events cannot solve issues surrounding climate change, neither can the refinement of scientific models. However, the study of Tambora (for example), as a cultural event, can inform current climate narratives and may represent a new avenue by which sceptical positions unassailable to science may be confronted. In the massive complexity of any issue surrounding climate we are confronted by major epistemological barriers, never more so than when trying to look into the future. However history may represent a vantage point from where, in the case of Tambora, we can look back over 200 years of the fallout from that event, it is only from this perspective that we can gain any appreciation of the range of possible outcomes of major climatic events. [Nick Groom](#) gave the example of the distinct apocalyptic element identifiable in C19th ideas of nature and how work on such trends can help to build understanding of the contingency of current narratives and therefore to see issues more clearly.

[Rob Allan](#), [Roy MacLeod](#) and [Neil MacDonald](#) noted their support for a project on Tambora seeing it as a suitable case study – perhaps one of a series of such studies – through which a methodology for an interdisciplinary approach might be developed. [Rob Allan](#) also observed that this year is the centenary of Shackleton's Antarctic voyage, this combined with the recent discovery of some new log books from Shackleton's ship, suggest another possible case study. As an example of the kind of extra coverage timely projects can illicit, [Julie Jones](#) described work on icebergs which received a huge boost in terms of visibility around the 2012 anniversary of the sinking of the Titanic.

[Rob Iliffe](#) suggested that there might be some mileage in looking at how people and institutions respond to climatic events through the built environment (referring to Rohan d'Souza *Drowned and Dammed*), how big European building or infrastructure projects have intervened in 'third world' environments and how unforeseen negative repercussions have been dealt with via further building. The conversion of qualitative, documentary material into quantitative data in order to appeal to climate scientist and modellers is seen as severely limiting and restricts debates to the questioning or confirming of current narratives. Perhaps then the aim of such a group should be the development of a methodology which explores the links between climate and various systems of knowledge such as botany, zoology, geology, religion etc. i.e. between religious narratives of apocalypse and global climate? In order to create a richer and more complete narrative than is available via the consideration of quantitative data alone.

[David Nash](#) suggested that the goal of a network might be the publication of three 'agenda-setting' review papers looking at the way the studies of climate and society are, and have the potential to be, linked. This done, a number of case studies might be identified with which to test and extend these ideas. The idea of a network is put forward under the aegis of which these reviews and case studies might be produced and published.

[Georgina Endfield](#) suggested that a networking grant might be used to fund three workshops which looked at methodologies, communication and key questions. Through this process the particular value of an interdisciplinary approach would become apparent. Precedence for such a process is sited in the form of a project on Mexican climate history in which both [Georgina Endfield](#) and [David Nash](#) were involved. Finally it is noted that a network need not address any particular 'central question', networking is rather about identifying potential gaps in knowledge and building capacity in advance of the launch of much larger projects.

With the idea of forming a network broadly agreed upon, a number of comments were made on the subject of what might be required to ensure its success; [Rob Iliffe](#) spoke in favour of forming links with scholars of the history of medicine, which, prior to the invention of germ theory, was entirely occupied with exploring links between health and environment. [Vinita Damodaran](#) suggested the consultation or involvement of holding institutions such as the British Library, Kew Gardens, the Forest Research Institute in India and the Botanical Survey of India among others with whom the Centre for World Environmental History (CWEH) at Sussex University have strong links (there is already an Memorandum of Understanding between the Met Office, Sussex University and the British Library which might be of use). [David Nash](#) spoke of the necessity of speaking to scholars working not only at the disciplinary interface but also pure climate scientists and pure cultural historians in order to understand the needs of academics working in these fields. It was suggested that holding a meeting at the Met Office might help to counter the problem [Rob Allan](#) identified of persuading meteorologists to attend. Another at a University and one at the Royal Geographical Society were suggested in order to gain wider coverage. In this regard the timing of major conferences was raised, as these might present the opportunity of making sessions available to a wider audience.

After these discussions the question of funding came to the fore. The often narrow remit of funding bodies was marked out as a central problem for interdisciplinary studies. [Martin Todd](#) noted that NERC focus funding on what they consider 'state of the art science' and are unlikely to be interested



in encouraging collaboration with the humanities. However, if it can be shown that models could be improved by consulting documentary data, if debates over the 'hockey stick graph' or the east Africa paradox (a decrease in precipitation in a region all models suggest should be experiencing a wetter period) could be contributed to in a significant way by such records then funding from NERC would be forthcoming – these are top priority scientific questions. Decadal variability is another key subject upon which documentary data might be able to shed significant light, especially where instrumental data is missing or patchy, that is assuming robust methodologies can be developed.

[David Nash](#) and others suggested that either Leverhulme or AHRC would be the most appropriate body to approach for network funding, [Roy MacLeod](#) suggested MacArthur or another large American foundation, while it was also noted that the process of pursuing funding via such a body is often much simpler than it is with UK research councils, project officers will speak frankly about likelihood of gaining funding while projects are judged purely by the extent of their alignment with the fund's own aims.

[George Adamson](#) mentioned an EU call, now closed but likely to be repeated, which was aimed specifically at encouraging interdisciplinary collaboration. [Erica Hendy](#) spoke in favour of EU training networks and specifically of gaining funding for doctoral training in order to nurture a generation of scholars who understand and are able to exploit the advantages of interdisciplinary work, developing methodologies to address knowledge gaps which exist at the intersections. [Julie Jones](#) supported the idea of pursuing funding for doctoral training, perhaps following an initial period of discussion during which suitable projects were to be identified. On the subject of AHRC funding, their particular priorities of communication – with various 'publics' – and of risk are noted.

[Neil Macdonald](#) noted the importance of effectively targeting funding bids and an awareness of perhaps unexpected sources of funding. He described how a hydrology study looking at a mid-Wales reservoir which provides much of the domestic water supply for middle England was rejected by NERC, but later, after presentation at a conference, was funded by the Seven Trent water company as it allowed them to develop more effective water management systems and therefore avoid the fines associated with failure to manage heavy loads.

*At the close of the meeting, the idea of forming a network was agreed upon, [George Adamson](#) volunteered to lead the funding bid from King's, assuming wide-ranging support from others within the network. This suggestion is seen positively across the group. It is understood that Dr Adamson will complete a draft application which will then be circulated and worked upon in collaboration.*