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Claire LOWRIE

Nicole TARULEVICZ

Fiona WILLIAMSON
Singapore Management University, fwilliamson@smu.edu.sg

Charmaine H. LAM

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Multiethnic elites and the management of tropical heat in colonial Malaya, circa 1870s–1930s

Claire Lowrie
University of Wollongong, Australia[1]

Nicole Tarulevicz
University of Tasmania, Australia

Fiona Williamson
Singapore Management University, Singapore

Charmaine H. Lam
New York University, United States of America

Abstract

This article considers the responses of multiethnic urban elites to living with tropical heat in colonial Malaya by analysing attitudes towards the meteorological study of temperature, commercial cold storage and hill stations. A transcolonial and transimperial approach is used to illustrate that interest in managing and monitoring temperature was slower to develop in Malaya compared with other tropical colonies. The article also considers how access to methods of ameliorating heat was shaped by colonial hierarchies based on ideas of race and class.

Introduction

This article analyses perceptions of tropical heat amongst colonial Malaya's multiethnic urban elites during the late nineteenth and early twentieth centuries. It does this by studying the development and uptake of three technologies designed to measure, or to mitigate, the effects of heat. These include: the meteorological study of temperature, commercial cold storage and hill stations. We use a transcolonial and transimperial frame of reference to consider how the educated elites of Malaya learnt about developments in meteorology, refrigeration and hill stations through the exchange of knowledge with colonists based in British India and the American Philippines. [2]

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The article also considers the circulation of scientific and popular ideas about climatic heat from Britain and China.

Monitoring temperature, pursuing cold storage and building hills stations only became a priority in Malaya during the 1920s and 1930s. In contrast, in colonies such as India, the Netherlands East Indies and the Philippines, such technologies were in use from the mid- to late- nineteenth century. This article explores how specific local factors related to climate, culture and economy ensured that measures to study or mitigate heat were slow to develop in Malaya. It also considers how access to methods of ameliorating heat were shaped by colonial hierarchies and ideas of race and class.

The territory loosely referred to as "British Malaya" consisted of distinct administrative entities that spanned the islands of Singapore and Penang and the Malay peninsula. Our focus is on the communities that resided in the urban centres of Singapore, Penang and Kuala Lumpur. Singapore and Penang were part of the Straits Settlements colony, which also included Malacca and was established in 1826. Kuala Lumpur was (from 1895) the administrative centre of the Federated Malay States. These cities were marked by their ethnic diversity, with large Malay and Chinese communities, significant Indian populations and very small "European" (mainly British) and Eurasian communities.[3] The group that colonial administrators described as "Eurasian" were descendants of marriages between Portuguese, British or Dutch men, and Indian, Malay or Chinese women. Hailing from India and Malacca, this community settled in Singapore, Penang and Kuala Lumpur from the nineteenth century. Individuals classified as Eurasian in the colonial census also included the children and descendants of more recent unions between European men and Asian women resident in Malaya.[4]

English-speaking Straits-born (*Peranakan*) Chinese; Overseas Chinese (*Huaqiao*) merchants; Malay sultans; Arab and Indian traders; and prominent Eurasians enjoyed particular privileges. Individuals from these groups were able to advise the administration, sit on semi-governmental committees, or work in the middling levels of the civil service.[5] Prominent members of the Asian and Eurasian communities mingled together for business and pleasure. In doing so, they forged cross-ethnic alliances and connections, developing vibrant multiethnic and multilingual urban communities.[6] During the interwar era, these communities demonstrated their modernity and sophistication through the uptake of technologies designed to master the tropical climate.

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The relationship between climate and colonialism has been a long-standing theme of historical geography and histories of science and medicine. Scholars have documented how geographers, scientists and doctors of the late nineteenth century divided the world and its peoples into distinct tropical and temperate zones. David Woodward and Brian Harley, for example, show how early maps represented latitudinal climate "zones" based on the ideas of Aristotle or Strabo. These ideas permeated nineteenth-century work, from the racially spurious "climate energy zones" of Ellsworth Huntington to the more culturally neutral isoline images developed by Alexander von Humboldt and others.[7] Views from the former perspective, however, proved some of the most destructive, with advocates of climatic determinism maintaining that the temperate climate fostered the development of a "white race" whose intellect, morality and drive was supposedly superior to Asian and African peoples of the tropical zone.[8] This perspective, it has been argued, helped to justify colonial invasion and expansion across the globe and fuelled a high level of climate anxiety amongst (and about) European colonists' resident in the tropics.[9] Historians of medicine such as David Arnold, Mark Harrison and Warwick Anderson undertook pioneering work on the impacts of these colonial ideologies on the idea of the body which, by the early twentieth century, pointed to tropical medicine and scientific hygiene as a means to foster human health and progress in tropical regions.[10] Other work by scholars including environmental historian James Beattie and colonial historian Dane Kennedy, broadened this scope to make climatic determinism an established part of colonial historiography.[11] This article takes a new approach to the history of climate and colonialism by moving beyond environmental determinism to instead provide insights as to how ideas about climate, and practical adaptions to climate, shaped the experience and knowledge of tropical living for well-to-do residents of Singapore, Penang and Kuala Lumpur.

Strategies to manage heat while maintaining racial prestige shaped the everyday lives of colonial elites in Malaya. Research on the hill stations of Southeast Asia has emphasized the importance that European colonists attributed to these retreats not only as refuges for climate ravaged bodies but also as material expressions of colonial dominance.[12] In a similar vein, scholars of tropical architecture have analysed how Anglo-Indian bungalows served as an architectural statement of colonial power while also incorporating passive cooling features, such as verandas and hallways, to maximize airflow.[13] As historians of domestic service have shown, the British colonial elites who resided in those bungalows employed a multiethnic staff of domestic workers

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to further illustrate their status. These workers also provided immediate relief from the heat, with Indian *punkah* pullers operating fans to cool sweaty British bodies (just as they did in India) while Chinese houseboys brought refreshing drinks.[14]

This article builds on that literature by considering not only how British colonists perceived and responded to climate in terms of health and hygiene but also in the respect of meteorological science. Moreover, we expand this understanding to upper and middle-class Asian and Eurasian communities. To do so we combine a diverse range of archival material, analysing meteorological reports produced by British doctors and scientists alongside the accounts of ordinary city dwellers published in the local Chinese and English-language press. A sense of diverse everyday experiences of heat is also provided by drawing on oral histories and letters written by multiethnic elites to the boards of the Fraser's Hill and Cameron Highlands Development Committees.

Our sources suggest that the study of meteorology was primarily dictated by the British colonial government in Malaya, although workers engaged in the study of climate comprised people from all cultures and backgrounds. The preoccupation with mitigating impacts of heat was one shared by wealthy residents of Malaya by the 1920s. Like British colonists, Asian and Eurasian elites visited cafes to consume "the soothing cool of iced beverages" and ice-cream as they lazed under electric fans.[15] The elites that we discuss in this article include very wealthy Chinese merchants and the top British administrators, such as the Colonial Secretary who, in 1924, received an annual salary of $26,400 (Straits).[16] We are also interested in those on more modest incomes who had enough disposable income for luxuries such as ice cream or a hill station holiday. In 1924, the annual salary of members of the ("European only") Malayan Civil Service ranged from $18,000 for top ranked officials to $4,200 for junior civil servants.[17] Asian and Eurasian clerks working in the civil service earned far less, with a maximum salary of $2,280 and a minimum of $840.[18] In comparison to the wages of these white-collar workers, for domestic servants an annual salary of between $150 to $200 was the norm.[19] Income was not the only factor that determined access to cooling technologies. Despite their lobbying of colonial officials and complaints to the press about their need for respite from lowland heat, Asian and Eurasian elites were denied access to the government-owned bungalows built atop Fraser's Hill (Bukit Fraser) and had only limited access to Penang Hill and the Cameron Highlands. Still, at least those with the means could gain a degree of respite. While labourers, such as servants, were present on the hill stations they were there to work rather than for recreation.

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The central argument of this article is that perceptions of heat and the attempts to ameliorate it provide unique insights into how urban elites drawn from the major ethnic groups in British Malaya shared information and had similar socio-economic aspirations that were reflected in patterns of consumption. Indeed, for Asian and Eurasian elites, class often trumped ethnic solidarities. At the same time, however, ideas about race divided the community and led to genteel protests by those seeking to expose the racial prejudice and discrimination that underpinned British colonial rule.

The gradual development of colonial weather science

Observations of temperature were made early on by English East India Company military personnel at Malacca (1809), Penang (1822) and Singapore (1820). Their interest stemmed from the ambition to create a series of new settlements within the Malay Archipelago to challenge Dutch rivalry in the region. The taking of temperature was a factor in considering the suitability of the new environment for the European body and for economic productivity.[20] Medical investigations into the weather were undertaken by John Caswall, of the Madras Medical Service and by Doctors Robert Little and T.M. Ward who compiled medical topographies for Singapore and for Penang respectively.[21] They concluded that the environment of the Straits Settlements was relatively healthy but warned that extreme heat and weather-induced toxic miasmas could present a danger to the health of the colonists.[22]

The "medical meteorology" practiced by Little and Ward involved collecting and analysing vast quantities of statistical information.[23] By the late 1840s, the statistics that had been collated over the first few decades of the colony's existence were used to debate a very different question: the possibility of human-induced temperature change. In Malaya, the accelerating pace of clearing virgin jungle for commercial plantations was clear to anyone who had lived there for a decade. Deforestation elicited much comment and even fear that the continued destruction of tropical forests would cause a "sultry atmosphere and dreadful droughts".[24] Temperature changes were also discussed in the context of urbanization. John Crawfurd, a medical doctor, amateur scientist and previously British Resident at Singapore, had argued in 1855 that the temperature of Singapore town was rising. This, he asserted, was "ascribable no doubt, to the increase of buildings, and to the country having been cleared of forests".[25]

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The discussion of whether environmental change was affecting local temperature and rainfall reached a peak in the Straits Settlements after 1865, when Alexander Maingay, a Malacca-based surgeon and amateur natural historian, published his views on the issue in a government report. Maingay claimed that "the ruin of the forest" resulted in "a general elevation of the temperature" and "an increasing prevalence of long droughts."[26] The report resulted in a heated debate in the local press. The Straits Settlements government only became interested in the relationship between land clearing, urbanization and temperature, following a major drought in 1877. We know today that the 1877 weather conditions were a result of a protracted El Niño event that created drought conditions across much of the world but at the time, it led to speculation that land-use change within Malaya itself might have been an instigating factor.[27] As a consequence, large areas of remaining virgin and secondary forest across Singapore island were reserved by the government during the 1880s.[28]

Despite this promising beginning, the study of heat in Malaya was less marked than that of rainfall. This reflected in part the established global scientific literature but also local concerns. Much of the work related to atmospheric temperature change during the nineteenth century was restricted to studies of Europe and America, and they tended to focus either on small-scale changes inspired by deforestation (though here still the predominant concern was desertification, not temperature change) or, following Louis Agassiz's work on the Ice Age, millennia-scale changes.[29] Temperature in meteorology was rarely considered a changeable component of large climatic systems, instead tending to be conflated with latitudinal studies of mean global averages. The one exception was the discussion of sunspot activity's influence on temperature, following work undertaken by Joseph Baxendell, Piazzi Smyth, George Airy and Wladimir Köppen among others, but this narrative had little impact on Malayan discourse.[30] This disjunct between temperature as it related to atmospheric studies and temperature within the field of meteorology, lasted until at least the 1930s, with the latter predominantly remaining a statistical exercise.

There were also specific local circumstances that stymied in-depth research in relation to temperature in British Malaya. The idea that Malaya was a place of "eternal summer" with year-round uniformity of temperature due to its proximity to the equator, ensured there was limited interest in meteorological research.[31] When it was discussed, temperature change was spoken of as temporary and always on local scales, responsive to specific environmental destruction and deforestation. Alternatively, basic statistical analysis of temperature was only undertaken, as we

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have shown, for medical research exploring the relationship between disease and weather. As a result, research on temperature in Malaya lagged behind other tropical colonies.[32] There was also little interest in establishing dedicated meteorological facilities, such as the British had introduced in India in 1875 and in Hong Kong in 1883.[33] In the Spanish Philippines, systematic measurement of temperature emerged even earlier in 1865, facilitated by the work of Jesuit scientists.[34] The development of full-scale meteorological services in these colonies was driven by the desire to predict and mitigate typhoons which were disastrous for shipping and trade.[35] In Malaya, while the monsoon season brought heavy rain and regular floods, there was no threat of typhoons.[36] The focus of scientists was thus on measuring rainfall with little consideration of other meteorological factors. This focus made economic sense. Malaya's revenue was based largely on a commercial crop plantation, especially rubber.[37] The tin industry, concentrated around Perak, also relied heavily on water, especially after the introduction of hydraulic mining techniques. In this context, a drought spelled disaster.[38]

It was not until the aviation industry emerged in the late 1920s that temperature research became a priority in Malaya. This impetus came in part from the actions of Chinese elites, such as Eu Tong Sen, a Penang-born businessman, and S.Q. Wong, a prominent lawyer from Singapore, who were enthusiastic supporters of the development of the aviation industry. In 1926, they guaranteed 2.5 million Straits dollars for the development of an air service from Singapore to Calcutta and onto Europe.[39] The development of civilian aviation in Malaya fuelled the need for more reliable meteorological predications to ensure safe journeys for travellers. Commercial aviation also facilitated temperature research by providing the opportunity to make widespread upper-air observations.[40]

As well as the impetus provided by the aviation industry, the development of meteorological services in Malaya was driven by actions of colonial administrators such as George Maxwell. In his role as Chief Secretary for the Federated Malay States, Maxwell called for investment to ensure more consistent readings of temperature and other weather-related phenomena.[41] This led to the establishment of a Meteorological Branch within the Malayan Survey Department in 1927 and the subsequent development of a dedicated meteorological department in 1929, located in Kuala Lumpur. Equipment for measuring and reporting temperature was installed at Mount Faber in Singapore in 1929, an observatory first established in the 1880s. In the same year, an additional seventeen fully equipped stations were built across the coastlines and through

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the interior of the Malay Peninsula.[42] Illustrating the significance of meteorology to aviation, in 1934 the Mount Faber Observatory was replaced by a new observatory at Kallang airfield in Singapore. The headquarters of the Meteorological Service were also relocated to Singapore. [43]

Though they are rarely mentioned in the records, Chinese and Eurasian workers may have been involved in meteorological observation. The Survey Department, which was responsible for the Meteorological Branch between 1927 and 1929, was part of the Malayan Civil Service. The Civil Service was renowned for admitting only "natural-born British subjects of pure European descent". But Asian and Eurasian staff were able to enter the professional branches of public service in a subordinate role.[44] The colonial Blue Book of 1931 includes the details of clerks employed in the Survey Department such as Teo Choon Eng, who worked in the department between 1928 and 1930, and Tay Tee Tee, employed from 1928.[45] While it is not clear if they engaged in meteorological work, we do know that when Maxwell began work to establish a standalone Meteorological Department one of his chief concerns was recruiting "the right class of Asiatic observer".[46] In the lead up to the headquarters being moved from Mount Faber to Kallang airfield in 1934, the Meteorological Service advertised for candidates to enrol in a meteorological observation training course. The scheme was reported to the Chinese reading public in *Nanyang Siang Pau*, a Chinese-language newspaper published in Singapore and circulated throughout British Malaya. The article explained that thirty of the sixty-seven recruits would be hired for the new observatory with the remaining candidates guaranteed employment in other towns and cities.[47]

Regardless of whether Asian and Eurasian professionals engaged in weather research, their communities took an active interest in it. By the mid-1930s developments in meteorological science were regularly reported in Singapore's Chinese language newspapers as were incidences of "excruciating" heat waves in Siam (Thailand), the US and the UK.[48] *Nanyang Siang Pau* and *Sin Chew Jit Poh* were read by educated Chinese elites as well as being distributed in Chinese schools. *Sin Chew Jit Poh* was the more commercially successful of the two, with circulation figures of around 5,000 during the 1930s.[49] In June 1934, the *Malaya Tribune*, an English-language newspaper directed at the Asian and Eurasian communities of Malaya, reproduced a long scientific report on the impact of temperature and humidity on "light" and "dark-skinned" people.[50] Given the *Malaya Tribune* was, by the 1930s, the most widely read newspaper in Malaya, with circulation figures in excess of 18,000, this suggests the relationship between climate and health was of interest to the broad multiethnic reading public.[51] As the following discussion of cold

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storage and hill stations illustrate, a desire to ameliorate the impacts of heat was also a concern of Malaya's Asian and Eurasian residents in this period just as it was for the British colonists.

Singapore Cold Storage: a slow journey to controlling temperature

Writing about ice in Hawaii, Hi'ilei Julia Hobart notes that "a taste for coldness, developed globally in the nineteenth century as a practice of refreshment".[52] However, such practices developed slowly in the Straits Settlements and the Federated Malay States. As one resident of Singapore wistfully put it in 1841 "American Ice would be a very luxurious addition" to local dining.[53] It took more than a decade for his wish to eventuate, and its realization was short lived.

In 1854, Hoo Ah Kay, a respected Chinese merchant better known by the name "Whampoa", and his Scottish business partner, Gilbert Angus, established Singapore's first icehouse. The building was located alongside the Singapore River ensuring that the blocks of Boston ice brought into the colony by the Tudor Company could be easily unloaded from the ships.[54] Whampoa and Angus projected 1,000 pounds of ice would be sold each day to commercial interests and consumers eager to cool their drinks and extend the life of perishable goods. Market demand was less than half that and the icehouse was forced to close in 1856.[55] The residents of Singapore, it seems, had yet be convinced of the desirability of ice.

Five years later, the Tudor Company launched its own ice business in Singapore. Frederic Tudor's company dominated the ice business at the time, shipping ice across the world for great profit, including regionally.[56] The Tudor Company had made a success of selling ice to British India, selling 100 tons to the residents of Calcutta alone as early as 1833.[57] Yet the Singapore venture failed with the company cutting its losses after less than twelve months in operation.[58] It was not until 1879 that a reliable supply of ice to the island was secured with the opening of the Singapore Ice Works. Even so, ice continued to be viewed as a "luxury" item. This changed in 1890 with the entry of the New Singapore Ice Works. The use of new technologies that lowered the costs of production and the price to "three-fifths of a cent a lb.", enabled the company to convince middle-class householders across Singapore that ice was "a necessity in tropical climates".[59]

The domestic consumption of ice expanded into the twentieth century but it was not embraced in all households. Khatijun Nissa Siraj, a member of a wealthy Indian family based in

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Singapore, recalled that her father had an icebox imported from England sometime in the late 1920s. The family used it to keep drinks, rather than food, cool.[60] May Wong, a prominent Chinese American, also purchased an icebox around that time but noted that many households in Singapore did not have this technology in their homes, let alone electric or kerosene refrigerators, which were available to purchase from the late 1920s.[61] Rather than using ice, a 1923 article published in *Nanyang Siang Pau* advised frugal Chinese householders how to keep milk fresh by storing it in a cool dark corner covered by damp cloth.[62]

Like the domestic take up of ice, commercial use, in the form of cold storage facilities, took a long time to develop. In reference to the rise of American refrigeration, Jonathan Rees notes that "unlike other industries where new inventions sometimes create sudden changes that transform societies overnight, almost all the technological changes associated with the creation of the cold chain came gradually."[63] This is certainly true in the case of Singapore. As one merchant put it in conversation with the Editor of the *Singapore Free Press and Mercantile Advertiser* in 1900, the lack cold storage in Singapore "is a disgrace to the place! You are simply behind the world".[64]

The impetus for commercial cold storage emerged from the desire of British colonists to consume beef and lamb from Australia. For the British in Malaya, like European colonizers elsewhere, maintaining the culinary traditions of the metropole was viewed as critical to maintaining racial prestige.[65] Some cattle were raised locally, largely by Indian farmers, mainly for milk. But the quality of the milk was poor, and worsened by adulteration with impure water.[66] When local animals, or those imported from Siam, were slaughtered, they had to be consumed quickly rather than hung, aged and dried, which also contributed to a dislike of their taste for British consumers and the desire for an alternative meat supply.[67]

British residents lobbied for the establishment of a government funded cold storage facility so that frozen meat could be brought into the colony from Australia.[68] Consumers in Singapore were aware that the American military in Manila were already receiving regular shipments of cheap Australian meat via specialist "refrigerating ships." In 1902, the Civil Commission of the Philippines passed an Act establishing a Bureau of Cold Storage, which had responsibility for the ice plant and was to provide frozen Australian meat to the broader population. Yet, though the developments in Manila were noted with "envy" in Singapore's local press, the government was slow to develop cold storage facilities. [69] This may have reflected the reality that, as with ice, the market for frozen meat was small. While the British desired beef and to a lesser extent lamb and

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butter, the Chinese community consumed pork and the Malay community chicken. Both commodities were reared and slaughtered locally.[70] Fish was widely consumed by the Indian, Malay and Chinese communities. But many fish products were boiled, dried or salted and did not require refrigeration.[71]

An early scheme to bring frozen meat to Singapore was developed by the Queensland Meat Export and Agency Company of Brisbane in 1902. In response, the Singapore Cold Storage Company was registered in June 1903. All 24,000 shares in the company were taken up over the course of a three-week period in 1903, signalling growing belief in the profitability of cold storage.[72] The first shipment arrived in March of 1905 and was reported with excitement not only in the newspapers of Singapore but also in Penang's *Straits Echo*, a newspaper produced by and for the Asian and Eurasian communities.[73] This suggests the novelty of access to beef and mutton was of interest to the broader community of multiethnic elites.

The delivery of modern imperial cuisine did not quite live up to expectations. In addition to the promised meat, consumers had been anticipating a "large consignment of fruit, including apples, oranges, grapes, plums, pears, and lemons; new potatoes as well". The ship, however, had travelled with only one frozen compartment that was filled with meat.[74] When the meat finally became available for purchase, consumers complained about its quality and the chaos that surrounded its distribution, including fighting and the mauling, by Cold Storage staff, of a Chinese cook employed by a well-known civil servant.[75] This underscores the fact that while the desire of British colonists for meat facilitated the emergence of commercial cold storage, it was Chinese cooks labouring over hot domestic stoves that fulfilled these wants.

Despite the delays and challenges in the establishment of the Cold Storage Company, it ultimately brought a sustained culinary change for Singapore and Malaya more broadly. Refrigeration allowed colonial elites to maintain culinary traditions – hams, turkey and plum pudding for Christmas – and for the establishment of new culinary traditions driven by innovations in industrial production and global trade.[76] Following the opening of a causeway linking Singapore with the Malaya Peninsula in 1909, the company opened new stores in Kuala Lumpur and Penang. Refrigerated train cars were used to distribute the frozen meat and dairy products to residents of those cities.[77] By the 1920s a variety of cuts of meat were available for purchase although they were relatively expensive. The *Straits Times*, whose readership at that time was largely confined to the European community, reported that market price of sirloin roast and leg of mutton in Penang

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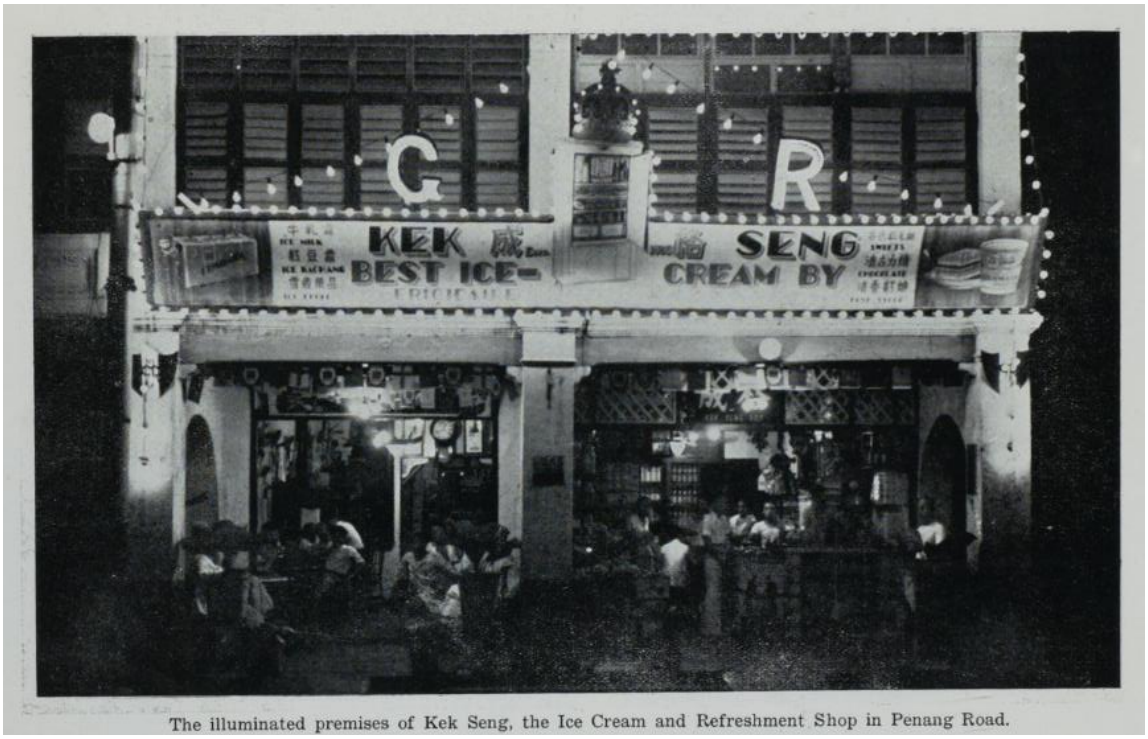
was in Straits dollars, 65cents per pound. The newspaper compared this with prices in New South Wales (Australia) where the government had fixed the cost of sirloin roast and leg of mutton to 7 pence per pound, the equivalent of 25cents in Straits dollars. Dairy was also sold at luxury prices. In Penang, Cold Storage charged $1.15 for a pound of butter. In Melbourne, consumers paid the equivalent of 57cents (Straits) per pound.[78]

In 1923, the company started their own line of ice cream sold through Cold Storage Creameries.[79] They did so to take advantage of the growing popularity of American-inspired iced drinks and ice cream that were promoted as a means to alleviate heat.[80] Unlike beef, Cold Storage ice cream was a relatively affordable luxury item, costing $1.25 (Straits) per quart brick in 1926 (roughly equivalent of one litre).[81] Well-to-do Chinese residents of Singapore celebrated the arrival of the On Lok Yuen franchise in 1927. The company, which was established in Hong Kong, was famous for its ice-cream and iced drinks that (the company claimed) were sure to provide "refreshing relief to the scorching heat of Singapore".[82] For residents of Penang, the Kek Seng café served a similar purpose (Figure 1).



The illuminated premises of Kek Seng, the Ice Cream and Refreshment Shop in Penang Road.

Figure 1: Kek Seng Ice Cream and Refreshment Shop, Penang Road, Penang, 1937, National Archives (UK).

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Hand-made ice-cream had been sold by hawkers from the mid-nineteenth century but by the twentieth century was associated with disease.[83] The Singapore Cold Storage Company, along with other producers of factory-made ice cream, differentiated their product by emphasizing the high-standards of hygiene involved in its production and by promoting the value of the sweet as a source of "refreshment" and nutrition for children.[84] Regardless of whether or not parents found the claims convincing, children from a variety of ethnic backgrounds recall regularly consuming ice cream during the interwar years. They did so at local cafes or by purchasing Cold Storage ice cream from purveyors that travelled on tricycles selling ice-creams door-to-door and announcing their arrival with a bell.[85]

The long wait for a modern Malayan hill station

Alongside everyday ways of managing heat through ice and cold storage technologies, access to hill stations was considered essential for the health of British residents in Malaya. By the interwar years, multiethnic elites of Malaya were also demanding access to these sites for recreation and respite from the climate. Their insistence on hill station holidays challenged the systems of racial segregation that underpinned the administration of the hill stations as well as the principles of British rule in Malaya.

The concept of using mountain retreats to escape seasonal heat was first embraced in China by the Qing dynasty. From 1703, the Kangxi Emperor (1654–1722) commissioned the construction of a complex of palaces and gardens at Rehe (now Chengde) for use by the court during the hot summer months.[86] Colonial hill stations were developed during the nineteenth century in British India and the Netherlands East Indies with white colonists advised to seek regular convalescence at these highland retreats for physical and psychological respite from the "persistent heat and exhausting humidity of urban centres".[87] By the beginning of the twentieth century, the Americans in the Philippines and the French in Indochina had also constructed hill stations.[88] The development of hill stations in Malaya was much slower.

Penang Hill (shown in Figure 2) was the first area to be used for this purpose but it was not developed in any formal sense until the 1830s when roads and some houses were built.[89] During the 1850s, plans emerged to develop Gunong Pulai in Johore for use by the residents of Singapore but little happened.[90] In the 1890s, the British established Maxwell Hill, a small resort, on the Larut

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Hills of Perak overlooking Taiping. However, the site "consisted of little more than a bungalow or a cluster of bungalows on a hill-top".[91]

Figure 2: A couple relaxing in grounds of the Cragg Hotel, Penang Hill, circa 1900. From the collections of the KITLV Digital Media Library.

The lack of local facilities led to an increasing outpouring of comment in the *Singapore Free Press and Mercantile Advertiser* – a newspaper targeted at British colonists.[92] By the 1920s, complaints about the lack of a suitable modern hill station in Malaya became commonplace and were frequently expressed in the *Malaya Tribune* and its associated publications, suggesting that Asian and Eurasian elites also saw the value of a stint in the hills.[93]

The unwillingness of the administrators of the Straits Settlements or the Federated Malay States to invest in hill stations related in part to the enormous costs associated with such retreats. The building of Kennon Road up to Baguio in the Philippines, for example, had cost the American administration more than four million US dollars by 1905.[94] In Penang, construction of the Hill Railway had to be stopped in 1919 after $18,395 (Straits) had been spent at a time of food shortages and price hikes in the regional staple supply chain.[95] In any case, colonial officials in Malaya may not have been convinced that the local climatic conditions warranted such a heavy investment. Hill

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stations in India, the Netherlands East Indies, the Philippines and Indochina were considered essential in the context of "beastly hot" summer conditions.[96] In the Straits Settlements and the Federated Malay States, the heat was constant rather than seasonal.

After a faltering start, plans for modern hill stations came to fruition with the establishment of Fraser's Hill in 1922 and the Cameron Highlands in 1930. These hill stations were developed as a direct result of the efforts of two high-ranking colonial administrators. As Chief Secretary of the Federated Malay States (1920–1926), Sir George Maxwell initiated the process by establishing committees made up of bureaucrats to advise on the development of the Fraser's Hill and then the Cameron Highlands. He also made the building a hill stations a federal budget issue where previously it had been the responsibility of the states.[97] It is significant that Maxwell was also one of the instigators behind the creation of the Malayan Meteorological Department. Issues of climate, it seems, were a priority for him. Sir Cecil Clementi, in his role as Commander in Chief of the Straits Settlements and High Commissioner of Malaya from 1929 to 1934, saw the Cameron Highlands project through to fruition.[98]

For Maxwell and Clementi, the financial costs association with hill stations were partly offset by the need to provide convalescence for veterans of the First World War. On Fraser's Hill, three bungalows, called Red Cross House, Victory House and Convalescent House, were built to accommodate returned servicemen and their families.[99] The investment of the colonial administrations in hill stations also coincided with, and was shaped by, significant demographic change within the British community as greater numbers of women began residing in Malaya.[100] Some of those women brought children with them while others started families following their arrival in Malaya.[101] The prevailing scientific wisdom of the era held that white women and children were particularly susceptible to the perceived deleterious impacts of a tropical climate.[102] The calls for providing a hill station became viewed as an "urgent necessity" in order to prevent family breakup and financial strain amongst families forced to send women and children home for respite from the climate.[103]

The opening of Fraser's Hill in 1922 failed to meet the expectations of the British in Malaya. It was also subject to regular criticism in the pages of the *Malayan Saturday Post* – a subsidiary of the *Malaya Tribune* and the mouthpiece of the well-to-do Asian and Eurasian communities. Fraser's Hill, developed at great public expense, could only accommodate small numbers of people, with civil servants given priority access to the nine government bungalows

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that had been built on the site by 1926. The rules stipulated that civil servants earning $4,200 (Straits) per annum or more were entitled to rent a bungalow for a maximum period of one month. This meant that even the lowest paid British officials could gain access to the site. The costs associated with convalescing on Fraser's Hill were very high. Renting a three-bedroom bungalow for one month cost $140 – that is, forty percent of the monthly salary of a civil servant on $4,200.[104] As Asians and Eurasians were prevented from entering the civil service in an official capacity, they were effectively barred from accessing the hill station. The only accommodation available to Asian and Eurasian visitors was the Bishop of Singapore's house called "The Retreat," pictured in the postcard shown in Figure 3. It is significant that this postcard was produced by Ah Joon who ran the only general store on Fraser's Hill. While the Chinese community faced barriers to using the hill station for leisure and respite, members of that community provided essential goods and services to the British colonists who visited. A Chinese "cook-caretaker and a boy" were also employed to service each bungalow and to attend to the guests that visited.[105]

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Figure 3: Postcard showing “The Retreat” produced by Ah Joon Shopkeeper General Store, Fraser's Hill, 1931.

In April 1925, a prominent Chinese mining entrepreneur and philanthropist, Yap Tai Chi, tested the colour bar in effect on Fraser’s Hill. Yap wrote to the Superintendent responsible for Fraser’s Hill to request access to a government-owned bungalow. Yap, who had a cultivated a close relationship with high-ranking British colonial officials, probably expected a favourable response to his request.[106] Instead, the Superintendent wrote back claiming that no accommodation was currently available. It was only after two further requests that Yap was finally informed that “the Bungalows at Fraser’s Hill are mainly for Government Officials and Europeans”.[107] An incensed Yap complained to the British Resident of Selangor asking for clarification on “whether any respectable Asiatic could be given permission to enjoy the previlege [sic] in occupying the Bungalows at Fraser’s Hill for a short period”.[108] The Secretary for the Resident avoided responsibility, explaining that it was the Federal Government (not the Resident) who made decisions in relation to Fraser’s Hill.[109]

Yap’s attempt to access the bungalows took place in a context of longstanding debate in the press about the exclusion of Asian and Eurasian elites, as well as regular British colonists (as opposed to civil servants) from Fraser’s Hill.[110] In response, Maxwell and then Clementi became key advocates for the development of the large plateau of the Cameron Highlands as a hill station where a broader range of the community might gain respite.[111] However, here too racial exclusions applied with the government sponsoring the development of two private schools for European children only.[112]

Criticism of the racial exclusions that operated on the hill stations came to a head in 1933 when the Straits Settlements government put forward a proposal to improve the road to Penang Hill, opening further sites for settlement. The scheme was promoted by Clementi as a means of providing work to unemployed Chinese labourers in the context of the Great Depression. It was opposed by Lim Cheng Ean, a prominent Straits Chinese (*Peranakan*) lawyer serving his second term of appointment on the Legislative Council.[113] Lim rejected the scheme because it offered no benefit to the tax paying members of the Chinese community. As he pointed out, from the inception of Penang Hill “the Chinese were not allowed up the hill – the top was reserved for Europeans”. The reasoning, according to Lim, was that “coming from a warmer climate they would not want to go to the top”. This was, in Lim’s words, “entirely wrong”.[114] As the Chinese-language press

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noted, political and military elites of mainland China convalesced at Kuling (Guling), located atop the Mountain Lu, as well as on Qingdao Island (Xiao Qingdao), during the hot summer months.[115]

It was not only Chinese elites advocating for access to Malaya's hill stations. In 1930, a Sinhalese man, A.C.F. de Silva wrote to the Cameron Highlands Development Committee asking for land at Tanah Rata to build a rest house. As he put it "there is a Rest House solely for the use of Europeans, but no such thing exists for the respectable and middle-class Asiatic population".[116] It was not until 1934 that this issue was partially addressed with the opening of the Eastern Hotel at Tanah Rata. The hotel was built with Chinese capital and the explicit goal of offering accommodation to Asian visitors who were barred from the Cameron Highlands Hotel. Still, most tourists booking hotel accommodation in the Cameron Highlands were European and writers to *Nanyang Siang Pau* continued to complain that they could not make use of Malaya's hill stations to escape the heat.[117]

Conclusion

This article has taken a new approach to the history of climate and colonialism by moving beyond scientific debates about environmental determinism. We have sought to provide insights into how ideas about climate, and practical adaptions to climate, shaped the everyday lives of well-to-do residents of Singapore, Penang and Kuala Lumpur. Wealthy residents of these cities exchanged information and shared strategies for coping with the heat that they considered commensurate with their class status. We have shown that the process of monitoring and managing tropical heat in Malaya was in some respects slow to develop. It was not until the 1920s and 1930s that temperature became a topic of sustained public and scientific observation. It was also in this era that multiethnic elites residing in Malaya's urban centres came to see the consumption of iced drinks and ice cream as an antidote to heat-induced fatigue. But while class privilege facilitated access to some cooling technologies, the racial discrimination that underpinned British rule in Malaya meant that others remained out of reach. Chinese and South Asian elites saw the potential health benefits offered by a hill station holiday and lobbied the government for access to these sites. They faced considerable challenges in accessing hill stations due to prevailing perceptions that these spaces should be preserved for the climate respite of white colonists. Even so, multiethnic elites had some capacity to stay cool in a hot climate. In contrast, Chinese, Malay and Indian workers had little time to

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contemplate the impact of heat on their bodies and limited access to the technologies that made it more bearable.

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[1] For correspondence: clowrie@uow.edu.au, nicole.tarulevicz@utas.edu.au, fwilliamson@smu.edu.sg or charmainehlam@gmail.com

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