Special Issue: Building back better? Lessons from disaster recovery in the Caribbean

Disaster Aid? Mapping historical responses to volcanic eruptions from 1800-2000 in the English-speaking Eastern Caribbean: their role in creating vulnerabilities

Jenni Barclay, Richie Robertson, Jazmin P. Scarlett, David M. Pyle, and Maria Teresa Armijos

Abstract

This paper uses volcanic eruptions on Montserrat and St. Vincent to explore the role that British colonial rule in the past and near past (1800-2000) has played in response to and recovery from hazardous events, and in turn, the influence that the nature of the hazards has on these responses. We show that systemic vulnerabilities to natural hazards have been created by inadequate aid responses and longer-term chronic problems and demonstrate that hazard impacts are compounded by these vulnerabilities. Vulnerabilities could be reduced by analysing integrated hazard impacts to generate mitigative measures across hazards and identify actions that more closely match timescales of political decision-making. Integrating local knowledge and experience into risk analysis will identify the most effective use of aid resource, ahead of emergencies. Finally, coupling aid for long term development with emergency response would improve outcomes and adaptation to longer term vulnerabilities in immediate rebuilding and short-term recovery.

Keywords: disaster aid, Eastern Caribbean, hazards, recovery, response, volcanic eruptions

1. Introduction

The Eastern Caribbean consists of a largely volcanic chain of islands between 10°N and 20°N straddling the boundary between the Atlantic Ocean and the Caribbean Sea (Figure 1). Despite numerous hazards, the islands were attractive to explorers and then to colonisers due to their rich natural resource potential; primarily for growing sugar cane.

Several historical compilations of natural hazards exist; either to document individual hazards and their impacts across the Caribbean (Lindsay et al., 2005; Mulcahy, 2008; Chenoweth and Devine, 2012; Robson, 1954), to document the influence of multiple-interacting hazards for single island states (Lewis, 1984; Boruff and Cutter, 2007; Wilkinson et al., 2016; Barclay et al., 2019) or to understand the historical role of colonial governance in and around emancipation in shaping responses to hazardous events (Webber, 2018, 2019).
However, the extent to which the relationship between topography, tectonics, governance and markets have created conditions where it becomes difficult to recover from the repeated and variable impacts of multiple hazards across the islands is relatively under explored. Here, we use volcanic eruptions on Montserrat and St. Vincent to explore the role that the British colonial rule in the past and near past has played in response and recovery to hazardous events, and the influence that the nature of the particular hazard has on these responses.

We examine how and why aid (both monetary and in kind) was requested; the conditions of its release and its influence on recovery. This allows us to analyse the extent to which economic,

political and social contexts influence the adoption of preparedness measures and their role in creating vulnerability to future events. Volcanic eruptions are typically agents of multiple hazards that create multiple impacts, however, we also examine the influence of other natural hazards in shaping the response to the volcanic eruptions or unrest. Our longitudinal historical position allows us to understand how and why lessons were learned over time; or when mistakes were repeated, what contributed to their repetition.

The aim of this paper is to identify practices and norms that had a negative influence on capacities to cope with the challenges of an eruptive crisis, particularly those that appear resistant to the specificity of time and place. We use this to understand how vulnerabilities are created and amplified and also how this recurrent cycle of risk creation might be broken. Whilst risk is socially created, our integration of the physical aspects of eruptions with aid-related responses makes it easier to understand the facets of hazard behaviour that encourage or create weak political or social responses or preparedness. So, a final goal is to understand how these historical lessons might be applied to improve future response both during and in anticipation of hazardous events.

2. A reflection on the materials and methods: their influence on understanding vulnerability

We use primary data from archived correspondence and administrative records. We have examined declassified records from the Colonial Office, and the original correspondence that made it into the 'Blue Books' for St Vincent, as well as contemporary newspaper articles (from electronic and national archives in the United Kingdom and St Vincent). In understanding historical responses to hazardous events, rich insights are gained as a consequence of the thorough recording of interactions and correspondence required of colonial administration in the Eastern Caribbean. Since the Public Records Act of 1958 in the UK most correspondence between colonial administrators, the UK government and the (literate) population was kept and released to the National Archives, 50 then 30 years after their writing.

However, it is comparatively rare to see direct records of the thoughts and motivations of all sectors of the population. In particular, those who were most adversely affected by hazardous events are rarely found in direct conversation but rather mediated and interpreted by the voices of landowners, line managers, administrators and decision-makers. So, we particularly focused on those records that provided glimpses into the views and actions of those sectors of the population that could not directly record their thoughts and opinions, including the original (uncensored) correspondence in the Blue Books, and correspondence files containing 'offline commentary' remarks and comments pencilled into the margins. Where possible we used several different sources to corroborate any views and to understand divergences of opinion. This is because our main goal is to understand the extent to which the actions of those with power and privilege created outcomes that mitigated any disaster in the short term and whether they created or dissipated long term future risk by changing vulnerabilities (economic, social, physical or systemic) for **all** of the population. We also draw on the work of other historical scholars of the Caribbean who have attempted to understand the influence of politics and prejudices brought to bear in documentation surrounding the lived experiences of the indigenous peoples, African-Caribbean and indentured population in the Eastern Caribbean (e.g. Bonham Richardson, 1992; Webber, 2018, 2019; Honychurch, 2017). While we acknowledge that our analysis of vulnerabilities using the historic record is not complete, by focussing on multiple sources

that specifically document both physical and wider social impacts, we try to acknowledge the partisan viewpoints and recognise the limits of interpreting the data, including the prejudices applied in the original documentary evidence. A full list of our Archival Sources is given in Appendix 1.

We begin by considering the trajectories of social, cultural and political context, and the near continuous interruptions arising from all hazard events. We then use this to compare the detailed responses to four volcanic eruptions separated by > 180 years. We use this to illuminate the enduring negative influences on capacities to cope and recover from hazardous events and consider how these might be addressed in the future.

3. Analysis

3.1 Political Context during the 19th and 20th Century: governance, infrastructure and the creation of vulnerability

The English (later the 'British' after the Union of the Parliaments in 1707) began to settle in the Lesser Antilles from 1623 when Thomas Warner began the Colony of St Christopher (Richardson, 1992). The momentum for permanent settlement came from the production of agricultural crops for export, trade and profit. This remained the main motivation behind further British settlement and development throughout the Lesser Antilles, amplified by the need to demonstrate colonial power and tempered by territorial skirmishes, primarily with French colonisers. 'Possession' of these islands was uneven in time and space (Fig. 1 and Table 1). 17th Century colonies were established in St Kitts in 1624; Nevis in 1628, Montserrat and Antigua in 1632 (Beckles, 1998).

Some of these colonies briefly changed hands with the French because of British-French Wars but remained primarily in British hands (Table 1). By contrast St Vincent, Dominica, Grenada, St Lucia were earlier French colonies (where some authors have inferred a less aggressive relationship between the invading settlers and the indigenous population (Stinchcombe, 1996; Honychurch, 2017) but changed hands in the late 18th Century as the 'ceded' territories (e.g. 1763, St. Vincent, Grenada and Dominica passing into British hands, St Lucia to French) or 'consolidated British territories' (e.g. St Kitts, 1783 as part of the Treaty of Versailles) and (again) as a final outcome of the British-French Wars that ended in 1815).

The apparent political stability of from 1800-2000 was offset by frequent changes in governance arrangements and the long-term consequences of an economic model that relied on enslaved and indentured labour, followed by slow social change in response to emancipation in 1834 (summarised in Table 1). Tensions between resident settlers and the British colonial government, complicated by absentee landowners (resident in the UK but dependent on island profitability) are well documented elsewhere (e.g. Sires, 1957; Murdoch, 1984; Richardson, 1992; Gibson, 2014). In the context of hazardous events one of the critical outcomes from these tensions are the changes to governance structures. These controlled which groups possessed the agency to act (on behalf of whom), and on what timescale in response to hazardous events. By the beginning of the 19th Century each of the islands typically possessed an un-elected Governor and nominated Council (representing and acting on behalf of the UK Monarch and Government) and an elected assembly (entirely consisting of high status settlers, with independent money-raising powers). The quality of governance varied and had strong impacts on the efficacy of this system.

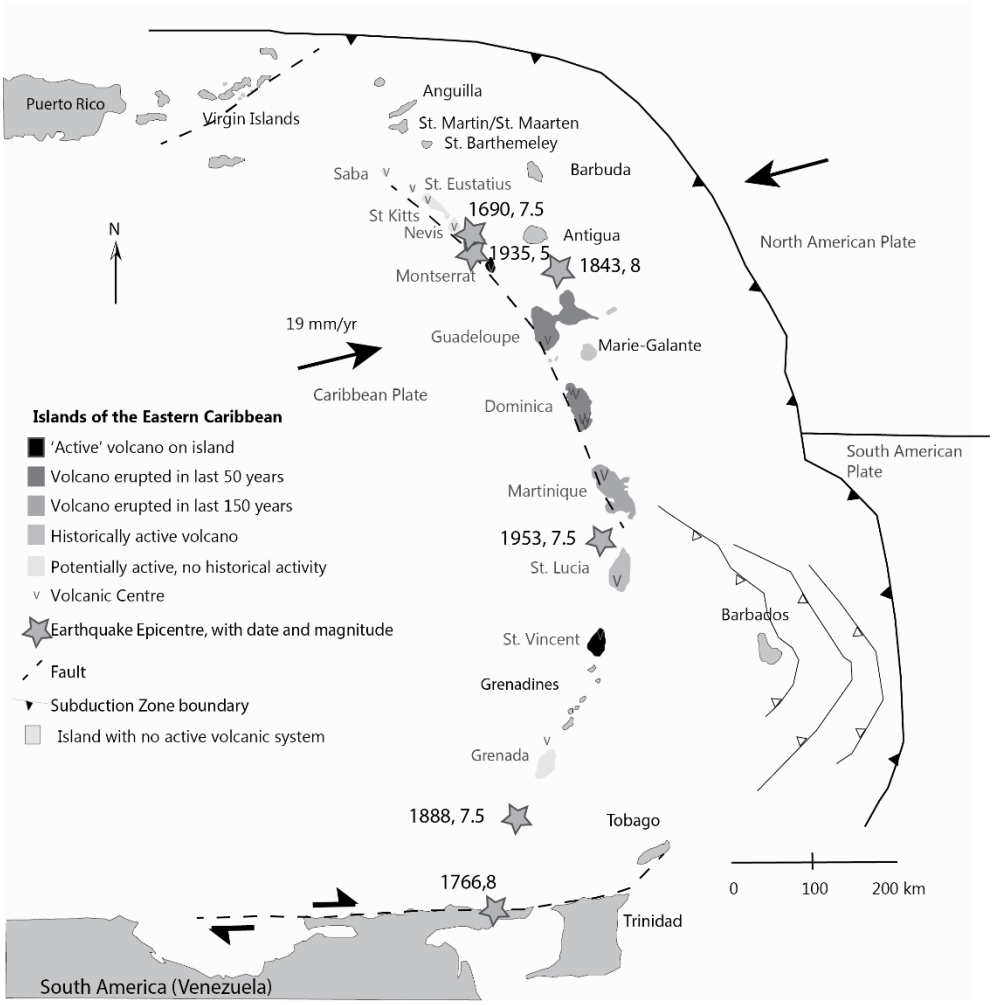

Figure 1 Key geographic, tectonic features and past tectonic and volcanic activity of the Eastern Caribbean. Eruption dates and centres from (Lindsay et al., 2005). Block and plate boundaries, relative plate motion from Smythe et al. (2015). Black arrows denote plate motion.

Table 1. Key Changes in governance and colonisation for Montserrat and St Vincent. Administrative timings from Banton, 2008.

Island	**Montserrat**	**St Vincent**
Indigenous population (Island name)	Caribs (Alliougana)	Kalinago (Hairouna) and Garifuna
British colonisation	1632	1763
Other Colonising Forces	France 1660; 1782-1783	France 1719-1763; 1779-1783
Independence	UK Overseas Territory	1979
Governor, nominated Council, elected assembly	1971-present	1800-1833; 1969-1979 (as associated state of UK)
Federation (Windward or Leeward Islands)	Leeward Islands Colony (1671-1833); British Leeward Islands (1833-1958); West Indies Federation (1958 0- 1962)	British Windward Islands (1833-1959); West Indies Federation (1959 – 1962)

Crown Colony (largely unelected representation)	Part of Leeward Islands Crown Colony	1877 (Legislative Council est., 1925)
Universal suffrage	1951	1951

Differences of opinion about the use of enslaved labour between the 'liberal elite' in the UK (where more individuals or interest groups were strongly minded to support emancipation) and the 'planter classes' (Richardson, 1992) on island and in the UK meant that there was generally a move to tighten remote control on island governance, increasing unelected representation and decreasing local free citizens' capacity to make choices with central budgets as mis-trust grew between these groups (Stinchcombe, 1996). Power and money were thus disseminated through federated governance and the establishment of 'Crown Colonies' (with local Administrators reporting to Governors responsible for several islands, who in turn represented the interests of the UK; Table 1). We will explore the important role this structure had to play in the timing and nature of aid in the face of current and future hazard events.

Through the late 19th Century and early 20th Century there was some recognition of the need for improved living and economic conditions, and for self-governance on the islands. Following the two World Wars, the drive for independence increased as a democratic response to universal suffrage (Table 1). This prompted some changes that created a system preparing itself for economic independence and self-governance but again the efficacy of the system at the time has been the subject of critical scrutiny; for example Stinchcombe (1996) notes : '*the racist oligarchic parliamentarianism of the British islands, backed by a more or less non-governing Colonial office, provided stability and some civility, but its tutelary democracy had provided more tuition than democracy, and not much of either*'. The islands examined here briefly became part of the West Indies Federation in 1958 and then St Vincent became independent through the 1970s. Montserrat remains a UK Overseas Territory to this day.

3.2 Social and Cultural Context during the 19th and 20th Century: circulation of 'aid', land entitlements and creating vulnerability

The troubled relationship between land, ownership and profit was created at an early stage of Caribbean colonisation in Montserrat with the establishment of a 'planter society' by the mid-17th Century (Fergus, 2001), largely drawn from Irish or Anglo-Irish elites (Ryzewski and Cherry, 2015). The peak of sugar profitability occurred between 1730-1760 fuelling a rapid rise in an enslaved population taken from Africa, and driving an increase in absentee plantation owners, determined to enjoy their wealth and seek power by living in Britain (Ryzewski and Cherry, 2015). A small but significant underclass of farmers and labourers were comprised of freed slaves, lower class Irish (and English) citizens and pre-dominantly white Catholic refugees from the consequences of the English Civil and then American Wars of Independence. Typically this group were only able to purchase marginal agricultural lands in and around the capital of Plymouth, now buried under volcanic deposits. By 1811 some 94 % of the local population were enslaved African labourers, although the sugar industry had been destabilised by a combination of market forces, natural hazards and crop and human disease. Absentee landowners became indebted and living and working conditions were

dominated by endemic labour and food shortages and the response of plantation managers to generate profitability for their owners despite these challenges.

St Vincent's history of British occupation began with cessation from the French in 1763. The island was surveyed, parcelled up for sale and profit, with little regard for current occupancy. The assumption was that infrastructure and healthy local governance would be an outcome from that profit, essentially trying to re-apply a model that had been somewhat successfully enacted on other islands (Barclay et al., 2019; Scarlett, 2020). British occupation and encroachment on the marginal agricultural lands, led to the First (1769-1773) and Second 'Carib Wars' (1795-1797). The Garifuna were then largely exiled to present-day Honduras. Not long after the Second Carib War, plantations near and around Georgetown appear in the records producing sugar. Nonetheless, in contrast to Montserrat, St. Vincent still had a small but significant indigenous population at the start of the 19th Century, albeit largely confined to marginal lands near high risk volcanic areas, deliberately removed from potentially profitable areas and colonial infrastructure.

Thus, by the early 19th Century hazard response was embedded in a hierarchical system of landowners and administrators who were themselves governed by the UK. Fundamentally, landowners were indebted, and the majority of the population possessed little or no agency to respond on their own behalf or articulate their needs. For the ceded territories land had usually been procured via a governmental loan (Murdoch, 1984) and in Montserrat debt was also accumulating. The mountainous terrain of the volcanic islands was not as well suited to large scale profitable monoculture to repay debts. Subsequently, when hazardous events occurred, the economic shock associated with the destruction of infrastructure and crops created responses that looked outwards for aid and directed financial assistance towards the needs of the landowners. Little attention was given to the needs of other groups or communal infrastructure, as requests for assistance were channelled through the local landowners and dependent on UK intervention for major infrastructure or assistance after disaster. In turn, financial aid to individual landowners was provided as loan-in-aid by the UK Government with a crippling 4% interest rate (Barclay et al., 2019). Following emancipation (1834), the Black majority on the islands, did not secure sustained access to land and independent livelihoods. They were forced to settle and work on less fertile land that had greater exposure to hazards (Ryzewski and Cherry, 2015; Barclay et al., 2019; Ryzewski et al., 2018), often on steep slopes on the edge of larger plantations nearer active volcanic centres. By the late 19th Century this system of debt, poverty and weakening infrastructure had created endemic poverty in the Caribbean such that Joseph Chamberlain, the then Secretary of State for the Colonies, referred to it as '*the Empire's Darkest Slum*' (in Richardson, 1992).

Disaster relief is considered to be the provision of humanitarian aid that alleviates impacts and losses from a catastrophic event, usually considered as an emergency response. In the 19th Century, UK colonialism and humanitarianism had a complicated relationship (Barnett 2011). During the late 19th Century there was evidence of some assumed responsibility for the state of affairs described above via repeated state-driven inquiries, in response to both endemic poverty and hazard-driven losses (House of Commons, 1855; Morris, 1897; Naftel, 1898; West India Royal Commission 1897 and 1898). There was also a proliferation of charitable works and welfare associations echoing UK domestic practices and views of vulnerability and who or what 'deserved' relief.

However, the fundamental response of the UK Government (bilateral aid) and charitable associations (voluntary aid) was still driven by the need to preserve social hierarchies, a belief in markets to create economic stability and a paternalistic need to solve the problem *as perceived by the donor* rather than that of the benefactor. Further, at this time, there was an emerging view that public institutions were superior to private charity, tending to push responses into the hands of the state (Barnett, 2011). Following hazardous events private and state donations were frequently compiled and directed to the 'Mansion House fund' (a centralised source for relief funds and donations created by the Lord Mayor of London), after which funds were dispersed via 'The Crown'; channelling voluntary aid via multilateral investments.

Consequently, stereotypes and fundamentally racist views drove decision-making 'in the best interests' of the most vulnerable communities (Webber, 2018, 2019). By the turn of the 20th Century, the circulation of aid was still rooted in the premise by which the islands had been colonised by the British. Landowners were not only able to access aid funds but were also able to apply for temporary tax exemptions (e.g. Land Tax Relief) and still found means to have accumulated debts written off. By contrast the Black majority on the island had no mechanism to request the form or size of aid. Power differentials affected access to the decision-making process around how donations were spent, and choices that could be made in the face of vulnerabilities generated by the hazardous events. At this time historical analysis of philanthropy (Henry, 2008) has identified the rise of community-based practices in the region including 'susu' (communal savings to be spent in time of need), and a tradition of mutual self-support, supplemented by donations of cash and goods from those who had migrated overseas.

Following several severe hurricanes in the 1920s and the economic impact of the Global Depression, by the 1930s the Caribbean remained in systemic poverty, triggering further state-sponsored analyses (interrupted by World War 2, Orde Browne, 1939; West indies Royal Commission, 1945). This time, the longer-term evidence gathering by the West Indies Royal Commission, attempted to focus on prospective practices to dismantle vulnerabilities including: education and capacity building. The recommendations were still influenced by market driven economics (this time focussing on bananas as a single potentially profitable crop, Thomson, 1990) and the need to respond to an emerging local and UK drive for independence.

A positive exemplar of the value of longer-term investment from this period is the creation of the Seismic Research Unit (SRU, now known as the Seismic Research Centre) from a 'Colonial Development and Welfare' project, the very first emergence of a proactive approach to hazard preparedness and monitoring rather than reactive response to the devastation left behind. The SRC are the agency responsible to this day for monitoring earthquakes and volcanoes in the English-speaking Caribbean. Nonetheless the SRC has been plagued throughout its history by unstable and inadequate funding, with core resources driven by the continued occurrence of geophysical hazards in the Caribbean (SRC, 2020, Joseph et al., in review) - reminding government of their value. Offsetting these state-driven initiatives was the fact that the emerging (state independent or international) humanitarian sector remained comparatively inactive at this point in the Caribbean, despite the need generated by continuous hazard events (Table 2) coupled with the widespread poverty created by the historical and recent past. This sector (e.g. Red Cross, Pan American Health Organisation) strengthened through the latter part of the 20th Century, initially facilitated at

grassroots level by strong networks offered by various Christian churches (Webson et al., 2010). However even in the last few decades long term approaches are difficult for these organisations, limited by the duration of multilateral international funding that fuels initiatives or the enthusiasm of private individuals to continue to give as the memory of triggering events fade.

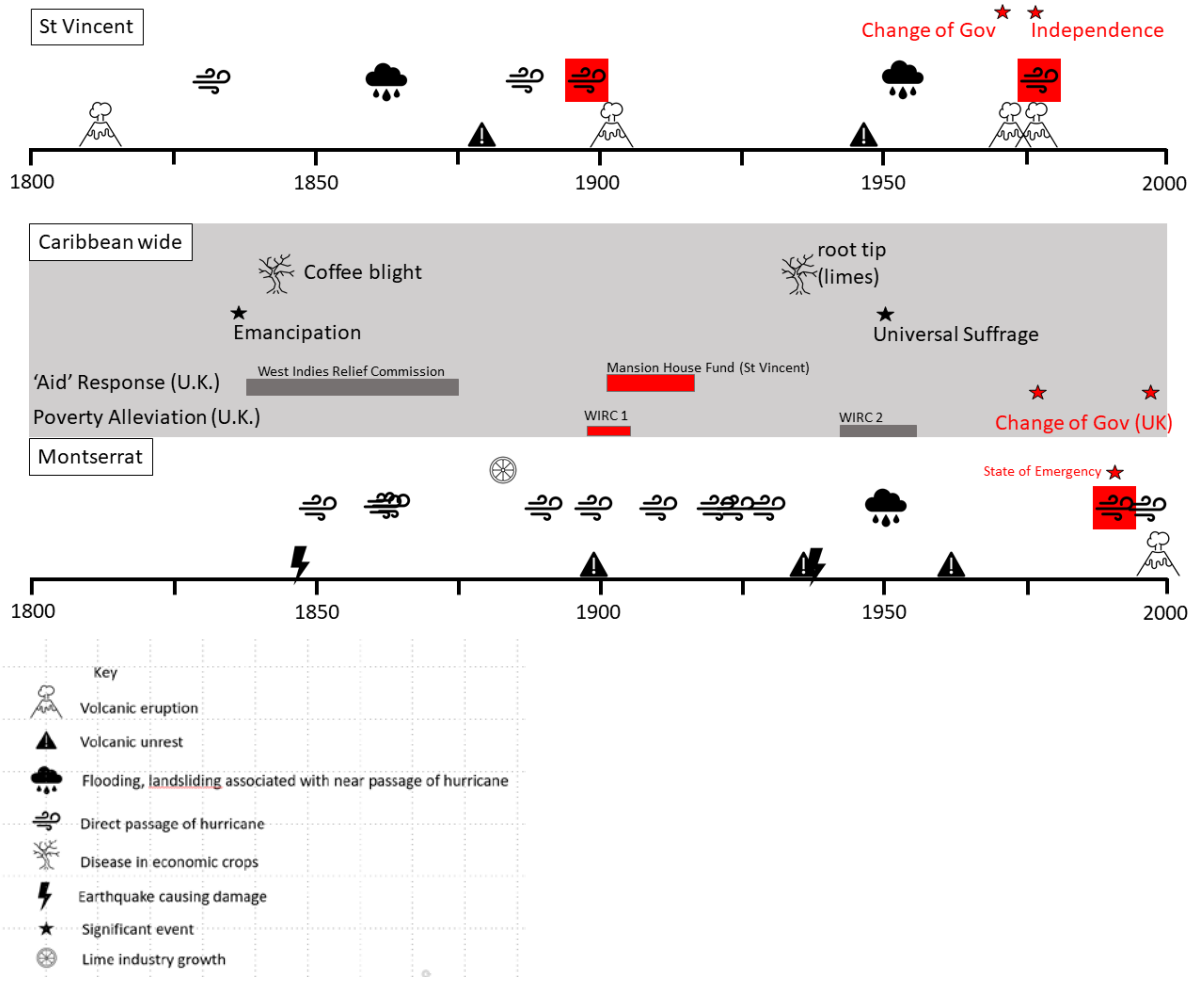

Figure 2 Island timelines with hazards above each island timeline. Mid panel shows relevant initiatives and events that impacted response and recovery. The events shown surrounded by boxes are the 'index' events influencing response to case study eruptions. 'Poverty alleviation' measures are in response to extreme deprivation across several islands in Eastern and wider Caribbean. WIRC refers to the strategies and initiatives developed in response to the two West India Royal Commission Reports on this poverty. The Aid measures are described in more detail in main text. Information sources are: (NOAA National Hurricane Centre Data Archive, Lindsay et al., 2005; Chenoweth, 2006; Wilkinson, 2015; Pyle, Barclay and Armijos, 2018; Barclay, Few, et al., 2019; UK National Archive).

3.3 Continuous hazardous events in the 19th and 20th Century

Figure 2 illustrates the timeline of hazardous events in the context of other environmental challenges and socio-political changes across the three islands. In their compilation of historical cyclones in the Eastern Caribbean, Chenoweth and Devine (2012) observe a 50 to 70 year cycle in 'accumulated cyclone energy', probably associated with multi-decadal variations in North Atlantic

Sea Surface Temperature, and the Atlantic Multi-decadal Oscillation. These translate into periods of lower cyclone activity across the region and on any one island. This variance is around the timescale of a human lifetime but much greater than that of a political cycle, it can be seen as periods of relative meteorological calm in our datasets (Figure 2). There is a conspicuous role for accumulated vulnerability from the impacts of repeated storms, or storms combined with other risks in a relatively short space of time during time periods of high energy. This threat will increase in the future as a warmer climate and consequently seas will act to increase the severity of hydrometeorological events (Stephenson et al., 2014).

A further significant non-eruptive hazard event for Montserrat is the impact of the 1843 Guadeloupe earthquake. Strong ground shaking effectively wiped out local island infrastructure on Montserrat (Ryzewski and Cherry, 2015), impacting sugar production for several years afterwards. The close timing relative to the social upheaval associated with emancipation, meant that this contributed to economic and social vulnerability for several decades. Two of the Vincentian volcanic eruptions have a conspicuous (non-causal) association with impactful Hurricanes (Hurricane Allen 1980 and 1898 Hurricane), and Montserrat was still recovering from the impacts of Hurricane Hugo (1989) when Soufrière Hills Volcano began to erupt in 1995. Further, in the mountainous topography associated with the Caribbean volcanic islands the enhanced rainfall associated with any one Hurricane season usually generates shorter term local challenges (e.g. road and building damage or localised crop damage) associated with localised landsliding and flooding. Drought too, has a role to play in amplifying vulnerabilities to disease and resource shortage. In the following section we deepen this analysis to focus on specific volcanic eruptions.

3.3 Mapping historical responses to volcanic eruptions through social, cultural and political changes: the creation of volcanic risk

Our exemplar eruptions capture four significant time periods: the period during which slavery was in operation (1812, St Vincent); the islands after several decades of emancipation (1902-3 St Vincent); preparing for independence (St Vincent 1971-72 and 1979) and a near historical response (Montserrat, 1995-1997). We use a detailed analysis of the correspondence around these eruptions to understand the precise motivations and drivers behind the distribution of aid described more broadly above. We also now consider the role that the capacity to anticipate eruptions and the likely impacts played in moderating preparedness, as well as the drivers of risk exposure for each period.

The 1812 eruption of St. Vincent

This eruption was not anticipated and generated several pyroclastic density currents and lahars into river valleys during the period from 27th April to 6th May 1812 (Anderson and Flett, 1902; Huggins, 1902). Preliminary explosions led to a climatic eruption from 30th April – 1st May. Activity subsided after that, although there is some written evidence of a minor pulse of activity on the 8th of June. This caused widespread disruption to those in the north of the island, including many large plantations. The post-eruptive morphological change in the Wallibou Valley in particular increased the likelihood of flash flooding which caused further loss of life some years after the eruption.
The archival records of the 1812 eruption of St Vincent demonstrate the attitudes towards Aid typical of this era (see Section 3.2). Contemporary scientific knowledge afforded no opportunity for responsive but only reactive aid (only a few recorded warning signs of activity, just a few days

before, (Anderson and Flett, 1902). The immediate need for food in the aftermath was met by donations from nearby colonies and the purchase of supplies overseen by an internal committee. In keeping with practice at that time, damage was estimated to infrastructure and to economic crops but not to people (Smith, 2012; Scarlett *et al*., in prep). Financial aid requests came from the Governor on behalf of estate owners, and from the estate owners themselves. Thus, on an island with a total population of 26,740 (> 90% enslaved, (Smith, 2011) only some 12 individuals (all landowners) were compensated as an expression of aid (Scarlett et al., in prep), although 802 people were evacuated and 53 were recorded as killed. The articulation of the financial loss implicitly mitigated the loss of life and damaged livelihoods via compensation for lowered productivity relevant to the wealthy landowners, rather than by direct attempts to improve recovery for individuals, families and communities.

Further, there is some evidence that this aid was manipulated for personal gain by these groups. To illustrate, a disproportionate sum is awarded to a larger estate further from the locus of destruction (The Gazette Office, 1825). In this instance this money was likely used to compensate a landowner for use of his land to rehouse displaced enslaved people (Appendix 1).
The most exposed population were the indigenous Kalinago and indigenous-African communities, (the Garifuna) settled in marginal lands very close to the volcano. Contemporary accounts record them as abandoning their homes and livestock (near Morne Ronde) and fleeing 'precipitately' towards town on the morning of the 30th, but casualties in this group are not recorded. Webber (2019) argues that the occurrence of a disaster in the 19th Century English-speaking Caribbean creates an opportunity for the social distance and racial hegemony that underpinned colonial rule to be challenged. In the instance of this disaster the structures in place during enslavement quashed that opportunity. From his demographic and economic survey of plantation recovery, Smith (2011) shows that the relief provided, in fact, facilitated a rise in plantation populations in the highest volcanic hazard zone following this eruption. Long term mitigative actions – for example via changing agricultural practices or land use - or changes in trajectories of risk creation - were not encouraged by the disaster relief.

The 1902-03 eruptions of Soufriere St Vincent
Although warning signs prior to this eruption were recognised up to a year in advance, particularly by the indigenous population (Pyle et al., 2018), the administration was distracted by continued landsliding and rebuilding as a consequence of the 1898 hurricane, so there is no pre-emptive discussion of the unrest, let alone response, in the official records. After some initial explosions on the 6th of May, the initial and largest series of explosions reached a climax on the afternoon of the 7th of May, subsiding overnight. There were further explosive eruptions in May, September and October 1902, with one final explosive event in March 1903. The 7th May eruptions sent destructive flows into most areas in the current 'red' zone of St. Vincent, with profound damage and severe loss of life (est. 1565 lives lost on the Windward side of the island, Blue Book, 1902). The most exposed populations were those living in marginalised lands near the volcanoes (indigenous communities and small scale subsistence farmers) and, on the morning on the 7th of May, the workers in the plantations on the Windward side of the island where a normal working day had commenced (Pyle et al., 2018).

With such profound damage and loss of life, aid was rapidly mobilised in response to the devastation. Relocation, rehousing and rebuilding were needed as a consequence of these eruptions. Rapid communications regarding ongoing activity and damage reports were facilitated by experiences from the recent hurricane (Anderson and Flett, 1902). Nonetheless, socially and politically this eruption served to reinforce the status quo (with large landowners retaining a tight grip on land use) and amplify or accelerate processes of migration and bankruptcy already in train, where those landowners were failing to make effective use of these lands (Pyle et al., 2018).

A significant change from 1812 was the estimation of damage more clearly articulated around the loss of life and livelihoods of more than just the landowning minority. Aid was articulated around the needs of the most vulnerable, and did not just manifest as grant-in-aid loans. Relief from Britain, and its colonies as well as other foreign nations through sources (e.g. governmental, authorities, royal or community) was substantial for this eruption. These donations, along with other funds related to relief efforts of the eruption, were amalgamated into a single pot created by the colonial government called the "Soufriere Relief Fund" administered by the Mansion House Fund (UK-based).

However, the economic model that permeated island governance (see Section 3.1) still meant that the circulation of aid was rooted in the premise by which the islands had been colonised by the British Government. Landowners were not only able to access aid funds but were also able to apply for temporary tax exemptions (e.g. Land Tax Relief) and still found means to have accumulated debts written off. Power differentials affected access to the decision-making process around how donations were spent, and choices that could be made in the face of vulnerabilities generated by the repeated eruptions of 1902-03. The most frequent direct beneficiaries were often absentee estate owners. Details of expenditure and correspondence (e.g. Webber, 2019; Pyle et al., 2018; Richardson, 2004; Scarlett, 2020) demonstrate that power held by the large landowners created a perception amongst themselves and the colonial government that they were the 'real' sufferers and that supporting them also offered the best route to recovery (see Appendix 1).
This patrimonial view of landowners towards their labourer population and their continued perception that monocultural (sugar and arrowroot) cultivation was still the most prosperous route to recovery persisted despite evidence for these crops decline (Pyle *et al*., 2018). Aid framed around the provision of labour on behalf of the majority population was a pervasive view, lack of compliance with schemes devised on behalf of that population, interpreted as manifestation of indolence (Webber, 2019). Considerable pressure was exerted to solve immediate problems via migration, and neighbouring administrations were encouraged to make offers of labour.

There is no archival evidence that peasant landowners were directly able to access special funds (either for the 1898 hurricane or the 1902-3 eruptions) or were able to access the tax exemptions. However, they were offered 'doles' (weekly relief, (Pyle *et al*., 2018) and '*Compensation for loss of Live Stock…without any conditions*' (despatch by Windwards Governor (RB Llewelyn), 5th January 1903 Blue Book 1903)., albeit with the caveats attached for working-age males (Appendix 1). The coincidence of the hurricane and eruption with the longer term development effort arising from the West Indies Royal Commission Report of 1897, meant that recovery was assisted through the land purchase scheme (that sold 5 acres plots and emphasised small-scale agriculture via '*by establishing a solid nucleus of peasant proprietors with a variety of cultivable products, will destroy that too exclusive devotion to particular industries which has proved the bane of the Island*' (Colonial Reports,

1901) and the creation of new, permanent settlements on St. Vincent. Although, this was confused by a lack of trust between the majority Black population, and local authorities and the authoritarian requirement to choose crops cultivable for cash. Later (March 1903), the final explosive eruption from La Soufriere, rendered many lands once again uninhabitable but wrangling persisted over the selling of land, creation of new settlements and other long term solutions to help islanders recover the way they wished to, rather than migrate as indentured labour on estates on neighbouring islands. The continued explosions associated with the year-long eruptive period meant that the town of Georgetown and surrounding villages were progressively abandoned as living with the large quantities of ash became difficult. The coincidence of the eruptions with the broader rebuilding program cemented a need to place most of the infrastructure and capacity in the south of the island. Several of the 'resettlement' developed in the longer term into villages, but often where economic activity was lower and levels of deprivation higher than in previously established settlements. This uneven development remains to this day. Thus, in the context of the 1902-03 eruptions the inadequate longer timeframe (years) responses to recovery have created conditions that persist over a century later.

The 1971-72 and the 1979 eruptions of St. Vincent

The historical records of the administrative process around the 1971-72 and 1979 eruptions in St. Vincent have not been reported in the literature to date so we summarise events and correspondence of relevance to our discussion in Figures 3 and 4.

By the 1970s, there was capacity to monitor and anticipate changes in behaviour or increased likelihood of the start of an eruption. Further, local aid needs were defined by a locally elected Government. However, preparedness remained a very poor cousin to 'relief'. The response to the 1971-72 effusive eruptions of St Vincent graphically illustrates this failure, even when a volcano was, in this instance, erupting and precautionary evacuations of the population had taken place (Figure 3). With temperature and disruption rising in the crater lake, a Royal Navy frigate was despatched to facilitate a short notice mass evacuation, which was never needed but how this cost was covered was the subject of lengthy wrangling (Figure 3). Basic supplies and shelter for the evacuated population were not available, and the scramble as to who was responsible for this and why is evident in the Foreign Office Records summarised in Figure 3 (despite St Vincent still operating as a state under 'grant-in-aid'). This caused unwelcome delays in preparing for evacuation and limits to supplies of food and medicines in particular (see 22nd December, Figure 3). The fixation with the need for an emergency rather than pre-emptive measures was clear, before, during and after evacuation (Figure 3, Appendix 1).

While needs were locally defined, the imperative around donor wishes remained, in this instance, manifest in a reluctance to create precedent for Aid in other countries (Figure 3, 17th December), coupled with a desire to retain oversight from other donating agencies and a strong desire to be seen to be generous. This led to a lack of preparedness and confusion. The situation was politically manipulated (see February- June 1972 in Figure 3) and time was wasted on debating whether a passively erupting volcano did or did not conform to established procedure. Further evidence is presented in Appendix 1.

SVG Situation	UK Officials and government	Scientists/ Evacuation
		1st Nov 'SRC' repair seismometer, commence regular lake obs
	6th Nov, UK SVG to FCO *'We are a part of this community, and if we are not be discredited both as individuals and as a group must share the experiences of the people among whom we live and work'*	24th November FCO internal briefing *'it soon emerged that the main difficulty facing us was finance. MOD could provide anything that was needed at very short notice, and could fly it out .....FPAD..... cannot act until a disaster has occurred.'*
		Voluntary evacuation est. 2-3000 people
		26th Nov FCO internal comms *' the UK can hardly recover the cost of assistance given in taking common sense precautions and particularly not, perhaps, if the help is given by our defence forces.*
		Concern around possibility of explosion
		30th Nov USGS infra-red overflight
		7th December UK SVG to All FCO (telegram) *Evacuation of population in threatened areas...expected to take place 7th Dec. Please organise with which governs other relief bodies good supplies for maximum of 11,000 people.*
		8th Dec Evacuation decision (11,000 people
		9th Dec FCO to UK SVG *'we are...pressing for the relaxation of the 'no eruption, no payments' rule*
		UK Navy assists with sample retrieval and obs
		17th Dec UK Treasury Minister to FCO *"Although the sum at issue is minor I would be reluctant to agree to expenditure explicitly in anticipation of a disaster because of the vastly more expensive repercussions.. e.g... in India or Pakistan*
		5th-6th Jan some evacuees return (Boundary change)
		22nd Dec FCO internal comms *'Effectively (financially) the disaster began to occur as soon as the [SVG] Government incurred expenditure ...Are the Treasury seriously suggesting that the relief money should be held back until a predetermined number of persons have been killed?'*
		4th March All evacuees return
	FCO to MOD 8th Dec *Evacuation is not going well. 7 hours after start of operation only 500 people, half of them children, have reached evacuation centres.*	22nd Dec UK SVG comm *The evacuees..are housed in schools and mission halls. ... except where there is a determined and experienced camp-leader, public areas, kitchens and sanitary facilities are neglected. The risk of disease is high... Cattle rustling has started, and animals are still being sold at ridiculously low prices.*
		29th Feb Minister Ag, Trade resigns over eruption handling
		11th June UK SVG to FCO *[New PM] and his colleagues have been industriously muck-raking ever since the elections.* [Then reports on politically motivated employment issues hampering recovery in evacuated zone]
		8th March parliament dissolved SVG general election 7th April

Figure 3 All materials and timings sourced from original letters and correspondence in National Archive FCO 663 81 1971, FCO 63 882 1971 and contemporary scientific descriptions (Aspinall *et al*., 1973). Abbreviations are as follows: SVG St Vincent and the Grenadines, FCO: Foreign and Commonwealth Office, UK SVG is UK representative based in St Vincent and the Grenadines MOD UK Ministry of Defence, SRC Seismic Research Centre, University of West Indies (then known as 'Seismic Research Unit), USGS United States Geological Survey, PM SVG Prime Minister

The second eruption of the 1970s was sufficiently close to the first that political, scientific and social memories were retained and there is some evidence of lessons learned between and across institutions during the crisis (Fig 4), such that aid-based responses were rooted in the learning from 1971-72. The incumbent Prime Minister (PM SVG) happened to be the same individual as in 1971. In this instance there was also a wider understanding of other sources of funding (although regarded with scepticism around effectiveness, see Figure 4, 1st May) to meet the needs of the population. In this instance the volcanic behaviour also facilitated rapid decision-making: unrest rapidly escalated into an explosive eruption prompting some spontaneous community (Figure 4, 13th April). Nonetheless the success of the evacuation and the lack of casualties averted 'disaster' and soon there was signs of the withdrawal of support because of this, particularly around naval support (both UK and USA). The provision of the long-term rehabilitation necessary from such a protracted crisis remained troublesome (Figure 4, 15th May). This time the politicisation of the aid response not only happened on St Vincent but also emerged in the UK General Election, and there was a rapid shift in attitude towards long term support when the New Government formed. Promises of further support were abruptly truncated and swift arrangements were made to facilitate St. Vincent's independence, distancing the UK Government from the need for further spending.

The emphasis in the British correspondence throughout is on the diplomatic appearance of spending well, as much as actually spending well *meeting* efforts of other aid agencies with a sceptical and critical eye (Figure 4), while continuing inter-departmental wrangling over responsibilities to do something effective. However, long-term views emerged from agencies such as the Red Cross (Appendix One) and via the experience of the UK officials on St. Vincent (Figure 3, 15th May). This emphasis on being seen to be effective and spend well discourages the more 'hidden' support inherent in strengthening preparedness and monitoring efforts (even in the absence of a high impact hazard event) and encouraged visible and ostentatious responsive aid spending. This theme is well described in the context of disaster recovery and slow onset disasters (e.g. Boston et al., 2020) and we will develop this further in a later paper on the capacity volcanoes have to 'threaten' disaster.

Some 16 years after the 1979 eruption of La Soufriere and only 6 years after the devastating local impacts of Hurricane Hugo (September 1989), the 18 July 1995 start of the long-lived eruption of the Soufriere Hills volcano on Montserrat demonstrated very little learning from the experiences on the 1971-72 and 79 eruption in terms of effectiveness of response from the British Government in particular, but more generally across the region.

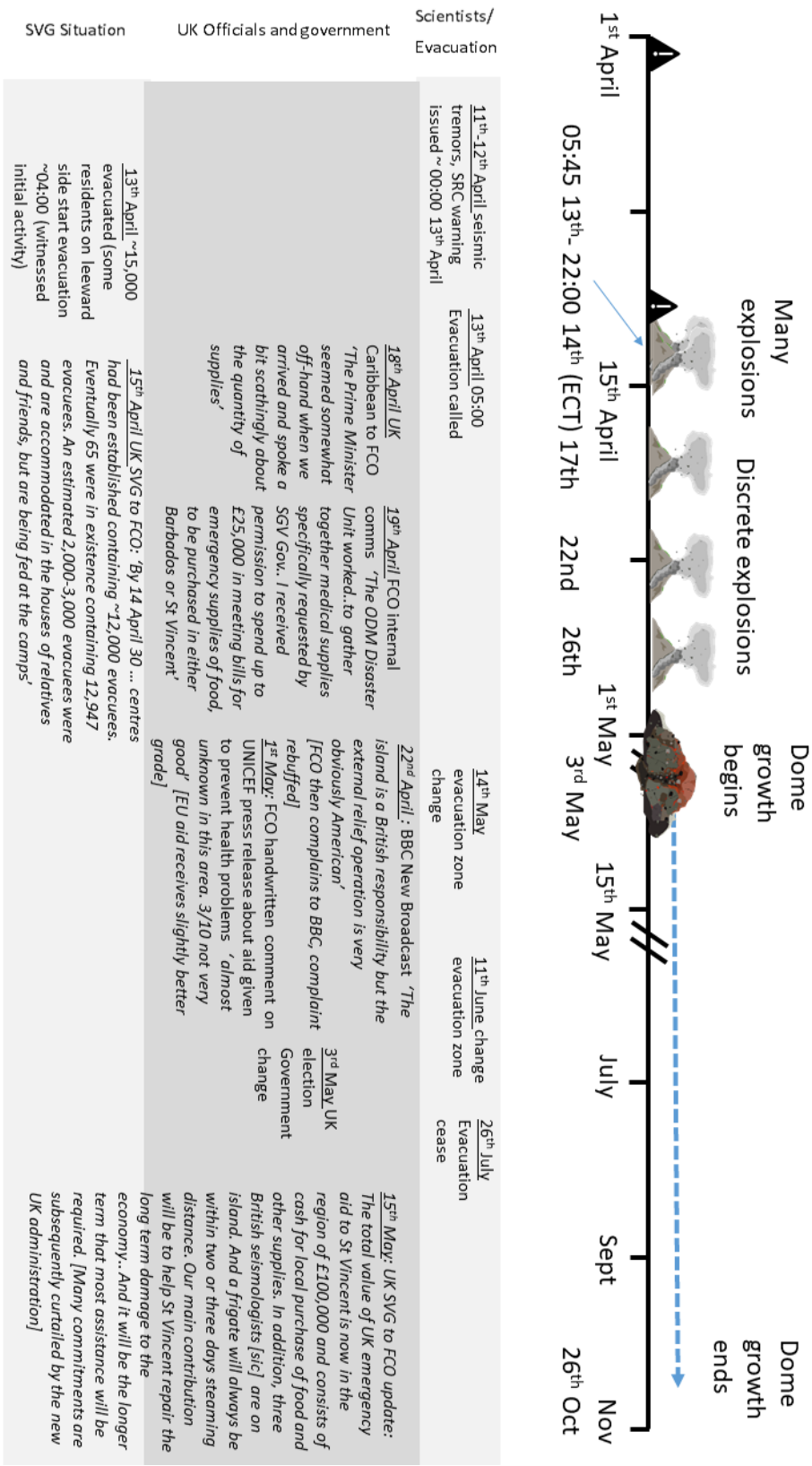

Figure 4 All materials and timing sourced from original letters and correspondence in UK National Archive files FCO 44 2031 and 2030 and contemporary scientific descriptions (Shepherd et al., 1979). Abbreviations are as follows: SVG St Vincent and the Grenadines, FCO: Foreign and Commonwealth Office, UK SVG is UK representative based in St Vincent and the Grenadines BBC British Broadcasting

Corporation, SRC Seismic Research Centre, University of West Indies (then known as 'Seismic Research Unit), PM SVG Prime Minister.

The Early Stages of Eruptive Crisis, Soufrière Hills Volcano, Montserrat (July 1995-December 1997). The activity and the contemporary response to the eruption have generated a plethora of academic papers and grey literature (Aspinall *et al*., 2002; Kokelaar *et al*., 2002; Donovan *et al*., 2012; Hicks and Few, 2015; Wilkinson, 2015) and also published parliamentary accounts (e.g. International Development Select Committee, 1997; PREM-49_37 and 38) on which we draw here with the patterns of activity and response summarised in Figure 5. A 1999 evaluation of the HMG response to that point was judged a '*qualified success'*: relatively few people died, there was no malnutrition amongst evacuees, but conditions were crowded and responses were slow, exacerbating pre-existing inequalities and vulnerabilities (Clay *et al*., 1999; Hicks and Few, 2015; Wilkinson, 2015). The failures identified here are a repetition of the failures of response found in earlier eruptions. In particular, support for the Seismic Research Centre and their assessment of both risk, and the need for monitoring was simply not supported and so did not allow '*the volcanic risk to be anticipated and then effectively monitored*'; (Clay et al., 1999). This was further compounded after the start of the eruption by a continued lack of willingness to invest for the longer term in monitoring, and this time, confusing and contradictory lines of communication between various different scientists, present on the island at different times (House of Commons, 1997, Figure 5). Beyond the scientific need, the issue regarding response was around whether the initial crisis and actions required were 'emergency aid' or budgetary aid designed to help with longer term economic growth (Appendix 1).

As an overseas territory, the finding and dispersal of aid was perceived by the UK government as a role for them, and some of the lack of responsiveness was attributed to the extreme uncertainty around anticipating eruptive impacts. This was further compounded by a change of administration in November 1996 (Montserrat) and May 1997 (UK). This led to a change of responsible department from the Overseas Development Agency of the Foreign and Commonwealth Office (FCO) to a situation where the DFID held the budget and the FCO had many of the decision-making powers. As an Overseas Territory in 1997, at one point, answers or agreement needed to come from some eight UK governmental departments before decisions could even be sent for approval and discussion with the Government of Montserrat. Opportunities for rapid response were minimised. Despite this, the UK administration still found time to comment on and try to influence opportunities for aid from other donors (see e.g. Figure 4 for another example). At heart, these problems were the same as those for the St Vincent eruptions some 16 years earlier, and very few of the investment decisions made to rebuild following Hurricane Hugo were robust to actions needed in the face of Soufrière Hills Volcano (Figure 5).

The lessons from earlier eruptions suggested hesitation in the face of scientific uncertainty was a driver of ineffective aid response. These lessons were not learnt or enacted during this crisis. Equally none of the dissections of the SHV eruption fully alighted on the interdependencies or similarities of impacts from differing threats or highlighted the need to match timescales of scientific uncertainty to appropriate timescales of response in terms of aid. In the next section we explore how the durable lessons emerging across time periods could help to improve future response.

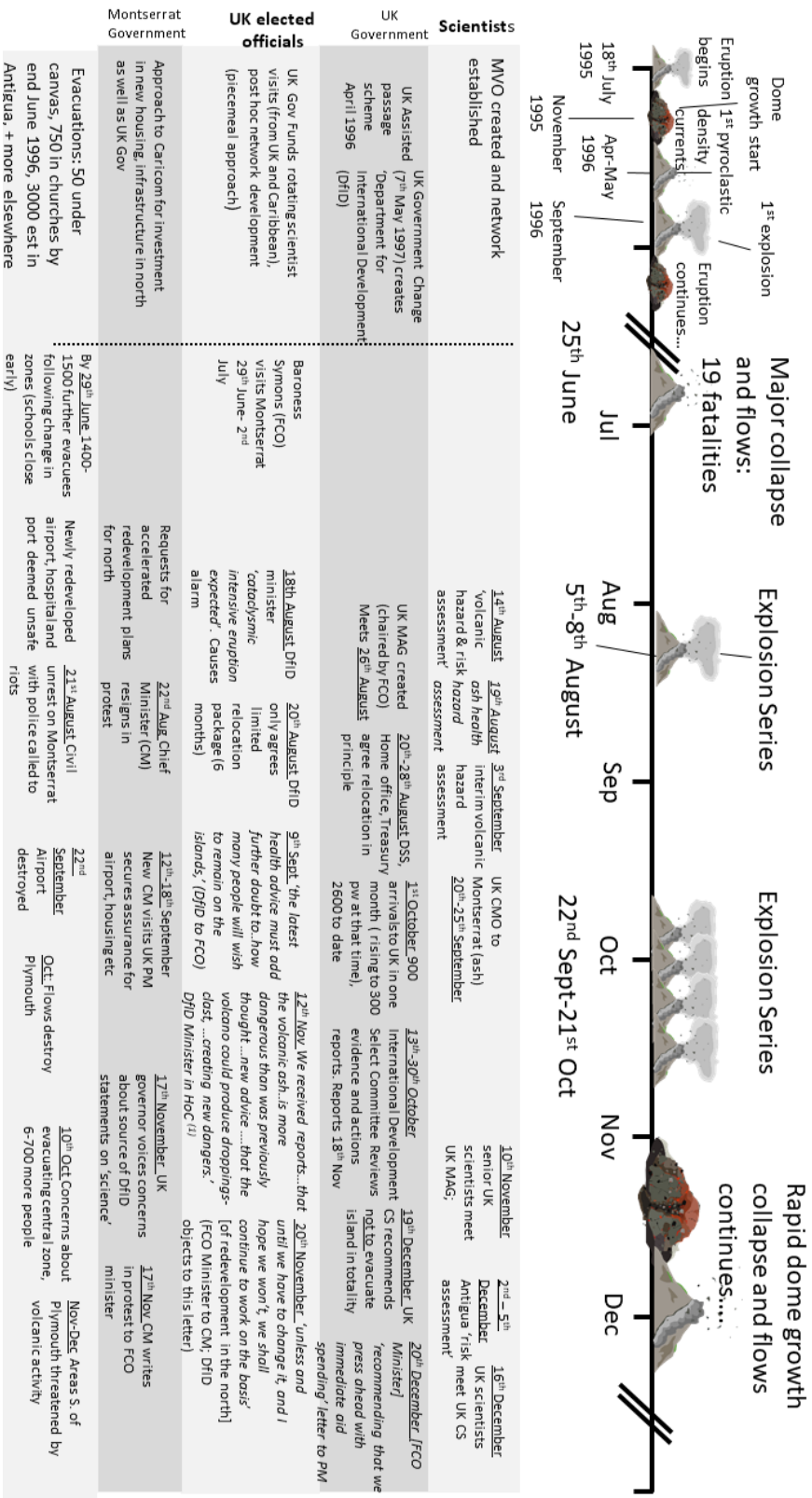

Figure 5 Activity and response in Aid from July 1995 to December 1997 All materials and timing sourced from original letters and correspondence in UK National Archive files PREM 49/137 and 49/138 and contemporary scientific descriptions (MVO Special Reports). (1) House of Commons Debate 12th November (HC, 1997). Abbreviations are as follows: FCO: Foreign and Commonwealth

Office, DSS Department for Social Security and Pensions, DfID Department for International Development, PM UK Prime Minister, PM S Private Secretary to the UK Prime Minister, CM Chief Minister on Montserrat

5. Discussion: Durable lessons around policy and practices that impact capacity to cope during volcanic eruptions

Effective disaster relief needs to be deployed such that it maximises impact in the immediate moment, allows impacted societies to continue to respond to escalating or cascading impacts and helps recover and rebuild in a way that limits future impacts. While it would not be fair to apply this modern understanding of disaster relief, in order to critique individual events and past efforts at response, we use this as a way to consider the extent to which past views of disaster aid, and attendant social and political prejudices acted to accumulate future risk. It also helps to uncover any characteristics of empirical responses that did help to dissipate immediate or future impacts.

Archetype volcanic eruptions represent a helpful end member of several important features of hazardous events in creating disaster. Firstly, volcanic eruptions *threaten* disaster, with that threat dissipating or amplifying over uncertain timescales in uncertain ways. Secondly, when eruptions happen, they offer a wide range of possible (multi-hazard) impacts, again over uncertain timescales. These characteristics exert considerable influence over decisions made to preserve both lives and livelihoods and thus provide an ideal archetype to examine in detail and to draw parallels with many other types of hazard events. This analysis largely focusses on bilateral aid, but again, this provides the backdrop against which to consider how this also assisted or hindered the development of effective multilateral and voluntary mechanisms, and to consider which groups influence decision-making powers and consequently the effectiveness of that aid.

5.1 Longitudinal impacts: the creation of enduring vulnerability through bilateral aid

As financial aid was granted either via petition or access to state-collated ‘funds’, the occurrence of overlapping initiatives caused some confusion and created the possibilities for those with access to power to use this for financial gain, to the detriment of more vulnerable populations. For example, following the eruption of 1902 Estate Owners continued to access the ‘hurricane loan special fund’, as well as the ‘Soufriere relief fund’ (Cameron, 1903), and the longer-term Land and Road Relief Fund (from the 1897 West Indies Royal Commission report) also contributed to the rebuilding of private infrastructure.

During the eruptions of the 1970s, the position of St Vincent as a nation already in receipt of grant in aid acted to slow down the colonial response to the volcanic crisis. This practice of responding after the event is consistent with the time, but the asymmetry of response and recovery (rapid onset of events with acute need followed by long tails of recovery and debt repayment) and the need for contextualisation with other colonial commitments, meant that response to any one individual event was always impacted by other recent events or creators of disaster and that this was particularly marked in the context of the Caribbean.

The topography generated by the young volcanic islands also created the setting for a distinctive set of historical vulnerabilities to all of these hazardous events, generating both physical (high levels of

exposure to multiple hazards) and social (those in the most physically vulnerable areas tended to be those with the least agency or capacity to cope) vulnerabilities. Firstly, in the ceded territory of St Vincent (Table 1) the indigenous population was 'awarded' limited territory that was both physically vulnerable, socially remote and economically less valuable in which to live in 1763. Sustainable livelihoods are still challenging to this day in these areas. Secondly, the practice of reserving land for large plantations of single crops continued well beyond emancipation. From the 1830s onwards those unwilling to live and work on plantations were also forced into marginalised land (more remote, less productive and prone to impacts from multiple hazards) either on coastal strips or in the rugged interior of the islands.

In the 20th Century issues around worker's rights and these commercial activities arose during unrest and eruption in St Vincent in both 1971 and 1979 (Appendix 1) and emerged in Montserrat in 1996 and 1997 in terms of the right to abode and access benefits in the United Kingdom. When the need to rebuild on Montserrat arose in 1996 and 1997, issues of land ownership quickly arose in identifying suitable places to do so, pushing cost and political issues ahead of best placement relative to long term mitigation against hazard (Figure 5). Thus, systemic vulnerabilities were created via historical land use practices combined with the relentless impact in more marginal settings of multiple hazard events. These vulnerabilities are the outcome of centuries of colonial governance, itself indentured to the practices of a free market economy.

5.2 The compartmentalisation of hazard events – consequences for additive and cascading impacts

Using volcanic eruptions as an example we have demonstrated the extent to which damaging hazard events in the Caribbean rarely occur outwith the envelope of response and recovery from other hazardous events, and typically within a background of longer term economic or social crisis. In Figure 2 we have highlighted 'index' events for these eruptions. By this we mean surrounding events that impacted the efficacy of response or amplified the effects of the event itself (or vice versa). We demonstrate here that, without exception, the uncertain early stages of the volcanic eruptions explored here tend to occur with a population and economy recovering from another recent (in last few months/years) acute or political event set against a backdrop of frequent incremental losses from less intense events and endemic poverty associated with poor governance.

The physical outcomes from events such as intense rain or windstorms tend to be damaged vegetation, mobilised soils and unstable ground. These outcomes for the physical environment have strong similarities to those from tephra fall and flows from volcanic eruptions, or ground shaking from strong earthquakes, so it should make sense that the impacts of concurrent events will exaggerate or amplify one another. For example, in the case of St. Vincent the indigenous population were in the process of negotiating moving to more stable ground following severe landsliding during the 1898 hurricane when pre-eruptive unrest caused them to abandon their settlements prior to the climactic 1902 eruption, as land destabilised further, albeit via a different generative mechanism. Yet, in the academic literature or historical accounts no mention could be found of these relations until the Soufrière Hills eruption, and then largely in the context of eruptive longevity and lahars (Barclay *et al*., 2007) or impacts on mammal and bird populations. In the historical accounts these impacts are largely described either financially or in terms of cumulative infrastructural impacts rather than a consideration of causative forces, or relationships between event outcomes.

This is partly compounded by the lack of framework to consider multiple hazards in this way, even within the context of hazard science (see e.g. De Angeli *et al* 2022). There is a rich and emerging literature that analyses hazards alongside one another, or as additive functions (for example identifying land with multiple susceptibilities, but rather less that considers them holistically in terms of the dynamic or cascading impact on the society and environment with which they interact (Wang et al., 2020). In turn this invites separated protocols for mitigation, response and preparedness for each hazard with the momentum for change with the most recent emergency and its associated hazard. Response to that demands decisions perhaps too quickly to embed preparedness or mitigation for other events. However, more recently ideas have emerged that short circuit this loop, for example by considering mitigative or planning measures that could generate 'co-benefits' during the course of multiple hazard events (e.g. Wilkinson *et al.*, 2016). Our analysis shows that this requires their identification in advance, and established pathways for implementation when opportunities arise. This almost always involves listening to and understanding hazard outcomes from the perspective of the impacted population, a facet often missing or only glimpsed from the historical record.

5.2 The political compartmentalisation of aid for disaster (bilateral aid)

We have also shown that long term inadequacies in colonial governances and the political and social inequalities it created were always exerting a longer duration and significant influence that impacted response. Here we explore political influences and complexity in short term response. From our historical analysis. Table 2 lists the cooperating entities needed to approve financial aid for each focus eruption.

Table 2: decision-making and budget holding departments requiring input into movement of disaster aid for four focus eruptions.

	SSV, 1812	SSV, 1902	SSV, 1971, 1979	SHV 1995-1997
UK Departments	Colonial Office, Treasury	(West Indies Dept), Colonial Office, Colonial Office, Treasury	Ministry of Defence, Home Office, Treasury, (West Indies Atlantic Department), FCO, (Overseas Development Agency), FCO	Ministry of Defence, Home Office, Treasury, West Indies Atlantic Department, FCO, FCO, Department for International Development (Emergency Aid), Department for Education, Department for Health
Caribbean departments	Appointed assembly	Leeward Islands Governor	Elected assembly, Prime Minister	Elected Assembly, Chief Minister (UK Governor)
Equivalence with other hazard events	Y	Y	Y	Y
Other AID awarding entities	-	Mansion House Funds, other bilateral funds	EU, Red Cross, U N Agencies, Church Bodies,	EU, Red Cross, UN Agencies, Church Bodies, other bilateral funders

		(notably USA, Canada)	other bilateral funders	

This demonstrates the proliferation of complexity, through time in terms of agreeing and releasing a response to a hazardous event, and the compartmentalisation of budgetary entities that might implement strategic investments that create improved planning, and mitigation that act to reduce risk.

The complexity of these processes and this compartmentalised decision making then demands creation of a more simplistic mechanism to deal specifically with the emergency. Here, this is demonstrated by the 'Mansion House Fund', which used in the 19th Century for the U.K. and other events in the Caribbean and is echoed in the 20th Century existence of emergency departments within the Foreign and Commonwealth Office and dedicated multilateral response mechanisms (Table 2). However, although these agencies enable rapid response, their focus is necessarily on immediate short term actions, mobilisation requires a 'disaster', and responsibility wanes at the moment of learning, mitigation and prevention, as evidenced by the issues with expenditure with the Mansion House fund and long-winded wrangling about actions in response to the slow-running 1971 eruption of St Vincent and culminating in the inadequate response to the eruption of Soufrière Hills on Montserrat. Further, in the presence of a department focussed on emergency response, other departments are disincentivised to consider preparedness and mitigation as part of their remit, including longer term projects specifically focussed on lowering vulnerability in other ways as part of a development agenda.

The main conclusions from the evaluation report commissioned by the UK Government in response to the inadequacies around the SHV eruption (Clay et al., 1999) echo those apparent from our analysis of responses earlier eruptions: the need to respond with aid strategies for both the short (days and weeks) and long (months and years) term and the provision of aid driven by the needs of the recipient not the donor. However, these recommendations cannot be met without rapid investment and decisions to release money or 'aid', *coupled* with aid that prepares for future events, and removes the vulnerabilities introduced by the current event.

These lessons could have been learned in the aftermath of any one of the significant events we have described here, the articulation of the same points evident from earlier eruptions begs the question as to whether these lessons are merely articulated or actually *learned*. The closely spaced eruptions of the 1970s on St Vincent demonstrated some local learning in action and response but there is rather less evidence that these exerted any influence in the subsequent response from the UK Government and external donors during the early stage of the volcanic activity at Soufrière Hills volcano. This was undoubtedly compounded by the British tradition of moving FCO officials regularly from country to country to avoid complacency. This learning is frequently articulated in the literature dealing with the political economy of decision-making as 'triple loop' learning (Wilkinson, 2015), and permanent change is articulated around the 'policy window' for realignment of political processes in the corrective aftermath of a disaster.

The reality here demonstrates that learning cannot be implemented until the temporal and spatial timescales of (multiple) hazard processes and impacts are aligned with the timescales associated

with political decision-making on spatial and fiscal scales, that align with projects from major infrastructural investments to local-scale preventative and preparedness actions. By this we do not suggest that these operate on similar spatial timescales but that thinking around hazard analysis can be adjusted to consider these decision-making pressures and the timescales over which they occur (consider hazards together, See Section 5.2) and in turn that financing of Disaster Aid widens emphasis on long-term support outwith the disaster moment.

This latter point is not new, but our analysis here particularly demonstrates the benefits of the accumulation and exchange of knowledge as a continuous process across hazards and the benefits of adequately resourced monitoring networks, and the valuing and sharing of experience.
A particular challenge in this regard is the coincidence of major hazards with rapid change during a political cycle (re-organisation or change in regime). Both SSV 1971 and 1979 and the 1995-1997 eruptions of SHV coincide with a major change of administration, leading to delays or alterations in aid administration.

5.3 Into the right gaps? Prejudice, personalities and external actors (multilateral and voluntary aid)

We have shown that over time, disaster relief has been articulated more clearly around the needs of those most strongly impacted but that this has been offset by increased bureaucracy and continued opportunities for political interference. The final dimension of our analysis here is to consider the spontaneous successes of disaster aid evident in the record despite these structural issues. These often, although not exclusively, manifest themselves around voluntary aid. In the Caribbean this type of aid is said to occupy the gaps and groupings left behind by state-based aid mechanisms, and so looking to patterns of aid movement in this area might suggest where smaller initiatives might act to dis-proportionately reduce vulnerabilities to further risks. A strong challenge with this is finding these instances in the written record we have examined. Nonetheless, there are some positive local instances that provide templates for different ways in which to distribute Aid. The network of the Commonwealth (not officially defined but broadly other countries in the British Empire at any one time during the 18th and early 19th Century) were inclined to provide not just financial assistance but also goods of relevance to the victims. In particular, the island-to-island practice of sending on seedlings and plants to ensure the rapid re-planting of not just plantations but also subsistence foods were widespread in the early 20th Century. This had a particular association with some late 19th Century long term development initiatives designed to address chronic poverty and vulnerability following a multi-island review by Morris (1897). These created Botanical Stations designed to experiment and understand best practice in both large and small-scale agriculture. Intriguingly the specialised reports pin-pointed the importance of small-scale diversification of farming practice, and a worthwhile outcome was the sharing of plants suitable for small-scale farming following hazard events (following hurricanes and the 1902-03 SSV eruption). This view did not prevail, as each time market economy monoculture was favoured (e.g. Barclay *et al*., 2019) and as detailed above, in 1902 there was considerable differences between those who farmed the land and those who administered it, as to the primary purpose of cultivation. Morris himself attempted to intervene and requested to conduct further experiments on the ash-laden soil to best understand which crops were to thrive under these conditions, this was resisted by Governor Llewelyn on the grounds it would be a poor investment of the Eruption Fund should further eruptions occur (Blue Book, 1903 UK National Archive).

In a similar vein, the 1999 evaluation of responses to the SHV eruption recognised that '*Overall construction and adaptation using local materials, know-how and labour appear to have been more cost-effective than solutions based on the importation and assembly of prefabricated structures*', when undertaking reconstruction projects. In particular, multiple participants at a STREVA workshop remembered the positive moment in using a small amount of aid money to pay local labourers to remove and redistribute heavy ashfall in the north of the island in 2003 (www.streva.ac.uk). This later example is a useful counterpoint to the stereotypes and complaints that emerged in the aftermath of the 1902-03 SSV eruption when labour was enforced (either on plantations or via migration) and consequently resisted. It demonstrates the benefits of aid deployed to not only respond and recover but that is fair and beneficial to those employed too. Collectively these insights point to the value of crisis aid driven by the context of long-term development concerns, something that can only be gained by embedding the concerns of the local population into those responses. Initiatives driven by donor-need and perceived as opposed to actual insights into what will help (see examples herein), are less successful.

Conclusions

We have used the historical record of four past eruptions augmented by an analysis of other hazards, and longer term political and social processes to examine the role of disaster aid in alleviating short-term problems and its contribution to long term vulnerabilities. We find that there are several enduring lessons that transcend the different eras in which these eruptions happen. Systemic vulnerabilities to natural hazards are created both by the impacts from these hazards, inadequate aid responses and longer-term chronic problems created by weaknesses in governance and financial management of the islands. We also demonstrate that the impacts of the hazard are compounded by these longer-term problems and that in the Caribbean most major hazards happen in sufficient spatial or temporal proximity that the cycle of response and recovery to one is broken by the occurrence of another hazard. However, our analysis provides new evidence for what approaches might work in the future. Firstly, a more detailed consideration of the hazards in terms of their integrated impacts and the ways in which they amplify and affect one another would identify preventative or mitigative measures that can be enacted on timescales that match political decision-making processes. Secondly by integrating local knowledge into understandings of both hazard and risk, and in determining effective use of aid resource, useful interventions can be identified that have a disproportionate impact on vulnerabilities and preparedness. This has largely been demonstrated by its absence in the historical record, its lack at the root of failure and dissent described here. Finally, decompartmentalising the way in which aid is viewed in the context of hazards, aid for long term development needs to be coupled with emergency funds, with desirable shifts in infrastructure and practice pre-identified for integration into rebuilding schemes when the need for that occurs.

Author affiliations

Jenni Barclay School of Environmental Sciences, University of East Anglia, U.K.

Richie Robertson Seismic Research Centre, University of West Indies, St. Augustine, Trinidad

Jazmin P. Scarlett Present Address: School of Environmental Sciences, University of East Anglia, U.K. and Department of Geography, Geology and the Environment, University of Hull, Hull, U.K.

David M. Pyle Department of Earth Sciences, University of Oxford, U.K.

Maria Teresa Armijos School of International Development, University of East Anglia, U.K

Correspondence
Jenni Barclay School of Environmental Sciences, University of East Anglia, U.K. Email: J.Barclay@uea.ac.uk

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Data Availability Statement
The data that supports the findings of this study are available in the supplementary material of this article and this contains public sector information licensed under the Open Government Licence v3.0.

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Archival Appendix

1812 eruption – manipulation of Aid for personal benefit.

A letter from the Governor to the Administrator of the Windward Islands, suggests the motivation for this. According to the letter, the colonial government wanted to purchase 132 acres of the Grand Sable estate (owner Thomas Brown) to rehouse displaced enslaved persons and turn the location into a village (township). The Governor described resistance by Thomas Brown to surrendering those lands. The estimated losses recorded are likely financial 'persuasion' for the selling of this land (Brisbane, 1813):

"*…Understanding however that it was the intention of Col. Browne's attorneys to make every resistance in their power to the rights of the crown and having been readily informed that of them (Mr Cayley) had declared his determination to die upon the* [sic] *than permit the execution of my orders, and considering that for the number of the negroes (six hundred and [sic]) there power would be insufficient for the purpose in case the parties should proceed to extremities,* [sic] *a letter a* [sic] *whereof is contained in the enclosure number 5: to Major General* [sic] *the officer commanding His Majesty's troops in this island, in reply to which received the answer a copy whereof is contained in the enclosure number 6*."

"*In the meantime however having received information that the parties did not intend to make further resistance, I addressed to Major General [sic] the enclosure number 7; which fortunately saved the troops a long and [sic] march; and on the morning of the 20th my order were carried into effect; the first stone of the intended town was laid, and the surveyors were left to complete their survey which has since been done, as a report of a very different nature may be made of this transaction to your Lordship, I have judged it right to state the facts fully to you as they occur"*.

1902 eruptions – perception of landowners of themselves as key victims of the eruptive impacts

Alexander Porter, his estates were physically and economically at risk due to the large area of land exposed to the volcanic hazards. Despite being at risk, Mr. Porter had a lot of wealth, which brought with it, power. As an absentee learning that his estates were impacted, he wrote a persuasive letter to seek compensation (Porter, 1902):

"*…without any assistance [my] estates notwithstanding my heavy losses and doing all [fre]quently averting a crisis among the excitable negroes population especially in the Carib Country districts…I feel in face of an estimated loss of £27,000 on my estates caused by this terrible calamity that unless I receive a moderate amount of compensation…the difficulties of the government will be greatly* increased with a large unemployed negro and coloured population clamouring for food".

1902 eruptions – evidence for pressure to migrate for labour

All correspondence here related from the original filed and enclosures in The National Archives associated with the publication of the 1902 and 1903 'Blue Books' (see references)

Governor of Leewards Island's correspondence of 9th January 1903 *'you will have gathered from Captain Youngs' reports that the people in St. Vincent.... have obstinately refused to listen to any proposals offered by Captain Young and myself to emigrate anywhere*.

I found in September, on the occasion of a visit to St. Vincent, a Petition from certain persons expressing their willingness to go to Jamaica, but before any definite proposals, such as I have just received from the Governor of Jamaica in his letter of the 30th ultimo could be laid before the people the agitators against the scheme set to work to prevent it, and it has been impossible for the Government to convince ignorant people, against the advice of their clergy, of any prospective advantages... I am afraid the people do not wish to go anywhere they will have to work. In their native island they can eke out an existence, and seem perfectly content to live under such conditions…..The charitable assistance of the world is thrown away upon such characters'

About this time (11th January 1903) the Carib Population of Owia and Fancy tried to bypass the local administration and directly petitioned the King in the UK about conditions in their temporary lodgings. It is rare to see direct views of this group expressed in the Archives although they were mediated through local clergy as observed by the Governor's Administrator '*the cover letter is in the handwriting of the Rev T. Huckerby, Wesleyan Minister of Chateaubelair, and the date on the petition is in the Rev J.H. Darrell's writing*'. They complain further about the imperative for migration *'After being huddled together for six months in the building referred to, in which we suffered greatly from overcrowding, the Governor ordered us to emigrate, which we declined to do so, St Vincent being our homeland, and that of our Carib ancestors, and there being abundant room and labour for us therein*.'

For example, in the original correspondence destined for the blue book at that time, a passage marked in red pencil as 'omit' details the Governor requesting that working-age males be denied access to shelter accommodation on the island should they resist migration for labour offered on other islands as an 'encouragement' to comply. Unfortunately, this top-down approach to handling the Soufriere Eruption Fund meant the Llewelyn ran out of ideas for how to spend the money, and £25,000 were returned to the UK Government with many of the needs of the refugees unmet (Pyle *et al*., 2018).

1971 eruption: experience of UK FCO and impact of frequent movements

Material from: The National Archives (TNA) FCO 63/881 File ANV 11/2 Part A. Caribbean Dept, HM Diplomatic Service (correspondence 6th November until 5th December); TNA FCO 63/882 Volcanic Activity in St Vincent File no AN V 11/2 Part B. 1971 and TNA FCO 63/883 File ANV 11/2 Part C. Caribbean Dept, HM Diplomatic Service (correspondence 5th December to end December) then FCO 63/1022 AN V 11/1 1972 (all 1972 correspondence) .

6th November Deputy British Government Representative St Vincent, DBGSVG to other Caribbean departments

'*My only previous experience of natural disasters were the Ionian Islands earthquakes in 1953 when it was laid down that no difference was to be made in our relief efforts between British subjects and others. I believe that this is the policy we must follow here should disaster happen . We are a part of this community, and if we are not be discredited both as individuals and as a group must share the experiences of the people among whom we live and work*. '

1971-72 eruption evidence for hesitation in provision of aid around need for disaster in process.

Between the 1st and 15th of November 1971 there was evidence for considerable unrest , observations of crater lake warming and discolouration in La Soufrière, accompanied by seismically detected unrest.

12th November DBGSVG to other Caribbean departments and Caribbean Dept, FCO.

'London will no doubt pronounce on the question of principle... on the policy to be adopted in the event of any relief operation. Subject to their comments, I would imagine that it would be right in the event of any evacuation to give priority to our own citizens; but that otherwise the relief effort should be directed without discrimination over nationality'

By the 15th of November 1971 a lava dome was observed growing in the crater. At this point the volcano is 'in eruption'. On the 23rd November HMS Berwick was ordered to 'sail at maximum speed' to St Vincent.

DBGSVG to Caribbean Office, FCO

I hope that there will be no question of presenting a bill to St Vincent government for any assistance we are able to render. This state is still under 'grant-in-aid' and receiving very substantial development aid from U.K. Eventually in one way or another the UK will no doubt accept this expenditure. Grateful if we could avoid any future difficulty by clearing this point now

24th November (FCO UK) to Deputy Under Secretary (Dependent territories), FCO

'*It soon emerged that the main difficulty facing us was finance. MOD could provide anything that was needed at very short notice, and could fly it out in a VC10 or a Hercules. but the cost of a Hercules flight alone would be over £8,000. For their part FPAD, who have authority to provide up to £10,000 for any one emergency, cannot act until a disaster has occurred.'*

26th November FCO Finance Policy and Aid Dept to Finance Dept FCO

The FCO Natural Disasters subhead permits us to offer first aid relief after a disaster has happened. Similarly the ODA can give aid for rehabilitation or reconstruction at a still later stage. But we are concerned at present with precautionary measures; apparently we are without financial authority to meet the cost of e.g. helicopter flights carrying vulcanologists on visits of inspection. Pre-disaster planning is normally the responsibility of the government of the country concerned. St Vincent is an Associated State, is self-governing except in the field of defence and external relations. But its resources are small. It has no defence forces. The UK can hardly recover the cost of assistance given in taking common sense precautions and particularly not, perhaps, if the help is given by our defence forces….. Perhaps the answer is that the cost of assistance with pre-disaster planning should be taken into account when fixing the amount of budgetary aid to be given to St Vincent. This is a matter for ODA. '

On the 30th of November volcanologists arrive from the USA and have an overflight using infra-red, after which they provide a briefing to the US Embassy and then head to St Vincent (1st December). Discussions in the FCO departments continue, as the dome grows, on the validity of providing funding.

3rd December Finance Dept FCO to Financy Policy and Aid Dept FCO

'*Our Natural Disasters subhead is quite clearly entitled 'Assistance <u>after</u> Natural Disasters Overseas' so it cannot cover planning before a disaster occurs*. ' [emphasis in original].

Meanwhile DBGSVG has written to all FCO departments to advise them that an evacuation has been decided upon based on discussions around new evidence from the US volcanologists, followed by a

flash telegram on the 4th December to confirm this and provide a prospective date for the announcement and enactment (7th December).

4th December DBSVG to Caribbean Department,FCO

'*the people at the centre [in St. Vincent] have realised that the difference between absolute disaster and a more serious set-back is measured by the amount of hard work done now*.'

7th December 1971 letter from Caribbean Department,FCO to other HMG depts)

'*As you know the special fund upon which FPAD can draw to provide a contribution from HMG towards the cost of providing relief measures in the case of natural disasters say, under present arrangements, can only be used when such a disaster has occurred…..as soon as the volcano erupts we shall be ready to provide naval assistance and that they can then expect a substantial contribution from HMG to the relief fund; but nevertheless the absence in the meantime of any immediate financial or material contribution from Britain will become increasingly obvious and embarrassing*'

Note here the use of embarrassment as a motivation to unlock funding. On the 8th of December the evacuation begins involving many agencies and NGOs including the Red Cross at this point. It is not perceived as proceeding smoothly.

9th December 1971 letter from Caribbean Department FCO to DBGSVG

'*It has struck us that, amidst so much relief assistance already being given by charitable bodies and other Governments. the absence of any financial help from HMG may soon become embarrassing even if it is not already so. For your own information we are therefore pressing for the relaxation of the 'no eruption, no payments' rule which governs the operation of the FCO's Natural Disaster Fund, with the idea that you might be authorised to offer the St. Vincent Government some small but respectable looking sum of money as soon as you can*.'

13th December 1971 letter from DBGSVG to FCO Depts

'*The Governor thinks that some actions already taken or which may need to be taken in the future, require formal proclamation of an emergency…… I went on to say that my own worries at the moment were concerned with (a) feeding refugees and (b) effects on the economy of the state. I did not see that formal declaration of emergency addendum helped much in these spheres. It was not for me to comment on internal political matters but the best answer to the opposition would be to see that the reception centres worked well and that evacuees were (a) kept happy and (b) stay fully employed. Governor said wryly that he knows his own people and that the only result of happy centres would be that others would jump on the band waggon for free meals etc*'

14th December 1971 letter from (FCO) to (HM Treasury)

'*So far, British Government help towards relieving the situation has been confined to assistance given by our diplomatic representative on the spot, and by a visiting ship, in the setting up of an operational centre; and in the conveyance by the ship's helicopter of seismographic gear and scientists to and from the volcanic crater. This hardly seems adequate in view of our 'association'*

with St. Vincent.... my purpose in writing is therefore to ask you to agree that we may authorise an immediate gift to the St Vincent Government of an amount up to £5000'

At this point the provision of aid to St Vincent becomes a point of contention because of parity with other countries with which the UK has an 'association' (sic).

17th December 1971 letter from HM Treasury to FCO

Although the sum at issue is minor I would be reluctant to agree to expenditure explicitly in anticipation of a disaster because of the vastly more expensive repercussions which such a decision might present in e.g. the context of flood prevention measures in India or Pakistan.... I suggest that ODA be asked to find £5000 from within the total aid programme.'

Handwritten note from FCO (also 17th December) 'Mr xxx. Can you make something out of this lemon?'

Handwritten note from Mr xxx (also 17th Dec) . 'Mr yyy (Caribbean Department). We discussed and you said you could take this up.'

22nd December 1971 letter from FCO Aid to FCO Finance

I am astonished that the Treasury attitude in (HM Treasury) letter of 17 December to Mr Bottomley.... if the Treasury argument is that no disaster has yet occurred I think that this should be equally rebuffed. Effectively (financially) the disaster began to occur as soon as the Government incurred expenditure and began to lose revenue. Are the Treasury seriously suggesting that the relief money should be held back until a predetermined number of persons have been killed?

Evidence for the impact of weak preparedness and poor funding on evacuation

22nd December DBGSVG (part of a 27 page report to all FCO Offices)

If, shortly, there is an explosive eruption, the Government will be praised for its foresight, and returned to power at the next elections. But if, as is quite as likely ,the present activity continues for some time the most probably development is a gradual spread of discontentment among evacuees and those who have had to suffer their presence in their communities and a progressive deterioriation of the State's economy, faced as it is with reduced productivity of the agriculture of the clearance areas and with the burden of supporting the evacuees…

Social problems are already appearing. The evacuees, removed from their homes are housed in schools and mission halls. ... But except where there is a determined and experienced camp-leader, public areas, kitchens and sanitary facilities are neglected. The risk of disease is high.

Cattle rustling has started, and animals are still being sold at ridiculously low prices.

1971 Political manipulation of the situation

With the growth of the lava dome slowing the evacuation area was changed on the 5th and 6th of January and some evacuees returned home, by the end of January dome growth was very slow and only one SRC scientist remained on the island. Meanwhile on the 29th of February the Minister for Agriculture, Trade and Tourism resigned citing that he was opposed to the Premier's handling of the eruption issue amongst other reasons. All evacuees were allowed to return home on the 4th of March and the eruption was declared over on the 20th of March. On the 8th of March parliament was dissolved and a new administration began with the premiership passing from Cato to Joshua on the 7th of April

14th June 1972 DBGSVG to (FCO Castries Administration. St Lucia)

[New Premier. PM SVG] and his colleagues have been industriously muck-raking ever since the elections. Themselves highly qualified practitioners in the art of squandering public money, they are taking advantage of every opportunity open to them to accuse the [previous Premier]Administration of graft, corruption, nepotism and so on.

Since the evacuation the plantation has managed to operate largely because the older worked, both men and women, continued to do their jobs. But the situation at the moment is that only about half the coconuts produced can be 'split' for copra-making at Orange Hills itself. The remainder must be transported to another plantation further south to be cut open. The coconut meat is then brought back to Orange Hills for drying. There is no prospect of an immediate improvement. Indeed, the reverse is the case.

Orange Hills is an area which is solidly pro-Joshua, and there is in process at the moment an operation of removing from minor government jobs, such as a road gang or truck driver, known supporters of the Labour Party. Their places are being taken by PPP support and Orange Hills has lost more than thirty of its most experienced workers during the past three weeks for this reason alone. Their acquired skills and knowledge of the plantation cannot be replaced.

Learning across eruptions in the 1970s

For example, the UK SVG representative wrote '*[PM SVG] and his team and Police HQ worked hard and long hours and with unaccustomed decisiveness. It is largely due to them that the initial evacuation proceeded so quickly and smoothly'*

'As the evacuation will last at least 9 weeks and probably much longer, the British Red Cross Society has sent a disaster relief delegate to the island for 2 weeks to assess the situation and to determine the need for further assistance... the volcano is still very unstable and although help has been coming

in from many sources certain needs have not yet been covered. The Society has therefore asked the League to make a limited appeal to North American and Caribbean Societies.' (1st May British Red Cross Bulletin in UK National Archives) and via the experience of UK officials on St. Vincent (Figure 3, 15th May)

1979 – Rapid response to early explosions and issues around the visibility of this 'aid'

All correspondence for 1979 in quote reproduced from TNA FCO 44/2030 and TNA FCO 44/2031.

On the 11th-12th April there were first small tremors, then continuous tremor by evening of 12th, with low rumblings around midnight. Just after that SRC, phone Premier to inform him of events**.** On the 13th April 04:00-05:00 first residents notice ash, and self-evacuation on west-side begins. At 05:00 evacuations called. Then 05:45 First Explosive eruption (series of four until 21:15)

''*Reception centres were set up in schools, churches and community centres and coordinators appointed to take charge of each centre. By 14 April 30 such centres had been established containing an estimated 12,000 evacuees. Further camps were gradually established to avoid overcrowding and eventually 65 were in existence containing 12,947 evacuees. An estimated 2,000-3,000 evacuees were and are accomodated in the houses of relatives and friends, but are being fed at the camp*s.' (15th May Deputy British Government Representative DGBR –'Lucas' update)

On the 14th April there were more explosions and on the 16th April UK approves initial amount of £25,000 for food, and assistance with medical aid. **On the 17th April there were more explosions**

' *Also according to LIAT between 2,500 and 3,000 people left St Vincent by air during the first week of the crisis*' On the 18th April British Government Representative (Barbados) visits on a US Coastguard plane with supplies and then reports to FCO.

'The Prime Minister seemed somewhat off-hand when we arrived and spoke a bit scathingly about the quantity of supplies and said five tons was no good, they needed 500 tons... he seems to undertake a great deal of the administration himself even locating missing persons. People were constantly coming and going in his office and the telephones kept ringing'

The DGBR [Deputy British Government Representative - St Vincent asked us to look into the possibility of having first call on some charter planes in case evacuation of British Residents should become necessary'

'Our visit seemed to be worthwhile in that we received good press coverage on arrival at the airport and we were seen travelling through town and visiting reception centres'

(Report from FCO Information Officer 19th April)

' it was suggested that we should restrict our efforts in the first instance to providing medical supplies. since it would clearly be more sensible from an economic point of view that heavy articles

*should be provided from nearer at hand than the UK. The ODM Disaster Unit worked throughout the weekend to gather together medical supplies specifically requested by the Government of St Vincent... in addition I received permission to spend up to £25,000 in meeting bills for emergency supplies of food, to be purchased in either Barbados or St Vincen*t'

20th April 1979 News item on British Broadcasting Corporation TV News by Martin Bell.

Transcript ' *The island is a British responsibility but the external relief operation is very obviously American. United States coastguard helicopters fly rescue and reconnaissance missions, the Americans have made an immediate offer of £150,000 worth of emergency aid, against only £25,000* from the British'

The FCO sent a strongly worded (unrecorded) complaint to the BBC about the tone of this reporting.

25th-26th April further explosions

1st May unknown FCO official handwritten comments (in square brackets and italics) on United Nations Press release

The United Nations Childrens Fund (UNICEF) is flying in assistance for 15,000-20,000 people evacuated from the volcanic eruptions in the Caribbean island of St. Vincent. The $6,000 worth of assistance included urgently-needed drugs, oral rehydration salts [*for use in cases of acute dehydration following gastroenteritis ????? necessary*]……. Conditions in the camps therefore have to be very carefully monitored to prevent outbreaks of gastroenteritis and typhoid [*almost unknown in the area? Not very good 3/10*]

3rd May UK Election Government become Conservative (such that Foreign Secretary David Owens becomes Lord Carrington. Civil servants will have remained in place.) No further explosions mean that the evacuation zones begin to change and on the **14th May Evacuated zone moved to north of Chateaubelair and Rabacca only.**

15th May 1979 British Broadcasting Corporation responds to complaint. From Ken Callaway Chief Assistant to Television News Editor.

'As you say, the tenor of the report is that the British contribution to relief was comparatively small. If Martin Bell, on the spot, said so, I am inclined to believe him. He is our senior and most experienced correspondent, and not one who would lightly say anything to the detriment of his own country'

(handwritten note in margin inferred from FCO member) 'Mr Callaway as well as Mr Bell, scores 0/10. But I am not inclined to take this any further) please copy with enc (transcript) to Disaster Unit ODM, News Dept FCO. '

1979 – political machinations around response and aid, and long term implications.

Memo West Indies Department FCO (25th April)

'*You may be interested to know that the Vincentian vote in this country is concentrated in Reading North, High Wycombe and Aylesbury and the Labour candidates in each of these constituencies have been pressed by immigrant organisations to state what the government has done, while opposition candidates have been accusing the Government of responding tardily to the disaster in St. Vincen*t'

Memo West Indies Department

I suppose one cannot blame Cato for trying to extract the maximum amount of assistance from as many donors as possible while the disaster is still fresh in many people's minds. He will have formidable problems later on when St Vincent is no longer in the headlines

The total value of UK emergency aid to St Vincent is now in the region of £100,000 and consists of cash for local purchase of food and other supplies. In addition, three British seismologists are on island to help local experts to analyse the volcano's current activity and the prospects for the future. And a frigate will always be within two or three days steaming distance. Our main contribution will be to help St Vincent repair the long term damage to the economy'

'*And it will be the longer term that most assistance will be required. Banana shipments are down by two-thirds, other crops have been similarly affected and although no accurate figures exist, a lot of livestock must have been lost. It will take time, perhaps years, to get agricultural production back to what it was. This years' Carnival has been cancelled which adversely affect the tourist industry and much of the impact of the Cooper Lybrand team's effort to attract investment have been lost*'

1995-1997 emergency on Montserrat:

'*When it came to projects DFID [Department for International Development] could not seem to decide whether the situation should be treated as an urgent development problem or as a true emergency*' (Taylor, 2010). '*It has three pockets out of which to finance Montserrat: first, emergency aid, which came into operation because of the volcanic devastation; secondly, budgetary aid to support the budget of the Government of Montserrat, over which rigid control is exercised; and thirdly, development finance'* (HoC Debate February, 1998 HC, 1998).

Ms Short regretfully commented, "we had to work within the existing machinery. You cannot change the machinery of government or its budget in the middle of an emergency" (Minutes of the UK Government International Development Select Committee, November 1997 HC 1997)

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