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**Climate Change and the Impact of Drought  
on Human Affairs and Human History  
in the Philippines,  
1582 to 2009**

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## Introduction

This paper draws attention to the causes and consequences of food shortages and famine with respect to the relationship between climatic factors, namely El Niño events, drought, food supply, regional characteristics and social structure.\* Hence, in examining famines in the past and present, I will stress the structural links between food shortages, Filipino peasant societies and the weather factor. In addition, I will explore the historical relationship associated with economic and political changes and societal group inequality that becomes ever more explicit in famine.

Until recently, famine and starvation have been so neglected by many scholars of the Philippines that little effort has been made to understand their historical bases and social behavioural effects. In employing a classic approach to climate, the environment and human activity, I will try to understand the present in the Philippines by looking at the past. As such, I will reconstruct a picture of the past with respect to drought, food shortage and famine.

Before the coming of Spanish and American colonialism and economic development and change to the Philippines, natural disasters were isolated in space and time. After the advent of colonial rule, however, natural disasters involving the behaviour of global markets, large-scale movements of rural populations and subsistence crises became systematic through space and time. Nevertheless, the increasingly widespread nature of the adverse impact did not necessarily imply uniformity of impact (Torry, 1979, p. 531; Dery, 2006; de Bevoise, 2002).

As Mike Davis forcefully argued, in *Late Victorian Holocausts: El Niño Famines and the Making of the Third World*, the poorest classes and regions suffered most under colonial rule in the final decades of the Victorian era in Asia, Africa and Latin America (Davis, 2001). He cites, in this important work of environmental and political history, the horrific famines that occurred in Brazil, China and India between 1876 and 1900, which were at the epicentre of a calculated catastrophic collision between political forces of empire and climatic events, namely three tightly spaced El Niño droughts that triggered widespread famines and the greatest human tragedy since the Black Death. Nature and the actions (and inactions) of colonial governments collaborated in a very real sense to create all the conditions in which thirty to fifty million people living on the equator around the world perished due to starvation and drought (Davis, 2001, pp. 23–116). Hence, vulnerability to disasters, natural or technological, was a class concept, with historical roots.

Over the last century, the Philippines has become increasingly vulnerable to drought exacerbated by alternating episodes and patterns of the El Niño Southern Oscillation (ENSO) and its sibling rival, La Niña. Their disastrous impacts on crop production losses have tended to become more and more serious (Benson, 1997; Bankoff, 2002).

However, the seventeenth century is a time period where one can actually start to look at what has gone on in terms of the climatic indicators of El Niño in Southeast Asia and the Philippines, in

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\* For a general discussion of the impact of a rise in surface temperature on changed climate and history on a global scale see Lamb, 1982; Fagan, 2008; Flannery, 2006; Dirks, 1980.

order to try and understand what is happening now with drought and maybe predict what will occur in the future. A crucial piece of evidence comes from the climate-affected time series of tree rings from Central Java from 1514 to 1929, compiled by Belarge. Anthony Reid, deploying Belarge's tree-ring records, has shown that the years 1598 to 1674 were markedly drier than average in Southeast Asia, with the driest period falling between 1643 and 1671 (Reid, 1993, pp. 291–93). While Peter Boomgard's systematic survey of crises events in the Indonesian Archipelago in the seventeenth century points to severe El Niño episodes spaced right across the century, in 1605–16; 1634–38; 1659–65; 1673–76 and 1684–87. These events adversely affected local economies and harvests causing crop failure and famine (Reid, 1993, pp. 291–93). In the Philippines at that time, food shortage and famine were clearly linked to the variability of El Niño events, particularly in the years 1643–44 and 1686–87. Since the end of the seventeenth century, there has been an increase in the frequency of food shortages and famines and that is partially associated with an increase in El Niño-related drought events that have occurred from that time to the present. To facilitate my research, data has been gathered on this past several hundred years of drought frequency in the Philippines coupled with conditions in the nineteenth century, especially the last quarter that made the archipelago more susceptible to climate shock—hence increasing the possibility of widespread famine.

David Arnold's lucid investigation of famine, social crisis and historical change, based on his research in South Asia, rests on a definition of famine that emphasises its extraordinary characteristics. Famine, he writes, is

a collective catastrophe of such magnitude as to cause social and economic dislocation. It generally results in abnormal levels of destitution, hunger and death...and can lead to the complete disintegration of customary patterns of work and subsistence and...[can] greatly disrupt customary norms of work mortality and social behaviour (Arnold, 1988, pp. 6–7).

While famine is exceptional, Arnold notes that it is closely linked to economic and political structures and, of course, to the gradual impact of climatic phenomena. Famine also has multiple demographic consequences, including excess mortality (frequently caused by epidemics linked to hunger), a decline in births and increased migrations (Arnold, 1988, pp. 6–7).

Food shortage and famine are of continuing major importance to the Philippines. 'Famines are wars over the right to existence,' writes Davis (2001, pp. 6–16). These horrific wars of existence fought over for centuries in the Philippines are not well-known and have not yet received a comprehensive narrative. Luis Dery's recent study of pestilence in the Philippines between the sixteenth and eighteenth centuries has, however, paid attention to natural disasters (typhoons, earthquakes, volcanic eruptions) including gradual or 'creeping' disasters such as famines.\*

These food shortages and famines, resulting from a disastrous collision between political and economic forces and climatic events must be likened to the 'annihilation of the structures of the

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\* See Dery's province by province account of the deadly toll of colonial rule and floods, droughts, famines and epidemics in the seventeenth and eighteenth centuries. Dery, 2006, pp. 57–144.

distribution of grain, of work, and the back-up of social functions' (Brun, in Dirks, 1980, pp. 34–35). Filipino farmers have not vanquished famine. Within the last twenty to thirty years, food has been so scarce in some areas of the Visayas and Mindanao that the threat of hunger and starvation has been a constant fact of life for millions of Filipinos. Moreover, dearth, destitution and death have all been continual and familiar outcomes caused by food shortages and natural disasters under both Spanish and American rule, and even up to the present day. Food shortages and famines, as here defined, were almost a constant factor in society and built into daily life in the Philippines between the sixteenth and twentieth centuries.

### **The El Niño Southern Oscillation**

Global temperature has increased at an unprecedented rate over a comparatively short period of time, namely this past century. It has been observed within current debates about climate change and its consequences, that the ENSO behaviour over the past two to three decades has been unusual with more El Niño and fewer La Niña events than expected (Couper-Johnston, 2000; Glantz, 1996; Fagan, 1999). The ENSO affects climate variables like rainfall—the most crucial factor affecting land use and fertility. Scientific evidence available so far for the Philippines suggests that with global warming El Niño events tend to skew the rainfall distribution, resulting in severe drought in certain regions, and drier conditions more likely everywhere (Allen, 1988; Nichols, 1993; Diaz and Kiladis, 1995).

An El Niño starts when a small change in the usual sea surface temperature in the Pacific Ocean produces a change in the winds along the equator. This eventually leads to a weakening of the ocean temperature gradient from one side of the Pacific, which is normally cooler in the east than in the west, to the other. Droughts occur around the Indian Ocean and the west Pacific, associated with cooler than normal ocean temperatures, while the unusually warm waters in the east bring heavy rains and floods to the normally arid Pacific coast of South America (Nicholls, 1997). Meteorologist and environmental historians agree that the El Niño weather phenomenon reached an unusual peak over the twentieth century. It has been more intense since 1900 than any time in the past 130,000 years (*Climate change what can we do?*).

Like global warming, El Niño—or more precisely the climate cycle that produces El Niño—does not generate weather *per se*: rather it allows the context in which weather takes place (Glantz, 1996, pp. 1–22). Meteorologists are now convinced that high atmospheric pressure in the eastern Pacific sends trade winds blowing to the west. Historically, climatic indicators of an El Niño event in the Philippines include weak typhoon activity, fewer numbers of typhoons entering the Philippine Area of Responsibility (PAR), and less intense typhoons.

One point that Davis makes is that in the last quarter of the nineteenth century El Niño activity increased and La Niña activity decreased and the same pattern seems to have taken a frightful hold on the last quarter of the twentieth century in the Philippines. The Philippines' rice fields—vital to feeding the country's population—were hit by drought in 1989. The failure of Asia's monsoon,

which normally watered rice paddies during the second third of each year, left large parts of the archipelago parched (PAGASA; Glantz, 1996, pp. 73–89).\*

### El Niño and the temporal dimension of drought: the long view

Droughts sometimes followed hard on the heels of departing killer typhoons and floods in some of the hardest-hit regions of the Philippines. By the end of the eighteenth century, Franciscan fathers in southern Luzon and, later, Jesuit meteorologists had clearly warned society that such periodic dry spells could last for a number of seasons. In the 1780s and 1790s, Spanish religious and government officials observed the repeated high-frequency alteration in particular areas between drought and typhoon-induced floods. They focussed on the drought-related effects in their official reports and updates. They also sometimes mentioned other climatic hazards, particularly flooding when it coincided with drought-related issues in the Philippine Islands.

The El Niño weather pattern, as previously noted, is a periodic warming of the Pacific Ocean which brings dry conditions and wreaks havoc among weather patterns in the Philippines with vulnerable areas experiencing longer dry seasons and very low rainfall. Historically, when El Niño conditions developed in the eastern Pacific, the visible signs included increased precipitation there, including parts of South America, and decreased precipitation in the western Pacific in places such as the Philippines, Australia and Indonesia (Report drought-related effects of El Niño for April 1998 and a six-month general update, 1998, p. 1). Prior to the last quarter of the twentieth century, before it was discovered how the El Niño worked, it was still difficult for Philippine meteorologists to predict areas that would be adversely affected by low rainfall. It was one of the cruellest ironies for the Jesuit meteorologists that an archipelago notorious for regular droughts and killer typhoons also supported the majority of its population through farming and commodity-driven export agriculture (Hookway, 2007, p. 47). However, at the start of the twenty-first century international forecasters could predict that the destructive El Niño weather system would recur roughly every four to five years (Glantz, 1996, pp. 73–89).

**Table 1.** El Niños, Drought and Famine 1582–1795

Year	Event	Place/s affected	El Niño
1583	drought, fire	Pampanga, Tondo, Bulacan	1582-1583
1614	drought	Tondo	
1626–1629	drought, locusts	Ilocos	
1644	drought, locusts <i>gran mortalidad</i>	Pampanga, Tondo, Bulacan Tondo	
1650–1653	drought, locusts	Tondo	1650, 1652
1651	drought	Pampanga	1650
1652	drought, smallpox	Pampanga, Tondo	
1653	drought	Ilocos, Pampanga	

\* See the website of PAGASA (Philippine Atmospheric, Geographical and Astronomical Services Administration) for climate impact assessment information on drought. The El Niño years considered span the period from 1965–66 to 1997–98, online, <http://www.pagasa.dost.gov.ph/>, accessed 24 November 2009.

1654	drought	Ilocos	
1658	drought	Ilocos	
1685	drought, floods	Pampanga, Tondo	1683–1684
1686	drought, floods	Pampanga, Tondo	
1690	drought	Bulacan	
1692–1697	drought, floods	Pampanga, Tondo, Bulacan	1692, 1694–1695, 1697
1701–1705	drought, locusts, floods	Pampanga, Tondo, Bulacan	1701, 1703–1704
1729	drought	Laguna	1728
1735	drought	Bulacan	1734
1738	drought, floods	Tondo, Bulacan	1737
1739	drought	Cagayan, Batangas	
1742	drought	Pampanga	
1745	drought	Pampanga, Bulacan	1744
1748	drought	Pangasinan	
1749–1750	drought	Pampanga	
1750	drought	Tondo, Bulacan	
1752–1753	drought	Bulacan	1751
1757	drought	Bulacan	
1758	drought	Bulacan	
1766–1767	drought	Bulacan	1765–1766
1768–1774	drought, floods	Pampanga, Tondo	1768–1769, 1769–1770 1772–1773
1769–1771	drought, floods	Bulacan	1768–1769, 1769–1770
1771	drought, floods	Pangasinan	
1771	famine ( <i>gran hambre</i> )	Batangas	
1775–1777	drought	Bulacan	1776–1778
1782	famine ( <i>gran hambre</i> )	Batangas	1782–1784
1789	drought	Cagayan	
1795	famine ( <i>gran hambre</i> )	Ilocos	

Source: Quinn and Neal, 1992, pp. 623–48; and Dery, 2006, pp. 225–33.

It is not easy to find data on drought for periods before the founding of the Manila Observatory, which marks the advent of instrument observations. The only meteorological observations are those proxy records noted in the histories and writings of the era. This shortage of data led me to reframe information on drought recently compiled by Luis Dery, detailing the various natural and non-natural calamities that devastated the Philippines between 1571 and 1800, especially Luzon. Table 1 helps to provide the means to understand the link between patterns of drought, El Niños, and resulting food shortages and famines.

The earliest recorded drought, as shown in Table 1, occurred in 1583 in the provinces of Pampanga, Tondo and Bulacan in the immediate aftermath of the El Niño of 1581–82. The table shows that a series of protracted droughts had a profound effect on the socio-economic and demographic development of these three provinces between 1683 and 1704. According to W.H. Quinn three tightly spaced El Niños occurred in the 1680s (1681, 1683–84, 1687–88) of which only one, 1683–84, affected the Philippines. But the three tightly-spaced El Niño droughts of the 1690s, namely in 1692, 1694–95 and 1697, had a profound effect on these provinces. More importantly, the lasting effects of this trio of droughts was compounded shortly afterwards by another set of terrible El Niño droughts that occurred in 1701 and 1703–04.

**Table 2.** List of years in which El Niño and La Niña events occurred, 1872–2000.

<b>El Niño</b>	<b>La Niña</b>
1877–78*	1872–73
1880–81*	1886–87
1885	1888–90*
1888–89	1892–93
1891–92	1903–04
1896–97*	1906–07
1899–1900*	1908–09
1902–03*	1916–17
1905–06	1924–25
1911–12*	1931–32
1914–15	1938–39
1918–19	1942–43
1925–26*	1949–50
1930–31*	1950–51
1939–40	1954–55*
1940–41	1955–56*
1951–52*	1964–65
1953–54	1970–71
1957–58*	1971–72
1963–64*	1973–74*
1965–66*	1975–76*
1969–70*	1988–89*
1972–73*	1995–96
1976–77*	1998–99*
1982–83*	1999–2000*
1986–87	
1887–88	
1991–92*	
1993*	
1994–85*	
1997–98*	

\* indicates that there was 80% agreement amongst the sources that an event had occurred that year. The sources for the El Niño (EN) and La Niña (LN) data in Table 2 are based on Quinn and Neal, 1992; D’Alco and Grubbe, 2002; Diaz and Kiladis 1989. The International Research Institute for Climate Prediction (IRI) has a webpage with a list of EN and LN events from January 1950 to December 2001, online: <http://www.iri.columbia.edu/climate/ENSO/background/pastevent>. Couper-Johnson, 2000, p. xiii, contains an EN/LN chronology for 1870 to 2000 based on the UK Meteorological Office; Dong, 1988.

A similar pattern occurred in the 1760s; a decade that marked the beginning of unprecedented social and political upheaval in the Philippines. In this period from the end of the Seven Years War until the 1790s, the impact of the 1766–67 (Bulacan), 1768–74 (Pampanga, Tondo), and 1769–71 (Bulacan) El Niño droughts must be emphasised. Table 1 shows that between 1583 and 1777 the provinces of Pampanga, Tondo and Bulacan each experienced thirteen major droughts—nearly one terrible event every decade. Between 1752 and 1767, Bulacan was particularly hard hit by a series of four droughts, or one nearly every four years. Like the latter part of the seventeenth century, the last three decades of the eighteenth century witnessed widespread famines, with desperately hungry people in Batangas in 1771 and 1782, and Ilocos in 1795.

Events listed within the boundaries of instrumental time series since 1875 show that several El Niño events have taken place each decade since the end of the nineteenth century. But the severity of these events has been prolonged since the 1970s, driving drought-devastated farmers to the brink of starvation, and on more than one occasion, sending the Philippines into recession (Hookway, 2007,

p. 47). The quasi-periodic frequency of two to seven years that has characterised the El Niño in the twentieth century seems to be contracting in the first decade of the twenty-first century, causing prolonged drought in the country. When it oscillates with La Niña, which creates an abnormal cooling of the sea surface, heavy rains and flooding are generated.

Table 2, listing years in which El Niño and La Niña events occurred from 1872 to 2000 in the Philippines shows how vulnerable the country's economy has been to a single weather system, and world commodity markets and the colonial (or independent) state.

The Philippines has experienced drought at least twice a decade.\* A highly variable climate can help to generate both the frequency and severity of the droughts and floods which have set the scene for potential food shortages, famines and epidemics. The El Niño Southern Oscillation (ENSO) variability has had a major effect on the climate of the Philippines. In the past, the phenomenon has amplified the inter-annual variability of the climate and imposed temporal patterns, phase-locked to the annual cycle, on droughts and widespread heavy rainfall episodes (Nichols, 1993). The effects of El Niño-related drought and flood damage remain just as severe today in terms of environmental, social and economic impacts across the archipelago, as in the eighteenth and nineteenth centuries. In the past, parts of Luzon, the Visayas and Mindanao, hit by severe drought, were often barely on the path to recovery, when major regional rivers flooded previously bone-dry provinces. In the absence of readily improved food assistance, such variable patterns of drought and flood have threatened millions of people with famine. Often, to make matters worse, while the typhoon season brought the threat of floods, the shrinking supply of stream water in the dry season exaggerated the effects of drought. Hence, cash-crop farmers in the central Luzon plain and the Visayas were encouraged by colonial and post-colonial governments to raise a seasonal crop—rice, maize, tobacco or vegetables—during the dry season, even though the watercourses were often dry during these hot months (McLennan, 1980, p. 81).

In the last years of the twentieth century, General Santos City in Mindanao was one of the worst affected areas savaged by drought and food shortage due to the El Niño weather phenomenon. The drought caused misery to some 804,054 families, or an estimated 3.6 million people in seventeen stricken cities and provinces, and stirred the conscience of the afflicted nation (Philippine drought, pp. 15–18). Other parts of the Philippines felt the same raised pressures of the great dry spell on agricultural lands that tormented various parched areas of south-western Mindanao, and they shared its drought. The vice-like grip of the long dry spell of the 1997–98 El Niño, which caused many rivers to dry up and induced extensive destruction to already degraded watershed and grassland areas through forest fires, quashed any hope of recovery by the agricultural sector in the second half of the year (Typhoon to induce recession, 1998). In the last half century, there has been an increase in the frequency of major food shortage and famine events and this has been associated in part with an

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\* For perspectives on vulnerability and the political ecology of famine in the last quarter of the nineteenth century see, Davis, 2001, pp. 280–310. For the last quarter of the twentieth century see Sen, 1981.

increase in severe El Niño-related drought events, which are arguably the most important disaster type in the upland and semi-arid areas of the archipelago.

### **El Niño and the temporal dimension of drought: the point-blank view**

I now want to look at drought events close up at point blank range in particular years and decades across the centuries. El Niño-related drought activity claiming large numbers of lives, damage to property and crops was reported as early as the seventeenth century. The great island of Mindanao suffered badly in 1643–44 because of ‘a famine among the Indians in that particular year due to a poor rice harvest caused by drought’ (Appendix, Events in Filipinas, 1686–1688, p. 184; Mindanao and Jolo, Events in the Philippines, 1643–1644, p. 147). Whereas in 1686–87 a protracted dry spell was followed by a typhoon and heavy, constant rains, as the La Niña, or ‘cold event’ with extreme climate variability began to prevail, which destroyed the rice fields of Cagayan.

Dry years often accompanied El Niño events, as in the hungry years of 1791–92 in southern Luzon. The consequences of the 1792 drought were of concern (and indeed, remained so) in many parts of Camarines and Tayabas for two to three consecutive seasons, adversely affecting the economy on both local and global scales. When asked in 1792 about the status of the recently-established pepper plantations of southern Luzon, the Alcalde Mayor Manuel Lecaroz had to say that the province in general had been reduced to extreme poverty and was badly affected by a drought-induced famine—‘unknown since time immemorial’—with thousands of people facing starvation (Selga, 1939, p. 116).

In times of such severe drought it was not uncommon for leaders of the Church to attempt to intervene and control the indiscriminate, unpredictable and often destructive vagaries of the weather. From the Spanish religious point of view, from the sixteenth to the nineteenth centuries in the Philippines, and even today, the collective and individual actions of Filipinos were held to be responsible for extreme weather events. Immoral conduct could lead to drought or poor rains, whereas prayer and moral behaviour could possibly arrest the dire consequences of drought and assume good rains. A rare circular from the Archives of Manila Cathedral enables us to learn about the great drought that gripped Manila in 1849 and the explicit plan of action taken by the Archbishop, which included instructions to priests and secular alike. On the last day of the month of August, Fray José Aranguren, the Archbishop of Manila, ordered parish priests to hold *rogativas* or public prayers, to ask the Lord for rain to alleviate the misfortunes that the drought had already caused. The text of the circular begins as follows:

Due to the extreme lack of water caused by the scarcity of rains that is currently being experienced, and that has already extended so early into the season for the planting of palay, there arises the public fear regarding the calamities caused by the severe lack of that which constitutes the main sustenance and that finances the acquisition of primary needs; aside from the illnesses that may arise from the excessive heat and the extreme dryness of the atmosphere. In similar afflictions, it is the duty of everyone, and especially of the ministers of the church, to implore Divine Mercy to deign to grant us abundant rain that will water and fertilize the fields and keep us, with His beneficent affluence, from ills that plague us (Selga, 1920, p. 96).

This circular, dated 31 August, suggests that the 1849 drought in Manila that affected the Tagalog region was extremely serious. At a time when the palay should have already grown, the Archbishop is anxious that the currently prevailing drought had already impeded the planting or growth of the crop. The charitable Archbishop had ample reason to order special and solemn *rogativas* in order to prevent the ‘terrible scourge of hunger’ and pestilence that was occurring because of the lack of rain required for sowing palay. The prayers were of an extraordinary character, a kind of moral meteorology, and they seem to have indicated a greater necessity and urgency than usual (Selga, 1920, p. 96). Judging by the Archbishop’s circular, it was probable that the rainfall at the end of August 1849 would have been among the lowest recorded in fifty-five years of instrument observation from 1865 to 1919 (Selga, 1920, p. 97).

Similarly, twenty-seven years later, the severe long El Niño drought from 1876 to 1878, impoverished wealthy farmers in the western Visayas while others around them with unanswered prayers and outstretched arms also died of hunger. This great drought struck hardest in Negros, where the sudden expansion of sugar monoculture had displaced traditional food self-sufficiency. Low sugar prices, astronomical rice prices and high unemployment condemned large numbers of debt-bonded *hacienda* day labourers, immigrant share-croppers and impoverished townspeople from Panay to crop failure and inflation and the island suffered widespread mortality during the El Niño drought (Duesta, 1980, pp. 253, 259–61, 378–89, 400 and 412–13; McCoy, 1992, pp. 109–14; Davis, 2001, pp. 94–97; Lopez-Gonzaga, 1994, pp. 105–110). Drought again brought famine to Negros’ sugar plantations in 1896–97, and also returned to devastate Luzon and the Visayas from 1899 to 1903.

In October 1902, when the dry season began, the Visayan Islands and Mindanao experienced a drought unprecedented in the memory of some of its oldest inhabitants. From October till the following June, the Philippines was scorched by the sun, and the prospects for poor peasants who depended upon their little plots of land for their livelihoods became worse and worse as the soil burned up. Ordinary people in the western Visayas who contributed least to the drought problem were being hit the hardest, and women, as the poorest of the poor, generally suffered most of all. Filipino women have helped grow the family’s food, fetched fuel and water, woven their clothing and cared for children and the elderly. When clean water becomes hard to find in a drought, or when crops fail, it has been Filipino women who must search further afield to feed their dependents.

An English woman, Mrs. Campbell Dauncey, writing from Iloilo in March 1905 described the variable impact of drought on the lifestyle of the more fortunate:

We are having more drought now – the rainwater tank, empty, and the well-water brackish. We filter the latter, even to make tea with, which makes the tea more palatable...Water is being brought from Guimares and sold in the streets at fabulous prices, only I am happy to say we have been lucky enough, so far to secure a daily supply out of a friend’s well, sufficient to get along with if we are careful (Dauncey, 1906, pp. 172–73).

Two of the most serious droughts of shorter duration which had occurred after the infamous 1876–79 catastrophe were those of 1885 and 1903, and these covered the months of January to May, inclusive. Each of these droughts was of five months duration and there was either a complete absence of rain or so little as to be negligible for water supply (*Fifth Annual Report of the Philippine Commission 1904*, p. 151). During the 1903 period, Cebu had suffered ‘one of the longest droughts known in the history of the island,’ and the corn crop was a near total failure (*Fourth Annual Report of the Philippine Commission 1903*, p. 242). The annual reports of the Governor General, throughout the first decade of the twentieth century, make repeated reference to the effects of prolonged drought and reduced agricultural production due to lack of rain. For example, in 1906, drought threatened rice production in central Luzon and the following year ravaged Leyte. While the 1907 annual report for Cebu highlighted the blistering hot weather conditions, stating that the past year ‘was ushered in by a great famine, which lasted till August and was unprecedented during a period of fifty years’ (*Eighth Annual Report of the Philippine Commission 1907*, p. 239).

Five years later, in 1912, improvement in the general agricultural situation was delayed by the prolonged drought across almost the entire archipelago, which had occurred from the end of September 1911 until the end of the fiscal year. This El Niño event seriously affected the rice and corn crops in the Visayas and Mindanao. In some places in Cebu, for example, as many as five plantings of corn were made only to be destroyed by lack of rain and great swarms of locusts that appeared at the end of the long dry season. The lack of rainfall left granaries empty. The shortage and high price of rice in the early months of 1912 compelled the government to make every effort to cajole the near-starving people to diversify their crops and to engage in household industries, so as not to rely unduly on one crop or one line of endeavour for their livelihood (*Thirteenth Annual Report of the Philippine Commission 1912*, p. 25). This partial failure of the rice crop affected by the drought resulted in a large increase in corn planting (*Thirteenth Annual Report of the Philippine Commission 1912*, p. 238).

The high price of rice was to remain a general topic of conversation and complaint among Filipino people under American rule, during periods of severe drought. Unusually high importations of rice followed the droughts of 1903, 1911–1912 and 1938 (Selga, *The drought of 1938 in the Philippines*; Dauncey, 1906, pp. 172–73). The general concern about the subject of drought as a partial cause of the high price of rice was reflected in the harsh criticism and debate in the press directed against the policy of the National Rice and Corn Corporation. As thousands of families were teetering on the brink of starvation the Commonwealth Government was not taking any chances. Rice imports were being speeded up, but the government had not declared its plans to fix prices because of the uncertain dry weather. Provincial governors voiced bitter complaints and twenty assembly-men sent a petition to the President of the Commonwealth to take action to regulate prices and the importation of 400,000 *cavans* of rice from Saigon and 40,000 *cavans* of rice from America by the National Rice and Corn Corporation, in order to offset the anticipated shortage of rice and maintain its price at a normal value (Selga, *The drought of 1938 in the Philippines*). The El Niño

drought of 1998 affected 90 per cent of the country with a 50 per cent reduction in rainfall. More than two million people in eleven provinces in Mindanao were affected by the drought and once again the government was forced to import 640,000 tons of rice that year (Report drought-related effects of El Niño for April 1988 and a six-month general update, 1998, p. 7).

I want to pause momentarily here to concentrate on the impact of drought on Samar as a marginal region. This was a large tropical wooded island of the archipelago where disaster vulnerability became ingrained in everyday events over long periods of time, particularly on the coast. By the latter part of the nineteenth century, the vulnerability resided in land appropriation for abaca cultivation, credit shortages, fluctuating market value for cash crops, deforestation and increasing encroachment on high risk tracts. The poor interior, rugged and forested, remained far less populated and far more difficult to govern. The colonial state was supposed to take measures against famine, especially to protect and ensure agricultural production. The central government in Manila had to be prepared to advance payments and credit to stricken cash-crop farmers, and ensure an adequate supply of grain as emergency stores (Cruikshank, 1975; Dery, 2006, pp. 216–17).

Disaster vulnerability emerged in Samar, and elsewhere in the eastern Visayas, because the Spanish colonial state was found wanting. Drought emerges as a major cause of poverty and susceptibility to communicable diseases on Samar in the late nineteenth and early twentieth centuries (Torry, 1979, p. 527; De Bevoise, 2002, p. 99). For drought-prone Samareños, for instance—in the years and decades after the mid-1870s—hunger and destitution propelled many small cultivators, in an era of transition and relative insecurity, to mass migrate either towards the interior, or to larger coastal towns, in search of disaster relief.\*

For more than several decades, many Samareños had had insufficient food to eat. In their desperate reports, local priests and minor officials bore witness to severe malnutrition and mass starvation. People died from eating wild roots in the eastern hills of Samar and at places like Gandara. In the 1880s, it was obvious to all concerned that starvation and chronic malnutrition threatened tens of thousands of Visayans, because of inadequate food aid from State, foreign and local sources. In many remote, affected areas of Samar that had not received any form of sustained relief, severe malnutrition among children was apparent. By 1886, local priests and officials were predicting mass starvation unless adequate food and shelter were provided immediately in rural isolated locations across the island.

On Samar, in the half century between 1882 and 1932, the population was likely to experience recurring famine, chronic undernourishment and widespread epidemics. The protracted social crises triggered by famine and drought on Samar were mediated to a large extent by the transitions and transformations in the developmentally defined socio-economic arrangements of Samareño society and the expansion of the abaca trade. Hence, while the topography and weather constantly impeded a sustainable way of life, the locus of hunger was also embedded in the dominant social hierarchies of

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\* A similar phenomenon occurred after the hurricanes of 1844 and 1846 delivered staggering losses to the countryside. See Perez, Jr, 2001, pp. 121–22; Cruikshank, 1975, pp. 170–79.

the late-nineteenth century and in the local-level and global political economy (Torry, 1979, p. 533; Cruikshank, 1985, p. 201). In this sense, the hazard-disaster nexus and associated reproduction squeeze was a crisis of an entire social system on Samar—one which threw into sharp relief the dynamics and contradictions of colonial governance and the society at large (Torry, 1979, p. 533; Cruikshank, 1985, p. 201). Yet, the historical record reveals that many Visayans, who regularly experienced the contradictions of this colonial socio-economic system and the repeated devastation of drought-induced famines, took measures into their own hands, including relocation—mass migration as disaster-relief—and armed resistance or rebellion.

### **Food scarcity, rural unrest and mass migration**

In the central jurisdiction of Samar, for thousands who had been displaced and were ill, rural unrest and banditry constituted defiant efforts to grapple with the loss of individual security and traditional values. According to Bruce Cruikshank, Samar did not have a long history of protest and restiveness. But, late in the Spanish colonial period, when many thousands chose to work as abaca cultivators, tenant farmers and itinerant labourers, anti-colonial resistance periodically broke out—perhaps, both as a sign of the resilience or desperation of the Samareños trying to cope in the only possible manner left open to them. Catbologan lay at the end of a corridor that connected the wealthy provinces of the west with the smaller towns like San Luis and Taft in the east. It was bleak, inhospitable, forested terrain that stretched between the two coasts and Spanish officials and Chinese mestizo traders, in trepidation, passed back and forth through this wretched hill country on horseback and foot, praying that they would not fall victim to the hungry bandits sweeping down from poor isolated villages. Entire interior districts of Samar in the late nineteenth century became noted for professional banditry, the incidence of which appears to have increased in times of famine and epidemic.

Eastern Samar was one of the poorest regions of the Philippines, and at the end of the nineteenth century, constantly beset by turmoil and disaster. From the vantage-point of late nineteenth-century Manila, this part of the archipelago, namely the eastern Visayas, required careful control. Increasingly prone to violence and rebellion, its temporarily settled rural society seemed, only on the surface, to be stable. However, underneath the surface of society, both the Spanish and subsequently the new rulers, the Americans, felt lay potential social unrest and millennial upheaval. In 1884, in a charged atmosphere of imminent catastrophe the Spanish armed forces crushed a millennial rebellion triggered by widespread hunger and the outbreak of a severe cholera epidemic near Gandara (Cruikshank, 1985, p. 201). Two years later, in 1886, another transformative movement, called Dios Dios, spawned by the same miserable conditions appeared briefly on the scene. For over two decades, the power and influence of these hill-based insurrectionists, or *pulahanes*, as they came to be called from their red garments, waxed and waned with the changing times. The widespread famine and cholera epidemic of the 1880s had become a powerful symbol to bands of *pulahanes* of the Samareños deprivation and disempowerment. At this juncture, the appeal of the *pulahanes* to supernatural means did not stop or alter their resistance through armed struggle. The already violent

situation that existed between the Samareños and Spanish was to become even more volatile with the advent of American rule. Both sides were on the defensive, waiting for each other to strike preemptively, as Samar was to play a central role in the Philippine–American War of 1899–1902.

Drought-related food shortages and famine not only produced a resurgence of folk messianism throughout the Visayas by the late 1880s, it also forced thousands of peasants and tribal peoples to withdraw into the mountainous interiors of Panay, Negros, Samar and Leyte (Duesta, 1980, pp. 253, 259–61; 378–79, 400 and 412–13; McCoy, 1992, pp. 109–114; Davis, 2001, pp. 94–97; Lopez-Gonzaga, 1994, pp. 105–110). El Niño drought-related famine recurred so insistently between 1878 and 1932 that *babaylan*-inspired flight was a risk-spreading mechanism designed to overcome food shortages caused by consecutive bad harvests and global agro-commodity price shocks. Hungry, indebted Visayan farmers simply settled on land in the rugged interior, well beyond the pale of Spanish or American authority. These dislocated cultivators believed anyone had the right to settle on virgin land. Particularly in the Visayas, one of the key determinants for coping with food scarcity and the variability of El Niño drought events among Filipino peasants has been mobility. This quest for food and security was sometimes voluntary, and at other times involuntary, depending on the timing of the decision and the unfolding character of the drought-related, life-threatening situation. Such movements of starving populations throughout the Philippines signified a final turn for autonomy and security by a vulnerable, drought-stricken populace.

As prospects remained grim after the end of the famines in 1878–79 and 1902–03, drought-stricken Visayan peasants refused to gamble on staying home to face mass starvation with no money. When the drought burden on the populace in the Visayas grew unsupportable a more mobile peasantry aggravated the social costs of El Niño disasters. Drought-displaced peasants swelled the ranks of autonomously-armed communities and folk-messianic movements, posing a serious challenge to the power of both the Spanish and the American colonial administrators (Duesta, 1980, pp. 253, 259–61; 378–79, 400 and 412–13; McCoy, 1992, pp. 109–114; Davis, 2001, pp. 94–97; Lopez-Gonzaga, 1994, pp. 105–110). Here we can infer that El Niño drought and famine events have had an impact on major shifts and changes that have occurred in these isolated communities, beyond the ecological and economic boundaries of colonial power. From a purely colonial standpoint, these drought-driven changes among formerly debt-bonded wage labourers and immigrant sharecroppers in the interior looked to be irreversible and dangerous as well.

After the great famines of 1878–79 and 1885, colonial policies failed to put livelihoods and food security first, rather than trade liberalisation and commerce. People in the Visayas and Luzon were starving because there were no policy structures that adequately defended rural livelihoods and access to resources and markets and hence, entitlements and incomes. The drought-induced move to the interior of islands like Panay, Negros and Samar put land back into the hands of peasants and cultivators. Without access to land in the autonomous interior, there was no lasting solution to hunger and a root cause of poverty for these small debt-ridden and displaced peasants. However, thousands of these people displaced by the El Niño droughts who had moved inland were

subsequently reduced to begging for food or eating grass, as they experienced the depredations of bitter localised fighting and sporadic warfare under American rule.

The pattern set out here for the remainder of the century was too clear. El Niño-related drought catastrophes and war spawned food scarcity and famine, and displaced persons and involuntary migrants had to somehow contend with starvation when hunger stalked across the archipelago, and government relief efforts failed. At the end of the twentieth century the Philippines' hard-pressed leaders were still attempting to reckon with the full social and economic costs of the El Niño-related droughts that devastated the archipelago in 1998. With over 50,000 hectares of parched croplands and fields affected by drought, the source of life had now brought untold pain and hardship to millions on Mindanao due to the El Niño Southern Oscillation. Teresita Usapdin, a Philippine Red Cross worker, described their uncertain future and the impact of one of the worst drought-induced famines in nearly five decades in this manner:

No one is really sure up to when the El Nino will stay. Each day as we wake up and greet the morning sun, we wonder how come this Divine phenomenon, the sun, which we have always known as a source of life and energy of humanity, now brings suffering to many (Philippine National Red Cross Society, Situation Report No. 1, 1998, p. 17).

## **Conclusion**

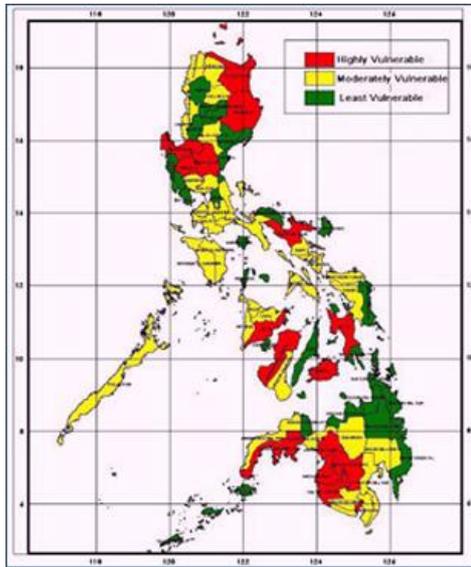
In this paper, I have briefly outlined the impact of the El Niño Southern Oscillation on the causes and consequences of food shortages and famine in the Philippines. In so doing, I have explored the causes of El Niño and its sibling La Niña and the impact that El Niño has on the likelihood of drought in certain parts of the archipelago. By exploring El Niño and the temporal dimension of drought through both the long view and through point blank aspects (particularly Samar), I have stressed the structural links between food shortages, Filipino peasant societies and the weather factor and explored the historical relationship associated with economic and political changes and societal group inequality that becomes ever more explicit in famine. I rounded off the paper by briefly exploring links between drought, food scarcity, and rural unrest and mass migration.

As explained, the effects of El Niño can be felt in various sectors of the country: agriculture, environment, water resources, energy and health. However, as stressed on the PAGASA website, 'the agricultural sector is most vulnerable to drought. About thirteen million hectares of agricultural area produce a wide variety of fruits, grains and vegetables. More than half of this area is devoted to rice and corn, the Filipino staple food' (Vulnerability Maps for Rice & Corn). Maps 1 and 2 show the El Niño vulnerability for rice- and corn-producing areas.

The impact of tightly-spaced sequences of El Niño droughts (1965–66, 1968–69, 1972–73, 1976–77, 1982–83, 1990–94 and 1997–98) (Vulnerability Maps for Rice & Corn), on a now much larger and expanding population, will undoubtedly be quite different than in the past. In terms of the time scale, for example several decades, the impacts by 2020–2030 could be catastrophic with

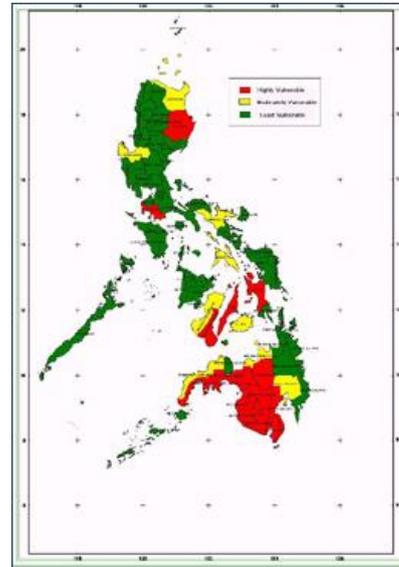
respect to population growth, in terms of averting the threats of famine triggered by larger, more intense El Niño drought events.

**Map 1.** El Niño vulnerability map for rice in the Philippines.



Source: 'Vulnerability Maps for Rice and Corn,' PAGASA, 2008.

**Map 2.** El Niño vulnerability map for corn in the Philippines.



Source: 'Vulnerability Maps for Rice and Corn,' PAGASA, 2008.

Indeed, the government's disaster-prevention and emergency management system has become a model to point out the typical strengths and weaknesses of the Philippines bureaucracy as a whole. There are loopholes in many areas. Some rules lack strict enforcement, the budget is not large enough, there are too few resources, there are not enough qualified personnel, and there are still some government agencies that lack cooperation. Over the past three decades, the data reveal that there has been on occasion systematic obstruction of disaster relief aid, wilful acts of theft and the sale of relief supplies.

Given that El Niño drought events are more predictable now, it seems obvious that future administrations are likely be held more accountable for an abject government response to such an extreme event, if the Philippines withers as drought grips the nation in fifteen or twenty years time, than it will be for failure to deal adequately with political corruption or an economic crisis.

## References

- Allen, R.J., 1988. El Niño-southern oscillation influences in the Australasian region, *Progress in Physical Geography*, 12(3), pp. 313–48.
- Annual Report of the Governor General of the Philippine Islands, 1912, 1913, *Thirteenth Annual Report of the Philippine Commission 1912*, Part 1, Bureau of Insular Affairs, War Department, Washington: Government Printing Office.
- Appendix, Events in Filipinas, 1686–1688, in *The Philippine Islands, 1493–1898*, ed. Emma H. Blair and James A. Robertson, Cleveland: A.H. Clark Company, 1903–1909, vol. 39, p. 147.
- Arnold, David, 1988. *Famine: Social Crisis and Historical Change*, New York: Basil Blackwell, 1988.
- Bankoff, Gregory, 2002. *Cultures of Disaster: Society and Natural Hazard in the Philippines*, London: Routledge Curzon.
- Benson, Charlotte, 1997. *The Economic Impact of Natural Disasters in the Philippines*, London: Overseas Development Institute.
- Bevoise, Ken de, 2002. *Agents of the Apocalypse Epidemic Disease in Colonial Philippines*, Quezon City: New Day Publishers.
- Climate Change: What Can We Do?*, Talking Point, BBC, 26 Jan. 2001.
- Couper-Johnston, Ross, 2000. *El Niño: The Weather Phenomenon that Changed the World*, London: Hodder and Stoughton, 2000.
- Cruikshank, Bruce, 1975. A history of Samar Island, the Philippines, 1768–1898, PhD, The University of Wisconsin.
- Cruikshank, Bruce, 1985. *Samar 1768–1898*, Manila: Historical Conservation Society.
- D’Alco Joseph S. with Pamela Grubbe, 2002. *The Oryx Resource Guide to El Niño and La Niña*, Westport: Greenwood Publishing Group.
- Davis, Mike, 2001. *Late Victorian Holocausts: El Niño Famines and the Making of the Third World*, London: Verso.
- Dery, Luis Camara, 2006. *Pestilence in the Philippines: A Social History of the Filipino People, 1571–1800*, Quezon City: New Day Publishers, 2006.
- Diaz, H.F. and G.N. Kiladis, 1995. Climatic variability on decadal to century time scales, *World Survey of Climatology Vol. 16 Future Climates of the World: A Modeling Perspective*, ed. R. Henderson-Sellers, Amsterdam: Elsevier, pp. 191–244.
- Dirks, Robert, 1980. Social responses during severe food shortages and famine, *Current Anthropology*, 21(1), February, pp. 21–44.
- Duesta, Angel Martinez, 1980. *History of Negros*, Manila.
- Dong, Kegin, 1988. El Niño and tropical cyclone frequency in the Australian region and Northwest Pacific, *Australian Meteorological Magazine*, 36, pp. 219–25.
- Duffy, John, 1951. Smallpox and the Indians in the American Colonies, *Bulletin of the History of Medicine*, XXV, July-August, pp. 324–41.
- Eighth Annual Report of the Philippine Commission 1907*, 1908. Part 1, Bureau of Insular Affairs, War Department, Washington: Government Printing Office.
- Fagan, Brian, 1999. *Floods, Famines and Emperors: El Niño and the Fate of Civilizations*, New York: Basic Books.
- Fagan, Brian, 2008. *The Great Warming Climate Change and the Rise and Fall of Civilizations*, New York: Bloomsbury Press.
- Fifth Annual Report of the Philippine Commission 1904*, 1905. Part 1, Bureau of Insular Affairs, War Department, Washington: Government Printing Office.

- Flannery, Tim, 2006, *We Are the Weather Makers: The Story of Global Warming*, Melbourne: The Text Publishing Company.
- Fourth Annual Report of the Philippine Commission 1903*, 1904. Part 3, Bureau of Insular Affairs, War Department, Washington: Government Printing Office.
- Glantz, Michael H., 1996. *Currents of Change: El Niño's Impact on Climate and Society*, Cambridge: Cambridge University Press.
- Hookway, James, 2007. El Niño's shadow, *Far Eastern Economic Review*, 4 April, p. 47.
- International Research Institute for Climate Prediction (IRI) online: <http://www.iri.columbia.edu/climate/ENSO/background/pastevent>, accessed 29 November 2009.
- Lamb, Hubert, 1982. *Climate History and the Modern World*, London: Methuen.
- Letter XX, Filipino indolence—a drought, Iloilo, 31 March 1905, in Mrs. Campbell Dauncey, 1906. *An Englishwoman in the Philippines*, London: J. Murray, pp. 172–73.
- Lopez-Gonzaga, Violeta, 1994. *Land of Hope, Land of Want: A Socio-Economic History of Negros 1571–1985*, Manila: Philippine National Historical Society.
- McCoy, Alfred, 1992. Sugar barons: formation of a native planter class in the colonial Philippines, *The Journal of Peasant Studies*, 19(3–4), April/July, pp. 109–14.
- McLennan, Marshall S., 1980. *The Central Luzon Plain: Land and Society on the Island Frontier*, Quezon City: Alemar-Phoenix Publishing.
- Mindanao and Jolo, Events in the Philippines, 1643–1644, in *The Philippine Islands, 1493–1898*, ed. Emma H. Blair and James A. Robertson, Cleveland: A.H. Clark Company, 1903–1909, vol. 35, p. 184.
- Newsom, Linda, 2004. Old world diseases in the early colonial Philippines and Spanish America, in *Population and History: Demographic Origins of the Modern Philippines*, ed. David Doepfers and Peter Xenos, Madison: University of Madison Press, Center for Southeast Asian Studies, pp. 17–36.
- Newsom, Linda A., 2009. *Conquest and Pestilence in the Early Spanish Philippines*, University of Hawai'i Press.
- Nicholls, Neville, 1997. El Niño: “droughts and flooding rains,” *Bureau of Meteorology Research Centre*, Australian Government Bureau of Meteorology, 16 October, online: [http://www.bom.gov.au/bmrc/clfor/cfstaff/nnn/nnn\\_el\\_nino.htm](http://www.bom.gov.au/bmrc/clfor/cfstaff/nnn/nnn_el_nino.htm), accessed 24 November 2009.
- Nichols, Neville, 1993. ENSO, drought and flooding rain in Southeast Asia, in *Southeast Asia's Environmental Future: The Search for Sustainability*, ed. H. Brookfield and Y Bryons, Melbourne: Oxford University Press, pp. 154–75.
- PAGASA (Philippine Atmospheric, Geographical and Astronomical Services Administration), online, <http://www.pagasa.dost.gov.ph/>, accessed 24 November 2009;
- Perez, Luis A. Jr, 2001. *Winds of Change: Hurricanes and the Transformation of Nineteenth-Century Cuba*, Chapel Hill: University of North Carolina Press.
- Philippine drought in relief operations in Philippines, Philippine National Red Cross, file: IIIA/relief-Philippines.htm 9/07/3:07.
- Philippine National Red Cross Society, Situation Report No. 1, 28 October–2 November, 1998.
- Quinn W.H., and V.T. Neal, 1992. The historical record of El Niño events, in *Climate Since 1500*, ed. Raymond S. Bradley and Philip B. James, London: Routledge, pp. 623–48.
- Reid, Anthony, 1993. *Southeast Asia in the Age of Commerce 1450–1680 Vol. 2 Expansion and Crisis*, New Haven: Yale University Press.
- Report drought-related effects of El Niño for April 1998 and a six-month general update, 1998. *Report, 1–30 April 1998*, National Drought Mitigation Center, University of Nebraska-Lincoln, April.
- Selga, Miguel, 1920. La sequia de 1849, *Revista de la Sociedad Astronomica de Espana y America*, X(73), 29 February, pp. 96–97.
- Selga, Miguel, 1939. Los antiguos plantios de pimienta y los baguios en Camarines, *Meteorological Note no. 38*, Manila: Bureau of Printing, May, pp. 113–17.

- Selga, Miguel, The drought of 1938 in the Philippines, Archives of the Manila Observatory, Box 20, item 14.
- Sen, Amartya, 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*, Oxford: Oxford University Press, 1981.
- Torry, William I., 1979. Anthropological studies in hazardous environments: past trends and new horizons, *Current Anthropology*, 20(3), September, pp. 517–41.
- Typhoon to induce recession, 1998. *Philippine Daily Inquirer*, 26 October, p. 2, online: <http://www.icsea.or.id/sea-span/09981/cv102611.htm>, accessed 17 July 2002 (no longer available).
- Vulnerability maps for rice and corn, PAGASA, 2008, online: [http://wb.pagasa.dost.gov.ph/index.php?option=com\\_content&task=view&id=155&Itemid=126&limit=1&limitstart=2](http://wb.pagasa.dost.gov.ph/index.php?option=com_content&task=view&id=155&Itemid=126&limit=1&limitstart=2), accessed 24 November 2009.