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Depends Which Way the Winds Blow: The Shape and Pulse of Spain's *Imperium* in the Pacific 1521-1898

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The rise of Western Europe to global dominance in the sixteenth century is usually characterised as a maritime phenomenon, but it could equally or more fittingly be described as *æolian* or wind-driven.[1] The Spanish empire in the Pacific largely owed its existence to the prevailing patterns of atmospheric circulation—wind—meteorological phenomena that few people but sailors were aware of and no one really understood.

The Spanish may have been motivated by their quest for "God, Gold and Glory," but their empire's geographical extent and its pulse were largely determined by the Pacific wind system. At the system's root are variations in atmospheric pressure. These are responsible for determining the nature and strength of the trade winds, which are named after the now obsolete word *tred*: to take a steady course. Under normal conditions, the trade winds are "easterlies"—that is, they blow from east to west between zero and thirty degrees of latitude on both sides of the equator. (Winds are known by the point of the compass from which they blow; those blowing from the east are *east winds*, or *easterlies*.) The trade winds blow away from South America, pushing surface water with them. It was this pathway through the seas that Ferdinand Magellan discovered during his epic voyage of 1519-21 and along which others followed. Pacific winds and currents would become the determinants of Spanish imperial ambitions, right down to the final act of Spain's *imperium* in the Pacific, her claims to the remote Caroline Islands in 1885. The fact that these islands lay along traditional trading routes largely determined by prevailing winds and currents was assessed to be more telling than their actual occupation by Germans.[2] Prevailing wind circulations were not only

1 Nor was this phenomenon of a wind-driven culture an exclusively European phenomenon: Chinese, Arab, Malay and Polynesian peoples were among those who also achieved degrees of mastery over this element, but never perhaps with the pertinacity or with the same ends in mind as the mariners of Western Europe.

2 Spain's claims to *las Islas Carolinas* were adjudicated in her favor by papal arbitration on the grounds that she had exercised sovereignty "since ancient times" despite the absence of any settlement. Rafael de Gracia y Parejo, *Consideraciones acerca del derecho de España sobre las Islas Carolinas* [Considerations on the Rights of Spain over the Caroline Islands] (Madrid: Establecimiento tipográfico de Gregorio Juste, 1885).

responsible for the routes that linked these far-flung outposts of empire together but also for ensuring the axis of imperial governance (Mexico—Manila—Guam), the trans-Pacific galleon trade that carried much of its commerce, and the progressive evangelisation of its peoples.

The Way the Winds Blow

The global wind pattern or "general circulation" splits the surface winds of each hemisphere into three belts: the easterly-blowing polar winds, the prevailing westerlies between 30-60 degrees of latitude, and the tropical easterlies between 0-30 degrees of latitude. While one might expect winds to consistently spill from areas of higher pressure to areas of lower pressure, in fact, as a result of the earth's rotational motion, winds are deflected at right angles away from any straight northward or southward path. They are always deflected to the west in the Northern Hemisphere and to the east in the Southern. This spinning force is known as the *Coriolis effect*. Air diverging from a high-pressure region spirals outward—clockwise north of the equator and counterclockwise in the south. The horizontal effect of this force varies in proportion to the latitude; it is strongest at the poles and vanishes altogether at the equator. Moreover, near the equator the easterly trades of both hemispheres move towards each other to form a narrow zone of low pressure, cloud, and humid conditions known as the Inter-Tropical Convergence (ITC) where winds alternate between being fitful and strong. [3]

The pattern of winds just described provides only a rough approximation of the actual atmospheric circulation. In reality it is considerably modified by the unequal distribution across the globe of continents that constitute significant thermal and topographical barriers, since land masses become much hotter in summer and colder in winter. The seasonal variation of solar heating, depending on the tilt of the earth's rotation, means that areas of high pressure tend to build up over cold continental land masses in winter, while low-pressure development takes place over the relatively warm oceans. Exactly the opposite conditions occur during summer, although to a lesser degree. These contrasting pressures over land and water are the cause of the monsoon winds. Also superimposed upon the general circulation

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On Spanish colonialism in the Carolinas, see David Hanlon, *Upon a Stone Altar: A History of the Island of Pohnpei to 1890* (Honolulu: University of Hawaii Press, 1988) and Francis Hezel, *Strangers in Their Own Land: A Century of Colonial Rule in the Caroline and Marshall Islands* (Honolulu: University of Hawaii Press, 1995).

3 While the circulation is similar in both hemispheres, the colder mean climate of the troposphere over Antarctica due to the deflecting *albedo effect* caused by its perpetual ice cover displaces all southerly climatic zones to the north. Thus the ITC mainly lies several degrees north of the geographical equator in all oceans, a circumstance that greatly reduces the frequency of typhoons in many places but increases the intensity of the prevailing westerlies in the Southern Hemisphere.

are many lesser disturbances, such as the common storms of temperate latitudes and the typhoons or hurricanes of the tropics. These generally move along the path of the prevailing winds but maintain within them their own circulatory pattern.[4]

While the wind system over the Pacific conforms to this general model of circulation, the region is also characterised by startling periodic changes due to a distinctive phenomenon known as the Southern Oscillation. Variations in atmospheric pressure over the Indian Ocean (in the west) are mirrored by the opposite changes over the south-eastern Pacific (in the east), so that if the barometer in one region is falling, the barometer in the other is invariably rising. This phenomenon's most important effect is known as *El Niño*, named by Peruvian fishermen during the Spanish Colonial era after the Christ Child, because of its seasonal manifestation in December. An *El Niño* event is a combination of interrelated oceanic and atmospheric processes that occurs every two to seven years when atmospheric pressures shift and the normally easterly trade winds slacken and even temporarily reverse.[5] Wind intensities are affected too, especially close to the equator. One may encounter unexpected variations in the strength of the usually predictable northeast and southwest monsoons as well as more localised fluctuations in direction and speed influenced by the local island topography.[6]

The ocean's currents, too, are largely dependent on the way the winds blow. Oceans are certainly not inert bodies; they have their own complex circulatory systems. Surface currents tend to conform closely to the prevailing wind system, especially along the equatorial belt that girdles the globe. There, two surface currents, the North and South Equatorial, flow westward blown by the trade winds, separated by an eastward-flowing surface equatorial countercurrent.[7] Near the western margins of all oceans, however, the cumulative flow of the

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4 This discussion of atmospheric circulation is based mainly upon William van Dorn, *Oceanography and Seamanship* (Centreville, Maryland: Cornell Maritime Press, 2nd ed., 1993).

5 Philippine Atmospheric, Geophysical & Astronomical Services Administration (PAGASA), *Primer on El Niño/Southern Oscillation (ENSO)* (Quezon City, Philippines: Climatology and Agrometeorology Branch, PAGASA, Department of Science and Technology, 1997), 2; Maxx [sic] Dilley and Barry N. Heyman, "ENSO and Disaster: Droughts, Floods and El Niño/Southern Oscillation Warm Events," *Disasters* 19, no. 30: 181-182; United Nations Environment Programme (UNEP), *The El Niño Phenomenon* (Nairobi: UNEP/GEM Environment Library No. 8, 1992), 14-15.

6 While the dynamics of El Niño/Southern Oscillation (ENSO) are now reasonably well understood, meteorologists are still unable to explain what upsets the normally balanced cycle of wind and water (see UNEP, *El Niño*, 9). It is considered possible that the amount of snowfall in the Himalayas may provide the trigger that initiates a warm or cold event: see G. Diokno, "Coping with the El Niño of the Century," *Canopy International* 23, no. 5 (1997): 1, 6-9. Or they may be linked to the number of sunspots: see David B. Enfield, "Historical and Prehistorical Overview of El Niño/Southern Oscillation," in Henry F. Diaz and Vera Markgraf., eds., *El Niño: Historical and Paleoclimatic Aspects of the Southern Oscillation* (Cambridge: Cambridge University Press, 1992), 95-118; and Neville Nicholls, "ENSO, Drought and Flooding Rain in Southeast Asia," in Harold Brookfield and Yvonne Byron, eds., *South-east Asia's Environmental Future: The Search for Sustainability* (Oxford, Singapore and Kuala Lumpur: Oxford University Press, 1993), 159-165.

7 There are also subsurface equatorial countercurrents that flow eastward beneath the surface currents.

equatorial currents pile up warm water against every continent's eastern shore. A portion of this surplus water returns eastward via the surface and subsurface countercurrents. Most of the water, though, forms deep, narrow, fast-moving western boundary currents that are guided poleward by the margins of the continental shelves at speeds of between three and five knots. In the western North Pacific, the Kuro-Shio Current (also known as the Japan Current and *corriente negra* or black current) off the northeast coast of Japan flows eastward at around 36ºN, near the latitude of Tokyo, in the direction of the prevailing westerlies as far as about 160-170ºE. [8] Similarly, the prevailing westerlies are also responsible for creating continental currents off the coast of North America around latitude 40º, one that flows towards the North Pole and another, the California Current, that heads south at least as far as Acapulco.[9] Any change to the way the winds blow, such as occurs during an *El Niño* event, will affect the surface ocean currents, causing sea levels in the western Pacific to fall and warm water to slip back towards America with corresponding effects on local climatic conditions – and on ships at sea.

Winds of Colonization

Superimpose a map of the Spanish *imperium* in the Pacific on a chart of the atmospheric circulation over that ocean and there is a remarkable "fit" between the prevailing winds and the form and extent of Spanish colonisation. The routes that the initial explorers took and therefore the landfalls they made were largely dictated by the trade winds. The shape of the Manila-Acapulco galleon trade—the economic lifeblood of the whole Spanish endeavor in this part of the world—was likewise dependent on the westerlies for the passage out to Mexico and on the northeast trades for the westward return route to the Philippines. Islands that served this purpose fell within the Hispanic mantle, those that did not were left for others despite their initial "discovery" and preliminary attempts at colonisation by Spaniards. Even the settlements on the west coast of North America owe their rationale partly to the dictates of this aeolian economic system. Likewise, islands like Hawai'i that one might expect to have come within the orbit of Spanish influence remained unknown or were ignored because of their location in relation to such winds. On the other hand, those places that lay on the appropriate latitudes were eventually to experience the full force of Hispanic cultural influence. Nor was this experience confined to just the sixteenth and seventeenth centuries; it

8 Van Dorn, *Oceanography*, 101-104, 107-109. Beyond 160-170ºE, the Kuro-Shio Current (sometimes also known as Kuroshiwo or Kuroshiwa) becomes too diffuse to be any longer identifiable.

9 Francisco Santiago Cruz, *La Nao de China* (Mexico City: Editorial Jus, 1962), 98.

remained an important factor influencing cultural development right up until the late nineteenth century. It is in this way that one can talk about there being "winds of colonisation" blowing across the Pacific during the days of sail.

The correlation between prevailing winds and colonization begins with the initial epic European crossing of the Pacific in 1520-1521. Ferdinand Magellan appears to have first headed north along the South American coast to reach warmer weather, then struck out away from land at about 32-34°S. [10] He may have been influenced in his decision to leave the mainland behind by encountering the prevailing southeast trade winds that blow in a generally west-northwest direction. At all events, running before such winds he was carried across the Pacific. Needing to obtain fresh supplies en route, he landed on Guam. Naming it Isla Ladrones—"Island of Thieves," after the inhabitants' proclivity to make off with everything they could—he sailed on, now driven by the northeast trades, till he reached the Philippines a week later. Thus, from the first the pivotal reference points of Spain's *imperium* in the Pacific were largely set by the general circulation over the ocean: the Philippines as a base in the East (and not Japan to the north or the Indonesian islands to the south), and Guam as a primary way-station.

Early Spanish enterprise in the region was dominated by the need to find a practical easterly passage back to the Americas, the elusive "turnback"—*la tornavuelta*, or *vuelta*. The Treaties of Tordesillas (1494) and Zaragoza (1529) that divided the world between Portugal and Spain ensured that Spanish mariners returning from Asia would do so by sailing across the Pacific, and not by way of the Cape of Good Hope through Portuguese dominions. Although four efforts to find a way back ended in failure and the loss of many lives, much useful information was learnt and the importance of sailing north to encounter the westerly winds around the 30° parallel was realised. The successful accomplishment of this task was left to the expedition commanded by Miguel López de Legaspi. As soon as he had gained a foothold in the Philippines in 1565, he lost no time in dispatching his nephew, Felipe de Salcedo, and the veteran pilot Friar Andrés de Urdaneta, to re-establish connections with New Spain.[11] Clearing the archipelago through the Straits of San Bernardino, they rode the monsoon north and continued in a general northeasterly direction until about 15°N latitude they encountered the prevailing westerlies that carried them across the ocean to the American

[10] There is considerable dispute over Magellan's exact route. Oskar Hermann Khristian Spate, *The Spanish Lake: The Pacific since Magellan,* vol. 1 (London: Croom Helm, 1979), 47-49.

[11] On the early history of Spain in the Philippines, see John Leddy Phelan, *The Hispanization of the Philippines: Spanish Aims and Filipino Responses 1565-1700* (Madison: University of Wisconsin Press, 1959).

coast and the California Current that helped them south. This passage came to be known as "Urdaneta's route" and was approximately the one followed during the ensuing 250 years of the Manila-Acapulco galleon's history.[12]

Thus the contours of the Spanish empire were established with the discovery of this eastward passage across the Pacific. The galleon trade that this discovery enabled served as the feeder line servicing Manila as the entrepôt of the Pacific, where the silver of New Spain was exchanged for the luxuries of the Orient—Chinese silks and porcelains above all.[13] On the northbound tack, however, ships encountered more variable winds or storms that might prolong the passage, or even drive them back in distress to the Philippines. This calamitous event was known as an *arribada* and it happened repeatedly between 1602 and 1617, when six galleons were forced to return to Manila.[14] Beating to the north of the Marianas, the galleons then fell in with the eastward-flowing Kuro-Shio Current and the prevailing westerlies in the vicinity of 37-39ºN that propelled them across the Pacific within a few degrees of latitude. Making landfall around Cape Mendocino, California, ships steered south, keeping no nearer to the inhospitable shore than was necessary to discern landmarks, until they anchored at Acapulco.[15] The westward route from Mexico to the Philippines was more direct and much quicker. Leaving Acapulco, galleons dropped to between the tenth and fourteenth parallel, where they picked up the northeast trade winds that carried them across the ocean to the Marianas, then on to the Philippines.[16]

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12 Spate, *Spanish Lake*, 104-106, and William Schurz, *The Manila Galleon* (Manila: Historical Conservation Society, 1985; originally published New York: E. P. Dutton & Co., 1939), 178-182.

13 Spate, *Monopolists and Freebooters: The Pacific since Magellan,* vol. 2 (Canberra: Australian National University Press, 1983), 279-289. In 1813 the Cortes de Cádiz issued a decree ending the trade. The last galleon "raised its rusty anchors, set its yellowed sails and slowly sailed out of Acapulco bay toward the setting sun, never to return" in March 1815. M. Almazán, "El Galeón de Manila," *Artes de Mexico* 18 (1971): 4-19. On the galleon trade, see also José María Francés, *Mexico y Manila (Historia de dos ciudades)* (Mexico City: Secretaría de Educación Pública, Departamento de Bibliotecas, n.d.), 31-36; Rafael Bernal, *México en Filipinas: Estudio de una Transculturación* (Mexico City: Universidad Nacional Autónoma de México, 1965), 75-86; John Hoyt Williams, "Tapping the Orient: Voyages of the Manila Galleons," *Oceans* 15 (1982): 44-49, and Ostwald Sales Colín, *El Movimiento Portuario de Acapulco: El Protagonismo de Nueva España en la Relación con Filipinas, 1587-1648* (Mexico City: Plaza y Valdes Editores, 2000), 81-110. For a complete list of all Pacific sailings through Micronesia, see Rodrigue Lévesque, "Ships through Micronesia" in *History of Micronesia* (Gatineau, Quebec: Lévesque Publications, 2002), vol. 20, 377-646.

14 Galleons are known to have been forced to return to Manila in 1593, 1602, 1616-1617, 1663, 1672, 1682, 1687, 1795 and 1806 (Cruz, *Nao de China*, 136).

15 Schurz, "The Manila Galleon and California," *Southwest Historical Quarterly* 21, no. 2 (1917):109.

16 Cruz, *Nao de China*, 101. Often the westward route was almost a straight line, with the galleons dropping southwest from Acapulco (16º51'N 99º55'W) to the vicinity of 12ºN where they then headed due west to the Straits of San Bernardino. On the role of weather in the galleon trade, see Rolando R. Garcia [sic], Henry F. Díaz, Ricardo García Herrera, Jon Eischeid, María del Rosario Prieto, Emiliano Hernández, Luis Gimeno, Francisco Rubio Durán and Ana María Bascary, "Atmospheric Circulation Changes in the Tropical Pacific Inferred from the Voyages of the Manila Galleons in the Sixteenth-Eighteenth Centuries," *Bulletin of the American Meteorological Society* 82, no. 11 (2001): 24-36.

Spanish contact with the Marianas remained fleeting for the first century of Spain's Pacific empire, except for the occasional visit of Manila-bound ships, an abortive evangelisation mission in 1595, and the wreck of two galleons on Saipan in 1600 and 1638. Though delayed, the physical occupation of the islands could not be ignored indefinitely and it fell to the Jesuit missionary Diego Luis de Sanvítores to effect its realisation in 1668.[17] A royal decree of the same year ordered the galleons to call at the island on their return passage from Acapulco, and watch-fires were kept lit on the highest points of Guam and Rota during the month of June to guide the ships thither.[18]

On the eastern side of the Pacific, the rationale of protecting Spain's transpacific trade was likewise a significant factor influencing the settlement of Alta California. The long duration of the eastward passage meant crews were in dire need of fresh water and provisions by the time they neared the coast. This manifested itself as early as 1602. One of the tasks assigned Sebastian Vizcaíno in his voyage of coastal exploration was to seek California ports in which galleons could resupply and in 1606, Philip III ordered a way-station established there for ships originating from the Philippines.[19] Much of the impulse for the occupation of California came from Governors-general of the Philippines, who in 1732 and 1734 gave direct orders to the captains of the galleon to put in to Baja California's existing missions and

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17 Father Sanvitores accomplished his mission to the Marianas with much subsequent loss of life, due partly to intermittent warfare and much more to the introduction of virulent diseases like smallpox, which decimated the indigenous population to the point of virtual extinction. The Chamorros of the inhabited islands of Guam, Saipan and Tinian declined from an estimated 80,000-100,000 in 1668 to 3,197 by the census of 1710, and had utterly disappeared by 1887. Spate, *Monopolists*, 114-118. See also Andrés A. de Ledesma, *Mission in the Marianas: An Account of Father Diego Luis de Sanvitores and his Companions, 1669-1670*, trans. with commentary by Ward Barrett (Minneapolis: University of Minnesota Press, 1975); Francisco F. García, *Sanvitores in the Marianas* (Guam: Micronesian Area Research Center, University of Guam, 1980); and Emilie E. Johnston, *Father Sanvitores: His Life, Times and Martyrdom* (Guam: Micronesian Area Research Center, University of Guam, 1993). The significance of wind power to the Spanish mentality is suggested by the alternate name often given to them before colonisation: Islas de las Velas Latinas, "Islands of Lateen Sails."

18 Cruz, *Nao de China*, 101.

19 Michael Mathes, *Vizcaíno and Spanish Expansion in the Pacific Ocean, 1580-1630* (San Francisco: California Historical Society, 1968), Schurz, "California," and Schurz, *Manila Galleon*, 190. Though no colonization of California materialised for more than a century, and the establishment of *presidios* and missions that began in 1769 had as much to do with the seventeenth century missionary endeavours of Eusebio Francisco Kino and with imperial fears of British and Russian encroachment, the Council of the Indies did decree in 1773 that galleons must put into port at Monterey, and imposed a fine of 4,000 pesos on captains who ignored such directives. On Spanish settlement of Alta California and the Northwest, see also Irving I. Richman, *California Under Spain and Mexico 1535-1847* (New York: Cooper Square, 1965); John J. Kendrick, *The Men with Wooden Feet: The Spanish Exploration of the Pacific Northwest* (Toronto: NC Press, 1985); Warren Cook, *Flood Tide of Empire: Spain and the Pacific Northwest, 1543-1819* (New Haven and London: Yale University Press, 1973); David Thomas, ed., *Spanish Borderlands Sourcebook: Native American Perspectives on the Hispanic Colonization of Alta California* (New York: Garland, 1991); and George Phillips, *Indians and Intruders in Central California 1769-1849* (Norman: University of Oklahoma Press, 1993), 32-64.

reconnoitre the coast for other suitable ports, and who in 1748 advocated the settlement of Monterey.[20]

Just as those islands and peoples that were eventually incorporated within Spain's Pacific dominion depended for their inclusion to a great extent on the way the winds blew, so those that were not incorporated were equally determined by the pattern of the general atmospheric circulation. Spanish mariners' apparent inability to locate the Hawaiian Islands, when their situation mid-way between the Philippines and America made them a potentially ideal place to replenish stocks of food and water, fails to take into consideration their position in relation to the prevailing wind patterns. Their geographic coordinates mean that they lie outside the prevailing westerlies in the North Pacific. Likewise they are situated near the furthest extreme of the northeast trade winds, which are weaker than their southern hemispheric counterparts, which blow freshest at about 15ºN, well south of the Hawaiian Islands.[21] This is why the galleons dropped to 10-14º degrees of latitude after leaving Acapulco on their westward passage, thus effectively leaving the islands in the middle of the two sailing paths and well out of the anticipated compass of passing ships. There is, in fact, speculation that Spanish seamen may have sighted the archipelago, since maps of the period occasionally show indeterminably situated islands bearing names such as La Mesa, Los Monjes, and La Desgraciada ("The Table," "The Hermits," and "The Unfortunate One").[22] Similarly dependent on the prevailing winds were the fates of Spanish endeavours to the Southwest Pacific: the remarkable voyages in Melanesia of Alvaro de Mendaña y Neyra in 1567-1568, of Mendaña again and Fernandez de Quiros in 1595 and of Quiros alone in 1605-1606, who sailed among the Solomons and the New Hebrides (Vanuatu) and even established a temporary settlement on Santa Cruz.[23] In these latter cases, of course, the islands location south of the path of the northeast trades and the North Pacific westerlies meant that the supply, maintenance or even very existence of a Spanish presence were of little

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20 Schurz, *Manila Galleon,* 198.

21 Van Dorn, *Oceanography*, 74.

22 Cruz holds that the Hawaiian Islands had been sighted as early as 1542, based on von Humboldt's study of the galleon's route. Cruz, *Nao de China*, 107. See Alexander von Humboldt, *Political Essay on the Kingdom of New Spain* (London: Longman, Hurst, Rees, Orme & Brown, 4 vols., 1811), vol. 4.

23 On the voyages of Mendaña and Quirós, see William Amherst and Basil Thomson, *The Discovery of the Solomon Islands by Alvaro de Mendaña in 1568* (London: Hakluyt Society, 1901); Celsus Kelly, *La Australia del Spiritu Santo: the Journal of Fray Martin de Munilla and Other Documents Relating to the Voyage of Pedro Fernández de Quirós to the South Sea (1605-1606) and the Franciscan Missionary Plan (1617-1627)* (Cambridge: Hakluyt Society at the University Press, 1966); Clements Markham, *The Voyages of Pedro Fernández de Quirós, 1595 to 1606* (Nendeln, Liechtenstein: Kraus Reprint, 1967).

consequence and proved far too costly for the stretched resources of an empire whose primary focus was elsewhere.[24]

[24] Spate, *Spanish Lake*, 119-143. On Spanish influences on other parts of the Pacific, see Robert Langdon's controversial studies *The Lost Caravel* (Sydney: Pacific Publications, 1975) and *The Lost Caravel Re-explored* (Canberra: Brolga Press, 1988).

Pulse of Empire

Not only did the prevailing winds set the routes and therefore the form and extent of the *imperium*, they also established the seasonal beat or pulse at which it operated. The great trade fair that was held annually at Acapulco in February, for example, was timed to the rhythm of the winds that brought the galleon. Likewise, the timing of the departure from Manila depended on favourable winds for its timing. The capriciousness of the atmospheric circulation around the archipelago and its seasonal variations made it advantageous that the galleon commence its outward passage before late June.[25] This month was certainly the best one to navigate the Straits of San Bernardino and to better avoid the storms and typhoons that become more frequent as the year advances. Captains and pilots struggled to be underway at least before the end of July, when the northeast-blowing monsoon began fading, and the voyage northward would likely be extended beyond the two months it usually took, or become completely impractical when the winds blew in the contrary direction. [26] Failure to do so could lengthen the crossing from four months to more than eight months, as the unlucky crew of the *San José* experienced in 1662.[27] Such a delay could have serious medical consequences leading to disease, famine, and death on board. This presumably accounts for the appearance of a "ghost" galleon off the coast of Guerrero in 1657 with not a single member of its crew or passengers left alive after a year at sea.[28] Mortality rates were always high even at the best of times and could range to as much as fifty percent of the crew.[29] Greater variation than is customary in the wind system of the Western Pacific, such as occurred during the seventeenth century, exacerbated matters, and considerably lengthened the voyages undertaken between 1640 and 1670.[30]

Since the northeast trades that returning galleons made use of on the westward passage vary seasonally, blowing more strongly during the months of March through May, the date of departure from Acapulco was also a matter of critical importance. The galleon had to be

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25 Indeed, a royal order decreed that galleons should set sail before 1 July. Prevailing winds in the Philippines blow from the east between mid December and March, north to south from April to May, southeasterly June through August, northeasterly from late September to October, and from the north and northeast from the end of October to the beginning of December (Cruz, *Nao de China*, 103).

26 Cruz, *Nao de China*, 130. There was much discussion and even gubernatorial directions on occasions to have the galleon take the much more direct route up the west coast of Luzon and around Cape Bojeador, with claims that ships could reach the 20ºN parallel in two to three days and so reduce the voyage to Mexico from five or six to three months (Schurz, *Manila Galleon,* 183-184).

27 Ibid., 138.

28 Ibid., 140.

29 Ibid., 125-126. Cruz enumerates the following deaths among crew sizes that ranged from 60-100 in the first galleons to upward of 400 on the largest: 80 in 1606, 99 in 1620, 105 in 1629, 114 in 1643 and 82 in 1752 (Ibid., 140).

30 García et al., "Circulation Changes," 2448-2450.

underway by March, and most endeavoured to do so by the end of that month.[31] In the Western Pacific, the Southeast Asian monsoon begins to dominate the circulation in May, reaching its maximum intensity in July and August. A ship approaching the Philippines before the end of June (when the trade winds still extend all the way across the ocean) would generally enjoy an easier westward sailing than one arriving during the following months. The monsoon trough that is located midway between Guam and the Philippines shifts eastward in July, so that ships making a later passage had to contend with southwest winds for the latter part of the crossing. In addition to unfavourable winds, galleons had also to face the heavier weather associated with tropical convective systems. Weather conditions in the Western Pacific seem to have been the main factor in determining the length of the passage from Acapulco.[32]

Winds, then, were a significant factor in determining both the shape and the pulse of Spain's *imperium* in the Pacific. They do not, of course, explain why Spaniards went there in the first place. It was the general circulation in the Northern Pacific, however—the direction and flow of the northeast trades and the westerlies—that primarily decided which islands and peoples would experience the Spaniards' desires for God, Gold and Glory firsthand, and those which would not. To a large extent, the Philippines, the Marianas, the Carolinas and Palau were affected by Hispanic culture because that was the way the winds blew. If the *imperium*'s shape was attributable to the winds, then its continuing maintenance that way was due to the innate conservatism of an empire extended beyond its resources, where unnecessary risk-taking came to be looked upon with disfavor and even aversion. Once set, Spain's empire in the Pacific did not expand, if one discounts the peculiar circumstances of her occupation of the Carolinas and Palau in the late nineteenth century. Hawaiian islanders, therefore, were able to enjoy another two centuries of undisturbed development as islands "between the winds" before being "discovered" by Captain Cook in 1778. While the Pacific is predominantly an aqueous environment, its life and history have been largely determined by the winds and currents that give shape and rhythm to the human endeavours within or upon it.

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[31] Ibid., 2442.
[32] Ibid., 2447-2448.