ONE

A Mercurial Character

There are more things in heaven and earth,
Horatio,
Than are dreamt of in your philosophy.
—William Shakespeare, *Hamlet*

Stockbrokers on Wall Street mutter "El Niño" when the market is erratic. Commuters in London do the same when the traffic is exceptionally bad. Humorists everywhere depict El Niño as a little devil responsible for everything that goes wrong. The rascal is so remarkably versatile and ubiquitous—the strange weather he causes globally includes floods and droughts, mild and severe winters—that his name has become part of our vocabulary; it designates a mischievous gremlin. El Niño joins a host of meteorological phenomena that serve as metaphors in our daily speech: the president is under a cloud; the test was a breeze; the economy is in the doldrums. The meanings of these statements are perfectly clear because everyone has intimate familiarity with clouds and breezes, and is aware of the depressing, perennially overcast doldrums near the equator. El Niño, however, remains a mystery to most people, despite all the publicity he currently receives. Who is El Niño?

El Niño is Spanish for "the boy" and can also be translated as "the small one." This is an odd name for a global phenomenon that adversely affects millions of people worldwide. Is irony intended? The name becomes even more intriguing when we investigate why the first letters in El Niño are capitalized. Apparently the people of Ecuador and Peru, who first used the name, had in mind, not any boy, but specifically the Child Jesus. Why that name for a phenomenon that amounts to a disaster? Were some of the early South American converts to Christianity cynical? Not at all. Originally the term El Niño referred to a warm coastal current that appears along the shores of Ecuador and Peru around Christmastime, when it brings welcome relief from the cold waters that otherwise bathe those shores.[1] The transformation of a regional curiosity, which we used to welcome as a blessing, into a global climate hazard happened recently, during the second half of the twentieth century.

We first "encountered" him, more than a century ago, along the shores of Ecuador and Peru. We assumed that he was an angel and named him El Niño. We eventually identified his relatives—La Niña, Southern Oscillation, ENSO—and proceeded to devote learned tomes to descriptions and exegesis of this remarkable family. These scriptures provide such a rich spectrum of historical, cultural, and scientific perspectives on El Niño that we are now having difficulties interpreting our own texts. We have become confused about issues as fundamental as the identity of El Niño. A member of our clergy, a scientist, summarizes the current, bewildering state of affairs as follows:[2]

> The atmospheric component tied to El Niño is termed the "Southern Oscillation." Scientists often call the phenomenon where the atmosphere and ocean collaborate ENSO, short for El Niño–Southern Oscillation. El Niño then corresponds to the warm phase of ENSO. The opposite "La Niña" ("the girl" in Spanish) phase consists of a basinwide cooling of the tropical Pacific and thus the cold phase of ENSO. However, for the public, the term for the whole phenomenon is "El Niño."

The clerics are confused. They have been grappling with the question Who is El Niño? for some time, and they find the answer to be frustratingly elusive. In the early 1980s they appointed an august committee to define El Niño quantitatively,[3] but shortly after that committee promulgated a definition, based on the "typical" behavior of El Niño up to that time, El Niño visited and behaved in a manner entirely inconsistent with the definition. His visits used to start along the shores of Peru, whereafter he proceeded westward across the Pacific, but in 1982 he reversed his itinerary: he first appeared in the far western equatorial Pacific and then moved eastward, arriving in Peru in a season different from the "usual" one. His personality proved too complex to be captured with a simple definition involving a handful of numbers. Clergymen who insist on narrow, rigid definitions of El Niño are at risk of becoming Mr. Gradgrind:

> "Bitzer," said Thomas Gradgrind, "your definition of a horse."
>
> "Quadruped. Gramnivorous. Forty teeth, namely twenty-four grinders, four eye-teeth, and twelve incisive. Sheds coat in the spring; in marshy countries sheds hoofs too. Hoofs hard, but requiring to be shod with iron. Age known by marks in mouth." Thus (and much more) Bitzer.
>
> "Now girl number twenty," said Mr. Gradgrind, "you know what a horse is."
>
> Charles Dickens, *Hard Times*

To methodical scientists, who cope best with an idealized, consistent world, El Niño is frustratingly whimsical. He was brief and intense in 1997, mild and languorous in 1992. He can be regular and energetic during some decades (the 1960s) but practically absent during other decades (the 1920s and 1930s). Laymen, who are more tolerant of caprice and impulse than scientists are, find him fascinating and beguiling, as is evident from the humorous ways in which they now use the term El Niño as a metaphor in their daily speech. The clerics should applaud this development because it offers a solution to their quandary.

The use of words cannot be legislated. Today everyone associates El Niño with the appearance of warm waters in the eastern tropical Pacific and believes him to be capable of interfering with weather patterns worldwide. This means that the term El Niño, as used at present, refers to a phenomenon with both atmospheric and oceanic aspects. Those who insist that El Niño is a strictly oceanic phenomenon, who recall that it originally referred to a seasonal current along the coast of Peru, can take pride in their erudition, but they should realize that their use of the term is becoming archaic. Unless they wish to be an elite culture with its own unintelligible argot, they should follow those who accept that El Niño has both atmospheric and oceanic aspects.

Until 1957, a lack of measurements led us to believe that El Niño was a regional phenomenon, confined to the shores of Peru and Ecuador. When he visited that year, many scientists happened to be engaged in a program to collect atmospheric and oceanic data on a global scale over an extended period.[4] The data revealed that we had been completely mistaken about the true dimensions of El Niño. We discovered that he is associated with the appearance of unusually warm waters, not only along the western coast of South America, but right across the vast tropical Pacific. It was natural to conclude that such an exceptional state of affairs amounts to a major departure from “normal” conditions. We therefore analyzed El Niño’s subsequent appearances in order to identify the “triggers” that initiate the development of such unusual conditions. At first some scientists proposed that a collapse of the trade winds precedes the appearance of El Niño.[5] Today many believe that the “triggers” are bursts of westerly winds along the equator in the vicinity of the date line; critical subsequent developments include oceanic Kelvin waves that propagate eastward along the equator. (The detection of these waves in satellite photographs of the Pacific is sometimes regarded as an annunciation, to be celebrated with a press conference.)

A very different perspective on El Niño became available in the 1980s once we had records sufficiently long to cover many consecutive episodes. To share this perspective, inspect surface temperature fluctuations in the eastern tropical Pacific over the past century. (The occasional warming of the surface waters in that region amounts to El Niño’s signature.) Figure 1.1 calls into question the earlier view that El Niño is a departure from “normal” conditions. Such conditions, which correspond to the horizontal line, are seen to prevail very seldom. Temperatures are either above the horizontal line, during El Niño episodes, or they are below that line. We are dealing with an unending oscillation that has a distinctive timescale of approximately four years. It is as if we are listening to a continuous melody that has a distinctive

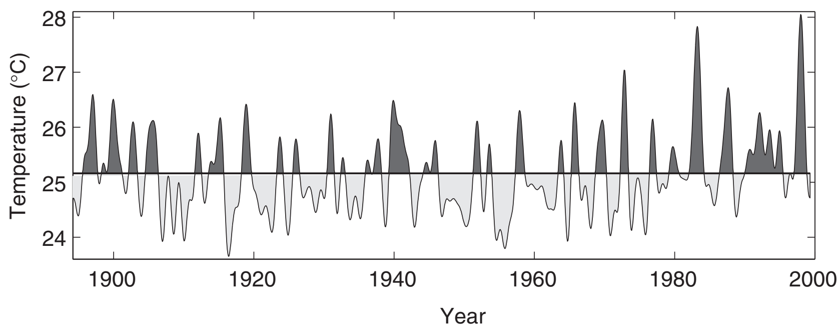

Figure 1.1. Temperature variations, in degrees centigrade, over the past 100 years, as measured on the equator near the Galápagos Islands after filtering out of the seasonal cycle. Warm conditions correspond to El Niño, cold conditions to La Niña.

beat. El Niño is only part of this ever present tune, so it makes little sense to listen to his notes in isolation. To appreciate his high, shrill notes we should also pay attention to the deep, resonant notes of the complementary periods when the waters are cold. La Niña is an apposite name for those cold periods.[6] The continual Southern Oscillation between El Niño and La Niña seems to have no beginning or end.

Are El Niño and La Niña the complementary phases of a cycle with no beginning or end? Or is each one of them an independent event, a departure from "normal" conditions "triggered" by certain disturbances, some of which lead to the appearance of warm water, some to the appearance of cold water. These different points of view reflect different perceptions of time itself. Those who believe that "triggers" initiate El Niño regard time as an arrow that moves in a definite direction as El Niño progresses from a beginning to an end, from birth to death. A more reassuring perception of time, one that gives us a continual sense of renewal, is in terms of natural cycles. El Niño can then be regarded as part of an endless cycle, similar to those mentioned in Ecclesiastes:

> The sun also ariseth, and the sun goeth down, and hasteth to his place where he arose. The wind goeth toward the south, and re-

> turneth about unto the north; it whirlith about continually, and the wind returneth again according to his circuits. All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again. . . . The things that hath been, it is that which shall be; and that which is done is that which shall be done.
>
> Ecclesiastes 1:5–9

Much of literature is concerned with these two very different aspects of time, which are captured by the metaphors of time's arrow and time's cycle. The current debate about which of these metaphors best describes El Niño is reminiscent of the nineteenth-century debate about the interpretation of the geological record.[7] Some early geologists, who subsequently became known as "catastrophists," described the history of the earth chronologically, in terms of a sequence of mostly biblical events and catastrophes that moved from a definite beginning to the present. (James Ussher, while he was bishop of Armagh in Ireland, determined that the creation started at precisely 9:00 A.M. on Monday, October 23, 4004 B.C.) In 1795 James Hutton put forward a radically different perspective when he proposed that the geological record extends back over an inconceivable length of time and should be interpreted in terms of repeated cycles with "no vestige of a beginning,—no prospect of an end."[8] Hutton believed that unchanging geological processes such as erosion and the gradual uplifting of rocks, acting slowly and steadily over an immensity of time that is difficult to comprehend, shaped our landscape in the past and continue to do so today. His followers were therefore known as "uniformitarians." Although they developed convincing arguments that explain much of the geological record, it is difficult to deny that the fossil record tells a story of the sequential evolution of different species, a story that moves in a direction. After much debate, geologists reached an accommodation that has room for both time's arrow and time's cycle. Students of El Niño need to do the same.

Persuasive evidence that, in 1997, a burst of westerly winds contributed to the development of El Niño lends credence to the idea that El Niño has a definite beginning. However, similar wind bursts on other occasions have failed to produce El Niño. Apparently only bursts that appear at the "right" time are capable of inducing El Niño. What factors determine the "right" time? Consider a swinging pendulum subjected to modest blows at random times. A blow at the right time can increase the amplitude of the swing considerably. At the wrong time, it can cause the pendulum to come to a standstill. This argument suggests that we are dealing with an unending cycle, subject to random disturbances. This compromise between time's arrow and time's cycle explains why each El Niño is distinct. The phenomenon was particularly intense in 1997 because, as it was about to visit, a burst of westerly winds came along, causing a significant amplification and acceleration of developments. The absence of appropriate random disturbances is the reason why El Niño was weak and prolonged in 1992.

We have seen the signatures of El Niño and La Niña in figure 1.1, which tells us when each of them visited, but we still do not know what those phenomena look like. What are their distinctive features? Their pictures, in figure 1.2, are surprising and also sobering because they bring to mind Confucius' observation that "a common man marvels at uncommon things; a wise man marvels at the commonplace." We have been lavishing attention on uncommon El Niño, whom some of us regard as a departure from "normal" conditions, when in reality commonplace La Niña is the more interesting of the two! El Niño's temperature patterns at the ocean surface are downright plain; uniformly warm surface waters are exactly what we expect in the tropics where sunshine is most intense. La Niña, by contrast, is intriguing and mysterious: she remains admirably cool under intense sunlight and expresses her coolness with flair. Her sea surface temperature patterns have fascinating asymmetries. Although the intensity of sunlight is independent of longitude and is perfectly symmetrical about the equator, she keeps the waters of the tropical Pacific colder in the east than the west and, in the east, warmest in a band to the north of the equator. La Niña transforms that renowned line, the equator, from a mere geographer's artifice into

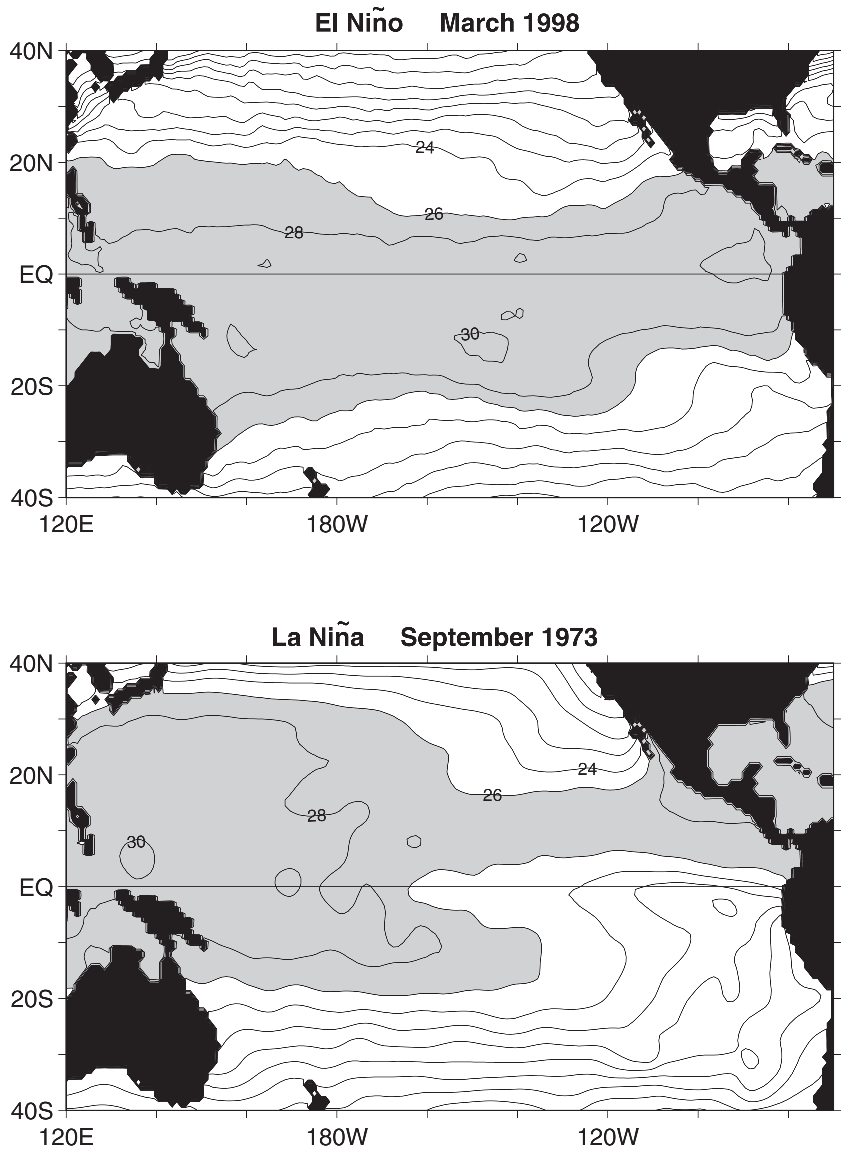

Figure 1.2. Sea surface temperatures characteristic of El Niño (*top*) and La Niña (*bottom*). Aspects of the seasonal cycle are evident in these snapshots, which show temperatures at the end of the Southern Hemisphere summer (*top*) and at the end of the Northern Hemisphere summer (*bottom*).

something very special—the location of a westward-stretching sliver of exceptionally cold waters, rich in nutrients and hence in marine life. So plentiful is nourishment along the Line that Moby Dick used to loiter there. That is where Captain Ahab went looking for the white whale.

La Niña expresses her alluring asymmetries not only in oceanic conditions but in atmospheric conditions too. The distinctive pattern that describes the sea surface temperatures associated with La Niña also describes the rainfall and cloud distribution associated with that phenomenon. For example, the dreary doldrums coincide with the swath of warm water that stretches clear across the Pacific along the latitude of approximately 10° N. That zone and, more generally, regions of high sea surface temperature in low latitudes have plentiful rainfall because, in low latitudes, the moist air rises spontaneously into tall cumulus towers over the warmest waters. The air subsides over regions of cold surface waters, where the clouds are very different; they are low, horizontal stratus decks that provide no precipitation and that stretch far westward off the coasts of California and Peru. During El Niño, when warm waters cover the eastern tropical Pacific, the stratus clouds disappear from that region and are replaced by cumulus clouds that bring heavy rains. The coastal zones of Ecuador and Peru can now experience floods while rainfall is reduced in the far western equatorial Pacific; northern Australia, New Guinea, and the Philippines can have droughts at such times.

How does La Niña succeed in keeping the equator cold despite the intense sunlight at that latitude? By bringing the winds into play, using them to bring the cold waters of the deep ocean to the surface. This is accomplished by tilting the thermocline, the interface between the very warm waters of the upper ocean and the much colder water at depth. To a first approximation, the tropical oceans are composed of two layers of fluid: the upper one is warm and shallow, the lower one cold and very deep. The intense westward winds that characterize La Niña pile up the warm water in the west, causing the thermocline to tilt steeply so that cold water is exposed to the surface in the east. During El Niño, when the winds are relaxed, the interface between the warm surface

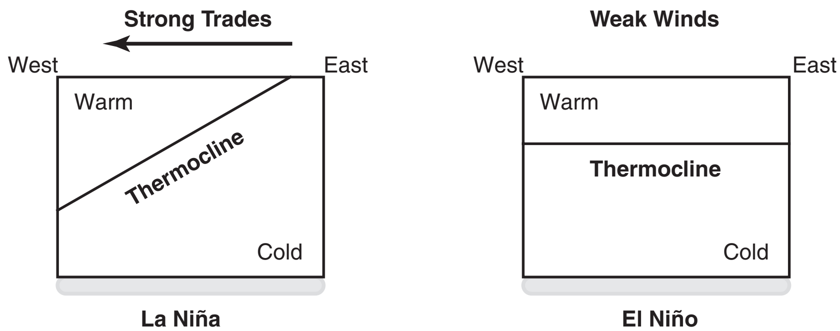

Figure 1.3. A schematic diagram of changes in the slope of the thermocline from La Niña (*left*) to El Niño (*right*). Note that, in the east, cold water is exposed to the surface during La Niña.

waters and the colder water at depth becomes practically horizontal. (See figure 1.3.)

Changes in the winds change the slope of the thermocline and thus alter surface temperature patterns in the tropics. This is a tantalizing result because the converse is also true: changes in temperature patterns change the winds. (A familiar example is a sea breeze from the cool ocean toward the warm land during the day; the wind blows in the opposite direction at night, when the land is cooler than the ocean.) The absence of temperature differences between the western and eastern tropical Pacific during El Niño explains why he is associated with relaxed winds. La Niña, on the other hand, has large temperature differences and hence strong winds. According to this circular reasoning, wind fluctuations are both the cause and consequence of changes in sea surface temperature patterns! From this chicken-and-egg argument scientists infer that interactions between the ocean and atmosphere are at the heart of the matter. Those interactions can amount to an escalating tit for tat: a slight intensification of the winds during La Niña increases the temperature difference between the eastern and western equatorial Pacific, thus reinforcing the winds, so that the temperature difference increases even further. . . . (Scientists and engineers refer to such interactions by the unattractive term "positive feedback.") These intimate interactions between the ocean and atmosphere, on the grand scale of the vast Pacific Ocean, generate El Niño and La Niña. They are therefore the children of water and air.

Laymen take the lineage of El Niño and La Niña for granted and accept that the two have both atmospheric and oceanic aspects. It then follows that, because the two together constitute the Southern Oscillation,

El Niño + La Niña = The Southern Oscillation

all three phenomena must involve both the air and the sea. This impeccable logic makes the acronym ENSO (= El Niño + Southern Oscillation) tautological and unnecessary. Use of the term would be justified if El Niño were merely an oceanic current, if the Southern Oscillation were a strictly atmospheric phenomenon. We held such beliefs at one time, but no longer. The continued use of the term ENSO is therefore a puzzle. It seems to signify different things to different authors and thus causes confusion.[9] Could its use reflect the determination of the clergy to have their own jargon?

Neither the ocean by itself nor the atmosphere on its own is capable of producing a Southern Oscillation — the one needs the winds, the other the surface temperature changes. However, the ocean plus atmosphere in concert, the two coupled together to form an inseparable unit, can spontaneously generate a Southern Oscillation. The properties of that oscillation depend on a key difference between the ocean and atmosphere: whereas the ocean is very slow in responding to changes in the winds, the atmosphere is swift in adjusting to altered ocean temperatures. We can simulate the interactions between the ocean and atmosphere by taking a shower in a bathroom with old-fashioned plumbing. When we turn the shower on, the temperature of the water at first is too cold. We therefore turn the knob of the faucet toward warm. Because the sluggish plumbing takes a while to respond, the temperature increases so slowly that we impatiently continue turning the knob beyond warm toward hot. After a while the water is pleasantly warm, but it then becomes progressively hotter and hotter so that we start turning the knob back toward warm and even toward cold. In due course the water is too cold, and we once again turn the knob toward warm. A seesaw between temperatures that are alternately too warm or too cold continues indefinitely because we respond instantaneously to the temperature of the water, while the plumbing responds to our instructions in a delayed mode.

In this analogy, the person in the shower represents the quick and nimble atmosphere; the plumbing corresponds to the ponderous ocean. In the same way that interactions between the person and the plumbing are essential to the oscillation in the water temperature, so interactions between the atmosphere and ocean are essential to the Southern Oscillation between El Niño and La Niña. The delayed response of one partner to a move by the other—of the ocean to a change in the winds—determines the period of the oscillation. These insights into the factors that determine the timescale of the Southern Oscillation, and an understanding of how El Niño and La Niña are related, are the rewards for focusing on time's cycle. In an idealized world with no beginning or end, the cycles are perfectly symmetrical: one El Niño is indistinguishable from another, and each is the mirror image of La Niña. Furthermore, the music of this pair is a monotone with a perfectly steady beat, so that we might as well be dealing with a pendulum that monotonously swings to and fro in a perfectly predictable manner. To approach complex reality, where each El Niño is distinct and where the music is a lively tune with a syncopated rhythm, we have to accommodate time's arrow and introduce brief, sporadic westerly wind bursts. They contribute to the relatively rapid, high-frequency aspects of the music, the notes played by flutes and violins. In addition, there are gradual changes in the properties of El Niño from one decade to the next. To explore that low-frequency aspect of the music, which involves a cello or double bass, we once again examine the signatures of El Niño and La Niña. In figure 1.1 we distinguished between El Niño and La Niña by adopting as a reference line the horizontal axis, which represented "normal" conditions, the average temperature for the past one hundred years. That line in effect defined the key (or pitch) of the Southern Oscillation's music. A tune that is always played in the same key soon becomes boring. Innovative musicians add color and variety to their music by occasionally modulating to another key, playing the tune at a higher or lower pitch. Are we underestimating the subtlety of El Niño's music by arbitrarily assuming that it is played in an unchanging key? A reference line on the basis of data collected over the past one hundred years is an arbitrary choice. Why not the past two hundred years, or the past decade? In figure 1.4 the upper panel has a constant reference line—that panel is identical to figure 1.1—but the lower panel has a reference line that changes continually because it corresponds to the average over a relatively short period of 10 years. The superimposed, rapidly fluctuating temperature curves are identical in the two panels, but El Niño's signature looks different in each one because the key in which the music is played is different. It is constant in the upper panel but shifts continually and gradually in the lower panel.

In the upper panel, El Niño attained exceptionally large amplitudes on two occasions, in 1982 and in 1997, and was exceptionally persistent during the early 1990s; La Niña seemed to disappear during the 1980s and 1990s. The lower panel tells a different story: El Niño is seen to alternate with La Niña throughout the record, even during the 1990s; the prolonged El Niño that started in 1992 now simply amounts to the persistence of background conditions. This revised interpretation results from the adoption of a new reference line that makes explicit that El Niño is superimposed on a continually changing background state, a gradual warming and cooling of the eastern Pacific over many decades.[10] It is as if the pitch of the music were gradually and continually changing. Such modulations to other keys provide a musician with new opportunities, new chords for harmony, for example. El Niño too explores new possibilities when the pitch of his music changes. The gradual, decadal warming and cooling of the tropical Pacific has subtle influences on El Niño. Careful inspection of his signature indicates that he visited every

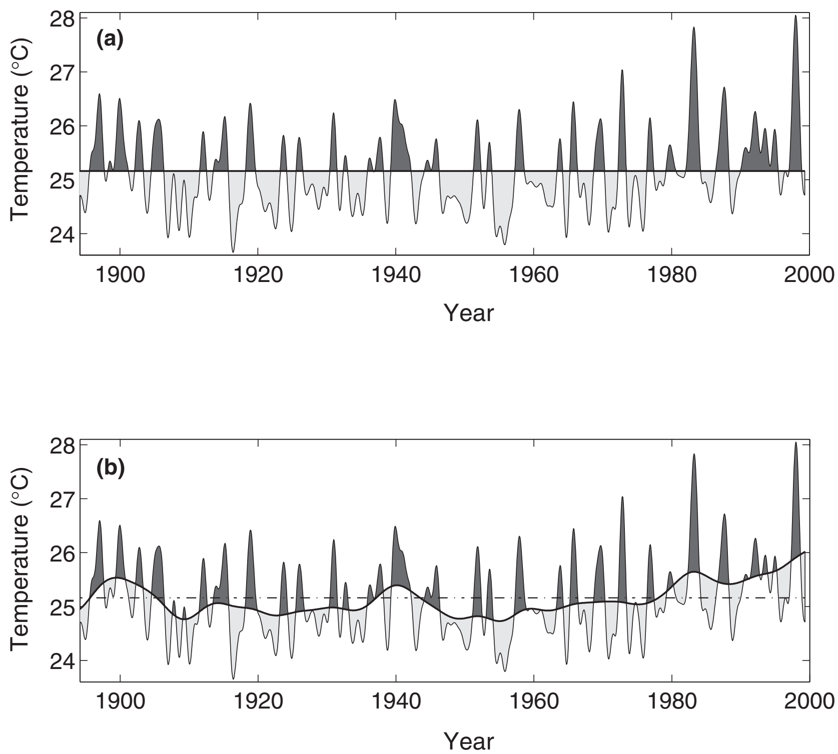

Figure 1.4. The top panel is the same as fig. 1.1. The bottom panel shows the same temperature fluctuations, but now the reference line, instead of being the average temperature of the past 100 years, changes gradually and is, at each point, the average temperature over a 10-year period.

three years, approximately, during the relatively cool 1960s and 1970s but then, during the warmer decades of the 1980s and 1990s, increased the interval between his visits to about five years. A change to a lower pitch was accompanied by a change in the rhythm, from fast to slow. Furthermore, after the warming in the late 1970s, El Niño's journeys across the Pacific proceeded from west to east, whereas, during the 1960s and 1970s, there were occasions when the journeys were in the opposite direction. Despite these changes, El Niño and La Niña remain recognizable. The complex music has a main theme that can readily be identified, thus providing unity within variety: the eastern tropical Pacific warms during El Niño, cools during La Niña.

Versatile El Niño can produce music with infinite variety because he has many tricks up his sleeve. To prevent an oscillation of the coupled ocean-atmosphere, with a period of several years, from becoming a dull monotone, El Niño can rely on gradually changing background conditions that, from one decade to the next, change the pitch of the music; or he can call on brief, sporadic westerly wind bursts that amplify or diminish, shorten or prolong the warm conditions. Scientists have yet to identify the additional devices by which La Niña lengthens her stay while El Niño curtails his. (In 1982 and again in 1997 El Niño conditions lasted for about one year, whereafter La Niña conditions persisted for about four years.) Scientists do not know why the oscillation between these two states can become skewed in this manner, which suggests that El Niño is likely to continue surprising them in future.

El Niño emerges from interactions between the tropical Pacific Ocean and the atmosphere above it. So intense are those interactions that regions remote from the tropical Pacific are affected. For example, El Niño can contribute to heavy rains over California and the Gulf states and to mild winters in central Canada and the northeastern United States. If El Niño reaches his peak during the northern summer, then the likelihood of more hurricanes in the Atlantic increases. To the west of the Pacific it is possible for El Niño to contribute to reduced rainfall over India and over Zimbabwe in southeastern Africa while increasing rainfall over equatorial eastern Africa.[11]

El Niño is capable of affecting different parts of the globe, but we should guard against exaggerating these "teleconnections" that emanate from the tropical Pacific. For example, California can have heavy rains even in the absence of El Niño. Mild winters in the northeastern United States and central Canada are more likely when El Niño visits, but such winters are possible even when he is absent. Although El Niño can contribute to reduced rainfall over India and Zimbabwe, those countries had normal rainfall during the very intense event of 1997–1998. The point is that atmospheric conditions in different parts of the globe depend on a great many factors; El Niño is only one of them. Relatively few instances of "unusual weather" can be attributed to him. (His influence over northern Europe is negligible.)

A close relative of El Niño makes an occasional appearance in the tropical Atlantic. This should come as no surprise, because the climates of the tropical Atlantic and Pacific have striking similarities. Westward trade winds prevail over both oceans, creating similar sea surface temperature patterns with warm waters along the western rims, cold waters in the east, except in a narrow band of latitudes just north of the equator. The western shores of Africa resemble those of the Americas in having barren deserts adjacent to the cold oceans, except for lush vegetation in the band just north of the equator, where the seas are warm and rainfall is plentiful. A rise in sea surface temperatures in the eastern side of either ocean causes a relaxation of the trade winds over that ocean and brings rains to the otherwise arid shores of southwestern Africa in the case of the Atlantic, Peru in the case of the Pacific. Such occurrences are more sporadic, and less intense, in the Atlantic than in the Pacific. In the latter ocean, El Niño is one phase of the irregular, continual Southern Oscillation, which can be compared to a freely swinging pendulum. In the Atlantic the pendulum is strongly damped and hangs vertically for much of the time, infrequently making a single swing; those are the occasions when El Niño makes an appearance, often in the wake of La Niña. To scientists, this difference between the Atlantic and Pacific amounts to a valuable test for their theories. Can they explain why the Southern Oscillation is strongly damped in the Atlantic but not the Pacific? Presumably the answer involves the smaller dimensions of the Atlantic. El Niño is inhibited on the cramped stage of the Atlantic but has ample room to develop to his full potential in the vast Pacific. Because of its modest amplitude, the Atlantic phenomenon is a regional one that affects mainly the adjacent land areas, whereas its far more extensive Pacific counterpart has a more global impact.

For most of the time, the Atlantic and Pacific Oceans experience La Niña conditions—the cold regions off South America warm up only when El Niño visits. The Indian Ocean is intriguingly different; there El Niño conditions are prevalent. The eastern part of that ocean is warm most of the time and cools off infrequently, during sporadic La Niña episodes. This happened in 1997 when westward winds prevailed along the equator and brought exceptionally heavy rains to Kenya. It is no coincidence that El Niño was visiting the Pacific at that time; his presence there sometimes favors complementary conditions in the Indian Ocean.[12]

El Niño is such a chameleon, adopting a different shape each time he visits the Pacific and whenever he appears in the other tropical oceans, that attempts to define him narrowly should be abandoned. We need to accept that the term El Niño is useful in the same way that the term winter is useful even though each winter is distinct. No one wishes for strict, quantitative definitions of winter and summer after reading the following lines:

> Now is the winter of our discontent,
> made glorious summer by this sun of York.
>
> William Shakespeare, *Richard III*

Hopefully a poet will soon use the term El Niño so imaginatively that the cognoscenti will stop debating its precise definition.