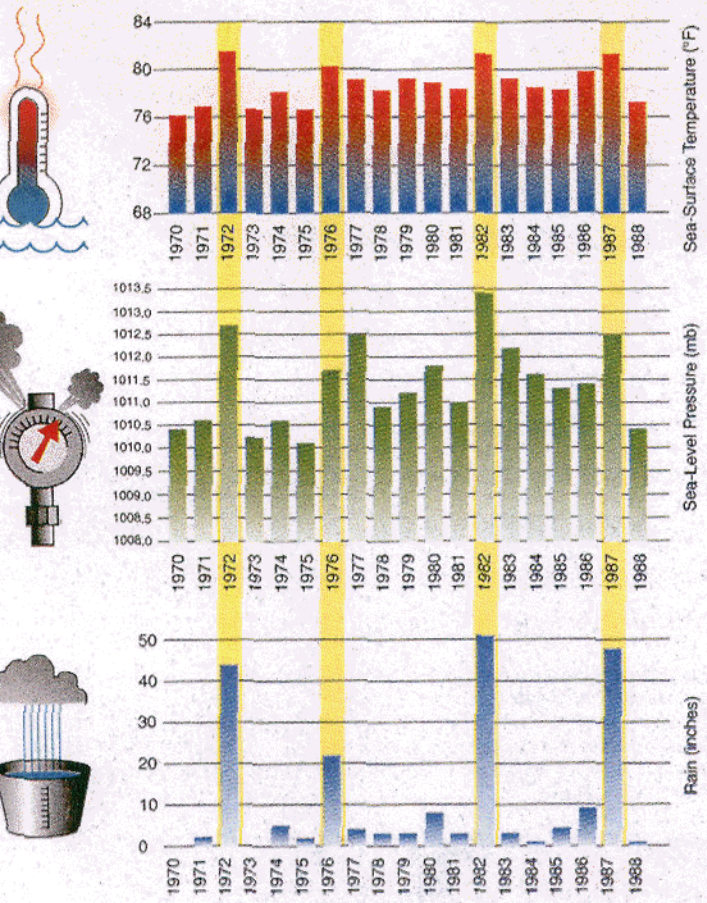

El Niño years (yellow) stand out clearly in these records of sea-surface temperature along the equator in the eastern Pacific, in barometer readings at Darwin (see map, p. 9), and in rainfall measurements at Christmas Island in the central Pacific (see map, p. 17).

of Walker's Southern Oscillation are part and parcel of the same phenomenon—sometimes referred to by the acronym ENSO.

Learning from the Past

In contrast to the march of the seasons, which is regular and therefore highly predictable, El Niño recurs at irregular intervals ranging from two years to a decade, and no two events are exactly alike. For example, the 1982–83 El Niño caught scientists by surprise because, unlike the El Niños of the previous three decades, it was not preceded by a period of stronger than normal easterlies on the equator. To further confuse scientists, this particular event also set in unusually late in the calendar year.

In order to guard against the possibility of being surprised by another "maverick" El Niño, scientists continue to document as many past events as possible by piecing together bits of historical evidence from many different sources, including:

- sea-surface temperature records. Many millions of reports from merchant ships crossing the equator have been collected for over a century. Puerto Chicama on the Peru coast has reported water temperature regularly since the 1930s.
- daily observations of atmospheric pressure and rainfall. Some stations, like the one at Darwin, Australia, have records extending back more than 100 years.
- fisheries' records from South America.
- writings of Spanish colonists in settlements along the coasts of Peru and Ecuador dating back to the late 15th century.

So-called "proxy evidence" based on coral samples from, for example, the Galapagos Islands provides information on how the frequency of El Niño events may have varied on a timescale of centuries to, potentially, thousands of years. Even data from trees, in the varying widths of their annual growth rings, provide clues to El Niños of past centuries.