Figure II.14
Average sea surface temperature from Jan 1996–Oct 1998 over a) the central equatorial Pacific Ocean (NINO 3.4 — lat 5°N–5°S, long 170°W–120°W); b) the eastern equatorial Pacific Ocean (NINO 3 — lat 5°N–5°S, long 150°W–90°W); and c) the coastal waters off South America (NINO 1+2 — Eq–10°S, long 90°W–80°W). The average seasonal cycles (blue lines) and the approximate threshold temperature for tropical deep atmospheric convection (28°C — red line) are shown for comparison.
(Du Penhoat (personal communication) based on data from NOAA/CPC, USA)

thermocline in the west and deeper thermocline in the east is typical of the mature phase of an El Niño event.

The easterly wind anomaly of the tropical Indian Ocean and the westerly wind anomaly of the tropical Pacific Ocean persisted as features of the wind circulation (Figure II.15c). The southward shift in the latitude of maximum anomalies is consistent with the normal southward shift of the intertropical convergence zone during the Southern Hemisphere summer. The surface wind field anomalies indicate that the Walker Circulation is not as strong as normal, and the likely presence of a reverse circulation across the Indian Ocean. The anomaly of sea surface temperature continued to be strong over the eastern equatorial Pacific Ocean during the mature phase but over the western equatorial Pacific Ocean the pattern of sea surface temperature anomalies had reverted to near normal (Figure II.15d).

Over the equatorial Indian Ocean the changes in the pattern of sea surface temperature anomaly that had taken place during the development of the El Niño event in October 1997 (see Figure II.13) were still evolving in January 1998. Although anomalously cold waters west of Indonesia were no longer evident there was further warming off the coast of equatorial East Africa and the sea surface temperature gradient across the Indian Ocean was maintained, consistent with the continuing easterly wind anomaly.

The pattern of positive outgoing longwave radiation anomaly across the equatorial Indo-Pacific region that had been established during the development of the El Niño persisted during the mature phase. The January 1998 pattern of outgoing longwave radiation anomaly is shown in Figure II.16 and suppressed convection (positive anomalies) is noted to extend from the eastern Indian Ocean through Indonesia to the western Pacific Ocean. Deep convection is indicated over the western equatorial Indian Ocean off the coast of East Africa and over the central equatorial Pacific Ocean, mainly south of the equator.

The decline

The equatorial longitude-depth section of temperature anomaly across the Pacific Ocean for January 1998 (Figure II.15b) indicates that the decline of the El Niño event may have already commenced at that time. The thermocline depth was rising progressively from the west to the east across the equatorial Pacific Ocean and the normal Trade Winds returned in the east during May 1998. The winds caused mixing