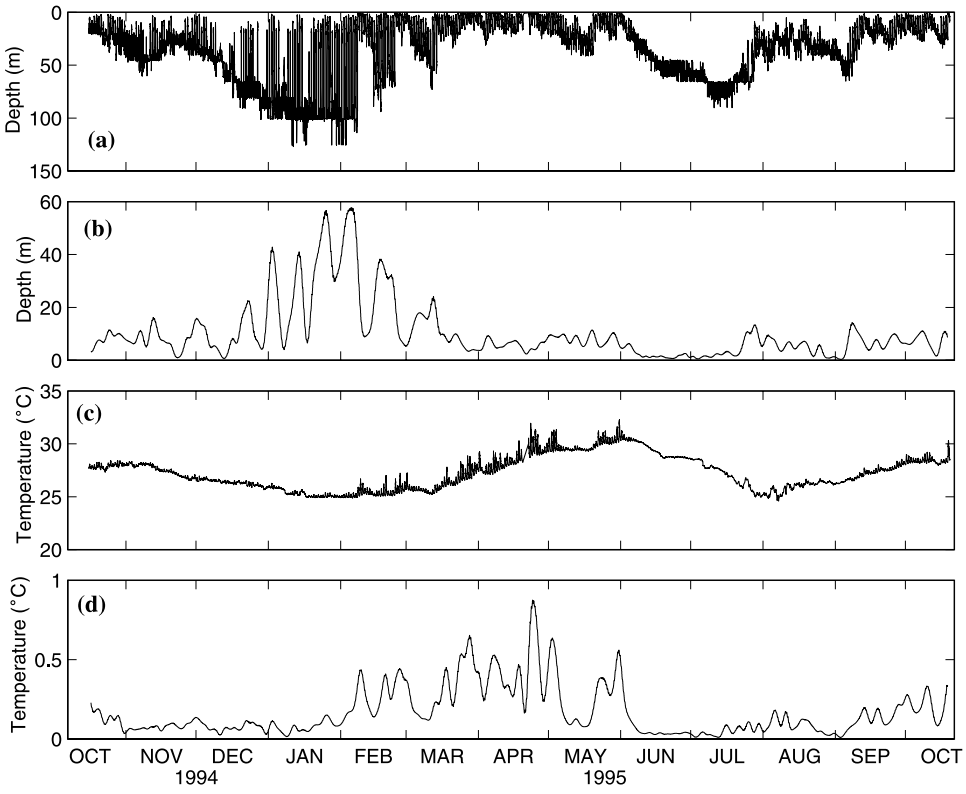

Fig. 5. (a) The mixed layer depth (MLD) defined by a 0.1°C difference from the SST, and (b) a two-day running mean of a wavelet reconstruction of its diurnal cycle amplitude. (c) The SST, and (d) the wavelet reconstruction of its diurnal cycle amplitude. The three different types of mixed layer response to surface forcing are evident: deep mixed layers with high diurnal MLD variability and low diurnal SST variability under net surface cooling and moderate winds during the NE Monsoon; deep mixed layers with low diurnal MLD and SST variability under net surface heating and strong winds during the SW Monsoon; shallow mixed layers with consequently low diurnal MLD variability but strong diurnal SST variability under strong heat and weak wind forcing during the two Intermonsoon seasons.

with a moderation of the wind stress, the mixed layer shoaled, and the sea-surface temperature warmed slowly thereafter.

The amplitude of the diurnal cycle in mixed-layer depth is strongest during the latter part of the NE Monsoon (January and early February, Fig. 5a and b). The continuous wavelet transform is a tool for extracting local-frequency information from a signal (Torrence and Compo, 1998), and the wavelet reconstructions in Fig. 5 are based on a transform of the mixed layer depth or sea-surface temperature using a Morlet wavelet with a scale of 24 h. This extraction of the time-varying amplitude of the diurnal cycle in mixed layer depth indicates a minimum during the main portion of the SW Monsoon, in June and July when the wind stress reached peak values. The variability in mixed layer depth exhibited during this period (of about 10–15 m depth) was of higher frequency than the diurnal. This difference between the two monsoon seasons is reflective of the stark difference in surface forcing. The maximum amplitude of the diurnal cycle in temperature comes during the Spring Intermonsoon, when the mixed layer depth is at its minimum.

The mixed layer, which was always warmer, was also, typically, saltier (Fig. 6) than the water below. The near-surface salinity increased from the deployment value of about 36 to a daily average peak of 36.64 on May 29, but then