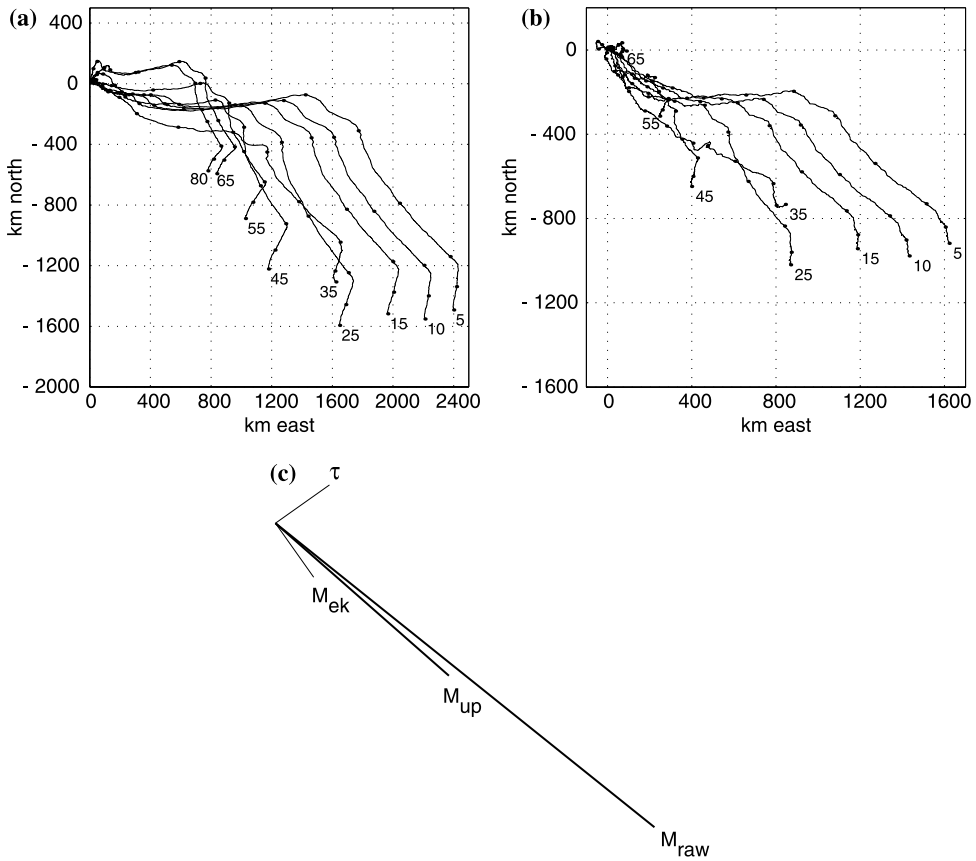

Fig. 25. Progressive vector diagrams and integrated transports for the SW Monsoon. (a) Progressive vector diagrams for flow in the upper 80 m during the SW Monsoon; (b) for the flow relative to 80 m. (c) The average wind stress, observed (raw) transport in the upper 80 m, observed transport relative to 80 m (up), and theoretical Ekman transport (ek) computed from the mean wind stress are shown below.

has formed and intensified, extending southeastward and then southward from the Omani coast for nearly 700 km. The altimetry record is remarkably consistent with the velocity record at the mooring, and suggests that the cooling and freshening of the water column could be associated with strong horizontal transports of recently upwelled nearshore water.

7.4. Deepening mechanism

The local surface forcing during the SW Monsoon, with a predominance of daily mean heating of the ocean and strong winds, suggests that wind mixing and shear generation of turbulence are the primary mechanisms locally driving the deepening of the mixed layer. The start of the SW Monsoon is a period when the one-dimensional balances of heat and salt hold approximately, making the oceanic response driven largely by local surface forcing. During both the night-time cooling and daytime heating phase, the scaling of the turbulence-generating forcing parameters L/h (see (4) and Fig. 27a) indicates that wind-driven entrainment dominates during the SW Monsoon. Even at night, when the buoyancy flux from the surface is negative, L/h is positive and generally greater than one, suggesting that shear-driven entrainment dominates.