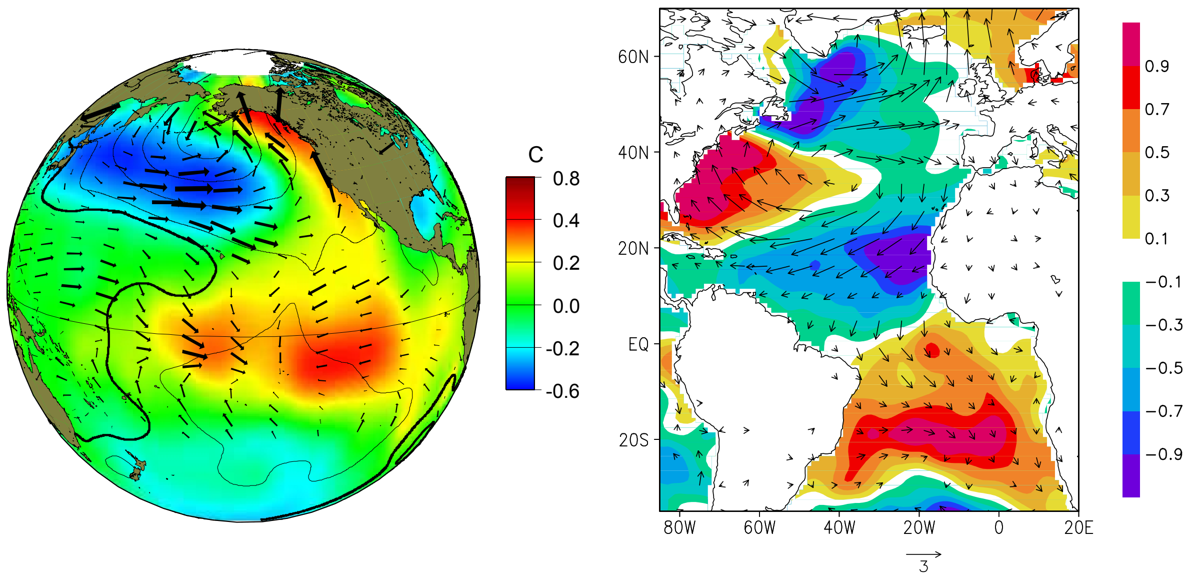

Fig. 1. SST-wind relation in the North Pacific and Atlantic Oceans. Left panel: COADS SST (color shade), surface wind vectors, and SLP regressed upon the Pacific Decadal Oscillation index (Mantua et al. 1997). Right: COADS SST (color in °C) and NCEP surface wind (m/s) composites in January-March based on a cross-equatorial SST gradient index (Okumura et al. 2001).

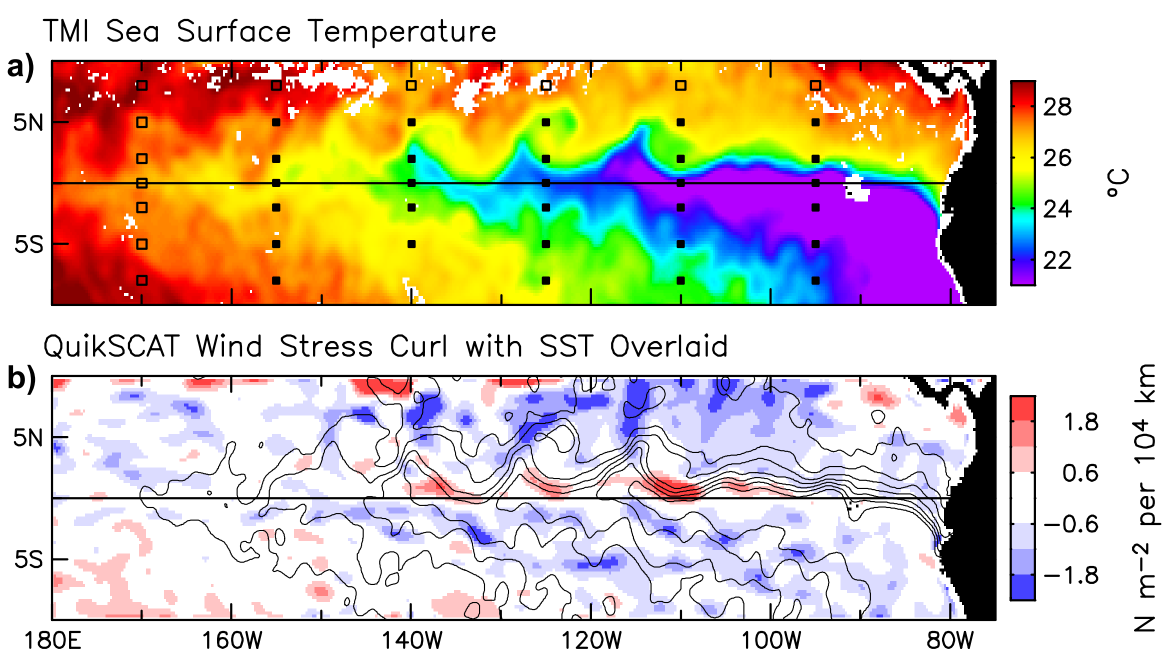

Fig. 2. TMI SST on 2-4 September 1999(color in a and contours in b). (b) QuikSCAT wind curl (color) intensifies as the southeasterly winds blow across the equatorial front. From Chelton et al. (2001).

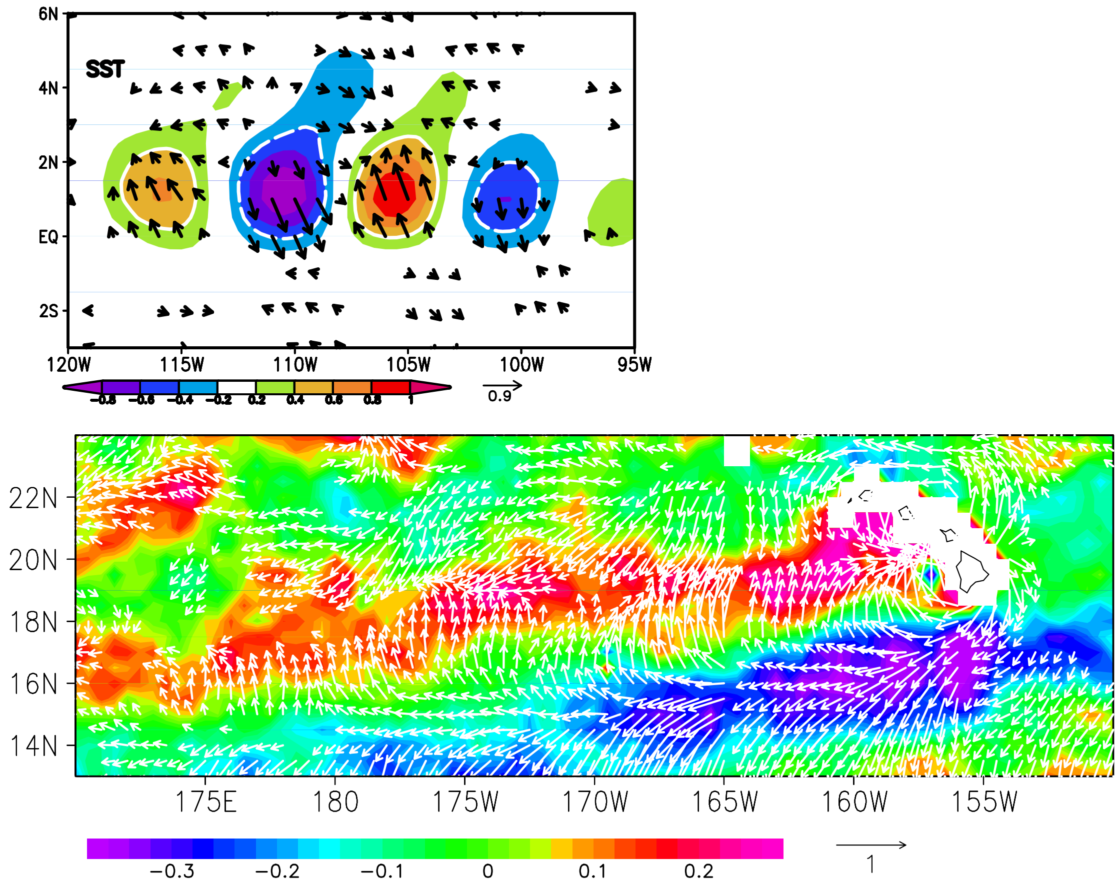

Fig. 3. Surface wind response to SST changes. Upper panel: TMI SST (color in ^{o}C) and QuikSCAT wind (vectors in m/s) regressed upon TIW-induced SST anomalies at 105^{o}W, 1.5^{o}N (Hashizume et al. 2001). Lower panel: SST and wind variations induced by the presence of the Hawaiian Islands (Xie et al. 2001). Basin-scale background fields as represented by 8^{o} meridional running-means have been removed. Note the difference in SST-wind correlation from that in Fig. 1.

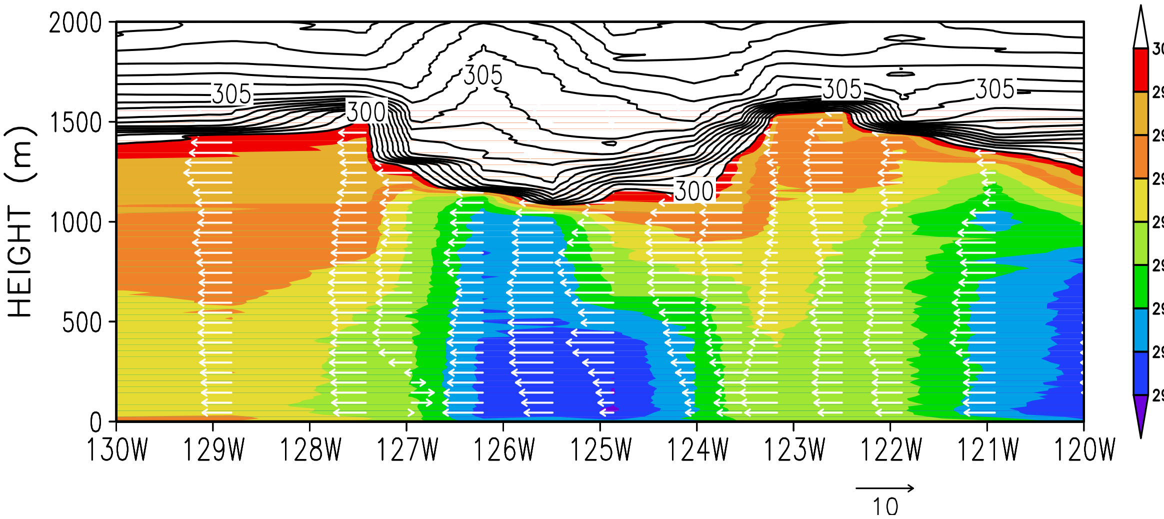

Fig. 4. Longitude-height section of virtual potential temperature (contours for θ_v>300 K and color shade for θ_v<300 K) and zonal wind velocity (vectors in m/s) based on a radiosonde transect along 2°N. The survey took place during September 24-25, 1999.

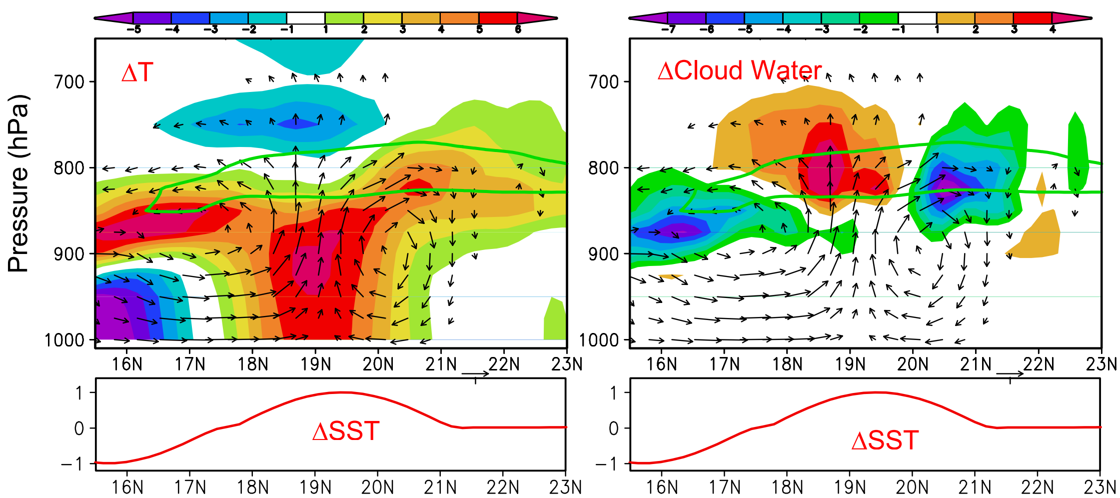

Fig. 5. Latitude-pressure sections of temperature (left in 10^{-1} K), cloud water content (right in 10^{-5} kg/kg) and meridional circulation anomalies simulated in a regional atmospheric model west of Hawaii, zonally averaged in 167-162°W. The green contours encompass the inversion layer. SST anomalies are imposed zonally uniformly west of Hawaii as in satellite observations (Fig. 3b) and their profile is plotted in the lower panels.

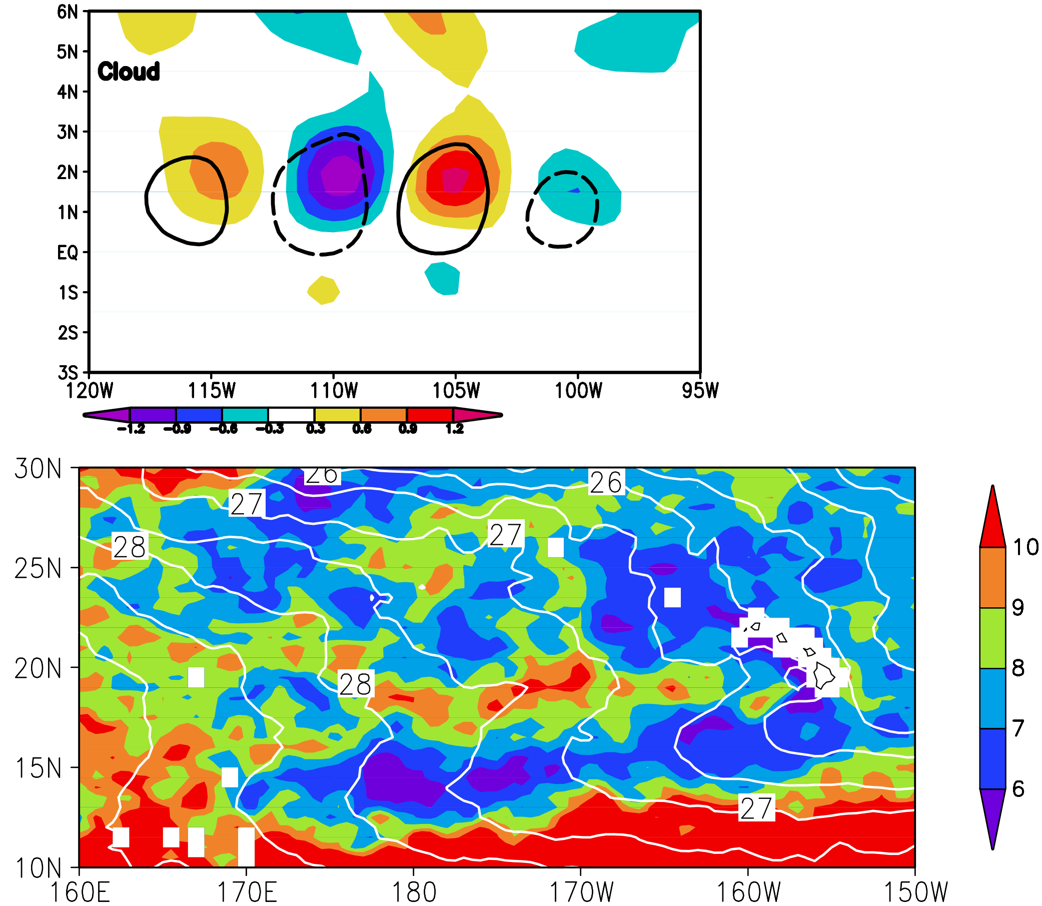

Fig. 6. Boundary-layer cloud response. Upper panel: TMI SST (contours in ^{o}C) and CLW (color in 10^{-2} mm) regressed upon TIW-induced SST anomalies at 105^{o}W, 1.5^{o}N (Hashizume et al. 2001). Only the 0.4^{o}C and –0.4^{o}C contours are plotted for SST. Lower panel: TMI SST (contours in ^{o}C) and CLW (color in 10^{-2} mm) in the central subtropical North Pacific averaged for August-November 1999 (Xie et al. 2001).

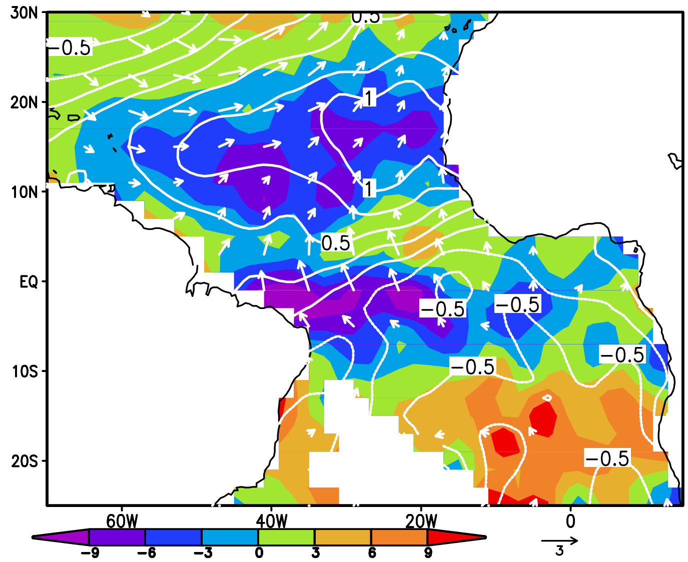

Fig. 7. COADS SST (contours in ^{o}C) and cloudiness (color in %) composites in January-March based on a cross-eqautorial SST gradient index. Note that their correlation in the subtropics is opposite to that in Fig. 6.

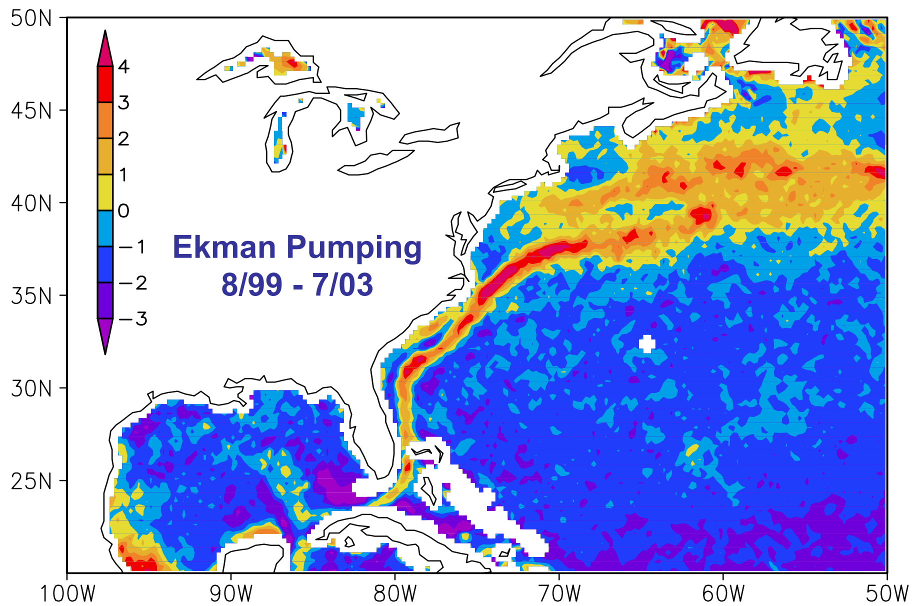

Fig. 8. Ekman pumping velocity (10^{-6} ms^{-1}) derived from QuikSCAT wind stress, averaged for a four-year period of August 1999-July 2003.

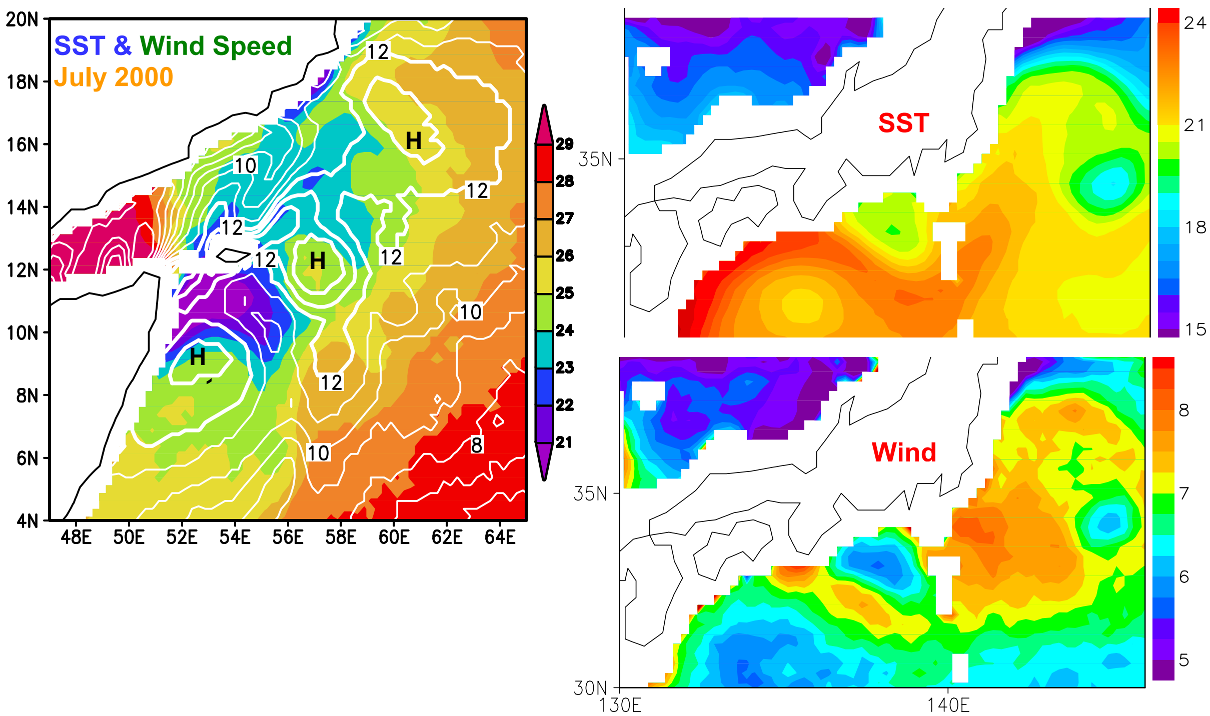

Fig. B1. Left panel: TMI SST (^{o}C) and wind speed (m/s) averaged for July 2000 over the western North Indian Ocean. Note the cold wedges due to coastal upwelling and their decelerating effect on wind. Right panels: TMI SST (upper) and wind speed (lower) over the Kuroshio Current south of Japan for April-June 2001 (Nonaka and Xie 2003). The Kuroshio appears as a stream of warm water in the SST imagery.

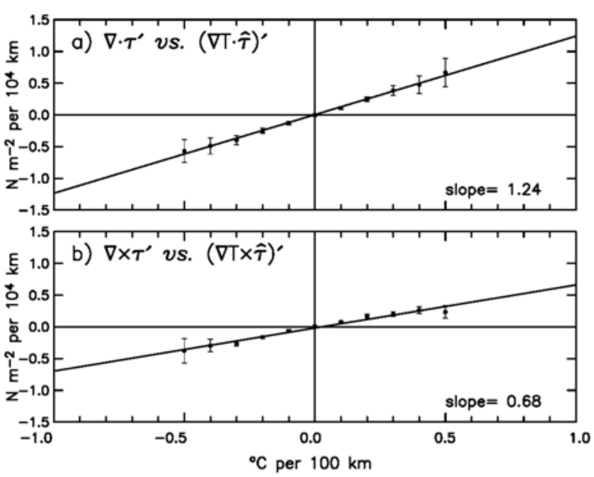

Fig. B2. Surface wind adjustment to SST variations in the Southern Ocean. Relationship between anomalies of downwind SST gradient and wind divergence (upper panel) and crosswind SST gradient and wind curl (lower). Spatial variations with wavelengths longer than 30^{o} longitude and 10^{o} latitude are removed. From O'Neill et al. (2003).

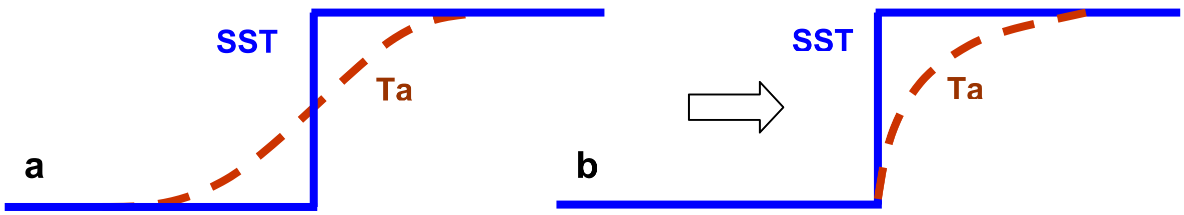

Fig. B3. Adjustment of surface air temperature (Ta in dashed line) to a sharp SST front (solid) due to (a) gravity wave adjustment and (b) advection by the background wind (arrow). SST-Ta is positive and hence the near-surface atmosphere is more unstable on the warmer than the colder flank of the front.

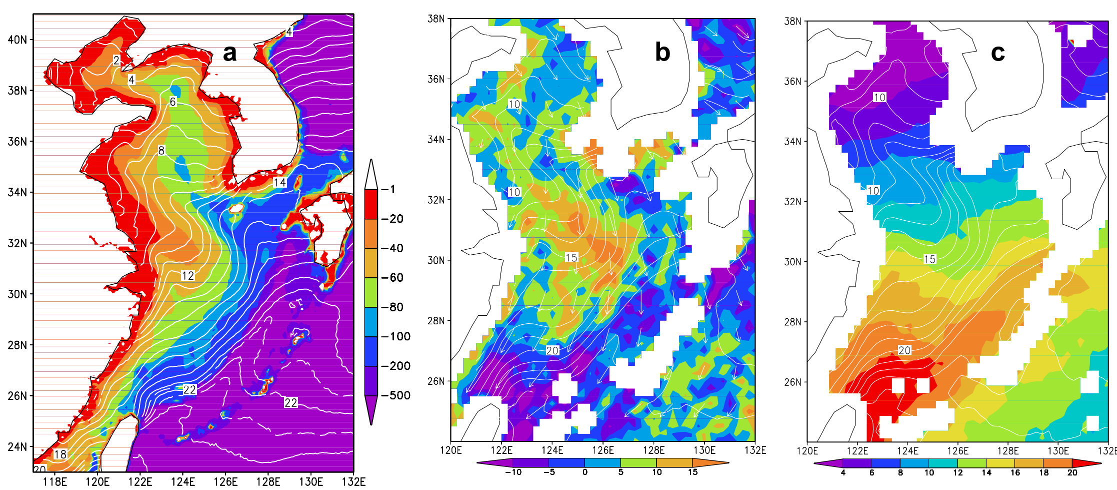

Fig. B4. January-March SST climatology (contours in ^{o}C) over the Yellow and East China Seas, along with (a) bottom depth (m); (b) velocity (vectors in ms^{-1}) and divergence (color in 10^{-6} s^{-1}) of QuikSCAT wind; and (c) TMI cloud liquid water (10^{-2} mm). The QuikSCAT and TMI climatologies are January-March averages for 2000-2002. From Xie et al. (2002).