

Daily Science Report
Stratus2007 Cruise
NOAA Ship Ronald H. Brown
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Report #2 October 19, 2007

Summary of Recent Activities

The ship departed Panama as planned the morning of October 16. Observations were officially begun on October 18. The ship reached 7 S 82 W by the end of October 19 (Fig. 1). The ESRL observations include air-sea fluxes/near-surface bulk meteorology, cloud ceilometers, radar wind profiler, scanning Doppler C-band precipitation radar, a microwave radiometer for column water vapor/liquid, and aerosols in the 0.1 to 6 micrometer range. Rawinsonde launches are currently every 6 hours until reaching the buoy location at 20 S 85 W when the frequency will increase to every 4 hours. A sample rawinsonde profile is shown in Fig. 2; a strong subsidence inversion typical of stratocumulus regions is visible at a height of about 650 m. Fig. 3 is a photograph taken later in the day. The cloud ceilometer return for the day is shown in Fig. 4. At this location cloud base is fairly low but the clouds are not thick (sky is bright during the day). The net heat flux into the ocean (Fig. 5) is greater than 100 W/m^2 .

Underway CTD observations (Fig. 6) clearly show the change of oceanographic regimes as the ship went from the heavy precipitation region in the Gulf of Panama into the cold upwelling region off Ecuador. This surface temperature is superposed on the ship track in Fig. 7. A time-depth cross section of temperature, salinity, and sigma-t is shown for the transect in Fig. 8. Other activities include a launch of a drifter buoy at 1930. A solar and longwave radiometer intercomparison project was started shortly after leaving Charleston and will continue throughout the cruise. Watch this space for a preliminary report.

The ship will continue underway SSE for about two more days before reaching the SHOA tsunami buoy at 20 S 75 W.

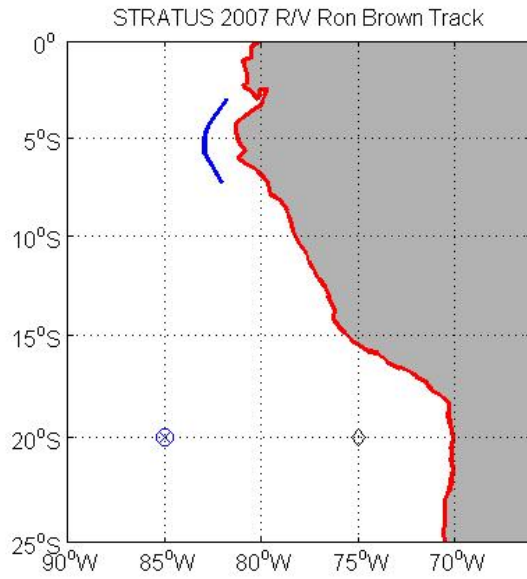


Figure 1. RHB cruise track on JD292 (Oct. 19). The diamond at 75 W is the SHOA tsunami buoy; the circle/plus at 85 W is the WHOI buoy.

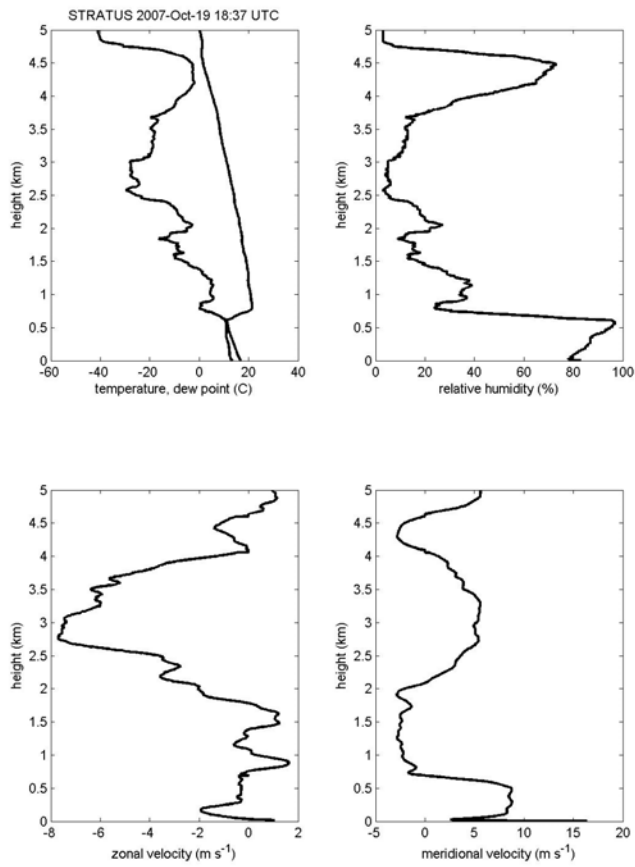


Figure 2. Rawinsonde profile 1830 GMT October 19.



Figure 3. Photograph of stratocumulus clouds 1800 GMT October 19 at 6 S 82 W.

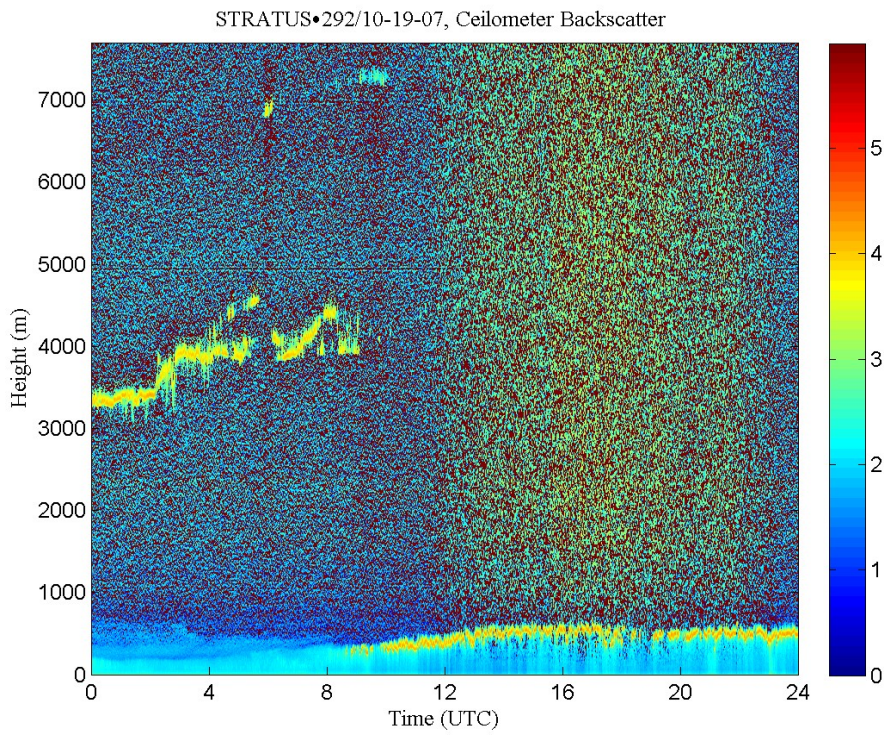


Figure 4. Time height cross section of ceilometer backscatter signal for October 19.

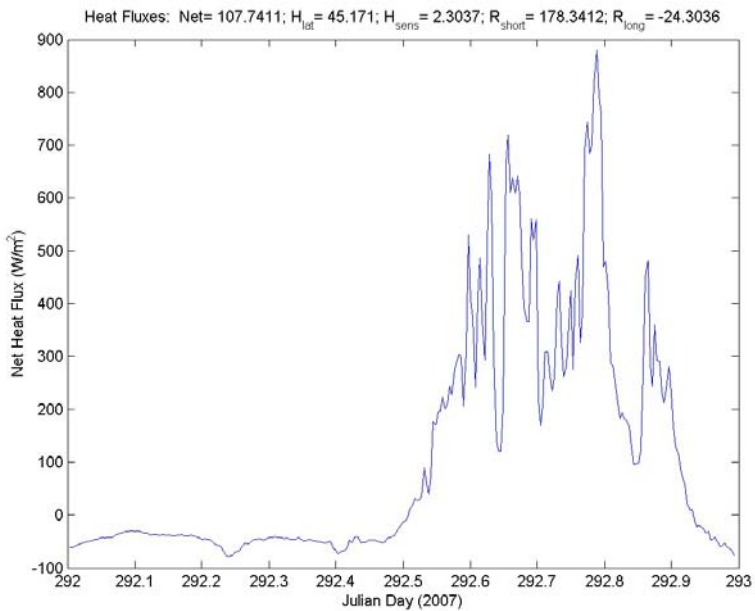


Figure 5. Time series of net heat flux into the ocean of Peru for October 19. The net heat flux is the sum of sensible (H_{sens}), Latent (H_{lat}) turbulent fluxes and net longwave (R_{long}) and net solar (R_{short}) radiative fluxes. Mean values for the day are given at the top of the graph.



Figure 6. Luis Morales and Carmen Grados operate an underway CTD sensor from the stern of the NOAA Ship Ronald H. Brown.

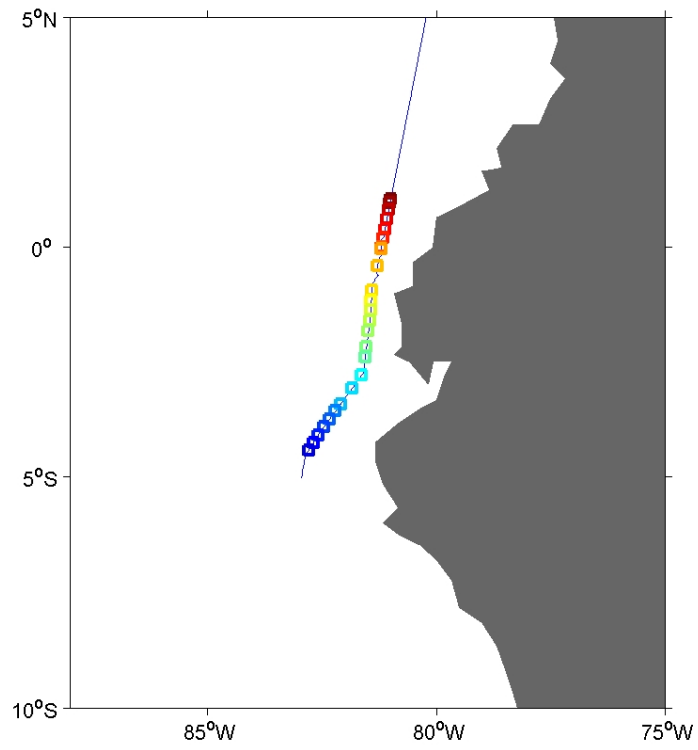


Figure 7. RHB cruise track with underway CTD near-surface SST superposed as color.

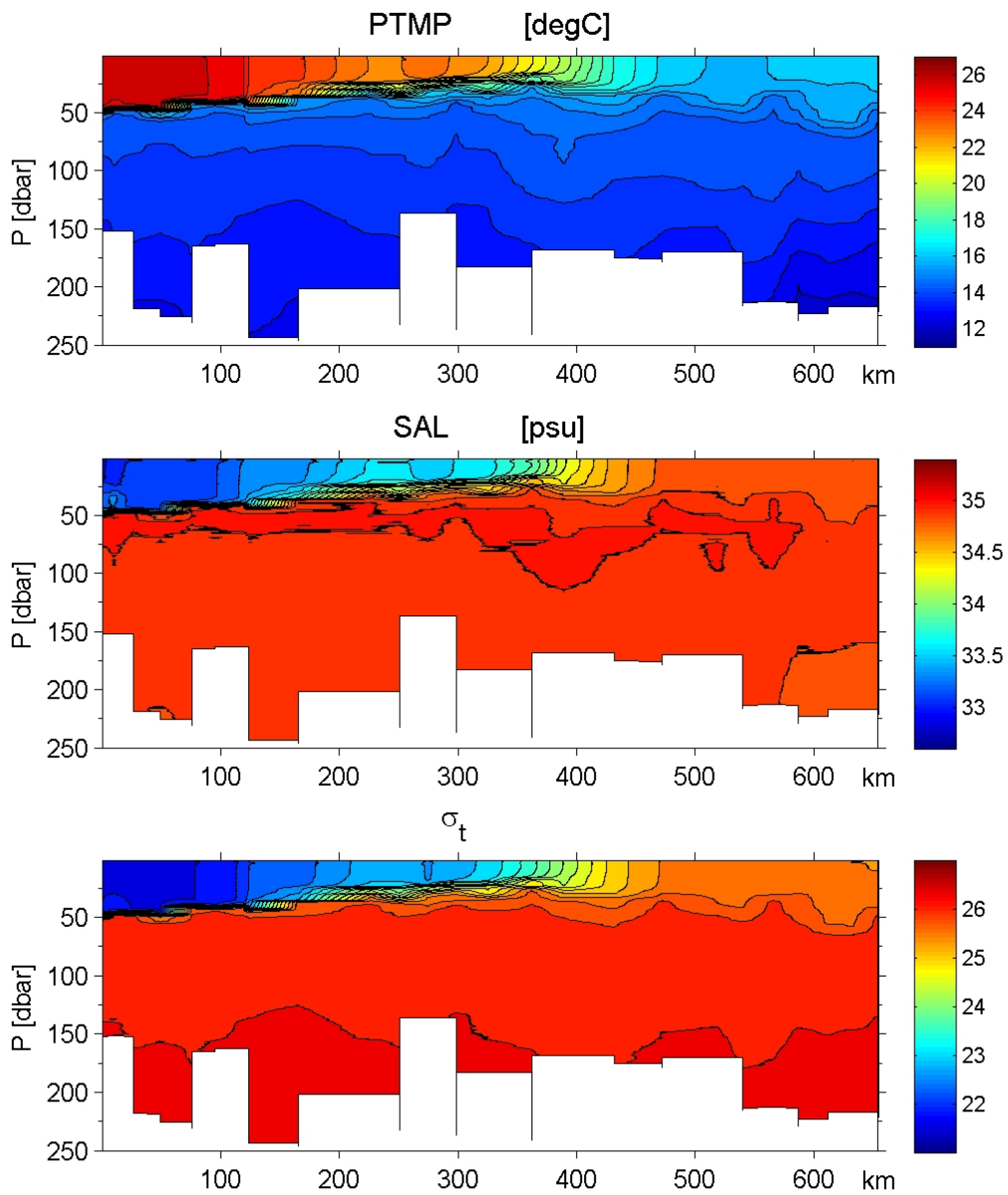


Figure 8. Time-depth cross section of oceanic parameters from underway CTD: temperature (upper panel), salinity (middle panel), and sigma-t (bottom panel) for the cruise track shown in Fig. 7.