Figure 1. Map showing locations (+) for the 85 vertical profiles acquired during ABLE-2B, 15 April – 8 May 1987. The wind in the lower 3 km of the atmosphere averaged 6.4 m s\(^{-1}\) from the East (arrow), giving a transit time of 4.3 days to the main sampling area northeast of Manaus, 2400 km from the ocean. (inset) Diurnal variation of the mean column concentration of CO\(_2\) (0.2-2.8 km) in central Amazônia (+, west of \(-56^\circ\)) compared to values in eastern Amazônia (o, east of \(-56^\circ\))
Figure 2a. Data for altitude, CO$_2$, O$_3$, and CO are plotted vs. time for flights 12 and 14 (see Table 1). Black points show the observations for 10s intervals with valid data for CO$_2$. Blue points show linear model representation of the data using CO as a predictor with hour and altitude as factors. Red points for O$_3$ add date as a factor to account for variation of background O$_3$ concentrations. Smoke layers encountered on flight 14 (8, 9.5, 9.7 hr) contributed up to 15 ppm CO$_2$. 
Figure 2b. Vertical profile data (points) for CO₂ and CO for flight 14 (upper) and flight 18 (lower), and smoothed curves from locally-weighted least-squares (lines). Note close agreement of two profiles (30 minutes apart, filled=earlier) above the PBL for both CO₂ and CO in Flt. 14. Data gaps show locations of mid-profile calibrations.
Figure 3. (a) Vertical profiles for CO\textsubscript{2} from 15 flights, days 105-126, 1987 in central Amazônia (Table 1), block averaged by local time. (b) Vertical profiles for CO, as in (a). Arrows show data from mid-Pacific stations Samoa (SMO, 14\textdegree 15' S, 170\textdegree 34' W) and Mauna Loa (MLO, 19\textdegree 32'N 155\textdegree 35'W) for April, 1987 (CO\textsubscript{2}) and for April, 1990 (the first year of station data for CO). (c) Vertical profiles for O\textsubscript{3}, as in (a). (d) Diurnal variation of CO\textsubscript{2} and CO concentrations at 500\text{m} (median values for each hour, all flights). Lines illustrate the general trends during the day. (e) Deviations of CO\textsubscript{2} and CO from the hourly median concentrations (panel d) at 500\pm50 m. (f) CO and CO\textsubscript{2} gradients across the Amazon Basin (Santarem-Manaus survey) at 3 km altitude: +, raw, ■, block averaged by CO (1 ppb bins, panel e; 5 ppb bins, panel f), linear regression line; straight-line connecting SMO and MLO data points (slope=0.08 ppm/ppb).
Figure 3g. (upper) Fluxes of CO$_2$ (black) and O$_3$ (blue) vs. local time at the Manaus tower [Fan et al., 1990]. (lower) Density weighted mean concentrations during the day for the column 0 – 3.1 km from the aircraft.
Fig. 4a. Mean diurnal variation of the height influenced by exchange with the surface (■) inferred from aircraft profiles of CO$_2$, O$_3$, H$_2$O, and temperature. The height $h$ in Eq. 1 is indicated by the grey horizontal line.

Fig. 4b. Mean hourly rainfall from a basin-wide network of automated weather stations [from Greco et al., 1990].
Figure 5. Concentrations for CO₂ and O₃ from Model 1, with CO set to 84 ppb and tower data appended at the bottom: (a), (b) mean hourly profiles for CO₂ and O₃, respectively; ■, daily mean at h=2.5 and 3.3 km, vertical dashed line, qᵇ; (c), (d) for h=2.5 km: ■, hourly column-means for CO₂ and O₃; (— qᵇ), daily averages for 0-h; (— qʰ), at h; (e), (f) same as (c),(d), for h=3.3 km. Hour=14 was interpolated and hour 17 was excluded from the computation of regional flux.
Figure 6. Wind speed (m s\(^{-1}\)), relative humidity (%), and wind direction (degrees) at EMBRAPA (60 W, 2.5 S): Averages of four soundings per day (0, 6, 12, 18 GMT, or 20, 2, 8, and 14 local) obtained daily during the experiment [Cohen et al., 1995]; dotted lines show \(h = 2500\) and 3300m. The sounding data for 5 sites may be retrieved from ftp://ftp-gte.larc.nasa.gov/pub/ABLE2B/GROUND/NOBRE.INPE/.

Figure 7. Ecosystem flux for April-May, 1987, computed by the IBIS model [ ] for the study area (58-60 W, 1-3 S), compared to the regional flux results from ABLE2B [ ] (IBIS results courtesy A. Botta and J. Foley, private communication, 2001). Note the ENSO-induced release of carbon in Oct.-Dec. 1987, with strong uptake in the previous wet season (Jan.-May).