

Highlights

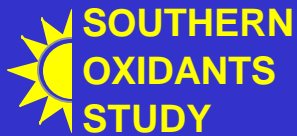
- Lighter Winds, Higher Temps Tomorrow.
- Thanks to TN Dept. of Environment & Conservation.
- Power plant plumes today, urban areas tomorrow.

Inside

- Science Team Meeting Finale on Thursday!
- Get your FREE T-shirt soon to avoid last minute rush.
- Thoughts for the day.

The Daily Plan-it

The SOS Field Study
Newsletter
Issue 25
July 13, 1999



News and Truth from around the SOS world

Winds Lighter, Temps Higher.

Tomorrow should mark a return to sluggish southerly winds. Clouds may be fewer, too, but elevated dew points suggest that the chance of convective thunderstorms remains pretty high. Might be a good day for an urban characterization study...

SOS Special Thanks to...

Tennessee Department of Environment and Conservation

During the 1999 SOS field study, the Tennessee Department of Environment and Conservation—most notably the Tennessee Division of Air Pollution Control—has done much to insure our success. They: (1) successfully pleaded our case with the Division of General Services to allow SOS to re-establish the downtown monitoring station at the James K. Polk Building, (2) assisted in the hydrocarbon canister sampling during the field study, and (3) provided daily maximum hourly ozone data from their statewide monitoring network. Special thanks go out to **James**

Hamilton, Tracy Carter, Jackie Waynick, Robert Brawner, and Billy Pugh.

SOS Airforce Schedule

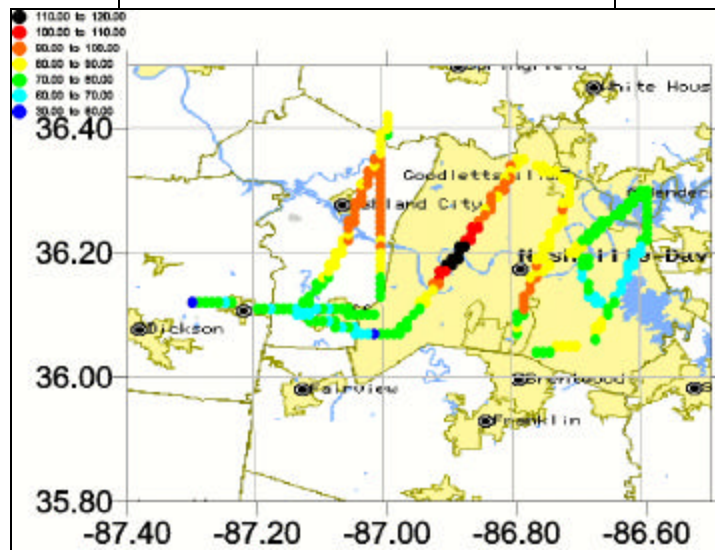
All SOS aircraft will be up tomorrow, July 14, 1999.

Tomorrow's **P-3** flight plan calls for the characterization of the Atlanta, Georgia, urban plume. The **P-3** will depart BNA at about 12:00 noon CDT and head north-northwest to Cornelia Fort Air Park where it will perform a vertical radiation profile within the planetary boundary layer. The **P-3** will then proceed southeast towards Atlanta while performing a calibration at 10000 ft AGL before

descending to 1500 ft AGL for the start of the characterization flight. The **P-3** will fly a grid pattern over the Atlanta metropolitan area. Finishing the Atlanta flight, the **P-3** will then return to Nashville at about 5:40 PM CDT.

Tomorrow's **Caribou** flight plan calls for two urban characterization flights over the Nashville metropolitan area. Centering on Cornelia Fort Air Park, the **Caribou** will initially fly a sequence of 25 nautical mile (n mi.) crosswind transects at a separation of 5 n mi. beginning at 11:00 AM CDT. The pattern will be repeated once and return to John tune at 3:00 PM CDT. Upon refueling, the **Caribou** will conduct a second urban characterization flight beginning at 5:00 PM CDT. This anticipated 2-hour flight will conclude at 7:00 PM CDT. Nominal altitude during the flights will be 10500 ft MSL.

The TVA **Bell 205** helicopter will depart Dickson Municipal Airport at about 7:15 AM CDT for an urban characterization flight.. The aircraft will travel North and do a flyby of the Dickson Co. ground site, then ferry



directly to the Cornelia Fort site at about 250 ft. AGL, and do an ascent to approximately 2500 ft AGL. The aircraft will then traverse to directly over the Downtown sampling site and, subject to FAA controller limitations, descend to minimum altitude. It will then traverse at about 500 ft AGL to near the SE corner of Davidson county (intersection of Davidson, Williamson and Rutherford counties) and begin a series of four traverses perpendicular to the wind direction (expected to be about 195°). These traverses will end near the Davidson-Wilson county line east of the Hermitage, then the helicopter will traverse to BNA and land at Signature Aviation.

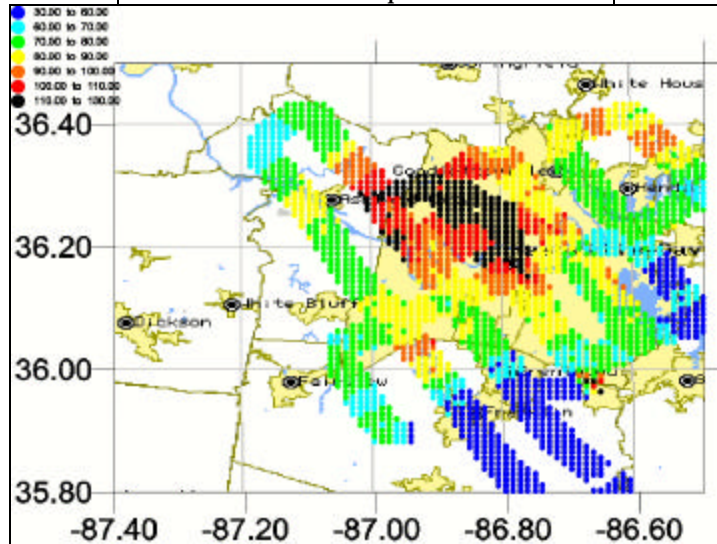
During the second portion of the flight, the helicopter will depart BNA at about 1:30 PM CDT, traverse to the Cornelia Fort site at about 500 ft. AGL, and do an ascent to the top of the boundary layer or approximately 5000 ft MSL (whichever is lower). The aircraft will then traverse to directly over the Downtown sampling site and, subject to FAA controller limitations, descend to minimum altitude. It will then traverse at about 500 ft AGL to near the Davidson-Cheatham county line Northwest of Bellevue and begin a series of four traverses perpendicular to the wind direction (expected to be about 195°) ending near I65 in White Hill. The helicopter will then ferry back to Dickson, (optionally) using a dolphin patten to the top of the boundary layer if time permits.

Comparison of Helicopter and Caribou Ozone

By Robert Imhoff and Christoph

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The helicopter (page 1 figure) and the Caribou (page 2 figure) both measured the ozone in the urban plume during the afternoon of July 8. Though the winds were light all day - from the ENE in the morning and shifting to the ESE in the afternoon, there was some transport of the urban



plume. Both the Caribou and the TVA Bell 205 helicopter measured a limited area of high ozone concentration located to the WNW of Nashville with concentrations up to 120 ppb (helicopter) and 133 ppb (Caribou). The maximum ozone measured by the Caribou was slightly higher and located more to the north than that measured by the helicopter. This may have be because the helicopter was in the area of maximum ozone production at about 14:30, while the Caribou was there about an hour later, at 15:30. Also, the lidar measurement characterized ozone in the mixed layer to 1500 m, while the helicopter's in situ measurement was made at about 125 meters above the surface.

The good agreement between measurements shows the capability of the airborne lidar for quantitative remote sensing of ozone. The plots indicate that the airborne lidar is able

to obtain more complete coverage of the ozone distribution in the urban area than is the helicopter. The Caribou is able to extend the legs further out to fully characterize the urban area. The helicopter is, however, able to measure other species such as NO_y, NO, NO₂, hydrocarbons, SO₂, particulate sulfate, nitrate, and ammonium, and particle size distributions at the same time as ozone.

Science Team Meeting Finale Thursday!

The final 1999 SOS Field Study Science Team Meeting will be held on Thursday evening, July 15, 1999. You will not want to miss the spellbinding scientific insight in store for us here.

SOS T-shirts

See Bill as soon as for your **free** SOS T-shirt. All Bill needs are your name, e-mail address, and phone & FAX numbers. Don't delay!

Thoughts for the Day

"Your food stamps will be stopped effective March 1992 because we received notice that you passed away. May God bless you. You may reapply if there is a change in your circumstances."

-Department of Social Services, Greenville, South Carolina

"Lack of brains hinders research ."

-The Columbus Dispatch, April 16.

"Lottery-A tax on people poor at math."

-Bumper Sticker

