

# HDDV Emission Measurement as we Speak

## HDDV Emission Measurement as we Speak



D. Stedman, G. Bishop  
U. of Denver and  
Chandan Misra CARB

In the time it takes to read this we will have monitored the integrated emissions of another HDDV leaving POLA. See results for DPF and SCR. Please visit OHMS in operation it is only 5.7 miles by road



## OHMS is operating NOW at the Port of Los Angeles

- SEE OHMS IN OPERATION 8:00 am to about 4:30 pm depending on Port activity.
- Visit it at 1000 West Harry Bridges Blvd.. It is only 5.7 miles (8.2km) by road.
- If you do not have a vehicle, sign up on the list below for a van ride with Mr. Niranjn Vescio of ETEC Co.
- If you do have a vehicle, see map and directions below and take a spare copy if desired.



Renaissance Long Beach Hotel, 111 E Ocean Blvd, Long Beach, CA 90802

1. Head toward Pine Ave on E Ocean Blvd 0.6 mi. Turn right onto Golden Ave 469 ft.
2. Take left ramp toward I-710 N 0.7 mi.
3. Take right ramp onto W 10th St toward 9th St/Anaheim St 0.5 mi
4. Continue on W 9th St 0.4 mi; Turn left onto E Anaheim St 1.5 mi
5. Turn left onto Alameda St 0.9 mi; Continue on E Harry Bridges Blvd 0.9 mi
6. Your destination on W Harry Bridges Blvd is on the left. 5.6 mi and 11 mins.

TraPac 1000 W Harry Bridges Blvd, Wilmington, CA 90744-5230

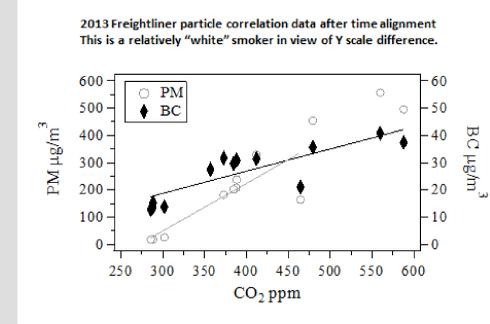
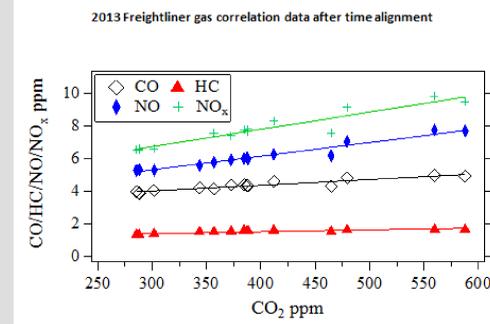
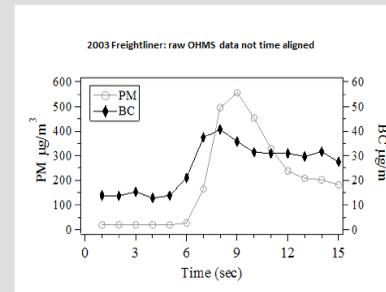
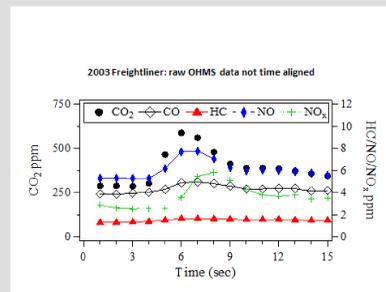
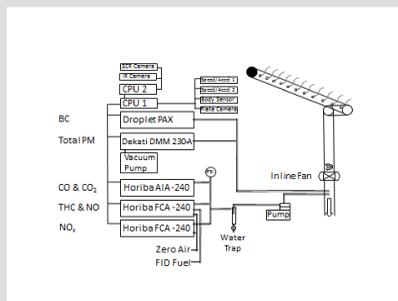
Longer but easier; go west on Ocean becoming CA47 six miles then merge to I110N. Go 1.7 mi to Exit 3A toward C St 0.2 mi. Turn right on to Figueroa, 0.1 mi turn left on to Harry Bridges destination is on the right in 0.3 miles. \$17 and 11 minutes.

Gary A. Bishop and Donald H. Stedman University of Denver, Dept. of Chemistry and Biochemistry [gbishop@du.edu](mailto:gbishop@du.edu), [dstedman@du.edu](mailto:dstedman@du.edu) and Chandan Misra, California Air Resources Board [cmisra@arb.ca.gov](mailto:cmisra@arb.ca.gov)

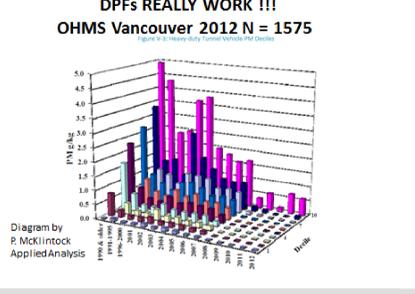
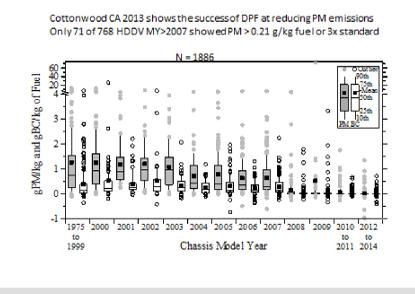
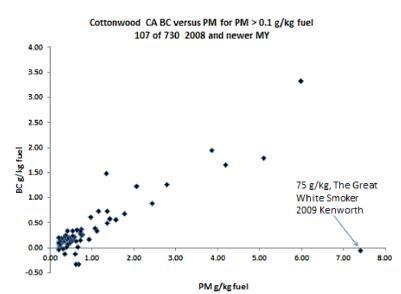
# On-road Heavy-duty Measurement System

## How it works

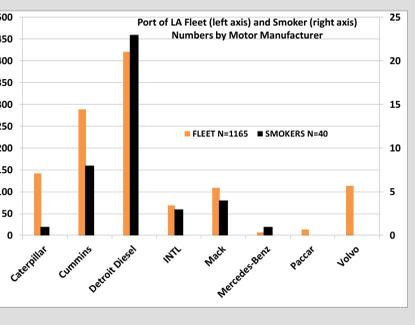
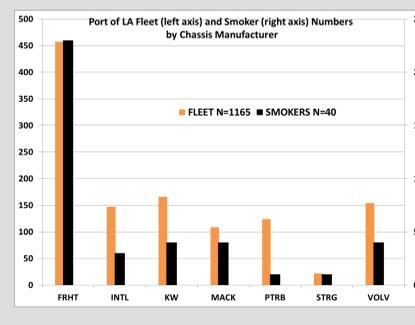
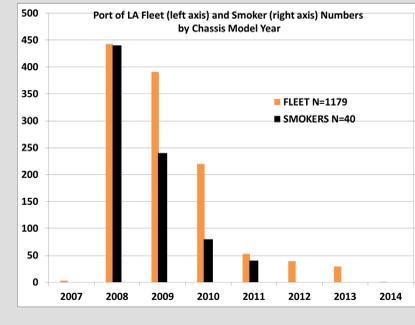
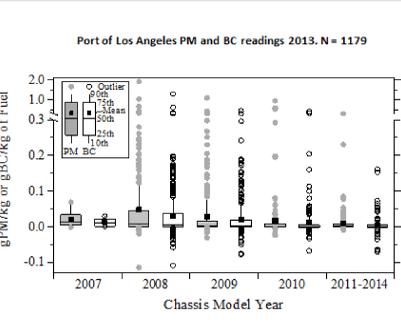
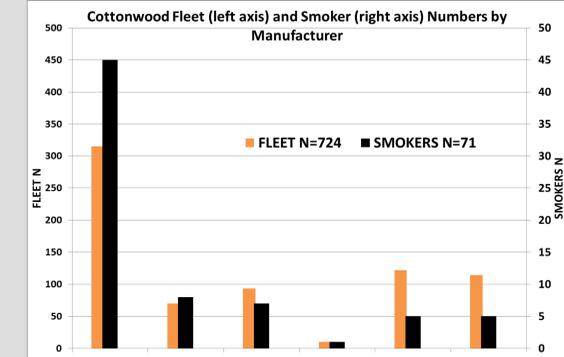
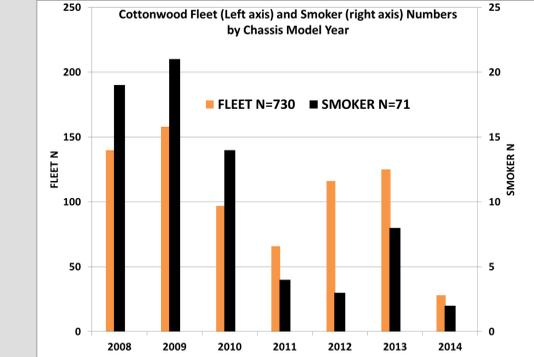
- ### OHMS
- Pipe 50ft long
  - Measurement time: 15 sec
  - Speed & Acceleration
  - License Plate
  - IR Exhaust Pipe Temperature
  - Horiba AIA 240; NDIR - CO<sub>2</sub> & CO
  - Horiba FCA240; FID/Chemi - HC & NO
  - Horiba FCA240; Chemi - Total NO<sub>x</sub>
  - Droplet Measurement Tech PAX - Black Carbon
  - Dekati Mass Monitor (DMM 230A) - PM mass & number



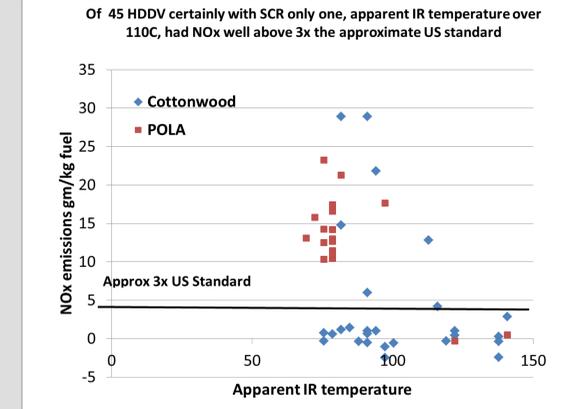
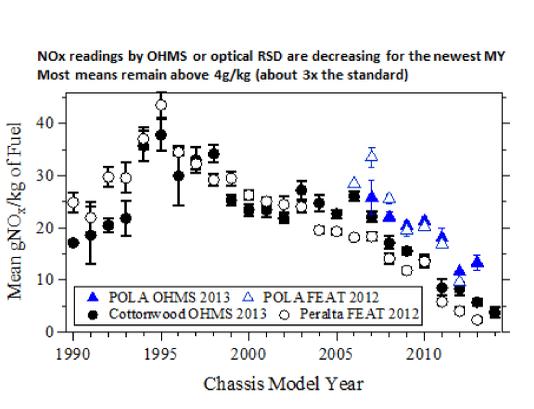
## Results PM/BC



- ### SMOKERS and HIGH NOx
- Smokers Standard
  - 0.01 g/bphpr in mixed metric units for 2008
  - Equivalent to 0.07 g/kg of fuel assuming 0.15kgfuel/bphpr
  - Define "SMOKER" at 3x standard therefore
  - SMOKER > 0.21g/kgfuel
  - HIGH NOx Standard
  - 0.2 g/bphpr in mixed metric units for 2010
  - Equivalent to 1.33 g/kg of fuel assuming 0.15kgfuel/bphpr
  - Define "HIGH NOx" at 3x standard therefore
  - HIGH NOx > 4g/kgfuel



## Results NOx



Smoker Distribution is non-random only with respect to X axis variables Model Year, FRHT and Detroit Diesel

Future includes POLA and Cottonwood 2015 and 2017 and may include demonstration of monitoring of low exhaust HDDV and Particle Number distribution as well as Geographic coverage expansion (depending on funding) and further comparison with other technologies.

*Please visit OHMS in operation it is only 5.7 miles by road*

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MAP to OHMS at Port of LA

