

# **DOAS Measurements during FLAIR**

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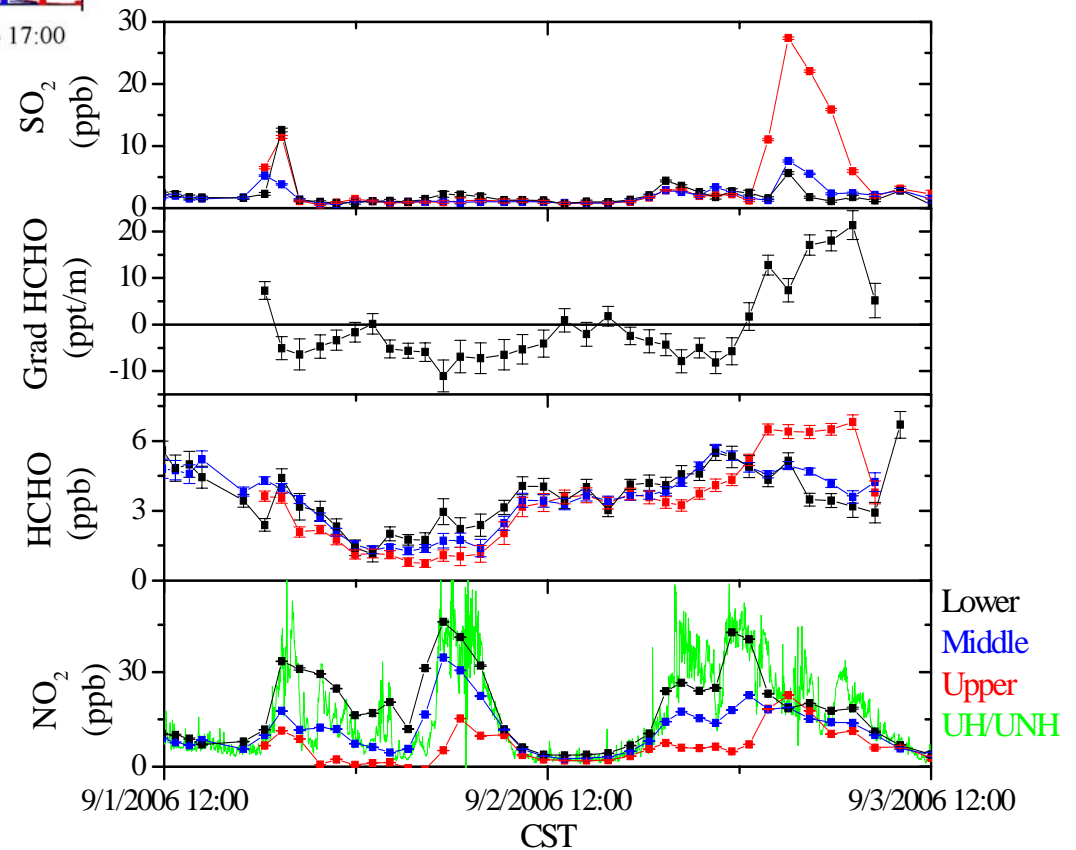
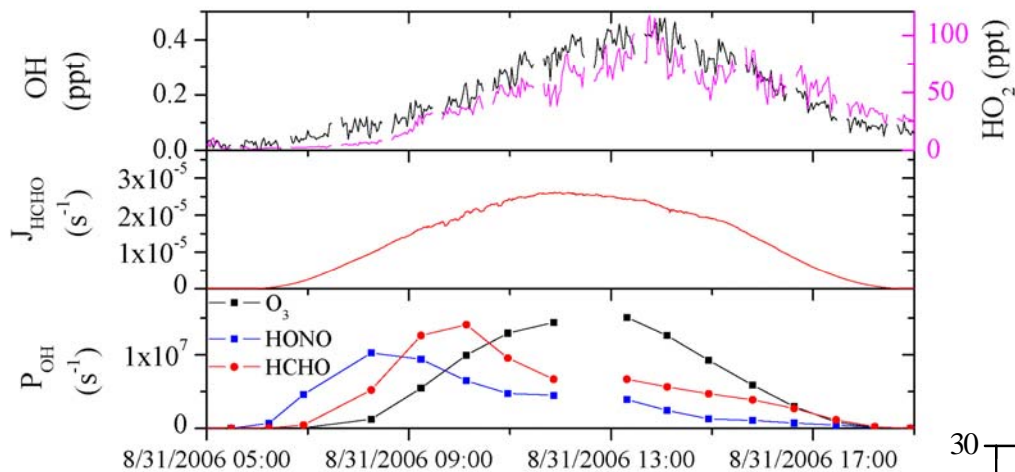
George Mount, WSU

Barry Lefer, UH

# Motivation



HCHO is important for the radical budget in Houston



Direct sources are poorly defined for the Houston area.

# **Goal of Proposed Activities**



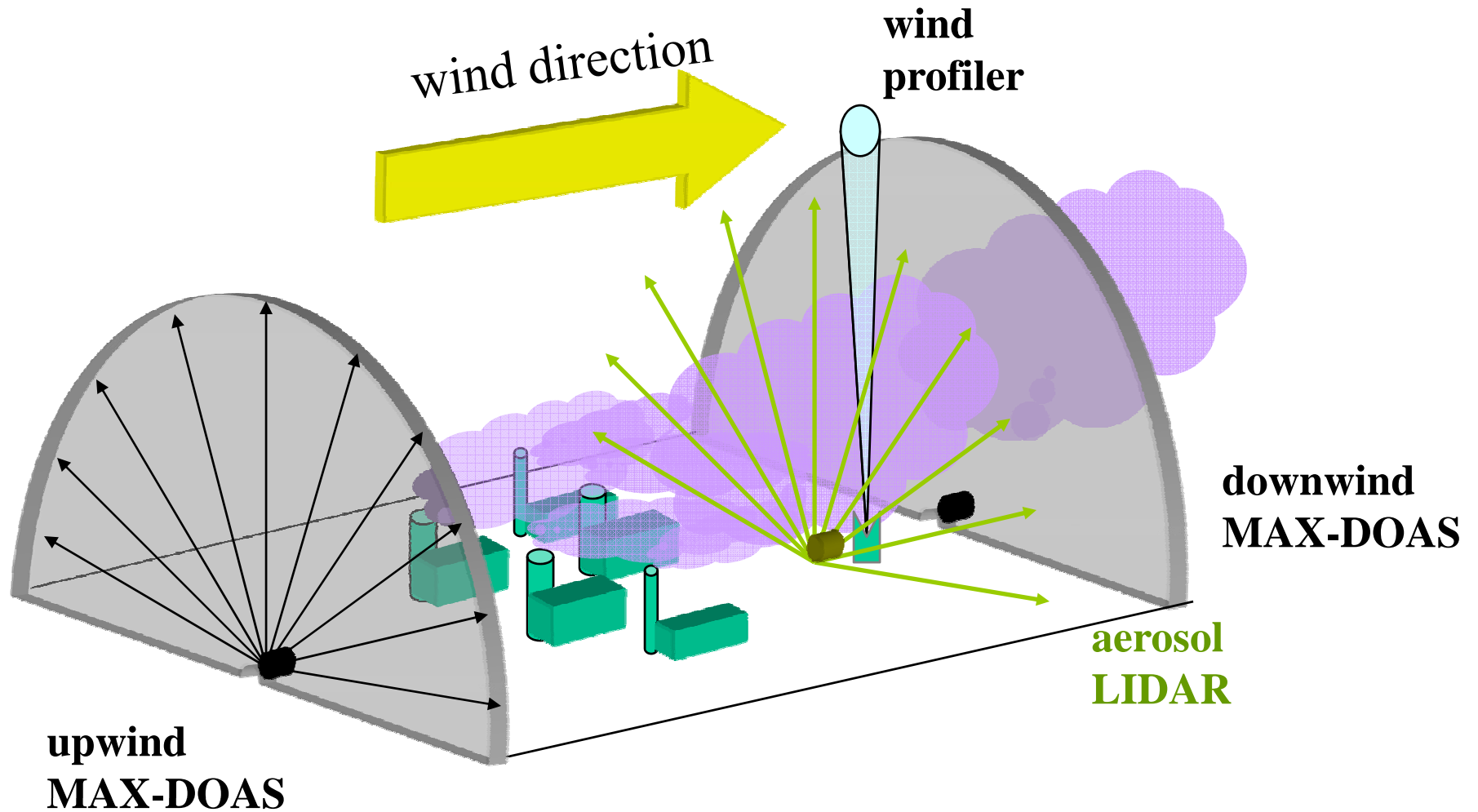
Measure the flux of formaldehyde from sources (e.g. flares, refineries) near the ship channel in Houston, TX

- 1. Area-average flux from large number of facilities in the ship channel (UCLA, WSU)**
- 2. Flux from individual flares and other point sources (UCLA, UH)**

Activities are part of Formaldehyde and Olefin from Large Industrial Sources (FLAIR) project.

**Overall goal: Improve Houston radical budget by providing accurate emission fluxes for HCHO**

# Approach for Area-average Flux Measurements



- Setup of two stationary Multi-Axis DOAS instruments, a wind profiler, and an aerosol LIDAR during 2009 field intensive to determine the area-averaged HCHO flux between the two vertical slices (~10km wide and ~5km high).
- Measurement provides unique view on HCHO emissions in ship channel over a 1 month period.

## Status

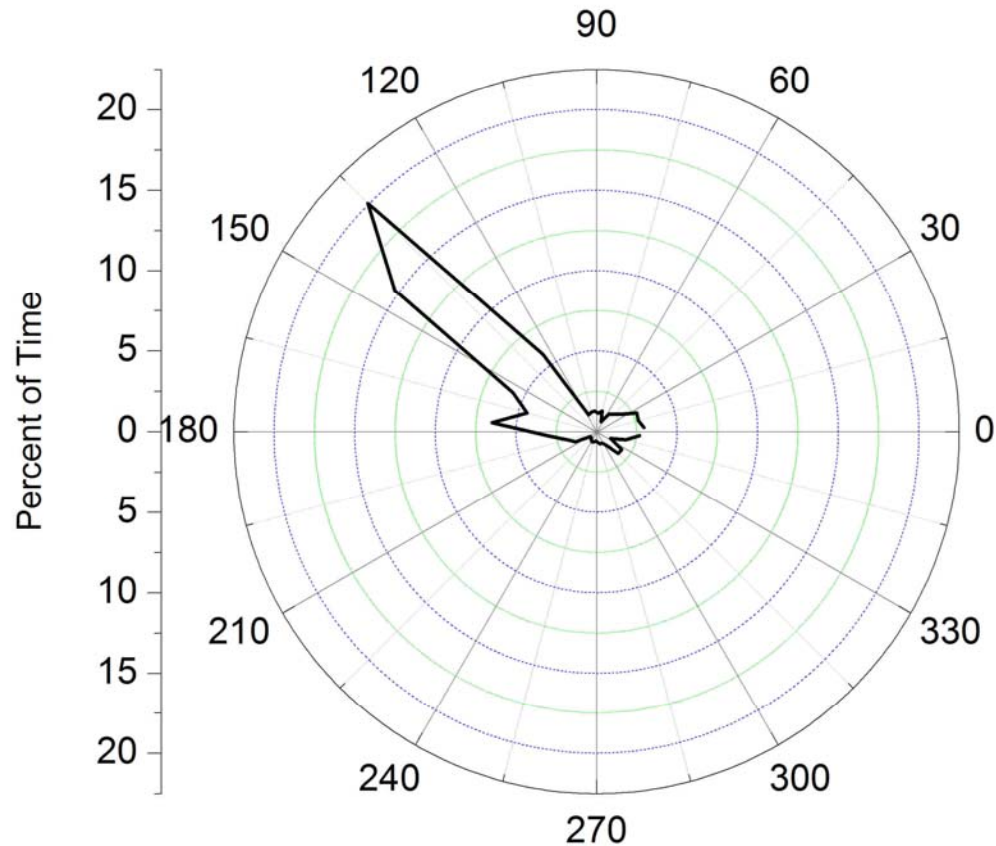
- Discussions with HARC and TERC about MAX-DOAS locations have begun.
- MAX-DOAS site survey, originally planned for Sept 16 – 20, had to be rescheduled to Nov 20-21.



# Wind Directions Analysis

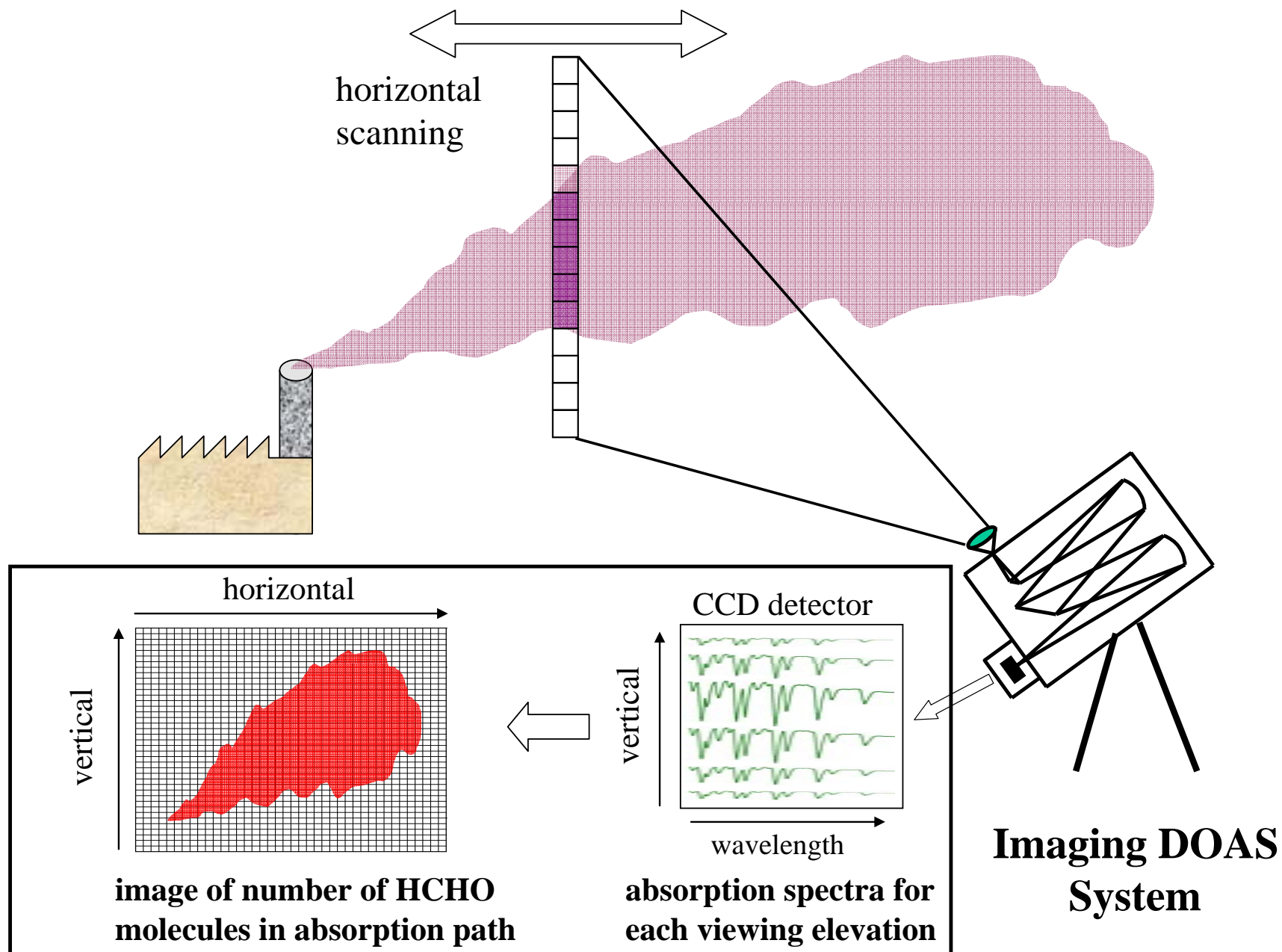


Lynchburg Ferry Site from 7am to 7pm April and May 2004-2007



Max-DOAS will scan perpendicular to main wind direction

# Approach for Single Source Flux Measurements: I-DOAS



- Novel method to remotely monitor single point sources of HCHO, HONO, NO<sub>2</sub>, and SO<sub>2</sub>. Plumes can be up to 2 km away from instrument. Access to source not necessary!
- Portability will allow the monitoring of many individual sources.
- Development (2008) and deployment (2009 and after) of Imaging DOAS instrument to measure integrated HCHO concentrations across a single plume.

### Status

- Main components for I-DOAS have been selected and ordered (delay due to late arrival of funding). Other components are being selected.
- Design is being finished.
- Deployment date is still planned for April 2009. However, less time will be available for testing.