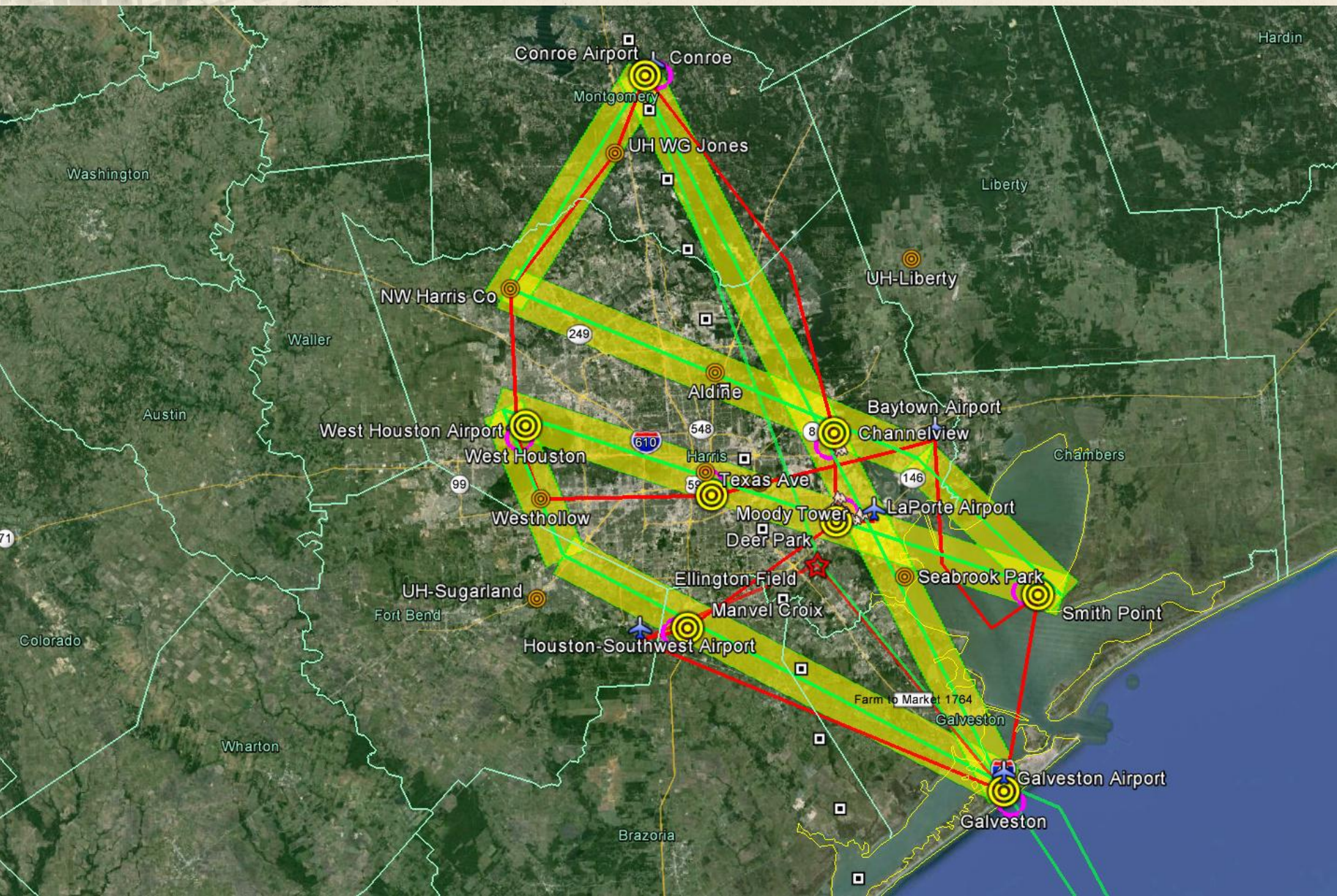




1. Houston Deployment Plans and Update
2. California data
3. Science Talk







*Changes since last telecon are shown in red*

Site Name	Spiral Y/N	Pandora Y/N	Aeronet Y/N	Missed Approach	Mobile Hook-up	other DISCOVER-AQ Augmentation
Aldine			Y			
Channelview	Y	Y	Y	N	Y	
Clinton	N	Y	Y	N	N	
Conroe (Airport)	Y	Y	Y	Y	Y	U. Texas – aerosols and NO <sub>2</sub>
Deer Park	Y	Y	Y	N	N	
Galveston	Y	Y	Y	Y	Y	NOAA Trace gases
LaPorte Airport	N	N	N	Y	Y	EPA Trailer, NOAA Ozone Lidar
Texas Avenue	N	Y	Y	N	N	EPA NO <sub>2</sub>
Manvel Croix	Y	Y	Y	N	Y	NOAA NO <sub>2</sub> , Baylor/Rice –neph and hi-vol samplers, NASA Ozone Lidar
Moody Tower	Y	Y(2)	Y	N	N	UMBC Leosphere, Appalachian State (CH <sub>2</sub> O, VOCs)
NW Harris Co	N	Y	Y	N	N	
Seabrook Park	N	Y	Y	N	N	EPA NO <sub>2</sub>
Smith Point	Y	Y(2)	Y	N	Y	NATIVE, Millersville, UMBC MPL, EPA-NO <sub>2</sub> , TCEQ Profiler, NOAA radiation
UH Coastal Center	N	N	Y	N	N	Pre-existing Aeronet, room for other instruments
UH Liberty	N	N	Y	N	N	
UH Sugarland	N	N	Y	N	N	
West Houston	Y	Y	Y	N	N	
Baytown Airport	N	N	N	TBD	N	Possible missed approach enroute from Smith Point to Moody Tower
Houston SW Airport	N	N	N	TBD	N	Possible missed approach (8 km west of Manvel Croix)
West Houston Airport	N	N	N	TBD	N	Possible missed approach enroute from Westhollow to NW Harris Co

Site Name	Pandora Y/N	Aeronet Y/N	Mobile Hook-up	Access Granted?	Comments
Aldine	N	Y	N		Aeronet negotiating directly with school for rooftop emplacement
Channelview	Y	Y	Y		Scaffolds ready and other work still pending
Clinton	Y	Y	N		
Conroe (Airport)	Y	Y	Y		Scaffolding in place, other work still pending
Deer Park	Y	Y	N		Scaffolding in place, complete
Galveston	Y	Y	Y		Scaffolding in place, complete
LaPorte Airport	N	N	Y		Scaffolding in place, other work still pending
Texas Avenue	Y	Y	N		Still negotiating details with Condo owners; EPA in contact with City of Houston
Manvel Croix	Y	Y	Y		Scaffolding in place, other work still pending
Moody Tower	Y(2)	Y	N		
NW Harris Co	Y	Y	N		Scaffolding in place, complete
Seabrook Park	Y	Y	N		Scaffolding in place, complete
Smith Point	Y(2)	Y	N		All details and arrangements should be coordinated through Rich Clark (Millersville University)
UH Coastal Center	N	Y	N		This site complete
UH Liberty	N	Y	N		This site complete
UH Sugarland	N	Y	N		This site complete
West Houston	Y	Y	N		Access is for rooftop instruments, still need to discuss possible NO2 measurement from TCEQ at this site

Yellow indicates that intended activities are still on track

Green indicates completion of intended activity or permission

15 July – Sites open for Pandora and Aeronet installations

12 August – Sites open for Trailers and Mobile units

15 August – Met Profiler set up completed

Initial site visits need to be coordinated with Jim Thomas ([jwinthomas@embargmail.com](mailto:jwinthomas@embargmail.com)) and Raj Nadkarni ([Raj.Nadkarni@tceq.texas.gov](mailto:Raj.Nadkarni@tceq.texas.gov)). The project will provide lock access codes for subsequent visits.



## *Smith Point Status*



POC for all questions and requirements: Rich Clark (Richard.Clark@millersville.edu)

Balloon operations will be allowed to 1570 feet (478 meters). Two balloons will be operated (one solely for the transponder). Also authorized for 2-3 nighttime ops.

Power upgrade at Spoonbill RV Park has been invoiced to SSAI and is progressing.

**Due to reliability issues with hot spots at this location, satellite communications will be provided through Rich Clark.**

Rich Clark and Tracy Woody (Spoonbill RV park) have settled on acceptable language for the legal agreements to operate at Smith Point. Each group will need to have a document signed with similar language:

"Neither of the parties shall assume any liabilities to each other. As to liability to each other or death to persons, or damages to property, the parties do not waive any defense as a result of entering into this contract. This provision shall not be construed to limit the Commonwealth's rights, claims or defenses that arise as a matter of law or pursuant to any provisions of this contract. This provision shall not be construed to limit the sovereign immunity of the Commonwealth or of the State System of Higher Education or the University."



## *Mobile Lab Operations*



Due to the attention-grabbing nature of the mobile labs (and P-3B) operating in close proximity to petrochemical and other facilities, a letter is being drafted for Homeland Security. A copy of this letter will be provided to show to any authorities in case you are stopped and questioned.

We need to establish a point of contact for coordinating the use of the mobile hook-ups across the study area for stationary sampling and overnight periods.

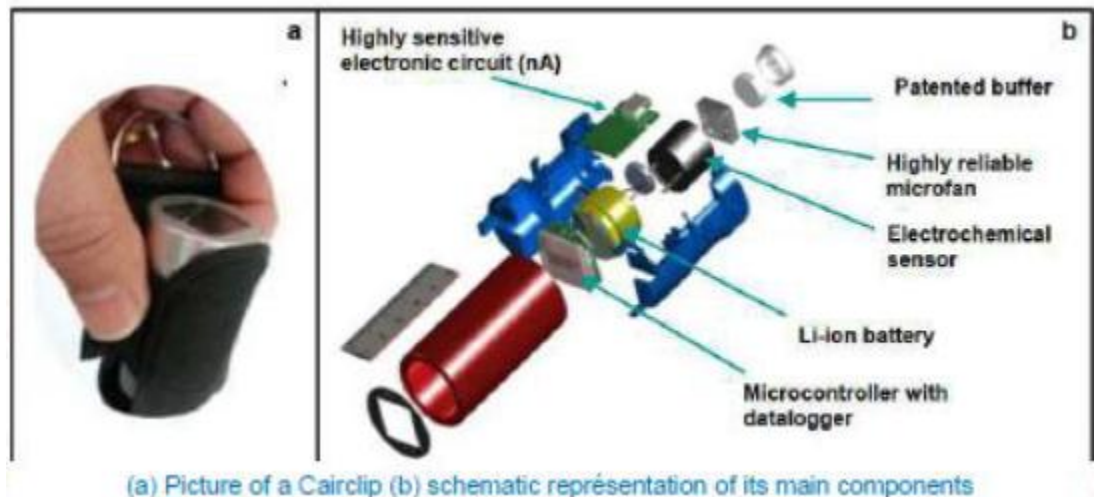
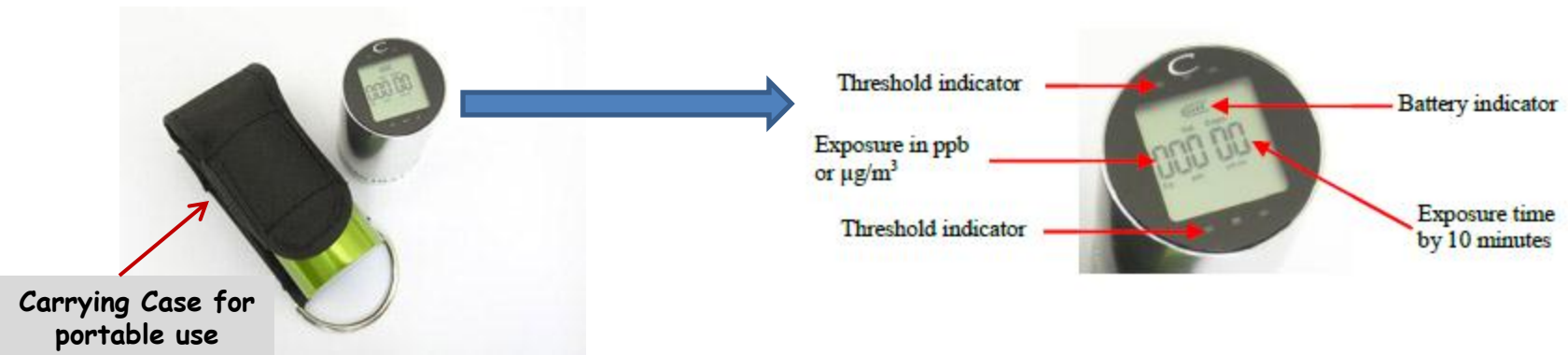
While mobile operations are flexible in nature, it would be good to have a strawman plan for each vehicle in terms of where and how they anticipate sampling. That will help get them into the collective mindset of the team in terms of the integrated observing strategy.

**Mobile facility groups will have a telecon on Friday (12 July)**

# CairClip Air Pollution Sensor

(these are being contributed to the small sensor effort by Russell Long)

**CairClip** is an easy to use, air pollution sensor that measures ozone ( $O_3$ ) and nitrogen dioxide ( $NO_2$ ). These pollutants are regulated because they are formed by a number of pollution sources (such as vehicles and industry) and are known to cause harmful effects on human health and the environment. The **CairClip** sensor is made by CairPol, located in France.





# Features of the CairClip Sensor

- ✓ Detection range for O<sub>3</sub> and NO<sub>2</sub>: 0 to 250 ppb
- ✓ Weight: 55 grams (about 0.12 pounds)
- ✓ Dimensions: 32 mm (1.26 inches) wide, 62 mm (2.44 inches) long
- ✓ Battery life: 24 hours
- ✓ Recharging battery: 4 hours to completely charge
- ✓ Battery charged with either a USB cable or AC adapter
- ✓ Can store about 28,800 data points; for example...
  - 1 point every minute = 20 days of data
  - 1 point every 15 minutes = 300 days of data
- Uses software (Cairsoft available from [www.cairpol.com](http://www.cairpol.com)) to retrieve measurement data and set up measurement parameters





### Logistical Issues and Possible Efficiencies:

Travel – There will be two WBS accounts for civil servants and two tasks for contractors/grantees. You will need to be specific with Diane Zeimet regarding which project you are travelling under. Sometimes it may get a little messy, but teams should consider splitting their travel by personnel even if there is some overlap in duties.

The 30-day rule will need to be considered by those working both projects.

Badging – All badging requests for personnel in groups associated with both SEAC<sup>4</sup>RS and DISCOVER-AQ will be handled by ESPO. We will handle all requests for groups specific to DISCOVER-AQ only. Once we have all of your information compiled, we will remind you of who you need to coordinate with for badging needs.

**\*It appears that ESPO is NOT entering Wallops access requirements into the system, so we need to make sure that all personnel needing to go to Wallops are identified and requested regardless of their SEAC<sup>4</sup>RS involvement.**



## Overlap with SEAC<sup>4</sup>RS: Second Site Survey



Luci Crittenden and Kent Shiffer will visit Ellington Field next Monday (15 July) to assess the logistics of having both groups occupy the field. Here is our list of issues. Please contact us ASAP if you have others. Results to be reported at next telecon.

- Badging: Visit with approving authorities face-to-face to ensure there are no requirements we have missed as well as current progress on approvals
- Internet: Check quality of wireless connection ([www.speedtest.net](http://www.speedtest.net)) in all spaces we will occupy (e.g., Labs, Conference Room, Hangar Floor)
- Space: Ensure adequate space and availability of tables and chairs on first floor of hangar for all DISCOVER-AQ and SEAC<sup>4</sup>RS overlap personnel.
- Power: Ensure that all occupied spaces have adequate access to power receptacles
- Conference Room: Check conference room for size, availability, phone, and projection. Is it too small for SEAC<sup>4</sup>RS or will we have to share? Will it suffice for Media Day?
- Phones: If conference room is unavailable, determine where a conference phone can be placed and daily telecons can be conducted. A side room where we can make phone calls (e.g., met support) would be useful.
- Will hangar have AC on the main floor as well as in the labs?
- Verify that there is no competition for aircraft support equipment (e.g., Ground power units, AC units, air stairs, etc.)

DISCOVER-AQ	STATUS	SEAC <sup>4</sup> RS (handled by ESPO)
Iq Mead (UK)	submitted-visa waived	Armin Wisthaler (Italy)
Gregor Stewart (UK)	submitted	Tomas Mikoviny (Slovakia)*
Detlef Mueller (Germany)	submitted	Markus Müller (Austria)*
Eduard Chemyakin (Russia)	submitted-needs new visa	Phillipp Eichler (Germany)
Basak Karakut Cevik (Turkey)	submitted	Petter Weibring (Sweden)*
Yu Jun Leong (Malaysia)	submitted	Suzanne Crumeyrolle (France)
Tara Yacovitch (Canada)	submitted	Nikolai Balashov (Russia)
Christoph Senff (Germany)	submitted	Ewan Crosbie (UK)
Yunsoo Choi (S. Korea)	submitted (green card)	
Paola Massoli (Italy)	submitted	* Denotes Wallops access
Patricia Sawamura (Brazil)	submitted-needs new visa	

Luci will only be assisting with badges for the names listed under DISCOVER-AQ.

We have discovered that ESPO was not entering data for Wallops access for those listed under SEAC<sup>4</sup>RS, we have highlighted those names and will ensure Wallops access is requested.



DISCOVER-AQ	
Cody Floerchinger (Aerodyne)	Barry Lefer (UH)
Edward Fortner (Aerodyne)	James Flynn (UH)
Scott Herndon (Aerodyne)	David Knapp (UCAR)
Edward Niple (Aerodyne)	Denise Montzka (UCAR)
Rob Roscioli (Aerodyne)	Andy Weinheimer (UCAR)
John Holloway (NOAA)	Ryan Stauffer (PSU)
Clare Flynn ( UMd)	Hannah Halliday (PSU)

This list is for people needing routine access to Ellington Field during the deployment. A separate list on the next page addresses visitors only expecting to make a visit or two and will not need more than a day badge.

Please submit additional names to Luci Crittenden ([Lucille.H.Crittenden@nasa.gov](mailto:Lucille.H.Crittenden@nasa.gov))

Have received inputs from EPA and TCEQ that are not reflected above



## *Access to Ellington Field for NASA PIV Badge Holders*



1. Go to <https://idmax.nasa.gov/>
2. Click on the “Self Service” tab
3. Choose “Add Travel Center”
4. Under “Select travel center(s):” check the box for JSC if it is not already listed under your list of “Active travel center(s):”
5. Click on the “Access Management” tab
6. Choose “Request or Modify Physical Access”
7. Click on the “Physical Access Levels” tab
8. Enter “JSC-EF-Gate Entry” in the “Find PAM Resource” field and click on “Search” (This search will fail if you do not enter this exactly. You may also enter just JSC-EF and the search will return 5 pages of results with “JSC-EF-Gate-Entry” as the last entry on the 5<sup>th</sup> page)
9. Click on “Add to Request” for JSC-EF-Gate Entry
10. Click on the “Sponsor” tab (instructions continued on next slide)



## *Access to Ellington Field for NASA PIV Badge Holders (cont.)*



11. Enter “Lisa” in the field for first name and “Buswell” in the field for “Last Name” and click “Search”
12. Click on “Select Sponsor” next to Lisa Buswell’s name
13. Toward the bottom of the page there is a field with a red star for “Expiration Date Requested”. Enter 10/2/2013
14. Further down, there is a field with a red star for “Business Justification”. Enter “Supporting DISCOVER-AQ science flight deployment at Ellington Field”. You should also mention SEAC4RS if you are involved in both experiments.
15. Click “Continue”, take one last look to verify details and click “Submit Request”
16. Send an email to [jsc-badgserv@mail.nasa.gov](mailto:jsc-badgserv@mail.nasa.gov) with “Access request” as the subject. In the body of the email, state the following:
  - I would like my badge verified to ensure that access can be added for the following area at Ellington: JSC-EF Gate Entry
  - I have already requested controlled access through the Physical Access Management tool on the Access Management tab in IdMAX(You will receive an auto-response stating that the request has been received and a response will be sent in (3) three business days)



DISCOVER-AQ	
Lea Ruiz (UT)	Raul Alvarez (NOAA)
Jeffrey Bean (UT)	Xinrong Ren (NOAA)
Cameron Faxon (UT)	Winston Luke (NOAA)
Rob Griffin (Rice)	Paul Kelley (NOAA)
Carlos Hernandez (Rice)	Andrew Langford (NOAA)
Bianca Baier (Penn State)	Mike Hardesty (NOAA)

This list is for people making single visits or periodic stops at Ellington that are not frequent. If you need more frequent access, please let us know. Otherwise, you will receive a day badge, and we will need to meet you when you arrive.

Please submit additional names to Luci Crittenden ([Lucille.H.Crittenden@nasa.gov](mailto:Lucille.H.Crittenden@nasa.gov))

Have received inputs from EPA and TCEQ that are not reflected above

ALL NASA-sponsored travel is under increased scrutiny and requires your name to be approved for travel through NASA, SSAI, or NIA. If your name is not on this list, then we need to hear from you regarding your team members and travel dates.

NOTE: Names highlighted in yellow are associated with research groups overlapping with SEAC<sup>4</sup>RS. Civil servants need to take care to charge the appropriate WBS and SSAI travelers need to stipulate with Diane Zeimet which project to assign your travel expenses.

## NASA CS

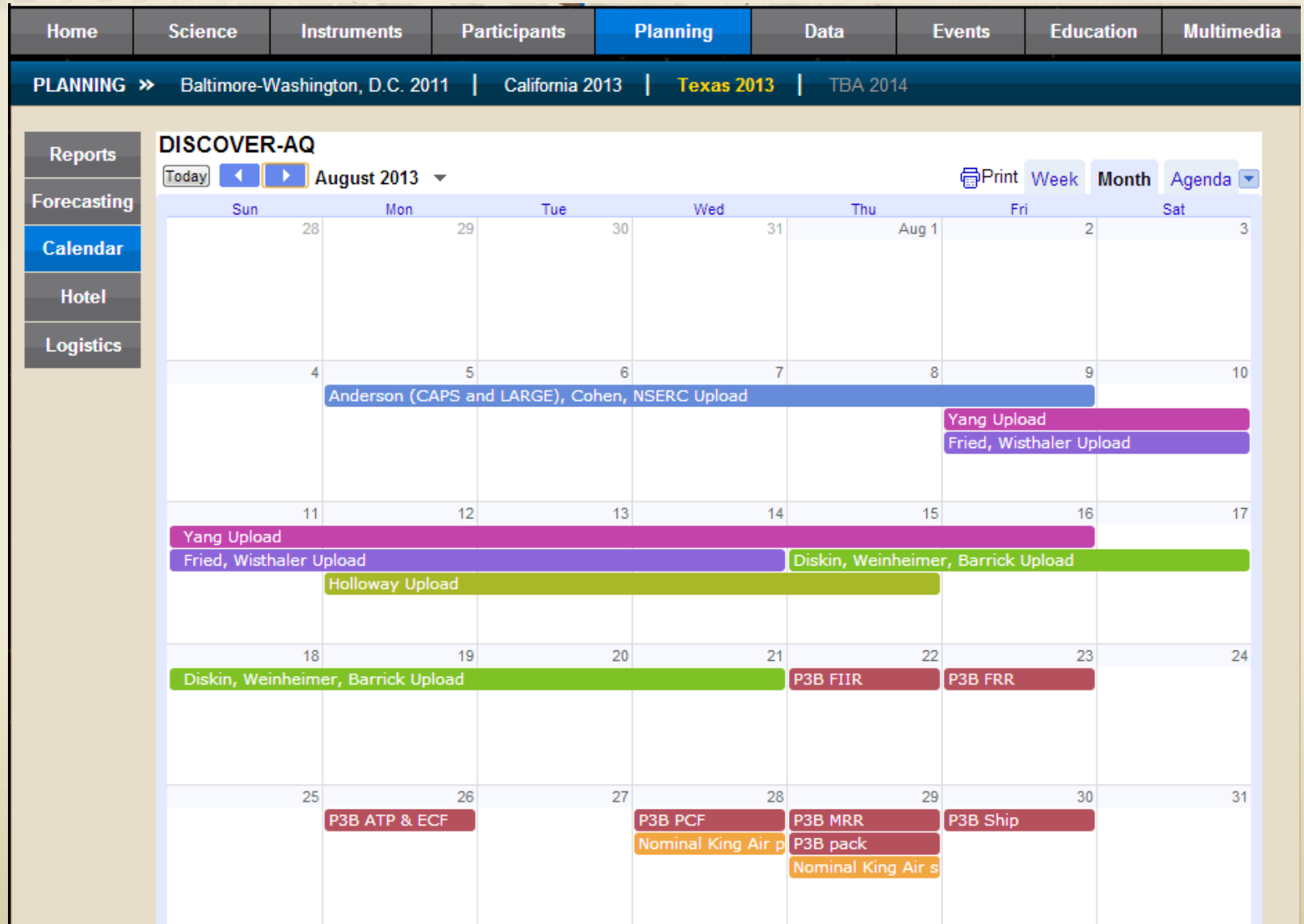
Anderson	Bruce
Beyersdorf	Andreas
Burton	Sharon
Chen	Gao
Cook	Anthony
Crawford	James
Diskin	Glenn
Duncan	Bryan
Ferrare	Richard
Geiger	Jimmy
Harper	David
Hostetler	Chris
Janz	Scott
Kleb	Mary
Martin	Robert
Pickering	Kenneth
Rogers	Raymond
Thompson	Anne
Yang	Melissa
Ziemba	Luke

## NIA - sponsored

Mead	Iq
Mikoviny	Tomas
Sachse	Glenn
Wisthaler	Armin

## SSAI - sponsored

Abuhassan	Nader	Holloway	John	Roscioli	Rob
Aknan	Ali	Hudgins	Charles	Slate	Thomas
Baier	Bianca	Knapp	David	Stauffer	Ryan
Balashov	Nikolai	Kowalewski	Matthew	Stewart	Gregor
Barrick	John	Labow	Gordon	Thornhill	Kenneth
Chemyakina	Eduard	Lin	Jack	Walega	James
Choi	Yong Hoon	Loughner	Christopher	Weibring	Petter
Cohen	Ronald	Martins	Doug	Weinheimer	Andrew
Crumeyrolle	Suzanne	Massoli	Paola	Winstead	Edward
Duffey	Kaitlin	McCullough	Kent	Wooldridge	Paul
Eichler	Philipp	Montzka	Denise	Xiong	Sam
Floerchinger	Cody	Moore	Richard	Yacovitch	Tara
Flynn	Clare	Mueller	Detlef	Zweers	Deb
Fortner	Edward	Müller	Markus		
Fried	Alan	Nault	Benjamin		
Halliday	Hannah	Niple	Edward		
Harward	Charles	Pusede	Sally		
Herman	Jay	Rana	Mario		
Herndon	Scott	Richter	Dirk		
Hoff	Raymond	Romer	Paul		



Upload activities will include both weekdays and weekends





## *Accommodations during P-3B Integration and Download*



Tourist season will still be in effect during P-3B integration making it difficult to obtain accommodations within the allowance.

The Wallops Lodging Facility has 9 rooms available throughout the integration and download periods for less than half the cost of a room in Chincoteague. These rooms are available to everyone except foreign nationals, who are required to live off base. **(Rooms are still available.)**

Reservations need to be made quickly to reserve these rooms. Please contact Debbie Toth at 757-824-1697 to make your reservation and identify yourself with the DISCOVER-AQ project.

**(We will no longer be monitoring the situation in the dorms. If you are unable to get a dorm room and cannot find accommodation in Chincoteague at per diem, then you will need to stay in Pocomoke City, MD. It is much cheaper and only 20 minutes away versus 15 minutes for Chincoteague.)**

We have secured a room block at the Homewood Suites at well below the per diem rate (\$99 per night versus \$109 per diem).

You should begin making your reservations now and identify yourself with the NASA DISCOVER-AQ project.

For those of you participating in both SEAC<sup>4</sup>RS and DISCOVER-AQ you may succeed in getting the lower rate for your entire stay, but it is not guaranteed.

If you are working on SEAC<sup>4</sup>RS only, we prefer that you not request to be part of the room block or seek accommodation elsewhere since we would like to preserve this preferred rate for DISCOVER-AQ.

SEAC<sup>4</sup>RS has a room block at this hotel for August only. If you overlap both experiments, you may need to identify BOTH room blocks to the hotel staff

To help, Homewood suites has requested that you make reservations through management (see next slide rather than front desk).



## *Accommodations in Houston*



**Homewood Suites by Hilton-Houston Clear Lake**

**Phone: 281-486-7677**

**Ask for Teresa Simplot or Jason Lincoln and identify yourself with the DISCOVER-AQ room block for any further reservations!**

**401 Bay Area Blvd., Houston, Texas 77058**

**Arrival Date: September 2, 2013 / Departure Date: October 1, 2013**

**Number of Rooms: 40**

**Room Type and Rate: One Bedroom Suite with a king bed @ \$99.00 per night plus tax (Note: All suites include a sofa sleeper in the living area.)** Room rates are quoted exclusive of local taxes and fees, currently 17%. If you are tax exempt, then each guest will be asked to sign federal tax exemption form at check in. **(Federal employees, please do this!!!!)**

### **Reservations/Payment:**

To make a reservation, please call the hotel directly and ask for the NASA Discover-AQ room block. All reservations are required to be guaranteed with a credit card.

### **Cancellation Policy:**

The room block will be released on August 18, 2013 and rooms at the above rate will be available on a rate and space basis. If it becomes necessary to cancel an individual reservation, to avoid a one night's charge of room and tax the reservation must be cancelled 6 pm 24 hours prior to the arrival date.

### **CHECK-IN/CHECK-OUT:**

Check in time is 3:00pm and check out time is 12:00 noon.





# Houston Deployment Schedule



- 2 Sep - Transit to Houston
- **3 Sep - Media Day**
- 4 Sep - First possible science flight
- 1 Oct - Return to WFF
- Other dates of potential interest from TCEQ:

late Aug – AQRP request for proposals

late Oct – proposals due

Week of 11 Nov – ITAC meeting, chance to share preliminary results of campaign

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
  SEARCH NASA

Home Science Instruments Participants **Planning** Data Events Education Multimedia

PLANNING >> Baltimore-Washington, D.C. 2011 | **California 2013** | Texas 2013 | TBA 2014

Reports  
 Forecasting  
**Calendar**  
 Hotel  
 Logistics

**DISCOVER-AQ**  
 Today | September 2013 | Print | Week | Month | Agenda

Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sep 1	2 Transit to Houston	3 Media Day	4 Nominal 1st scienc	5	6	7
8	9 Nominal ship cruise	10	11	12	13	14
15 Nominal ship cruise	16	17	18	19	20	21
22 Nominal ship cru	23	24	25	26	27	28
29	30 Return to WFF&Lal	Oct 1	2	3	4	5

Events shown in time zone: Eastern Time

Google Calendar

## DISCOVER-AQ NASA P-3B (N426NA) FLIGHT ITINERARY AND PASSENGER MANIFEST

Houston - Sept. 2013

### TRANSIT FLIGHT

Pilot: Mike Singer  
Co-Pilot: Jeff Chandler  
3rd Pilot: Anderson or Farley  
FE: Brian Yates

Flight #: DAQ-1 TRANSIT  
Date: 02/09/2013-Mon  
From: KWAL  
To: KEFD  
Time Out: \_\_\_\_\_  
Time Off: \_\_\_\_\_  
Time Down: \_\_\_\_\_  
Time In: \_\_\_\_\_

Total Hrs: \_\_\_\_\_

	Name	Organization/Instrument
1	John Barrick	PDS/NO2
2	Eric Buzay	REVEAL
3	empty seat	REVEAL
4	Tom Slate	DLH/DACOM
5	Charles Harward	DLH/DACOM
6	empty seat	DFGAS
7	James Walega	DFGAS
8	empty seat	NH3
9	empty seat	NOxy
10	David Knapp	NOxy
11	Markus Mueller	PTR-MS
12	James Geiger	AVOCET
13	Melissa Yang	AVOCET
14	Kaitlin Duffey	TD-LIF
15	Paul Wooldridge	TD-LIF
16	Andreas Beyersdorf	LARGE
17	Rich Moore	LARGE
18	Eddie Winstead	LARGE
19	Brian Norman	ACM - crew
20	Jim Schultz	ACM - crew

Flight Crew Total: 6  
Science Crew Total: 13  
Grand Total: 19

Changes or additions should be sent to Luci Crittenden

Transit may need to have fewer passengers due to extra weight of flyaway kit. Waiting for WFF to define max number of passengers.

***Space will be at a premium at Ellington Field. Any changes to these requirements can be sent to Luci Crittenden ([Lucille.H.Crittenden@nasa.gov](mailto:Lucille.H.Crittenden@nasa.gov))***

Requester	Tables	Chairs	Comment
Barrick	1	2	Looks OK
Beyersdorf	4	6	Satisfies requirements for both DISCOVER-AQ and SEAC4RS
Cohen	2	4	Satisfies requirements for both DISCOVER-AQ and SEAC4RS
Crawford	2	4	May get away with 1 table, but do need at least 4 chairs
Diskin	3	6	Satisfies requirements for both DISCOVER-AQ and SEAC4RS
Fried	2	4	Satisfies requirements for both DISCOVER-AQ and SEAC4RS
Hoff/Visitors	1	4	
Hostetler	4	7	Need one of these tables to be by the aircraft
Janz	3	3	Need one of these table to be by the aircraft
Pickering	1	3	Looks OK
Weinheimer	2	4	Includes space for Deb Zweers
Wisthaler	2	4	Satisfies requirements for both DISCOVER-AQ and SEAC4RS
Yang	1	2	Looks OK



## *Ellington Field Shipping POC*



***Please begin preparing your shipping documents for Luci Crittenden. She will need them from you NLT 15 August.***

***Anyone who plans to ship items to Ellington Field in advance of the truck shipment should use the following shipping address:***

***Wanda Frederick  
Attn: DISCOVER-AQ Project  
DYNCORP/NASA  
Building 270  
Ellington Field  
Houston, TX 77034***

***Phone: 281-244-9112***

***Email: [Wanda.J.Frederick@nasa.gov](mailto:Wanda.J.Frederick@nasa.gov)***

***This information is now on the website, too.***



The data archive went public on 17 June.

All preliminary data was removed from access.

Almost all data is on the archive. We will communicate with those few groups still preparing data.

Merges will need to wait until all data is available.

While video from the P-3B has been available for some time, we will continue to work on getting other ancillary information (e.g., HYSPLIT trajectories, satellite images, etc.)

Any questions on format or upload should be addressed to Gao Chen ([Gao.Chen@nasa.gov](mailto:Gao.Chen@nasa.gov)) or Ali Aknan ([Ali.A.Aknan@nasa.gov](mailto:Ali.A.Aknan@nasa.gov))

It is important to indicate the final data status in your last revision note. In addition, the entry of “STIPULATIONS\_ON\_USE” should indicate that the data is open to public.

# **UH air quality forecasting for DISCOVER-AQ**

**DISCOVER-AQ bi-weekly meeting**  
**July 11, 2013**

**Yunsoo Choi**  
**Beata Czader**  
**Lijun Diao**  
**Joey Rodriguez**

**Department of Earth and Atmospheric Sciences**  
**University of Houston**

# Air Quality Forecasting on spock.geosc.uh.edu

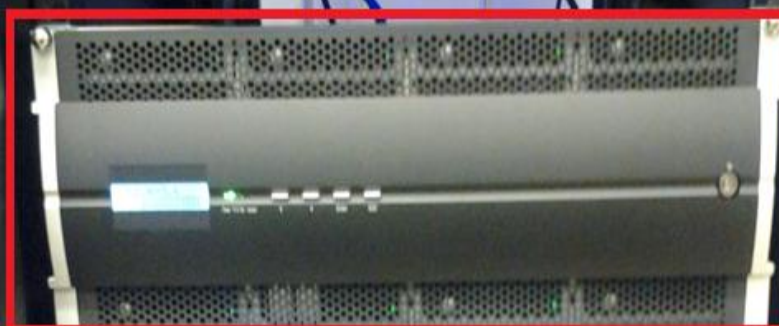


- Affiliation: UHfleet Choi Government
- First name: Spock
- Posting: Air Quality Forecasting officer/first officer
- Rank: Main Node Commander
- Spock is managing two UH air quality forecasting systems.

From Wikipedia



Master Node



Storage

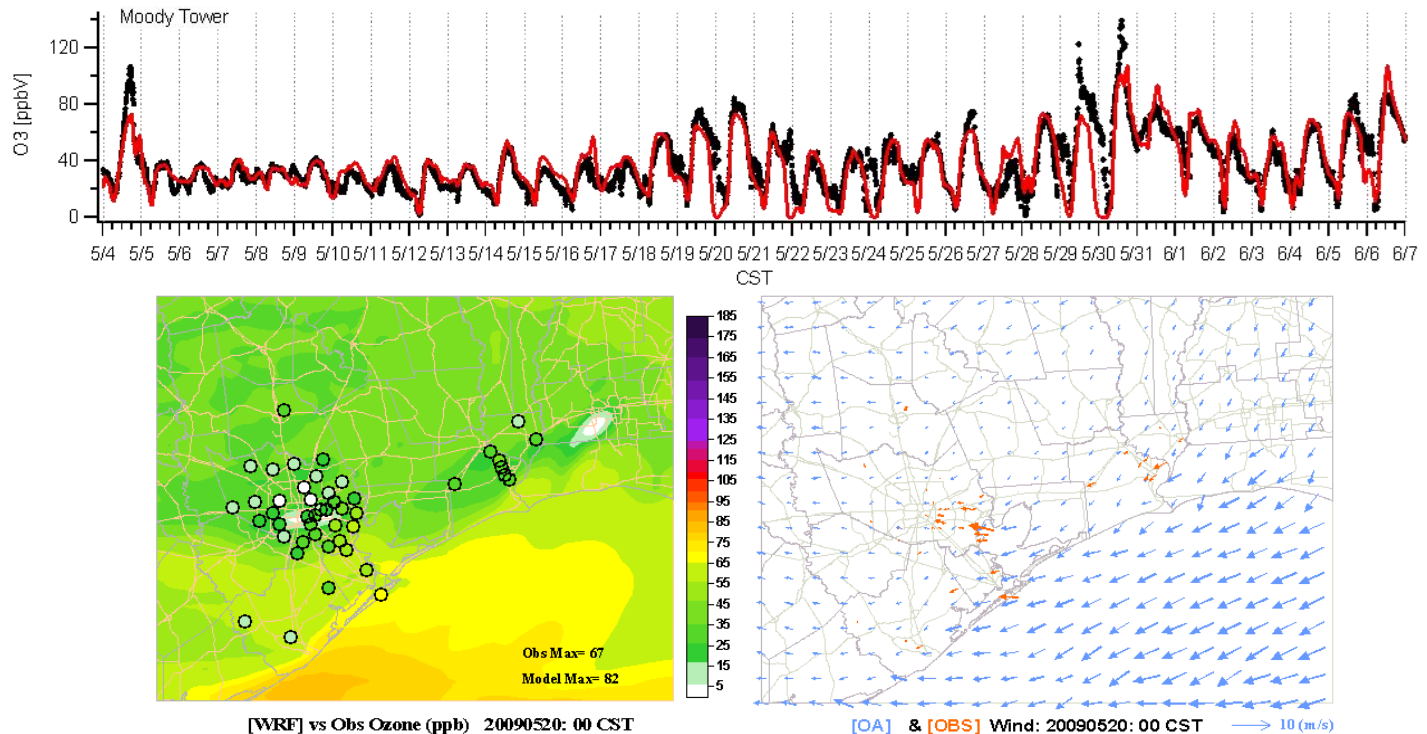


Slave / Com  
Nodes

Spock	
192 processors	
2 TB of system memory	
60 TB of storage space	
~ 200 k	
Uses specialized (Xeon) processors. (e5-4640)	
Uses about 40 Amps of power	
~ 500 GFLOPS	
Very dense, same space as about 3-4 pcs	



# UH WRF-CMAQ forecasting system



- Dr. Beata Czader is performing QA/QC process of the WRF-CMAQ modeling system on 2000, 2006 and/or 2009 field campaigns and perform automated air quality forecasting during DISCOVER-AQ Houston campaign

# WRF-CMAQ setup

**WRF v3.5 - CMAQ5.0.1: perform 0Z every day**

## **Domains**

12-km (Texas), 150 columns, 34 rows  
04-km (Houston), 84 columns, 66 rows  
27 layers, model top at 5000 Pa

## **Emission Inventory**

National Emission Inventory 2008 with MOVES processed mobile emissions

## ***CMAQ science options***

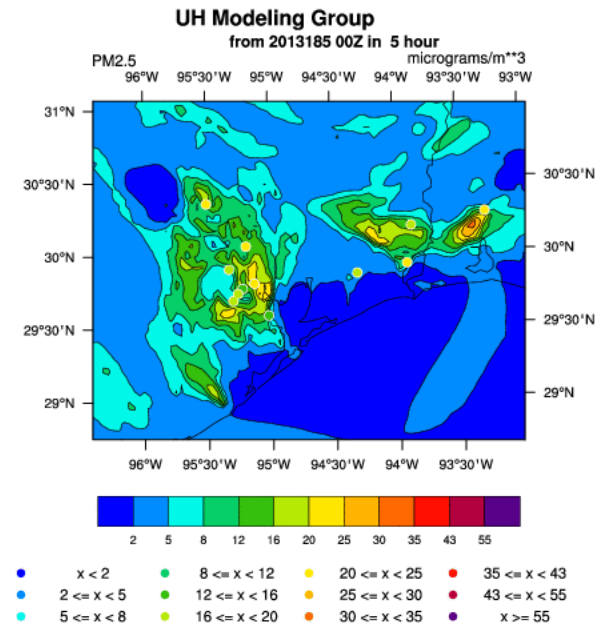
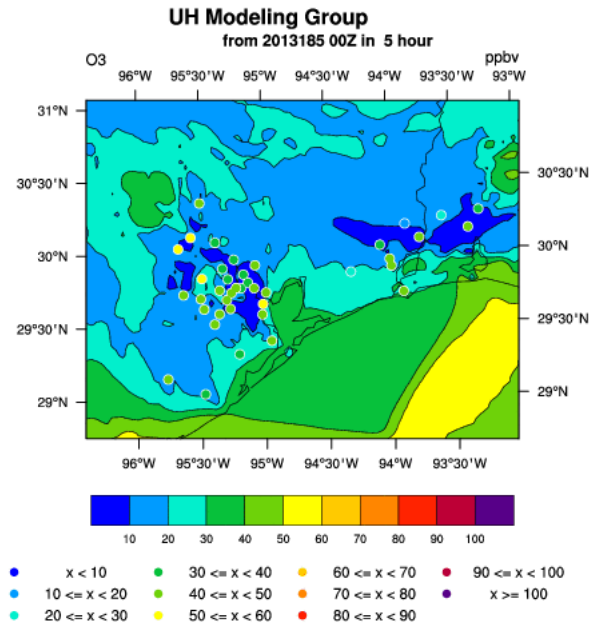
***ctm\_yamo***: use Yamartino scheme for mass-conserving advection

***acm2***: vertical diffusion calculation using the Asymmetric Convective Model version 2 (ACM2)

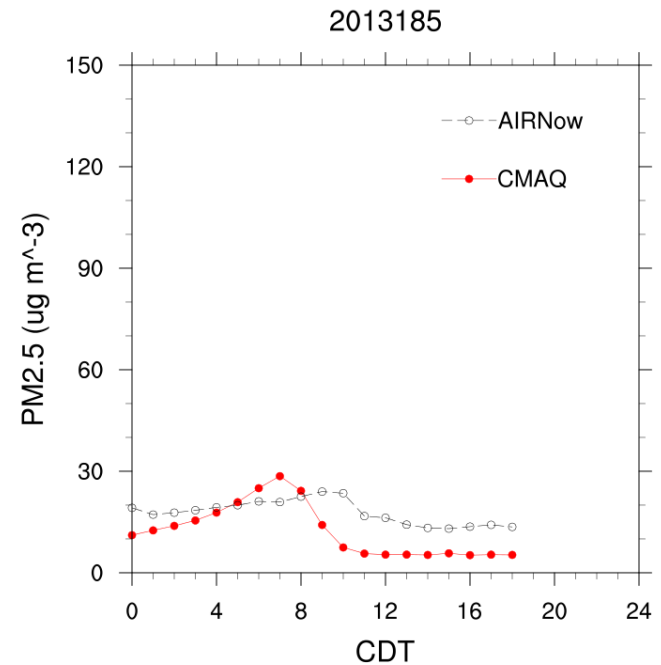
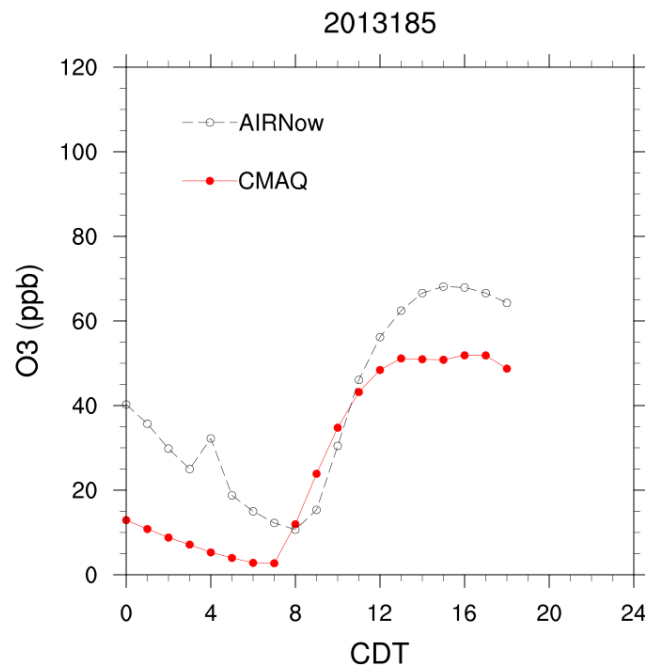
***cb05tucl\_ae5\_aq***: CB05 gas-phase mechanism with active chlorine chemistry, updated toluene mechanism, fifth-generation CMAQ aerosol mechanism with sea salt, aqueous/cloud chemistry

***ebi\_cb05tucl***: the Euler Backward Iterative solver optimized for the Carbon Bond-05 mechanism

# WRF-CMAQ forecasting system on July 4<sup>th</sup>, 2013



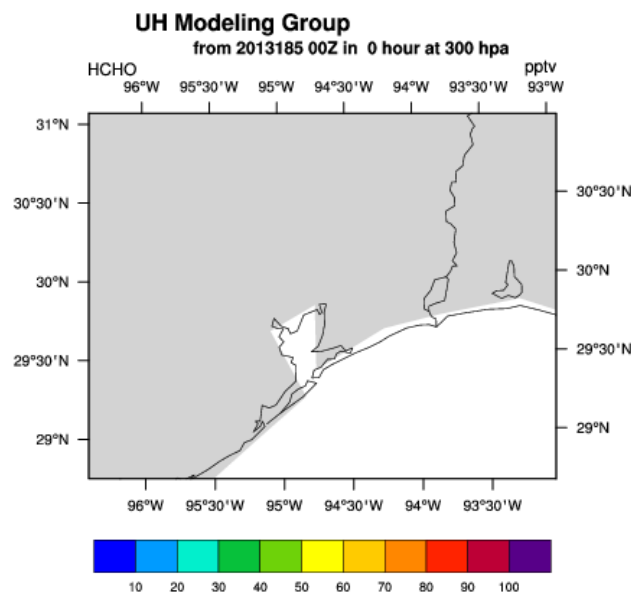
# WRF-CMAQ forecasting system on July 4<sup>th</sup>, 2013





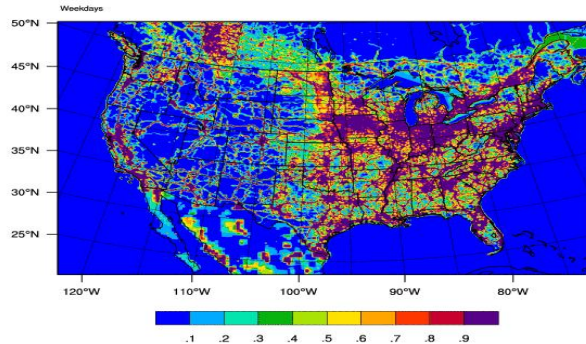
# WRF-CMAQ forecasting system outputs

- HCHO, CO, NO<sub>x</sub>, O<sub>3</sub>, PM25 and met-data (e.g., temperature, wind direction and wind speed) are plotted at surface, 800 hPa, 500 hPa, and 300 hPa
- For example, HCHO at 300 hPa

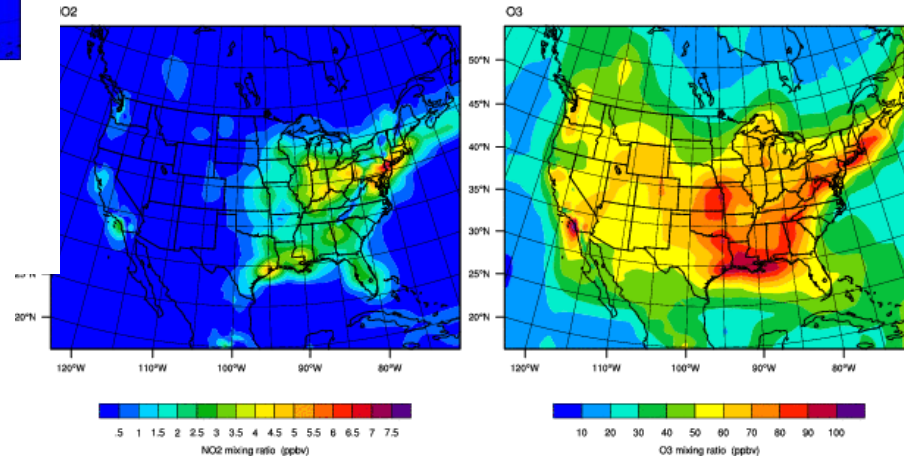


# UH WRF-Chem forecasting system

NO (mol/s), res=12 km 0 hour



August 27, 2011 00Z, res=36 km



- Lijun Diao is performing QA/QC process of the WRF-Chem forecasting system during wildfire period and perform air quality forecasting during DISCOVER-AQ 2013 Houston aircraft campaign.

# WRF-Chem setup

**WRF/Chem v3.5: perform 12Z everyday**

## **Domains**

04-km, 95 columns, 77 rows (same as CMAQ forecasting)  
27 layers, model top at 50 hPa

## **Emission Inventory**

National Emission Inventory 2005

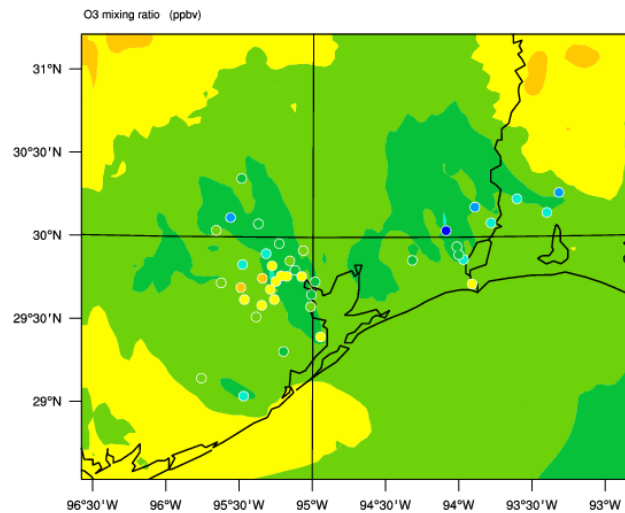
## ***WRF-Chem science options***

<b>Longwave radiation:</b>	RRTMG
<b>Shortwave radiation:</b>	New Goddard scheme
<b>Cloud microphysics:</b>	Lin et al.
<b>Surface layer:</b>	Monin-Obukov
<b>Boundary layer:</b>	YSU
<b>Land surface:</b>	Noah
<b>Cumulus clouds:</b>	New Grell scheme (G3)
<b>Gas-phase chemistry:</b>	RADM2 (Regional Acid Deposition Model, 2 <sup>nd</sup> generation)
<b>Aerosol chemistry:</b>	MADE/SORGAM (the Modal Aerosol Dynamics Model for Europe/Second ORGanic Aerosol Model)
<b>Photolysis:</b>	Fast-J

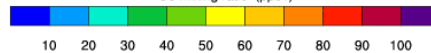
# WRF-Chem forecasting system on July 4<sup>th</sup>, 2013

UH Modeling Group

Init: 2013-07-04\_12:00:00  
Valid: 2013-07-05\_05:00:00

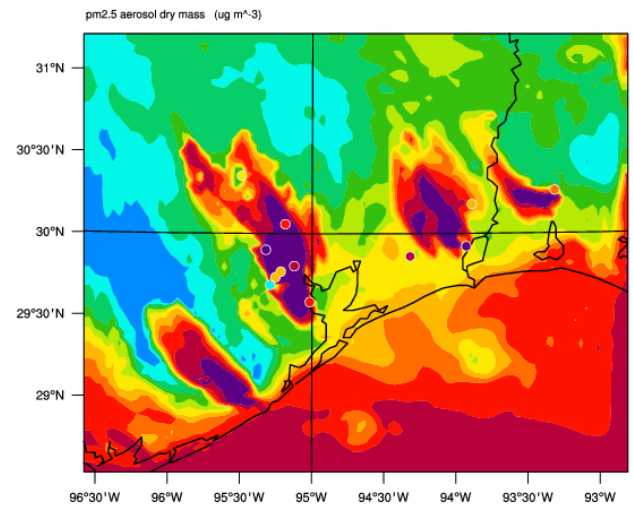


O3 mixing ratio (ppbv)



UH Modeling Group

Init: 2013-07-04\_12:00:00  
Valid: 2013-07-05\_05:00:00

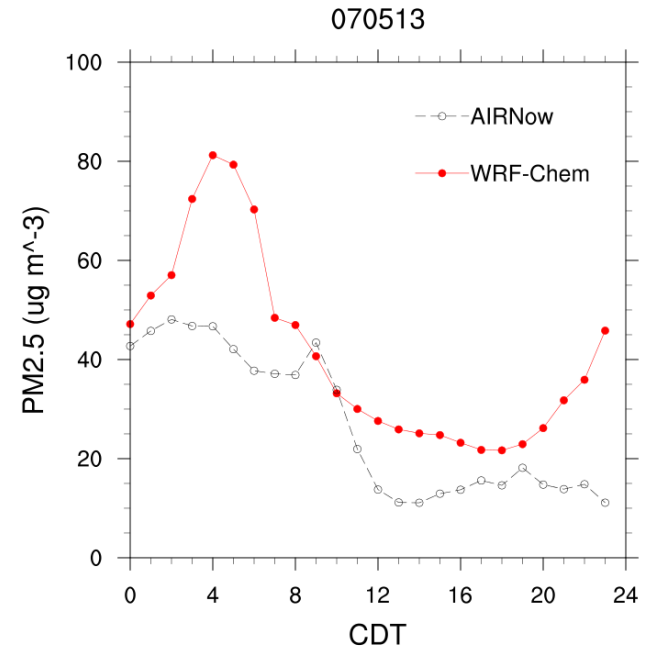
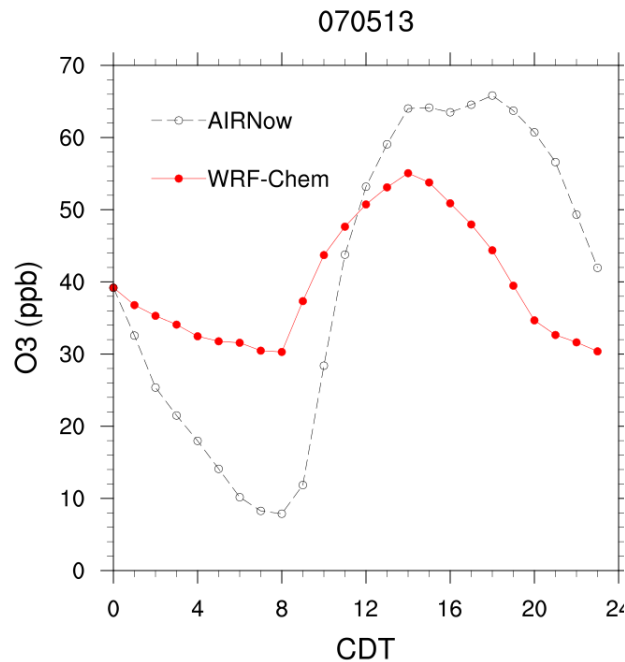


pm2.5 aerosol dry mass (ug m<sup>-3</sup>)



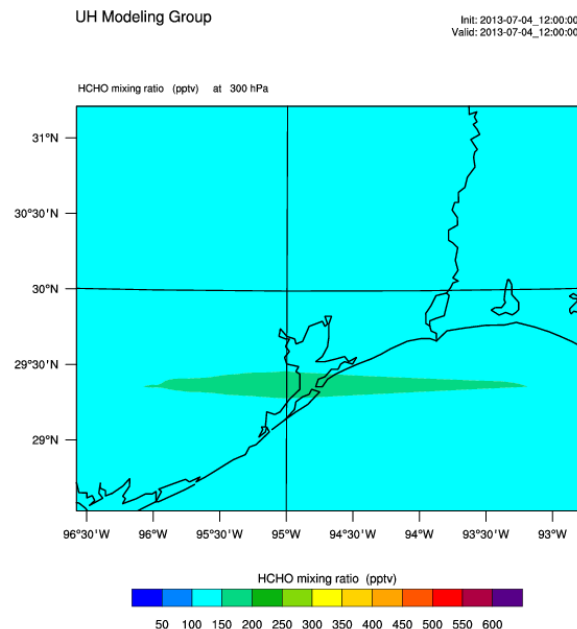


# WRF-Chem forecasting system on July 5<sup>th</sup>, 2013



# WRF-Chem forecasting system

- HCHO, CO, NO<sub>x</sub>, O<sub>3</sub>, PM25, and met-data (e.g., temperature, wind direction and wind speed) are plotted at surface, 800 hPa, 500 hPa, and 300 hPa
- For example, HCHO at 300 hPa



# **UH modeling group members for DISCOVER- AQ work**

- **Dr. Yunsoo Choi: PI of UH forecasting/modeling group**
- **Dr. Beata Czader (Research Scientist): CMAQ based air quality forecasting/modeling**
- **Lijun Diao (Ph.D. student): WRF-Chem based air quality forecasting/modeling**
- **Shuai Pan (Ph.D. student): CMAQ based air quality modeling**
- **Joey Rodriguez (M.S. student): Establishment of website**



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