Overview of NOAA R/V Ronald H. Brown Measurements and Activities During TexAQS/GoMACCS 2006

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(with help from all of the PIs; photo credits: Richard Marchbanks, Sara Tucker, Dan Welsh-Bon)

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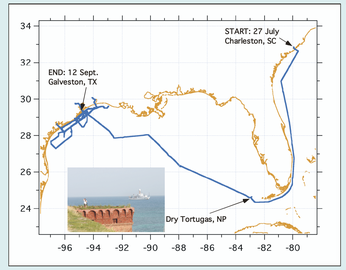
2006 TEXAQS/GoMACCS
Science and Implementation Plan

Combining Climate Change and Air Quality Research
(http://www.esrl.noaa.gov/csd/2006)

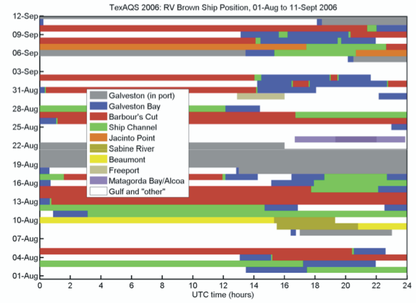
Specifications for NOAA R/V Ronald H. Brown

Parameter	Specification
Length (ft/m)	274 / 83.5
Range (nm/km)	11,300 / 20,900
Endurance (days)	35
Cruising speed (kt) / mph)	12 / 6.2
Maximum speed (kts / mph)	15 / 7.7
Officers / Engineers / Crew	5 / 4 / 16
Scientific staff	34 (maximum)
Laboratory/office space (sq. ft.)	4100
Telecommunications, data	INMARSAT-A
Telecommunications, voice	Cell & satellite phones, VHF radios

Officers and Crew of NOAA R/V Ronald H. Brown



Scientific team on Ronald H. Brown with the Barbours Cut container terminal in background on 10 September, 2006.

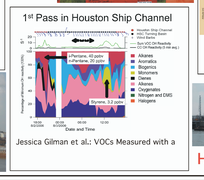


Time and location summary for measurements taken on the Ronald H. Brown

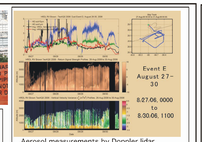
TexAQS/GoMACCS 2006 Ronald H. Brown Measurements

Parameter	Method	Laboratory	PI
Photolysis rates (j-NO2; j-NO3; j-O3)	Filter radiometer	ESRL	Lerner
Ozone	UV absorbance	ESRL	Williams
Ozone	UV absorbance	PMEL	Johnson
Ozone	NO chemiluminescence	ESRL	Williams
Carbon monoxide	UV fluorescence (AeroLaser)	ESRL	Lerner
Carbon dioxide	Non-dispersive IR	ESRL	Lerner
Sulfur dioxide	Pulsed fluorescence	ESRL	Lerner
Sulfur dioxide	Pulsed fluorescence	PMEL	Bates
Nitric oxide	Chemiluminescence	ESRL	Lerner
Nitrogen dioxide	Photolysis cell	ESRL	Lerner
Total nitrogen oxides	Au tube reduction	ESRL	Williams
PANs	GC/ECD & CIMS	ESRL	Roberts
Alkyl nitrates, hydrocarbons	GC/MS	ESRL	Kuster
NO3/N2O5	Cavity ring-down spect.	ESRL	Osthoff
HO2/RO2	PERCA	ESRL	Sommariva
Nitric acid/NH3	Automated mist chamber/IC	UNH	Dibb
Radon	Radon gas decay	PMEL	Johnson
Continuous speciation of VOCs	PTR-MS/CIMS	ESRL	Warneke
Formaldehyde	QCL spectroscopy	Aerodyne Research	Herndon/Zahniser
Hg	Atomic Absorption Spectrometry	ESRL	Fortin
Seawater and atmospheric pCO2	Non-dispersive IR	PMEL/AOML	Feely/ Wanninkhof
Seawater DMS	S chemiluminesence	PMEL	Bates/Johnson
Aerosol ionic composition	PILS-IC	PMEL	Quinn
Aerosol WSOC	PILS-TOC	PMEL	Quinn/Bates
Organic aerosol speciation	PILS-LCMS	PMEL	Quinn
Organic aerosol speciation	PTRMS	ESRL	Thornberry/ D. Murphy
Aerosol size and composition	Quad- AMS	PMEL	Bates
Aerosol size and composition	W-TOF-AMS	Aerodyne	Worsnop/Onash
Aerosol OC/EC	On-line thermal/optical	PMEL	Bates
Aerosol functional groups	FTIR	SIO	Russell
Aerosol composition, 2 stage (sub/super micron) & 7 stage at 60% RH	Impactors (IC, XRF and thermal-optical OC/EC, total gravimetric weight)	PMEL	Quinn/Bates
Total and sub-micron aerosol scattering & backscattering (450, 550, 700 nm) at 60% RH	TSI 3563 nephelometers (2)	PMEL	Quinn
Total and sub-micron aerosol abs. (450, 550, 700 nm) dry	Radiance Research PSAPs (2)	PMEL	Quinn
Aerosol light scattering hygroscopic growth	Twin TSI 3563 nephelometers	UW	Covert
Total and Sub-micron aerosol extinction, f(RH)	Cavity ring-down spect.	ESRL	Baynard
Sub-micron aerosol absorption	Photo acoustic	ESRL	Lack/Baynard
Aerosol number	CNC (TSI 3010, 3025)	UW/PMEL	Covert/Bates
Aerosol size distribution	DMA and APS	UW/PMEL	Covert/Bates
CCN	DMT	PMEL	Bates/Quinn
Radiative fluxes	Spectral radiometer	CU	Pilewski
Aerosol optical depth	Microtops	PMEL	Quinn
Ozone aerosol backscatter	O3 Lidar (OPAL)	ESRL	Machol
BL wind/aerosol	Doppler Lidar (HRDL)	ESRL	Brewer
Wind/temp profiles	915 MHz wind profiler	ESRL	White
Temp/RH profiles	Sondes	ESRL	White
Cloud height	Ceilometer	ESRL	Fairall
Turbulent fluxes	Bow-mounted EC flux package	ESRL	Fairall

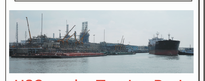
Hg data and potential sources in the HSC



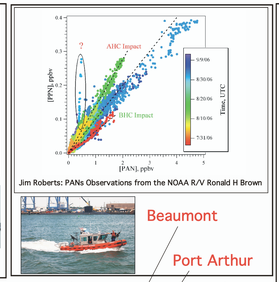
Jessica Gilman et al.: VOCs Measured with a



Aerosol measurements by Doppler lidar



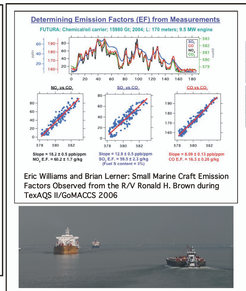
HSC to the Turning Basin



Jim Roberts: PANs Observations from the NOAA R/V Ronald H Brown

Beaumont

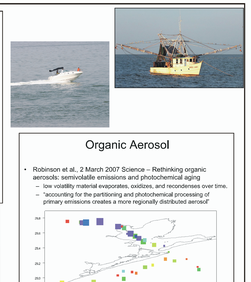
Port Arthur



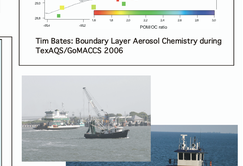
Eric Williams and Brian Lerner: Small Marine Craft Emission Factors Observed from the R/V Ronald H. Brown during TexAQS II/GoMACCS 2006

Houston Ship Channel (HSC)

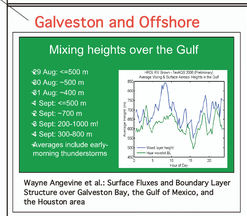
Paola Massoli et al.: The Optical Properties of Aerosols as Measured by Cavity Ring-Down Extinction Spectrometry during TexAQS II-GoMACCS 2006: Selection of Case Studies and their Implications for Air Quality and Climate



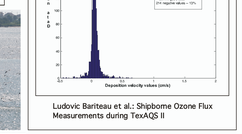
Tim Bates: Boundary Layer Aerosol Chemistry during TexAQS/GoMACCS 2006



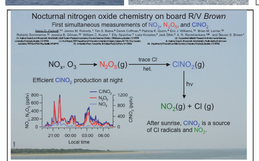
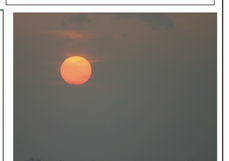
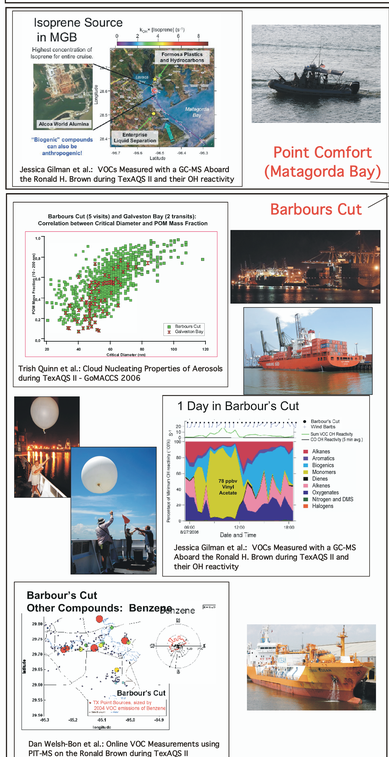
Galveston and Offshore



Wayne Angevine et al.: Surface Fluxes and Boundary Layer Structure over Galveston Bay, the Gulf of Mexico, and the Houston area



Ludovic Bariteau et al.: Shipborne Ozone Flux Measurements during TexAQS II



Hans Osthoff et al.: Nocturnal Nitrogen Oxide Chemistry on board R/V Brown