



2005 & 2006 Episodic Ozone Modeling EI Development Update

**Southeast Texas Photochemical Modeling
Technical Committee Meeting
June 20, 2007**

24 Pages
June 20, 2007

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Today's Presentation

- **Point Source Updates**
 - 2005 STARS
 - 2005 Hourly
 - Acid Rain Program
 - Preliminary Special Inventory Analyses
 - Preliminary CCEDS Processing
- **Area Source Update**
- **Overall 2005 & 2006 Modeling Episodes Preview**

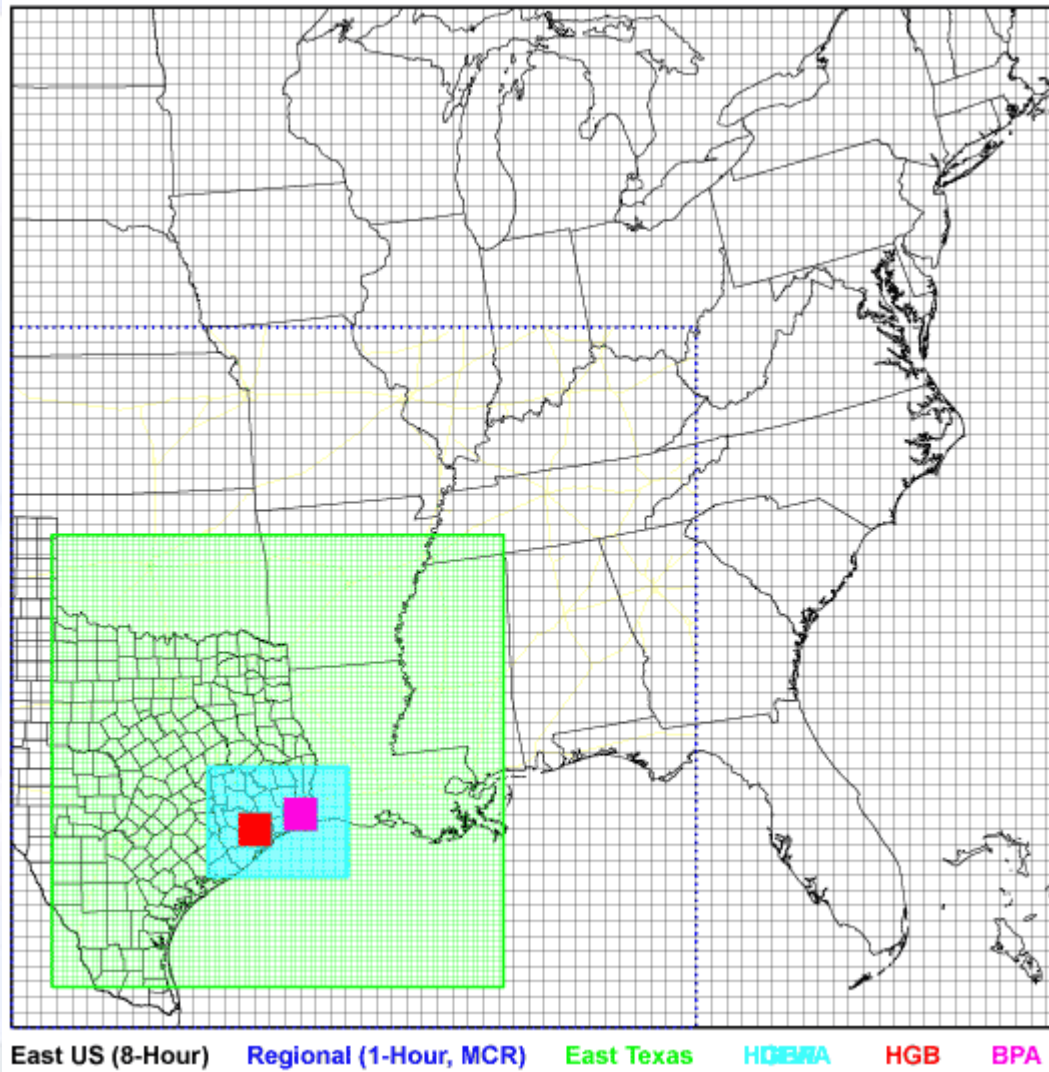


2005 & 2006 HGB Episodes

- **May 19 – June 3, 2005**
 - School in session until Thursday May 26
 - Memorial Day weekend from May 27-30
 - Special Inventory May 3 – May 7 and May 12 – June 4
 - CCEDS data
- **June 15 – June 30, 2005**
 - CCEDS data
- **July 26 – August 8, 2005**
 - CCEDS data
- **May 31 – June 16, 2006**
 - CCEDS data
- **August 1 – October 15, 2006**
 - Period of TexAQS II Study
 - Not all calendar days considered
 - Includes school, non-school, and Labor Day weekend
 - Special Inventory August 15 – September 15
 - CCEDS data



HGB CAMx Modeling Domain





Point Source Updates

- **2005 STARS data**
 - Extracted after June 1 NEI/CERR submittal to EPA
 - Converted to AFS
 - Replacing 2004
 - Comparing to 2004
 - Not fully quality assured/controlled
 - Began EPS3 processing this week
 - Re-speciate
 - Re-allocate temporally
 - Re-evaluate PiGs
 - Substitute episodic Hourly (Acid Rain, CCEDS, SI) where applicable
 - Rerun the preliminary photochemical model runs



Point Source Updates

One QA step: Top 100 VOC comparison (excerpt)

COMPANY	SITE	FIN	EPN	ANNUAL TPY	REPORTED O3 PPD	SUMMER %	DAYS/W EEK	OSD ppd	OSD tpd
INTERNATIONAL PAPER CO	TEXARKANA MILL	WWTS1	WWTS1	1654.8869	9067.8755	25	7	9067.88	4.53394
ROC GAS COMPANY CARE O	PIKES PEAK PLANT	01005	01005	1102.205	0	25	7	6039.48	3.01974
MOTIVA ENTERPRISES, L.L.C.	PORT ARTHUR PLANT	FKFCCU1/2	FKFCCU1/2	676.9563	3709.3494	25	7	3709.35	1.85467
SOUTHERN UNION GAS SERV	GREY RANCH TREATING PLAI	VENT	VENT	563.07	0	25	7	3085.32	1.54266
TEMPLE-INLAND FOREST PRO	DIBOLL FACILITY	FB-BLOPIT1	FB-11	482.2387	2753.0374	25	7	2753.04	1.37652
PHILLIPS 66 CO	BORGER REFINERY	P-2	F-2	488.0192	0	25	7	2674.08	1.33704
NRG TEXAS LP	RELIANT ENERGY LIMESTONE	2	LMS2	123.869	2660.554	26	7	2660.55	1.33028
COPANO PROCESSING LP	HOUSTON CENTRAL GAS PLA	CO2VENT	CO2 VENT	485.27	2658.99	25	7	2658.99	1.32950
THE GOODYEAR TIRE & RUBER	BEAUMONT CHEMICAL PLANT	880FB	286F	448.865	2459.537	25	7	2459.54	1.22977
TEMPLE-INLAND FOREST PRO	DIBOLL FACILITY	LU-KILN1	LU-05-FU	99.2251	2006.3121	25	5	2006.31	1.00316
TEMPLE-INLAND FOREST PRO	DIBOLL FACILITY	LU-KILN W1	LU-04-FU	99.2197	2006.3121	25	5	2006.31	1.00316
EASTMAN CHEMICAL COMPAN	TEXAS OPERATIONS	OL226FG1	F226FG1	363.0811	1989.5372	25	7	1989.54	0.99477
THE GOODYEAR TIRE & RUBER	BEAUMONT CHEMICAL PLANT	840FB	236F	236.102	1971.233	25	7	1971.23	0.98562
HOLCIM TEXAS LIMITED PART	HOLCIM (TEXAS) LP	07*	07*	295.2651	1921.5881	30	7	1921.59	0.96079
DIAMOND SHAMROCK REFINI	THREE RIVERS REFINERY	FUG28VHP	FUG28VHP	342.8831	1873.6768	25	7	1873.68	0.93684

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Top 100 total = 66.6 tpd



Point Source Updates

Another QA step: Top 100 NOx comparison (excerpt)

COMPANY	SITE	FIN	EPN	ANNUAL TPY	REPORTED O3 PPD	SUMMER %	DAYS/W EEK	OSD ppd	OSD tpd
PUBLIC SERVICE CO OF OKLAHO	OKLAUNION POWER STATION	OPS1	1	8128.22	47709	26	7	47709.00	23.85450
TXU GENERATION COMPANY LP	STATION	B3	S3	6936.459	37657.1225	26	7	37657.12	18.82856
NRG TEXAS LP	RELIANT ENERGY LIMESTONE	2	LMS2	5704	35554	26	7	35554.00	17.77700
SOUTHWESTERN PUBLIC SERVIC	TOLK STATION	UNIT 1	1-1	6367.64	0	25	7	34891.18	17.44559
NRG TEXAS LP	RELIANT ENERGY LIMESTONE	1	LMS1	6175	33733	25	7	33733.00	16.86650
TXU GENERATION COMPANY LP	STATION	U3-B3	S-3	5072.462	33164.2945	27	7	33164.29	16.58215
TXU GENERATION COMPANY LP	STATION	U2-B2	S-2	5540.109	32297.5474	23	7	32297.55	16.14877
TXU GENERATION COMPANY LP	STATION	U1-B1	S-1	5586.329	31865.2115	25	7	31865.21	15.93261
TXU GENERATION COMPANY LP	SANDOW STEAM ELECTRIC	S4MB	S03	4774.215	29277.261	24	7	29277.26	14.63863
SOUTHWESTERN ELECTRIC POW	AEP PIRKEY POWER PLANT	P-16	16	4625	28152.17	28	7	28152.17	14.07609
SOUTHWESTERN PUBLIC SERVIC	HARRINGTON STATION	UNIT 3	3-1	5058.55	0	25	7	27718.08	13.85904
SOUTHWESTERN PUBLIC SERVIC	TOLK STATION	UNIT 2	2-1	4680.138	0	25	7	25644.59	12.82230
CITY PUBLIC SERVICE	POWER	P-5	U-5	4026.9	24151.6	28	7	24151.60	12.07580
SOUTHWESTERN ELECTRIC POW	WELSH POWER PLANT	W-02	02	3015	24004	37	7	24004.00	12.00200
SOUTHWESTERN PUBLIC SERVIC	HARRINGTON STATION	UNIT 1	1-1	4293.76	0	25	7	23527.45	11.76373

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Top 100 total = 591.7 tpd



Hourly Data Updates

- **2005 Acid Rain Program**
 - New query (not only TX)
 - Substitution
 - QA of AFS vs. ARP raw
 - Daily totals, boiler totals for TX and adjacent states, states totals for Region
 - Random sampling of a day
 - Comparing to previous EPS3 runs



Hourly Data Updates

- **2005 Special Inventory**
 - May 19 – June 3 episode
 - Quality Assuring
 - Comparing STARS extract and raw HEIRS submittals
 - Logistics tracking
 - Path-day summaries
 - Preliminary Analyses
 - Improved speciation procedure
 - Every hour receives a separate profile
 - Previously received an episode average



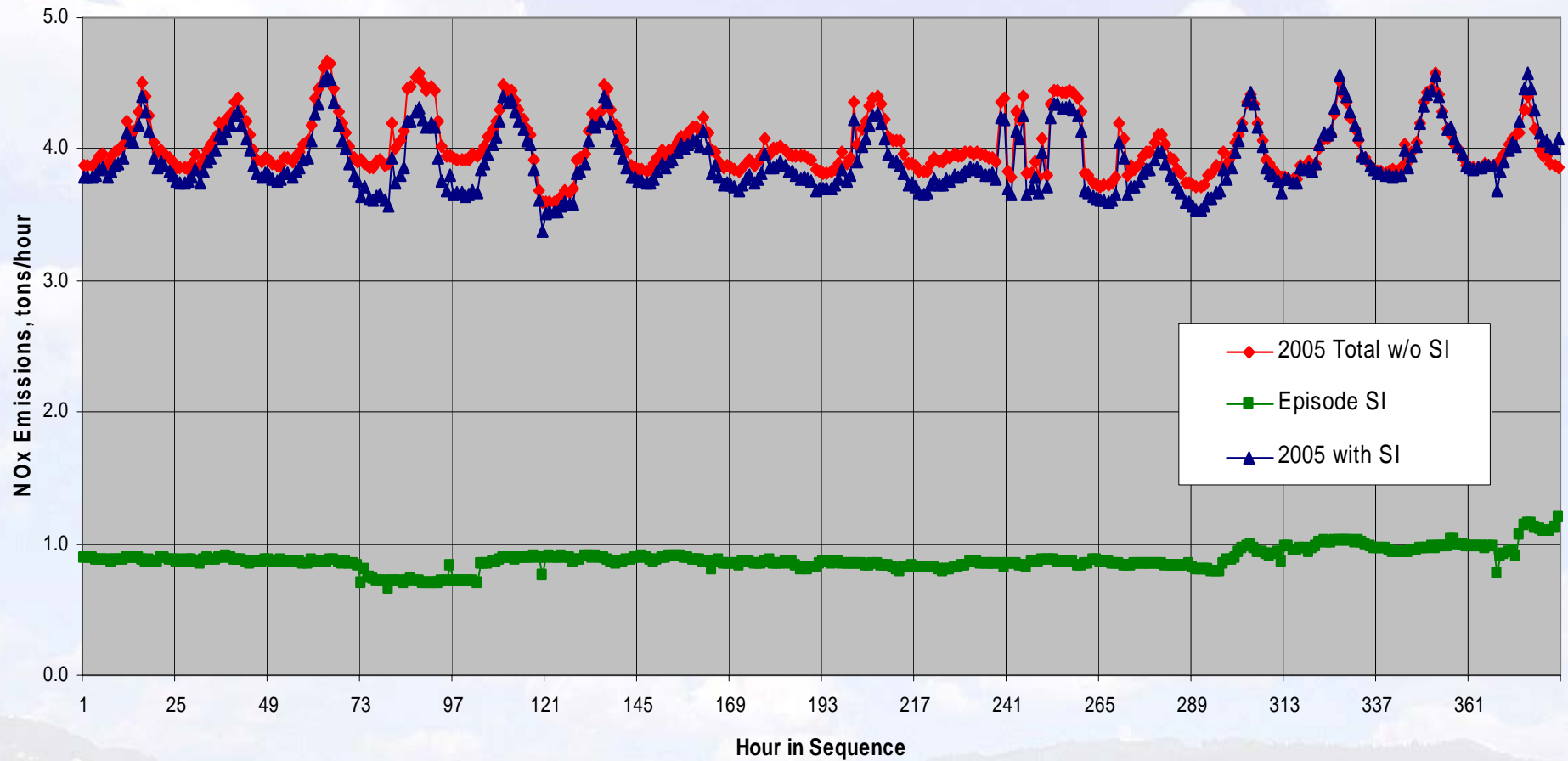
Hourly Data Updates

- **2005 Special Inventory Statistics**
 - Substituting ~150 paths (VOC, NOx & VOC) at 22 accounts (36 were requested) in Harris Co. for every hour of the episode
 - Eliminated 4 of the 22 due to minimal hours reported with minimal emissions
 - ~743,000 path-pollutant-hour records
 - ~73% reported “Normal” reason code
 - Shell in particular
 - Overwhelming majority of emissions for this SI episode
 - ~10% records were Shell, 86% were “Normal”, ~3% “BL”, several “US” NOx



Special Inventory

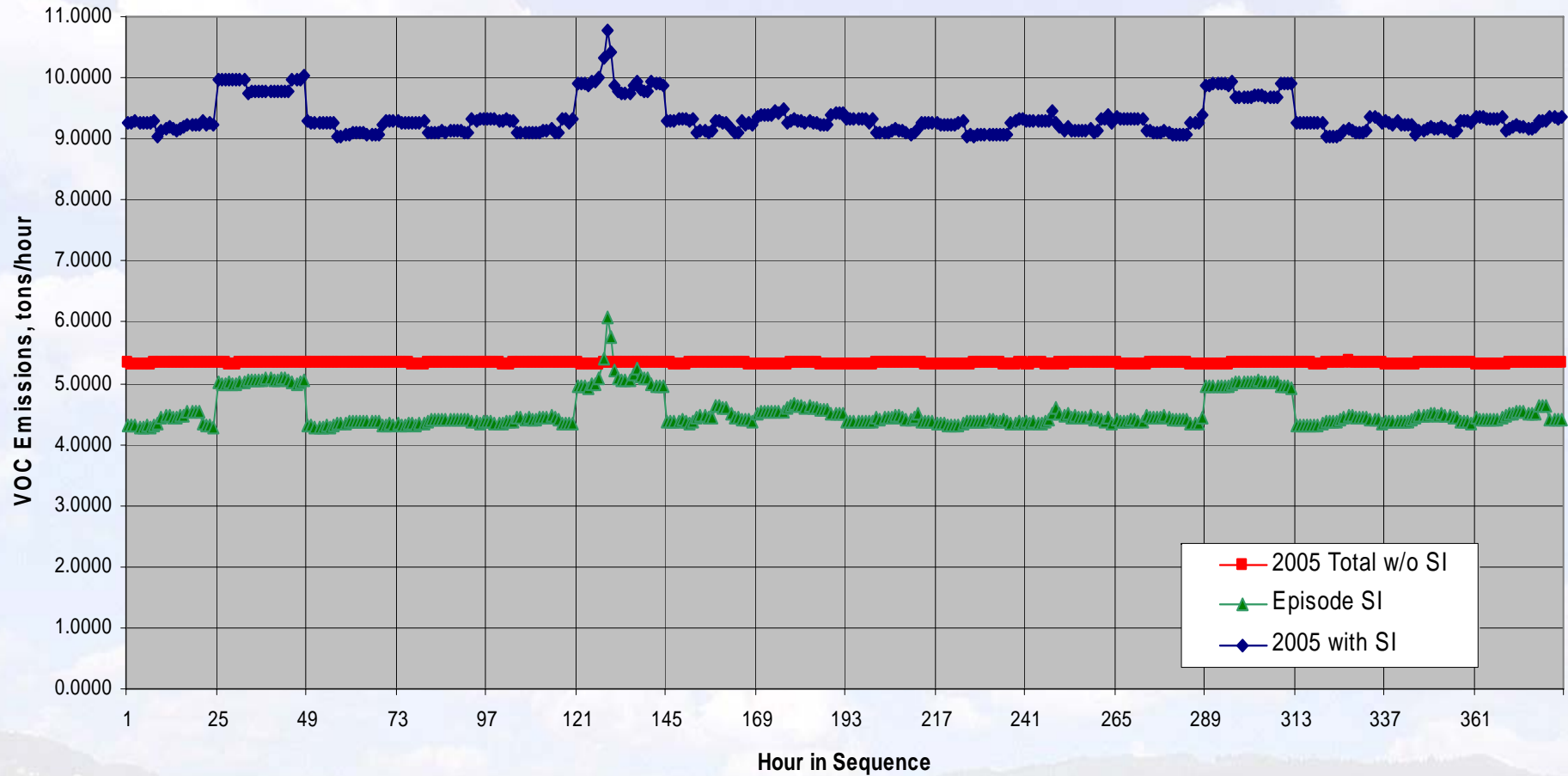
Harris County 19May-3Jun05 NOx Special Inventory





Special Inventory

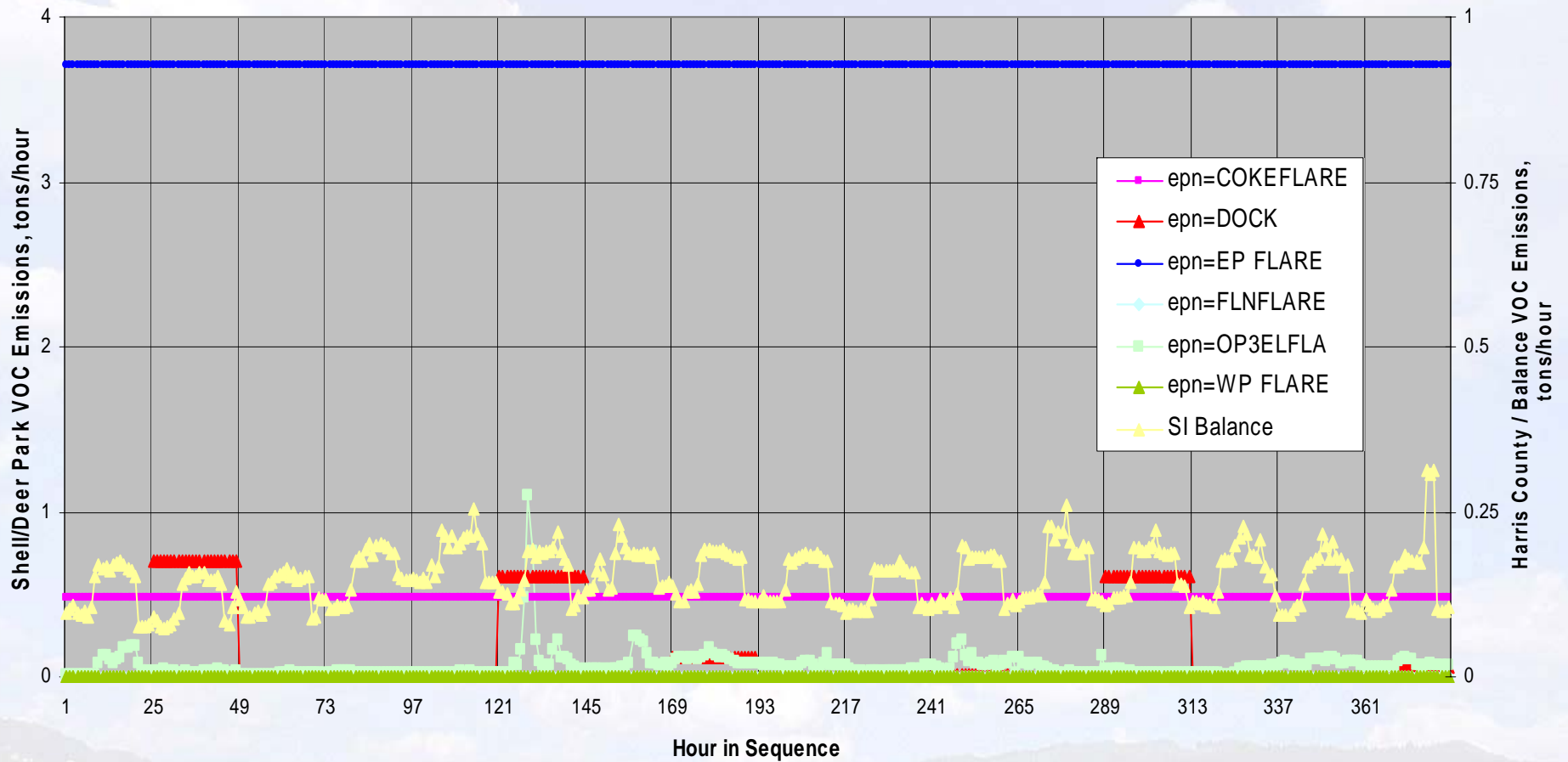
Harris County 19May-3Jun05 VOC Special Inventory





Special Inventory

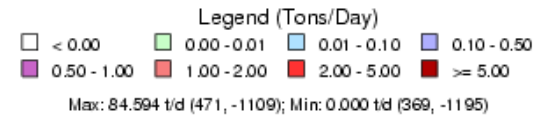
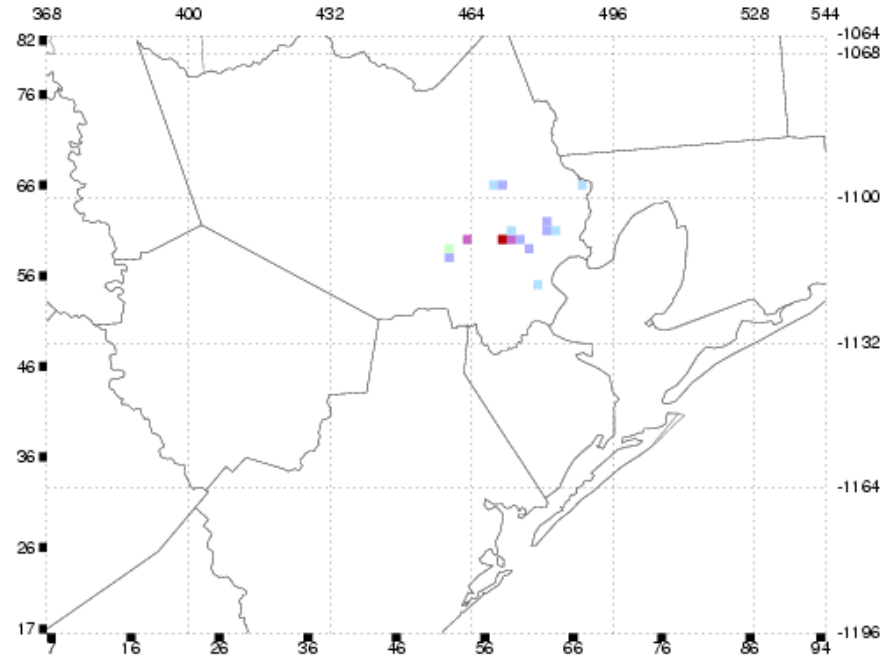
Harris County 19May-3Jun05 VOC Special Inventory



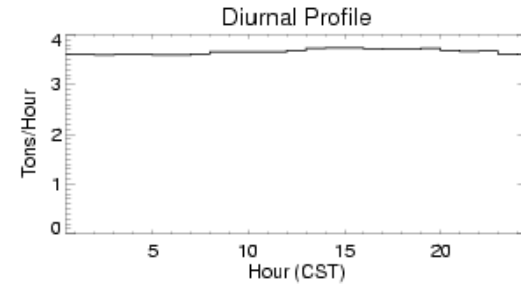


Preliminary 2005 VOC Special Emissions Only

hg_02km.si_bc05a Elevated Point Emissions, 06/01/2005: VOC



Total
Emissions:
87.8106 T/D



TCDD @ SACU-VI Mon, Jun 11 10:08:33 2007: file=emf0531sgems.vi\data/ocd/0200



Hourly Data Updates

- **2005 CCEDS data (preliminary)**
 - Modeling as addition to all other point source AFS files
 - Matched “EPN_FIN_NUM” to 2005 path
 - Start with June episode
 - Creating AFS file containing 65 unspiciated records for 27 paths at 16 accounts for every hour of the event
 - Preliminary runs will be with the worst-case (“fully condensed”) emission rate to test sensitivity to ozone production in model
 - One speciation profile for each path-event



June 2005 CCEDS Preliminary Processing

Total NOx for this episode

RN	owner	account	fin	epn	fips	plant	stack	point	begin_hr	polcode	polluta	EventTons
RN100225	DOW CHEMICAL	BL0023K	B60F3	B60F3	48039	16	663	1351	227	42603	NOx	7.30
RN100225	DOW CHEMICAL	BL0023K	B72S30	B72S30	48039	16	257	249	227	42603	NOx	0.00
RN100238	SOLUTIA INC	BL0038U	70Z522	70Z522	48039	9	445	367	15	42603	NOx	0.00
RN100825	CHEVRON PHILLIP	BL0758C	56-61-10	56-61-10	48039	145	48	56	-29	42603	NOx	0.10
RN100825	CHEVRON PHILLIP	BL0758C	56-61-10	56-61-10	48039	145	48	56	279	42603	NOx	0.10
RN100825	CHEVRON PHILLIP	BL0758C	56-61-12	56-61-12	48039	145	51	57	-29	42603	NOx	0.10
RN100825	CHEVRON PHILLIP	BL0758C	56-61-12	56-61-12	48039	145	51	57	279	42603	NOx	0.10
RN100825	CHEVRON PHILLIP	BL0758C	56-61-14	56-61-14	48039	145	61	58	163	42603	NOx	0.12
RN100825	CHEVRON PHILLIP	BL0758C	56-61-20	56-61-20	48039	145	62	59	163	42603	NOx	0.12
RN100825	CHEVRON PHILLIP	BL0758C	56-61-22	56-61-22	48039	145	75	60	32	42603	NOx	1.29
RN102323	ENTERPRISE PRO	CI0008R	45	45	48071	7	81	88	308	42603	NOx	0.10
RN102535	BP PRODUCTS N	GB0004L	321	321	48167	1	243	276	127	42603	NOx	0.02
RN104095	PRAXAIR INC	GBA005E	HU2-L301	HU2-L301	48167	139	9	9	103	42603	NOx	0.24
RN100212	TOTAL PETROCHE	HG0036S	ES-805	ES-805	48201	8	93	88	117	42603	NOx	0.03
RN100212	TOTAL PETROCHE	HG0036S	ES-805	ES-805	48201	8	93	88	144	42603	NOx	0.03
RN100219	VALERO REFININ	HG0130C	42CB2001	42CB2001	48201	65	146	447	251	42603	NOx	0.07
RN102579	EXXONMOBIL CO	HG0232Q	FLARE27	FL27	48201	27	491	490	323	42603	NOx	0.04
RN100223	ROHM & HAAS TE	HG0632T	HT-11	HT-11	48201	34	582	547	106	42603	NOx	0.16
RN100211	SHELL OIL CO	HG0659W	H600	H600	48201	39	208	208	-31	42603	NOx	0.10
RN100524	SUNOCO INC R&M	HGA009I	PEFLR	1-167	48201	1559	124	31	130	42603	NOx	0.01
Total tons in episode											10.02	



June 2005 CCEDS Preliminary Processing

Total VOC for this episode

RN	owner	account	fin	epn	fips	plant	stack	point	begin_hr	polcode	polluta	EventTons
RN100225	DOW CHEMICAL	BL0023K	B60F3	B60F3	48039	16	663	434	227	43104	VOC	74.45
RN100238	SOLUTIA INC	BL0038U	70Z522	70Z522	48039	9	445	367	15	43104	VOC	0.01
RN100825	CHEVRON PHILLIP	BL0758C	56-61-10	56-61-10	48039	145	48	56	-29	43104	VOC	0.82
RN100825	CHEVRON PHILLIP	BL0758C	56-61-10	56-61-10	48039	145	48	56	279	43104	VOC	0.82
RN100825	CHEVRON PHILLIP	BL0758C	56-61-12	56-61-12	48039	145	51	57	-29	43104	VOC	0.82
RN100825	CHEVRON PHILLIP	BL0758C	56-61-12	56-61-12	48039	145	51	57	279	43104	VOC	0.82
RN100825	CHEVRON PHILLIP	BL0758C	56-61-14	56-61-14	48039	145	61	58	163	43104	VOC	0.30
RN100825	CHEVRON PHILLIP	BL0758C	56-61-20	56-61-20	48039	145	62	59	163	43104	VOC	0.30
RN100825	CHEVRON PHILLIP	BL0758C	56-61-22	56-61-22	48039	145	75	60	32	43104	VOC	3.60
RN102323	ENTERPRISE PRO	CI0008R	45	45	48071	7	81	88	308	43104	VOC	0.73
RN102535	BP PRODUCTS N	GB0004L	F-30	F-30	48167	1	228	274	128	43104	VOC	0.20
RN100238	VALERO REFININ	GB0073P	CT-4	CT-4	48167	7	172	172	33	43104	VOC	4.88
RN100217	OILTANKING TEXA	GB0077H	E15A079	E15A079	48167	15	115	115	128	43104	VOC	0.30
RN100212	TOTAL PETROCHI	HG0036S	ES-805	ES-805	48201	8	93	176	117	43104	VOC	0.35
RN100212	TOTAL PETROCHI	HG0036S	ES-805	ES-805	48201	8	93	176	144	43104	VOC	0.35
RN100218	HOUSTON REFINI	HG0048L	233-UNIT	233-UNIT	48201	40	998	222	53	43104	VOC	25.53
RN100219	VALERO REFININ	HG0130C	42CB2001	42CB2001	48201	65	146	447	251	43104	VOC	0.00
RN102579	EXXONMOBIL CO	HG0232Q	FCCU3FU	FCCU3FU	48201	27	314	454	298	43104	VOC	0.23
RN102579	EXXONMOBIL CO	HG0232Q	FLARE27	FL27	48201	27	491	490	323	43104	VOC	0.32
RN102018	PHILLIPS CHEMIC	HG0566H	524	524	48201	48	108	137	333	43104	VOC	0.46
RN100211	SHELL OIL CO	HG0659W	D371	D371	48201	39	61	61	109	43104	VOC	0.10
RN100211	SHELL OIL CO	HG0659W	H600	H600	48201	39	208	208	-31	43104	VOC	0.03
RN100211	SHELL OIL CO	HG0659W	H600	V603	48201	39	1919	208	324	43104	VOC	0.00
RN100524	SUNOCO INC R&M	HGA009I	P-1PE	1-167	48201	1559	113	23	154	43104	VOC	0.05
Total tons in episode											115.48	



June 2005 CCEDS Preliminary Processing

Total CO for this episode

RN	owner	account	fin	epn	fips	plant	stack	point	begin_hr	polcode	polluta	EventTons
RN100225	DOW CHEMICAL C	BL0023K	B60F3	B60F3	48039	16	663	1351	227	42101	CO	52.71
RN100225	DOW CHEMICAL C	BL0023K	B72S30	B72S30	48039	16	257	249	227	42101	CO	0.01
RN100238	SOLUTIA INC	BL0038U	70Z522	70Z522	48039	9	445	367	15	42101	CO	0.02
RN100238	SOLUTIA INC	BL0038U	83S14	83S14	48039	9	365	316	111	42101	CO	0.00
RN100825	CHEVRON PHILLI	BL0758C	56-61-10	56-61-10	48039	145	48	56	-29	42101	CO	0.69
RN100825	CHEVRON PHILLI	BL0758C	56-61-10	56-61-10	48039	145	48	56	279	42101	CO	0.69
RN100825	CHEVRON PHILLI	BL0758C	56-61-12	56-61-12	48039	145	51	57	-29	42101	CO	0.69
RN100825	CHEVRON PHILLI	BL0758C	56-61-12	56-61-12	48039	145	51	57	279	42101	CO	0.69
RN100825	CHEVRON PHILLI	BL0758C	56-61-14	56-61-14	48039	145	61	58	163	42101	CO	0.31
RN100825	CHEVRON PHILLI	BL0758C	56-61-20	56-61-20	48039	145	62	59	163	42101	CO	0.31
RN100825	CHEVRON PHILLI	BL0758C	56-61-22	56-61-22	48039	145	75	60	32	42101	CO	6.59
RN102323	ENTERPRISE PRO	CI0008R	45	45	48071	7	81	88	308	42101	CO	0.21
RN102535	BP PRODUCTS N	GB0004L	321	321	48167	1	243	276	127	42101	CO	0.13
RN104095	PRAXAIR INC	GBA005E	HU2-L301	HU2-L301	48167	139	9	9	103	42101	CO	4.25
RN100212	TOTAL PETROCHE	HG0036S	ES-805	ES-805	48201	8	93	88	117	42101	CO	0.24
RN100212	TOTAL PETROCHE	HG0036S	ES-805	ES-805	48201	8	93	88	144	42101	CO	0.24
RN100219	VALERO REFININ	HG0130C	42CB2001	42CB2001	48201	65	146	447	251	42101	CO	0.02
RN102579	EXXONMOBIL CO	HG0232Q	FCCU3FU	FCCU3FU	48201	27	314	454	298	42101	CO	0.00
RN102579	EXXONMOBIL CO	HG0232Q	FLARE27	FL27	48201	27	491	490	323	42101	CO	0.57
RN100211	SHELL OIL CO	HG0659W	H600	H600	48201	39	208	208	-31	42101	CO	3.35
RN100524	SUNOCO INC R&M	HGA009I	PEFLR	1-167	48201	1559	124	31	130	42101	CO	0.04
Total tons in episode											71.77	



Point Source Updates

- **Outside of Texas**
 - Obtained Arkansas 2005 state NEI submittal
 - Obtaining Oklahoma 2005 state NEI submittal
 - Converting Louisiana 2004 state NEI submittal
 - Matching Acid Rain units for the above
 - Awaiting 2005 offshore update from MMS



Area Source Inventory Update

HGB 8 County	2002 v	2005_b6	2005_b6a	2005_b7
	2002 TexAER	2002 TexAER projected by jdm	2002 TexAER projected to 2005 but with new OilnGasp	2005 TexAER with new OilnGasp
	area02_b6_8co	area05_b6_8co	area05_b6wNEWoilgasp	area05_b7wNEWoilngasp
Category	NOx (tpd)	NOx (tpd)	NOx (tpd)	NOx (tpd)
OILGOFF	0.85	0.85	0.85	0.89
OILGASP	22.53	22.89	23.39	23.39
INDFUEL	15.92	16.21	16.21	10.47
RESFUEL	2.25	2.29	2.29	2.29
OPENBRN	0.7	0.73	0.73	0.57
Total Nox	42.25	42.98	43.47	37.61
	area02_b6_8co	area05_b6_8co	area05_b6wNEWoilgasp	area05_b7wNEWoilngasp
Category	VOC (tpd)	VOC (tpd)	VOC (tpd)	VOC (tpd)
PETROGAS	66.44	67.62	67.62	68.46
ARCHCOT	27.98	30.36	30.36	30.35
OILGOFF	0.14	0.14	0.14	0.15
OILGASP	17.14	17.39	238.33	238.33
SOLVENT	66.16	70.23	70.23	56.48
SURCLEN	0.95	1.05	1.05	1.05
INDFUEL	0.52	0.53	0.53	0.44
RESFUEL	0.13	0.13	0.13	0.13
AUTOREF	3.01	3.18	3.18	3.18
WASTRET	7.78	7.96	7.96	6.93
GRAPHIC	0.92	0.91	0.91	0.91
PESTICD	0.01	0.01	0.01	0.01
LUST	2.41	2.34	2.34	2.34
TRAFMAR	0.61	0.6	0.6	0.6
SURCOAT	32.83	36.03	36.03	30.21
OPENBRN	9.02	9.42	9.42	8.46
DRYCLEN	2.81	2.8	2.8	2.8
ASPAVNG	8.41	8.49	8.49	1.05
FOOBBREW	1.3	1.32	1.32	0.73
Total VOC	248.56	260.54	481.45	452.61
VOC total less On-shore OilnGasp	231.42	243.15	243.12	214.28



Overall 2005 & 2006 Modeling Episodes Preview

- Placed link to TX 2005 (all categories) NEI/CEER files on TexAQS webpage
- Expect that CB-05 will completely replace CB-IV; CB-05 can use ethane, methane default in CAMx
- May-June SI 2005 episode first run with CB-IV, then June CCEDS episode with CB-IV, then switch to CB-05
- “First cut” 2006 emissions inventory development in progress
- Data Analysis for potential emissions imputation in progress (e.g. PSCF)
- Inventory refinements will be ongoing for both 2005 and 2006



Questions