

Houston-Galveston-Brazoria (HGB) Eight-Hour Ozone State Implementation Plan (SIP) Stakeholder Meeting

March 25 and 26, 2008





HGB Topics

- SIP Update
- Modeling Review
- Potential Control Strategies



SIP Update



Background

- EPA designated the eight-county HGB metropolitan area as nonattainment and classified it as “moderate” for the eight-hour ozone National Ambient Air Quality Standard on June 15, 2004
- The Federal Clean Air Act required states to submit SIP revisions for the eight-hour ozone standard by June 15, 2007



HGB Area

Submitted to EPA on June 15, 2007:

- Eight-Hour Ozone SIP
 - Moderate (June 15, 2010, attainment date)
 - Includes rule revisions and local emissions reductions but does not demonstrate attainment of the standard
- Reasonable Further Progress SIP
- Governor's request for reclassification from moderate to severe



HGB Reclassification

- EPA Proposal, Docket No. EPA-R06-OAR-2007-0554, published in the Federal Register (December 31, 2007) includes:
 - Voluntarily reclassify the HGB ozone nonattainment area from a moderate to a severe area
 - Attainment date: not later than June 15, 2019, but as expeditiously as practicable
 - Comments for revised SIP: Dec. 15, 2008 – April 15, 2010
- TCEQ submitted comments to EPA (January 30, 2008) that:
 - Support the reclassification and attainment by June 15, 2019
 - Provide justification for an April 2010 HGB SIP submittal date
 - All comments submitted to EPA regarding the proposal are available at: <http://www.regulations.gov/search/index.jsp>



SIP and Rule Timeline

- Development of base case, baseline, and attainment modeling with controls: December 2007 – March 2009
- Control Strategy Development, hold informational and stakeholder meetings, develop control files, perform sensitivity runs: February 2008 – March 2009
- Development of SIP Narrative and Rules Proposals: April 2009 – August 2009
- SIP and Rules Proposal Commission Agenda: October 2009
- SIP and Rules Adoption Commission Agenda: March 2010



Contact Information

- To receive e-mail notification of updates on SIP revisions and SIP-related news items:
 - Go to TCEQ’s web site at: <http://www.tceq.state.tx.us>
 - Choose “Sign up for e-mail updates”
 - From the list of choices, look under Air Quality and select “SIP Hot Topics”

- HGB SIP Coordinator: Lola Brown
 - Phone: 512-239-0348
 - E-mail: lbrown@tceq.state.tx.us



Modeling Review



CAMx Ozone Modeling in SIP Development

The Big Picture

Base Case

Day-specific meteorology and emissions;
replicate what actually happened

Current Baseline

Day-specific meteorology and Typical emissions;
used in RRF to predict future design values

Future Baseline

Apply future growth + on-the-books controls
to estimate future ozone

Control Strategy Testing

Determine control strategies that will
effectively reduce ozone

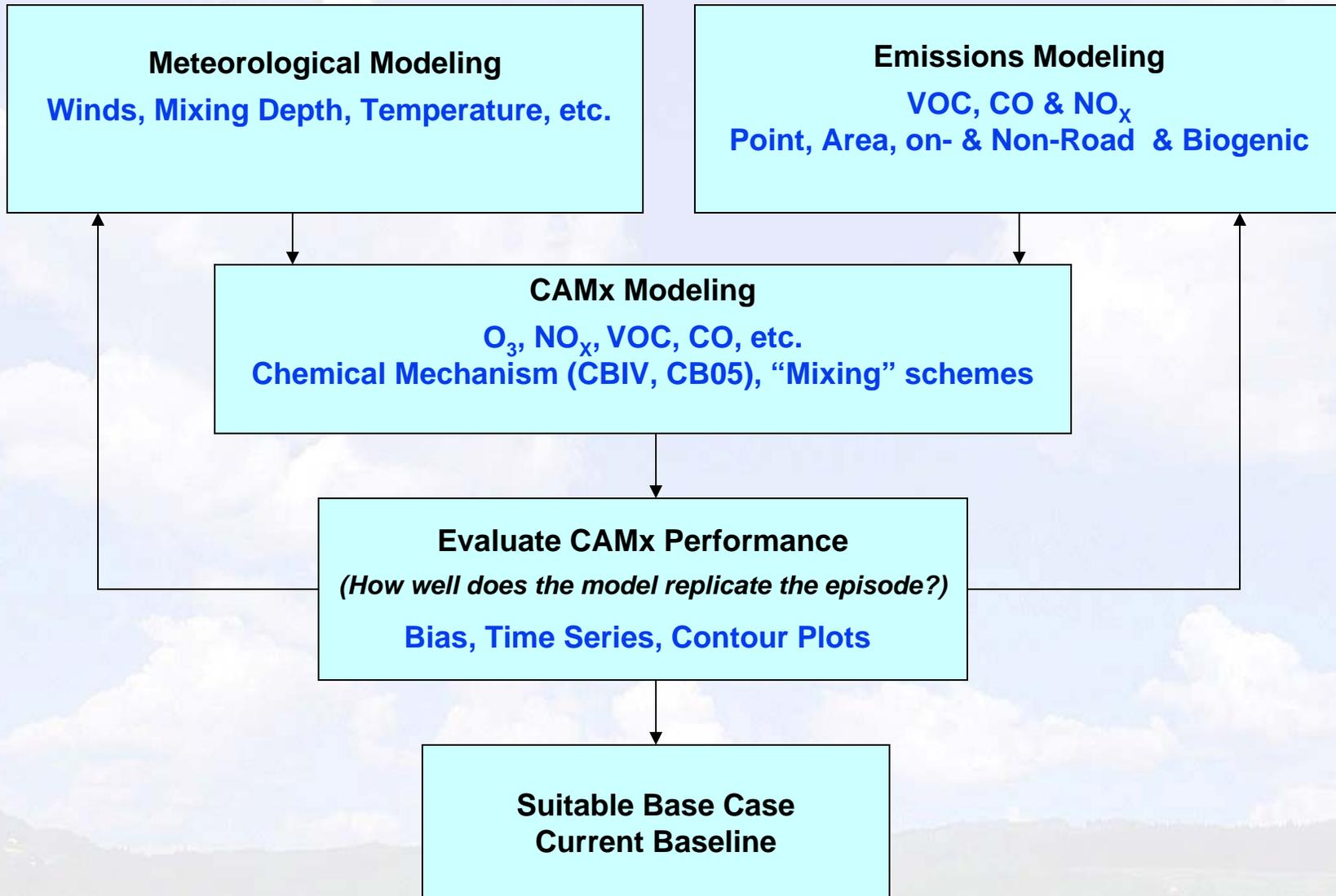
SIP

Document modeling procedures



CAMx Ozone Modeling in SIP Development

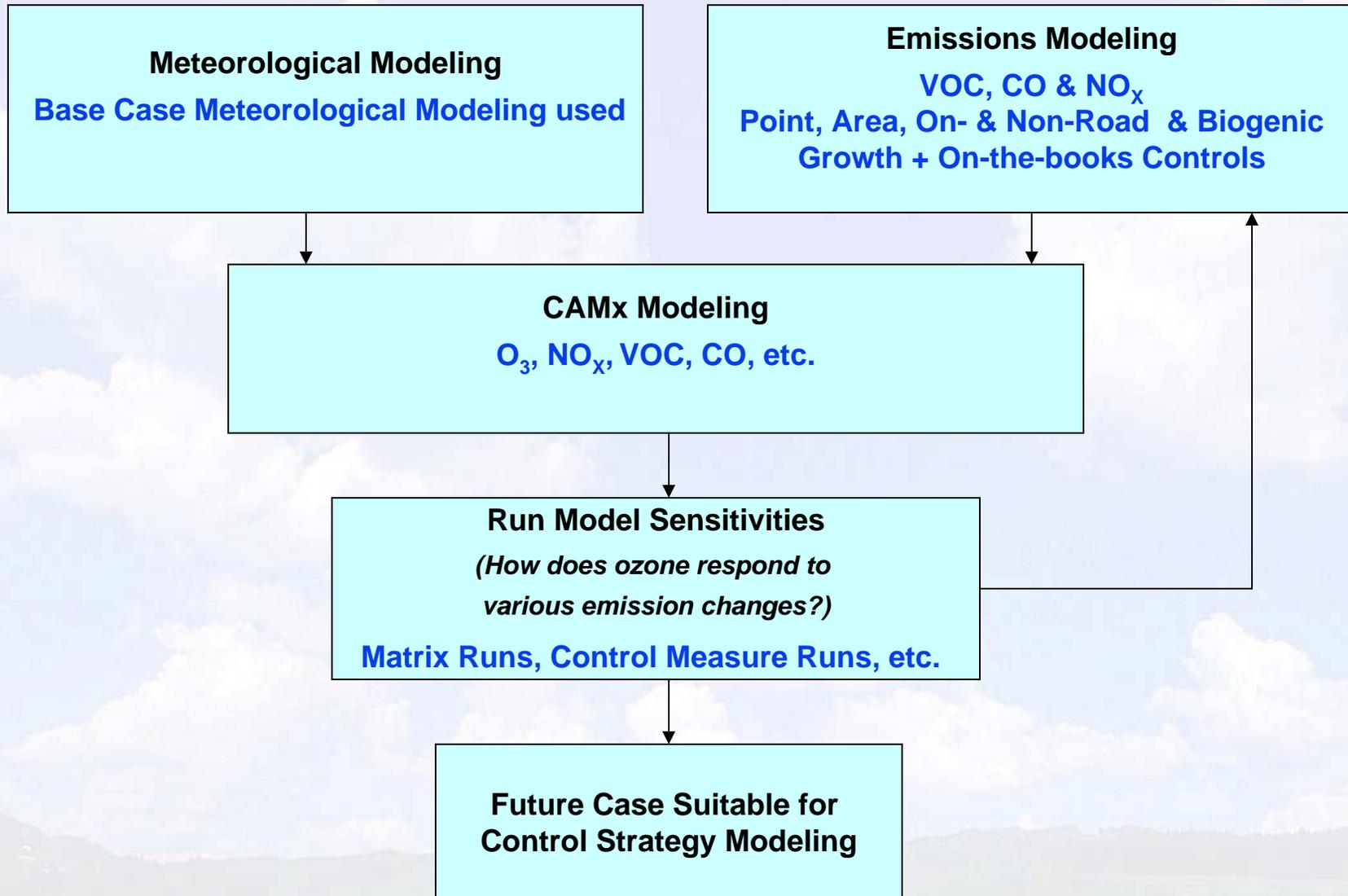
Base Case – Historical Episode Replication





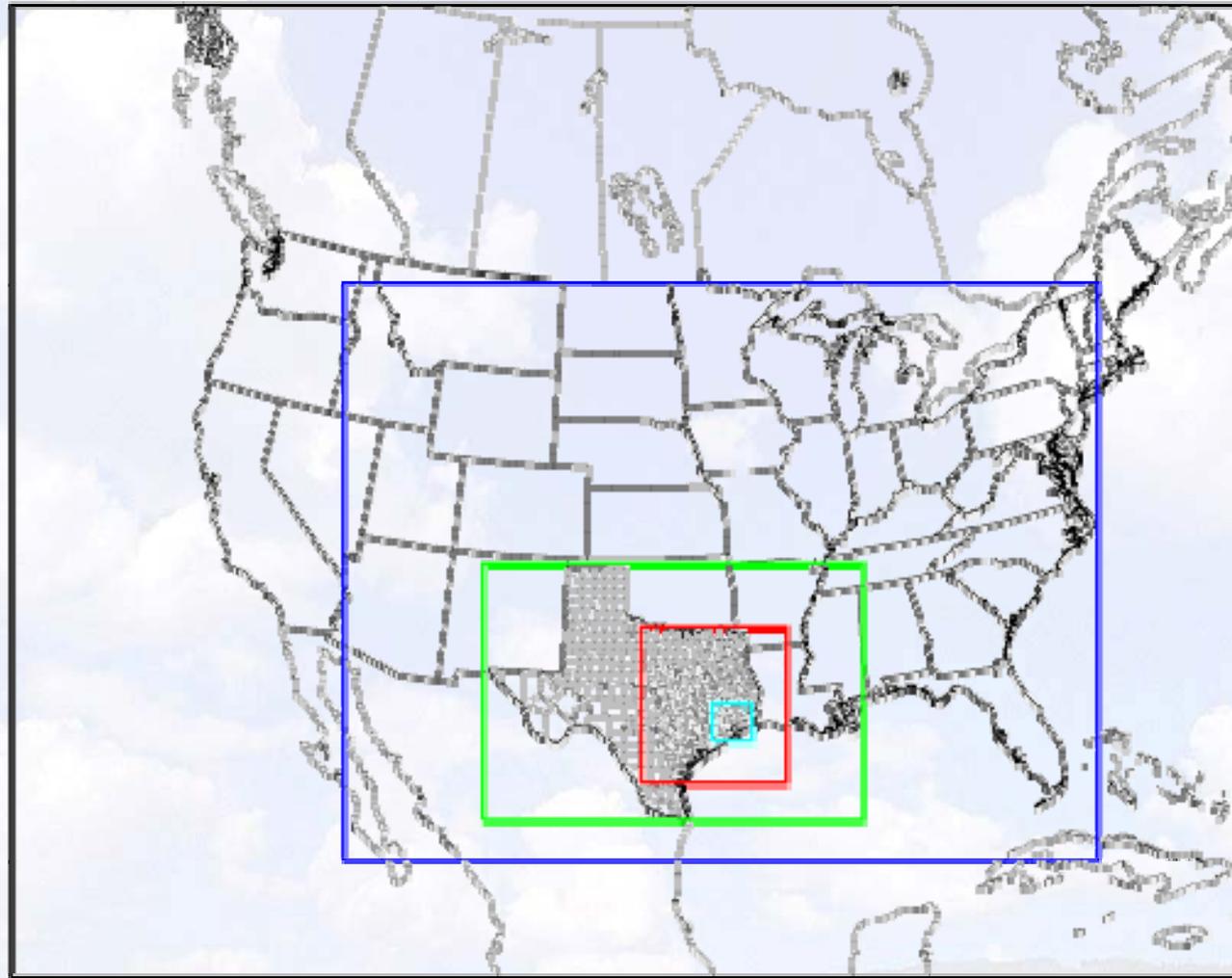
CAMx Ozone Modeling in SIP Development

Future Case – Future Baseline Emissions





Modeling Domains



Continental

US

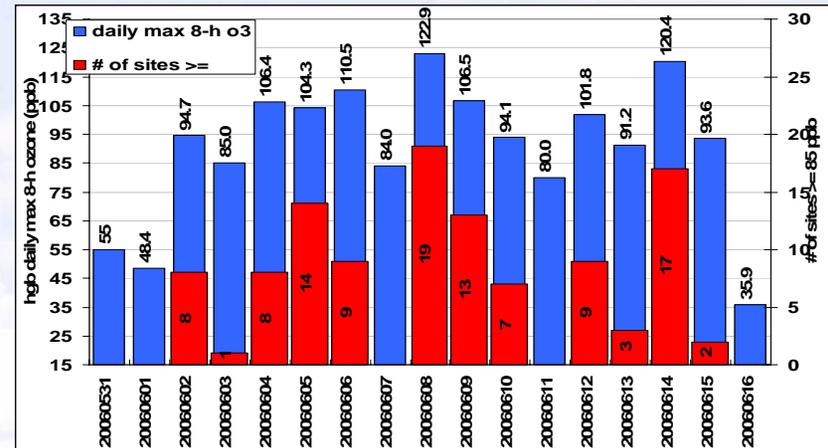
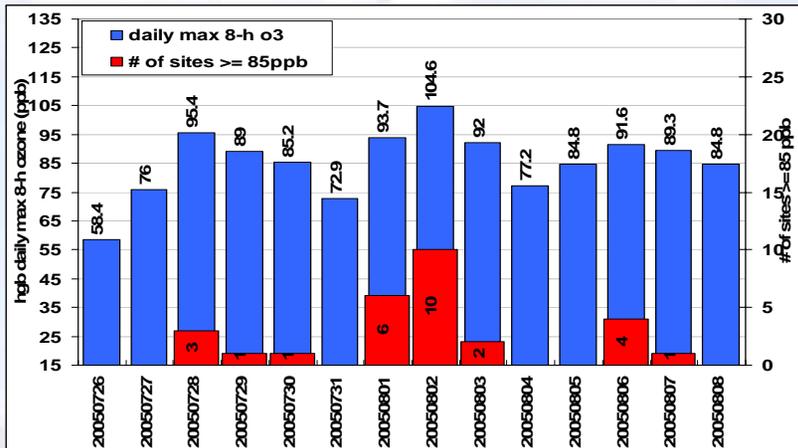
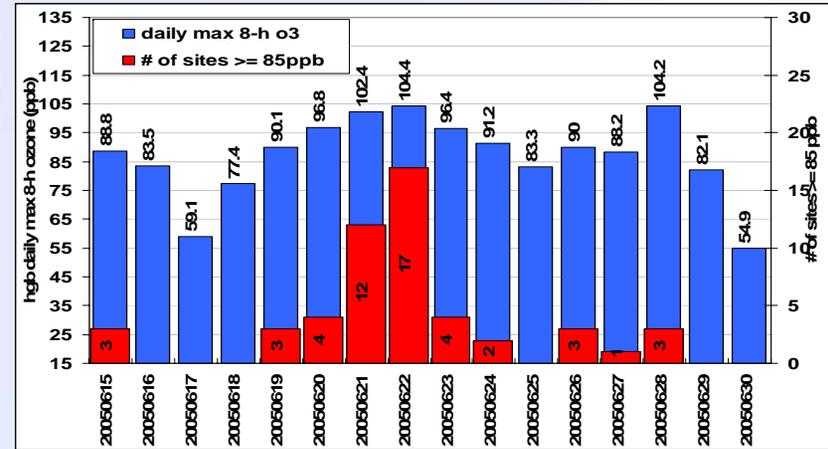
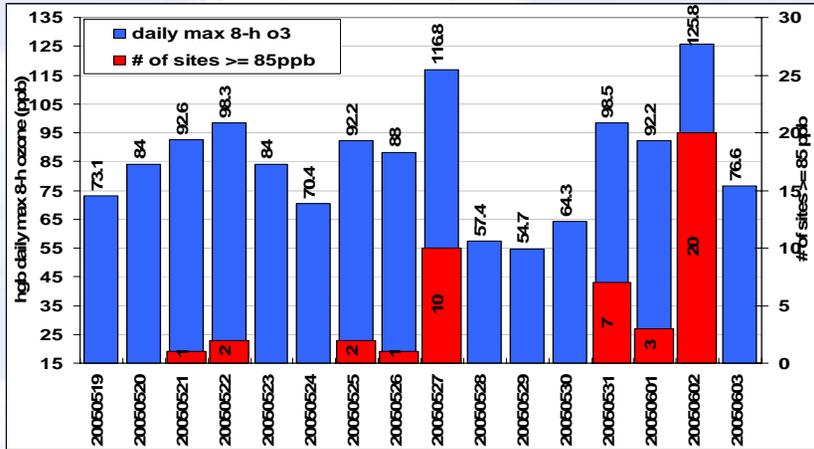
South US

East Texas

HGB

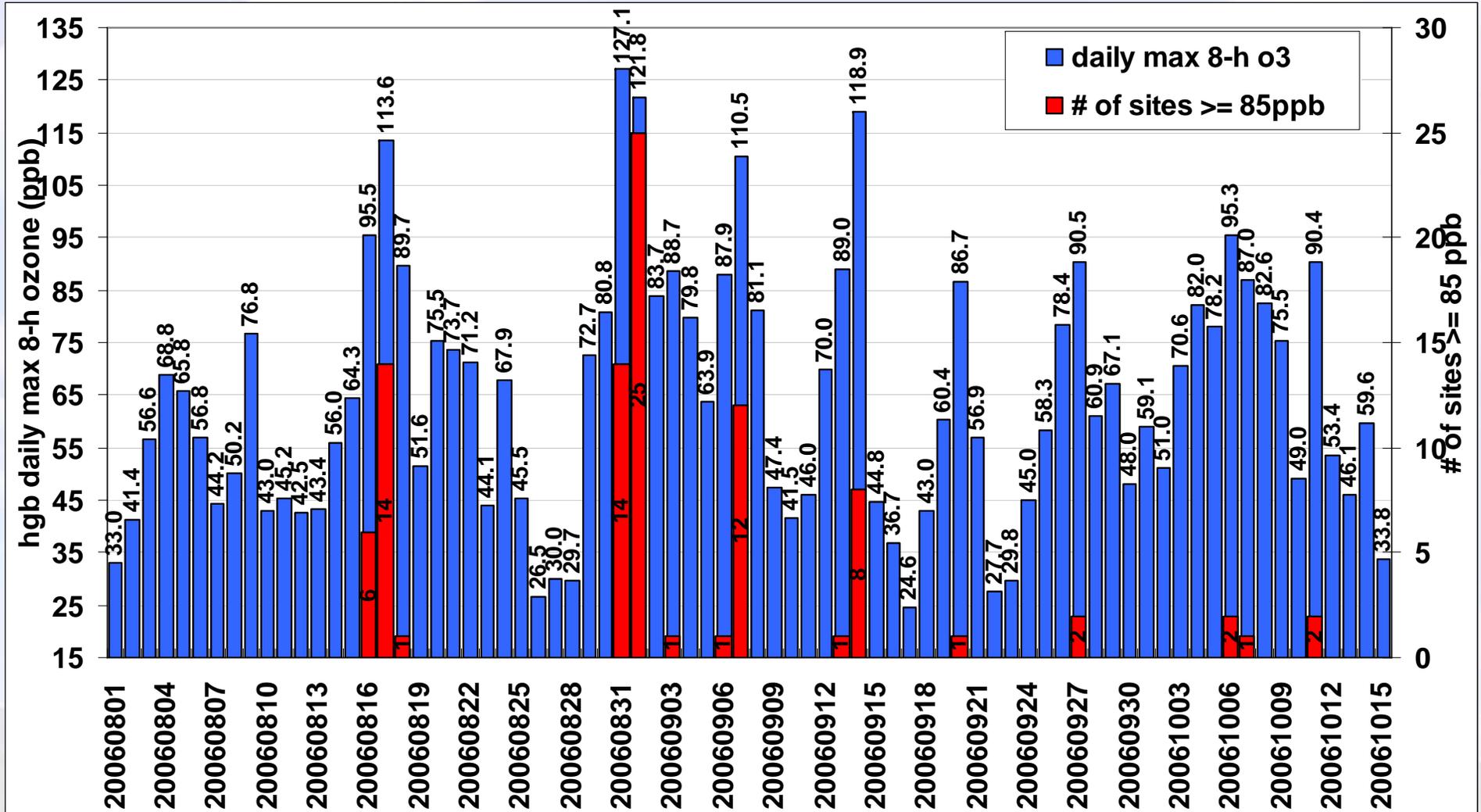


2005/2006 Non-TexAQs II Modeling Episodes





The TexAQs II Intensive Period





Base Case Modeling 2005 Episodes

- Episode0: May 19 through June 3, 2005
- Episode1: June 17 through June 30, 2005
- Episode2: July 27 through August 8, 2005

(note: All Episodes were Modeled w/ HGB 2X2 KM Domain)



Base Case Modeling 2005 Episodes

- Emissions
 - Points: 2005 STARS, Hourly ARP
 - On-Road Mobile: TTI 2005 link-based HGB & BPA
 - Non & Off-Road Mobile & Area: 2005 NMIM & TexAER
 - Biogenics: GloBEIS w/UT-CSR LU/LC and hourly PAR & temperature

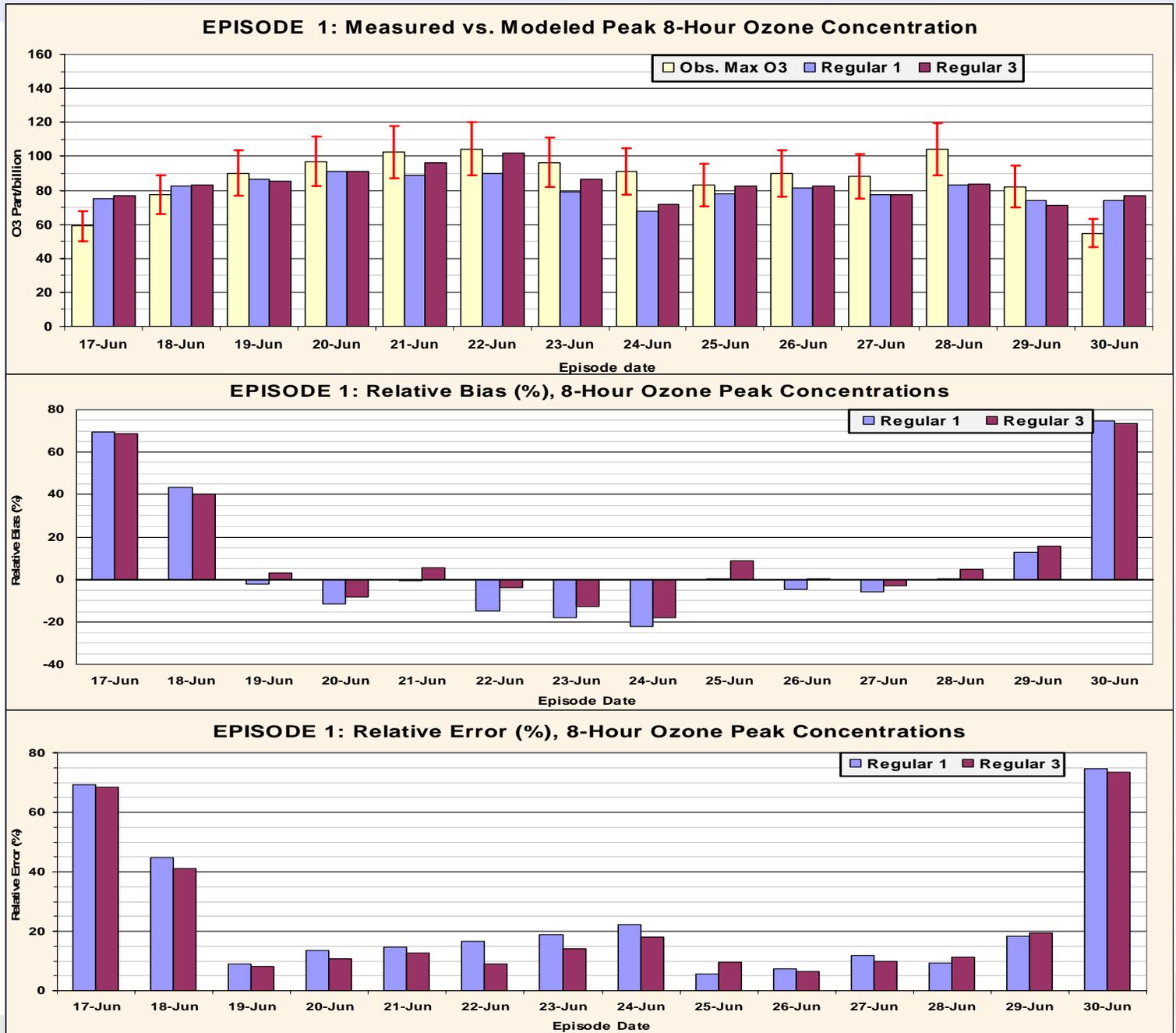
- Meteorology
 - Radar Profiler Observational Nudging
 - NOAA Land Surface Model
 - NASA emissivities
 - ETA PBL
 - NCEP Sea Surface Temperature



Base Case Modeling 2005 Episodes

- Episodic base case model performance (i.e., replicating the ozone concentrations) is evaluated using:
 - Statistical measures, such as the bias between modeled and monitored concentrations
 - Graphical measures, such as hourly time-series comparing modeled and monitored concentrations

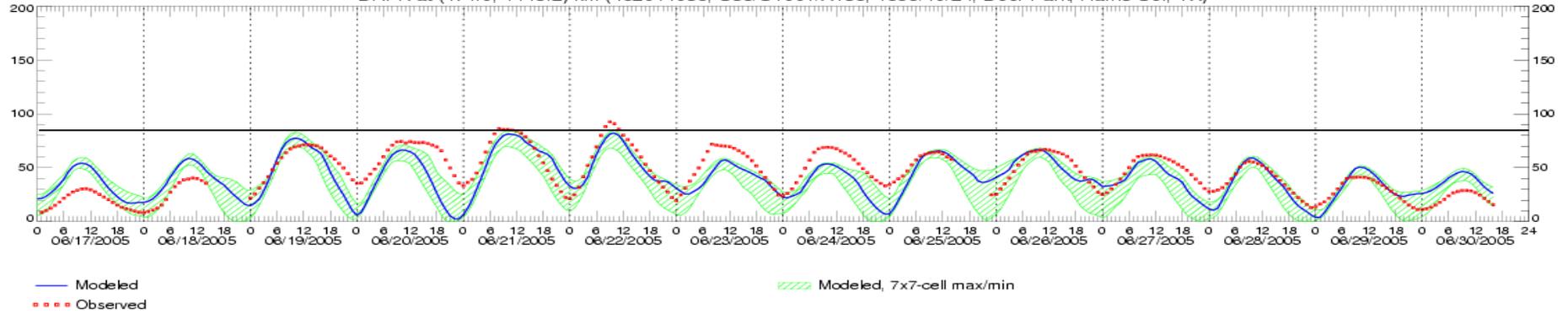
Episode 1 Base Case 8-hr Model Performance Statistics June 17 – June 30, 2005



8-Hour Moving Average O₃ Concentration (ppb) at Layer 1 (06/17/2005-06/30/2005)

camx450_cb05.hgb8h2.bc05jun.regular3.2005ep1_eta_dbemis_fdda_ncepsst.hgbpa_02km

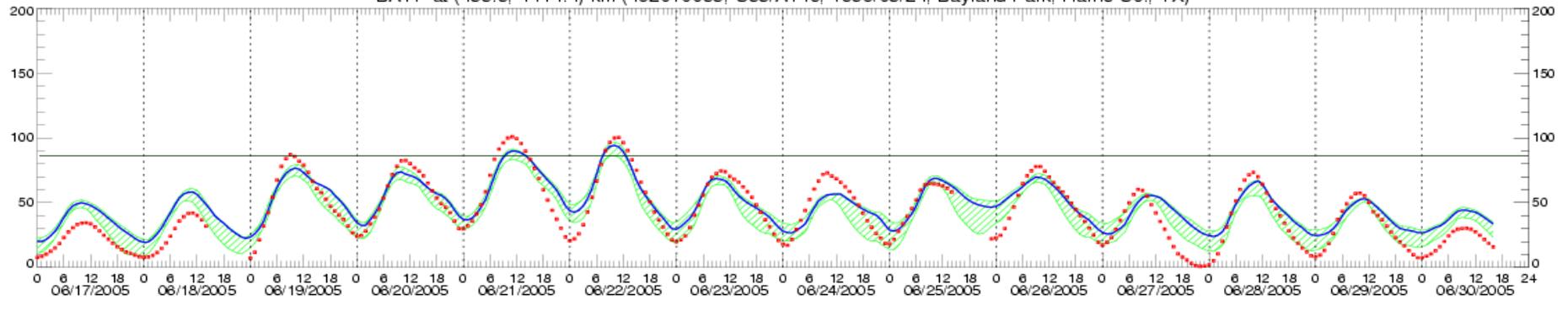
DRPK at (471.0, -1115.2) km (482011039, C35/C1001/A139, 1996/10/24, Deer Park, Harris Co., TX)



8-Hour Moving Average O₃ Concentration (ppb) at Layer 1 (06/17/2005-06/30/2005)

camx450_cb05.hgb8h2.bc05jun.regular3.2005ep1_eta_dbemis_fdda_ncepsst.hgbpa_02km

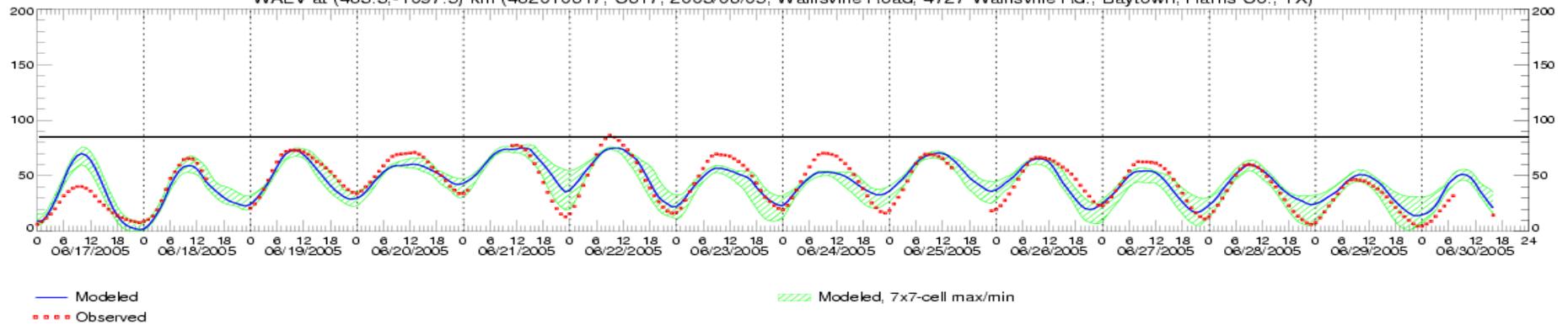
BAYP at (435.5, -1114.4) km (482010055, C53/A146, 1998/03/24, Bayland Park, Harris Co., TX)



8-Hour Moving Average O₃ Concentration (ppb) at Layer 1 (06/17/2005-06/30/2005)

camx450_cb05.hgb8h2.bc05jun.regular3.2005ep1_eta_dbemis_fdda_ncepsst.hgbpa_02km

WALV at (483.3, -1097.5) km (482010617, C617, 2003/06/05, Wallisville Road, 4727 Wallisville Rd., Baytown, Harris Co., TX)

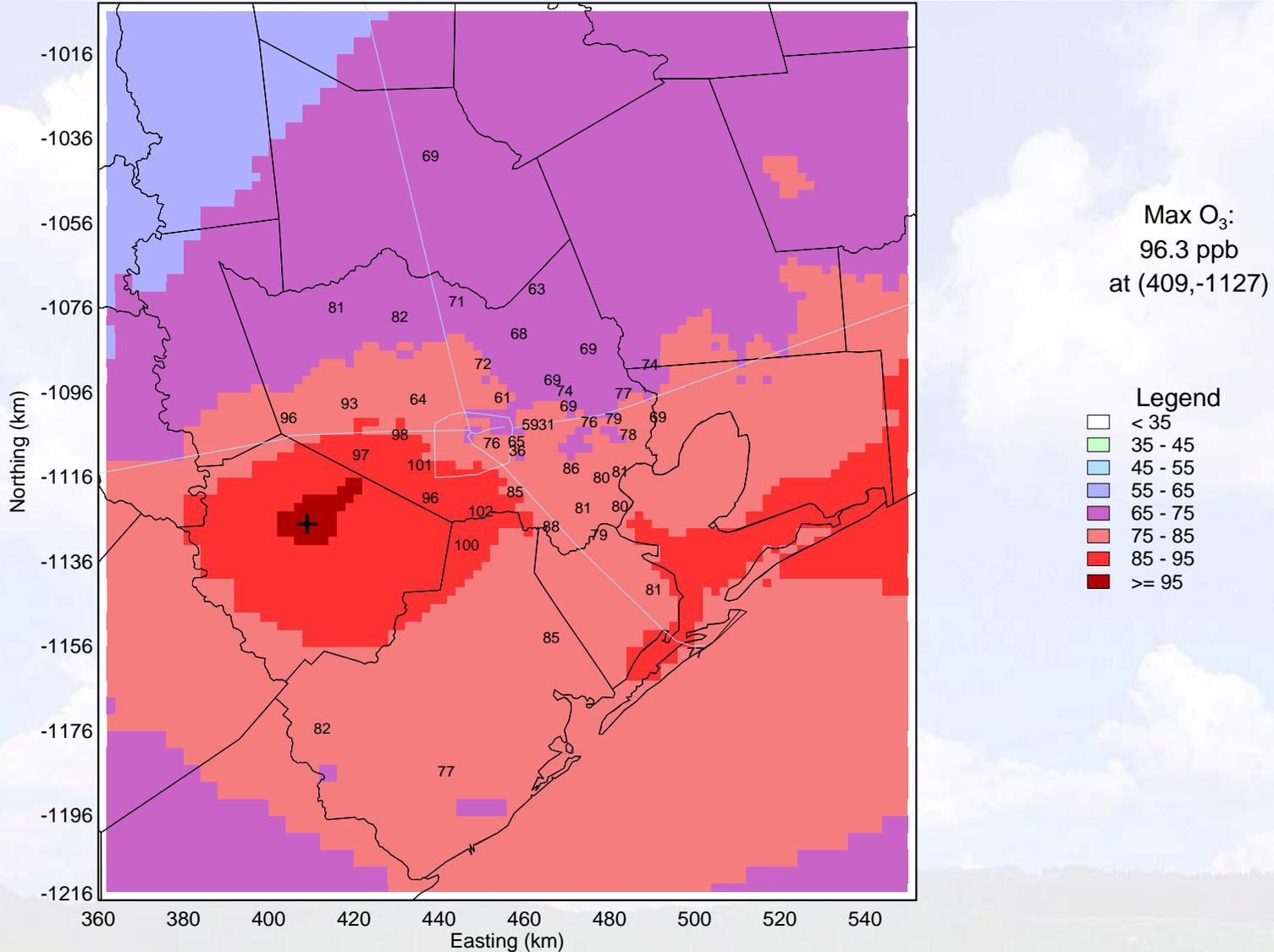




Daily Maximum 8-Hour Moving Average O₃ Concentrations (ppb) for 06/21/2005

camx450_cb05.hgb8h2.bc05jun.regular3.2005ep1_eta_dbemis_fdda_ncepsst

Layer 1



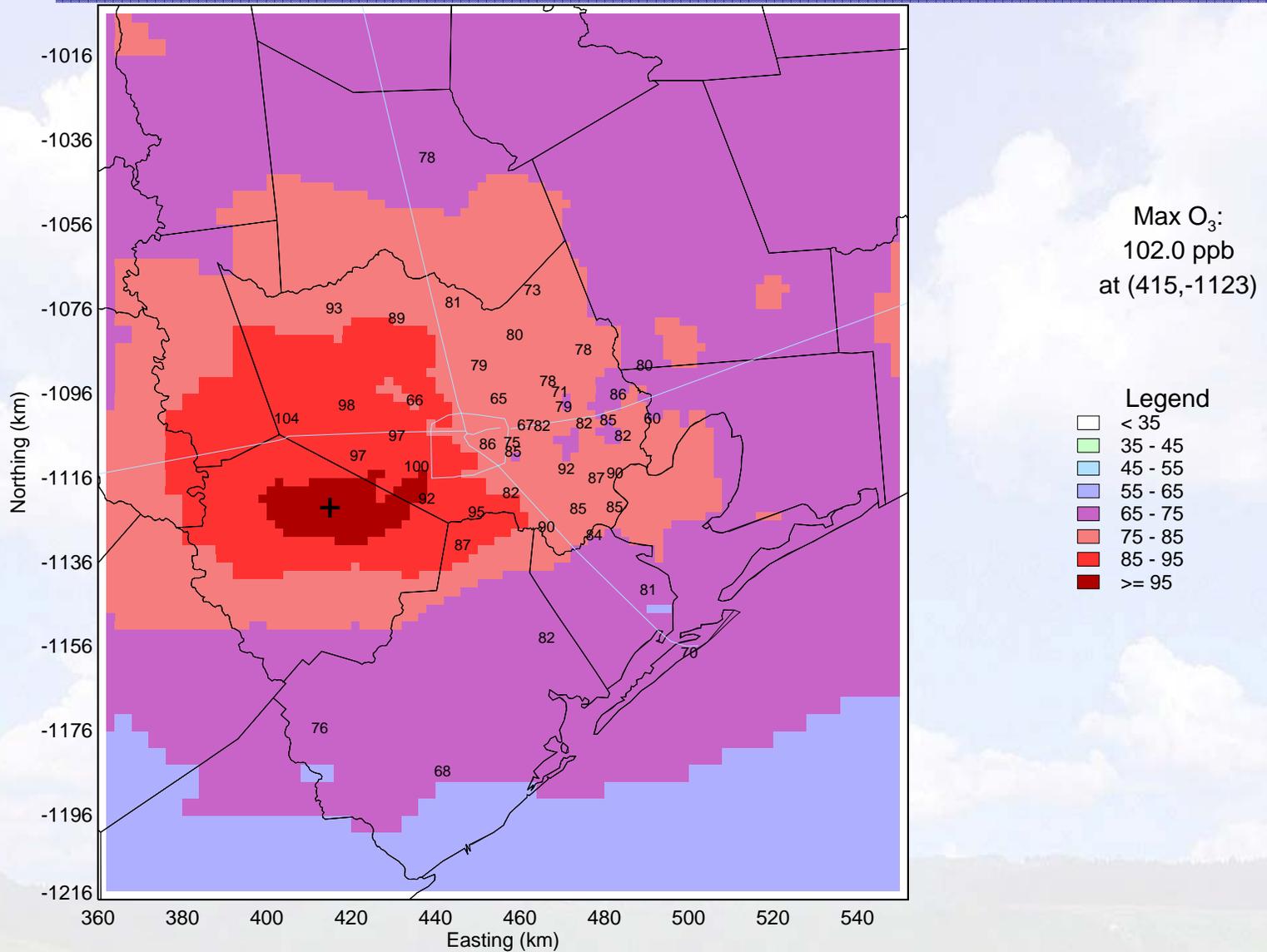
TCEQ\WZHAO: Wed Nov 14 10:11:46 2007: /sap/hgb8h2/output/bc05jun/regular3.2005ep1



Daily Maximum 8-Hour Moving Average O₃ Concentrations (ppb) for 06/22/2005

camx450_cb05.hgb8h2.bc05jun.regular3.2005ep1_eta_dbemis_fdda_ncepsst

Layer 1



TCEQ \VZHAO\Wed Nov 14 10:12:10 2007: \ac\hgs8h2\output\bc05jun\regular3.2005ep1



Base Case Modeling 2005 Episodes

- On-going Improvements for the 2005 Episode Base Cases
 - Meteorology
 - Surface characteristics Derived from New UT-CSR-LU/LC
 - Hourly Sea Surface Temperature
 - Updated Radar Profiler Data
 - Emissions
 - Hourly Tank Landing losses
 - Reconciliation with Ambient HRVOCs
 - Other
 - New BCs derived from the GEOS-CHEM Model



Base Case Modeling 2006 Episodes (plus TexAQS II)

- Episode3: May 31 through June 16, 2006
- Episode (multiple): August 13 through October 12, 2006
 - August 15 - 22, 2006
 - August 29 - September 8, 2006
 - September 12 - 14, 2006
 - October 3 - 11, 2006



Base Case Modeling 2006 Episodes (plus TexAQS II)

- The emissions and meteorological modeling for the 2006 episodes is conducted similar to that for the 2005 episodes. The noteworthy differences are:
 - Emissions
 - Points: 2006 STARS, 2006 SI
 - On-Road Mobile: TTI 2006 link-based HGB & BPA
 - Non-Road Mobile: 2006 NMIM
 - Meteorology
 - Hourly Sea Surface Temperature
 - NOAA Land Surface Model + UT-CSR LU/LC



Current Baseline Modeling All Episodes

- The 8-hour ozone modeling attainment test uses a relative response factor (RRF)
- RRF is the ratio of the future baseline modeled 8-hour ozone to current baseline modeled 8-hour ozone
- Current baseline modeling uses typical ozone season emissions, rather than episode specific emissions
- TCEQ plans to use 2005 typical emissions for the current baseline, commensurate with the 2005 weighted baseline ozone design value



Future (2018) Baseline Modeling All Episodes

- HGB reclassification to severe nonattainment status makes 2018 the applicable future year for the modeling attainment test
- Future baseline modeling uses typical emissions from the current baseline projected to 2018 using appropriate growth and controls
- Future baseline modeled 8-hour ozone is used in calculating the RRF



Modeling Activities Schedule

- 2005 Modeling Episodes
 - Complete Base Case and Current Baseline – March 2008
 - Complete Future Baseline w/current controls – August 2008
 - Complete Future Baseline w/current and proposed controls – March 2009
- 2006 Modeling Episodes
 - Complete Base Case and Current Baseline – August 2008
 - Complete Future Baseline w/ current and propose controls – March 2009



Potential Control Strategies



HGB Control Strategy Planning

- Draft initial concept list of potential control strategies for the HGB eight-hour ozone attainment demonstration is available for informal comment
 - List will also be posted on the TCEQ web site at:
http://www.tceq.state.tx.us/implementation/air/sip/hgb_stakeholder.html
- Control strategy concept list is preliminary
 - Further analysis is necessary to determine ozone reduction benefit as well as technical and economic feasibility
 - Control strategy concept list is not considered exhaustive, other concepts may be added
 - The presence or absence of a particular strategy on this list does not mean it will or will not be pursued



HGB Control Strategy Planning

- Requesting informal comments on:
 - Technical and economic feasibility.
 - Modifications or alternatives for specific control strategy concepts.
 - Suggestions for additional control strategy concepts.
- When submitting comments:
 - Provide as much detail and technical information as possible.
 - If suggesting rules for control strategies, please provide a copy, Web link, or citation for the rule.
 - Clearly identify any confidential information.
 - Please explain the basis of economic feasibility information provided on a \$/ton basis, e.g., TCEQ fiscal analysis is typically done on a five-year basis.
- Please submit written comments on draft initial control strategy concept list presented today by April 30, 2008.



HGB Control Strategy Planning

- Written comments (non-confidential information) will be posted on the stakeholder group web site at:
http://www.tceq.state.tx.us/implementation/air/sip/hgb_stakeholder.html

- Please send comments by postal mail or e-mail to:
Ashley Forbes – Stationary Sources
aforbes@tceq.state.tx.us

Donna Huff – Mobile Sources
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Open Discussion