2014 Virginia Ozone Season Forecast Verification

Kristen Stumpf and Dan Salkovitz
Virginia Department of Environmental Quality
NOAA Air Quality Forecaster Focus Group Workshop
Sept 9-10, 2014
2014 Ozone Season

• 5 forecast areas in VA
  – VA DEQ prepares forecasts for Richmond, Roanoke, Hampton Roads, and Winchester
  – VA DEQ and MDE collaborate for Winchester, VA/Western MD/Martinsburg, WV consensus forecast
  – MDE and MWCOG collaborate for Northern VA/DC area consensus forecast

• Only 3 exceedance days so far this year
  – 6/16: Northern VA, Richmond
  – 7/11: Northern VA
  – 8/27: Northern VA
VA Ozone Monitors and Forecast Areas

- Winchester
- Northern VA
- Richmond
- Roanoke
- Hampton Roads
Moderate/USG Threshold
5/1/14 – 9/1/14
06Z NOAA Model

Next Day Forecast

<table>
<thead>
<tr>
<th>Agency</th>
<th>City</th>
<th>Forecasts</th>
<th>Percent Correct</th>
<th>Bias</th>
<th>FAR</th>
<th>CSI</th>
<th>POD</th>
<th>Skill</th>
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- False Alarms: 7 in Hampton Roads, 4 in Richmond
- Did capture the one exceedance day in Richmond

Matrix:  
A: forecast and obs below threshold, B: forecast above, obs below threshold  
C: forecast below, obs above threshold, D: forecast and obs above threshold
## Moderate/USG Threshold

**5/1/14 – 9/1/14**

**12Z NOAA Model**

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- False Alarms: 4 in Hampton Roads, 2 in Richmond
- Missed the one exceedance day in Richmond

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Moderate/USG Threshold
5/1/14 – 9/1/14
Forecaster

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- False Alarms: 1 in Richmond
- Missed the one exceedance day in Richmond (doesn’t show in stats because it wasn’t a “Next Day” forecast)

Matrix:  
A: forecast and obs below threshold, B: forecast above, obs below threshold  
C: forecast below, obs above threshold, D: forecast and obs above threshold
(Daily forecasted and observed ozone AQI from AirNow-Tech)
High Ozone Example in Hampton Roads

Operational Model 06Z Forecast AQI for Jun 17

AirNow Max Observed AQI Jun 17
High Ozone Example in Hampton Roads

Experimental Model  06Z Forecast AQI  for Jun 17

06Z 31H–48H 2 day 8h max sf $O_3$ (ppbv) Valid 17 JUN 2014

AirNow Max Observed AQI
Jun 17
(Daily forecasted and observed ozone AQI from AirNow-Tech)
High Ozone Example
in Richmond

Operational Model 06Z Forecast AQI for Aug 28

06Z 31H–48H 2 day 8h max sf \( O_3 \) (ppbv) Valid 28 AUG 2014

AirNow Max Observed AQI Aug 28
High Ozone Example in Richmond

Experimental Model 06Z Forecast AQI for Aug 28

AirNow Max Observed AQI Aug 28
(Daily forecasted and observed ozone AQI from AirNow-Tech)
Winchester, Western MD, Martinsburg

(Daily forecasted and observed ozone AQI from AirNow-Tech)
Summary

• Only 3 exceedance days so far this year available for evaluation.
• The 06Z model captured the single ozone exceedance day in Richmond, but also had 4 false alarms.
• Both model runs had more false alarms than the human forecaster, especially in Hampton Roads.
• Along the Moderate/USG Threshold, the human forecasters have been more accurate in Richmond and Hampton Roads than the models.
Additional Information
# Good/Moderate Threshold

**5/1/14 – 9/1/14**

## Forecaster

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**Matrix:**

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