Performance of the NAQFC in Philadelphia during Summer 2013

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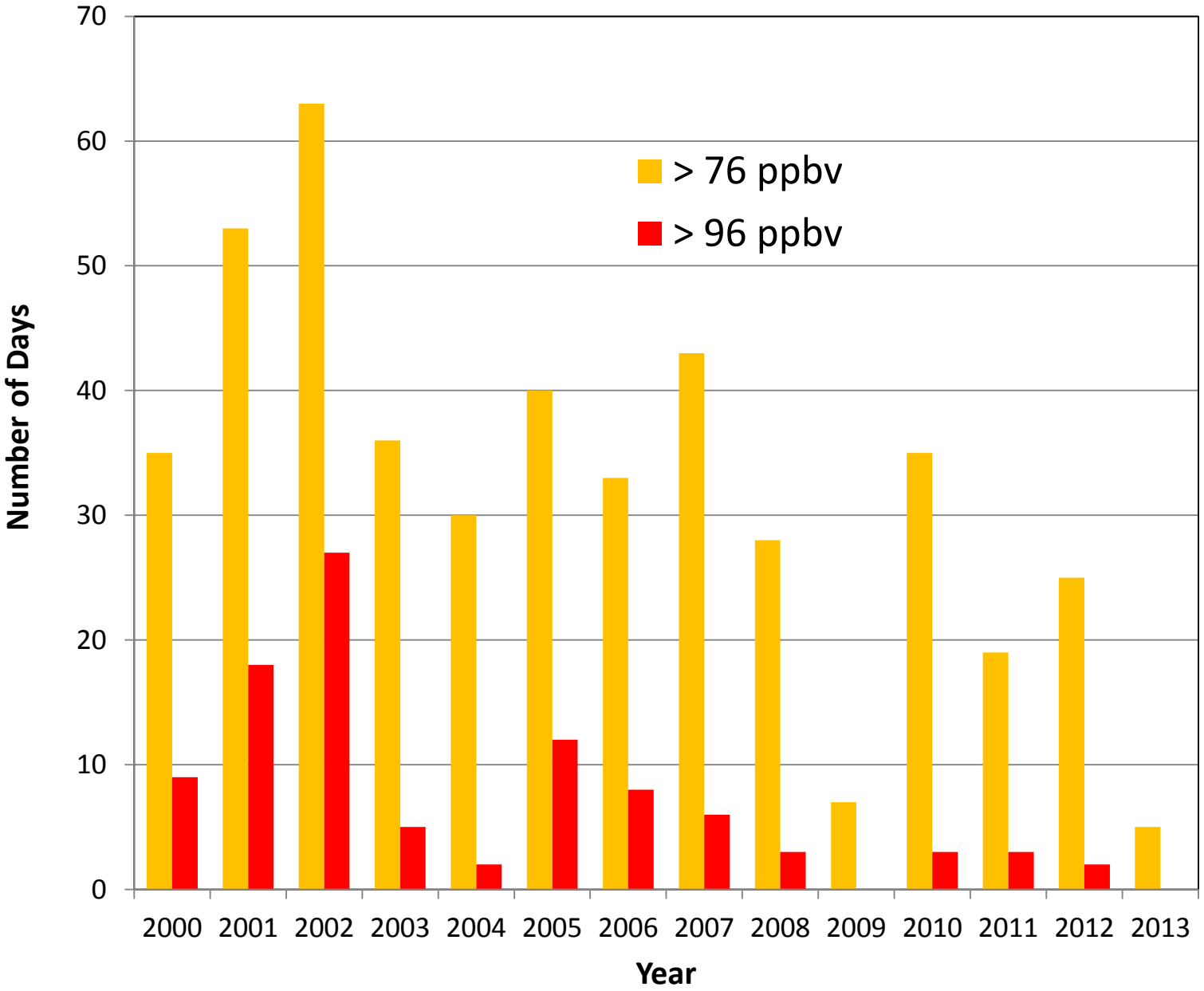
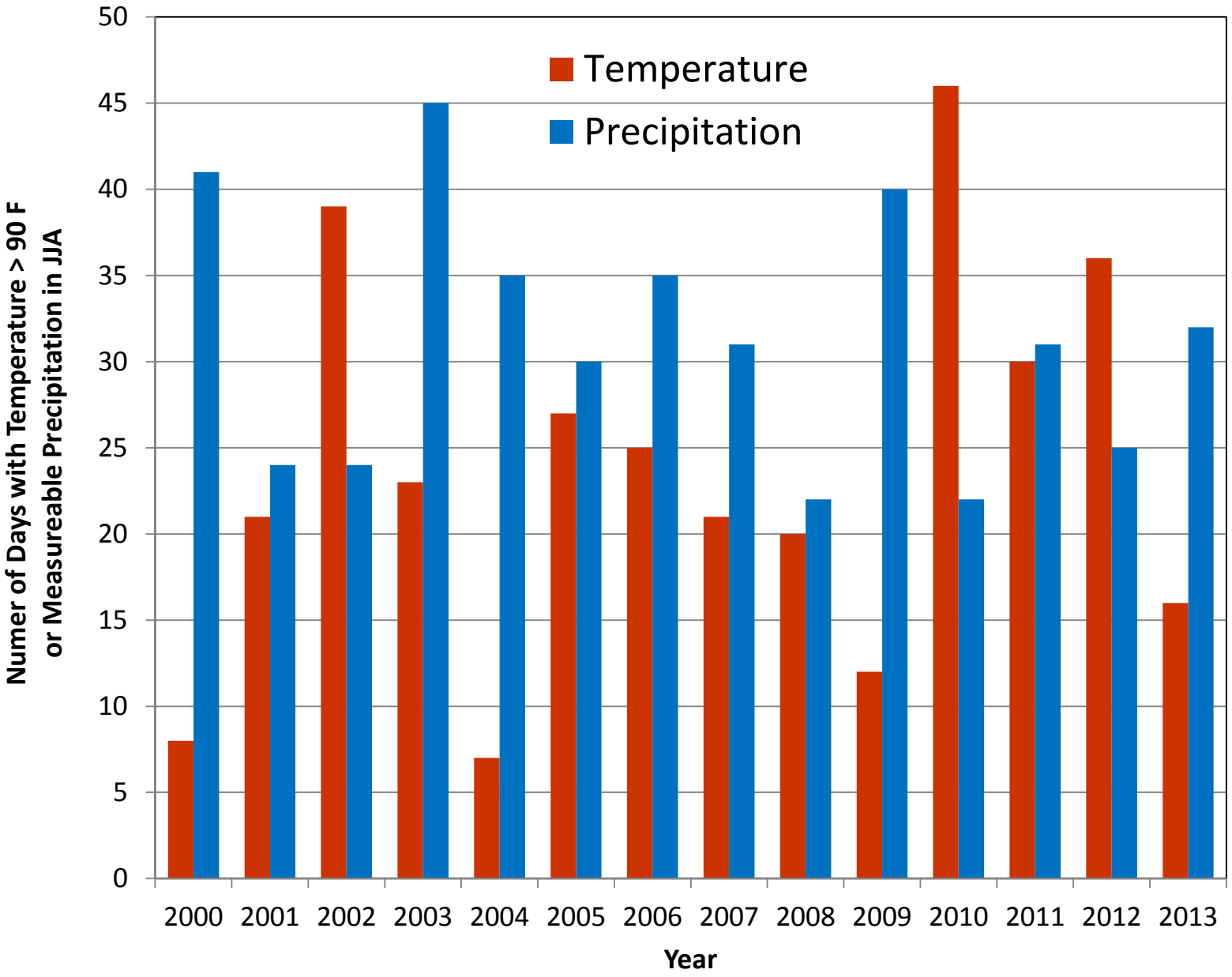
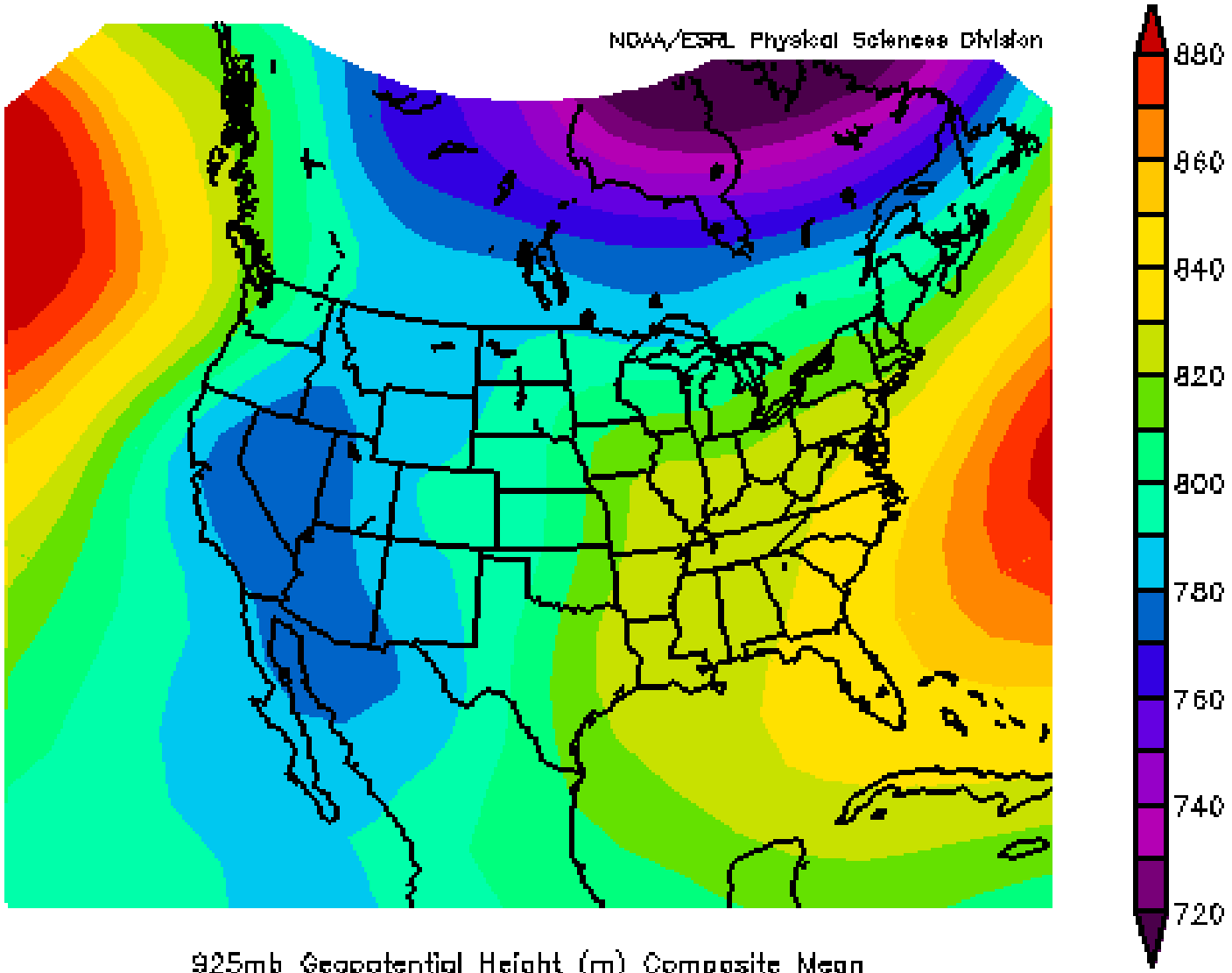
Atypically Low Ozone Season in PHL



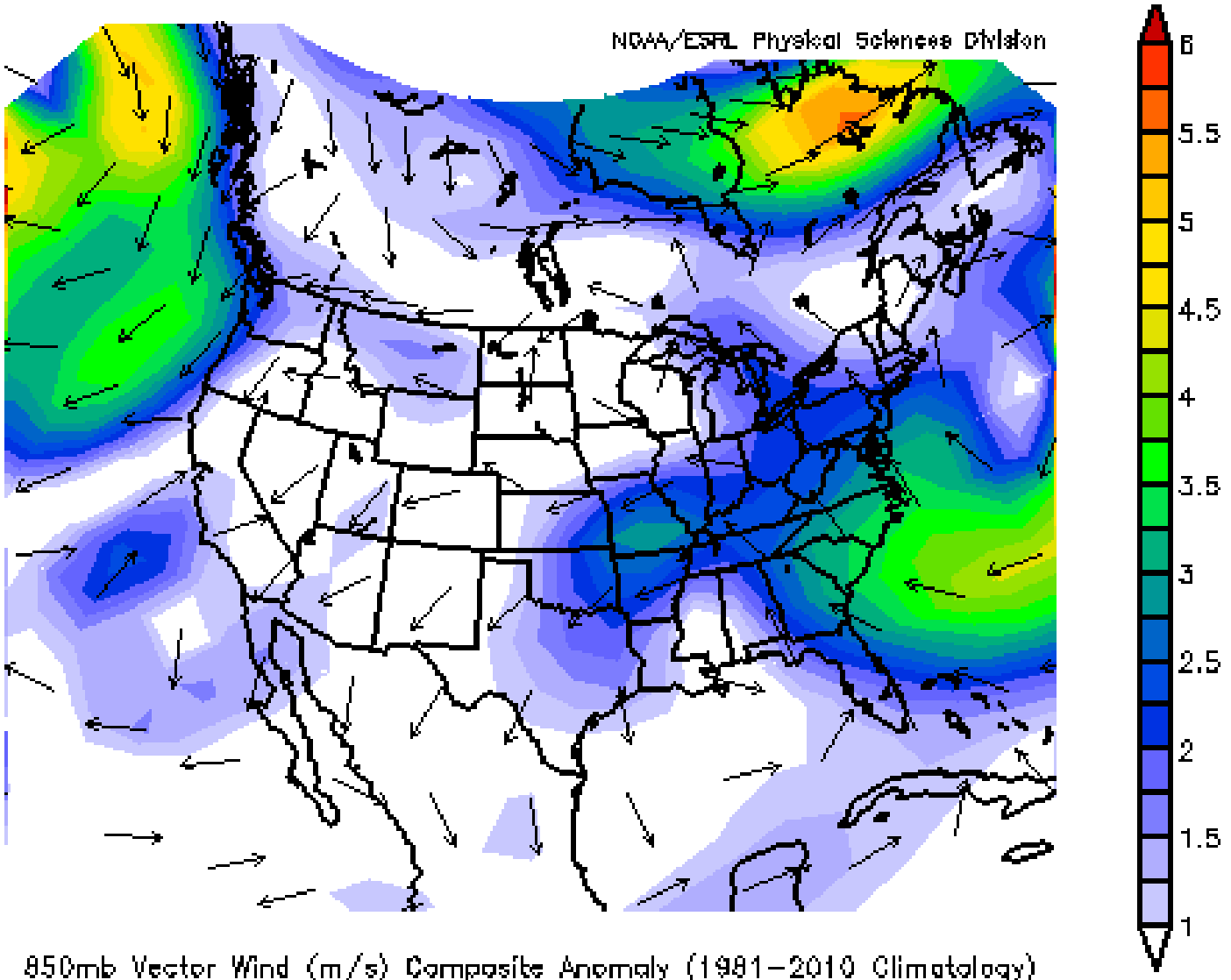
Summer (JJA) was Warm and Wet in PHL



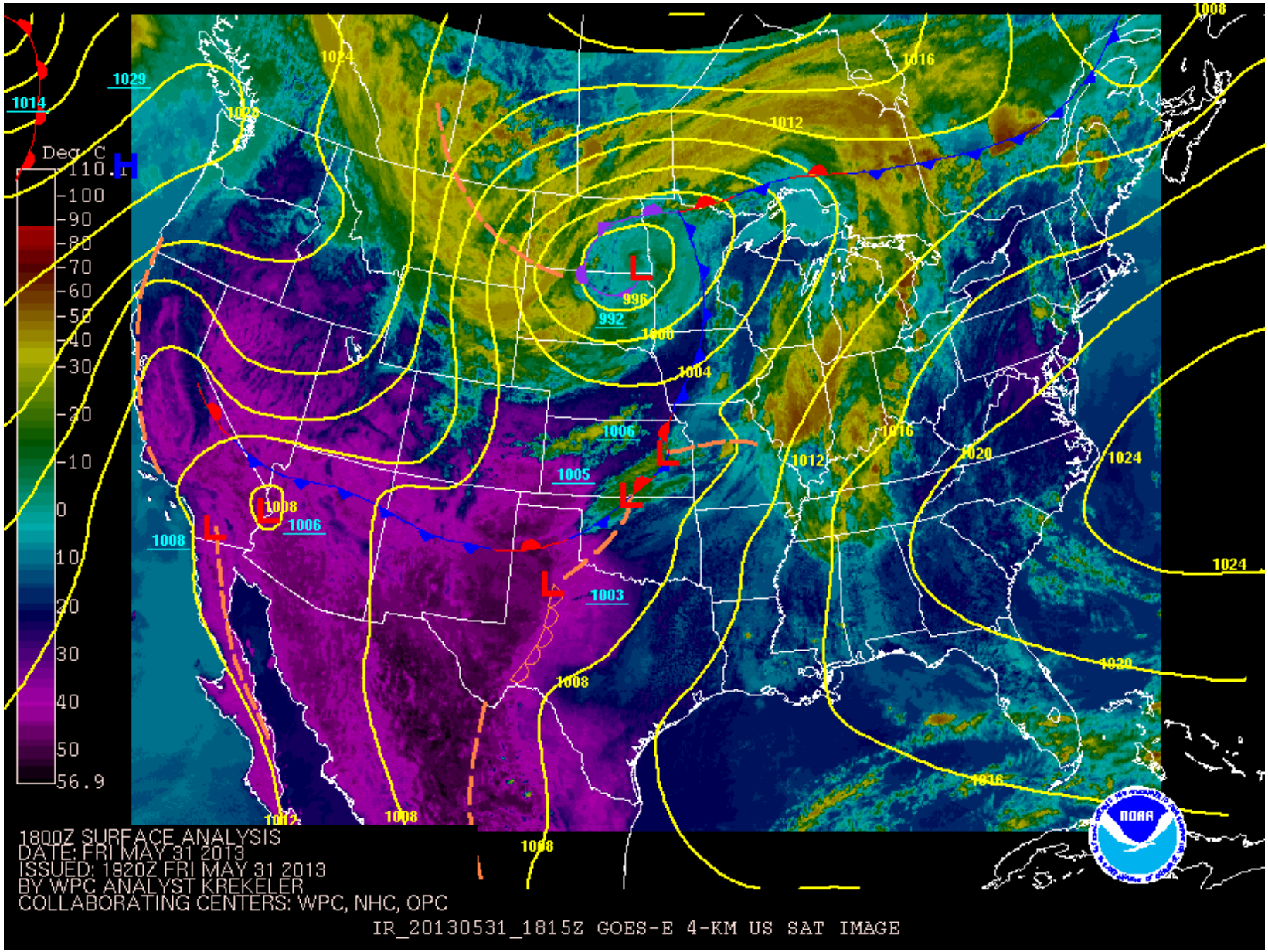
Bermuda High Did Not Extend Westward



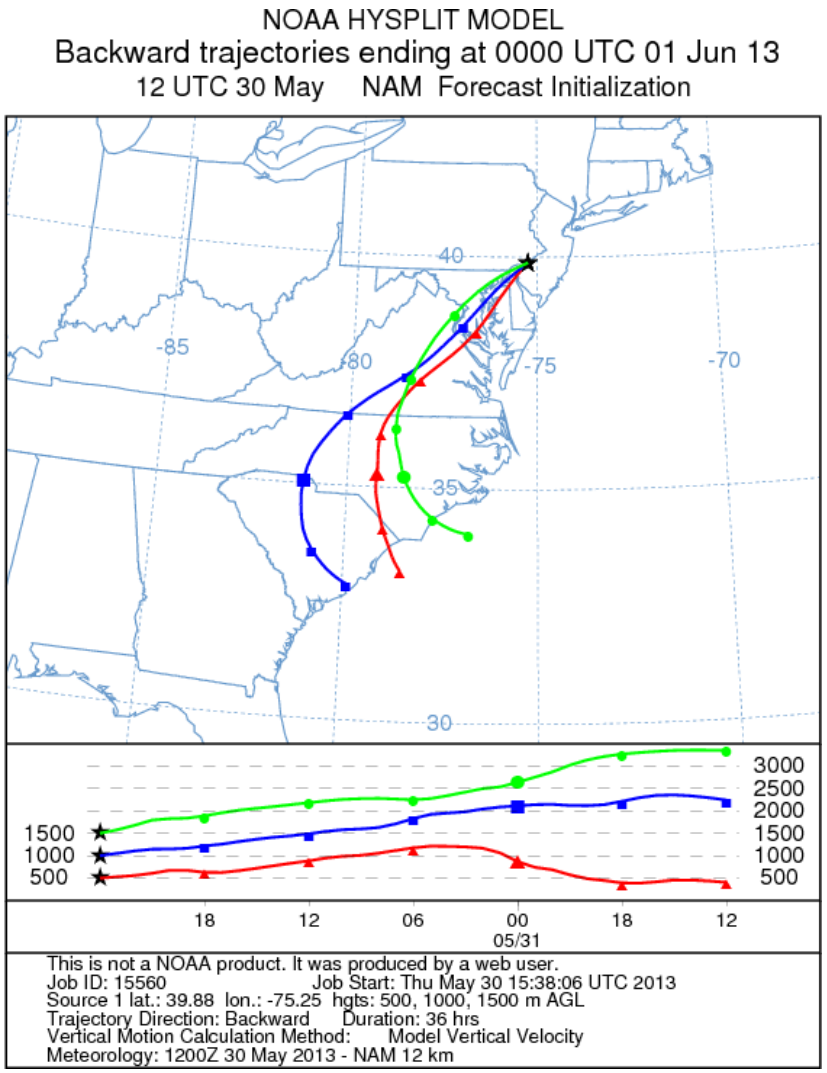
Anomalous SE Flow – Tropical Maritime Air

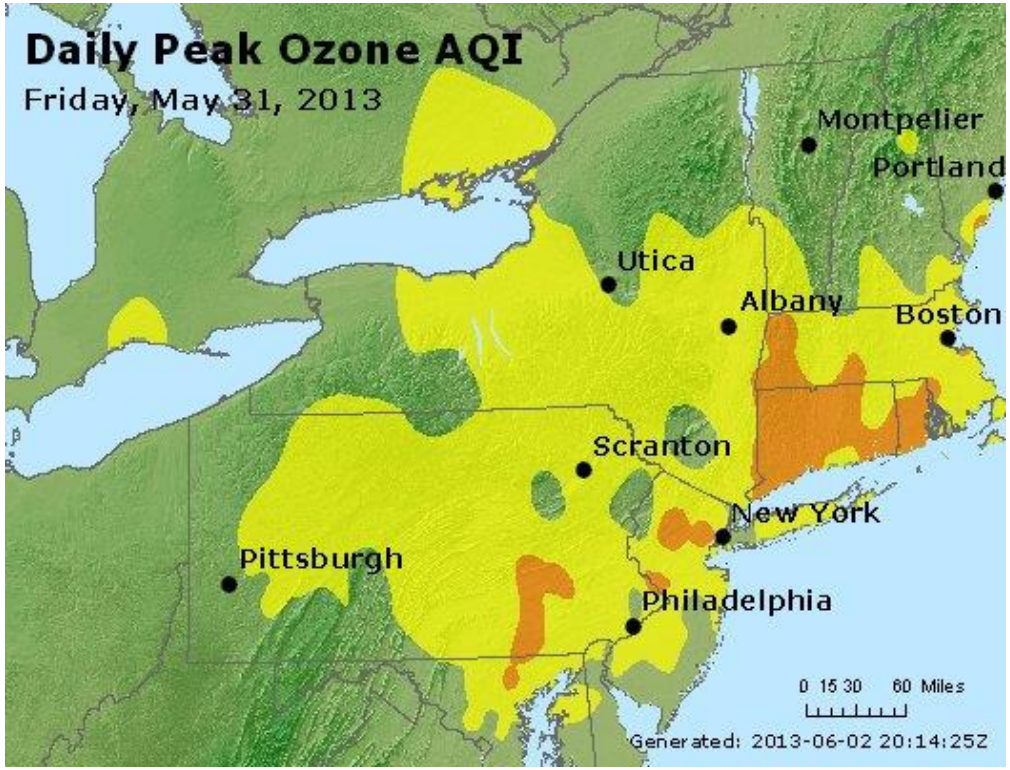


Example: Friday, May 31, 2013

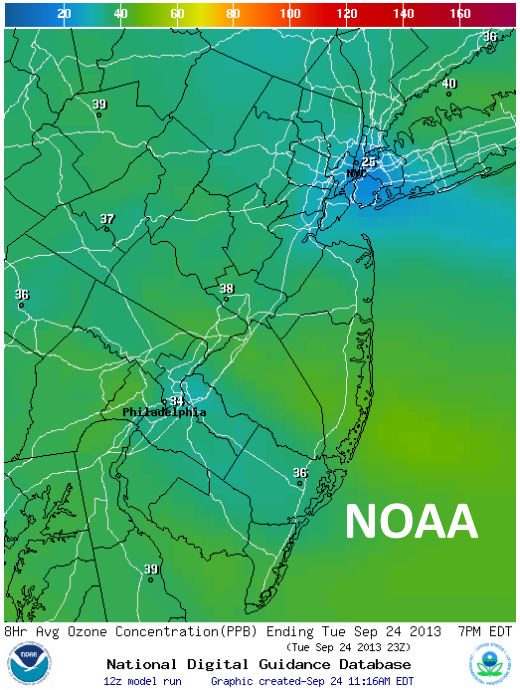


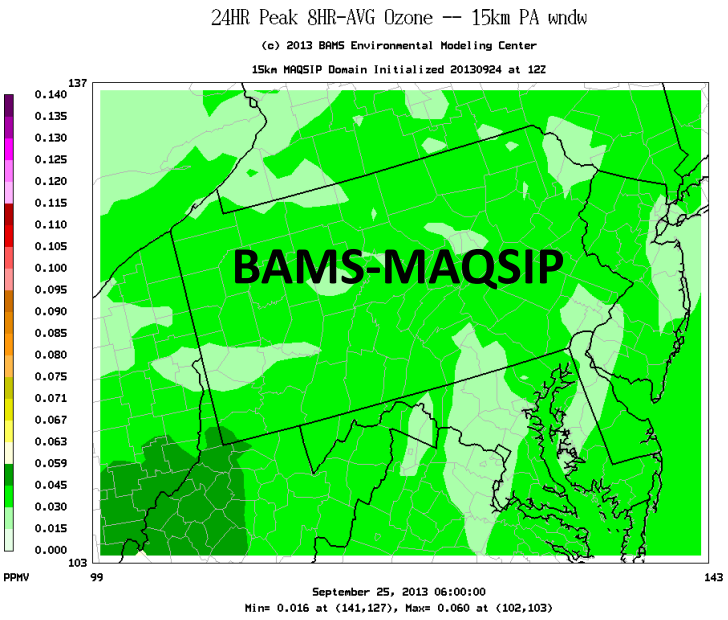
S/SE Transport Aloft → Moderate O_3 in PHL

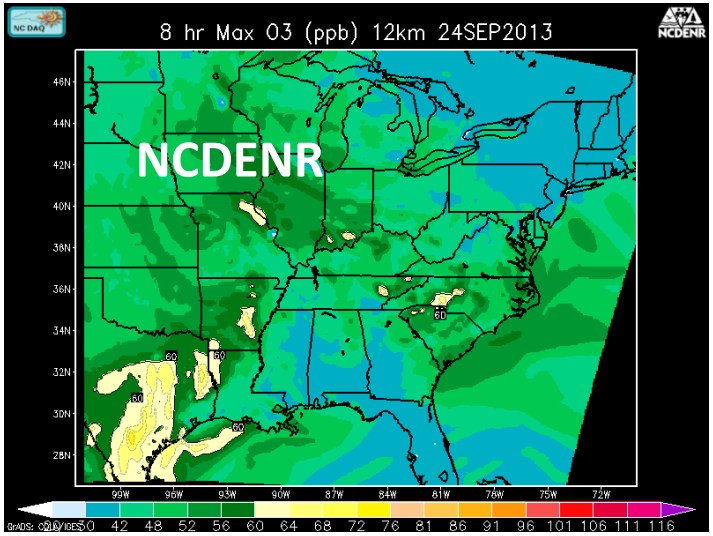


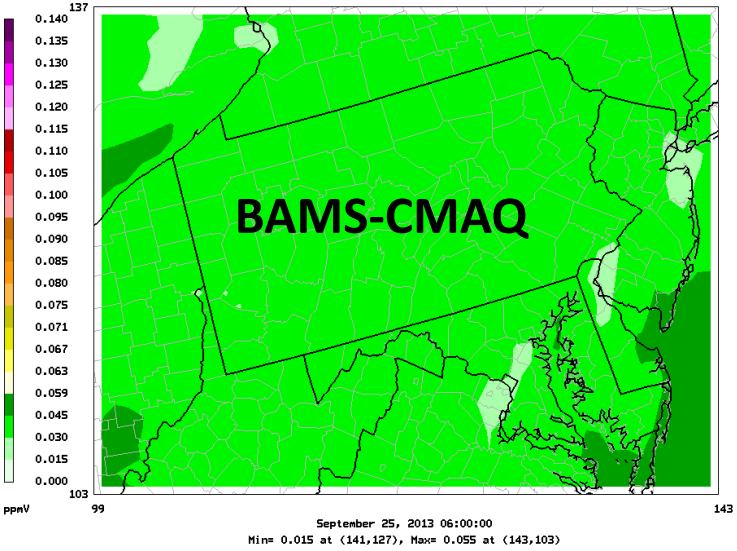


2013 AQ Model Ensemble for PHL

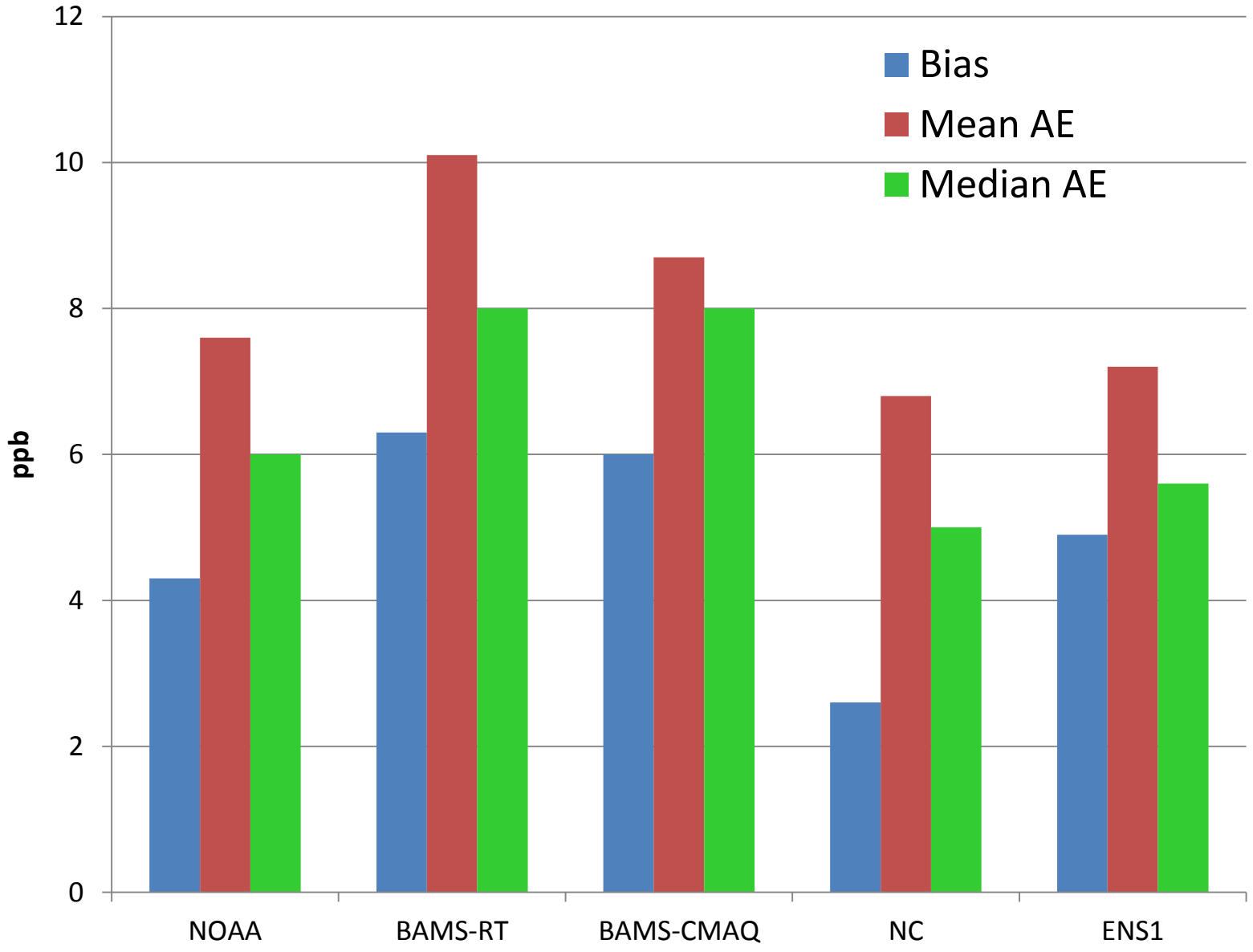




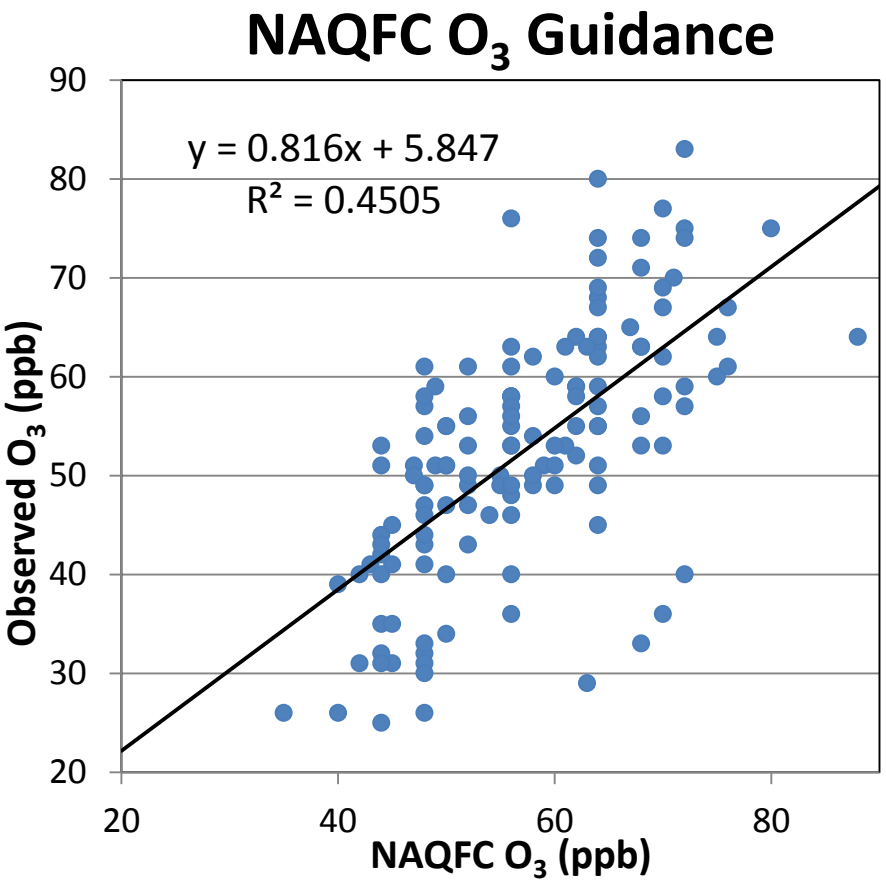


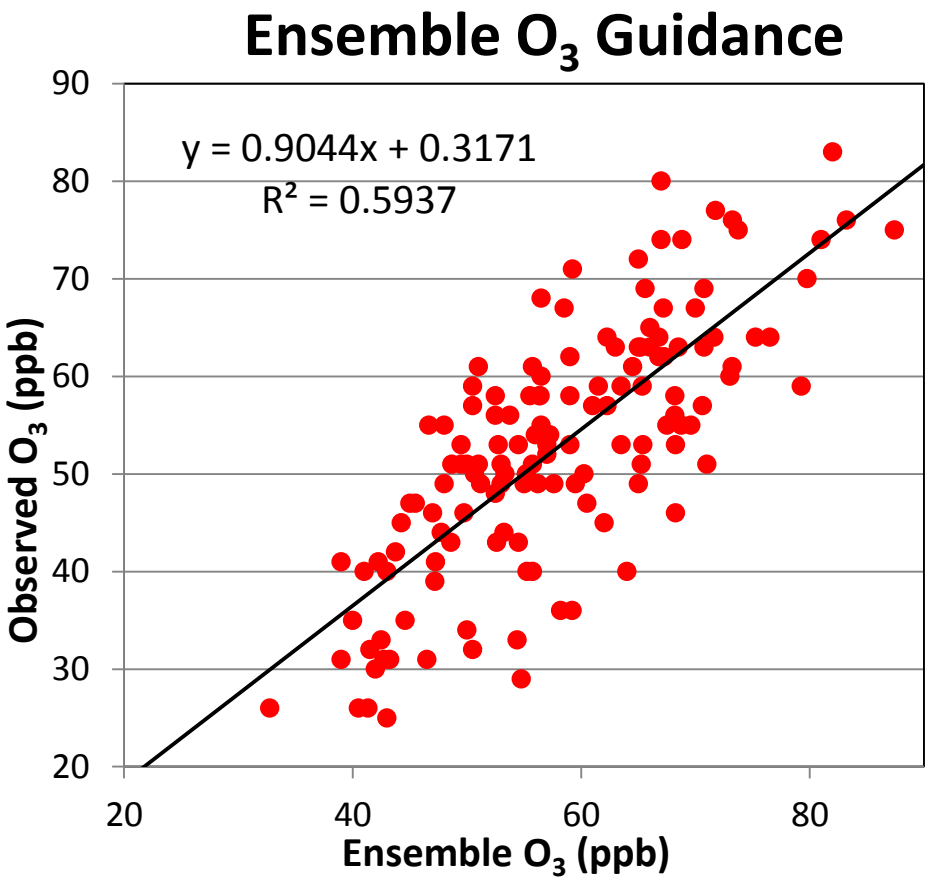


2013 AQ Model Ensemble Results

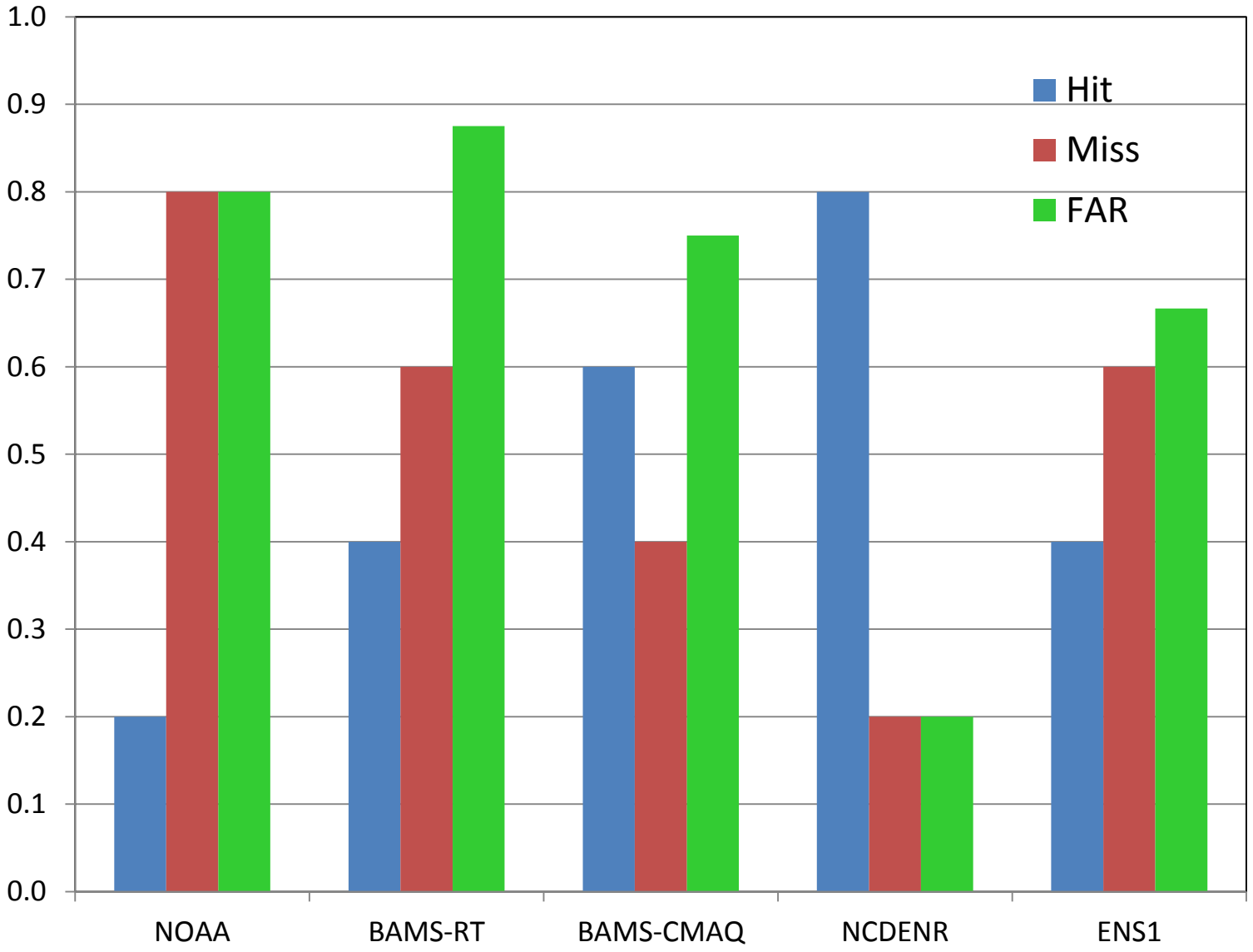


NAQFC and Ensemble Comparison



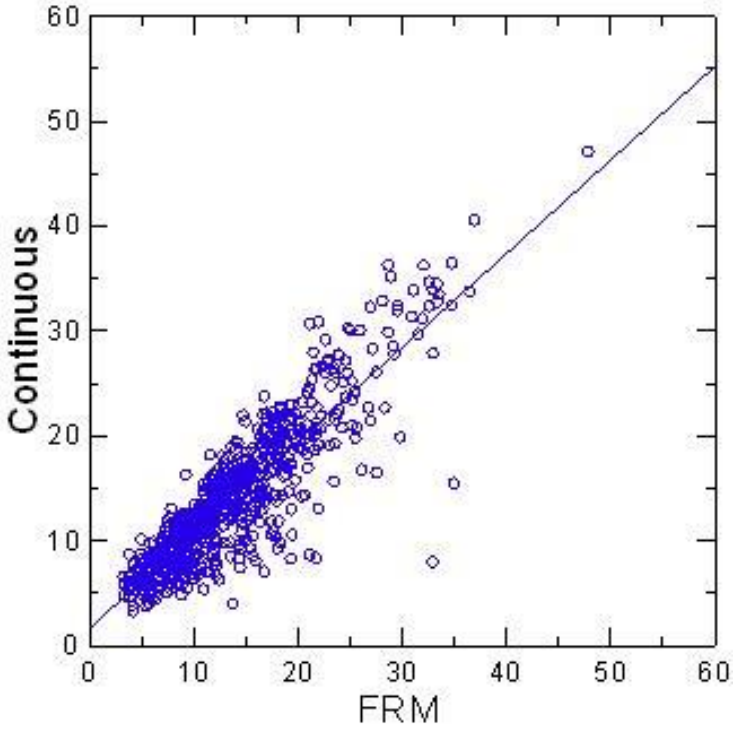


Standard Skill Score Measures

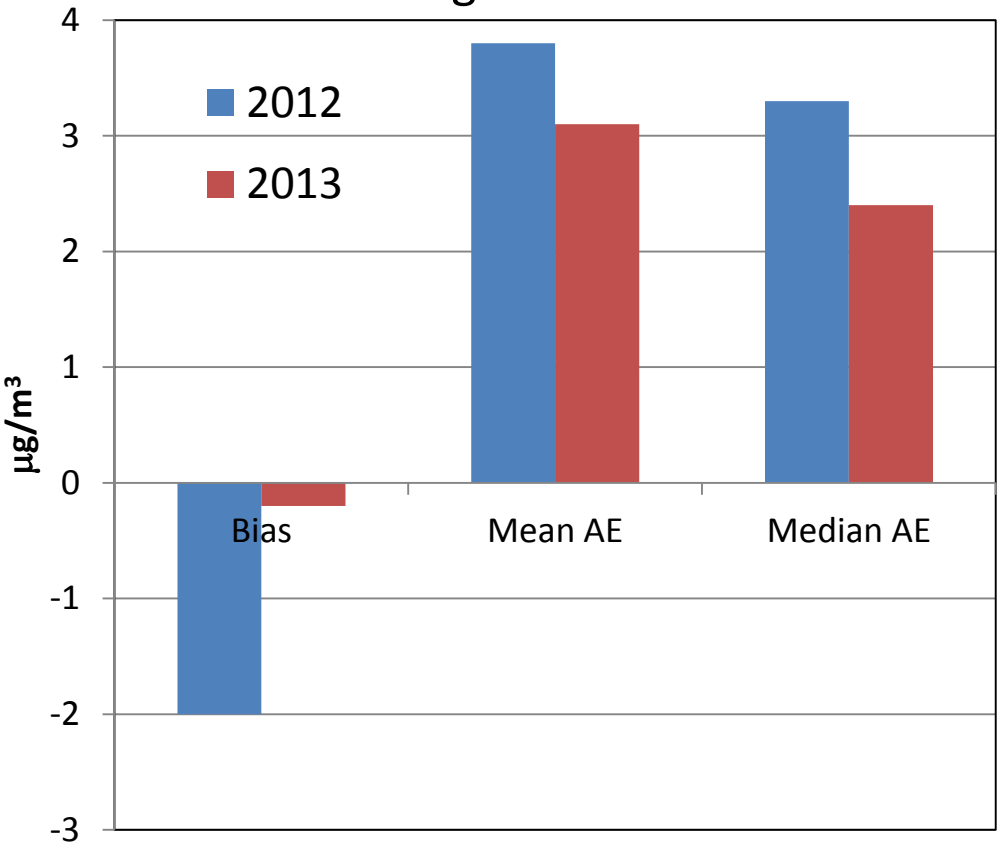


NAQFC $PM_{2.5}$ Model Performance

Continuous vs. FRM $PM_{2.5}$ Monitors during MJJA in PHL, 2008-2012



NOAA $PM_{2.5}$ Model Compared to Continuous Monitor Observations during MJJA in PHL



Conclusions

- The summer of 2013 was not conducive for O_3 formation
  - Plenty of hot days, but anomalous SE flow resulted in maritime tropical air mass transport
- All AQ models over-predicted peak O_3
  - Likely due to breakdown in relationship between temperature and O_3
- Use of AQ model ensemble increases forecast accuracy
- NAQFC $PM_{2.5}$ model performance increased in Summer 2013 compared to 2012

Acknowledgements

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