CCOS Improvement of Air Quality Model Aloft Performance: Findings Relevant to Meteorological Modeling

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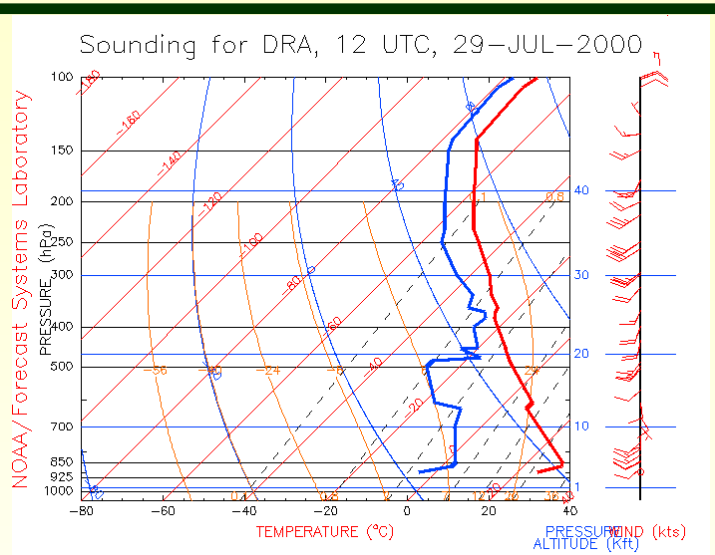
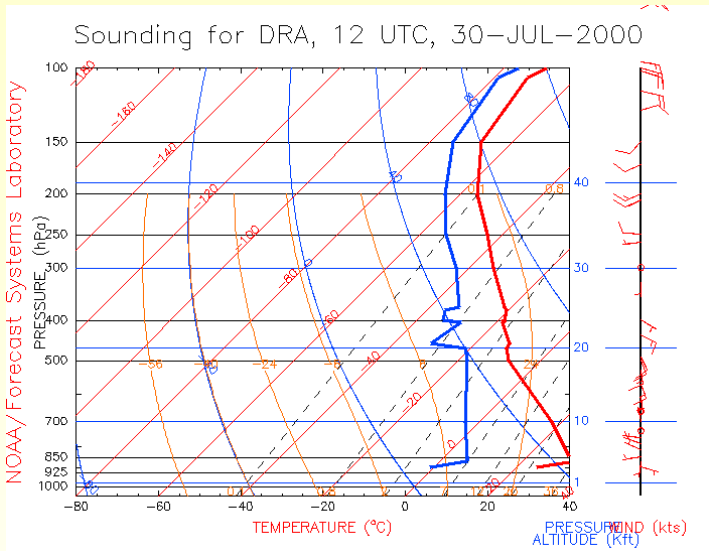
Presented to:
CCOS Technical Committee
Sacramento, CA
October 19, 2005

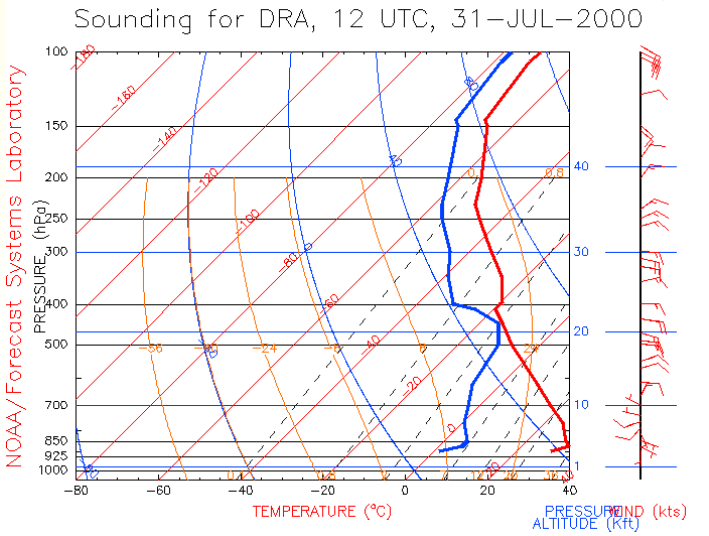
Overview

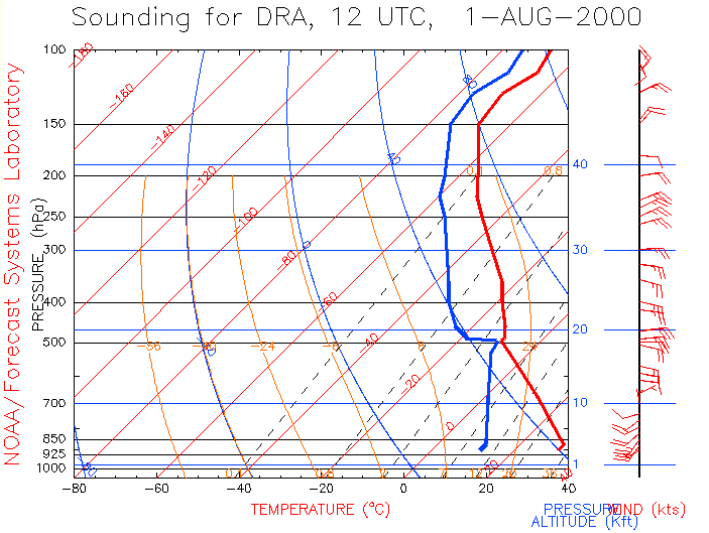
- Meteorological Conditions
- Air Quality Conditions Aloft
- CAMx Mass Fluxes
- Comparisons
- Meteorological Modeling Issues
- Recommendations

Meteorological Soundings (1 of 2)









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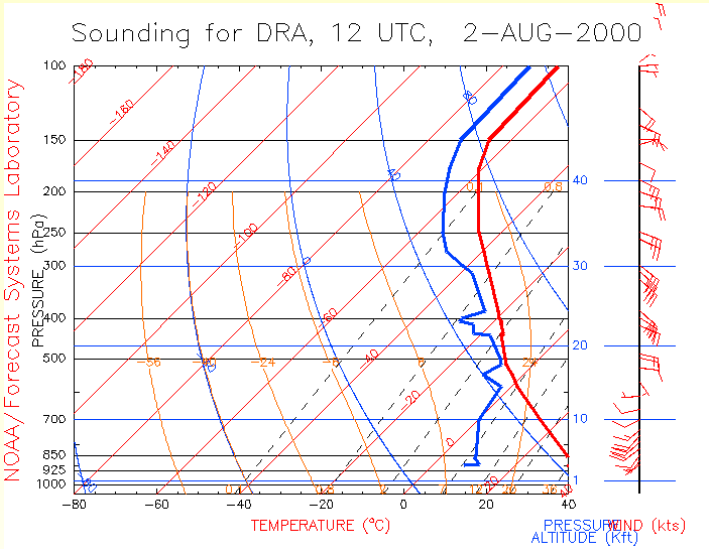
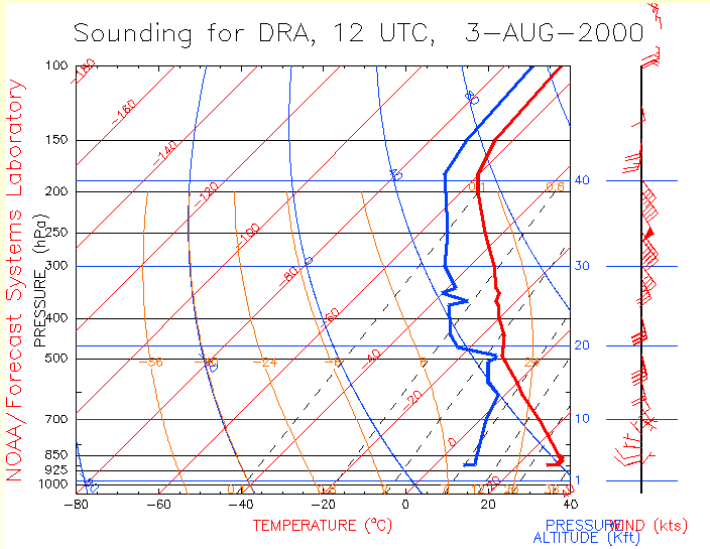
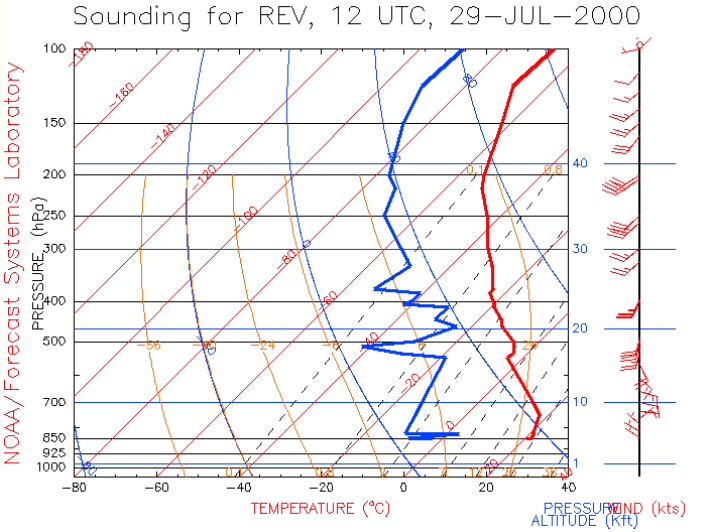
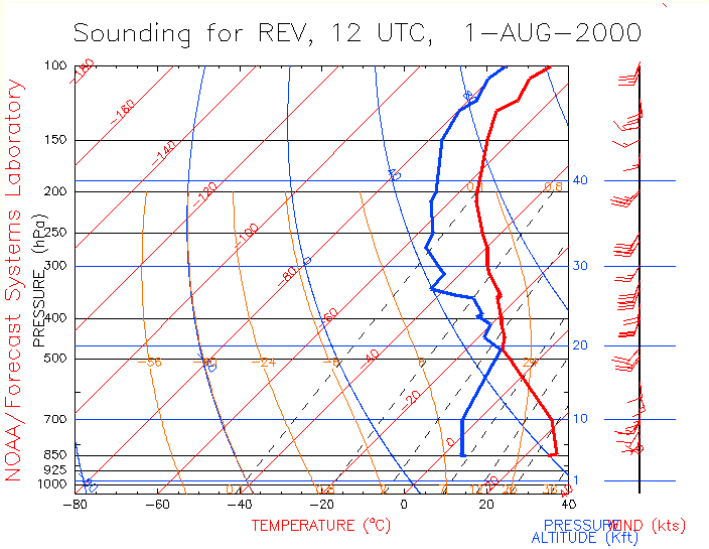
Meteorological Soundings (2 of 2)

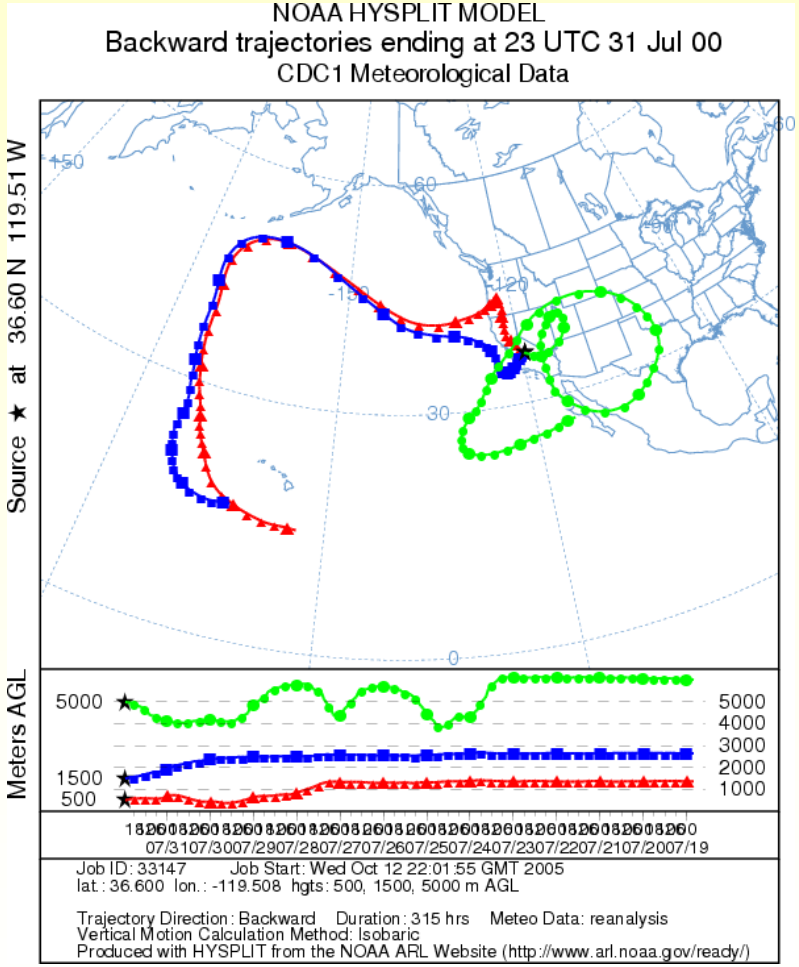


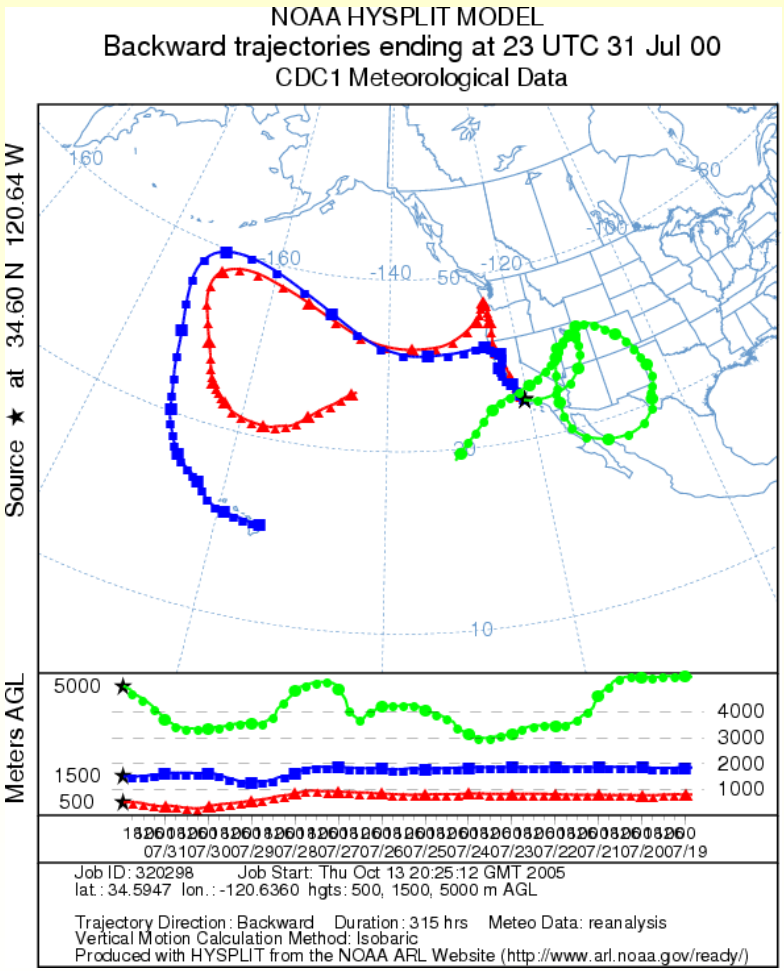






Trajectories





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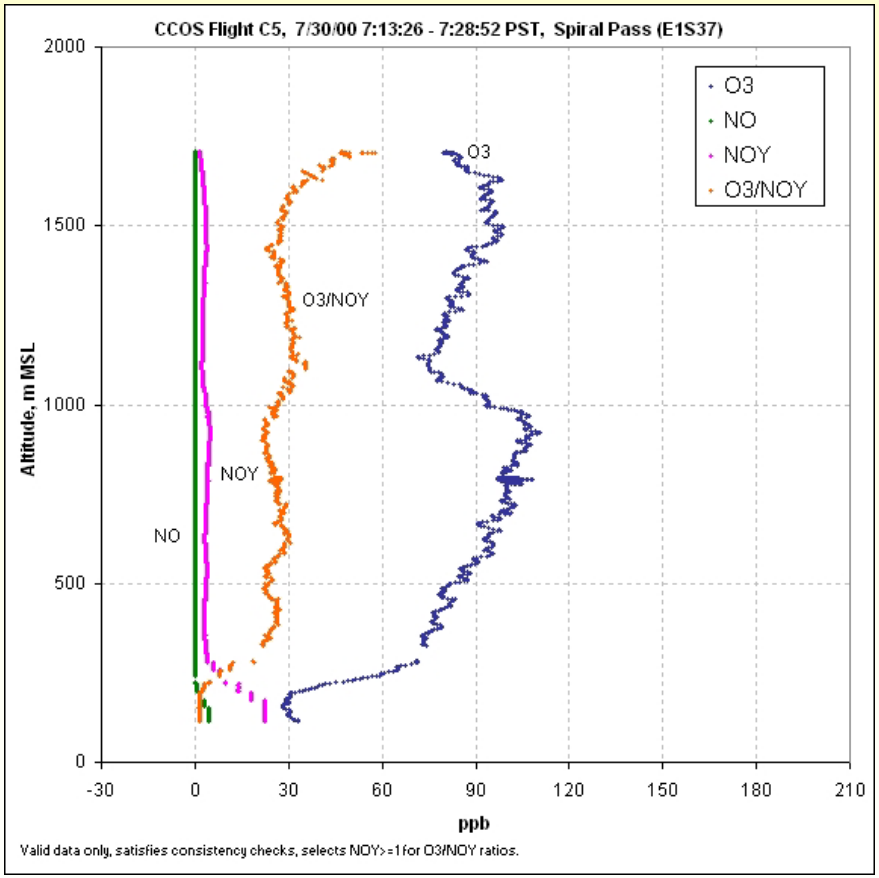
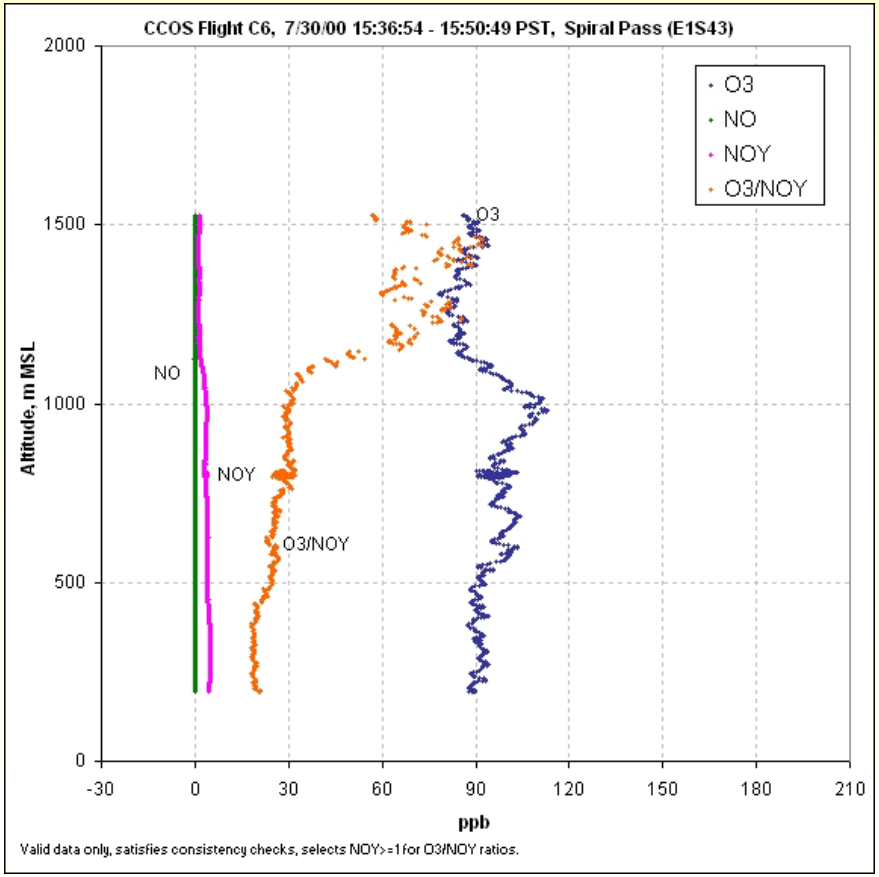
Structure of Air Quality Aloft

- Aircraft Spiral
- Ozonesondes
- Hydrocarbons

Aircraft Spirals



37.0N 120.1W



35.9N 19.5W

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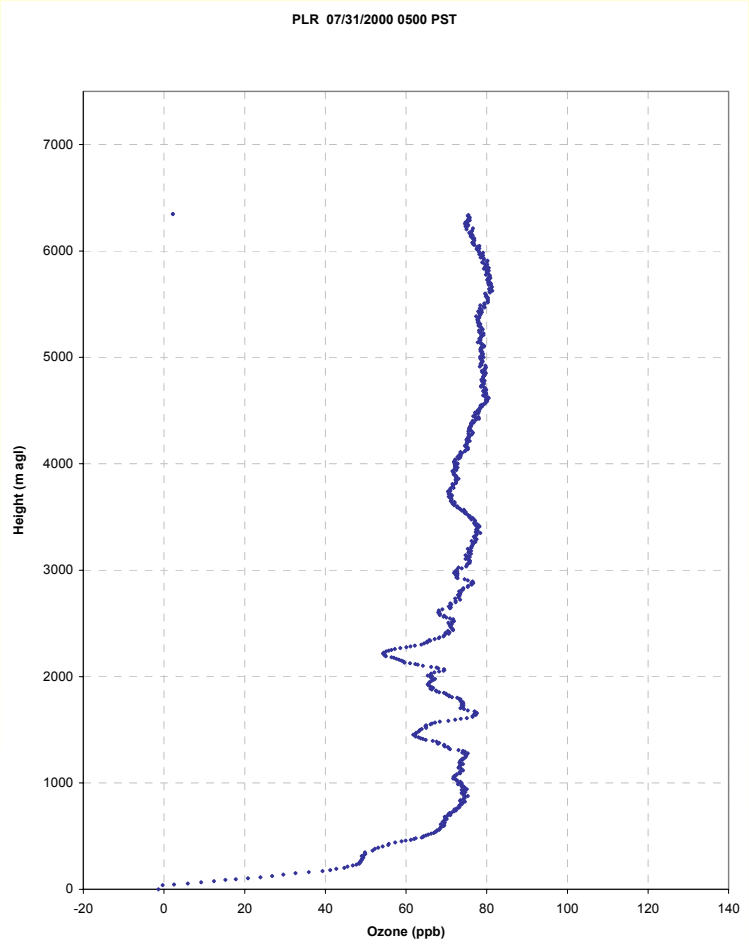
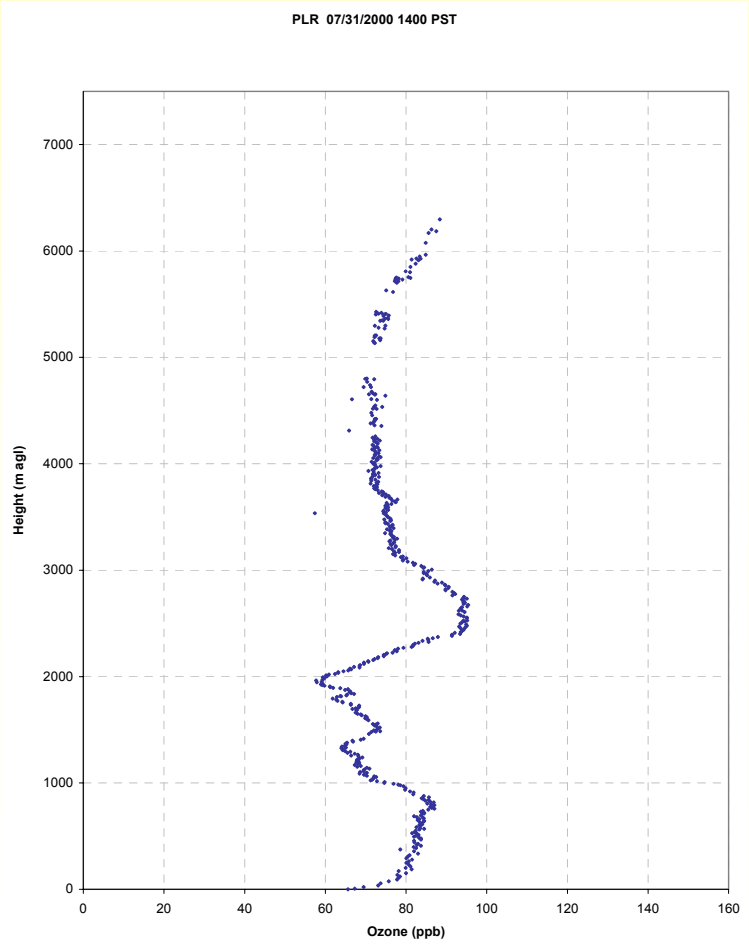
Ozonesondes (1 of 2)





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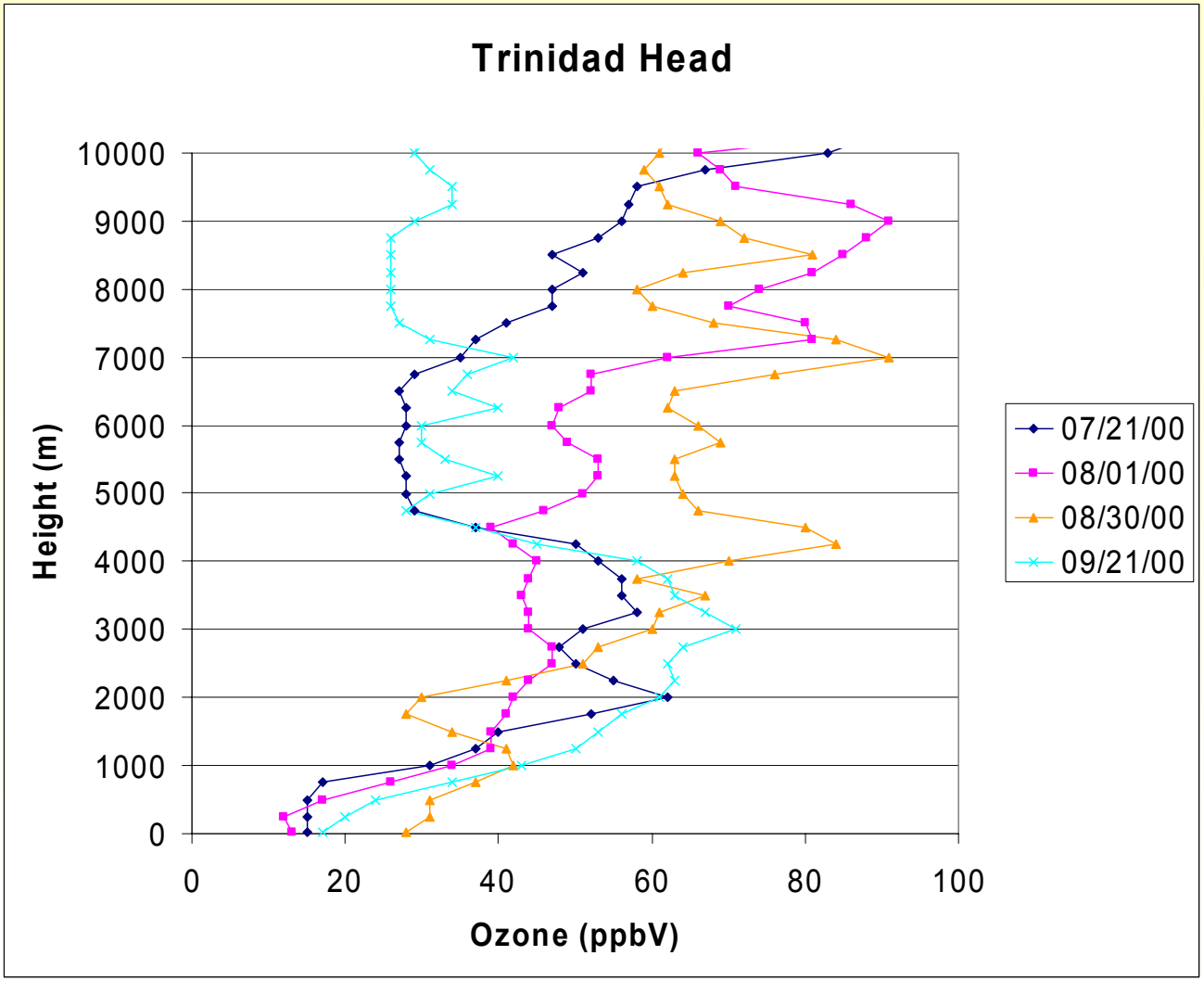
Ozonesondes (2 of 2)



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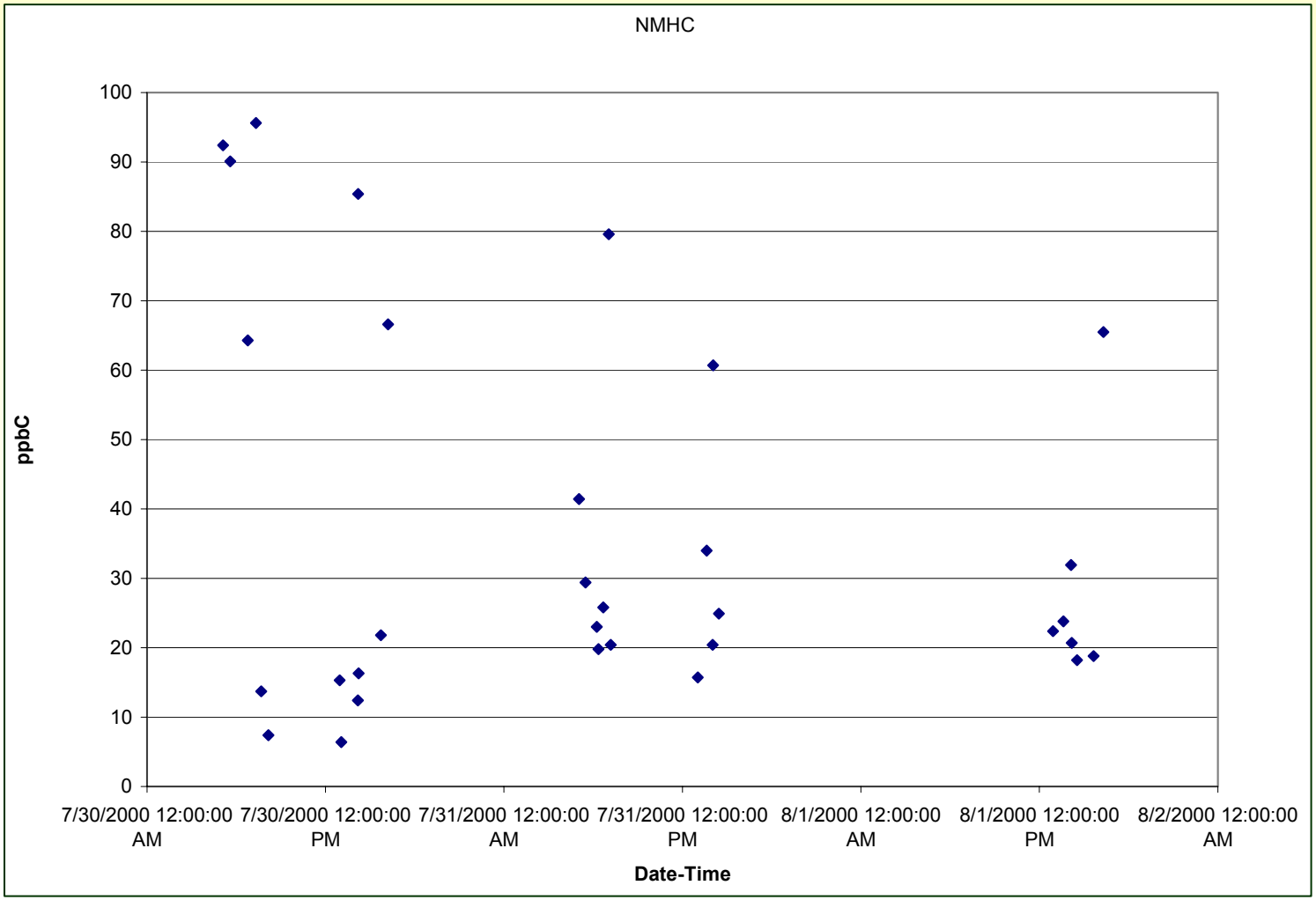
Hydrocarbons Aloft



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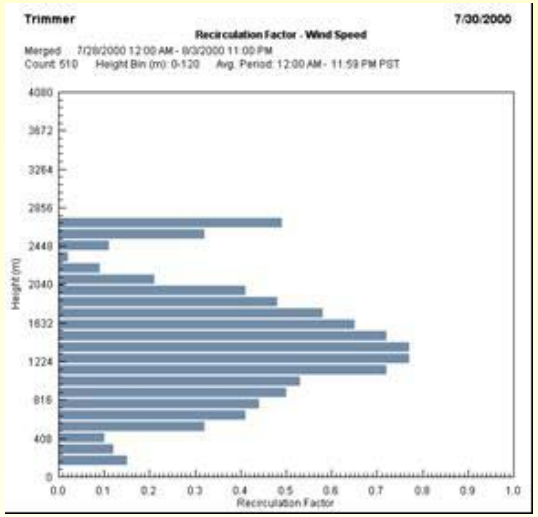
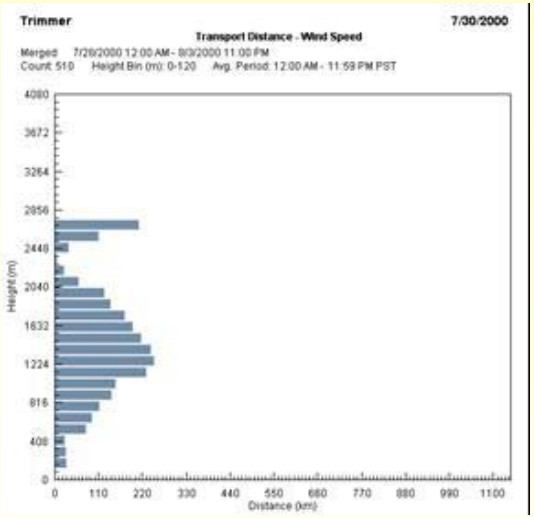
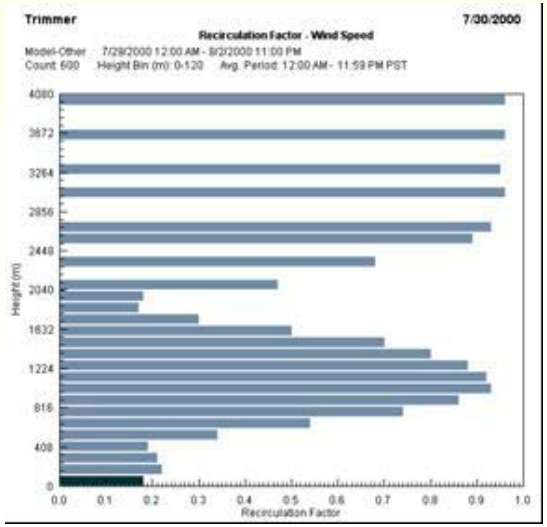
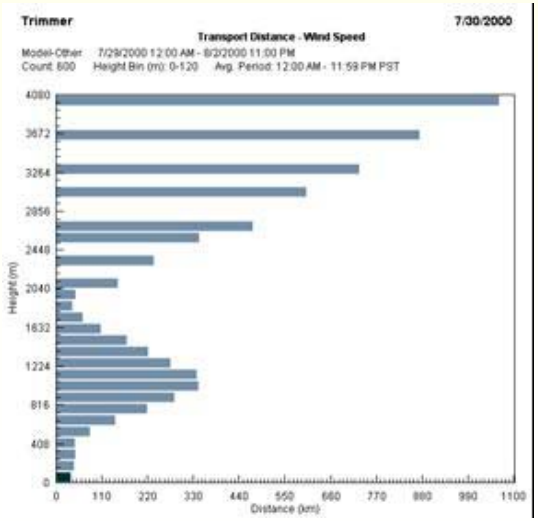
Transport Statistics





RWP





MM5

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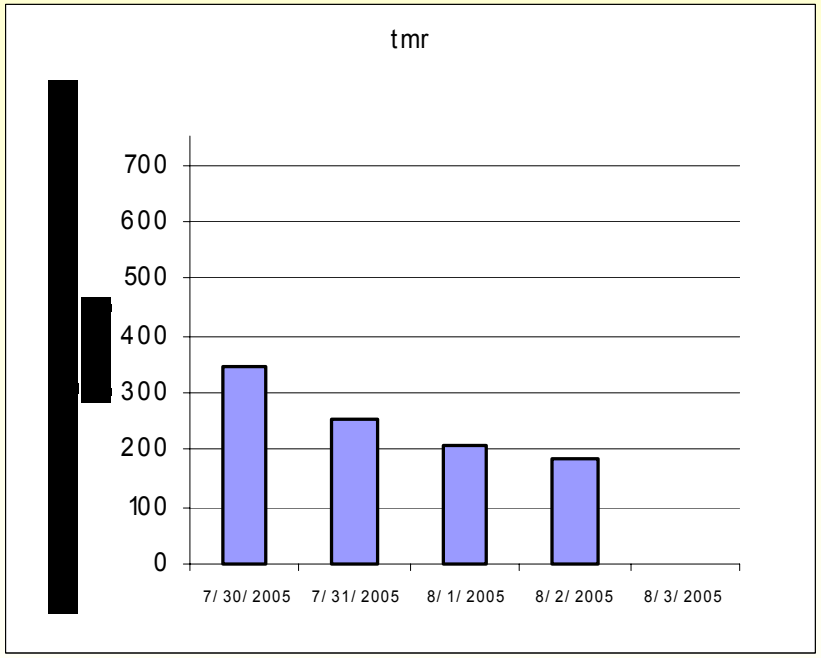
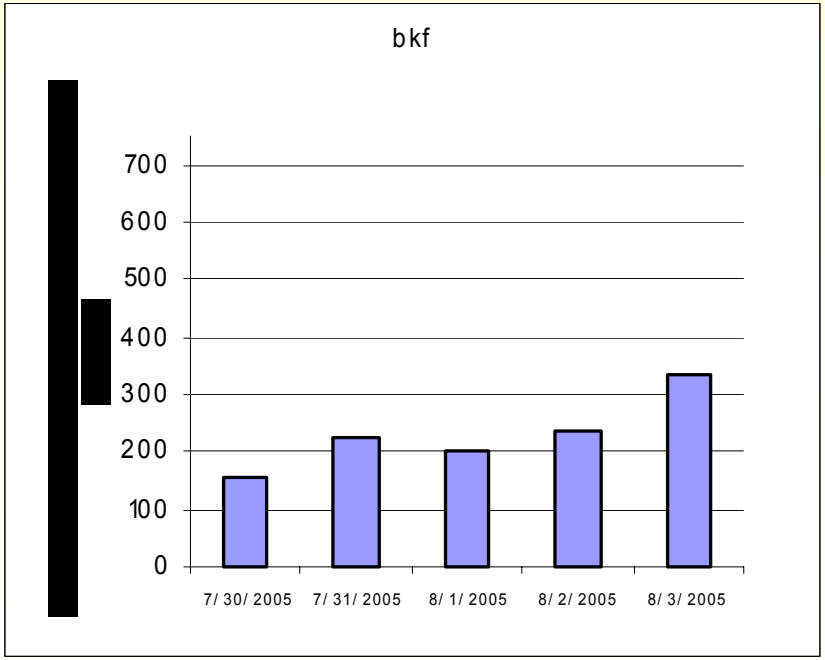
Mixing Depth Growth





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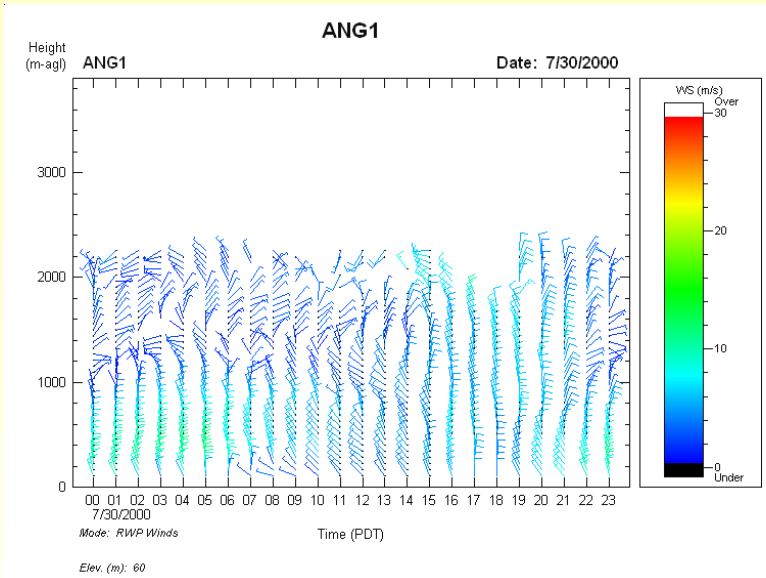
Vertical Wind Profiles

RWP



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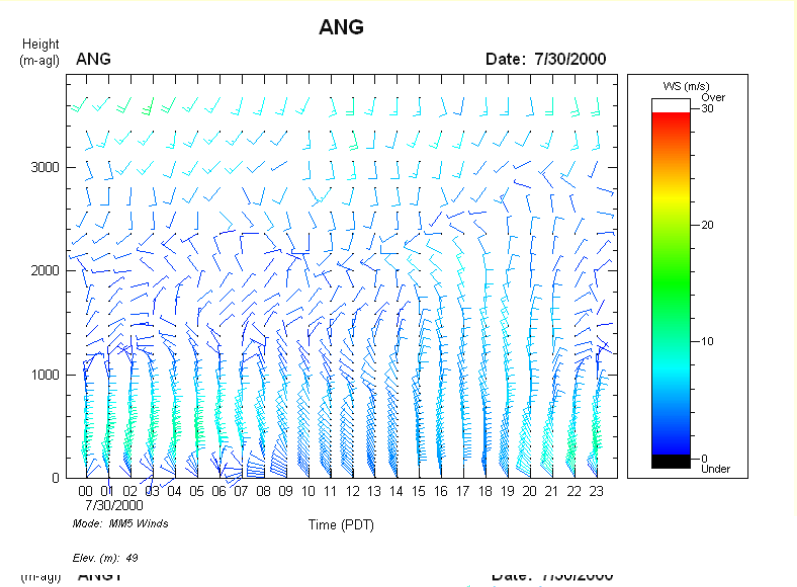
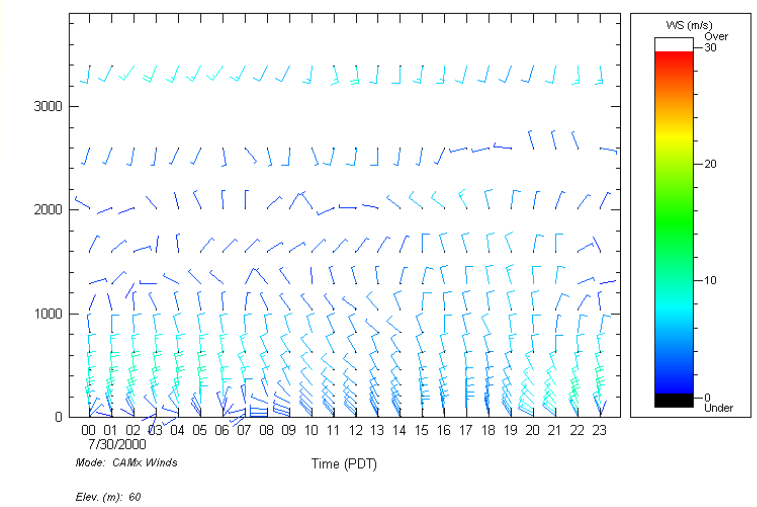


TC



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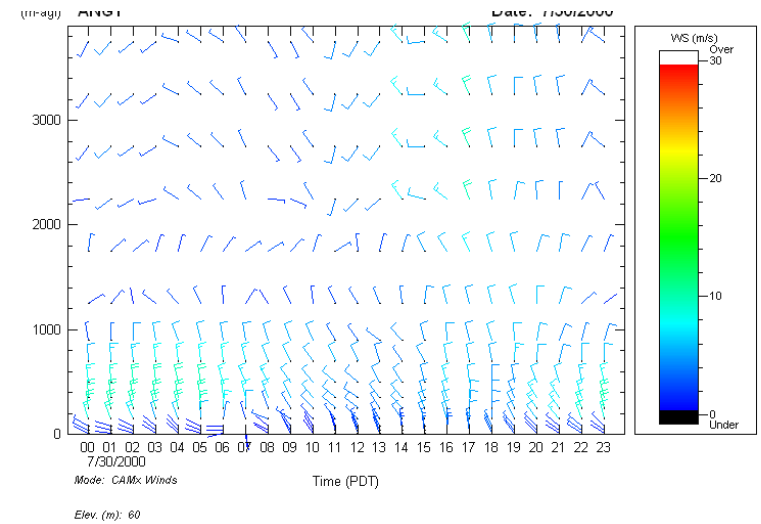

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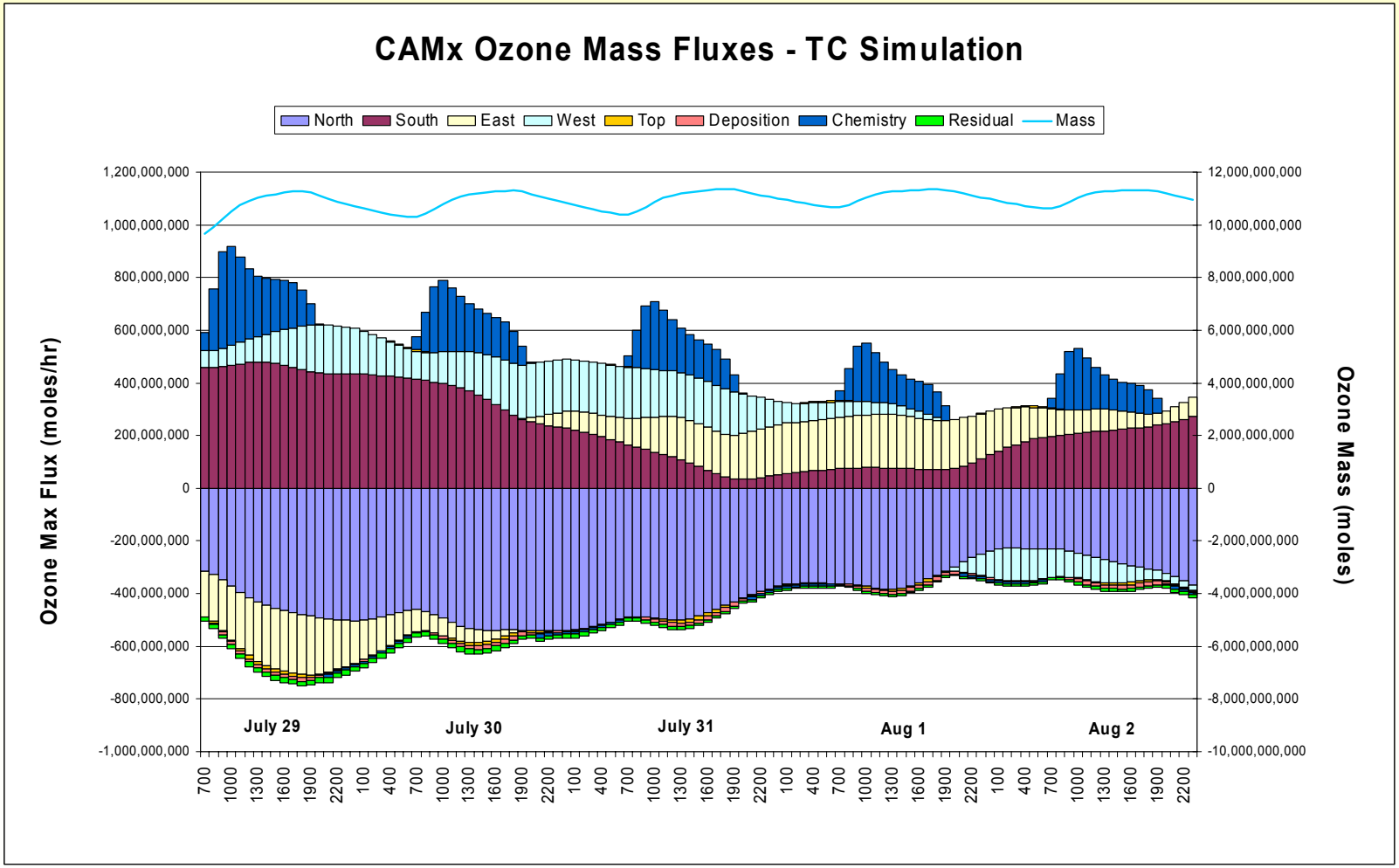
Mass Flux Analysis – TC MM5



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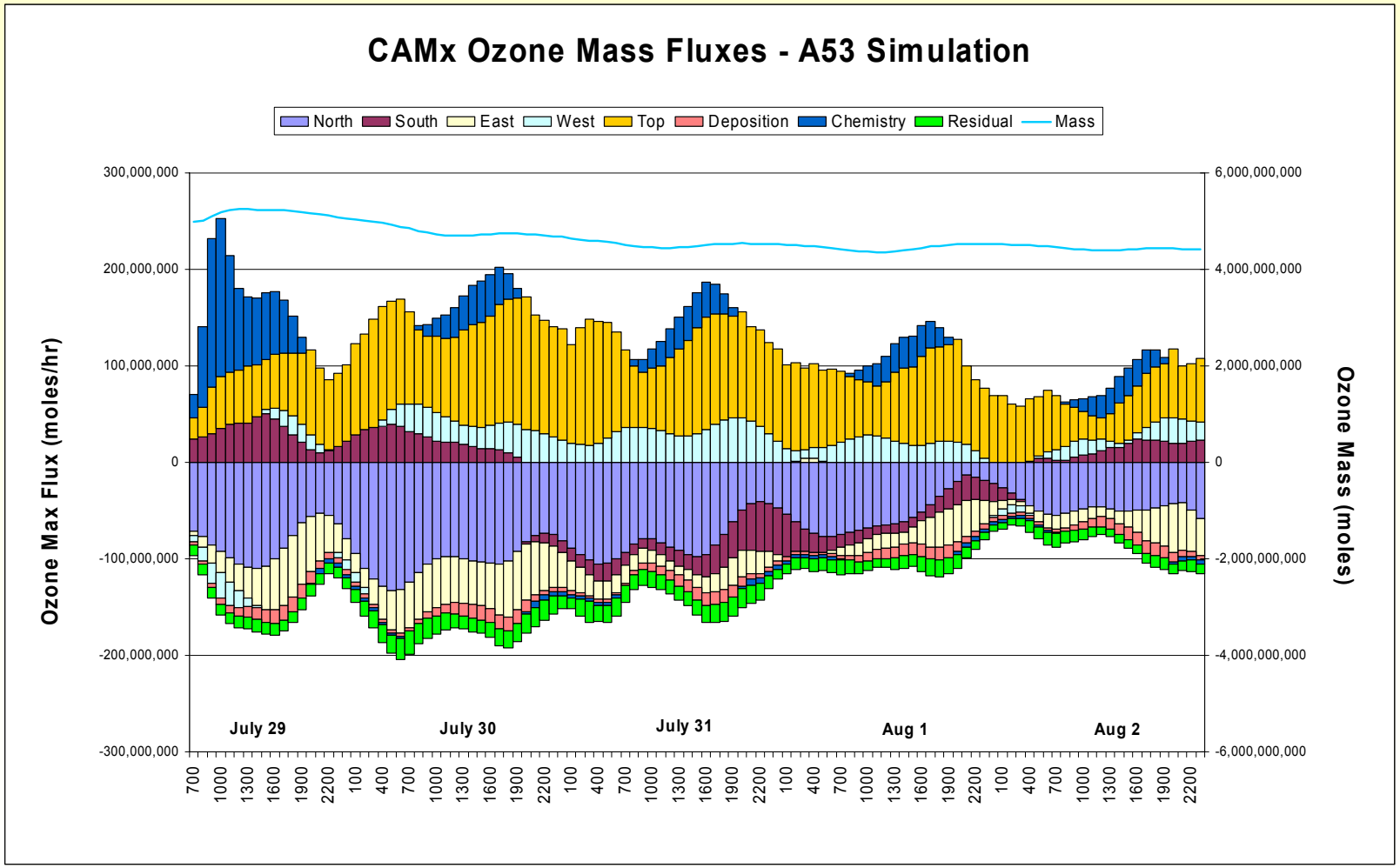
Mass Flux Analysis – Hybrid



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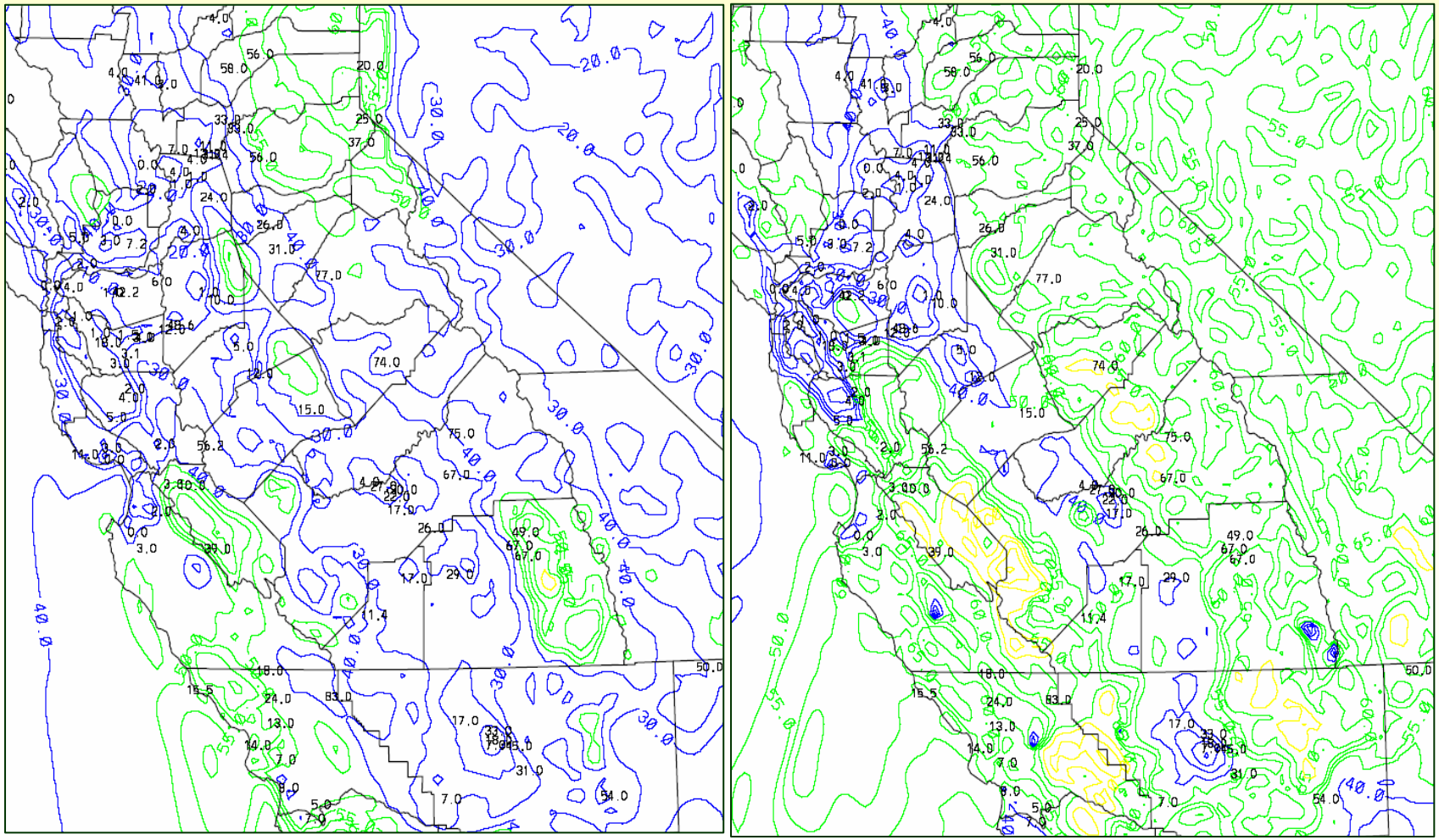
Morning Ozone Predictions



A53 TC

0700 PDT August 1

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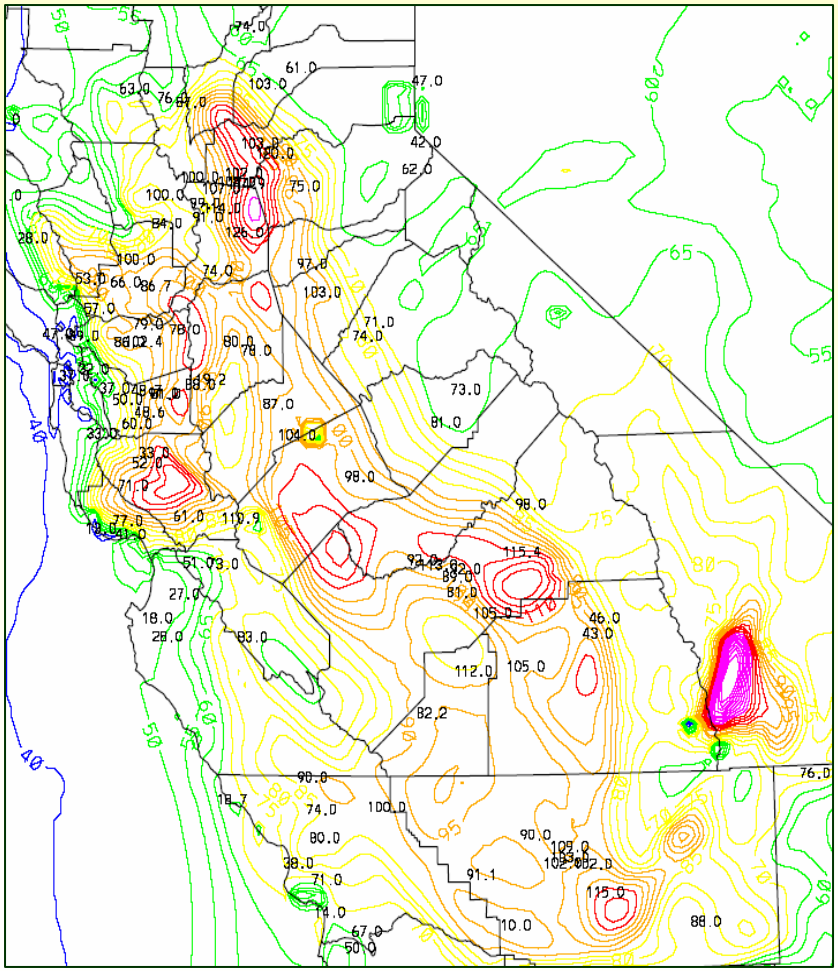
Afternoon Ozone Predictions



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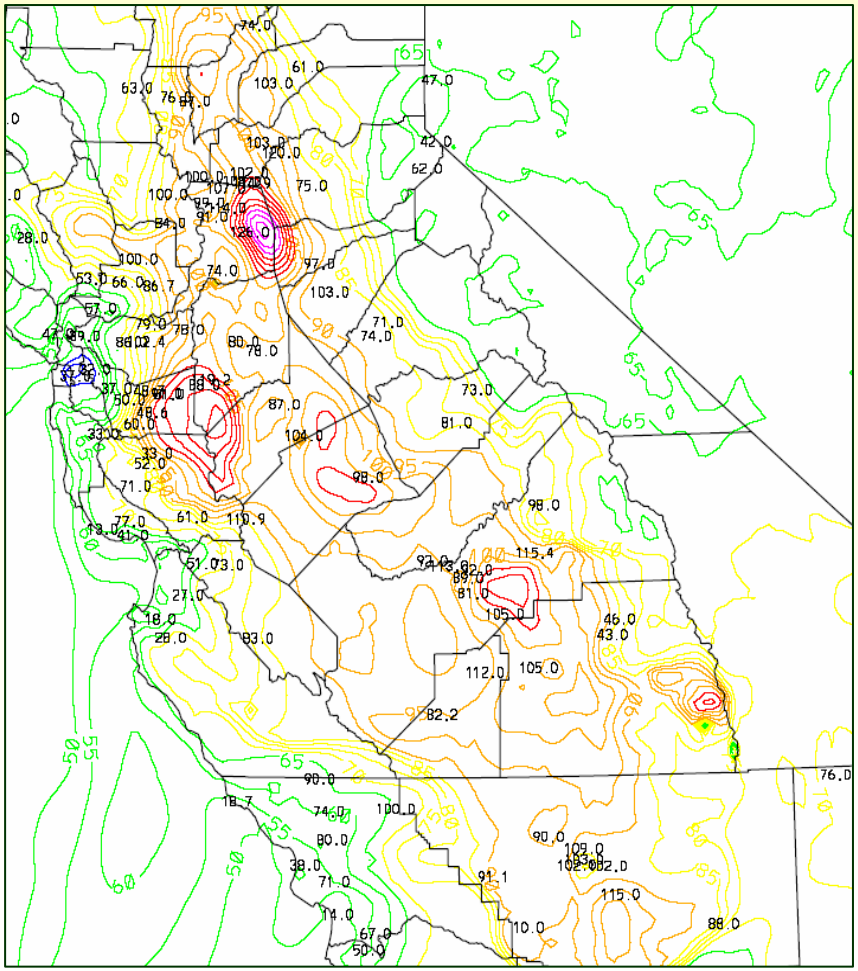

TC

1600 PDT August 1

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Meteorological Modeling Issues

- MM5
- CALMET-MM5 Hybrid
- Mapping to CAMx vertical structure
- Evaluation of winds above 2-km
- Mechanical mixing at night

Recommendations

- Catalog known defects in meteorological simulations
- Perform focused evaluations at specific sites affected by slope flows
- Careful review of MM5-Radiosonde comparisons
- Extend range of matched MM5-CAMx layers
- Explore new options for K_v diagnosis

Questions?