

BAY AREA MODELING

Status of District's Modeling Work

Modeling Advisory Committee Meeting

December 4, 2003

Status of District's Work

- Performing QA/QC for CCOS data
- Analyzing CCOS data to better understand ozone formation
- Examining the causes of underestimation of predicted ozone
- Conducting investigative simulations
- Collaborating with modeling working groups

Status of District's Work (cont.)

- Update on Working Group Discussions
 - Meteorology
 - Emissions
- Surface and Upper-Air Meteorological Comparisons

Working Group Participants

- Districts
 - Monterey Bay Area
 - Sacramento
 - San Francisco Bay Area
 - San Joaquin Valley
- MTC
- CARB
- Environ
- SJSU
- Alpine Geophysics
- NOAA
- DRI
- UCB
- Earth Matters
- Others

Meteorological Working Group

- Identify problems
- Devise a plan to address problems
- Divide the work of investigative modeling
- All groups to use common data and evaluation methods

Met. Working Group (cont.)

Items to be jointly investigated with MM5:

- Analysis FDDA
- Observational FDDA
- Surface parameters
 - Soil moisture availability/vegetative cover
 - Deep soil temperature
 - Surface roughness
 - Soil heat capacity
 - Surface albedo

Met. Working Group (cont.)

- Terrain-barrier treatment
- Horizontal grid resolution
- Marine stratus
- Grid alignment (more closely align the meteorological, emissions, and air-quality grids)

Met. Working Group (cont.)

Evaluation methods:

- Apply common statistical measures
- Evaluate in three dimensions
- Report PBL height
- Report key meso-scale features
- Examine CAMx input, not just MM5 output

Emissions Working Group

Potential Uncertainties in On-Road Mobile:

- Heavy-Duty NO_x:
 - Growth and Emission Factors
 - Seasonal, Weekly, Diurnal Profiles
 - On-road/Off-road Activity Split
- Light-Duty:
 - Emissions Factors
 - Activity
- Representation of Temperature
- Speed/VMT mismatch, at least in Bay Area

Emissions Working Group (cont.)

Action Items:

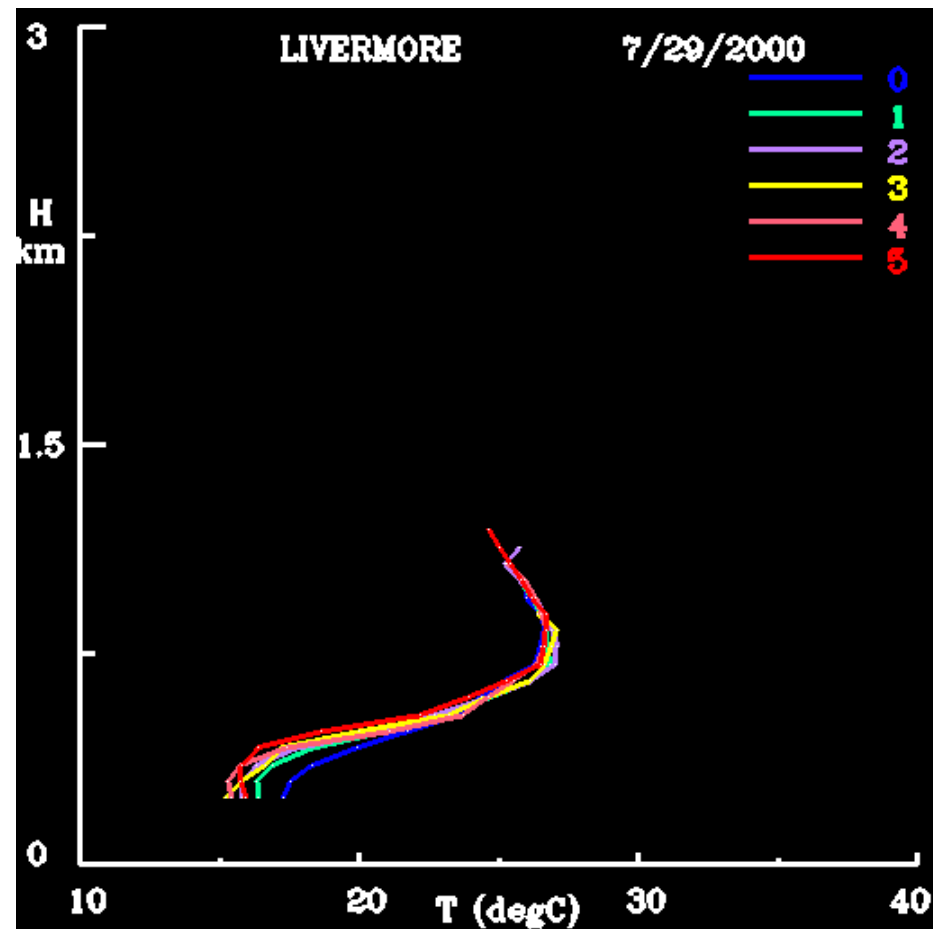
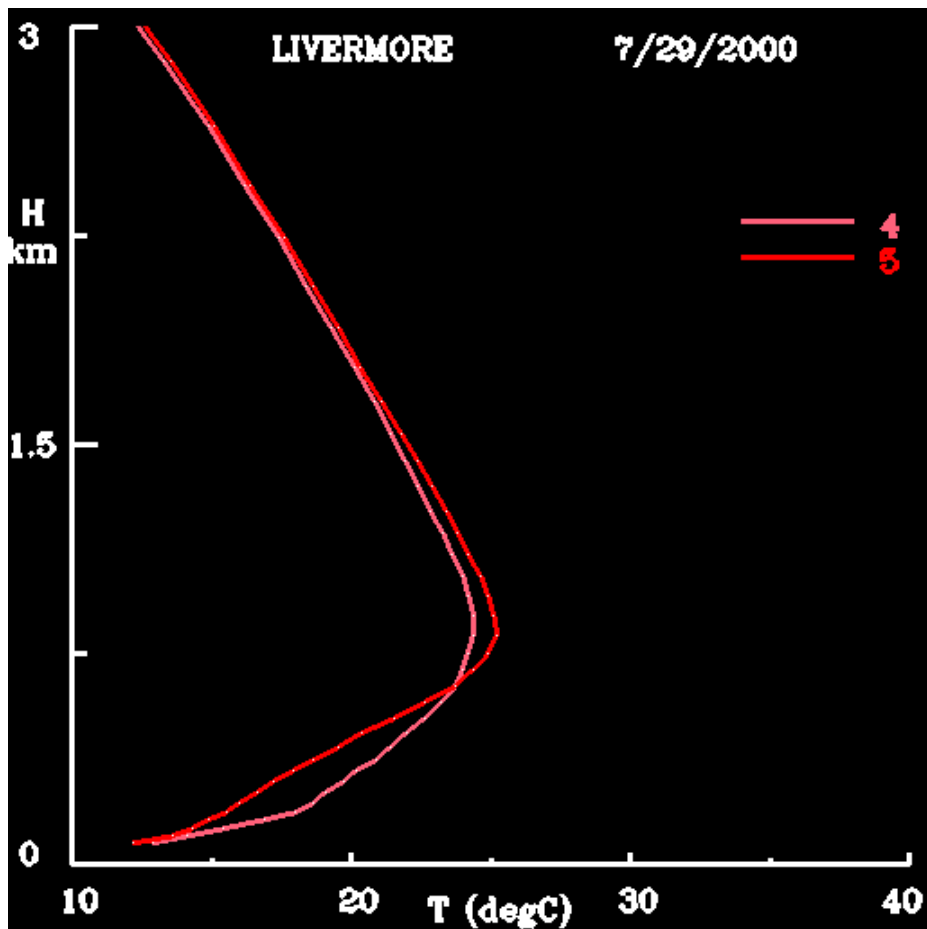
- Improve documentation of all emission inventory processing
- Generate separate emission files for on-road heavy-duty diesel emissions
- Short-term fix: apply emissions scaling

MM5 Performance Evaluation

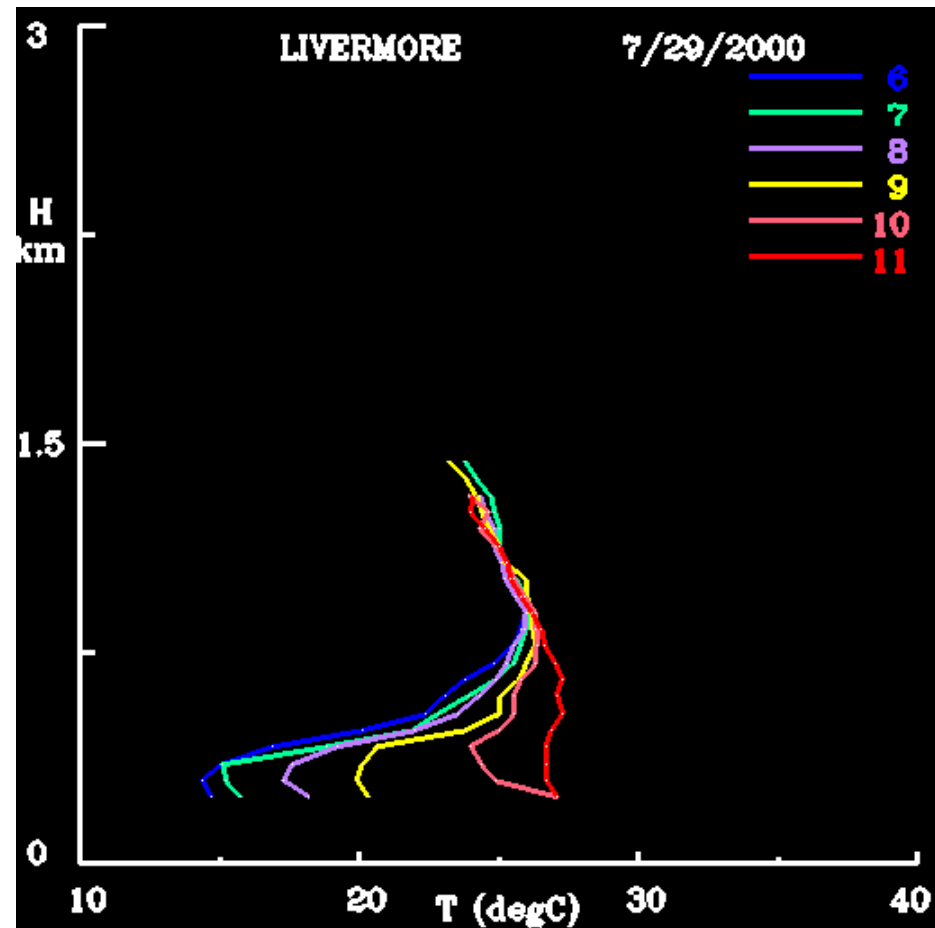
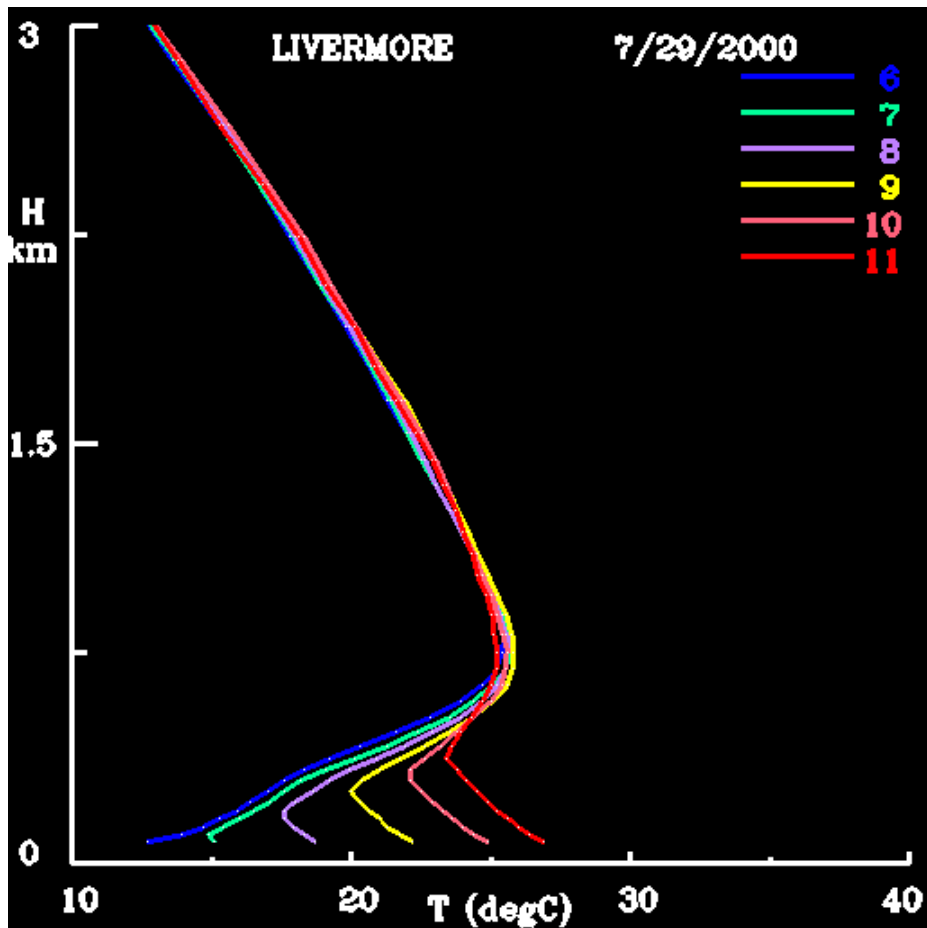
Surface and Upper-air
Meteorological Comparisons:
MM5 versus observations

[URL://gate1.baaqmd.gov/ccaqs](http://gate1.baaqmd.gov/ccaqs)

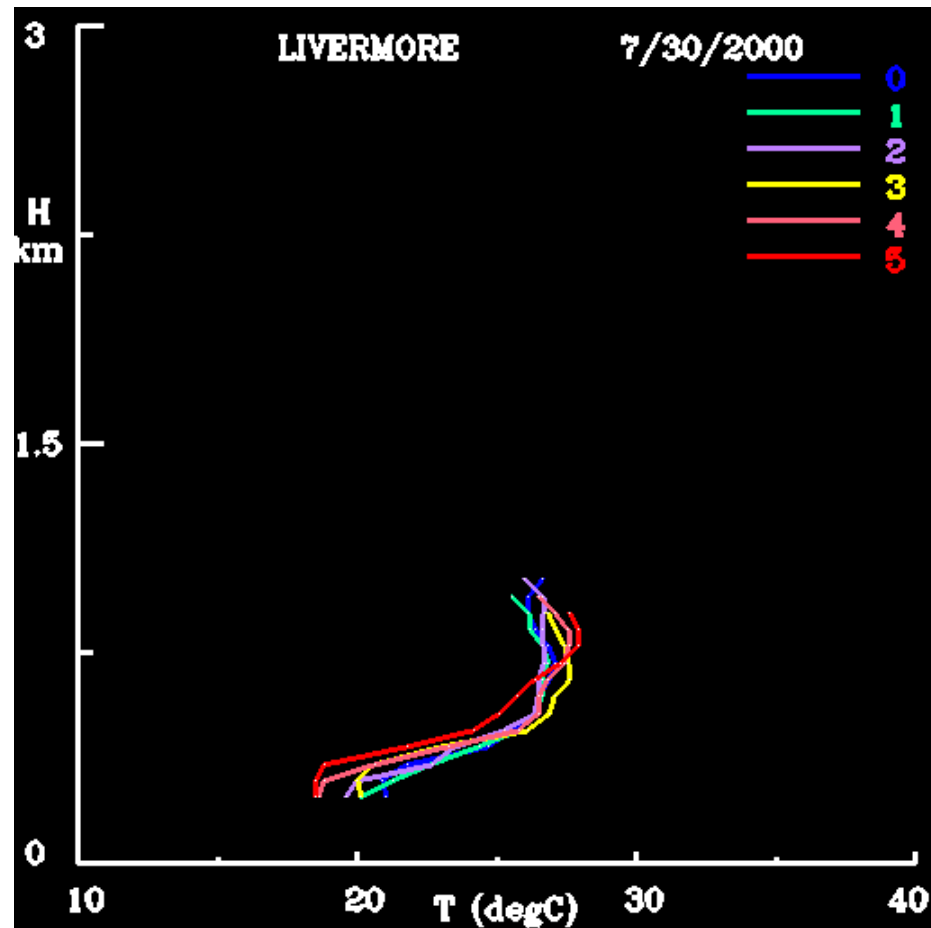
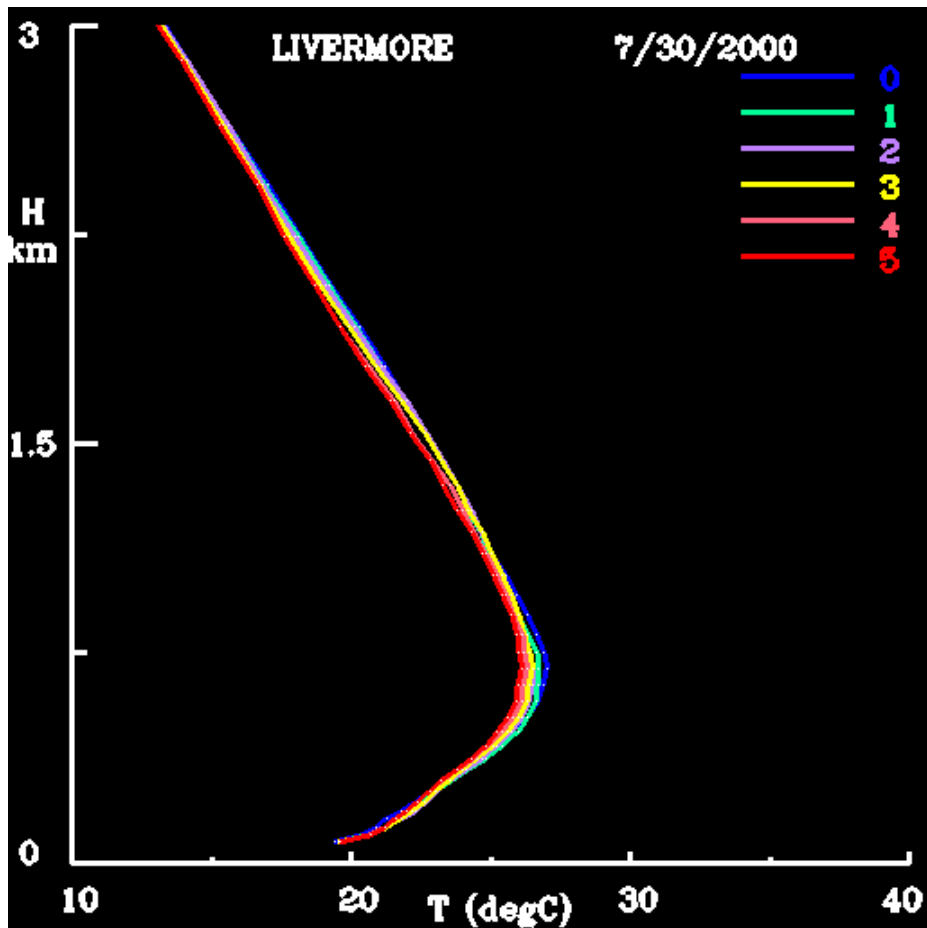
Livermore July 29, 00-05 PST



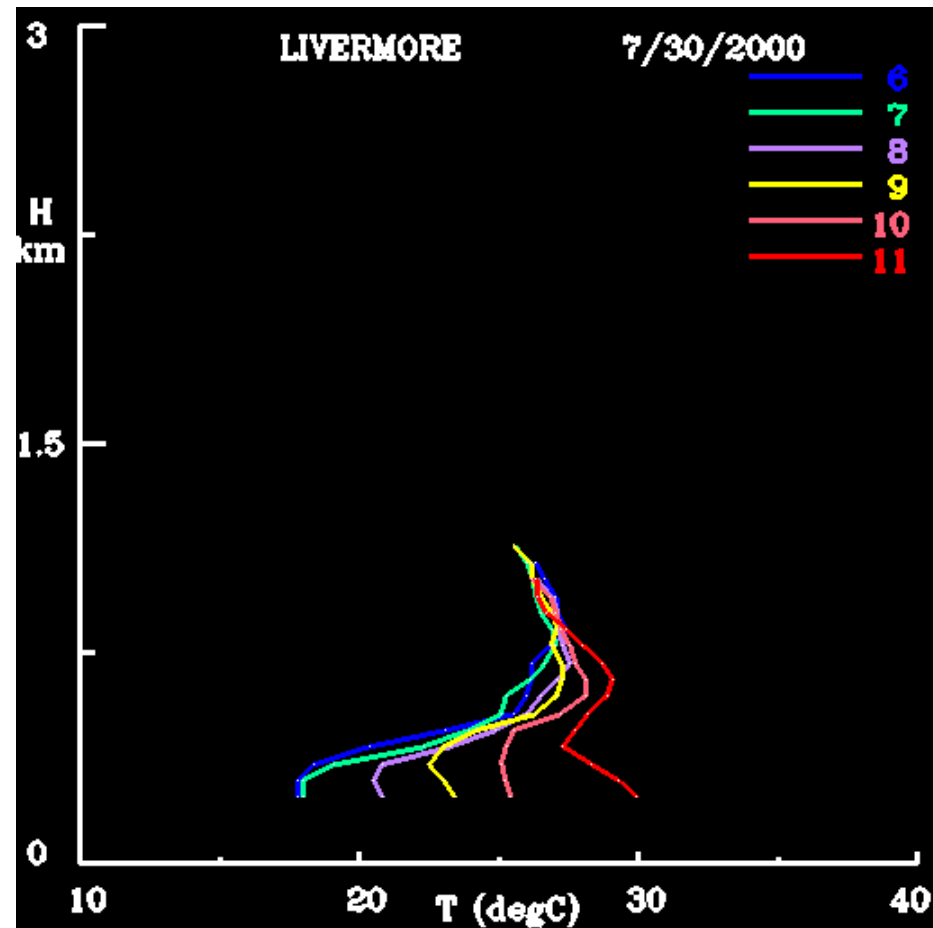
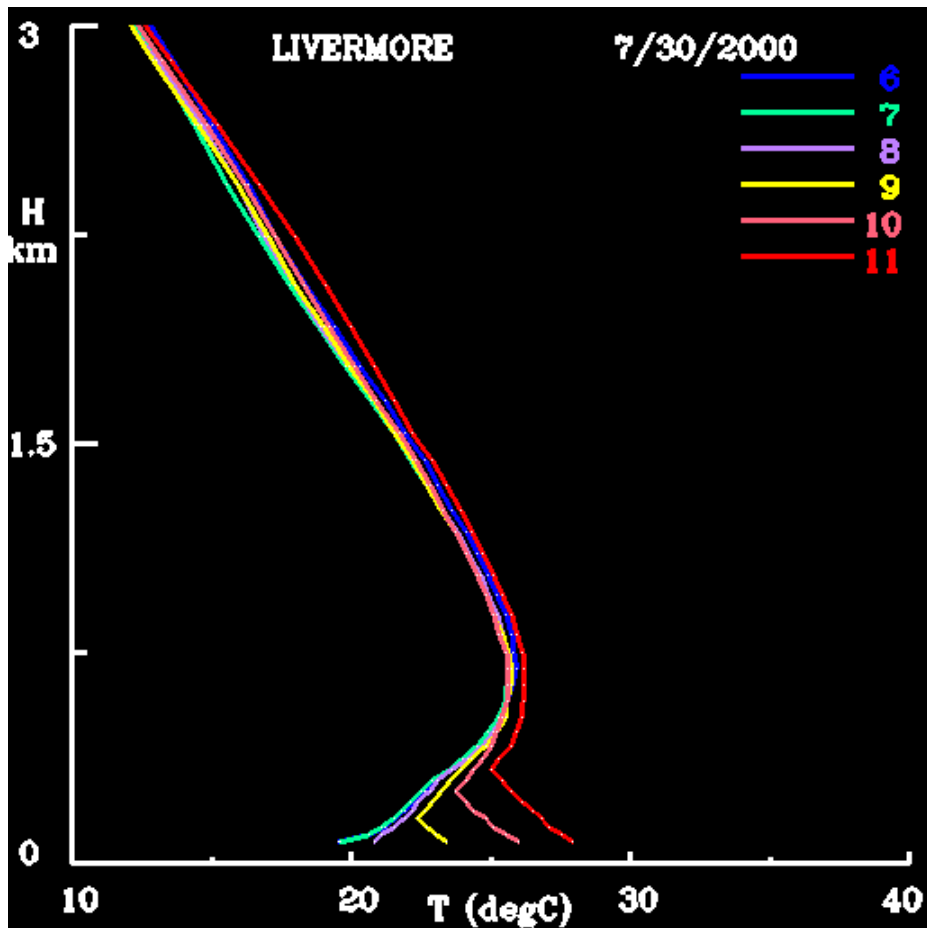
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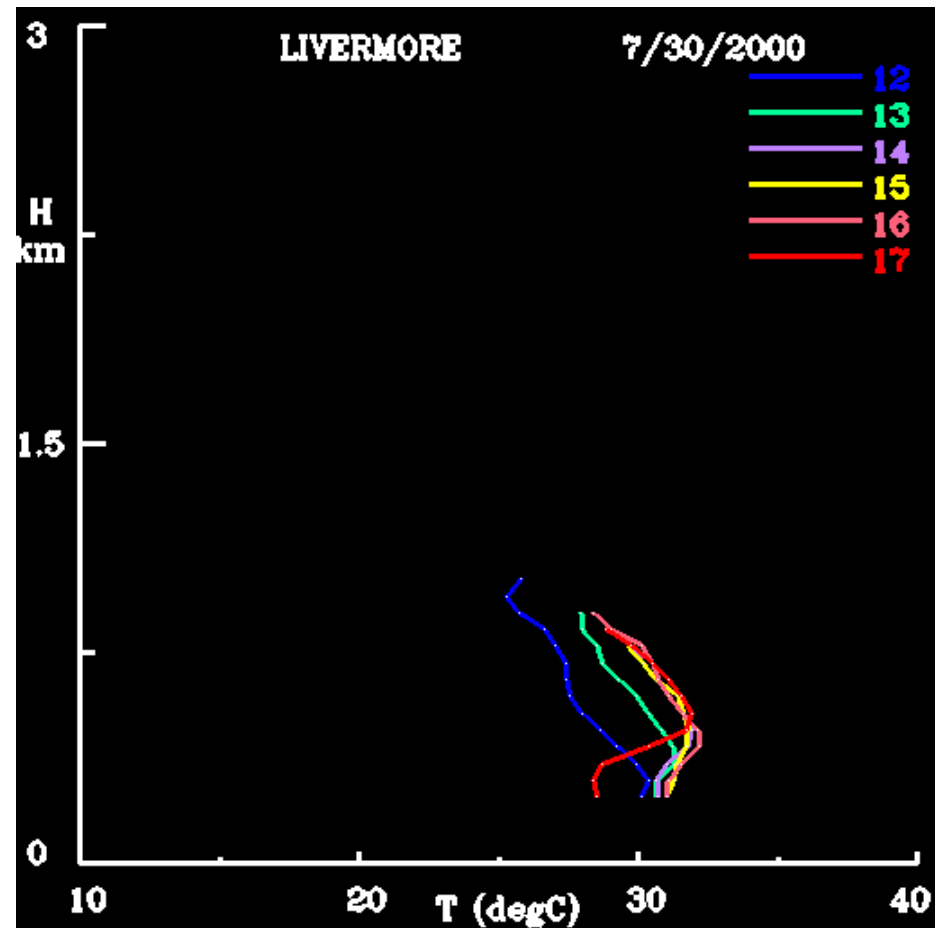
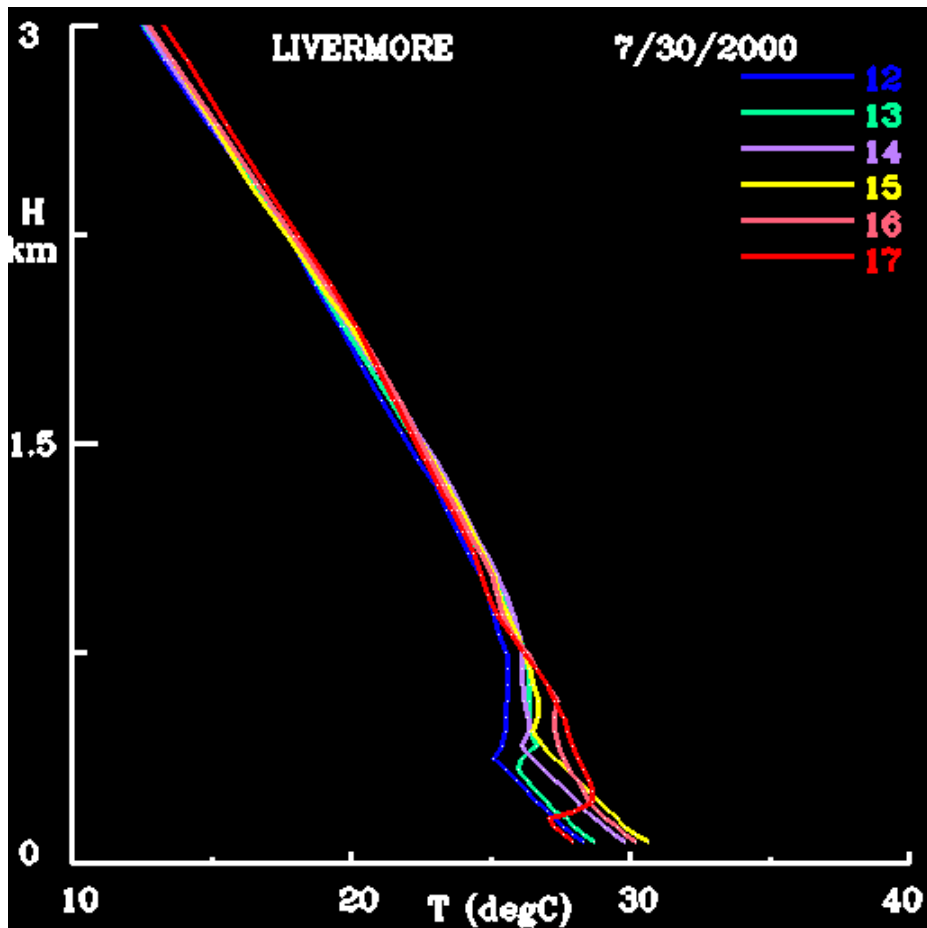
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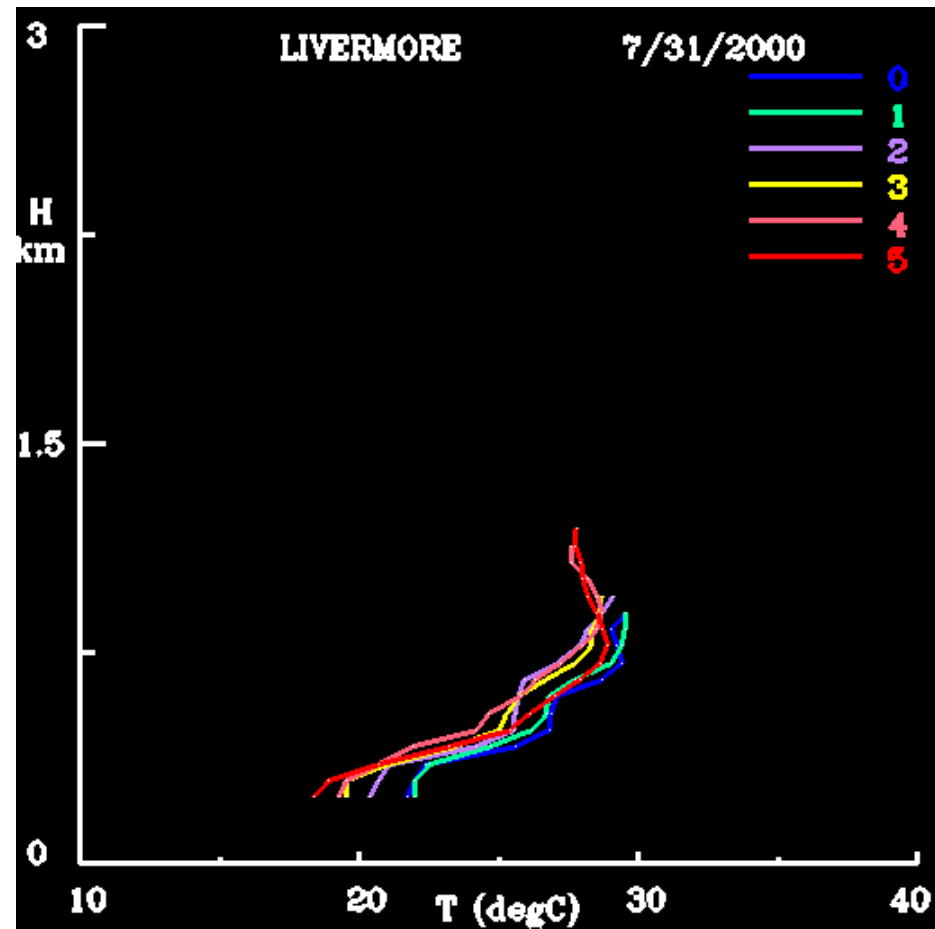
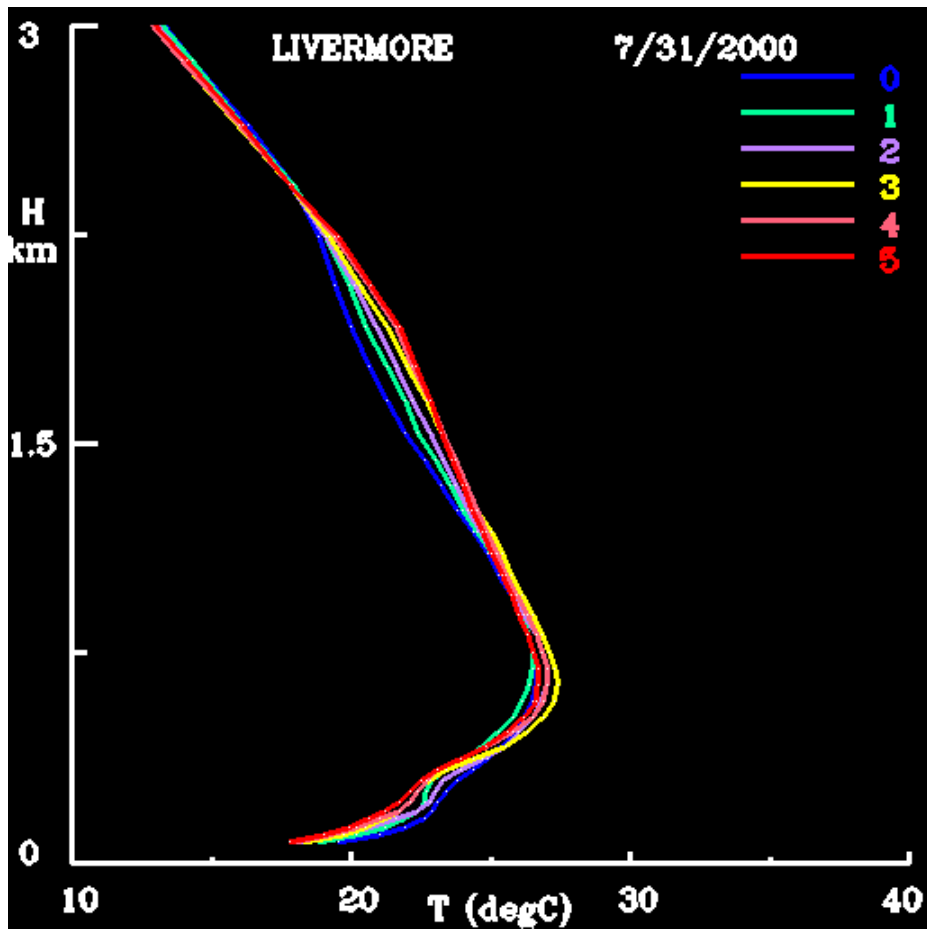
Livermore July 30, 06-11 PST



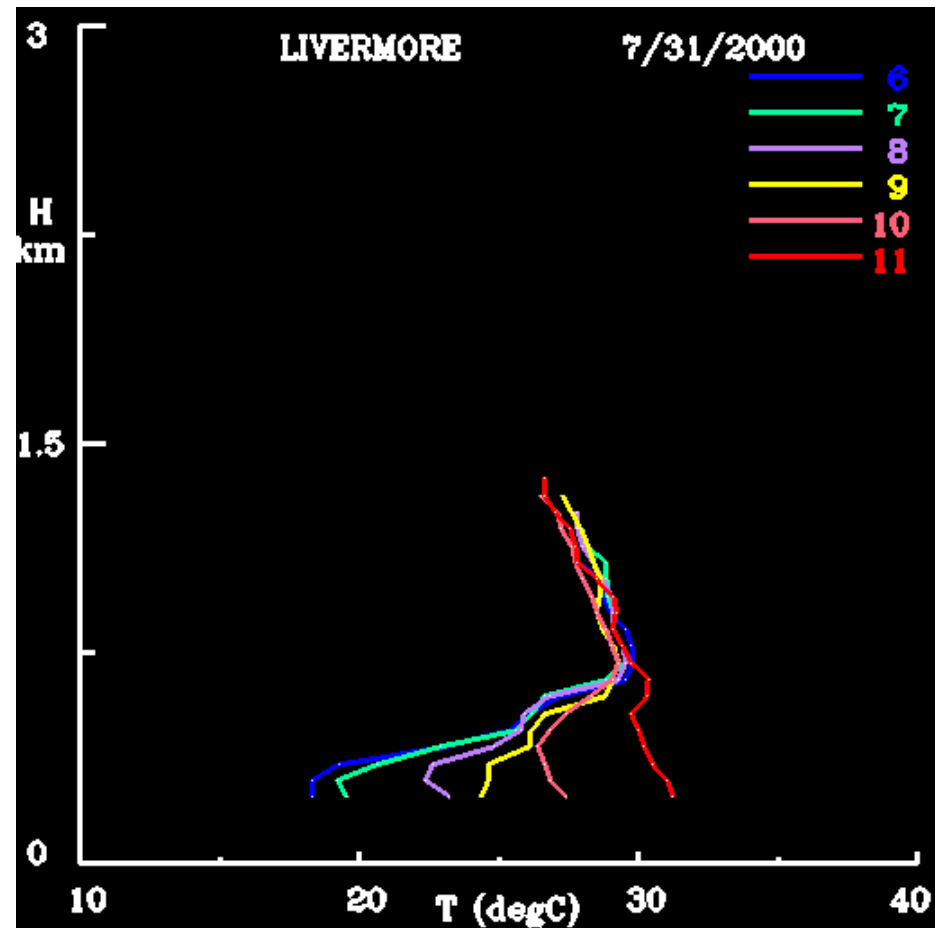
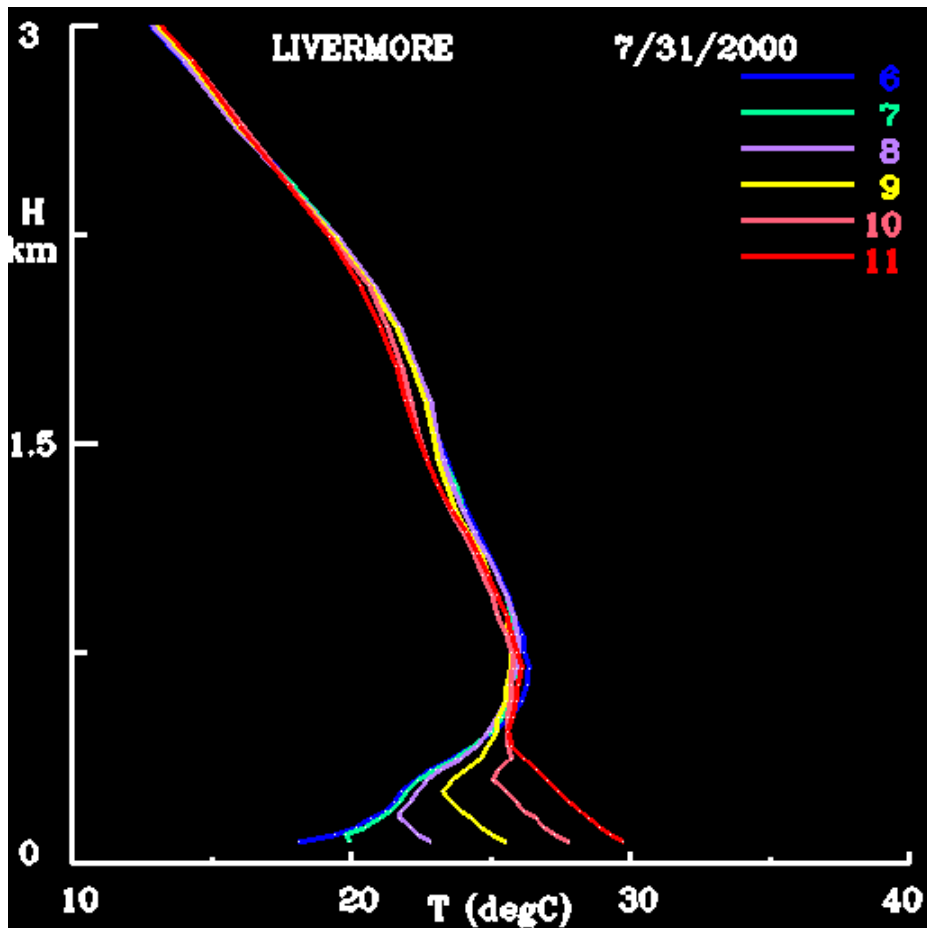
Livermore July 30, 12-17 PST



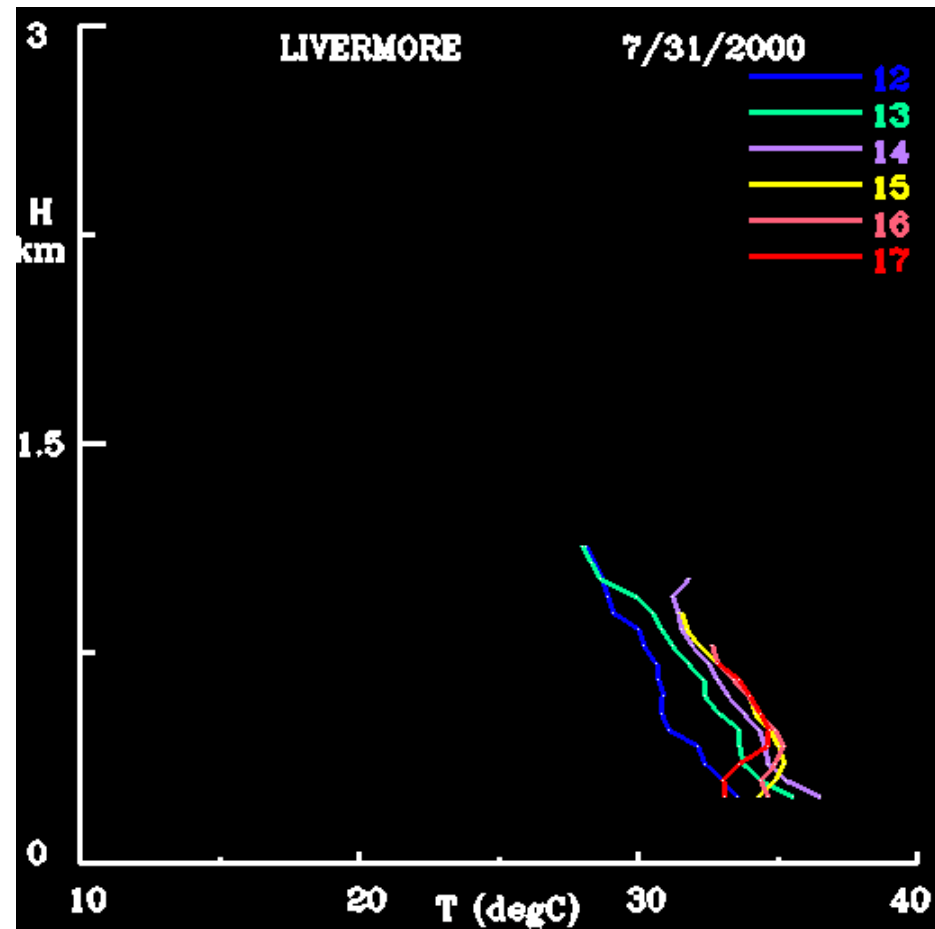
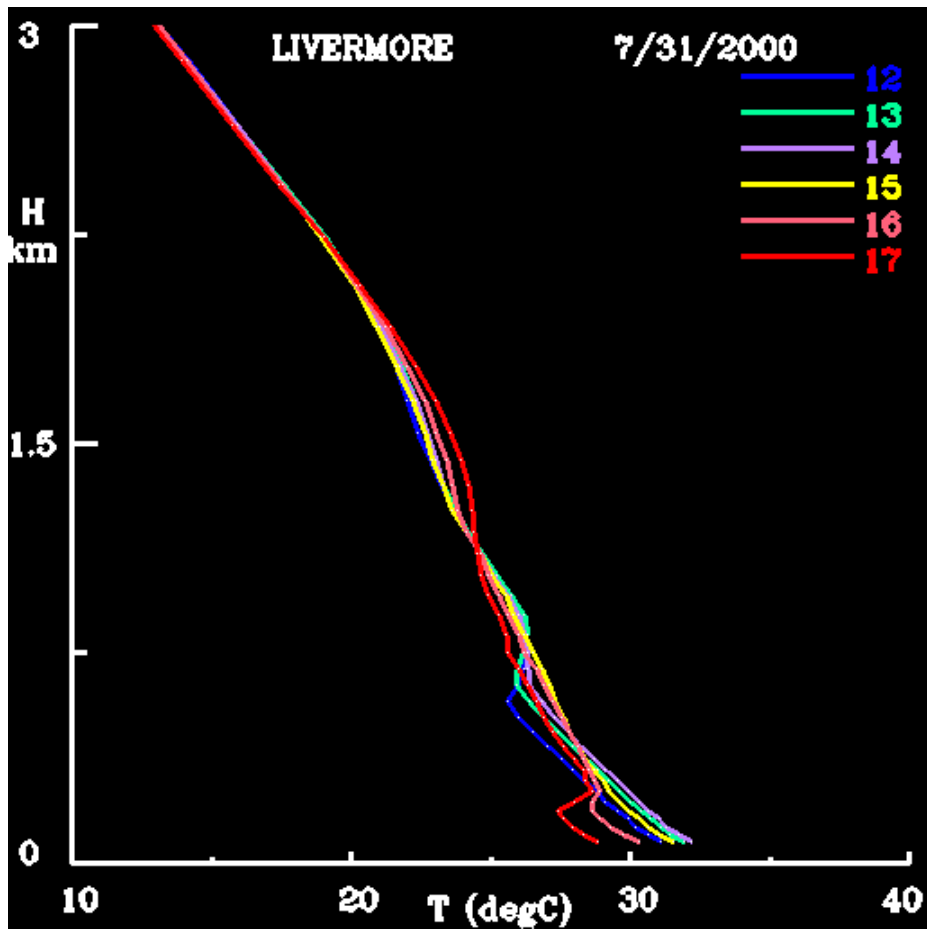
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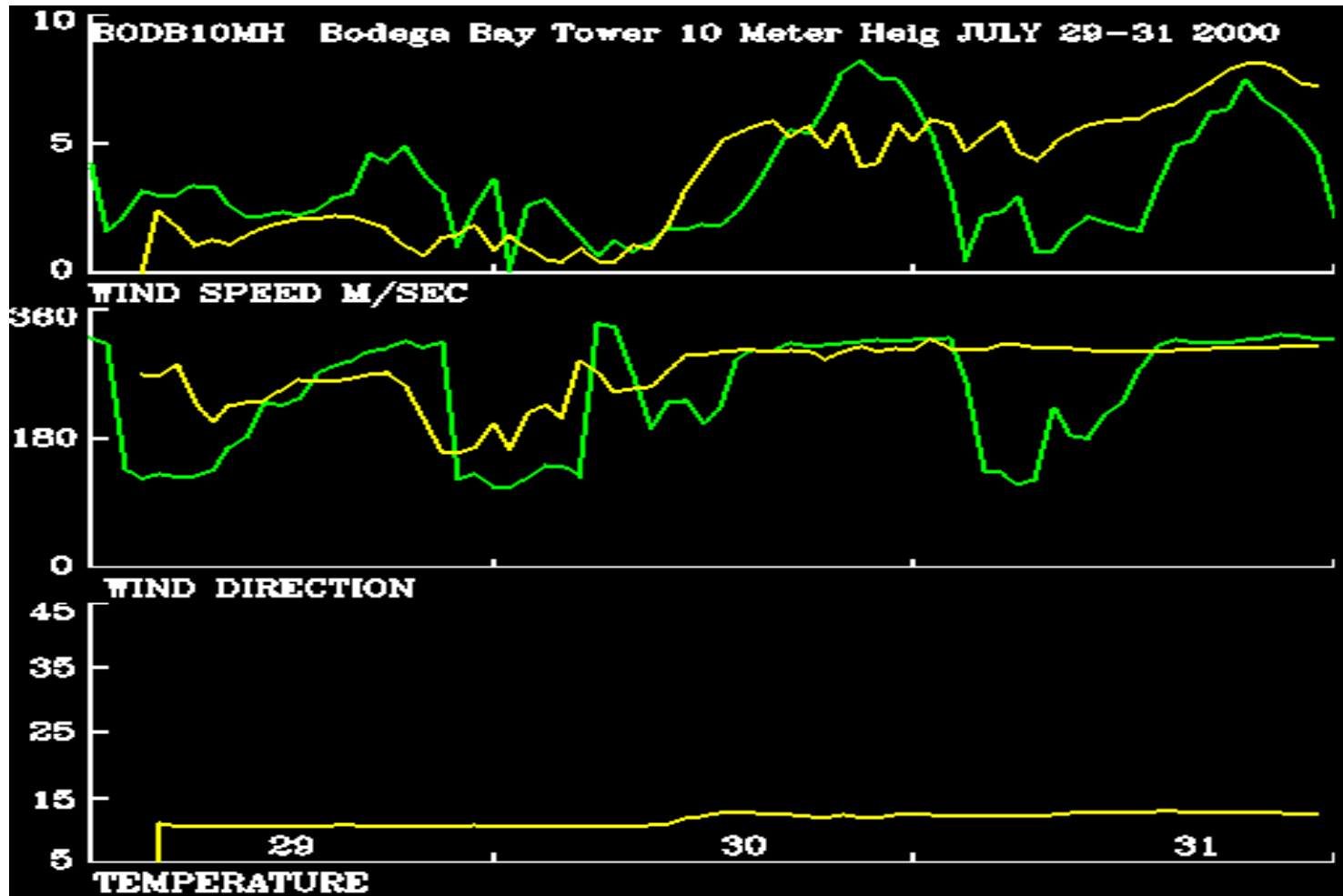
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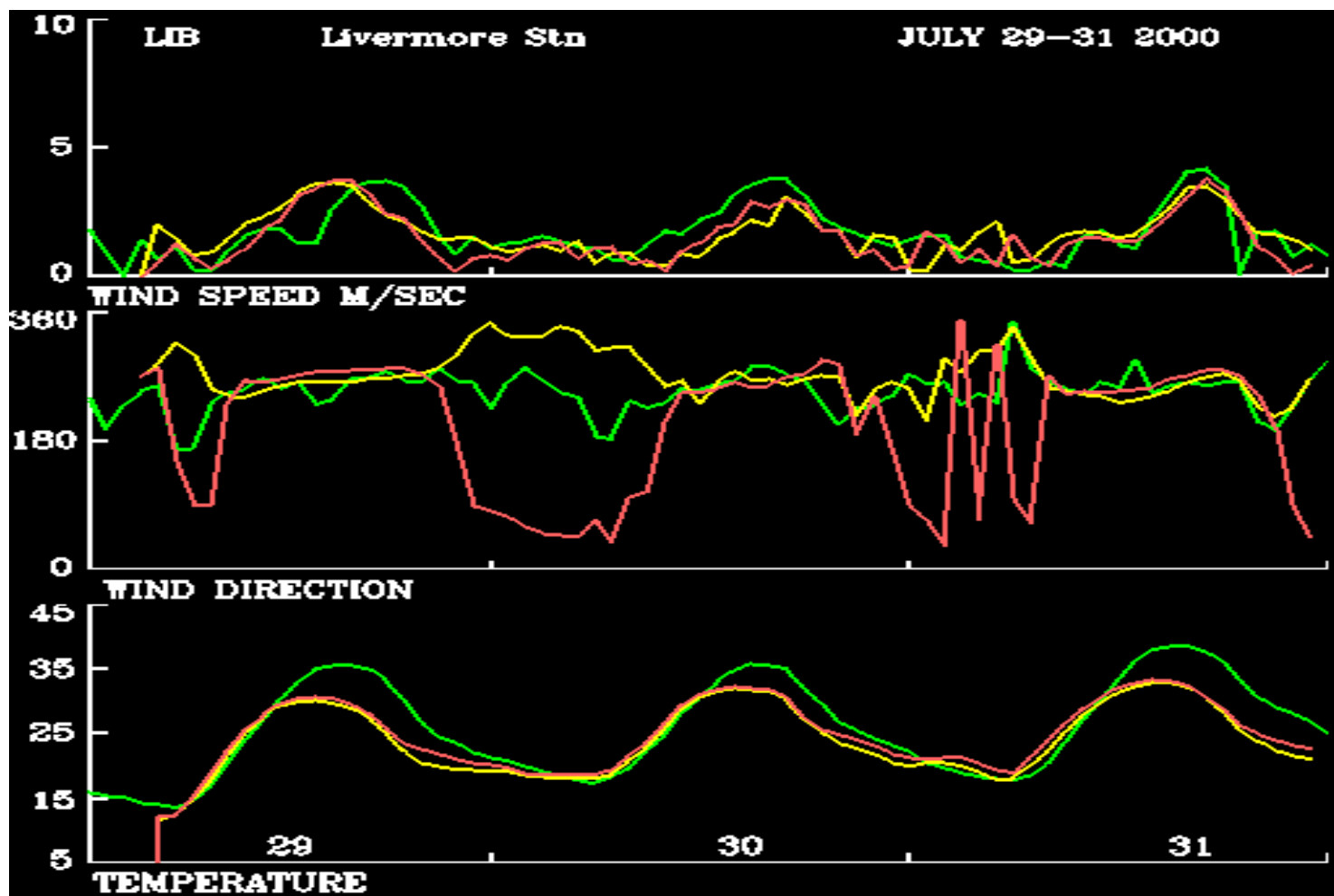
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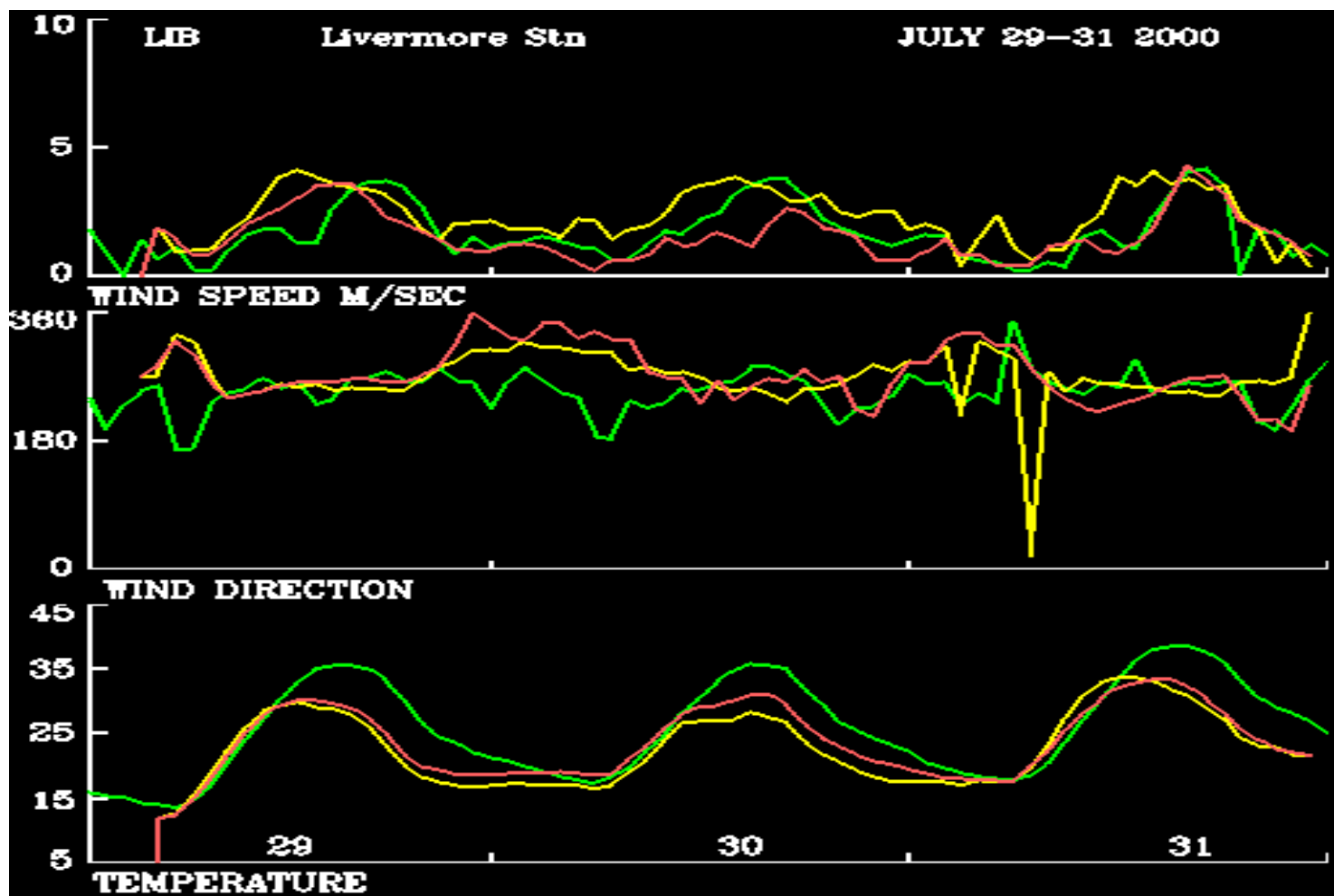
Bodega Bay, 10m. Tower, BAAQMD



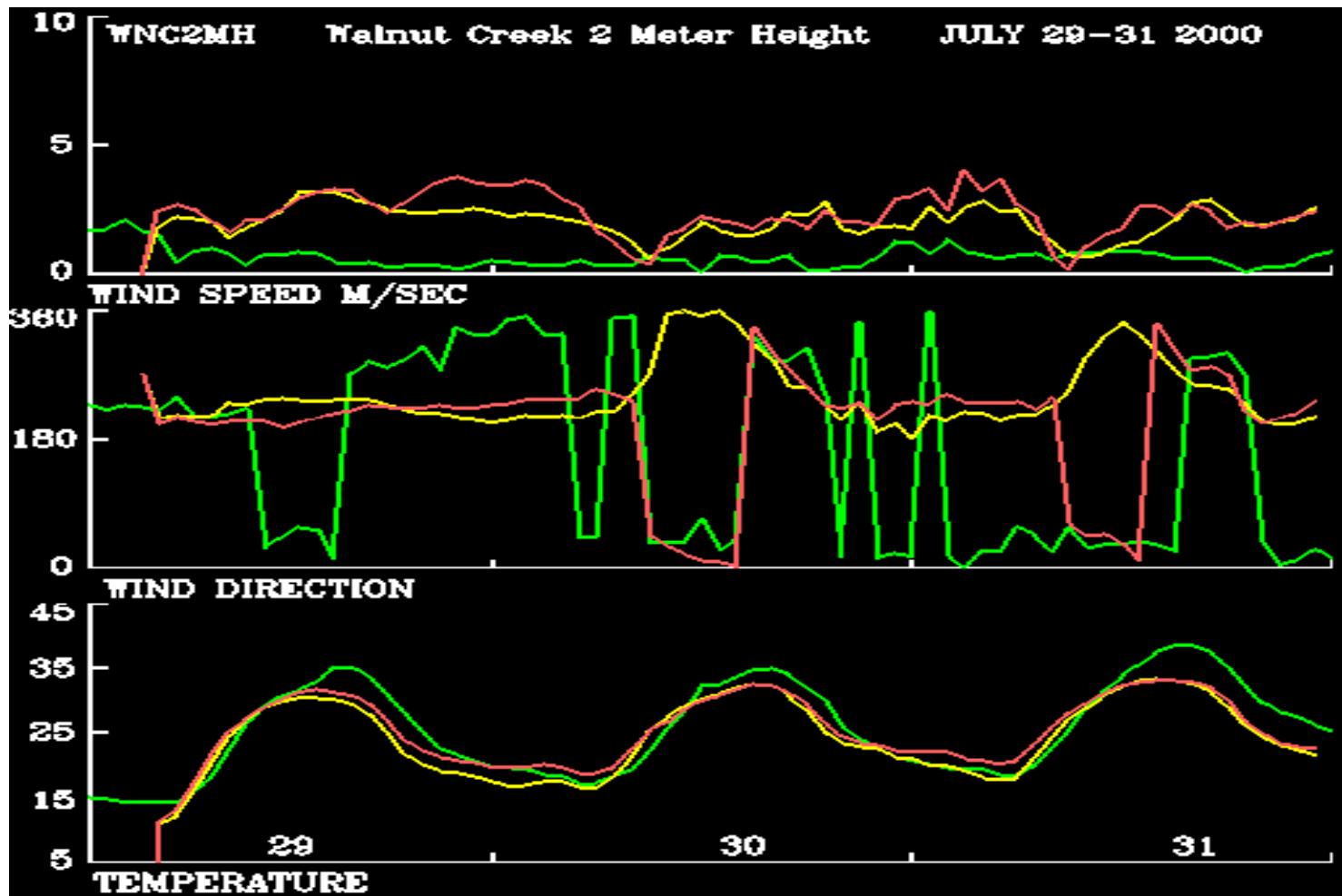
Livermore Stn., BAAQMD



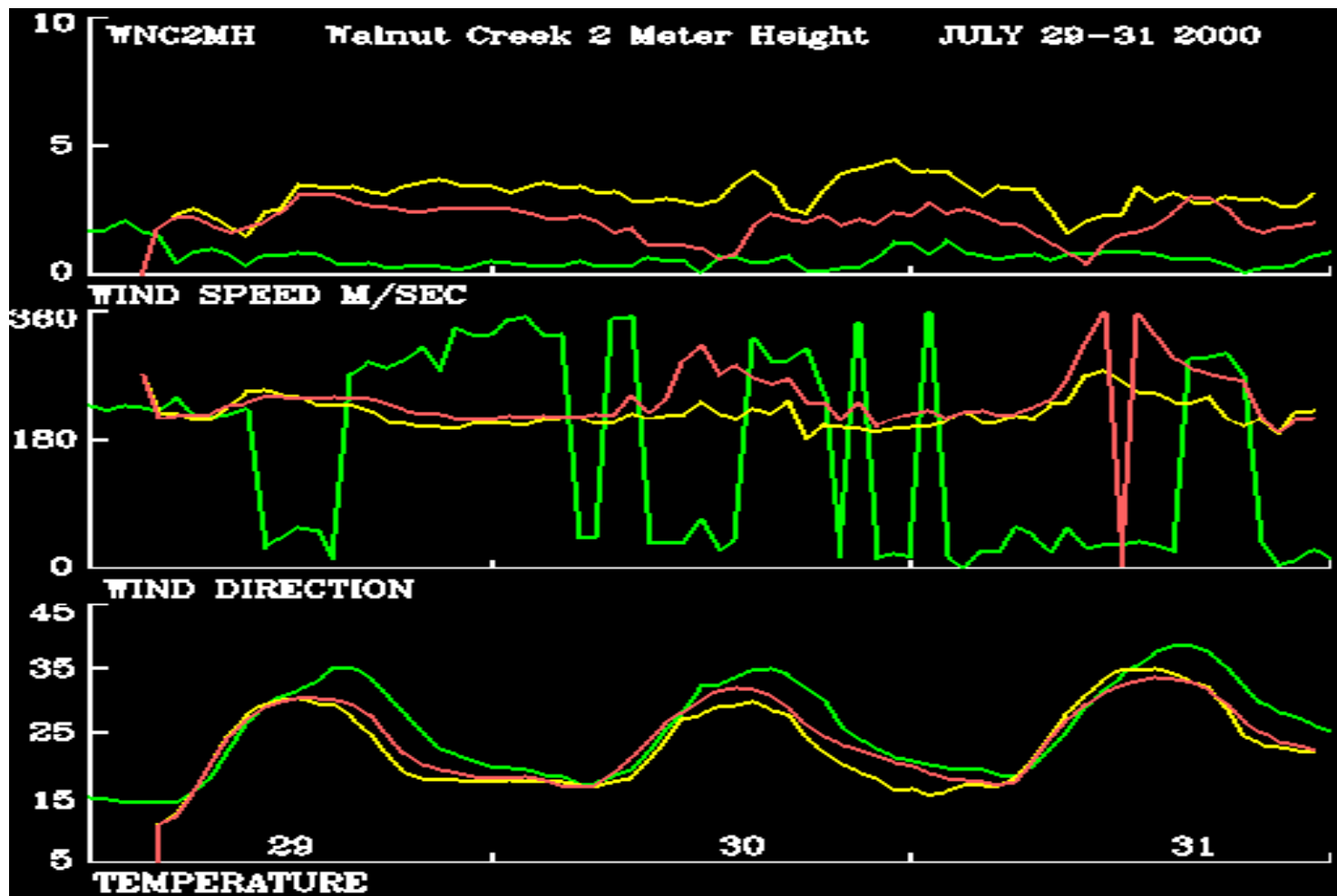
Livermore Stn., NOAA



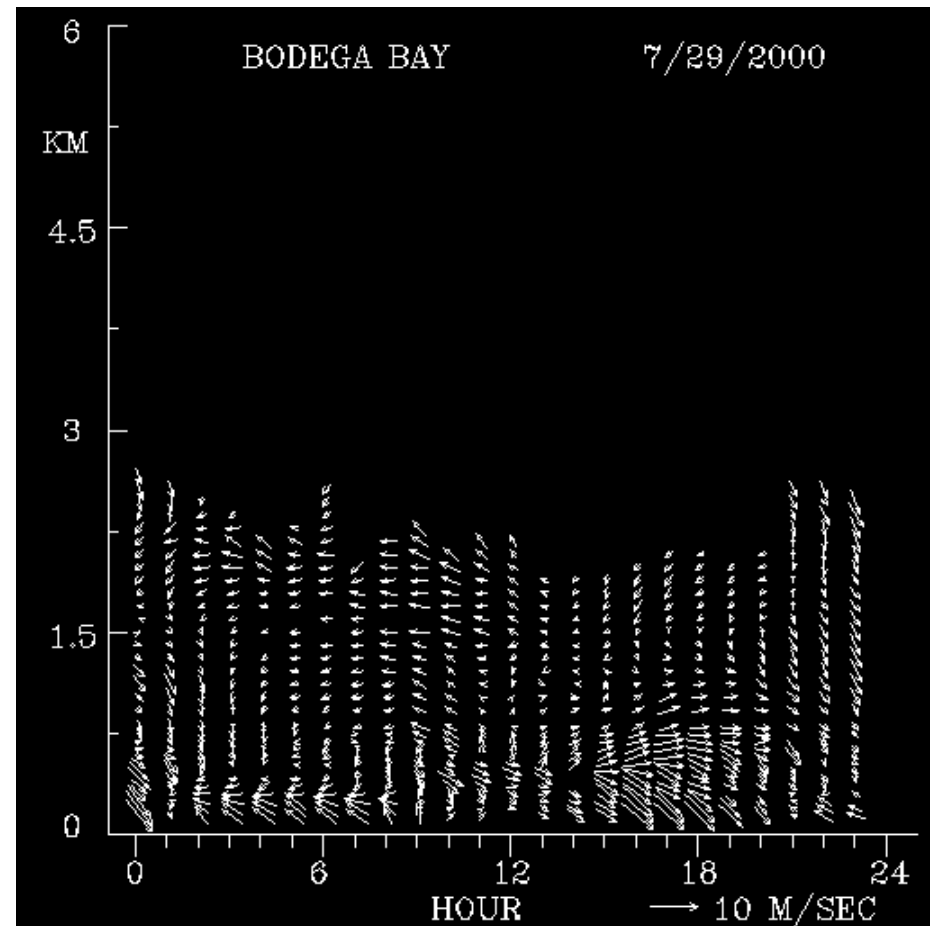
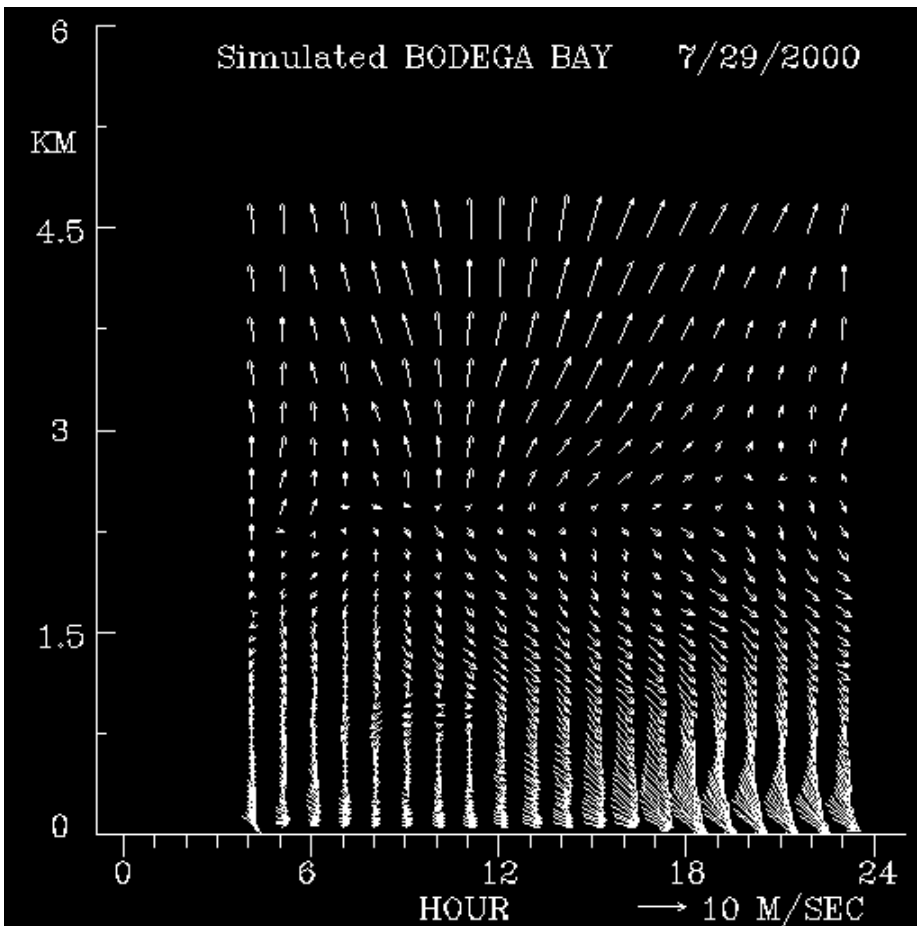
Walnut Creek, 2 meter, BAAQMD



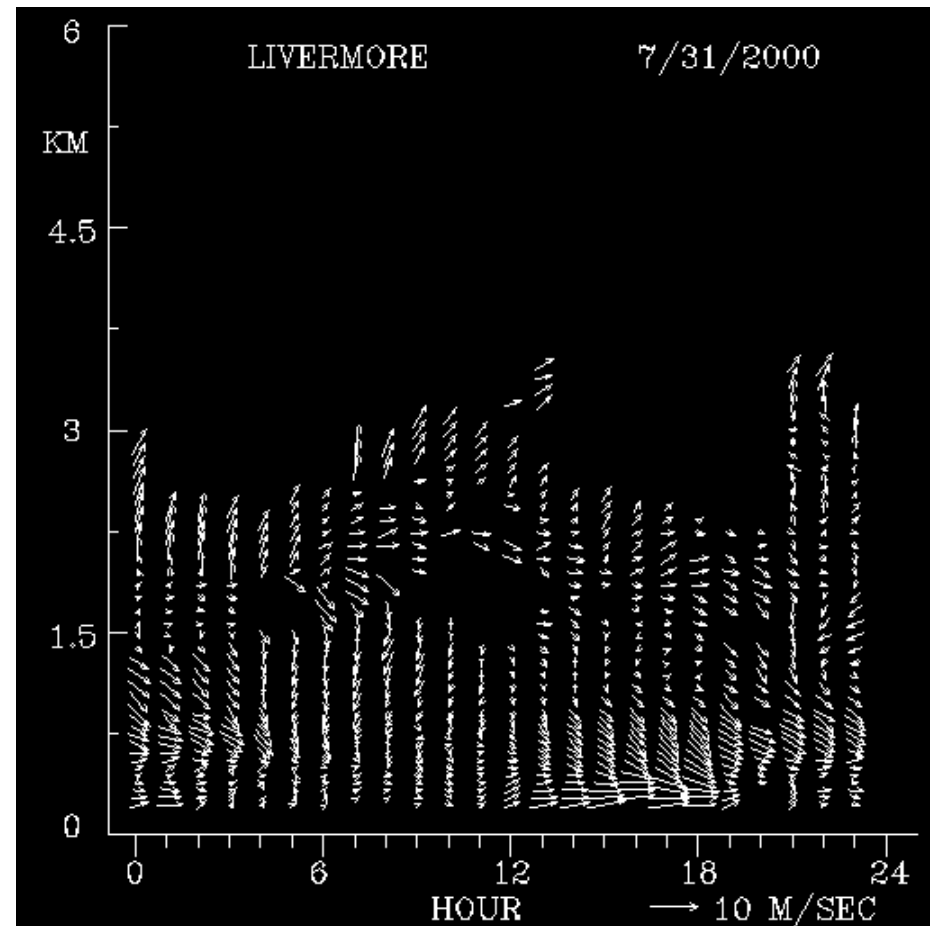
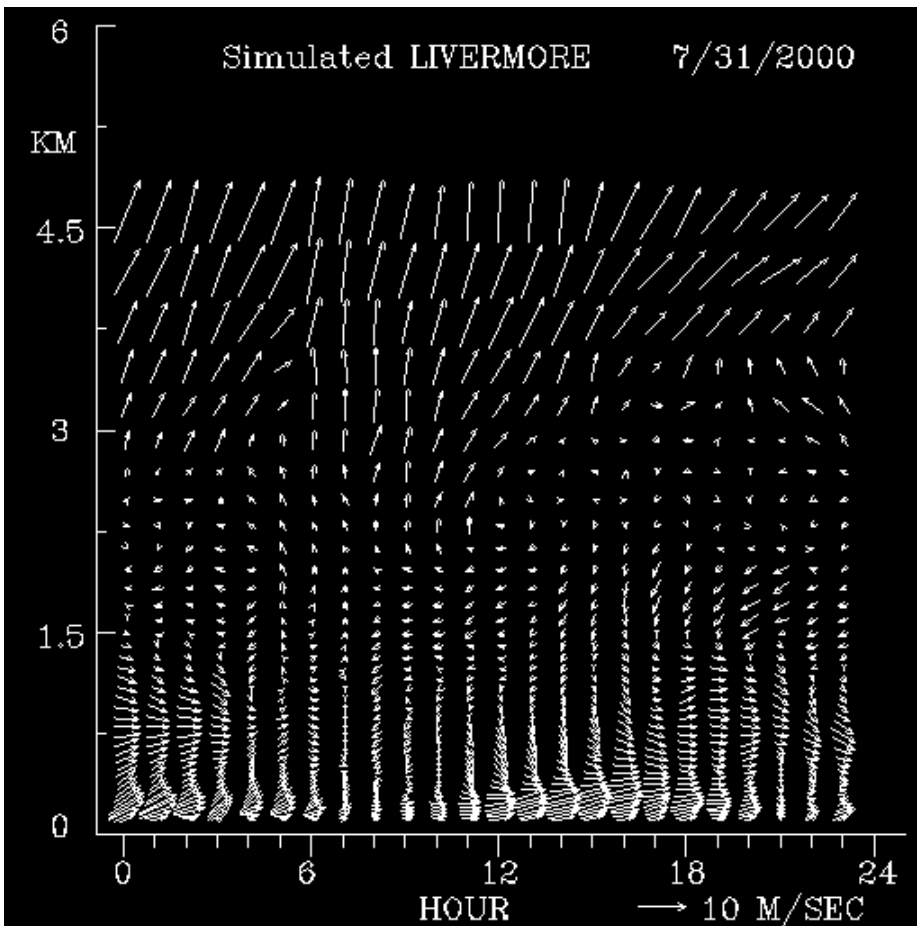
Walnut Creek, 2 meter, NOAA



Bodega Bay, July 29, 2003



Livermore, July 31, 2003



Next Steps

- Prioritize recommendations of working groups
- Foster communications and exchange among working group members
- Test impacts of meteorological and emissions investigations on air-quality model performance