

SIP Planning Needs and the Design of TexAQS II

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TCEQ Perspective on TexAQS II

- *TCEQ considers the following projects to be most likely to answer the questions of greatest interest:*
- The two NOAA aircraft and the *Ronald H. Brown*, carrying out the missions described in the NOAA/GoMACCS research plan;
- The regional pollutant and wind flow monitoring network currently in operation;
- The rapid synthesis of field study results, to be compiled by Ellis Cowling and the TexAQS II principal investigators.
- These three projects are the most likely to support the upcoming SIPs and maintenance plans, and are TCEQ's highest priority.



Why bother with field studies?



Field studies fill in the science gaps

- Routine monitoring often cannot precisely show how important urban, industrial, power plant, biogenic, and regional NOX and VOC emissions are in forming ozone.
- Photochemical grid models, which can be used for source apportionment, have uncertainties that need to be resolved by measuring pollutants over the region.



Field studies create fresh ideas

- Before the TexAQS 2000 study, TCEQ had no policy on highly reactive VOCs, and did not recognize the role they play in Houston's ozone.
- After TexAQS 2000, TCEQ wrote rules controlling HRVOC emissions.
- New data create new ideas, and fresh perspectives on how to solve air quality problems.



Field studies verify models independently and objectively

- TCEQ receives much technical assistance from stakeholders and academia. Most of these groups are unbiased and objective.
- Field studies can figure out what's going on without resorting to photochemical grid modeling.
- This is one reason why field studies are so necessary: it is important to have independent, objective verification of modeling results.



Successes of TexAQS 2000

- Discovery that highly reactive VOCs play a large role in Houston's ozone formation (Wert et al., Ryerson et al., Day et al., Kleinman et al., Daum et al.)
- Discovery that highly reactive VOCs were associated with industrial emissions rather than urban emissions (Berkowitz et al., Ryerson et al., Wert et al., Karl et al.)



Successes of TexAQS 2000

- Discovery that plumes from industrial areas with HRVOC emissions were more efficient at making ozone than urban emissions, and had much higher production rates (Ryerson et al., Kleinman et al., Daum et al.)
- Discovery that reported VOC emissions inventories could not adequately explain the high concentrations observed (Karl et al., Wert et al.)



Successes of TexAQS 2000

- Verification that the sea and bay breeze, and planetary boundary layer dynamics in and near Galveston Bay play a crucial role in concentrating, reacting, and transporting pollutants found in Houston (Banta et al., Nielsen-Gammon et al.)
- Synthesis of all findings into a coherent and objective picture of ozone formation, based upon measurements, **independent** of photochemical grid modeling.



TCEQ perspective on TexAQS II

- Most of the projects that have been proposed are interesting, and with more funding we would have supported them.
- However, nobody has enough money. A few projects are more likely than the others to answer TCEQ's questions, so we must support those first.