

Introduction

- Modeling Forum is proposing the creation of a RTC to perform modeling to accomplish modeling goals to meet 309 (2003 SIP) and 308 (2006-2008) requirements.
- Intend to provide preliminary control strategy runs 2 years before SIPs are due and more refined runs 1 1/2 years before SIPs are due.
 - 2001/2002 for 309 SIPs
 - 2004/5 for 308 SIPs
- Purpose is to build capacity and perform regional haze modeling in the west as opposed to contracting out the work.
- A "distributed" center is proposed to allow sharing of work components.
- Models-3 seen as our primary model with use of backup measures as needed.

Tools

Intended main tool of choice = Models-3

Reasons

- Best science
- Rigorous approach
- Considerable development work by EPA
- Modeling Forum is recommending using this model for both the current 309 work but also for upcoming 308 work.

What Is Models-3?

- Integration of multiple models
 - Emissions (MEPS with SMOKE being developed)
 - Meteorology (MM5)
 - Dispersion (CMAQ)

Proposed Staffing For RTC Project

- No additional staff proposed for FY99 Budget.
- 3 staff proposed for FY00 Budget
- 6 staff proposed for FY01 Budget

- Initial staffing will be provided through in-kind services being provided by:
 - Washington DOE
 - US EPA (Region X and ORD)
 - US NPS

- Other In-kind Services
 - 2 SGI workstations from Washington DOE and EPA Region X.
 - 1996 MM5 wind field data from EPA

- **Proposed Staffing (continued)**

- First staff position filled will be the RTC Modeling Coordinator.
- Envision positions being filled through IPAs, MOUs, or other agreements.
 - Current budgeting process does not allow for long-term hiring.
 - Utilize existing modeling staff
 - Allows member modelers to come up to speed on Models-3
 - Allows individuals to return to their permanent positions.
- Needs umbrella of WGA or WESTAR.

2000-2001 Workplan

Task	Completion
Identify Center Director	7/1/ 2000
Obtain 1996 MM5 Wind Fields	3/31/2000
Acquire Initial Hardware	4/28/2000
Identify Initial Episodes	6/1/2000
Initial EI Processing	9/30/2000
Hire Additional Tech Staff	12/31/2000
Obtain Improved EIs	Early 2001
Base Case Verification Runs	12/31/2001
Determine Meteorology for SIP Demonstration	12/31/2001
309 SIP Runs	6/30/2002

Annex Deliverables

- **BART Impacts**
 - Pat Ryan produced report using Transfer Coefficients on the predicted benefits from BART.
 - The report has not been evaluated by the Modeling Forum.
 - The report will be discussed in April.
 - Bottom line: Very small benefits predicted.

Market Trading Impact Evaluation

- Also being evaluated using Transfer Coefficients.

309 Deliverables

Deliverable	Delivery Date
Decision regarding need for backup runs	6/30/2001
Base case verification runs	12/31/2001
First look at GCVTC runs	12/31/2001
Refined GCVTC runs	6/30/2002
Limited detailed modeling	12/31/2002

Required Deliverable:

- Answer to whether or not the GCVCT control strategies satisfy the Reasonable Progress requirements or not.
- Required analysis areas: 16 GCVTC Class-I areas.
- Modeling Forum intends to provide impacts at all 100⁺ Class-I areas.

Capabilities of Reactive Grid Models

Can Do	Cannot Do
Evaluate impacts from a large number of sources with chemically reactive emissions.	Provide definite individual source impact contributions.
Evaluate impacts at a resolution finer than the smallest grid cells (36 km for 1 st runs)	Evaluate impacts from close sources.
Model episodes or aggregate days. Annual runs are more difficult.	Easily make annual runs.
More complex models have better science but run slowly.	Simpler models do poorly in identifying short-term impacts but run more quickly.

Candidate Back-up Approaches

REMSAD

- Simpler grid cell model that runs relatively quickly.
- Did not have a favorable peer review.

Calpuff

- Simpler puff model that runs relatively quickly when run with a limited number of sources.
- Many current applications in USA and other countries.
- Simple chemistry and limits on number of sources reduce its usefulness.

Trajectory analysis

- Using 1996 MM5 wind fields and 3-D trajectory models, we can show what sources are not contributing to the problem.
- Difficult to quantify source impacts with this method.

Transfer Coefficients

- Earlier work has provided groundwork to isolate individual source contributions.
 - Limited by the capabilities of those earlier models.
 - Atmospheric chemistry limits capability of deriving individual source contributions.
 - Relatively easy to perform, but may provide misleading results.
- We do not intend to activate back-ups unless needed.
(Decision = June 2001)

(Preliminary)
Proposed Strategies for Modeling

- Model evaluations will be performed for limited episodes during 1996. A range of episodes will be selected to cover different conditions.
- 309 Deliverables provide answer to whether or not the GCVTC control strategies work or do not work.
- First emphasis on 309 deliverables will be for episodes representing the 20% worst visibility conditions.
- Annual runs will be attempted to provide robust best and worst 20% day impacts.
- Cleanest 20% days may adequately be evaluated from an emissions budget. If we do not move emissions into the cleanest days, we will not degrade visibility on those days.
- 309 Deliverables will be available at 36 km resolution only.