



NOAA's Contribution to Policy Relevant Information: CalNex



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Briefly:

1. Climate – Air Quality (AQ) intersections

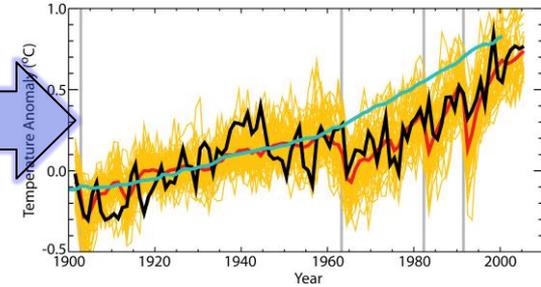
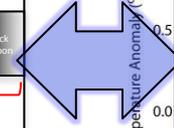
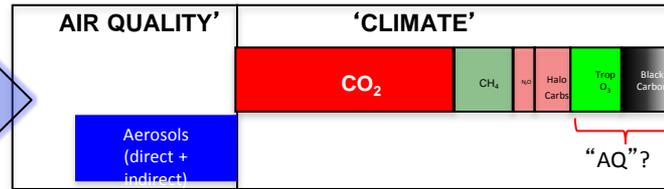
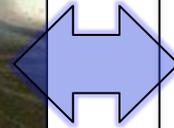
- Science
- Policy implications for mitigation and for adaptation
- Convergence of scales
- “Knobs” under our control

2. Meeting the needs

- Evaluation of “knobs”
- One example

More results and information from CalNex will emerge during this meeting

Climate – Air Quality: Their many linkages



Researchers calculated that more than 15% of the 2.5 year increase in life expectancy since 1980s was due to cleaner air. The project tracked the change of air quality in 51 American cities since the 1980s.

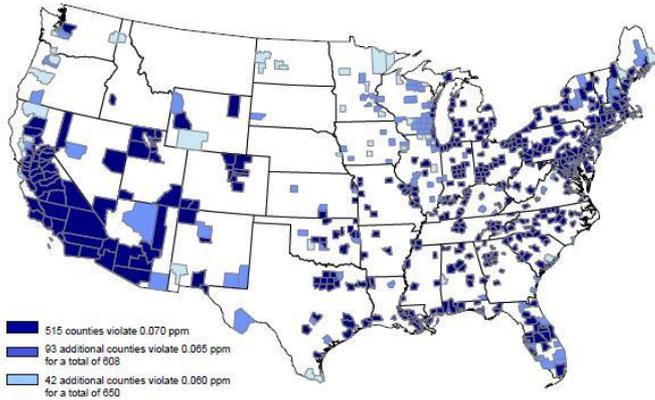
HOW DO WE WEIGH AIR QUALITY IMPROVEMENTS AGAINST CLIMATE CHANGE?

Climate researchers, using models and knowledge development studies, estimate that surface temperature would increase by roughly 0.8 C in less than 10 years if all manmade aerosols were removed today. A large effect!

- “Air Quality related emissions” have masked GHG forced climate change
- Air Quality in a warmer world with a different climate
- Intimate connections between AQ and climate
 - Implications for policy formulation
 - Implications for implementation
 - Implications for emission management

Meeting New Air Quality Regulations now and in the future

Counties With Monitors Violating Proposed Primary 8-hour Ground-level Ozone Standards
0.060 - 0.070 parts per million
(Based on 2006 - 2008 Air Quality Data)
EPA will not designate areas as nonattainment on these data, but likely on 2008 - 2010 data which are expected to show improved air quality.



Current review of O₃ NAAQS will likely result in a lower standard (0.06 – 0.07 PPM?)

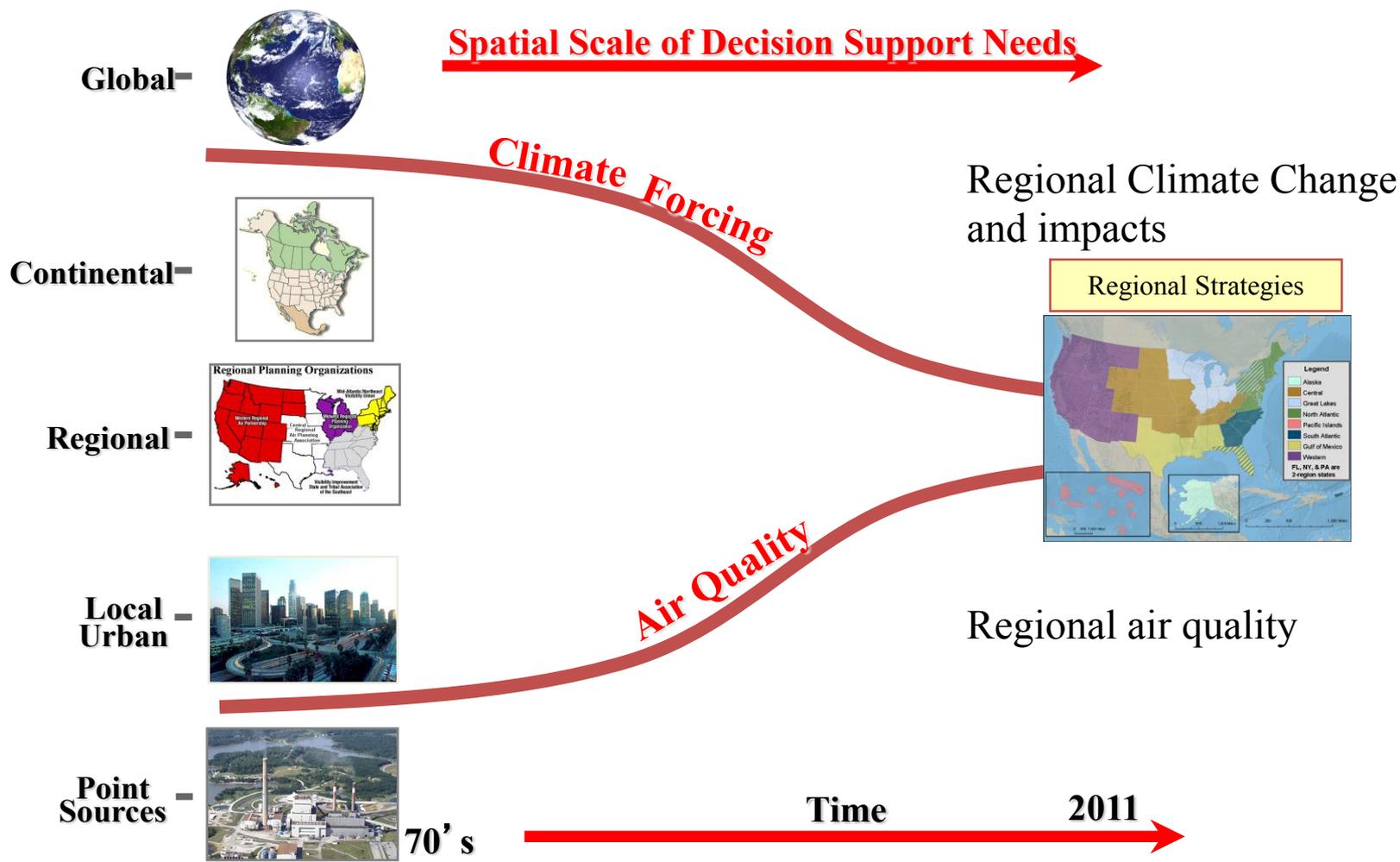
- Widespread nonattainment
- “Background” a significant fraction of the standard
- inter-regional and inter-continental transport will have to be considered, e.g. transport from Asia

“Climate penalty” in meeting AQ standards in the future-

- Different climate
- Enhanced “backgrounds?”
- Limits for “local control”

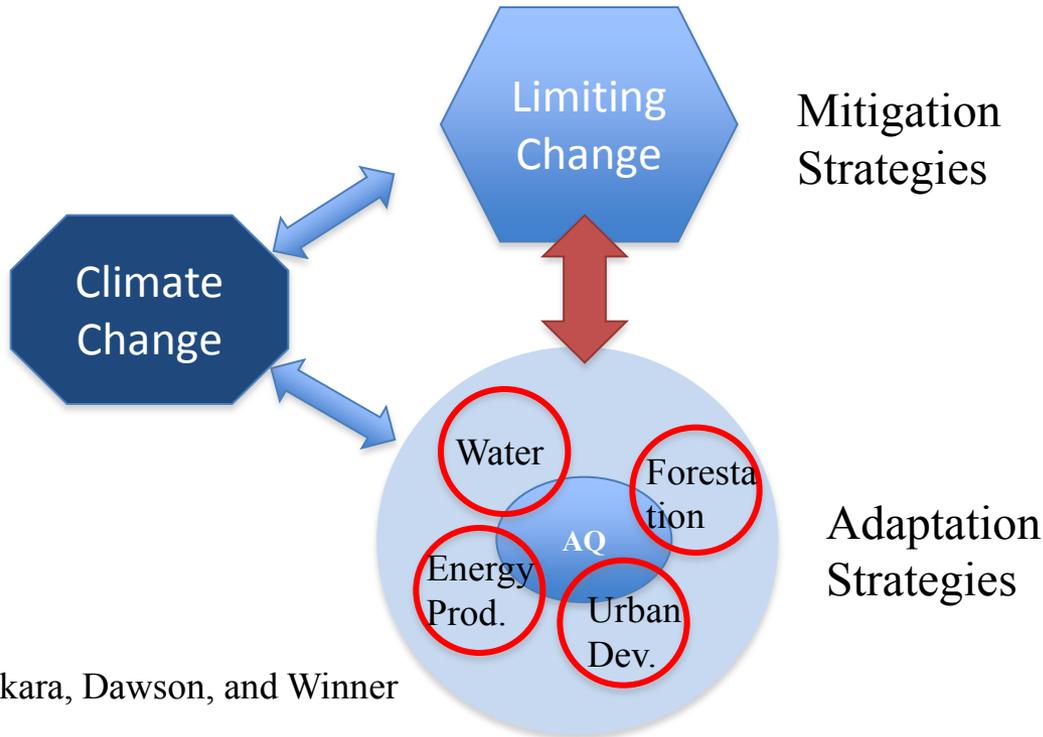
Climate Penalty: hardship places in meeting AQ standards because of climate change

Changing needs of climate and AQ: Convergence of scales



Air Quality and Climate change important on the same spatial scales!

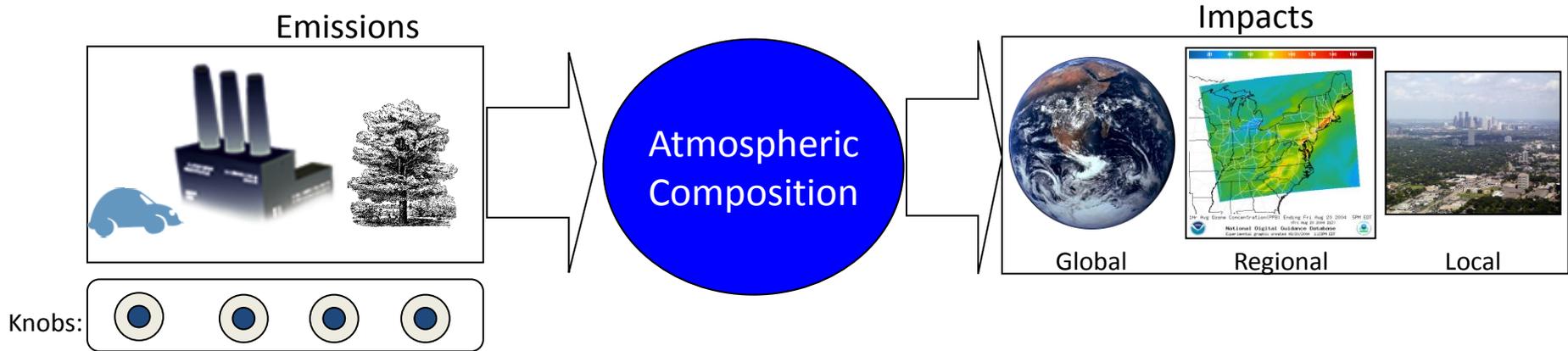
Commonality for mitigation and adaptation



Ravishankara, Dawson, and Winner

- Adaptation to climate change requires AQ considerations- direct and through other changes
- Commonality of forcing agent for AQ and climate, and for impacts
 - Implications for policy formulation
 - Implications for implementation
 - Implications for emission management

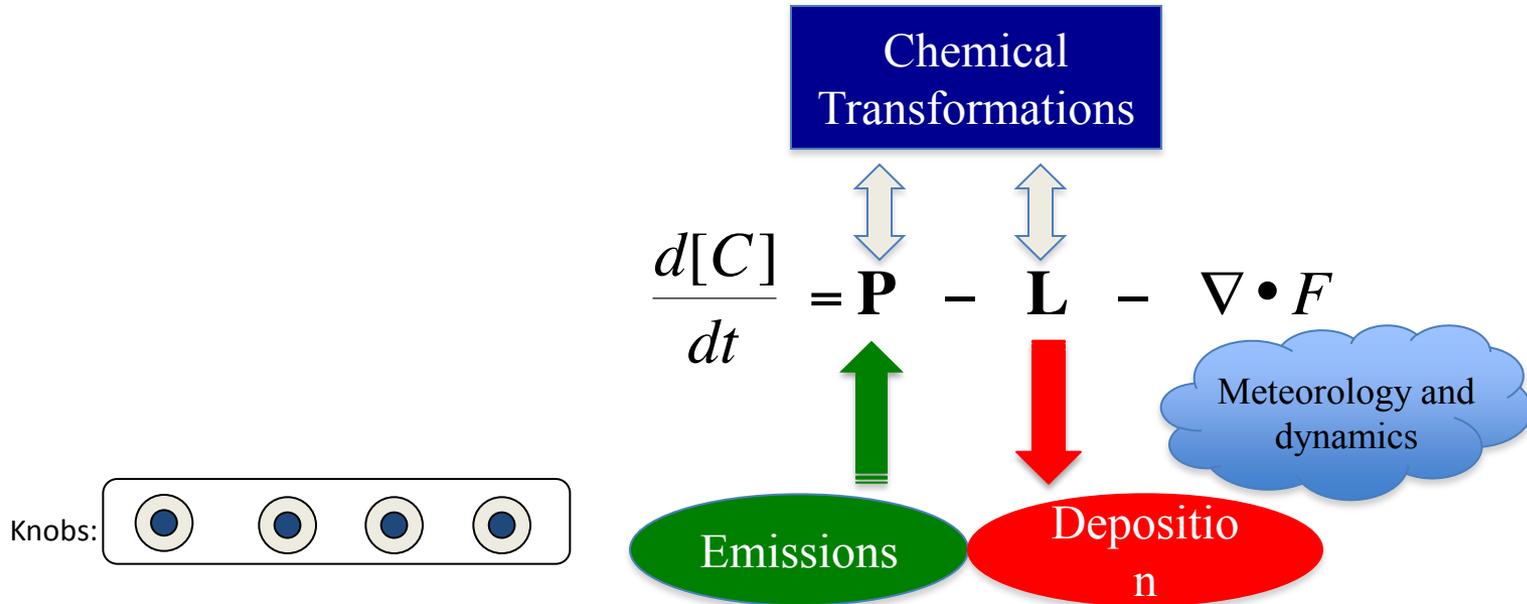
Emissions: A key tool



- Accounting for the past
- Observing and calculating the present
- Predicting and projecting the future
- Making choices: Which “knob” to turn? One better than the other?

Quantification of emissions (in usable form) is a key need!

Usable information: going beyond just emissions



NOAA's attempt to provide policy relevant information:

- Quantify emissions – location and time specific (but more widely applicable)
- Understand transformations- General applicability to other places
- Evaluate Transport- Key for interpretation and some applicability
- Model calculations- Usable information

Need: Converting emissions to impacts and putting in usable forms

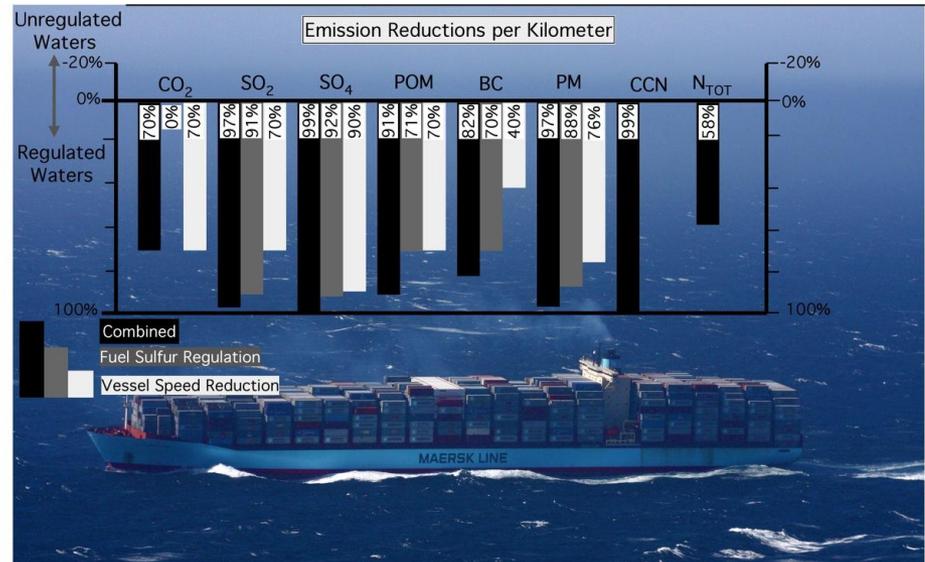
Evaluating Actions: Air Quality Climate benefits

Example: What are the benefits of fuel switching?

For Air Quality:
Need reduction in SO₂ and PM

Clear decreases in:
- SO₂, PM, BC, (others?)

- For Climate:
- Reduction of “white” aerosols along with the simultaneous reduction in “warming” BC
 - What is the net “direct” effect?
 - What is the net effect?
 - need to evaluate indirect effects



Lack, D., Cappa, C., Langridge, J., Bahreini, R., et al. (2011). Impact of Fuel Quality Regulation and Speed Reductions on Shipping Emissions: Implications for Climate and Air Quality. *Submitted to Environmental Science and Technology*

Very preliminary finding: A definite AQ benefit with likely no regret for climate.
STAY TUNED!

Thank you
for
your attention