Comment: Intersection of policy and science

Answer: Who drives regulation? (public? scientists? law-makers?)

Observe: Learnings about rule-making and forecasting

GROUP 3

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XUELING LIU, XUEKUN FANG
ALICIA GRESSENT, MINGWEI LI
NEGIN SOBHANI, CHARLOTTE RIGGS
CAITLIN AUGUSTIN, AUDREY GAUDEL
MARIEL FRIBERG

Science and policy/regulatory/law-making side of Air Quality

Questions

3. Standards

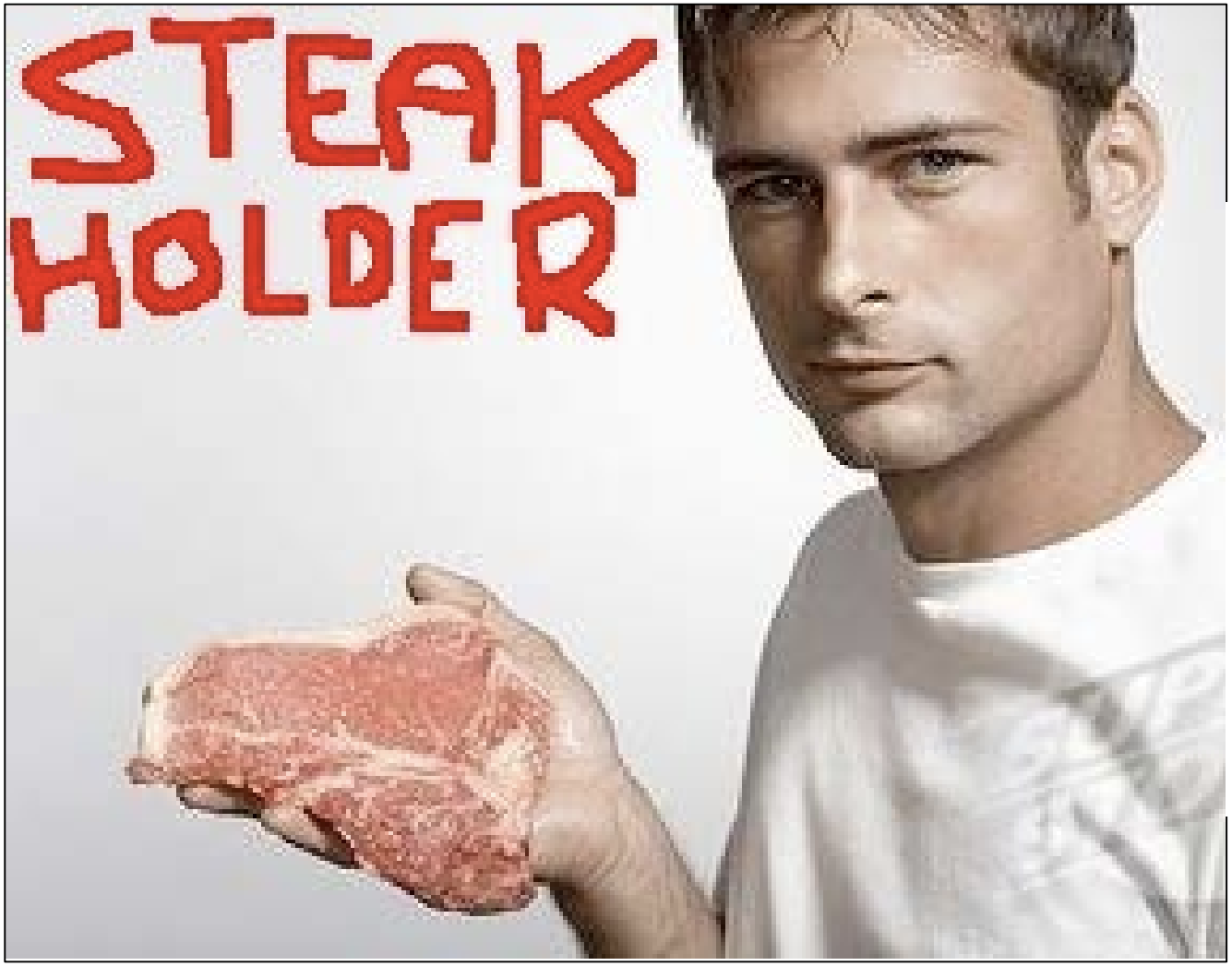
4. Anthropogenic vs. Biogenic Emissions

6. Fundamental Research

5. Enforcement

2. Drivers of both Science and Policy

1. Stakeholders

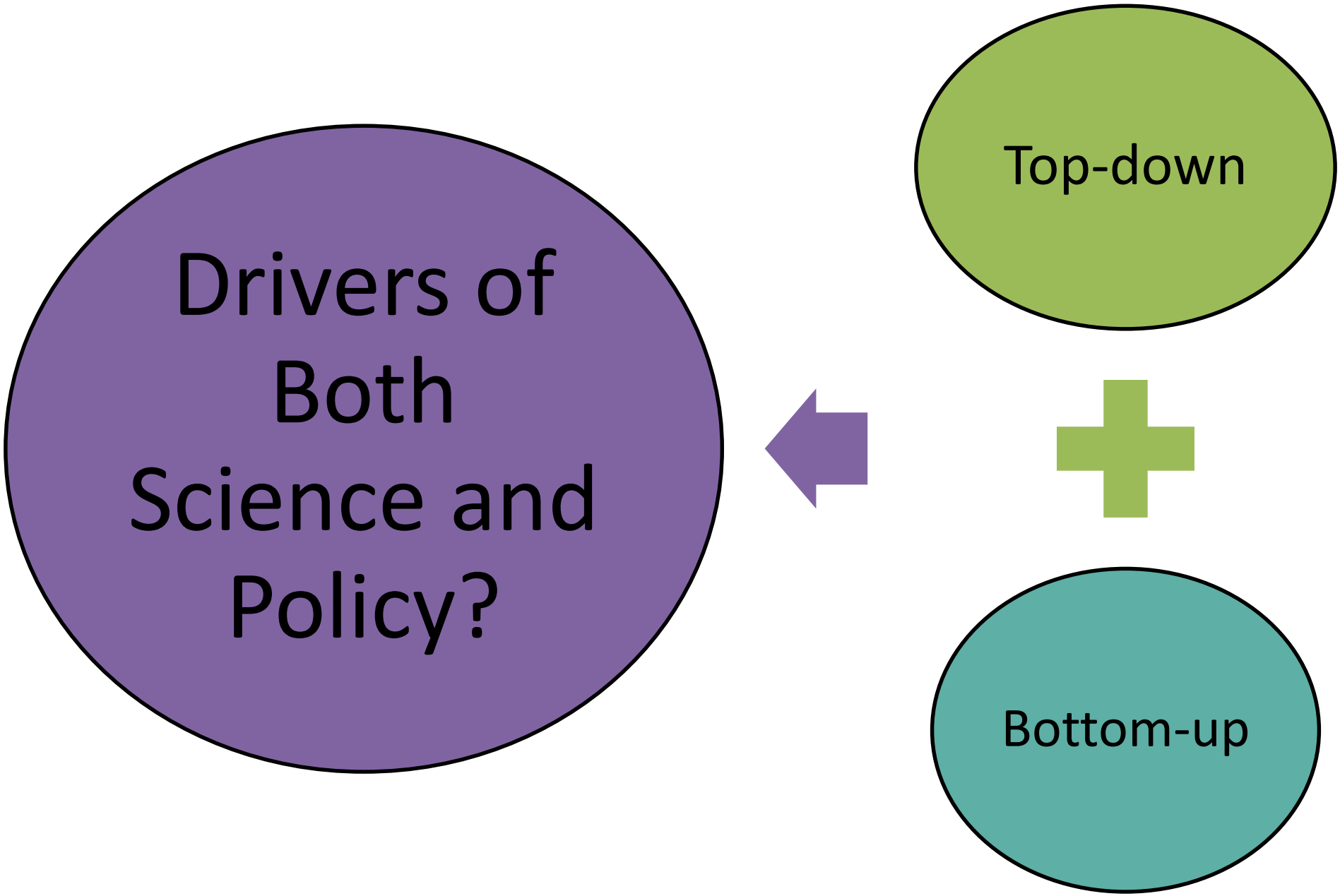


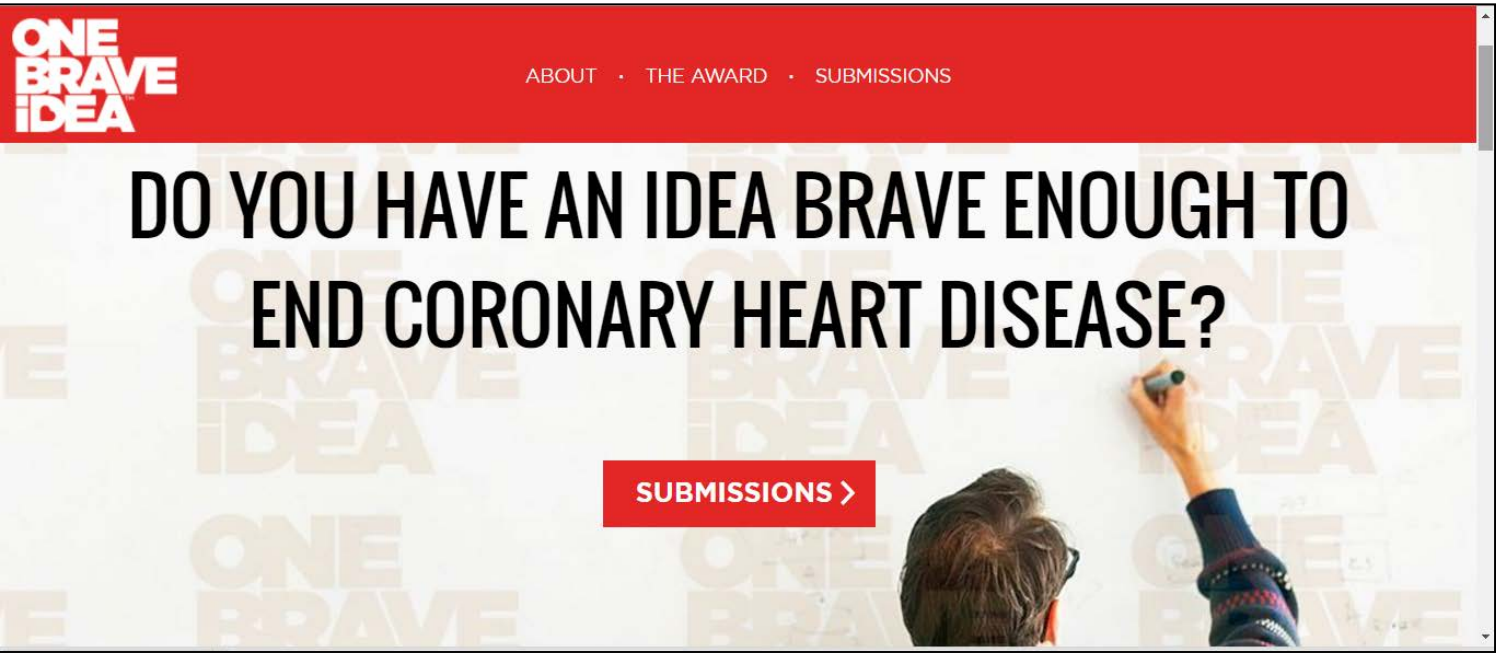
Who?

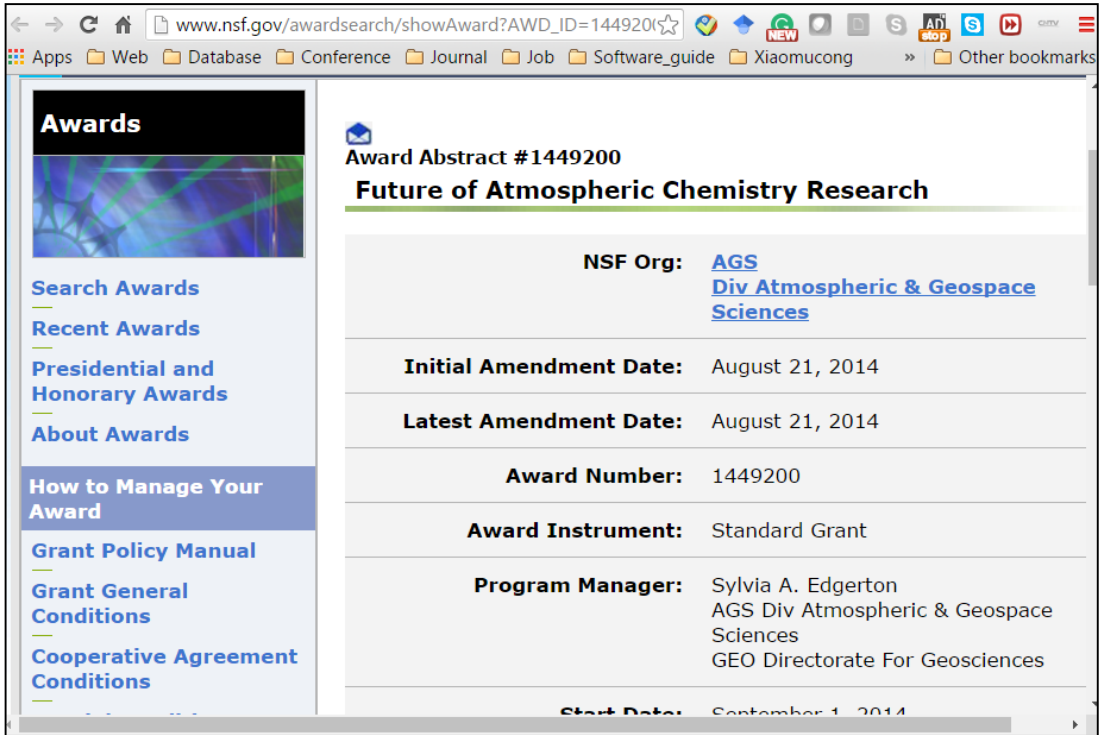
- Industry
- Policy makers
- Lobbyists
- Scientists/Engineers
- Public (Perspective)
  - Health/AQI
  - Weather/Climate Forecasting

What roles stakeholders play?

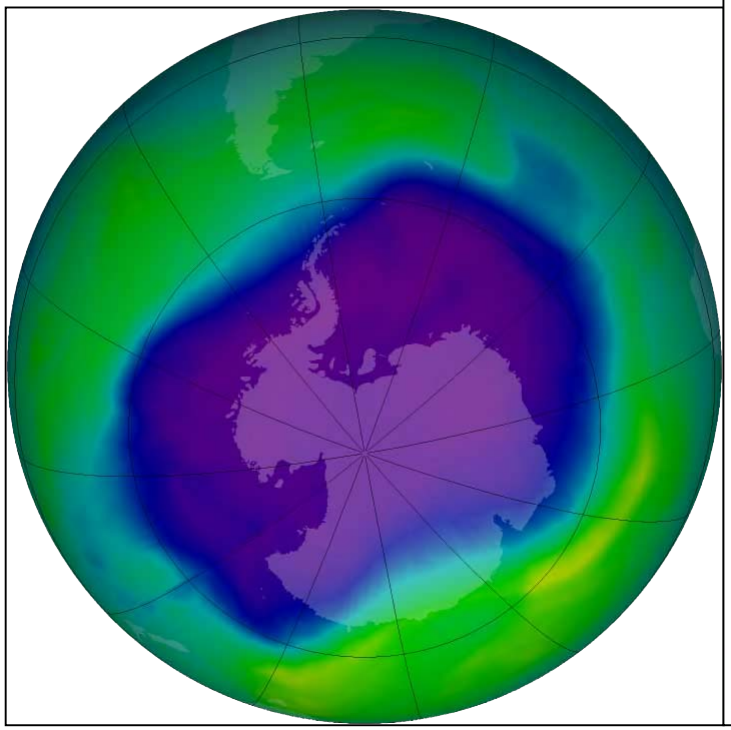
- Type of advocates (science)
- Absolute truth vs. relative truth
- Use of tools: Evidence (e.g. exceptional events) vs. Accuracy (e.g. research)
- Influencing Standards


Drivers of Both Science and Policy?
Top-down
Bottom-up

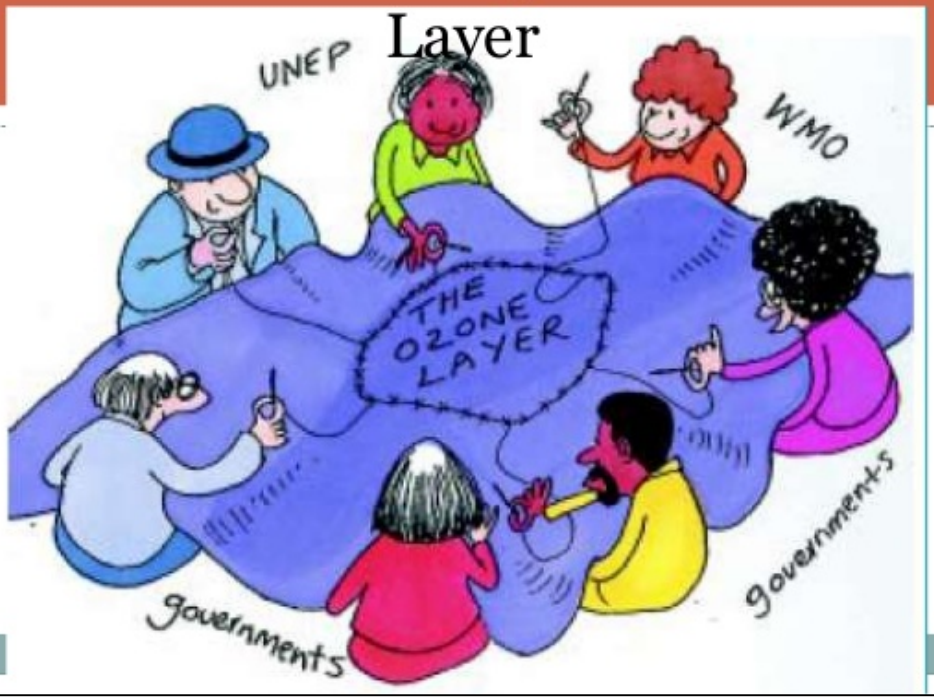

ONE BRAVE IDEA
ABOUT · THE AWARD · SUBMISSIONS
DO YOU HAVE AN IDEA BRAVE ENOUGH TO END CORONARY HEART DISEASE?
SUBMISSIONS ›


www.nsf.gov/awardsearch/showAward?AWD_ID=144920
Apps Web Database Conference Journal Job Software_guide Xiaomucong Other bookmarks
Awards
Search Awards
Recent Awards
Presidential and Honorary Awards
About Awards
How to Manage Your Award
Grant Policy Manual
Grant General Conditions
Cooperative Agreement Conditions
Award Abstract #1449200
Future of Atmospheric Chemistry Research
NSF Org: AGS Div Atmospheric & Geospace Sciences
Initial Amendment Date: August 21, 2014
Latest Amendment Date: August 21, 2014
Award Number: 1449200
Award Instrument: Standard Grant
Program Manager: Sylvia A. Edgerton
AGS Div Atmospheric & Geospace Sciences
GEO Directorate For Geosciences

Drivers



1987 Montreal Protocol on Substances that Deplete the Ozone Layer



Drivers


美国大使馆
EMBASSY OF THE
UNITED STATES OF AMERICA


www.stateair.net/web/post/1/1.html
Apps
Web
Database
Conference
Journal
Job
Software_guide
Xiaomucong
Research_group
Journey
Forum
NILU
Other bookmarks
Mission China
Beijing
Posts
Beijing
Chengdu
Guangzhou
Shanghai
Shenyang
Feeds
Beijing - PM2.5
Past 24-hour AQI was
Unhealthy for Sensitive Groups
µg/m³
AQI
Most Recent AQI
Aug 06, 2016 12 AM
153 AQI
Unhealthy
if at this level for 24 Hours
Concentration: 60.0 µg/m³

Drivers

Drivers

Air quality standards

are informed by scientists,
industry groups,
and many others….

National Ambient Air Quality Standard

Ozone

National Ambient Air Quality Standard

Ozone

AMERICAN LUNG ASSOCIATION.

EPA's independent science advisors

standards

National Ambient Air Quality Standard

Ozone

AMERICAN LUNG ASSOCIATION.

EPA's independent science advisors

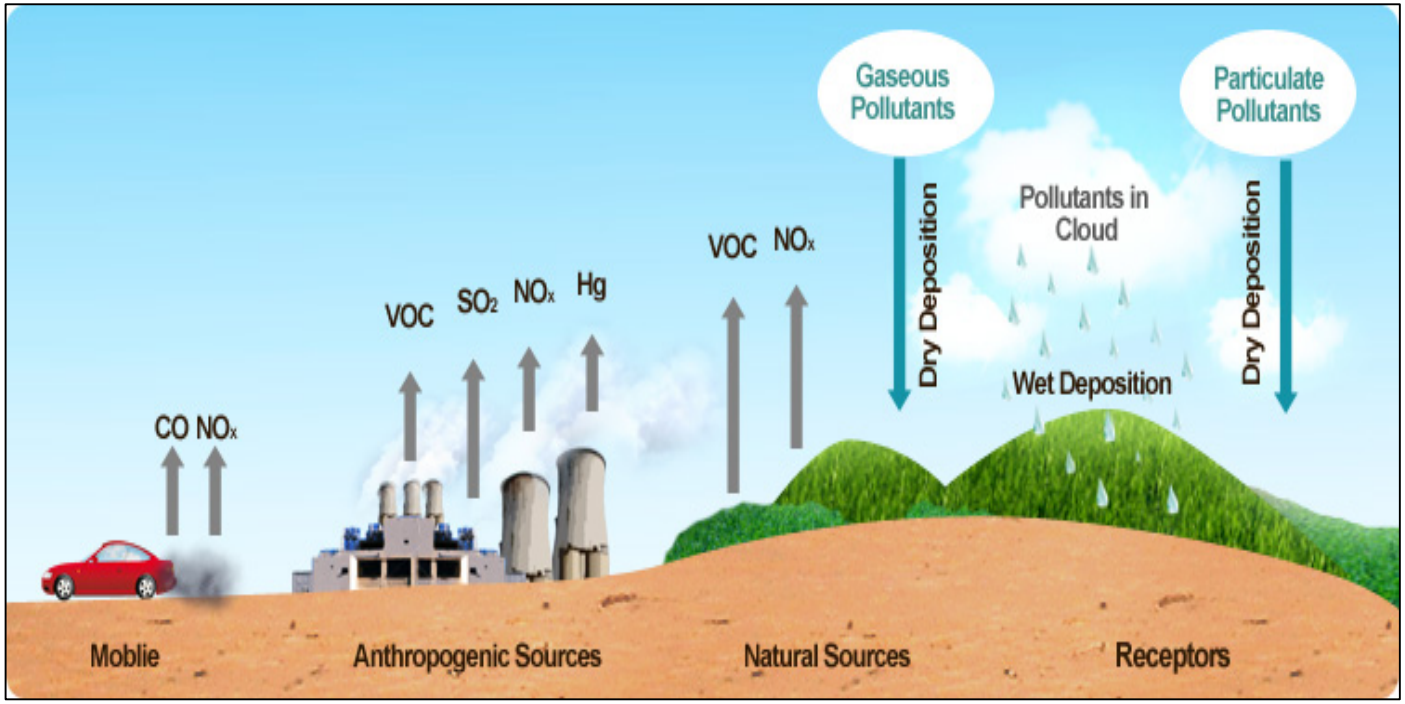
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

standards

Identify emission sources

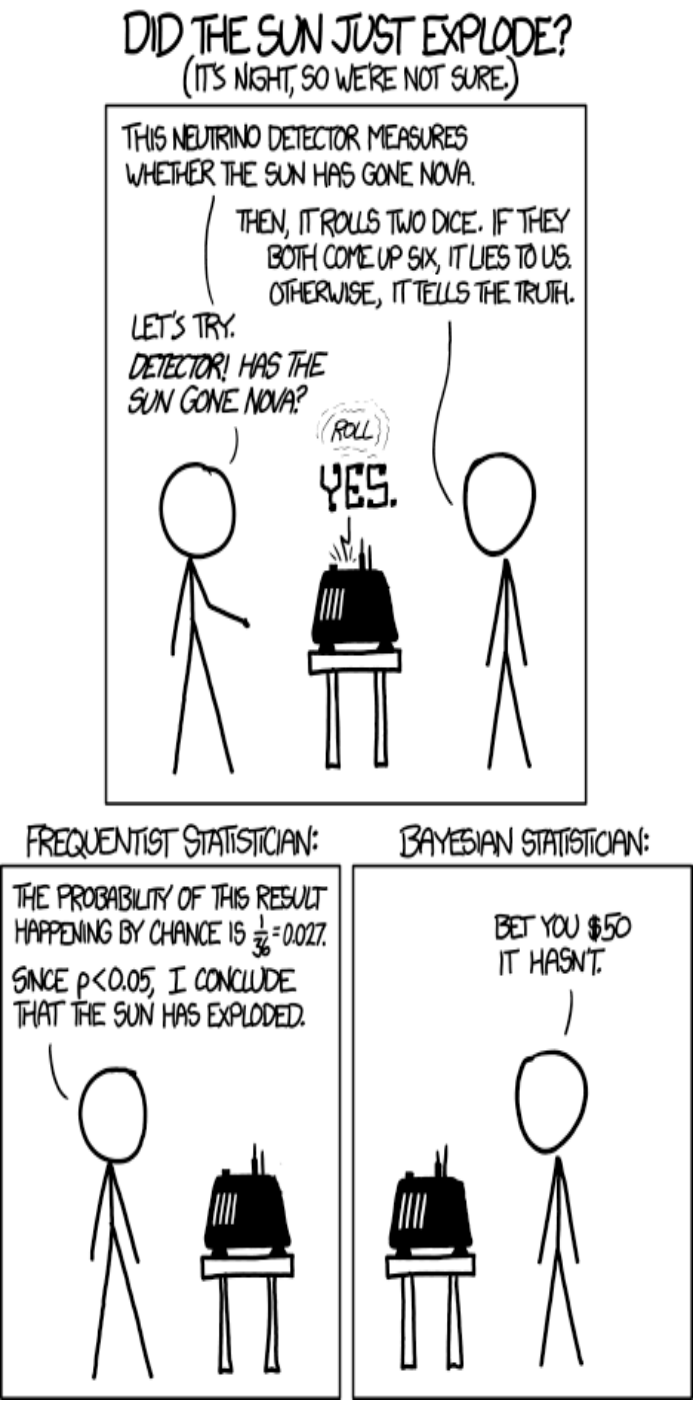
Anthropogenic vs natural emissions?

- Bottom-up inventories
- Measurements
- Models



Source: http://www.energyland.emsd.gov.hk/en/energy/environment/pollutants.html

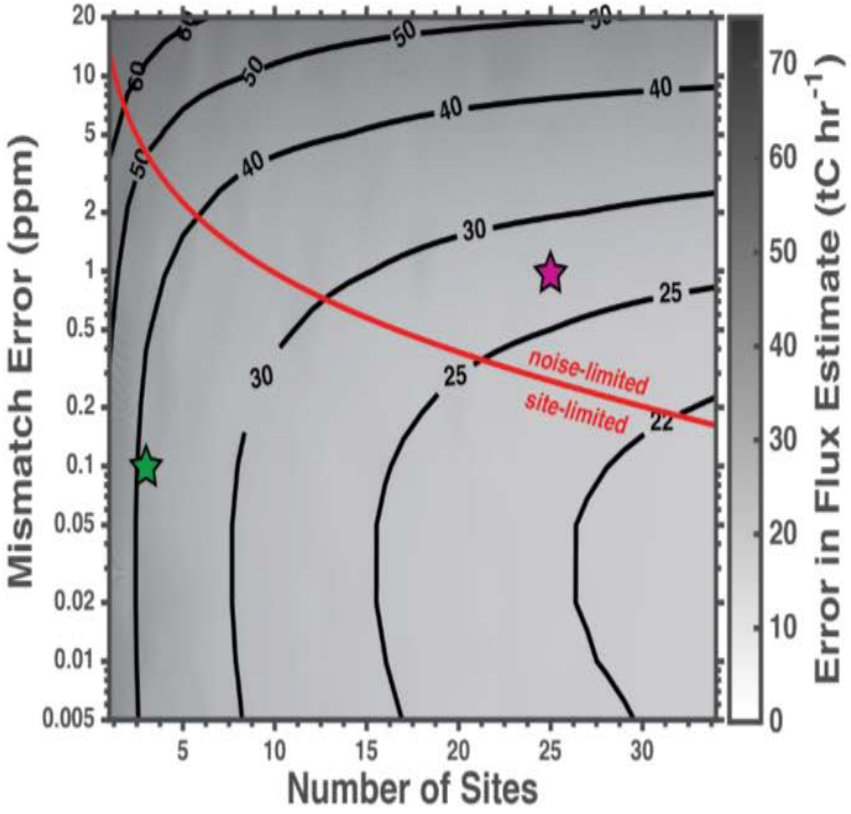
emissions



Emission Estimation

- Bottom-up vs. top-down approach
- Mitigation verification
- We all love Bayesian !

Optimal observing network design



From Turner et al., 2016

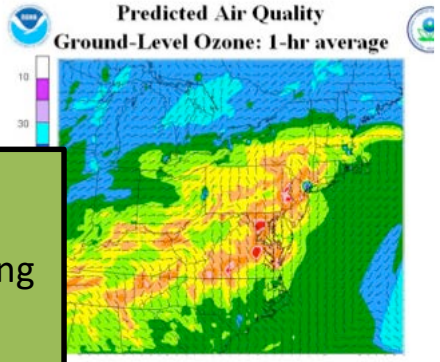
emissions

Fundamental Research for Air Quality

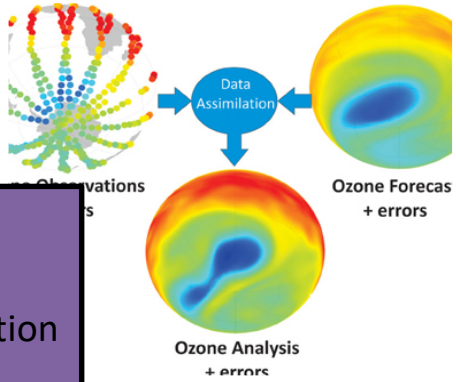
Research for the sake of science vs. Research for the sake of policy

Satellite Observations and retrievals methods

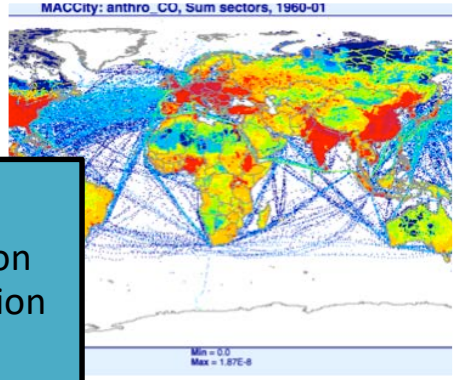
Forecasting



Data Assimilation



Emission Estimation



Fundamental research

Questions / Unknowns

Beyond forecasting how are policy and regulation similar / different in other countries?

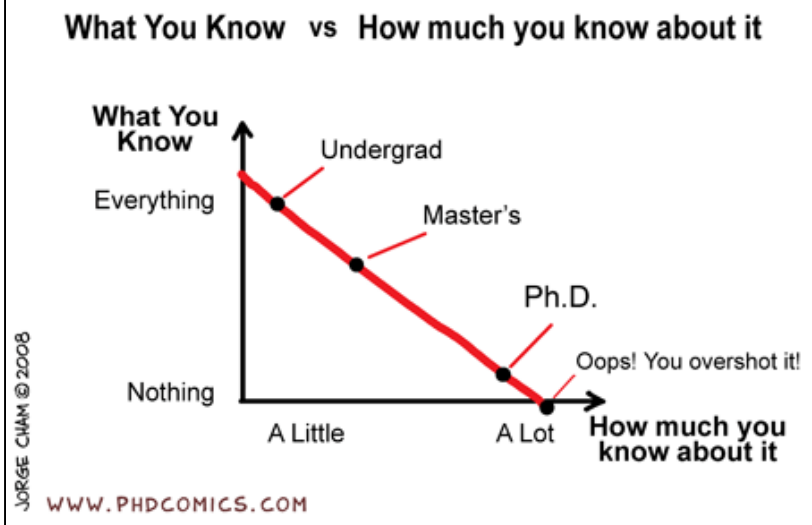
How does the state / national government help the emitter meet the standards?

We were left wondering about pollution reduction technology

Conclusion

Four idealized modes of engagement

VIEW OF DEMOCRACY	VIEW OF SCIENCE IN SOCIETY: Linear Model	VIEW OF SCIENCE IN SOCIETY: Stakeholder Model
Interest group pluralism	Pure Scientist	Issue Advocate
Elite Conflict	Science Arbiter	Honest Broker of Policy Alternatives



Questions?


National Center for Atmospheric Research
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DISCOVER
EXPLORE