Implications of Improved Emissions Estimates

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Evolution of GEIA and the Emissions Inventory Community

From: Providing a global emissions data set for use in atmospheric models

To: Organizing the scientific community to improve emissions inventories at the neighborhood, city, regional, and global scale to inform:

- **Earth System Science:** Understanding the processes driving that past, present, and future atmospheric composition and the implications for human health, welfare, and the environment.
- **Policy Development:** Projection and posterior evaluation of the impact of mitigation policies and changes in economic activity and technology on air quality, climate change, and their health and environmental impacts.
- **Forecasting and Public Information:** Providing information in near real-time to help individuals (and organizations) manage their exposure, contribution, and response to air pollution.

Improvements & Innovations

- Availability of Detailed Data and Computing Power
  - Enabled Increased Spatial and Temporal Resolution
- New Observations and Analysis Techniques
  - Enabled Increased Evaluation of Traditional Emissions Estimation Techniques
  - Enabled Development of New Emission Estimation Techniques
- Increased Communication Across Regions and Disciplines
  - Facilitated By Information Technology and Collaborative Projects
  - Creating Expanded Capability and Improved Information

Persistent Challenges

- Availability of Information at the Process Level, for example:
  - emission rates of vegetation species
  - prevalence of technology types
  - chemical composition of emissions
- Timeliness
  - Responding to Rapid Developments
  - Near Real Time Data Demands
- Systematic Evaluation of Uncertainties
- Learning from Insights
  - Informing changes to emission estimation techniques
  - Informing uses of emissions data
- Capacity and Information Gaps by Region and Emission Sector
  - Can we share information where we have it and focus community efforts where the biggest gaps are?