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?