ISSRC Goal: Improve the Air Quality Management Process

Provide Training, Software Tools, and Information for Better Air Quality Management programs in developing countries

www.issrc.org

Needs Identified in 2000

- On-Road vehicles are the main source of urban emissions yet there was no applicable emissions model or data collection process for on-road and off-road vehicles in developing countries
- Only limited information was available to help developing countries create an effective air quality management process
- Data (such as information to build emission inventories) needed for the air quality management process was not easily accessible or easily useable by air quality improvement agencies in developing
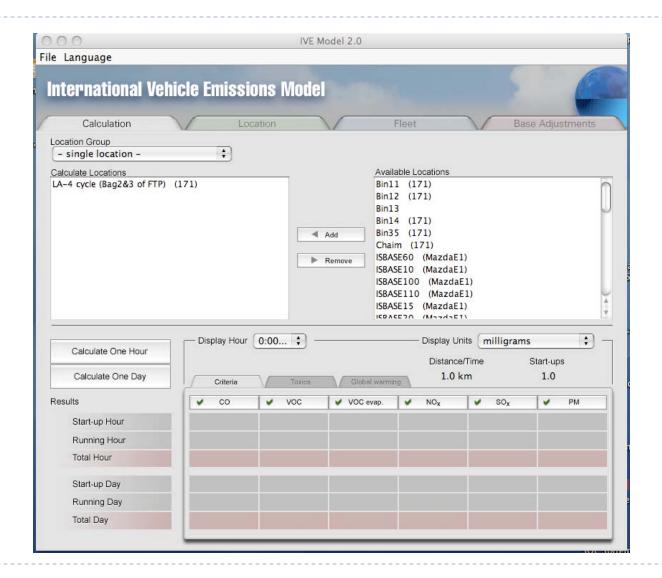- countries

Projects Undertaken by ISSRC

- **International Vehicle Emissions Model (IVE)**
  - Develop emissions model for on-road mobile sources applicable to developing countries (2000-present)
- **Air Quality Knowledgebase**
  - Provide an internet based information system on air quality management (2006-present)
- **Integrated Air Quality Management Process**
  - Develop an internet based database system that supports data collection and facilitates a comprehensive air quality management process to addresses criteria, toxic, and climate change pollutants (2008-present)

On-Road Vehicle Emissions Model Completed

▸ **IVE Model**

  ▸ Can be downloaded for free from ISSRC web site (www.issrc.org/IVE)

  ▸ Can be operated in five languages with more languages being added as needed

  ▸ Reviewed in Air and Waste Management Association Journal as best overall model for estimating vehicular emissions in developing countries (February, 2009)
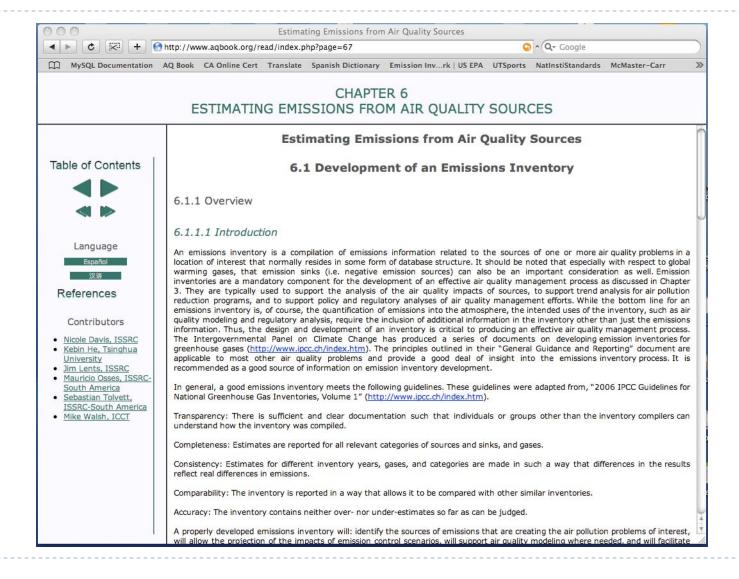
▹

IVE Model Interface

On-Road Data Collection Methodologies

- Methodologies have been developed to collect appropriate on-road mobile source data for emissions modeling.
- Methodologies are being applied in Argentina (Buenos Aires), China (Beijing, Shanghai, Tianjin, Xian), Chile (Santiago), Colombia (Bogotá, Cali), Israel (Jerusalem), India (Pune), Kazakhstan (Almaty), Mexico (Mexico City, Guadalajara, Mexicali, Monterey, Tijuana), Turkey (Istanbul).
- Work beginning in Chongqing, China and plans underway for additional cities in Turkey

AQ Knowledge Base

▶ **Internet Encyclopedia On Air Quality Management Issues**

  ▶ Most important topics identified and outlined, some chapters drafted

  ▶ Text upload system created to allow additions to the text from multiple persons from anywhere in world with an internet connection

  ▶ Can support multiple languages

  ▶ Can be reviewed in present stage of development at www.aqbook.org/read

Knowledgebase Interface

Knowledgebase Development

- 13 topics identified for knowledgebase
- Information on 4 topics online
- Chapter 3 in English, Spanish, and Chinese to demonstrate multi-language capability
- Present authors: Nicole Davis, Kebin He, James Lents, Mauricio Osses, Michael Walsh
- 2 day class taught annually in Sweden using Chapter 3 and 6 of knowledgebase
- Hope to make use of expertise at NACAA and EPA in U.S. and other experts around the world to add to knowledgebase

Environmental Database System

▶ **Database system to support integrated air quality management (**Urban Air Quality, Regional Air Quality, Global Air Quality**)**

  ▶ Presently designed to operate in Chinese, English, Portuguese, and Spanish

  ▶ To be available at no cost

  ▶ Designed to be easily implementable in office with low cost components

  ▶ Developing web applications to support an integrated air quality management process using the new database design including spatially and temporally disaggregated emission inventories, credit tracking, inspection tracking, etc.
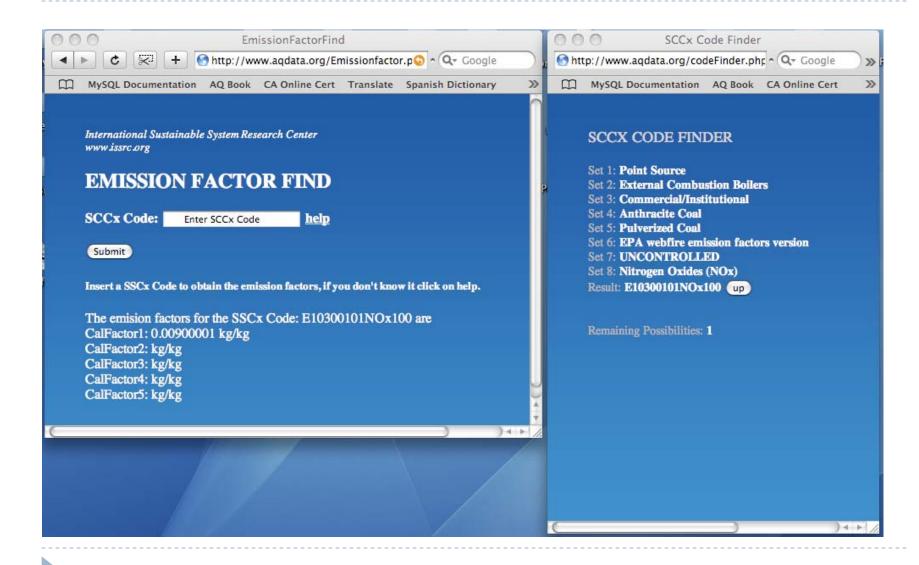
Database Development and Testing

▸ **For initial development, working with**
- ▸ Mexico EPA (SEMARNAT), Mexico DF, and Mexico INE
- ▸ Sao Paulo EPA (CETESB) and Institute of Energy and Environment (IEMA) in Brazil
- ▸ Shanghai Environmental Academy and Chongqing Air Pollution Control Agency in China

▸ **Most generic data entered into database, presently working on local Mexico City and Guadalajara and Sao Paulo data to move into database to demonstrate system. Data related to Shanghai and Chongqing to follow**

▸

Example Interfaces Presently Available

- ▶ Gridded Data Input Interface
- ▶ Emission Factor Finder
- ▶ IPCC Web Interface
- ▶ Many others under development

Emission Factor Interface

Conclusion

▸ Have on-road mobile emissions model in place and available free with English and Spanish users manuals

▸ Working toward an off-road mobile emissions model with similar user interface

▸ Created a free website to house information on air quality management with sections presently available on collecting appropriate information to build on-road mobile source emission inventory, AQM concepts, inventory development, air quality standards, modeling.

▸ Developing free internet database system to house and allow processing of air quality management related data with interfaces in Chinese, English, Portuguese, and Spanish.

▸