

Airport Emissions Inventory Update

AIRQUEST Annual Meeting
September 16-18, 2008

Background

- Airpact is a daily air quality forecasting system for criteria pollutants and several toxics
- 12-km grids over ID, OR, WA
- Began in the mid 1990s and has undergone several major updates
- Last major inventory update was in 2005.
- Inventory Update Workgroup formed last summer

Workgroup Members

- Sarah Clouse – WA ECY
- Kelly Der – Metro-Van
- Colin di Cenzo - EnvCan
- Bob Kotchenruther - EPA
- Brian Lamb - WSU
- Warren McCormick – BC Env
- Sally Otterson – WA ECY
- Chris Ramsdell – ID DEQ
- Wes Risher – OR DEQ
- John St. Clair - SWCAA
- Jeffrey Stocum – OR DEQ
- Chris Swab – OR DEQ

Inventory Components

- Domain
- Grid
- Sources
- Pollutants
- Year
- Spatial Allocation
- Temporal Allocation
- Special Treatment
- Sources
- Chemical Speciation
- Format
- QA/QC
- Documentation

Domain

■ Current

- Airport domain is ID, OR, WA with buffer
- Emissions domain is the larger Airquest domain (more BC, AL, larger buffer)
- Center from MM5

■ Update

- Center from WRF. This alters the domain and is an unresolved issue at this time

Grids

- Current
 - Inventory available at 12-km and 4-km
 - Point sources and some line source surrogates available at 1-km
- Update
 - Developing additional 1-km surrogates

Sources

- Current and Update are a compilation of national, state, provincial, and local data.
- Onroad, nonroad (model), biogenic, and fire sources compiled specifically for Airpact and are fairly consistent across jurisdictional lines.
- Point, nonpoint, aircraft, locomotives, ships, and geogenic from jurisdictions' individual inventories. Source category coverage, methodologies, and data sources vary among jurisdictions.

Pollutants

- Current
 - Criteria pollutants
 - Nine air toxics treated as non-reactive tracers
- Update
 - Considering expanding number of air toxics
 - Considering adding some toxics to the chemical mechanism

Year

- Current
 - Biogenic, fire: actual day's forecast
 - Onroad, nonroad (model): 2005
 - All other: 2000/2002 projected to 2005
- Update
 - Onroad, nonroad (model): 2009
 - All other: predominantly 2005 projected to 2009

Spatial Allocation

- Current (major surrogates)
 - Population: 2000 Census
 - Land use/cover: 1992
 - Onroad link VMT for OR and WA: ~ 1995
 - Rail and highway miles: (?) obtained in 2001
- Update (major surrogates)
 - Onroad link VMT for OR and WA: 2000-2010
 - Onroad highway link VMT for ID: ?
 - Commercial Marine
 - Exploring new sources of land use/cover and other surrogate updates

Temporal Allocation

- Current
 - EPA defaults (from CAIR work)
 - EPA NONROAD2004
 - Local and regional data
- Update
 - EPA NONROAD2005
 - Updating some local and regional data (onroad, others?)

Special Treatment Sources

- Current
 - Onroad mobile temperature adjustments
 - Dairy ammonia module
- Update
 - Enhancements to onroad temperature adjustments
 - Exploring woodstove temperature adjustments, road dust precipitation adjustments, annual point source updates

Chemical Speciation

- Current
 - SAPRC99
- Update
 - No change (?)

Format

- Current
 - SMOKE emissions processor files
- Update
 - No change

QA/QC

■ Current

- ODEQ produced emissions summaries to look at major differences among jurisdictions and source categories
- Errors caught through process of using Airpact for various analyses

■ Update

- Create a more deliberate and systematic QA process
 - Build pre and post SMOKE processing QC checks into the Airpact system
 - Use visualization tools such as ArcGIS
- Final Report
- Recommendations for what kind of analyses the Airpact data will be suitable for

Documentation

- Current
 - No formal documentation prepared
- Update
 - Write report for Airpact focusing on
 - Process of combining the agency inventories into one
 - Special source treatments such as temperature adjustments
 - Preparing the inventory for the SMOKE processor
 - Include links to agency inventories or contacts for information on emissions estimates