**IWDW tools**

Emissions Review Tool (ERT): User can create “dynamic” charts of WAQS modeling platform emissions “inputs (county level)” aggregated by chemical “parameter” and annual State, county, and Source Classification Codes (SCCs) averages.

Model Performance Evaluation Plots (Image Browser): Browser to display “static” plots produced as part of the WAQS MPE process. Plots include emissions, meteorological modeling and PGM MPE. Plot types include spatial plots, time series, bar, soccer, scatter. Aggregations include 4 and 12km domains. Temporal aggregations include annual and monthly averages, with hourly, 1hr max, 8hr max comparisons at sites with continuous criteria pollutant monitoring.

Source Apportionment Tool (SA): Dynamic charts to display SA modeling results. Source category specific contribution to MDA8 at monitoring sites (in 4km DSAD and by States and regions in 12km domain)

Model-to-Observation Comparison Tool (Model-to-Obs): Dynamic display of CAMx output paired to observational data. Pairings can be aggregated by observational network. Time series chart can be filtered by date range. Can provide site level MPE that may not be available with in a static plot browser.

Monitoring Data Tools (Reports): Includes pre-defined chart types for visibility, O3, wet and dry deposition.

GIS Tools: Two types of GIS tools are currently being considered: Selection by geographic region, which includes site, county and other areas of interest. This can be used to enable selections for other tools, and/or to display metadata related to geographic regions (such as county or state level emissions). Another GIS display provides “layered” display of either gridded and/or point data, including model output and monitoring point data.

Revisions: Green text shows revisions to Table 1 based on feedback received during Oct. 20 call.



**Figure 1. IWDW tool deployment timeline**

**Table 1. IWDW tool development and deployment planning**

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| --- | --- | --- | --- | --- | --- |
| **Tool** | **Version** | **Current functionality & future enhancements**  | **Modeling platforms**  | **Obs. data** | **Target release date**  |
| ERT | v1 | Dynamic browsing of WAQS emissions data at chemical species and State, county, SCC levels | 2008b, 2008\_20202011a |  | 9-23-15 |
| v2 | Enhancements: Source category and parameter aggregation metadata; multiple platform display; charts at SCC level; refactor State ordering; speciated VOCs (need to address sectors w/o VOC speciation, e.g. biogenics. Could apply to anthro sources with VOC speciation)Bug fixes: SCC max query string; multiple platform selection; platform specific labels; select box text truncation | 2011b, 2011b\_2020 |  | TBD |
|  |  |  |  |  |  |
| MPE | v1 | Display of static images used for WAQS modeling platform MPE. Includes met, emissions, and PGM plots for release platforms and related sensitivity studies | 2008b, 2011a, 2011a\_GCBC, 2011a\_MOVES, 2011a\_WinterO3, (2011)WRF, 2011b |  | 9-23-15 |
| v2 | Enhancements: dual plots, metadata enabled plot selection; daily emissions spatial plots for VOC species; batch plot download | 2011b (CAMx, CMAQ) |  | TBD |
|  |
| Model-to-obs  | v1 | Dynamic time series plots of model-to-obs data pairings generated using AMET and sitecompare.f | 2008b | AQS, CASTNet, CSN, IMPROVE | 9-23-15 |
| v2 | Enhancements: map based site selection; additional chart types (scatter, spatial stats, tile plots, soccer); statistics output (r2, NME, NMB, etc.); State ordering; filtering for diurnal trends | 2011a, 2011b (CAMx, CMAQ) |  | TBD |
|  |  |  |  |  |  |
| SA | v1(v1.0.1.2) | Current: Source category specific contribution to MDA8 at monitoring sites (in 4km DSAD and regions in 12km domain) | 2008b |  | 9-23-15 |
| v2 |  | 2011a |  | TBD |
| v3 |  | 2011b (CAMx, CMAQ) |  | TBD |

**Table 1 cont.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tool** | **Version** | **Current functionality & future enhancements**  | **Modeling platforms**  | **Obs. data** | **Target release date**  |
| Summary reports (general) | v1 | pre-defined displays of observational data; single-site selection using Google map UI |  |  | 9-23-15 |
|  | v2 | GIS based single/multiple site selection; select sites by other criteria (e.g. proximity to geographic regions –CIAs, urban/rural characteristics, elevation, O&G basin proximity) |  |  |  |
|  |  |  |  |  |  |
| Visibility | v1 | RHR metrics (are these relevant to IWDW-WAQS?) |  | IMPROVE dv | 9-23-15 |
|  | v2 |  |  |  |  |
|  |  |  |  |  |  |
| Ozone | v1 | Trends, exceedances |  | AQS hourly | 9-23-15 |
|  | v2 | Enhancements: apply 70ppb O3 standard |  |  |  |
|  |  |  |  |  |  |
| Wet Dep | v1 | S, N trends and composition |  | NADP NTN | 9-23-15 |
|  | v2 |  |  |  |  |
|  |  |  |  |  |  |
| Dry Dep | v1 | S, N trends and composition |  | CASTNet | 9-23-15 |
|  | v2 | Enhancements: add PM, Hg dep |  |  |  |
|  |  |  |  |  |  |
| Other reports? |  | Phase I, Phase II O&G inventories and projections |  |  |  |
|  |  | WAQS O&G sectors vs. NEI |  |  |  |
|  |  |  |  |  |  |
| GIS tools |  | ERT: enable selection by user defined geographic region(s); dynamic aggregation by selected regions; display gridded (premerged and SMOKE output)ERT GIS: display gridded emissions by parameter/source category to look for discrepancies across State/County boundaries; implement emissions pie chart overlay (prototype provided by Zac) |  |  | Demo |
|  |  | MPE: combine PGM output and monitoring data layers |  |  |  |