Comparison of EASIUR to AP2

• Figures 1 to 4 compare EASIUR with deterministic AP2 values published in Muller (2014).

• The AP2 for year 2005 was downloaded from the supporting material at the journal website.

• Adjustments were made to isolate the comparison to air quality modeling:
  – Because AP2 uses $6M (to be exact, $5,907,840) for VSL, AP2 is adjusted to the EASIUR’s base VSL ($8.6M).
  – AP2 is converted from $ per short ton to $ per metric ton.
  – Both EASIUR and AP2 use the same concentration-response relation, 6% increase in mortality per an increase of 10 $\mu g$ PM$_{2.5}$/m$^3$.

• I treated three old counties in AP2 that do not exist anymore: one (12025) simply changed its FIPS code (12086); the other (51560) merged to an other county (51005) was assigned with values from the parent county; and another, a newly created one (8014), was assigned with inverse-distance weighted averages of three nearby counties.

• EASIUR’s 150 m and 300 m are modeled for the physical stack heights of 150 m and 300 m with a common stack characteristics (e.g. plume temperature and flow rate). CAMx internally simulated plume rise accordingly depending on ambient conditions. AP2 Medium represents effective stack heights ranging 250 m to 500 m, which include plume rise in addition to physical height.

Reference
Figure 1: EASIUR v.s. AP2 (Muller, 2014) for ground-level emissions. For each county, AP2’s estimate is divided by EASIUR’s. Yellow areas indicate where AP2 reported negative values.
Figure 2: EASIUR 150 m v.s. AP2 Medium (Muller, 2014). EASIUR 150 m indicates a 150 m physical stack height while AP2 Medium is modeled for effective stack heights ranging 250 m to 500 m.
Figure 3: EASIUR 300 m v.s. AP2 Medium (Muller, 2014). EASIUR 300 m indicates a 300 m physical stack height while AP2 Medium is modeled for effective stack heights ranging 250 m to 500 m.
Figure 4: Comparison of EASIUR to AP2 (Muller, 2014) for ground-level emissions. EASIUR and AP2 are compared for each county. Pearson correlation coefficients ($r$) between EASIUR and AP2 are presented on the bottom right.