This paper deals with post-processing methods for mimicking the determination of time-resolved concentrations of atmospheric organic aerosols (OAs) starting from time-averaged measurements. This is an important issue because, even if it has been acknowledged that the existing spectroscopic methods for OA measurement provide complementary information, the actual applicability of some offline methods (e.g., FTIR, NMR) is limited for not providing the desired time resolution. The paper presents a comprehensive theoretical discussion of a case study, an AMS field campaign, where a hypothetical time-averaged measurement series was produced based on a set of sampling strategies and post-processing methods which were then compared and evaluated. The authors conclude that the simple linear interpolation of sequential samples of 4 h duration provides the best approximation of a time-resolved (hourly) timeline of observations for many practical purposes, although some uncertainty still relies in the actual sampling strategy (how much start/stop times overlap with peak concentrations). This is a useful recommendation, even if, I believe, it is not straightforward to generalize it to all possible real sampling conditions. The Mexico City campaign was characterized by very pronounced, consistent diurnal variations in the concentrations of HOA and OOA (Figure 2), and simply most of this variability can be captured by a 4 h sampling strategy. In areas where diurnal cycles are more complicated (e.g., lunch-time peak of cooking aerosols) or meteorological conditions are more variable (marine/coastal sites), I am not sure the Authors would have found the same conclusions.

Specific comments:

- I suggest to include the average concentration calculated throughout the full measurement period as an additional diagnostic, because some post-processing methods seem to qualitatively capture the time trend but not the absolute amounts respect to the true time series (Figure 5d,e).
- The regularization parameters remain a source of error that cannot simply constrained in a real case scenario, when the true time series is (obviously) not known. Are there any recommendations for the selection of k and λ in the TSVD and Tikhonov methods beside looking at when the solution provides a "reasonable" time trend?
- Figure 6 shows that the error associated with sequential sampling increases with increasing sampling duration. Here, it is assumed that measurement errors are invariant with sampling duration except for the effect of mass loading approaching the detection limit. In the real world, this is complicated by sampling artifact effects. A number of studies have shown that extending the sampling time allows for a better equilibration of vapors absorbing into the filter matrix (e.g., Kirchstetter and Novakov, Atmos. Environ. 2001, 1663-1671), therefore, ME would decrease with $\Delta\tau$ faster than it is supposed in the present study for many practical purposes (but depending on the technique and on the substrate, actually).

Other comments:

Page 10, line 6: "The temporal resolution of *f* is $\delta\tau$, the temporal resolution of *g*." There is something missing in this phrase. ($\Delta\tau$?)