Here Honyu Chen, Xiangyu Liu and Qihui Li use F0AM to explore the OVOC( Formaldehyde, Formic Acid and Glyoxal ) yield from VOCs(Isoprene, Alpha-pinene and Limonene) respectively: chemical mechanism(MCM.331v and Geos-Chem), constraints from Constraints are taken from observations at the Centerville, AL site of the 2013 SOAS field campaign.

Each simulations are initiated at 09:00 LT with 1 ppbv of one kind of VOCs, 40 ppbv O3 , and 100 ppbv CO. The initial OH concentration is 4 × 106 molecules cm−3 , which is not fixed for the model. NOx concentrations are held at fixed values[0.01,0.1,1].

Here we can see from the Graphs that for HCHO, the MCM and Geos-Chem have a very similar trend but have a very different trend for other OVOCs, just as the result of Christopher Chan Miller. etc. This may due to the reason that MCM.331v have more reaction than the Geos-Chem. There is far more disagreement between the two mech- anisms for CHOCHO yields. Under high-NOx conditions, GEOS-Chem produces CHOCHO rapidly in the first 2 h due to its higher δ-ISOPO2 +NO branching ratio (10 % in GEOS- Chem vs. 3.4% in MCMv3.3.1). This is compensated at longer OH exposure times by higher GLYC yields from iso- prene in MCMv3.3.1. GEOS-Chem produces higher ultimate yields of CHOCHO under low-NOx conditions mainly due to DHDC formation and subsequent photolysis, neither of which are included in MCMv3.3.1. The NOx-dependence of the CHOCHO yield in MCMv3.3.1 is similar to that of HCHO, implying that CHOCHO and HCHO observations would provide redundant information on isoprene emissions.

Reference:

1. Miller, Christopher & Jacob, Daniel & Marais, Eloise & Yu, Karen & Travis, Katherine & Kim, Patrick & Fisher, Jenny & Zhu, Lei & Wolfe, Glenn & Hanisco, Thomas & Keutsch, Frank & Kaiser, J. & Min, Kyung-Eun & Brown, Steven & Washenfelder, Rebecca & Gonzalez Abad, Gonzalo & Chance, Kelly. (2017). Glyoxal yield from isoprene oxidation and relation to formaldehyde: Chemical mechanism, constraints from SENEX aircraft observations, and interpretation of OMI satellite data. Atmospheric Chemistry and Physics. 17. 8725-8738. 10.5194/acp-17-8725-2017.