Table S1: SAPRC07 lumping and reaction rate for each speciated precursor

	Species	Lumping	k_{OH} (cm^3 $molecules^{-1}$ s^{-1})
VOC	1-butene	OLE1	3.14E-11
	1-heptene	OLE1	3.34E-12
	1-hexene	OLE1	3.70E-11
	1-methylcyclohexene	OLE1	9.64E-12
	1-octene	OLE1	3.70E-11
	1-pentene	OLE1	3.14E-11
	1;2-butadiene	OLE1	2.60E-11
	1;2-diethylbenzene	ARO1	5.80E-12
	1;2;3-trimethylbenzene	ARO2	3.27E-11
	1;2;4-trimethylbenzene	ARO2	3.25E-11
	1;2;4;5-tetramethylbenzene	ARO2	3.25E-11
	1;3-butadiene	OLE2	6.66E-11
	1;3-diethylbenzene	ARO2	3.25E-11
	1;3;5-trimethylbenzene	ARO2	5.67E-11
	1;4-diethylbenzene	ARO2	3.25E-11
	2-ethyltoluene	ARO1	1.18E-11
	2-methyl-1-butene	OLE2	6.10E-11
	2-methyl-1-pentene	OLE2	6.30E-11
	2-methyl-2-butene	OLE2	8.69E-11
	2-methyl-2-pentene	OLE2	8.90E-11
	2-methylheptane	ALK4	4.77E-12
	2-methylhexane	ALK4	4.77E-12
	2-methylpentane	ALK4	5.20E-12
	2;2-dimethylbutane	NONE	2.23E-12
	2;3-dimethyl-2-pentene	OLE2	1.03E-10
	2;3-dimethylbutane	ALK4	5.78E-12
	2;3;4-trimethylpentane	ALK4	6.60E-12
	2;4-dimethylpentane	ALK4	6.75E-12
	3-ethyltoluene	ARO1	1.19E-11
	3-methyl-1-butene	OLE1	3.18E-11
	3-methylheptane	ALK4	5.20E-12
	3-methylhexane	ALK5	8.11E-12
	3-methylpentane	ALK4	5.20E-12
	4-ethyltoluene	ARO2	1.86E-11
	4-methyl-1-pentene	OLE2	6.30E-11
	4-methylheptane	ALK4	5.20E-12
	a-pinene	TERP	5.23E-11
	acetylene	OLE1	8.15E-13
	benzene	ARO1	1.22E-12
	butane	NONE	2.36E-12
	butylbenzene	ARO1	4.50E-12
	c-1;3-dimethylcyclopentane	ALK5	9.64E-12
	c-2-butene	OLE2	5.64E-11
	c-2-hexene	OLE1	3.70E-11
	c-2-pentene	OLE2	6.50E-11
	c-3-hexene	OLE1	3.70E-11
	cyclohexane	ALK5	6.97E-12
	cyclohexene	OLE2	6.77E-11
	cyclopentane	ALK4	4.97E-12
	cyclopentene	OLE2	6.70E-11
	cyclopropane	NONE	8.15E-14
	decane	ALK5	1.10E-11
	dodecane	ALK5	1.32E-11
	ethane	NONE	2.48E-13
	ethene	NONE	8.52E-12
	ethylbenzene	ARO1	7.00E-12
	heptane	ALK4	6.76E-12
	hexane	ALK4	5.20E-12
	hexylbenzene	ARO2	1.13E-10
	i-butane	NONE	2.36E-12
	i-butene	OLE1	3.14E-11
	i-pentane	ALK4	3.80E-12
	isoprene	ISOP	1.01E-10
	i-propylbenzene	ARO1	6.30E-12
	limonene	TERP	1.64E-10
	m-xylene	ARO2	2.31E-11
	methylcyclohexane	ALK5	9.64E-12
	methylcyclopentane	ALK4	3.80E-12
	naphthalene	ARO2	2.30E-11
	nonane	ALK5	9.70E-12
	o-xylene	ARO2	1.36E-11
	octane	ALK5	8.11E-12
	p-xylene	ARO2	1.43E-11
	pentane	ALK4	3.80E-12
	propane	NONE	1.09E-12
	propene	NONE	2.63E-11
	propylbenzene	ARO1	5.80E-12
	propyne	OLE1	7.13E-12
	sec-butylbenzene	ARO1	5.80E-12
	styrene	ARO2	5.80E-11
	tetradecane	ALK5	1.79E-11
	toluene	ARO1	5.63E-12
	1;3-hexadiene (trans)	OLE2	1.12E-10
	t-2-butene	OLE2	6.40E-11
	t-2-hexene	OLE1	3.70E-11
	t-2-pentene	OLE2	6.70E-11
	tridecane	ALK5	1.51E-11
	undecane	ALK5	1.23E-11

Table S2: VBS yields for SAPRC07 lumped species

	High Nox (Low Yield)					Low Nox (High Yield)			
	C* (µg/m3)					C* (µg/m3)			
Group	1	10	100	1000		1	10	100	1000
ALK4	0.0000	0.0375	0.0000	0.0000		0.0000	0.0750	0.0000	0.0000
ALK5	0.0000	0.1500	0.0000	0.0000		0.0000	0.3000	0.0000	0.0000
OLE1	0.0008	0.0045	0.0375	0.1500		0.0045	0.0090	0.0600	0.2250
OLE2	0.0030	0.0255	0.0825	0.2700		0.0225	0.0435	0.1290	0.3750
ARO1	0.0107	0.2571	0.4821	0.7500		0.0107	0.2571	0.7500	0.9643
ARO2	0.0015	0.1950	0.3000	0.4350		0.0750	0.3000	0.3750	0.5250
ISOP	0.0003	0.0225	0.0150	0.0000		0.0090	0.0300	0.0150	0.0000
SESQ	0.0750	0.1500	0.7500	0.9000		0.0750	0.1500	0.7500	0.9000
TERP	0.0120	0.1215	0.2010	0.5070		0.1073	0.0918	0.3587	0.6075

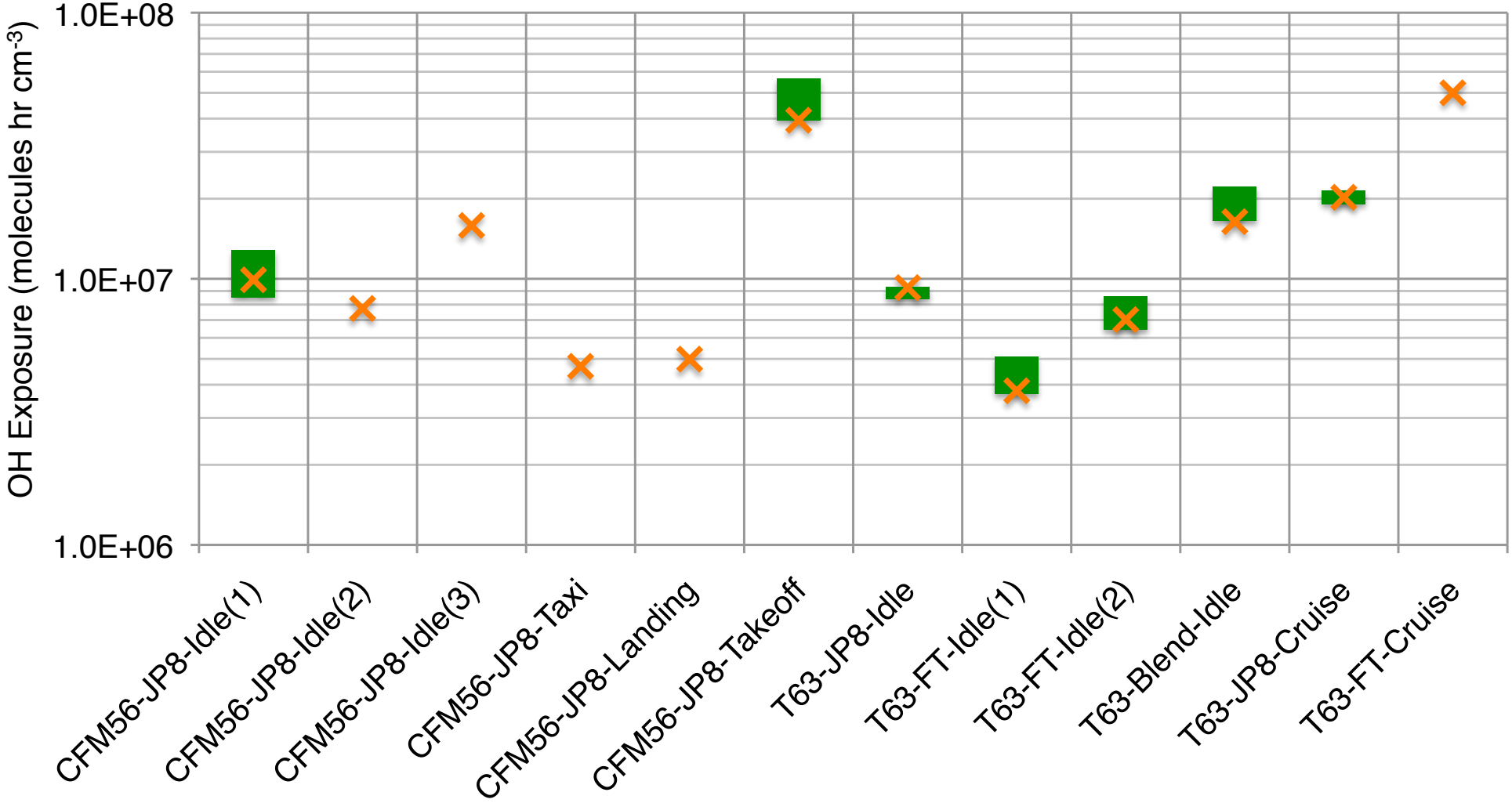

Figure S1: Interpreted OH exposure range (molecules hr cm^{-3}) for the twelve different experiments. The median value represented using the orange cross is what is used in our analysis.

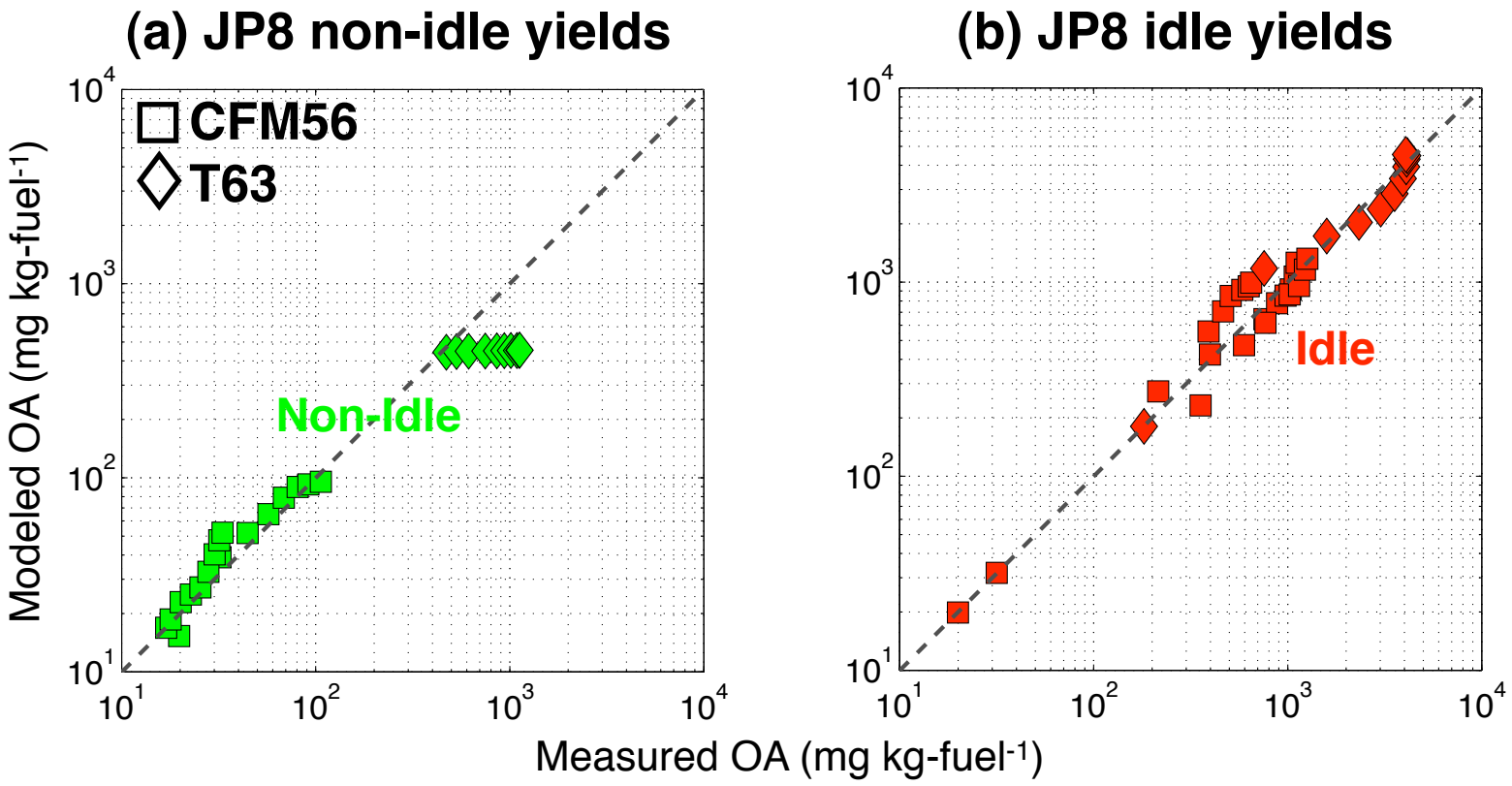

Figure S2: Model-measurement comparison for the JP8 experiments using (a) NT-SOA yields derived from the non-idle experiments and (b) NT-SOA yields derived from the idle experiments.