Supplement of

Comparative ozone production sensitivity to NOx and VOCs in Quito, Ecuador and Santiago, Chile: implications for control strategies in times of climate action

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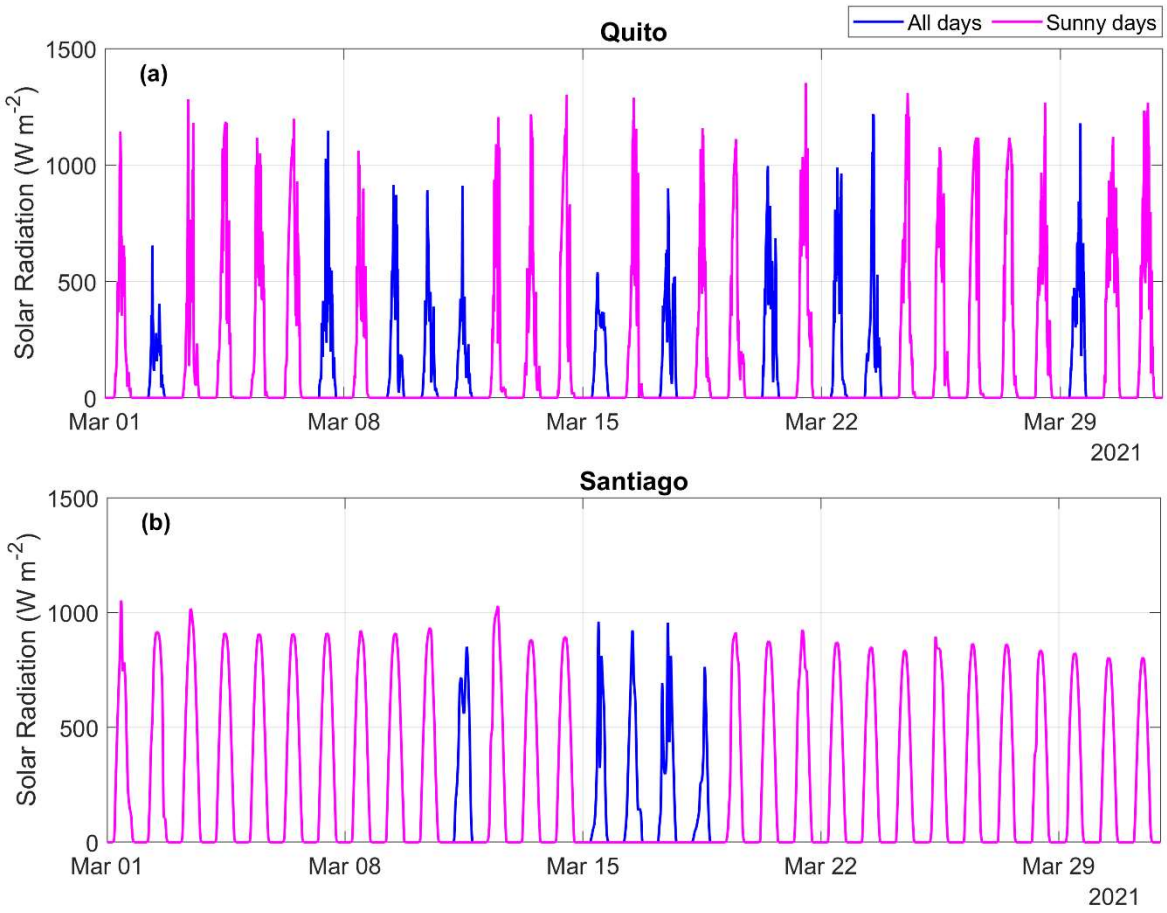

Figure S1: Time series of solar radiation in Quito and Santiago overlapping sunny days to all days.

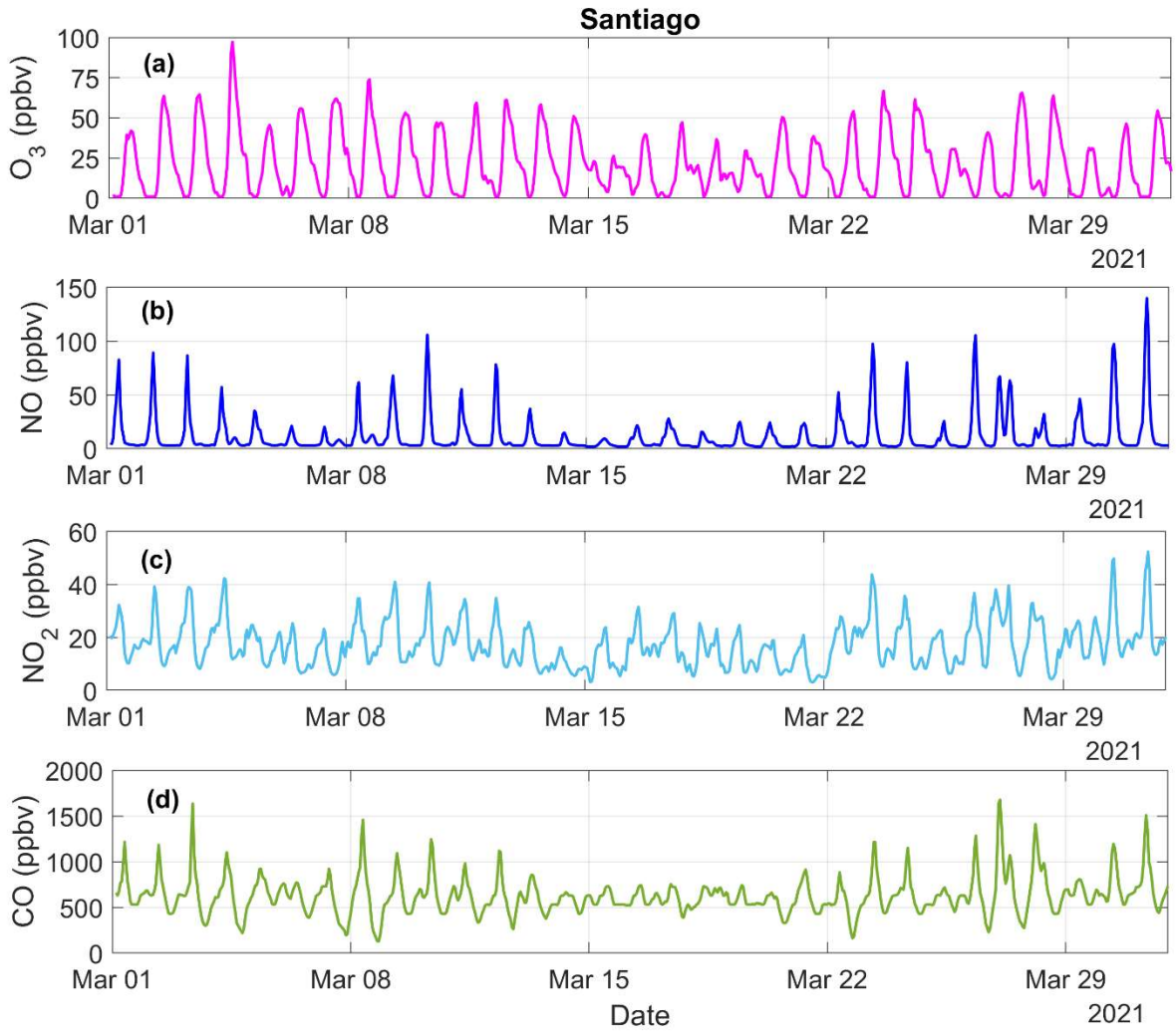

Figure S2: Air quality time series for Santiago (O´Higgins Station)

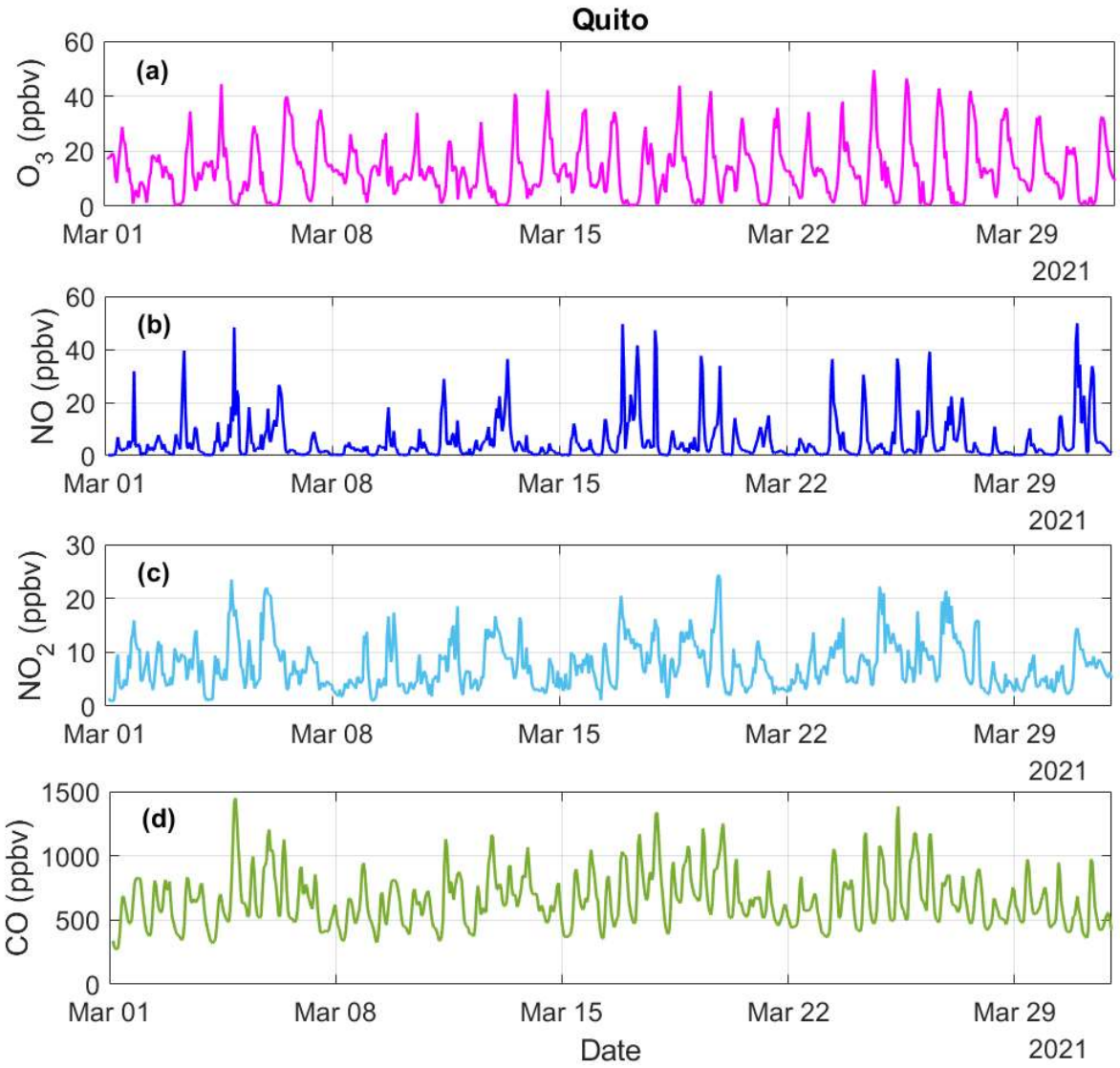

Figure S3. Air quality time series for Quito. Ozone, NO, and NO_2 are from EMA USFQ station. CO was obtained by averaging data from Belisario, Centro and Tumbaco stations from the Quito Air Quality Network (Secretariat of the Environment, Quito, Ecuador, https://aireambiente.quito.gob.ec/).

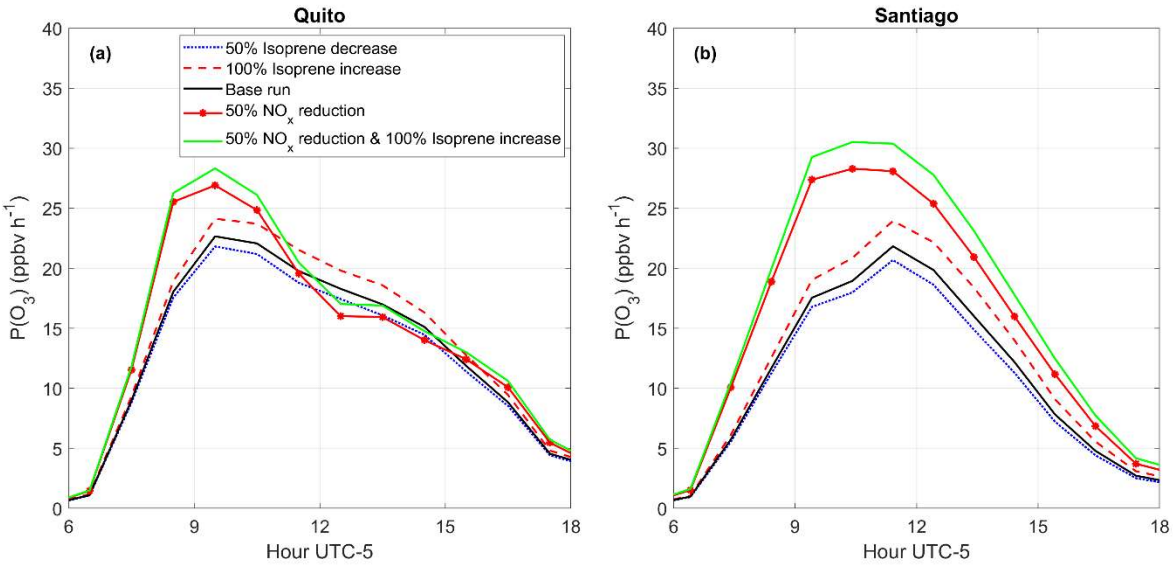

Figure S4. Isoprene and NOx scenarios for Quito and Santiago.

Table S1: VOC compounds used in the model with the measurement nomenclature and the attributed weighting factors

Group	Measured Compounds	MCM Nomenclature	Name	Attributed Factor
		CO	Carbon monoxide	1
		O3	Ozone	1
		NO	Nitrogen monoxide	1
		NO2	Nitrogen dioxide	1
Alkenes	Propene/Cyclopropane	C3H6	Propene	1
	1- Butene/2-Butene	BUT1ENE	1-butene	0.333
		CBUT2ENE	Cis-2-butene	0.333
		TBUT2ENE	Trans-2-butene	0.333
Aromatics	Benzene	BENZENE	Benzene	1
	Toluene	TOLUENE	Toluene	1
	Styrene	STYRENE	Styrene	1
	Ethyl benzene/Xylenes	EBENZ	Ethylbenzene	0.20
		OXYL	O-xylene	0.20
		MXYL	M-xylene	0.40
		PXYL	P-xylene	0.20
	C9-Aromatics	PBENZ	Propylbenzene	0.125
		IPBENZ	Cumene	0.125
		TM123B	1,2,3-trimethylbenzene	0.125
		TM124B	1,2,4-trimethylbenzene	0.125
		TM135B	1,3,5-trimethylbenzene	0.125
		OETHTOL	2-ethyltoluene	0.125
		METHTOL	3-ethyltoluene	0.125
		PETHTOL	4-ethyltoluene	0.125
Aldehydes and ketones	Formaldehyde	HCHO	Formaldehyde	1
	Acetaldehyde	CH3CHO	Acetaldehyde	1
	Methacrolein / MVK	MACR	Methacrolein	1
	Butanone / Butanal	MEK	Butanone	0.50
		C3H7CHO	Butanal	0.50
	Acetone / Propanal	CH3COCH3	Acetone	0.50
		C2H5CHO	Propanal	0.50
Oxygenated compounds	Acetic Acid / Glicolaldehyde	CH3CO2H	Acetic acid	1
	Methanol	CH3OH	Methanol	1

	Ethanol	C2H5OH	Ethanol	1
	Phenol	PHENOL	Phenol	1
	Cresol	CRESOL	Cresol	1
Isoprene	Isoprene	C5H8	Isoprene	1
Monoterpenes	Monoterpenes	APINENE	Alpha-pinene	0.333
		BPINENE	Beta-pinene	0.333
		LIMONENE	Limonene	0.333

Table S2: F0Am input options chosen for model runs

Parameter	Variables	Name in model	Units	Input
Meteorology	Pressure	P	mbar	Meteorological dataset
	Temperature	T	K	
	Relative humidity	RH	%	
Dilution	Dilution constant	kdil	s^{-1}	1/86400
Photolysis options	J-value function	MCMv331_J(Met, Jmethod)	s^{-1}	MCMv331_J(Met,0)
Radiation-Related	Solar zenith angle	SZA	degrees	Self-generated
	Ozone column	O3col	DU	Merra-2 1 hour dataset of Area-Averaged of total ozone column
	Albedo	Albedo	-	Merra-2 1 hour dataset of Area-Averaged of surface albedo
	Altitude	ALT	m	538.4 (S), 2414(Q)
Chemical Concentrations	O_3, NO, NO_2, CO and VOC's	InitConc	ppb	Dataset of air quality variables and 35 VOC´s
	Background concentration	BkgdConc	ppb	0 (default)
Chemistry	MCM scheme	ChemFiles	-	Subset of chemical species
Model options	Verbose	Verbose	-	3 (flag for verbose command window output)
	End points	EndPointsOnly	-	1 (flag for concentration and rate outputs)
	Link step	LinkSteps	-	0 (flag for using end-points of one run to initialize next run)

Table S3: Ozone and NO statistics for 2022 data at Quito and Santiago

Month 2022	Days	Quito		Santiago	
		Days with O_3 higher than 60 ppbv	Days with NO higher than 100 ppbv	Days with O_3 higher than 60 ppbv	Days with NO higher than 100 ppbv
January	31	0	5	2	1
February	28	1	1	6	0
March	31	0	0	7	12
April	30	0	0	5	17
May	31	0	0	1	27
June	30	0	1	0	25
July	31	0	0	0	24
August	31	0	0	2	22
September	30	0	0	2	13
October	31	0	4	4	6
November	30	0	10	6	1
December	31	0	10	13	0
Sum	365	1	31	48	148