Table 1: Emission factors used for the biomass burning emission flux of Higher aromatic species. * This is the average of the molar masses of the different compounds. We use the average value of Pine-forest understory and coniferous canopy as representative for extra-tropical forest.

Species	Semiarid Shrubland	Pine-forest understory	Coniferous canopy	Organic soil	number of carbon atoms	molar mass
Naphthalene PTR	0.71	0.20	0.29	0.82	10	128
1-Butenylbenzene	0.00	0.00	0.00	0.00	10	132
Ethylstyrene	0.00	0.00	0.01	0.00	10	132
1-Methyl-1-Propenylbenzene	0.03	0.01	0.01	0.01	10	132
p-Cymene	0.12	0.06	0.05	0.06	10	134
Isobutylbenzene	0.01	0.01	0.01	0.01	10	134
n-Butylbenzene	0.00	0.01	0.01	0.00	10	134
1,4-Diethylbenzene	0.01	0.01	0.01	0.01	10	134
Ethyl Xylene isomer 1	0.01	0.01	0.01	0.00	10	134
Ethyl Xylene isomer 2	0.00	0.00	0.00	0.00	10	134
C11 Aromatics PTR	0.05	0.08	0.11	0.23	10	134
Sum	0.95	0.40	0.50	1.14	11	134*

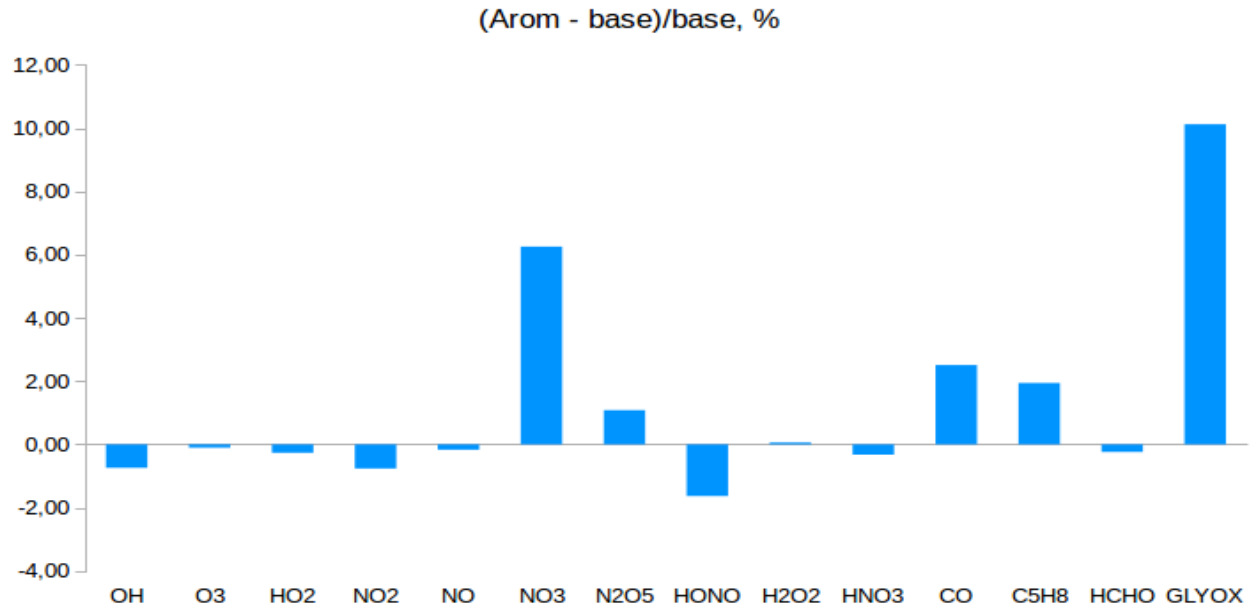

Figure 1: Relative change in the atmospheric burdens of selected species

Table 2: Reactions modified in the chemical mechanism to account for SOA loss. Reaction containing ***SOA, are new species created to simulate the SOA formation channel.

Reaction	Rate constant	
BENZENE + OH	= .352 BZBIPERO2 + .118 BZEPOXMUC + .53 HO2 + .118 HO2	$2.3x10^{-12} * EXP(-190/TEMP) * 0.72$
BENZENE + OH	= BENSOA	$2.3x10^{-12} * EXP(-190/TEMP) * 0.28$
PHENOL + NO3	= PHENOLSOA	$3.8x10^{-12} * 0.23$
PHENOL + OH	= .06 C6H5O + .8 CATECHOL + .8 HO2 + .14 PHENO2	$4.7x10^{-13} * EXP(1220/TEMP) * 0.77$
TOLUENE + OH	= .07 C6H5CH2O2 + .18 CRESOL + .18 HO2 + .65 TLBIPERO2 + .10 TLEPOXMUC + .10 HO2	$1.8x10^{-12} * EXP(340/TEMP) * 0.82$
TOLUENE + OH	= TOLSOA	$1.8x10^{-12} * EXP(340/TEMP) * 0.18$
BENZAL + NO3	= C6H5CO3 + HNO3	$2.40x10^{-15} * 0.77$
BENZAL + NO3	= BENZALSOA	$2.40x10^{-15} * 0.23$
BENZAL + OH	= C6H5CO3	$5.9x10^{-12} * EXP(225/TEMP) * 0.77$
BENZAL + OH	= BENZALSOA	$5.9x10^{-12} * EXP(225/TEMP) * 0.23$
LXYL + OH	= TLEPOXMUC + HO2 + PXYL_ TLEPOXMUC + LCARBON	$0.401x10^{-11} * 0.74$
LXYL + OH	= XYLSOA	$1.695x10^{-11} * 0.26$
LTMB + OH	= TLEPOXMUC + HO2 + PTMB_ TLEPOXMUC + 2 LCARBON	$0.827x10^{-11} * 0.77$
LTMB + OH	= LTMBSOA	$3.345x10^{-11} * 0.23$
LTMB + NO3	= C6H5CH2O2 + HNO3 + PTMB_ C6H5CH2O2 + 2 LCARBON	$1.52x10^{-15} * 0.77$
LTMB + NO3	= LTMBSOA	$1.52x10^{-15} * 0.23$
EBENZ + OH	= .10 TLEPOXMUC + .07 C6H5CH2O2 + .18 CRESOL +.65 TLBIPERO2 + 0.28 HO2 + LCARBON	$7.00x10^{-12} * 0.77$
EBENZ + OH	= EBENZSOA	$7.00x10^{-12} * 0.23$
EBENZ + NO3	= C6H5CH2O2 + HNO3 + LCARBON	$1.20x10^{-16} * 0.77$
EBENZ + NO3	= EBENZSOA	$1.20x10^{-16} * 0.23$
HAROM + OH	= .14 TLEPOXMUC + .03 C6H5CH2O2 + .04 CRESOL + .79 TLBIPERO2 + 0.18 HO2 + 4 LCARBON	$5.67x10^{-11} * 0.77$
HAROM + OH	= HAROMSOA	$5.67x10^{-11} * 0.23$
HAROM + NO3	= C6H5CH2O2 + HNO3 + 4 LCARBON	$2.60x10^{-15} * 0.77$
HAROM + NO3	= HAROMSOA	$2.60x10^{-15} * 0.23$
NO3 + STYRENE	= NSTYRENO2	$1.50x10^{-12} * 0.77$
NO3 + STYRENE	= STYRENESOA	$1.50x10^{-12} * 0.23$
O3 + STYRENE	= .545 HCHO + .1 BENZENE + .28 C6H5O2 + .56 CO + .36 OH + .28 HO2 + .075 PHCOOH + .545 BENZAL + .09 H2O2 + .075 HCOOH	$1.70x10^{-17} * 0.77$
O3 + STYRENE	= STYRENESOA	$1.70x10^{-17} * 0.23$
OH + STYRENE	= STYRENO2	$5.80x10^{-11} * 0.77$
OH + STYRENE	= STYRENESOA	$5.80x10^{-11} * 0.23$

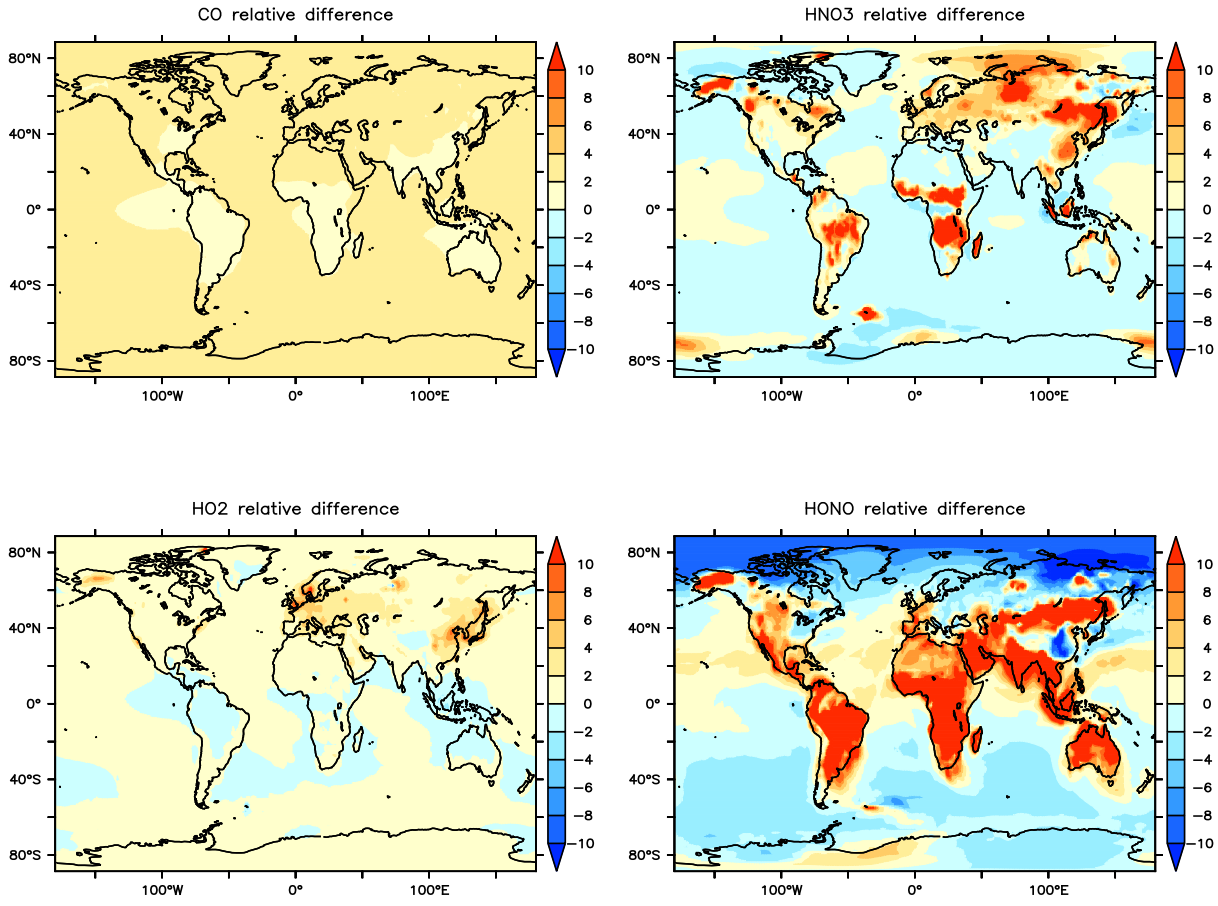

Figure 2: Annual average relative differences for CO, HNO3, HO2 and HONO.

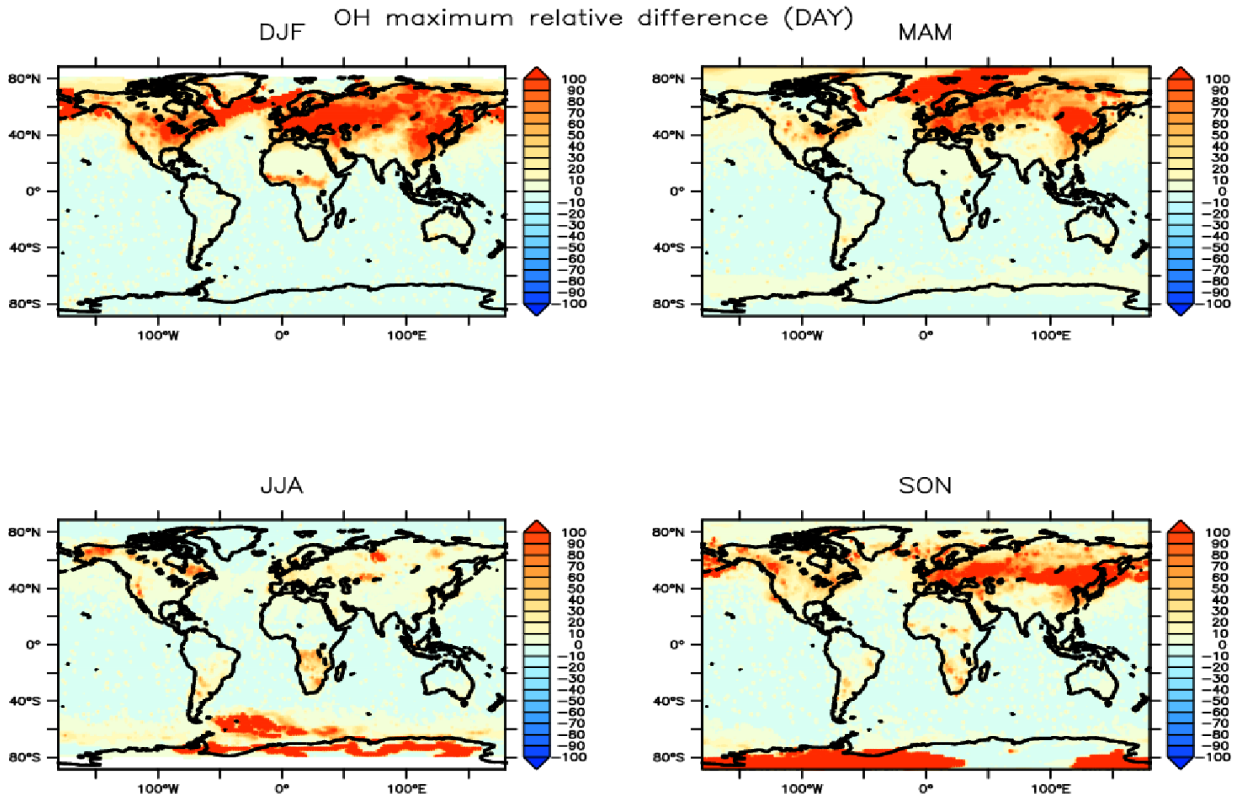

Figure 3: Maximum instantaneous relative differences for OH.

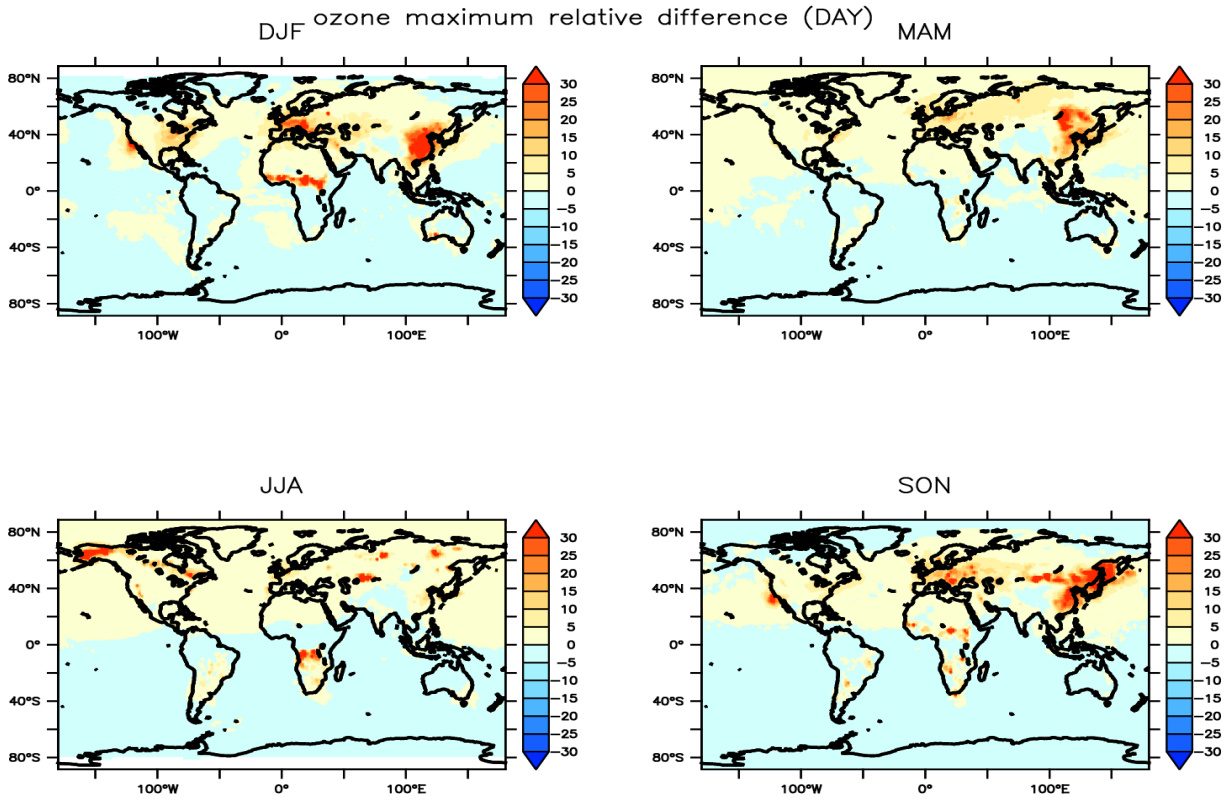

Figure 4: Maximum instantaneous relative differences for ozone.

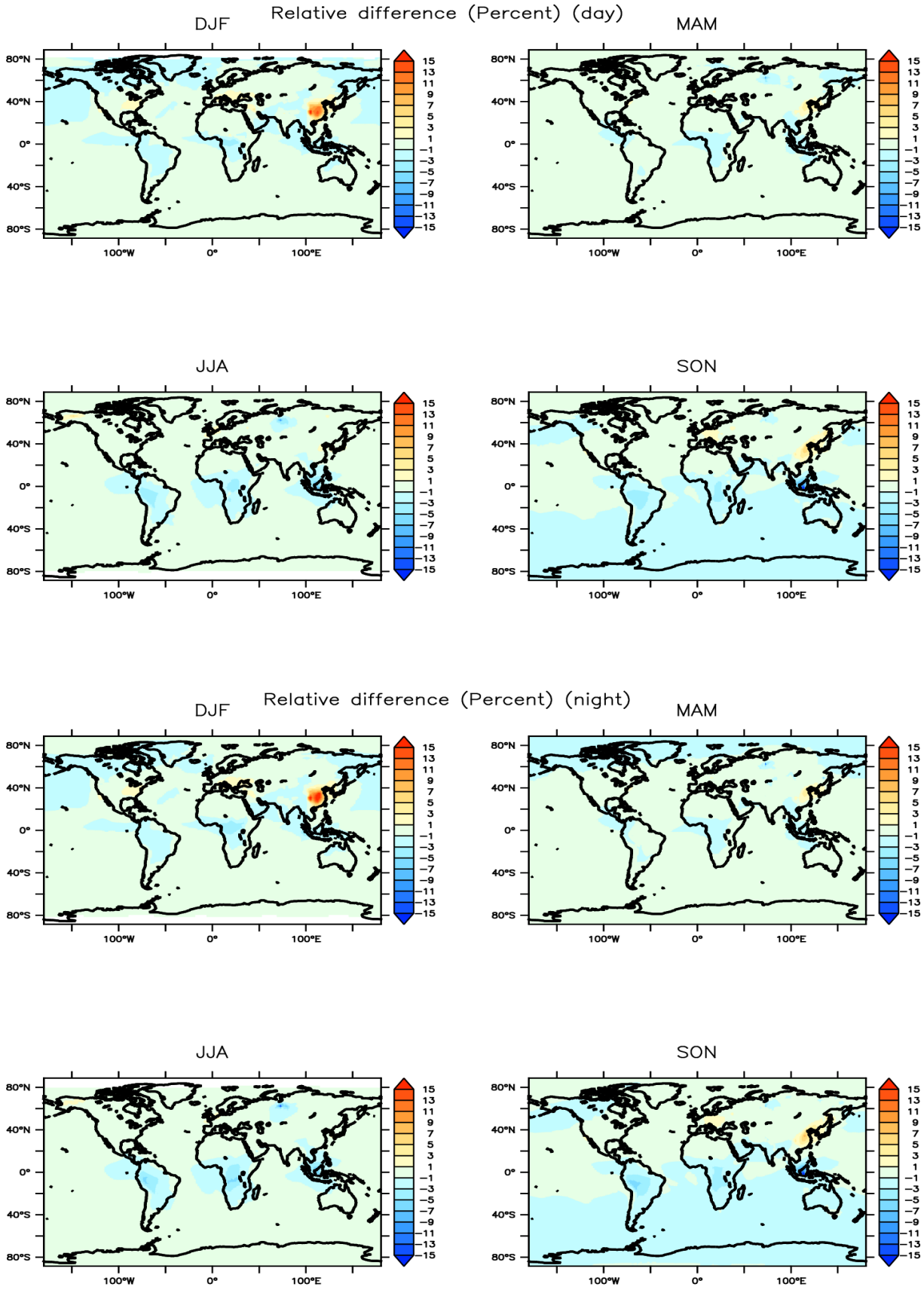

Figure 5: Seasonal relative differences for ozone.

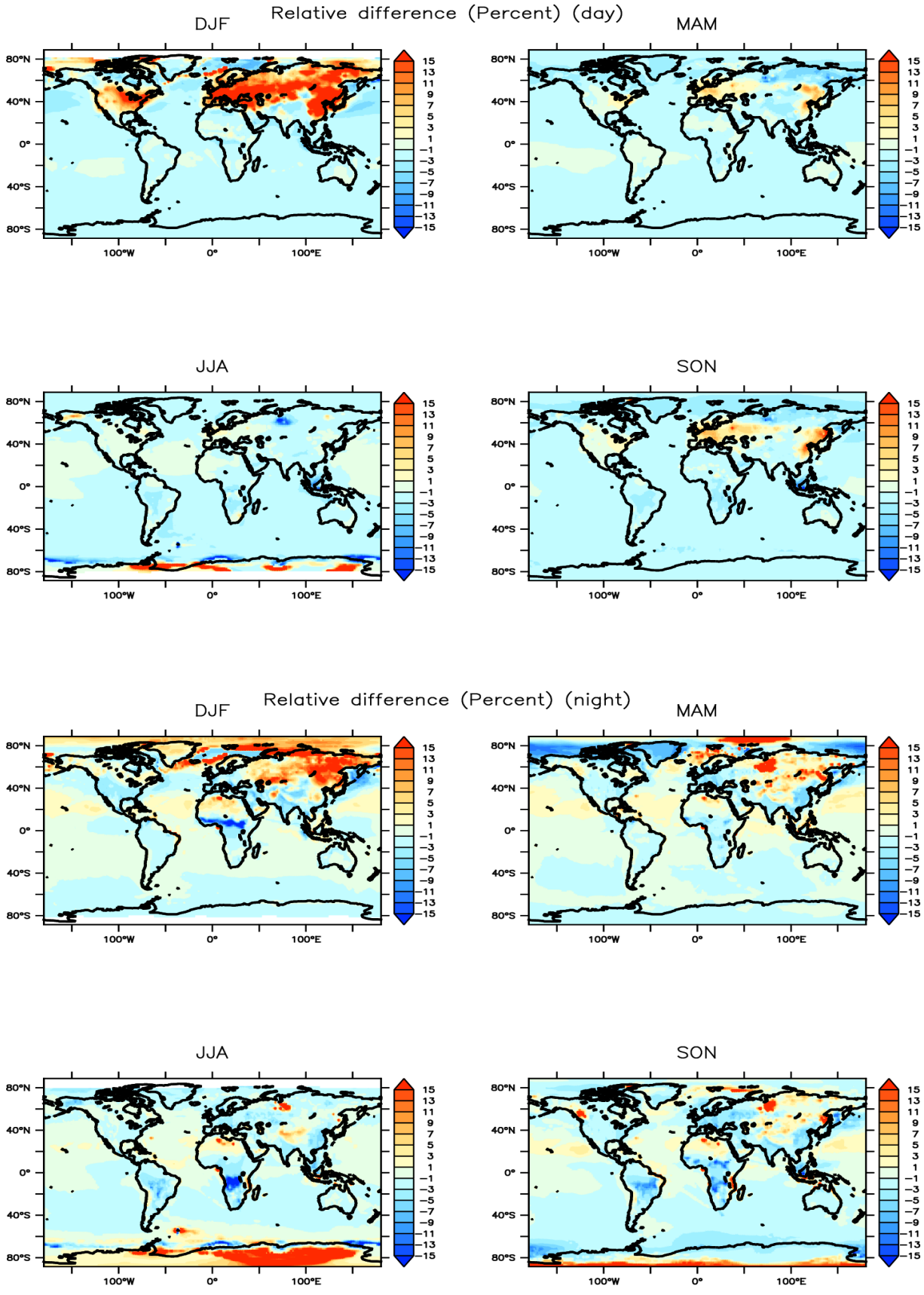

Figure 6: Seasonal relative differences for OH.