Supplementary material to paper:

Ethane, ethyne and carbon monoxide concentrations in the upper troposphere and lower stratosphere from ACE and GEOS-Chem: a comparison study

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Table S1. Average CO VMR profiles for the period January 2004 – February 2007 in 10° latitude bins from ACE satellite measurements in ppbv

	Latitude (Degrees)																	
Altitude (km)	**90°S-80°S**	**80°S-70°S**	**70°S-60°S**	**60°S-50°S**	**50°S-40°S**	**40°S-30°S**	**30°S-20°S**	**20°S-10°S**	**10°S-0°**	**0°-10°N**	**10°N-20°N**	**20°N-30°N**	**30°N-40°N**	**40°N-50°N**	**50°N-60°N**	**60°N-70°N**	**70°N-80°N**	**80°N-90°N**
5.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6.5	58	62	68	72	81	92	92	83	85	90	110	116	110	119	136	137	140	117
7.5	54	62	66	71	78	91	91	85	94	95	103	107	111	121	126	127	127	118
8.5	51	62	65	74	82	96	88	89	92	94	101	110	115	120	119	117	111	110
9.5	38	51	54	65	78	91	88	91	93	100	96	102	107	106	93	91	79	89
10.5	29	40	44	54	71	82	81	84	88	97	93	94	94	84	69	66	57	65
11.5	25	32	36	45	61	74	78	80	84	88	88	85	82	67	50	48	41	43
12.5	23	26	30	37	50	61	65	65	68	71	72	70	61	47	38	35	31	34
13.5	20	23	27	32	41	53	57	59	61	57	63	55	47	39	31	30	26	28
14.5	18	20	24	28	35	46	53	55	58	53	51	47	40	34	27	26	23	25
15.5	15	17	21	24	31	41	48	44	46	51	49	45	37	31	24	23	20	21
16.5	14	16	18	20	26	33	37	7	19	39	-----	34	30	26	20	19	17	18
17.5	15	15	16	17	21	25	28	14	1	14	-----	26	24	21	18	17	15	16
18.5	15	15	15	15	17	21	23	19	20	-----	-----	21	21	18	16	15	14	15

Table S2. Average C_2H_6 VMR profiles for the period January 2004 – February 2007 in 10° latitude bins from ACE satellite measurements in ppbv

	Latitude (Degrees)																
Altitude (km)	**90°S-80°S**	**80°S-70°S**	**70°S-60°S**	**60°S-50°S**	**50°S-40°S**	**40°S-30°S**	**30°S-20°S**	**20°S-10°S**	**10°S-0°**	**0°-10°N**	**10°N-20°N**	**20°N-30°N**	**30°N-40°N**	**40°N-50°N**	**50°N-60°N**	**60°N-70°N**	**70°N-80°N**	**80°N-90°N**
5.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7.5	0.254	0.257	0.263	0.315	0.443	0.319	0.337	-----	-----	-----	-----	0.901	0.740	1.054	1.034	1.115	1.244	0.871
8.5	0.257	0.251	0.266	0.327	0.389	0.566	0.436	0.428	0.422	0.679	0.631	0.718	0.804	0.907	0.918	0.944	0.921	0.770
9.5	0.166	0.201	0.225	0.313	0.399	0.553	0.402	0.439	0.462	0.577	0.560	0.651	0.760	0.814	0.749	0.726	0.629	0.612
10.5	0.099	0.147	0.175	0.263	0.382	0.510	0.450	0.440	0.466	0.532	0.549	0.650	0.694	0.625	0.510	0.454	0.390	0.438
11.5	0.070	0.094	0.131	0.188	0.304	0.405	0.401	0.429	0.451	0.421	0.519	0.515	0.500	0.397	0.306	0.268	0.231	0.312
12.5	0.057	0.068	0.109	0.155	0.250	0.344	0.348	0.355	0.380	0.406	0.421	0.414	0.372	0.252	0.201	0.169	0.134	0.209
13.5	0.036	0.054	0.091	0.124	0.198	0.298	0.316	0.306	0.300	0.303	0.334	0.330	0.244	0.188	0.140	0.115	0.086	0.161
14.5	0.022	0.038	0.071	0.103	0.154	0.225	0.252	0.229	0.240	0.232	0.257	0.234	0.171	0.137	0.097	0.077	0.056	0.116
15.5	0.011	0.024	0.045	0.067	0.111	0.157	-----	0.035	0.201	0.199	0.158	0.160	0.119	0.100	0.066	0.051	0.034	0.067
16.5	0.007	0.014	0.025	0.041	0.070	0.096	-----	0.113	0.076	-----	-----	0.108	0.081	0.063	0.040	0.031	0.020	0.035
17.5	0.008	0.011	0.015	0.022	0.041	0.058	-----	0.073	-----	0.051	-----	0.071	0.049	0.038	0.024	0.020	0.016	0.020
18.5	0.010	0.010	0.012	0.014	0.022	0.041	0.044	-----	-----	-----	-----	0.050	0.035	0.025	0.016	0.016	0.018	0.012

Table S3. Average C_2H_2 VMR profiles for the period January 2004 – February 2007 in 10° latitude bins from ACE satellite measurements in ppbv

	Latitude (Degrees)																	
Altitude (km)	**90°S-80°S**	**80°S-70°S**	**70°S-60°S**	**60°S-50°S**	**50°S-40°S**	**40°S-30°S**	**30°S-20°S**	**20°S-10°S**	**10°S-0°**	**0°-10°N**	**10°N-20°N**	**20°N-30°N**	**30°N-40°N**	**40°N-50°N**	**50°N-60°N**	**60°N-70°N**	**70°N-80°N**	**80°N-90°N**
5.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6.5	-----	0.047	0.088	0.140	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.242	0.222	0.271	0.096
7.5	0.047	0.034	0.054	0.076	0.102	-----	-----	-----	-----	-----	-----	-----	0.130	0.158	0.180	0.184	0.239	0.088
8.5	0.036	0.033	0.043	0.050	0.059	0.110	0.084	0.115	0.091	0.130	0.116	0.127	0.109	0.139	0.148	0.148	0.177	0.105
9.5	0.025	0.026	0.035	0.048	0.060	0.091	0.068	0.075	0.077	0.096	0.095	0.098	0.099	0.109	0.107	0.104	0.109	0.088
10.5	0.015	0.018	0.026	0.039	0.055	0.078	0.068	0.071	0.070	0.088	0.082	0.084	0.085	0.086	0.068	0.064	0.061	0.050
11.5	0.007	0.011	0.016	0.026	0.039	0.051	0.050	0.052	0.056	0.052	0.056	0.056	0.062	0.050	0.038	0.033	0.027	0.033
12.5	0.008	0.009	0.012	0.018	0.029	0.038	0.041	0.036	0.040	0.044	0.040	0.045	0.042	0.030	0.024	0.019	0.017	0.018
13.5	0.010	0.007	0.010	0.014	0.021	0.029	0.031	0.030	0.028	0.035	0.032	0.031	0.028	0.020	0.015	0.013	0.012	0.009
14.5	0.008	0.007	0.009	0.012	0.017	0.024	0.026	0.027	0.027	0.035	0.031	0.029	0.021	0.016	0.012	0.010	0.010	0.014
15.5	0.008	0.007	0.008	0.010	0.013	0.019	0.025	0.023	0.024	0.022	0.023	0.023	0.018	0.014	0.010	0.008	0.008	0.011
16.5	0.008	0.006	0.006	0.007	0.010	0.015	0.021	0.021	0.020	0.016	0.016	0.019	0.013	0.009	0.008	0.006	0.007	0.008
17.5	0.007	0.004	0.005	0.006	0.007	0.011	0.016	0.018	0.016	0.015	0.013	0.014	0.010	0.007	0.005	0.005	0.006	0.009
18.5	0.006	0.004	0.005	0.005	0.005	0.008	0.012	0.013	0.013	0.014	0.012	0.011	0.007	0.006	0.004	0.004	0.005	0.007

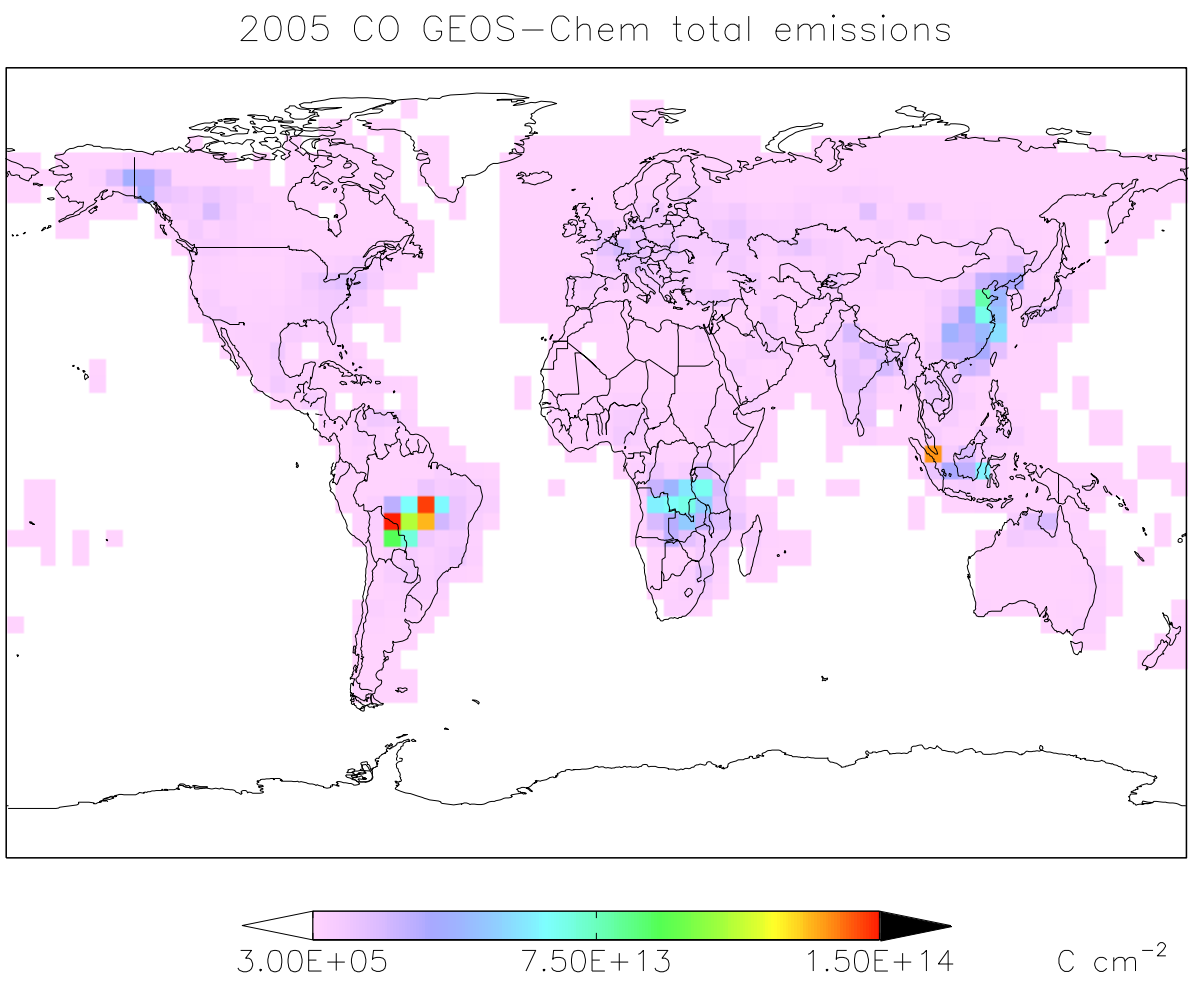

Fig. S1. 2005 CO global emissions including CO production from VOCs oxidation

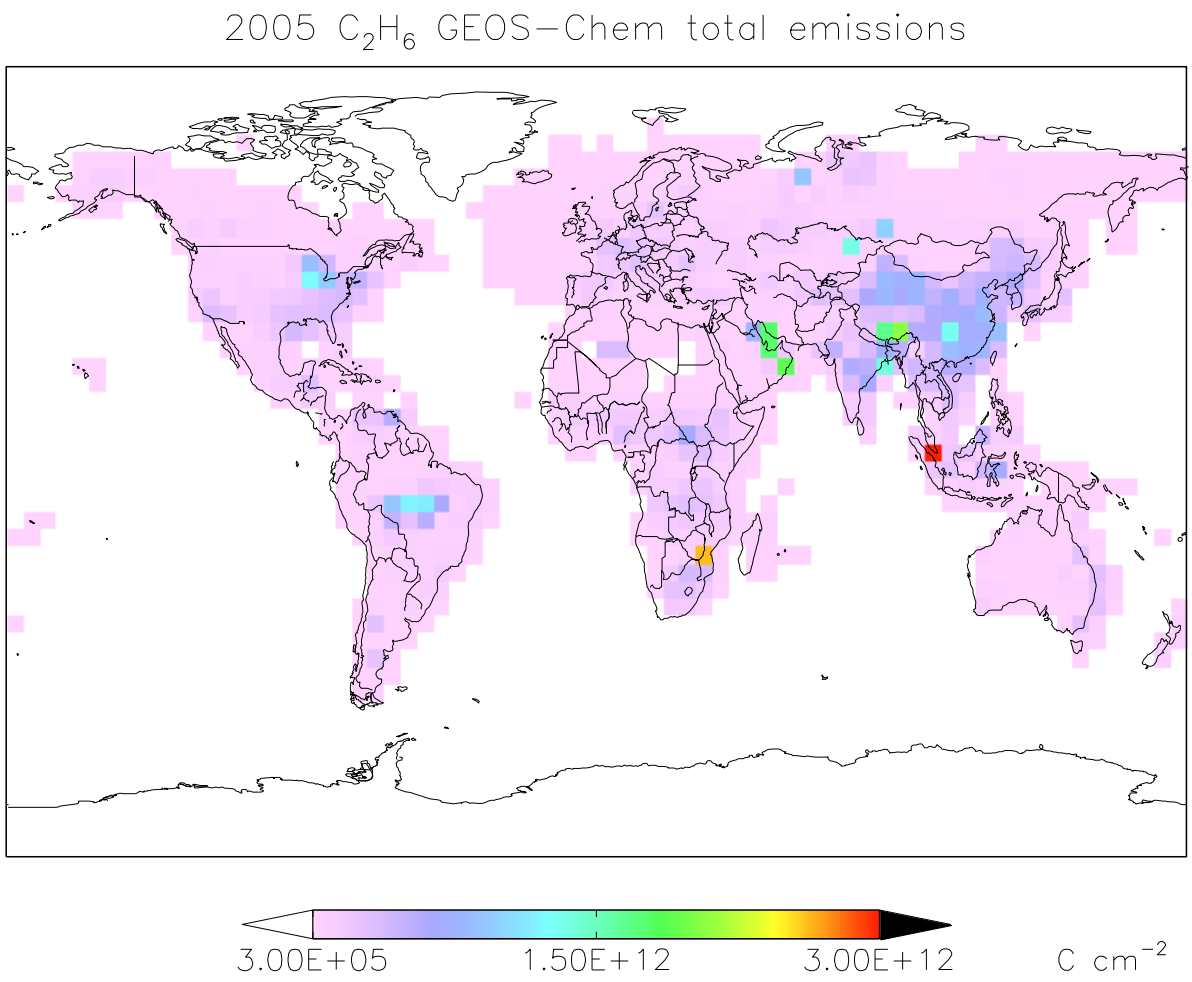

Fig. S2. 2005 C_2H_6 global emissions

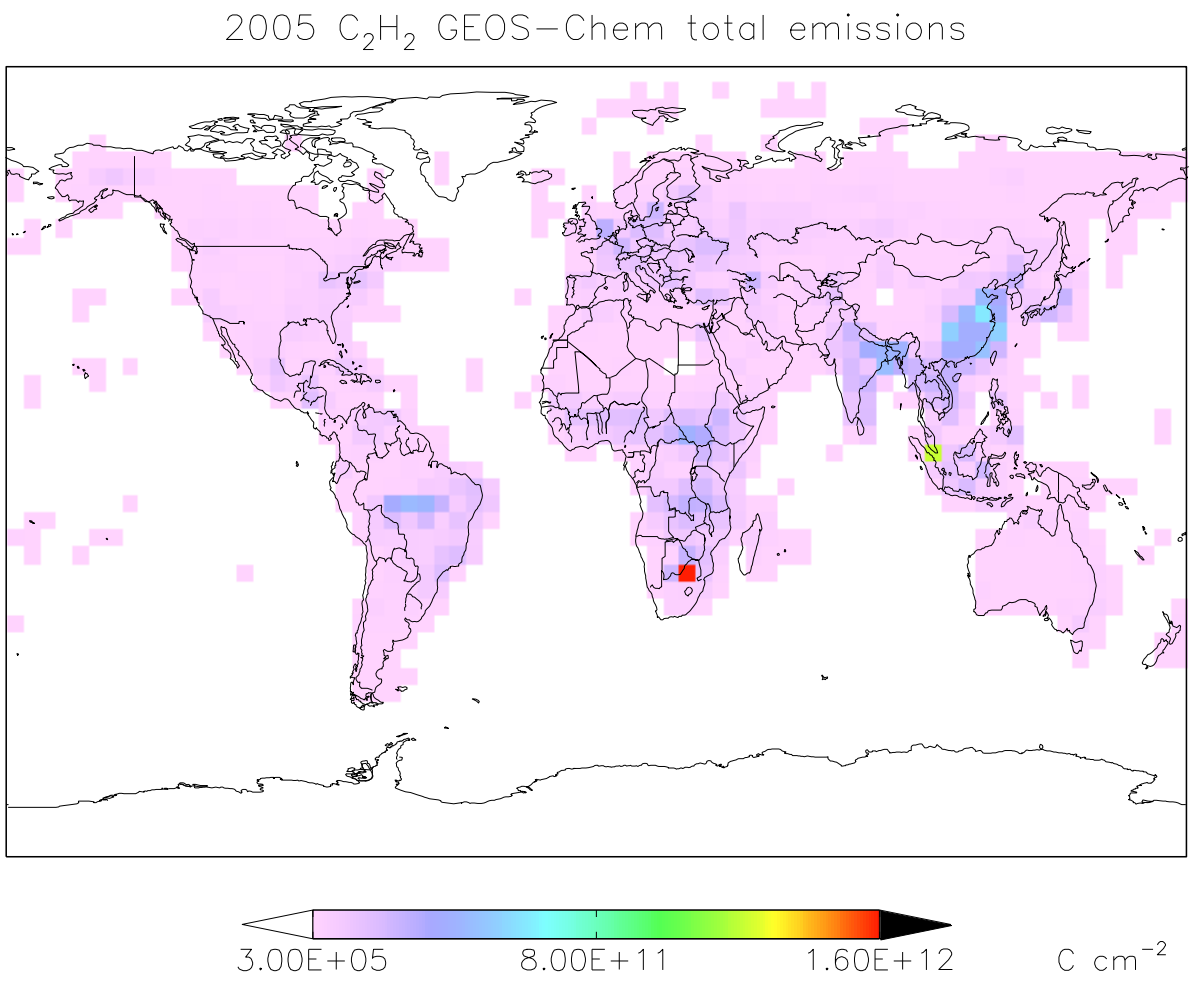

Fig. S3. 2005 C_2H_2 global emissions

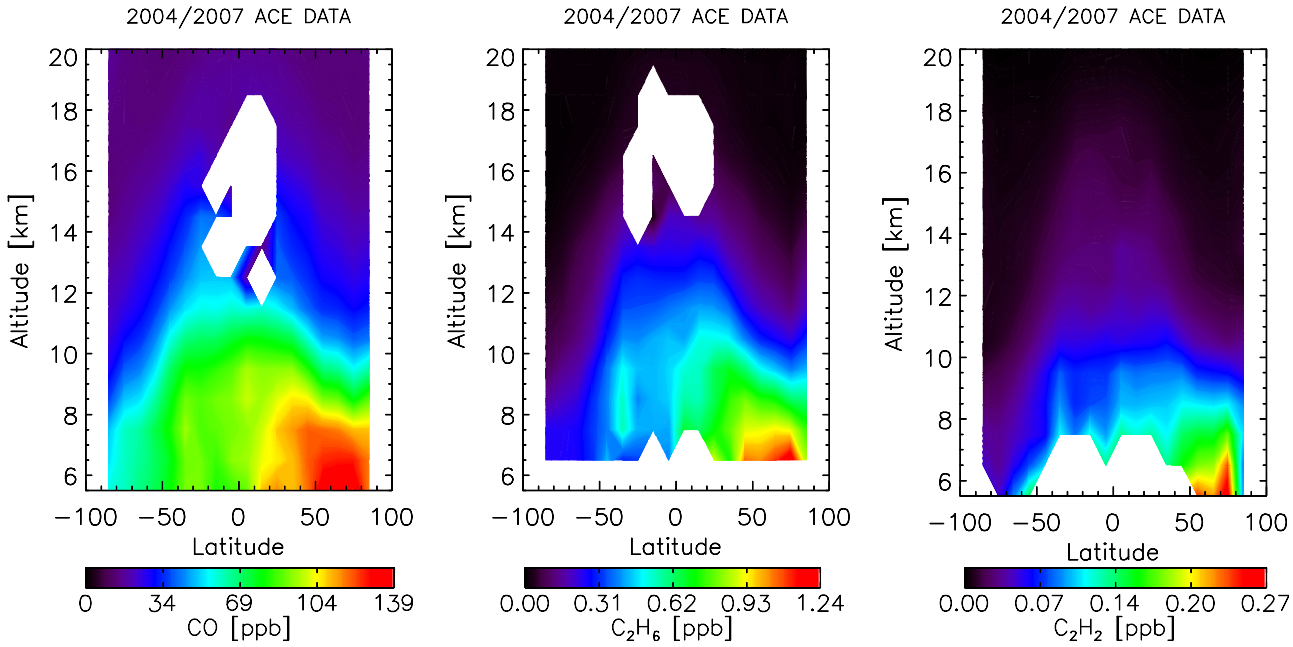

Fig. S4. Concentrations altitude-latitude cross sections for ACE data for the period of time between February 2004 and February 2007